MOOREBANK INTERMODAL COMPANY

Moorebank Intermodal Terminal Response to Submissions Report

Volume 3

May 2015

PARSONS BRINCKERHOFF

Contents of the Response to Submissions Report

VOLUME 1

Glossary and abbreviations
Executive summary
Chapter 1 – Introduction
Chapter 2 – Assessment of the issues raised by the NSW Planning Assessment Commission
Chapter 3 – Consultation
Chapter 4 – Overview of submissions
Chapter 5 – Response to government agency submissions
Chapter 6 – Response to community submissions
Chapter 7 – Proposed amendments to the development
Chapter 8 – Additional technical investigations since EIS
Chapter 9 – Revised environmental management measures
Chapter 10 – Conclusion

VOLUME 2

Appendix A – Index of Submissions
Appendix B – Response to Council Submissions
Appendix C – Biodiversity Offset Strategy
Appendix D – Visual and Urban Design Assessment

VOLUME 3

Appendix E – Traffic and Transport Impact Assessment

VOLUME 4

Appendix F – Noise and Vibration Assessment
Appendix G – Local Air Quality Assessment
Appendix H – Health Impact Assessment and Human Health Risk Assessment
Appendix I – Aboriginal Scar Tree Assessment
Appendix J – Cultural Heritage Report
Appendix K – Cultural Heritage Archival Recordings

Appendix E
Traffic and Transport Impact Assessment

Moorebank Intermodal Company

Moorebank Intermodal Terminal – Traffic and Transport Impact Assessment

27 April 2015

PARSONS BRINCKERHOFF

Document information

Client: Moorebank Intermodal Company
Title: Moorebank Intermodal Terminal – Traffic and Transport Impact Assessment
Document No: 2189293I-ITP-RPT-3787-RevC
Date: 27 April 2015

Rev	Date	Details
	27/02/2015	Traffic and Transport Report
A	04/03/2015	Traffic and Transport Report
B	20/04/2015	Traffic and Transport Report
C	27/04/2015	Traffic and Transport Report

Author, Reviewer and Approver details

Prepared by:	Rachael Christie Adam Ainsley Chris Chun Claire Mead Ryan Miller	Date: 27/04/2015	Signature:
Reviewed by:	Sam Black Paul Greenhalgh	Date: 27/04/2015	Signature:
Approved by:	John Webster	Date: 27/04/2015	Signature:

Distribution

Moorebank Intermodal Company, Parsons Brinckerhoff file, Parsons Brinckerhoff Library

©Parsons Brinckerhoff Australia Pty Limited 2015

Copyright in the drawings, information and data recorded in this document (the information) is the property of Parsons Brinckerhoff. This document and the information are solely for the use of the authorised recipient and this document may not be used, copied or reproduced in whole or part for any purpose other than that for which it was supplied by Parsons Brinckerhoff. Parsons Brinckerhoff makes no representation, undertakes no duty and accepts no responsibility to any third party who may use or rely upon this document or the information.

Document owner

Parsons Brinckerhoff Australia Pty Limited

ABN 80 078 004 798

Level 27 Ernst & Young Centre
680 George Street
Sydney NSW 2000
GPO Box 5394
Sydney NSW 2001
Australia
Tel: +61 2 9272 5100
Fax: +61 2 9272 5101
www.pbworld.com

Certified to ISO 9001, ISO 14001, OHSAS 18001

Contents

		Page number
Glossary		ix
1.	Introduction	1
1.1	Project location and study area	2
1.2	Scope and methodology	4
1.3	Purpose of this report	6
1.4	Summary of changes that have been made from the EIS reporting	6
1.5	Document structure	7
2.	Existing situation	9
2.1	Existing land use	9
2.2	Surrounding road network	9
2.3	Existing traffic conditions	11
2.3.1	Existing intersection performance	16
2.4	Southern Sydney Freight Line	17
2.5	Public transport	17
2.5.1	Train services	18
2.5.2	Bus services	18
2.6	Pedestrian and cyclist facilities	20
2.7	Crash analysis	22
2.7.1	Moorebank Avenue crash analysis	22
2.7.2	M5 crash analysis	22
2.8	Black spot analysis	23
2.8.1	Moorebank Avenue	23
2.8.2	M5	23
3.	Proposed project	25
3.1	Rail access	27
3.2	Rail layout	27
3.3	Moorebank Avenue upgrades	27
3.4	Internal road layout and access	27
3.5	Staff parking	30
3.6	Bus services	30
3.7	Pedestrian and cyclist facilities	30

Contents (Continued)

Page number

4. Project road and intersection upgrades 31

4.1 Moorebank IMT construction accesses 31

4.2 Moorebank Avenue upgrades 31

4.3 Moorebank Avenue, Anzac Road and Moorebank IMT Access intersection 32

4.4 Moorebank Avenue intersections 33

5. Future year traffic modelling 35

5.1 Traffic modelling program 35

5.2 Future year assessment 35

5.3 Cumulative scenarios 37

5.4 SIMTA site access 38

6. Traffic generation and distribution 41

6.1 Construction 41

6.2 Operations 42

6.2.1 Intermodal terminal traffic generation – IMEX and Interstate facilities 42
6.2.2 Warehouse traffic generation 48
6.2.3 Staff traffic generation 51
6.2.4 Truck petrol station/retail facility 52

6.3 Traffic generation summary 52

6.4 Cumulative scenarios 56

6.5 Traffic generation from alternate land uses 63

6.6 Traffic distribution 65

6.6.1 Moorebank IMT traffic distribution 65
6.6.2 SIMTA traffic distribution 66

6.7 Moorebank Avenue Daily Traffic Profile 72

7. Background traffic growth rates 75

8. Strategic traffic modelling and trip distribution 79

8.1 Strategic modelling 79

8.1.1 Network performance 85
8.1.2 Moorebank IMT traffic distribution 85

Contents (Continued)

Page number

9. Intersection analysis 87

9.1 Intersection performance 87

9.1.1 I-01 – Hume Highway/Orange Grove Road 87
9.1.2 I-02 – Hume Highway/Elizabeth Drive 91
9.1.3 I-03 – Hume Highway/Memorial Avenue 94
9.1.4 I-04 – Hume Highway/Hoxton Park Road/Macquarie Street 97
9.1.5 I-05 – Hume Highway/Reilly Street 100
9.1.6 I-06 – Newbridge Road/Moorebank Avenue 102
9.1.7 I-07 – Heathcote Road/Moorebank Avenue 105
9.1.8 I-08 – Moorebank Avenue/Industrial Park Access 108
9.1.9 I-09 – Moorebank Avenue/Church Road 110
9.1.10 I-10 – Heathcote Road/Nuwarra Road 114
9.1.11 I-11 – Newbridge Road/Nuwarra Road 116
9.1.12 I-12 – Newbridge Road/Brickmans Drive/Governor Macquarie Drive 118
9.1.13 I-13 – Moorebank Avenue/M5 122
9.1.14 I-14 – Hume Highway/M5 126
9.1.15 I-15 – Cambridge Avenue/Canterbury Road 129
9.1.16 I-0A – Moorebank Avenue/Anzac Road 132
9.1.17 I-0B – Moorebank Avenue/New DNSDC Access (SIMTA Northern Access) 135
9.1.18 I-0C – Moorebank Avenue/SIMTA Central Access 138
9.1.19 I-0D – Moorebank Avenue/SIMTA Southern Access 140

9.2 Comparison of 2030 intersection performance 141

9.3 Intersection upgrade and timing requirements 146

9.4 Summary of potential road network capacity issues in 2030 148

9.5 Potential crash reduction 149

9.5.1 Other safety benefits 150

10. Mid-block capacity analysis 151

11. Traffic weaving on the M5 at the Georges River Crossing 155

12. M5 159

13. Mitigation measures for detailed design and operations 161

13.1 General detailed design considerations 161

13.2 Detailed design of Project Development Phasing 162

13.3 Outside the study area – M5 162

13.4 Travel demand management 162

13.4.1 Buses 162
13.4.2 Walking and cycling links 163
13.4.3 Employee focussed programs 163

Contents (Continued)

Page number

14. Construction traffic management 165

14.1 Scope of construction works 165

14.2 Project construction footprint 165

14.2.1 Moorebank Avenue upgrades 166

14.3 Construction workforce 166

14.4 Haulage routes and Project site access 166

14.5 Parking 170

14.6 Pedestrian and cyclist impacts 170

14.7 Construction mitigation measures 170

15. Conclusion 173

16. References 175

List of tables

Page number

Table 2.1	Level of Service criteria for intersections	16
Table 2.2	Existing intersection performance (2014)	17
Table 2.3	Travel distance and accessibility to local railway stations	18
Table 6.1	Construction vehicle volumes	42
Table 6.2	Moorebank terminal daily traffic movements	46
Table 6.3	Moorebank terminal peak hour traffic movements	47
Table 6.4	Moorebank warehouse daily truck movements	50
Table 6.5	Moorebank warehouse peak hour truck movements	50
Table 6.6	Terminal staff numbers	51
Table 6.7	Peak hour staff light vehicle traffic generation in the weekday AM and PM peak hours	52
Table 6.8	Summary of total daily weekday trips generated by Moorebank IMT	53
Table 6.9	Summary of total weekday AM peak hour traffic movements	54
Table 6.10	Summary of total weekday PM peak hour traffic movements	55
Table 6.11	Cumulative scenario daily and peak hourly traffic generation	61
Table 6.12	Summary of traffic generated by alternate land uses	64
Table 6.13	Moorebank IMT traffic distribution	65
Table 6.14	SIMTA traffic distribution	66
Table 7.1	Annual weekday peak period growth rates on Moorebank Avenue and Anzac Road	75
Table 7.2	Annual weekday peak period growth rates on the wider area road network	76
Table 8.1	Strategic model components	79
Table 8.2	Planned network changes	80
Table 8.3	Moorebank IMT traffic distribution in 2030	86
Table 9.1	I-01 intersection performance results	87
Table 9.2	I-01 proposed intersection upgrades	89
Table 9.3	I-02 intersection performance results	91
Table 9.4	I-02 proposed intersection upgrades	92
Table 9.5	I-03 intersection performance results	94
Table 9.6	I-03 proposed intersection upgrades	95
Table 9.7	I-04 intersection performance results	97
Table 9.8	I-04 proposed intersection upgrades	98
Table 9.9	I-05 intersection performance results	100
Table 9.10	I-06 intersection performance results	102
Table 9.11	I-06 proposed intersection upgrades	103
Table 9.12	I-07 intersection performance results	105
Table 9.13	I-07 proposed intersection upgrades	106
Table 9.14	I-08 intersection performance results	108
Table 9.15	I-08 proposed intersection upgrades	110
Table 9.16	I-09 intersection performance results	110
Table 9.17	I-09 proposed intersection upgrades	112
Table 9.18	I-10 intersection performance results	114
Table 9.19	I-11 intersection performance results	116
Table 9.20	I-11 proposed intersection upgrades	118
Table 9.21	I-12 intersection performance results	118
Table 9.22	I-12 proposed intersection upgrades	120
Table 9.23	I-13 intersection performance results	122
Table 9.24	I-13 proposed intersection upgrades	124
Table 9.25	I-14 intersection performance results	126
Table 9.26	I-14 proposed intersection upgrades	127
Table 9.27	I-15 intersection performance results	129

Table 9.28	I-15 proposed intersection upgrades	130
Table 9.29	I-0A intersection performance results	132
Table 9.30	I-0A proposed intersection upgrades	133
Table 9.31	I-0B intersection performance results	135
Table 9.32	I-0B proposed intersection upgrades	136
Table 9.33	I-0C intersection performance results	138
Table 9.34	I-0C proposed intersection upgrades	139
Table 9.35	I-0D intersection performance results	140
Table 9.36	Intersection upgrade and timing requirements – IMT only	146
Table 9.37	Intersection upgrade and timing requirements – cumulative scenarios	147
Table 9.38	The impact of Moorebank IMT traffic on road infrastructure congestion	148
Table 9.39	Potential crash reduction	149
Table 10.1	Typical mid-block capacities for urban roads with interrupted flow	151
Table 10.2	Mid-block capacity analysis on the wider road network	152
Table 11.1	Freeway weaving levels of service	156
Table 11.2	Expected Levels of Service for Weaving at the M5 Georges River Crossing in 2030 with and without Moorebank IMT	156
Table 11.3	Expected V/C Ratios at the M5 Georges River Crossing in 2030 with and without Moorebank IMT	157
Table 12.1	Moorebank IMT percentage increase on M5 during 2030 peak periods	159
Table 12.2	Cumulative traffic percentage increase to the M5 from Moorebank IMT and SIMTA during weekday peak periods in 2030	160
Table 14.1	Indicative peak daily construction workforce	166

List of figures

Page number

Figure 1.1	Project site and context	3
Figure 2.1	Location of existing key intersections on Moorebank Avenue	13
Figure 2.2	Existing AM peak hour intersection turning volumes – Year 2014	14
Figure 2.3	Existing PM peak hour intersection turning volumes – Year 2014	15
Figure 2.4	Local bus service route and train station locations	19
Figure 2.5	Existing and proposed footpaths and cycleways	21
Figure 2.6	Location of crashes on Moorebank Avenue and the M5	24
Figure 3.1	Indicative revised IMT layout associated with the southern rail access option – Full build in 2030	26
Figure 3.2	Indicative Moorebank IMT vehicle circulation and access associated with the southern rail access option – Full build in 2030	29
Figure 4.1	Proposed Moorebank Avenue, Anzac Road and Moorebank IMT Access intersection	32
Figure 5.1	Relationship between the Project development phasing and assessment scenarios	36
Figure 5.2	Proposed SIMTA site access locations	39
Figure 6.1	2030 Cumulative Scenario A	57
Figure 6.2	2030 Cumulative Scenario B	58
Figure 6.3	2020 Cumulative Scenario C1	59
Figure 6.4	2030 Cumulative Scenario C2	60
Figure 6.5	2030 weekday AM and PM peak Moorebank IMT light vehicle distribution on the wider area road network	67
Figure 6.6	2030 weekday AM peak Moorebank IMT heavy vehicle distribution on the wider area road network	68
Figure 6.7	2030 weekday PM peak Moorebank IMT heavy vehicle distribution on the wider area road network	69
Figure 6.8	2030 Moorebank IMT traffic generated on the wider area road network in the AM peak	70
Figure 6.9	2030 Moorebank IMT traffic generated on the wider area road network in the PM peak	71
Figure 6.10	Daily traffic volume profiles for Moorebank Avenue between M5 and Anzac Road in 2030 with and without Moorebank IMT in Passenger Car Unit (PCU) equivalents	73
Figure 8.1	Base case articulated truck distributions to/from Port Botany	82
Figure 8.2	Articulated truck distributions to/from Port Botany with Moorebank IMT	83
Figure 8.3	Articulated truck distributions to/from Moorebank with Moorebank IMT	84
Figure 9.1	Existing intersection layout – I-01	90
Figure 9.2	Proposed intersection layout – I-01	90
Figure 9.3	Existing intersection layout – I-02	93
Figure 9.4	Proposed intersection layout (cumulative scenario C2 only) – I-02	93
Figure 9.5	Existing intersection layout – I-03	96
Figure 9.6	Proposed intersection layout – I-03	96
Figure 9.7	Existing intersection layout – I-04	99
Figure 9.8	Proposed intersection layout – I-04	100
Figure 9.9	Existing intersection layout – I-06	104
Figure 9.10	Proposed intersection layout – I-06	104
Figure 9.11	Existing intersection layout – I-07	107
Figure 9.12	Proposed intersection layout – I-07	108
Figure 9.13	Existing intersection layout – I-09	113
Figure 9.14	Proposed intersection layout – I-09	114
Figure 9.15	Existing intersection layout – I-12	121
Figure 9.16	Proposed intersection layout – I-12	121

Figure 9.17	Existing intersection layout – I-13	125
Figure 9.18	Proposed intersection layout – I-13	125
Figure 9.19	Existing intersection layout – I-14	128
Figure 9.20	Proposed intersection layout – I-14	128
Figure 9.21	Existing intersection layout – I-15	131
Figure 9.22	Proposed intersection layout – I-15	131
Figure 9.23	Proposed intersection layout – I-0A	134
Figure 9.24	Upgraded intersection layout – I-0A (For Cumulative Scenario A and C2)	134
Figure 9.25	Upgraded intersection layout – I-0A (For Cumulative Scenario B)	135
Figure 9.26	Proposed intersection layout – I-0B	137
Figure 9.27	Upgraded intersection layout – I-0B	137
Figure 9.28	Proposed intersection layout – I-0C	139
Figure 9.29	Upgraded intersection layout – I-0C	140
Figure 9.30	Intersection LoS Comparison 2030 weekday AM peak	142
Figure 9.31	Intersection LoS Comparison 2030 weekday PM peak	143
Figure 9.32	Intersection LoS, Delay and Queue Comparison 2030 weekday AM peak	144
Figure 9.33	Intersection LoS, Delay and Queue Comparison 2030 weekday PM peak	145
Figure 14.1	Early works development phase – construction footprint, access and haulage	168
Figure 14.2	Construction phase – indicative construction footprint, access and haulage	169

List of appendices

Appendix A	Traffic surveys
Appendix B	Intersection performance indicators
Appendix C	2014 existing year SIDRA results
Appendix D	2015 SIDRA results with and without Moorebank IMT
Appendix E	2016 SIDRA results with and without Moorebank IMT
Appendix F	2019 SIDRA results with and without Moorebank IMT
Appendix G	2023 SIDRA results with and without Moorebank IMT
Appendix H	2025 SIDRA results with and without Moorebank IMT
Appendix I	2028 SIDRA results with and without Moorebank IMT
Appendix J	2030 SIDRA results with and without Moorebank IMT
Appendix K	2030 SIDRA results with Moorebank IMT and SIMTA
Appendix L	Strategic traffic modelling report (August 2014)
Appendix M	Deloitte EIS – Supporting Information

Glossary

AADT	Annual Average Daily Traffic
ADT	Average Daily Traffic
AEP	Annual Exceedance Probability
BITRE	(Commonwealth) Bureau of Infrastructure, Transport and Regional Economic
BOOT	Build Own Operate Transfer
BTS	Bureau of Transport Statistics, a division of Transport for NSW
CBD	Central Business District
CEMP	Construction Environmental Management Plan
CCC	Campbelltown City Council
DNSDC	Defence National Storage and Distribution Centre
DoD	Department of Defence
DoE	(Commonwealth) Department of Environment
DP&E	(NSW) Department of Planning and Environment
DoS	Degree of Saturation
DUAP	(NSW) Department of Urban Affairs and Planning
EAR	Environmental Assessment Requirements
EIS	Environmental Impact Statement
EMME/2	Equilibrium Multi Modal Equilibrium
EP&A	Environmental Planning & Assessment
EPBC	Environment Protection & Biodiversity Conservation
FAK	Freight All Kinds
FBTS	Freight Bureau of Transport Statistics
FCL	Full Container Load
FMM	Freight Movement Model
GBE	Government Business Enterprise
GFA	Gross Floor Area

GLFA	Gross Leasable Floor Area
ha	hectare
HV	Heavy vehicle
IMEX	Import/Export
IMT	Intermodal terminal
IS	Inter-state
ITVs	In-terminal vehicles
km	Kilometre
km/h	Kilometre per hour
LCC	Liverpool City Council
LCVM	Light Commercial Vehicle Model
LGA	Local Government Area
LoS	Level of Service
LV	Light vehicle
MIC	Moorebank Intermodal Company
MUR	Moorebank Units Relocation
MT	Empty Container
OTR	over the road vehicles
PCU	Passenger Car Unit
ROL	Road Occupancy Licence
RMS	(NSW) Roads and Maritime Services
SEPP	(NSW) State Environmental Planning Policy
SIDRA	Signalised and unsignalised Intersection Design Research Aid
SIMTA	Sydney Intermodal Terminal Alliance
SME	School of Military Engineering
SSD	Stage significant development
SSFL	Southern Sydney Freight Line
STM	Sydney Strategic Transport Model
SZA	Speed Zone Authorisation

TEU	Twenty-foot equivalent unit containers
TCP	Traffic Control Plan
TDT	Traffic Technical Direction
VHT	Vehicle hours travelled
VKT	Vehicle kilometres travelled
VMS	Variable message sign

1. Introduction

The Moorebank Intermodal Terminal (IMT) Project (the Project) involves the development of approximately 220 hectares (ha) of land at the Project site (refer to Figure 1.1) for the construction and operation of an IMT and associated infrastructure, facilities and warehousing. The Project includes a rail link connecting the Project site to the Southern Sydney Freight Line (SSFL) and a single road access from the Moorebank Avenue and Anzac Road intersection. The Project is proposed on an area of land owned by the Australian Government and currently occupied by the Department of Defence (Defence). The site is adjacent to the SSFL, the East Hills Rail Line and the M5.

The primary function of the IMT is to be a transfer point in the logistics chain for shipping containers and to handle both international IMEX cargo, and domestic interstate and intrastate (regional) cargo. The key aims of the Project are to increase Sydney's rail freight mode share including: promoting the movement of container freight by rail between Port Botany and western and south-western Sydney; and reducing forecast road freight on Sydney's congested road network.

The development of the Project is proposed to be phased, with an initial import export (IMEX) terminal and warehousing facilities planned to commence operations around 2018 (subject to approval). Subsequent 'ramp-up' of IMEX capacity, interstate capacity and warehousing is then expected, with the site fully developed (referred to as the 'full – build' scenario) by about 2030, in line with the expected freight demand. Early Works, consisting mainly of building demolition, are proposed to commence in 2015, followed by the first phase of construction.

The Project proponent is Moorebank Intermodal Company (MIC), a Government Business Enterprise (GBE) set up to facilitate the development of the Project.

The key features/components of the Project are:

- *an IMEX freight terminal* – designed to handle up to 1.05 million TEU per annum (525,000 TEU inbound and 525,000 TEU outbound) of IMEX containerised freight to service 'port shuttle' train services between Port Botany and the Project;
- *an Interstate freight terminal* – designed to handle up to 500,000 TEU per annum (250,000 TEU inbound and 250,000 TEU outbound) of interstate containerised freight to load on and off freight trains travelling to and from regional and interstate destinations; and
- *warehousing facilities* – with capacity for up to 300,000 (square metres) sq. m of warehousing to provide an interface between the IMT and commercial users of its facilities such as freight forwarders, logistics facilities and retail distribution centres.

1.1 Project location and study area

The Project is situated in the Sydney suburb of Moorebank, NSW located approximately 35 km south west from the centre of Sydney and approximately 2 km south of Liverpool CBD. It is located in the Liverpool City Council (LCC) local government area (LGA). The Moorebank IMT is proposed to be located on land currently occupied by the School of Military Engineering (SME). The Project Site is approximately 220 hectares (ha) in area.

The Project site is bounded by Moorebank Avenue to the east, the East Hills Railway Line to the south, the Georges River to the west and the commercial site for ABB Australia (a power and automation technology manufacturer) and the M5 to the north. The M5 provides access to other Sydney motorways, with the M7 Motorway (M7) interchange approximately 5 km by motorway west of the Project site.

The SSFL has been constructed on the western side of the Georges River along the South Line/Bankstown Line and would be used to service the terminal by rail.

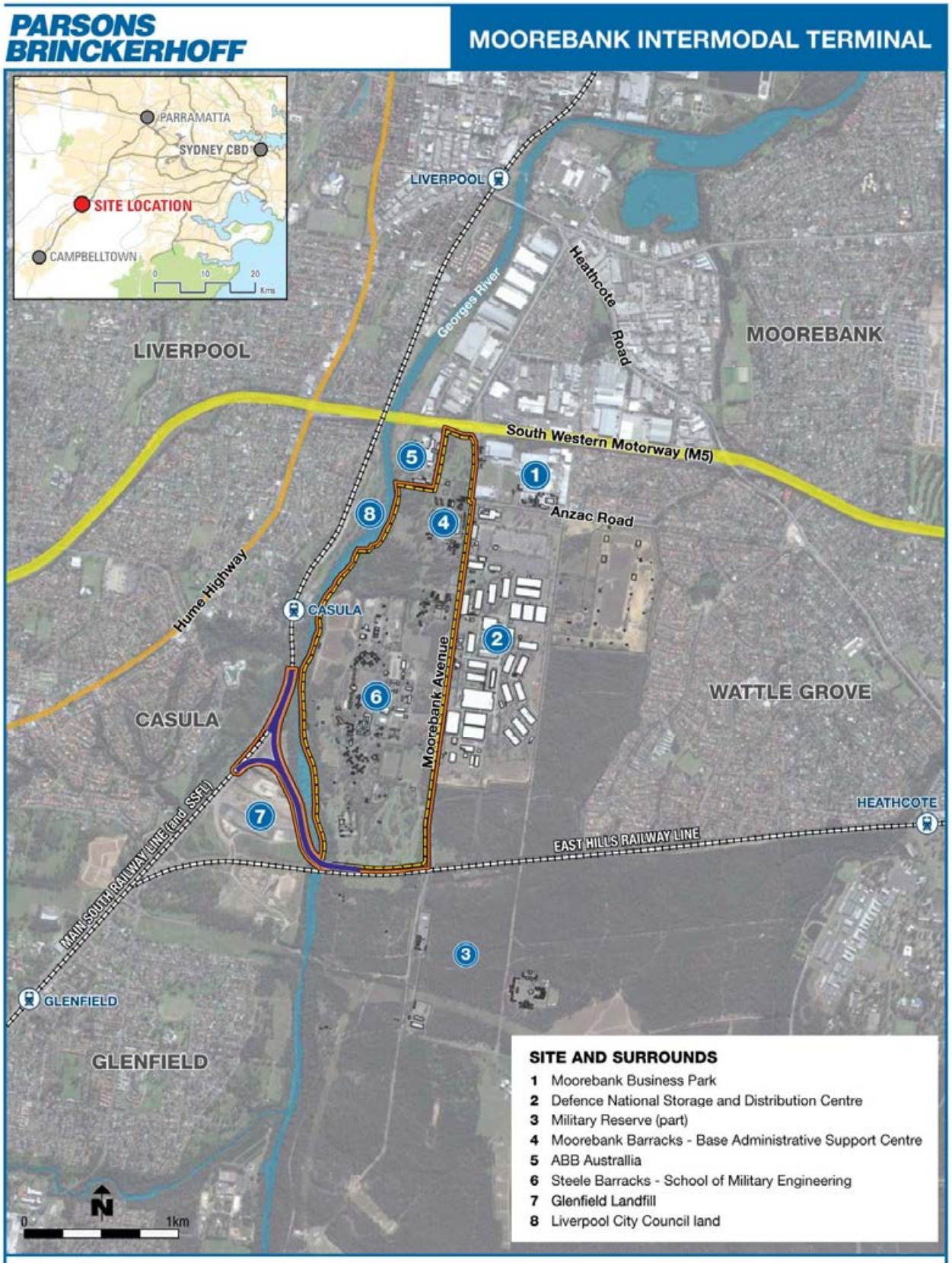


Figure 1.1 Project site and context

1.2 Scope and methodology

This report presents the results of an investigation into the traffic impact of the Moorebank IMT on the surrounding transportation network and assesses the operation of the road upgrades to Moorebank Avenue required to manage the increased demand at acceptable performance levels.

In preparing this report, our analysis follows the principles of the Roads and Maritime Services (RMS) *Guide to Traffic Generating Developments (2002).* Where appropriate, different rates and requirements have been adopted to either make use of more recent and applicable information or to better reflect the local planning environment. Information sources are as follows:

- IMEX and interstate traffic generations were sourced from Deloitte analysis based on a comprehensive analysis of internal warehouse operations.
- Warehouse traffic generation rates sourced from both Deloitte and the RMS *Guide to Traffic Generating Developments Technical Direction TDT 2013/04 Traffic Surveys* (May 2013).

The Moorebank IMT would facilitate the distribution of road freight to western Sydney by transferring the origin of truck hauled containers from Port Botany to Moorebank. These movements would be present on the road network originating from Port Botany if the Moorebank IMT were not developed.

The methodology used for the investigation comprised:

- Consultation with Transport for NSW (TfNSW) and Roads and Maritime Services (RMS) to determine suitable study area extents and those intersections to be surveyed and analysed
- Collection of data including traffic surveys to determine the existing traffic network demands and performance by times of day.
- Determining the expected traffic generation from all developments proposed within the Project site for both operation and construction phases.
- Distributing the expected traffic generated to the network via a number of intersections along Moorebank Avenue and the wider area road network.
- Determining the peak traffic years to be tested depending on peak operational and construction traffic demands and assess the AM peak hour and PM peak hour.
- Determining the future level of background traffic based on yearly traffic growth rates provided by RMS from various years of the EMME/2 model.
- Simulating the proposed future intersection upgrades of Moorebank Avenue and the wider area road network utilising SIDRA 6 intersection analysis software to forecast the operation of the network for the following design years:
    - Early works – 2015: this considers construction only impacts.
    - Scenario 1 – 2016: this considers construction only impacts.
    - Scenario 2a – 2019: this considers a combination of construction and operation impacts.
    - Under this scenario operations on-site would be 24 hours/7 day a week with the exception of the operation of the truck gate which would only be operational 16 hours/5 days a week.
    - Scenario 2b – 2023: this considers a combination of construction and operation impacts.
    - Under this scenario operations on-site would be 24 hours/7 day a week with the exception of the operation of the truck gate which would only be operational 16 hours/5 days a week.
    - Scenario 3 – 2030: this considers operational impacts only.
    - Under this scenario operations on-site would be 24 hours/7 day a week and truck movements would be 24 hours.

- Additional assessment for the years 2025 and 2028 as requested by Transport for NSW.
- Modelling cumulative scenarios.

The Sydney Intermodal Terminal Alliance (SIMTA) is proposing to develop an IMT facility on the site currently occupied by DNSDC on Moorebank Avenue, Moorebank. In light of this, the Secretary's Environmental Assessment Requirements (EARs) require a cumulative assessment of the impacts that would occur in the event that both projects were developed:

- Cumulative scenario A (2030) – which assumes that the SIMTA site would operate as an intensified warehousing development that would support the operation of the Project in 2030. A number of assumptions have been made to define and assess cumulative scenario A including:
  - i) The Moorebank IMT would operate as proposed in the EIS.
  - ii) The SIMTA development would have an indicative warehouse capacity of 300,000 sq. m gross floor area (GFA).
  - iii) Both sites would operate 24 hours a day, seven days a week.
- Cumulative scenario B (2030) – which consists of an IMEX terminal on the SIMTA site only with throughput of 1 million TEU per year, as well as 300,000 sq. m of warehousing. An interstate terminal of 500,000 TEU per year and 300,000 sq. m of warehousing would be located on the Project site in 2030. The following assumptions were made for cumulative scenario B:
  - i) Both sites would operate 24 hours a day, seven days a week.
  - ii) The Moorebank IMT will have 205,000 sq. m of warehousing not directly associated with containerised terminal traffic.
- Cumulative scenario C1 – this is an interim (2020) scenario that would ultimately lead to scenario C2 at 2030 (full build). It consists of an IMEX terminal on the SIMTA site with throughput of 250,000 TEU per year, as well as 200,000 sq. m of warehousing. An IMEX terminal of 250,000 TEU per year, interstate terminal of 250,000 TEU per year and 100,000 sq. m of warehousing would be located on the Project site in 2020. The following assumptions were made for cumulative scenario C1:
  - i) Both sites would operate 24 hours a day, seven days a week.
  - ii) The SIMTA development will have surplus warehousing in the order of 125,000 sq. m.
- Cumulative scenario C2 (2030) – which consists of an IMEX terminal on the SIMTA site with throughput of 500,000 TEU per year, as well as 300,000 sq. m of warehousing. An IMEX terminal of 500,000 TEU per year, interstate terminal of 500,000 TEU per year and 300,000 sq. m of warehousing would be located on the Project site in 2030. The following assumptions were made for cumulative scenario C2:
  - i) Both sites would operate 24 hours a day, seven days a week.
  - ii) The SIMTA development will have will have 150,000 sq. m of warehousing not directly associated with containerised terminal traffic.

- All traffic assessments are based upon the southern rail alignment.
- Reviewing the results and providing recommendations for future intersection and other required upgrades to mitigate traffic impacts from the Project.

1.3 Purpose of this report

This report documents and assesses changes that MIC proposes to make to the Project since the public exhibition of the Environmental Impact Statement (EIS).

The revised Project has been developed as a result of an in-principle agreement between MIC and SIMTA that will result in the development of both the Moorebank IMT site (the subject of the EIS and this Response to Submissions Report) and the SIMTA IMT site to create an intermodal precinct solution. This has meant that since exhibition of the EIS, new site layouts and phasing (as well as the selection of a southern rail access) is proposed that better responds to the likely development under a precinct – wide development. This approach additionally requires consideration of additional cumulative assessment scenarios as described in section 1.2. These changes are described in more detail in section 1.4 below.

1.4 Summary of changes that have been made from the EIS reporting

The following changes have been made relative to the Traffic and Transport Impact Assessment prepared for the Environmental Impact Statement to this document, the Response to Submissions Report:

Project site layout

- Revised site layout which accommodates only one vehicular access via the Moorebank Avenue and Anzac Road intersection from 2016.
- Revised internal road layout including roundabout intersection.
- Bapaume Road is not upgraded and realigned.
- Construction access to the Project site relocated to single intersection (previously the Project had additional accesses on Moorebank Avenue south of Anzac Road).
- Southern rail access option is utilised (the northern and central rail access options presented in the EIS are no longer being considered).

Project phasing

- Revised construction and operational phasing with changes in land use yields at each stage and year.

Cumulative scenario assessment

- Revised cumulative scenario assessment and land use yields.
- Four cumulative scenarios assessed (cumulative scenarios A, B, C1 and C2).

Traffic generation and distribution

- Revised truck loading capacities for the Project which see an increase in pallet loading for rigid trucks from 8 pallets to 20 pallets and for semi-trailers from 20 pallets to 40 pallets, which will reduce the level of truck traffic generation.
- Revised construction traffic generation based upon new Project phasing.
- SIMTA peak hour heavy vehicle percentage of 7.7% in the AM peak and 9.3% in the PM peak applied to the Project.
- SIMTA traffic distribution for light and heavy vehicles applied to proposed development on SIMTA site in the closer area (including Moorebank Avenue, Anzac Road and the M5) and STM distribution for heavy vehicles applied to the wider area (beyond Moorebank Avenue and the M5).

- 2030 STM traffic distribution from the STM model applied to all assessment years.

Intersection traffic assessment

- Additional years of assessment for wider area intersections including 2015, 2016, 2019, 2023, 2025 and 2028 (beyond Moorebank Avenue, the EIS only assessed intersection performance at 2030).
- Additional base year intersection assessment for wider area intersections.
- Additional base plus Moorebank IMT intersection assessment for wider area intersections.

SIMTA site intersection layouts

- Due to the removal of Project site accesses on Moorebank Avenue south of Anzac Road, the layouts of the SIMTA intersections have been reconfigured for the cumulative scenario assessments as T-intersection arrangements.

Mitigation measures for improved intersection performance

- Preparation of mitigation measures to enable intersections to perform at similar levels of service when compared to the base conditions for any assessment year.
- Determining what intersection upgrades are required in what year based on Moorebank IMT traffic increases.

General reporting, figures and tables

- Revised mid-block capacity assessments based on new traffic generation.
- Revised weaving assessment for the M5 in both directions between Moorebank Avenue and the Hume Highway in the 2030 AM and PM peaks based on the latest STM and FMM distributions.
- Revised trip increases (percentages) onto the M5 due to both Moorebank IMT and SIMTA traffic (cumulative scenarios).

1.5 Document structure

This report is structured as follows:

- Section 2 describes the existing situation and Project location.
- Section 3 describes the proposed Project.
- Section 4 details the Project road and intersection upgrades.
- Section 5 describes the future year traffic modelling undertaken.
- Section 6 describes the expected traffic generation and distribution. The input assumptions to derive these values are also provided.
- Section 7 documents the background traffic growth rates on the surround road network as provided from RMS.
- Section 8 describes the strategic modelling and strategic trip distribution.
- Section 9 provides discussion on the intersection analysis for Moorebank Avenue and the wider road network study area and summarises intersection performance between 2015 and 2030 with and without Moorebank IMT. This includes proposed mitigation measures for intersection upgrades and modifications to signal phasing.
- Section 10 assesses mid-block road capacity on the wider area road network in 2030.

- Section 11 documents the weaving assessment undertaken on the M5 between Moorebank Avenue and the Hume Highway in 2030.
- Section 12 describes the volume of Project traffic on the M5 in 2030.
- Section 13 describes mitigation measures during detailed design and operation of the facility.
- Section 14 discusses the construction traffic workforce, haulage routes, construction impacts and mitigation measures.
- Section 15 provides conclusions of the report findings.
- Section 16 lists the study references.

2. Existing situation

Summary of changes from the Environmental Impact Statement Traffic and Transport Assessment:

No change.

2.1 Existing land use

Currently the Project site is occupied by the SME and other minor Defence units. The Project site contains a number of buildings used for administration, teaching and instructing, tactical operations, storage and accommodation. There are training facilities associated with skills and trade training for the SME located around the Project site. The Project site also has a number of recreational facilities, including playing fields and a golf course. There are a total of 13 Defence units that currently utilise the Project site.

On the western side of Moorebank Avenue, off-street car parks at grade have been provided for the staff of the facility and the neighbouring facility, the Defence National Storage and Distribution Centre (DNSDC). The DNSDC is currently in the process of relocating to a new site at West Wattle Grove. The relocation is expected to be completed by early 2015. The new site will be accessed from Moorebank Avenue and Anzac Road.

2.2 Surrounding road network

This assessment considers the impact on the following roads within the study area as shown in Figure 2.1:

- Moorebank Avenue is a local road owned and maintained by Liverpool City Council (LCC) between the M5 interchange and Anzac Road with a 2010 ADT of 17,581 with 6% heavy vehicles (HV). South of Anzac Road, Moorebank Avenue is a private road on Commonwealth land (2010 ADT 15,777) with 4.2% heavy vehicles. This section of Moorebank Avenue south of the M5 interchange is generally two lane undivided road with one lane in each direction. The posted speed limit along Moorebank Avenue on both these road sections is 60 km/h.
- Anzac Road is a local road owned and maintained by LCC. It is primarily a two-lane undivided road with one lane in each direction. The posted speed limit on this road is 60 km/h. The intersection with Moorebank Avenue at the western end of Anzac Road is a signalised T-intersection. The intersection has designated turn bays, with a left turn slip lane from Moorebank Avenue southbound into Anzac Road.
- Bapaume Road is a local road owned and maintained by LCC that provides access to ABB Australia Pty Ltd. It is a two lane undivided road with one lane in each direction. The intersection with Moorebank Avenue is a T-intersection with right of way given to vehicles on Moorebank Avenue. There are no turning bays at this intersection. However there is ample storage within Bapaume Road to accommodate queuing of exiting vehicles.
- There are a number of private roads located in the subject SME site with some connecting to Moorebank Avenue, including Chatham Avenue. Some of these intersections are controlled gates. The majority of the intersections have dedicated turning lanes along Moorebank Avenue into the Project site. The majority of these internal roads are two lane undivided roads with one lane in each direction. All of these roads will be removed as part of the proposed development.

- Cambridge Avenue to the east of the causeway (low level bridge subject to flooding) is a local road owned and maintained by LCC. It is a two-lane undivided road with one lane in each direction. This road crosses the Georges River to the south of the Project site via a narrow low lying bridge with a limited vehicle loading capacity that is prone to flooding. The posted speed limit on this road is 60 km/h.

The nearby major roads in the area include the Hume Highway, the M5, Newbridge Road, Heathcote Road and the M7.

The Hume Highway is classified as a National Road. It is a six-lane divided road with three-lanes of traffic in each direction. The posted speed limit on the Hume Highway is 70 km/h in this area. The Hume Highway links Sydney to Canberra and provides a local arterial route through this area.

The M5 is classified as a State Road until it reaches the Camden Valley Way Interchange (northbound traffic) and the Hume Highway on ramp (southbound traffic) where it is classified as a National Road. The M5 was built under a Build Own Operate Transfer (BOOT) scheme with Interlink Roads Pty Ltd. They are currently responsible for the operation and maintenance of the motorway. This road opened in 1992 and, following several project variations including the M5 widening, the contract is due to be transferred to State Government ownership in 2026. From 2026 the NSW Government will benefit from road to rail transfer resulting from the Moorebank IMT project and the reduction in truck movements around Port Botany and the airport.

The lane configuration on the M5 depends on the location. To the east of Heathcote Road, the M5 is a six lane divided road with three lanes in each direction. Between Heathcote Road and Moorebank Avenue the M5 widens to a six lane divided road with three lanes in each direction and had a 2010 AADT of 102,766. Between Moorebank Avenue and the Hume Highway the M5 is widened further to an eight lane divided road with four lanes in each direction (2010 AADT 123,780). The additional lanes in this section of road are due to a continuation of entry and exit merge lanes from the two interchanges. To the west of the Hume Highway the M5 reduces to a six lane divided road with three lanes in each direction. The M5 posted speed limit in the vicinity of the Project site is 100 km/h.

The section of the M5 over the Georges River between Moorebank Avenue and the Hume Highway acts as a bottleneck within the motorway network. This is due in part to the substandard distance available for the weaving movement of vehicles joining and leaving the motorway. Congestion from weaving movements is expected to be become worse with the widening of the M5 to the east and west of this location.

A number of ‘rat-runs’ have developed through the area in order to avoid using the M5. Turning volumes from Cambridge Avenue into Moorebank Avenue indicate it is used as an alternative to the M5 for access from the Hume Highway and suburbs further south. In addition, Anzac Road may be used to access Heathcote Road to avoid using the M5.

Newbridge Road is classified as a State Road. From Henry Lawson Drive it is a six lane divided road with three lanes of traffic in each direction until Heathcote Road (westbound) where it becomes a four lane divided road with two lanes of traffic in each direction, crossing the Georges River and continuing along Terminus Street to Macquarie Street. The post speed limit on Newbridge Road is 60 km/h from Terminus Street to Bridges Road and 70 km/h between Bridges Road and Henry Lawson Road. Newbridge Road provides a local arterial route between Bankstown Airport, Milperra and the Liverpool CBD.

Heathcote Road is classified as a State Road. It is a four lane road with two lanes of traffic in each direction. Heathcote Road narrows to one lane in each direction between Junction Road and the M5 (north of the interchange). The posted speed limit on Heathcote Road is 60 km/h in this area. Heathcote Road provides access to most of the Moorebank industrial precinct.

The M7 is classified as a motorway and is a privately operated Toll Road with distance-based tolling. The M7 was built under a Build Own Operate Transfer (BOOT) scheme with the Westlink Motorway consortium and opened in 2005. This contract is due to be transferred back to the State Government in 2037. It is consistently a four lane divided road with two lanes of traffic in each direction. The posted speed limit on the M7 is 100 km/h with variable speed limit signs.

2.3 Existing traffic conditions

Intersection surveys of traffic and pedestrians were undertaken on Tuesday 7 December 2010 during the AM peak (between 6.00 am and 9.00 am) and the PM peak (between 4.00 pm and 7.00 pm) at the following intersections:

- M5 and the Hume Highway
- Moorebank Avenue and the M5
- Moorebank Avenue and Bapaume Road
- Moorebank Avenue and Anzac Road
- Moorebank Avenue and Defence Support access (and a secondary access to the DNSDC)
- Moorebank Avenue and DNSDC access (including car park access on the western side of Moorebank Avenue)
- Moorebank Avenue and Chatham Avenue.

The location of these intersections is shown in Figure 2.1.

Seven-day classified tube counts were also undertaken for the week from Tuesday 7 December to Monday 13 December 2010, at the following locations:

- Moorebank Avenue between the M5 and Bapaume Road
- Moorebank Avenue north of Cambridge Avenue
- Anzac Road east of Moorebank Avenue.

Further intersection surveys on the wider road network adjacent to the Project site were undertaken on Tuesday 18 March 2014 during the AM peak (between 6.00 am and 9.00 am) and the PM peak (between 4.00 pm and 7.00 pm) and also included the following intersections:

- Hume Highway and Orange Grove Road
- Hume Highway and Elizabeth Drive
- Hume Highway and Memorial Avenue
- Hume Highway, Hoxton Park Road and Macquarie Street
- Hume Highway and Reilly Street
- Moorebank Avenue and Newbridge Road
- Moorebank Avenue and Heathcote Road
- Moorebank Avenue and Industrial Park Access
- Moorebank Avenue and Church Road
- Heathcote Road, Wattle Grove Road and Nuwarra Road
- Newbridge Road and Nuwarra Road
- Newbridge Road, Governor Macquarie Drive and Brickmakers Drive

- Cambridge Avenue, Canterbury Road, Glenfield Road and Railway Parade.

All counts were conducted outside of school and university holidays. Intersection and tube counts indicated average daily and peak hour traffic, light and heavy vehicle proportions and pedestrian volumes. For this study, traffic growth rates have been obtained by extrapolating changes in traffic volume growth from the Sydney STM EMME/2 model to estimate the traffic volumes for intersections surveyed in 2010.

Intersection diagnostic monitor (IDM) data was obtained from RMS for all signalised intersection to determine traffic signal phasing and cycle times for the weekday AM and PM peak periods. Traffic signal phasing and cycle times were also verified during the site inspection. This data was then utilised into the SIDRA intersection modelling.

The intersection surveys indicate that the majority of the traffic currently using Moorebank Avenue is through traffic travelling between the Glenfield area and the M5/Moorebank Avenue interchange. The network peaks for Moorebank Avenue are between 6.45 am and 7.45 am and between 5.00 pm and 6.00 pm. Both the AM and PM peaks have unbalanced traffic flows where the majority of traffic is northbound on Moorebank Avenue in the AM peak and southbound in the PM peak.

Data retrieved from the additional surveys undertaken on March 2014 indicate that the network peaks on the wider road network (beyond Moorebank Avenue) generally occurs between 7.45 am and 8.45 am and between 4.30 pm and 5.30 pm.

Figures 2.2 and 2.3 show the intersection turning movement volumes in vehicles per hour (vph) during the analysed peak AM and PM periods, respectively.

PARSONS BRINCKERHOFF

MOOREBANK INTERMODAL TERMINAL

Figure 2.1 Location of existing key intersections on Moorebank Avenue

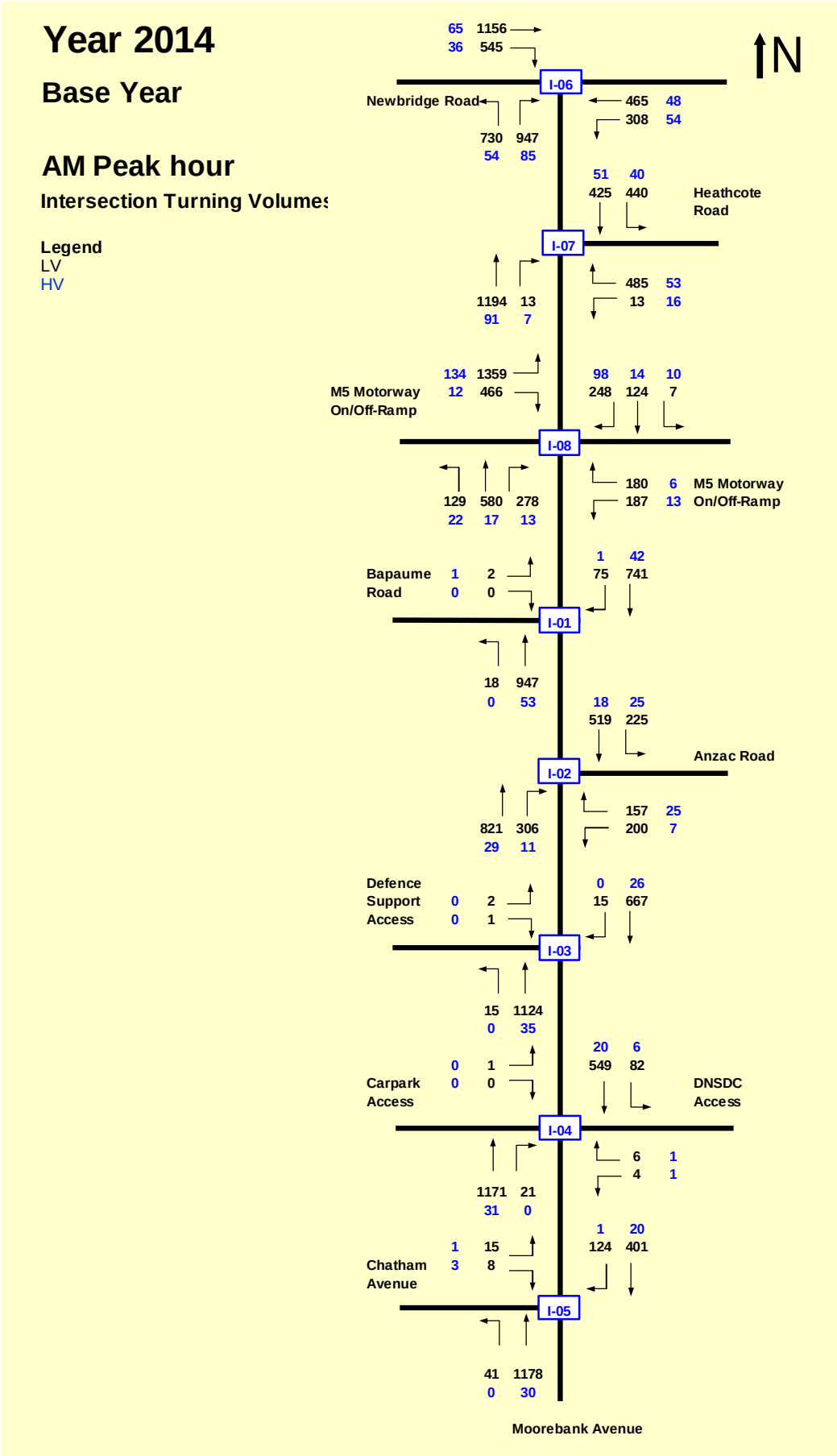


Figure 2.2 **Existing AM peak hour intersection turning volumes – Year 2014**

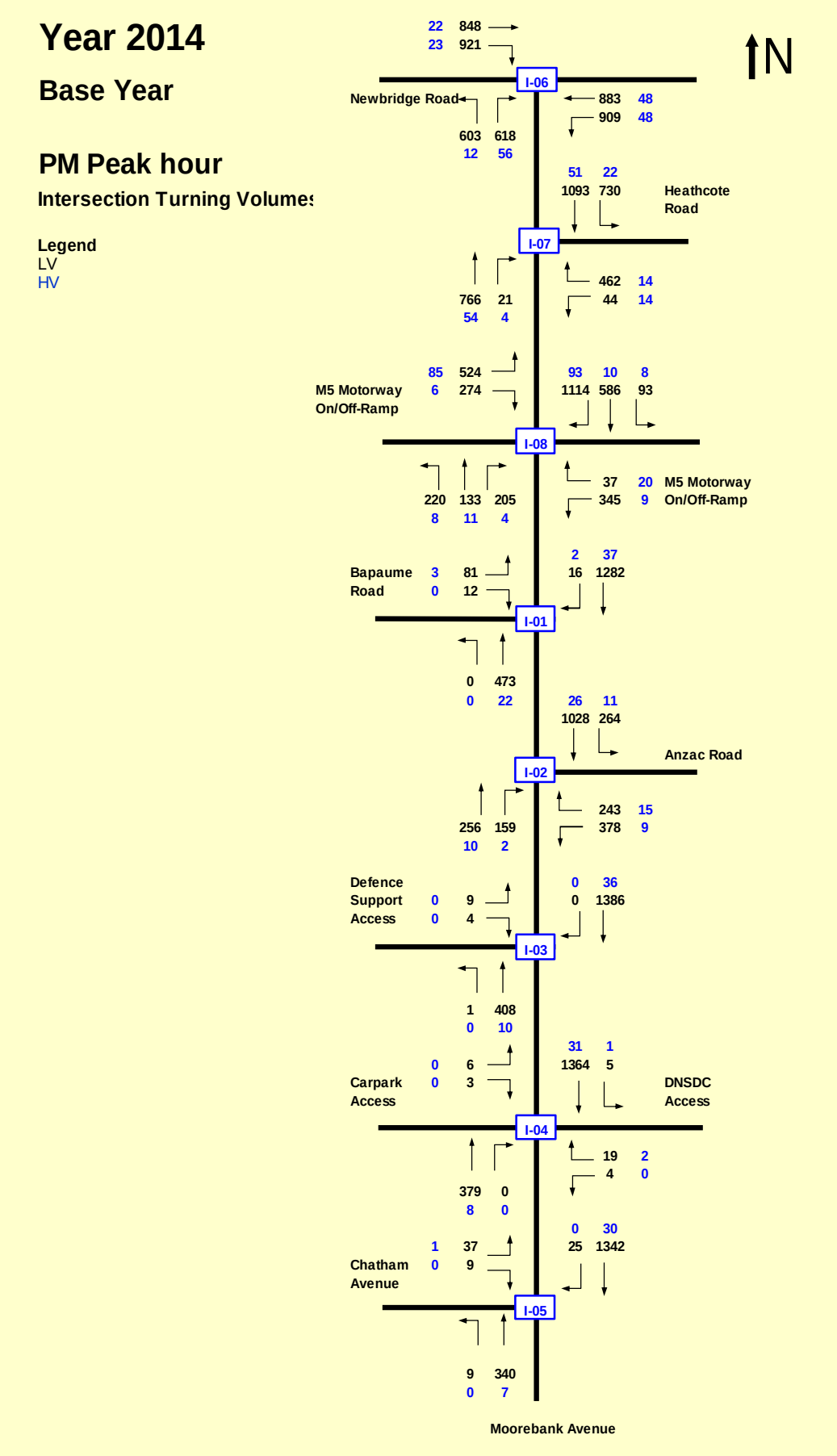


Figure 2.3 **Existing PM peak hour intersection turning volumes – Year 2014**

Traffic flows on Moorebank Avenue are tidal with high northbound volumes in the AM peak hour (1,024 vehicles per hour), reversing during the PM peak hour to high southbound volumes (1,156 vehicles per hour). As a result sections of the road with one lane are at or near to capacity during the peak periods.

The full traffic survey results can be found in **Appendix A**.

2.3.1 Existing intersection performance

A base case SIDRA Intersection analysis was undertaken to provide an understanding of the current traffic operations along Moorebank Avenue and provide a basis for the qualitative and quantitative assessments of the proposed Moorebank IMT.

SIDRA is a traffic engineering micro-analytical traffic evaluation tool used for intersection design and analysis. It stands for Signalised and unsignalised Intersection Design and Research Aid. It is used for the analysis of intersection capacity, level of service and performance.

This package provides several useful indicators to determine the level of intersection performance. These are known as Level of Service (LoS), Degree of Saturation (DoS), Average Delay (seconds) and Maximum Queue Length (metres). An explanation of these intersection assessment criteria is provided in **Appendix B**. The LoS criteria for intersections are also shown in Table 2.1.

Table 2.1 Level of Service criteria for intersections

Level of Service	Average delay (seconds per vehicle)	Traffic signals, roundabout	Give Way and Stop signs
A	Less than 14	good operation	good operation
B	15 to 28	good with acceptable delays and spare capacity	acceptable delays and spare capacity
C	29 to 42	satisfactory	satisfactory, but accident study required
D	43 to 56	operating near capacity	near capacity and accident study required
E	57 to 70	at capacity at signals; incidents will cause excessive delays; roundabouts require other control mode	at capacity; requires other control mode
F	Greater than 71	unsatisfactory with excessive queuing	unsatisfactory with excessive queuing; requires other control mode

Source: RMS Guide to Traffic Generating Developments

Table 2.2 shows the SIDRA modelling results of the performance of the intersections along Moorebank Avenue under existing traffic conditions. Refer to Figure 2.1 for the location of the key intersections.

Table 2.2 Existing intersection performance (2014)

Intersection	Intersection control type	Peak hour	Degree of Saturation	Average Delay (sec)	Level of Service	95th percentile queue (m)
Moorebank Avenue and Bapaume Road	Priority – give way	AM	0.56	>100	F	28
		PM	0.42	>100	F	40
Moorebank Avenue and Anzac Road	Signalised	AM	0.69	18	B	193
		PM	0.94	28	B	219
Moorebank Avenue and Defence Support Access	Signalised	AM	0.84	8	A	253
		PM	0.96	26	B	409
Moorebank Avenue and DNSDC Access	Signalised	AM	0.70	6	A	140
		PM	0.95	24	B	598
Moorebank Avenue and Chatham Avenue	Signalised	AM	0.98	41	C	646
		PM	0.98	39	C	669

The level of service at the intersection of Moorebank Avenue and Bapaume Road reflects the delays experience by vehicles turning right from Bapaume Road into Moorebank Avenue. As those vehicles must give-way to the high volumes of traffic on Moorebank Road, they find few opportunities to exit and experience poor performance of the intersection. The through lanes on Moorebank Avenue have good operation.

The intersection of Moorebank Avenue and Anzac Road has a good LoS with acceptable delays.

The high DoS and long queues at the other intersections on Moorebank Avenue are a result of their existing designs and the unbalanced traffic flows of the northern and southern approaches.

The full results of the existing intersection SIDRA analysis can be found in **Appendix C**.

2.4 Southern Sydney Freight Line

The SSFL has been constructed between Birrong and Macarthur and forms a dedicated freight rail corridor between Port Botany and Macarthur. The SSFL was opened in 2013 and improves the efficiency and cost effectiveness of rail freight services by removing current restrictions created due to the sharing of the railway lines operated by RailCorp.

The SSFL provides an additional freight only railway track that allows passenger and freight services to operate separately. This permits freight movements to be transported by rail at any time.

2.5 Public transport

Whilst there is no rail station on or adjacent to the site, bus route 901 runs along Moorebank Avenue during peak traffic periods providing a link to the passenger rail network. Trips to the Project site using existing public transport must therefore be by bus only or by rail and bus. Further discussion on the existing public transport network is provided below.

2.5.1 Train services

The Project site is accessible via four nearby railway stations: Liverpool, Casula, Glenfield and Holsworthy. Travel distance to each station and station accessibility is shown in Table 2.3. The locations of Liverpool, Casula and Holsworthy railway stations are shown in Figure 2.4.

Table 2.3 Travel distance and accessibility to local railway stations

Station/Interchange	Train line	Distance by car (travel time)	Distance by walking (travel time)	Accessible by bus (average trip time)
Casula Station	Cumberland Line (T5) Inner West and South Line (T2)	4.8 km (7 minutes)	7.2 km (1.5 hrs)	No
Liverpool Interchange	Cumberland Line (T5) Inner West and South Line (T2) Bankstown Line (T3)	4.1 km (6 minutes)	3.8 km (50 minutes)	Yes (11 minutes)
Glenfield Interchange	Cumberland Line (T5) Airport, Inner West and South Line (T2)	4.8 km (7 minutes)	5.6 km (1.2 hrs)	No
Holsworthy Station	Airport, Inner West and South Line (T2)	5.9 km (9 minutes)	4.8 km (1 hr)	Yes (19 minutes)

Note: distances and travel times were measured from the centre point of the Moorebank IMT area, or equivalent location on Moorebank Avenue. Distances and travel times may vary slightly, depending on Project site access location.

Table 2.3 shows that while there are four stations within a 10 minute drive from the Moorebank IMT site, only two stations are accessible by bus and would be difficult to access by walking. While Casula station is less than 1 km from the Project site, it is a 1.5 hour walk or 7 minute drive from the site, without a bus connection to Moorebank Avenue. In terms of options for commuting to the Project site, Liverpool and Holsworthy stations are currently the only viable options with bus connections to Moorebank Avenue.

2.5.2 Bus services

Moorebank Avenue is currently serviced by one bus route provided by Transdev (Route 901). The bus route operates between Liverpool and Holsworthy via Wattle Grove (using Anzac Road) with a single AM and PM diverted service which travels further south along Moorebank Avenue to Chatham Avenue. The route map and bus stop locations on Moorebank Avenue are shown in Figure 2.4.

On a weekday, bus services operate between 5.30 am and 9.30 pm at half hourly intervals during the AM and PM peaks. Hourly services run outside peak periods. Weekend and Public Holiday services are provided (7.00 am to 7.00 pm Saturday, 8.30 am to 7.00 pm Sunday and Public holidays) where buses operate hourly with no diverted bus services to Chatham Avenue.

PARSONS BRINCKERHOFF

MOOREBANK INTERMODAL TERMINAL

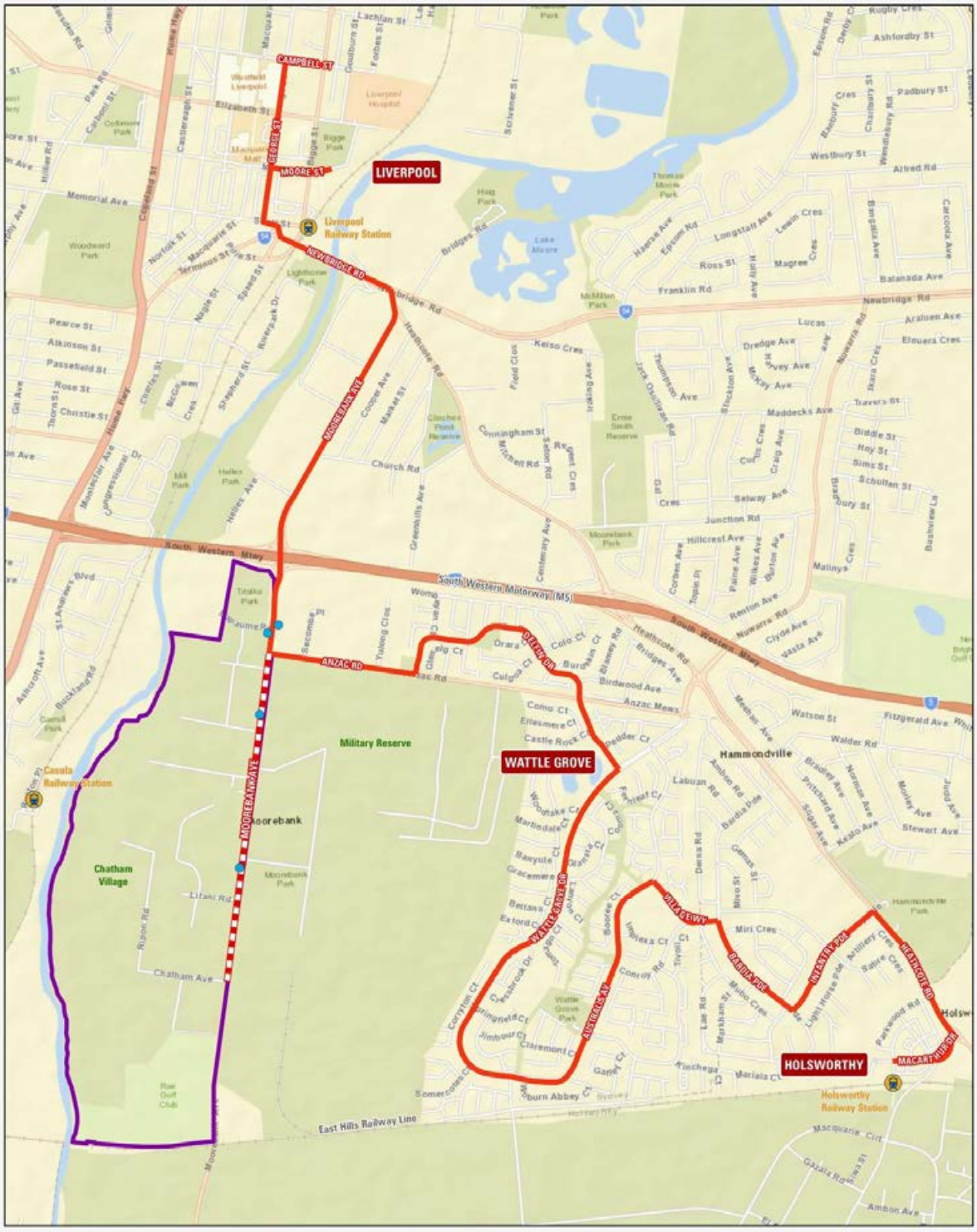


Figure 2.4 Local bus service route and train station locations

2.6 Pedestrian and cyclist facilities

A shared path is provided on the eastern side of Moorebank Avenue between the M5 and Anzac Road. The shared path then continues on the southern side of Anzac Road to connect to Holsworthy Station. This is the only identified cycleway in the area.

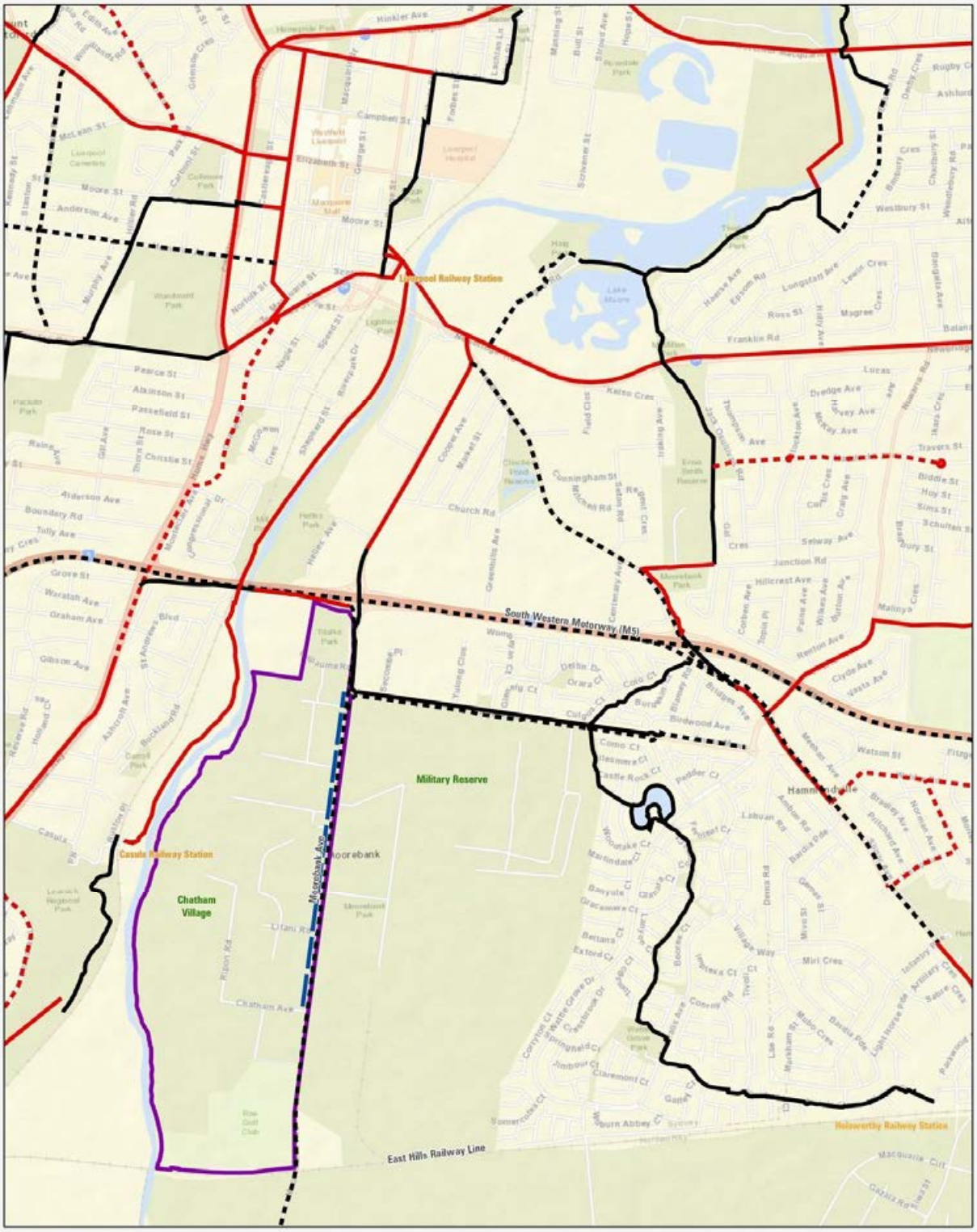
There are limited pedestrian and cyclist facilities on Moorebank Avenue south of Anzac Road. There is no shared path along Moorebank Avenue in front of the Project site. A footpath is provided on the western side of Moorebank Avenue between Anzac Road and Chatham Avenue. There is a wide shoulder (except for the locations of the signalised intersections) along Moorebank Avenue that can accommodate cyclists; however is not a designated cycle lane.

LCC have identified a number of proposed routes in its *Bike Plan 2009* for new on and off road paths in the LGA. These routes would include provision of off-road cycleways from the northern end of the Project site to provide additional options for cycling. As a result this may improve the connection between the Project site, neighbouring destinations and suburbs, and the local train stations.

Figure 2.5 shows the existing footpaths, cycleways and proposed LCC cycleways in proximity to the Project site.

PARSONS BRINCKERHOFF

MOOREBANK INTERMODAL TERMINAL



Existing on road cycleway
Existing off road cycleway
Proposed on road cycleway
Proposed off road cycleway
Existing footpath
IMT boundary

0 500 1,000
Metres

Figure 2.5 Existing and proposed footpaths and cycleways

2.7 Crash analysis

2.7.1 Moorebank Avenue crash analysis

Crash data were obtained from RMS for a five year period (2008–2013) for the section of Moorebank Avenue between the East Hills Railway Line and south of the intersection with the M5. The crash locations are shown in Figure 2.6.

An analysis of the accident data is provided below:

- A total of 61 reported accidents occurred on Moorebank Avenue involving a total of 127 vehicles.
- Of the 61 analysed accidents, 33 (54%) were at intersections and 28 (46%) occurred midblock. Out of the 33 recorded accidents at intersections, 15 accidents occurred that the intersection of Moorebank Avenue and the M5 and 18 accidents occurred at the intersection of Moorebank Avenue and Anzac Road.
- On Moorebank Avenue, accidents involving vehicles from opposite directions were the most common accident type with 21 accidents constituting 34% of accidents. A further 18 involved rear end collisions.
- There were no accidents that resulted in a fatality.
- There were no accidents involving pedestrians or cyclists.
- 85% of road users involved in accidents were light vehicles (cars, utilities, vans) and 15% were heavy vehicles.
- 18% of crashes involved three or more vehicles.
- 78% of the accidents occurred during fine conditions.
- 78% of accidents occurred during the day (46% AM, 32% PM), of which the majority occurred during daylight.
- 88% of accidents occurred on weekdays.

2.7.2 M5 crash analysis

Crash data was obtained from RMS for a five year period (2008–2013) for the section of the M5 between the Hume Highway and Heathcote Road intersections.

An analysis of the accident data is provided below:

- A total of 171 reported accidents occurred on the M5, involving a total of 368 vehicles.
- Overall, accidents involving rear end collisions were the most common accident type with 77 accidents constituting 45% of all accidents. A further 16% were vehicles leaving the road and colliding with an object and 12% as a result of a lane change.
- There were no accidents that resulted in a fatality.
- There was one cyclist crash and no pedestrian crashes.
- 86% of road users involved in accidents were light vehicles (cars, utilities, vans) and 14% were heavy vehicles.
- 80% of crashes involved more than one vehicle.
- 75% of the accidents occurred during fine conditions.
- 69% of accidents occurred during the day (30% AM, 39% PM), of which the majority occurred during daylight.

- 78% of accidents occurred on weekdays.

2.8 Black spot analysis

The following guidelines apply to nominating black spots in NSW under the National Black Spot Programme and sourced from the *NSW Black Spot Program, How to apply for funding* (Roads and Maritime Services).

Black Spot sites

A Black Spot can be up to 3 km in length. The minimum criteria for eligibility is at least two casualty crashes in the most recent 5 years of crash data.

Black Lengths sites

A Black Length is any section of road being treated that is longer than 3 km. The minimum criteria for eligibility are an average 0.13 casualty crashes per kilometre per annum over the last 5 years of crash data.

The above guidelines have been applied to Moorebank Avenue between the East Hills Railway Line and the M5, and the M5 between the Hume Highway and Heathcote Road interchanges.

2.8.1 Moorebank Avenue

The section of Moorebank Avenue between the East Hills Railway Line and the M5 is approximately 2.8 km and is generally two-lane two-way with lane widening to accommodate movements at the M5 intersection.

The crash data as supplied by RMS indicate that 38 casualty crashes have occurred over the last 5 year period between 2008 and 2013.

By converting these crash rates per kilometre per annum, this results in 2.71 casualty crashes per kilometre per annum. This is in excess of the 0.13 casualty crashes per kilometre per annum and therefore considered a black spot.

2.8.2 M5

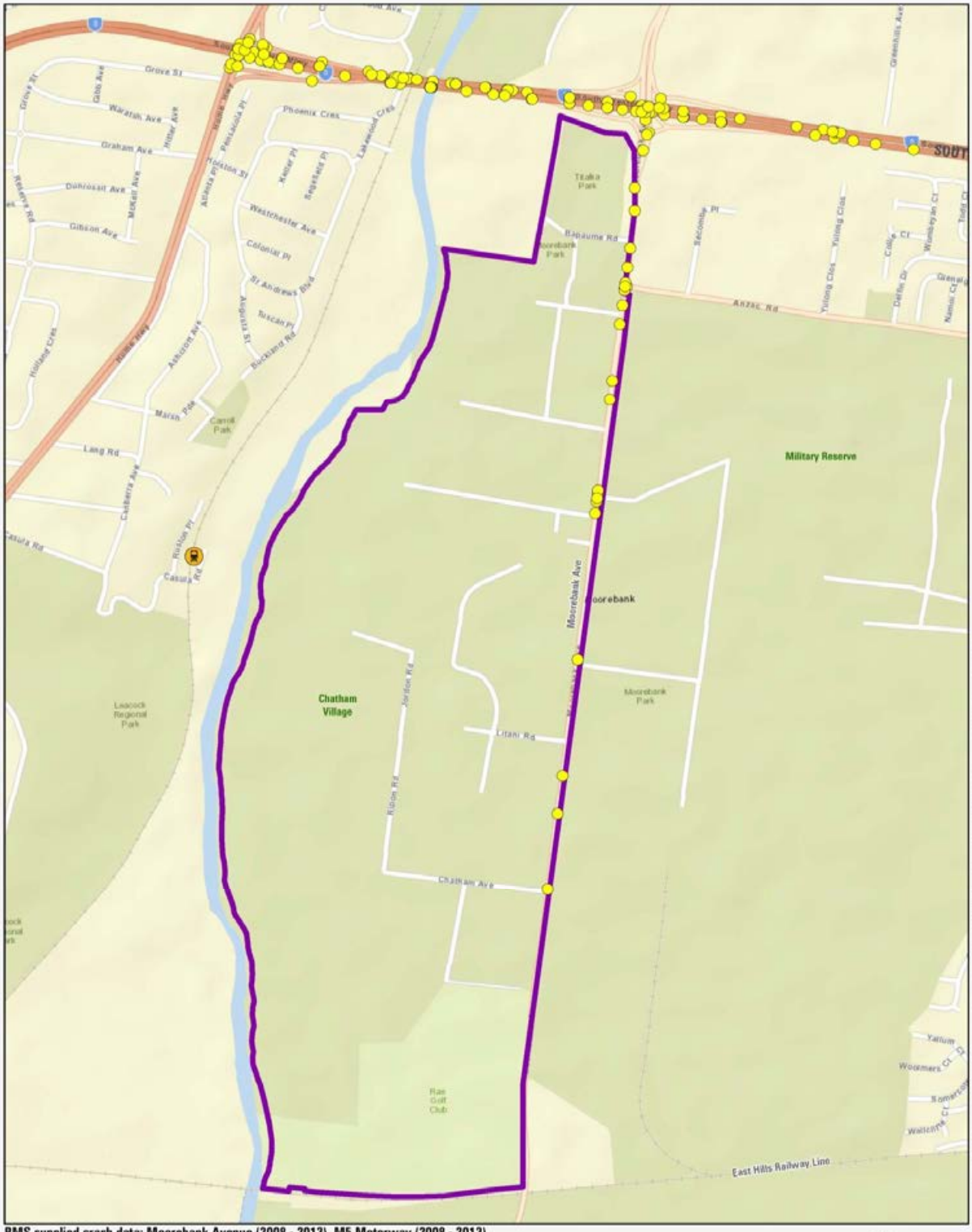
The section of the M5 between the Hume Highway and Heathcote Road interchanges is approximately 2.7 km and is generally three lanes in either direction at this location.

The crash data as supplied by RMS indicate that 66 casualty crashes have occurred over the last 5 year period between 2008 and 2013.

By converting these crash rates per kilometre per annum, this results in 4.89 casualty crashes per kilometre per annum. This is in excess of the 0.13 casualty crashes per kilometre per annum and therefore considered a black spot.

PARSONS BRINCKERHOFF

MOOREBANK INTERMODAL TERMINAL



RMS supplied crash data: Moorebank Avenue (2008 - 2013), M5 Motorway (2008 - 2013)

Crash location

IMT boundary

0 200 400
Metres

Figure 2.6 Location of crashes on Moorebank Avenue and the M5 Motorway

3. Proposed project

Summary of changes from the Environmental Impact Statement Traffic and Transport Assessment:

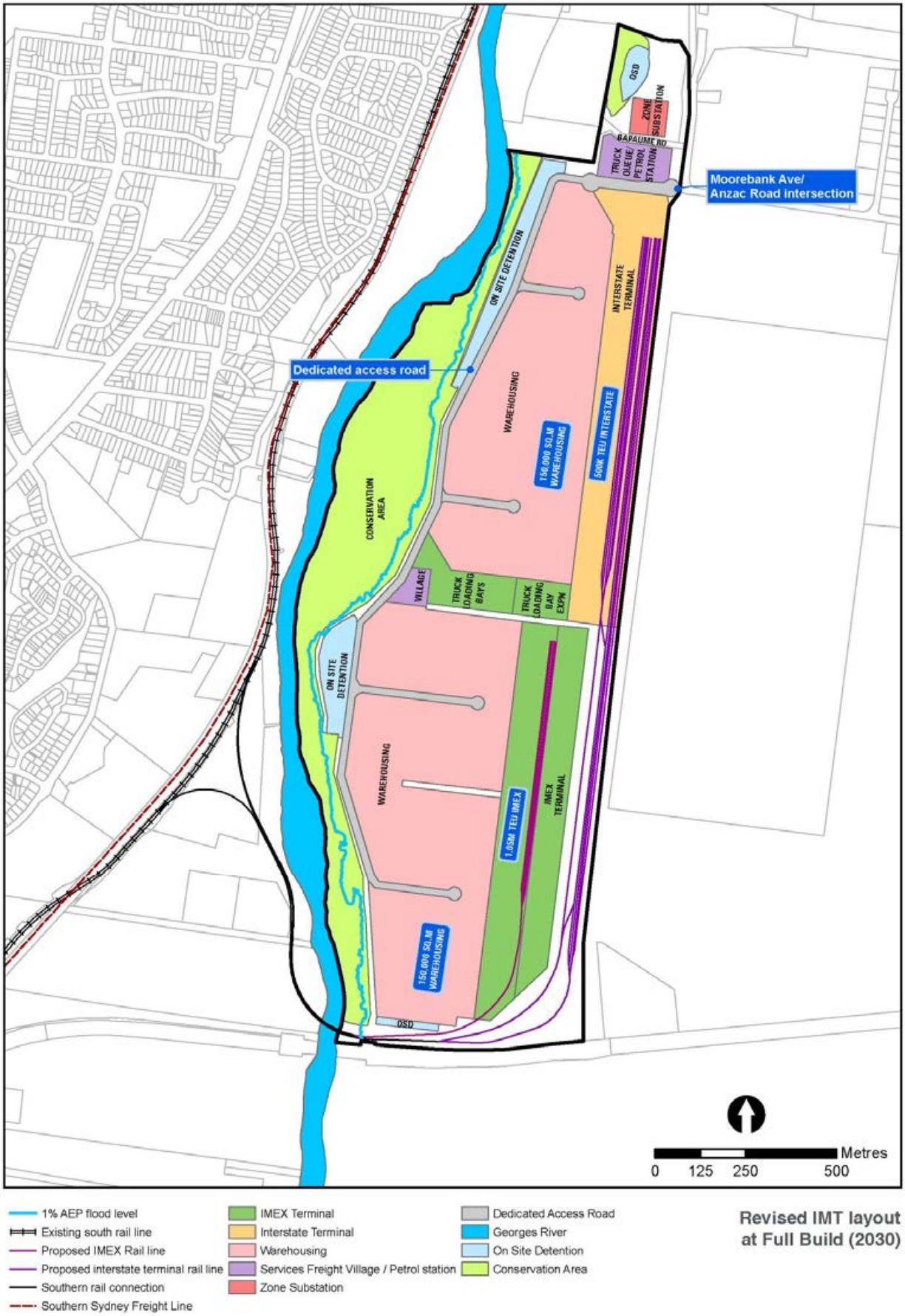
– Proposed Project details.
– Project site layouts.
– Access intersection layout for Moorebank Avenue and Anzac Road.
– Consideration of the southern rail access option only.

The Project includes:

- *An IMEX freight terminal* – designed with a maximum capacity of 1.05 million twenty-foot equivalent units (TEU) a year (525,000 TEU inbound and 525,000 TEU outbound) servicing international IMEX freight movement between Port Botany and the Project site.
- *A*n interstate freight terminal – designed to handle up to 500,000 TEU a year (250,000 TEU inbound and 250,000 TEU outbound) of interstate freight, servicing trains travelling to, from and between Sydney and regional and interstate destinations. The interstate terminal would provide for a total of up to 500,000 TEU a year, of which approximately 406,000 TEU would generate truck movements and approximately 94,000 TEU would remain on site as transit movements (between trains only).
- *Warehousing facilities* – with capacity for up to 300,000 square metres (sq. m) of warehousing to provide an interface between the IMEX and interstate terminals and commercial users of the facilities such as freight forwarders, logistics facilities and retail distribution centres.

The following changes have been made to the Project since the EIS (refer to Figure 3.1):

- Changes to the footprint (associated with the removal of the northern and central rail accesses from further consideration), layout and operation of the IMT terminal, including the location of the warehousing, working tracks and storage tracks, IMT freight village precinct, IMEX and Interstate equipment storage and repair area and detention ponds.
- Confirmation that only the southern rail access into the site will be required (the EIS sought flexibility to build either a southern, central or northern rail access into the site from the SSFL).
- Changes to the upgrade of Moorebank Avenue as described in the EIS (changes in the extent and timing of the upgrade works).
- Changes to access and circulation including heavy and light vehicle access to the facility via the Moorebank Avenue and Anzac Road intersection along a dedicated road at the north and along the western boundary of the Project site.
- Changes to the site access and vehicle circulation within the Project site.
- Modification to the locations and footprint of the detention basin and administrative office buildings, employee facilities and parking.
- Increase in the size of the conservation area as a result of the new IMT layout and a reduction of the size of the IMT footprint.



1% AEP flood level
Existing south rail line
Proposed IMEX Rail line
Proposed interstate terminal rail line
Southern rail connection
Southern Sydney Freight Line
IMEX Terminal
Interstate Terminal
Warehousing
Services Freight Village / Petrol station
Zone Substation
Dedicated Access Road
Georges River
On Site Detention
Conservation Area

Revised IMT layout at Full Build (2030)

Figure 3.1 Indicative revised IMT layout associated with the southern rail access option – Full build in 2030

3.1 Rail access

The project no longer seeks approval to construct a northern or central rail connection. Approval is sought for a southern rail connection only.

The southern rail access location and configuration has not changed since the EIS and remains as per the description presented in Section 7.5.3 and Figure 7.6 of the EIS. However the construction staging of delivery has changed, with the entire rail connection (northbound and southbound rail spur) to be built during Phase A in 2016.

3.2 Rail layout

The revised Project allows for four IMEX terminal tracks (three working tracks and locomotive release) which are arranged in parallel in one group along the eastern boundary of the Project site set back from Moorebank Avenue.

The Interstate rail layout is also located on the eastern boundary to the north of the IMEX terminal tracks and still comprises two groupings of approximately four interstate arrival and departure tracks, one group for 1800 m long trains and the other group for 900 m long trains. The revised proposal however does not include a separate grouping of combined storage and classification tracks.

3.3 Moorebank Avenue upgrades

All traffic entering and exiting the Project site will utilise an upgraded Moorebank Avenue and Anzac Road intersection, with traffic restrictions in place to force all exiting heavy vehicle traffic to turn left onto Moorebank Avenue. Hence redevelopment of Moorebank Avenue north of Anzac Road is proposed and would include:

- Widening of Moorebank Avenue to a four-lane carriageway between the M5 and Anzac Road only.
- An upgrade of the Anzac Road intersection and relocation of and upgrade of Bapaume Road and its intersection with Moorebank Avenue (to be determined as part of the detailed design).
- Only one access point to the IMT Project site.

Design for these upgrades will be undertaken as part of the detailed design phase of the Project.

3.4 Internal road layout and access

The internal road layout and access, as illustrated on Figure 3.2, will include:

- A vehicle entry point (for all vehicles) from Moorebank Avenue at a proposed new intersection at the junction of Moorebank Avenue and Anzac Road.
- Within the site, a dedicated access road for heavy and light vehicles and emergency vehicles (constructed from the Moorebank Avenue and Anzac Road intersection).
- Right-turn lanes at the Moorebank Avenue and Anzac Road intersection will be provided for safe entry for vehicles turning into the Project site and the dedicated access road. The dedicated access road will be a dead end road, also open to the public, located adjacent to the warehouse precinct on the western boundary of the Project site.
- When exiting the Project site from the dedicated access road, all heavy vehicles will be restricted to left turns only at the Moorebank Avenue and Anzac Road intersection for travel towards the M5. There will be no restrictions on light vehicle movements at this intersection.

- Two IMT access gates, one for the Interstate Terminal and one for the IMEX Terminal as follows:
  - The Interstate IMT gate will provide access for heavy vehicles and would be located at the northern end of the Interstate terminal with direct access from the dedicated access road. This gate will be located a sufficient distance from the access road to allow inbound trucks to queue within the IMT boundary without impeding the flow of traffic on the access road, Moorebank Avenue or the functioning of the intersection with Anzac Road or the M5. Outbound traffic will still be able to queue within the IMT boundary along the approach to the Interstate IMT gate.
  - The IMEX gate will provide access for heavy vehicles to a dedicated IMEX truck loading area. This area processes the trucks which then parks in a designated bay and waits for their container to be delivered by a straddle crane or transfer vehicle. The truck then secures the load and leaves the area via the exit gate.
- Internal warehouse access roads that interface the warehouse precinct, on the western side of the Project site, with the terminals, providing direct internal access for the ITVs to the warehouses from the IMEX and Interstate terminal.
- No grade separated crossing over the IMEX and interstate rail track is proposed at the south-western corner of the Project site for the southern rail access option.

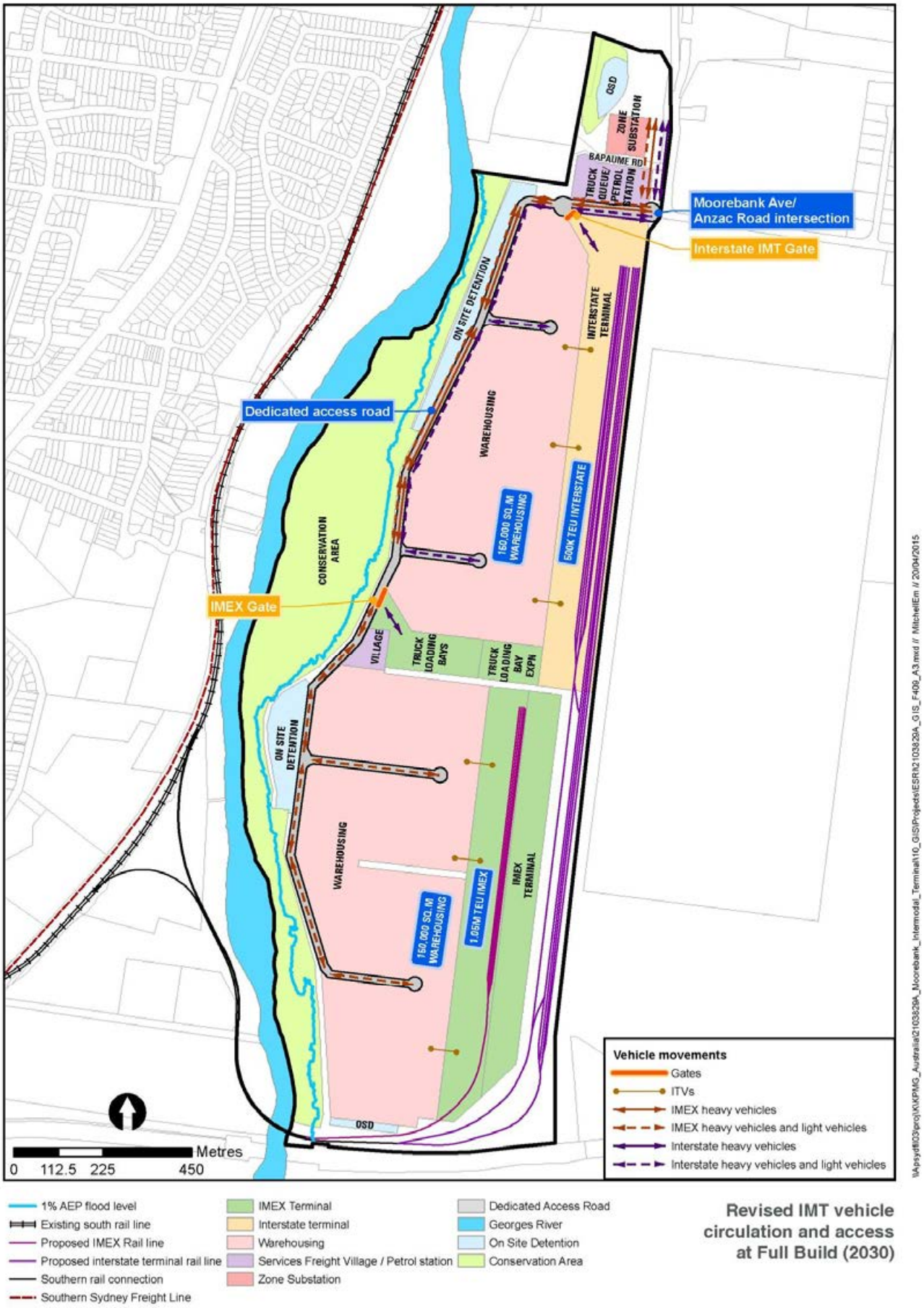


Figure 3.2 **Indicative Moorebank IMT vehicle circulation and access associated with the southern rail access option – Full build in 2030**

3.5 Staff parking

All staff parking for IMEX, interstate and warehouse operations would be provided within the Project site at dedicated parking areas.

3.6 Bus services

The Project site will be designed to accommodate for potential regular bus or shuttle bus services internal to the site. Site access at intersections and adequate turnaround facility will be provided should these services occur. Ideally the provision of bus services and bus stop facilities on Moorebank Avenue adjacent to the Project site would be preferred.

3.7 Pedestrian and cyclist facilities

To accommodate the increase in background traffic and the Moorebank IMT development, 4.3 m borders are included on both sides of Moorebank Avenue in the road reserve cross-section. A border is the distance between the right of way and the property boundary. The width is based on an arterial road standard allowance as per Austroads 2009, *Guide to Road Design Part 3: Geometric Design*. The 4.3 m border would accommodate the proposed footpath/shared use path.

4. Project road and intersection upgrades

Summary of changes from the Environmental Impact Statement Traffic and Transport Assessment:

– Single construction access to the Project site from 2016 onwards.
– Upgrade of Moorebank Avenue between the M5 and Anzac Road.
– Larger Anzac Road and Moorebank Avenue intersection footprint.
– Internal road access to include internal roundabout.
– Discussion on proposed M5/Moorebank Avenue Interchange upgrades by SIMTA.
– Proposed timeframe of road and intersection upgrades by SIMTA.

4.1 Moorebank IMT construction accesses

All Moorebank IMT construction vehicle access would be via the Moorebank Avenue, Anzac Road and Moorebank IMT Access Road intersection from 2016 to 2028 during the construction stages of the Project.

Construction vehicle access during the Early Works Phase of the Project in 2015 would be via existing intersections along Moorebank Avenue including Bapaume Road, Defence Support Access and Chatham Avenue.

Construction accesses have changed due to the removal of new intersections along Moorebank Avenue to the south of Anzac Road.

4.2 Moorebank Avenue upgrades

Existing (2014) intersection performances indicate that intersections along Moorebank Avenue between Cambridge Avenue and the M5 are performing near or at capacity at present. Future year background traffic growth on Moorebank Avenue as discussed further in section 7.1, would lead to increased traffic volumes on Moorebank Avenue and further deteriorating intersection performance. Intersection and roadway capacity will worsen and hence the need for an upgrade of Moorebank Avenue. The Moorebank Avenue upgrade would be required purely on background traffic growth alone based on existing intersection operation and vehicle movements.

As part of the Project, Moorebank Avenue is proposed to be upgraded to a four lane divided roadway from the M5 interchange to Anzac Road in 2016. One new intersection is proposed to provide access to the Moorebank IMT site with the existing intersection at Anzac Road being retained with the implementation of the Moorebank IMT Access Road leg included to create a four way signalised intersection.

4.3 Moorebank Avenue, Anzac Road and Moorebank IMT Access intersection

The SIMTA development is proposing the following intersection layout for the Moorebank Avenue, Anzac Road and Moorebank IMT Access intersection as shown in Figure 4.1 and would be constructed in 2016. This intersection would be traffic signal controlled with indented right and left turn lanes as required. Generally pedestrian footpaths or shared paths are proposed on both sides of the road with signalised pedestrian crossings at the intersection. This intersection layout would also form the basis for future mesoscopic modelling to be undertaken at a later stage.

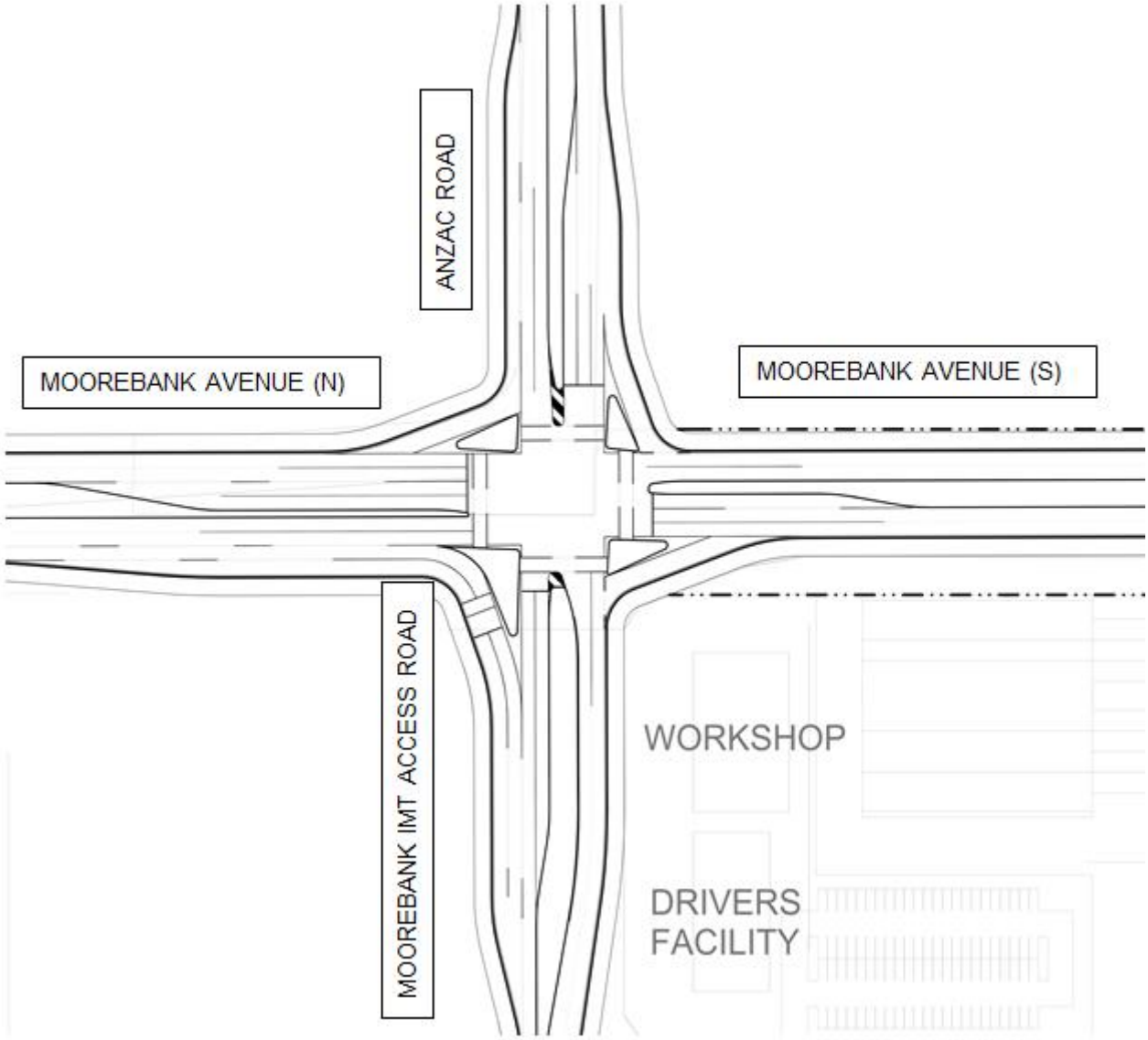


Figure 4.1 Proposed Moorebank Avenue, Anzac Road and Moorebank IMT Access intersection

4.4 Moorebank Avenue intersections

SIMTA proposes to undertake Moorebank Avenue and Moorebank Avenue intersections into the future. These proposed upgrades by SIMTA have been included in this assessment as they form part of the cumulative assessment undertaken. As documented in Table 4 of Section 6 in the *Sydney Intermodal Terminal Alliance (SIMTA) Submissions Report* December 2013 prepared by Urbis, the following upgrades are proposed to intersections along Moorebank Avenue:

- Provide a new traffic signal at SIMTA's Northern access with Moorebank Avenue.
- Provide a new traffic signal approximately 750 metres south of SIMTA Central access.
- Widen Moorebank Avenue to four lanes between the M5 Motorway/Moorebank Avenue grade separated interchange and the southern SIMTA site access. Some localised improvements will be required around central and southern access points (to be addressed within 24 months of operating at 300,000 TEU throughput per annum).
- Potential upgrading works at the M5 Motorway/Moorebank Avenue grade separated interchange (to be addressed within 24 months of operating at 500,000 TEU throughput per annum).

5. Future year traffic modelling

Summary of changes from the Environmental Impact Statement Traffic and Transport Assessment:

The future year traffic scenarios assessment has been revised based on Project land use yields, the timing of construction and operation of the facility, cumulative scenario traffic distribution and generation, and revised peak period heavy vehicle percentages of total daily traffic.

This section discusses the traffic modelling program utilised for the traffic assessment and future assessment years and scenarios.

5.1 Traffic modelling program

SIDRA Intersection version 6 software was used as the modelling tool to undertake the modelling for this project as agreed with RMS. This version of SIDRA allows intersections to be modelled as a network, allowing the interaction of queues between intersections to be modelled. Due to the close spacing of the Moorebank Avenue/Newbridge Road intersection and Moorebank Avenue/Heathcote Road intersection and Moorebank Avenue and Industrial Park Access intersection, these have been grouped into network models in SIDRA.

5.2 Future year assessment

For the Response to Submissions Report, the focus of the assessments is on the *changes to the impact* relative to that predicted in the EIS. Adopting this approach it was identified that a number of impacts remain largely unchanged relative to the EIS assessments and that any minor changes of impact could be addressed during the subsequent stages of the SSD process.

The assessment of the revised Project and development phasing, where remodelling has been undertaken (noise and vibration, transport and access, local air quality and human health), follows the same approach to the EIS, with an assessment of the southern rail access only.

This approach allows for assessment of potential worst case impacts, by considering the cumulative impacts of simultaneous construction and operational activities. As with the EIS, this assessment approach has also been applied to the Response to Submissions Report to provide transparency to the community and approval agencies Department of Environment (DoE) and NSW Department of Planning & Environment (DP&E) in relation to the potential impacts over the course of development of the Project.

For the studies where remodelling has required, the assessment was undertaken for the following four scenarios:

- Scenario 1 – (Phase A) 2016 (construction only)
- Scenario 2a – (Phase B) 2019 (construction and operation)
- Scenario 2b – (Phase C) 2023 (construction and operation)
- Scenario 3 – (Full Build) 2030 (operation only).

Figure 5.1 shows the relationship between the Project development phases and the assessment scenarios. Additional traffic modelling was also undertaken for 2025 and 2028.

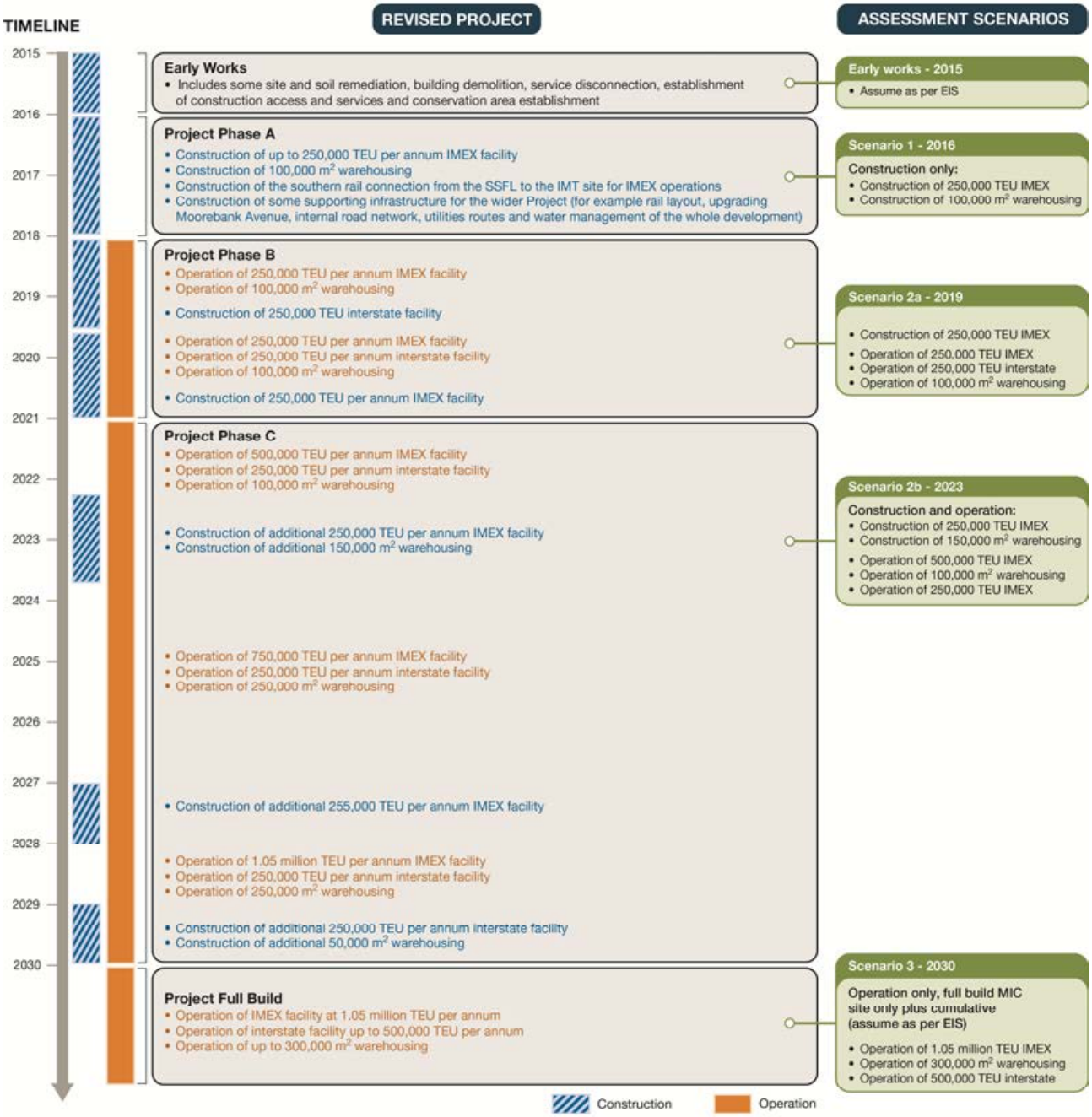


Figure 5.1 Relationship between the Project development phasing and assessment scenarios

5.3 Cumulative scenarios

This sub section provides a description of the approach to the cumulative impact assessment of the Moorebank IMT and the proposed development on the SIMTA site and the potential traffic impacts associated with the development of both sites. The cumulative assessment has been completed based on the Moorebank IMT southern rail access option for Cumulative Scenario's A, B, C and C1.

The SIMTA proposal has been assessed by the NSW Department of Planning and Environment and was subsequently approved by the NSW Planning Assessment Commission (PAC) on 29 September 2014 (albeit for an interim capacity of 250,000 TEU IMEX freight and an eventual 500,000 TEU). The *SIMTA Traffic and Transport Assessment* prepared by Hyder Consulting in 2013 assesses the traffic impacts of the proposed facility based on the development described in the SIMTA EIS, being 1 million TEU IMEX and 300,000 sq. m warehousing. Parsons Brinckerhoff has extracted some of the information from this report in preparation of this cumulative impact assessment including traffic generation, shift operation, warehouse development yields and site access locations onto Moorebank Avenue.

The site for the SIMTA development is to the immediate east of the Project site and the two projects would, if both approved, operate simultaneously.

Four cumulative scenarios were analysed to determine their traffic generating impact on the road network utilising the southern rail access and include:

- Cumulative scenario A – 1.05 million TEU IMEX, 500,000 TEU Interstate, 300,000 sq. m warehouse on Moorebank IMT site and 300,000 sq. m standalone warehouse operation on the SIMTA site in 2030.
- Cumulative scenario B – 500,000 TEU Interstate, 300,000 sq. m warehouse on Moorebank IMT site and 1.0 million TEU IMEX, 300,000 sq. m warehouse operation on the SIMTA site in 2030.
- Cumulative scenario C1 – 250,000 TEU IMEX, 250,000 TEU Interstate, 300,000 sq. m warehouse on Moorebank IMT site and 250,000 TEU IMEX and 200,000 sq. m warehouse on the SIMTA site in 2020.
- Cumulative scenario C2 – 550,000 TEU IMEX, 500,000 TEU Interstate, 300,000 sq. m warehouse on Moorebank IMT site and 500,000 TEU IMEX and 300,000 sq. m warehouse on the SIMTA site in 2030.

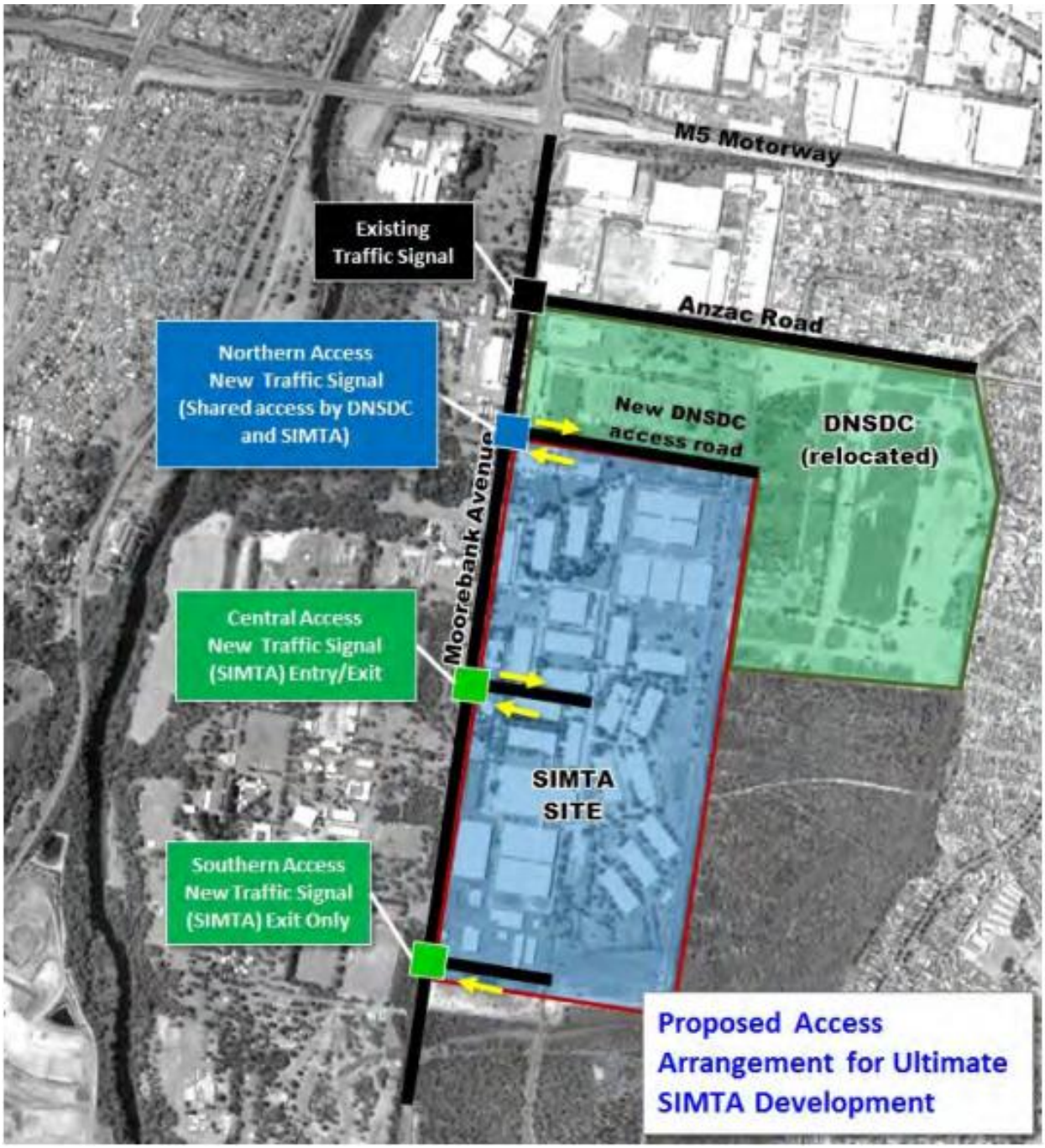
For these cumulative scenarios it is assumed that:

- The traffic generated by warehousing by Moorebank IMT is based upon Deloitte traffic generation rates for heavy vehicles and staffing requirements for light vehicles.
- The traffic generated by standalone warehousing on the SIMTA site or surplus warehousing on the Project site utilises the RMS daily trip generation rate, with 8.7% of daily light vehicle trips occurring during peak hours.
- The SIMTA site would be developed in accordance with the concept layout identified in Figure 5.2 with three access roads connecting with Moorebank Avenue (northern, central and southern accesses).
- The traffic generated by the SIMTA standalone warehouse operation is based upon RMS trip generation rates.
- The heavy vehicle distribution for the Moorebank IMT site is based upon the Freight Movement Model (FMM) distribution.
- The heavy vehicle distribution for the SIMTA site is based upon the Freight Movement Model (FMM) distribution from the M5 and from the SIMTA EIS onto Moorebank Avenue.
- The light vehicle distribution for Moorebank IMT is based upon the Sydney Strategic Travel Model (STM) for Moorebank Avenue and from intersection traffic volume distributions on the wider road network (beyond Moorebank Avenue).

- The light vehicle distribution for SIMTA is based upon the SIMTA EIS for Moorebank Avenue and from intersection traffic volume distributions on the wider road network (beyond Moorebank Avenue).
- Both sites are assumed to be operational 24 hours a day seven days a week.
- The majority of staff would arrive and depart outside the peak periods on the road network and the maximum traffic generation would occur during the shift changeover (at 6.00 am, 2.00 pm and 10.00 pm) for the Project site.
- The majority of staff would arrive and depart within the peak periods on the road network and the maximum traffic generation would occur during the shift changeover (at 8.00 am and 5.00 pm) for the SIMTA site.
- Light vehicle trip generation was assumed to be tidal during peak hours, i.e. all inbound in the AM peak and all outbound in the PM peak, and heavy vehicles were assumed to be evenly distributed between inbound and outbound movements.
- A heavy vehicle peak hour traffic profile of 7.7% for the AM peak and 9.3% for the PM peak utilised for both Moorebank IMT and SIMTA sites.

5.4 SIMTA site access

The proposed access locations for the SIMTA site are shown in Figure 5.2. Based on the SIMTA Traffic and Transport Assessment prepared by Hyder Consulting, the Northern and Central accesses would be utilised by both light and heavy vehicle for ingress and egress and the Southern access for heavy vehicle egress only. These accesses have been utilised in various forms for all four cumulative scenarios.



Source: SIMTA Traffic and Transport Assessment, Hyder Consulting 2013

Figure 5.2 Proposed SIMTA site access locations

6. Traffic generation and distribution

Summary of changes from the Environmental Impact Statement Traffic and Transport Assessment:

– Revised construction staging and construction traffic generation.
– Revised Project traffic generation based upon increased truck capacities to hold increased pallet loads, revised peak period heavy vehicle traffic percentage of daily traffic.
– Revised traffic distribution for facilities on the SIMTA site.
– Revised daily traffic profile on Moorebank Avenue between the M5 and Anzac Road due to revised traffic generations and increased peak hour heavy vehicle percentages.

This section outlines the forecast traffic generation from the Project site. This includes the operation and construction phases for the IMEX, interstate and the warehouse developments. The assumptions behind these calculations are provided in this section.

In general, the traffic generated by the Moorebank IMT development will include:

- construction trucks and staff movements;
- IMEX and interstate truck and staff movements; and
- warehousing truck and staff movements.

It was assumed there would be no significant commercial vehicle traffic generated by this development as the freight associated with this terminal would be transported to and from the Project site as pallets or containers on trucks.

6.1 Construction

The construction vehicle volumes are based on an indicative construction schedule and the estimated volume of material to be shifted during the various stages of construction. The maximum traffic generator for the Project site is the removal of spoil and delivery of fill. These volumes may differ to the eventual volume experienced by the Project site depending on the capacity of machinery used.

Heavy vehicle movements generated by construction activities were assumed to be consistent throughout the hours of construction during the day, with 25% of the hourly heavy vehicle volume arriving just before and after construction start and finish each day to align with construction working hours.

The number of construction staff onsite was determined according to the indicative construction schedule. It was assumed that 90% of staff would drive to work, where:

- 80% of workers arrive before morning peak hour and leave after the afternoon peak hour
- 20% of workers arrive during the morning peak hour and leave during the afternoon peak hour
- 50% of workers leave the Project site and return in the middle of the day
- Each staff member will generate three light vehicle trips a day on average.

Hours of construction are assumed as follows:

- Monday to Friday – 7.00 am to 6.00 pm.
- Saturday – 8.00 am to 3.00 pm.
- No work will be undertaken on Sundays or public holidays.

Based on the construction schedule and the volume of material, the assumed maximum daily volume of construction vehicle trips calculated for each stage is shown in Table 6.1.

Table 6.1 Construction vehicle volumes

Stage	Daily vehicle movements		Peak hourly vehicle movements	
	Cars	HV	Cars	HV
Early Works (2015)	810	64	54	10
Scenario 1 (2016)	2295	1390	153	152
Scenario 2a (2019)	1485	260	99	28
Scenario 2b (2023)	2080	360	139	40

6.2 Operations

6.2.1 Intermodal terminal traffic generation – IMEX and Interstate facilities

The train and road traffic generation of the Moorebank IMT was sourced from the *Moorebank Intermodal Terminal Demand Estimate Summary – Trip Generation Modelling* (Deloitte January 2015), based on the annual TEU forecast freight movements for the IMEX and interstate facilities.

Train generation

Deloitte demand modelling estimated that IMEX would have a capacity of approximately 1.05 million TEU per annum split between imports and exports (approximately 525,000 TEU in/525,000 TEU out) in 2030. As a result of this demand, IMEX would generate approximately 273 train trips per week with the IMEX facility operating 24 hours 7 days a week. The forecast TEU is comprised of the following:

- 52.3% import, TEU.
- 16.5% export TEU.
- 31.2% empty TEU.

The demand model estimated that interstate would cater for around 500,000 TEU per annum by 2030, (approximately 30 train trips per week with the interstate facility operating 24 hours 7 days a week) where freight is received or handled prior to distribution outside the Sydney metropolitan region. Of this around 406,000 TEU were assumed to be associated with truck movements to and from the Moorebank IMT.

6.2.1.1 Derivation of truck numbers from TEU demand

The forecast train movements and their container loading will result in the generation of truck demand to transport those containers. Deloitte derived the relationship between TEU demand and truck movements in and out of the Moorebank IMT based on the following process:

Approach to estimating daily truck trips generated from Moorebank IMT

In order to estimate the daily heavy vehicles generated from the Moorebank IMT, the forecast container volumes for the terminal at 2030 were derived. These estimates were broken down into three categories for containers both arriving and departing the Project site by rail:

- Full container load (FCL) movements arriving or departing the terminal by rail and moving directly offsite or onsite by road.
- FCLs moving within the Project site between the rail terminal and associated warehousing with all cargo arriving or leaving the warehouses by truck as deconsolidated or palletised cargo.
- Empty (MT) containers.

Warehouse related FCLs were further broken down equally into two segments: Freight of all kinds (FAK) to be deconsolidated (i.e. unpacked from containers and broken up into smaller packages) and delivered; and inventory, which was assumed to be held in the warehouse for a period prior to delivery. It has been assumed that FCLs and MTs would leave the Project site on a combination of semi-trailers and B-doubles whilst FAK and Inventory would leave the Project site on a mix of semi-trailers and rigid trucks.

2030 Traffic – IMEX and Interstate

The terminal is anticipated to handle 500,000 TEU of interstate and close to 1.05 million TEU of IMEX throughput when it reaches full capacity. For the purposes of investigating the full capabilities of the IMEX and Interstate terminals, it is assumed that these terminals and the warehouses will be operating at full capacity in 2030.

The following steps were taken to derive the daily truck movements in and out of Moorebank IMT:

1. Of the 1.55 million TEU expected to be handled through the terminal in 2030, the breakdown between IMEX and interstate is:

   1,546,000 TEU = 1,046,000 IMEX TEU + 500,000 interstate TEU

2. Of the 1.046 million IMEX TEU handled, the breakdown between full imports, full exports and empty containers is:

   1,046,000 TEU = 547,000 full import TEU + 173,000 full export TEU + 326,000 empty TEU

3. Of the 500,000 Interstate TEU handled, the proportion not unloaded from the inbound train and the proportion unloaded from the train, to be transported via the road network are:

   500,000 TEU = 406,000 TEU via the road network + 94,000 TEU not transferred outside the terminal

4. Of the 406,000 Interstate TEU to be transported via the road network, the breakdown between full inbound, full outbound and empty containers is:

   406,000 TEU = 149,000 full inbound TEU + 149,000 full outbound TEU + 108,000 empty TEU

   This leads to a new total of:

   1,452,000 TEU by road = 1,046,000 IMEX TEU + 406,000 Interstate TEU

5. Of the 1.452 million total TEU by road in 2030, the breakdown between containers leaving the Project site by road and containers arriving at the Project site by road are as follows:

   1,452,000 TEU = 702,000 inbound TEU + 750,000 outbound TEU

6. Of the 702,000 TEU containers arriving at the Project site, 627,200 TEU arrive by road and 74,800 by rail, the breakdown between loaded and empty containers is as follows:

   627,200 TEU = 321,500 loaded TEU + 305,700 empty TEU

7. Of the 750,000 TEU containers leaving the Project site by road the breakdown between loaded and empty containers is as follows:

   750,000 TEU = 695,500 loaded TEU + 54,500 empty TEU

8. In 2030, it was assumed that approximately 80% of the loaded combined TEU would move to and from the Project site as containers and 20% of the loaded combined TEU would move through the onsite warehousing. The empty containers were all assumed to move directly to and from the Project site:

   321,500 loaded TEU inbound = (321,500 x 80% direct to the Project site) + (321,500 x 20% to onsite warehousing)

   = 257,200 loaded TEU direct + 64,400 TEU via warehouses

   695,500 loaded TEU outbound = (695,500 x 80% direct from the Project site) + (695,500 x 20% from onsite warehousing)

   = 556,400 loaded TEU direct + 139,200 TEU via warehouses

   360,200 empty TEU inbound and outbound = 305,700 empty TEU inbound + 54,500 empty TEU outbound

9. As outlined above it was assumed that all of the empty containers and approximately 80% of the loaded total TEU would move off the Project site as containers. The 20% going via warehouses was split equally resulting in 10% going to warehousing onsite for deconsolidation (FAK) and direct delivery and 10% going to warehousing for deconsolidation and placement into inventory for later delivery.

   1,173,800 Direct TEU = 435,000 empty TEU -74,800 + 257,200 loaded direct into terminal + 556,400 loaded TEU direct out of terminal

   203,400 TEU via warehouses = 139,200 TEU out of warehouses + 64,400 TEU into warehouses = (139,200 x 50% FAK) + (139,200 x 50% Inventory) + (64,400 x 50% FAK) + (64,400 x 50% Inventory) = (69,600 FAK and 69,600 Inv) leaving the Project site from warehouses + (32,200 FAK and 32,200 Inv) arriving at Project site warehouses
   = 102,000 TEU to and from the warehouses and 102,000 TEU inventory

10. This can be further summarised into the total number of IMEX and Interstate TEU (1.452 million) split into total FCL Direct (1.249 million) and total TEU via the warehousing onsite (0.250 million):

    1,452,000 TEU = 1,249,000 containers direct to/from customers + 102,000 FAK TEU + 102,000 Inventory TEU

Direct FCL and empty container movements by road

1. The demand analysis has determined likely future demand for both IMEX and interstate markets where Sydney is either an origin or a destination. For the purposes of simplification all international and interstate cargo destined for the Sydney market is referred to in the following as imports – all international and interstate cargo leaving the Sydney market is referred to as exports.

   610,900 TEU leaving the Project site by road (imports) = 556,400 full import TEU + 54,400 empty import TEU

   562,900 TEU arriving at the Project site by road (exports) = 257,200 full export TEU + 305,700 empty export TEU

2. It is assumed that the terminal would be operational 52 weeks per year.

   11,748 TEU leaving the IMT by road per week = 610,900 import TEU ÷ 52

   10,825 TEU arriving at the IMT by road per week = 562,900 export TEU ÷ 52

3. It was assumed that trucks moving containers in and out of Moorebank IMT will comprise 80% semi-trailers and 20% B-Doubles based on similar intermodal operations:

   Semi-Trailer TEU (80% of TEU arriving at or leaving the terminal):

   9,398 TEU out on a Semi = 11,748 TEU x 80%

   8,660 TEU in on a Semi = 10,825 TEU x 80%

   B-double TEU (20% of TEU arriving at or leaving the terminal):

   2,350 TEU out on a B-double = 11,748 TEU x 20%

   2,165 TEU in on a B-double = 10,825 TEU x 20%

4. Each Semi-Trailer truck is assumed to have the capacity to carry 2 TEU with an utilisation of 80% on average resulting in an average 1.6 TEU per Semi-Trailer truck. B-double trucks will have the capacity to carry 3 TEU, and with an average utilisation of 80% the resulting average TEU per B-double truck is 2.4. Using these factors, the weekly total loaded truck movements can be derived.

   5,874 Semis out of terminal per week = 9,398 TEU out on a Semi ÷ 1.6 TEU per Semi

   5,412 Semis into terminal per week = 8,660 TEU in on a Semi ÷ 1.6 TEU per Semi

   979 B-doubles out of terminal per week = 2,350 TEU out on B-Double ÷ 2.4 TEU per B-double

   902 B-doubles into terminal per week = 2,165 TEU in on B-Double ÷ 2.4 TEU per B-double

5. In addition, each outbound movement outlined above will also generate an inbound movement. It is assumed that some load matching would occur, i.e. rather than every truck having to do an empty return journey to its origin, a portion of the journeys could be loaded both ways. For example, some outbound full import movements could be matched with full export or empty containers inbound, the remainder of the trucks would arrive empty. It was assumed that this load matching would be limited to only 30% of loaded semi-trailer truck movements (generated off the direction with the more significant volume). The 30% load matching has been advised by freight logistics specialists in Deloitte and the same load matching factor was adopted by the SIMTA Traffic and Transport Assessment prepared by Hyder Consulting. There are currently no intermodal terminals in Australia of the nature and scale proposed at the Project site to use as a reference. However, the load matching being achieved at the Fremantle Ports precinct (incorporating empty container park facilities and warehousing) which was 43% in 2013, an increase from 39% in 2012 (Fremantle Ports, July 2014). It is therefore considered that the 30% load matching is a realistic estimate for the Moorebank IMT. All other movements would generate an empty running leg into or out of the terminal.

   To generate the empty running trips for each truck type:

   Empty running trips in = loaded trips out X (1 – % load matching factor):

   4,112 semis empty into terminal per week = 5,874 loaded semis outbound X (1 - 30% matched loads)

   979 B-doubles empty into terminal per week = 979 loaded B-doubles outbound X (1 - 0% matched loads)

   Empty running trips out = loaded trips in – (loaded trips out – empty running trips in):

   3,650 semis empty out of terminal = 5,412 loaded semis inbound – (5,874 loaded semis outbound – 4,112 empty semis inbound).

902 B-doubles empty out of terminal per week = 902 loaded B-doubles inbound – (979 loaded B-doubles outbound – 979 empty B-doubles inbound).

By adding the total inbound and outbound movements the total truck movements can be estimated. To generate total number of trips for each truck type:

Total trips per week = loaded trips out + empty trips out + loaded trips in + empty trips in

Total B-double movements = 979 loads out + 902 empty out + 902 loads in + 979 empty in

= 1,881 trips out + 1,881 trips in

= 3,762 trips

Total semi movements = 5,874 loads out + 3,650 empty out + 5,412 loads in + 4,112 empty in

= 9,524 trips out + 9,524 trips in

= 19,048 trips

6. It was then assumed that 85% of container truck movements would occur on weekdays and 15% would occur on weekends based on current profiles at Port Botany. The proportion on weekdays was then divided by 5 to reach an average number of truck moves per weekday, assuming two truck movements per truck trip.

   (3,762 B-double trips per week X 85%) ÷ 5 = 639 B-double movements per weekday

   (19,048 semi trips per week X 85%) ÷ 5 = 3,238 Semi movements per weekday

Total inbound and outbound moves per weekday for 2030 is summarised in Table 6.2.

Table 6.2 Moorebank terminal daily traffic movements

Truck status	Direction	Truck type	2030
IMEX			
Loaded	Inbound	B-double	106
		Semi	637
	Outbound	B-double	119
		Semi	715
Empty	Inbound	B-double	119
		Semi	501
	Outbound	B-double	106
		Semi	422
Total	Inbound	B-double	225
		Semi	1138
	Outbound	B-double	225
		Semi	1138
Interstate			
Loaded	Inbound	B-double	47
		Semi	283
	Outbound	B-double	47
		Semi	283

Truck status	Direction	Truck type	2030
Empty	Inbound	B-double	47
		Semi	198
	Outbound	B-double	47
		Semi	198
Total	Inbound	B-double	94
		Semi	481
	Outbound	B-double	94
		Semi	481

Source: *Moorebank Intermodal Terminal Trip Generation Estimate, January 2015 (Deloitte)*

7. Daily truck volumes were multiplied by 7.7% in the AM peak and 9.3% in the PM peak to generate indicative peak hourly truck volumes for each vehicle class, both inbound and outbound.

   Average trucks per weekday in each direction x 7.7% = trucks on and off site per hour in AM peak:

   639 B-double movements per weekday divided by 2 x 7.7% = 25 B-double truck movements in AM peak hour in each direction.

   3,238 Semi movements per weekday divided by 2 x 7.7% = 125 Semi truck movements in AM peak hour in each direction.

   Average trucks per weekday in each direction x 9.3% = trucks on and off site per hour in PM peak:

   639 B-double movements per weekday divided by 2 x 9.3% = 30 B-double truck movements in PM peak hour in each direction.

   3,238 Semi movements per weekday divided by 2 x 9.3% = 151 Semi truck movements in PM peak hour in each direction.

Table 6.3 Moorebank terminal peak hour traffic movements

Facility	Direction	Truck type	2030 AM	2030 PM
IMEX	Inbound	B-double	17	21
		Semi	88	106
	Outbound	B-double	17	21
		Semi	88	106
Interstate	Inbound	B-double	7	9
		Semi	37	45
	Outbound	B-double	7	9
		Semi	37	45
Total	Inbound	B-double	25	30
		Semi	125	151
	Outbound	B-double	25	30
		Semi	125	151

Source: *Moorebank Intermodal Terminal Trip Generation Estimate, January 2015 (Deloitte)*

The arrival of trucks to the terminal would be controlled by a booking system managed by the terminal operators. The proposed booking system is assumed to have a similar operation to that used by Port Botany. This tends to create an even arrival profile of trucks collecting and delivering containers throughout the day. Trucks that arrive early to the terminal may be required to wait on the internal Project site service road. No parking of trucks would be permitted on Moorebank Avenue.

6.2.2 Warehouse traffic generation

The total proposed warehouse GFA as part of the concept plan is approximately 308,000 m^2.

Warehouse generated truck traffic movements were estimated using a similar methodology to the derivation of container truck movements through the IMEX and Interstate operations, with some variation to the underlying assumptions. The most significant changes to the assumptions were:

- the makeup of the fleet
- the proportion of movements occurring during the week
- the level of load matching.

The following steps were taken to derive the daily truck movements in and out of Moorebank IMT for cargo handled through the warehouses:

1. The Moorebank IMT will have enough on-site warehousing capacity to handle approximately 20% of all full TEU. It is assumed that half of these will be held in inventory in onsite warehousing for a period of weeks with the rest being general cargo (FAK) which would be deconsolidated and distributed offsite within a few days or arrive onsite for consolidation and export.

   69,600 TEU FAK for distribution from the Project site = 695,500 full inbound TEU x 10% FAK

   69,600 TEU Inventory for distribution from the Project site = 695,500 full inbound TEU x 10% Inventory

   32,200 TEU FAK arriving at the Project site for consolidation = 321,500 full outbound TEU x 10% FAK

   32,200 TEU Inventory arriving at the Project site for consolidation = 321,500 full outbound TEU x 10% Inventory.

2. It is assumed that the terminal would be operational 52 weeks per year.

   2,675 TEU into warehouse and distributed off site each week = 69,600 FAK + 69,600 Inventory TEU ÷ 52

   1,237 TEU arrive onto the Project site and into warehouse each week = 32,200 FAK + 32,200 Inventory TEU ÷ 52.

3. It is assumed that each TEU, when deconsolidated will generate approximately 25 pallet loads for domestic distribution:

   66,879 equivalent pallet loads into warehouse and distributed off site by road each week = 2,675 TEU x 25 equivalent pallet loads per TEU.

   30,917 equivalent pallet loads into warehouse by road and railed offsite each week = 1,237 x 25 equivalent pallet loads per TEU.

4. The truck fleet profile for palletised cargo would be different to that for direct FCL and MT container movements to and from the Moorebank terminal. It is assumed that trucks moving pallets out of Moorebank IMT warehousing will comprise of 34% semi-trailers and 66% rigid trucks whilst 100% of the palletised cargo arriving at the Project site will be carried by rigid trucks:

   Deliveries from Moorebank warehouses*:*

   22,739 pallets out on semi-trailer trucks = 66,879 pallets per week x 34%

   44,140 pallets out on rigid trucks = 66,879 pallets per week x 66%.

Deliveries to Moorebank warehouses:

30,917 pallets in on rigid trucks = 30,917 pallets per week x 100%.

5. Semi-trailer trucks are likely to carry, on average 40 pallets per truck whilst rigid trucks have been assumed to carry, on average 20 pallets per load. Dividing the number of pallets by each average load determines the average number of loaded truck movements per week into and out of the warehouses.

   Deliveries from Moorebank warehouses:

   568 loaded semi-trailer truck movements out per week = 22,739 pallets in semis per week ÷ 40 pallets per truck

   2,207 loaded rigid truck movements out per week = 44,140 pallets in rigids per week ÷ 20 pallets per truck.

   Deliveries to Moorebank warehouses:

   1,546 loaded rigid truck movements in per week = 30,917 pallets in rigids per week ÷ 20 pallets per truck.

6. It is assumed that there will be no truck load matching for palletised cargo movement to and from the Moorebank IMT warehouses. Therefore all movements would generate an empty running leg into or out of the terminal. By adding the total inbound and outbound movements the total truck movements can be estimated.

   Empty running trips in = loaded trips out X (1 – % load matching factor):

   568 semis empty into terminal per week = 568 loaded semis outbound X (1 - 0% matched loads)

   2,207 empty rigids into terminal per week = 2,207 loaded rigids outbound X (1 - 0% matched loads)

   1,546 empty rigids out of terminal per week = 1,546 loaded rigids inbound X (1 - 0% matched loads).

   By adding the total inbound and outbound movements the total truck movements can be estimated. To generate total number of trips for each truck type:

   Total trips per week = loaded trips out + empty trips out + loaded trips in + empty trips in

   Total semi movements = 568 loads out + 0 empty out + 0 loads in + 568 empty in

   = 568 trips out + 568 trips in

   = 1,137 trips per week

   Total rigid movements = 2,207 loads out + 1,546 empty out + 1,546 loads in + 2,207empty in

   = 3,753 trips out + 3,753 trips in

   =7,506 trips per week.

7. It was then assumed that 95% of container truck movements would occur on weekdays and 5% would occur on weekends. The proportion on weekdays was then divided by 5 to reach an average number of truck moves per weekday:

   216 semi-trailer movements per weekday = (1,137 semi-trailer movements per week X 95%) ÷ 5

   1,426 rigid truck movements per weekday = (7,506 rigid truck movements per week X 95%) ÷ 5.

Total inbound and outbound truck movements per weekday for 2030 is summarised in Table 6.4.

Table 6.4 Moorebank warehouse daily truck movements

Facility	Direction	Truck type	2030
IMEX	Inbound	B-double	0
		Semi	294
	Outbound	B-double	108
		Semi	420
Interstate	Inbound	B-double	108
		Semi	420
	Outbound	B-double	0
		Semi	294
Total	Inbound	B-double	108
		Semi	714
	Outbound	B-double	108
		Semi	714

Source: *Moorebank Intermodal Terminal Trip Generation Estimate, January 2015 (Deloitte)*

8. Daily truck volumes were multiplied by 7.7% in the AM peak and 9.3% in the PM peak to generate indicative peak hourly truck volumes for each vehicle class, both inbound and outbound:

   Trucks on and off site per hour in AM peak in each direction = Average trucks per weekday x 7.7%

   8 semi-trailer movements in AM peak hour in each direction = 108 semi movements per weekday x 7.7%

   55 rigid truck movements in AM peak hour in each direction = 714 rigid movements per weekday x 7.7%

   Trucks on and off site per hour in PM peak in each direction = Average trucks per weekday x 9.3%

   10 semi-trailer movements in PM peak hour in each direction = 108 semi movements per weekday x 9.3%

   66 rigid truck movements in PM peak hour in each direction = 714 rigid movements per weekday x 9.3%

Table 6.5 Moorebank warehouse peak hour truck movements

Facility	Direction	Truck type	2030 AM	2030 PM
Total	Inbound	Semi	8	10
		Rigid	55	66
	Outbound	Semi	8	10
		Rigid	55	66

Source: *Moorebank Intermodal Terminal Trip Generation Estimate, January 2015 (Deloitte)*

The shift pattern of the warehouses is expected to follow the terminal operations with a 24 hour operation from 2030.

6.2.3 Staff traffic generation

Staff traffic generation is based on the number of staff for the IMEX and interstate terminals and Warehouses. The number of staff assumed for each facility is provided in Table 6.6.

Table 6.6 Terminal staff numbers

Staff type	IMEX	Interstate	Warehouse(1)	Total daily
Administration	35	35	22	92
Operations (by shift – 3/day)	104	78	496	2,082
Maintenance (by shift – 3/day)	9	7		

(1) *Warehouse staffing sourced via RMS Guide to Traffic Generating Developments, 2013*

Source: *Staff numbers based on Moorebank IMT Staffing Requirements – Version 4, August 18, 2011 (Deloitte)*

Warehouse staff numbers were estimated using data from the RMS *Guide to Traffic Generating Developments,* 2013 traffic surveys. The total number of staff was calculated using a daily trip rate of 2.1 trips per 100 m^2, assuming approximately 70% of all trips are light vehicle (staff) and an average trip rate of three trips per person per day, assuming 50% of staff would travel offsite and return during the middle of the day:

6,468 vehicle trips per day = 308,000 m^2 GFA x 2.1 trips per 100 m^2

1509 staff (further broken down into 22 administration staff, 496 operations staff per shift) = 6,468 trips x 70% (light vehicles) ÷ 3 trips per staff/

The following assumptions have been made in the calculation of traffic generation for staff vehicles:

- Shift hours would be as follows:
  - administration – 8.30 am to 5.00 pm
  - operations and maintenance:
    - 6.00 am to 2.00 pm
    - 2.00 pm to 10.00 pm
    - 10.00 pm to 6.00 am.
- It is assumed that 90% of the staff for both IMEX and interstate would drive to the Project site. This assumes that 10% of staff may carpool, catch public transport or walk/cycle to the terminal. This is a conservative estimate. There is considerable scope to reduce reliance on car travel further by car share programs and the use of other transport modes such as public transport through the development of work place travel plans/green travel plans.
- All staff would arrive just prior to the start of their shift and depart directly after the shift.
- Traffic generated by IMEX and Warehouse staff in the intermediate years of operation would be based on the proportion of operations active at that time.

Based on the above assumptions, the administration staff would be the only light vehicle generator during both AM (6.45 am to 7.45 am) and PM (5.00 pm to 6.00 pm) peak hours on the road network. This traffic generation is shown in Table 6.7.

Table 6.7 Peak hour staff light vehicle traffic generation in the weekday AM and PM peak hours

	IMEX	Interstate	Warehouse
AM peak (inbound)	32	32	20
PM peak (outbound)	32	32	20

The maximum staff generation period would be during the shift changeover of the operation and maintenance staff. When both IMEX and interstate are in operation (from year 2030 onwards), the shift changeover would generate 625 vehicle trips. However, this is likely to occur outside the peak period (at 6.00 am, 2.00 pm and 10.00 pm) when there would be sufficient capacity on the road network and at intersections, and therefore has not been assessed.

6.2.3.1 Service vehicle generation

Service vehicles would be generated by the operational requirements of the Moorebank IMT. These vehicles are likely to be small or medium rigid vehicles that are used by contractors to service electrical, machinery or other items. This number is anticipated to be relatively low. These movements would probably occur outside peak periods and have been excluded from the assessment.

6.2.4 Truck petrol station/retail facility

A truck petrol station or small retail facility has been considered for the Project IMT site to provide goods and services to staff and visitors of the Project site. Although the proposed facility has not been designed, land within the Project site on the concept plan has been allocated for this land use.

Considering the current availability of fast food outlets elsewhere and the remoteness of this facility, this facility is not expected to attract traffic above that which is already entering the facility. It is therefore assumed that the potential facility would not generate any additional traffic other than catering for vehicles already on the adjacent road network and within the Project site.

6.3 Traffic generation summary

A summary of the total traffic generated by the Moorebank IMT development during the construction and operation phase based on the information contained within section 6 is shown in Table 6.8 for the different years of analysis. Table 6.9 and Table 6.10 show the weekday AM peak and PM peak volumes for these phases for the different years.

While a reduction of 30% due to load matching was applied to semi-trailer movements generated by the IMEX and Interstate terminals, load matching is accounts for 13% of the total vehicle trips generated by the development (including light vehicle movements).

Table 6.8 shows one-way weekday trips. For example 50 trips would involve 25 trips in and 25 trips out.

Table 6.8 Summary of total daily weekday trips generated by Moorebank IMT

	Early Works 2015		Scenario 1 2016		Scenario 2a 2019		Scenario 2b 2023		Scenario 3 2030	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Construction	810	64	2,295	1,390	1,485	260	2,080	360	0	0
IMEX	0	0	0	0	168	652	337	1,302	674	2,726
Interstate	0	0	0	0	262	710	262	710	522	1,152
Warehouse	0	0	0	0	1,510	580	1,510	852	4,528	1,644
Total trips	**810**	**64**	**2,295**	**1,390**	**3,425**	**2,202**	**4,189**	**3,224**	**5,724**	**5,522**

Table 6.9 Summary of total weekday AM peak hour traffic movements

		Early Works 2015		Scenario 1 2016		Scenario 2a 2019		Scenario 2b 2023		Scenario 3 2030	
		LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Construction	Inbound	54	5	153	76	99	14	139	20	0	0
	Outbound	0	5	0	76	0	14	0	20	0	0
IMEX	Inbound	0	0	0	0	8	25	16	50	32	105
	Outbound	0	0	0	0	0	25	0	50	0	105
Interstate	Inbound	0	0	0	0	16	27	16	27	32	44
	Outbound	0	0	0	0	0	27	0	27	0	44
Warehouse	Inbound	0	0	0	0	10	22	10	33	20	63
	Outbound	0	0	0	0	0	22	0	33	0	63
Total trips	**Inbound**	**54**	**5**	**153**	**76**	**133**	**88**	**181**	**130**	**84**	**212**
	Outbound	**0**	**5**	**0**	**76**	**0**	**88**	**0**	**130**	**0**	**212**

Table 6.10 Summary of total weekday PM peak hour traffic movements

		Early Works 2015		Scenario 1 2016		Scenario 2a 2019		Scenario 2b 2023		Scenario 3 2030	
		LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Construction	Inbound	0	5	0	76	0	14	0	20	0	0
	Outbound	54	5	153	76	99	14	139	20	0	0
IMEX	Inbound	0	0	0	0	0	30	0	61	0	127
	Outbound	0	0	0	0	8	30	16	61	32	127
Interstate	Inbound	0	0	0	0	0	33	0	33	0	54
	Outbound	0	0	0	0	16	33	16	33	32	54
Warehouse	Inbound	0	0	0	0	0	27	0	40	0	76
	Outbound	0	0	0	0	10	27	10	40	20	76
Total trips	**Inbound**	**0**	**5**	**0**	**76**	**0**	**104**	**0**	**154**	**0**	**257**
	Outbound	**54**	**5**	**153**	**76**	**133**	**104**	**181**	**154**	**84**	**257**

6.4 Cumulative scenarios

Cumulative scenario A (refer to Figure 6.1) assumes that the SIMTA site would operate as an intensified warehousing development that would support the operation of the Moorebank IMT Project.

A number of assumptions have been made to define and assess cumulative Scenario A including:

- the Moorebank IMT would operate as proposed in the EIS
- the SIMTA development would have indicative warehouse capacity of 300,000 sq. m gross floor area (GFA)
- both sites would operate 24 hours a day, seven days a week.

Cumulative scenario B (refer to Figure 6.2) consists of an IMEX terminal on the SIMTA site only with throughput of 1 million TEU per year, as well as 300,000 sq. m of warehousing. An interstate terminal of 500,000 TEU per year and 300,000 sq. m of warehousing would be located on the Project site. Under cumulative scenario B, there is surplus warehousing in the order of 205,000 sq. m for the Project.

The following assumptions were made for cumulative scenario B:

- Both sites would operate 24 hours a day, seven days a week.

Cumulative scenario C1 (refer to Figure 6.3) consists of an IMEX terminal on the SIMTA site with throughput of 250,000 TEU per year, as well as 200,000 sq. m of warehousing. An IMEX terminal of 250,000 TEU per year, interstate terminal of 250,000 TEU per year and 100,000 sq. m of warehousing would be located on the Project site in 2020. Under cumulative scenario C1, there is surplus warehousing in the order of 125,000 sq. m for the SIMTA site.

The following assumptions were made for cumulative scenario C1:

- Both sites would operate 24 hours a day, seven days a week.

Cumulative scenario C2 (refer to Figure 6.4) consists of an IMEX terminal on the SIMTA site with throughput of 550,000 TEU per year, as well as 300,000 sq. m of warehousing. An IMEX terminal of 500,000 TEU per year, interstate terminal of 500,000 TEU per year and 300,000 sq. m of warehousing would be located on the Project site in 2030. Under cumulative scenario C2, there is surplus warehousing in the order of 150,000 sq. m for the SIMTA site.

The following assumptions were made for cumulative scenario C2:

- Both sites would operate 24 hours a day, seven days a week.

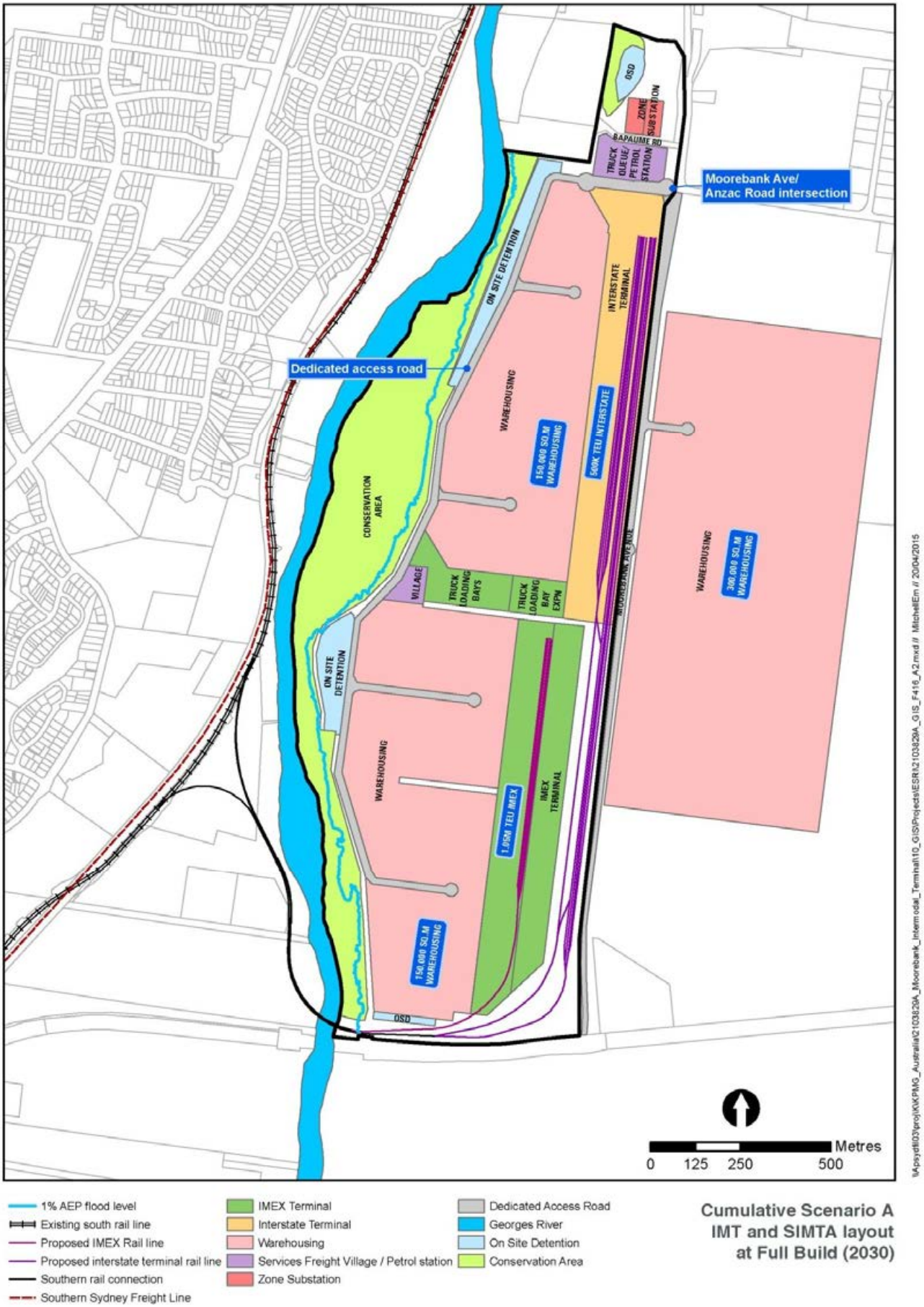


Figure 6.1 2030 Cumulative Scenario A

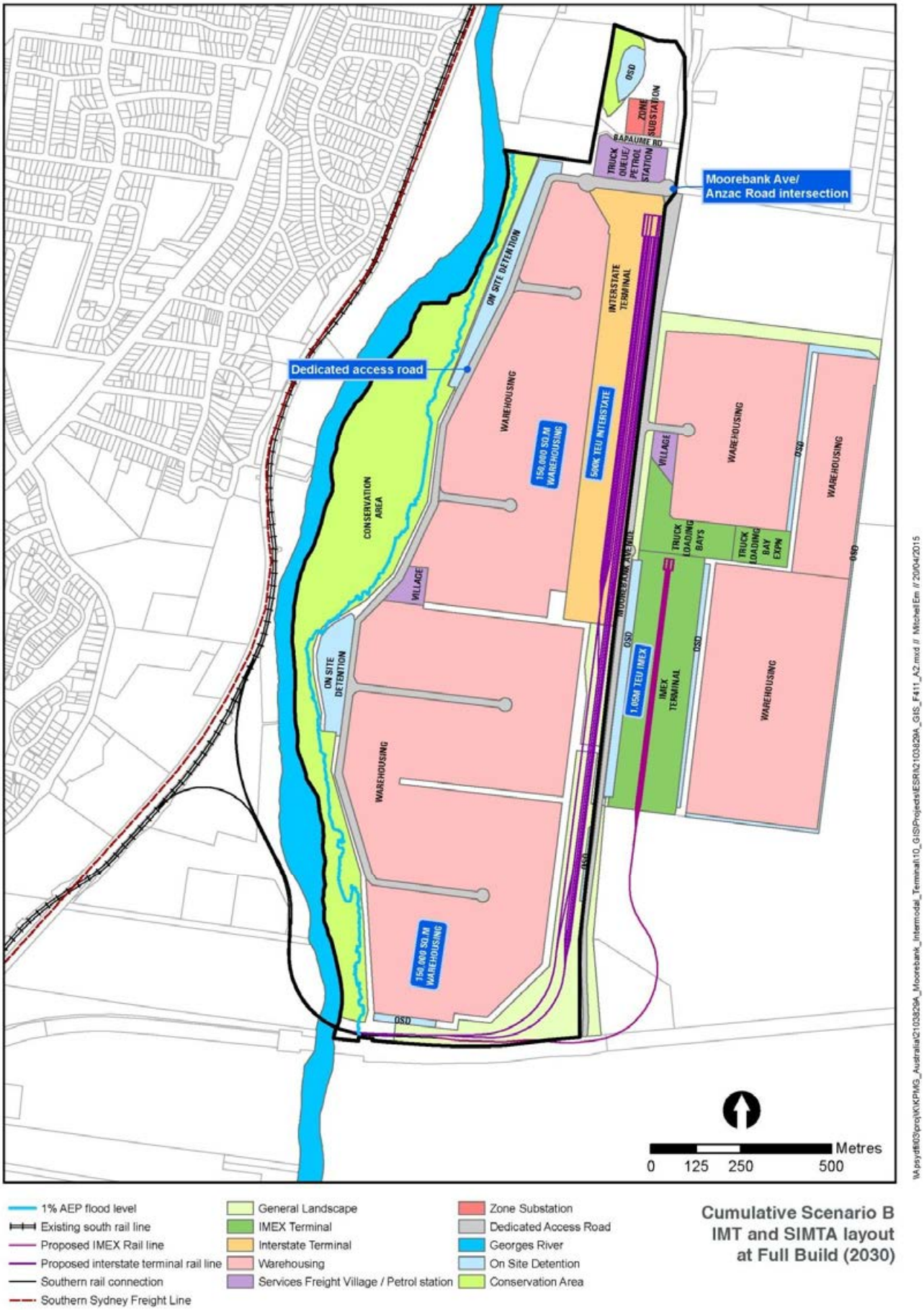


Figure 6.2 2030 Cumulative Scenario B

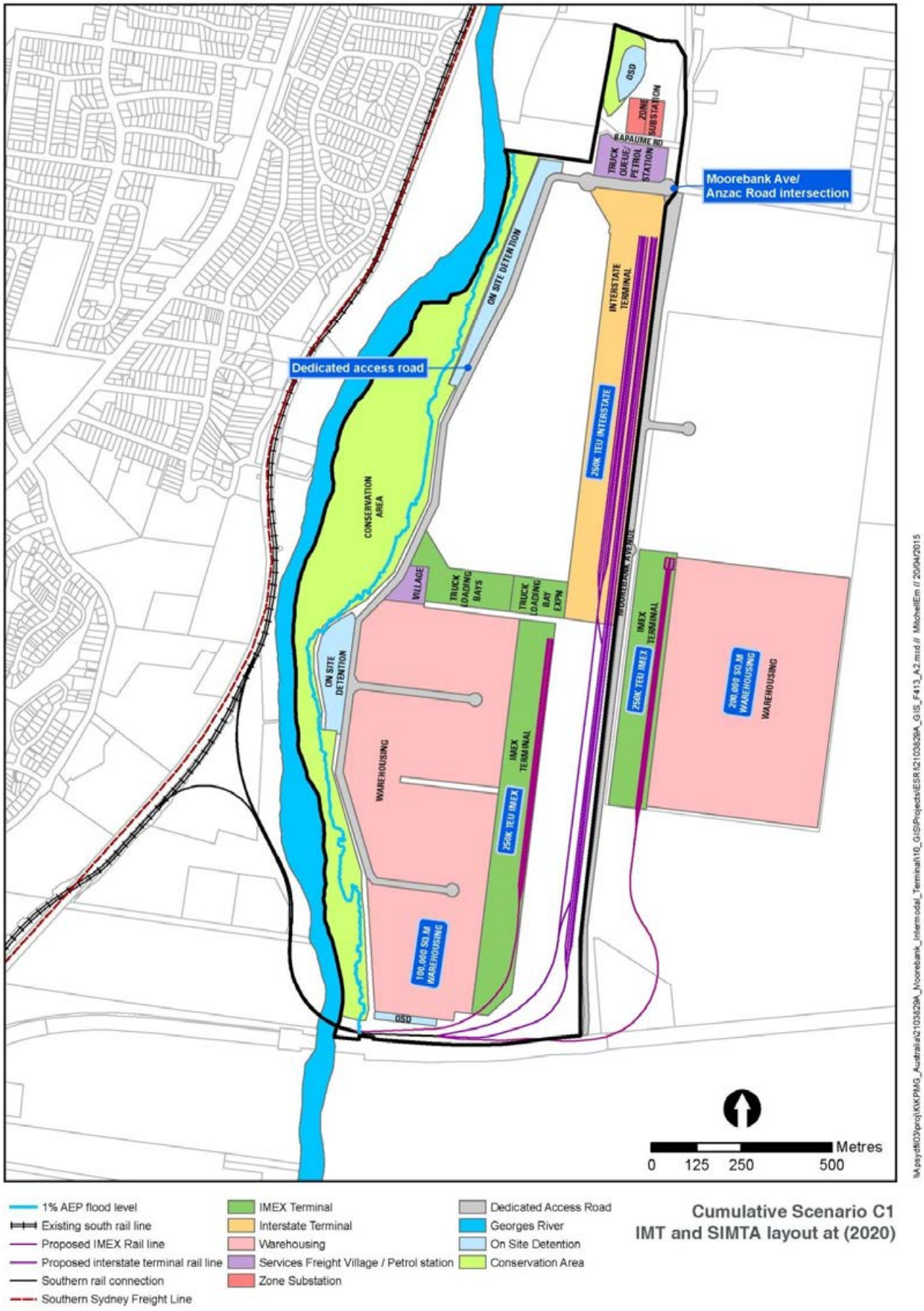


Figure 6.3 2020 Cumulative Scenario C1

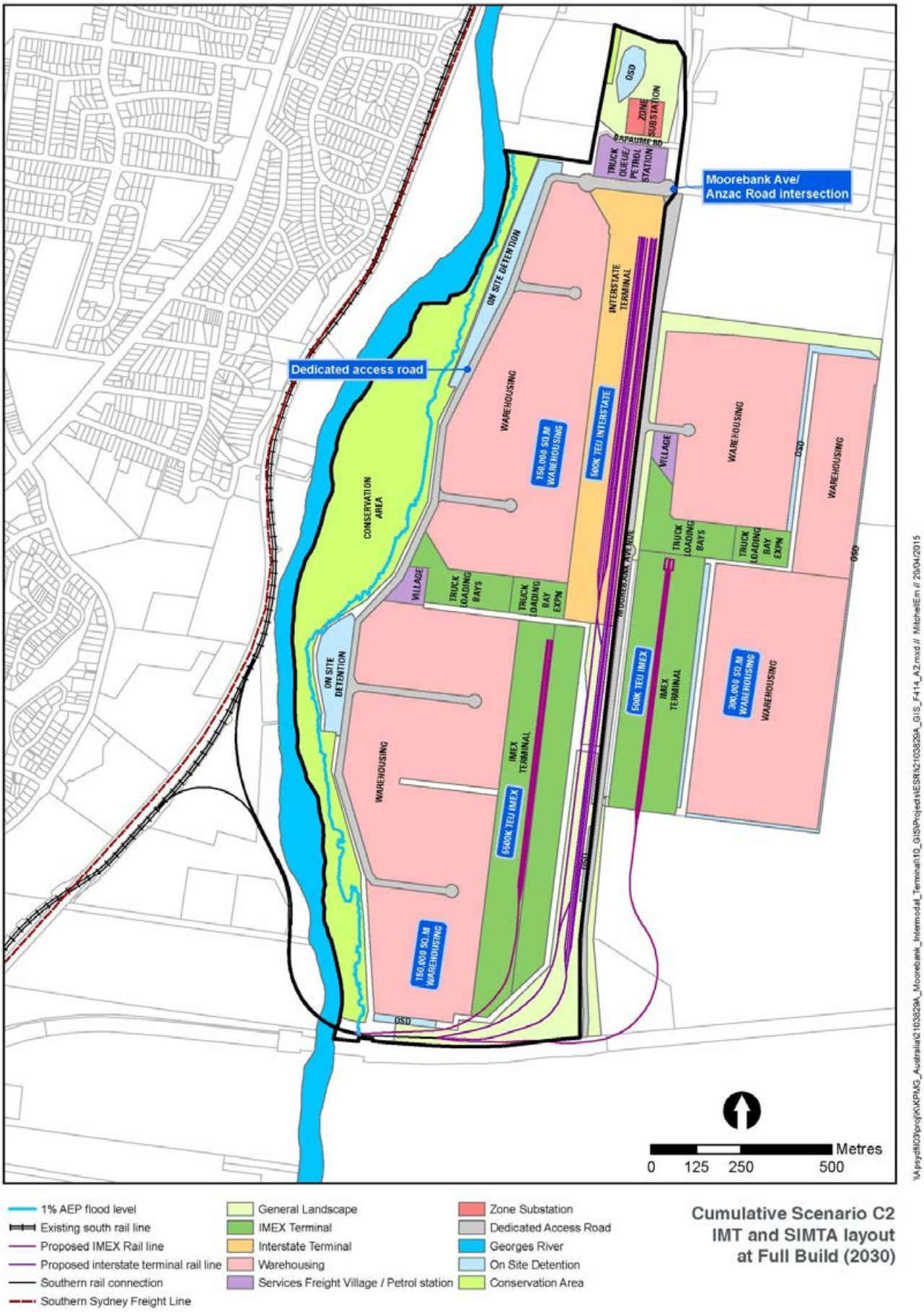


Figure 6.4 2030 Cumulative Scenario C2

Traffic generated by standalone or surplus warehousing has been estimated using the RMS *Guide to Traffic Generating Developments (2013) – Appendix A Business Parks and Industrial Estates – Site details and trip generation*, as follows:

- Daily vehicle trips = 2.1 per 100 m^2 GFA.
- Warehouse operations peak hour vehicle trips = 0.1825 per 100 m^2 GFA.
- Trips occurring during the AM and PM peak hour for light vehicles is 8.7%.
- Trips occurring during the peak hour of the adjacent road network for heavy vehicles are 7.7% in the AM peak and 9.3% in the PM peak.
- Heavy vehicle trip proportion of 30% for the warehouse facility.

Daily and warehouse peak hour vehicle trips were taken as an average of two similar warehouse sites from the RMS *Guide to Traffic Generating Developments*, as follows:

- Site 1 Erskine Park Industrial Estate, Erskine Park:
  - 0.163 peak vehicle trips per 100 m^2 GFA
  - warehouse peak hour 2.45–3.45 pm
  - 1.892 total daily trips per 100 m^2 GFA
  - 28.3% heavy vehicle trips
- Site 3 Wonderland Business Park, Eastern Creek:
  - 0.202 peak vehicle trips per 100 m^2 GFA
  - warehouse peak hour 8.00–9:00 am
  - 2.308 total daily trips per 100 m^2 GFA
  - 25.9% heavy vehicle trips.

Traffic generation for the cumulative scenarios is shown in Table 6.11 below.

Table 6.11 Cumulative scenario daily and peak hourly traffic generation

Cumulative traffic			LV	HV
Site	**Scenario A**			
Moorebank IMT	AM peak hour traffic	Inbound	84	212
		Outbound	0	212
	PM peak hour traffic	Inbound	0	257
		Outbound	84	257
	Total daily vehicle trips		**5,724**	**5,522**
SIMTA	AM peak hour traffic	Inbound	399	66
		Outbound	0	66
	PM peak hour traffic	Inbound	0	79
		Outbound	399	79
	Total daily vehicle trips		**4,593**	**1,707**

Cumulative traffic			LV	HV
Combined	AM peak hour traffic	Inbound	482	278
		Outbound	0	278
	PM peak hour traffic	Inbound	0	336
		Outbound	482	336
	Total daily vehicle trips		**10,316**	**7,229**
Site	**Scenario B**			
Moorebank IMT	AM peak hour traffic	Inbound	310	115
		Outbound	0	115
	PM peak hour traffic	Inbound	0	140
		Outbound	310	140
	Total daily vehicle trips		**5,050**	**3,001**
SIMTA	AM peak hour traffic	Inbound	692	102
		Outbound	0	102
	PM peak hour traffic	Inbound	0	78
		Outbound	630	78
	Total daily vehicle trips		**3,614**	**2,638**
Combined	AM peak hour traffic	Inbound	1002	217
		Outbound	0	217
	PM peak hour traffic	Inbound	0	218
		Outbound	940	218
	Total daily vehicle trips		**8,664**	**5,639**
Site	**Scenario C1**			
Moorebank IMT	AM peak hour traffic	Inbound	174	153
		Outbound	0	153
	PM peak hour traffic	Inbound	0	170
		Outbound	174	170
	Total daily vehicle trips		**4,099**	**3,420**
SIMTA	AM peak hour traffic	Inbound	292	54
		Outbound	0	54
	PM peak hour traffic	Inbound	0	52
		Outbound	478	52
	Total daily vehicle trips		**3,632**	**1,365**

Cumulative traffic			LV	HV
Combined	AM peak hour traffic	Inbound	465	207
		Outbound	0	207
	PM peak hour traffic	Inbound	0	222
		Outbound	652	222
	Total daily vehicle trips		**7,731**	**4,785**
Site	**Scenario C2**			
Moorebank IMT	AM peak hour traffic	Inbound	68	157
		Outbound	0	157
	PM peak hour traffic	Inbound	0	191
		Outbound	68	191
	Total daily vehicle trips		**5,386**	**4,098**
SIMTA	AM peak hour traffic	Inbound	494	85
		Outbound	0	85
	PM peak hour traffic	Inbound	0	78
		Outbound	649	78
	Total daily vehicle trips		**4,788**	**2,167**
Combined	AM peak hour traffic	Inbound	562	242
		Outbound	0	242
	PM peak hour traffic	Inbound	0	269
		Outbound	717	269
	Total daily vehicle trips		**10,174**	**6,265**

6.5 Traffic generation from alternate land uses

Parsons Brinckerhoff has undertaken a review of alternate land uses for the Project site. The purpose of this review is to compare traffic generation from the Project site based on various land uses occupying the site on developable land only.

Traffic generation for alternative land uses has been estimated in accordance with the RMS's *Guide to Traffic Generating Developments* (August 2013) which provides guidelines regarding the likely traffic generation potential of various types of development. In most cases, traffic volumes generated by developments are determined by applying multipliers that are either specific to the floor areas or other unit rates specific to the developments. These representative rates were determined through surveys undertaken by the RMS.

The overall area of the Project site is approximately 192 hectares. For this study, it is assumed that the Project site has approximately 166 hectares of developable land which excludes the 1% AEP flood line and confirmed conservation areas. The adopted peak hour vehicle trips for the different land use developments are as follows:

- Residential dwellings – trip generation of 0.95 and 0.99 per dwelling based on RMS rates for low density residential dwellings within the Sydney urban area were adopted for the AM and PM peak hour respectively. It is assumed that 20 dwellings could be constructed per hectare based on Landcom's *Residential Density Guide* (May 2011).
- Business parks and industrial estates – trip generation rate of 5.35 peak hour vehicle trips per hectare was adopted based on RMS rates for the similar size development of business parks in the Sydney area.
- Shopping centres – it is assumed that the Gross Leasable Floor Area (GLFA) for the proposed development site would be approximately 150,000 m^2 (equivalent to the size of the Westfield Parramatta shopping centre). Trip generation of 1.47 and 3.16 peak hour vehicle trips per 100 m^2 GLFA was adopted for the AM and PM peak hour respectively.

Table 6.12 shows the adopted trip generation rate and the inbound/outbound distribution assumed for the AM and PM peak periods.

Table 6.12 Summary of traffic generated by alternate land uses

Development		Distribution	Vehicle trips
Moorebank Intermodal Terminal – Full Build 2030 (IMEX, Interstate and Warehouse)			
AM peak hour	Inbound	-	253
	Outbound	-	169
PM peak hour	Inbound	-	169
	Outbound	-	253
Low density residential dwellings – Approximately 3320 dwellings			
AM peak hour (0.95 per dwelling)	Inbound	20%	631
	Outbound	80%	2523
PM peak hour (0.99 per dwelling)	Inbound	80%	2629
	Outbound	20%	657
Business parks and industrial estates – 166 hectares			
AM peak hour (5.35 per hectare)	Inbound	80%	710
	Outbound	20%	178
PM peak hour (5.35 per hectare)	Inbound	20%	178
	Outbound	80%	710
Shopping centres – Approximately 150,000 m^2 GLFA			
AM peak hour (1.47 per 100m^2 of GLFA)	Inbound	50%	1103
	Outbound	50%	1103
PM peak hour (3.16 per 100m^2 of GLFA)	Inbound	50%	2370
	Outbound	50%	2370

Source: RMS *Guide to Traffic generating Developments* (2013)

Table 6.12 shows that the estimated traffic that generated by the Moorebank IMT development during the peak hours would be significantly lower than the generated traffic by alternative land uses. It indicates that a less significant traffic impact would be expected on the adjacent road network when compared to the alternate land uses.

6.6 Traffic distribution

The distribution of traffic generated by the Moorebank IMT is based on the results of strategic modelling undertaken for the Project. For the purposes of the modelling it is assumed that the origin and destination for vehicles would be similar. This is based on the assumption that vehicles would return to their origin after travelling to the Moorebank IMT. The distribution of traffic may be different for light and heavy vehicles. Heavy vehicles generated by the Project site would travel to and from the M5 interchange where they would be distributed amongst the road network to travel to their destinations throughout the Sydney region.

The design of the Moorebank IMT proposed truck access does not allow for southbound heavy vehicle movements. This is to prevent heavy vehicles generated by the Moorebank IMT travelling south along Moorebank Avenue to Cambridge Avenue and beyond. B-double vehicles are not permitted to use Anzac Road.

Table 6.13 shows the assumed distribution of traffic generated by the Project site. This same traffic distribution has been applied to all assessment years and is based upon the 2030 traffic distribution. The distribution of light and heavy vehicles is based upon the STM and FMM model which does not distribute freight related heavy vehicle traffic onto Anzac Road.

Wider area traffic distribution is based upon the STM and FMM models and has been applied to both the Moorebank IMT and SIMTA. These distributions are shown in Figures 6.5 to 6.7. Traffic generated by the Project in 2030 is shown in Figures 6.8 and 6.9.

6.6.1 Moorebank IMT traffic distribution

The traffic distribution along Moorebank Avenue for Moorebank IMT is shown in Table 6.13.

Table 6.13 Moorebank IMT traffic distribution

Direction (Moorebank Avenue to)	Distribution (%) weekday AM peak		Distribution (%) weekday PM peak	
	Light vehicles	Heavy vehicles	Light vehicles	Heavy vehicles
M5 West	20.0%	45.3%	20.0%	44.8%
Hume Highway North	18.5%	19.6%	18.5%	20.0%
Moorebank Avenue North	7.7%	27.9%	7.7%	13.9%
M5 East	13.3%	7.2%	13.3%	21.3%
Anzac Road East	10.5%	0.0%	10.5%	0.0%
Moorebank Avenue South	30.0%	0.0%	30.0%	0.0%

Source: STM and FMM models (BTS)

6.6.2 SIMTA traffic distribution

The traffic distribution along Moorebank Avenue for SIMTA is shown in Table 6.14. This is based on the *SIMTA Traffic and Transport Assessment* (Hyder Consulting 2013) report traffic distributions.

Table 6.14 SIMTA traffic distribution

Direction (Moorebank Avenue to)	Distribution (%) weekday AM peak		
	Light vehicles	Container Truck	Rigid Truck
M5 West	18%	41%	35%
Hume Highway North	16%	28%	25%
Moorebank Avenue North	14%	14%	22%
M5 East	29%	3%	3%
Hume Highway South	13%	13%	10%
Anzac Road East	5%	0%	0%
Moorebank Avenue South	5%	0%	5%

Source: SIMTA Traffic and Transport Assessment, Hyder Consulting 2013

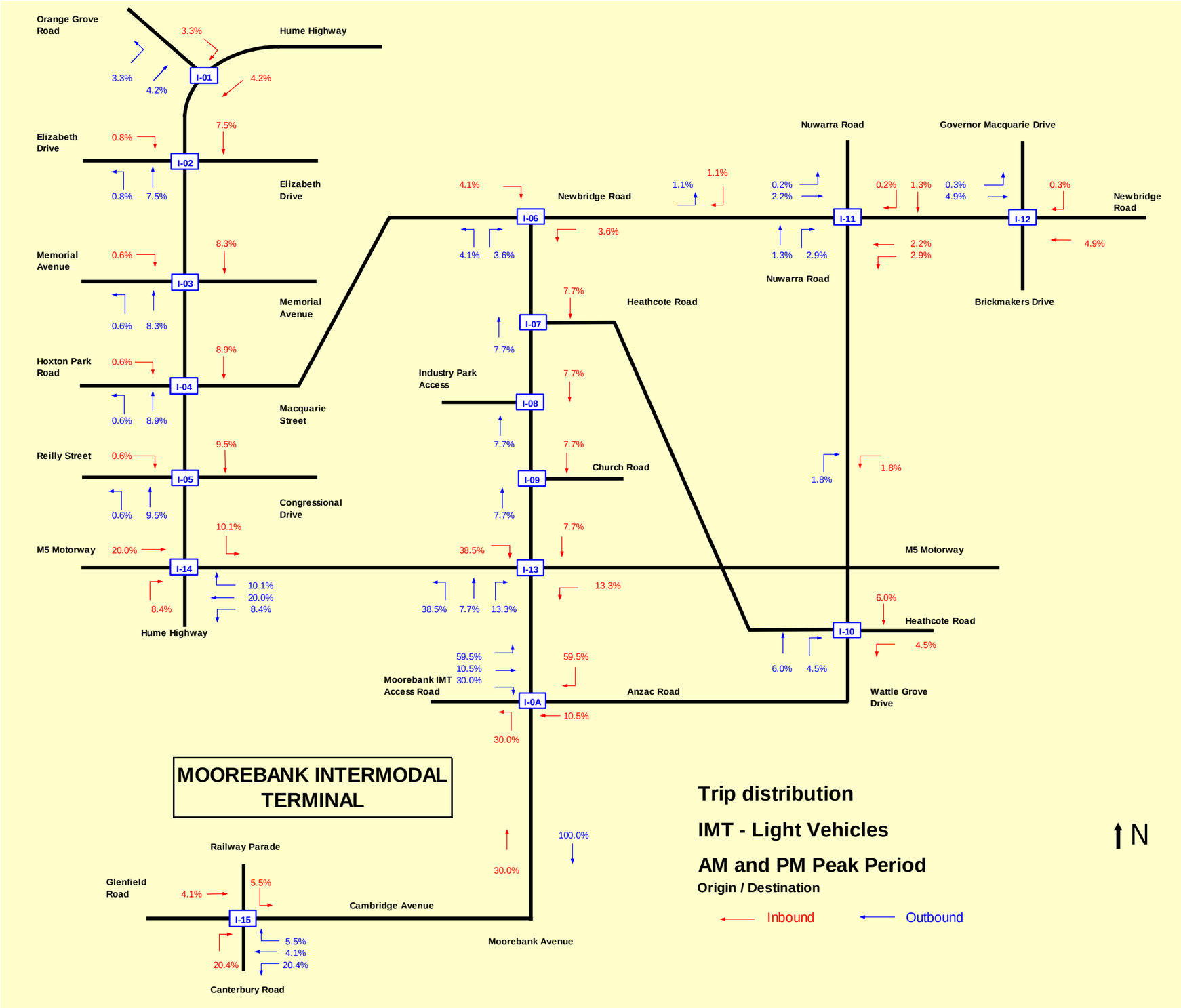


Figure 6.5 **2030 weekday AM and PM peak Moorebank IMT light vehicle distribution on the wider area road network**

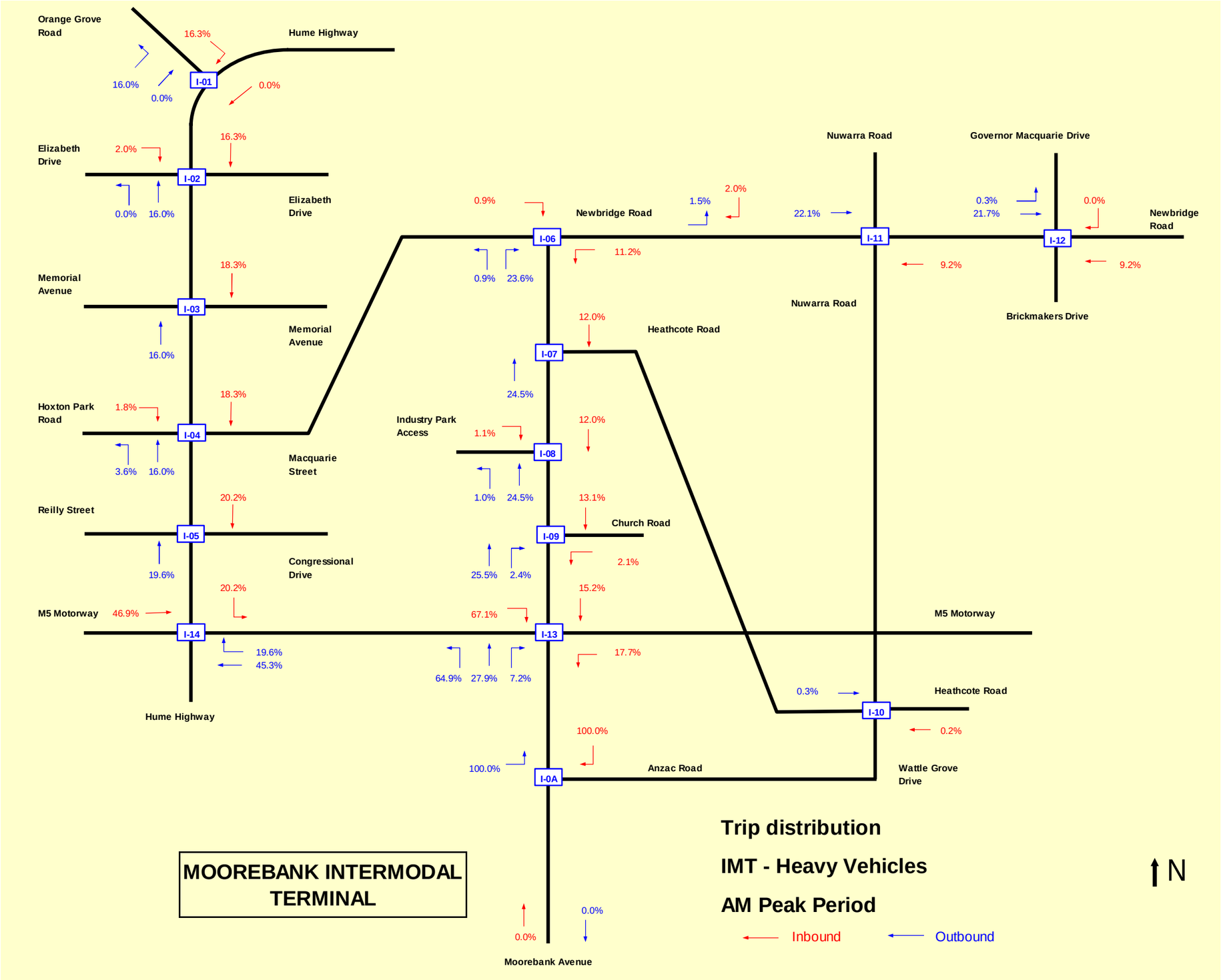


Figure 6.6 **2030 weekday AM peak Moorebank IMT heavy vehicle distribution on the wider area road network**

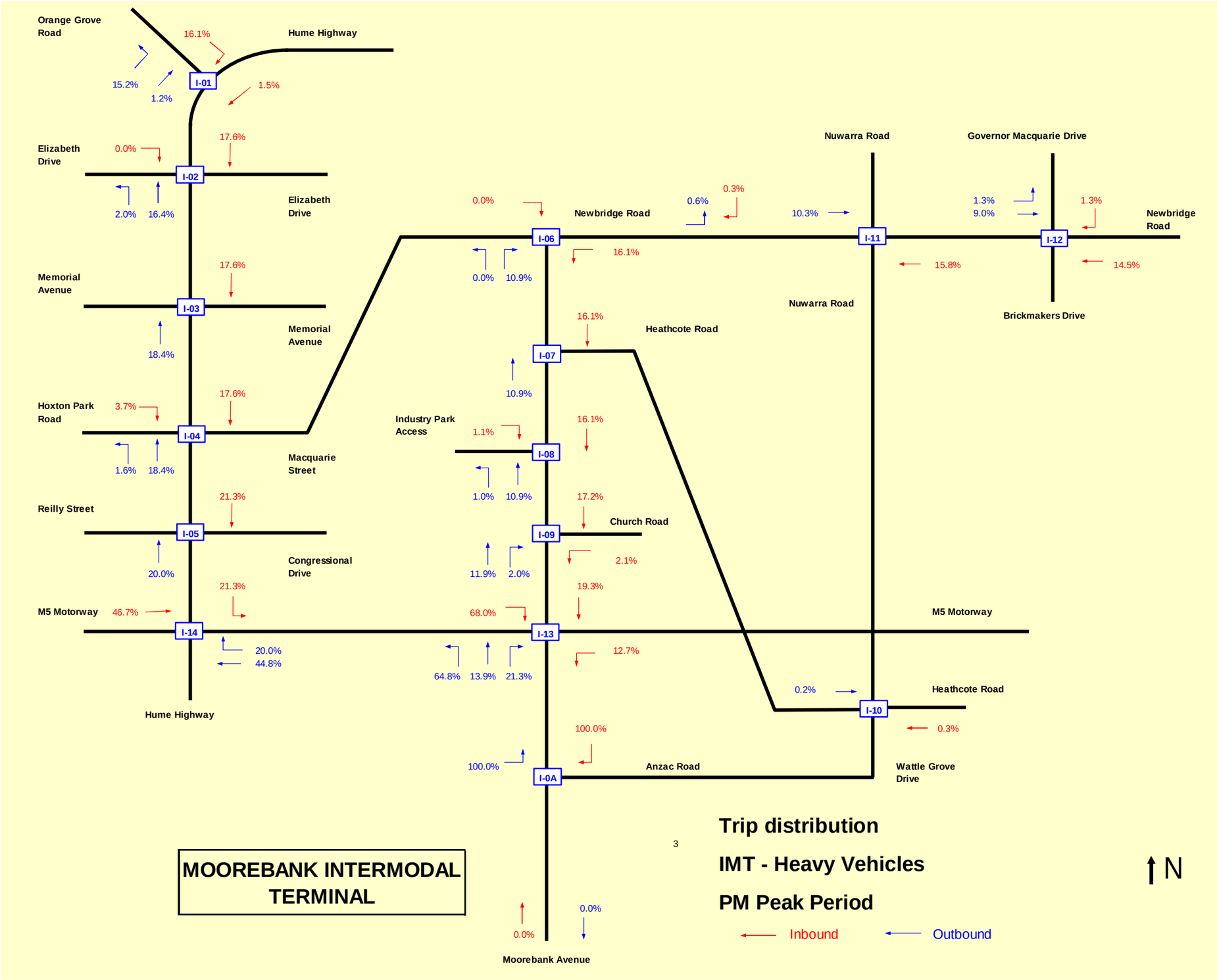


Figure 6.7 **2030 weekday PM peak Moorebank IMT heavy vehicle distribution on the wider area road network**

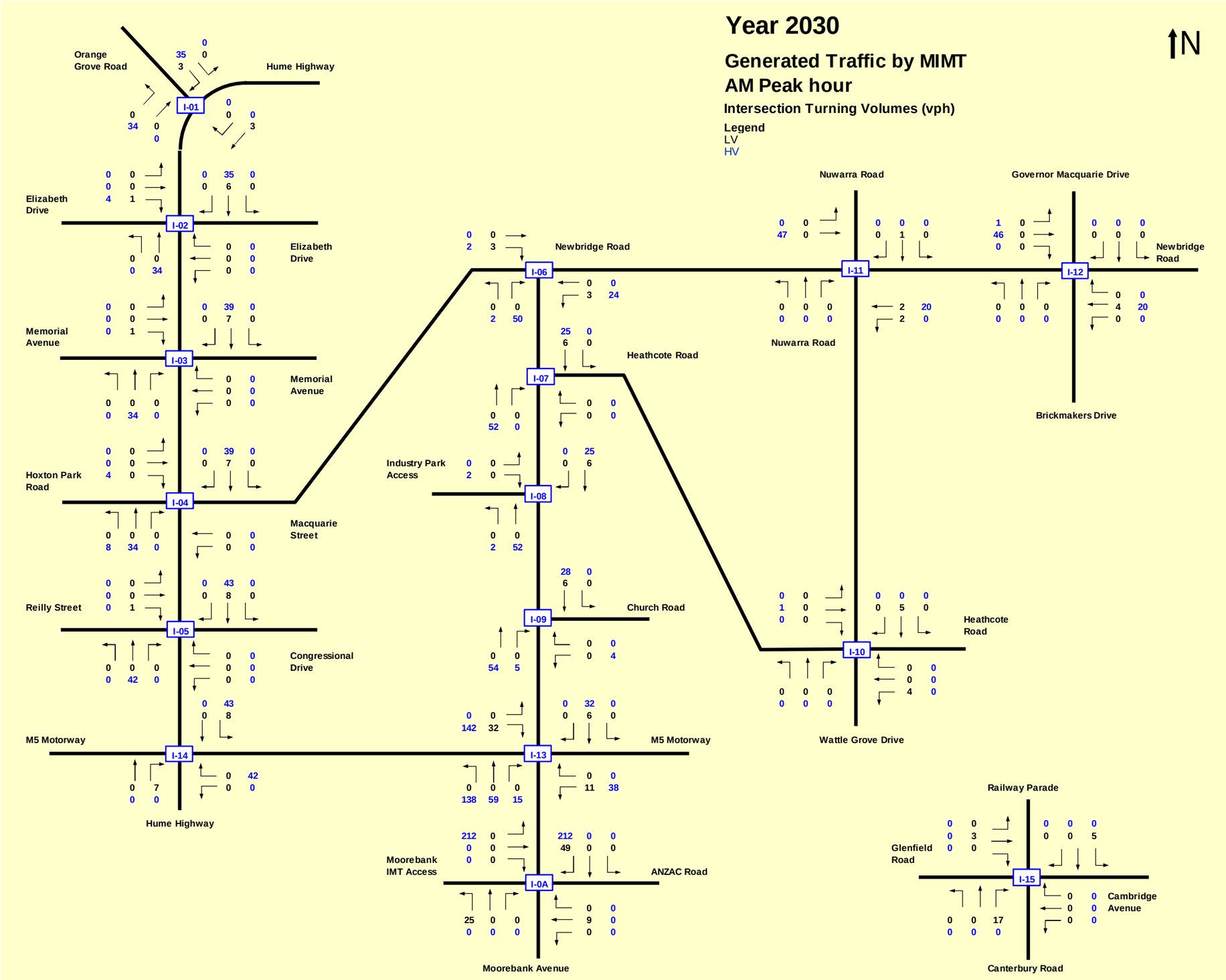


Figure 6.8 **2030 Moorebank IMT traffic generated on the wider area road network in the AM peak**

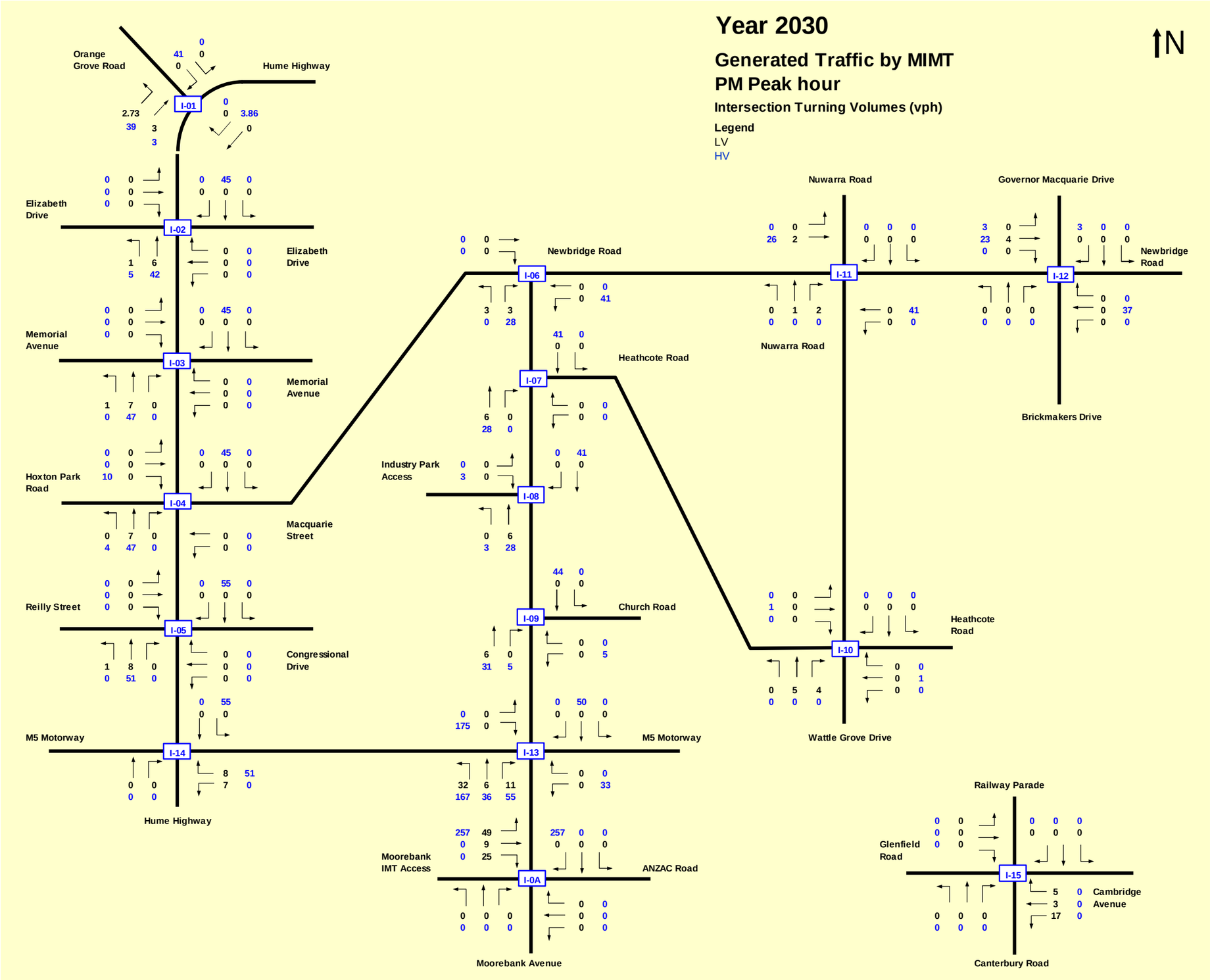


Figure 6.9 2030 Moorebank IMT traffic generated on the wider area road network in the PM peak

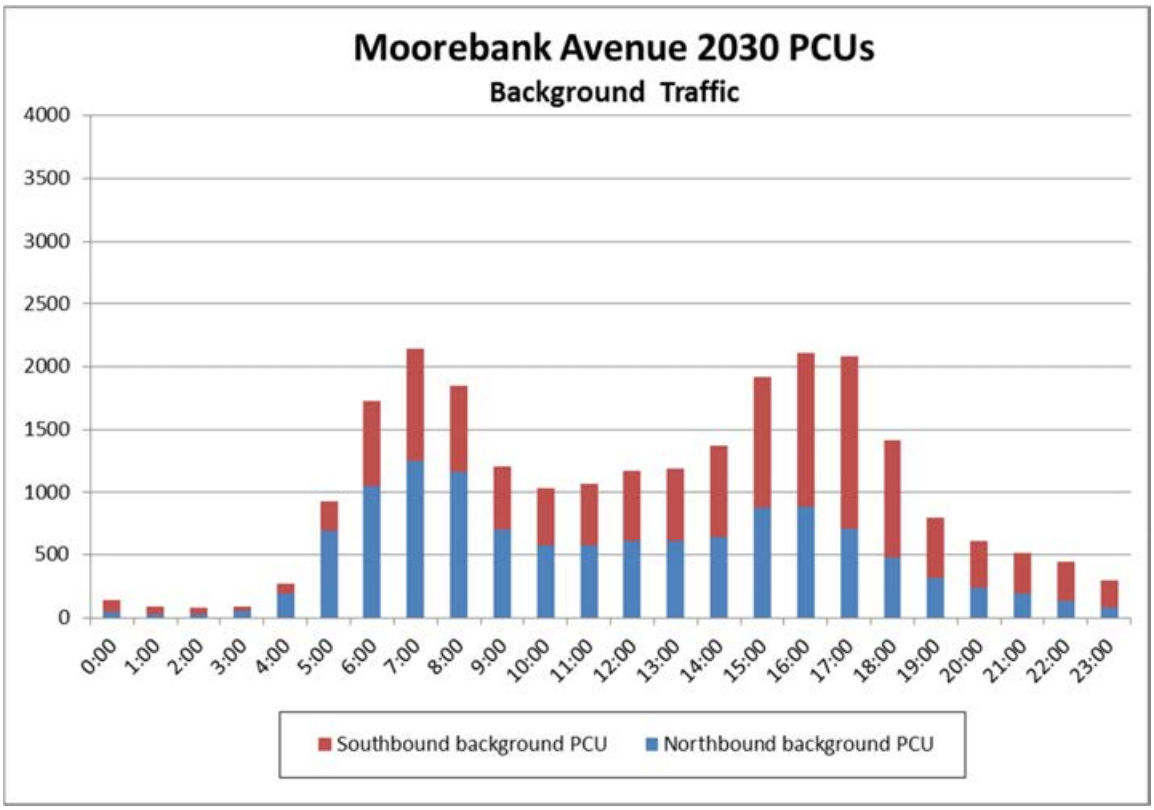
6.7 Moorebank Avenue Daily Traffic Profile

Daily traffic volume profiles for Moorebank Avenue between the M5 and Anzac Road in 2030 with and without the Project are presented in Figure 6.10. Light and heavy vehicles were converted to Passenger Car Unit (PCU) equivalents to compare the difference between with and without Project traffic profiles. The following conversion factors were applied to generate PCU equivalents:

- 1.0 PCUs for cars.
- 1.2 PCUs for light commercial vehicles (LCV).
- 2.0 PCUs for rigid trucks.
- 4.0 PCUs for articulated trucks.

Figure 6.10 clearly differentiates the road traffic peak hours with and without the Project. The weekday road background traffic peak occurs between 7.00 am and 8.00 am and 5.00 pm and 6.00 pm. With the inclusion of Project traffic, it can be seen that the road traffic peak continues to occur at these times. The figure shows that the highest traffic volumes travel on Moorebank Avenue during the AM and PM peak hours and there would be less traffic during the off peak period even with the Moorebank IMT traffic. This daily profile suggests that the off peak traffic conditions still represents a more favourable condition than the peak hours, hence there would be no significant impact on the traffic conditions along Moorebank Avenue during off peak periods.

2030 Background traffic in PCUs



2030 with Moorebank IMT traffic in PCUs

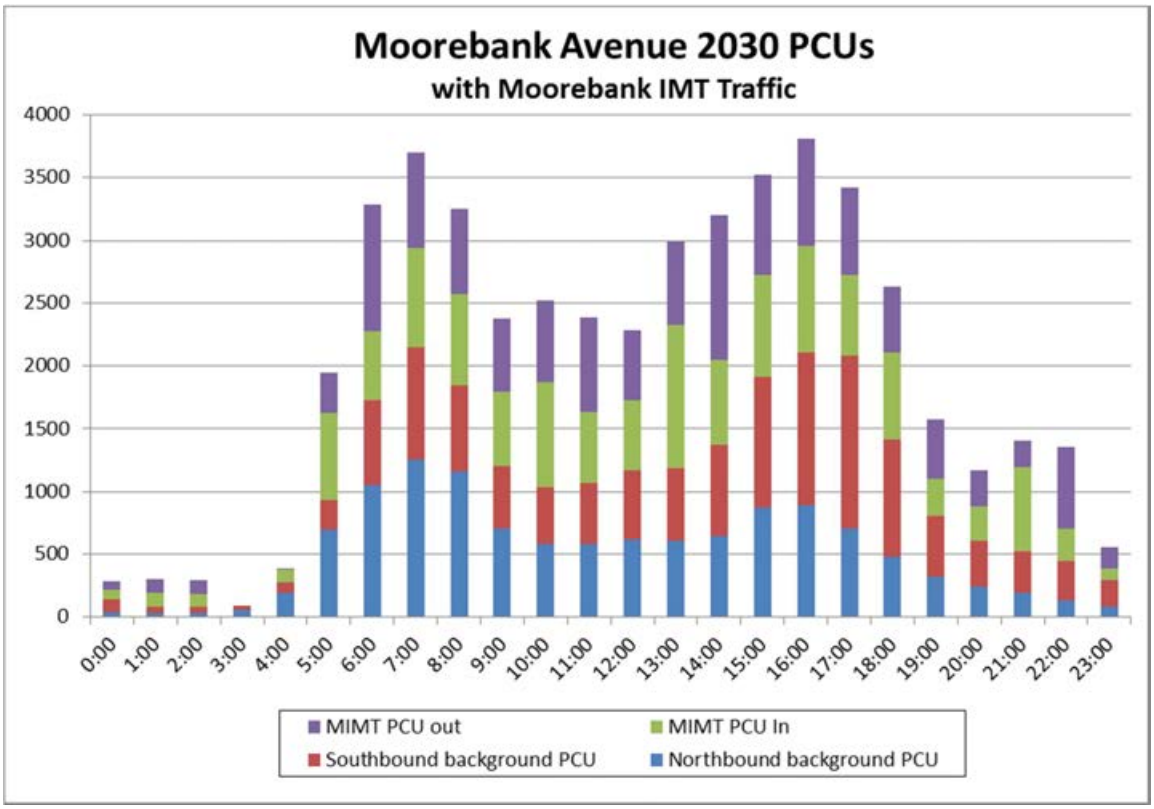


Figure 6.10 **Daily traffic volume profiles for Moorebank Avenue between M5 and Anzac Road in 2030 with and without Moorebank IMT in Passenger Car Unit (PCU) equivalents**

7. Background traffic growth rates

Summary of changes from the Environmental Impact Statement Traffic and Transport Assessment:

No change.

For the purpose of this study, and in consultation with RMS, traffic growth rates have been obtained by from the RMS road assignment EMME/2 model. Table 7.1 shows the linear traffic growth rates that have been applied to this assessment to estimate future background traffic volumes on the road network (Moorebank Avenue and Anzac Road) adjacent to the Project site. Table 7.2 shows the linear traffic growth rates that have been applied on the wider area road network.

Table 7.1 Annual weekday peak period growth rates on Moorebank Avenue and Anzac Road

Location	Period	Direction	Annual growth rates between		
			2016–2021	2021–2026	2026–2031
Moorebank Avenue, south of Anzac Road	AM (7–9 am)	Northbound	1.8%	1.9%	0.5%
		Southbound	0.8%	0.8%	0.8%
	PM (4–6 pm)	Northbound	0.7%	1.4%	0.5%
		Southbound	1.1%	2.2%	0.6%
Moorebank Avenue, between Anzac Road and the M5	AM (7–9 am)	Northbound	0.8%	1.9%	0.0%
		Southbound	1.7%	1.1%	0.5%
	PM (4–6 pm)	Northbound	1.5%	1.2%	0.4%
		Southbound	0.7%	1.7%	0.8%
Anzac Road, east of Moorebank Avenue	AM (7–9 am)	Eastbound	6.1%	2.5%	4.6%
		Westbound	0.4%	1.4%	1.8%
	PM (4–6 pm)	Eastbound	0.3%	3.4%	2.1%
		Westbound	3.0%	3.6%	1.1%

Source: RMS (2014)

Table 7.2 Annual weekday peak period growth rates on the wider area road network

Location	Period	Direction	Annual growth rates between		
			2016–2021	2021–2026	2026–2031
Hume Highway, north of Elizabeth Drive	AM (7–9 am)	Northbound	0.5%	0.9%	1.3%
		Southbound	0.6%	0.2%	0.9%
	PM (4–6 pm)	Northbound	0.7%	0.0%	0.1%
		Southbound	0.7%	0.5%	0.3%
Orange Grove Road, north of Hume Highway	AM (7–9 am)	Northbound	0.4%	0.8%	1.1%
		Southbound	0.9%	0.6%	1.1%
	PM (4–6 pm)	Northbound	0.4%	0.3%	0.9%
		Southbound	0.2%	0.5%	0.8%
Elizabeth Drive, west of Hume Highway	AM (7–9 am)	Eastbound	0.7%	1.1%	1.5%
		Westbound	1.6%	0.5%	1.6%
	PM (4–6 pm)	Eastbound	0.2%	0.8%	0.6%
		Westbound	0.0%	2.4%	0.7%
Hoxton Park Road, west of Hume Highway	AM (7–9 am)	Eastbound	2.4%	1.3%	1.4%
		Westbound	1.3%	3.9%	0.4%
	PM (4–6 pm)	Eastbound	1.0%	1.3%	0.5%
		Westbound	2.8%	0.6%	0.9%
Moorebank Avenue, north of the M5	AM (7–9 am)	Northbound	1.9%	1.5%	0.1%
		Southbound	1.6%	2.3%	1.6%
	PM (4–6 pm)	Northbound	1.9%	2.4%	0.0%
		Southbound	0.8%	1.7%	0.9%
Moorebank Avenue, south of Newbridge Road	AM (7–9 am)	Northbound	1.8%	2.5%	0.0%
		Southbound	3.2%	3.6%	1.4%
	PM (4–6 pm)	Northbound	2.8%	3.8%	0.6%
		Southbound	0.3%	2.1%	0.7%
Newbridge Road, east of Moorebank Avenue	AM (7–9 am)	Eastbound	2.7%	2.0%	0.5%
		Westbound	3.5%	1.7%	1.5%
	PM (4–6 pm)	Eastbound	2.0%	1.9%	0.9%
		Westbound	1.1%	1.5%	1.1%
Newbridge Road, west of Moorebank Avenue	AM (7–9 am)	Eastbound	2.5%	3.5%	2.1%
		Westbound	1.9%	2.6%	0.6%
	PM (4–6 pm)	Eastbound	0.8%	2.6%	1.1%
		Westbound	2.2%	3.2%	1.3%

Location	Period	Direction	Annual growth rates between		
			2016–2021	2021–2026	2026–2031
Heathcote Road, south of the M5	AM (7–9 am)	Northbound	0.9%	2.9%	0.4%
		Southbound	1.1%	3.9%	1.6%
	PM (4–6 pm)	Northbound	1.2%	2.8%	0.9%
		Southbound	0.7%	2.4%	0.6%
Heathcote Road, south of Nuwarra Road	AM (7–9 am)	Northbound	0.8%	3.0%	0.4%
		Southbound	1.4%	4.4%	1.6%
	PM (4–6 pm)	Northbound	1.3%	3.4%	1.3%
		Southbound	0.5%	2.5%	0.8%
Nuwarra Road, North of Heathcote Road	AM (7–9 am)	Northbound	1.7%	0.3%	1.3%
		Southbound	0.7%	2.7%	1.1%
	PM (4–6 pm)	Northbound	1.2%	0.5%	1.1%
		Southbound	1.3%	0.7%	0.2%
M5 off ramp to Moorebank Avenue	AM (7–9 am)	Eastbound	0.3%	0.4%	0.3%
		Westbound	1.8%	0.7%	0.3%
	PM (4–6 pm)	Eastbound	2.3%	1.9%	0.7%
		Westbound	0.9%	1.3%	0.4%
Hume Highway, north of the M5	AM (7–9 am)	Northbound	0.1%	1.3%	0.6%
		Southbound	0.2%	0.8%	0.2%
	PM (4–6 pm)	Northbound	0.0%	0.1%	0.3%
		Southbound	0.3%	0.8%	0.6%
Hume Highway, south of the M5	AM (7–9 am)	Northbound	0.3%	1.8%	0.9%
		Southbound	1.2%	1.4%	1.2%
	PM (4–6 pm)	Northbound	0.6%	0.7%	0.4%
		Southbound	1.2%	1.2%	0.9%
M5 on and off ramp to Hume Highway	AM (7–9 am)	Eastbound	0.1%	1.7%	1.4%
		Westbound	0.3%	0.5%	3.0%
	PM (4–6 pm)	Eastbound	1.0%	1.1%	0.3%
		Westbound	2.0%	1.3%	0.6%
Cambridge Avenue, east of Canterbury Road	AM (7–9 am)	Eastbound	2.1%	2.1%	0.7%
		Westbound	1.7%	1.5%	1.3%
	PM (4–6 pm)	Eastbound	2.3%	5.1%	0.4%
		Westbound	1.3%	3.1%	0.4%

Location	Period	Direction	Annual growth rates between		
			2016–2021	2021–2026	2026–2031
Canterbury Road, west of Cambridge Avenue	AM (7–9 am)	Northbound	0.4%	2.9%	0.6%
		Southbound	1.7%	2.7%	1.2%
	PM (4–6 pm)	Northbound	0.2%	3.3%	1.3%
		Southbound	0.2%	1.9%	0.8%
Glenfield Road, east of Canterbury Road	AM (7–9 am)	Eastbound	1.8%	4.8%	1.4%
		Westbound	0.5%	3.8%	1.1%
	PM (4–6 pm)	Eastbound	1.1%	4.2%	0.7%
		Westbound	1.7%	6.2%	1.2%
Railway Parade Road, north of Canterbury Road	AM (7–9 am)	Northbound	0.9%	2.8%	1.4%
		Southbound	2.2%	2.2%	1.0%
	PM (4–6 pm)	Northbound	1.5%	2.0%	0.9%
		Southbound	3.2%	3.1%	1.6%

Source: RMS (2014)

8. Strategic traffic modelling and trip distribution

Summary of changes from the Environmental Impact Statement Traffic and Transport Assessment:

No change.

This section outlines the distribution of traffic generated by the Moorebank IMT development based on information extracted from a strategic model developed for the Project.

8.1 Strategic modelling

Strategic modelling has been undertaken to investigate the traffic related changes associated with the Moorebank IMT Project. This analysis has been based on utilising the Transport for New South Wales (TfNSW) strategic models to examine the projected changes on truck volumes resulting from the operations of the 'with Moorebank IMT' as compared to the 'base case' without Moorebank IMT.

The travel demand sources available to the study include:

- Sydney Strategic Travel Model (STM).
- Light Commercial Vehicle Model (LCVM).
- Freight Movement Model (FMM) for rigid and articulated commercial vehicles.

These three components provide the travel demand across the highway network. The supply of highway network has been based on:

- Roads and Maritime Services (RMS) highway network as used in the STM.

These four data sources are outlined in Table 8.1.

Table 8.1 Strategic model components

Demand/Supply	Data	Class of vehicles	Sources
Demand	Background traffic	Car	STM
		Light commercial vehicles	LCVM
		Rigid trucks	FMM
		Articulated trucks (non-Port Botany and Moorebank IMT)	FMM
	Port Botany and Moorebank IMT	Articulated trucks	FMM
Supply	Highway Network	All	RMS networks as used in the STM highway assignment

These data sources have all been developed with the same geographic coverage and modelling zoning system (2006 travel zones) to provide a compatible set of travel demand trip tables.

Details of the strategic modelling are provided in the Strategic Traffic Modelling report in **Appendix J**.

The STM was supplied with a 2011 base year and future networks for 2016 to 2041 in 5 year increments. Table 8.2 lists the changes that the STM road network should contain as per the documentation supplied with the model. It is noted that the form/alignment of some of the projects identified in Table 8.2 may differ from the latest planning documentation and this is because the detailed investigations around these projects are still underway.

Table 8.2 Planned network changes

Year	Road	Detail
2016	Hunter Expressway	Four-lane expressway from the M1 Pacific Motorway to Branxton.
	M2 widening	Widen from Windsor Road to Delhi Road.
	M5 widening	Widening Camden Valley Way to King Georges Road.
	Western Sydney Employment Hub	Link roads to the M7 Motorway.
	Great Western Highway widening	Widening the highway to four/three lanes between Emu Plains and Mount Victoria.
	South West Rail Link via East Hills	There are some changes to the road network around Edmondson Park that are likely to be related to this project (i.e. links to rail stations, etc.).
2021	WestConnex Stage 2: M5 East Duplication	Duplication from M5 East to King Georges Road It is noted that the changes included in the 2021 network extend to parts of the WestConnex project beyond the M5 East duplication such as the Sydney Airport Access Link, etc. (as per the WestConnex – Sydney's next motorway priority, October 2012, RMS document).
	North West Rail Link to Rouse Hill	There are changes to the 2021 model road network around Kellyville which is likely to be associated with this project.
2026	WestConnex Stage 2: M4 Extension and M4 Widening	M4 widening and extension from Parramatta to Haberfield.
	NW Growth Centre	The 2026 model road network includes changes to links in the area to the north west of the M7 which are likely to be related to this project.
2031	M2 to M1 Tunnel (NorthConnex)	Connection between M2 and M1 at Wahroonga.
	SW Growth Centre	This is seen in the model as various network changes (i.e. new links, upgraded links, etc.) to the west of the Hume Highway and the M7.

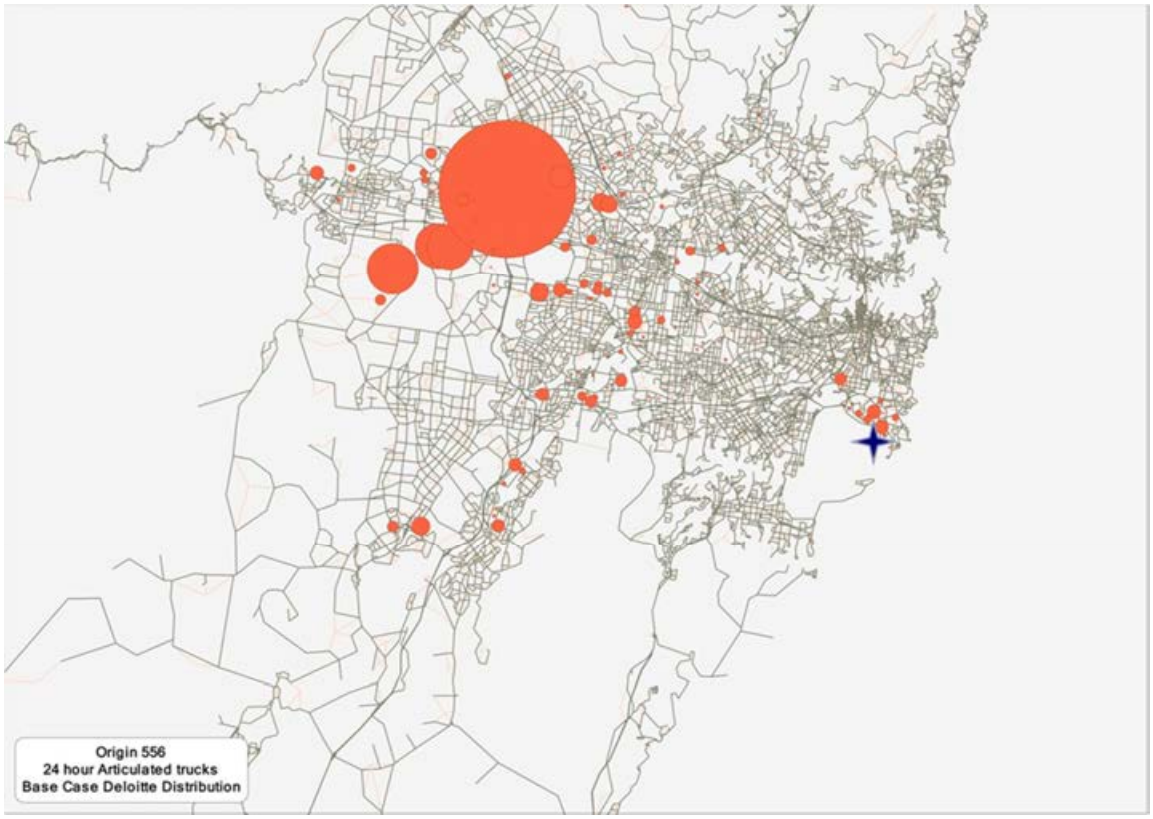
Source: STM network changes (BTS)

The changes between each of the forecast years are shown in the Strategic Traffic Modelling report in **Appendix L**. However there are changes to the road network which are not covered in Table 8.2 (i.e. not discussed in the documentation provided with the model). The most notable of these changes is the extension of Cambridge Avenue to Campbelltown Road which first appears in 2026 and is also present in the 2031 network. This is the only change that is likely to have a significant bearing on the results of the investigations relating to the Moorebank IMT. Discussions with Roads and Maritime Services indicate that this extension is not currently part of the future 2031 network. Therefore the modelling undertaken for this study has removed this extension from the model network.

The future STM road network changes have been included in the strategic modelling undertaken for the Project. The relevant road network upgrades as stated in Table 8.2 have been included in future 2031 strategic modelling to assess the impacts of the Project traffic on the road network in terms of volume change, as well as vehicle kilometres travelled (VKT) and vehicle hours travelled (VHT).

The strategic model was used to compare the demand with and without the Moorebank IMT based on the 2031 daily forecasts of articulated vehicles associated with container freight based on information provided by Deloitte. Plots of the comparisons are shown in Figure 8.1 to Figure 8.3. The red circles represent the relative size of the demand to and from either Port Botany or Moorebank IMT (indicated as blue star).

From Port Botany



To Port Botany

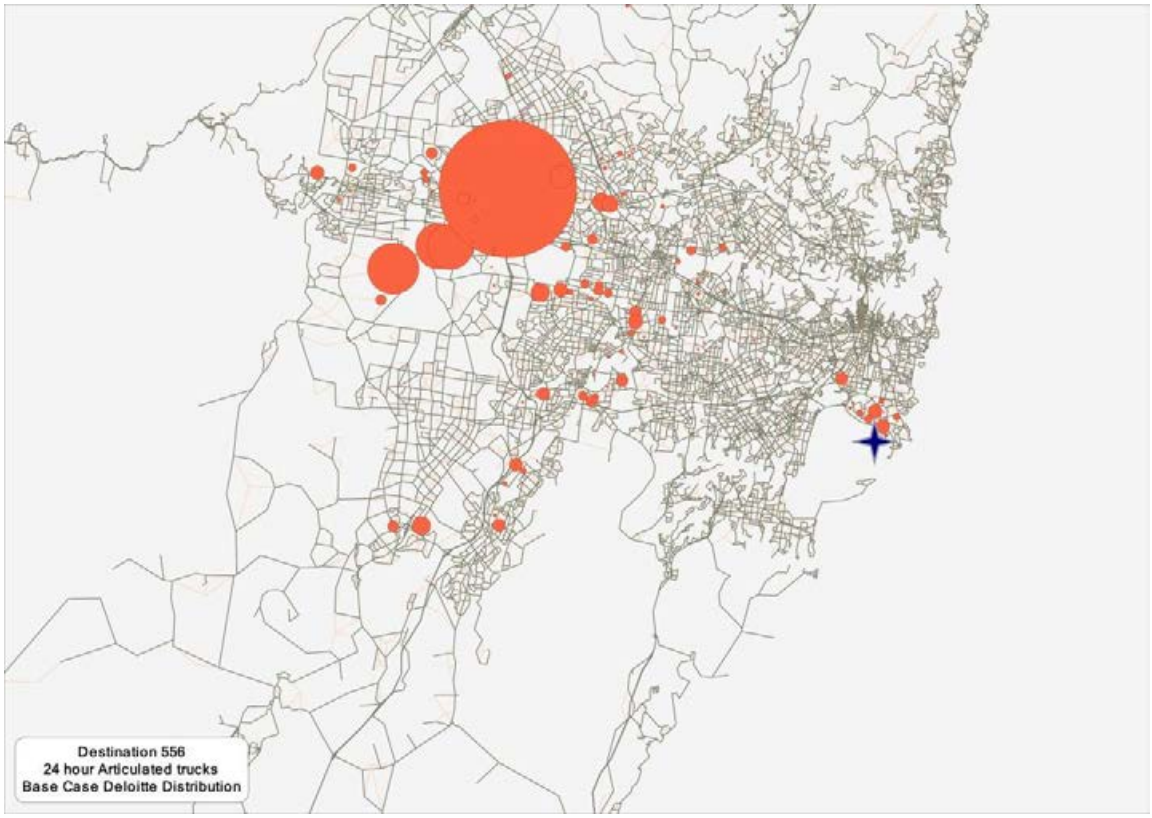
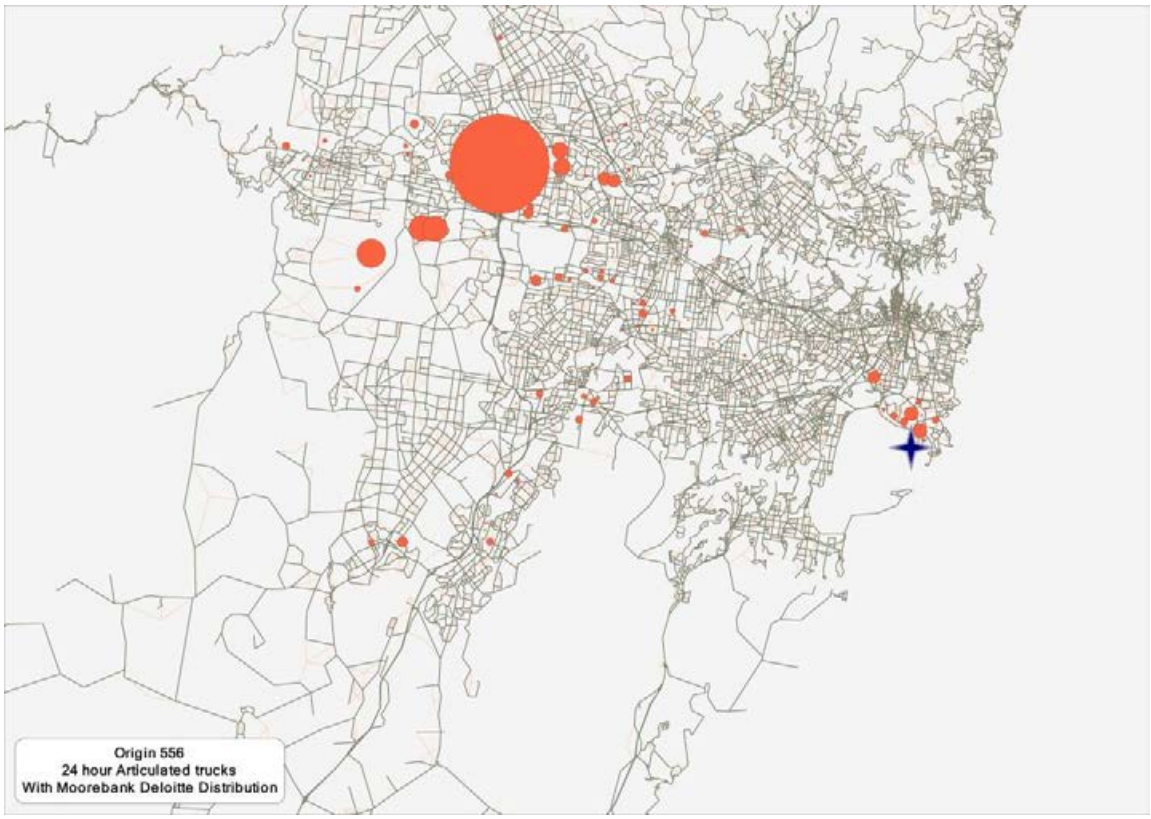


Figure 8.1 Base case articulated truck distributions to/from Port Botany

From Port Botany



To Port Botany

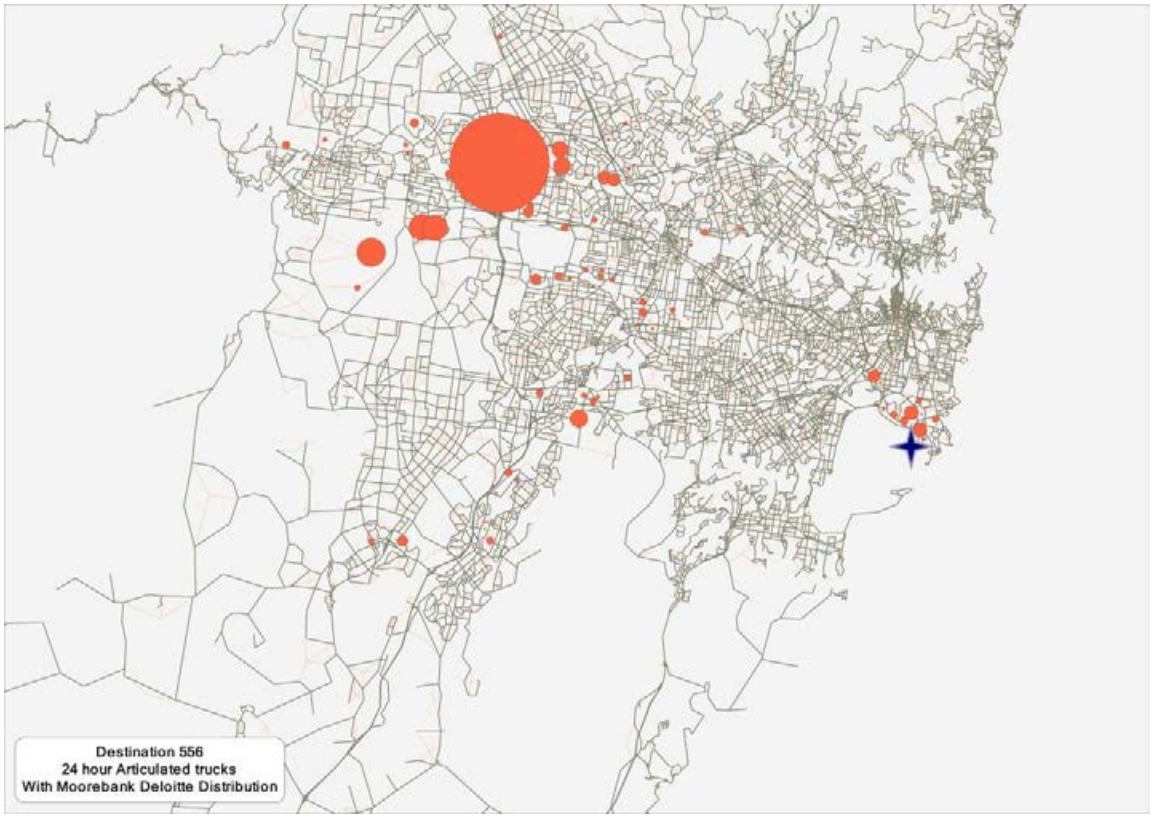
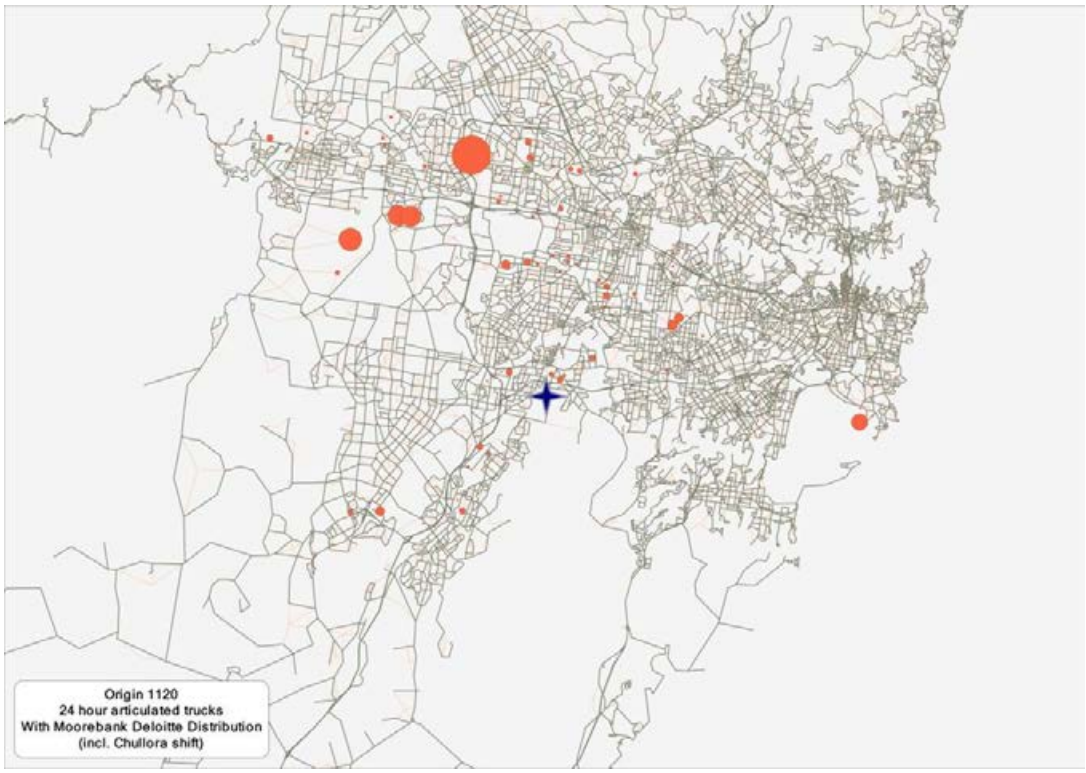


Figure 8.2 Articulated truck distributions to/from Port Botany with Moorebank IMT

From Moorebank



To Moorebank

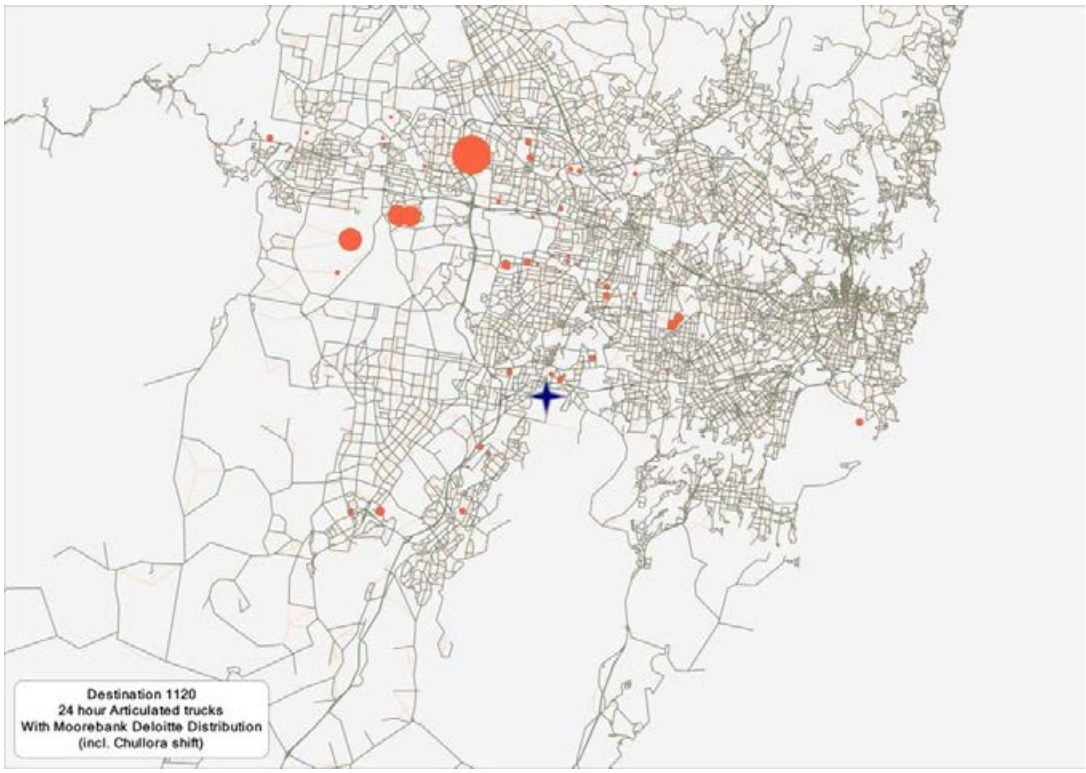


Figure 8.3 Articulated truck distributions to/from Moorebank with Moorebank IMT

8.1.1 Network performance

The performance of the whole network can be assessed by considering the VKT and VHT travelled in each of the assignments by the users of the road network in 2031.

The results indicate that:

- With Moorebank IMT there will be a decrease in both VKT and VHT across the Sydney metropolitan road network as a whole, with most of the reductions seen in articulated truck movements. Although articulated truck trips to and from Port Botany see the greatest reduction in VKT and VHT, other (i.e. background) articulated truck traffic are also expected to see decreases in VKT and VHT under the with Moorebank IMT case.
- On an average weekday the implementation of the Moorebank IMT will result in a reduction of 56,125 vehicle kilometres travelled and 1,265 vehicle hours travelled by trucks across the network.
- At Moorebank and Port Botany, the Moorebank IMT will result in 36,185 fewer vehicle kilometres travelled and 670 fewer vehicle hours travelled by articulated trucks to and from Port Botany and Moorebank per day.

This is accompanied by a daily saving of approximately 2,530 VHT for non-truck traffic across the Sydney road network. The vehicle kilometres for non-truck traffic increased by approximately 10,670 VKT, this is probably caused by traffic migrating from adjacent routes to take advantage of the reduction in congestion along the M5.

Further details of the forecast changes in VKT and VHT for other key roads in the Sydney network are discussed in the Strategic Traffic Modelling Report in **Appendix L**.

8.1.2 Moorebank IMT traffic distribution

The distribution of traffic generated by the Moorebank IMT (as identified in Table 6.8 to 6.10) and associated developments is based on the results of strategic modelling discussed in section 8.1.1. For the purposes of the modelling it is assumed that the origin and destination for vehicles would be similar. This is based on the assumption that vehicles would return to their origin after travelling to the Moorebank IMT. The distribution of traffic may be different for light and heavy vehicles. Heavy vehicles generated by the Project site would travel to and from the M5 interchange where they would be distributed amongst the road network to travel to their destinations throughout the Sydney region.

The design of the Moorebank IMT proposed truck access does not allow for southbound heavy vehicle movements. This is to prevent heavy vehicles generated by the Moorebank IMT travelling south along Moorebank Avenue to areas of the road network (Cambridge Avenue) which may not be able to able to cater for the vehicle types generated by the Moorebank IMT. B-Double vehicles are not permitted to use Anzac Road.

Table 8.3 shows the assumed distribution of traffic generated by the Project site in 2030. This distribution of light and heavy vehicles is based upon the STM and FMM model which does not distribute freight related heavy vehicle traffic onto Anzac Road.

Table 8.3 Moorebank IMT traffic distribution in 2030

Direction	Distribution (%) weekday AM peak		Distribution (%) weekday PM peak	
	Light vehicles	Heavy vehicles	Light vehicles	Heavy vehicles
Moorebank Avenue – West (M5)	20.0%	45.3%	20.0%	44.8%
Moorebank Avenue – West (Hume Highway)	18.5%	19.6%	18.5%	20.0%
Moorebank Avenue – North (Moorebank Avenue)	7.7%	27.9%	7.7%	13.9%
Moorebank Avenue – East (M5)	13.3%	7.2%	13.3%	21.3%
Moorebank Avenue – East (Anzac Road)	10.5%	0.0%	10.5%	0.0%
Moorebank Avenue – South (Moorebank Avenue)	30.0%	0.0%	30.0%	0.0%

Source: STM and FMM models (BTS)

Appendix E
Traffic and Transport Impact Assessment

9. Intersection analysis

Summary of changes from the Environmental Impact Statement Traffic and Transport Assessment:

– Additional intersection assessment for the wider road network has been completed for 2015, 2016, 2019, 2023, 2025, 2028 and 2030 based upon revised traffic generation, distribution and heavy vehicle peak hour percentages of daily traffic generation.
– Mitigation measures have been proposed for intersection upgrades and/or changes to signal timings to return the intersection to base year operation (condition) shall the intersection fail under background traffic alone.
– Proposed intersection upgrades and modifications and the timing for implementation are included at the end of this section.

The following tasks have been undertaken to analyse intersection performance:

1. Apply the annual growth to the 2010 and 2014 AM and PM intersection counts to calculate future year background traffic volumes.
2. Analyse the intersections in SIDRA for the future interim years and the ultimate year without the generated traffic from the Project site. Intersection phasing and cycle times were based on the IDM SCATS data provided by RMS.
3. Add traffic generated by the Moorebank IMT (construction, IMEX and IS staff, heavy vehicles and warehouse generators) for all future year assessment.
4. Analysis of the intersections in SIDRA for all future year assessment with Moorebank IMT traffic.

9.1 Intersection performance

9.1.1 I-01 – Hume Highway/Orange Grove Road

Table 9.1 I-01 intersection performance results

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Early Works	2014 Base	0.88	31	C	220	0.96	44	D	269
	2015 Base	0.88	31	C	224	0.96	45	D	271
	2015 with Moorebank IMT	0.88	31	C	226	0.96	45	D	272
	2015 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 1	2016 Base	0.88	31	C	230	0.96	45	D	272
	2016 with Moorebank IMT	0.89	31	C	242	0.98	47	D	290
	2016 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Scenario 2a	2019 Base	0.89	31	C	241	0.98	49	D	291
	2019 with Moorebank IMT	0.89	32	C	249	1.00	53	D	330
	2019 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative Scenario C1	2020 Cum. C1	0.94	33	C	283	1.04	59	E	376
	2020 Cum. C1 with intersection upgrades/ modifications	N/A	N/A	N/A	N/A	1.00	56	D	322
Scenario 2b	2023 Base	0.91	32	C	255	0.99	54	D	329
	2023 with Moorebank IMT	0.93	33	C	274	1.05	62	E	386
	2023 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	1.00	60	E	361
	2025 Base	0.92	33	C	257	1.01	56	E	335
	2025 with Moorebank IMT	1.02	39	C	309	1.07	64	E	410
	2025 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	1.02	62	E	369
	2028 Base	0.94	34	C	270	1.03	61	E	362
	2028 with Moorebank IMT	1.06	43	D	357	1.11	73	F	472
	2028 Moorebank IMT with intersection upgrades/modifications	1.04	40	C	341	0.98	59	E	440
Scenario 3	2030 Base	0.94	35	C	288	1.04	63	E	372
	2030 with Moorebank IMT	1.07	44	D	375	1.11	76	F	488
	2030 Moorebank IMT with intersection upgrades/modifications	1.07	44	D	378	1.00	62	E	448
Cumulative Scenario A	2030 Cumulative A	1.10	49	D	420	1.14	82	F	528
	2030 Cum. A with intersection upgrades/ modifications	1.10	49	D	420	1.03	68	E	479
Cumulative Scenario B	2030 Cumulative B	1.11	50	D	425	1.11	78	F	479
	2030 Cum. B with intersection upgrades/ modifications	1.11	49	D	429	1.00	67	E	499
Cumulative Scenario C2	2030 Cum. C2	1.10	49	D	417	1.13	80	F	502
	2020 Cum. C2 with intersection upgrades/ modifications	1.10	48	D	421	1.01	64	E	445

9.1.1.1 Performance summary and impacts

The Hume Highway and Orange Grove Road intersection would operate at worse at a LoS D in future years with Moorebank IMT in the AM peak. The DoS will exceed 1.00 from year 2025 in the AM peak. This intersection would operate with a poor LoS E from year 2023 with Moorebank IMT in the PM peak. Upgrades to the intersection have been proposed to return the intersection back to the base year level performance parameters without Moorebank IMT. This is detailed in Table 9.2.

9.1.1.2 Mitigation measures

The following mitigation measures are proposed to improve the intersections performance back to similar base level performance. This includes signal timing changes and additional short approach and departure lanes of 60 m length on the Hume Highway in the northbound direction. Refer to Figures 9.1 and 9.2.

Table 9.2 I-01 proposed intersection upgrades

Year	Existing delay (LoS)		Proposed upgrades and/or signal changes	Resulting delay (LoS)	
	AM	PM		AM	PM
I-01 – Hume Highway/Orange Grove Road					
2020 Cum C1	N/A	59 (E)	Phase timing adjusted.	N/A	56 (D)
2023	N/A	62 (E)		N/A	60 (E)
2025	N/A	64 (E)		N/A	62 (E)
2028	43 (D)	73 (F)	Provide additional approach and departure lanes of 60 m on Hume Highway in the northbound direction. Phase timing adjusted.	40 (C)	59 (E)
2030	44 (D)	76 (F)		44 (D)	62 (E)
2030 Cum A	49 (D)	82 (F)		49 (D)	68 (E)
2030 Cum B	50 (D)	78 (F)		49 (D)	67 (E)
2030 Cum C2	49 (D)	80 (F)		48 (D)	64 (E)

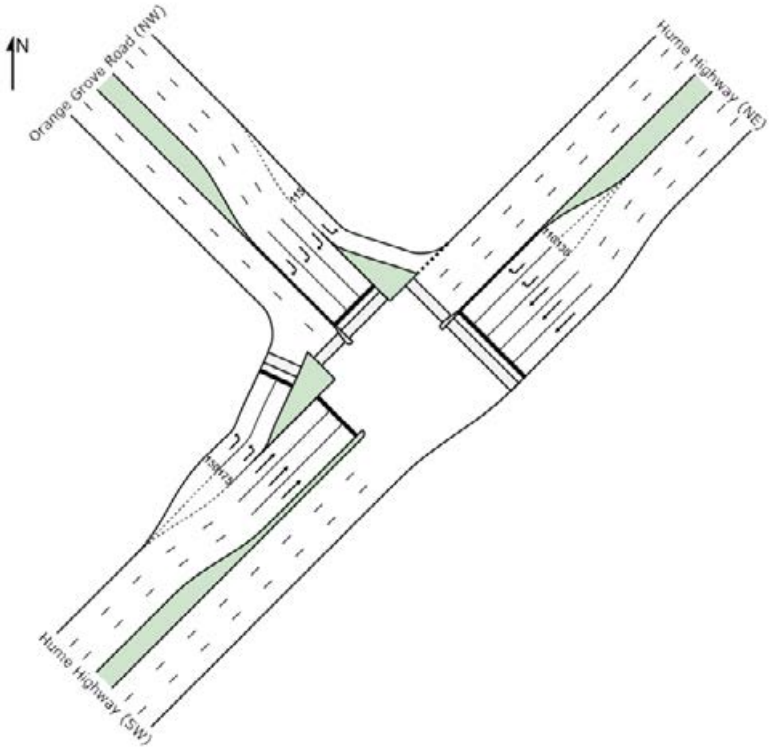


Figure 9.1 Existing intersection layout – I-01

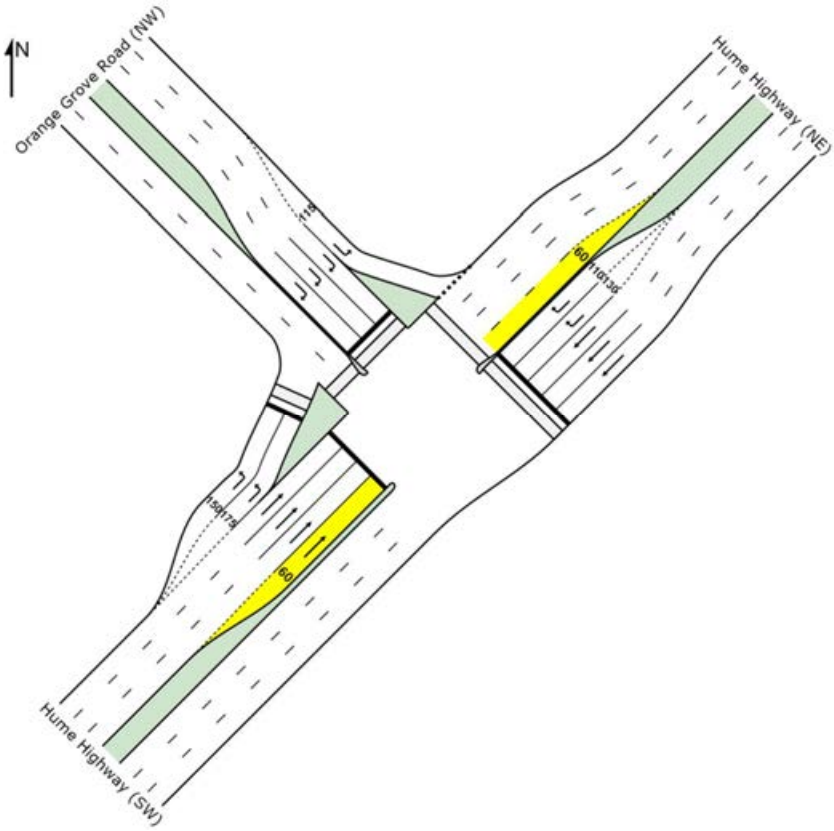


Figure 9.2 Proposed intersection layout – I-01

9.1.2 I-02 – Hume Highway/Elizabeth Drive

Table 9.3 I-02 intersection performance results

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Early Works	2014 Base	1.10	58	E	313	0.99	47	D	235
	2015 Base	1.11	59	E	318	0.99	47	D	239
	2015 with Moorebank IMT	1.11	59	E	318	0.99	47	D	237
	2015 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 1	2016 Base	1.12	60	E	323	1.00	47	D	239
	2016 with Moorebank IMT	1.12	61	E	323	1.00	48	D	259
	2016 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 2a	2019 Base	1.16	65	E	340	1.03	48	D	257
	2019 with Moorebank IMT	1.16	66	E	340	1.03	49	D	281
	2019 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative Scenario C1	2020 Cum. C1	1.16	66	E	343	1.03	53	D	358
	2020 Cum. C1 with intersection upgrades/ modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 2b	2023 Base	1.19	72	F	381	1.07	51	D	267
	2023 with Moorebank IMT	1.19	73	F	381	1.07	53	D	313
	2023 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2025 Base	1.20	77	F	412	1.09	53	D	268
	2025 with Moorebank IMT	1.20	79	F	412	1.09	55	D	317
	2025 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2028 Base	1.23	90	F	471	1.13	56	D	277
	2028 with Moorebank IMT	1.23	93	F	471	1.13	61	E	351
	2028 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Scenario 3	2030 Base	1.27	100	F	515	1.16	59	E	286
	2030 with Moorebank IMT	1.27	104	F	515	1.16	63	E	356
	2030 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative Scenario A	2030 Cumulative A	1.27	105	F	518	1.16	62	E	341
	2030 Cum. A with intersection upgrades/ modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative Scenario B	2030 Cumulative B	1.27	104	F	515	1.16	63	E	359
	2030 Cum. B with intersection upgrades/ modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative Scenario C2	2030 Cum. C2	1.27	104	F	515	1.16	70	E	434
	2030 Cum. C2 with intersection upgrades/ modifications	1.27	104	F	515	1.16	63	E	385

9.1.2.1 Performance summary and impacts

The Hume Highway and Elizabeth Drive intersection operates at worse at a LoS E under existing conditions and at a LoS F from 2023 in the AM peak. In the PM peak, this intersection operates at a LoS D under existing conditions and at a LoS E from 2030. Upgrades to the intersection have been proposed to return the intersection back to the base year level performance parameters without Moorebank IMT. This is detailed in Table 9.4.

9.1.2.2 Mitigation measures

The following mitigation measures are proposed to improve the intersections performance back to similar base level performance. This includes signal timing changes and additional short right turn of 70 m length on Elizabeth Drive in the westbound direction for 2030 Cumulative C2 scenario. Refer to Figures 9.3 to 9.4.

Table 9.4 I-02 proposed intersection upgrades

Year	Existing delay (LoS)		Proposed upgrades and/or signal changes	Resulting delay (LoS)	
	AM	PM		AM	PM
I-02 – Hume Highway/Elizabeth Drive					
2030 Cum C2	104 (F)	70 (E)	Additional right turn lane on Elizabeth Drive. E of 70 m length. Assumed northern footpath reduced. Phase timings adjusted.	104 (F)	63 (E)

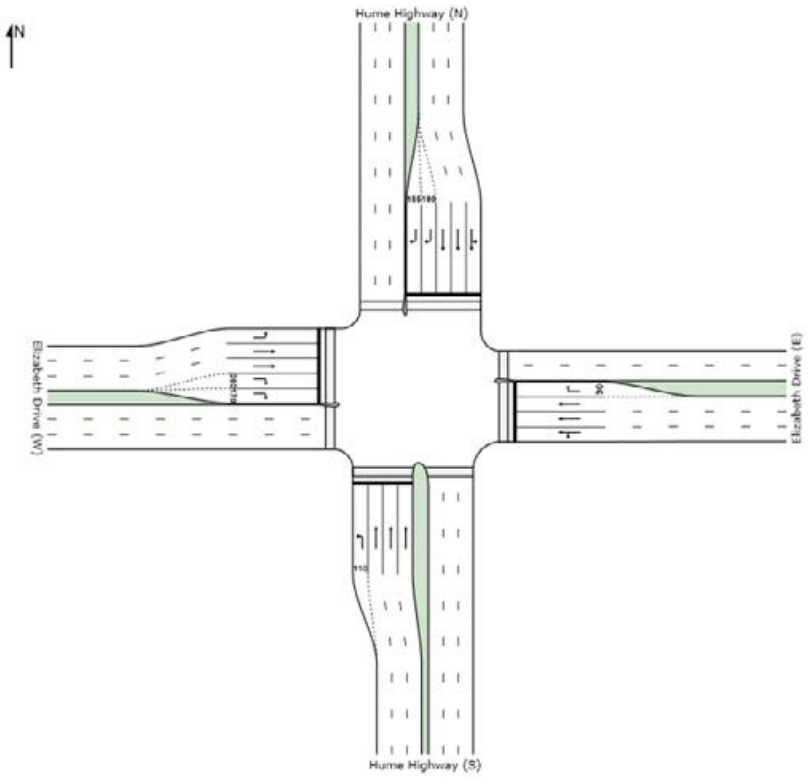


Figure 9.3 Existing intersection layout – I-02

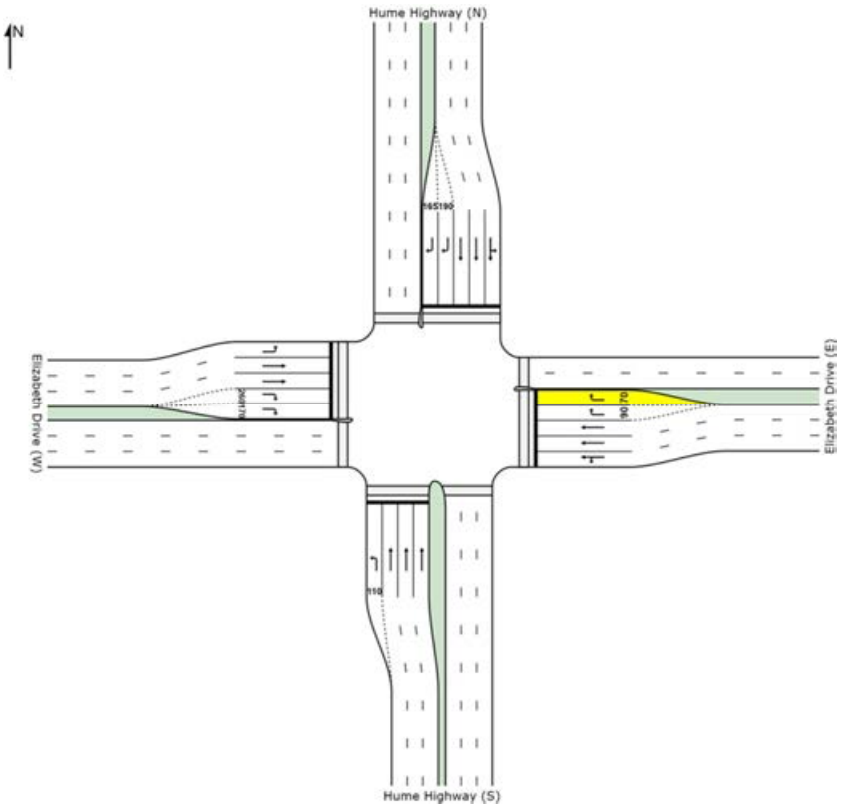


Figure 9.4 Proposed intersection layout (cumulative scenario C2 only) – I-02

9.1.3 I-03 – Hume Highway/Memorial Avenue

Table 9.5 I-03 intersection performance results

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Early Works	2014 Base	1.00	51	D	314	1.18	45	D	258
	2015 Base	1.01	52	D	319	1.19	45	D	266
	2015 with Moorebank IMT	1.01	52	D	319	1.19	45	D	266
	2015 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 1	2016 Base	1.02	54	D	324	1.20	46	D	273
	2016 with Moorebank IMT	1.03	54	D	334	1.20	46	D	280
	2016 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 2a	2019 Base	1.05	58	E	339	1.24	49	D	296
	2019 with Moorebank IMT	1.05	59	E	357	1.24	50	D	314
	2019 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative Scenario C1	2020 Cum. C1	1.06	60	E	381	1.24	50	D	338
	2020 Cum. C1 with intersection upgrades/ modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 2b	2023 Base	1.09	67	E	372	1.28	54	D	330
	2023 with Moorebank IMT	1.10	68	E	403	1.28	55	D	370
	2023 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2025 Base	1.11	72	F	395	1.30	57	E	348
	2025 with Moorebank IMT	1.12	74	F	435	1.31	58	E	401
	2025 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2028 Base	1.15	82	F	451	1.35	61	E	373
	2028 with Moorebank IMT	1.15	86	F	525	1.35	64	E	461
	2028 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Scenario 3	2030 Base	1.18	92	F	504	1.39	66	E	404
	2030 with Moorebank IMT	1.26	102	F	583	1.38	68	E	472
	2030 Moorebank IMT with intersection upgrades/modifications	1.26	89	F	503	1.30	59	E	425
Cumulative Scenario A	2030 Cumulative A	1.26	105	F	610	1.38	69	E	503
	2030 Cum. A with intersection upgrades/ modifications	1.26	91	F	526	1.30	60	E	452
Cumulative Scenario B	2030 Cumulative B	1.26	104	F	591	1.38	68	E	456
	2030 Cum. B with intersection upgrades/ modifications	1.26	91	F	510	1.30	59	E	410
Cumulative Scenario C2	2030 Cum. C2	1.26	104	F	603	1.38	68	E	477
	2030 Cum. C2 with intersection upgrades/ modifications	1.26	91	F	520	1.30	60	E	428

9.1.3.1 Performance summary and impacts

The Hume Highway and Memorial Drive intersection operates at worse at a LoS D under existing conditions and at a LoS E from 2019 in the AM peak. In the PM peak, this intersection operates at a LoS D under existing conditions and at a LoS E from 2025. Upgrades to the intersection have been proposed to return the intersection back to the base year level performance parameters without Moorebank IMT. This is detailed in Table 9.6.

9.1.3.2 Mitigation measures

The following mitigation measures are proposed to improve the intersections performance back to similar base level performance. This includes signal timing changes and additional short right turn of 60 m length on the Hume Highway in the northbound direction for 2030 with Moorebank IMT scenario. Refer to Figures 9.5 and 9.6.

Table 9.6 I-03 proposed intersection upgrades

Year	Existing delay (LoS)		Proposed upgrades and/or signal changes	Resulting delay (LoS)	
	AM	PM		AM	PM
I-03 – Hume Highway/Memorial Drive					
2030	102 (F)	68 (E)	Additional 60 m right turn on Hume Highway South. Phase timings adjusted.	89 (F)	59 (E)
2030 Cum A	105 (F)	69 (E)		91 (F)	60 (E)
2030 Cum B	104 (F)	68 (E)		91 (F)	59 (E)
2030 Cum C2	104 (F)	68 (E)		91 (F)	60 (E)

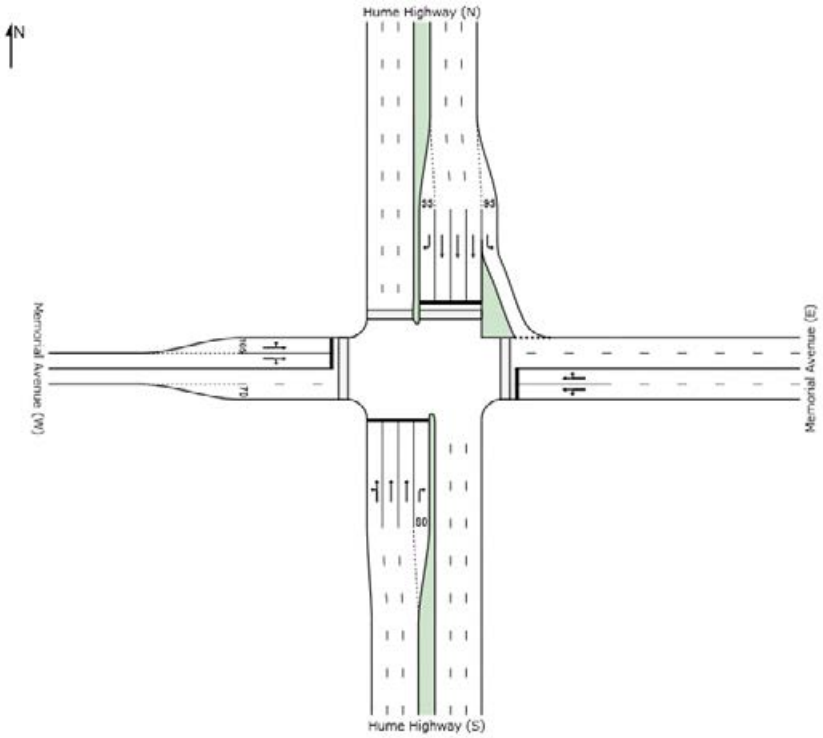


Figure 9.5 Existing intersection layout – I-03

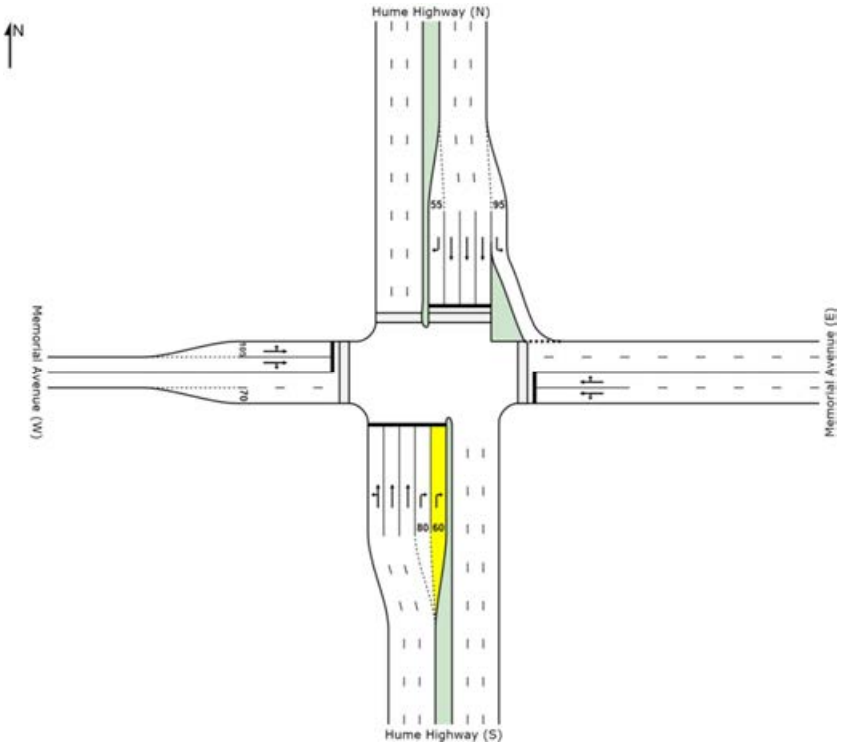


Figure 9.6 Proposed intersection layout – I-03

9.1.4 I-04 – Hume Highway/Hoxton Park Road/Macquarie Street

Table 9.7 I-04 intersection performance results

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Early Works	2014 Base	0.94	48	D	268	1.16	45	D	298
	2015 Base	0.95	49	D	272	1.19	47	D	300
	2015 with Moorebank IMT	0.95	49	D	275	1.19	47	D	301
	2015 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 1	2016 Base	0.96	50	D	277	1.22	48	D	310
	2016 with Moorebank IMT	0.96	51	D	292	1.22	48	D	327
	2016 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 2a	2019 Base	1.00	56	D	288	1.33	53	D	349
	2019 with Moorebank IMT	1.01	57	E	310	1.33	54	D	374
	2019 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative Scenario C1	2020 Cum. C1	1.05	60	E	360	1.33	55	D	402
	2020 Cum. C1 with intersection upgrades/ modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 2b	2023 Base	1.10	76	F	347	1.42	61	E	403
	2023 with Moorebank IMT	1.10	78	F	348	1.42	63	E	427
	2023 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2025 Base	1.16	85	F	379	1.44	66	E	413
	2025 with Moorebank IMT	1.16	88	F	380	1.44	69	E	442
	2025 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2028 Base	1.21	98	F	447	1.47	79	F	435
	2028 with Moorebank IMT	1.21	102	F	447	1.47	82	F	503
	2028 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Scenario 3	2030 Base	1.27	117	F	522	1.50	84	F	469
	2030 with Moorebank IMT	1.26	124	F	539	1.49	90	F	580
	2030 Moorebank IMT with intersection upgrades/modifications	1.13	115	F	503	1.41	88	F	580
Cumulative Scenario A	2030 Cumulative A	1.26	127	F	540	1.49	91	F	615
	2030 Cum. A with intersection upgrades/ modifications	1.18	110	F	502	1.32	71	F	536
Cumulative Scenario B	2030 Cumulative B	1.26	131	F	540	1.49	88	F	560
	2030 Cum. B with intersection upgrades/ modifications	1.20	114	F	541	1.29	69	E	491
Cumulative Scenario C2	2030 Cum. C2	1.26	126	F	540	1.49	90	F	584
	2030 Cum. C2 with intersection upgrades/ modifications	1.19	111	F	505	1.30	70	E	510

9.1.4.1 Performance summary and impacts

The Hume Highway and Hoxton Park Road intersection operate at worse at a LoS D under existing conditions and at a LoS E or worse from 2023 in both the AM and PM peaks. Upgrades to the intersection have been proposed to return the intersection back to the base year level performance parameters without Moorebank IMT. This is detailed in Table 9.8.

9.1.4.2 Mitigation measures

The following mitigation measures are proposed to improve the intersections performance back to similar base level performance. This includes signal timing changes and additional short right turn of 75 m length on the Hume Highway in the southbound direction for 2030 with Moorebank IMT scenario. Refer to Figures 9.7 and 9.8.

Table 9.8 I-04 proposed intersection upgrades

Year	Existing delay (LoS)		Proposed upgrades and/or signal changes	Resulting delay (LoS)	
	AM	PM		AM	PM
I-04 – Hume Highway/Hoxton Park Road/Macquarie Street					
2030	124 (F)	90 (F)	Phase timings adjusted.	115 (F)	88 (F)
2030 Cum A	127 (F)	91 (F)	Additional right turn lane (75 m) on Hume Highway north. Phase timings adjusted.	110 (F)	71 (F)
2030 Cum B	131 (F)	88 (F)		114 (F)	69 (E)
2030 Cum C2	126 (F)	90 (F)		111 (F)	70 (F)

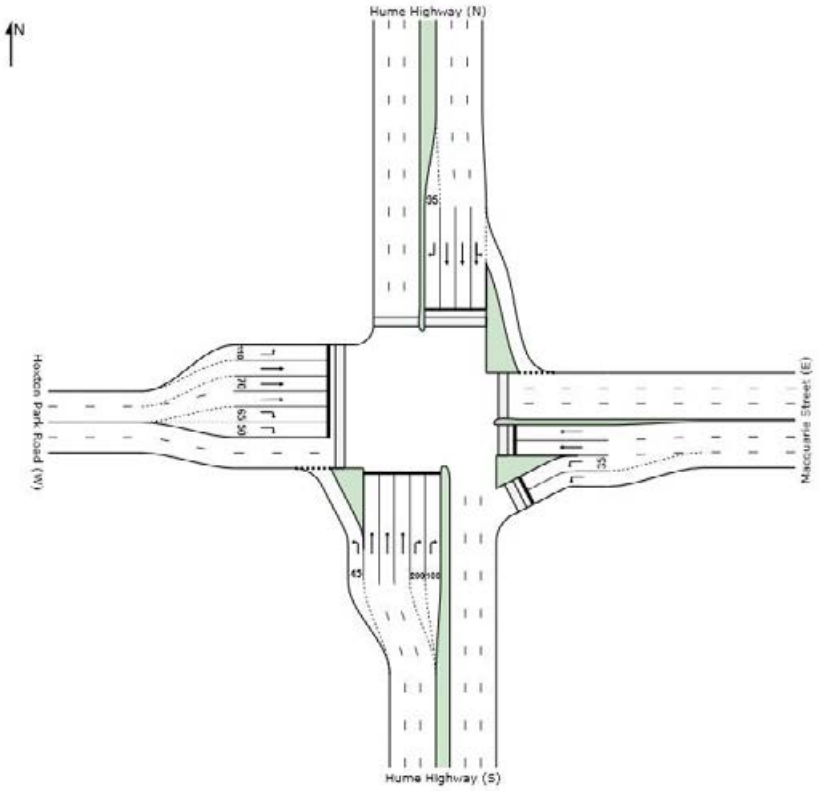


Figure 9.7 Existing intersection layout – I-04

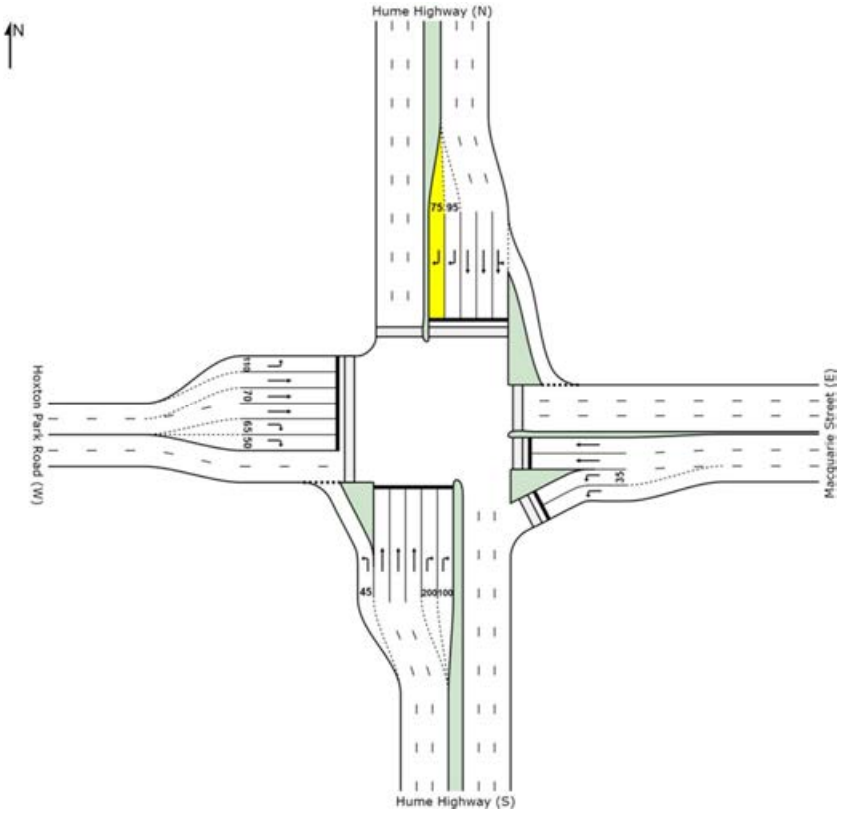


Figure 9.8 Proposed intersection layout – I-04

9.1.5 I-05 – Hume Highway/Reilly Street

Table 9.9 I-05 intersection performance results

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Early Works	2014 Base	0.89	17	B	273	0.93	16	B	280
	2015 Base	0.90	17	B	274	0.94	16	B	296
	2015 with Moorebank IMT	0.90	17	B	274	0.94	17	B	299
	2015 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 1	2016 Base	0.91	17	B	275	0.94	17	B	312
	2016 with Moorebank IMT	0.91	17	B	283	0.94	19	B	362
	2016 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 2a	2019 Base	0.94	18	B	291	0.97	20	B	368
	2019 with Moorebank IMT	0.91	18	B	307	0.97	24	B	468
	2019 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Cumulative Scenario C1	2020 Cum. C1	0.97	18	B	328	0.97	28	B	578
	2020 Cum. C1 with intersection upgrades/ modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 2b	2023 Base	0.99	20	B	349	0.98	26	B	519
	2023 with Moorebank IMT	0.97	21	B	397	0.98	32	C	685
	2023 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2025 Base	1.01	22	B	378	1.00	31	C	642
	2025 with Moorebank IMT	1.02	24	B	441	1.00	38	C	876
	2025 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2028 Base	1.04	24	B	414	1.03	36	C	787
	2028 with Moorebank IMT	1.04	29	C	524	1.03	47	D	1010
	2028 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 3	2030 Base	1.06	27	B	462	1.06	42	C	941
	2030 with Moorebank IMT	1.06	31	C	572	1.06	53	D	1060
	2030 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative Scenario A	2030 Cumulative A	1.07	34	C	615	1.06	56	D	1093
	2030 Cum. A with intersection upgrades/ modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative Scenario B	2030 Cumulative B	1.09	34	C	596	1.06	51	D	1041
	2030 Cum. B with intersection upgrades/ modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative Scenario C2	2030 Cum. C2	1.08	34	C	607	1.06	54	D	1065
	2030 Cum. C2 with intersection upgrades/ modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

9.1.5.1 Performance summary and impacts

The Hume Highway and Reilly Street intersection operates at worse at a LoS D under future conditions in 2030. No upgrades are proposed at this intersection.

9.1.6 I-06 – Newbridge Road/Moorebank Avenue

Table 9.10 I-06 intersection performance results

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Early Works	2014 Base	0.90	26	B	186	0.90	31	C	196
	2015 Base	0.93	28	B	200	0.92	32	C	200
	2015 with Moorebank IMT	0.93	28	B	200	0.93	32	C	200
	2015 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 1	2016 Base	0.96	30	C	216	0.95	32	C	205
	2016 with Moorebank IMT	1.01	32	C	216	0.97	34	C	211
	2016 Moorebank IMT with intersection upgrades/modifications	1.00	31	C	216	0.97	34	C	211
Scenario 2a	2019 Base	1.12	44	D	287	1.01	38	C	239
	2019 with Moorebank IMT	1.10	47	D	287	1.04	48	D	278
	2019 Moorebank IMT with intersection upgrades/modifications	1.07	44	D	287	1.05	49	D	278
Cumulative Scenario C1	2020 Cumulative C1	1.20	57	E	341	1.11	64	E	300
	2020 Cum. C1 with intersection upgrades/ modifications	1.17	54	D	315	1.14	54	D	405
Scenario 2b	2023 Base	1.29	73	F	409	1.07	56	D	317
	2023 with Moorebank IMT	1.29	80	F	410	1.12	81	F	441
	2023 Moorebank IMT with intersection upgrades/modifications	1.26	76	F	405	1.20	64	E	480
	2025 Base	1.38	89	F	480	1.10	73	F	392
	2025 with Moorebank IMT	1.38	97	F	475	1.14	96	F	522
	2025 Moorebank IMT with intersection upgrades/modifications	1.34	91	F	467	1.29	85	F	586
	2028 Base	1.50	110	F	585	1.15	87	F	458
	2028 with Moorebank IMT	1.55	125	F	625	1.17	115	F	637
	2028 Moorebank IMT with intersection upgrades/modifications	1.51	120	F	591	1.36	112	F	679

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Scenario 3	2030 Base	1.58	134	F	650	1.19	99	F	520
	2030 with Moorebank IMT	1.70	151	F	759	1.21	127	F	688
	2030 Moorebank IMT with intersection upgrades/modifications	1.60	139	F	706	1.29	123	F	643
Cumulative Scenario A	2030 Cumulative A	1.85	173	F	892	1.22	139	F	739
	2030 Cum. A with intersection upgrades/ modifications	1.66	154	F	720	1.43	124	F	743
Cumulative Scenario B	2030 Cumulative B	1.93	184	F	967	1.20	125	F	631
	2030 Cum. B with intersection upgrades/ modifications	1.51	156	F	667	1.33	110	F	658
Cumulative Scenario C2	2030 Cumulative C2	1.86	173	F	896	1.21	131	F	678
	2030 Cum. C2 with intersection upgrades/ modifications	1.42	144	F	598	1.36	116	F	689

9.1.6.1 Performance summary and impacts

The Moorebank Avenue and Newbridge Road intersection would operate satisfactorily until 2023. From 2023, this intersection would perform at LoS F. Upgrades to the intersection have been proposed to return the intersection back to the base year level performance parameters without Moorebank IMT. This is detailed in Table 9.11.

9.1.6.2 Mitigation measures

The following mitigation measures are proposed to improve the intersections performance back to similar base level performance. This includes signal timing changes and increased left turn of 150 m length on Newbridge Road in the westbound direction in 2030. Refer to Figures 9.9 and 9.10.

Table 9.11 I-06 proposed intersection upgrades

Year	Existing delay (LoS)		Proposed upgrades and/or signal changes	Resulting delay (LoS)	
	AM	PM		AM	PM
I-06 – Newbridge Road/Heathcote Road					
2016	32 (C)	34 (C)	Phase timing adjusted.	31 (C)	34 (C)
2019	47 (D)	48 (D)		44 (D)	49 (D)
2020 Cum C1	57 (E)	64 (E)		54 (D)	54 (D)
2023	80 (F)	81 (F)		76 (F)	64 (E)
2025	97 (F)	96 (F)		91 (F)	85 (F)
2028	125 (F)	115 (F)		120 (F)	112 (F)
2030	151 (F)	127 (F)		139 (F)	123 (F)

Year	Existing delay (LoS)		Proposed upgrades and/or signal changes	Resulting delay (LoS)	
	AM	PM		AM	PM
I-06 – Newbridge Road/Heathcote Road					
2030 Cum A	173 (F)	139 (F)	Extend left turn lane on Newbridge Road east to 150 m in length. Phase timing adjusted.	154 (F)	124 (F)
2030 Cum B	184 (F)	125 (F)		156 (F)	110 (F)
2030 Cum C2	173 (F)	131 (F)		144 (F)	116 (F)

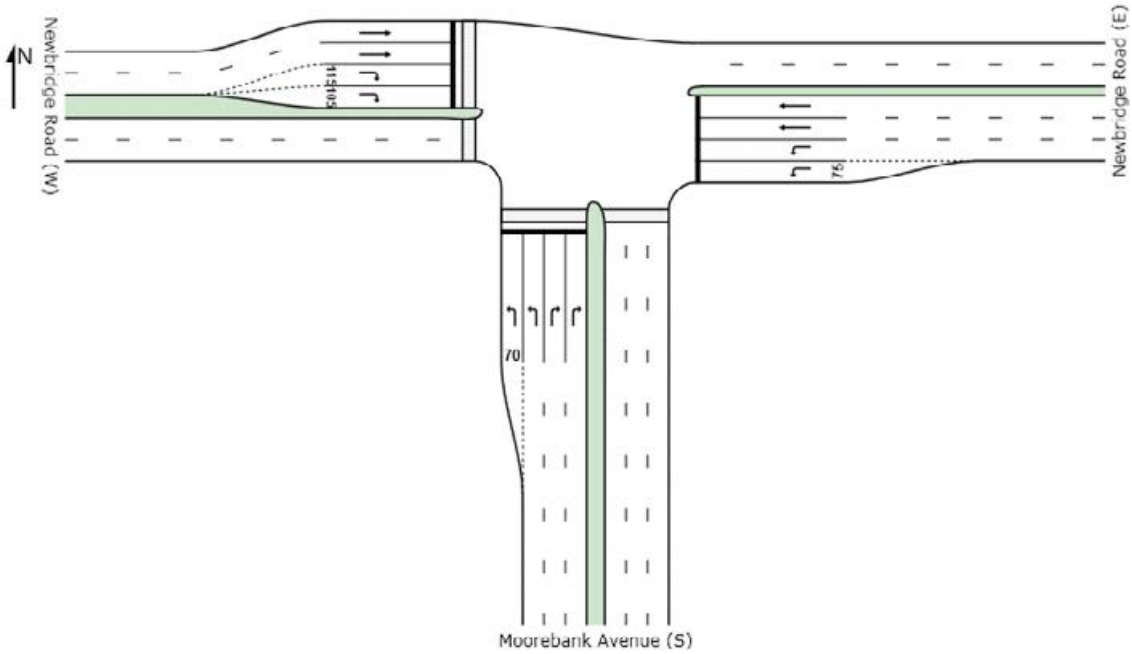


Figure 9.9 Existing intersection layout – I-06

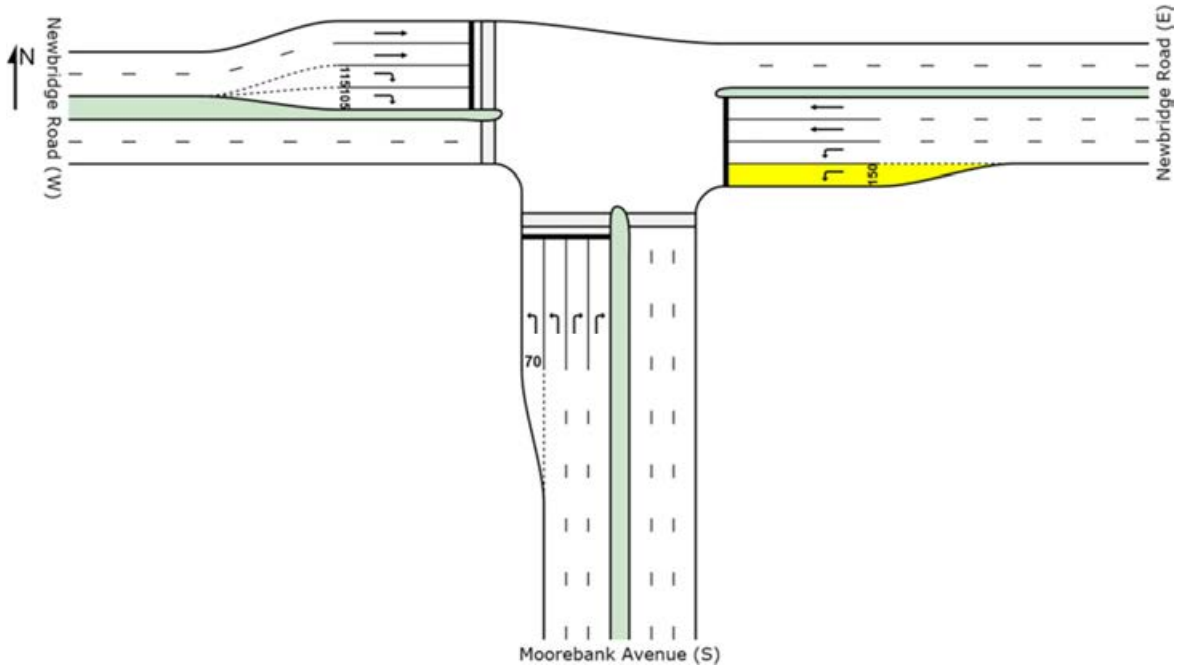


Figure 9.10 Proposed intersection layout – I-06

9.1.7 I-07 – Heathcote Road/Moorebank Avenue

Table 9.12 I-07 intersection performance results

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Early Works	2014 Base	0.93	27	B	239	0.89	16	B	176
	2015 Base	1.00	36	C	311	0.91	16	B	189
	2015 with Moorebank IMT	1.01	36	C	317	0.91	16	B	189
	2015 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 1	2016 Base	1.06	50	D	441	0.94	17	B	203
	2016 with Moorebank IMT	1.11	66	E	441	0.94	17	B	205
	2016 Moorebank IMT with intersection upgrades/modifications	1.03	55	D	441	0.87	16	B	144
Scenario 2a	2019 Base	1.16	82	F	452	1.07	27	B	320
	2019 with Moorebank IMT	1.23	118	F	525	1.07	27	B	325
	2019 Moorebank IMT with intersection upgrades/modifications	1.10	87	F	441	1.01	24	B	171
Cumulative Scenario C1	2020 Cumulative C1	1.26	135	F	560	1.12	34	C	363
	2020 Cum. C1 with intersection upgrades/ modifications	1.12	107	F	441	1.03	27	B	197
Scenario 2b	2023 Base	1.34	170	F	645	1.30	58	E	581
	2023 with Moorebank IMT	1.37	178	F	697	1.31	61	E	587
	2023 Moorebank IMT with intersection upgrades/modifications	1.23	173	F	441	1.18	46	D	293
	2025 Base	1.37	182	F	685	1.30	80	F	572
	2025 with Moorebank IMT	1.42	179	F	751	1.43	88	F	729
	2025 Moorebank IMT with intersection upgrades/modifications	1.30	176	F	441	1.29	65	E	371
	2028 Base	1.37	178	F	704	1.36	93	F	646
	2028 with Moorebank IMT	1.44	172	F	795	1.50	106	F	816
	2028 Moorebank IMT with intersection upgrades/modifications	1.30	157	F	441	1.35	80	F	423

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Scenario 3	2030 Base	1.39	207	F	706	1.42	107	F	690
	2030 with Moorebank IMT	1.45	205	F	785	1.42	115	F	692
	2030 Moorebank IMT with intersection upgrades/modifications	1.30	206	F	473	1.28	85	F	364
Cumulative Scenario A	2030 Cumulative A	1.46	203	F	795	1.46	136	F	717
	2030 Cum. A with intersection upgrades/ modifications	1.30	200	F	472	1.28	89	F	441
Cumulative Scenario B	2030 Cumulative B	1.44	208	F	768	1.50	147	F	736
	2030 Cum. B with intersection upgrades/ modifications	1.30	204	F	473	1.28	91	F	441
Cumulative Scenario C2	2030 Cumulative C2	1.45	205	F	781	1.49	144	F	730
	2030 Cum. C2 with intersection upgrades/ modifications	1.30	202	F	473	1.28	89	F	441

9.1.7.1 Performance summary and impacts

The Moorebank Avenue and Heathcote Road intersection would operate satisfactorily until 2016 in the AM peak and 2023 in the PM peak. From 2019 in the AM peak and 2025 in the PM peak, this intersection would perform at a LoS F. Upgrades to the intersection have been proposed to return the intersection back to the base year level performance parameters without Moorebank IMT. This is detailed in Table 9.13.

9.1.7.2 Mitigation measures

The following mitigation measures are proposed to improve the intersections performance back to similar base level performance. This includes signal timing changes and the removal of the short bus lane on Heathcote Road and replacing with a combined left and right turn lane it its location and the second lane becoming a dedicated right turn lane. Refer to Figures 9.11 and 9.12.

Table 9.13 I-07 proposed intersection upgrades

Year	Existing delay (LoS)		Proposed upgrades and/or signal changes	Resulting delay (LoS)	
	AM	PM		AM	PM
I-07 – Heathcote Road/Moorebank Avenue					
2016	66 (E)	17 (B)	Change Bus lane on Heathcote Road east approach to general traffic (left/right). Phase timing adjusted.	55 (D)	16 (B)
2019	118 (F)	27 (B)		87 (F)	24 (B)
2020 Cum C1	135 (F)	34 (C)		107 (F)	27 (B)
2023	178 (F)	61 (E)		173 (F)	46 (D)
2025	179 (F)	88 (F)		176 (F)	65 (E)
2028	172 (F)	106 (F)		157 (F)	80 (F)
2030	205 (F)	115 (F)		206 (F)	85 (F)

Year	Existing delay (LoS)		Proposed upgrades and/or signal changes	Resulting delay (LoS)	
	AM	PM		AM	PM
I-07 – Heathcote Road/Moorebank Avenue					
2030 Cum A	203 (F)	136 (F)		200 (F)	89 (F)
2030 Cum B	208 (F)	147 (F)		204 (F)	91 (F)
2020 Cum C2	205 (F)	144 (F)		202 (F)	89 (F)

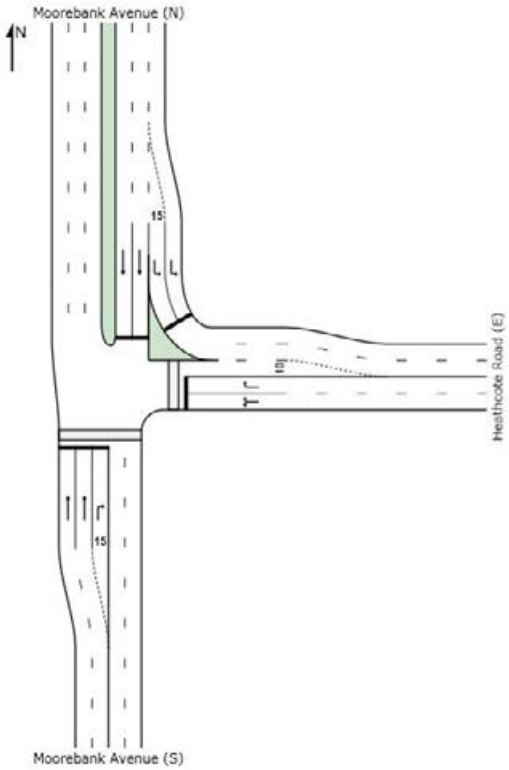


Figure 9.11 Existing intersection layout – I-07

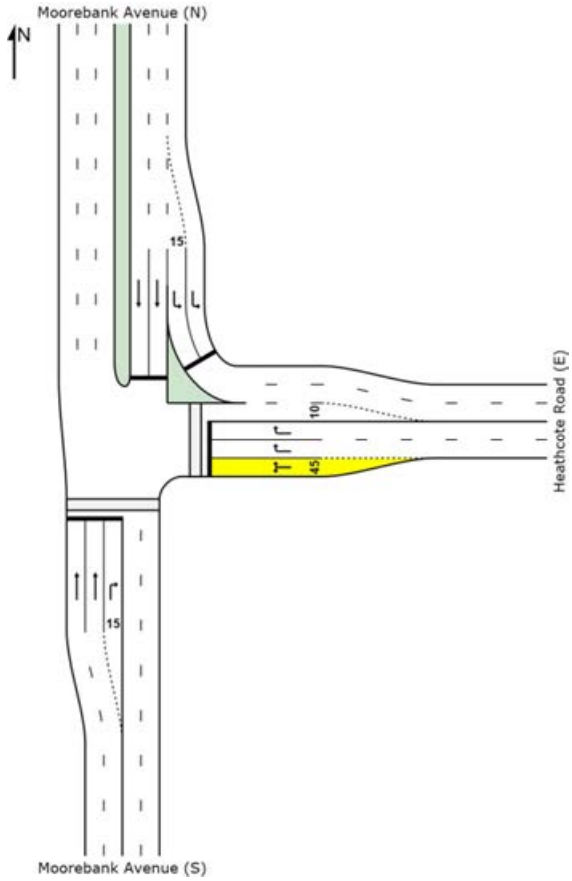


Figure 9.12 Proposed intersection layout – I-07

9.1.8 I-08 – Moorebank Avenue/Industrial Park Access

Table 9.14 I-08 intersection performance results

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Early Works	2014 Base	0.48	4	A	90	0.49	7	A	68
	2015 Base	0.49	4	A	95	0.49	7	A	69
	2015 with Moorebank IMT	0.50	4	A	96	0.49	7	A	69
	2015 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 1	2016 Base	0.64	5	A	145	0.49	7	A	69
	2016 with Moorebank IMT	0.86	12	A	266	0.50	7	A	71
	2016 Moorebank IMT with intersection upgrades/modifications	0.85	10	A	249	0.50	7	A	71

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Scenario 2a	2019 Base	1.16	82	F	452	0.49	7	A	71
	2019 with Moorebank IMT	1.14	136	F	943	0.45	8	A	90
	2019 Moorebank IMT with intersection upgrades/modifications	1.14	135	F	942	0.45	8	A	91
Cumulative Scenario C1	2020 Cumulative C1	1.16	150	F	1018	0.46	8	A	93
	2020 Cum. C1 with intersection upgrades/ modifications	1.16	150	F	1018	0.44	8	A	88
Scenario 2b	2023 Base	1.14	140	F	979	0.51	7	A	73
	2023 with Moorebank IMT	1.21	180	F	1133	0.46	8	A	93
	2023 Moorebank IMT with intersection upgrades/modifications	1.21	180	F	1133	0.45	8	A	89
	2025 Base	1.15	148	F	1012	0.52	7	A	75
	2025 with Moorebank IMT	1.24	200	F	1220	0.46	8	A	92
	2025 Moorebank IMT with intersection upgrades/modifications	1.24	200	F	1220	0.46	8	A	91
	2028 Base	1.17	159	F	1063	0.52	7	A	74
	2028 with Moorebank IMT	1.28	227	F	1340	0.48	8	A	93
	2028 Moorebank IMT with intersection upgrades/modifications	1.28	226	F	1340	0.48	8	A	92
Scenario 3	2030 Base	1.22	187	F	1144	0.52	7	A	75
	2030 with Moorebank IMT	1.28	226	F	1335	0.50	8	A	94
	2030 Moorebank IMT with intersection upgrades/modifications	1.22	189	F	1241	0.50	8	A	95
Cumulative Scenario A	2030 Cumulative A	1.29	232	F	1375	0.70	9	A	147
	2030 Cum. A with intersection upgrades/ modifications	1.24	193	F	1280	0.57	8	A	119
Cumulative Scenario B	2030 Cumulative B	1.26	209	F	1276	0.79	11	A	177
	2030 Cum. B with intersection upgrades/ modifications	1.21	170	F	1182	0.63	9	A	132
Cumulative Scenario C2	2030 Cumulative C2	1.27	220	F	1319	0.79	10	A	171
	2030 Cum. C2 with intersection upgrades/ modifications	1.22	180	F	1226	0.61	9	A	127

9.1.8.1 Performance summary and impacts

The Moorebank Avenue and Industrial Parl Access intersection would operate satisfactorily until 2019 in the AM peak and 2030 in the PM peak. From 2019 in the AM peak, this intersection would perform at a LoS F. Upgrades to the intersection have been proposed to return the intersection back to the base year level performance parameters without Moorebank IMT. This is detailed in Table 9.15.

9.1.8.2 Mitigation measures

The following mitigation measures are proposed to improve the intersections performance back to similar base level performance. This includes signal timing changes.

Table 9.15 I-08 proposed intersection upgrades

Year	Existing Delay (LoS)		Proposed upgrades and/or signal changes	Resulting Delay (LoS)	
	AM	PM		AM	PM
I-08 – Moorebank Avenue/Industrial Park Access					
2016	12 (A)	7 (A)	Phase timing adjusted.	10 (A)	7 (A)
2019	136 (F)	8 (A)		135 (F)	8 (A)
2020 Cum C1	150 (F)	8 (A)		150 (F)	8 (A)
2023	180 (F)	8 (A)		150 (F)	8 (A)
2025	200 (F)	8 (A)		200 (F)	8 (A)
2028	227 (F)	8 (A)		226 (F)	8 (A)
2030	226 (F)	7 (A)		189 (F)	8 (A)
2030 Cum A	232 (F)	9 (A)		193 (F)	8 (A)
2030 Cum B	209 (F)	11 (A)		170 (F)	9 (A)
2030 Cum C2	220 (F)	10 (A)		180 (F)	9 (A)

9.1.9 I-09 – Moorebank Avenue/Church Road

Table 9.16 I-09 intersection performance results

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Early Works	2014 Base	0.69	67	E	60	0.91	92	F	183
	2015 Base	0.71	78	F	60	0.93	98	F	192
	2015 with Moorebank IMT	0.71	80	F	60	0.93	99	F	193
	2015 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Scenario 1	2016 Base	0.72	91	F	61	0.94	105	F	203
	2016 with Moorebank IMT	0.74	114	F	63	0.96	117	F	217
	2016 Moorebank IMT with intersection upgrades/modifications	0.74	17	B	63	0.96	101	F	216
Scenario 2a	2019 Base	0.77	163	F	67	0.99	131	F	241
	2019 with Moorebank IMT	0.80	252	F	70	1.03	160	F	278
	2019 Moorebank IMT with intersection upgrades/modifications	0.80	19	B	70	1.03	135	F	277
Cumulative Scenario C1	2020 Cumulative C1	0.84	501	F	73	1.07	235	F	312
	2020 Cum. C1 with intersection upgrades/ modifications	0.84	22	B	73	1.07	155	F	310
Scenario 2b	2023 Base	0.84	443	F	74	1.01	203	F	331
	2023 with Moorebank IMT	0.88	773	F	81	1.12	286	F	407
	2023 Moorebank IMT with intersection upgrades/modifications	0.88	43	B	81	1.15	215	F	405
	2025 Base	0.87	779	F	77	1.14	266	F	394
	2025 with Moorebank IMT	0.93	763	F	87	1.23	406	F	495
	2025 Moorebank IMT with intersection upgrades/modifications	0.93	26	B	87	1.23	278	F	493
	2028 Base	0.90	768	F	80	1.22	333	F	483
	2028 with Moorebank IMT	0.99	778	F	96	1.36	743	F	636
	2028 Moorebank IMT with intersection upgrades/modifications	0.99	31	C	96	1.36	384	F	635
Scenario 3	2030 Base	0.95	845	F	83	1.29	374	F	567
	2030 with Moorebank IMT	1.00	768	F	97	1.45	736	F	729
	2030 Moorebank IMT with intersection upgrades/modifications	1.00	32	C	13	1.45	457	F	728
Cumulative Scenario A	2030 Cumulative A	1.06	653	F	101	1.49	1257	F	766
	2030 Cum. A with intersection upgrades/ modifications	1.06	37	C	101	1.48	490	F	765

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Cumulative Scenario B	2030 Cumulative B	1.05	654	F	91	1.40	1144	F	679
	2030 Cum. B with intersection upgrades/ modifications	1.05	36	C	91	1.40	413	F	676
Cumulative Scenario C2	2030 Cumulative C2	1.03	652	F	94	1.44	1269	F	716
	2030 Cum. C2 with intersection upgrades/ modifications	1.03	35	C	94	1.43	446	F	715

9.1.9.1 Performance summary and impacts

The Moorebank Avenue and Church Road intersection operates at unsatisfactory levels of service under existing conditions. This intersection is a priority controlled T junction. Upgrades to the intersection have been proposed to return the intersection back to the base year level performance parameters without Moorebank IMT. This is detailed in Table 9.17.

9.1.9.2 Mitigation measures

The following mitigation measures are proposed to improve the intersections performance back to similar base level performance. This includes the implementation of right turn bans out of Church Road. Refer to Figures 9.13 and 9.14.

Table 9.17 I-09 proposed intersection upgrades

Year	Existing delay (LoS)		Proposed upgrades and/or signal changes	Resulting delay (LoS)	
	AM	PM		AM	PM
I-09 – Moorebank Avenue/Church Road					
2016	114 (F)	117 (F)	Ban right turn out of Church Road.	17 (B)	101 (F)
2019	252 (F)	160 (F)		19 (B)	135 (F)
2020 Cum C1	501 (F)	235 (F)		22 (B)	155 (F)
2023	773 (F)	286 (F)		43 (B)	215 (F)
2025	763 (F)	406 (F)		26 (B)	278 (F)
2028	778 (F)	743 (F)		31 (C)	384 (F)
2030	768 (right turn out of Church) (F)	735 (right turn out of Church) (F)		32 (right turn into Church) (C)	457 (left out of Church) (F)
2030 Cum A	653 (right turn out of Church) (F)	1257 (right turn out of Church) (F)		37 (right turn into Church) (C)	490 (left turn out of Church) (F)
2030 Cum B	654 (right turn out of Church) (F)	1144 (right turn out of Church) (F)		36 (right turn into Church) (C)	413 (left turn out of Church) (F)

Year	Existing delay (LoS)		Proposed upgrades and/or signal changes	Resulting delay (LoS)	
	AM	PM		AM	PM
I-09 – Moorebank Avenue/Church Road					
2030 Cum C2	652 (right turn out of Church) (F)	1269 (right turn out of Church) (F)		35 (right turn into Church) (C)	446 (left turn out of Church) (F)

It should be noted the banning of the right turn would not impact of trip routes given that there are alternate routes to access Moorebank Avenue via Heathcote Road.

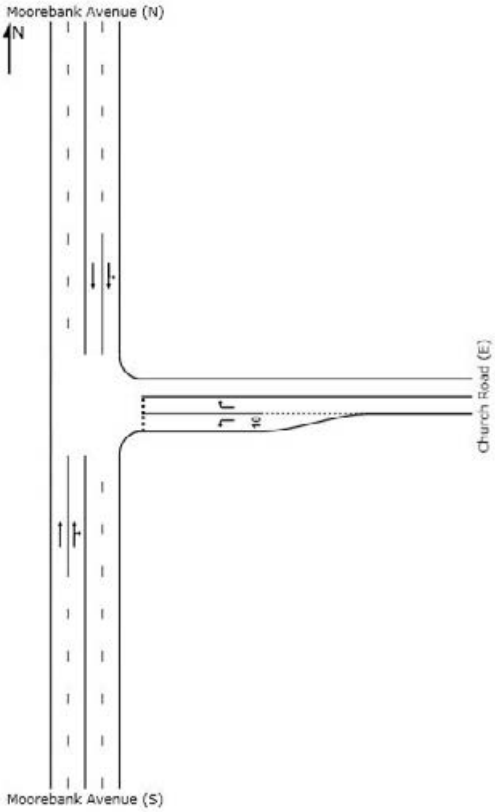


Figure 9.13 Existing intersection layout – I-09

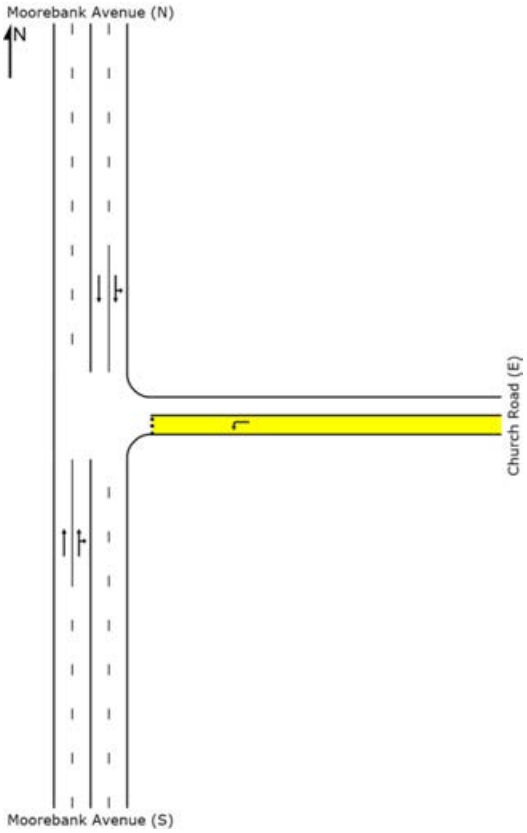


Figure 9.14 Proposed intersection layout – I-09

9.1.10 I-10 – Heathcote Road/Nuwarra Road

Table 9.18 I-10 intersection performance results

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Early Works	2014 Base	1.04	50	D	260	0.97	54	D	327
	2015 Base	1.05	51	D	270	0.99	56	D	343
	2015 with Moorebank IMT	1.05	51	D	270	1.00	56	D	343
	2015 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 1	2016 Base	1.08	53	D	282	1.00	57	E	360
	2016 with Moorebank IMT	1.08	53	D	282	1.03	59	E	360
	2016 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 2a	2019 Base	1.13	60	E	334	1.04	65	E	425
	2019 with Moorebank IMT	1.13	60	E	335	1.06	66	E	426
	2019 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Cumulative Scenario C1	2020 Cum. C1	1.13	60	E	335	1.11	68	E	426
	2020 Cum. C1 with intersection upgrades/ modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 2b	2023 Base	1.23	92	F	602	1.14	90	F	608
	2023 with Moorebank IMT	1.23	93	F	608	1.17	92	F	609
	2023 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2025 Base	1.32	126	F	835	1.21	111	F	718
	2025 with Moorebank IMT	1.32	126	F	838	1.22	111	F	719
	2025 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2028 Base	1.40	157	F	1012	1.28	134	F	838
	2028 with Moorebank IMT	1.40	157	F	1021	1.32	136	F	840
	2028 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 3	2030 Base	1.44	178	F	1182	1.32	148	F	920
	2030 with Moorebank IMT	1.44	178	F	1183	1.34	150	F	922
	2030 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative Scenario A	2030 Cumulative A	1.44	178	F	1190	1.37	152	F	922
	2030 Cum. A with intersection upgrades/ modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative Scenario B	2030 Cumulative B	1.44	179	F	1202	1.43	155	F	921
	2030 Cum. B with intersection upgrades/ modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative Scenario C2	2030 Cum. C2	1.44	178	F	1191	1.39	153	F	921
	2030 Cum. C2 with intersection upgrades/ modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

9.1.10.1 Performance summary and impacts

The Heathcote Road and Nuwarra Road intersection operates unsatisfactorily from 2019 in the AM peak and 2016 in the PM peak The with Moorebank IMT or cumulative scenarios will not alter the performance of this intersection much when compared to the base conditions and therefore no upgrades are proposed at this intersection.

9.1.11 I-11 – Newbridge Road/Nuwarra Road

Table 9.19 I-11 intersection performance results

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Early Works	2014 Base	0.99	48	D	320	0.96	27	B	178
	2015 Base	1.02	53	D	352	0.97	27	B	182
	2015 with Moorebank IMT	1.02	53	D	354	0.97	27	B	182
	2015 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 1	2016 Base	1.04	57	E	391	0.99	28	B	186
	2016 with Moorebank IMT	1.04	58	E	416	0.99	28	B	189
	2016 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 2a	2019 Base	1.11	77	F	550	1.03	30	C	198
	2019 with Moorebank IMT	1.11	82	F	595	1.03	30	C	205
	2019 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative Scenario C1	2020 Cum. C1	1.11	87	F	635	1.03	31	C	211
	2020 Cum. C1 with intersection upgrades/ modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 2b	2023 Base	1.16	116	F	790	1.09	35	C	224
	2023 with Moorebank IMT	1.16	126	F	867	1.09	35	C	232
	2023 Moorebank IMT with intersection upgrades/modifications	1.20	119	F	808	N/A	N/A	N/A	N/A
	2025 Base	1.16	129	F	872	1.12	37	C	242
	2025 with Moorebank IMT	1.18	141	F	966	1.12	37	C	249
	2025 Moorebank IMT with intersection upgrades/modifications	1.21	133	F	904	N/A	N/A	N/A	N/A

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
	2028 Base	1.18	143	F	957	1.15	40	C	267
	2028 with Moorebank IMT	1.23	162	F	1093	1.15	41	C	275
	2028 Moorebank IMT with intersection upgrades/modifications	1.22	153	F	1030	N/A	N/A	N/A	N/A
Scenario 3	2030 Base	1.25	168	F	1038	1.17	43	D	281
	2030 with Moorebank IMT	1.25	178	F	1143	1.18	44	D	291
	2030 Moorebank IMT with intersection upgrades/modifications	1.28	172	F	1079	N/A	N/A	N/A	N/A
Cumulative Scenario A	2030 Cumulative A	1.26	183	F	1167	1.18	45	D	291
	2030 Cum. A with intersection upgrades/ modifications	1.33	172	F	1040	N/A	N/A	N/A	N/A
Cumulative Scenario B	2030 Cumulative B	1.28	175	F	1104	1.18	46	D	291
	2030 Cum. B with intersection upgrades/ modifications	1.28	168	F	1041	N/A	N/A	N/A	N/A
Cumulative Scenario C2	2030 Cum. C2	1.25	179	F	1133	1.18	45	D	291
	2030 Cum. C2 with intersection upgrades/ modifications	1.28	171	F	1070	N/A	N/A	N/A	N/A

9.1.11.1 Performance summary and impacts

The Newbridge Road and Nuwarra Road intersection would operate satisfactorily until 2016 in the AM peak and 2030 in the PM peak. From 2016 in the AM peak, this intersection would perform at a LoS E and gradually worsen to a LoS F. Upgrades to the intersection have been proposed to return the intersection back to the base year level performance parameters without Moorebank IMT. This is detailed in Table 9.20.

9.1.11.2 Mitigation measures

The following mitigation measures are proposed to improve the intersections performance back to similar base level performance. This includes signal timing changes.

Table 9.20 I-11 proposed intersection upgrades

Year	Existing delay (LoS)		Proposed upgrades and/or signal changes	Resulting delay (LoS)	
	AM	PM		AM	PM
I-11 – Newbridge Road / Nuwarra Road					
2023	126 (F)	N/A	Phase timing adjusted in the AM peak times. No changes to PM peak times.	119 (F)	N/A
2025	141 (F)	N/A		133 (F)	N/A
2028	162 (F)	N/A		153 (F)	N/A
2030	178 (F)	N/A		172 (F)	N/A
2030 Cum A	183 (F)	N/A		172 (F)	N/A
2030 Cum B	175 (F)	N/A		168 (F)	N/A
2030 Cum C2	179 (F)	N/A		171 (F)	N/A

9.1.12 I-12 – Newbridge Road/Brickmans Drive/Governor Macquarie Drive

Table 9.21 I-12 intersection performance results

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Early Works	2014 Base	0.98	49	D	400	1.02	40	C	264
	2015 Base	1.00	52	D	440	1.04	41	C	270
	2015 with Moorebank IMT	1.00	52	D	442	1.04	41	C	271
	2015 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 1	2016 Base	1.02	56	D	490	1.06	43	D	278
	2016 with Moorebank IMT	1.02	58	E	515	1.06	43	D	281
	2016 Moorebank IMT with intersection upgrades/modifications	1.02	56	D	486	N/A	N/A	N/A	N/A
Scenario 2a	2019 Base	1.07	76	F	661	1.09	46	D	312
	2019 with Moorebank IMT	1.07	81	F	704	1.09	47	D	312
	2019 Moorebank IMT with intersection upgrades/modifications	1.07	77	F	673	N/A	N/A	N/A	N/A

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Cumulative Scenario C1	2020 Cum. C1	1.07	85	F	745	1.09	47	D	312
	2020 Cum. C1 with intersection upgrades/ modifications	1.07	81	F	712	N/A	N/A	N/A	N/A
Scenario 2b	2023 Base	1.15	115	F	921	1.14	52	D	358
	2023 with Moorebank IMT	1.15	123	F	997	1.14	53	D	358
	2023 Moorebank IMT with intersection upgrades/modifications	1.15	118	F	958	N/A	N/A	N/A	N/A
	2025 Base	1.18	131	F	1020	1.16	56	D	384
	2025 with Moorebank IMT	1.18	141	F	1110	1.16	57	E	384
	2025 Moorebank IMT with intersection upgrades/modifications	1.16	127	F	1070	1.03	47	D	390
	2028 Base	1.21	144	F	1073	1.20	62	E	421
	2028 with Moorebank IMT	1.21	159	F	1205	1.20	65	E	421
	2028 Moorebank IMT with intersection upgrades/modifications	1.19	142	F	1164	1.07	55	D	494
Scenario 3	2030 Base	1.24	161	F	1180	1.22	67	E	446
	2030 with Moorebank IMT	1.24	170	F	1278	1.62	85	F	658
	2030 Moorebank IMT with intersection upgrades/modifications	1.22	153	F	1236	1.09	69	E	548
Cumulative Scenario A	2030 Cumulative A	1.24	173	F	1303	1.62	85	F	658
	2030 Cum. A with intersection upgrades/ modifications	1.22	156	F	1262	1.09	70	E	570
Cumulative Scenario B	2030 Cumulative B	1.24	166	F	1245	1.60	83	F	643
	2030 Cum. B with intersection upgrades/ modifications	1.21	149	F	1204	1.09	68	E	524
Cumulative Scenario C2	2030 Cum. C2	1.24	169	F	1270	1.61	84	F	651
	2030 Cum. C2 with intersection upgrades/ modifications	1.21	152	F	1229	1.09	69	E	545

9.1.12.1 Performance summary and impacts

The Newbridge Road, Brickmans Drive and Governor Macquarie Drive intersection would operate satisfactorily until 2016 in the AM peak and 2028 in the PM peak. From 2016 in the AM peak, this intersection would perform at a LoS E and gradually worsen to a LoS F. Upgrades to the intersection have been proposed to return the intersection back to the base year level performance parameters without Moorebank IMT. This is detailed in Table 9.22.

9.1.12.2 Mitigation measures

The following mitigation measures are proposed to improve the intersections performance back to similar base level performance. This includes signal timing changes and an extended combined through and right turn lane, and right turn lane, both of 200 m length on Governor Macquarie Drive in 2030. Refer to Figures 9.15 and 9.16.

Table 9.22 I-12 proposed intersection upgrades

Year	Existing Delay (LoS)		Proposed upgrades and/or signal changes	Resulting Delay (LoS)	
	AM	PM		AM	PM
I-11 – Newbridge Road/Nuwarra Road					
2016	58 (E)	N/A	Phase timing adjusted in the AM peak times.	56 (D)	N/A
2019	81 (F)	N/A		77 (F)	N/A
2020 CUM C1	85 (F)	N/A		81 (F)	N/A
2023	123 (F)	N/A		118 (F)	N/A
2025	141 (F)	57 (E)	Change layout of Governor Macquarie Drive approach to include a combined through and right turn lane, and dedicated right turn lane of 200 m lengths. Phase timing adjusted.	127 (F)	47 (D)
2028	159 (F)	65 (E)		142 (F)	55 (D)
2030	170 (F)	85 (F)		153 (F)	69 (E)
2030 Cum A	173 (F)	85 (F)		156 (F)	70 (E)
2030 Cum B	166 (F)	83 (F)		149 (F)	68 (E)
2030 CUM C2	169 (F)	84 (F)		152 (F)	69 (E)

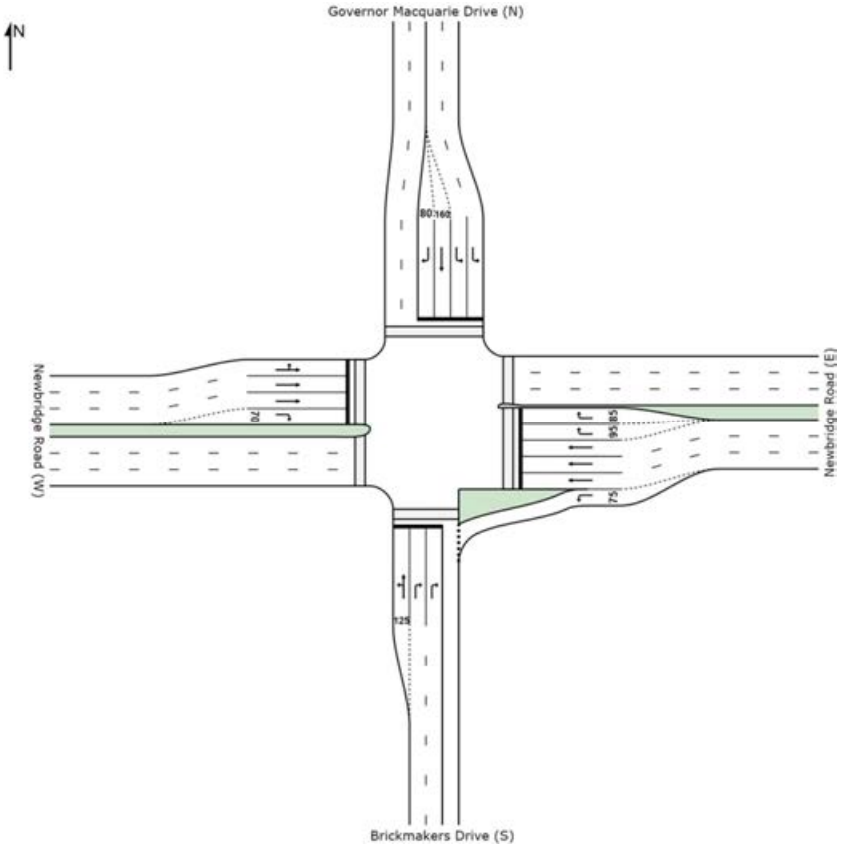


Figure 9.15 Existing intersection layout – I-12

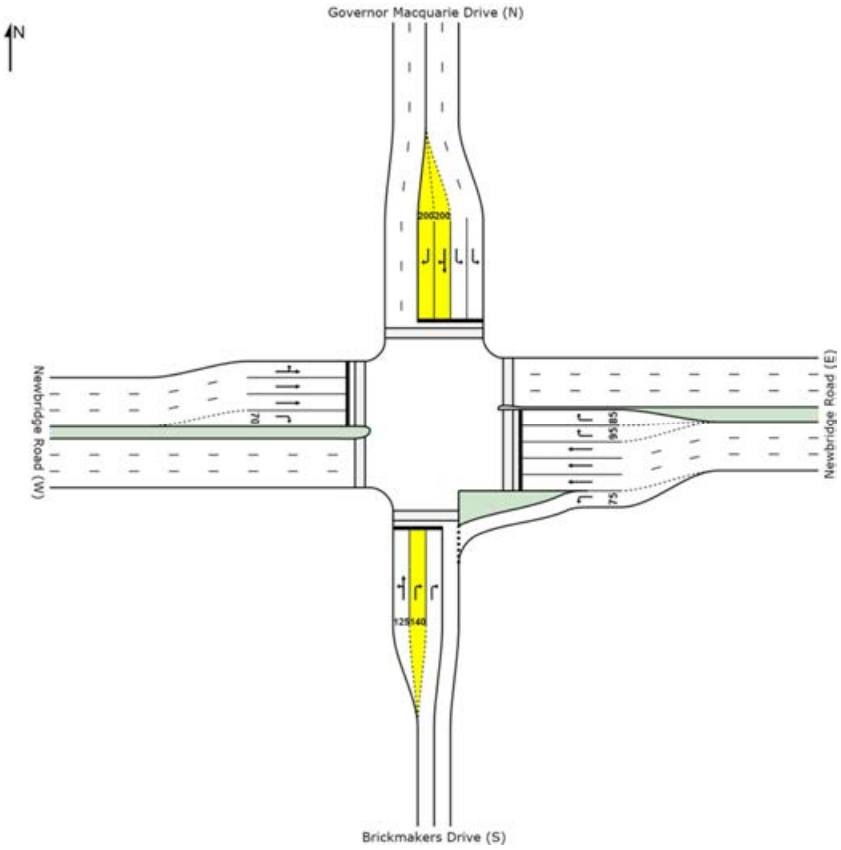


Figure 9.16 Proposed intersection layout – I-12

9.1.13 I-13 – Moorebank Avenue/M5

Table 9.23 I-13 intersection performance results

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Early Works	2014 Base	0.83	19	B	73	0.88	28	B	212
	2015 Base	0.85	19	B	74	0.89	29	C	218
	2015 with Moorebank IMT	0.85	19	B	74	0.89	29	C	218
	2015 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 1	2016 Base	0.86	19	B	74	0.89	29	C	225
	2016 with Moorebank IMT	0.86	19	B	80	0.89	30	C	225
	2016 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 2a	2019 Base	0.91	19	B	81	0.92	31	C	249
	2019 with Moorebank IMT	0.91	20	B	95	0.92	32	C	249
	2019 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative Scenario C1	2020 Cum. C1	0.91	24	B	157	1.05	47	D	562
	2020 Cum. C1 with intersection upgrades/ modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 2b	2023 Base	0.96	20	B	93	0.95	34	C	288
	2023 with Moorebank IMT	0.96	22	B	120	0.95	36	C	288
	2023 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2025 Base	0.97	20	B	88	0.96	36	C	312
	2025 with Moorebank IMT	0.97	21	B	117	0.96	39	C	312
	2025 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2028 Base	0.98	20	B	89	0.98	40	C	347
	2028 with Moorebank IMT	0.98	24	B	140	1.06	58	E	347
	2028 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	1.06	55	D	342

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Scenario 3	2030 Base	0.99	21	B	90	1.00	43	D	373
	2030 with Moorebank IMT	0.98	24	B	142	1.09	63	E	360
	2030 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	1.09	56	D	342
Cumulative Scenario A	2030 Cumulative A	1.05	40	C	307	1.25	112	F	1068
	2030 Cum. A with intersection upgrades/ modifications	1.05	40	C	307	0.99	51	D	340
Cumulative Scenario B	2030 Cumulative B	1.21	78	F	533	1.29	90	F	1168
	2030 Cum. B with intersection upgrades/ modifications	0.98	31	C	251	1.01	48	D	340
Cumulative Scenario C2	2030 Cumulative C2	1.06	40	C	312	1.28	98	F	1145
	2030 Cum. C2 with intersection upgrades/ modifications	0.98	29	C	186	1.00	49	D	340

9.1.13.1 Performance summary and impacts

The Moorebank Avenue and M5 intersection operates at worse at a LoS E under future conditions in 2028 with Moorebank IMT in the PM peak. Upgrades to the intersection have been proposed to return the intersection back to the base year level performance parameters without Moorebank IMT for the cumulative scenarios only. This is detailed in Table 9.24.

9.1.13.2 Mitigation measures

The following mitigation measures are proposed to improve the intersections performance back to similar base level performance. This includes signal timing changes and additional signalised short left turn of 100 m length on the Moorebank Avenue westbound slip lane entry onto to the M5 on-ramp for 2030 cumulative scenarios. Refer to Figures 9.17 and 9.18.

Table 9.24 I-13 proposed intersection upgrades

Year	Existing delay (LoS)		Proposed upgrades and/or signal changes	Resulting delay (LoS)	
	AM	PM		AM	PM
I-13 – Moorebank Avenue/M5					
2028	N/A	58 (E)	Phase timing adjusted.	N/A	55 (D)
2030	N/A	63 (E)		N/A	56 (D)
2030 Cum A	40 (C)	112 (F)	Short left turn lane of 100 m added to Moorebank Avenue south and signalised to cater for high demand in the PM peak. Cycle timing increased from 74 seconds to 100 seconds in AM peak and from 94 seconds to 120 seconds in PM peak.	40 (C)	51 (D)
2030 Cum B	78 (F)	90 (F)		31 (C)	48 (D)
2030 Cum C2	40 (C)	98 (F)		29 (C)	49 (D)

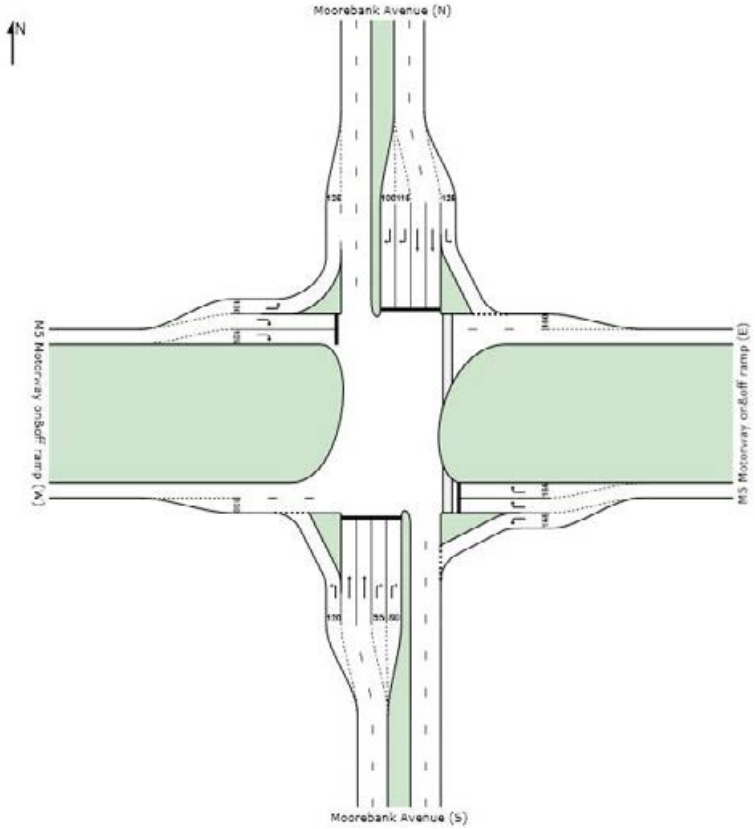


Figure 9.17 Existing intersection layout – I-13

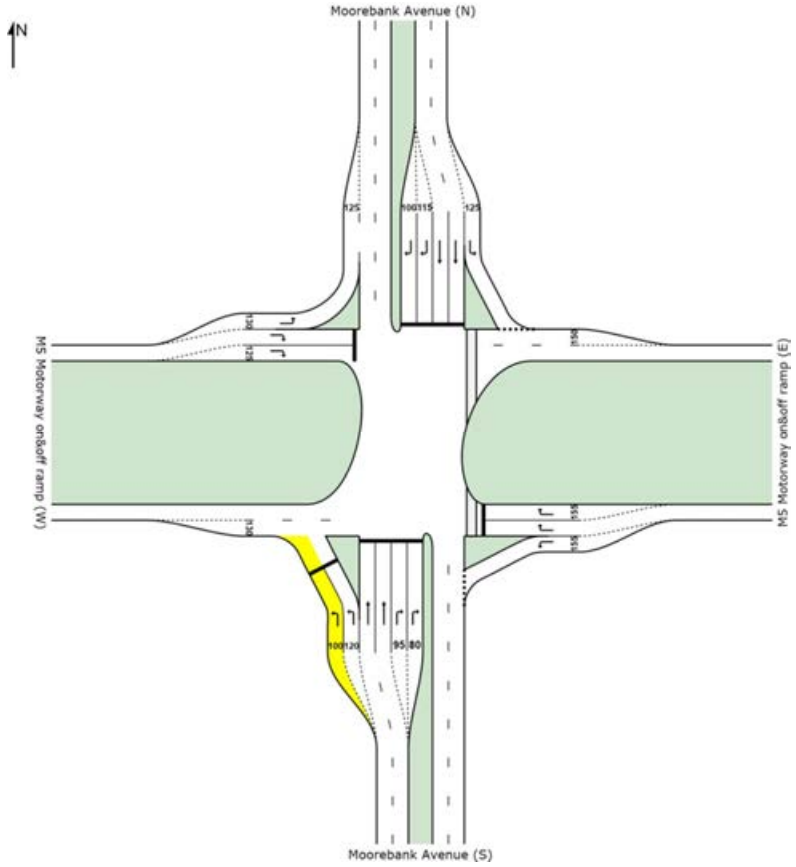


Figure 9.18 Proposed intersection layout – I-13

9.1.14 I-14 – Hume Highway/M5

Table 9.25 I-14 intersection performance results

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Early Works	2014 Base	1.03	30	C	276	0.89	29	C	295
	2015 Base	1.03	30	C	279	0.90	30	C	297
	2015 with Moorebank IMT	1.04	31	C	281	0.91	31	C	300
	2015 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 1	2016 Base	1.04	31	C	282	0.92	31	C	314
	2016 with Moorebank IMT	1.06	34	C	309	0.98	35	C	325
	2016 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 2a	2019 Base	1.04	32	C	290	0.99	39	C	391
	2019 with Moorebank IMT	1.09	37	C	335	1.06	46	D	406
	2019 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative Scenario C1	2020 Cum. C1	1.16	46	D	419	1.21	78	F	538
	2020 Cum. C1 with intersection upgrades/ modifications	1.10	39	C	363	1.03	48	D	450
Scenario 2b	2023 Base	1.06	36	C	307	1.07	59	E	521
	2023 with Moorebank IMT	1.13	44	D	377	1.16	71	F	515
	2023 Moorebank IMT with intersection upgrades/modifications	1.07	39	C	356	1.01	53	D	489
	2025 Base	1.07	44	D	501	1.09	66	E	569
	2025 with Moorebank IMT	1.15	53	D	501	1.19	77	F	576
	2025 Moorebank IMT with intersection upgrades/modifications	1.12	50	D	501	1.03	62	E	533
	2028 Base	1.14	64	E	1017	1.12	73	F	618
	2028 with Moorebank IMT	1.25	78	F	1017	1.27	92	F	643
	2028 Moorebank IMT with intersection upgrades/modifications	1.22	74	F	1017	1.14	78	F	622

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Scenario 3	2030 Base	1.21	81	F	1101	1.15	79	F	641
	2030 with Moorebank IMT	1.32	95	F	1109	1.29	95	F	646
	2030 Moorebank IMT with intersection upgrades/modifications	1.29	91	F	1109	1.16	86	F	626
Cumulative Scenario A	2030 Cumulative A	1.35	111	F	1109	1.39	118	F	745
	2030 Cum. A with intersection upgrades/ modifications	1.32	97	F	1109	1.25	107	F	723
Cumulative Scenario B	2030 Cumulative B	1.33	103	F	1109	1.39	129	F	839
	2030 Cum. B with intersection upgrades/ modifications	1.30	99	F	1109	1.26	117	F	816
Cumulative Scenario C2	2030 Cumulative C2	1.34	100	F	1109	1.40	125	F	803
	2030 Cum. C2 with intersection upgrades/ modifications	1.31	96	F	1109	1.26	114	F	780

9.1.14.1 Performance summary and impacts

The Hume Highway and M5 intersection operates unsatisfactorily from 2023 in the PM peak hour. Upgrades to the intersection have been proposed to return the intersection back to the base year level performance parameters without Moorebank IMT from 2023 onwards. This is detailed in Table 9.26.

9.1.14.2 Mitigation measures

The following mitigation measures are proposed to improve the intersections performance back to similar base level performance. This includes signal timing changes and additional short right turn of 230 m length on the M5 westbound off-ramp. Refer to Figures 9.19 and 9.20.

Table 9.26 I-14 proposed intersection upgrades

Year	Existing delay (LoS)		Proposed upgrades and/or signal changes	Resulting delay (LoS)	
	AM	PM		AM	PM
I-14 – Hume Highway/M5					
2020 Cum C1	46 (D)	78 (F)	Extend right turn lane on M5 east to maximum (about 230 m) Phase timing adjusted.	39 (C)	48 (D)
2023	44 (D)	71 (F)		39 (C)	48 (D)
2025	53 (D)	77 (F)		50 (D)	62 (E)
2028	78 (F)	92 (F)		74 (F)	78 (F)
2030	95 (F)	95 (F)		91 (F)	86 (F)
2030 Cum A	111 (F)	118 (F)		97 (F)	107 (F)
2030 Cum B	103 (F)	129 (F)		99 (F)	117 (F)
2030 Cum C2	100 (F)	125 (F)		96 (F)	114 (F)

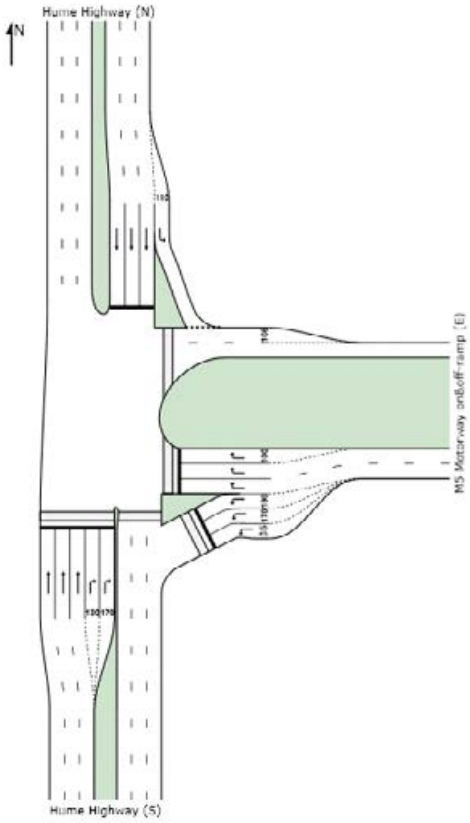


Figure 9.19 Existing intersection layout – I-14

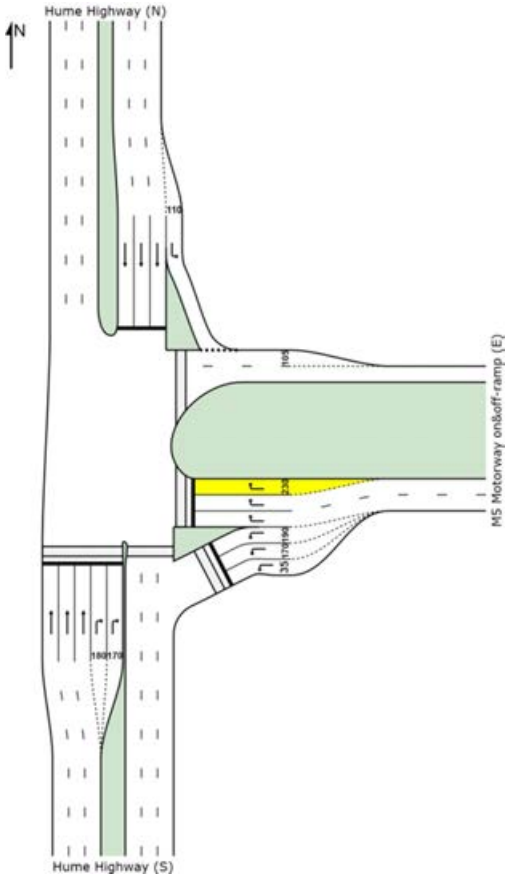


Figure 9.20 Proposed intersection layout – I-14

9.1.15 I-15 – Cambridge Avenue/Canterbury Road

Table 9.27 I-15 intersection performance results

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Early Works	2014 Base	0.62	17	B	34	0.48	11	A	15
	2015 Base	0.63	18	B	35	0.48	12	A	15
	2015 with Moorebank IMT	0.63	18	B	37	0.49	12	A	15
	2015 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 1	2016 Base	0.63	18	B	37	0.49	12	A	15
	2016 with Moorebank IMT	0.66	20	B	41	0.50	12	A	15
	2016 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 2a	2019 Base	0.66	21	B	44	0.50	12	A	16
	2019 with Moorebank IMT	0.68	22	B	49	0.51	12	A	16
	2019 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative Scenario C1	2020 Cum. C1	0.70	24	B	53	0.53	12	A	16
	2020 Cum. C1 with intersection upgrades/ modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 2b	2023 Base	0.76	30	C	72	0.53	12	A	19
	2023 with Moorebank IMT	0.82	38	C	91	0.55	12	A	19
	2023 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2025 Base	0.90	51	D	129	0.56	13	A	22
	2025 with Moorebank IMT	0.92	59	E	147	0.56	13	A	22
	2025 Moorebank IMT with intersection upgrades/modifications	0.61	18	B	34	0.56	13	A	21
	2028 Base	1.05	120	F	300	0.58	13	A	26
	2028 with Moorebank IMT	1.18	216	F	501	0.60	14	A	27
	2028 Moorebank IMT with intersection upgrades/modifications	0.70	20	B	44	0.60	13	A	24

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Scenario 3	2030 Base	1.14	180	F	441	0.59	14	A	28
	2030 with Moorebank IMT	1.19	223	F	538	0.60	14	A	28
	2030 Moorebank IMT with intersection upgrades/modifications	0.72	19	B	48	0.60	14	A	25
Cumulative Scenario A	2030 Cumulative A	1.25	273	F	634	0.61	14	A	28
	2030 Cum. A with intersection upgrades/ modifications	0.74	20	B	50	0.61	14	A	25
Cumulative Scenario B	2030 Cumulative B	1.47	467	F	941	0.63	14	A	29
	2030 Cum. B with intersection upgrades/ modifications	0.78	22	B	56	0.63	14	A	27
Cumulative Scenario C2	2030 Cumulative C2	1.23	262	F	612	0.61	14	A	28
	2030 Cum. C2 with intersection upgrades/ modifications	0.73	20	B	49	0.61	14	A	25

9.1.15.1 Performance summary and impacts

The Cambridge Avenue and Canterbury Road intersection operates at a LoS F for the worst performing movement under future conditions in the 2028 AM peak. Overall this intersection would perform at a LoS F in the 2028 and 2030 AM peak with Moorebank IMT and for cumulative scenarios A, B and C2. Mitigations are proposed at this intersection to recover the level of service.

9.1.15.2 Mitigation measures

The following mitigation measures are proposed to improve the intersections performance back to similar base level performance. This includes lane marking change on Canterbury Road to a single left, through and right lane and separate right turn lane from the southern approach. Refer to Figures 9.21 and 9.22.

Table 9.28 I-15 proposed intersection upgrades

Year	Existing delay (LoS)		Proposed upgrades and/or signal changes	Resulting delay (LoS)	
	AM	PM		AM	PM
I-15 – Cambridge Avenue / Canterbury Road					
2025	59 (E)	13 (A)	Left, through and right lane and separate right turn lane	18 (B)	13 (A)
2028	216 (F)	14 (A)		20 (B)	13 (A)
2030	223 (F)	14 (A)		19 (B)	14 (A)
2030 Cum A	273 (F)	14 (A)		20 (B)	14 (A)
2030 Cum B	467 (F)	14 (A)		22 (B)	14 (A)
2030 Cum C2	262 (F)	14 (A)		20 (B)	14 (A)

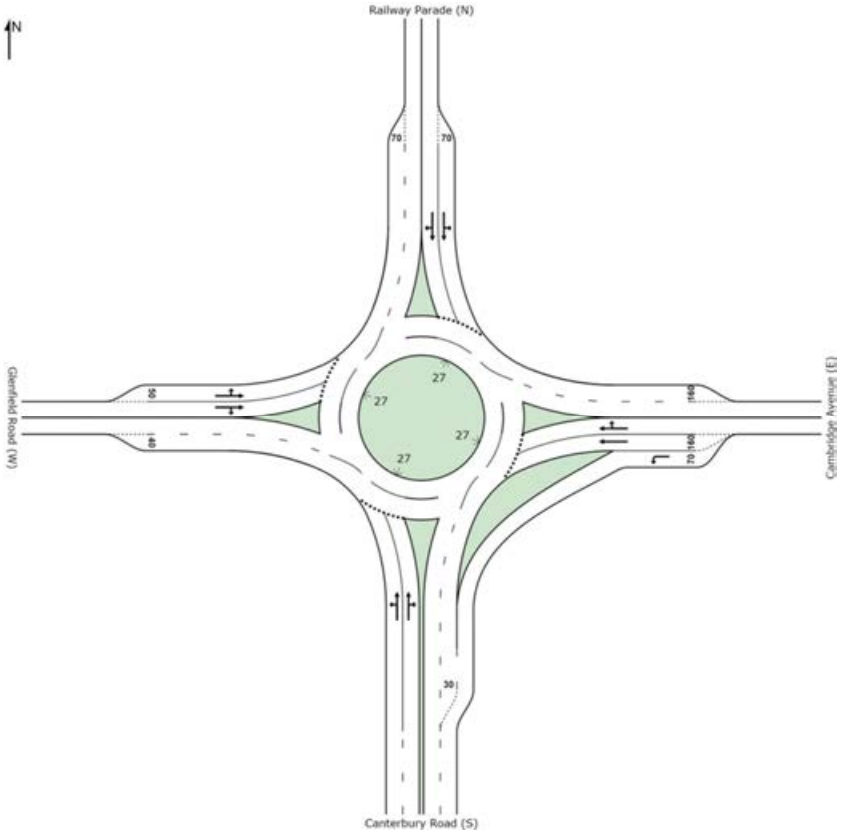


Figure 9.21 Existing intersection layout – I-15

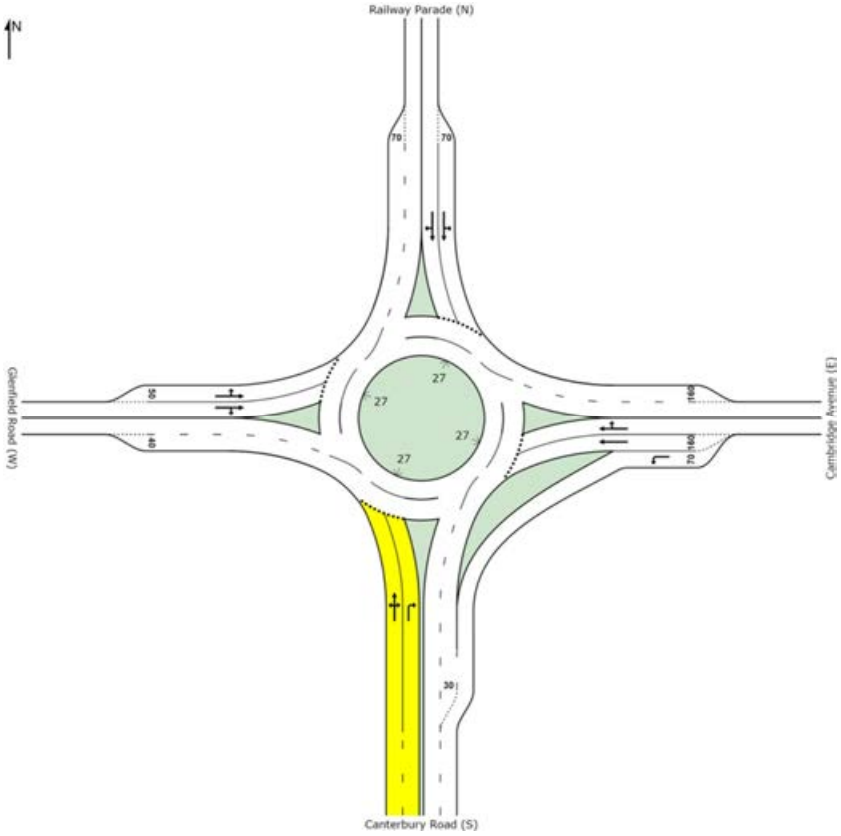


Figure 9.22 Proposed intersection layout – I-15

9.1.16 I-0A – Moorebank Avenue/Anzac Road

Table 9.29 I-0A intersection performance results

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Early Works	2014 Base#	0.73	19	B	181	0.84	27	B	290
	2015 Base#	0.73	19	B	188	0.85	28	B	296
	2015 with Moorebank IMT#	0.73	19	B	191	0.85	28	B	303
	2015 Moorebank IMT with intersection upgrades/modifications #	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 1	2016 Base#	0.74	19	B	194	0.85	29	C	302
	2016 with Moorebank IMT	0.64	33	C	132	0.79	28	C	191
	2016 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 2a	2019 Base#	0.74	20	B	210	0.87	30	C	324
	2019 with Moorebank IMT	0.71	33	C	140	0.82	30	C	212
	2019 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative Scenario C1	2030 Cumulative C1	0.98	47	D	365	0.93	33	C	283
	2030 Cum. C1 with intersection upgrades/ modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 2b	2023 Base#	0.90	24	B	306	0.96	35	C	387
	2023 with Moorebank IMT	0.79	35	C	159	0.88	33	C	250
	2023 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2025 Base#	1.02	49	D	674	1.06	41	C	447
	2025 with Moorebank IMT	0.82	35	C	174	0.94	36	C	288
	2025 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2028 Base#	1.04	54	D	732	1.18	54	D	522
	2028 with Moorebank IMT	1.04	47	D	276	0.99	44	D	357
	2028 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Scenario 3	2030 Base#	1.04	56	D	752	1.21	59	E	577
	2030 with Moorebank IMT	0.88	39	C	198	1.00	48	D	385
	2030 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative Scenario A	2030 Cumulative A	1.13	89	F	661	1.05	61	E	572
	2030 Cum. A with intersection upgrades/ modifications	0.94	42	C	246	1.01	44	D	295
Cumulative Scenario B	2030 Cumulative B	1.44	197	F	1354	1.10	62	E	538
	2030 Cum. B with intersection upgrades/ modifications	0.97	42	C	343	0.96	46	D	337
Cumulative Scenario C2	2030 Cumulative C2	1.25	128	F	931	1.10	62	E	559
	2030 Cum. C2 with intersection upgrades/ modifications	1.00	55	D	381	1.00	47	D	335

– this is based on the existing signalised T junction layout.

9.1.16.1 Performance summary and impacts

The Moorebank Avenue and Anzac Road intersection would operate at LoS B under existing conditions. It was assumed that this intersection would be upgraded in 2016 (as shown in Figure 3.2) which provides an access road into the Moorebank IMT site on the western approach. This intersection wold operates at LoS C in 2016 and at LoS D from 2030 in the PM peak hour. Upgrades to the intersection have been proposed to achieve a satisfactory level of service with the cumulative traffic scenarios in 2030. This is detailed in Table 9.30.

9.1.16.2 Mitigation measures

The following mitigation measures are proposed to achieve a satisfactory intersections performance back to similar base level performance. This includes signal timing changes and provides a short left slip turn lane of 50 m length in the southbound direction and an additional right turn lane in the northbound direction on Moorebank Avenue for 2030 cumulative scenarios. Refer to Figures 9.23 and 9.25.

Table 9.30 I-0A proposed intersection upgrades

Year	Existing delay (LoS)		Proposed upgrades and/or signal changes	Resulting delay (LoS)	
	AM	PM		AM	PM
I-0A –Moorebank Avenue/Anzac Road/Moorebank IMT Access					
2030 Cum A	89 (F)	124 (F)	Provide a dedicated left turn lane (50 m) on Moorebank Avenue north Signal timing change in PM peak hour.	42 (C)	44 (D)
2030 Cum C2	128 (F)	82 (F)		55 (D)	47 (D)
2030 Cum B	197 (F)	74 (F)	Provide an additional right turn lane on Moorebank Avenue south.	42 (C)	46 (D)

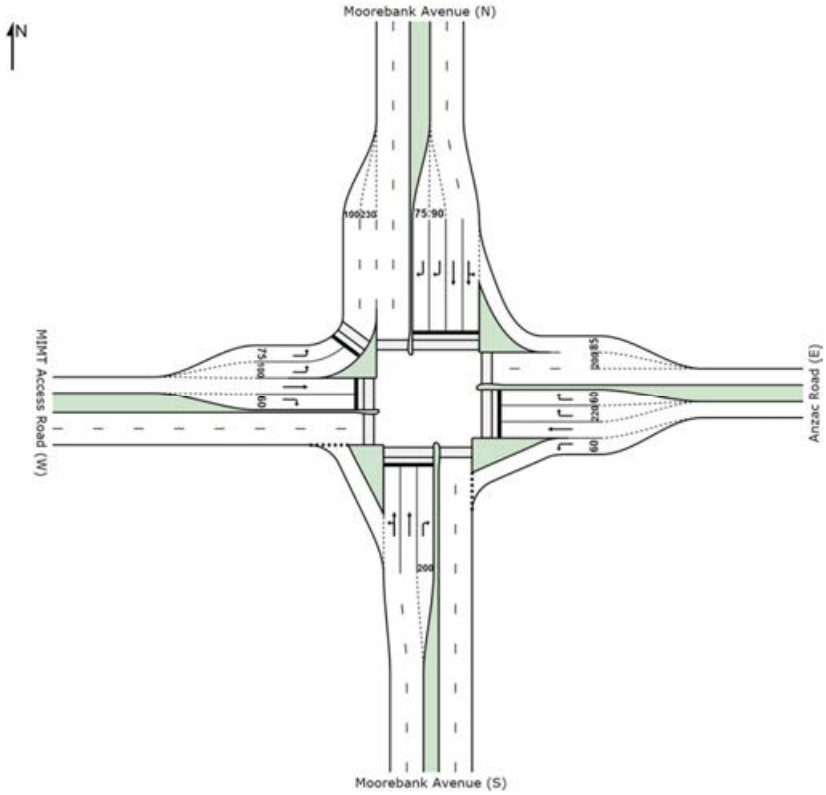


Figure 9.23 Proposed intersection layout – I-0A

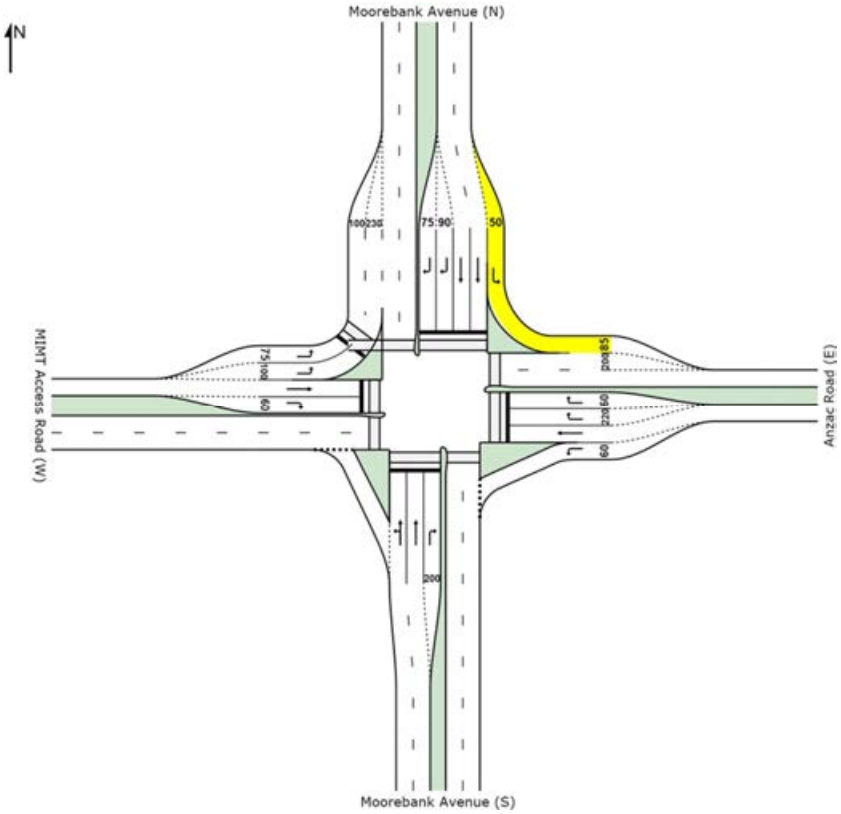


Figure 9.24 Upgraded intersection layout – I-0A (For Cumulative Scenario A and C2)

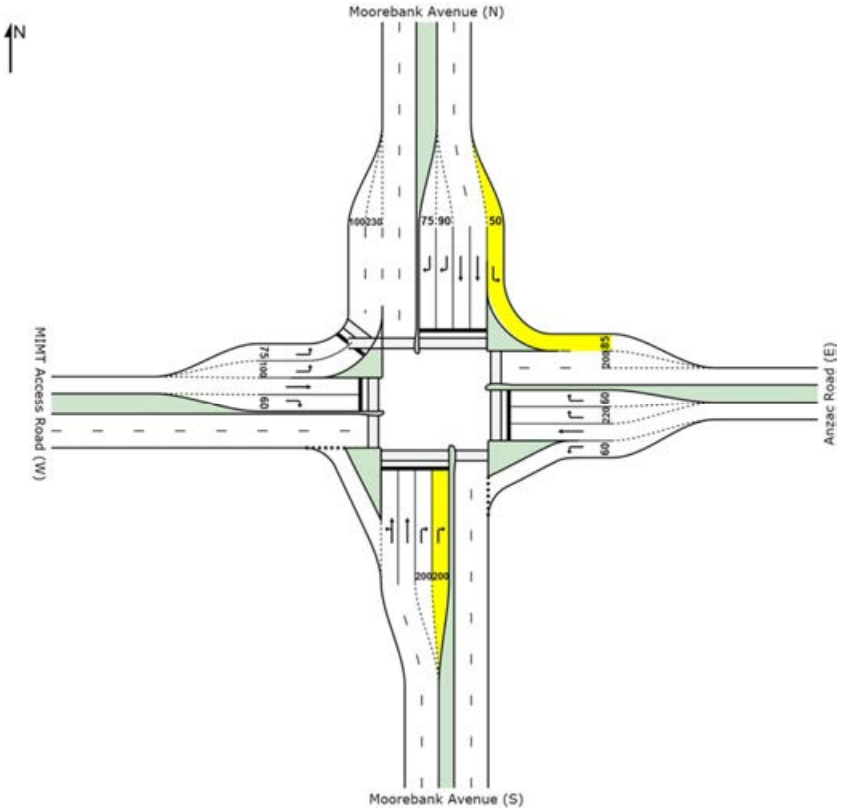


Figure 9.25 Upgraded intersection layout – I-0A (For Cumulative Scenario B)

9.1.17 I-0B – Moorebank Avenue/New DNSDC Access (SIMTA Northern Access)

Table 9.31 I-0B intersection performance results

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Cumulative Scenario C1	2020 Cumulative C1	0.53	2	A	36	0.71	9	A	106
	2020 Cum. C1 with intersection upgrades/ modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 3	2030 Base	0.53	1	A	15	0.64	1	A	18
	2030 with Moorebank IMT	0.56	1	A	15	0.65	1	A	19
	2030 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative Scenario A	2030 Cumulative A	0.58	3	A	54	0.80	9	A	128
	2030 Cum. A with intersection upgrades/ modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative Scenario B	2030 Cumulative B	0.64	3	A	101	0.91	21	B	334
	2030 Cum. B with intersection upgrades/ modifications	0.64	4	A	101	0.86	11	A	165

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Cumulative Scenario C2	2030 Cumulative C2	0.62	2	A	59	0.85	14	A	225
	2030 Cum. C2 with intersection upgrades/ modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

9.1.17.1 Performance summary and impacts

The Moorebank Avenue and New DNSDC Access (SIMTA Northern Access) intersection would operate at a satisfactory level (LoS B or better) under all future scenarios in 2030 in both the AM and PM peaks. Although this intersection would operate satisfactorily with the proposed layout, dual right turn lanes on DNSDC Access Road has been proposed as a upgraded layout for the cumulative B scenario as the queue on DNSDC Access Road would exceed 160 m which would not ideal for the internal traffic movement within the DNSDC and SIMTA site. This is detailed in Table 9.32.

9.1.17.2 Mitigation measures

The following mitigation measure is proposed to reduce the queuing on the side road during the PM peak hour. This includes signal timing changes and dual right turn lanes on the eastern approach which would not require any geometric upgrade. Refer to Figures 9.26 and 9.27.

Table 9.32 I-0B proposed intersection upgrades

Year	Existing Delay (LoS)		Proposed upgrades and/or signal changes	Resulting Delay (LoS)	
	AM	PM		AM	PM
I-0B – Moorebank Avenue/New DNSDC Access					
2030 Cum B	3 (A)	21 (B)	Dual right turn lanes on the DNSDC Access. Phase timing adjusted.	4 (A)	11 (A)

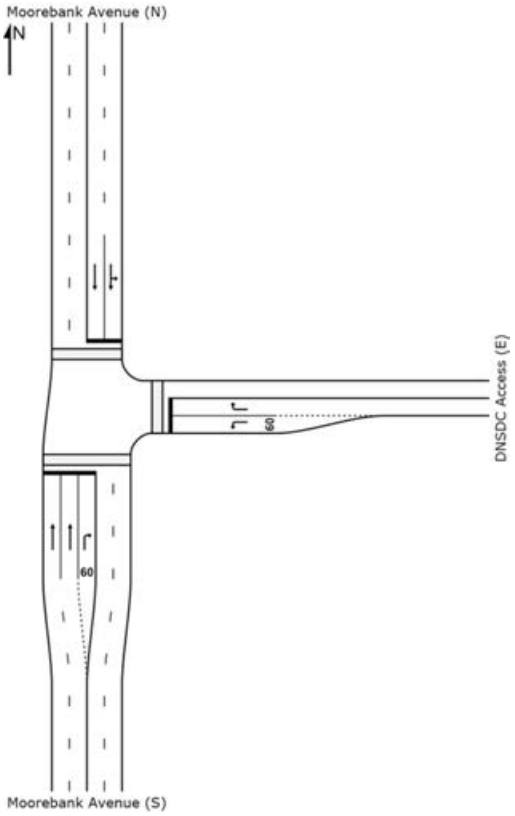


Figure 9.26 Proposed intersection layout – I-0B

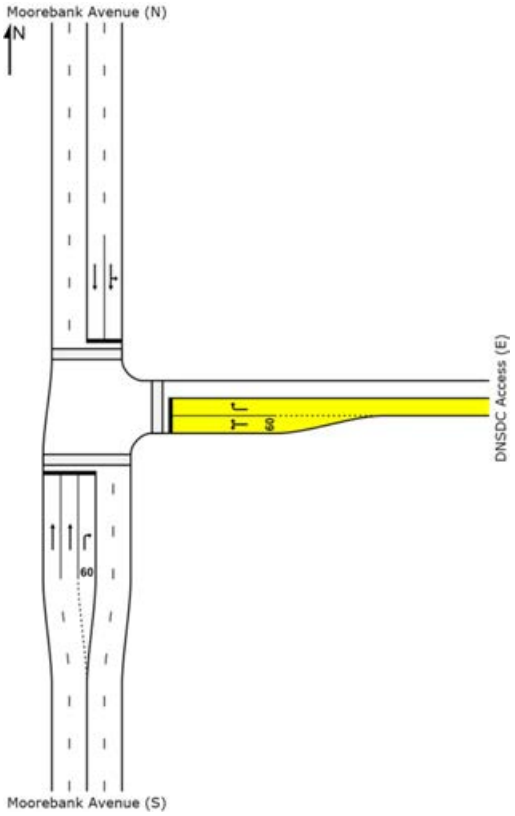


Figure 9.27 Upgraded intersection layout – I-0B

9.1.18 I-0C – Moorebank Avenue/SIMTA Central Access

Table 9.33 I-0C intersection performance results

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Cumulative Scenario C1	2020 Cumulative C1	0.62	3	A	49	0.77	13	A	158
	2020 Cum. C1 with intersection upgrades/ modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scenario 3	2030 Base	0.56	1	A	12	0.64	1	A	17
	2030 with Moorebank IMT	0.57	1	A	13	0.65	1	A	18
	2030 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative Scenario A	2030 Cumulative A	0.58	2	A	30	0.77	8	A	103
	2030 Cum. A with intersection upgrades/ modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative Scenario B	2030 Cumulative B	0.63	3	A	62	0.87	17	B	245
	2030 Cum. B with intersection upgrades/ modifications	0.63	3	A	62	0.80	11	A	138
Cumulative Scenario C2	2030 Cumulative C2	0.93	5	A	103	1.03	32	C	336
	2030 Cum. C2 with intersection upgrades/ modifications	0.85	4	A	61	0.85	16	B	206

9.1.18.1 Performance summary and impacts

The Moorebank Avenue and SIMTA Central Access intersection would operate at a satisfactory level (LoS B or better) under all future scenarios in 2030 in both the AM and PM peaks. Although this intersection would operate satisfactorily with the proposed layout, dual right turn lanes on SIMTA Central Access has been proposed as a upgraded layout for the cumulative B scenario as the queue on DNSDC Access Road would exceed 300m which would not ideal for the internal traffic movement within the SIMTA site. This is detailed in Table 9.34.

9.1.18.2 Mitigation measures

The following mitigation measure is proposed to reduce the queuing on the side road during the PM peak hour. This includes signal timing changes and dual right turn lanes on the eastern approach which would not require any geometric upgrade. Refer to Figures 9.28 and 9.29.

Table 9.34 I-0C proposed intersection upgrades

Year	Existing delay (LoS)		Proposed upgrades and/or signal changes	Resulting delay (LoS)	
	AM	PM		AM	PM
I-0C – Moorebank Avenue/SIMTA Central Access					
2030 Cum B	3 (A)	17 (B)	Dual right turn lanes on SIMTA Central Access	3 (A)	11 (A)

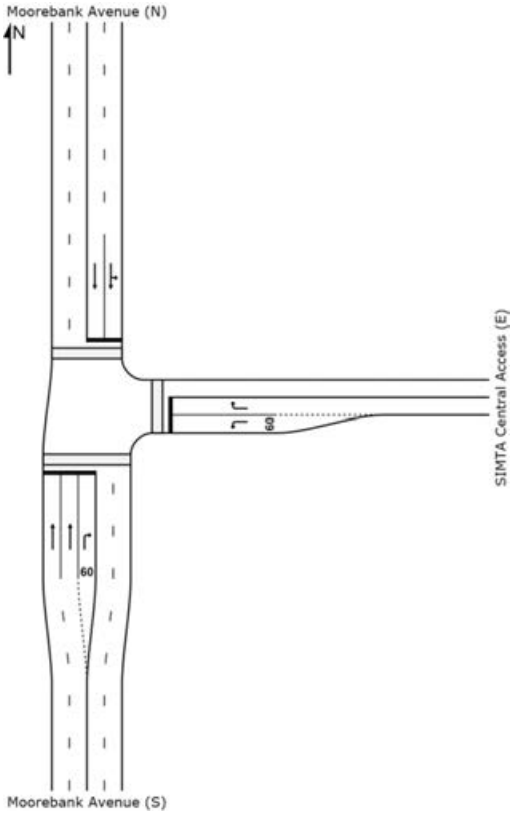


Figure 9.28 Proposed intersection layout – I-0C

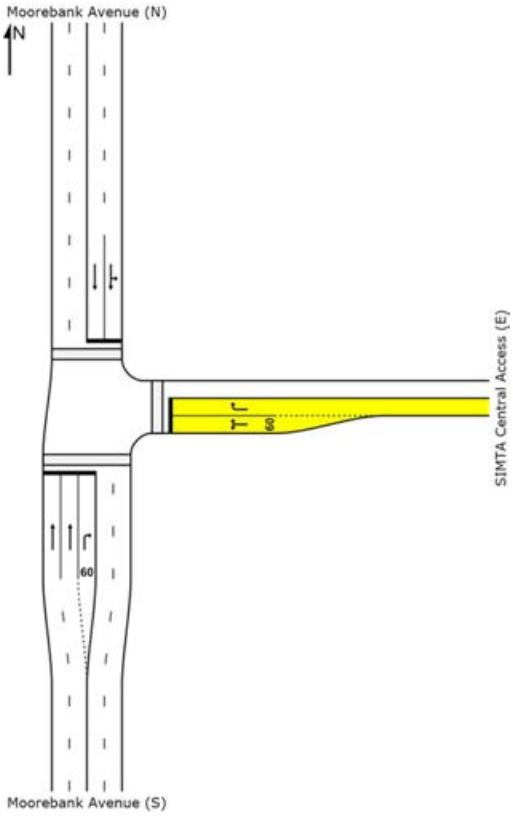


Figure 9.29 Upgraded intersection layout – I-0C

9.1.19 I-0D – Moorebank Avenue/SIMTA Southern Access

Table 9.35 I-0D intersection performance results

Scenario	Year	AM peak				PM peak			
		DoS	Delay	LoS	Queue	DoS	Delay	LoS	Queue
Scenario 3	2030 Base	0.56	1	A	12	0.72	1	A	24
	2030 with Moorebank IMT	0.57	1	A	13	0.73	1	A	25
	2030 Moorebank IMT with intersection upgrades/modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative Scenario A	2030 Cumulative A	0.57	4	A	121	0.74	2	A	26
	2030 Cum. A with intersection upgrades/ modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative Scenario B	2030 Cumulative B	0.60	6	A	136	0.77	2	A	33
	2030 Cum. B with intersection upgrades/ modifications	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

9.1.19.1 Performance summary and impacts

The Moorebank Avenue and SIMTA Southern Access intersection operates at LoS A under all future scenarios in 2030. No upgrades are proposed at this intersection.

9.2 Comparison of 2030 intersection performance

A comparison of intersection level of service, average vehicle delays and queue lengths for 2030 with and without Moorebank IMT are presented in Figures 9.30 to 9.33. This clearly shows the changes in intersection operation with the introduction of Moorebank IMT traffic on the road network.

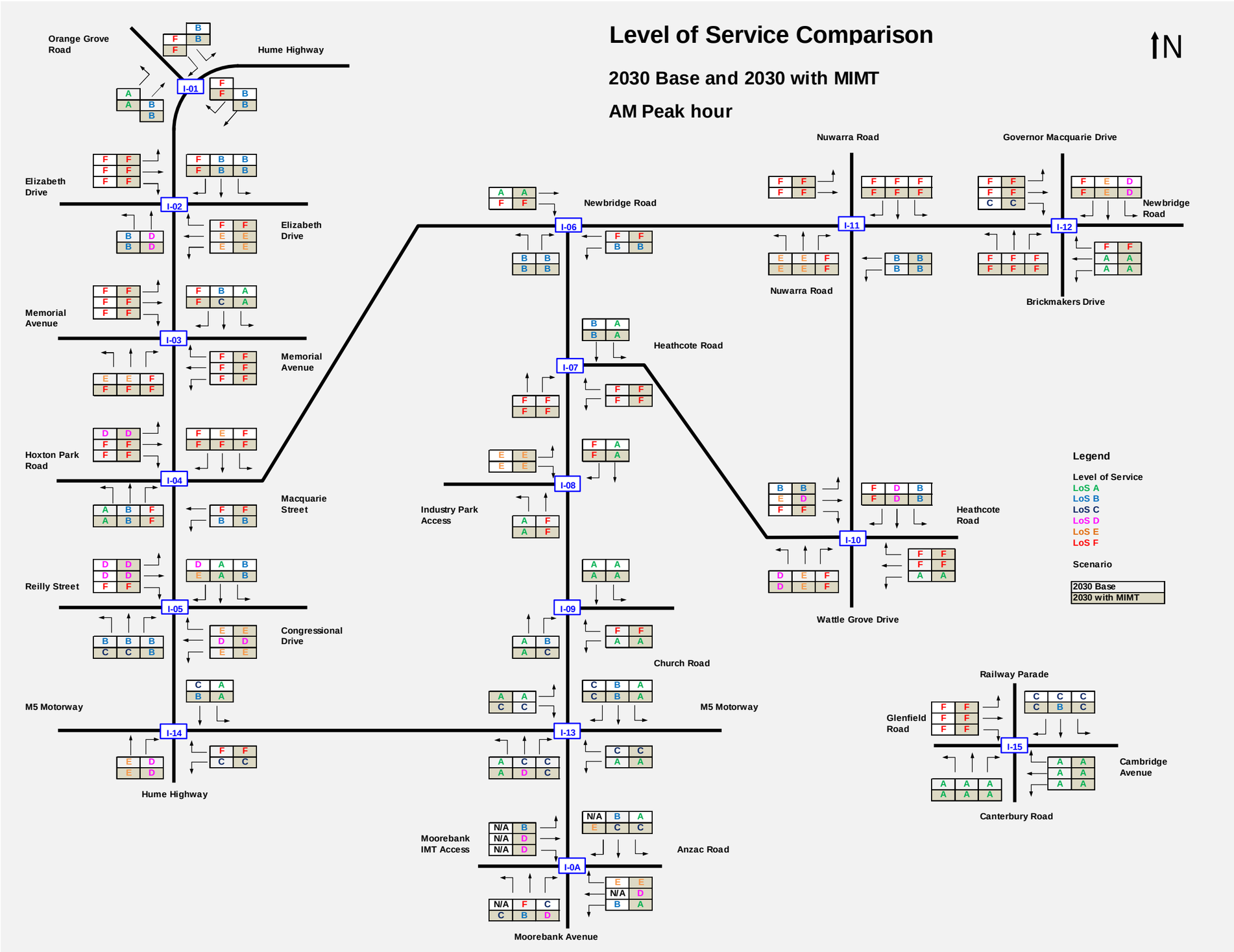


Figure 9.30 Intersection LoS Comparison 2030 weekday AM peak

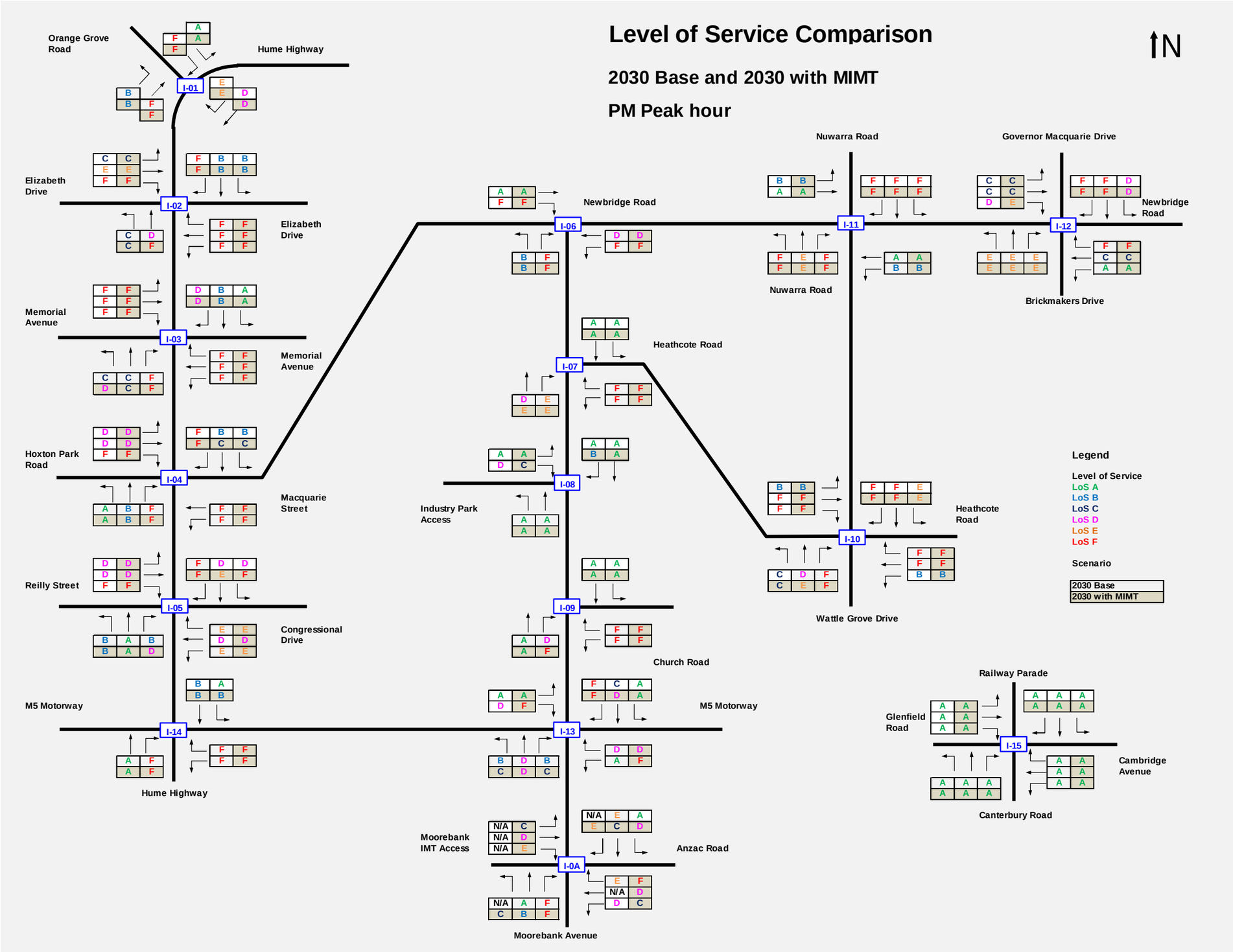


Figure 9.31 Intersection LoS Comparison 2030 weekday PM peak

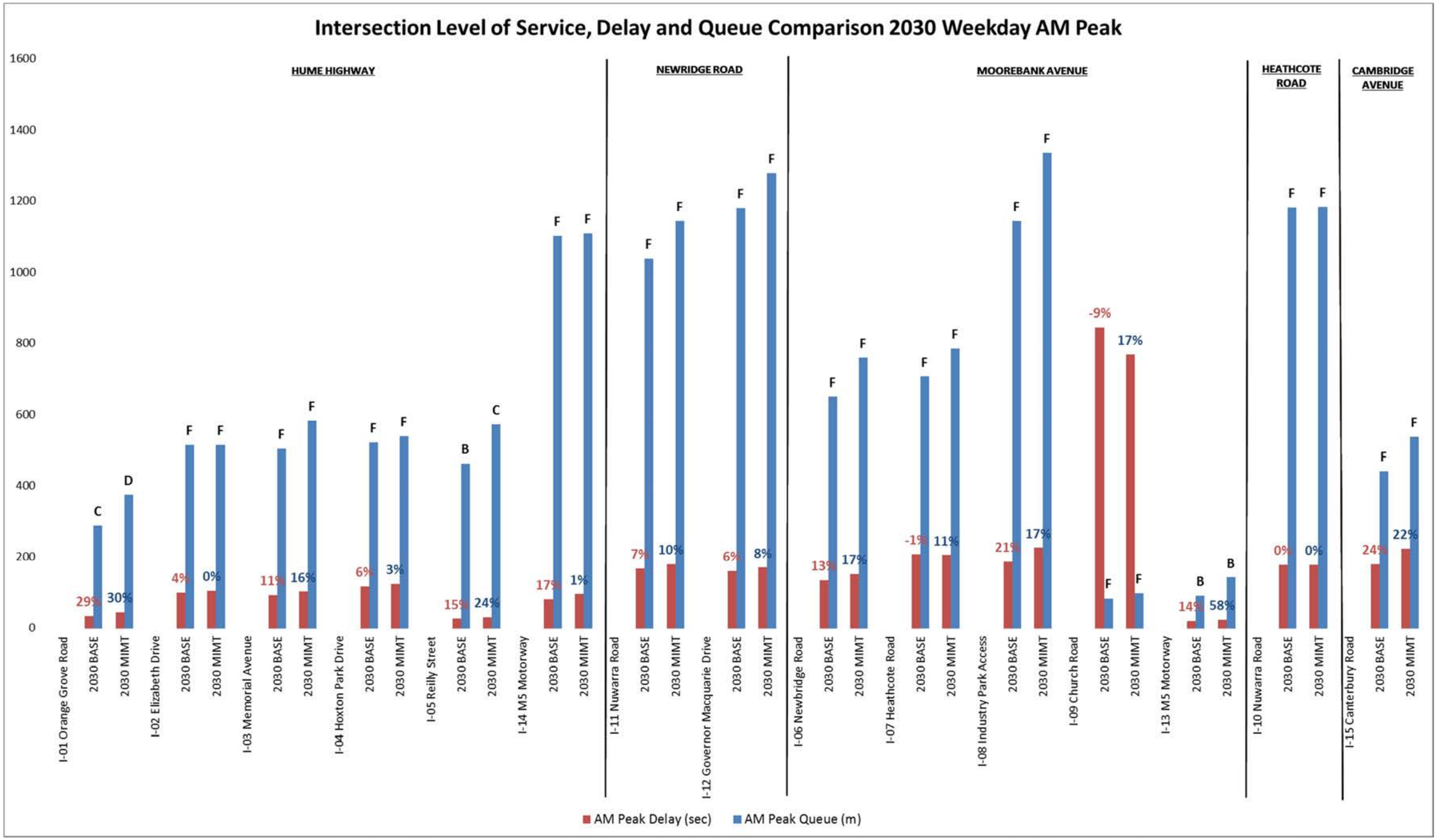


Figure 9.32 Intersection LoS, Delay and Queue Comparison 2030 weekday AM peak

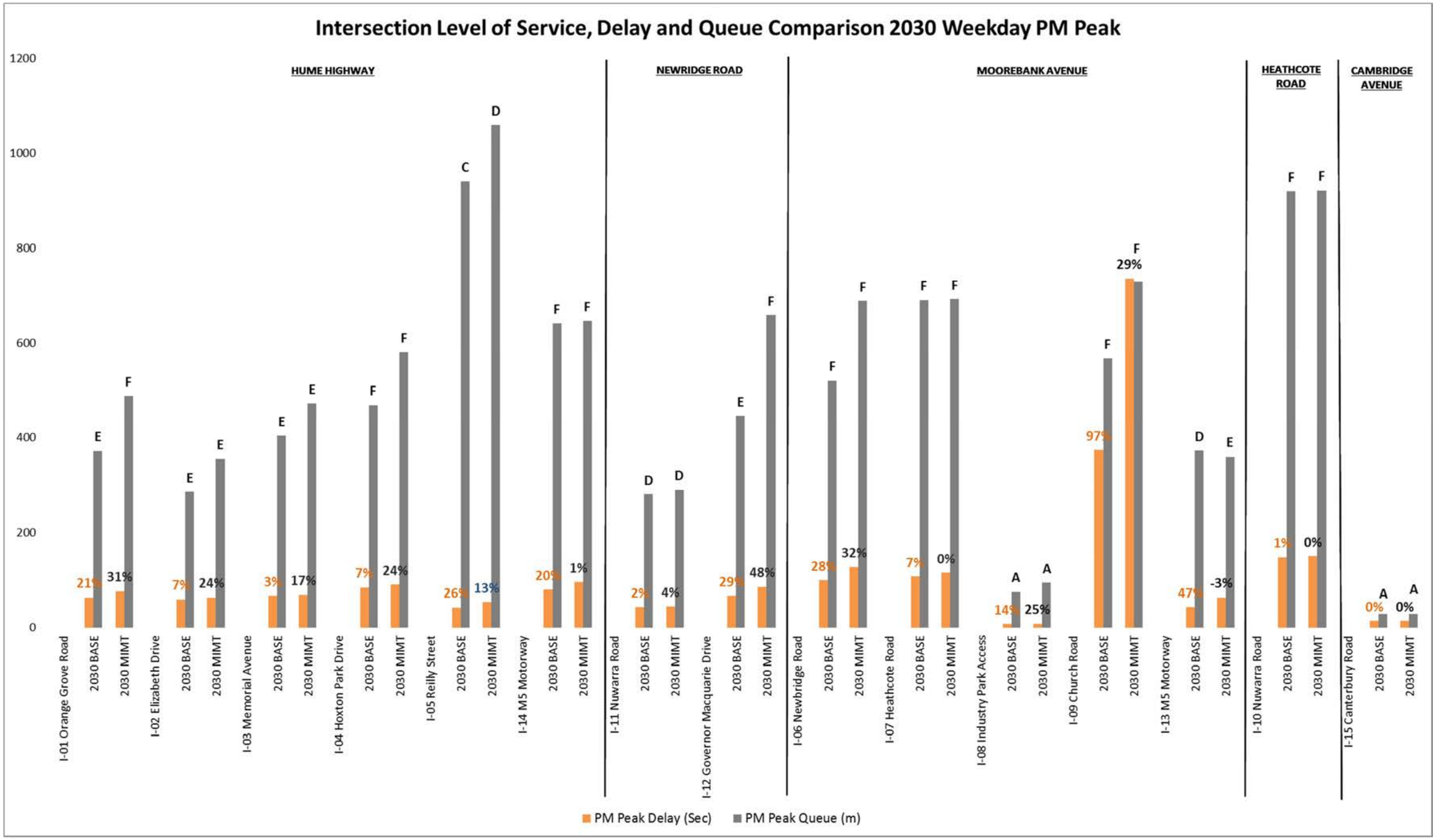


Figure 9.33 Intersection LoS, Delay and Queue Comparison 2030 weekday PM peak

9.3 Intersection upgrade and timing requirements

Table 9.36 below identifies the treatments that would be required, and by what date, for affected intersections (IMT project only). Mitigation treatments would only be applied if an intersection is operating at level of Service (LoS) E or worse as a result of the Project traffic above the background growth and cumulative impacts by others. Treatments would not be recommended where the resulting LoS of D or above is achieved, even where performance has deteriorated as a result of the Project.

Indicative timing of these upgrades is provided in Table 9.36, based on current projections for background traffic growth and anticipated increases in container throughput (or 'ramp up') over time for the IMT. However, in recognition of the uncertainties over actual throughput increases (due to factors such as future economic growth rates), any funding contribution of the IMT towards these upgrades would be based on the following circumstances:

- That certain throughput levels at the terminal had been achieved. These throughputs are outlined in column 1 of Table 9.36.

That it can be further demonstrated (as part of any subsequent planning approval stage) that the intersection performance would have deteriorated to a level of service E or worse (where previously operating at a LoS D or above) were it not for the implementation of the upgrades outlined in Table 9.36. Table 9.37 below presents the same approach as outlined in Table 9.36, but examines the treatments that would be required, and by what date, under cumulative Scenarios A, B and C (C1 and C2). The same provisions apply (including the circumstances by which funding from the IMT is provided) as for the IMT-only scenarios documented in Table 9.36.

Table 9.36 Intersection upgrade and timing requirements – IMT only

Throughputs triggering IMT contributions to upgrades	Upgrade description	Intersections	Indicative upgrade year
Construction of Phase A (no operational throughput)	Signal timing changes, change bus lane on Heathcote Road to general traffic lane (combined left and right turn lane) and second lane to right turn lane.	I-07 – Heathcote Road/Moorebank Avenue	2016
	Ban right turn on Church Road	I-09 – Moorebank Avenue/Church Road	
	Signal timing changes	I-12 – Newbridge Road/Governor Macquarie Drive	
Operation of 250,000 TEU	Signal timing changes	I-08 – Moorebank Avenue/Industrial Access	2019
Operation of 750,000 TEU	Signal timing changes	I-01 – Hume Highway/Orange Grove Road I-06 – Newbridge Road/Moorebank Avenue I-11 – Newbridge Road/Nuwarra Road	2023
	Signal timing changes, extend short right turn lane on M5 East to 230 m in length.	I-14 – Hume Highway/M5 Motorway	
Operation of 1 million TEU	Signal timing changes, changed layout on Governor Macquarie Drive to include a combined through and right turn lane, and dedicated right turn lane of 200 m lengths.	I-12 – Newbridge Road/Governor Macquarie Drive	2025

Throughputs triggering IMT contributions to upgrades	Upgrade description	Intersections	Indicative upgrade year
	Provide a left, through and right lane and dedicated right turn lane on Canterbury Road.	I-15 – Cambridge Avenue/Canterbury Road	
Operation of 1.3 million TEU	Signal timing changes	I-13 – Moorebank Avenue/M5 Motorway	2028
Operation of 1.55 million TEU	Signal timing changes, 60 m approach and 60 m departure lanes on Hume Highway in the northbound direction.	I-01 – Hume Highway/Orange Grove Road	2030
	Signal timing changes, additional 60 m right turn lane on the Hume Highway in the northbound direction.	I-03 – Hume Highway/Memorial Avenue	
	Signal timing changes	I-04 – Hume Highway/Hoxton Park Road	

Table 9.37 Intersection upgrade and timing requirements – cumulative scenarios

Throughputs triggering IMT contributions to upgrades	Cumulative Scenario	Upgrade description	Intersections	Upgrade year
375,000 TEU	C1	Signal timing changes (brought forward from 2023 for IMT-only)	I-01 – Hume Highway/ Orange Grove Road I-06 – Newbridge Road/ Moorebank Avenue	2020
		Signal timing changes, extend short right turn lane on M5 east Motorway to 230 m (brought forward from 2023 for IMT-only).	I-14 – Hume Highway/M5 Motorway	
1.55 million TEU	C2	Signal timing changes, additional 70 m right turn lane on Elizabeth Drive in the westbound direction.	I-02 – Hume Highway /Elizabeth Drive	2030
	A, B and C2	Signal timing changes for an additional 75 m right turn lane on the Hume Highway in the southbound direction.	I-04 – Hume Highway/ Hoxton Park Road	
	A, B and C2	Signal timing changes, extend left turn lane on Newbridge Road to 150 m in the westbound direction.	I-06 – Newbridge Road/ Moorebank Avenue	
	A, B and C2	Signal timing changes, short left turn lane of 100 m to Moorebank Avenue slip lane (dual signalised slip lane westbound).	I-13 – Moorebank Avenue/ M5 Motorway	

Throughputs triggering IMT contributions to upgrades	Cumulative Scenario	Upgrade description	Intersections	Upgrade year
	A and C2	Signal timing changes; provide a dedicated left turn lane on Moorebank Avenue north.	I-0A – Moorebank Avenue/ Anzac Road	
	B	As for A and C2 plus additional right turn lane on Moorebank Avenue south.		
	B	Provide dual right-turn lanes on SIMTA central access.	I-0B – Moorebank Avenue new DNSDC access/ SIMTA northern access.	
	B	Provide dual right-turn lanes on SIMTA southern access.	I-0C – Moorebank Avenue/ SIMTA central access.	

9.4 Summary of potential road network capacity issues in 2030

Capacity issues are reflected through the presence of congestion during peak periods. The analysis of the traffic generated by Moorebank IMT compared to the congestion forecast to be present on the road infrastructure is summarised in Table 9.38.

Table 9.38 The impact of Moorebank IMT traffic on road infrastructure congestion

Road Infrastructure	Peak hour congestion in 2030	Contribution of Moorebank IMT traffic to congestion issue	Mitigation Measure and Impact
Moorebank Avenue (Anzac Road to M5)	Some	Significant adverse impact	Project includes widening of Moorebank Avenue to four lanes and provision of new intersections which reduces congestion to 2015 levels
Moorebank Avenue north of M5	Yes	Minor adverse impact	Minor Intersection modifications may be required
Cambridge Avenue	Yes	Insignificant impact	None required
M5 Westbound between Moorebank Avenue & Hume Highway	Yes	The M5 is heavily congested without Moorebank IMT traffic	TfNSW to explore how to resolve congestion issue on M5 caused by inadequate weave distance as this is not a direct Project impact.
M5 Eastbound between Moorebank Avenue & Hume Highway	Yes	The M5 is heavily congested without Moorebank IMT traffic	TfNSW to explore how to resolve congestion issue on M5 caused by inadequate weave distance as this is not a direct Project impact.
Hume Highway north of M5	Yes	Insignificant impact	None required
M7	Yes	Insignificant impact	None required
M2 Motorway	Yes	Insignificant impact	None required
M1 Pacific Motorway	Yes	Insignificant impact	None required

The influence of the Moorebank IMT traffic on the surrounding road network can be further mitigated by managing the arrival and departure of trucks through the terminal gate during peak periods of congestion.

The localised impact on congestion around Moorebank is offset by the broader network benefits:

- a saving of 56,125 truck vehicle kilometres travelled (VKT) per day.
- a saving of 1,265 truck vehicle hours travelled (VHT) per day.

The potential contribution of Moorebank IMT traffic to the congestion around Moorebank and at a regional level will be revisited as part of the next stage (Stage 2 SSD) development application process. At this later stage, several elements will be more defined allowing many of the issues discussed in this report to be analysed in more detail.

9.5 Potential crash reduction

The impact of the Moorebank Avenue upgrade on accidents was assessed in accordance with the RMS *Accident Reduction Guide, Version 1.1, TD2004/RS01 (August 2005)*. The proposed treatments and their potential individual impact on the type of accidents that occur within the study area are shown in Table 9.39.

Table 9.39 Potential crash reduction

Treatment location	Accident type		
Intersections	**Vehicles from opposing direction**	**Vehicles from one direction**	**Off path on straight**
Fully control right turn with arrows	80%	–	–
Upgrade signal display (mast arm/additional lanterns	10%	25%	–
Protected right turn lane	40%	60%	–
Separated left turn deceleration lane	15%	60%	–
Midblock			
Install street lighting	20%	25%	25%
RRPM's on Centre and Edge lines	–	15%	15%
Limit access to roadside developments	–	50%	–
Duplicate road	–	30%	–
New signing	–	–	10%
Non–skid surfacing	–	50%	5%

Source – RMS Accident Reduction Guide, Version 1.1

The percentage reduction indicates that the upgrade of Moorebank Avenue within the study area is predicted to have a positive result on reducing accidents. The combinations of some of these treatments at certain locations are also likely to reduce the severity of accidents.

The Moorebank IMT reduces truck VKT on the network (section 8.1) and would lead to a potential reduction in heavy vehicle related crashes. The reduction of heavy vehicle numbers on the road network would also assist in reducing the number of potential conflicts along existing travel routes between light and heavy vehicles.

9.5.1 Other safety benefits

Whilst there are no recorded instances over the five year period between 2008 and 2013 of accidents involving pedestrians or cyclists on Moorebank Avenue, the proposed enhancements include footpaths/shared use paths. This would provide an improved and safer environment for pedestrian and cyclists.

10. Mid-block capacity analysis

Summary of changes from the Environmental Impact Statement Traffic and Transport Assessment:

- Mid-block capacities have been revised based on the new traffic generation, distribution and heavy vehicle peak hour proportions.

A mid-block capacity assessment has been undertaken to analyse mid-block road capacity on wider road network based on Austroads *Guide to Traffic Management part 3: Traffic Studies and Analysis, Table 5.1*. The mid-block road capacity determines volume-to-capacity (V/C) ratios and this ration indicates the flow and road performance at each location. The typical mid-block capacities for various types of urban road with interrupted flow, with unflared major intersections and with interruptions form cross and turning traffic at minor intersections are shown in Table 10.1.

Table 10.1 Typical mid-block capacities for urban roads with interrupted flow

Type of lane	One-way mid-block capacity (pc/hr)
Median or inner lane	
Divided road	1,000
Undivided road	900
Middle lane (of a three lane carriageway)	
Divided road	900
Undivided road	1,000
Kerb lane	
Adjacent to parking lane	900
Occasional parked vehicle	600
Clearway conditions	900

Source: Austroads *Guide to Traffic Management Part 3: Traffic Studies and Analysis, Section 5.2.1, Table 5.1*

The modelled traffic volumes were compared with the following nominal lane capacity of the subject road:

- divided three lane road (e.g. Hume Highway and Newbridge Road): 2,800 vehicles/three lanes/h
- divided two lane road (e.g. Heathcote Road, south of Nuwarra Road): 1,900 vehicles/two lanes/h
- undivided two lane road (e.g. Moorebank Avenue): 1,800 vehicles/two lanes/h
- divided one lane road (e.g. Nuwarra Road): 1,000 vehicles/lane/h
- undivided one lane road (e.g. Cambridge Road): 900 vehicles/lane/h.

The peak hour directional traffic flows for the key mid-block sections on the wider road network and the results of volume-to-capacity (V/C) ratios assessments are presented in Table 10.2. A V/C ratio greater than 1.00 indicates the section of roadway is over capacity and will not operate efficiently.

Table 10.2 shows that there are several mid-block road sections that are currently performing near capacity (V/C between 0.90 and 1.00) or over capacity (V/C greater than 1.00). Much of the road network is or will be experiencing congestion without the Project and the addition of Project traffic would have a negligible contribution to that congestion.

Table 10.2 Mid-block capacity analysis on the wider road network

Road section	Peak hour	Available capacity (veh/hr)	2014 Existing				2030 Background				2030 with Moorebank IMT				(%) Difference with Moorebank IMT	
			Peak hour traffic volume (veh/hr)		V/C		Peak hour traffic volume (veh/hr)		V/C		Peak hour traffic volume (veh/hr)		V/C			
			NB or EB	SB or WB	NB or EB	SB or WB	NB or EB	SB or WB	NB or EB	SB or WB	NB or EB	SB or WB	NB or EB	SB or WB	NB or EB	SB or WB
Hume Highway, east of Orange Grove Road	AM	2800	2338	1169	0.84	0.42	2651	1275	0.95	0.46	2649	1278	0.95	0.46	-0.08%	0.27%
	PM	2800	1325	2241	0.47	0.80	1402	2449	0.50	0.87	1409	2454	0.50	0.88	0.47%	0.20%
Hume Highway, south of Orange Grove Road	AM	2800	2902	1938	1.04	0.69	3267	2151	1.17	0.77	3300	2191	1.18	0.78	1.01%	1.85%
	PM	2800	2126	2714	0.76	0.97	2245	2964	0.80	1.06	2293	3010	0.82	1.08	2.15%	1.56%
Hume Highway, north of Elizabeth Drive	AM	2800	2606	1861	0.93	0.66	2979	2042	1.06	0.73	3016	2082	1.08	0.74	1.24%	1.95%
	PM	2800	1779	3007	0.64	1.07	1895	3298	0.68	1.18	1942	3344	0.69	1.19	2.50%	1.40%
Hume Highway, south of Elizabeth Drive	AM	2800	2073	1945	0.74	0.69	2364	2152	0.84	0.77	2402	2196	0.86	0.78	1.60%	2.03%
	PM	2800	1620	2512	0.58	0.90	1721	2739	0.61	0.98	1776	2784	0.63	0.99	3.21%	1.65%
Hume Highway, north of Memorial Avenue	AM	2800	1962	1647	0.70	0.59	2240	1840	0.80	0.66	2278	1887	0.81	0.67	1.69%	2.54%
	PM	2800	1684	2881	0.60	1.03	1803	3133	0.64	1.12	1851	3172	0.66	1.13	2.67%	1.25%
Hume Highway, north of Hoxton Park Road	AM	2800	2075	1603	0.74	0.57	2341	1816	0.84	0.65	2380	1860	0.85	0.66	1.66%	2.43%
	PM	2800	1644	2753	0.59	0.98	1710	3038	0.61	1.09	1768	3079	0.63	1.10	3.37%	1.36%
Hume Highway, south of Hoxton Park Road	AM	2800	2887	1840	1.03	0.66	3269	2065	1.17	0.74	3309	2116	1.18	0.76	1.21%	2.49%
	PM	2800	1967	3432	0.70	1.23	2084	3779	0.74	1.35	2145	3832	0.77	1.37	2.94%	1.40%
Hume Highway, south of Reilly Street	AM	2800	2772	1805	0.99	0.64	3077	1989	1.10	0.71	3113	2041	1.11	0.73	1.16%	2.62%
	PM	2800	2085	3453	0.74	1.23	2139	3771	0.76	1.35	2201	3821	0.79	1.36	2.89%	1.32%
Newbridge Road, west of Moorebank Avenue	AM	1800	1608	1798	0.89	1.00	2324	2376	1.29	1.32	2332	2375	1.30	1.32	0.36%	-0.05%
	PM	1800	1772	1740	0.98	0.97	2133	2253	1.19	1.25	2137	2255	1.19	1.25	0.19%	0.11%
Newbridge Road, east of Moorebank Avenue	AM	2800	2072	1086	0.74	0.39	2797	1571	1.00	0.56	2843	1594	1.02	0.57	1.65%	1.45%
	PM	2800	1534	2071	0.55	0.74	1976	2483	0.71	0.89	1999	2528	0.71	0.90	1.16%	1.83%
Moorebank Avenue, south of Newbridge Road	AM	3800	2149	973	0.57	0.35	2755	1477	0.73	0.53	2799	1507	0.74	0.54	1.59%	2.03%
	PM	2800	1327	1896	0.35	0.68	1856	2243	0.49	0.80	1877	2288	0.49	0.82	1.15%	2.02%
Moorebank Avenue, south of Heathcote Road	AM	1800	1467	534	0.82	0.30	1847	772	1.03	0.43	1884	806	1.05	0.45	2.00%	4.38%
	PM	1800	851	1234	0.47	0.69	1151	1453	0.64	0.81	1180	1496	0.66	0.83	2.55%	2.99%
Moorebank Avenue, north of Church Road	AM	1800	1625	537	0.90	0.30	2003	716	1.11	0.40	2043	757	1.14	0.42	2.00%	5.75%
	PM	1800	873	1355	0.49	0.75	1119	1616	0.62	0.90	1142	1663	0.63	0.92	2.05%	2.92%
Moorebank Avenue, south of Church Road	AM	1800	1836	673	1.02	0.37	2264	871	1.26	0.48	2307	917	1.28	0.51	1.91%	5.24%
	PM	1800	952	1687	0.53	0.94	1221	2006	0.68	1.11	1248	2058	0.69	1.14	2.22%	2.57%
Heathcote Road, north of Nuwarra Road	AM	1900	1182	2149	0.62	1.13	1461	3060	0.77	1.61	1456	3059	0.77	1.61	-0.37%	-0.02%
	PM	1900	1810	1726	0.95	0.91	2305	2078	1.21	1.09	2306	2083	1.21	1.10	0.02%	0.23%
Heathcote Road, south of Nuwarra Road	AM	1900	1316	1990	0.69	1.05	1640	2822	0.86	1.49	1637	2825	0.86	1.49	-0.21%	0.11%
	PM	1900	1986	1687	1.05	0.89	2567	2031	1.35	1.07	2573	2031	1.35	1.07	0.24%	-0.01%

Road section	Peak hour	Available capacity (veh/hr)	2014 Existing				2030 Background				2030 with Moorebank IMT				(%) Difference with Moorebank IMT	
			Peak hour traffic volume (veh/hr)		V/C		Peak hour traffic volume (veh/hr)		V/C		Peak hour traffic volume (veh/hr)		V/C			
			NB or EB	SB or WB	NB or EB	SB or WB	NB or EB	SB or WB	NB or EB	SB or WB	NB or EB	SB or WB	NB or EB	SB or WB	NB or EB	SB or WB
Nuwarra Road, north of Heathcote Road	AM	1000	1095	868	1.10	0.87	1373	1112	1.37	1.11	1372	1117	1.37	1.12	-0.07%	0.45%
	PM	1000	838	1445	0.84	1.45	1000	1724	1.00	1.72	1005	1732	1.00	1.73	0.50%	0.46%
Newbridge Road, west of Nuwarra Road	AM	2800	1807	954	0.65	0.34	2461	1386	0.88	0.50	2491	1401	0.89	0.50	1.21%	1.05%
	PM	2800	1285	1961	0.46	0.70	1687	2369	0.60	0.85	1709	2393	0.61	0.85	1.28%	1.00%
Newbridge Road, west of Governor Macquarie Drive	AM	2800	2240	1094	0.80	0.39	2971	1576	1.06	0.56	2999	1585	1.07	0.57	0.93%	0.56%
	PM	2800	1646	2360	0.59	0.84	2133	2853	0.76	1.02	2138	2942	0.76	1.05	0.22%	3.11%
Newbridge Road, east of Governor Macquarie Drive	AM	2800	3252	1681	1.16	0.60	4258	2268	1.52	0.81	4279	2282	1.53	0.81	0.49%	0.60%
	PM	2800	2157	3317	0.77	1.18	2775	3982	0.99	1.42	2807	4001	1.00	1.43	1.16%	0.48%
Cambridge Avenue, west of Moorebank Avenue	AM	900	1110	323	1.23	0.36	1442	420	1.60	0.47	1463	420	1.63	0.47	1.45%	0.00%
	PM	900	340	1293	0.38	1.44	487	1638	0.54	1.82	487	1663	0.54	1.85	0.00%	1.52%
Orange Grove Road, north of Hume Highway	AM	1900	1399	1604	0.74	0.57	1559	1819	0.82	0.65	1593	1854	0.84	0.66	2.18%	1.94%
	PM	2800	1864	1536	0.98	0.55	1989	1661	1.05	0.59	2031	1702	1.07	0.61	2.10%	2.49%
Elizabeth Drive, west of Hume Highway	AM	2800	1814	791	0.65	0.28	2119	943	0.76	0.34	2121	942	0.76	0.34	0.09%	-0.11%
	PM	2800	1033	1977	0.37	0.71	1111	2242	0.40	0.80	1106	2247	0.40	0.80	-0.45%	0.22%
Hoxton Park Road, west of Hume Highway	AM	1800	1509	617	0.84	0.34	1981	850	1.10	0.47	2002	857	1.11	0.48	1.07%	0.78%
	PM	1800	1091	932	0.61	0.52	1277	1127	0.71	0.63	1292	1131	0.72	0.63	1.14%	0.32%
Heathcote Road, east of Moorebank Avenue	AM	1800	719	506	0.40	0.28	933	777	0.52	0.43	932	777	0.52	0.43	-0.11%	0.00%
	PM	1800	578	758	0.32	0.42	842	885	0.47	0.49	843	886	0.47	0.49	0.12%	0.11%

V/C ratio greater than 1.00

V/C ration between 0.90 and 1.00

V/C ratio less than 0.90

Table 10.2 shows that the volume to capacity (V/C) ratios for all mid-block road sections would continue to perform at similar levels to the base condition with the addition of Moorebank IMT traffic.

11. Traffic weaving on the M5 at the Georges River Crossing

Summary of changes from the Environmental Impact Statement Traffic and Transport Assessment:

– The weaving assessment has been completed utilising the HCM 2020 Highway Capacity Manual with the latest heavy vehicle distributions from the STM and FMM models and includes the latest road upgrade configurations on the M5.

The HCM 2010 Highway Capacity Manual – Transportation Research Board defines weaving as follows:

'Weaving is generally defined as the crossing of two or more traffic streams travelling in the same direction along a significant length of highway without the aid of traffic control devices. Thus, weaving segments are formed when merge segments are closely followed by diverge segments. 'Closely' implies that there is not sufficient distance between the merge and diverge segments for them to operate independently.'

At the M5 crossing of the Georges River the Hume Highway and Moorebank Avenue Interchanges are located nearby on either side of the river. The proximity of the interchanges results in the easterly oriented ramps of the Hume Highway interchange to be close to the westerly oriented ramps from the Moorebank Avenue interchange.

In the westbound direction, traffic from the M5 destined for the Hume Highway must weave over a distance of 453 m through the traffic coming from Moorebank Avenue destined for the M5. Similarly, in the eastbound direction, traffic from the Hume Highway and destined for the M5, must weave over a distance of 361 m through traffic from the M5 destined for Moorebank Avenue. This section of M5 must also cater for through traffic on the main carriageways and traffic moving directly between the entry and exit ramps.

Due to the proximity of the two interchanges the resultant traffic weaving tends to control operation during the peak hours rather than the individual exits and entries.

In order to establish the expected levels of service and hence the spare capacity available for Moorebank IMT traffic, a weaving analysis was undertaken using the HCM 2010 Highway Capacity Manual – Transportation Research Board. Traffic data for the design years was extracted from the Strategic Travel Model (STM, information provided by the Bureau of Transport Statistics). This model presented the projected background traffic and did not include any Moorebank IMT or Sydney Intermodal Terminal Alliance (SIMTA) related background traffic.

The following inputs were included in the assessment:

- M5 configuration eastbound between Hume Highway and Moorebank Avenue (with widening):
  - three dedicated through travel lanes
  - one combined Hume Highway on-ramp and Moorebank Avenue off-ramp (this requires vehicles to exit the lane to join motorway)
  - total number of lanes in this segment is four
  - the length between these two ramps is approximately 361 metres (1,184 feet).

- M5 configuration westbound between Moorebank Avenue and Hume Highway (with widening):
  - three dedicated through travel lanes
  - one combined Moorebank Avenue on-ramp and Hume Highway off-ramp (this requires vehicles to exit the lane to join motorway) with the second lane a combined left and through lane, with one lane splitting to become the off-ramp to the Hume Highway and the other lane splitting continuing through on the motorway (allowing vehicles to exit the motorway without lane change)
  - total number of lanes in this segment is four
  - the length between these two ramps is approximately 453 metres (1,486 feet).

The following assumptions were applied to the assessment:

- free flow speed on M5 of 65 mph which equates to 104 km/h (the posted speed is 110 km/h)
- freeway maximum capacity of 2350 vehicles per lane
- peak hour flow factor of 0.94
- level terrain conditions.

The Level of Service (LoS) ranges for freeway conditions is calculated in terms of vehicle density (pcu) per mile per lane. LoS densities are provided in Table 11.1.

Table 11.1 Freeway weaving levels of service

LoS	Density (pcu/mi/ln)
A	0-10
B	>10-20
C	>20-28
D	>28-35
E	>35
F	

Source: Highway Capacity Manual (2010)

The analysis indicates that the M5 at this location will be at and/or nearing capacity in future years as a result of the weaving manoeuvres between the two interchanges. The weaving assessment results from the HCS program are shown in the Table 11.2.

Table 11.2 Expected Levels of Service for Weaving at the M5 Georges River Crossing in 2030 with and without Moorebank IMT

Scenario	Density (pcu/mi/ln) (LoS)	
	2030 AM peak	2031 PM peak
Eastbound		
Base	LoS F	31.4 (LoS D)
With Moorebank IMT	LoS F	31.8 (LoS D)
Westbound		
Base	26.3 (LoS C)	45.9 (LoS E)
With Moorebank IMT	26.7 (LoS C)	46.1 (LoS E)

The assessment indicates the section of the M5 between Moorebank Avenue and Hume Highway in both east and west bound directions will operate with only minimal increase in density due to the inclusion of the Moorebank IMT. As a result, the Level of Service with Moorebank IMT does not deviate from the respective base scenario for both AM and PM peak periods.

However, besides the westbound AM peak scenario, all over scenarios produce undesirable LoS with 2030 traffic volumes, with the eastbound AM peak scenario operating at a poor LoS F.

The volume to capacity ratios for the weaving segment is provided in Table 11.3.

Table 11.3 Expected V/C Ratios at the M5 Georges River Crossing in 2030 with and without Moorebank IMT

Scenario	V/C Ratio	
	2030 AM peak	2030 PM peak
Eastbound		
Base	1.515	0.889
With Moorebank IMT	1.516	0.913
Westbound		
Base	0.651	0.988
With Moorebank IMT	0.659	0.991

A V/C ratio less than 0.90 indicates that the section of road is performing within capacity. A V/C ratio between 0.90 and 1.00 indicates it is nearing capacity and over 1.00, over capacity (operating at a LoS F).

The analysis indicates that the eastbound 2030 AM peak for both base and with Moorebank IMT will be over capacity. For the 2030 PM peak, both eastbound and westbound will operate nearing capacity with only westbound AM peak operating within capacity.

It can be inferred from the above that by 2030 the background traffic growth alone would have resumed all spare capacity on M5 in both directions in the PM peak and all spare capacity in the eastbound direction in the AM peak. Consequently any Moorebank IMT traffic would experience considerable congestion during these times.

The introduction of Moorebank IMT traffic would result in a minimal change in the volume of the M5 between Moorebank Avenue and Hume Highway in both directions. For both the weekday AM and PM peak periods, the densities determined with the addition of the Moorebank IMT closely mimic those of the base case for each time scenario. As such, LoS classifications are unchanged for all scenarios.

It is recognised that Moorebank IMT traffic will add to the weaving traffic on the M5 and the potential contribution of Moorebank IMT traffic to the weaving impact will be analysed in more detail at the next stage of more detailed planning including microsimulation modelling.

12. M5

Summary of changes from the Environmental Impact Statement Traffic and Transport Assessment:

– Changes to the percentage of Project traffic and cumulative scenario traffic on the M5 have been revised based on the new traffic generation, distribution and heavy vehicle peak hour proportions.

To assess the impact of the Moorebank IMT on the M5, the following was undertaken:

- Observed traffic volumes from the 2010 counts were factored to future year values based on growth rates taken from the STM.
- This was then compared to the traffic generated by the Moorebank IMT to calculate the percentage increase. The traffic generated by the IMEX and interstate facilities would already be present on the road network as it would have been mostly generated at Port Botany, therefore some of the additional traffic is double counted using this approach. These percentage increases are therefore likely to represent a slight over estimate of the increase. The percentage increase is provided in Table 12.1.

Table 12.1 Moorebank IMT percentage increase on M5 during 2030 peak periods

	Direction	2030		
		LV	HV	ALL
AM peak hour				
M5 west of Moorebank Avenue	EB	0.47%	17.09%	2.26%
	WB	0.00%	24.63%	2.63%
M5 east of Moorebank Avenue	EB	0.00%	2.23%	0.27%
	WB	0.20%	6.51%	0.82%
PM peak hour				
M5 west of Moorebank Avenue	EB	0.00%	57.72%	3.31%
	WB	0.42%	21.82%	2.35%
M5 east of Moorebank Avenue	EB	0.23%	16.19%	1.30%
	WB	0.00%	9.79%	0.48%

EB – Eastbound, WB – Westbound
LV – Light vehicle, HV – Heavy vehicle, ALL – All vehicles

The percentage increase from the traffic generated by Moorebank IMT on the M5 is under 3.3% of total M5 traffic during the 2030 AM and PM peak hours. The increase in the heavy vehicle proportion is an overestimate as no allowance has been made for heavy vehicles that would have been on the network anyway.

An assessment of the trips generated by Moorebank IMT and SIMTA (under the cumulative scenarios) on the M5 east and west of Moorebank Avenue has been undertaken for both directions of travel during the AM and PM peak periods. The percentage increase in overall traffic volumes is provided in Table 12.2.

Table 12.2 Cumulative traffic percentage increase to the M5 from Moorebank IMT and SIMTA during weekday peak periods in 2030

		Moorebank IMT only	Cumulative scenario A	Cumulative scenario B	Cumulative scenario C2
AM peak hour					
M5 west of Moorebank Avenue	EB	2.26%	5.30%	7.79%	5.56%
	WB	2.63%	3.51%	2.94%	3.19%
M5 east of Moorebank Avenue	EB	0.27%	0.31%	0.20%	0.25%
	WB	0.82%	2.79%	4.44%	3.04%
PM peak hour					
M5 west of Moorebank Avenue	EB	3.31%	4.37%	2.95%	3.56%
	WB	2.35%	5.24%	6.69%	6.07%
M5 east of Moorebank Avenue	EB	1.30%	3.61%	5.03%	4.71%
	WB	0.48%	0.51%	0.29%	0.39%

EB – Eastbound, WB – Westbound

These results suggest that the combined development of Moorebank IMT and SIMTA is not likely to have a substantial impact on the operation of the M5 with the following percentage increases in total traffic volumes:

- up to a 5% increase in total traffic volumes under cumulative scenario A
- up to a 8% increase in total traffic volumes under cumulative scenario B
- up to a 6% increase in total traffic volumes under cumulative scenario C2.

13. Mitigation measures for detailed design and operations

Summary of changes from the Environmental Impact Statement Traffic and Transport Assessment:

No change.

13.1 General detailed design considerations

The operation of the Project site would be supported by the upgrade of Moorebank Avenue and its associated intersections. Moorebank Avenue would be increased to a four-lane two-way road with two lanes in both directions between the M5 and Anzac Road. In association with the increase in lanes, access locations into the Project site would be signalised and all intersections and have designated turn bays on Moorebank Avenue.

The upgrade to Moorebank Avenue and the staged construction of Moorebank IMT would be coordinated to minimise the impact on Moorebank Avenue traffic.

The following mitigation measures are to be considered during detailed design stage to improve the operation of the Moorebank IMT and reduce its impacts:

- IMEX, Interstate and the warehouse developments provide storage and shower areas for cyclists to promote cycling as mode of transport.
- Consider the potential for increased bus services between the Moorebank IMT and nearby public transport interchange hubs to reduce the volume of light vehicles generated by staff. There is potential for buses to service the Project site. It is the responsibility of the Moorebank IMT operators to negotiate the services changes provided by bus operators.
- Undertake inspections and monitoring of traffic congestion on Moorebank Avenue at Full Build in 2030 and report on any project specific impacts to Moorebank Avenue operation.
- Creation of a working subgroup of the Moorebank IMT facility, whereby the subgroup work closely with the LCC traffic committee to ensure that a best practice approach is taken to future bus (and rail link) provision for workers and visitors to both the sites and the operation of Moorebank Avenue.
- Facilitated discussion with Transdev and TfNSW regarding future bus servicing the Project site.

The *Integrated Land Use and Transport Package* (DUAP, 2001) should be consulted during the detailed design stage to achieve the identified ‘best practice’ for the different planning principles.

13.2 Detailed design of Project Development Phasing

During the respective detailed design and subsequent approvals and assessment processes for the development phasing, refining traffic, transport and access impact assessment would be undertaken to confirm forecasts and the required mitigation measures on the local network and for the vehicle distribution impacts on the wider road network.

13.3 Outside the study area – M5

The Moorebank IMT would facilitate the distribution of freight to western Sydney by transferring the origin of road vehicles from Port Botany to Moorebank.

Some of the traffic generated by the IMEX and Interstate facilities would have been on the M5 anyway – but originating at Port Botany.

The Project traffic would not have a significant impact on the operation of the M5.

13.4 Travel demand management

For forecasting, a mode split was used for the Moorebank Intermodal Terminal, as discussed in section 4, of 90% of staff travelling to and from the Project site by car and 10% travelling by public transport, car share, walking, cycling or other alternative transport modes. This is considered a reasonable future target for the project as the currently limited public transport access to and from the Project site with only two bus services near the Project site during the peak hours, and the closest train stations more than a 40 minute walk.

Up to approximately 2,200 staff are estimated to work at the terminal each day during full operation. There is potential to reduce the reliance on private car travel, through implementation of initiatives to maximise employee access to public transport in the local area. A number of opportunities to improve employee access to public transport are identified in the following sections.

Reduced reliance on private car travel could also reduce the amount of car parking required on site, freeing up land for other uses. Increased walking and cycling has the potential for improving employee health and fitness levels and employee travel by alternative modes would reduce car ownership costs.

The health aspects of promoting greater use of walking and cycling both as sole and feeder modes should be considered as part of the Project site workplace travel plan.

13.4.1 Buses

Access to nearby train stations with frequent service is currently facilitated by the 901 (Transdev) bus service between Liverpool and Holsworthy. Options to improve bus service to the Project site and access to these train stations might include:

- Increased peak period bus service that coordinate with train services at Liverpool and Holsworthy.
- Extension of the 901 route to the main terminal access points on Moorebank Avenue.
- A review and upgrade of bus stops on Moorebank Avenue to include shelter, seating and bus timetabling information.
- An employee shuttle bus to Liverpool train station for the peak periods and before/after staff shifts.
- Bus access into the Project site should a shuttle service or public bus service operate from the Project site.

- Increased bus services in the local area or an express bus between Liverpool and Holsworthy Stations and the Moorebank IMT.
- Bus priority at key intersections should the need arise.

13.4.2 Walking and cycling links

Improved access to public transport and alternative transport modes would be further supported through provision of accessible and safe walking and cycling links to the Project site. The current concept plan includes provision for a shared path along Moorebank Avenue, which would connect with pedestrian and bicycle infrastructure in the local area. In addition the proposed upgrades to Moorebank Avenue and future intersections include provision of signalised pedestrian crossings.

Pedestrian and cyclist connections could be further supported through:

- Footpath upgrades along Anzac Road with a continuous footpath link to Wattle Grove.
- A pedestrian and cyclist link along Cambridge Avenue.
- Improved pedestrian and cyclist connections to Newbridge Road and Liverpool.
- Walkways and cycleways from Moorebank Avenue to on-site facilities, and through the Project site as necessary.

There may also be potential for a pedestrian/cyclist link from the Project site to Casula Powerhouse and Casula Station. This would require detailed investigation should there be demand for the link.

13.4.3 Employee focussed programs

Other initiatives which MIC could explore as part of the Project site management plan to offer travel choice and be responsible environmental managers include:

- Reduction of the supply of car parking to terminal employees as availability of viable transport choices increases.
- Travel behaviour change program for terminal employees, including programs and campaigns to increase employee awareness of public transport services and local walking/cycling links.
- Staff carpooling program.
- Car share scheme, funded by tenants or site management.
- End of trip facilities including bicycle parking, change rooms, showers and lockers.

14. Construction traffic management

Summary of changes from the Environmental Impact Statement Traffic and Transport Assessment:

– Changes to construction workforce due to revised Project staging and revised construction site accesses.

This section outlines some of the concepts which would need to be included in the construction management plan of the Project site to mitigate likely construction impacts to road users during the proposed upgrade of Moorebank Avenue. This plan would evolve as construction methods become more certain.

14.1 Scope of construction works

The proposed indicative construction timeline is as follows:

- Early works: from 2015.
- Phase A: from 2016 to 2018 with construction traffic peaking in 2016.
- Proposed upgrade on Moorebank Avenue: from 2016.
- Phase B: from 2018 to 2021 with construction traffic peaking in 2020.
- Phase C: from 2021 to 2030 with construction peaking in 2023.

14.2 Project construction footprint

The construction footprint represents the area within which construction activities would occur. For the purposes of assessment, the construction footprint for each Project phase has been assumed to be entirely cleared of vegetation, providing for the construction of buildings, hard surfaces and infrastructure.

The construction footprint includes:

- the entire Project site for the development of the Moorebank IMT, with the exception of most of the conservation zone and some additional areas within which vegetation would be retained;
- a section of the Georges River and its banks for construction of the rail bridge and for construction access;
- areas to accommodate drainage channels across the conservation area between the Moorebank IMT and the Georges River; and
- The entire Moorebank Avenue for the upgrade to four lanes.

All rail access options are likely to be constructed using access for labour, plant and materials predominantly from the Project site on the eastern bank of the Georges River.

For construction of the southern rail access, approximately 90% of the rail bridge and approach viaduct structures would utilise access from the eastern bank (Project site) and 10% from the western bank, on the Glenfield Landfill site.

14.2.1 Moorebank Avenue upgrades

Moorebank Avenue is proposed to be upgraded to a four lane divided roadway from the M5 interchange to the Anzac Road intersection. All intersections will be traffic signal controlled with indented right and left turn lanes as required. Generally pedestrian footpaths are proposed on both sides of the road with signalised pedestrian crossings at the intersections.

The existing Moorebank Avenue is a two lane two-way road. It is proposed that this will become the ultimate southbound carriageway and a new northbound carriageway would be constructed on the west side of the existing road. Traffic would remain on the existing road whilst the new northbound carriageway is constructed clear of traffic.

Upon completion of the northbound carriageway, the two way traffic would be transferred from the existing Moorebank Avenue to the new carriageway. The existing Moorebank Avenue would then be reconstructed clear of traffic to form the new southbound carriageway. Construction related traffic for both the Moorebank Avenue upgrades and Project site would, as far as is possible, be confined to off peak hours to minimise the impact of the works. During construction existing accesses, public transport and pedestrian facilities would be retained at all times.

14.3 Construction workforce

The construction workforce would vary depending on the phase of construction and associated activities. Anticipated peak in construction workforce numbers by phase of project are shown in Table 14.1.

Table 14.1 Indicative peak daily construction workforce

Project Stage	Peak daily workforce
Early Works	300
Phase A	850
Phase B	550
Phase C	770

14.4 Haulage routes and Project site access

The haulage routes during construction are to remain on state and national roads where possible. As the Project site is close to the M5, it has been assumed that construction vehicles will travel between the construction vehicle access (on Moorebank Avenue) and the M5 interchange.

Light vehicles associated with construction activities, including construction staff, are assumed to have the same distribution as assumed for the operational phase traffic distribution.

Depending on the scheduling of the upgrade to Moorebank Avenue, the access locations into the Project construction site would vary. However, due to the volume of spoil to be removed and material to be imported to the Project site, it would likely require multiple locations to improve the efficiency of construction logistics. This will require coordination between the two construction activities.

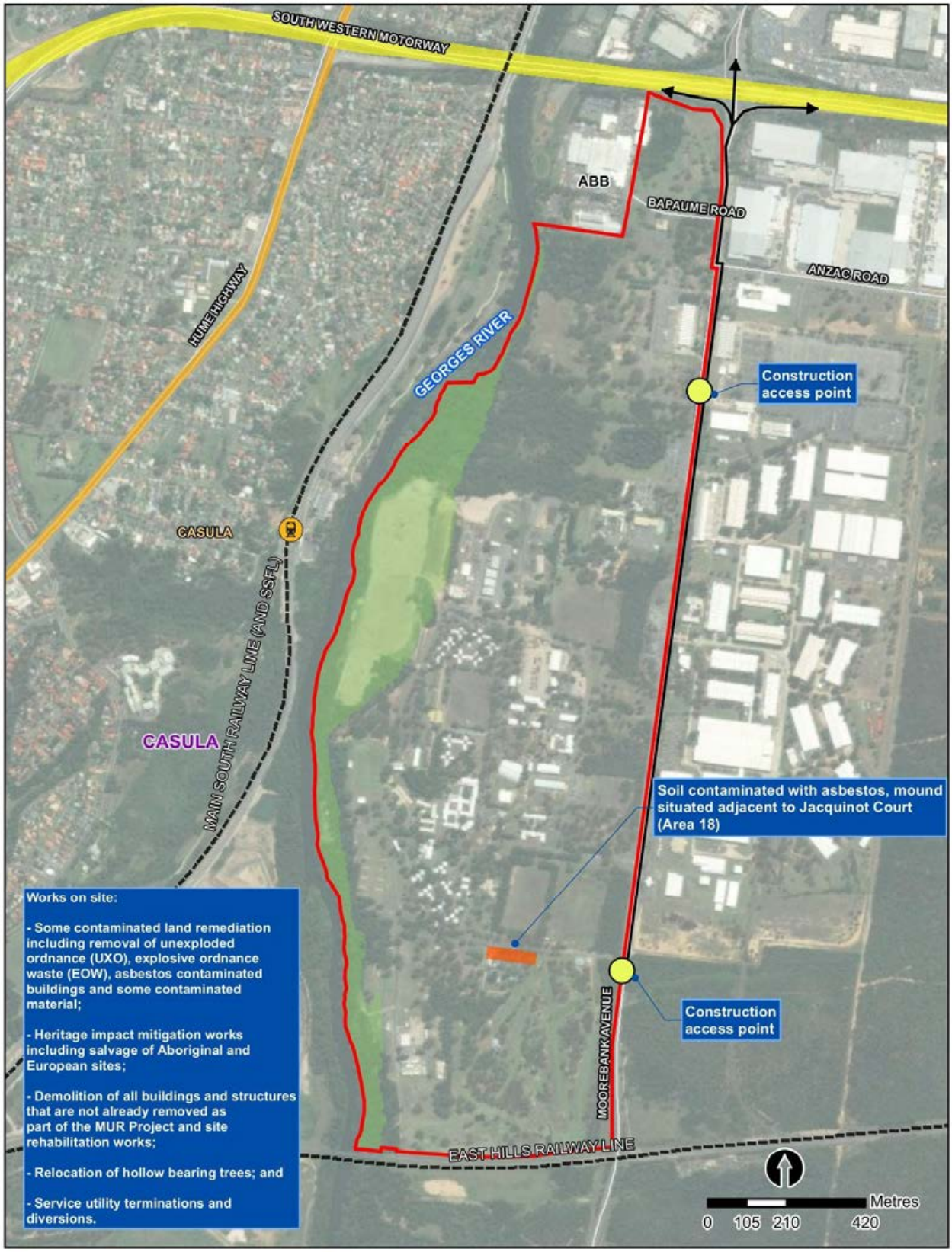
Likely access points for construction vehicles have been identified in Figures 14.1 and 14.2 during the Early Works and Project phases respectively. Access to the Project site would predominately be via the M5 and Moorebank Avenue. Moorebank Avenue south of the East Hills Railway Line would not be utilised by construction traffic other than for light vehicles only.

Haulage routes for the southern rail access to and from Cambridge Avenue would be via Moorebank Avenue or Glenfield Road.

All required car parking would be provided on-site. Access would be maintained for ABB throughout the Project and road construction.

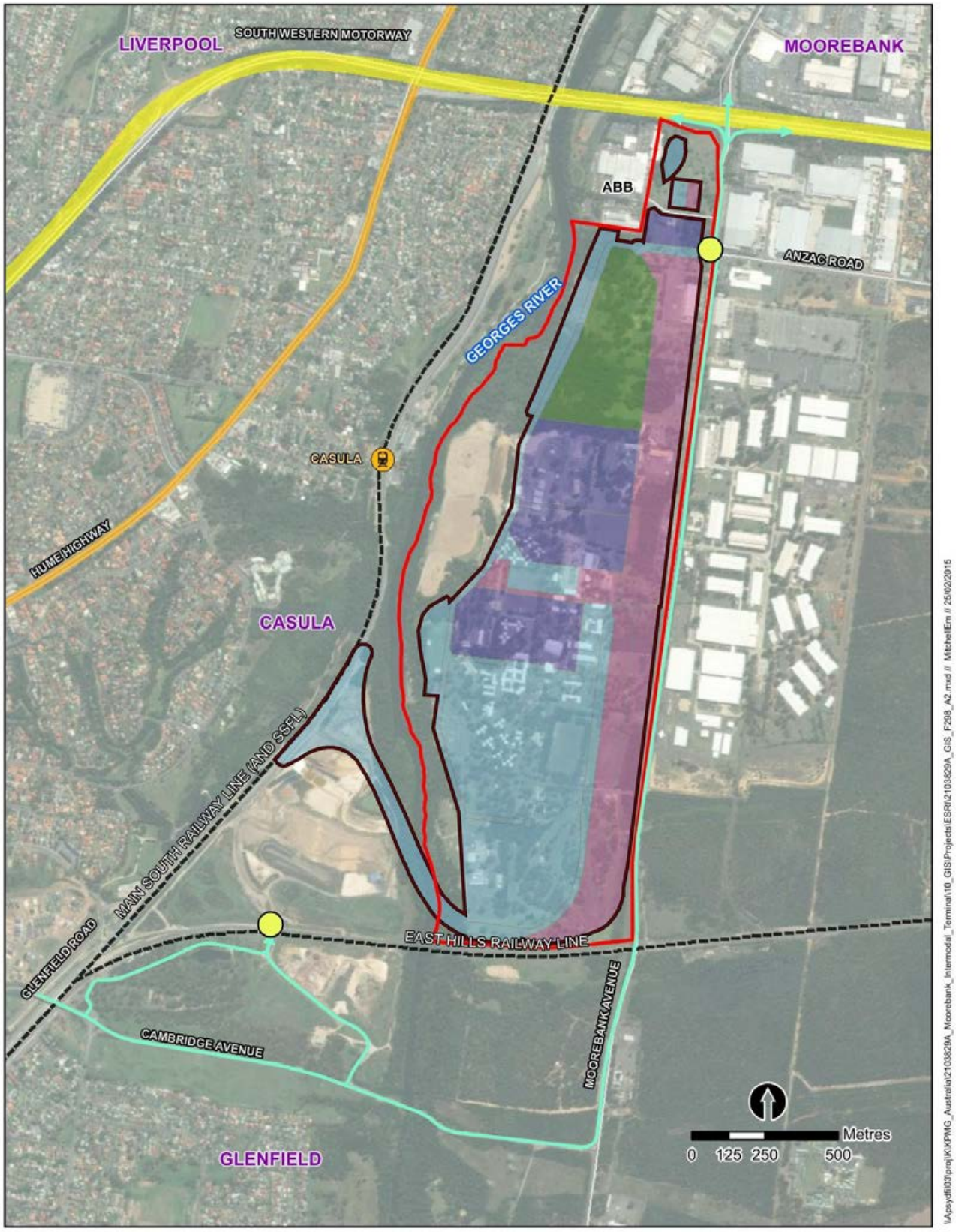
Some partial and full road closures may be required during construction. Where possible, these would occur at night during quieter traffic periods. Road closures would occur in consultation with the RMS and Liverpool City Council.

Moorebank Avenue between the M5 and the Anzac Road intersection would be upgraded as part of the Project, with the majority of works assumed to occur around 2016. Prior to the full upgrade of Moorebank Avenue and during the Early Works development phase and part of Phase A, the existing Project site access points would be used.



Rail line & station
Area to be remediated as part of Early works
Establishment of conservation area
Likely construction access
Haulage route
IMT site boundary

Figure 14.1 Early works development phase - construction footprint, access and haulage



Rail line & station
IMT site boundary
Total construction area

Construction Footprint
Phase A - 2016
Phase B - 2019
Phase C - 2023
Full Build

Likely construction access
Haulage route

Figure 14.2 Indicative Construction Footprint, Access and Haulage

14.5 Parking

All construction workers would park within the Project site where possible. It is anticipated that there will be a number of access points along Moorebank Avenue that will allow construction staff in light vehicles to enter and leave the site compound at safe locations in 2015 and a single access from 2016. It is anticipated that these parking locations would change over the course of construction. Depending on the different stages of construction, formal access may be provided from either the existing or proposed intersections.

14.6 Pedestrian and cyclist impacts

Pedestrian and cyclist impacts are expected to be minimal during the Early Works stage. Pedestrian movements generated by the public bus service would be catered for by providing a safe corridor for movement to and from the bus stop throughout the construction phase. It may be necessary to temporarily relocate bus stops during the construction phase of Moorebank Avenue. The volume of passengers using the bus service is likely to reduce during the Early Works stage with the relocation of SME.

During Phases B and C and Project Full Build, the volume of pedestrians and cyclists are expected to be equal or greater than the existing situation. This is due to the operation of the Moorebank IMT and the improvement in facilities along Moorebank Avenue that will be constructed during the Early works and Phase A stages.

14.7 Construction mitigation measures

The greatest traffic impacts created by the Moorebank IMT would occur during Phase A construction. During this period there would be a high volume of heavy vehicles travelling to and from the Project site combined with the disruption to traffic from the upgrade of Moorebank Avenue in Phase A.

Construction Traffic Management Plans (CTMP) would be developed for each development phase to provide additional information for the construction planning of the Moorebank IMT and the upgrade of Moorebank Avenue. Numerous CTMPs are potentially required to address the traffic impacts of individual components of the different stages.

The following mitigation measures to provide additional information during the construction stages should be considered in developing the CTMPs:

- Modify access locations in response to the development of the Moorebank Avenue upgrade. During this stage numerous access locations may be required for the transportation of spoil and material.
- Reducing the volumes of construction vehicles travelling during peak periods, especially if the increase in traffic generated by construction activities impedes on the operation of Moorebank Avenue.
- Maintain access to neighbouring properties. It is particularly important that the ABB site has access throughout the construction stages as the proposed works have potential to affect its operation.
- Provision of alternate suitable pedestrian, cycle and public transport facilities during the construction of Moorebank Avenue upgrades retaining well defined and well signed routes, paths and bus stop locations.
- Develop a communication plan to provide information to the relevant authorities, bus operators and local community. This is particularly important as there is potential for multiple contractors to be present on Project site at any one time. The communication plan will need to incorporate a contact list with the chain of command.

- The implementation of Traffic Control Plans (TCP) to inform drivers of the construction activities and locations of heavy vehicle access locations. Variable Message Signs (VMS) and advertisements in local papers may be required to provide advanced warning of the proposed works.
- Obtain Road occupancy licences (ROL) for the upgrade of Moorebank Avenue. A TCP and potentially a Speed Zone Authorisation (SZA) application will need to be prepared for the ROL applications.
- Develop an emergency response plan for the upgrade of Moorebank Avenue during Phase A. During this stage, emergency vehicles using Moorebank Avenue as a transport route will need to be considered, as well as emergency access to adjoining properties.

15. Conclusion

The following conclusions are reached:

- The impact of traffic from the Moorebank IMT represent less than 3.3% of the total traffic already on the M5, the Project would therefore not have a substantial impact on the motorway operation.
- The trucks from the IMEX development would have been on the highway network anyway – but associated with Port Botany.
- The proposed modifications to Moorebank Avenue include:
  - widening Moorebank Avenue to a dual carriageway, four-lane road (two lanes in each direction), between the M5 intersection and Anzac Road; and
  - the expansion of the Moorebank Avenue/Anzac Road intersection.
- Several intersection upgrades are proposed due to background traffic growth alone in future years. These intersection upgrades are proposed to return the intersection back to base level performance for each particular future year should the intersection be performing unsatisfactorily.
- There are sufficient parking spaces to cater for the forecast staff numbers both during construction and operation.
- There are opportunities to provide enhanced public transport services in the form of more regular bus services or an employee shuttle bus to service the Project site. The increased workforce may make such operations viable.

The combined traffic associated with the Moorebank IMT and an adjacent SIMTA operation could be accommodated within the proposed upgrades to Moorebank Avenue for cumulative scenarios A, B, C1 and C2. Modifications to the Moorebank Avenue and Anzac Road intersection would be required to accommodate cumulative scenario traffic.

The cumulative scenarios are not likely to have a substantial impact on the operation of the M5 or the regional road network.

16. References

The following documents were referenced in preparation of this report:

- Austroads, Guide to Road Design Part 3: Geometric Design (November 2009).
- Austroads, Guide to Traffic Management Part 3: Traffic Studies and Analysis (November 2009).
- Bureau of Transport Statistics, Freight Movements in Sydney (July 2010).
- Bureau of Transport Statistics, Sydney Freight Movement Model (2006).
- Bureau of Transport Statistics, Sydney Light Commercial Vehicle Model (2006).
- Bureau of Transport Statistics, Sydney Strategic Travel Model (2006).
- Deloitte, Moorebank Intermodal Terminal Demand Estimate Summary – Trip Generation Modelling (January 2015).
- Deloitte, Staff numbers based on Moorebank IMT Staffing Requirements – Version 4 (August 2001).
- Deloitte, Moorebank Intermodal Company, EIS – Supporting Information, Final Report (February 2015).
- Department of Urban Affairs and Planning, Integrated Land Use and Transport Package (August 2001).
- Fremantle Ports, Truck Productivity Study (July 2014).
- Halcrow, M5 West Widening Project Traffic and Transport Report (September 2010).
- Hyder Consulting, Sydney Intermodal Terminal Alliance Part 3A Concept Plan Application Traffic and Transport, Traffic and Accessibility Impact Assessment (August 2011).
- Landcom, Residential Density Guide for Landcom Project Teams (May 2011).
- Liverpool City Council, Bike Plan 2009 (2009).
- Liverpool City Council, Development Control Plan 2008 Part 1.2 Additional General Controls for Development (April 2012).
- New South Wales Government, The Sydney Metropolitan Strategy (December 2010).
- New South Wales Government, Port Botany and Sydney Airport Transport Improvement Program (2011).
- Roads and Maritime Services, Accident Reduction Guide, Version 1.1, TD2004/RS01 (August 2005).
- Roads and Maritime Services, Background Traffic Annual Growth Rates 2016 to 2031 for a 2hr AM and PM peak period Moorebank Area – email 2/5/2014, 6/5/2014, 21/7/2014 and 15/9/2014.
- Roads and Maritime Services, Crash id dataset 4434 - Selected crashes along Moorebank Avenue between Cambridge Avenue and Church Road intersections. 2006–2010 (November 2011).
- Roads and Maritime Services, Crash id dataset 4434 - Selected crashes along South Western Motorway (M5) between Hume Highway and Heathcote Road intersections. 2006–2010 (November 2011).
- Roads and Maritime Services, Guide to Traffic Generating Developments, Version 2.2 (October 2002).
- Roads and Maritime Services, Guide to Traffic Generating Developments, Updated Traffic Surveys TDT 2013/04 (May 2013).
- Roads and Maritime Services, NSW Black Spot Program, How to apply for funding.
- Transport Research Board, Highway Capacity Manual (HCM) (2010).
- Urbis, SIMTA Environmental Assessment (EA) - Part 3A Concept Application (March 2012).

- Urbis, Sydney Intermodal Terminal Alliance (SIMTA) Submissions Report (December 2013).
- URS, Port Botany Expansion Environmental Impact Statement (November 2003).

Appendix A

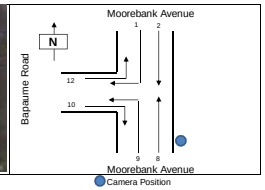
Traffic surveys

Intersection of Moorebank Avenue and Bapaume Road

Tuesday, 7 December 2010

Austraffic

Survey Start	**6:00 AM 16:00 PM**
Intersection Type	T Junction
Intersection No.	**10**
North Approach	**Moorebank Avenue**
East Approach	
South Approach	**Moorebank Avenue**
West Approach	**Bapaume Road**
Date	**7/12/10**
Classification	**Light Heavy**



Camera Position

TIME PERIOD	1			2			3			4			5			6			7			8			9			10			11			12			GRAND TOTAL		
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
6:00 - 6:15	13	0	13	56	3	59																185	4	189	0	0	0	1	0	1				1	0	1	256	7	263
6:15 - 6:30	3	1	4	73	6	79																190	12	202	3	0	3	0	1	1				0	0	0	269	20	289
6:30 - 6:45	17	1	18	97	8	105																233	11	244	3	0	3	0	0	0				0	0	0	350	20	370
6:45 - 7:00	33	0	33	161	8	169																219	8	227	6	0	6	0	0	0				1	0	1	420	16	436
7:00 - 7:15	15	0	15	209	15	224																209	11	220	4	0	4	0	0	0				1	0	1	438	26	464
7:15 - 7:30	11	0	11	185	10	195																264	15	279	5	0	5	0	0	0				0	0	0	465	25	490
7:30 - 7:45	13	1	14	138	6	144																225	17	242	2	0	2	0	0	0				0	1	1	378	25	403
7:45 - 8:00	21	0	21	127	11	138																262	11	273	3	0	3	2	0	2				3	0	3	418	22	440
8:00 - 8:15	17	0	17	118	8	126																264	17	281	8	0	8	1	0	1				3	0	3	411	25	436
8:15 - 8:30	22	2	24	111	8	119																262	12	274	8	0	8	0	0	0				4	1	5	407	23	430
8:30 - 8:45	31	0	31	109	10	119																212	12	224	7	1	8	1	0	1				2	1	3	362	24	386
8:45 - 9:00	20	0	20	86	8	94																152	9	161	2	0	2	0	0	0				3	1	4	263	18	281
Σ	216	5	221	1470	101	1571																2677	139	2816	51	1	52	5	1	6				18	4	22	4437	251	4688

TIME PERIOD	1			2			3			4			5			6			7			8			9			10			11			12			GRAND TOTAL		
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
16:00 - 16:15	5	0	5	219	9	228																264	13	277	0	0	0	3	1	4				19	0	19	510	23	533
16:15 - 16:30	4	0	4	212	11	223																145	4	149	1	1	2	6	0	6				18	0	18	386	16	402
16:30 - 16:45	3	0	3	252	4	256																127	4	131	0	0	0	10	0	10				27	0	27	419	8	427
16:45 - 17:00	3	0	3	236	6	242																122	2	124	0	0	0	2	0	2				15	1	16	378	9	387
17:00 - 17:15	2	0	2	303	13	316																133	7	140	0	0	0	5	0	5				31	0	31	474	20	494
17:15 - 17:30	4	1	5	306	5	311																112	6	118	0	0	0	3	0	3				20	1	21	445	13	458
17:30 - 17:45	3	0	3	313	7	320																102	4	106	0	0	0	3	0	3				14	0	14	435	11	446
17:45 - 18:00	6	1	7	325	11	336																90	3	93	0	0	0	1	0	1				13	2	15	435	17	452
18:00 - 18:15	5	1	6	306	11	317																87	1	88	0	0	0	1	0	1				16	1	17	415	14	429
18:15 - 18:30	5	0	5	228	6	234																111	3	114	1	0	1	2	0	2				5	0	5	352	9	361
18:30 - 18:45	2	0	2	264	5	269																81	2	83	1	0	1	3	0	3				4	0	4	355	7	362
18:45 - 19:00	0	0	0	166	1	167																68	2	70	1	0	1	0	0	0				3	0	3	238	3	241
Σ	42	3	45	3130	89	3219																1442	51	1493	4	1	5	39	1	40				185	5	190	4842	150	4992

TIME PERIOD	1			2			3			4			5			6			7			8			9			10			11			12			GRAND TOTAL			
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
6:00 - 7:00	66	2	68	387	25	412																827	35	862	12	0	12	1	1	2				2	0	2	1295	63	1358	
6:15 - 7:15	68	2	70	540	37	577																851	42	893	16	0	16	0	1	1				2	0	2	1477	82	1559	
6:30 - 7:30	76	1	77	652	41	693																925	45	970	18	0	18	0	0	0				2	0	2	1673	87	1760	
6:45 - 7:45	72	1	73	693	39	732																917	51	968	17	0	17	0	0	0				2	1	3	1701	92	1793	
7:00 - 8:00	**60**	**1**	**61**	**659**	**42**	**701**																**960**	**54**	**1014**	**14**	**0**	**14**	**2**	**0**	**2**				**4**	**1**	**5**	**1699**	**98**	**1797**	**Peak**
7:15 - 8:15	62	1	63	568	35	603																1015	60	1075	18	0	18	3	0	3				6	1	7	1672	97	1769	
7:30 - 8:30	73	3	76	494	33	527																1013	57	1070	21	0	21	3	0	3				10	2	12	1614	95	1709	
7:45 - 8:45	91	2	93	465	37	502																1000	52	1052	26	1	27	4	0	4				12	2	14	1598	94	1692	
8:00 - 9:00	90	2	92	424	34	458																890	50	940	25	1	26	2	0	2				12	3	15	1443	90	1533	

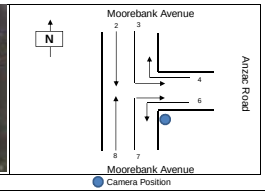
TIME PERIOD	1			2			3			4			5			6			7			8			9			10			11			12			GRAND TOTAL			
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
16:00 - 17:00	15	0	15	919	30	949																658	23	681	1	1	2	21	1	22				79	1	80	1693	56	1749	
16:15 - 17:15	12	0	12	1003	34	1037																527	17	544	1	1	2	23	0	23				91	1	92	1657	53	1710	
16:30 - 17:30	12	1	13	1097	28	1125																494	19	513	0	0	0	20	0	20				93	2	95	1716	50	1766	
16:45 - 17:45	12	1	13	1158	31	1189																469	19	488	0	0	0	13	0	13				80	2	82	1732	53	1785	
17:00 - 18:00	**15**	**2**	**17**	**1247**	**36**	**1283**																**437**	**20**	**457**	**0**	**0**	**0**	**12**	**0**	**12**				**78**	**3**	**81**	**1789**	**61**	**1850**	**Peak**
17:15 - 18:15	18	3	21	1250	34	1284																391	14	405	0	0	0	8	0	8				63	4	67	1730	55	1785	
17:30 - 18:30	19	2	21	1172	35	1207																390	11	401	1	0	1	7	0	7				48	3	51	1637	51	1688	
17:45 - 18:45	18	2	20	1123	33	1156																369	9	378	2	0	2	7	0	7				38	3	41	1557	47	1604	
18:00 - 19:00	12	1	13	964	23	987																347	8	355	3	0	3	6	0	6				28	1	29	1360	33	1393	

Intersection of Moorebank Avenue and Anzac Road

Tuesday, 7 December 2010

Austraffic

Survey Start	**6:00 AM 16:00 PM**
Intersection Type	T Junction
Intersection No.	**1**
North Approach	**Moorebank Avenue**
East Approach	**Anzac Road**
South Approach	**Moorebank Avenue**
West Approach	
Date	**7/12/10**
Classification	**Light Heavy**



Camera Position

TIME PERIOD	VEHICLE MOVEMENT																																				GRAND TOTAL		
	1			2			3			4			5			6			7			8			9			10			11			12					
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
6:00 - 6:15				36	0	36	21	3	24	17	0	17				11	0	11	79	5	84	169	4	173													333	12	345
6:15 - 6:30				51	4	55	22	3	25	14	2	16				18	0	18	83	2	85	176	10	186													364	21	385
6:30 - 6:45				69	3	72	28	5	33	33	3	36				36	0	36	74	3	77	200	8	208													440	22	462
6:45 - 7:00				118	4	122	43	4	47	35	0	35				54	1	55	82	1	83	185	8	193													517	18	535
7:00 - 7:15				163	7	170	46	8	54	23	6	29				46	1	47	51	2	53	187	5	192													516	29	545
7:15 - 7:30				129	5	134	56	5	61	50	7	57				53	0	53	53	3	56	214	8	222													555	28	583
7:30 - 7:45				84	1	85	54	5	59	47	12	59				44	5	49	69	3	72	178	6	184													476	32	508
7:45 - 8:00				73	5	78	56	6	62	53	7	60				37	2	39	58	4	62	212	4	216													489	28	517
8:00 - 8:15				60	2	62	59	6	65	74	10	84				41	1	42	66	2	68	193	7	200													493	28	521
8:15 - 8:30				55	4	59	56	4	60	59	9	68				30	3	33	49	1	50	207	4	211													456	25	481
8:30 - 8:45				55	5	60	55	5	60	49	4	53				32	1	33	54	2	56	165	9	174													410	26	436
8:45 - 9:00				39	4	43	47	4	51	27	3	30				23	1	24	49	1	50	128	7	135													313	20	333
Σ				932	44	976	543	58	601	481	63	544				425	15	440	767	29	796	2214	80	2294													5362	289	5651

TIME PERIOD	VEHICLE MOVEMENT																																				GRAND TOTAL		
	1			2			3			4			5			6			7			8			9			10			11			12					
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
16:00 - 16:15				179	3	182	43	7	50	73	9	82				87	1	88	83	1	84	180	4	184													645	25	670
16:15 - 16:30				177	7	184	41	4	45	43	2	45				72	4	76	51	0	51	110	2	112													494	19	513
16:30 - 16:45				209	2	211	53	2	55	49	4	53				88	1	89	31	0	31	85	0	85													515	9	524
16:45 - 17:00				180	3	183	58	3	61	49	2	51				93	3	96	28	1	29	78	1	79													486	13	499
17:00 - 17:15				247	7	254	61	6	67	81	5	86				88	3	91	35	0	35	73	2	75													585	23	608
17:15 - 17:30				234	3	237	75	2	77	54	5	59				82	3	85	41	1	42	58	2	60													544	16	560
17:30 - 17:45				253	7	260	63	0	63	42	2	44				76	1	77	38	1	39	64	2	66													536	13	549
17:45 - 18:00				266	8	274	60	3	63	39	1	40				99	1	100	42	0	42	54	4	58													560	17	577
18:00 - 18:15				254	11	265	53	0	53	37	0	37				97	5	102	29	1	30	56	2	58													526	19	545
18:15 - 18:30				186	5	191	44	1	45	43	0	43				132	1	133	27	0	27	73	3	76													505	10	515
18:30 - 18:45				225	4	229	42	1	43	39	2	41				100	3	103	16	0	16	46	0	46													468	10	478
18:45 - 19:00				122	1	123	44	0	44	31	1	32				53	1	54	19	0	19	40	1	41													309	4	313
Σ				2532	61	2593	637	29	666	580	33	613				1067	27	1094	440	5	445	917	23	940													6173	178	6351

TIME PERIOD	VEHICLE MOVEMENT																																				GRAND TOTAL			
	1			2			3			4			5			6			7			8			9			10			11			12						
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
6:00 - 7:00				274	11	285	114	15	129	99	5	104				119	1	120	318	11	329	730	30	760													1654	73	1727	
6:15 - 7:15				401	18	419	139	20	159	105	11	116				154	2	156	290	8	298	748	31	779													1837	90	1927	
6:30 - 7:30				479	19	498	173	22	195	141	16	157				189	2	191	260	9	269	786	29	815													2028	97	2125	
6:45 - 7:45				**494**	**17**	**511**	**199**	**22**	**221**	**155**	**25**	**180**				**197**	**7**	**204**	**255**	**9**	**264**	**764**	**27**	**791**													**2064**	**107**	**2171**	**Peak**
7:00 - 8:00				449	18	467	212	24	236	173	32	205				180	8	188	231	12	243	791	23	814													2036	117	2153	
7:15 - 8:15				346	13	359	225	22	247	224	36	260				175	8	183	246	12	258	797	25	822													2013	116	2129	
7:30 - 8:30				272	12	284	225	21	246	233	38	271				152	11	163	242	10	252	790	21	811													1914	113	2027	
7:45 - 8:45				243	16	259	226	21	247	235	30	265				140	7	147	227	9	236	777	24	801													1848	107	1955	
8:00 - 9:00				209	15	224	217	19	236	209	26	235				126	6	132	218	6	224	693	27	720													1672	99	1771	

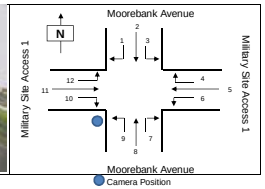
TIME PERIOD	VEHICLE MOVEMENT																																				GRAND TOTAL			
	1			2			3			4			5			6			7			8			9			10			11			12						
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
16:00 - 17:00				745	15	760	195	16	211	214	17	231				340	9	349	193	2	195	453	7	460													2140	66	2206	
16:15 - 17:15				813	19	832	213	15	228	222	13	235				341	11	352	145	1	146	346	5	351													2080	64	2144	
16:30 - 17:30				870	15	885	247	13	260	233	16	249				351	10	361	135	2	137	294	5	299													2130	61	2191	
16:45 - 17:45				914	20	934	257	11	268	226	14	240				339	10	349	142	3	145	273	7	280													2151	65	2216	
17:00 - 18:00				**1000**	**25**	**1025**	**259**	**11**	**270**	**216**	**13**	**229**				**345**	**8**	**353**	**156**	**2**	**158**	**249**	**10**	**259**													**2225**	**99**	**2294**	**Peak**
17:15 - 18:15				1007	29	1036	251	5	256	172	8	180				354	10	364	150	3	153	232	10	242													2166	65	2231	
17:30 - 18:30				959	31	990	220	3	224	161	3	164				404	8	412	136	2	138	247	11	258													2127	59	2186	
17:45 - 18:45				931	28	959	199	5	204	158	3	161				428	10	438	114	1	115	229	9	238													2059	56	2115	
18:00 - 19:00				787	21	808	183	2	185	150	3	153				382	10	392	91	1	92	215	6	221													1808	43	1851	

Intersection of Moorebank Avenue and Defence Support Access

Tuesday, 7 December 2010

Austraffic

Survey Start	**6:00 AM 16:00 PM**
Intersection Type	Cross Junction
Intersection No.	**11**
North Approach	**Moorebank Avenue**
East Approach	**Military Site Access 1**
South Approach	**Moorebank Avenue**
West Approach	**Military Site Access 1**
Date	**7/12/10**
Classification	**Light Heavy**



Camera Position

TIME PERIOD	VEHICLE MOVEMENT																																	GRAND TOTAL		
	1			2			3			4			5			6			7			8			9			10			11			12					
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
6:00 - 6:15	1	0	1	44	0	44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	260	9	269	1	0	1	0	0	0	0	0	0	1	0	1	307	9	316
6:15 - 6:30	0	0	0	71	2	73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	264	13	277	1	0	1	1	0	1	0	0	0	0	0	0	337	15	352
6:30 - 6:45	0	0	0	115	6	121	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	277	10	287	2	0	2	0	0	0	0	0	0	0	0	0	394	16	410
6:45 - 7:00	0	0	0	157	4	161	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	266	9	275	2	0	2	0	0	0	0	0	0	0	0	0	425	13	438
7:00 - 7:15	3	0	3	174	7	181	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	261	5	266	3	0	3	0	0	0	0	0	0	0	0	0	441	12	453
7:15 - 7:30	6	0	6	178	7	185	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	265	10	275	3	0	3	1	0	1	0	0	0	1	0	1	454	17	471
7:30 - 7:45	5	0	5	137	7	144	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	255	9	264	6	0	6	0	0	0	0	0	0	1	0	1	404	16	420
7:45 - 8:00	2	0	2	110	8	118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	268	8	276	2	0	2	5	0	5	0	0	0	2	0	2	389	16	405
8:00 - 8:15	6	0	6	103	5	108	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	261	8	269	2	0	2	0	0	0	0	0	0	3	0	3	375	13	388
8:15 - 8:30	4	0	4	77	7	84	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	257	7	264	2	0	2	2	0	2	0	0	0	1	0	1	343	14	357
8:30 - 8:45	1	0	1	95	6	101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	213	12	225	2	0	2	1	0	1	0	0	0	0	0	0	312	18	330
8:45 - 9:00	1	0	1	62	5	67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	171	9	180	0	0	0	1	0	1	0	0	0	0	0	0	235	14	249
Σ	29	0	29	1323	64	1387	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3018	109	3127	26	0	26	11	0	11	0	0	0	9	0	9	4416	173	4589

TIME PERIOD	VEHICLE MOVEMENT																																	GRAND TOTAL		
	1			2			3			4			5			6			7			8			9			10			11			12					
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
16:00 - 16:15	0	0	0	251	2	253	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	227	3	230	0	0	0	21	0	21	0	0	0	8	0	8	507	5	512
16:15 - 16:30	1	0	1	264	12	276	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	142	2	144	1	0	1	5	0	5	0	0	0	6	0	6	419	14	433
16:30 - 16:45	2	0	2	286	4	290	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	113	1	114	1	0	1	1	0	1	0	0	0	3	0	3	406	5	411
16:45 - 17:00	1	0	1	285	6	291	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	98	2	100	0	0	0	2	0	2	0	0	0	1	0	1	387	8	395
17:00 - 17:15	0	0	0	325	13	338	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	105	2	107	0	0	0	0	0	0	0	0	0	6	0	6	436	15	451
17:15 - 17:30	0	0	0	314	6	320	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	98	3	101	0	0	0	1	0	1	0	0	0	1	0	1	414	9	423
17:30 - 17:45	0	0	0	316	8	324	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	104	3	107	0	0	0	2	0	2	0	0	0	2	0	2	424	11	435
17:45 - 18:00	0	0	0	372	7	379	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	90	2	92	1	0	1	1	0	1	0	0	0	0	0	0	464	9	473
18:00 - 18:15	0	0	0	324	15	339	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	91	3	94	1	0	1	2	0	2	0	0	0	3	0	3	421	18	439
18:15 - 18:30	0	0	0	327	10	337	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	84	1	85	1	0	1	0	0	0	0	0	0	3	0	3	415	11	426
18:30 - 18:45	0	0	0	321	6	327	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	64	1	65	0	0	0	0	0	0	0	0	0	0	0	0	385	7	392
18:45 - 19:00	0	0	0	183	3	186	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	58	1	59	0	0	0	1	0	1	0	0	0	0	0	0	242	4	246
Σ	4	0	4	3568	92	3660	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1274	24	1298	5	0	5	36	0	36	0	0	0	33	0	33	4920	116	5036

TIME PERIOD	VEHICLE MOVEMENT																																	GRAND TOTAL			
	1			2			3			4			5			6			7			8			9			10			11			12					
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
6:00 - 7:00	1	0	1	387	12	399	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1067	41	1108	6	0	6	1	0	1	0	0	0	1	0	1	1463	53	1516	
6:15 - 7:15	3	0	3	517	19	536	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1068	37	1105	8	0	8	1	0	1	0	0	0	0	0	0	1597	56	1653	
6:30 - 7:30	9	0	9	624	24	648	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1069	34	1103	10	0	10	1	0	1	0	0	0	1	0	1	1714	58	1772	
6:45 - 7:45	**14**	**0**	**14**	**646**	**25**	**671**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1047**	**33**	**1080**	**14**	**0**	**14**	**1**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**2**	**1724**	**58**	**1782**	**Peak**
7:00 - 8:00	16	0	16	599	29	628	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1049	32	1081	14	0	14	5	0	5	0	0	0	4	0	4	1688	61	1749	
7:15 - 8:15	19	0	19	528	27	555	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1049	35	1084	13	0	13	6	0	6	0	0	0	7	0	7	1622	62	1684	
7:30 - 8:30	17	0	17	427	27	454	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1041	32	1073	12	0	12	7	0	7	0	0	0	7	0	7	1511	59	1570	
7:45 - 8:45	13	0	13	385	26	411	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	999	35	1034	8	0	8	9	0	9	0	0	0	6	0	6	1419	61	1480	
8:00 - 9:00	12	0	12	337	23	360	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	902	36	938	6	0	6	4	0	4	0	0	0	4	0	4	1265	59	1324	

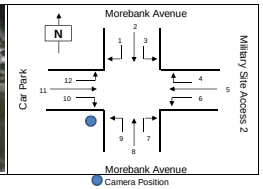
TIME PERIOD	VEHICLE MOVEMENT																																	GRAND TOTAL			
	1			2			3			4			5			6			7			8			9			10			11			12					
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
16:00 - 17:00	4	0	4	1086	24	1110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	580	8	588	2	0	2	29	0	29	0	0	0	18	0	18	1719	32	1751	
16:15 - 17:15	4	0	4	1160	35	1195	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	458	7	465	2	0	2	8	0	8	0	0	0	16	0	16	1648	42	1690	
16:30 - 17:30	3	0	3	1210	29	1239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	414	8	422	1	0	1	4	0	4	0	0	0	11	0	11	1643	37	1680	
16:45 - 17:45	1	0	1	1240	33	1273	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	405	10	415	0	0	0	5	0	5	0	0	0	10	0	10	1661	43	1704	
17:00 - 18:00	**0**	**0**	**0**	**1327**	**34**	**1361**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**397**	**10**	**407**	**1**	**0**	**1**	**4**	**0**	**4**	**0**	**0**	**0**	**9**	**0**	**9**	**1738**	**44**	**1782**	**Peak**
17:15 - 18:15	0	0	0	1326	36	1362	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	383	11	394	2	0	2	6	0	6	0	0	0	6	0	6	1723	47	1770	
17:30 - 18:30	0	0	0	1339	40	1379	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	369	9	378	3	0	3	5	0	5	0	0	0	8	0	8	1724	49	1773	
17:45 - 18:45	0	0	0	1344	38	1382	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	329	7	336	3	0	3	3	0	3	0	0	0	6	0	6	1685	45	1730	
18:00 - 19:00	0	0	0	1155	34	1189	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	297	6	303	2	0	2	3	0	3	0	0	0	6	0	6	1463	40	1503	

Intersection of Morebank Avenue and Military Site Access 2

Tuesday, 7 December 2010

Austraffic

Survey Start	**6:00 AM 16:00 PM**
Intersection Type	Cross Junction
Intersection No.	**13**
North Approach	**Morebank Avenue**
East Approach	**Military Site Access 2**
South Approach	**Morebank Avenue**
West Approach	**Car Park**
Date	**7/12/10**
Classification	**Light Heavy**



TIME PERIOD	1			2			3			4			5			6			7			8			9			10			11			12			GRAND TOTAL		
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
6:00 - 6:15	0	0	0	36	0	36	6	0	6	2	0	2	0	0	0	1	0	1	4	0	4	265	9	274	0	0	0	0	0	0	0	0	0	0	0	0	314	9	323
6:15 - 6:30	0	0	0	65	1	66	10	1	11	1	0	1	0	0	0	0	0	0	5	0	5	266	12	278	0	0	0	0	0	0	0	0	0	0	0	0	347	14	361
6:30 - 6:45	0	0	0	98	4	102	13	1	14	0	0	0	0	0	0	0	0	0	2	0	2	297	12	309	0	0	0	0	0	0	0	0	0	0	0	0	410	17	427
6:45 - 7:00	0	0	0	130	4	134	21	0	21	1	0	1	0	0	0	0	0	0	5	0	5	271	8	279	0	0	0	0	0	0	0	0	0	0	0	0	428	12	440
7:00 - 7:15	0	0	0	144	5	149	22	1	23	1	1	2	0	0	0	0	0	0	6	0	6	271	4	275	0	0	0	0	0	0	0	0	0	0	0	0	444	11	455
7:15 - 7:30	0	0	0	146	5	151	23	3	26	4	0	4	0	0	0	2	0	2	7	0	7	285	8	293	0	0	0	0	0	0	0	0	0	0	0	0	467	16	483
7:30 - 7:45	0	0	0	112	5	117	13	2	15	0	0	0	0	0	0	2	1	3	2	0	2	263	9	272	0	0	0	0	0	0	0	0	0	1	0	1	393	17	410
7:45 - 8:00	0	0	0	95	7	102	12	1	13	2	1	3	0	0	0	1	0	1	4	0	4	277	5	282	0	0	0	0	0	0	0	0	0	0	0	0	391	14	405
8:00 - 8:15	0	0	0	86	4	90	9	0	9	4	1	5	0	0	0	2	0	2	5	0	5	251	7	258	0	0	0	0	0	0	0	0	0	0	0	0	357	12	369
8:15 - 8:30	0	0	0	71	6	77	10	1	11	7	2	9	0	0	0	3	0	3	5	0	5	253	6	259	0	0	0	0	0	0	0	0	0	0	0	0	348	15	364
8:30 - 8:45	0	0	0	93	2	95	4	4	8	2	1	3	0	0	0	4	0	4	4	1	5	223	10	233	0	0	0	0	0	0	0	0	0	1	0	1	331	18	349
8:45 - 9:00	0	0	0	59	1	60	1	3	4	0	3	3	0	0	0	3	0	3	3	1	4	170	4	174	0	0	0	0	0	0	0	0	0	0	0	0	236	12	248
Σ	0	0	0	1135	44	1179	144	17	161	24	9	33	0	0	0	18	1	19	52	2	54	3092	94	3186	0	0	0	0	0	0	0	0	0	2	0	2	4467	167	4634

TIME PERIOD	1			2			3			4			5			6			7			8			9			10			11			12			GRAND TOTAL		
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
16:00 - 16:15	0	0	0	243	3	246	3	0	3	16	1	17	0	0	0	7	0	7	1	0	1	161	2	163	0	0	0	35	0	35	0	0	0	49	0	49	515	6	521
16:15 - 16:30	0	0	0	281	12	293	2	0	2	9	0	9	0	0	0	5	1	6	0	0	0	124	2	126	0	0	0	4	0	4	0	0	0	7	0	7	432	15	447
16:30 - 16:45	0	0	0	290	4	294	1	0	1	11	0	11	0	0	0	1	0	1	0	1	1	95	1	96	0	0	0	4	0	4	0	0	0	6	0	6	408	6	414
16:45 - 17:00	0	0	0	295	4	299	2	1	3	4	0	4	0	0	0	5	0	5	1	0	1	86	3	89	0	0	0	2	0	2	0	0	0	5	0	5	400	8	408
17:00 - 17:15	0	0	0	312	10	322	1	0	1	5	0	5	0	0	0	0	0	0	0	0	0	96	2	98	0	0	0	0	0	0	0	0	0	3	0	3	417	12	429
17:15 - 17:30	0	0	0	324	6	330	1	1	2	5	0	5	0	0	0	1	0	1	0	0	0	93	3	96	0	0	0	1	0	1	0	0	0	0	0	0	425	10	435
17:30 - 17:45	0	0	0	313	6	319	3	0	3	3	2	5	0	0	0	1	0	1	0	0	0	96	1	97	0	0	0	1	0	1	0	0	0	2	0	2	419	9	428
17:45 - 18:00	0	0	0	357	8	365	0	0	0	5	0	5	0	0	0	2	0	2	0	0	0	84	2	86	0	0	0	1	0	1	0	0	0	1	0	1	450	10	460
18:00 - 18:15	0	0	0	332	16	348	0	0	0	1	0	1	0	0	0	1	0	1	1	0	1	84	3	87	0	0	0	2	0	2	0	0	0	6	0	6	427	19	446
18:15 - 18:30	0	0	0	341	9	350	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	79	0	79	0	0	0	1	0	1	1	0	1	3	0	3	426	10	436
18:30 - 18:45	1	0	1	319	4	323	2	0	2	1	0	1	0	0	0	1	0	1	0	0	0	61	1	62	0	0	0	0	0	0	1	0	1	0	0	0	386	5	391
18:45 - 19:00	0	0	0	192	5	197	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	61	1	62	0	0	0	0	0	0	0	0	0	0	0	0	255	6	261
Σ	1	0	1	3599	87	3686	16	2	18	62	4	66	0	0	0	24	1	25	3	1	4	1120	21	1141	0	0	0	51	0	51	2	0	2	82	0	82	4960	116	5076

TIME PERIOD	1			2			3			4			5			6			7			8			9			10			11			12			GRAND TOTAL			
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
6:00 - 7:00	0	0	0	329	9	338	50	2	52	4	0	4	0	0	0	1	0	1	16	0	16	1099	41	1140	0	0	0	0	0	0	0	0	0	0	0	0	1499	52	1551	
6:15 - 7:15	0	0	0	437	14	451	66	3	69	3	1	4	0	0	0	0	0	0	18	0	18	1105	36	1141	0	0	0	0	0	0	0	0	0	0	0	0	1629	54	1683	
6:30 - 7:30	**0**	**0**	**0**	**518**	**18**	**536**	**79**	**5**	**84**	**6**	**1**	**7**	**0**	**0**	**0**	**2**	**0**	**2**	**20**	**0**	**20**	**1124**	**32**	**1156**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1749**	**56**	**1805**	**Peak**
6:45 - 7:45	0	0	0	532	19	551	79	6	85	6	1	7	0	0	0	4	1	5	20	0	20	1090	29	1119	0	0	0	0	0	0	0	0	0	1	0	1	1732	56	1788	
7:00 - 8:00	0	0	0	497	22	519	70	7	77	7	2	9	0	0	0	5	1	6	19	0	19	1096	26	1122	0	0	0	0	0	0	0	0	0	1	0	1	1695	58	1753	
7:15 - 8:15	0	0	0	439	21	460	57	6	63	10	2	12	0	0	0	7	1	8	18	0	18	1076	29	1105	0	0	0	0	0	0	0	0	0	1	0	1	1608	59	1667	
7:30 - 8:30	0	0	0	364	22	386	44	4	48	13	4	17	0	0	0	8	1	9	16	0	16	1044	27	1071	0	0	0	0	0	0	0	0	0	1	0	1	1490	58	1548	
7:45 - 8:45	0	0	0	345	19	364	35	6	41	15	5	20	0	0	0	10	0	10	18	1	19	1004	28	1032	0	0	0	0	0	0	0	0	0	1	0	1	1428	59	1487	
8:00 - 9:00	0	0	0	309	13	322	24	8	32	13	7	20	0	0	0	12	0	12	17	2	19	897	27	924	0	0	0	0	0	0	0	0	0	1	0	1	1273	57	1330	

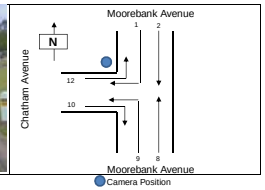
TIME PERIOD	1			2			3			4			5			6			7			8			9			10			11			12			GRAND TOTAL			
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
16:00 - 17:00	**0**	**0**	**0**	**1109**	**23**	**1132**	**8**	**1**	**9**	**40**	**1**	**41**	**0**	**0**	**0**	**18**	**1**	**19**	**2**	**1**	**3**	**466**	**8**	**474**	**0**	**0**	**0**	**45**	**0**	**45**	**0**	**0**	**0**	**67**	**0**	**67**	**1755**	**35**	**1790**	**Peak**
16:15 - 17:15	0	0	0	1178	30	1208	6	1	7	29	0	29	0	0	0	11	1	12	1	1	2	401	8	409	0	0	0	10	0	10	0	0	0	21	0	21	1657	41	1698	
16:30 - 17:30	0	0	0	1221	24	1245	5	2	7	25	0	25	0	0	0	7	0	7	1	1	2	370	9	379	0	0	0	7	0	7	0	0	0	14	0	14	1650	36	1686	
16:45 - 17:45	0	0	0	1244	26	1270	7	2	9	17	2	19	0	0	0	7	0	7	1	0	1	371	9	380	0	0	0	4	0	4	0	0	0	10	0	10	1661	39	1700	
17:00 - 18:00	0	0	0	1306	30	1336	5	1	6	18	2	20	0	0	0	4	0	4	0	0	0	369	8	377	0	0	0	3	0	3	0	0	0	6	0	6	1711	41	1752	
17:15 - 18:15	0	0	0	1326	36	1362	4	1	5	14	2	16	0	0	0	5	0	5	1	0	1	357	9	366	0	0	0	5	0	5	0	0	0	9	0	9	1721	48	1769	
17:30 - 18:30	0	0	0	1343	39	1382	3	0	3	10	3	13	0	0	0	4	0	4	1	0	1	343	6	349	0	0	0	5	0	5	1	0	1	12	0	12	1722	48	1770	
17:45 - 18:45	1	0	1	1349	37	1386	2	0	2	8	1	9	0	0	0	4	0	4	1	0	1	308	6	314	0	0	0	4	0	4	2	0	2	10	0	10	1689	44	1733	
18:00 - 19:00	1	0	1	1184	34	1218	3	0	3	4	1	5	0	0	0	2	0	2	1	0	1	285	5	290	0	0	0	3	0	3	2	0	2	9	0	9	1494	40	1534	

Intersection of Moorebank Avenue and Chatham Avenue

Tuesday, 7 December 2010

Austraffic

Survey Start	**6:00 AM 16:00 PM**
Intersection Type	T Junction
Intersection No.	**12**
North Approach	**Moorebank Avenue**
East Approach	
South Approach	**Moorebank Avenue**
West Approach	**Chatham Avenue**
Date	**7/12/10**
Classification	**Light Heavy**



Camera Position

TIME PERIOD	VEHICLE MOVEMENT																														GRAND TOTAL		
	1			2			3			4			5			6			7			8			9			10			11			12					
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
6:00 - 6:15	11	0	11	26	0	26																272	10	282	2	0	2	0	0	0				2	0	2	313	10	323
6:15 - 6:30	19	0	19	40	1	41																260	11	271	4	0	4	0	0	0				2	0	2	325	12	337
6:30 - 6:45	14	1	15	75	2	77																305	13	318	6	0	6	0	0	0				3	0	3	403	16	419
6:45 - 7:00	20	0	20	99	4	103																281	7	288	10	0	10	0	0	0				1	0	1	411	11	422
7:00 - 7:15	35	0	35	101	5	106																267	5	272	14	0	14	1	1	2				3	0	3	425	11	436
7:15 - 7:30	42	1	43	91	5	96																281	8	289	10	0	10	1	1	2				3	0	3	428	15	443
7:30 - 7:45	22	0	22	97	5	102																268	8	276	5	0	5	6	1	7				3	1	4	401	15	416
7:45 - 8:00	13	0	13	85	6	91																266	5	271	3	0	3	3	0	3				7	0	7	377	11	388
8:00 - 8:15	15	0	15	67	5	72																256	8	264	8	0	8	9	0	9				4	0	4	358	13	372
8:15 - 8:30	5	1	6	73	6	79																256	5	261	2	2	4	3	0	3				8	1	9	347	15	362
8:30 - 8:45	10	0	10	84	3	87																213	7	220	6	0	6	3	0	3				6	2	8	322	12	334
8:45 - 9:00	8	0	8	55	1	56																170	3	173	7	0	7	5	0	5				8	0	8	253	4	257
Σ	214	3	217	893	43	936																3095	90	3185	77	2	79	31	3	34				54	4	58	4364	145	4509

TIME PERIOD	VEHICLE MOVEMENT																														GRAND TOTAL		
	1			2			3			4			5			6			7			8			9			10			11			12					
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
16:00 - 16:15	7	0	7	280	4	284																112	2	114	2	0	2	18	0	18				49	0	49	468	6	474
16:15 - 16:30	3	0	3	300	13	313																106	2	108	2	0	2	4	0	4				17	0	17	432	15	447
16:30 - 16:45	3	0	3	290	4	294																81	2	83	1	0	1	7	0	7				13	0	13	395	6	401
16:45 - 17:00	4	0	4	297	5	302																73	3	76	2	0	2	4	0	4				12	0	12	392	8	400
17:00 - 17:15	8	0	8	302	7	309																82	3	85	0	0	0	3	0	3				14	1	15	408	11	420
17:15 - 17:30	3	0	3	328	8	336																87	1	88	5	0	5	2	0	2				12	0	12	437	9	446
17:30 - 17:45	7	0	7	306	6	312																83	1	84	4	0	4	0	0	0				6	0	6	406	7	413
17:45 - 18:00	6	0	6	349	8	357																79	2	81	0	0	0	4	0	4				4	0	4	442	10	452
18:00 - 18:15	9	0	9	324	15	339																85	3	88	1	0	1	2	0	2				3	0	3	424	18	442
18:15 - 18:30	8	0	8	339	10	349																72	0	72	1	0	1	0	0	0				5	0	5	425	10	435
18:30 - 18:45	2	0	2	321	4	325																55	1	56	1	0	1	0	0	0				3	0	3	382	5	387
18:45 - 19:00	1	0	1	194	5	199																54	1	55	1	0	1	2	0	2				7	0	7	259	6	265
Σ	61	0	61	3630	89	3719																969	21	990	20	0	20	46	0	46				145	1	146	4871	111	4982

TIME PERIOD	VEHICLE MOVEMENT																														GRAND TOTAL			
	1			2			3			4			5			6			7			8			9			10			11			12						
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
6:00 - 7:00	64	1	65	240	7	247																1118	41	1159	22	0	22	0	0	0				8	0	8	1452	49	1501	
6:15 - 7:15	88	1	89	315	12	327																1113	36	1149	34	0	34	2	1	2				13	0	13	1564	50	1614	
6:30 - 7:30	**111**	**2**	**113**	**366**	**16**	**382**																**1134**	**33**	**1167**	**40**	**0**	**40**	**2**	**2**	**4**				**14**	**0**	**14**	**1667**	**53**	**1720**	**Peak**
6:45 - 7:45	119	1	120	388	19	407																1097	28	1125	39	0	39	8	3	11				14	1	15	1665	52	1717	
7:00 - 8:00	112	1	113	374	21	395																1082	26	1108	32	0	32	11	3	14				20	1	21	1631	52	1683	
7:15 - 8:15	92	1	93	340	21	361																1071	29	1100	26	0	26	19	2	21				17	1	18	1565	54	1619	
7:30 - 8:30	55	1	56	322	22	344																1046	26	1072	18	2	20	21	1	22				22	2	24	1484	54	1538	
7:45 - 8:45	43	1	44	309	20	329																991	25	1016	19	2	21	18	0	18				25	3	28	1405	51	1456	
8:00 - 9:00	38	1	39	279	15	294																895	23	918	23	2	25	20	0	20				26	3	29	1281	44	1325	

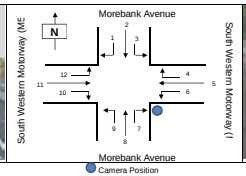
TIME PERIOD	VEHICLE MOVEMENT																														GRAND TOTAL			
	1			2			3			4			5			6			7			8			9			10			11			12						
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
16:00 - 17:00	17	0	17	1167	26	1193																372	9	381	7	0	7	33	0	33				91	0	91	1687	35	1722	
16:15 - 17:15	18	0	18	1189	29	1218																342	10	352	5	0	5	18	0	18				56	1	57	1628	40	1668	
16:30 - 17:30	18	0	18	1217	24	1241																322	9	331	8	0	8	16	0	16				51	1	52	1633	34	1667	
16:45 - 17:45	22	0	22	1233	26	1259																325	8	333	11	0	11	9	0	9				44	1	45	1644	35	1679	
17:00 - 18:00	24	0	24	1285	29	1314																331	7	338	9	0	9	22	0	22				76	1	77	1694	37	1731	
17:15 - 18:15	**25**	**0**	**25**	**1307**	**37**	**1344**																**334**	**7**	**341**	**10**	**0**	**10**	**8**	**0**	**8**				**25**	**0**	**25**	**1709**	**44**	**1753**	**Peak**
17:30 - 18:30	30	0	30	1318	39	1357																319	6	325	6	0	6	6	0	6				18	0	18	1697	45	1742	
17:45 - 18:45	25	0	25	1333	37	1370																291	6	297	3	0	3	6	0	6				15	0	15	1673	43	1716	
18:00 - 19:00	20	0	20	1178	34	1212																266	5	271	4	0	4	4	0	4				18	0	18	1490	39	1529	

Intersection of South Western Motorway (M5) and Morebank Avenue

Tuesday, 7 December 2010

Austraffic

Survey Start	6:00 AM 16:00 PM
Intersection Type	Cross Junction
Intersection No.	2
North Approach	Morebank Avenue
East Approach	South Western Motorway (M5)
South Approach	Morebank Avenue
West Approach	South Western Motorway (M5)
Date	7/12/10
Classification	Light Heavy



TIME PERIOD	VEHICLE MOVEMENT 1 Light	1 Heavy	1 Σ	2 Light	2 Heavy	2 Σ	3 Light	3 Heavy	3 Σ	4 Light	4 Heavy	4 Σ	5 Light	5 Heavy	5 Σ	6 Light	6 Heavy	6 Σ
6:00 - 6:15	45	12	57	15	1	16	2	1	3	12	2	14	405	52	457	16	0	16
6:15 - 6:30	46	19	65	17	4	21	1	2	3	18	4	22	590	84	674	13	0	13
6:30 - 6:45	59	26	85	24	3	27	0	1	1	25	3	28	687	90	777	27	2	29
6:45 - 7:00	64	29	93	31	4	35	3	1	4	32	1	33	646	83	729	39	3	42
7:00 - 7:15	46	13	59	38	4	42	3	4	7	39	2	41	678	72	750	46	4	50
7:15 - 7:30	59	28	87	28	2	30	1	2	3	51	2	53	821	98	919	58	3	61
7:30 - 7:45	74	26	100	19	3	22	0	3	3	56	1	57	834	100	934	42	3	45
7:45 - 8:00	66	35	101	40	6	46	4	5	9	45	3	48	926	88	1014	52	3	55
8:00 - 8:15	71	25	96	22	3	25	5	7	12	51	3	54	970	91	1061	43	4	47
8:15 - 8:30	80	17	97	23	2	25	7	2	9	61	4	65	921	100	1021	49	4	53
8:30 - 8:45	70	25	95	34	6	40	10	6	16	43	3	46	826	121	947	49	4	53
8:45 - 9:00	81	23	104	21	2	23	6	6	12	53	2	55	800	89	889	39	2	41
Σ	761	278	1039	312	40	352	37	40	77	486	30	516	9104	1068	10172	473	32	505

TIME PERIOD	VEHICLE MOVEMENT 7 Light	7 Heavy	7 Σ	8 Light	8 Heavy	8 Σ	9 Light	9 Heavy	9 Σ	10 Light	10 Heavy	10 Σ	11 Light	11 Heavy	11 Σ	12 Light	12 Heavy	12 Σ	GRAND TOTAL Light	GRAND TOTAL Heavy	GRAND TOTAL Σ
6:00 - 6:15	57	4	61	113	2	115	20	0	20	56	3	59	728	121	849	302	37	339	4171	286	4457
6:15 - 6:30	54	5	59	137	11	148	14	0	14	55	7	62	743	122	865	323	28	351	2011	286	2297
6:30 - 6:45	57	5	62	130	5	135	28	3	31	68	3	71	740	120	860	309	33	342	2154	294	2448
6:45 - 7:00	68	4	72	126	2	128	28	0	28	109	2	111	830	117	947	291	38	329	2267	284	2551
7:00 - 7:15	75	3	78	135	4	139	22	6	28	126	0	126	828	109	937	280	28	308	2316	249	2565
7:15 - 7:30	66	3	69	140	2	142	39	9	48	107	5	112	816	69	885	340	29	369	2526	252	2778
7:30 - 7:45	69	3	72	161	8	169	37	7	44	92	4	96	814	74	888	354	30	384	2552	262	2814
7:45 - 8:00	58	1	59	141	6	147	57	5	62	72	4	76	763	79	842	390	34	414	2604	269	2873
8:00 - 8:15	58	1	59	155	6	161	58	9	67	86	4	90	736	93	829	349	30	379	2813	277	2890
8:15 - 8:30	56	3	59	120	5	125	55	9	64	61	2	63	740	96	836	316	27	343	2489	271	2760
8:30 - 8:45	51	1	52	108	6	114	45	4	49	76	3	79	702	114	816	230	23	253	2244	316	2560
8:45 - 9:00	43	3	46	85	3	88	31	5	36	41	2	43	647	113	760	299	36	335	2146	286	2432
Σ	726	37	763	1551	60	1611	434	57	491	949	39	988	9087	1227	10314	3773	373	4146	27693	3281	30974

U TURNS

TIME PERIOD	NORTHBOUND Light	NORTHBOUND Heavy	NORTHBOUND Σ	EASTBOUND Light	EASTBOUND Heavy	EASTBOUND Σ	SOUTHBOUND Light	SOUTHBOUND Heavy	SOUTHBOUND Σ	WESTBOUND Light	WESTBOUND Heavy	WESTBOUND Σ
6:00 - 6:15	0	0	0	0	0	0	0	0	0	4	0	4
6:15 - 6:30	0	0	0	0	0	0	0	0	0	0	0	0
6:30 - 6:45	0	0	0	0	0	0	0	0	0	2	0	2
6:45 - 7:00	0	0	0	0	0	0	0	0	0	2	0	2
7:00 - 7:15	0	0	0	0	0	0	0	0	0	2	2	4
7:15 - 7:30	0	0	0	0	0	0	0	0	0	1	0	1
7:30 - 7:45	0	0	0	0	0	0	0	0	0	0	0	0
7:45 - 8:00	0	0	0	0	0	0	0	0	0	2	2	4
8:00 - 8:15	0	0	0	0	0	0	0	0	0	3	0	3
8:15 - 8:30	0	0	0	0	0	0	0	0	0	4	1	5
8:30 - 8:45	0	0	0	0	0	0	0	0	0	3	0	3
8:45 - 9:00	0	0	0	0	0	0	0	0	0	5	0	5
Σ	0	0	0	0	0	0	0	0	0	28	5	33

TIME PERIOD	VEHICLE MOVEMENT 1 Light	1 Heavy	1 Σ	2 Light	2 Heavy	2 Σ	3 Light	3 Heavy	3 Σ	4 Light	4 Heavy	4 Σ	5 Light	5 Heavy	5 Σ	6 Light	6 Heavy	6 Σ
16:00 - 16:15	290	29	319	103	4	107	13	3	16	18	1	19	904	121	1025	74	0	74
16:15 - 16:30	241	26	267	115	2	117	11	2	13	7	4	11	1000	98	1098	80	4	84
16:30 - 16:45	282	23	305	115	10	125	14	1	15	18	5	23	1027	82	1109	77	0	77
16:45 - 17:00	281	28	309	137	4	141	19	3	22	15	1	16	960	76	1036	74	5	79
17:00 - 17:15	277	24	301	154	3	157	36	1	37	11	6	17	967	93	1060	83	3	86
17:15 - 17:30	322	18	340	152	4	156	28	2	30	10	3	13	1023	65	1088	72	1	73
17:30 - 17:45	265	32	297	141	1	142	13	3	16	6	5	11	486	33	519	78	2	80
17:45 - 18:00	215	16	231	121	2	123	9	1	10	7	4	11	450	35	485	82	2	84
18:00 - 18:15	210	13	223	120	0	120	14	0	14	11	9	20	330	32	362	80	1	81
18:15 - 18:30	185	14	199	83	2	85	8	1	9	18	8	26	498	30	528	83	2	85
18:30 - 18:45	170	14	184	82	1	83	10	0	10	8	9	17	856	59	915	80	2	82
18:45 - 19:00	130	16	146	60	0	60	5	1	6	15	5	20	667	43	710	71	1	72
Σ	2868	253	3121	1383	33	1416	180	18	198	144	60	204	9168	767	9935	934	23	957

TIME PERIOD	VEHICLE MOVEMENT 7 Light	7 Heavy	7 Σ	8 Light	8 Heavy	8 Σ	9 Light	9 Heavy	9 Σ	10 Light	10 Heavy	10 Σ	11 Light	11 Heavy	11 Σ	12 Light	12 Heavy	12 Σ	GRAND TOTAL Light	GRAND TOTAL Heavy	GRAND TOTAL Σ
16:00 - 16:15	67	1	68	46	5	51	133	4	137	57	0	57	823	61	884	114	21	135	2642	250	2892
16:15 - 16:30	35	2	37	32	2	34	64	2	66	42	4	46	887	59	946	108	21	129	2622	226	2848
16:30 - 16:45	50	1	51	35	1	36	70	0	70	45	2	47	824	66	890	114	13	127	2671	204	2875
16:45 - 17:00	54	0	54	30	4	34	44	4	48	52	2	54	863	41	904	105	26	131	2634	194	2828
17:00 - 17:15	61	3	64	29	4	33	83	4	87	45	3	48	951	43	994	104	14	118	2801	198	2999
17:15 - 17:30	52	1	53	38	2	40	52	3	55	60	1	61	930	54	984	117	26	143	2856	180	3036
17:30 - 17:45	46	0	46	25	3	28	49	1	50	69	1	70	707	33	740	124	17	141	2011	131	2142
17:45 - 18:00	29	0	29	33	1	34	29	3	32	90	1	91	687	36	723	161	25	186	1913	126	2039
18:00 - 18:15	36	0	36	44	0	44	59	2	61	81	3	84	722	35	757	159	28	187	1866	123	1989
18:15 - 18:30	27	1	28	34	0	34	38	2	40	70	0	70	728	36	764	168	19	187	1940	115	2055
18:30 - 18:45	23	0	23	25	0	25	31	0	31	61	0	61	737	41	778	76	12	88	2159	138	2297
18:45 - 19:00	30	1	31	33	1	34	30	0	30	43	0	43	556	18	574	62	7	69	1702	93	1795
Σ	512	10	522	404	23	427	682	22	704	715	17	732	9415	523	9938	1412	229	1641	27817	1978	29795

TIME PERIOD	NORTHBOUND Light	NORTHBOUND Heavy	NORTHBOUND Σ	EASTBOUND Light	EASTBOUND Heavy	EASTBOUND Σ	SOUTHBOUND Light	SOUTHBOUND Heavy	SOUTHBOUND Σ	WESTBOUND Light	WESTBOUND Heavy	WESTBOUND Σ
16:00 - 16:15	0	0	0	0	0	0	0	0	0	5	0	5
16:15 - 16:30	0	0	0	0	0	0	0	0	0	6	0	6
16:30 - 16:45	0	0	0	1	1	2	0	0	0	11	1	12
16:45 - 17:00	0	0	0	1	0	1	0	0	0	2	0	2
17:00 - 17:15	0	0	0	0	0	0	0	0	0	6	3	9
17:15 - 17:30	0	0	0	1	0	1	0	0	0	5	0	5
17:30 - 17:45	0	0	0	0	1	1	0	0	0	4	0	4
17:45 - 18:00	0	0	0	0	0	0	0	0	0	1	0	1
18:00 - 18:15	0	0	0	0	0	0	0	0	0	1	0	1
18:15 - 18:30	0	0	0	0	0	0	0	0	0	4	0	4
18:30 - 18:45	0	0	0	0	0	0	0	0	0	3	0	3
18:45 - 19:00	0	0	0	0	0	0	0	0	0	1	0	1
Σ	0	0	0	2	2	4	0	0	0	49	4	53

TIME PERIOD	VEHICLE MOVEMENT 1 Light	1 Heavy	1 Σ	2 Light	2 Heavy	2 Σ	3 Light	3 Heavy	3 Σ	4 Light	4 Heavy	4 Σ	5 Light	5 Heavy	5 Σ	6 Light	6 Heavy	6 Σ
6:00 - 7:00	214	86	300	87	12	99	6	5	11	87	10	97	2328	309	2637	95	5	100
6:15 - 7:15	215	87	302	110	15	125	7	6	13	114	10	124	2601	329	2930	125	9	134
6:30 - 7:30	228	96	324	121	13	134	7	6	13	141	8	149	2832	343	3175	170	12	182
6:45 - 7:45	243	96	339	116	13	129	7	10	17	178	6	184	2979	353	3332	185	13	198
7:00 - 8:00	245	102	347	125	15	140	8	14	22	191	8	199	3259	358	3617	198	13	211
7:15 - 8:15	**270**	**114**	**384**	**109**	**14**	**123**	**5**	**17**	**22**	**203**	**9**	**212**	**3551**	**377**	**3928**	**195**	**13**	**208**
7:30 - 8:30	291	103	394	104	14	118	11	17	28	213	11	224	3651	379	4030	186	14	200
7:45 - 8:45	287	102	389	119	17	136	21	20	41	200	13	213	3643	400	4043	193	15	208
8:00 - 9:00	302	90	392	100	13	113	23	21	44	208	12	220	3517	401	3918	180	14	194

TIME PERIOD	VEHICLE MOVEMENT 7 Light	7 Heavy	7 Σ	8 Light	8 Heavy	8 Σ	9 Light	9 Heavy	9 Σ	10 Light	10 Heavy	10 Σ	11 Light	11 Heavy	11 Σ	12 Light	12 Heavy	12 Σ	GRAND TOTAL Light	GRAND TOTAL Heavy	GRAND TOTAL Σ	
6:00 - 7:00	236	18	254	506	20	526	90	3	93	288	15	303	3041	480	3521	1225	136	1361	8203	1099	9302	
6:15 - 7:15	254	17	271	528	22	550	92	9	101	358	12	370	3141	468	3609	1203	127	1330	8748	1113	9861	
6:30 - 7:30	266	15	281	531	13	544	117	18	135	410	10	420	3214	415	3629	1220	128	1348	9263	1079	10342	
6:45 - 7:45	278	13	291	562	16	578	126	22	148	434	11	445	3288	369	3657	1265	125	1390	9661	1047	10708	
7:00 - 8:00	268	10	278	577	20	597	155	27	182	397	13	410	3221	331	3552	1354	121	1475	9998	1032	11030	
7:15 - 8:15	**265**	**9**	**274**	**597**	**22**	**619**	**191**	**30**	**221**	**357**	**17**	**374**	**3129**	**315**	**3444**	**1423**	**123**	**1546**	**10296**	**1060**	**11356**	**Peak**
7:30 - 8:30	255	9	264	577	25	602	207	30	237	311	14	325	3052	242	3295	1399	121	1520	10258	1079	11337	
7:45 - 8:45	237	7	244	524	23	547	215	27	242	295	13	308	2941	382	3323	1275	114	1389	9950	1133	11083	
8:00 - 9:00	222	9	231	468	20	488	189	27	216	264	11	275	2825	416	3241	1194	116	1310	9492	1180	10642	

TIME PERIOD	NORTHBOUND Light	NORTHBOUND Heavy	NORTHBOUND Σ	EASTBOUND Light	EASTBOUND Heavy	EASTBOUND Σ	SOUTHBOUND Light	SOUTHBOUND Heavy	SOUTHBOUND Σ	WESTBOUND Light	WESTBOUND Heavy	WESTBOUND Σ
6:00 - 7:00	0	0	0	0	0	0	0	0	0	8	0	8
6:15 - 7:15	0	0	0	0	0	0	0	0	0	6	2	8
6:30 - 7:30	0	0	0	0	0	0	0	0	0	7	0	7
6:45 - 7:45	0	0	0	0	0	0	0	0	0	5	2	7
7:00 - 8:00	0	0	0	0	0	0	0	0	0	5	1	6
7:15 - 8:15	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**2**	**8**
7:30 - 8:30	0	0	0	0	0	0	0	0	0	9	3	12
7:45 - 8:45	0	0	0	0	0	0	0	0	0	12	3	15
8:00 - 9:00	0	0	0	0	0	0	0	0	0	15	1	16

TIME PERIOD	VEHICLE MOVEMENT 1 Light	1 Heavy	1 Σ	2 Light	2 Heavy	2 Σ	3 Light	3 Heavy	3 Σ	4 Light	4 Heavy	4 Σ	5 Light	5 Heavy	5 Σ	6 Light	6 Heavy	6 Σ
16:00 - 17:00	1094	106	1200	470	20	490	57	9	66	58	11	69	3891	377	4268	305	9	314
16:15 - 17:15	1081	101	1182	521	19	540	80	7	87	51	16	67	3954	349	4303	314	12	326
16:30 - 17:30	**1162**	**93**	**1255**	**558**	**21**	**579**	**97**	**7**	**104**	**54**	**15**	**69**	**3977**	**316**	**4293**	**306**	**9**	**315**
16:45 - 17:45	1145	102	1247	584	12	596	96	9	105	42	15	57	3436	267	3703	307	11	318
17:00 - 18:00	1079	90	1169	588	10	598	88	5	93	34	13	47	2926	226	3152	316	8	324
17:15 - 18:15	1012	79	1091	534	7	541	64	6	70	34	21	55	2289	165	2454	312	6	318
17:30 - 18:30	973	75	1048	463	5	468	44	5	49	42	28	68	1764	130	1894	323	7	330
17:45 - 18:45	789	57	837	409	5	411	41	2	43	44	30	74	2134	156	2290	325	7	332
18:00 - 19:00	695	57	752	345	3	348	37	2	39	52	31	83	2351	164	2515	314	6	320

TIME PERIOD	VEHICLE MOVEMENT 7 Light	7 Heavy	7 Σ	8 Light	8 Heavy	8 Σ	9 Light	9 Heavy	9 Σ	10 Light	10 Heavy	10 Σ	11 Light	11 Heavy	11 Σ	12 Light	12 Heavy	12 Σ	GRAND TOTAL Light	GRAND TOTAL Heavy	GRAND TOTAL Σ	
16:00 - 17:00	206	4	210	143	12	155	311	10	321	196	8	204	3397	227	3624	441	81	522	10569	874	11443	
16:15 - 17:15	200	6	206	126	11	137	261	7	268	184	11	195	3525	209	3734	431	74	505	10728	822	11550	
16:30 - 17:30	**217**	**5**	**222**	**132**	**11**	**143**	**249**	**8**	**257**	**202**	**8**	**210**	**3566**	**204**	**3772**	**440**	**79**	**519**	**10962**	**776**	**11738**	**Peak**
16:45 - 17:45	215	4	219	122	13	135	228	9	237	226	7	233	3451	171	3622	450	83	533	10302	703	11005	
17:00 - 18:00	190	4	194	125	10	135	213	8	221	264	6	270	3275	166	3441	508	82	590	9581	628	10209	
17:15 - 18:15	165	1	166	140	6	146	189	9	198	300	6	306	3040	158	3204	561	96	657	8646	562	9208	
17:30 - 18:30	140	1	141	136	4	140	175	8	183	310	5	315	2844	140	2984	612	89	701	7780	485	8265	
17:45 - 18:45	135	1	136	136	1	137	157	7	164	302	4	306	2874	148	3022	564	84	648	7878	502	8380	
18:00 - 19:00	116	2	118	136	1	137	158	4	162	255	3	258	2743	130	2873	465	66	531	7667	469	8136	

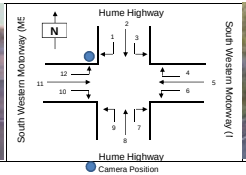
TIME PERIOD	NORTHBOUND Light	NORTHBOUND Heavy	NORTHBOUND Σ	EASTBOUND Light	EASTBOUND Heavy	EASTBOUND Σ	SOUTHBOUND Light	SOUTHBOUND Heavy	SOUTHBOUND Σ	WESTBOUND Light	WESTBOUND Heavy	WESTBOUND Σ
16:00 - 17:00	0	0	0	1	1	2	0	0	0	24	1	25
16:15 - 17:15	0	0	0	1	1	2	0	0	0	25	4	29
16:30 - 17:30	0	0	0	2	1	3	0	0	0	24	4	28
16:45 - 17:45	0	0	0	2	1	3	0	0	0	17	3	20
17:00 - 18:00	0	0	0	1	1	2	0	0	0	18	2	19
17:15 - 18:15	0	0	0	1	1	2	0	0	0	11	0	11
17:30 - 18:30	0	0	0	1	1	2	0	0	0	10	0	10
17:45 - 18:45	0	0	0	0	0	0	0	0	0	9	0	9
18:00 - 19:00	0	0	0	0	0	0	0	0	0	9	0	9

Intersection of South Western Motorway (M5) and Hume Highway

Tuesday, 7 December 2010

Austraffic

Survey Start	6:00 AM 16:00 PM
Intersection Type	Cross Junction
Intersection No.	1
North Approach	Hume Highway
East Approach	South Western Motorway (M5)
South Approach	Hume Highway
West Approach	South Western Motorway (M5)
Date	7/12/10
Classification	Light Heavy



TIME PERIOD	VEHICLE MOVEMENT 1 Light	1 Heavy	1 Σ	2 Light	2 Heavy	2 Σ	3 Light	3 Heavy	3 Σ	4 Light	4 Heavy	4 Σ	5 Light	5 Heavy	5 Σ	6 Light	6 Heavy	6 Σ
6:00 - 6:15	0	0	0	121	18	139	124	6	130	100	8	108	342	52	394	26	3	29
6:15 - 6:30	0	0	0	191	12	203	127	11	138	114	6	120	494	97	591	20	2	22
6:30 - 6:45	0	0	0	219	18	237	157	9	166	148	11	159	617	101	718	47	2	49
6:45 - 7:00	0	0	0	209	25	234	202	10	212	133	7	140	601	95	696	31	3	34
7:00 - 7:15	0	0	0	208	29	237	187	16	203	106	19	125	589	94	683	26	2	28
7:15 - 7:30	0	0	0	184	23	207	165	6	171	164	16	180	705	114	819	42	2	44
7:30 - 7:45	0	0	0	272	24	296	143	7	150	188	11	199	765	127	892	62	5	67
7:45 - 8:00	0	0	0	242	30	272	146	12	158	263	8	271	758	118	876	61	4	65
8:00 - 8:15	0	0	0	232	16	248	127	9	136	271	8	279	797	110	907	71	4	75
8:15 - 8:30	0	0	0	256	20	276	144	5	149	178	7	185	785	105	890	68	4	72
8:30 - 8:45	0	0	0	277	10	287	123	8	131	202	14	216	746	130	876	56	6	62
8:45 - 9:00	0	0	0	244	14	258	108	12	120	206	10	216	675	108	783	83	4	87
Σ	0	0	0	2655	239	2894	1753	111	1864	2073	125	2198	7874	1251	9125	593	41	634

TIME PERIOD	VEHICLE MOVEMENT 7 Light	7 Heavy	7 Σ	8 Light	8 Heavy	8 Σ	9 Light	9 Heavy	9 Σ	10 Light	10 Heavy	10 Σ	11 Light	11 Heavy	11 Σ	12 Light	12 Heavy	12 Σ	GRAND TOTAL Light	GRAND TOTAL Heavy	GRAND TOTAL Σ
6:00 - 6:15	163	7	170	639	37	676	0	0	0	0	0	0	740	128	868	0	0	0	2556	268	2824
6:15 - 6:30	134	11	145	808	53	861	0	0	0	0	0	0	802	134	936	0	0	0	2808	326	3134
6:30 - 6:45	150	7	157	757	43	800	0	0	0	0	0	0	780	140	920	0	0	0	2875	331	3206
6:45 - 7:00	165	5	170	744	33	777	0	0	0	0	0	0	891	127	1018	0	0	0	2876	305	3181
7:00 - 7:15	140	8	148	841	52	893	0	0	0	0	0	0	898	125	1023	0	0	0	2995	345	3340
7:15 - 7:30	161	4	165	841	44	885	0	0	0	0	0	0	885	85	970	0	0	0	3147	294	3441
7:30 - 7:45	146	4	150	886	37	923	0	0	0	0	0	0	966	94	1060	0	0	0	3428	309	3737
7:45 - 8:00	131	6	137	907	41	948	0	0	0	0	0	0	923	90	1013	0	0	0	3433	308	3741
8:00 - 8:15	124	4	128	875	39	914	0	0	0	0	0	0	888	122	1010	0	0	0	3383	312	3695
8:15 - 8:30	130	6	136	847	39	886	0	0	0	0	0	0	838	114	952	0	0	0	3246	300	3546
8:30 - 8:45	118	6	124	704	38	742	0	0	0	0	0	0	792	131	923	0	0	0	3018	343	3361
8:45 - 9:00	102	6	108	728	33	761	0	0	0	0	0	0	768	133	901	0	0	0	2914	320	3234
Σ	1664	74	1738	9577	489	10066	0	0	0	0	0	0	10151	1423	11574	0	0	0	36340	3753	40093

U TURNS

TIME PERIOD	NORTHBOUND Light	NORTHBOUND Heavy	NORTHBOUND Σ	EASTBOUND Light	EASTBOUND Heavy	EASTBOUND Σ	SOUTHBOUND Light	SOUTHBOUND Heavy	SOUTHBOUND Σ	WESTBOUND Light	WESTBOUND Heavy	WESTBOUND Σ
6:00 - 6:15	0	0	0	0	0	0	0	0	0	0	0	0
6:15 - 6:30	0	0	0	0	0	0	0	0	0	0	0	0
6:30 - 6:45	0	0	0	0	0	0	0	0	0	0	0	0
6:45 - 7:00	0	0	0	1	0	1	0	0	0	0	0	0
7:00 - 7:15	0	0	0	0	0	0	0	0	0	0	0	0
7:15 - 7:30	0	0	0	0	0	0	0	0	0	0	0	0
7:30 - 7:45	0	0	0	3	0	3	0	0	0	0	0	0
7:45 - 8:00	0	0	0	2	1	3	0	0	0	0	0	0
8:00 - 8:15	0	0	0	1	0	1	0	0	0	0	0	0
8:15 - 8:30	0	0	0	0	0	0	0	0	0	0	0	0
8:30 - 8:45	0	0	0	0	0	0	0	0	0	0	0	0
8:45 - 9:00	0	0	0	0	0	0	0	0	0	0	0	0
Σ	0	0	0	7	1	8	0	0	0	0	0	0

TIME PERIOD	VEHICLE MOVEMENT 1 Light	1 Heavy	1 Σ	2 Light	2 Heavy	2 Σ	3 Light	3 Heavy	3 Σ	4 Light	4 Heavy	4 Σ	5 Light	5 Heavy	5 Σ	6 Light	6 Heavy	6 Σ
16:00 - 16:15	0	0	0	636	22	658	186	12	198	247	10	257	880	131	1011	205	3	208
16:15 - 16:30	0	0	0	620	16	636	179	5	184	226	12	238	867	101	968	230	10	240
16:30 - 16:45	0	0	0	544	23	567	180	5	185	247	11	258	901	100	1001	266	11	277
16:45 - 17:00	0	0	0	618	16	634	168	3	171	178	5	183	926	85	1011	204	12	216
17:00 - 17:15	0	0	0	618	15	633	183	4	187	223	7	230	798	100	898	274	6	280
17:15 - 17:30	0	0	0	635	13	648	160	3	163	209	9	218	862	84	946	325	11	336
17:30 - 17:45	0	0	0	705	17	722	175	4	179	166	11	177	303	19	322	268	17	285
17:45 - 18:00	0	0	0	667	14	681	171	4	175	149	13	162	157	9	166	338	12	350
18:00 - 18:15	0	0	0	637	11	648	149	4	153	120	10	130	168	20	188	326	16	341
18:15 - 18:30	0	0	0	606	20	626	142	5	147	155	8	163	249	36	285	364	13	377
18:30 - 18:45	0	0	0	455	19	474	139	4	143	198	6	204	481	56	537	366	9	375
18:45 - 19:00	0	0	0	546	15	561	131	4	135	147	7	154	536	48	584	226	8	234
Σ	0	0	0	7287	201	7488	1963	57	2020	2265	109	2374	7128	789	7917	3391	128	3519

TIME PERIOD	VEHICLE MOVEMENT 7 Light	7 Heavy	7 Σ	8 Light	8 Heavy	8 Σ	9 Light	9 Heavy	9 Σ	10 Light	10 Heavy	10 Σ	11 Light	11 Heavy	11 Σ	12 Light	12 Heavy	12 Σ	GRAND TOTAL Light	GRAND TOTAL Heavy	GRAND TOTAL Σ
16:00 - 16:15	75	5	80	537	26	563	0	0	0	0	0	0	684	73	757	0	0	0	3450	282	3732
16:15 - 16:30	81	4	85	585	24	609	0	0	0	0	0	0	743	71	814	0	0	0	3531	243	3774
16:30 - 16:45	71	2	73	563	28	591	0	0	0	0	0	0	695	81	776	0	0	0	3467	261	3728
16:45 - 17:00	57	1	58	564	16	580	0	0	0	0	0	0	772	63	835	0	0	0	3487	201	3688
17:00 - 17:15	97	0	97	489	20	509	0	0	0	0	0	0	828	60	888	0	0	0	3538	232	3770
17:15 - 17:30	101	3	104	510	19	529	0	0	0	0	0	0	883	62	945	0	0	0	3585	204	3889
17:30 - 17:45	74	3	77	485	23	508	0	0	0	0	0	0	636	38	674	0	0	0	3012	192	3204
17:45 - 18:00	83	4	87	466	27	493	0	0	0	0	0	0	608	37	645	0	0	0	2635	120	2755
18:00 - 18:15	97	6	103	461	26	487	0	0	0	0	0	0	638	49	687	0	0	0	2585	142	2727
18:15 - 18:30	87	1	88	454	12	466	0	0	0	0	0	0	678	41	719	0	0	0	2735	136	2871
18:30 - 18:45	76	0	76	504	16	520	0	0	0	0	0	0	683	56	739	0	0	0	2362	166	2528
18:45 - 19:00	61	0	61	397	12	409	0	0	0	0	0	0	467	29	496	0	0	0	2511	123	2634
Σ	960	29	989	6015	249	6264	0	0	0	0	0	0	8315	660	8975	0	0	0	37324	2222	39546

TIME PERIOD	NORTHBOUND Light	NORTHBOUND Heavy	NORTHBOUND Σ	EASTBOUND Light	EASTBOUND Heavy	EASTBOUND Σ	SOUTHBOUND Light	SOUTHBOUND Heavy	SOUTHBOUND Σ	WESTBOUND Light	WESTBOUND Heavy	WESTBOUND Σ
16:00 - 16:15	0	0	0	1	0	1	0	0	0	0	0	0
16:15 - 16:30	0	0	0	0	0	0	0	0	0	0	0	0
16:30 - 16:45	0	0	0	0	0	0	0	0	0	0	0	0
16:45 - 17:00	0	0	0	0	0	0	0	0	0	0	0	0
17:00 - 17:15	0	0	0	1	0	1	0	0	0	0	0	0
17:15 - 17:30	0	0	0	0	0	0	0	0	0	0	0	0
17:30 - 17:45	0	0	0	1	0	1	0	0	0	0	0	0
17:45 - 18:00	0	0	0	2	0	2	0	0	0	0	0	0
18:00 - 18:15	0	0	0	0	0	0	0	0	0	0	0	0
18:15 - 18:30	0	0	0	1	0	1	0	0	0	0	0	0
18:30 - 18:45	0	0	0	0	0	0	0	0	0	0	0	0
18:45 - 19:00	0	0	0	0	0	0	0	0	0	0	0	0
Σ	0	0	0	6	0	6	0	0	0	0	0	0

TIME PERIOD	VEHICLE MOVEMENT 1 Light	1 Heavy	1 Σ	2 Light	2 Heavy	2 Σ	3 Light	3 Heavy	3 Σ	4 Light	4 Heavy	4 Σ	5 Light	5 Heavy	5 Σ	6 Light	6 Heavy	6 Σ
6:00 - 7:00	0	0	0	740	73	813	610	36	646	495	32	527	2054	345	2399	124	10	134
6:15 - 7:15	0	0	0	827	84	911	673	46	719	501	43	544	2301	387	2688	124	9	133
6:30 - 7:30	0	0	0	820	85	905	711	41	752	551	53	604	2512	404	2916	146	9	155
6:45 - 7:45	0	0	0	873	101	974	697	39	736	591	53	644	2660	430	3090	161	12	173
7:00 - 8:00	0	0	0	906	106	1012	641	41	682	721	54	775	2817	453	3270	191	13	204
7:15 - 8:15	0	0	0	930	93	1023	581	34	615	886	43	929	3025	469	3494	236	15	251
7:30 - 8:30	0	0	0	1002	90	1092	560	33	593	900	34	934	3105	460	3565	262	17	279
7:45 - 8:45	0	0	0	1007	76	1083	540	34	574	914	37	951	3086	463	3549	256	18	274
8:00 - 9:00	0	0	0	1009	80	1089	502	34	536	857	39	896	3003	453	3456	278	18	296

TIME PERIOD	VEHICLE MOVEMENT 7 Light	7 Heavy	7 Σ	8 Light	8 Heavy	8 Σ	9 Light	9 Heavy	9 Σ	10 Light	10 Heavy	10 Σ	11 Light	11 Heavy	11 Σ	12 Light	12 Heavy	12 Σ	GRAND TOTAL Light	GRAND TOTAL Heavy	GRAND TOTAL Σ	
6:00 - 7:00	612	30	642	2948	166	3114	0	0	0	0	0	0	3213	529	3742	0	0	0	10796	1221	12017	
6:15 - 7:15	589	31	620	3150	181	3331	0	0	0	0	0	0	3373	526	3897	0	0	0	11539	1307	12843	
6:30 - 7:30	616	24	640	3183	172	3355	0	0	0	0	0	0	3494	477	3971	0	0	0	11993	1275	13268	
6:45 - 7:45	612	21	633	3312	166	3478	0	0	0	0	0	0	3640	431	4071	0	0	0	12546	1253	13799	
7:00 - 8:00	519	22	600	3475	174	3649	0	0	0	0	0	0	3672	394	4066	0	0	0	13001	1257	14258	
7:15 - 8:15	562	18	580	3509	161	3670	0	0	0	0	0	0	3642	391	4033	0	0	0	13371	1224	14595	
7:30 - 8:30	531	20	551	3515	156	3671	0	0	0	0	0	0	3595	420	4015	0	0	0	13470	1230	14700	Peak
7:45 - 8:45	503	22	525	3333	157	3490	0	0	0	0	0	0	3421	457	3878	0	0	0	13060	1264	14324	
8:00 - 9:00	474	22	496	3154	149	3303	0	0	0	0	0	0	3266	500	3766	0	0	0	12543	1275	13818	

TIME PERIOD	NORTHBOUND Light	NORTHBOUND Heavy	NORTHBOUND Σ	EASTBOUND Light	EASTBOUND Heavy	EASTBOUND Σ	SOUTHBOUND Light	SOUTHBOUND Heavy	SOUTHBOUND Σ	WESTBOUND Light	WESTBOUND Heavy	WESTBOUND Σ
6:00 - 7:00	0	0	0	1	0	1	0	0	0	0	0	0
6:15 - 7:15	0	0	0	1	0	1	0	0	0	0	0	0
6:30 - 7:30	0	0	0	1	0	1	0	0	0	0	0	0
6:45 - 7:45	0	0	0	4	0	4	0	0	0	0	0	0
7:00 - 8:00	0	0	0	5	1	6	0	0	0	0	0	0
7:15 - 8:15	0	0	0	6	1	7	0	0	0	0	0	0
7:30 - 8:30	0	0	0	6	1	7	0	0	0	0	0	0
7:45 - 8:45	0	0	0	3	1	4	0	0	0	0	0	0
8:00 - 9:00	0	0	0	1	0	1	0	0	0	0	0	0

TIME PERIOD	VEHICLE MOVEMENT 1 Light	1 Heavy	1 Σ	2 Light	2 Heavy	2 Σ	3 Light	3 Heavy	3 Σ	4 Light	4 Heavy	4 Σ	5 Light	5 Heavy	5 Σ	6 Light	6 Heavy	6 Σ
16:00 - 17:00	0	0	0	2418	77	2495	713	25	738	898	38	936	3574	417	3991	905	36	941
16:15 - 17:15	0	0	0	2400	70	2470	710	17	727	874	35	909	3492	386	3878	974	39	1013
16:30 - 17:30	0	0	0	2415	67	2482	691	15	706	857	32	889	3487	369	3856	1069	40	1109
16:45 - 17:45	0	0	0	2576	61	2637	686	14	700	776	32	808	2889	288	3177	1071	46	1117
17:00 - 18:00	0	0	0	2625	59	2684	689	15	704	747	40	787	2120	212	2332	1205	46	1251
17:15 - 18:15	0	0	0	2644	55	2699	655	15	670	644	43	687	1490	132	1622	1296	56	1352
17:30 - 18:30	0	0	0	2615	62	2677	637	17	654	590	42	632	877	84	961	1295	58	1353
17:45 - 18:45	0	0	0	2365	64	2429	601	17	618	622	37	659	1055	121	1176	1393	50	1443
18:00 - 19:00	0	0	0	2244	65	2309	561	17	578	620	31	651	1434	160	1594	1281	46	1327

TIME PERIOD	VEHICLE MOVEMENT 7 Light	7 Heavy	7 Σ	8 Light	8 Heavy	8 Σ	9 Light	9 Heavy	9 Σ	10 Light	10 Heavy	10 Σ	11 Light	11 Heavy	11 Σ	12 Light	12 Heavy	12 Σ	GRAND TOTAL Light	GRAND TOTAL Heavy	GRAND TOTAL Σ	
16:00 - 17:00	284	12	296	2249	94	2343	0	0	0	0	0	0	2894	288	3182	0	0	0	13935	987	14922	
16:15 - 17:15	306	7	313	2201	88	2289	0	0	0	0	0	0	3038	275	3313	0	0	0	13995	917	14912	
16:30 - 17:30	326	6	332	2126	83	2209	0	0	0	0	0	0	3176	268	3444	0	0	0	14149	878	15027	Peak
16:45 - 17:45	329	7	336	2048	78	2126	0	0	0	0	0	0	3119	223	3342	0	0	0	13494	749	14243	
17:00 - 18:00	355	10	365	1968	67	2035	0	0	0	0	0	0	2965	187	3152	0	0	0	12646	668	13314	
17:15 - 18:15	355	16	371	1922	55	2077	0	0	0	0	0	0	2765	186	2951	0	0	0	11731	598	12329	
17:30 - 18:30	341	14	355	1866	58	1924	0	0	0	0	0	0	2660	165	2725	0	0	0	10791	530	11311	
17:45 - 18:45	343	11	354	1869	61	1930	0	0	0	0	0	0	2607	183	2790	0	0	0	10871	564	11435	
18:00 - 19:00	321	7	328	1816	66	1882	0	0	0	0	0	0	2466	175	2641	0	0	0	10743	567	11310	

TIME PERIOD	NORTHBOUND Light	NORTHBOUND Heavy	NORTHBOUND Σ	EASTBOUND Light	EASTBOUND Heavy	EASTBOUND Σ	SOUTHBOUND Light	SOUTHBOUND Heavy	SOUTHBOUND Σ	WESTBOUND Light	WESTBOUND Heavy	WESTBOUND Σ
16:00 - 17:00	0	0	0	1	0	1	0	0	0	0	0	0
16:15 - 17:15	0	0	0	1	0	1	0	0	0	0	0	0
16:30 - 17:30	0	0	0	1	0	1	0	0	0	0	0	0
16:45 - 17:45	0	0	0	2	0	2	0	0	0	0	0	0
17:00 - 18:00	0	0	0	4	0	4	0	0	0	0	0	0
17:15 - 18:15	0	0	0	3	0	3	0	0	0	0	0	0
17:30 - 18:30	0	0	0	4	0	4	0	0	0	0	0	0
17:45 - 18:45	0	0	0	3	0	3	0	0	0	0	0	0
18:00 - 19:00	0	0	0	1	0	1	0	0	0	0	0	0

Intersection of Hume Highway and Orange Grove Road

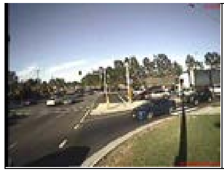
Tuesday, 18 March 2014

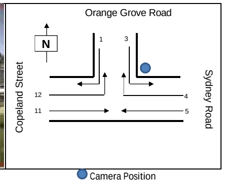
Austraffic

Survey Start: 6:00 AM 16:00 PM
Intersection Type: T Junction
Intersection No.: 1
North Approach: Orange Grove Road
East Approach: Sydney Road
South Approach:
West Approach: Copeland Street

Date: 18/03/14

Classification: Light Heavy





Camera Position

TIME PERIOD	VEHICLE MOVEMENT																																						
	1			2			3			4			5			6			7			8			9			10			11			12			GRAND TOTAL		
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
6:00 - 6:15	157	9	166				64	6	70	34	5	39	103	10	113																428	26	454	232	18	250	1018	74	1092
6:15 - 6:30	198	13	211				67	4	71	44	7	51	166	11	177																426	23	449	214	18	232	1115	76	1191
6:30 - 6:45	195	20	215				96	6	102	49	7	56	159	13	172																445	27	472	259	16	275	1203	89	1292
6:45 - 7:00	183	28	211				132	7	139	48	5	53	139	14	153																483	22	505	209	12	221	1194	88	1282
7:00 - 7:15	162	20	182				112	5	117	61	2	63	152	11	163																518	26	544	244	17	261	1249	81	1330
7:15 - 7:30	210	18	228				113	5	118	70	6	76	151	11	162																491	29	520	224	24	248	1259	93	1352
7:30 - 7:45	189	14	203				135	6	141	82	6	88	192	15	207																432	24	456	247	12	259	1277	77	1354
7:45 - 8:00	187	17	204				101	5	106	73	7	80	194	15	209																519	21	540	273	17	290	1347	82	1429
8:00 - 8:15	224	16	240				114	13	127	69	7	76	195	25	220																397	18	415	275	16	291	1274	95	1369
8:15 - 8:30	239	18	257				131	10	141	80	10	90	183	23	206																474	23	497	217	16	233	1324	100	1424
8:30 - 8:45	382	22	404				120	5	125	80	10	90	167	31	198																358	29	387	229	20	249	1336	117	1453
8:45 - 9:00	273	27	300				121	8	129	101	13	114	156	16	172																333	21	354	241	19	260	1225	104	1329
Σ	2599	222	2821				1306	80	1386	791	85	876	1957	195	2152																5304	289	5593	2864	205	3069	14821	1076	15897

TIME PERIOD	VEHICLE MOVEMENT																																						
	1			2			3			4			5			6			7			8			9			10			11			12			GRAND TOTAL		
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
16:00 - 16:15	288	12	300				73	6	79	183	8	191	354	19	373																212	12	224	245	17	262	1355	74	1429
16:15 - 16:30	318	9	327				95	5	100	160	6	166	364	16	380																222	16	238	273	14	287	1432	66	1498
16:30 - 16:45	292	15	307				85	1	86	176	7	183	393	16	409																244	11	255	263	13	276	1453	63	1516
16:45 - 17:00	321	5	326				83	5	88	154	4	158	360	16	376																253	16	269	289	7	296	1460	53	1513
17:00 - 17:15	254	9	263				70	6	76	197	2	199	384	12	396																173	12	185	246	5	251	1324	46	1370
17:15 - 17:30	285	8	293				94	3	97	169	7	176	338	6	344																256	13	269	316	9	325	1458	46	1504
17:30 - 17:45	277	13	290				71	4	75	161	2	163	321	6	327																211	8	219	300	9	309	1341	42	1383
17:45 - 18:00	229	9	238				88	4	92	114	7	121	363	10	373																226	16	242	251	5	256	1271	51	1322
18:00 - 18:15	258	4	262				67	8	75	129	5	134	355	10	365																171	8	179	257	7	264	1237	42	1279
18:15 - 18:30	244	4	248				79	3	82	123	2	125	384	11	395																208	8	216	252	7	259	1290	35	1325
18:30 - 18:45	211	13	224				56	4	60	110	2	112	318	9	327																176	6	182	210	6	216	1081	40	1121
18:45 - 19:00	238	6	244				54	1	55	81	0	81	251	5	256																163	3	166	169	7	176	956	22	978
Σ	3215	107	3322				915	50	965	1757	52	1809	4185	136	4321																2515	129	2644	3071	106	3177	15658	580	16238

TIME PERIOD	VEHICLE MOVEMENT																																							
	1			2			3			4			5			6			7			8			9			10			11			12			GRAND TOTAL			
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
6:00 - 7:00	733	70	803				359	23	382	175	24	199	567	48	615																1782	98	1880	914	64	978	4530	327	4857	
6:15 - 7:15	738	81	819				407	22	429	202	21	223	616	49	665																1872	98	1970	926	63	989	4761	334	5095	
6:30 - 7:30	750	86	836				453	23	476	228	20	248	601	49	650																1937	104	2041	936	69	1005	4905	351	5256	
6:45 - 7:45	744	80	824				492	23	515	261	19	280	634	51	685																1924	101	2025	924	65	989	4979	339	5318	
7:00 - 8:00	748	69	817				461	21	482	286	21	307	689	52	741																1960	100	2060	988	70	1058	5132	333	5465	
7:15 - 8:15	810	65	875				463	29	492	294	26	320	732	66	798																1839	92	1931	1019	69	1088	5157	347	5504	
7:30 - 8:30	839	65	904				481	34	515	304	30	334	764	78	842																1822	86	1908	1012	61	1073	5222	354	5576	
7:45 - 8:45	**1032**	**73**	**1105**				**466**	**33**	**499**	**302**	**34**	**336**	**739**	**94**	**833**																**1748**	**91**	**1839**	**994**	**69**	**1063**	**5281**	**394**	**5675**	**Peak**
8:00 - 9:00	1118	83	1201				486	36	522	330	40	370	701	95	796																1562	91	1653	962	71	1033	5159	416	5575	

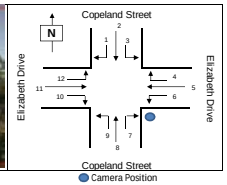
TIME PERIOD	VEHICLE MOVEMENT																																							
	1			2			3			4			5			6			7			8			9			10			11			12			GRAND TOTAL			
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
16:00 - 17:00	**1219**	**41**	**1260**				**336**	**17**	**353**	**673**	**25**	**698**	**1471**	**67**	**1538**																**931**	**55**	**986**	**1070**	**51**	**1121**	**5700**	**256**	**5956**	**Peak**
16:15 - 17:15	1185	38	1223				333	17	350	687	19	706	1501	60	1561																892	55	947	1071	39	1110	5669	228	5897	
16:30 - 17:30	1152	37	1189				332	15	347	696	20	716	1475	50	1525																926	52	978	1114	34	1148	5695	208	5903	
16:45 - 17:45	1137	35	1172				318	18	336	681	15	696	1403	40	1443																893	49	942	1151	30	1181	5583	187	5770	
17:00 - 18:00	1045	39	1084				323	17	340	641	18	659	1406	34	1440																866	49	915	1113	28	1141	5394	185	5579	
17:15 - 18:15	1049	34	1083				320	19	339	573	21	594	1377	32	1409																864	45	909	1124	30	1154	5307	181	5488	
17:30 - 18:30	1008	30	1038				305	19	324	527	16	543	1423	37	1460																816	40	856	1060	28	1088	5139	170	5309	
17:45 - 18:45	942	30	972				290	19	309	476	16	492	1420	40	1460																781	38	819	970	25	995	4879	168	5047	
18:00 - 19:00	951	27	978				256	16	272	443	9	452	1308	35	1343																718	25	743	888	27	915	4564	139	4703	

Intersection of Hume Highway and Elizabeth Drive

Tuesday, 18 March 2014

Austraffic

Survey Start	**6:00 AM 16:00 PM**
Intersection Type	Cross Junction
Intersection No.	**2**
North Approach	**Copeland Street**
East Approach	**Elizabeth Drive**
South Approach	**Copeland Street**
West Approach	**Elizabeth Drive**
Date	**18/03/14**
Classification	**Light Heavy**



Camera Position

TIME PERIOD	VEHICLE MOVEMENT 1			2			3			4			5			6			7			8			9			10			11			12			GRAND TOTAL		
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
6:00 - 6:15	26	4	30	225	13	238	1	0	1	11	1	12	26	3	29	1	0	1	0	0	0	475	38	513	30	1	31	91	4	95	74	2	76	93	5	98	1053	71	1124
6:15 - 6:30	37	5	42	336	26	362	3	0	3	21	1	22	19	5	24	0	1	1	0	0	0	512	34	546	38	0	38	105	6	111	90	7	97	103	8	111	1264	93	1357
6:30 - 6:45	45	4	49	335	27	362	6	3	9	16	0	16	27	3	30	0	2	2	0	0	0	557	35	592	29	2	31	86	3	89	112	2	114	96	7	103	1309	88	1397
6:45 - 7:00	39	4	43	276	32	308	9	1	10	15	1	16	35	4	39	3	1	4	0	0	0	513	21	534	28	3	31	107	7	114	182	3	185	145	10	155	1352	87	1439
7:00 - 7:15	38	2	40	278	29	307	9	0	9	19	0	19	36	7	43	4	0	4	0	0	0	597	36	633	23	6	29	91	7	98	144	3	147	122	9	131	1361	99	1460
7:15 - 7:30	59	7	66	305	27	332	11	0	11	16	5	21	63	9	72	1	1	2	0	0	0	525	39	564	14	3	17	70	6	76	175	7	182	127	10	137	1366	114	1480
7:30 - 7:45	58	7	65	327	26	353	12	0	12	24	3	27	73	5	78	1	1	2	1	0	1	559	21	580	27	1	28	79	7	86	167	4	171	99	10	109	1427	85	1512
7:45 - 8:00	54	6	60	297	23	320	13	0	13	29	2	31	83	10	93	6	0	6	0	0	0	512	24	536	27	1	28	72	5	77	210	8	218	127	10	137	1430	89	1519
8:00 - 8:15	79	6	85	350	34	384	15	1	16	34	0	34	87	5	92	5	2	7	0	0	0	508	30	538	29	1	30	101	5	106	175	5	180	106	5	111	1489	94	1583
8:15 - 8:30	60	7	67	322	35	357	15	1	16	24	0	24	102	5	107	10	0	10	0	0	0	454	33	487	31	1	32	105	7	112	224	5	229	127	5	132	1474	99	1573
8:30 - 8:45	69	9	78	399	39	438	27	0	27	36	1	37	96	3	99	9	0	9	0	0	0	366	36	402	17	3	20	109	10	119	247	9	256	129	8	137	1504	118	1622
8:45 - 9:00	82	7	89	373	43	416	34	0	34	29	1	30	107	6	113	9	0	9	0	0	0	368	33	401	24	6	30	140	3	143	237	7	244	138	9	147	1541	115	1656
Σ	646	68	714	3823	354	4177	155	6	161	274	15	289	754	65	819	49	8	57	1	0	1	5946	380	6326	317	28	345	1156	70	1226	2037	62	2099	1412	96	1508	16570	1152	17722

TIME PERIOD	VEHICLE MOVEMENT 1			2			3			4			5			6			7			8			9			10			11			12			GRAND TOTAL		
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
16:00 - 16:15	134	8	142	473	20	493	18	0	18	36	1	37	236	7	243	21	0	21	0	0	0	294	26	320	69	3	72	80	0	80	130	7	137	56	3	59	1547	75	1622
16:15 - 16:30	203	4	207	508	25	533	15	0	15	41	2	43	198	4	202	22	1	23	0	0	0	322	27	349	67	7	74	85	3	88	129	5	134	67	4	71	1657	82	1739
16:30 - 16:45	204	11	215	528	20	548	17	1	18	31	0	31	209	5	214	27	0	27	0	0	0	325	17	342	60	4	64	54	1	55	117	6	123	73	4	77	1645	69	1714
16:45 - 17:00	169	3	172	529	18	547	15	0	15	37	0	37	210	7	217	32	1	33	0	0	0	324	18	342	76	3	79	73	1	74	126	4	130	73	7	80	1664	62	1726
17:00 - 17:15	188	4	192	515	15	530	12	1	13	40	0	40	220	6	226	21	0	21	0	0	0	284	17	301	55	2	57	74	4	78	97	5	102	55	5	60	1561	59	1620
17:15 - 17:30	229	6	235	501	9	510	11	1	12	31	0	31	230	4	234	23	0	23	0	0	0	350	13	363	69	3	72	65	1	66	106	7	113	72	3	75	1687	47	1734
17:30 - 17:45	188	7	195	495	12	507	9	2	11	26	1	27	208	4	212	22	0	22	0	0	0	309	14	323	65	1	66	71	0	71	106	4	110	47	1	48	1546	46	1592
17:45 - 18:00	173	3	176	473	15	488	14	0	14	34	1	35	265	14	279	22	0	22	0	0	0	287	11	298	85	0	85	77	2	79	120	4	124	65	7	72	1615	57	1672
18:00 - 18:15	194	4	198	490	13	503	6	0	6	39	0	39	182	4	186	19	0	19	0	0	0	289	9	298	66	1	67	82	3	85	96	3	99	69	6	75	1532	43	1575
18:15 - 18:30	169	2	171	479	10	489	15	0	15	14	0	14	135	6	141	16	0	16	0	0	0	303	10	313	87	2	89	75	0	75	99	5	104	56	4	60	1448	39	1487
18:30 - 18:45	159	4	163	434	19	453	10	1	11	18	0	18	131	3	134	12	0	12	0	0	0	260	7	267	65	3	68	65	0	65	90	3	93	64	3	67	1308	43	1351
18:45 - 19:00	126	3	129	366	10	376	9	0	9	21	1	22	98	5	103	12	0	12	0	0	0	227	4	231	63	0	63	73	0	73	75	3	78	63	4	67	1133	30	1163
Σ	2136	59	2195	5791	186	5977	151	6	157	368	6	374	2322	69	2391	249	2	251	0	0	0	3574	173	3747	827	29	856	874	15	889	1291	56	1347	760	51	811	18343	652	18995

TIME PERIOD	VEHICLE MOVEMENT 1			2			3			4			5			6			7			8			9			10			11			12			GRAND TOTAL			
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
6:00 - 7:00	147	17	164	1172	98	1270	19	4	23	63	3	66	107	15	122	4	4	8	0	0	0	2057	128	2185	125	6	131	389	20	409	458	14	472	437	30	467	4978	339	5317	
6:15 - 7:15	159	15	174	1225	114	1339	27	4	31	71	2	73	117	19	136	7	4	11	0	0	0	2179	126	2305	118	11	129	389	23	412	528	15	543	466	34	500	5286	367	5653	
6:30 - 7:30	181	17	198	1194	115	1309	36	4	39	66	6	72	161	23	184	8	4	12	0	0	0	2192	131	2323	94	14	108	354	23	377	613	15	628	490	36	526	5388	388	5776	
6:45 - 7:45	194	20	214	1186	114	1300	41	1	42	74	9	83	207	25	232	9	3	12	1	0	1	2194	117	2311	92	13	105	347	27	374	668	17	685	493	39	532	5506	385	5891	
7:00 - 8:00	200	22	231	1207	105	1312	45	0	45	88	10	98	255	31	286	12	2	14	1	0	1	2192	120	2312	91	11	102	312	25	337	696	22	718	475	39	514	5594	397	5971	
7:15 - 8:15	250	26	276	1279	110	1389	51	1	52	103	10	113	306	29	335	13	4	17	1	0	1	2104	114	2218	97	6	103	322	23	345	727	24	751	459	35	494	5712	382	6094	
7:30 - 8:30	251	26	277	1296	118	1414	55	2	57	111	5	116	345	25	370	22	3	25	1	0	1	2031	108	2141	114	4	118	357	24	381	778	22	799	459	30	489	5800	357	6157	
7:45 - 8:45	262	28	290	1368	131	1499	70	2	72	123	3	126	368	23	391	30	2	32	0	0	0	1840	123	1963	104	6	110	387	27	414	856	27	883	489	28	517	5897	400	6297	
8:00 - 9:00	**290**	**29**	**319**	**1444**	**151**	**1595**	**91**	**2**	**93**	**123**	**2**	**125**	**392**	**19**	**411**	**33**	**2**	**35**	**0**	**0**	**0**	**1696**	**132**	**1828**	**101**	**11**	**112**	**455**	**25**	**480**	**883**	**26**	**909**	**500**	**27**	**527**	**6008**	**426**	**6434**	**Peak**

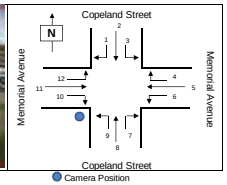
TIME PERIOD	VEHICLE MOVEMENT 1			2			3			4			5			6			7			8			9			10			11			12			GRAND TOTAL			
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
16:00 - 17:00	**710**	**26**	**736**	**2038**	**83**	**2121**	**65**	**1**	**66**	**145**	**3**	**148**	**853**	**23**	**876**	**102**	**2**	**104**	**0**	**0**	**0**	**1265**	**88**	**1353**	**272**	**17**	**289**	**292**	**5**	**297**	**502**	**22**	**524**	**269**	**18**	**287**	**6513**	**288**	**6801**	**Peak**
16:15 - 17:15	764	22	786	2080	78	2158	59	2	61	149	2	151	837	22	859	102	2	104	0	0	0	1255	79	1334	258	16	274	286	9	295	469	20	489	268	20	288	6527	272	6799	
16:30 - 17:30	790	24	814	2073	62	2135	55	3	58	139	0	139	869	22	891	103	1	104	0	0	0	1283	65	1348	260	12	272	266	7	273	446	22	468	273	19	292	6557	237	6794	
16:45 - 17:45	774	20	794	2040	54	2094	47	4	51	134	1	135	869	21	890	98	1	99	0	0	0	1267	62	1329	265	9	274	293	6	299	435	20	455	247	16	263	6458	214	6672	
17:00 - 18:00	778	20	798	1984	51	2035	46	4	50	131	2	133	923	28	951	88	0	88	0	0	0	1230	55	1285	274	6	280	287	7	294	429	20	449	239	16	255	6409	209	6618	
17:15 - 18:15	784	20	804	1959	49	2008	40	3	43	130	2	132	885	26	911	86	0	86	0	0	0	1235	47	1282	265	5	270	295	6	301	428	18	446	253	17	270	6380	193	6573	
17:30 - 18:30	724	16	740	1937	50	1987	44	2	46	113	2	115	790	28	818	79	0	79	0	0	0	1188	44	1232	303	4	307	305	5	310	421	16	437	237	18	255	6141	185	6326	
17:45 - 18:45	695	13	708	1876	57	1933	45	1	46	105	1	106	713	27	740	69	0	69	0	0	0	1128	37	1165	303	6	309	299	5	304	405	15	420	254	20	274	5903	182	6085	
18:00 - 19:00	648	13	661	1769	52	1821	40	1	41	92	1	93	546	18	564	59	0	59	0	0	0	1079	30	1109	281	6	287	295	3	298	360	14	374	252	17	269	5421	155	5576	

Intersection of Hume Highway and Memorial Avenue

Tuesday, 18 March 2014

Austraffic

Survey Start	**6:00 AM 16:00 PM**
Intersection Type	Cross Junction
Intersection No.	**3**
North Approach	**Copeland Street**
East Approach	**Memorial Avenue**
South Approach	**Copeland Street**
West Approach	**Memorial Avenue**
Date	**18/03/14**
Classification	**Light Heavy**



Camera Position

TIME PERIOD	VEHICLE MOVEMENT																																				GRAND TOTAL		
	1			2			3			4			5			6			7			8			9			10			11			12					
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
6:00 - 6:15	7	0	7	269	19	288	26	0	26	21	5	26	11	0	11	1	0	1	4	0	4	443	29	472	7	0	7	11	0	11	15	0	15	19	2	21	834	55	889
6:15 - 6:30	5	0	5	370	38	408	44	4	48	16	0	16	19	1	20	1	0	1	8	1	9	485	35	520	18	0	18	16	0	16	12	1	13	11	1	12	1005	81	1086
6:30 - 6:45	9	0	9	354	34	388	40	1	41	16	3	19	6	1	7	1	0	1	15	1	16	509	36	545	12	0	12	21	0	21	13	1	14	24	1	25	1020	78	1098
6:45 - 7:00	8	0	8	319	43	362	43	1	44	19	5	24	12	3	15	0	0	0	14	0	14	545	30	575	17	0	17	24	0	24	31	0	31	18	0	18	1060	82	1142
7:00 - 7:15	10	0	10	311	38	349	38	5	43	15	3	18	16	0	16	0	0	0	12	2	14	531	36	567	24	1	25	26	1	27	28	1	29	29	1	30	1040	88	1128
7:15 - 7:30	8	2	10	315	34	349	41	1	42	21	1	22	26	2	28	4	0	4	17	1	18	519	43	562	16	1	17	24	0	24	43	3	46	33	0	33	1067	88	1155
7:30 - 7:45	16	1	17	322	32	354	18	1	19	21	2	23	21	0	21	1	2	3	33	1	34	473	26	499	21	0	21	24	0	24	54	0	54	33	0	33	1037	65	1102
7:45 - 8:00	15	0	15	302	36	338	14	0	14	16	1	17	31	2	33	4	0	4	25	0	25	469	27	496	34	1	35	38	1	39	67	2	69	29	0	29	1044	70	1114
8:00 - 8:15	20	0	20	347	42	389	11	1	12	18	2	20	28	2	30	3	1	4	68	0	68	428	30	458	35	0	35	30	1	31	81	0	81	20	0	20	1089	79	1168
8:15 - 8:30	21	1	22	303	36	339	26	4	30	30	3	33	28	2	30	5	3	8	75	0	75	375	34	409	30	0	30	35	1	36	106	2	108	29	1	30	1053	97	1150
8:30 - 8:45	24	2	26	350	49	399	42	1	43	25	7	32	36	1	37	5	0	5	55	0	55	357	36	393	30	1	31	25	1	26	113	2	115	23	2	25	1085	102	1187
8:45 - 9:00	38	0	38	367	46	413	37	0	37	27	8	35	38	0	38	8	0	8	51	1	52	346	29	375	35	0	35	25	0	25	93	1	94	21	0	21	1086	85	1171
Σ	181	6	187	3929	447	4376	380	19	399	245	40	285	272	14	286	33	6	39	377	7	384	5480	391	5871	279	4	283	299	5	304	656	13	669	289	8	297	12420	960	13380

TIME PERIOD	VEHICLE MOVEMENT																																				GRAND TOTAL		
	1			2			3			4			5			6			7			8			9			10			11			12					
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
16:00 - 16:15	36	1	37	600	21	621	38	0	38	39	3	42	59	4	63	13	0	13	38	5	43	342	27	369	26	0	26	29	0	29	39	2	41	14	0	14	1273	63	1336
16:15 - 16:30	41	1	42	562	28	590	24	2	26	46	4	50	50	2	52	15	0	15	29	0	29	349	32	381	28	2	30	31	0	31	43	1	44	21	1	22	1239	73	1312
16:30 - 16:45	52	1	53	614	24	638	35	1	36	44	1	45	54	1	55	13	0	13	33	0	33	342	24	366	30	1	31	39	0	39	37	1	38	13	1	14	1306	55	1361
16:45 - 17:00	40	2	42	617	19	636	27	0	27	47	4	51	66	0	66	9	0	9	27	0	27	354	21	375	29	0	29	37	0	37	49	0	49	25	0	25	1327	46	1373
17:00 - 17:15	42	1	43	652	20	672	31	1	32	32	3	35	53	1	54	12	0	12	18	0	18	295	22	317	20	0	20	36	0	36	34	1	35	18	0	18	1243	49	1292
17:15 - 17:30	49	0	49	601	14	615	36	2	38	37	3	40	56	4	60	10	0	10	26	0	26	373	15	388	27	0	27	26	0	26	48	0	48	10	0	10	1299	38	1337
17:30 - 17:45	47	1	48	557	18	575	38	1	39	32	2	34	50	0	50	5	0	5	22	0	22	340	13	353	31	0	31	17	0	17	39	1	40	24	0	24	1185	38	1223
17:45 - 18:00	45	1	46	520	15	535	24	0	24	45	0	45	64	0	64	10	0	10	26	0	26	327	14	341	27	0	27	27	0	27	41	0	41	16	1	17	1172	31	1203
18:00 - 18:15	55	1	56	540	21	561	45	0	45	38	2	40	53	1	54	12	0	12	31	0	31	322	13	335	26	1	27	24	0	24	44	1	45	30	0	30	1220	40	1260
18:15 - 18:30	41	0	41	505	13	518	39	1	40	57	1	58	48	1	49	11	0	11	30	0	30	314	13	327	47	0	47	22	0	22	45	0	45	20	0	20	1179	29	1208
18:30 - 18:45	40	0	40	450	25	475	33	0	33	40	0	40	37	1	38	8	0	8	27	0	27	308	12	320	24	0	24	22	0	22	26	1	27	18	0	18	1033	39	1072
18:45 - 19:00	38	0	38	373	11	384	36	1	37	41	1	42	56	0	56	5	0	5	23	0	23	234	7	241	30	0	30	20	0	20	39	0	39	24	0	24	919	20	939
Σ	526	9	535	6591	229	6820	406	9	415	498	24	522	646	15	661	123	0	123	335	5	340	3878	215	4093	345	4	349	330	0	330	484	8	492	233	3	236	14395	521	14916

TIME PERIOD	VEHICLE MOVEMENT																																				GRAND TOTAL			
	1			2			3			4			5			6			7			8			9			10			11			12						
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
6:00 - 7:00	29	0	29	1312	134	1446	153	6	159	72	13	85	48	5	53	3	0	3	41	2	43	1982	130	2112	54	0	54	72	0	72	71	2	73	72	4	76	3909	296	4205	
6:15 - 7:15	32	0	32	1354	153	1507	165	11	176	66	11	77	53	5	58	2	0	2	49	4	53	2070	137	2207	71	1	72	87	1	88	84	3	87	82	3	85	4115	329	4444	
6:30 - 7:30	35	2	37	1299	149	1448	162	8	170	71	12	83	60	6	66	5	0	5	58	4	62	2104	145	2249	69	2	71	95	1	96	115	5	120	104	2	106	4177	336	4513	
6:45 - 7:45	42	3	45	1267	147	1414	140	8	148	76	11	87	75	5	80	6	2	7	76	4	80	2068	135	2203	78	2	80	98	1	99	156	4	160	113	1	114	4194	323	4517	
7:00 - 8:00	49	3	52	1250	140	1390	111	7	118	73	7	80	94	4	98	9	2	11	87	4	91	1992	132	2124	95	3	98	112	2	114	192	6	198	124	1	125	4188	311	4499	
7:15 - 8:15	59	3	62	1286	144	1430	84	3	87	76	6	82	106	6	112	12	2	15	143	2	145	1889	126	2015	106	2	108	116	2	118	245	5	250	115	0	115	4237	302	4539	
7:30 - 8:30	72	2	74	1274	146	1420	69	6	75	85	8	93	108	6	114	13	6	19	201	1	202	1745	117	1862	120	2	122	127	3	130	308	4	312	111	1	112	4233	301	4534	
7:45 - 8:45	80	3	83	1302	163	1465	93	6	99	89	13	102	123	7	130	17	4	21	223	0	223	1629	127	1756	129	2	131	128	4	132	367	6	373	101	3	104	4281	338	4619	
8:00 - 9:00	**103**	**3**	**106**	**1367**	**173**	**1540**	**116**	**6**	**122**	**100**	**20**	**120**	**130**	**5**	**135**	**21**	**4**	**25**	**240**	**1**	**250**	**1506**	**129**	**1635**	**130**	**1**	**131**	**115**	**3**	**118**	**393**	**5**	**398**	**93**	**3**	**96**	**4323**	**353**	**4676**	Peak

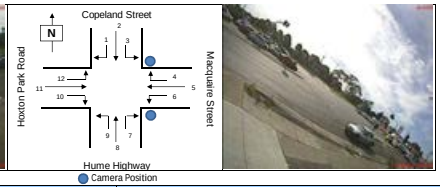
TIME PERIOD	VEHICLE MOVEMENT																																				GRAND TOTAL			
	1			2			3			4			5			6			7			8			9			10			11			12						
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
16:00 - 17:00	**169**	**5**	**174**	**2393**	**92**	**2485**	**124**	**3**	**127**	**176**	**12**	**188**	**229**	**7**	**236**	**50**	**0**	**50**	**127**	**5**	**132**	**1387**	**104**	**1491**	**113**	**3**	**116**	**136**	**0**	**136**	**168**	**4**	**172**	**73**	**2**	**75**	**5145**	**237**	**5382**	Peak
16:15 - 17:15	175	5	180	2445	91	2536	117	4	121	169	12	181	223	4	227	49	0	49	107	0	107	1340	99	1439	107	3	110	143	0	143	163	3	166	77	2	79	5115	223	5338	
16:30 - 17:30	183	4	187	2494	77	2571	129	4	133	160	11	171	229	6	235	44	0	44	104	0	104	1364	82	1446	106	1	107	138	0	138	168	2	170	66	1	67	5175	188	5363	
16:45 - 17:45	176	4	180	2422	71	2493	132	4	136	148	12	160	225	5	230	36	0	36	98	0	98	1340	73	1413	107	0	107	115	0	115	170	2	172	77	0	77	5054	171	5225	
17:00 - 18:00	183	3	186	2330	67	2397	129	4	133	146	8	154	223	5	228	37	0	37	97	0	97	1313	66	1379	105	0	105	106	0	106	162	2	164	68	1	69	4899	156	5055	
17:15 - 18:15	190	3	193	2218	68	2286	143	3	146	152	7	159	223	5	228	37	0	37	110	0	110	1340	57	1397	111	1	112	94	0	94	172	2	174	80	1	81	4976	147	5023	
17:30 - 18:30	188	3	191	2122	67	2189	146	2	148	172	5	177	215	2	217	38	0	38	114	0	114	1281	55	1336	131	1	132	90	0	90	169	2	171	90	1	91	4758	138	4894	
17:45 - 18:45	181	2	183	2015	74	2089	141	1	142	180	2	182	202	3	205	41	0	41	114	0	114	1271	52	1323	124	1	125	95	0	95	158	2	160	84	1	85	4604	139	4743	
18:00 - 19:00	174	1	175	1868	70	1938	153	2	155	176	4	180	194	3	197	36	0	36	111	0	111	1178	45	1223	127	1	128	88	0	88	154	2	156	92	0	92	4351	128	4479	

Intersection of Hume Highway and Hoxton Park Road

Tuesday, 18 March 2014

Austraffic

Survey Start	**6:00 AM 16:00 PM**
Intersection Type	Cross Junction
Intersection No.	**4**
North Approach	**Copeland Street**
East Approach	**Macquaire Street**
South Approach	**Hume Highway**
West Approach	**Hoxton Park Road**
Date	**18/03/14**
Classification	**Light Heavy**



Camera Position

TIME PERIOD	VEHICLE MOVEMENT																																				GRAND TOTAL		
	1			2			3			4			5			6			7			8			9			10			11			12					
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
6:00 - 6:15	17	2	19	238	13	251	30	5	35	0	0	0	44	2	46	36	1	37	105	17	122	369	19	388	8	0	8	69	3	72	162	11	173	44	5	49	1122	78	1200
6:15 - 6:30	33	6	39	279	20	299	41	3	44	0	0	0	49	4	53	30	1	31	142	6	148	450	29	479	14	0	14	46	5	51	152	11	163	39	7	46	1275	92	1367
6:30 - 6:45	41	5	46	315	32	347	29	8	37	0	0	0	69	7	76	36	1	37	141	10	151	471	19	490	15	2	17	76	6	82	215	9	224	42	10	52	1450	109	1559
6:45 - 7:00	47	10	57	268	25	293	27	4	31	0	0	0	61	8	69	45	0	45	191	5	196	489	30	519	13	3	16	60	1	61	195	16	211	60	6	66	1456	108	1564
7:00 - 7:15	38	6	44	255	32	287	33	3	36	0	0	0	62	9	71	39	4	43	215	8	223	525	27	552	12	4	16	47	1	48	179	12	191	62	10	72	1467	116	1583
7:15 - 7:30	35	8	43	259	20	279	28	2	30	0	0	0	78	10	88	39	0	39	192	6	198	506	35	541	12	2	14	67	2	69	198	13	211	58	13	71	1472	111	1583
7:30 - 7:45	38	8	46	245	19	264	38	6	44	0	0	0	84	7	91	54	8	62	216	5	221	463	18	481	18	0	18	68	2	70	244	10	254	53	7	60	1521	90	1611
7:45 - 8:00	37	7	44	278	18	296	34	10	44	0	0	0	92	3	95	42	4	46	224	3	227	467	18	485	22	0	22	69	4	73	235	6	241	49	11	60	1549	84	1633
8:00 - 8:15	36	7	43	276	26	302	38	8	46	0	0	0	105	4	109	53	3	56	236	5	241	461	19	480	16	1	17	73	4	77	214	9	223	50	10	60	1558	96	1654
8:15 - 8:30	30	13	43	323	27	350	33	3	36	0	0	0	76	5	81	70	5	75	256	7	263	402	27	429	17	2	19	81	1	82	216	15	231	65	12	77	1568	117	1685
8:30 - 8:45	38	7	45	281	31	312	37	5	42	0	0	0	80	5	85	91	4	95	259	4	263	398	29	427	12	2	14	75	1	76	242	10	252	49	8	57	1562	106	1668
8:45 - 9:00	41	8	49	283	30	313	35	9	44	0	0	0	75	7	82	70	3	73	243	6	249	401	26	427	31	3	34	73	3	76	191	10	201	53	7	60	1496	112	1608
Σ	431	87	518	3300	293	3593	403	66	469	0	0	0	875	71	946	605	34	639	2420	82	2502	5402	296	5698	190	19	209	804	33	837	2443	132	2575	624	106	730	17497	1219	18716

TIME PERIOD	VEHICLE MOVEMENT																																				GRAND TOTAL		
	1			2			3			4			5			6			7			8			9			10			11			12					
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
16:00 - 16:15	50	4	54	558	18	576	28	1	29	0	0	0	142	13	155	139	3	142	105	3	108	325	24	349	20	2	22	75	2	77	127	2	129	63	4	67	1632	76	1708
16:15 - 16:30	42	4	46	525	20	545	25	1	26	0	0	0	146	7	153	143	1	144	100	1	101	351	27	378	27	5	32	51	1	52	113	2	115	43	6	49	1566	75	1641
16:30 - 16:45	48	4	52	584	20	604	29	3	32	0	0	0	136	7	143	164	2	166	111	3	114	340	24	364	43	3	46	78	2	80	128	7	135	56	2	58	1717	77	1794
16:45 - 17:00	40	3	43	619	20	639	27	0	27	0	0	0	138	6	144	156	2	158	95	0	95	332	16	348	32	2	34	72	2	74	144	6	150	54	3	57	1709	60	1769
17:00 - 17:15	39	4	43	606	14	620	15	2	17	0	0	0	155	1	156	140	3	143	92	1	93	298	21	319	27	0	27	74	1	75	128	3	131	44	1	45	1618	51	1669
17:15 - 17:30	67	3	70	582	11	593	13	0	13	0	0	0	133	5	138	195	3	198	92	1	93	385	13	398	33	3	36	82	0	82	143	6	149	53	2	55	1778	47	1825
17:30 - 17:45	45	2	47	600	13	613	26	2	28	0	0	0	136	7	143	128	1	129	87	0	87	323	13	336	47	1	48	89	1	90	118	3	121	43	1	44	1642	44	1686
17:45 - 18:00	61	1	62	536	12	548	29	3	32	1	0	1	152	2	154	171	2	173	105	0	105	324	9	333	44	0	44	80	1	81	115	2	117	38	3	41	1656	35	1691
18:00 - 18:15	64	1	65	531	19	550	14	1	15	0	0	0	151	4	155	141	2	143	104	0	104	351	11	362	44	1	45	60	1	61	108	1	109	41	2	43	1609	43	1652
18:15 - 18:30	52	2	54	509	13	522	14	0	14	0	0	0	143	3	146	97	3	100	105	1	106	320	14	334	39	1	40	64	0	64	111	2	113	51	2	53	1505	41	1546
18:30 - 18:45	64	4	68	411	15	426	23	1	24	0	0	0	133	4	137	105	1	106	97	0	97	298	12	310	31	2	33	71	1	72	104	2	106	44	2	46	1381	44	1425
18:45 - 19:00	68	1	69	308	13	321	17	0	17	0	0	0	127	4	131	95	1	96	87	1	88	257	6	263	36	0	36	57	1	58	116	1	117	42	0	42	1210	28	1238
Σ	640	33	673	6369	188	6557	260	14	274	1	0	1	1692	63	1755	1674	24	1698	1180	11	1191	3904	190	4094	423	20	443	853	13	866	1455	37	1492	572	28	600	19023	621	19644

TIME PERIOD	VEHICLE MOVEMENT																																				GRAND TOTAL			
	1			2			3			4			5			6			7			8			9			10			11			12						
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
6:00 - 7:00	138	23	161	1100	90	1190	127	20	147	0	0	0	223	21	244	147	3	150	579	38	617	1775	97	1876	50	5	55	251	15	266	724	47	771	185	28	213	5303	387	5690	
6:15 - 7:15	159	27	186	1117	109	1226	130	18	148	0	0	0	241	28	269	150	6	156	689	29	718	1935	105	2040	54	9	63	229	13	242	741	48	789	203	33	236	5648	425	6073	
6:30 - 7:30	161	29	190	1097	109	1206	117	17	134	0	0	0	270	34	304	159	5	164	730	29	759	1951	111	2062	52	11	63	250	10	260	787	50	837	222	39	261	5845	444	6289	
6:45 - 7:45	158	32	190	1027	96	1123	126	15	141	0	0	0	285	34	319	177	12	189	814	24	838	1983	110	2093	55	9	64	242	6	248	816	51	867	233	36	269	5916	425	6341	
7:00 - 8:00	146	29	175	1037	89	1126	133	21	154	0	0	0	316	29	345	174	16	190	847	22	869	1960	98	2058	64	6	70	251	9	260	856	41	897	222	41	263	6009	401	6410	
7:15 - 8:15	146	30	176	1058	83	1141	138	26	164	0	0	0	359	24	383	188	15	203	868	19	887	1967	90	2057	68	3	71	277	12	289	891	38	929	210	41	251	6100	381	6481	
7:30 - 8:30	141	35	176	1122	90	1212	143	27	170	0	0	0	367	19	386	218	20	238	932	20	952	1793	82	1875	73	3	76	291	11	302	909	40	949	217	40	257	6097	387	6584	
7:45 - 8:45	**141**	**34**	**175**	**1158**	**102**	**1260**	**142**	**26**	**168**	**0**	**0**	**0**	**353**	**17**	**370**	**256**	**16**	**272**	**975**	**19**	**994**	**1728**	**93**	**1821**	**67**	**5**	**72**	**298**	**10**	**308**	**907**	**40**	**947**	**213**	**41**	**254**	**6238**	**403**	**6641**	**Peak**
8:00 - 9:00	145	35	180	1163	114	1277	143	25	168	0	0	0	336	21	357	284	15	299	994	22	1016	1662	101	1763	76	8	84	302	9	311	863	44	907	217	37	254	6185	431	6616	

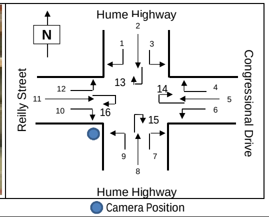
TIME PERIOD	VEHICLE MOVEMENT																																				GRAND TOTAL			
	1			2			3			4			5			6			7			8			9			10			11			12						
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
16:00 - 17:00	180	15	195	2286	78	2364	109	5	114	0	0	0	562	33	595	602	8	610	411	7	418	1348	91	1439	122	12	134	276	7	283	512	17	529	216	15	231	6624	288	6912	
16:15 - 17:15	169	15	184	2334	74	2408	96	6	102	0	0	0	575	21	596	603	8	611	398	5	403	1321	88	1409	129	10	139	275	6	281	513	18	531	197	12	209	6610	263	6873	
16:30 - 17:30	**194**	**14**	**208**	**2391**	**65**	**2456**	**84**	**5**	**89**	**0**	**0**	**0**	**562**	**19**	**581**	**655**	**10**	**665**	**390**	**5**	**395**	**1358**	**74**	**1429**	**135**	**8**	**143**	**306**	**5**	**311**	**543**	**22**	**565**	**207**	**8**	**215**	**6822**	**235**	**7057**	**Peak**
16:45 - 17:45	191	12	203	2407	58	2465	81	4	85	0	0	0	562	19	581	619	9	628	366	2	368	1336	63	1401	139	6	145	317	4	321	533	18	551	194	7	201	6747	202	6949	
17:00 - 18:00	212	10	222	2324	50	2374	83	7	90	1	0	1	576	15	591	634	9	643	376	2	378	1330	56	1386	151	4	155	325	3	328	504	14	518	178	7	185	6694	177	6871	
17:15 - 18:15	237	7	244	2249	55	2304	82	6	88	1	0	1	572	18	590	635	8	643	388	1	389	1361	46	1429	168	5	173	311	3	314	484	12	496	175	8	183	6685	169	6854	
17:30 - 18:30	222	6	228	2179	57	2233	83	6	89	1	0	1	582	16	598	537	8	545	401	1	402	1318	47	1365	174	3	177	293	3	296	452	8	460	173	8	181	6412	163	6575	
17:45 - 18:45	241	8	249	1987	59	2046	80	5	85	1	0	1	579	13	592	514	8	522	411	1	412	1293	46	1339	158	4	162	275	3	278	438	7	445	174	9	183	6151	163	6314	
18:00 - 19:00	248	8	256	1759	60	1819	68	2	70	0	0	0	554	15	569	438	7	445	393	2	395	1226	43	1269	150	4	154	252	3	255	439	6	445	178	6	184	5705	156	5861	

Intersection of Hume Highway and Reilly Street

Tuesday, 18 March 2014

Austraffic

Survey Start	6:00 AM 16:00 PM
Intersection Type	Cross Junction
Intersection No.	5
North Approach	Hume Highway
East Approach	Congressional Drive
South Approach	Hume Highway
West Approach	Reilly Street
Date	18/03/14
Classification	Light Heavy



TIME PERIOD	1			2			3			4			5			6			7			8		
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
6:00 - 6:15	4	0	4	282	12	294	2	0	2	12	0	12	1	0	1	2	0	2	3	0	3	476	19	495
6:15 - 6:30	6	0	6	354	28	382	0	0	0	9	0	9	2	0	2	7	0	7	2	0	2	642	36	678
6:30 - 6:45	8	1	9	405	37	442	1	1	2	16	0	16	1	0	1	4	1	5	0	0	0	653	27	680
6:45 - 7:00	12	0	12	367	27	394	2	1	3	11	0	11	2	0	2	5	0	5	1	0	1	716	32	748
7:00 - 7:15	2	0	2	314	38	352	2	0	2	19	0	19	1	0	1	5	1	6	1	0	1	745	40	785
7:15 - 7:30	7	0	7	353	21	374	2	0	2	15	0	15	1	0	1	8	1	9	1	0	1	745	30	775
7:30 - 7:45	14	0	14	345	28	373	0	0	0	10	0	10	3	0	3	6	1	7	4	0	4	677	22	699
7:45 - 8:00	10	0	10	325	25	350	6	0	6	18	2	20	7	0	7	7	1	8	1	1	2	622	11	633
8:00 - 8:15	15	1	16	354	28	382	4	0	4	15	1	16	13	1	14	14	0	14	2	0	2	697	27	724
8:15 - 8:30	32	0	32	393	30	423	7	0	7	17	0	17	8	0	8	11	0	11	3	0	3	628	30	658
8:30 - 8:45	26	0	26	380	30	410	9	1	10	20	0	20	8	1	9	7	0	7	5	0	5	646	30	676
8:45 - 9:00	28	0	28	370	29	399	12	3	15	10	1	11	6	2	8	6	0	6	7	0	7	627	36	663
Σ	164	2	166	4242	333	4575	47	6	53	172	4	176	53	4	57	82	5	87	30	1	31	7874	340	8214

TIME PERIOD	9			10			11			12			13			14			15			16			GRAND TOTAL		
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
6:00 - 6:15	11	0	11	37	0	37	1	0	1	12	0	12	0	0	0	0	0	0	0	0	0	0	0	0	843	31	874
6:15 - 6:30	12	0	12	31	1	32	0	0	0	9	1	10	0	0	0	0	0	0	0	0	0	0	0	0	1074	66	1140
6:30 - 6:45	9	0	9	57	3	60	0	0	0	9	0	9	0	0	0	0	0	0	0	0	0	0	0	0	1163	70	1233
6:45 - 7:00	15	1	16	34	4	38	1	0	1	14	0	14	0	0	0	0	0	0	0	0	0	0	0	0	1180	65	1245
7:00 - 7:15	12	1	13	50	0	50	0	0	0	10	1	11	0	0	0	0	0	0	1	0	1	0	0	0	1162	81	1243
7:15 - 7:30	15	1	16	51	1	52	1	0	1	15	2	17	0	0	0	0	0	0	1	0	1	0	0	0	1215	56	1271
7:30 - 7:45	13	0	13	49	1	50	1	0	1	16	0	16	0	0	0	0	0	0	2	0	2	0	0	0	1140	52	1192
7:45 - 8:00	12	0	12	50	0	50	3	0	3	20	1	21	0	0	0	0	0	0	0	0	0	0	0	0	1081	41	1122
8:00 - 8:15	19	1	20	43	1	44	1	1	2	18	1	19	0	0	0	0	0	0	0	0	0	0	0	0	1195	62	1257
8:15 - 8:30	10	1	11	56	3	59	4	0	4	31	2	33	0	0	0	0	0	0	0	0	0	0	0	0	1200	66	1266
8:30 - 8:45	26	0	26	47	0	47	2	0	2	21	0	21	0	0	0	0	0	0	0	0	0	0	0	0	1197	62	1259
8:45 - 9:00	15	0	15	54	3	57	6	0	6	23	0	23	0	0	0	0	0	0	0	0	0	0	0	0	1164	74	1238
Σ	169	5	174	559	17	576	20	1	21	198	8	206	0	0	0	0	0	0	4	0	4	0	0	0	13614	726	14340

TIME PERIOD	1			2			3			4			5			6			7			8		
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
16:00 - 16:15	42	0	42	766	16	782	13	1	14	13	0	13	3	0	3	11	1	12	5	1	6	428	28	456
16:15 - 16:30	44	1	45	720	22	742	18	0	18	8	0	8	7	0	7	12	0	12	7	0	7	473	28	501
16:30 - 16:45	43	1	44	743	21	764	11	0	11	11	0	11	3	0	3	3	0	3	6	0	6	462	29	491
16:45 - 17:00	36	1	37	795	21	816	14	0	14	9	0	9	6	0	6	8	0	8	3	0	3	424	14	438
17:00 - 17:15	42	0	42	774	18	792	14	0	14	14	0	14	6	0	6	14	1	15	6	0	6	380	21	401
17:15 - 17:30	32	0	32	815	12	827	20	0	20	8	0	8	5	0	5	8	0	8	4	1	5	507	20	527
17:30 - 17:45	36	0	36	774	11	785	11	0	11	9	0	9	5	1	6	9	0	9	9	0	9	450	17	467
17:45 - 18:00	53	2	55	777	12	789	22	0	22	11	0	11	7	0	7	8	0	8	5	0	5	438	7	445
18:00 - 18:15	34	0	34	668	20	688	16	0	16	15	0	15	4	0	4	13	0	13	4	0	4	433	13	446
18:15 - 18:30	36	2	38	612	11	623	14	0	14	10	0	10	5	0	5	3	0	3	5	0	5	464	11	475
18:30 - 18:45	27	0	27	507	21	528	9	0	9	10	0	10	7	0	7	4	0	4	5	0	5	407	11	418
18:45 - 19:00	23	1	24	442	10	452	7	0	7	9	0	9	6	0	6	6	0	6	6	0	6	358	10	368
Σ	448	8	456	8393	195	8588	169	1	170	127	0	127	64	1	65	99	2	101	65	2	67	5224	209	5433

TIME PERIOD	9			10			11			12			13			14			15			16			GRAND TOTAL		
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
16:00 - 16:15	59	1	60	55	0	55	4	0	4	7	1	8	0	0	0	0	0	0	0	0	0	0	0	0	1406	49	1455
16:15 - 16:30	47	4	51	50	1	51	9	1	10	8	0	8	0	0	0	0	0	0	0	0	0	0	0	0	1403	57	1460
16:30 - 16:45	42	1	43	60	2	62	7	0	7	10	0	10	0	0	0	0	0	0	0	0	0	0	0	0	1401	54	1455
16:45 - 17:00	53	0	53	55	2	57	4	0	4	12	0	12	0	0	0	0	0	0	0	0	0	0	0	0	1419	38	1457
17:00 - 17:15	54	0	54	46	0	46	8	0	8	15	0	15	1	0	1	0	0	0	0	0	0	0	0	0	1374	40	1414
17:15 - 17:30	58	0	58	55	0	55	7	0	7	16	0	16	0	0	0	0	0	0	1	0	1	0	0	0	1536	33	1569
17:30 - 17:45	50	0	50	60	0	60	2	0	2	8	0	8	0	0	0	0	0	0	1	0	1	0	0	0	1424	29	1453
17:45 - 18:00	47	1	48	48	0	48	6	0	6	10	0	10	1	0	1	0	0	0	0	0	0	0	0	0	1433	22	1455
18:00 - 18:15	57	0	57	38	1	39	10	0	10	14	0	14	0	0	0	0	0	0	0	0	0	0	0	0	1306	34	1340
18:15 - 18:30	47	1	48	35	0	35	8	0	8	23	0	23	1	0	1	0	0	0	0	0	0	0	0	0	1263	25	1288
18:30 - 18:45	28	0	28	37	1	38	2	0	2	5	0	5	0	0	0	0	0	0	0	0	0	0	0	0	1048	33	1081
18:45 - 19:00	23	0	23	29	0	29	4	0	4	5	0	5	1	0	1	0	0	0	0	0	0	0	0	0	919	21	940
Σ	565	8	573	568	7	575	71	1	72	133	1	134	4	0	4	0	0	0	2	0	2	0	0	0	15932	435	16367

TIME PERIOD	1			2			3			4			5			6			7			8		
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
6:00 - 7:00	30	1	31	1408	104	1512	5	2	7	48	0	48	6	0	6	18	1	19	6	0	6	2487	114	2601
6:15 - 7:15	28	1	29	1440	130	1570	5	2	7	55	0	55	6	0	6	21	2	23	4	0	4	2756	135	2891
6:30 - 7:30	29	1	30	1439	123	1562	7	2	9	61	0	61	5	0	5	22	3	25	3	0	3	2859	129	2988
6:45 - 7:45	35	0	35	1379	114	1493	6	1	7	55	0	55	7	0	7	24	3	27	7	0	7	2883	124	3007
7:00 - 8:00	33	0	33	1337	112	1449	10	0	10	62	2	64	12	0	12	26	4	30	7	1	8	2789	103	2892
7:15 - 8:15	46	1	47	1377	102	1479	12	0	12	58	3	61	24	1	25	35	3	38	8	1	9	2741	90	2831
7:30 - 8:30	71	1	72	1417	111	1528	17	0	17	60	3	63	31	1	32	38	2	40	10	1	11	2624	90	2714
7:45 - 8:45	83	1	84	1452	113	1565	26	1	27	70	3	73	36	2	38	39	1	40	11	1	12	2593	98	2691
8:00 - 9:00	**101**	**1**	**102**	**1497**	**117**	**1614**	**32**	**4**	**36**	**62**	**2**	**64**	**35**	**4**	**39**	**38**	**0**	**38**	**17**	**0**	**17**	**2598**	**123**	**2721**

TIME PERIOD	9			10			11			12			13			14			15			16			GRAND TOTAL			
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
6:00 - 7:00	47	1	48	159	8	167	2	0	2	44	1	45	0	0	0	0	0	0	0	0	0	0	0	0	4260	232	4492	
6:15 - 7:15	48	2	50	172	8	180	1	0	1	42	2	44	0	0	0	0	0	0	1	0	1	0	0	0	4579	282	4861	
6:30 - 7:30	51	3	54	192	8	200	2	0	2	48	3	51	0	0	0	0	0	0	2	0	2	0	0	0	4720	272	4992	
6:45 - 7:45	55	3	58	184	6	190	3	0	3	55	3	58	0	0	0	0	0	0	4	0	4	0	0	0	4697	254	4951	
7:00 - 8:00	52	2	54	200	2	202	5	0	5	61	4	65	0	0	0	0	0	0	4	0	4	0	0	0	4598	230	4828	
7:15 - 8:15	59	2	61	193	3	196	6	1	7	69	4	73	0	0	0	0	0	0	3	0	3	0	0	0	4631	211	4842	
7:30 - 8:30	54	2	56	198	5	203	9	1	10	85	4	89	0	0	0	0	0	0	2	0	2	0	0	0	4616	221	4837	
7:45 - 8:45	67	2	69	196	4	200	10	1	11	90	4	94	0	0	0	0	0	0	0	0	0	0	0	0	4673	231	4904	
8:00 - 9:00	**70**	**2**	**72**	**200**	**7**	**207**	**13**	**1**	**14**	**93**	**3**	**96**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4756**	**264**	**5020**	**Peak**

TIME PERIOD	1			2			3			4			5			6			7			8		
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
16:00 - 17:00	165	3	168	3024	80	3104	56	1	57	41	0	41	19	0	19	34	1	35	21	1	22	1787	99	1886
16:15 - 17:15	165	3	168	3032	82	3114	57	0	57	42	0	42	22	0	22	37	1	38	22	0	22	1739	92	1831
16:30 - 17:30	**153**	**2**	**155**	**3127**	**72**	**3199**	**59**	**0**	**59**	**42**	**0**	**42**	**20**	**0**	**20**	**33**	**1**	**34**	**19**	**1**	**20**	**1773**	**84**	**1857**
16:45 - 17:45	146	1	147	3158	62	3220	59	0	59	40	0	40	22	1	23	39	1	40	22	1	23	1761	72	1833
17:00 - 18:00	163	2	165	3140	53	3193	67	0	67	42	0	42	23	1	24	39	1	40	24	1	25	1775	65	1840
17:15 - 18:15	155	2	157	3034	55	3089	69	0	69	43	0	43	21	1	22	38	0	38	22	1	23	1828	57	1885
17:30 - 18:30	159	4	163	2831	54	2885	63	0	63	45	0	45	21	1	22	33	0	33	23	0	23	1785	48	1833
17:45 - 18:45	150	4	154	2564	64	2628	61	0	61	46	0	46	23	0	23	28	0	28	19	0	19	1742	42	1784
18:00 - 19:00	120	3	123	2229	62	2291	46	0	46	44	0	44	22	0	22	26	0	26	20	0	20	1662	45	1707

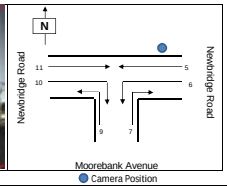
TIME PERIOD	9			10			11			12			13			14			15			16			GRAND TOTAL			
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
16:00 - 17:00	201	6	207	220	5	225	24	1	25	37	1	38	0	0	0	0	0	0	0	0	0	0	0	0	5629	198	5827	
16:15 - 17:15	196	5	201	211	5	216	28	1	29	45	0	45	1	0	1	0	0	0	0	0	0	0	0	0	5597	189	5786	
16:30 - 17:30	**207**	**1**	**208**	**216**	**4**	**220**	**26**	**0**	**26**	**53**	**0**	**53**	**1**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**5730**	**165**	**5895**	**Peak**
16:45 - 17:45	215	0	215	216	2	218	21	0	21	51	0	51	1	0	1	0	0	0	2	0	2	0	0	0	5753	140	5893	
17:00 - 18:00	209	1	210	209	0	209	23	0	23	49	0	49	2	0	2	0	0	0	2	0	2	0	0	0	5767	124	5891	
17:15 - 18:15	212	1	213	201	1	202	25	0	25	48	0	48	1	0	1	0	0	0	2	0	2	0	0	0	5699	118	5817	
17:30 - 18:30	201	2	203	181	1	182	26	0	26	55	0	55	2	0	2	0	0	0	1	0	1	0	0	0	5426	110	5536	
17:45 - 18:45	179	2	181	158	2	160	26	0	26	52	0	52	2	0	2	0	0	0	0	0	0	0	0	0	5050	114	5164	
18:00 - 19:00	155	1	156	139	2	141	24	0	24	47	0	47	2	0	2	0	0	0	0	0	0	0	0	0	4536	113	4649	

Intersection of Moorebank Avenue and Newbridge Road

Tuesday, 18 March 2014

Austraffic

Survey Start	**6:00 AM 16:00 PM**
Intersection Type	T Junction
Intersection No.	**6**
North Approach	
East Approach	**Newbridge Road**
South Approach	**Moorebank Avenue**
West Approach	**Newbridge Road**
Date	**18/03/14**
Classification	**Light Heavy**



Camera Position

TIME PERIOD	VEHICLE MOVEMENT 1			2			3			4			5			6			VEHICLE MOVEMENT 7			8			9			10			11			12			GRAND TOTAL		
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
6:00 - 6:15													54	8	62	49	18	67	215	19	234				75	10	85	115	12	127	253	16	269				761	83	844
6:15 - 6:30													73	7	80	87	14	101	204	18	222				112	4	116	89	5	94	280	20	300				845	68	913
6:30 - 6:45													102	13	115	88	12	100	231	15	246				131	9	140	109	11	120	263	21	284				934	81	1015
6:45 - 7:00													96	9	105	67	14	81	236	18	254				146	15	161	144	6	150	299	17	316				988	79	1067
7:00 - 7:15													90	9	99	68	14	82	250	27	277				147	11	158	125	10	135	297	17	314				977	88	1065
7:15 - 7:30													129	16	145	70	13	83	247	24	271				213	16	229	123	5	128	269	16	285				1051	90	1141
7:30 - 7:45													150	14	164	103	13	116	214	16	230				224	12	236	153	15	168	291	15	306				1135	85	1220
7:45 - 8:00													141	8	149	98	18	116	261	27	288				280	7	287	149	8	157	255	11	266				1184	79	1263
8:00 - 8:15													190	7	197	87	20	107	219	29	248				269	15	284	122	14	136	256	14	270				1143	99	1242
8:15 - 8:30													164	7	171	77	25	102	228	23	251				278	6	284	109	7	116	242	16	258				1098	84	1182
8:30 - 8:45													127	12	139	83	22	105	208	12	220				279	8	287	123	11	134	244	27	271				1064	92	1156
8:45 - 9:00													177	20	197	87	16	103	152	20	172				208	10	218	106	12	118	223	16	239				953	94	1047
Σ													1493	130	1623	964	199	1163	2665	248	2913				2362	123	2485	1467	116	1583	3172	206	3378				12123	1022	13145

TIME PERIOD	VEHICLE MOVEMENT 1			2			3			4			5			6			VEHICLE MOVEMENT 7			8			9			10			11			12			GRAND TOTAL		
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
16:00 - 16:15													236	18	254	251	12	263	129	18	147				205	11	216	174	3	177	194	8	202				1189	70	1259
16:15 - 16:30													260	9	269	234	22	256	120	17	137				154	5	159	180	6	186	175	7	182				1123	66	1189
16:30 - 16:45													281	22	303	216	18	234	113	25	138				189	7	196	211	5	216	191	8	199				1201	85	1286
16:45 - 17:00													246	7	253	245	13	258	141	13	154				132	8	140	203	6	209	196	11	207				1163	58	1221
17:00 - 17:15													227	12	239	238	8	246	153	16	169				172	3	175	230	4	234	225	7	232				1245	50	1295
17:15 - 17:30													271	9	280	246	12	258	184	17	201				150	4	154	232	9	241	227	7	234				1312	58	1370
17:30 - 17:45													237	16	253	233	6	239	166	14	180				147	2	149	239	4	243	212	4	216				1234	46	1280
17:45 - 18:00													148	11	159	192	22	214	115	9	124				134	3	137	220	6	226	184	4	188				993	55	1048
18:00 - 18:15													212	5	217	210	13	223	110	6	116				137	2	139	171	9	180	156	6	162				996	41	1037
18:15 - 18:30													189	12	201	168	11	179	85	12	97				122	3	125	110	6	116	152	8	160				826	52	878
18:30 - 18:45													186	7	193	147	10	157	55	8	63				109	4	113	118	7	125	120	2	122				735	38	773
18:45 - 19:00													173	9	182	111	2	113	78	9	87				108	5	113	98	4	102	108	2	110				676	31	707
Σ													2666	137	2803	2491	149	2640	1449	164	1613				1759	57	1816	2186	69	2255	2140	74	2214				12691	650	13341

TIME PERIOD	VEHICLE MOVEMENT 1			2			3			4			5			6			VEHICLE MOVEMENT 7			8			9			10			11			12			GRAND TOTAL			
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
6:00 - 7:00													325	37	362	291	58	349	886	70	956				464	38	502	457	34	491	1095	74	1169				3518	311	3829	
6:15 - 7:15													361	38	399	310	54	364	921	78	999				536	39	575	467	32	499	1139	75	1214				3734	316	4050	
6:30 - 7:30													417	47	464	293	53	346	964	84	1048				637	51	688	501	32	533	1128	71	1199				3940	338	4278	
6:45 - 7:45													465	48	513	308	54	362	947	85	1032				730	54	784	545	36	581	1156	65	1221				4151	342	4493	
7:00 - 8:00													510	47	557	339	58	397	972	94	1066				864	46	910	550	38	588	1112	59	1171				4347	342	4689	
7:15 - 8:15													610	45	655	358	64	422	941	96	1037				986	50	1036	547	42	589	1071	56	1127				4513	353	4866	
7:30 - 8:30													645	36	681	305	76	441	922	95	1017				1051	40	1091	533	44	577	1044	56	1100				4560	347	4907	Peak
7:45 - 8:45													622	34	656	345	85	430	916	91	1007				1106	36	1142	503	40	543	997	68	1065				4489	354	4843	
8:00 - 9:00													658	46	704	334	83	417	807	84	891				1034	39	1073	460	44	504	965	73	1038				4258	369	4627	

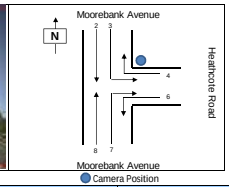
TIME PERIOD	VEHICLE MOVEMENT 1			2			3			4			5			6			VEHICLE MOVEMENT 7			8			9			10			11			12			GRAND TOTAL			
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
16:00 - 17:00													1023	56	1079	946	65	1011	503	73	576				680	31	711	768	20	788	756	34	790				4676	279	4955	
16:15 - 17:15													1014	50	1064	933	61	994	527	71	598				647	23	670	824	21	845	787	33	820				4732	259	4991	
16:30 - 17:30													1025	50	1075	945	51	996	591	71	662				643	22	665	876	24	900	839	33	872				4919	251	5170	Peak
16:45 - 17:45													981	44	1025	962	39	1001	644	60	704				601	17	618	904	23	927	860	29	889				4952	212	5164	
17:00 - 18:00													883	48	931	909	48	957	618	56	674				603	12	615	921	23	944	848	22	870				4782	209	4991	
17:15 - 18:15													868	41	909	881	53	934	575	46	621				568	11	579	862	28	890	779	21	800				4533	200	4733	
17:30 - 18:30													786	44	830	803	52	855	476	41	517				540	10	550	740	25	765	704	22	726				4049	194	4243	
17:45 - 18:45													725	35	760	717	56	773	365	35	400				592	12	604	619	28	647	612	20	632				3550	186	3736	
18:00 - 19:00													760	33	793	636	36	672	328	35	363				476	14	490	497	26	523	536	18	554				3233	162	3395	

Intersection of Moorebank Avenue and Heathcote Road

Tuesday, 18 March 2014

Austraffic

Survey Start	**6:00 AM 16:00 PM**
Intersection Type	T Junction
Intersection No.	**7**
North Approach	**Moorebank Avenue**
East Approach	**Heathcote Road**
South Approach	**Moorebank Avenue**
West Approach	
Date	**18/03/14**
Classification	**Light Heavy**



Camera Position

TIME PERIOD	VEHICLE MOVEMENT																																							GRAND TOTAL		
	1			2			3			4			5			6			7			8			9			10			11			12					
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
6:00 - 6:15				72	21	93	90	5	95	54	5	59				1	0	1	2	1	3	244	20	264													463	52	515
6:15 - 6:30				92	13	105	92	6	98	56	6	62				3	1	4	3	2	5	243	17	260													489	45	534
6:30 - 6:45				101	16	117	85	7	92	80	6	86				2	4	6	3	0	3	301	17	318													572	50	622
6:45 - 7:00				115	15	130	96	7	103	86	12	98				2	3	5	1	3	4	300	27	327													600	67	667
7:00 - 7:15				106	10	116	91	14	105	100	17	117				2	8	10	3	2	5	278	18	296													580	69	649
7:15 - 7:30				83	11	94	110	4	114	150	13	163				4	3	7	8	1	9	301	24	325													658	56	714
7:30 - 7:45				121	15	136	143	15	158	149	11	160				5	2	7	1	1	2	315	22	337													734	66	800
7:45 - 8:00				114	18	132	143	8	151	168	10	178				2	4	6	6	2	8	358	20	378													791	62	853
8:00 - 8:15				108	26	134	101	10	111	145	16	161				1	1	2	1	0	1	353	28	381													709	91	790
8:15 - 8:30				105	18	123	92	11	103	184	10	194				4	3	7	2	2	4	326	18	344													713	62	775
8:30 - 8:45				99	25	124	113	9	122	159	6	165				2	4	6	6	0	6	329	16	345													708	80	788
8:45 - 9:00				91	13	104	107	13	120	132	13	145				0	2	2	4	1	5	240	18	258													574	60	634
Σ				1207	201	1408	1263	109	1372	1463	125	1588				28	35	63	40	15	55	3588	245	3833													7589	730	8319

TIME PERIOD	VEHICLE MOVEMENT																																							GRAND TOTAL		
	1			2			3			4			5			6			7			8			9			10			11			12					
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
16:00 - 16:15				260	13	273	165	2	167	141	6	147				12	2	14	11	0	11	196	22	218													785	45	830
16:15 - 16:30				272	20	292	150	5	155	104	7	111				11	2	13	8	1	9	171	17	188													716	52	768
16:30 - 16:45				282	15	297	156	8	164	125	9	134				13	4	17	9	1	10	170	21	191													755	58	813
16:45 - 17:00				282	11	293	171	7	178	123	9	132				6	1	7	11	1	12	152	14	166													745	43	788
17:00 - 17:15				283	11	294	178	5	183	140	5	145				9	3	12	6	0	6	193	13	206													809	37	846
17:15 - 17:30				278	11	289	191	6	197	103	3	106				21	4	25	7	1	8	232	20	252													832	45	877
17:30 - 17:45				290	8	298	189	3	192	115	2	117				7	4	11	7	3	10	196	12	208													854	32	886
17:45 - 18:00				242	21	263	172	8	180	104	4	108				7	3	10	1	0	1	145	9	154													671	45	716
18:00 - 18:15				250	19	269	140	3	143	102	1	103				0	2	2	3	0	3	140	8	148													635	33	668
18:15 - 18:30				170	11	181	94	5	99	80	2	82				4	2	6	1	0	1	128	12	140													477	32	509
18:30 - 18:45				167	14	181	105	3	108	75	4	79				2	0	2	1	1	2	94	8	102													444	30	474
18:45 - 19:00				127	4	131	85	4	89	64	4	68				3	0	3	4	0	4	126	9	135													409	21	430
Σ				2903	158	3061	1796	59	1855	1276	56	1332				95	27	122	69	8	77	1943	165	2108													8082	473	8555

TIME PERIOD	VEHICLE MOVEMENT																																							GRAND TOTAL			
	1			2			3			4			5			6			7			8			9			10			11			12								
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ		
6:00 - 7:00				380	65	445	363	25	388	276	29	305				8	8	16	9	6	15	1088	81	1169													2124	214	2338		
6:15 - 7:15				414	54	468	364	34	398	322	41	363				9	16	25	10	7	17	1122	79	1201													2241	231	2472		
6:30 - 7:30				405	52	457	382	32	414	416	48	464				10	18	28	15	6	21	1180	86	1266													2408	242	2650		
6:45 - 7:45				425	51	476	440	40	480	485	53	538				13	16	29	13	7	20	1194	91	1285													2570	258	2828		
7:00 - 8:00				424	54	478	487	41	528	567	51	618				13	17	30	18	6	24	1222	84	1306													2761	253	3014		
7:15 - 8:15				426	70	496	497	37	534	612	50	662				12	10	22	16	4	20	1327	94	1421													2890	265	3155		
7:30 - 8:30				448	77	525	479	44	523	646	47	693				12	10	22	10	5	15	1352	88	1440													2947	271	3218	Peak	
7:45 - 8:45				426	87	513	449	38	487	656	42	698				9	12	21	15	4	19	1366	82	1448													2921	265	3186		
8:00 - 9:00				403	82	485	413	43	456	620	45	665				7	10	17	13	3	16	1248	80	1328													2704	263	2967		

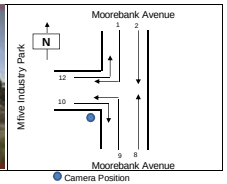
TIME PERIOD	VEHICLE MOVEMENT																																							GRAND TOTAL			
	1			2			3			4			5			6			7			8			9			10			11			12								
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ		
16:00 - 17:00				1096	59	1155	642	22	664	493	31	524				42	9	51	39	3	42	689	74	763													3001	198	3199		
16:15 - 17:15				1119	57	1176	655	25	680	492	30	522				39	10	49	34	3	37	686	65	751													3025	190	3215		
16:30 - 17:30				1125	48	1173	696	26	722	491	26	517				49	12	61	33	3	36	747	68	815													3141	183	3324		
16:45 - 17:45				1133	41	1174	729	21	750	481	19	500				43	12	55	21	5	26	773	59	832													3180	157	3337	Peak	
17:00 - 18:00				1093	51	1144	730	22	752	462	14	476				44	14	58	21	4	25	766	54	820													3116	159	3275		
17:15 - 18:15				1060	59	1119	692	20	712	424	10	434				35	13	48	18	4	22	713	49	762													2942	155	3097		
17:30 - 18:30				952	59	1011	595	19	614	401	9	410				18	11	29	12	3	15	609	41	650													2587	142	2729		
17:45 - 18:45				829	65	894	511	19	530	361	11	372				13	7	20	5	2	7	507	37	544													2227	140	2367		
18:00 - 19:00				714	48	762	424	15	439	321	11	332				9	4	13	9	1	10	488	37	525													1965	116	2081		

Intersection of Moorebank Avenue and MFive Industry Park

Tuesday, 18 March 2014

Austraffic

Survey Start	**6:00 AM 16:00 PM**
Intersection Type	T Junction
Intersection No.	**15**
North Approach	**Moorebank Avenue**
East Approach	
South Approach	**Moorebank Avenue**
West Approach	**MFive Industry Park**
Date	**18/03/14**
Classification	**Light Heavy**



Camera Position

TIME PERIOD	VEHICLE MOVEMENT 1			2			3			4			5			6			7			8			9			10			11			12			GRAND TOTAL		
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
6:00 - 6:15	3	1	4	65	21	86																256	16	272	3	2	5	12	2	14				0	2	2	339	44	383
6:15 - 6:30	6	0	6	90	13	103																242	14	256	2	0	2	3	2	5				0	3	3	343	32	375
6:30 - 6:45	6	1	7	94	20	114																268	18	286	5	0	5	0	6	6				4	1	5	377	46	423
6:45 - 7:00	15	0	15	99	17	116																318	27	345	7	0	7	0	11	11				1	1	2	440	56	496
7:00 - 7:15	8	1	9	106	18	124																275	17	292	8	2	10	1	4	5				2	3	5	400	45	445
7:15 - 7:30	9	7	16	85	8	93																317	21	338	6	0	6	6	9	15				0	5	5	423	50	473
7:30 - 7:45	8	2	10	124	15	139																320	25	345	7	0	7	2	5	7				2	0	2	463	47	510
7:45 - 8:00	5	3	8	115	19	134																364	16	380	12	0	12	1	6	7				1	4	5	498	48	546
8:00 - 8:15	7	6	13	103	21	124																348	26	374	8	1	9	4	6	10				1	2	3	471	62	533
8:15 - 8:30	13	6	19	95	15	110																343	18	361	26	0	26	5	9	14				3	2	5	485	50	535
8:30 - 8:45	5	4	9	102	25	127																336	12	348	25	0	25	3	11	14				2	4	6	473	56	529
8:45 - 9:00	5	2	7	91	13	104																247	14	261	14	0	14	2	6	8				3	3	6	362	38	400
Σ	90	33	123	1169	205	1374																3634	224	3858	123	5	128	39	77	116				19	30	49	5074	574	5648

TIME PERIOD	VEHICLE MOVEMENT 1			2			3			4			5			6			7			8			9			10			11			12			GRAND TOTAL		
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
16:00 - 16:15	1	0	1	257	16	273																206	17	223	3	2	5	17	5	22				7	1	8	491	41	532
16:15 - 16:30	7	2	9	290	18	308																165	21	186	1	0	1	16	4	20				7	0	7	486	45	531
16:30 - 16:45	4	2	6	283	17	300																180	23	203	2	0	2	23	3	26				6	0	6	498	45	543
16:45 - 17:00	1	1	2	282	10	292																155	10	165	0	1	1	20	5	25				8	2	10	466	29	495
17:00 - 17:15	2	3	5	294	11	305																187	15	202	3	0	3	58	4	62				7	0	7	551	33	584
17:15 - 17:30	1	7	8	311	9	320																253	16	269	1	0	1	37	2	39				2	2	4	605	36	641
17:30 - 17:45	2	2	4	285	11	296																191	13	204	1	1	2	34	4	38				7	2	9	530	31	561
17:45 - 18:00	0	7	7	236	18	254																128	6	134	0	0	0	19	7	26				4	2	6	387	40	427
18:00 - 18:15	2	5	7	245	15	260																140	8	148	1	0	1	43	2	45				7	2	9	438	32	470
18:15 - 18:30	2	8	10	175	5	180																121	7	128	0	1	1	19	1	20				1	5	6	318	27	345
18:30 - 18:45	0	5	5	165	8	173																90	2	92	0	0	0	15	2	17				1	5	6	271	22	293
18:45 - 19:00	0	2	2	135	2	137																114	6	120	0	0	0	14	2	16				6	8	14	269	20	289
Σ	22	44	66	2958	140	3098																1930	144	2074	12	5	17	315	41	356				63	29	92	5300	403	5703

TIME PERIOD	VEHICLE MOVEMENT 1			2			3			4			5			6			7			8			9			10			11			12			GRAND TOTAL			
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
6:00 - 7:00	30	2	32	348	71	419																1084	75	1159	17	2	19	15	21	36				5	7	12	1499	178	1677	
6:15 - 7:15	35	2	37	389	68	457																1103	76	1179	22	2	24	4	23	27				7	8	15	1560	179	1739	
6:30 - 7:30	39	8	47	384	63	447																1176	83	1261	26	2	28	7	30	37				7	10	17	1640	197	1837	
6:45 - 7:45	40	10	50	414	58	472																1230	90	1320	28	2	30	9	29	38				5	9	14	1726	198	1924	
7:00 - 8:00	30	13	43	430	60	490																1276	79	1355	33	2	35	10	24	34				5	12	17	1784	190	1974	
7:15 - 8:15	29	18	47	427	63	490																1346	88	1437	33	1	34	13	26	39				4	11	15	1855	207	2062	
7:30 - 8:30	33	17	50	437	70	507																1375	85	1460	53	1	54	12	26	38				7	8	15	1917	207	2124	
7:45 - 8:45	**30**	**19**	**49**	**415**	**80**	**495**																**1391**	**72**	**1463**	**71**	**1**	**72**	**13**	**32**	**45**				**7**	**12**	**19**	**1927**	**216**	**2143**	**Peak**
8:00 - 9:00	30	18	48	391	74	465																1274	70	1344	73	1	74	14	32	46				9	11	20	1791	206	1997	

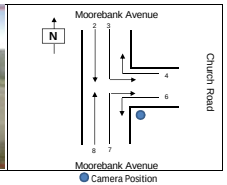
TIME PERIOD	VEHICLE MOVEMENT 1			2			3			4			5			6			7			8			9			10			11			12			GRAND TOTAL			
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
16:00 - 17:00	13	5	18	1112	61	1173																706	71	777	6	3	9	76	17	93				28	3	31	1941	160	2101	
16:15 - 17:15	14	8	22	1149	56	1205																687	69	756	6	1	7	117	16	133				28	2	30	2001	152	2153	
16:30 - 17:30	8	13	21	1170	47	1217																775	64	839	6	1	7	138	14	152				23	4	27	2120	143	2263	
16:45 - 17:45	**6**	**13**	**19**	**1172**	**41**	**1213**																**786**	**54**	**840**	**5**	**2**	**7**	**149**	**15**	**164**				**24**	**6**	**30**	**2142**	**131**	**2273**	**Peak**
17:00 - 18:00	5	19	24	1126	49	1175																759	50	809	5	1	6	148	17	165				20	6	26	2063	142	2205	
17:15 - 18:15	5	21	26	1077	53	1130																712	43	755	3	1	4	133	15	148				20	8	28	1950	141	2091	
17:30 - 18:30	6	22	28	941	49	990																580	34	614	2	2	4	115	14	129				19	11	30	1663	132	1795	
17:45 - 18:45	4	25	29	821	46	867																479	23	502	2	0	2	96	12	108				13	14	27	1414	121	1535	
18:00 - 19:00	4	20	24	720	30	750																465	23	488	1	1	2	91	7	98				15	20	35	1296	101	1397	

Intersection of Moorebank Avenue and Church Road

Tuesday, 18 March 2014

Austraffic

Survey Start	**6:00 AM 16:00 PM**
Intersection Type	T Junction
Intersection No.	**14**
North Approach	**Moorebank Avenue**
East Approach	**Church Road**
South Approach	**Moorebank Avenue**
West Approach	
Date	**18/03/14**
Classification	**Light Heavy**



Camera Position

TIME PERIOD	VEHICLE MOVEMENT																																							GRAND TOTAL		
	1			2			3			4			5			6			7			8			9			10			11			12					
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
6:00 - 6:15				68	24	92	2	0	2	1	0	1				31	2	33	28	3	31	264	22	286													394	51	445
6:15 - 6:30				96	12	108	3	0	3	0	0	0				25	5	30	40	2	42	268	20	288													432	39	471
6:30 - 6:45				106	24	130	1	0	1	1	0	1				17	6	23	38	3	41	284	19	303													447	52	499
6:45 - 7:00				93	27	120	3	1	4	0	0	0				10	1	11	42	4	46	337	31	368													485	64	549
7:00 - 7:15				105	22	127	0	0	0	0	1	1				15	4	19	48	0	48	299	22	321													467	49	516
7:15 - 7:30				100	15	115	2	0	2	1	0	1				10	3	13	39	2	41	343	24	367													495	44	539
7:30 - 7:45				111	23	134	2	0	2	0	0	0				16	2	18	35	2	37	355	27	382													519	54	573
7:45 - 8:00				112	24	136	2	0	2	0	0	0				37	3	40	64	1	65	387	29	416													602	57	659
8:00 - 8:15				100	27	127	10	0	10	2	0	2				31	4	35	50	6	56	371	34	405													564	71	635
8:15 - 8:30				94	24	118	6	0	6	0	0	0				44	5	49	39	3	42	373	21	394													556	53	609
8:30 - 8:45				97	33	130	8	0	8	4	0	4				27	11	38	47	7	54	384	20	404													567	71	638
8:45 - 9:00				94	21	115	2	1	3	2	0	2				30	4	34	43	2	45	272	17	289													443	45	488
Σ				1176	276	1452	41	2	43	11	1	12				293	50	343	513	35	548	3937	286	4223													5971	650	6621

TIME PERIOD	VEHICLE MOVEMENT																																							GRAND TOTAL		
	1			2			3			4			5			6			7			8			9			10			11			12					
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
16:00 - 16:15				284	21	305	2	0	2	2	0	2				100	6	106	18	2	20	203	28	231													609	57	666
16:15 - 16:30				320	25	345	2	0	2	0	0	0				55	5	60	13	0	13	165	21	186													555	51	606
16:30 - 16:45				281	18	299	3	0	3	1	0	1				94	4	98	19	2	21	175	26	201													573	50	623
16:45 - 17:00				328	19	347	5	1	6	0	0	0				71	3	74	14	2	16	160	20	180													578	45	623
17:00 - 17:15				301	11	312	1	0	1	0	0	0				101	4	105	14	5	19	193	27	220													610	47	657
17:15 - 17:30				373	13	386	1	0	1	0	0	0				62	4	66	24	0	24	240	31	271													700	48	748
17:30 - 17:45				320	12	332	2	0	2	0	0	0				76	4	80	13	1	14	197	34	231													608	51	659
17:45 - 18:00				257	22	279	2	1	3	0	0	0				57	5	62	11	1	12	133	25	158													460	54	514
18:00 - 18:15				285	19	304	1	0	1	0	0	0				51	2	53	9	0	9	132	31	163													478	52	530
18:15 - 18:30				212	5	217	2	0	2	0	0	0				26	0	26	17	0	17	127	18	145													384	23	407
18:30 - 18:45				186	11	197	1	0	1	2	0	2				26	0	26	4	0	4	92	15	107													311	26	337
18:45 - 19:00				137	4	141	3	0	3	1	0	1				29	0	29	6	0	6	113	14	127													289	18	307
Σ				3284	180	3464	25	2	27	6	0	6				748	37	785	162	13	175	1930	290	2220													6155	522	6677

TIME PERIOD	VEHICLE MOVEMENT																																							GRAND TOTAL			
	1			2			3			4			5			6			7			8			9			10			11			12								
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ		
6:00 - 7:00				363	87	450	9	1	10	2	0	2				83	14	97	148	12	160	1153	92	1245													1758	206	1964		
6:15 - 7:15				400	85	485	7	1	8	1	1	2				67	16	83	168	9	177	1188	92	1280													1851	204	2035		
6:30 - 7:30				404	88	492	6	1	7	2	1	3				52	14	66	167	9	176	1261	98	1359													1894	209	2103		
6:45 - 7:45				409	87	496	7	1	8	1	1	2				51	10	61	164	8	172	1334	104	1438													1966	211	2177		
7:00 - 8:00				428	84	512	5	0	5	3	1	4				78	12	90	186	5	191	1384	102	1486													2083	204	2287		
7:15 - 8:15				423	89	512	16	0	16	3	0	3				94	12	106	188	11	199	1456	114	1570													2180	226	2406		
7:30 - 8:30				417	98	515	20	0	20	2	0	2				128	14	142	188	12	200	1486	111	1597													2241	237	2478		
7:45 - 8:45				**403**	**108**	**511**	**26**	**0**	**26**	**6**	**0**	**6**				**139**	**23**	**162**	**200**	**17**	**217**	**1515**	**104**	**1619**													**2289**	**252**	**2541**	**Peak**	
8:00 - 9:00				385	105	490	26	1	27	8	0	8				132	24	156	179	18	197	1400	92	1492													2130	240	2370		

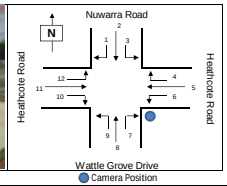
TIME PERIOD	VEHICLE MOVEMENT																																							GRAND TOTAL			
	1			2			3			4			5			6			7			8			9			10			11			12					
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ		
16:00 - 17:00				1213	83	1296	12	1	13	3	0	3				320	18	338	64	6	70	703	95	798													2315	203	2518		
16:15 - 17:15				1230	73	1303	11	1	12	1	0	1				321	16	337	60	9	69	693	94	787													2316	193	2509		
16:30 - 17:30				1293	61	1344	10	1	11	1	0	1				328	15	343	71	9	80	768	104	872													2461	190	2651		
16:45 - 17:45				**1322**	**55**	**1377**	**9**	**1**	**10**	**0**	**0**	**0**				**310**	**15**	**325**	**65**	**8**	**73**	**790**	**112**	**902**													**2496**	**191**	**2687**	**Peak**	
17:00 - 18:00				1251	58	1309	6	1	7	0	0	0				296	17	313	62	7	69	763	117	880													2378	200	2578		
17:15 - 18:15				1235	66	1301	6	1	7	0	0	0				246	15	261	57	2	59	702	121	823													2246	205	2451		
17:30 - 18:30				1074	58	1132	7	1	8	0	0	0				210	11	221	50	2	52	589	108	697													1930	180	2110		
17:45 - 18:45				940	57	997	5	1	7	2	0	2				160	7	167	41	1	42	484	89	573													1633	155	1788		
18:00 - 19:00				820	39	859	7	0	7	3	0	3				132	2	134	36	0	36	464	78	542													1462	119	1581		

Intersection of Nuwarra Road and Heathcote Road

Tuesday, 18 March 2014

Austraffic

Survey Start	**6:00 AM 16:00 PM**
Intersection Type	Cross Junction
Intersection No.	**9**
North Approach	**Nuwarra Road**
East Approach	**Heathcote Road**
South Approach	**Wattle Grove Drive**
West Approach	**Heathcote Road**
Date	**18/03/14**
Classification	**Light Heavy**



Camera Position

TIME PERIOD	VEHICLE MOVEMENT 1			2			3			4			5			6			VEHICLE MOVEMENT 7			8			9			10			11			12			GRAND TOTAL		
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
6:00 - 6:15	41	7	48	22	0	22	77	4	81	70	1	71	171	16	187	15	0	15	35	2	37	70	3	73	36	3	39	11	0	11	223	18	241	36	3	39	807	57	864
6:15 - 6:30	42	19	61	28	1	29	87	4	91	52	4	56	215	10	225	27	2	29	41	4	45	108	1	109	63	1	64	27	0	27	294	30	324	57	12	69	1041	88	1129
6:30 - 6:45	59	11	70	51	2	53	64	5	69	79	1	80	208	8	216	28	0	28	27	0	27	99	3	102	61	2	63	28	1	29	263	19	282	45	7	52	1012	59	1071
6:45 - 7:00	42	11	53	54	2	56	67	4	71	66	4	70	177	15	192	38	1	39	30	3	33	100	2	102	74	2	76	35	1	36	160	21	181	53	12	65	896	78	974
7:00 - 7:15	68	16	84	42	2	44	63	7	70	74	5	79	208	13	221	39	0	39	38	2	40	121	7	128	65	1	66	31	1	32	156	19	175	47	9	56	952	82	1034
7:15 - 7:30	52	12	64	27	3	30	64	4	68	117	4	121	301	16	317	50	2	52	42	1	43	92	5	97	102	2	104	31	2	33	181	20	201	38	8	46	1097	79	1176
7:30 - 7:45	99	2	101	29	5	34	78	3	81	91	6	97	283	9	292	40	1	41	35	3	38	138	3	141	107	1	108	25	2	27	161	8	169	60	7	67	1146	50	1196
7:45 - 8:00	107	1	108	40	4	44	86	4	90	123	3	126	313	13	326	37	1	38	56	1	57	112	6	118	105	2	107	44	5	49	203	20	223	43	3	46	1269	63	1332
8:00 - 8:15	101	2	103	42	5	47	65	4	69	89	2	91	314	18	332	42	0	42	46	3	49	117	2	119	112	2	114	46	2	48	157	16	173	39	6	45	1170	62	1232
8:15 - 8:30	89	4	93	48	2	50	69	6	75	126	3	129	326	25	351	49	0	49	42	2	44	98	7	105	114	3	117	56	3	59	180	31	211	38	9	47	1235	95	1330
8:30 - 8:45	47	14	61	41	5	46	81	1	82	109	7	116	324	15	339	50	1	51	49	2	51	89	4	93	96	2	98	27	2	29	167	25	192	54	6	60	1134	84	1218
8:45 - 9:00	62	18	80	60	1	61	58	7	65	98	6	104	313	15	328	50	3	53	54	3	57	72	2	74	99	2	101	40	1	41	178	22	200	36	6	42	1120	86	1206
Σ	809	117	926	484	32	516	859	53	912	1094	46	1140	3153	173	3326	465	11	476	495	26	521	1216	45	1261	1034	23	1057	401	20	421	2323	249	2572	546	88	634	12879	883	13762

TIME PERIOD	VEHICLE MOVEMENT 1			2			3			4			5			6			VEHICLE MOVEMENT 7			8			9			10			11			12			GRAND TOTAL		
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
16:00 - 16:15	82	18	100	101	1	102	104	2	106	85	3	88	252	23	275	50	3	53	45	0	45	68	3	71	52	2	54	84	4	88	261	9	270	53	8	61	1237	76	1313
16:15 - 16:30	133	10	143	126	3	129	100	6	106	81	2	83	265	13	278	83	3	86	54	2	56	49	5	54	68	0	68	87	2	89	260	18	278	55	2	57	1361	66	1427
16:30 - 16:45	101	10	111	112	2	114	107	3	110	83	5	88	249	16	265	74	1	75	46	0	46	74	2	76	56	0	56	81	1	82	296	6	302	44	6	50	1323	52	1375
16:45 - 17:00	113	7	120	142	1	143	129	4	133	92	1	93	223	12	235	64	2	66	66	1	67	57	0	57	55	1	56	92	3	95	276	13	289	56	1	57	1365	46	1411
17:00 - 17:15	81	4	85	126	0	126	115	2	117	73	5	78	253	20	273	58	3	61	49	2	51	52	0	52	60	2	62	89	1	90	354	8	362	54	3	57	1364	50	1414
17:15 - 17:30	122	6	128	128	3	131	124	3	127	115	1	116	261	9	270	66	1	67	84	0	84	78	1	79	64	1	65	91	2	93	293	7	298	33	2	35	1457	35	1492
17:30 - 17:45	84	0	84	129	3	132	111	4	115	100	3	103	269	14	283	68	0	68	54	0	54	52	0	52	58	1	59	96	3	99	386	9	395	38	7	45	1445	44	1489
17:45 - 18:00	90	4	94	121	0	121	121	3	124	112	0	112	264	10	274	84	0	84	59	1	60	59	0	59	60	1	61	68	0	68	382	5	387	42	3	45	1462	27	1489
18:00 - 18:15	77	5	82	156	1	157	135	2	137	113	2	115	250	7	257	82	0	82	45	0	45	58	0	58	49	1	50	115	2	117	312	2	314	43	2	45	1435	24	1459
18:15 - 18:30	117	6	123	120	1	121	115	1	116	103	0	103	233	8	241	48	0	48	39	1	40	48	0	48	47	0	47	92	0	92	245	6	251	50	1	51	1257	24	1281
18:30 - 18:45	91	6	97	99	1	100	105	1	106	120	1	121	201	4	205	52	0	52	26	0	26	52	0	52	59	0	59	73	0	73	200	5	205	42	3	45	1120	21	1141
18:45 - 19:00	72	0	72	103	1	104	95	0	95	71	1	72	165	5	170	43	0	43	27	0	27	46	1	47	52	1	53	68	0	68	181	4	185	35	2	37	958	15	973
Σ	1163	76	1239	1463	17	1480	1361	31	1392	1148	24	1172	2885	141	3026	772	13	785	594	7	601	693	12	705	680	10	690	1036	18	1054	3444	92	3536	545	40	585	15784	481	16265

TIME PERIOD	VEHICLE MOVEMENT 1			2			3			4			5			6			VEHICLE MOVEMENT 7			8			9			10			11			12			GRAND TOTAL			
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
6:00 - 7:00	184	48	232	155	5	160	295	17	312	267	10	277	771	49	820	108	3	111	133	9	142	377	9	386	234	8	242	101	2	103	940	88	1028	191	34	225	3756	282	4038	
6:15 - 7:15	211	57	268	175	7	182	281	20	301	271	14	285	808	46	854	132	3	135	136	9	145	428	13	441	263	6	269	121	3	124	873	89	962	202	40	242	3901	307	4208	
6:30 - 7:30	221	50	271	174	9	183	258	20	278	336	14	350	894	52	946	156	3	159	137	5	142	412	17	429	302	7	309	125	5	130	760	79	839	183	36	219	3957	298	4255	
6:45 - 7:45	261	41	302	152	12	164	272	18	290	348	19	367	969	53	1022	167	4	171	145	9	154	451	17	468	348	6	354	122	6	128	658	68	726	198	36	234	4091	289	4380	
7:00 - 8:00	326	31	357	138	14	152	291	18	309	405	18	423	1105	51	1156	196	4	200	171	7	178	463	21	484	379	6	385	131	10	141	701	67	768	188	27	215	4464	274	4738	
7:15 - 8:15	359	17	376	138	17	155	293	15	308	420	15	435	1211	56	1267	169	4	173	179	8	187	459	16	475	426	7	433	146	11	157	702	64	766	180	24	204	4682	254	4936	
7:30 - 8:30	396	9	405	159	16	175	298	17	315	429	14	443	1236	65	1301	168	2	170	179	9	188	465	18	483	438	8	446	171	12	183	701	75	776	180	25	205	4820	270	5090	
7:45 - 8:45	**344**	**21**	**365**	**171**	**16**	**187**	**301**	**15**	**316**	**447**	**15**	**462**	**1277**	**71**	**1348**	**178**	**2**	**180**	**193**	**8**	**201**	**416**	**19**	**435**	**427**	**9**	**436**	**173**	**12**	**185**	**707**	**92**	**799**	**174**	**24**	**198**	**4808**	**304**	**5112**	**Peak**
8:00 - 9:00	299	38	337	191	13	204	273	18	291	422	18	440	1277	73	1350	191	4	195	191	10	201	376	15	391	421	9	430	169	8	177	682	94	776	167	27	194	4659	327	4986	

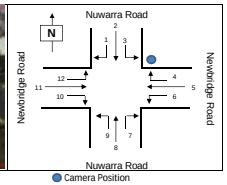
TIME PERIOD	VEHICLE MOVEMENT 1			2			3			4			5			6			VEHICLE MOVEMENT 7			8			9			10			11			12			GRAND TOTAL			
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
6:00 - 7:00	429	45	474	481	7	488	440	15	455	341	11	352	989	64	1053	271	9	280	211	3	214	248	10	258	231	3	234	344	10	354	1093	46	1139	208	17	225	5286	240	5526	
6:15 - 7:15	428	31	459	506	6	512	451	15	466	329	13	342	990	61	1051	279	9	288	215	5	220	232	7	239	239	3	242	349	7	356	1186	45	1231	209	12	221	5403	214	5617	
6:30 - 7:30	417	27	444	508	6	514	475	12	487	353	12	375	986	57	1043	262	7	269	245	3	248	261	3	264	235	4	239	353	7	360	1217	34	1251	187	12	199	5509	184	5693	
6:45 - 7:45	400	17	417	525	7	532	479	13	492	380	10	390	1006	55	1061	256	6	262	253	3	256	239	1	240	237	5	242	368	9	377	1307	37	1344	181	13	194	5631	176	5807	
7:00 - 8:00	377	14	391	504	6	510	471	12	483	400	9	409	1047	53	1100	276	4	280	246	3	249	241	1	242	242	5	247	344	6	350	1413	29	1442	167	15	182	5728	157	5885	
7:15 - 8:15	**373**	**15**	**388**	**534**	**7**	**541**	**491**	**12**	**503**	**440**	**6**	**446**	**1044**	**40**	**1084**	**300**	**1**	**301**	**242**	**1**	**243**	**247**	**1**	**248**	**231**	**4**	**235**	**370**	**7**	**377**	**1371**	**23**	**1394**	**156**	**14**	**170**	**5799**	**131**	**5930**	**Peak**
7:30 - 8:30	368	15	383	526	5	531	482	10	492	428	5	433	1016	39	1055	282	0	282	197	2	199	217	0	217	214	3	217	371	5	376	1325	22	1347	173	13	186	5599	119	5718	
7:45 - 8:45	376	22	398	496	3	499	476	7	483	448	3	451	948	29	977	266	0	266	169	2	171	217	0	217	215	2	217	348	2	350	1139	18	1157	177	9	186	5274	96	5370	
8:00 - 9:00	357	17	374	478	4	482	450	4	454	407	4	411	849	24	873	225	0	225	137	1	138	204	1	205	207	2	209	348	2	350	938	17	955	170	8	178	4770	84	4854	

Intersection of Newbridge Road and Nuwarra Road

Tuesday, 18 March 2014

Austraffic

Survey Start	**6:00 AM 16:00 PM**
Intersection Type	Cross Junction
Intersection No.	**8**
North Approach	**Nuwarra Road**
East Approach	**Newbridge Road**
South Approach	**Nuwarra Road**
West Approach	**Newbridge Road**
Date	**18/03/14**
Classification	**Light Heavy**



Camera Position

TIME PERIOD	VEHICLE MOVEMENT 1			2			3			4			5			6		
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
6:00 - 6:15	5	0	5	14	1	15	2	0	2	0	0	0	100	16	116	56	11	67
6:15 - 6:30	7	0	7	18	1	19	5	0	5	0	0	0	141	17	158	66	20	86
6:30 - 6:45	7	0	7	21	2	23	1	0	1	0	0	0	152	22	174	65	10	75
6:45 - 7:00	12	1	13	23	0	23	2	0	2	0	0	0	141	18	159	64	19	83
7:00 - 7:15	8	3	11	15	1	16	4	0	4	0	0	0	144	16	160	44	22	66
7:15 - 7:30	22	2	24	29	1	30	1	0	1	0	0	0	145	23	168	52	14	66
7:30 - 7:45	18	1	19	21	0	21	1	0	1	0	0	0	190	31	221	53	21	74
7:45 - 8:00	22	2	24	31	0	31	1	0	1	0	0	0	177	21	198	58	6	64
8:00 - 8:15	9	1	10	24	0	24	1	0	1	0	0	0	213	26	239	55	10	65
8:15 - 8:30	26	1	27	27	1	28	4	0	4	0	0	0	173	19	192	47	8	55
8:30 - 8:45	39	1	40	33	0	33	0	0	0	0	0	0	170	28	198	39	19	58
8:45 - 9:00	50	3	53	51	0	51	5	0	5	0	0	0	140	30	170	60	17	77
Σ	225	15	240	307	7	314	27	0	27	0	0	0	1886	267	2153	659	177	836

TIME PERIOD	VEHICLE MOVEMENT 7			8			9			10			11			12			GRAND TOTAL		
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
6:00 - 6:15	154	7	161	8	0	8	3	1	4	0	0	0	406	29	435	5	1	6	753	66	819
6:15 - 6:30	167	18	185	19	0	19	10	0	10	0	0	0	434	36	470	6	0	6	873	92	965
6:30 - 6:45	124	7	131	14	0	14	3	0	3	0	0	0	457	40	497	3	0	3	847	81	928
6:45 - 7:00	183	10	193	27	0	27	11	0	11	0	0	0	428	29	457	17	1	18	908	78	986
7:00 - 7:15	134	13	147	33	1	34	6	1	7	0	0	0	473	49	522	27	0	27	888	106	994
7:15 - 7:30	142	14	156	48	1	49	6	0	6	0	0	0	380	24	404	23	2	25	848	81	929
7:30 - 7:45	132	10	142	55	1	56	6	1	7	0	0	0	430	32	462	34	2	36	940	99	1039
7:45 - 8:00	152	6	158	49	0	49	8	1	9	0	0	0	372	32	404	29	3	32	898	71	970
8:00 - 8:15	168	9	177	66	3	69	6	0	6	0	0	0	403	34	437	36	1	37	981	84	1065
8:15 - 8:30	117	12	129	60	0	60	2	0	2	0	0	0	353	36	389	60	0	60	868	77	945
8:30 - 8:45	168	17	185	99	2	101	8	1	9	0	0	0	315	40	355	92	1	93	963	109	1072
8:45 - 9:00	104	13	117	72	2	74	9	0	9	0	0	0	254	30	284	52	0	52	797	95	892
Σ	1745	136	1881	550	10	560	78	5	83	0	0	0	4705	411	5116	384	11	395	10566	1039	11605

TIME PERIOD	VEHICLE MOVEMENT 1			2			3			4			5			6		
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
16:00 - 16:15	49	1	50	44	0	44	4	0	4	0	0	0	387	22	409	85	9	94
16:15 - 16:30	42	0	42	55	0	55	4	0	4	0	0	0	394	30	424	123	14	137
16:30 - 16:45	42	1	43	54	0	54	3	0	3	0	0	0	433	33	466	143	12	155
16:45 - 17:00	48	0	48	49	1	50	4	0	4	0	0	0	385	23	408	147	4	151
17:00 - 17:15	34	1	35	71	0	71	5	0	5	0	0	0	411	33	444	149	7	156
17:15 - 17:30	43	0	43	69	1	70	2	0	2	0	0	0	416	12	428	155	5	160
17:30 - 17:45	25	1	26	43	1	44	6	1	7	0	0	0	424	24	448	172	6	178
17:45 - 18:00	28	0	28	65	1	66	4	0	4	0	0	0	368	26	394	151	5	156
18:00 - 18:15	23	1	24	44	0	44	0	0	0	0	0	0	345	17	362	124	5	129
18:15 - 18:30	27	1	28	39	0	39	8	0	8	0	0	0	344	25	369	146	7	153
18:30 - 18:45	26	1	27	39	0	39	5	0	5	0	0	0	287	14	301	110	6	116
18:45 - 19:00	16	0	16	45	0	45	3	1	4	0	0	0	241	11	252	93	2	95
Σ	403	7	410	617	4	621	48	2	50	0	0	0	4435	270	4705	1598	82	1680

TIME PERIOD	VEHICLE MOVEMENT 7			8			9			10			11			12			GRAND TOTAL		
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
16:00 - 16:15	92	9	101	29	0	29	10	1	11	0	0	0	244	22	266	20	0	20	964	64	1028
16:15 - 16:30	116	7	123	49	0	49	10	1	11	0	0	0	225	23	248	21	0	21	1039	75	1114
16:30 - 16:45	105	10	115	34	0	34	10	1	11	0	0	0	255	30	285	21	0	21	1100	87	1187
16:45 - 17:00	105	4	109	29	0	29	11	1	12	0	0	0	224	22	246	15	0	15	1017	55	1072
17:00 - 17:15	90	9	99	26	0	26	10	1	11	0	0	0	321	15	336	27	0	27	1144	66	1210
17:15 - 17:30	107	4	111	37	1	38	12	0	12	0	0	0	313	27	340	15	0	15	1169	50	1219
17:30 - 17:45	107	5	112	48	0	48	11	0	11	0	0	0	305	14	319	25	0	25	1166	52	1218
17:45 - 18:00	104	5	109	41	0	41	15	1	16	0	0	0	276	16	292	9	0	9	1061	54	1115
18:00 - 18:15	101	2	103	46	0	46	17	0	17	0	0	0	201	12	213	15	0	15	916	37	953
18:15 - 18:30	84	0	84	42	0	42	9	0	9	0	0	0	197	19	216	18	0	18	914	52	966
18:30 - 18:45	65	9	74	38	0	38	7	0	7	0	0	0	136	10	146	17	0	17	730	40	770
18:45 - 19:00	68	2	70	21	0	21	9	0	9	0	0	0	132	10	142	18	0	18	646	26	672
Σ	1144	66	1210	440	1	441	131	6	137	0	0	0	2829	220	3049	221	0	221	11866	658	12524

TIME PERIOD	VEHICLE MOVEMENT 1			2			3			4			5			6		
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
6:00 - 7:00	31	1	32	76	4	80	10	0	10	0	0	0	534	73	607	251	60	311
6:15 - 7:15	34	4	38	77	4	81	12	0	12	0	0	0	579	73	651	239	71	310
6:30 - 7:30	49	6	55	88	4	92	8	0	8	0	0	0	582	79	661	225	65	290
6:45 - 7:45	60	7	67	88	2	90	8	0	8	0	0	0	620	88	708	213	76	289
7:00 - 8:00	70	8	78	96	2	98	7	0	7	0	0	0	656	91	747	207	63	270
7:15 - 8:15	71	6	77	105	1	106	4	0	4	0	0	0	725	101	826	218	51	269
7:30 - 8:30	75	5	80	103	1	104	7	0	7	0	0	0	753	97	850	213	45	258
7:45 - 8:45	**96**	**5**	**101**	**115**	**1**	**116**	**6**	**0**	**6**	**0**	**0**	**0**	**733**	**94**	**827**	**199**	**43**	**242**
8:00 - 9:00	124	6	130	135	1	136	10	0	10	0	0	0	696	103	799	201	54	255

TIME PERIOD	VEHICLE MOVEMENT 7			8			9			10			11			12			GRAND TOTAL			
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
6:00 - 7:00	628	42	670	68	0	68	27	1	28	0	0	0	1725	134	1859	31	2	33	3381	317	3698	
6:15 - 7:15	608	48	656	93	1	94	30	1	31	0	0	0	1792	154	1946	53	1	54	3516	357	3873	
6:30 - 7:30	583	44	627	122	2	124	26	1	27	0	0	0	1736	142	1880	70	3	73	3491	346	3837	
6:45 - 7:45	591	47	638	163	3	166	29	2	31	0	0	0	1711	134	1845	101	5	106	3584	364	3948	
7:00 - 8:00	560	43	603	185	3	188	26	3	29	0	0	0	1655	137	1792	113	7	120	3575	357	3932	
7:15 - 8:15	594	39	633	218	4	222	26	2	28	0	0	0	1585	122	1707	122	8	130	3698	335	4033	
7:30 - 8:30	569	37	606	230	4	234	22	2	24	0	0	0	1558	134	1692	159	6	165	3698	331	4029	
7:45 - 8:45	**605**	**44**	**649**	**274**	**5**	**279**	**24**	**2**	**26**	**0**	**0**	**0**	**1443**	**142**	**1585**	**217**	**5**	**222**	**3712**	**341**	**4053**	**Peak**
8:00 - 9:00	557	51	608	297	7	304	25	1	26	0	0	0	1325	140	1465	240	2	242	3610	365	3975	

TIME PERIOD	VEHICLE MOVEMENT 1			2			3			4			5			6		
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
16:00 - 17:00	181	2	183	202	1	203	15	0	15	0	0	0	1599	108	1707	498	39	537
16:15 - 17:15	166	2	168	229	1	230	16	0	16	0	0	0	1623	119	1742	562	37	599
16:30 - 17:30	167	2	169	243	2	245	14	0	14	0	0	0	1645	101	1746	594	28	622
16:45 - 17:45	150	2	152	232	3	235	17	1	18	0	0	0	1636	92	1728	623	22	645
17:00 - 18:00	**130**	**2**	**132**	**248**	**3**	**251**	**17**	**1**	**18**	**0**	**0**	**0**	**1619**	**95**	**1714**	**627**	**23**	**650**
17:15 - 18:15	119	2	121	221	3	224	12	1	13	0	0	0	1553	79	1632	602	21	623
17:30 - 18:30	103	3	106	191	2	193	18	1	19	0	0	0	1481	92	1573	593	23	616
17:45 - 18:45	104	3	107	187	1	188	17	0	17	0	0	0	1344	82	1426	531	23	554
18:00 - 19:00	92	3	95	167	0	167	16	1	17	0	0	0	1217	67	1284	473	20	493

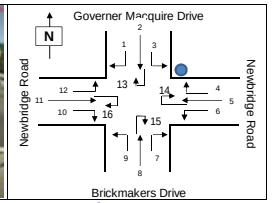
TIME PERIOD	VEHICLE MOVEMENT 7			8			9			10			11			12			GRAND TOTAL			
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
16:00 - 17:00	418	30	448	141	0	141	41	4	45	0	0	0	948	97	1045	77	0	77	4120	281	4401	
16:15 - 17:15	416	30	446	138	0	138	41	4	45	0	0	0	1025	90	1115	84	0	84	4300	283	4583	
16:30 - 17:30	407	27	434	126	1	127	43	3	46	0	0	0	1113	94	1207	78	0	78	4430	258	4688	
16:45 - 17:45	400	23	423	140	1	141	44	2	46	0	0	0	1162	78	1241	82	0	82	4496	223	4719	
17:00 - 18:00	**408**	**23**	**431**	**152**	**1**	**153**	**48**	**2**	**50**	**0**	**0**	**0**	**1215**	**72**	**1287**	**76**	**0**	**76**	**4540**	**222**	**4762**	**Peak**
17:15 - 18:15	419	16	435	172	1	173	55	1	56	0	0	0	1095	69	1164	64	0	64	4312	193	4505	
17:30 - 18:30	396	12	408	177	0	177	52	1	53	0	0	0	979	61	1040	67	0	67	4057	195	4252	
17:45 - 18:45	354	16	370	167	0	167	48	1	49	0	0	0	810	57	867	59	0	59	3621	183	3804	
18:00 - 19:00	318	13	331	147	0	147	42	0	42	0	0	0	666	51	717	68	0	68	3206	155	3361	

Intersection of Governor Macquarie Drive and Newbridge Road

Tuesday, 18 March 2014

Austraffic

Survey Start	6:00 AM 16:00 PM
Intersection Type	Cross Junction
Intersection No.	13
North Approach	Governer Macquire Drive
East Approach	Newbridge Road
South Approach	Brickmakers Drive
West Approach	Newbridge Road
Date	18/03/14
Classification	Light Heavy



Camera Position

TIME PERIOD	VEHICLE MOVEMENT																																										GRAND TOTAL		
	1			2			3			4			5			6			7			8			9			10			11			12			13			14			15			16					
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
6:00 - 6:15	9	14	23	18	0	18	82	9	91	47	7	54	138	16	154	37	1	38	74	2	76	7	0	7	0	0	0	0	0	0	548	33	581	22	8	30	0	0	0	1	0	1	0	0	0	0	0	0	983	90	1073
6:15 - 6:30	12	14	26	10	1	11	99	18	117	46	23	69	177	23	200	49	0	49	83	0	83	7	0	7	1	0	1	1	0	1	572	45	617	20	3	23	0	0	0	2	0	2	0	0	0	0	0	0	1079	127	1206
6:30 - 6:45	12	12	24	16	0	16	76	14	90	55	11	66	204	25	229	44	4	48	71	2	73	11	2	13	0	0	0	3	0	3	555	52	607	13	1	14	0	0	0	0	0	0	0	0	0	0	1	1	1060	124	1184
6:45 - 7:00	13	7	20	16	1	17	87	10	97	87	6	93	188	27	215	60	3	63	139	1	140	16	0	16	2	0	2	2	0	2	583	29	612	18	5	23	0	0	0	0	0	0	0	0	0	0	0	0	1211	89	1300
7:00 - 7:15	11	14	25	16	3	19	100	12	112	101	10	111	168	26	194	39	1	40	111	1	112	24	2	26	1	0	1	3	0	3	578	53	631	18	7	25	0	0	0	0	0	0	0	0	0	0	0	0	1170	129	1299
7:15 - 7:30	10	11	21	6	0	6	117	10	127	92	11	103	186	28	214	29	1	30	152	3	155	36	0	36	0	0	0	1	0	1	520	30	550	16	2	18	0	0	0	0	0	0	0	0	0	0	0	0	1165	96	1261
7:30 - 7:45	11	11	22	15	0	15	155	7	162	132	7	139	224	30	254	35	1	36	141	0	141	31	1	32	1	0	1	1	0	1	528	34	562	11	10	21	0	0	0	1	0	1	0	0	0	0	0	0	1286	101	1387
7:45 - 8:00	23	9	32	18	0	18	120	10	130	106	7	113	208	26	234	34	0	34	132	2	134	32	1	33	1	0	1	1	0	1	520	37	557	14	9	23	0	0	0	1	0	1	0	0	0	0	0	0	1210	101	1311
8:00 - 8:15	21	9	30	23	0	23	141	13	154	124	16	140	226	25	251	44	2	46	147	2	149	40	0	40	3	0	3	2	1	3	540	29	569	20	9	29	0	0	0	1	0	1	0	0	0	1	0	1	1333	106	1439
8:15 - 8:30	23	15	38	35	1	36	148	15	163	138	14	152	202	20	222	44	3	47	128	0	128	50	0	50	3	0	3	0	0	0	429	37	466	11	8	19	0	0	0	0	0	0	0	0	0	0	0	0	1211	113	1324
8:30 - 8:45	20	14	34	31	2	33	122	14	136	131	20	151	211	33	244	47	0	47	129	2	131	44	1	45	2	0	2	0	0	0	494	41	535	30	8	38	0	0	0	0	0	0	0	0	0	0	0	0	1261	135	1396
8:45 - 9:00	28	12	40	25	6	31	111	13	124	127	18	145	176	36	212	45	1	46	96	0	96	40	1	41	3	0	3	4	0	4	322	35	357	49	10	59	0	0	0	0	0	0	0	0	0	0	0	0	1026	132	1158
Σ	193	142	335	229	14	243	1358	145	1503	1186	150	1336	2308	315	2623	507	17	524	1403	15	1418	338	8	346	17	0	17	18	1	19	6189	455	6644	242	80	322	0	0	0	6	0	6	0	0	0	1	1	2	13995	1343	15338

TIME PERIOD	VEHICLE MOVEMENT																																										GRAND TOTAL		
	1			2			3			4			5			6			7			8			9			10			11			12			13			14			15			16					
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
16:00 - 16:15	20	10	30	40	0	40	76	4	80	142	19	161	434	17	451	113	0	113	56	3	59	18	1	19	5	1	6	0	0	0	307	25	332	38	6	44	0	0	0	0	0	0	0	0	0	1	0	1	1250	86	1336
16:15 - 16:30	36	6	42	53	1	54	94	10	104	150	11	161	490	38	528	135	0	135	42	2	44	15	0	15	1	0	1	0	0	0	304	27	331	26	3	29	0	0	0	0	0	0	0	0	0	0	0	0	1346	98	1444
16:30 - 16:45	33	6	39	39	0	39	91	5	96	111	23	134	523	39	562	124	2	126	61	0	61	11	1	12	0	0	0	2	0	2	330	27	357	34	7	41	0	0	0	0	0	0	0	0	0	0	0	0	1359	110	1469
16:45 - 17:00	39	17	56	62	0	62	99	4	103	153	14	167	491	17	508	125	2	127	48	0	48	29	1	30	4	0	4	1	0	1	311	19	330	29	6	35	0	0	0	1	0	1	0	0	0	1	0	1	1393	80	1473
17:00 - 17:15	39	8	47	73	0	73	111	5	116	134	12	146	521	28	549	158	3	161	51	2	53	17	1	18	1	0	1	0	0	0	385	20	405	28	7	35	0	0	0	0	0	0	0	0	0	0	0	0	1518	86	1604
17:15 - 17:30	45	6	51	76	2	78	132	2	134	143	19	162	528	12	540	134	1	135	46	0	46	17	1	18	3	0	3	0	0	0	383	25	408	28	4	32	0	0	0	0	0	0	0	0	0	0	0	0	1535	72	1607
17:30 - 17:45	39	4	43	33	0	33	80	2	82	147	14	161	551	22	573	138	0	138	39	1	40	15	0	15	3	0	3	1	0	1	398	26	424	24	5	29	0	0	0	0	0	0	0	0	0	0	0	0	1468	74	1542
17:45 - 18:00	34	3	37	34	0	34	85	3	88	132	14	146	490	19	509	126	1	127	36	0	36	11	0	11	1	0	1	3	0	3	332	18	350	33	4	37	0	0	0	0	0	0	0	0	0	0	0	0	1317	62	1379
18:00 - 18:15	34	1	35	32	0	32	81	2	83	171	11	182	447	23	470	148	3	151	46	0	46	16	0	16	1	0	1	1	0	1	253	14	267	25	4	29	0	0	0	0	0	0	0	0	0	1	0	1	1256	58	1314
18:15 - 18:30	25	5	30	32	0	32	62	4	66	145	11	156	453	23	476	143	3	146	37	0	37	15	2	17	1	0	1	3	0	3	250	15	265	32	3	35	0	0	0	0	0	0	0	0	0	0	0	0	1198	66	1264
18:30 - 18:45	14	1	15	22	2	24	39	5	44	140	16	156	363	19	382	103	0	103	32	0	32	19	0	19	3	0	3	0	0	0	215	15	230	21	0	21	0	0	0	1	0	1	0	0	0	0	0	0	972	58	1030
18:45 - 19:00	29	3	32	30	1	31	57	0	57	98	3	101	292	12	304	91	0	91	34	0	34	19	0	19	0	0	0	2	0	2	185	6	191	23	2	25	0	0	0	0	0	0	0	0	0	1	0	1	861	27	888
Σ	387	70	457	526	6	532	1007	46	1053	1666	167	1833	5583	269	5852	1538	15	1553	528	8	536	202	7	209	23	1	24	13	0	13	3653	237	3890	341	51	392	0	0	0	2	0	2	0	0	0	4	0	4	15473	877	16350

TIME PERIOD	VEHICLE MOVEMENT																																										GRAND TOTAL			
	1			2			3			4			5			6			7			8			9			10			11			12			13			14			15			16						
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ		
6:00 - 7:00	46	47	93	60	2	62	344	51	395	235	47	282	707	91	798	190	8	198	367	5	372	41	2	43	3	0	3	6	0	6	2258	159	2417	73	17	90	0	0	0	3	0	3	0	0	0	0	1	1	4333	430	4763	
6:15 - 7:15	48	47	95	58	5	63	362	54	416	289	50	339	737	101	838	192	8	200	404	4	408	58	4	62	4	0	4	9	0	9	2288	179	2467	69	16	85	0	0	0	2	0	2	0	0	0	0	1	1	4520	469	4989	
6:30 - 7:30	46	44	90	54	4	58	380	46	426	335	38	373	746	106	852	172	9	181	473	7	480	87	4	91	3	0	3	9	0	9	2236	164	2400	65	15	80	0	0	0	0	0	0	0	0	0	0	1	1	4606	438	5044	
6:45 - 7:45	45	43	88	53	4	57	459	39	498	412	34	446	766	111	877	163	6	169	543	5	548	107	3	110	4	0	4	7	0	7	2209	146	2355	63	24	87	0	0	0	1	0	1	0	0	0	0	0	0	4832	415	5247	
7:00 - 8:00	55	45	100	55	3	58	492	39	531	431	35	466	786	110	896	137	3	140	536	6	542	123	4	127	3	0	3	6	0	6	2146	154	2300	39	28	87	0	0	0	2	0	2	0	0	0	0	0	0	4831	427	5258	
7:15 - 8:15	65	40	105	62	0	62	533	40	573	454	41	495	844	109	953	142	4	146	572	7	579	139	2	141	5	0	5	5	1	6	2108	130	2238	61	30	91	0	0	0	3	0	3	0	0	0	1	0	1	4994	404	5398	
7:30 - 8:30	78	44	122	91	1	92	564	45	609	500	44	544	860	101	961	157	6	163	548	4	552	153	2	155	8	0	8	4	1	5	2017	137	2154	56	36	92	0	0	0	3	0	3	0	0	0	1	0	1	5040	421	5461	
7:45 - 8:45	**87**	**47**	**134**	**107**	**3**	**110**	**531**	**52**	**583**	**499**	**57**	**556**	**847**	**104**	**951**	**169**	**5**	**174**	**536**	**6**	**542**	**166**	**2**	**168**	**9**	**0**	**9**	**3**	**1**	**4**	**1983**	**144**	**2127**	**75**	**34**	**109**	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**1**	**5015**	**455**	**5470**	**Peak**
8:00 - 9:00	92	50	142	114	9	123	522	55	577	520	68	588	815	114	929	180	6	186	500	4	504	174	2	176	11	0	11	6	1	7	1785	142	1927	110	35	145	0	0	0	1	0	1	0	0	0	1	0	1	4831	486	5317	

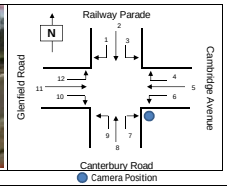
TIME PERIOD	VEHICLE MOVEMENT																																										GRAND TOTAL			
	1			2			3			4			5			6			7			8			9			10			11			12			13			14			15			16						
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ		
16:00 - 17:00	128	39	167	194	1	195	360	23	383	556	67	623	1938	111	2049	497	4	501	207	5	212	73	3	76	10	1	11	3	0	3	1252	98	1350	127	22	149	0	0	0	1	0	1	0	0	0	2	0	2	5348	374	5722	
16:15 - 17:15	147	37	184	227	1	228	395	24	419	548	60	608	2025	122	2147	542	7	549	202	4	206	72	3	75	6	0	6	3	0	3	1330	93	1423	117	23	140	0	0	0	1	0	1	0	0	0	1	0	1	5616	374	5990	
16:30 - 17:30	156	37	193	250	2	252	433	16	449	541	68	609	2063	96	2159	541	8	549	206	2	208	74	4	78	8	0	8	3	0	3	1409	91	1500	119	24	143	0	0	0	1	0	1	0	0	0	1	0	1	5805	348	6153	
16:45 - 17:45	**162**	**35**	**197**	**244**	**2**	**246**	**422**	**13**	**435**	**577**	**59**	**636**	**2091**	**79**	**2170**	**555**	**6**	**561**	**184**	**3**	**187**	**78**	**3**	**81**	**11**	**0**	**11**	**2**	**0**	**2**	**1477**	**90**	**1567**	**109**	**22**	**131**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**1**	**5914**	**312**	**6226**	**Peak**
17:00 - 18:00	157	21	178	216	2	218	408	12	420	556	59	615	2090	81	2171	556	5	561	172	3	175	60	2	62	8	0	8	4	0	4	1498	89	1587	113	20	133	0	0	0	0	0	0	0	0	0	0	0	0	5838	294	6132	
17:15 - 18:15	152	14	166	175	2	177	378	9	387	593	58	651	2016	76	2092	546	5	551	167	1	168	59	1	60	8	0	8	5	0	5	1366	83	1449	110	17	127	0	0	0	0	0	0	0	0	0	1	0	1	5576	266	5842	
17:30 - 18:30	132	13	145	131	0	131	308	11	319	595	50	645	1941	87	2028	555	7	562	158	1	159	57	2	59	6	0	6	8	0	8	1233	73	1306	114	16	130	0	0	0	0	0	0	0	0	0	1	0	1	5239	260	5499	
17:45 - 18:45	107	10	117	120	2	122	267	14	281	588	52	640	1753	84	1837	520	7	527	151	0	151	61	2	63	6	0	6	7	0	7	1050	62	1112	111	11	122	0	0	0	0	0	0	0	0	0	1	0	1	4743	244	4987	
18:00 - 19:00	102	10	112	116	3	119	239	11	250	554	41	595	1555	77	1632	485	6	491	149	0	149	69	2	71	5	0	5	6	0	6	903	50	953	101	9	110	0	0	0	1	0	1	0	0	0	2	0	2	4287	209	4496	

Intersection of Cambridge Avenue and Canterbury Road

Tuesday, 18 March 2014

Austraffic

Survey Start	**6:00 AM 16:00 PM**
Intersection Type	Cross Junction
Intersection No.	**16**
North Approach	**Railway Parade**
East Approach	**Cambridge Avenue**
South Approach	**Canterbury Road**
West Approach	**Glenfield Road**
Date	**18/03/14**
Classification	**Light Heavy**



Camera Position

TIME PERIOD	1			2			3			4			5			6			7			8			9			10			11			12			GRAND TOTAL		
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
6:00 - 6:15	15	1	16	2	0	2	30	6	36	5	0	5	1	0	1	19	0	19	188	2	190	2	0	2	53	1	54	14	2	16	52	2	54	16	2	18	397	16	413
6:15 - 6:30	20	4	24	4	0	4	50	0	50	9	0	9	1	0	1	37	1	38	203	6	209	1	0	1	63	5	68	21	1	22	81	7	88	14	5	19	504	29	533
6:30 - 6:45	21	2	23	4	0	4	51	3	54	10	2	12	6	0	6	26	0	26	212	7	219	0	0	0	66	5	71	18	2	20	64	10	74	22	2	24	500	33	533
6:45 - 7:00	14	3	17	4	2	6	52	5	57	8	0	8	11	1	12	18	1	19	176	4	180	0	0	0	93	6	99	14	4	18	38	2	40	28	6	34	456	34	490
7:00 - 7:15	29	3	32	0	0	0	70	4	74	9	3	12	8	0	8	34	2	36	172	5	177	5	0	5	105	2	107	10	0	10	48	1	49	34	7	41	524	27	551
7:15 - 7:30	20	3	23	0	0	0	55	3	58	10	2	12	6	2	8	25	2	27	208	9	217	1	0	1	82	6	88	23	1	24	27	1	28	38	0	38	495	29	524
7:30 - 7:45	23	3	26	1	0	1	79	4	83	11	0	11	10	1	11	48	1	49	220	2	222	0	0	0	87	1	88	39	1	40	38	2	40	93	5	98	649	20	669
7:45 - 8:00	24	3	27	1	0	1	70	1	71	8	1	9	8	2	10	48	2	50	183	7	190	0	0	0	83	1	84	56	5	61	23	4	27	69	2	71	573	28	601
8:00 - 8:15	27	2	29	1	1	2	55	2	57	6	1	7	14	1	15	48	2	50	197	1	198	3	0	3	82	5	87	41	0	41	33	1	34	93	6	99	600	22	622
8:15 - 8:30	47	4	51	0	0	0	43	2	45	11	0	11	15	1	16	55	1	56	198	4	202	2	0	2	76	5	81	46	2	48	34	3	37	53	4	57	580	26	606
8:30 - 8:45	20	2	22	0	0	0	52	2	54	11	2	13	18	1	19	65	2	67	155	4	159	1	0	1	86	1	87	84	7	91	35	1	36	38	2	40	565	24	589
8:45 - 9:00	27	5	32	0	0	0	44	0	44	12	1	13	6	2	8	49	2	51	134	5	139	1	0	1	69	3	72	78	0	78	37	3	40	58	3	61	515	24	539
Σ	287	35	322	17	3	20	651	32	683	110	12	122	104	11	115	472	16	488	2246	56	2302	16	0	16	945	41	986	444	25	469	510	37	547	556	44	600	6358	312	6670

TIME PERIOD	1			2			3			4			5			6			7			8			9			10			11			12			GRAND TOTAL		
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
16:00 - 16:15	25	4	29	0	0	0	19	0	19	44	0	44	69	2	71	182	2	184	66	0	66	3	0	3	65	1	66	58	1	59	9	0	9	46	2	48	586	12	598
16:15 - 16:30	23	4	27	1	0	1	17	1	18	53	5	58	49	1	50	215	5	220	46	2	48	1	0	1	43	1	44	79	3	82	15	0	15	49	5	54	593	27	618
16:30 - 16:45	28	2	30	0	0	0	19	0	19	58	0	58	38	0	38	223	5	228	57	0	57	1	0	1	44	1	45	80	5	85	11	0	11	51	2	53	610	15	625
16:45 - 17:00	36	2	38	0	0	0	21	0	21	61	0	61	36	9	45	191	5	196	56	1	57	0	0	0	44	1	45	78	3	81	7	0	7	38	4	42	568	25	593
17:00 - 17:15	26	4	30	0	0	0	21	1	22	58	0	58	47	5	52	207	2	209	60	2	62	2	0	2	75	2	77	81	3	84	13	0	13	46	2	48	636	21	657
17:15 - 17:30	43	4	47	0	0	0	15	0	15	60	2	62	55	1	56	222	8	230	52	0	52	2	0	2	57	1	58	89	2	91	4	0	4	51	1	52	660	19	679
17:30 - 17:45	41	1	42	0	0	0	17	0	17	65	0	65	32	3	35	232	5	237	63	0	63	1	0	1	65	0	65	70	0	70	6	0	6	40	3	43	632	12	644
17:45 - 18:00	33	3	36	0	0	0	14	0	14	53	0	53	36	0	36	222	5	227	58	0	58	1	0	1	69	0	69	110	5	115	3	0	3	55	2	57	654	15	669
18:00 - 18:15	70	4	74	0	0	0	13	0	13	52	0	52	10	1	11	198	3	201	62	0	62	1	0	1	75	0	75	67	1	68	5	0	5	36	2	38	589	11	600
18:15 - 18:30	37	1	38	0	0	0	19	0	19	47	0	47	11	0	11	160	3	163	56	1	57	0	0	0	62	0	62	71	1	72	2	0	2	36	2	38	501	8	509
18:30 - 18:45	53	3	56	1	0	1	18	1	19	33	0	33	6	0	6	125	2	127	57	1	58	0	0	0	60	3	63	62	0	62	11	0	11	25	2	27	451	12	463
18:45 - 19:00	57	2	59	0	0	0	14	0	14	25	2	27	5	0	5	108	1	109	37	0	37	0	0	0	44	0	44	47	2	49	4	0	4	69	0	69	410	7	417
Σ	472	34	506	2	0	2	207	3	210	609	9	618	394	22	416	2285	46	2331	670	7	677	12	0	12	703	10	713	892	26	918	90	0	90	542	27	569	6878	184	7062

TIME PERIOD	1			2			3			4			5			6			7			8			9			10			11			12			GRAND TOTAL			
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
6:00 - 7:00	70	10	80	14	2	16	183	14	197	32	2	34	19	1	20	100	2	102	779	19	798	3	0	3	275	17	292	67	9	76	235	21	256	80	15	95	1857	112	1969	
6:15 - 7:15	84	12	96	12	2	14	223	12	235	36	5	41	26	1	27	115	4	119	763	22	785	6	0	6	327	18	345	63	7	70	231	20	251	98	20	118	1984	123	2107	
6:30 - 7:30	84	11	95	8	2	10	208	15	223	37	7	44	31	3	34	103	5	108	768	25	793	6	0	6	346	19	365	65	7	72	177	14	191	122	15	137	1975	123	2098	
6:45 - 7:45	86	12	98	5	2	7	256	16	272	38	5	43	35	4	39	125	6	131	776	20	796	6	0	6	367	15	382	86	6	92	151	6	157	193	18	211	2124	110	2234	
7:00 - 8:00	96	12	108	2	0	2	274	12	286	38	6	44	32	5	37	155	7	162	783	23	806	6	0	6	357	10	367	128	7	135	136	8	144	234	14	248	2241	104	2345	
7:15 - 8:15	94	11	105	3	1	4	259	10	269	35	4	39	38	6	44	169	7	176	808	19	827	4	0	4	334	13	347	159	7	166	121	8	129	293	13	306	2317	99	2416	
7:30 - 8:30	**121**	**12**	**133**	**3**	**1**	**4**	**247**	**9**	**256**	**36**	**2**	**38**	**47**	**5**	**52**	**198**	**6**	**205**	**798**	**14**	**812**	**5**	**0**	**5**	**328**	**12**	**340**	**182**	**8**	**190**	**128**	**10**	**138**	**308**	**17**	**325**	**2402**	**96**	**2498**	**Peak**
7:45 - 8:45	118	11	129	2	1	3	220	7	227	36	4	40	55	5	60	216	7	223	733	16	749	6	0	6	327	12	339	227	14	241	125	9	134	253	14	267	2318	100	2418	
8:00 - 9:00	121	13	134	1	1	2	194	6	200	40	4	44	53	5	58	217	7	224	684	14	698	7	0	7	313	14	327	249	9	258	139	8	147	242	15	257	2260	96	2356	

TIME PERIOD	1			2			3			4			5			6			7			8			9			10			11			12			GRAND TOTAL			
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
16:00 - 17:00	112	12	124	1	0	1	76	1	77	216	5	221	192	12	204	811	17	828	225	3	228	5	0	5	196	4	200	295	12	307	42	0	42	184	13	197	2355	79	2434	
16:15 - 17:15	113	12	125	1	0	1	78	2	80	230	5	235	170	15	185	836	17	853	219	5	224	4	0	4	206	5	211	318	14	332	46	0	46	184	13	197	2405	88	2493	
16:30 - 17:30	133	12	145	0	0	0	76	1	77	237	2	239	176	15	191	843	20	863	225	3	228	5	0	5	220	5	225	328	13	341	35	0	35	186	9	195	2464	80	2544	
16:45 - 17:45	146	11	157	0	0	0	74	1	75	244	2	246	170	18	188	852	20	872	231	3	234	5	0	5	241	4	245	318	8	326	30	0	30	175	10	185	2486	77	2563	
17:00 - 18:00	**143**	**12**	**155**	**0**	**0**	**0**	**67**	**1**	**68**	**236**	**2**	**238**	**170**	**9**	**179**	**883**	**20**	**903**	**233**	**2**	**235**	**6**	**0**	**6**	**266**	**3**	**269**	**350**	**10**	**360**	**26**	**0**	**26**	**192**	**8**	**200**	**2572**	**67**	**2639**	**Peak**
17:15 - 18:15	187	12	199	0	0	0	59	0	59	230	2	232	133	5	138	874	21	895	235	0	235	5	0	5	266	1	267	336	8	344	18	0	18	182	8	190	2525	57	2582	
17:30 - 18:30	181	9	190	0	0	0	63	0	63	217	0	217	89	4	93	812	16	828	239	1	240	3	0	3	271	0	271	318	7	325	16	0	16	167	9	176	2376	46	2422	
17:45 - 18:45	193	11	204	1	0	1	64	1	65	165	0	165	63	1	64	705	13	718	231	2	233	2	0	2	266	3	269	310	7	317	21	0	21	152	8	160	2195	46	2241	
18:00 - 19:00	217	10	227	1	0	1	64	1	65	157	2	159	32	1	33	591	9	600	212	2	214	1	0	1	241	3	244	247	4	251	22	0	22	166	6	172	1951	38	1989	

Appendix B

Intersection performance indicators

The operation of key intersections within was assessed using the SIDRA intersection modelling software. SIDRA calculates intersection performance measures including:

- level of service (LoS)
- degree of saturation (DoS)
- average delay
- queue length.

Level of Service (LoS)

Level of Service (Los) is a basic performance parameter used to describe the operation of an intersection. Levels of service range from A (indicating good intersection operation) to F (indicating over-saturated conditions with long delays and queues). At signalised intersections, the LoS criteria are related to average intersection delay (seconds per vehicle). At priority controlled (give-way and stop controlled) and roundabout intersections, the LoS is based on the modelled delay (seconds per vehicle) for the most delayed movement (refer to Table 1).

Degree of saturation (DoS)

The Degree of Saturation (DoS) is the ratio of demand flow to capacity, and therefore has no unit. As it approaches 1.0, extensive queues and delays could be expected. For a satisfactory situation, DoS should be less than the nominated practical degree of saturation, usually 0.9. The intersection DoS is based on the movement with the highest value.

Average vehicle delay

This is the difference between interrupted and uninterrupted travel times through the intersection and is measured in seconds per vehicle. At signalised intersections the average intersection delay is usually reported. At priority controlled intersections and roundabouts, the average delay for the most delayed movement is usually reported.

Queue length

Queue length is measured in metres reflecting the number of vehicles waiting at the stop line and is usually quoted as the 95th percentile back of queue, which is the value below which 95% of all observed queue lengths fall. It reflects the number of vehicles per traffic lane at the start of the green period, when traffic starts moving again after a red signal. The intersection queue length is usually taken from the movement with the longest queue length.

Table 1 Level of Service criteria for intersections

Level of Service	Average delay (seconds per vehicle)	Traffic signals, roundabout	Give Way and stop signs
A	Less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity and accident study required
E	57 to 70	At capacity. At signals, incidents would cause excessive delays. Roundabouts require other control mode.	At capacity; requires other control mode
F	Greater than 71	Unsatisfactory with excessive queuing	Unsatisfactory with excessive queuing; requires other control mode

Source: RMS *Guide to Traffic Generating Developments*, 2002

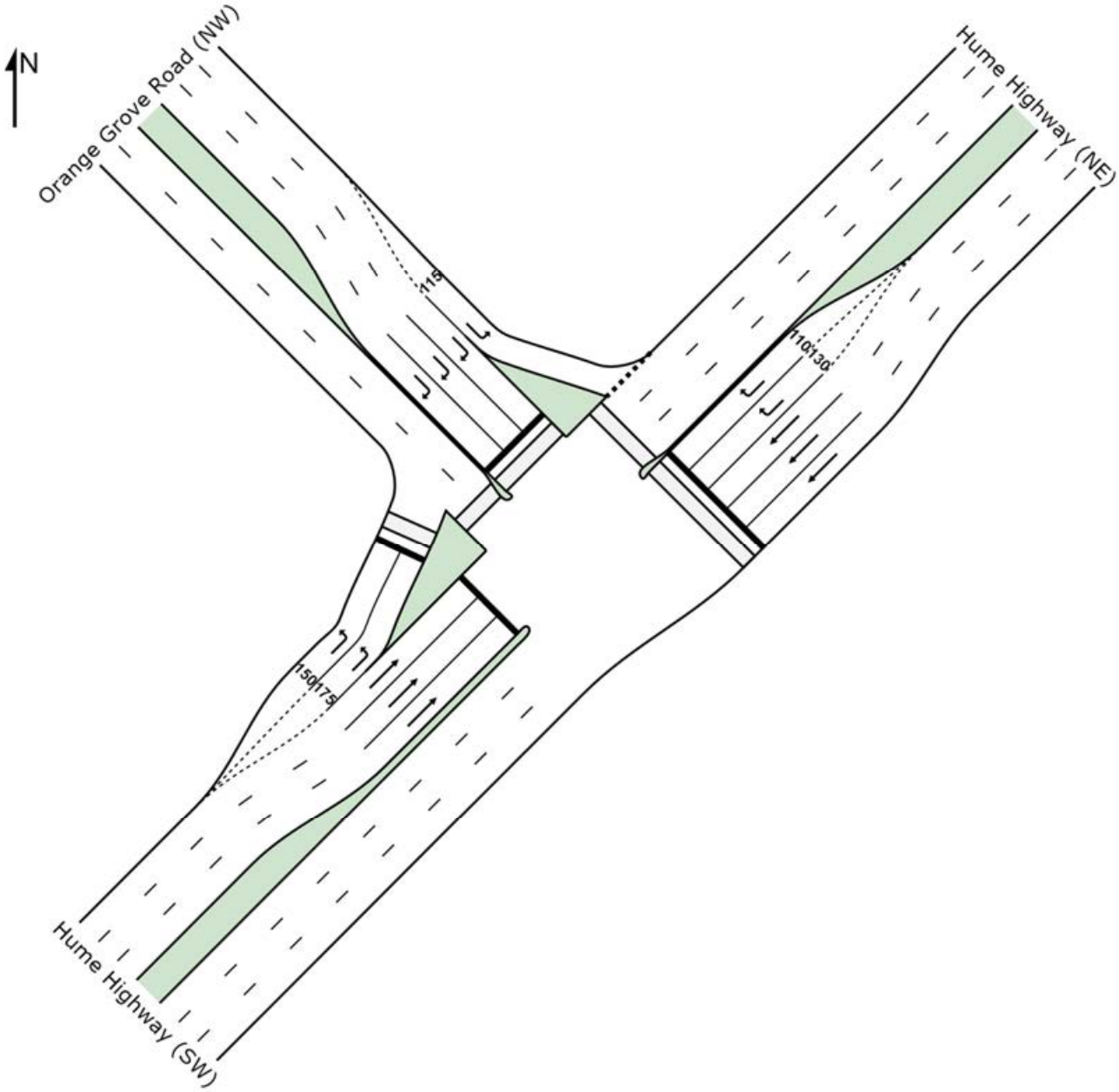
Appendix E
Traffic and Transport Impact Assessment

Appendix C

2014 existing year SIDRA results

I-01 Intersection of the Hume Highway and Orange Grove Road

INTERSECTION LAYOUT



MOVEMENT SUMMARY

Site: I-01 2014 BASE AM

Hume Highway / Orange Grove Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	877	11.3	0.623	22.1	LOS B	17.2	132.2	0.81	0.73	37.1
26	R2	354	10.1	0.876	84.4	LOS F	14.9	113.5	1.00	0.91	24.2
Approach		1231	10.9	0.876	40.0	LOS C	17.2	132.2	0.86	0.78	30.8
NorthWest: Orange Grove Road (NW)											
27	L2	525	6.6	0.612	9.1	LOS A	7.5	55.6	0.22	0.63	51.4
29	R2	1163	6.6	0.858	67.3	LOS E	29.8	220.3	0.98	0.89	24.6
Approach		1688	6.6	0.858	49.2	LOS D	29.8	220.3	0.75	0.81	30.0
SouthWest: Hume Highway (SW)											
30	L2	1119	6.5	0.391	10.9	LOS A	11.2	83.0	0.31	0.69	52.8
31	T1	1936	4.9	0.695	19.5	LOS B	28.9	210.8	0.59	0.54	42.8
Approach		3055	5.5	0.695	16.4	LOS B	28.9	210.8	0.49	0.59	46.6
All Vehicles		5974	6.9	0.876	30.5	LOS C	29.8	220.3	0.64	0.69	36.3

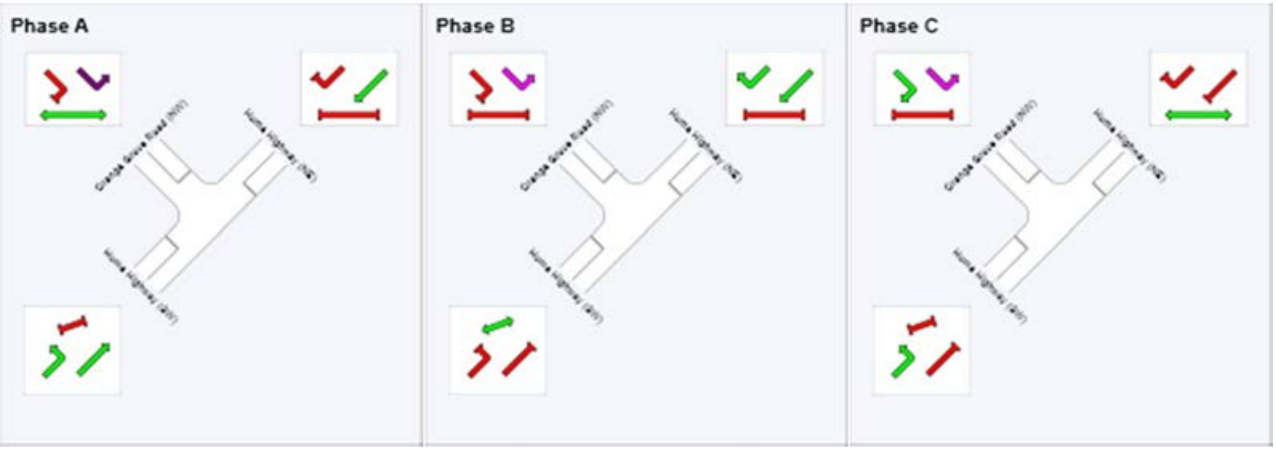
PHASING SUMMARY

Site: I-01 2014 BASE AM

Hume Highway / Orange Grove Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	86	109
Green Time (sec)	79	16	35
Yellow Time (sec)	5	4	5
All-Red Time (sec)	2	2	2
Phase Time (sec)	86	22	42
Phase Split	57 %	15 %	28 %



MOVEMENT SUMMARY

Site: I-01 2014 BASE PM

Hume Highway / Orange Grove Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	1605	3.3	0.828	22.8	LOS B	32.4	233.5	0.79	0.75	36.7
26	R2	754	2.8	0.862	44.2	LOS D	17.5	125.5	1.00	0.93	34.4
Approach		2359	3.1	0.862	29.6	LOS C	32.4	233.5	0.85	0.81	35.7
NorthWest: Orange Grove Road (NW)											
27	L2	365	4.3	0.337	11.0	LOS A	5.2	37.6	0.23	0.62	50.4
29	R2	1252	3.1	0.956	82.7	LOS F	37.4	269.0	1.00	0.98	21.8
Approach		1617	3.4	0.956	66.5	LOS E	37.4	269.0	0.83	0.90	25.4
SouthWest: Hume Highway (SW)											
30	L2	1208	3.0	0.713	19.2	LOS B	18.2	130.9	0.76	0.82	46.0
31	T1	1029	5.3	0.925	72.3	LOS F	31.7	231.6	1.00	1.04	20.9
Approach		2238	4.0	0.925	43.6	LOS D	31.7	231.6	0.87	0.92	31.3
All Vehicles		6214	3.5	0.956	44.3	LOS D	37.4	269.0	0.85	0.87	30.6

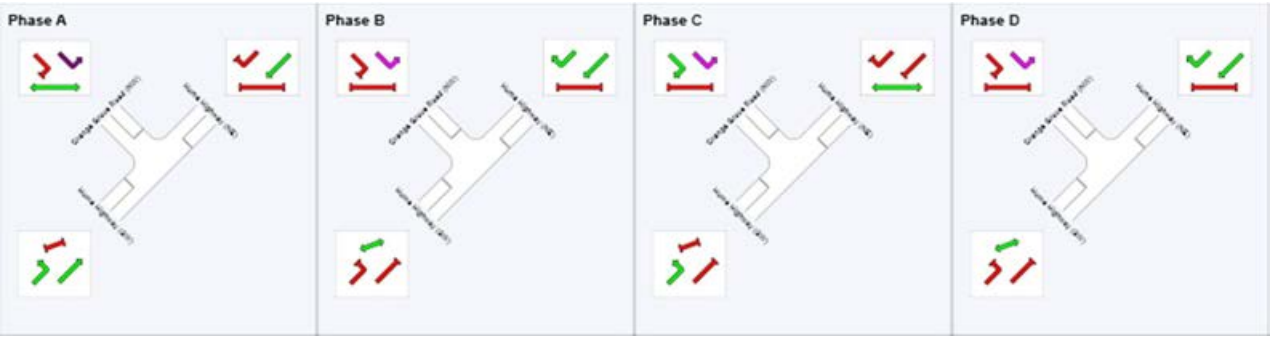
PHASING SUMMARY

Site: I-01 2014 BASE PM

Hume Highway / Orange Grove Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

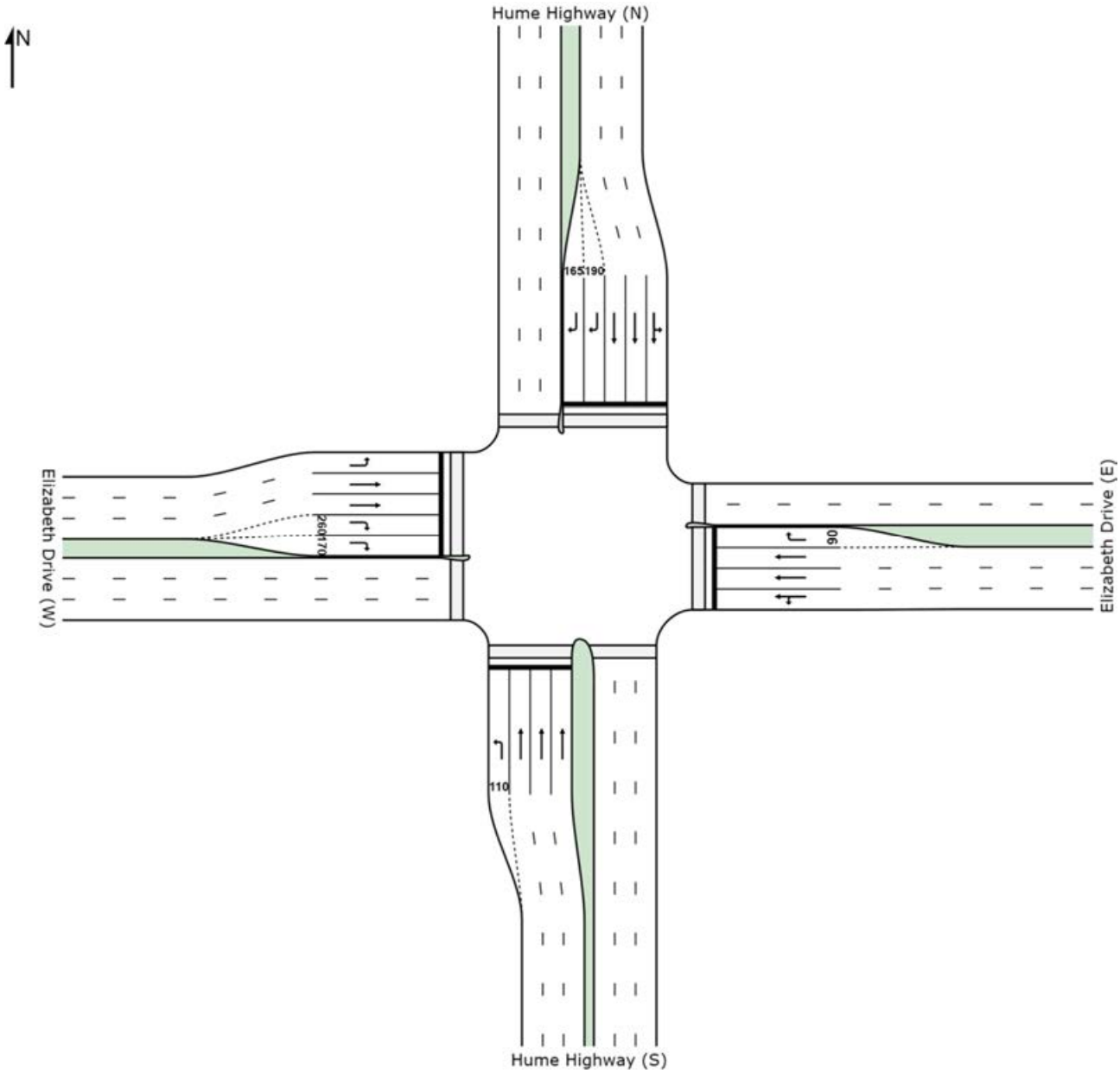
Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	81	124
Green Time (sec)	47	21	37	19
Yellow Time (sec)	5	4	5	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	54	27	44	25
Phase Split	36 %	18 %	29 %	17 %



I-02 Intersection of the Hume Highway and Elizabeth Drive

INTERSECTION LAYOUT



MOVEMENT SUMMARY

Site: I-02 2014 BASE AM

Hume Highway / Elizabeth Drive
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	116	5.5	0.128	21.1	LOS B	2.9	21.5	0.38	0.67	37.4
2	T1	2066	6.3	0.792	35.4	LOS C	40.4	298.3	0.85	0.76	27.5
Approach		2182	6.2	0.808	34.6	LOS C	40.4	298.3	0.82	0.76	28.0
East: Elizabeth Drive (E)											
4	L2	34	6.2	0.362	59.6	LOS E	8.5	62.8	0.90	0.81	18.6
5	T1	412	5.9	0.362	55.8	LOS D	9.7	71.3	0.89	0.82	23.8
6	R2	133	2.4	0.641	75.0	LOS F	9.6	68.3	1.00	0.81	15.2
Approach		578	5.1	0.641	60.4	LOS E	9.7	71.3	0.91	0.81	21.2
North: Hume Highway (N)											
7	L2	76	2.8	0.567	24.6	LOS B	19.5	146.0	0.55	0.53	32.4
8	T1	1578	8.7	0.567	18.0	LOS B	19.5	146.0	0.53	0.49	37.3
9	R2	305	9.7	1.098	187.9	LOS F	18.5	140.5	1.00	1.25	9.7
Approach		1959	8.7	1.098	44.7	LOS D	19.5	146.0	0.60	0.61	24.4
West: Elizabeth Drive (W)											
10	L2	544	5.4	0.918	72.4	LOS F	42.7	312.5	1.00	0.95	19.4
11	T1	929	3.1	0.922	74.3	LOS F	37.0	266.1	1.00	1.02	18.5
12	R2	436	6.5	1.083	179.8	LOS F	26.3	194.1	1.00	1.25	10.1
Approach		1909	4.5	1.083	97.8	LOS F	42.7	312.5	1.00	1.05	15.6
All Vehicles		6628	6.4	1.098	58.1	LOS E	42.7	312.5	0.82	0.80	21.2

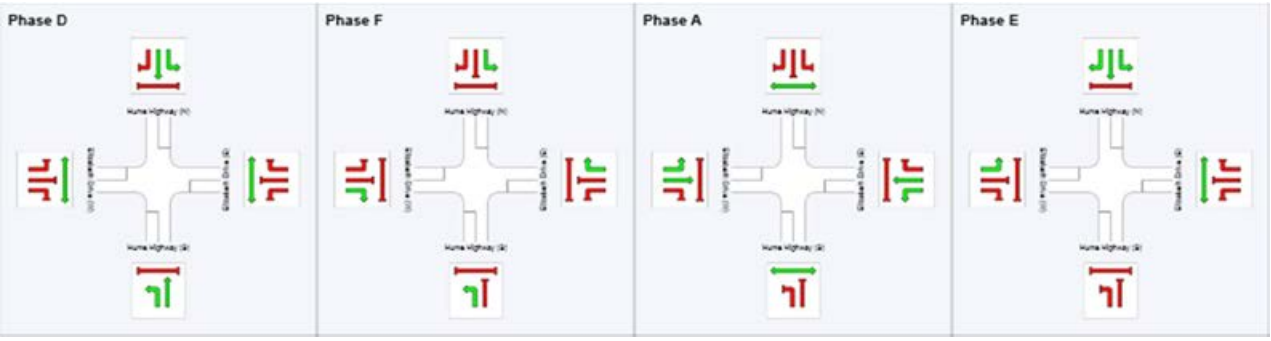
PHASING SUMMARY

Site: I-02 2014 BASE AM

Hume Highway / Elizabeth Drive
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	68	91	132
Green Time (sec)	62	17	35	12
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	68	23	41	18
Phase Split	45 %	15 %	27 %	12 %



MOVEMENT SUMMARY

Site: I-02 2014 BASE PM

Hume Highway / Elizabeth Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	286	4.4	0.426	39.9	LOS C	13.2	95.8	0.68	0.77	28.4
2	T1	1419	4.8	0.819	51.7	LOS D	32.3	235.2	0.94	0.86	22.0
Approach		1705	4.8	0.819	49.7	LOS D	32.3	235.2	0.90	0.85	23.0
East: Elizabeth Drive (E)											
4	L2	109	1.0	0.817	73.1	LOS F	23.0	163.3	1.00	0.92	16.1
5	T1	938	2.5	0.817	67.8	LOS E	28.2	201.6	1.00	0.92	20.8
6	R2	146	0.0	0.985	114.7	LOS F	13.8	96.3	1.00	1.14	11.1
Approach		1194	2.0	0.985	74.0	LOS F	28.2	201.6	1.00	0.94	18.7
North: Hume Highway (N)											
7	L2	61	5.2	0.785	20.1	LOS B	30.1	216.0	0.60	0.57	35.9
8	T1	2247	2.9	0.785	14.5	LOS B	30.8	220.9	0.60	0.56	40.3
9	R2	857	2.9	0.818	65.8	LOS E	29.7	212.9	0.98	0.89	21.5
Approach		3165	3.0	0.818	28.5	LOS C	30.8	220.9	0.70	0.65	31.7
West: Elizabeth Drive (W)											
10	L2	307	6.5	0.406	33.0	LOS C	12.4	91.8	0.60	0.75	30.1
11	T1	493	4.7	0.630	60.0	LOS E	15.9	115.6	0.93	0.80	21.3
12	R2	287	2.6	0.985	116.1	LOS F	13.5	96.8	1.00	1.09	14.3
Approach		1087	4.6	0.985	67.2	LOS E	15.9	115.6	0.86	0.86	20.3
All Vehicles		7152	3.5	0.985	47.0	LOS D	32.3	235.2	0.82	0.78	24.4

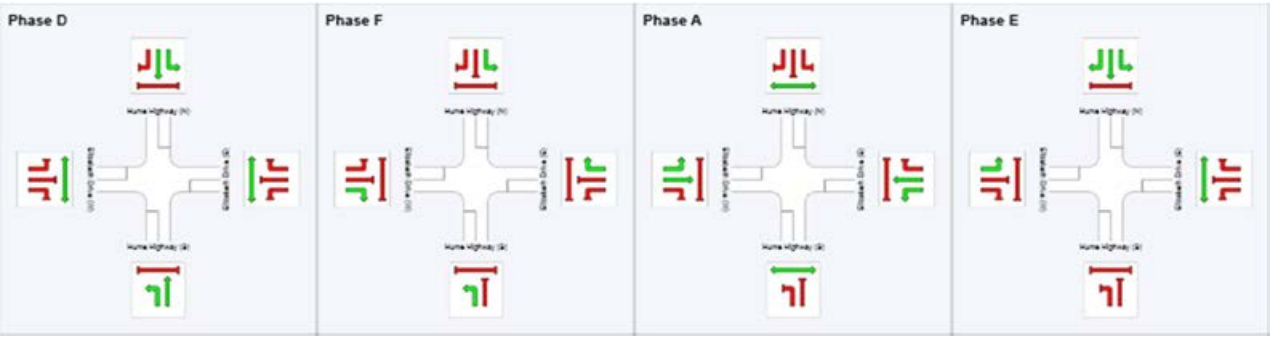
PHASING SUMMARY

Site: I-02 2014 BASE PM

Hume Highway / Elizabeth Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

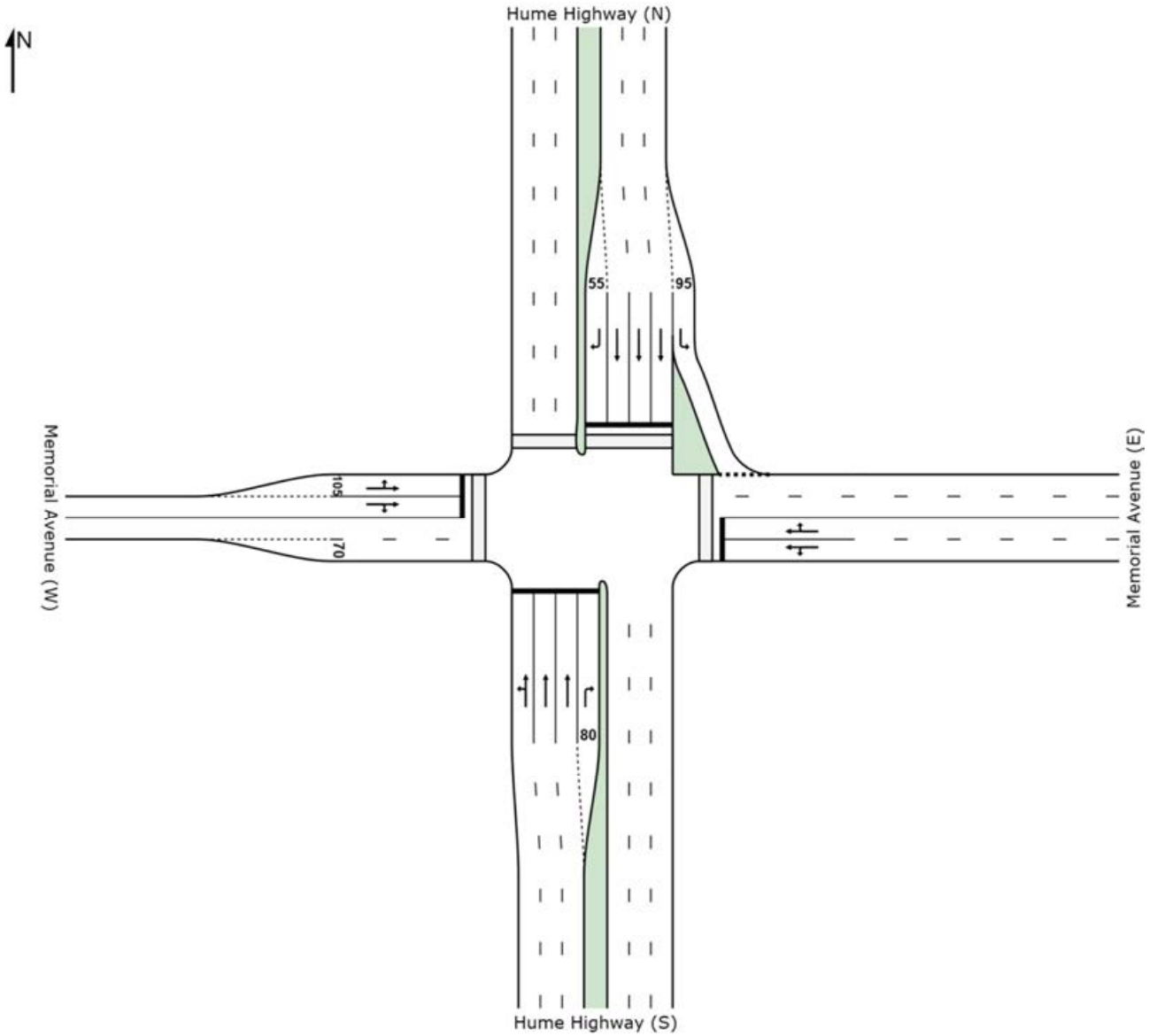
Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	71	108
Green Time (sec)	47	12	31	36
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	53	18	37	42
Phase Split	35 %	12 %	25 %	28 %



I-03 Intersection of the Hume Highway and Memorial Avenue

INTERSECTION LAYOUT



MOVEMENT SUMMARY

Site: I-03 2014 BASE AM

Hume Highway / Memorial Avenue
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	138	1.5	0.839	40.6	LOS C	42.1	310.4	0.89	0.84	34.3
2	T1	1848	7.2	0.839	32.8	LOS C	42.2	313.8	0.82	0.77	34.1
3	R2	235	0.0	0.998	121.0	LOS F	23.1	161.6	1.00	1.08	15.2
Approach		2221	6.1	0.998	42.6	LOS D	42.2	313.8	0.84	0.81	30.3
East: Memorial Avenue (E)											
4	L2	22	19.0	1.001	123.6	LOS F	13.7	101.8	1.00	1.19	15.2
5	T1	137	5.4	1.001	118.9	LOS F	13.7	101.8	1.00	1.19	14.8
6	R2	107	12.7	1.001	123.6	LOS F	12.4	95.4	1.00	1.19	10.9
Approach		266	9.5	1.001	121.2	LOS F	13.7	101.8	1.00	1.19	13.3
North: Hume Highway (N)											
7	L2	104	6.1	0.088	12.3	LOS A	2.2	16.4	0.35	0.64	39.5
8	T1	1542	11.1	0.646	26.7	LOS B	24.9	191.1	0.67	0.60	37.2
9	R2	87	3.6	0.381	71.5	LOS F	6.0	43.1	0.96	0.78	21.5
Approach		1734	10.4	0.646	28.1	LOS B	24.9	191.1	0.67	0.61	36.0
West: Memorial Avenue (W)											
10	L2	109	2.9	1.004	106.4	LOS F	26.3	187.2	1.00	1.18	16.8
11	T1	393	1.6	1.004	109.2	LOS F	34.4	245.0	1.00	1.21	15.6
12	R2	139	3.0	1.004	120.7	LOS F	34.4	245.0	1.00	1.23	18.9
Approach		641	2.1	1.004	111.2	LOS F	34.4	245.0	1.00	1.21	16.6
All Vehicles		4862	7.3	1.004	50.8	LOS D	42.2	313.8	0.81	0.81	27.1

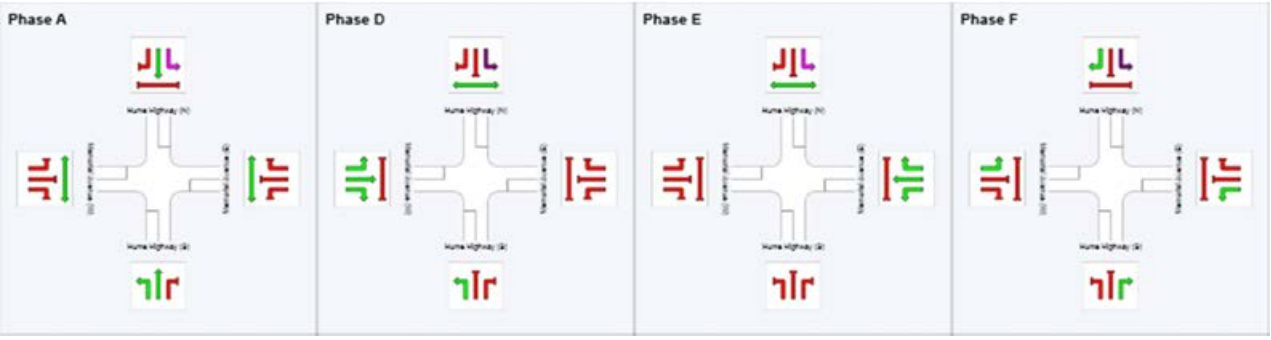
PHASING SUMMARY

Site: I-03 2014 BASE AM

Hume Highway / Memorial Avenue
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	75	108	125
Green Time (sec)	69	27	11	19
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	75	33	17	25
Phase Split	50 %	22 %	11 %	17 %



MOVEMENT SUMMARY

Site: I-03 2014 BASE PM

Hume Highway / Memorial Avenue
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	113	0.9	0.717	40.6	LOS C	29.8	217.3	0.82	0.77	34.3
2	T1	1522	5.7	0.717	32.8	LOS C	30.3	222.2	0.77	0.70	34.1
3	R2	109	0.0	0.737	83.1	LOS F	8.3	58.3	1.00	0.84	19.7
Approach		1744	5.0	0.737	36.4	LOS C	30.3	222.2	0.79	0.72	32.7
East: Memorial Avenue (E)											
4	L2	46	0.0	1.180	258.8	LOS F	36.3	258.4	1.00	1.67	8.4
5	T1	247	2.6	1.180	254.3	LOS F	36.3	258.4	1.00	1.65	8.2
6	R2	180	6.4	1.180	259.2	LOS F	33.4	245.0	1.00	1.58	5.9
Approach		474	3.8	1.180	256.6	LOS F	36.3	258.4	1.00	1.62	7.4
North: Hume Highway (N)											
7	L2	140	3.0	0.082	8.0	LOS A	1.7	12.5	0.23	0.61	43.9
8	T1	2696	3.0	0.830	10.0	LOS A	35.9	257.8	0.50	0.46	48.8
9	R2	197	2.1	0.747	51.6	LOS D	8.8	62.7	1.00	0.88	25.7
Approach		3033	3.0	0.830	12.6	LOS A	35.9	257.8	0.52	0.49	45.9
West: Memorial Avenue (W)											
10	L2	71	1.5	0.770	69.3	LOS E	12.5	88.7	1.00	0.92	22.2
11	T1	179	1.2	0.770	66.7	LOS E	15.7	110.1	1.00	0.91	21.0
12	R2	145	0.0	0.770	74.5	LOS F	15.7	110.1	1.00	0.89	25.0
Approach		395	0.8	0.770	70.1	LOS E	15.7	110.1	1.00	0.90	22.8
All Vehicles		5645	3.5	1.180	44.5	LOS D	36.3	258.4	0.68	0.69	29.0

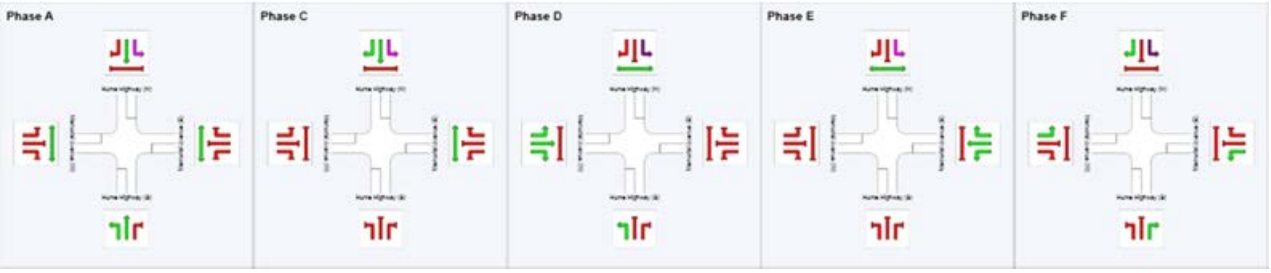
PHASING SUMMARY

Site: I-03 2014 BASE PM

Hume Highway / Memorial Avenue
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

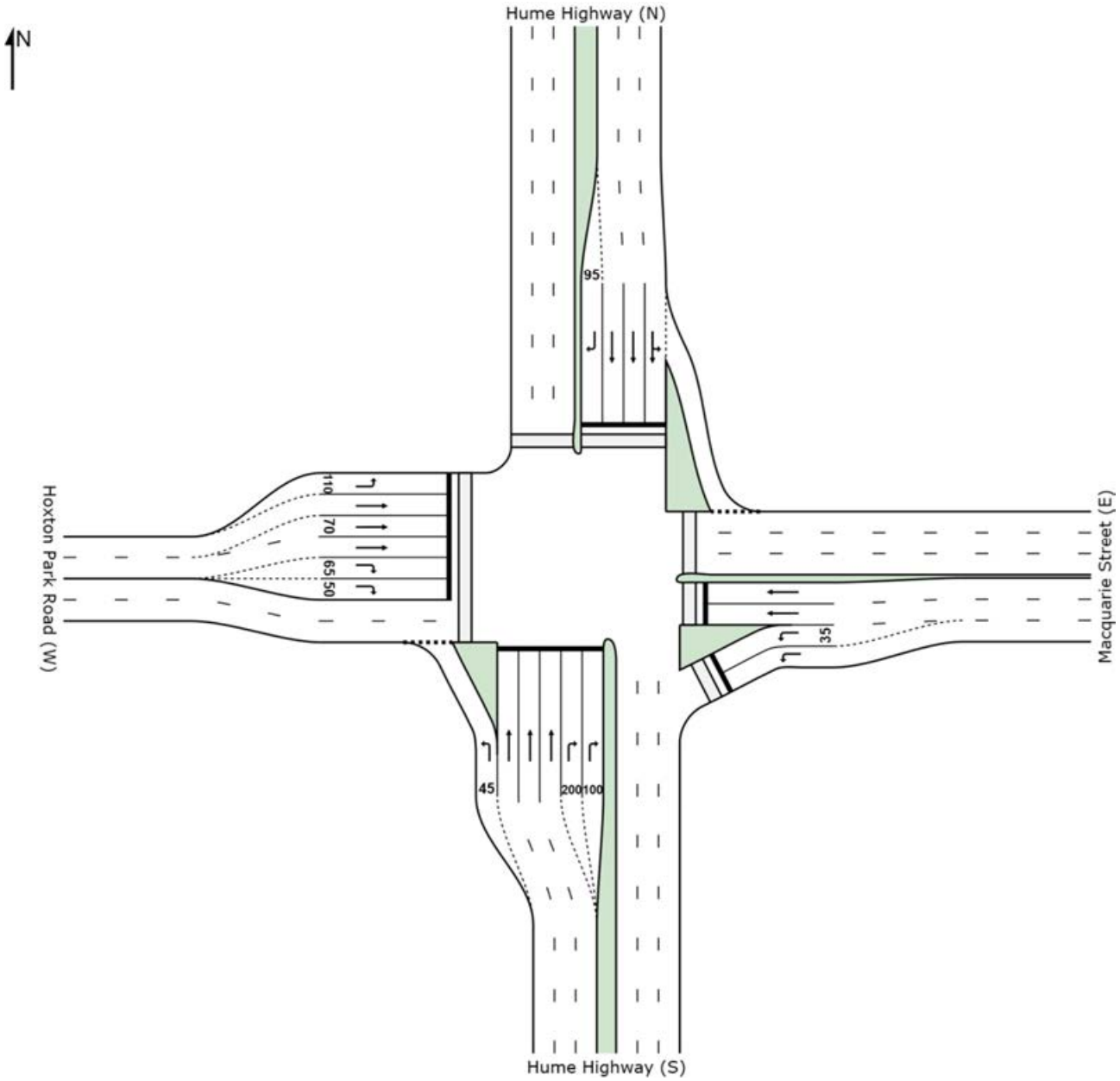
Phase Timing Results

Phase	A	C	D	E	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	70	82	110	132
Green Time (sec)	64	6	22	16	12
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	70	12	28	22	18
Phase Split	47 %	8 %	19 %	15 %	12 %



I-04 Intersection of the Hume Highway and Hoxton Park Drive

INTERSECTION LAYOUT



MOVEMENT SUMMARY

Site: I-04 2014 BASE AM

Hume Highway / Hoxton Park Road / Macquarie Street
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	76	6.9	0.060	6.8	LOS A	0.3	1.9	0.05	0.56	52.5
2	T1	1917	5.1	0.714	24.9	LOS B	30.9	225.7	0.69	0.63	41.1
3	R2	1046	1.9	0.931	53.9	LOS D	26.6	189.5	1.00	0.98	25.8
Approach		3039	4.1	0.931	34.4	LOS C	30.9	225.7	0.78	0.75	35.3
East: Macquarie Street (E)											
4	L2	286	5.9	0.185	21.6	LOS B	4.4	32.4	0.65	0.72	38.8
5	T1	389	4.6	0.812	74.6	LOS F	14.9	108.1	1.00	0.92	23.5
Approach		676	5.1	0.812	52.1	LOS D	14.9	108.1	0.85	0.84	27.7
North: Hume Highway (N)											
7	L2	177	15.5	0.831	58.9	LOS E	33.7	257.4	0.95	0.99	26.5
8	T1	1326	8.1	0.831	53.1	LOS D	35.8	267.9	0.93	0.89	30.1
9	R2	184	19.4	0.941	100.6	LOS F	16.3	133.1	1.00	1.05	22.2
Approach		1687	10.1	0.941	58.9	LOS E	35.8	267.9	0.94	0.92	28.5
West: Hoxton Park Road (W)											
10	L2	267	16.1	0.463	46.5	LOS D	15.1	120.4	0.83	0.81	32.8
11	T1	997	4.2	0.804	55.8	LOS D	22.6	164.1	0.94	0.87	27.7
12	R2	324	3.2	0.918	88.3	LOS F	14.6	105.2	1.00	0.95	23.0
Approach		1588	6.0	0.918	60.9	LOS E	22.6	164.1	0.93	0.88	27.3
All Vehicles		6991	6.1	0.941	48.1	LOS D	35.8	267.9	0.86	0.83	30.6

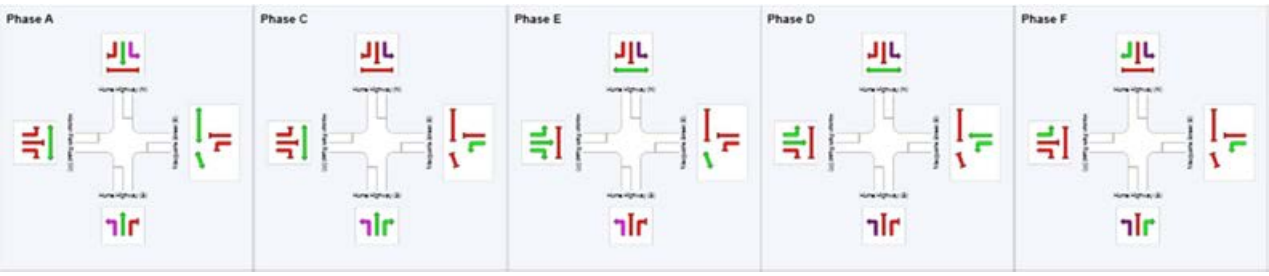
PHASING SUMMARY

Site: I-04 2014 BASE AM

Hume Highway / Hoxton Park Road / Macquarie Street
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	D	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	51	79	101	126
Green Time (sec)	45	22	16	19	18
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	51	28	22	25	24
Phase Split	34 %	19 %	15 %	17 %	16 %



MOVEMENT SUMMARY

Site: I-04 2014 BASE PM

Hume Highway / Hoxton Park Road / Macquarie Street
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	151	5.6	0.124	8.5	LOS A	1.2	8.6	0.12	0.58	51.1
2	T1	1504	5.2	0.572	22.4	LOS B	21.1	154.0	0.59	0.53	42.4
3	R2	416	1.3	0.921	93.2	LOS F	17.4	123.1	1.00	0.99	18.4
Approach		2071	4.4	0.921	35.6	LOS C	21.1	154.0	0.64	0.62	35.4
East: Macquarie Street (E)											
4	L2	700	1.5	0.906	67.5	LOS E	23.4	166.1	0.82	0.90	22.7
5	T1	612	3.3	0.941	84.6	LOS F	25.6	183.9	1.00	1.05	21.7
Approach		1312	2.3	0.941	75.5	LOS F	25.6	183.9	0.91	0.97	22.2
North: Hume Highway (N)											
7	L2	94	5.6	0.851	18.2	LOS B	39.0	279.8	0.63	0.63	45.4
8	T1	2585	2.6	0.851	12.8	LOS A	41.7	298.3	0.59	0.56	48.4
9	R2	219	6.7	1.158	241.6	LOS F	30.9	228.9	1.00	1.42	11.9
Approach		2898	3.1	1.158	30.2	LOS C	41.7	298.3	0.62	0.63	38.5
West: Hoxton Park Road (W)											
10	L2	226	3.7	0.361	44.5	LOS D	12.2	88.3	0.79	0.79	33.6
11	T1	595	3.9	0.364	45.5	LOS D	11.5	82.9	0.84	0.71	30.8
12	R2	327	1.6	1.036	119.8	LOS F	18.8	133.5	1.00	1.09	18.9
Approach		1148	3.2	1.036	66.5	LOS E	18.8	133.5	0.88	0.83	26.3
All Vehicles		7428	3.3	1.158	45.3	LOS D	41.7	298.3	0.72	0.72	31.8

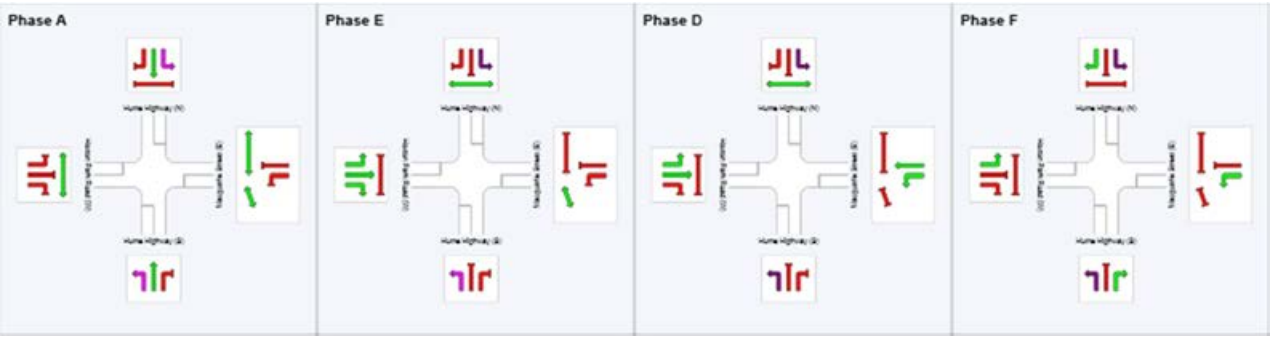
PHASING SUMMARY

Site: I-04 2014 BASE PM

Hume Highway / Hoxton Park Road / Macquarie Street
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

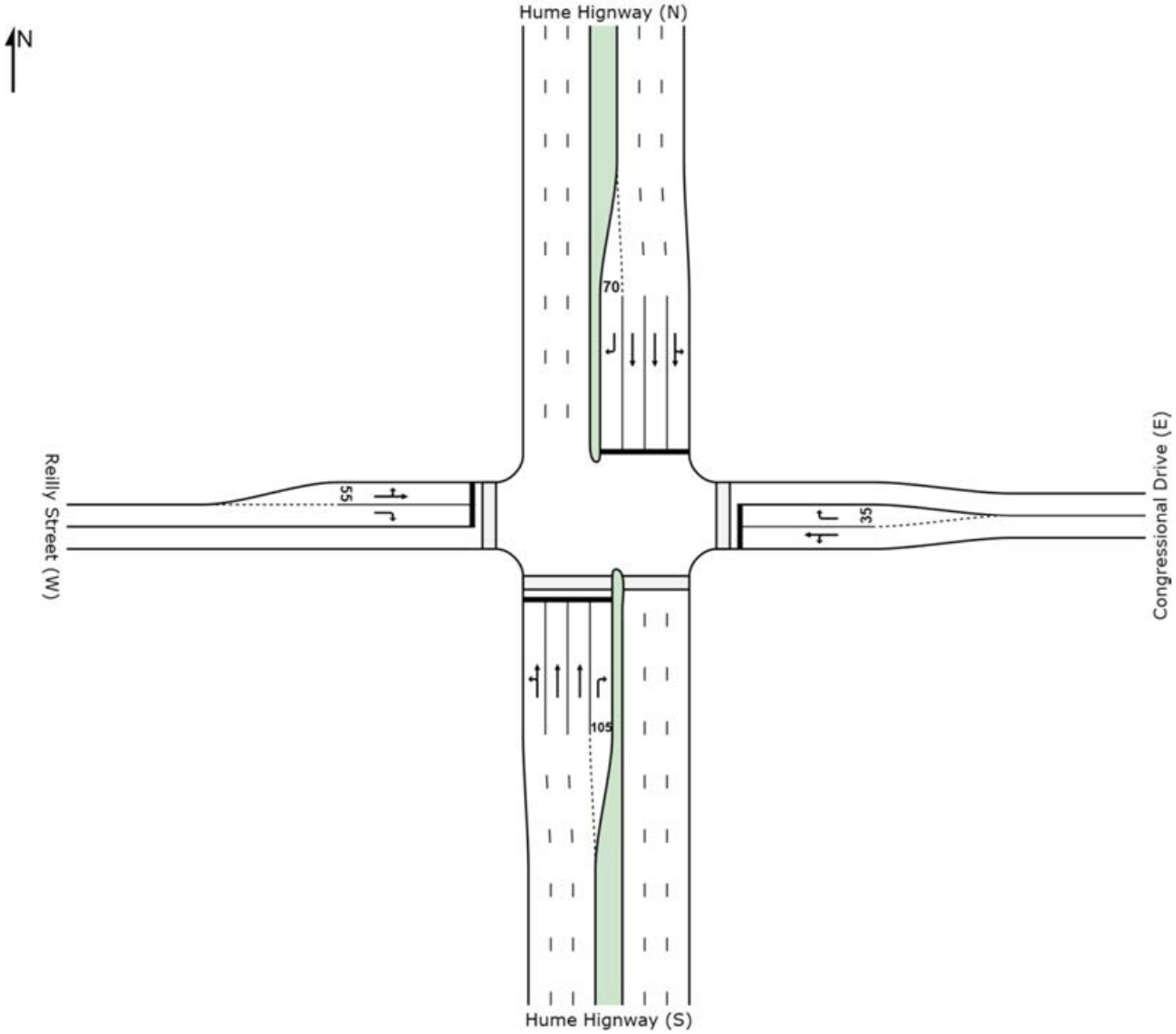
Phase Timing Results

Phase	A	E	D	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	79	99	128
Green Time (sec)	73	14	23	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	79	20	29	22
Phase Split	53 %	13 %	19 %	15 %



I-05 Intersection of the Hume Highway and Reilly Street

INTERSECTION LAYOUT



MOVEMENT SUMMARY

Site: I-05 2014 BASE AM

Hume Highway / Reilly Street
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Hignway (S)											
1	L2	73	2.9	0.821	17.9	LOS B	37.8	272.8	0.59	0.57	43.7
2	T1	2833	3.6	0.821	11.7	LOS A	37.8	272.8	0.57	0.54	46.0
3	R2	13	8.3	0.076	20.1	LOS B	0.4	3.0	0.45	0.66	38.4
Approach		2918	3.6	0.821	11.8	LOS A	37.8	272.8	0.57	0.54	45.8
East: Congressional Drive (E)											
4	L2	42	2.5	0.234	59.6	LOS E	5.1	36.7	0.89	0.73	24.4
5	T1	40	5.3	0.234	55.0	LOS D	5.1	36.7	0.89	0.73	23.9
6	R2	77	4.1	0.348	66.1	LOS E	5.1	37.0	0.93	0.77	18.9
Approach		159	4.0	0.348	61.6	LOS E	5.1	37.0	0.91	0.75	21.7
North: Hume Hignway (N)											
7	L2	28	3.7	0.482	15.4	LOS B	19.9	147.6	0.47	0.45	41.5
8	T1	1647	7.2	0.482	9.5	LOS A	20.0	148.4	0.45	0.42	48.1
9	R2	88	1.2	0.596	32.3	LOS C	4.7	33.4	0.99	0.85	30.7
Approach		1764	6.9	0.596	10.7	LOS A	20.0	148.4	0.48	0.44	46.6
West: Reilly Street (W)											
10	L2	99	4.3	0.231	50.5	LOS D	6.3	45.7	0.82	0.75	24.4
11	T1	12	9.1	0.231	45.9	LOS D	6.3	45.7	0.82	0.75	25.6
12	R2	211	2.0	0.892	85.8	LOS F	17.5	124.3	1.00	1.00	21.0
Approach		321	3.0	0.892	73.5	LOS F	17.5	124.3	0.94	0.91	22.0
All Vehicles		5162	4.7	0.892	16.8	LOS B	37.8	272.8	0.57	0.53	41.4

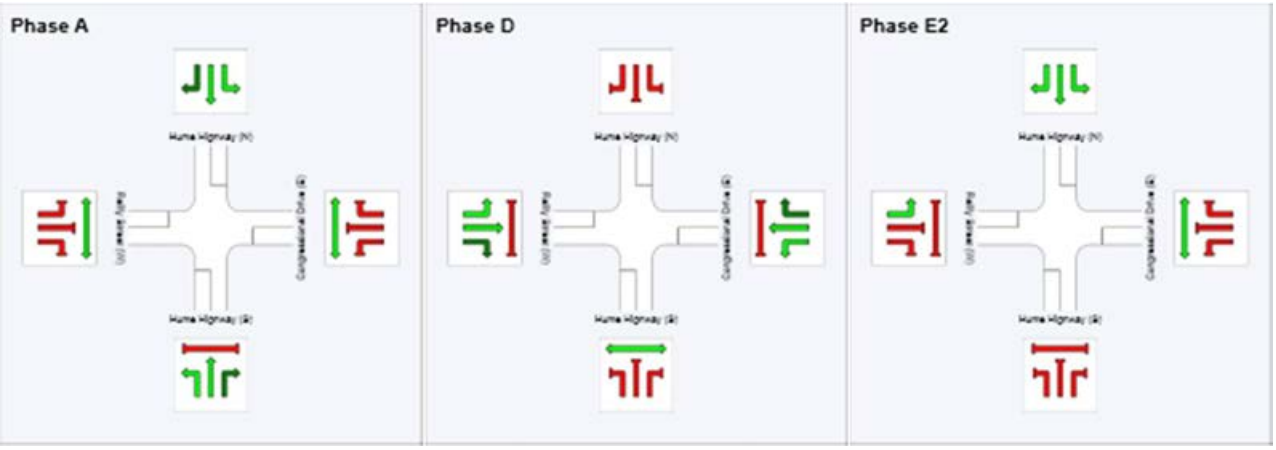
PHASING SUMMARY

Site: I-05 2014 BASE AM

Hume Highway / Reilly Street
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	100	137
Green Time (sec)	94	31	7
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	100	37	13
Phase Split	67 %	25 %	9 %



MOVEMENT SUMMARY

Site: I-05 2014 BASE PM

Hume Highway / Reilly Street
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Hignway (S)											
1	L2	219	0.5	0.629	19.3	LOS B	23.7	170.7	0.50	0.55	42.0
2	T1	1955	4.5	0.629	11.3	LOS A	23.7	170.7	0.43	0.42	46.0
3	R2	21	5.0	0.371	28.0	LOS B	1.0	7.1	0.59	0.72	34.4
Approach		2195	4.1	0.629	12.2	LOS A	23.7	170.7	0.44	0.44	45.3
East: Congressional Drive (E)											
4	L2	36	2.9	0.163	59.6	LOS E	3.5	24.8	0.88	0.72	24.3
5	T1	21	0.0	0.163	55.0	LOS D	3.5	24.8	0.88	0.72	23.8
6	R2	44	0.0	0.179	62.1	LOS E	2.8	19.5	0.89	0.74	19.8
Approach		101	1.0	0.179	59.7	LOS E	3.5	24.8	0.88	0.73	22.3
North: Hume Hignway (N)											
7	L2	62	0.0	0.916	13.1	LOS A	39.3	279.9	0.44	0.45	43.7
8	T1	3367	2.3	0.916	8.9	LOS A	39.3	279.9	0.35	0.37	48.6
9	R2	163	1.3	0.784	44.7	LOS D	10.4	73.3	1.00	0.97	26.5
Approach		3593	2.2	0.916	10.6	LOS A	39.3	279.9	0.38	0.39	46.7
West: Reilly Street (W)											
10	L2	56	0.0	0.190	53.9	LOS D	4.8	33.9	0.84	0.72	24.0
11	T1	27	0.0	0.190	49.3	LOS D	4.8	33.9	0.84	0.72	25.0
12	R2	232	1.8	0.932	94.6	LOS F	20.4	145.3	1.00	1.05	19.8
Approach		315	1.3	0.932	83.5	LOS F	20.4	145.3	0.96	0.96	20.7
All Vehicles		6203	2.8	0.932	15.7	LOS B	39.3	279.9	0.44	0.44	42.3

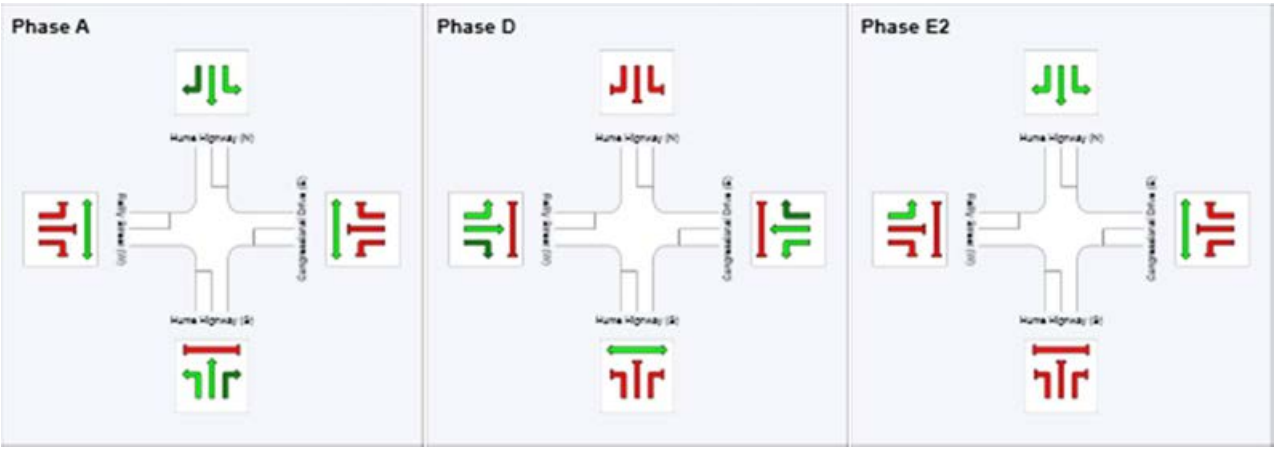
PHASING SUMMARY

Site: I-05 2014 BASE PM

Hume Highway / Reilly Street
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

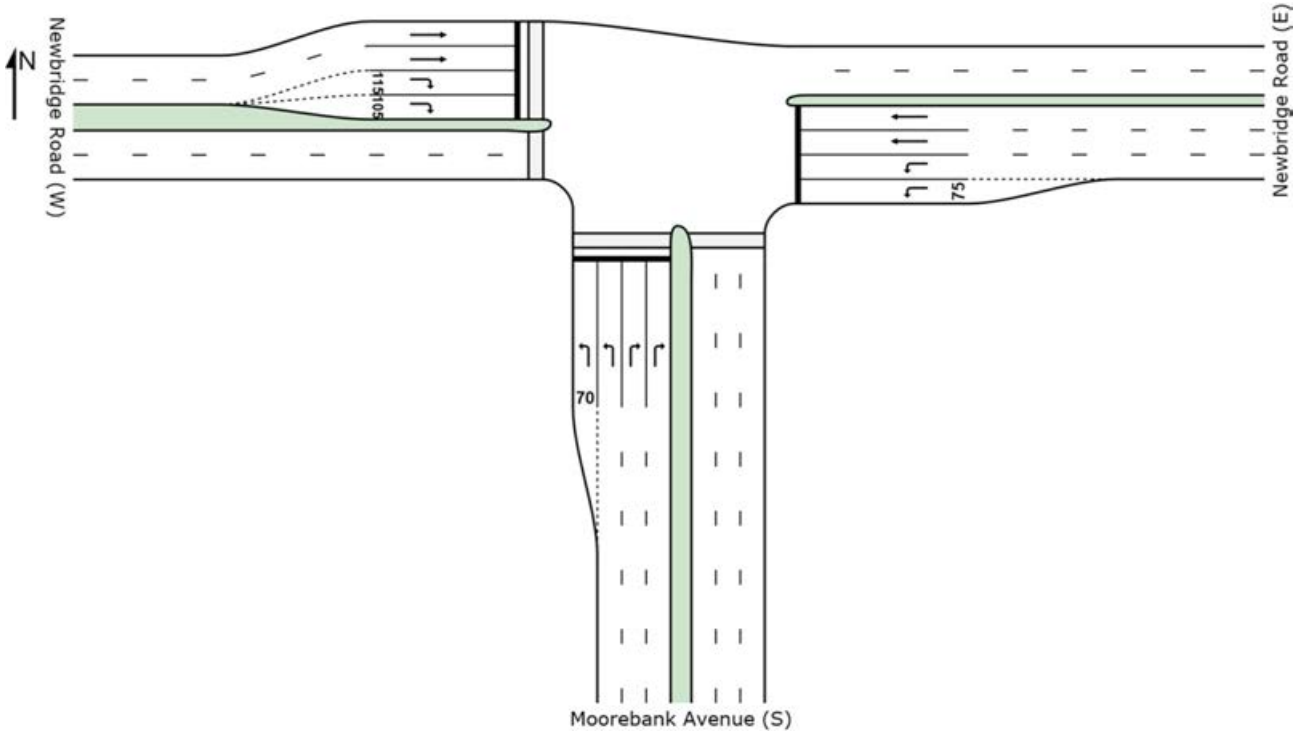
Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	98	135
Green Time (sec)	92	31	9
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	98	37	15
Phase Split	65 %	25 %	10 %



I-06 Intersection of Newbridge Road and Moorebank Avenue

INTERSECTION LAYOUT



MOVEMENT SUMMARY

Site: I-06 2014 BASE AM

Network: 2014 BASE AM

Newbridge Road / Moorebank Avenue
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	1202	3.2	1202	3.2	0.620	18.7	LOS B	12.8	91.9	0.55	0.81	42.5
3	R2	1060	9.0	1060	9.0	0.623	14.8	LOS B	12.1	91.3	0.38	0.67	52.8
Approach		2262	5.9	2262	5.9	0.623	16.9	LOS B	12.8	91.9	0.47	0.75	48.0
East: Newbridge Road (E)													
4	L2	453	19.8	453	19.8	0.376	17.1	LOS B	4.8	39.2	0.63	0.76	52.9
5	T1	691	5.2	691	5.2	0.902	69.9	LOS E	25.4	186.0	1.00	1.03	37.9
Approach		1143	11.0	1143	11.0	0.902	49.0	LOS D	25.4	186.0	0.85	0.92	41.4
West: Newbridge Road (W)													
11	T1	1121	6.4	1121	6.4	0.603	8.8	LOS A	12.4	91.3	0.37	0.33	63.3
12	R2	572	7.4	572	7.4	0.874	49.9	LOS D	14.8	109.8	1.00	0.95	26.8
Approach		1693	6.7	1693	6.7	0.874	22.6	LOS B	14.8	109.8	0.58	0.54	52.0
All Vehicles		5098	7.3	5098	7.3	0.902	26.0	LOS B	25.4	186.0	0.60	0.72	47.3

PHASING SUMMARY

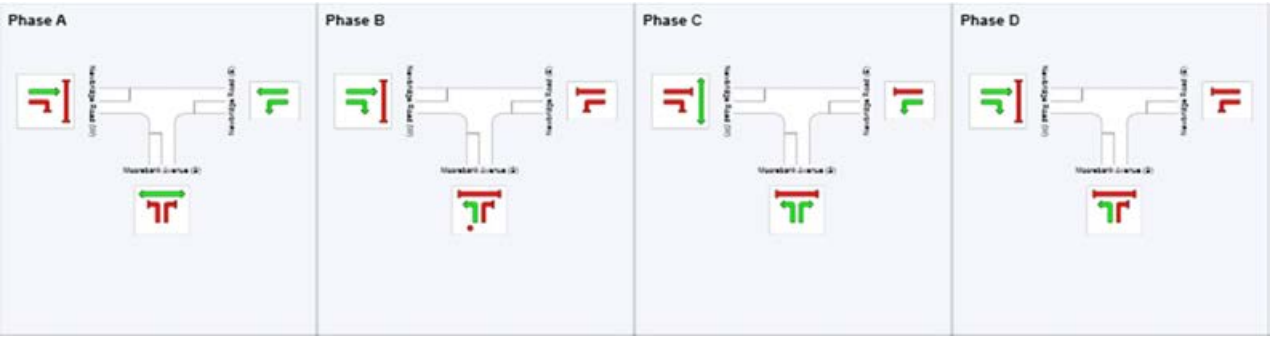
Site: I-06 2014 BASE AM

Network: 2014 BASE AM

Newbridge Road / Moorebank Avenue
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	33	55	116
Green Time (sec)	27	16	55	11
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	22	61	17
Phase Split	25 %	17 %	46 %	13 %



MOVEMENT SUMMARY

Site: I-06 2014 BASE PM

Network: 2014 BASE PM

Newbridge Road / Moorebank Avenue
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	700	3.3	700	3.3	0.400	21.4	LOS B	9.4	67.6	0.51	0.72	40.6
3	R2	697	10.7	697	10.7	0.901	51.5	LOS D	17.1	130.6	1.00	0.94	35.5
Approach		1397	7.0	1397	7.0	0.901	36.4	LOS C	17.1	130.6	0.76	0.83	37.3
East: Newbridge Road (E)													
4	L2	1048	5.1	1048	5.1	0.682	26.2	LOS B	23.4	171.3	0.73	0.82	46.6
5	T1	1132	4.7	1132	4.7	0.760	36.2	LOS C	26.9	196.1	0.90	0.80	48.7
Approach		2180	4.9	2180	4.9	0.760	31.4	LOS C	26.9	196.1	0.82	0.81	47.9
West: Newbridge Road (W)													
11	T1	918	3.8	918	3.8	0.359	8.6	LOS A	11.0	79.4	0.46	0.41	63.4
12	R2	947	2.7	947	2.7	0.887	43.4	LOS D	26.6	190.3	0.97	0.92	29.1
Approach		1865	3.2	1865	3.2	0.887	26.3	LOS B	26.6	190.3	0.72	0.67	47.7
All Vehicles		5442	4.9	5442	4.9	0.901	30.9	LOS C	26.9	196.1	0.77	0.77	45.3

PHASING SUMMARY

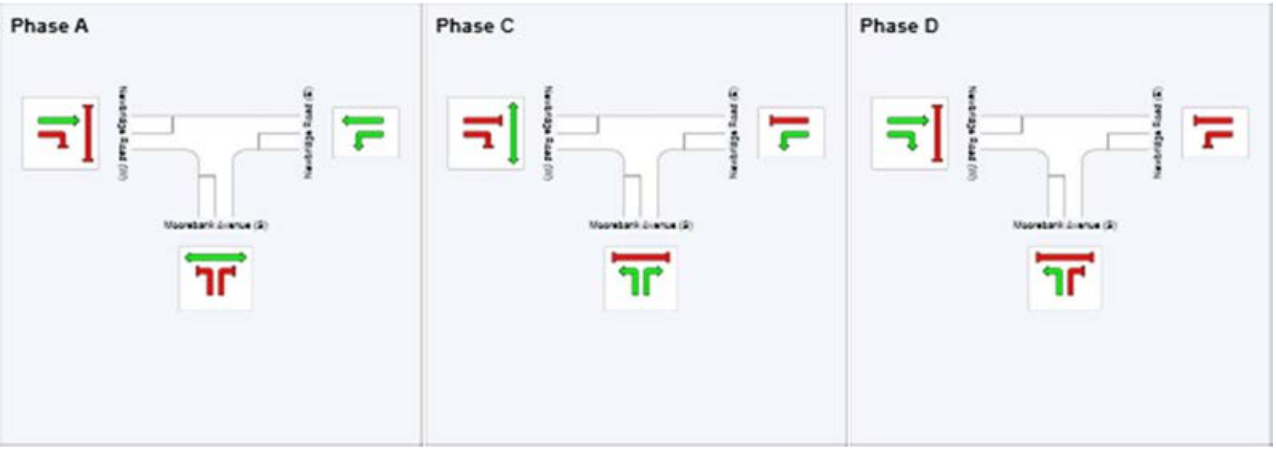
Site: I-06 2014 BASE PM

Network: 2014 BASE PM

Newbridge Road / Moorebank Avenue
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

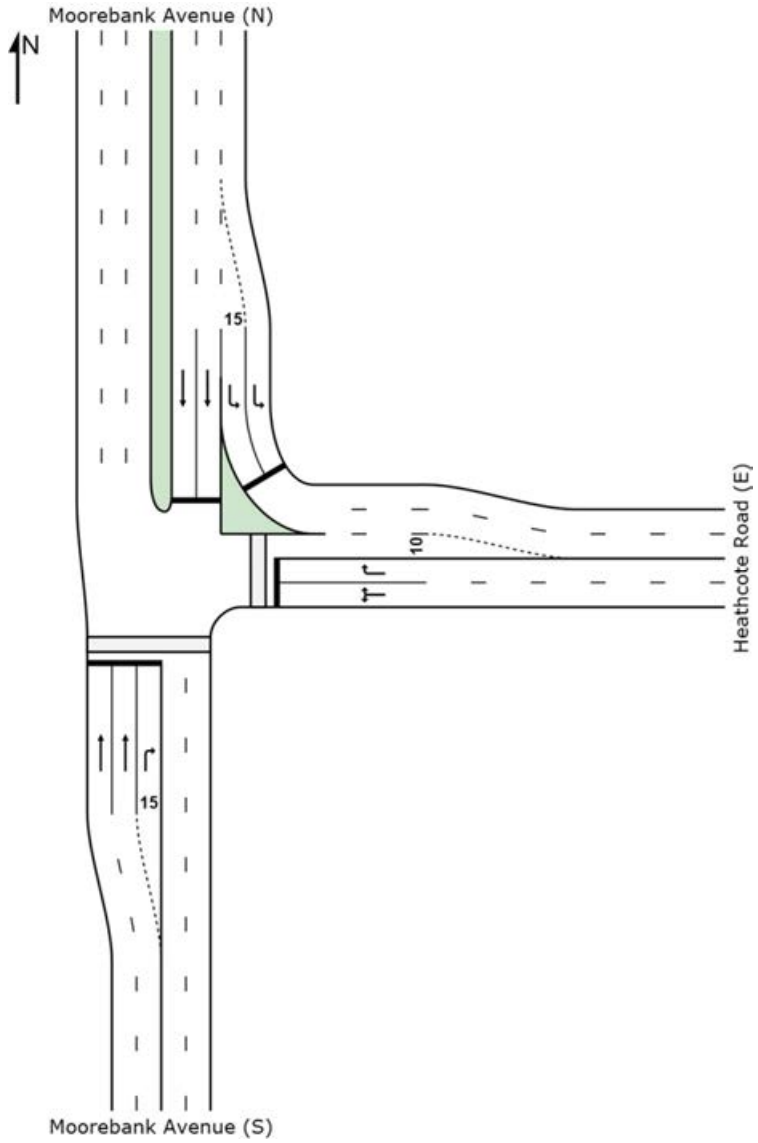
Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	44	76
Green Time (sec)	38	26	34
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	44	32	40
Phase Split	38 %	28 %	34 %



I-07 Intersection of Moorebank Avenue and Heathcote Road

INTERSECTION LAYOUT



MOVEMENT SUMMARY

Site: I-07 2014 BASE AM

Network: 2014 BASE AM

Moorebank Avenue / Heathcote Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	1524	5.7	1524	5.7	0.838	12.1	LOS A	29.9	219.5	0.58	0.55	35.4
3	R2	20	21.1	20	21.1	0.183	71.8	LOS F	1.3	10.6	0.98	0.71	30.5
Approach		1544	5.9	1544	5.9	0.838	12.9	LOS A	29.9	219.5	0.59	0.55	35.1
East: Heathcote Road (E)													
4	L2	22	57.1	22	57.1	0.934	81.7	LOS F	31.7	239.0	1.00	1.04	25.9
6	R2	735	6.0	735	6.0	0.934	71.3	LOS F	31.7	239.0	1.00	0.99	27.8
Approach		757	7.5	757	7.5	0.934	71.6	LOS F	31.7	239.0	1.00	0.99	27.7
North: Moorebank Avenue (N)													
7	L2	513	7.8	513	7.8	0.300	10.4	LOS A	9.5	71.0	0.52	0.70	51.6
8	T1	540	17.0	540	17.0	0.305	20.5	LOS B	10.1	81.0	0.63	0.54	13.6
Approach		1053	12.5	1053	12.5	0.305	15.6	LOS B	10.1	81.0	0.58	0.62	41.5
All Vehicles		3354	8.3	3354	8.3	0.934	27.0	LOS B	31.7	239.0	0.68	0.67	33.1

PHASING SUMMARY

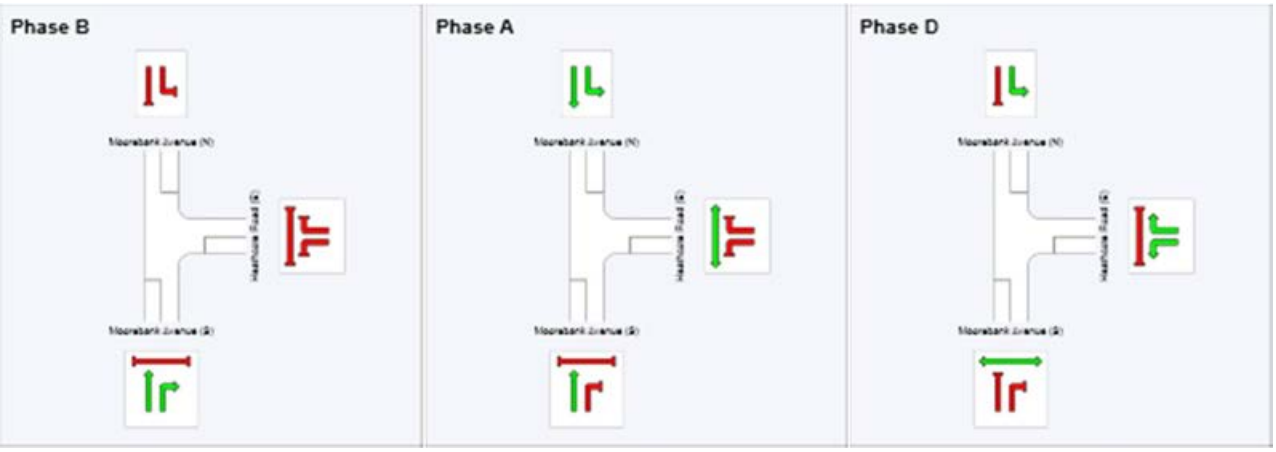
Site: I-07 2014 BASE AM

Network: 2014 BASE AM

Moorebank Avenue / Heathcote Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	15	88
Green Time (sec)	9	67	39
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	73	45
Phase Split	11 %	55 %	34 %



MOVEMENT SUMMARY

Site: I-07 2014 BASE PM

Network: 2014 BASE PM

Moorebank Avenue / Heathcote Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	858	8.3	858	8.3	0.636	13.6	LOS A	17.2	129.0	0.65	0.59	33.7
3	R2	38	8.3	38	8.3	0.313	64.1	LOS E	2.2	16.2	0.99	0.73	32.3
Approach		896	8.3	896	8.3	0.636	15.7	LOS B	17.2	129.0	0.66	0.59	33.4
East: Heathcote Road (E)													
4	L2	64	19.7	64	19.7	0.890	49.7	LOS D	23.7	176.2	0.99	0.94	33.2
6	R2	544	5.0	544	5.0	0.890	45.9	LOS D	23.7	176.2	0.95	0.90	34.3
Approach		608	6.6	608	6.6	0.890	46.3	LOS D	23.7	176.2	0.95	0.90	34.2
North: Moorebank Avenue (N)													
7	L2	760	3.6	760	3.6	0.356	7.5	LOS A	5.0	36.2	0.24	0.61	53.8
8	T1	1235	4.1	1235	4.1	0.628	6.1	LOS A	10.4	75.2	0.32	0.29	29.8
Approach		1995	3.9	1995	3.9	0.628	6.6	LOS A	10.4	75.2	0.29	0.41	48.8
All Vehicles		3499	5.5	3499	5.5	0.890	15.8	LOS B	23.7	176.2	0.50	0.54	40.2

PHASING SUMMARY

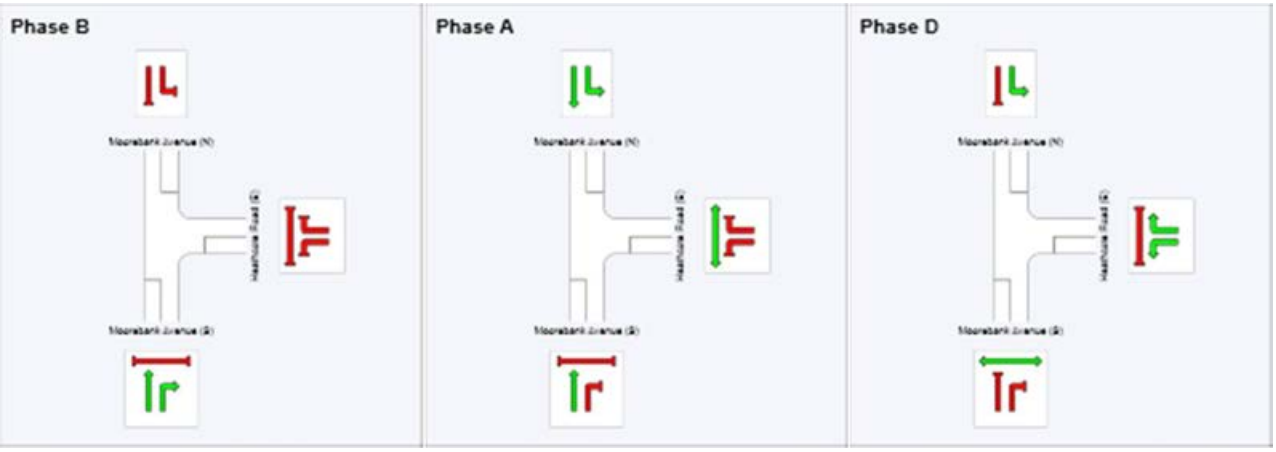
Site: I-07 2014 BASE PM

Network: 2014 BASE PM

Moorebank Avenue / Heathcote Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

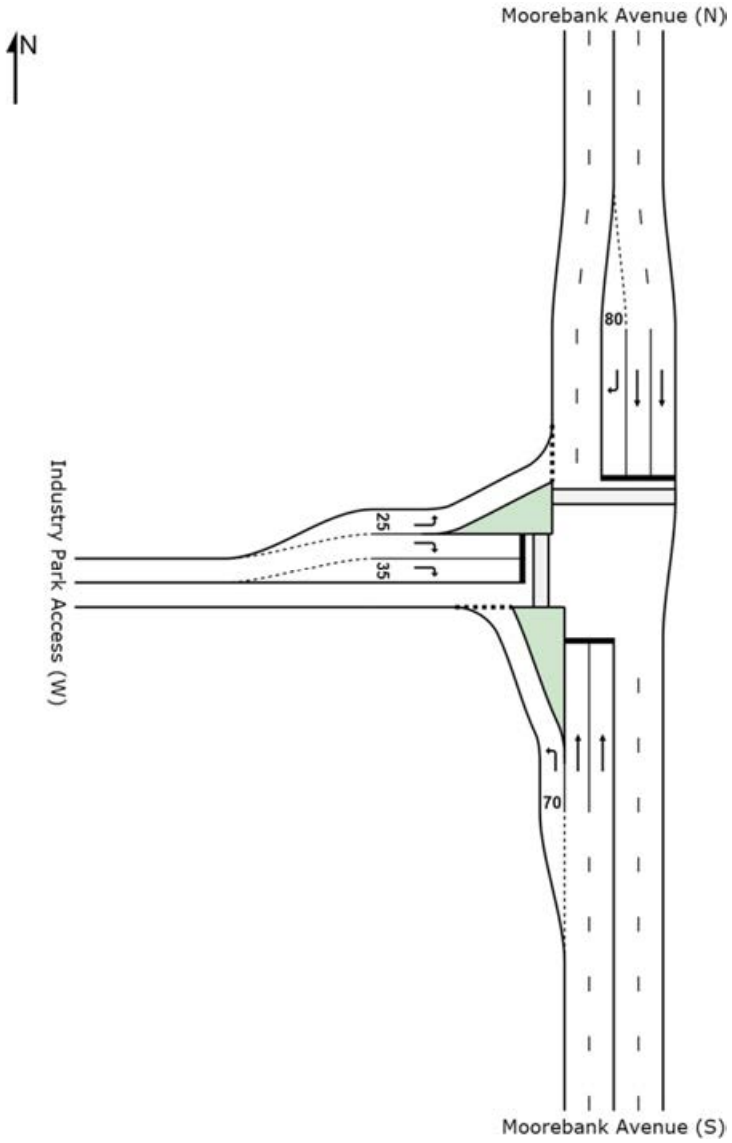
Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	14	80
Green Time (sec)	8	60	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	66	36
Phase Split	12 %	57 %	31 %



I-08 Intersection of Moorebank Avenue and Industry Park Access

INTERSECTION LAYOUT



MOVEMENT SUMMARY

Site: I-08 2014 BASE AM

Network: 2014 BASE AM

Moorebank Avenue / Industry Park Access
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (Network Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	76	1.4	76	1.4	0.063	8.0	LOS A	0.9	6.2	0.24	0.61	41.8
2	T1	1540	4.9	1540	4.9	0.480	2.7	LOS A	12.3	90.0	0.28	0.26	55.1
Approach		1616	4.8	1616	4.8	0.480	2.9	LOS A	12.3	90.0	0.27	0.27	53.9
North: Moorebank Avenue (N)													
8	T1	521	16.2	521	16.2	0.174	1.8	LOS A	2.9	23.1	0.19	0.16	57.7
9	R2	52	38.8	52	38.8	0.466	13.4	LOS A	1.4	13.0	0.41	0.68	33.3
Approach		573	18.2	573	18.2	0.466	2.9	LOS A	2.9	23.1	0.21	0.21	55.2
West: Industry Park Access (W)													
10	L2	20	63.2	20	63.2	0.103	3.5	LOS A	0.2	2.5	0.22	0.34	26.9
12	R2	47	71.1	47	71.1	0.456	72.1	LOS F	2.3	26.0	0.99	0.73	19.3
Approach		67	68.7	67	68.8	0.456	51.7	LOS D	2.3	26.0	0.76	0.61	20.0
All Vehicles		2256	10.1	2256	10.1	0.480	4.4	LOS A	12.3	90.0	0.27	0.27	51.6

PHASING SUMMARY

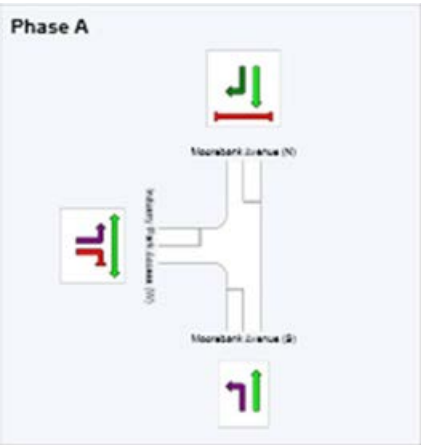
Site: I-08 2014 BASE AM

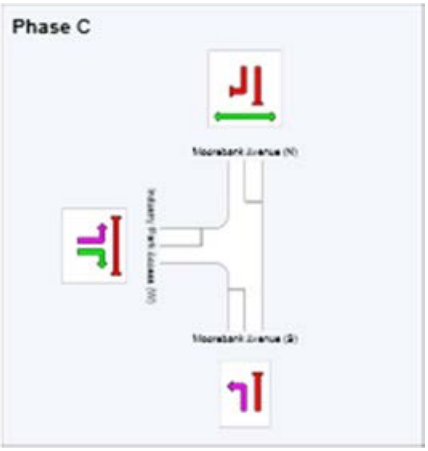
Network: 2014 BASE AM

Moorebank Avenue / Industry Park Access
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (Network Cycle Time)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	119
Green Time (sec)	113	8
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	119	14
Phase Split	89 %	11 %





MOVEMENT SUMMARY

Site: I-08 2014 BASE PM

Network: 2014 BASE PM

Moorebank Avenue / Industry Park Access
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 65 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	7	14.3	7	14.3	0.006	6.5	LOS A	0.0	0.2	0.21	0.57	42.8
2	T1	883	7.6	883	7.6	0.343	4.3	LOS A	5.6	42.0	0.43	0.38	52.4
Approach		891	7.7	891	7.7	0.343	4.3	LOS A	5.6	42.0	0.43	0.38	52.2
North: Moorebank Avenue (N)													
8	T1	1281	3.9	1281	3.9	0.486	5.0	LOS A	9.4	68.0	0.50	0.45	54.1
9	R2	22	61.9	22	61.9	0.089	12.5	LOS A	0.3	3.4	0.44	0.65	34.0
Approach		1303	4.8	1303	4.8	0.486	5.1	LOS A	9.4	68.0	0.50	0.45	53.8
West: Industry Park Access (W)													
10	L2	28	14.8	28	14.8	0.045	3.1	LOS A	0.2	1.4	0.30	0.39	27.2
12	R2	160	9.2	160	9.2	0.373	32.0	LOS C	2.5	18.8	0.96	0.75	28.3
Approach		188	10.1	188	10.1	0.373	27.7	LOS B	2.5	18.8	0.86	0.70	28.2
All Vehicles		2382	6.3	2382	6.3	0.486	6.6	LOS A	9.4	68.0	0.50	0.45	49.8

PHASING SUMMARY

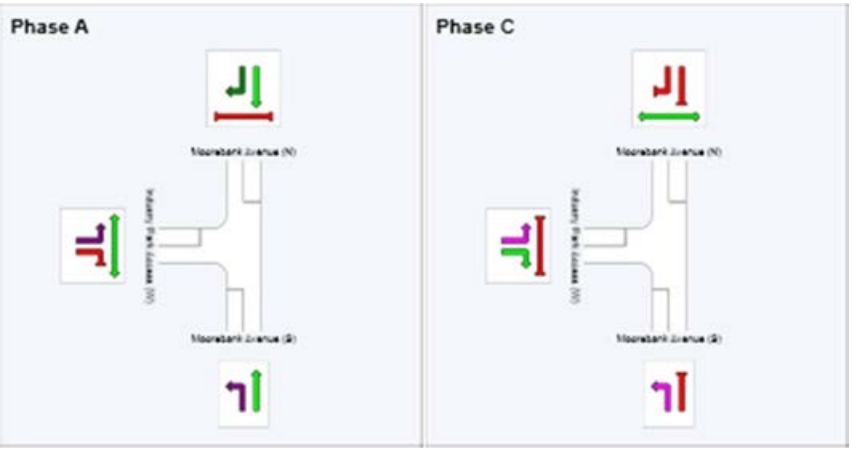
Site: I-08 2014 BASE PM

Network: 2014 BASE PM

Moorebank Avenue / Industry Park Access
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 65 seconds (User-Given Phase Times)

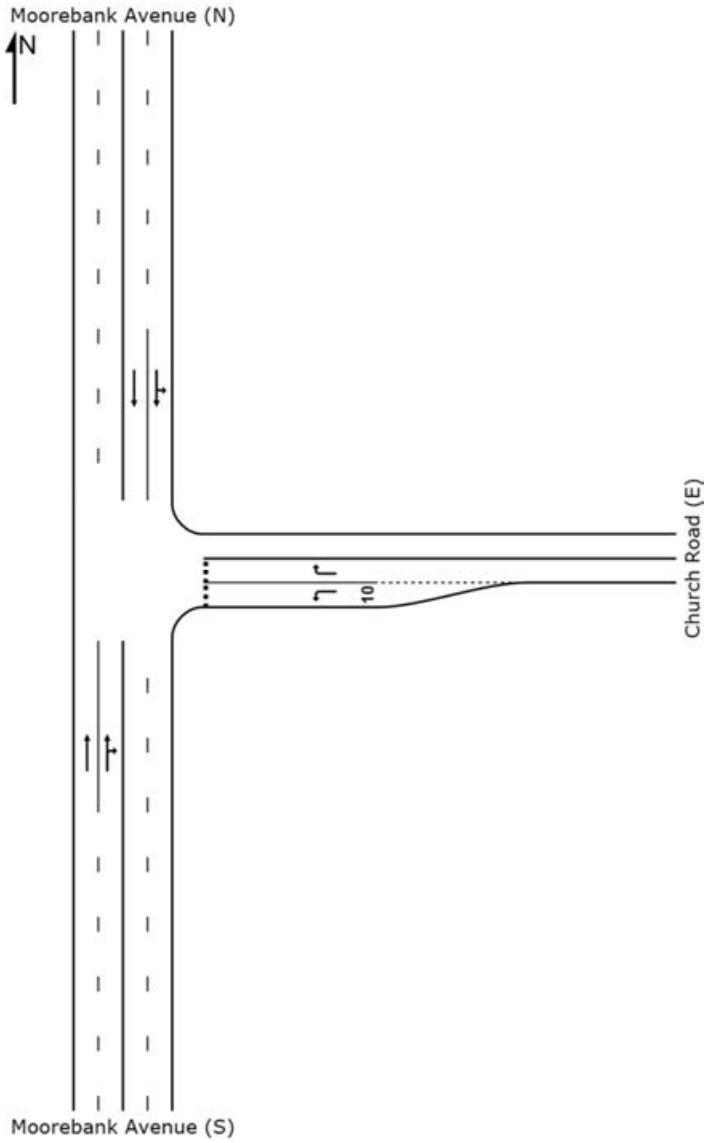
Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	51
Green Time (sec)	45	8
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	51	14
Phase Split	78 %	22 %



I-09 Intersection of Moorebank Avenue and Church Road

INTERSECTION LAYOUT



MOVEMENT SUMMARY

Site: I-09 2014 BASE AM

Moorebank Avenue / Church Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	1704	6.4	0.552	2.3	LOS A	8.1	59.8	0.24	0.10	57.2
3	R2	228	7.8	0.552	14.7	LOS B	8.1	59.8	1.00	0.42	46.1
Approach		1933	6.6	0.690	3.8	NA	8.1	59.8	0.33	0.14	55.6
East: Church Road (E)											
4	L2	171	14.2	0.184	6.3	LOS A	0.7	5.7	0.40	0.62	48.1
6	R2	6	0.0	0.125	67.4	LOS E	0.3	2.2	0.97	0.99	26.6
Approach		177	13.7	0.184	8.5	LOS A	0.7	5.7	0.42	0.63	46.7
North: Moorebank Avenue (N)											
7	L2	27	0.0	0.164	5.6	LOS A	0.0	0.0	0.00	0.06	57.7
8	T1	538	21.1	0.164	0.0	LOS A	0.0	0.0	0.00	0.03	59.6
Approach		565	20.1	0.164	0.3	NA	0.0	0.0	0.00	0.03	59.5
All Vehicles		2675	9.9	0.690	3.4	NA	8.1	59.8	0.27	0.15	55.7

MOVEMENT SUMMARY

Site: I-09 2014 BASE PM

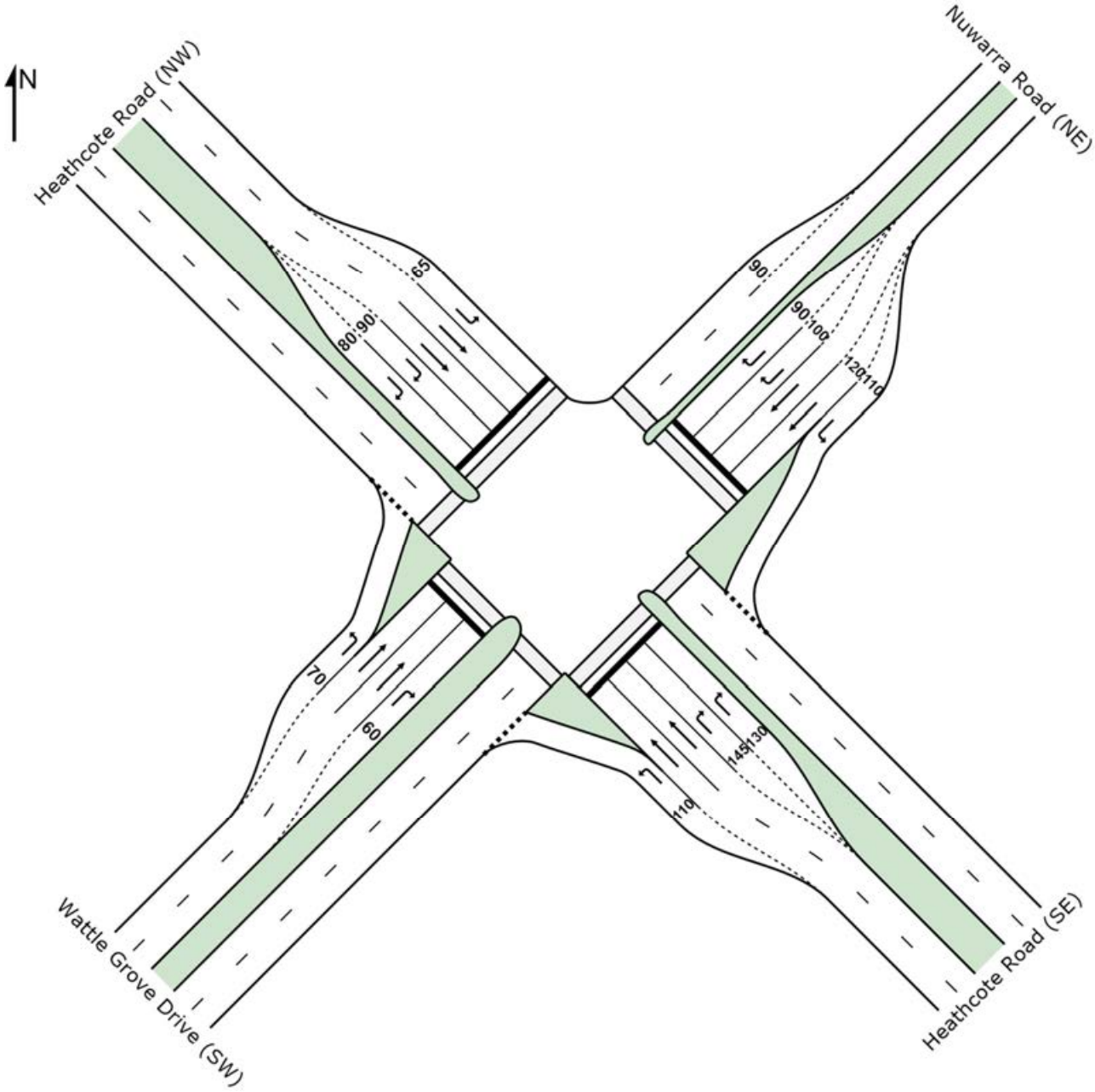
Moorebank Avenue / Church Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	918	11.9	0.394	4.8	LOS A	5.2	40.4	0.22	0.07	55.2
3	R2	84	11.3	0.394	26.8	LOS B	5.2	40.4	1.00	0.33	40.1
Approach		1002	11.9	0.394	6.6	NA	5.2	40.4	0.29	0.10	53.4
East: Church Road (E)											
4	L2	361	4.4	0.913	84.2	LOS F	25.2	183.1	1.00	2.46	23.7
6	R2	1	0.0	0.027	91.7	LOS F	0.1	0.5	0.97	0.99	22.5
Approach		362	4.4	0.913	84.3	LOS F	25.2	183.1	1.00	2.46	23.7
North: Moorebank Avenue (N)											
7	L2	12	9.1	0.754	6.1	LOS A	0.0	0.0	0.00	0.01	57.0
8	T1	1415	4.5	0.754	0.5	LOS A	0.0	0.0	0.00	0.00	59.0
Approach		1426	4.6	0.754	0.5	NA	0.0	0.0	0.00	0.00	58.9
All Vehicles		2791	7.2	0.913	13.6	NA	25.2	183.1	0.23	0.36	47.7

I-10 Intersection of Heathcote Road and Nuwarra Road

INTERSECTION LAYOUT



MOVEMENT SUMMARY

Site: I-10 2014 BASE AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Heathcote Road (SE)											
4	L2	189	1.1	0.127	7.5	LOS A	2.0	14.4	0.23	0.61	49.0
5	T1	1419	5.3	0.832	27.2	LOS B	35.5	259.8	0.79	0.73	41.2
6	R2	486	3.2	0.952	62.8	LOS E	13.4	96.4	1.00	1.04	29.6
Approach		2095	4.4	0.952	33.7	LOS C	35.5	259.8	0.79	0.79	37.9
NorthEast: Nuwarra Road (NE)											
7	L2	333	4.7	0.361	16.6	LOS B	9.9	71.9	0.55	0.73	46.6
8	T1	197	8.6	0.317	52.2	LOS D	5.6	42.0	0.92	0.73	26.5
9	R2	384	5.8	1.041	174.0	LOS F	24.6	180.7	1.00	1.32	15.1
Approach		914	6.0	1.041	90.4	LOS F	24.6	180.7	0.82	0.98	22.9
NorthWest: Heathcote Road (NW)											
10	L2	208	12.1	0.275	21.0	LOS B	6.2	48.0	0.67	0.75	42.9
11	T1	841	11.5	0.740	34.1	LOS C	21.5	165.7	0.80	0.70	38.2
12	R2	195	6.5	0.653	72.0	LOS F	6.4	47.2	1.00	0.81	20.5
Approach		1244	10.8	0.740	37.8	LOS C	21.5	165.7	0.81	0.72	35.6
SouthWest: Wattle Grove Drive (SW)											
1	L2	459	2.1	0.560	32.5	LOS C	20.4	145.6	0.84	0.95	31.2
2	T1	458	4.4	0.625	56.0	LOS D	13.7	99.8	0.98	0.82	25.2
3	R2	212	4.0	1.027	125.4	LOS F	19.8	143.1	1.00	1.24	14.6
Approach		1128	3.4	1.027	59.5	LOS E	20.4	145.6	0.93	0.95	23.7
All Vehicles		5381	5.9	1.041	49.7	LOS D	35.5	259.8	0.83	0.84	30.9

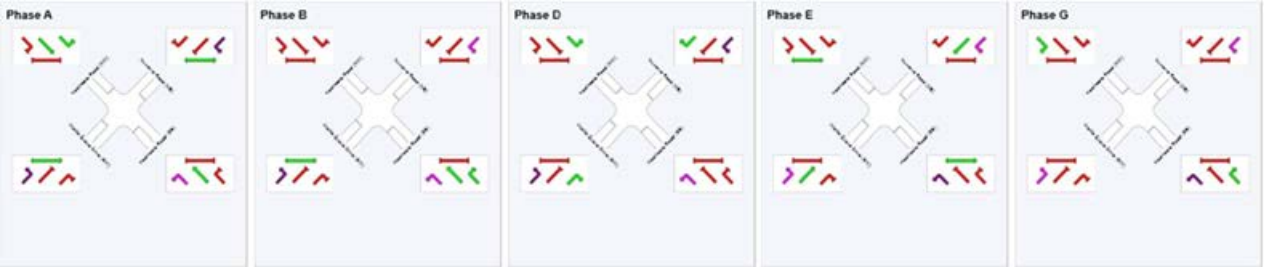
PHASING SUMMARY

Site: I-10 2014 BASE AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	D	E	G
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	54	67	86	114
Green Time (sec)	48	7	13	22	11
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	54	13	19	28	17
Phase Split	41 %	10 %	15 %	21 %	13 %



MOVEMENT SUMMARY

Site: I-10 2014 BASE PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Heathcote Road (SE)											
4	L2	283	2.6	0.232	13.0	LOS A	6.7	48.3	0.41	0.67	44.2
5	T1	1098	5.5	0.754	34.4	LOS C	29.6	216.9	0.83	0.74	38.0
6	R2	395	3.2	0.944	94.6	LOS F	16.3	117.0	1.00	1.05	23.6
Approach		1776	4.5	0.944	44.3	LOS D	29.6	216.9	0.80	0.80	33.6
NorthEast: Nuwarra Road (NE)											
7	L2	513	2.5	0.656	36.4	LOS C	23.1	165.4	0.85	0.97	37.4
8	T1	541	1.2	0.830	64.6	LOS E	19.6	138.7	1.00	0.93	23.3
9	R2	467	6.1	0.936	86.4	LOS F	19.6	144.2	1.00	1.00	24.2
Approach		1521	3.1	0.936	61.8	LOS E	23.1	165.4	0.95	0.97	27.7
NorthWest: Heathcote Road (NW)											
10	L2	209	6.0	0.193	21.9	LOS B	6.9	50.9	0.53	0.72	42.6
11	T1	1317	2.7	0.936	53.1	LOS D	45.6	326.8	0.87	0.93	31.7
12	R2	379	1.9	0.838	76.5	LOS F	14.1	100.0	1.00	0.90	19.7
Approach		1905	2.9	0.936	54.3	LOS D	45.6	326.8	0.86	0.90	30.1
SouthWest: Wattle Grove Drive (SW)											
1	L2	252	1.7	0.291	22.9	LOS B	10.1	72.1	0.66	0.74	35.8
2	T1	278	1.1	0.378	55.7	LOS D	8.4	59.2	0.93	0.76	25.2
3	R2	261	1.2	0.970	99.2	LOS F	22.4	158.5	1.00	1.11	17.3
Approach		791	1.3	0.970	59.6	LOS E	22.4	158.5	0.87	0.87	23.7
All Vehicles		5993	3.2	0.970	54.0	LOS D	45.6	326.8	0.87	0.88	29.6

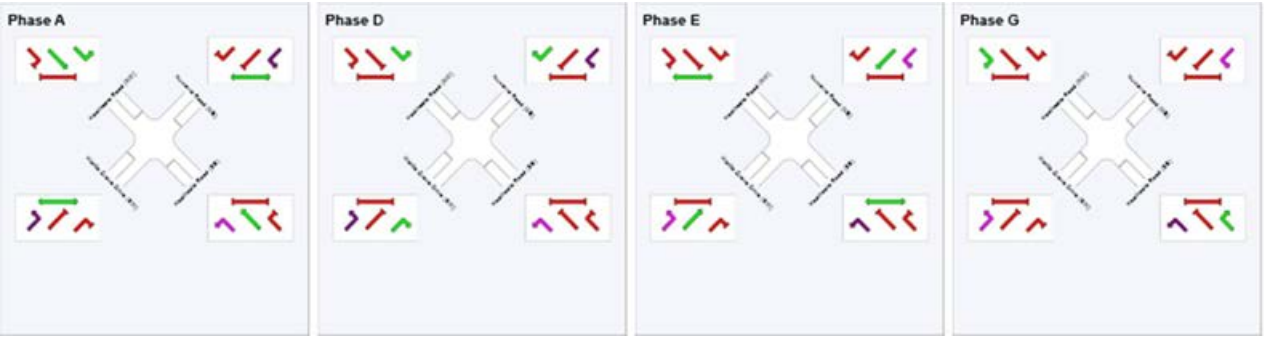
PHASING SUMMARY

Site: I-10 2014 BASE PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

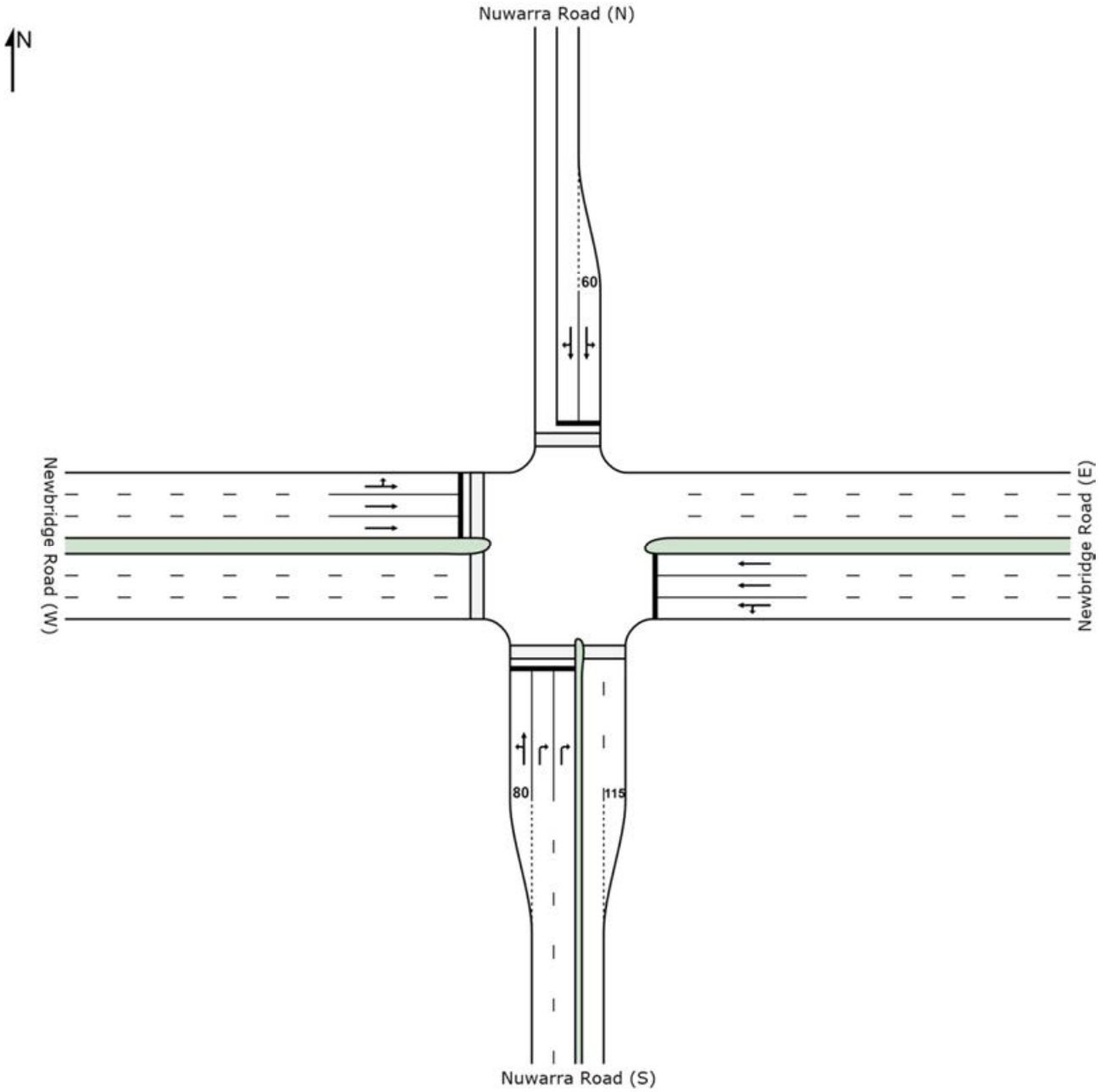
Phase Timing Results

Phase	A	D	E	G
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	61	87	117
Green Time (sec)	55	20	24	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	61	26	30	22
Phase Split	44 %	19 %	22 %	16 %



I-11 Intersection of Newbridge Road and Nuwarra Road

INTERSECTION LAYOUT



MOVEMENT SUMMARY

Site: I-11 2014 BASE AM

Newbridge Road / Nuwarra Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nuwarra Road (S)											
1	L2	27	7.7	0.528	47.1	LOS D	17.8	127.1	0.87	0.80	38.2
2	T1	294	1.8	0.528	44.1	LOS D	17.8	127.1	0.87	0.80	31.7
3	R2	683	6.8	0.991	113.5	LOS F	35.9	265.8	1.00	1.13	22.8
Approach		1004	5.3	0.991	91.4	LOS F	35.9	265.8	0.96	1.02	25.2
East: Newbridge Road (E)											
4	L2	255	17.8	0.438	21.2	LOS B	11.3	90.0	0.62	0.71	48.4
5	T1	871	11.4	0.438	20.2	LOS B	12.9	99.4	0.56	0.51	53.1
Approach		1125	12.8	0.438	20.4	LOS B	12.9	99.4	0.57	0.56	52.0
North: Nuwarra Road (N)											
7	L2	6	0.0	0.761	77.8	LOS F	7.1	50.3	1.00	0.90	26.7
8	T1	122	0.9	0.952	81.6	LOS F	11.4	82.3	1.00	0.96	24.9
9	R2	106	5.0	0.952	96.5	LOS F	11.4	82.3	1.00	1.14	24.6
Approach		235	2.7	0.952	88.2	LOS F	11.4	82.3	1.00	1.04	24.8
West: Newbridge Road (W)											
10	L2	234	2.3	0.836	40.5	LOS C	35.7	263.5	0.88	0.86	36.9
11	T1	1668	9.0	0.890	35.8	LOS C	42.4	319.7	0.89	0.88	45.0
Approach		1902	8.1	0.890	36.4	LOS C	42.4	319.7	0.89	0.87	43.8
All Vehicles		4266	8.4	0.991	48.0	LOS D	42.4	319.7	0.83	0.83	37.7

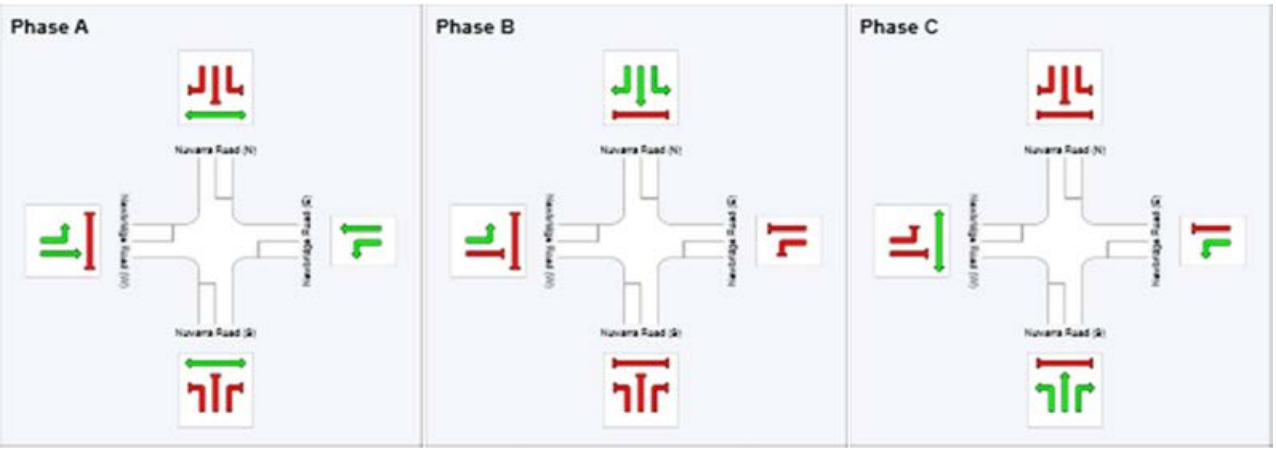
PHASING SUMMARY

Site: I-11 2014 BASE AM

Newbridge Road / Nuwarra Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	72	89
Green Time (sec)	66	11	45
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	72	17	51
Phase Split	51 %	12 %	36 %



MOVEMENT SUMMARY

Site: I-11 2014 BASE PM

Newbridge Road / Nuwarra Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nuwarra Road (S)											
1	L2	48	6.5	0.641	66.9	LOS E	11.9	85.0	0.99	0.82	32.8
2	T1	134	0.8	0.641	62.5	LOS E	11.9	85.0	0.99	0.82	29.8
3	R2	457	6.2	0.856	77.4	LOS F	16.9	124.5	1.00	0.93	28.5
Approach		639	5.1	0.856	73.5	LOS F	16.9	124.5	1.00	0.90	29.1
East: Newbridge Road (E)											
4	L2	655	4.5	0.628	13.6	LOS A	16.0	116.6	0.37	0.68	53.1
5	T1	1838	5.8	0.628	12.2	LOS A	24.2	178.0	0.47	0.47	58.6
Approach		2493	5.4	0.628	12.6	LOS A	24.2	178.0	0.44	0.52	57.2
North: Nuwarra Road (N)											
7	L2	15	0.0	0.766	70.4	LOS E	14.6	102.9	1.00	0.90	30.2
8	T1	258	0.8	0.957	72.8	LOS F	20.3	143.2	1.00	0.95	27.9
9	R2	178	1.2	0.957	96.3	LOS F	20.3	143.2	1.00	1.10	26.3
Approach		451	0.9	0.957	82.0	LOS F	20.3	143.2	1.00	1.01	27.2
West: Newbridge Road (W)											
10	L2	82	0.0	0.395	18.2	LOS B	10.5	77.2	0.40	0.43	50.2
11	T1	1271	7.8	0.449	11.2	LOS A	11.3	84.4	0.38	0.36	59.5
Approach		1353	7.3	0.449	11.6	LOS A	11.3	84.4	0.38	0.36	58.8
All Vehicles		4935	5.5	0.957	26.5	LOS B	24.2	178.0	0.55	0.57	47.3

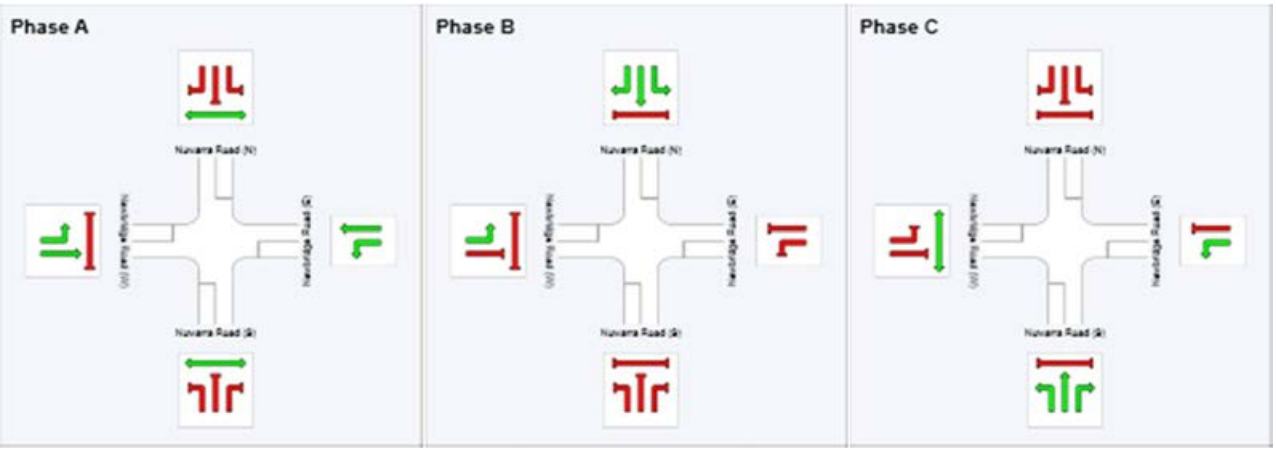
PHASING SUMMARY

Site: I-11 2014 BASE PM

Newbridge Road / Nuwarra Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

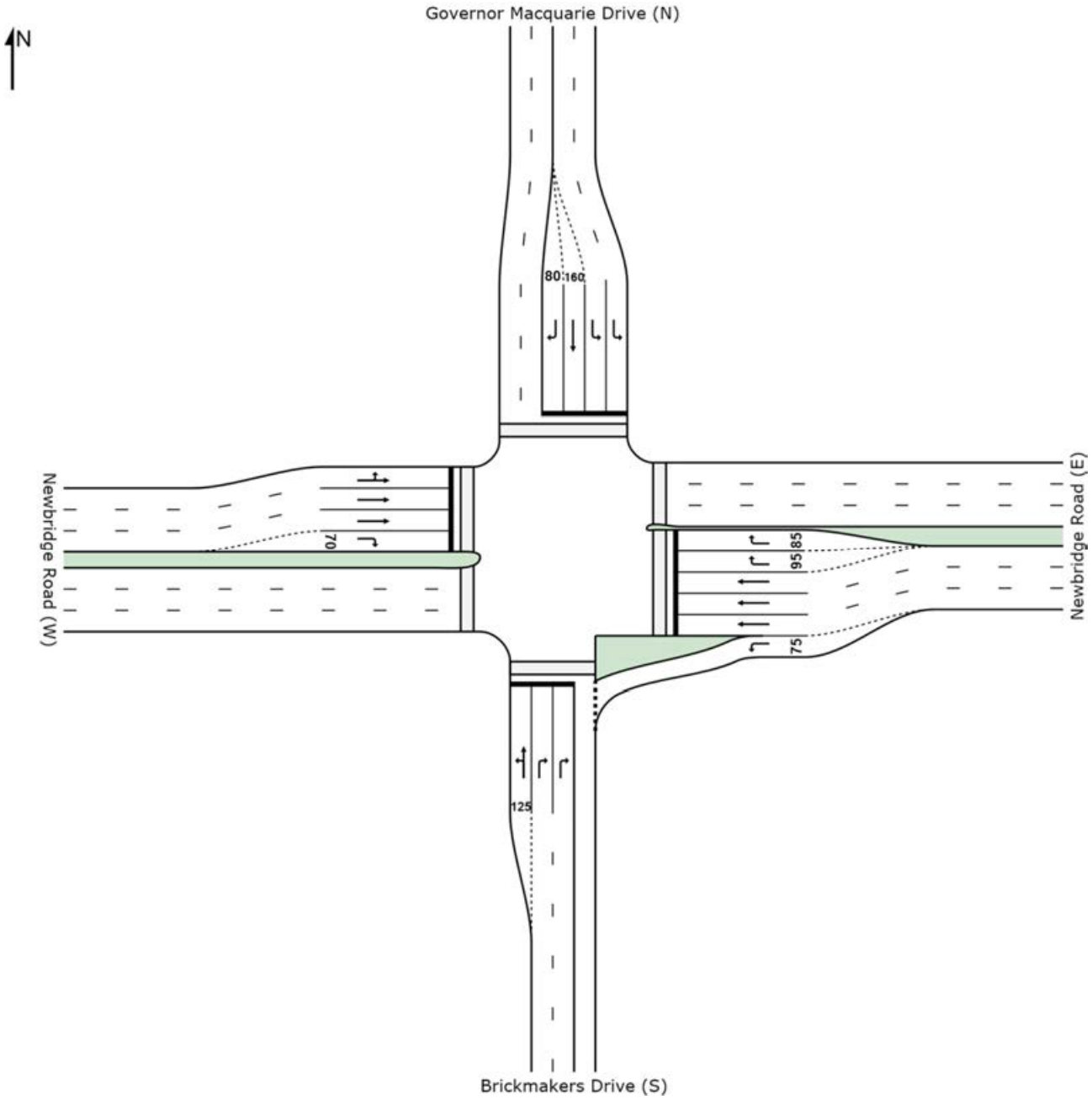
Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	87	113
Green Time (sec)	81	20	21
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	87	26	27
Phase Split	62 %	19 %	19 %



I-12 Intersection of Newbridge Road and Governor Macquarie Drive

INTERSECTION LAYOUT



MOVEMENT SUMMARY

Site: I-12 2014 BASE AM

Newbridge Road / Governor Macquarie Drive
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	9	0.0	0.763	72.0	LOS F	13.0	91.7	1.00	0.89	26.5
2	T1	177	1.2	0.763	67.7	LOS E	13.0	91.7	1.00	0.89	26.2
3	R2	571	1.1	0.982	102.4	LOS F	24.7	174.7	1.00	1.12	26.7
Approach		757	1.1	0.982	93.9	LOS F	24.7	174.7	1.00	1.06	26.6
East: Newbridge Road (E)											
4	L2	183	2.9	0.132	7.5	LOS A	1.4	9.9	0.16	0.63	58.3
5	T1	1001	10.9	0.292	12.4	LOS A	10.1	77.5	0.49	0.43	60.8
6	R2	585	10.3	0.809	72.0	LOS F	20.3	154.6	1.00	0.88	36.0
Approach		1769	9.9	0.809	31.6	LOS C	20.3	154.6	0.62	0.60	49.2
North: Governor Macquarie Drive (N)											
7	L2	614	8.9	0.586	50.4	LOS D	17.8	133.9	0.91	0.83	40.8
8	T1	116	2.7	0.470	63.5	LOS E	7.5	53.6	0.97	0.78	27.1
9	R2	141	35.1	0.831	80.5	LOS F	10.5	95.4	1.00	0.93	28.2
Approach		871	12.3	0.831	57.0	LOS E	17.8	133.9	0.93	0.84	37.0
West: Newbridge Road (W)											
10	L2	115	31.2	0.908	51.2	LOS D	52.4	399.7	0.97	0.96	37.4
11	T1	2239	6.8	0.908	43.5	LOS D	53.7	397.4	0.96	0.95	45.8
12	R2	4	25.0	0.022	32.1	LOS C	0.2	1.4	0.60	0.66	38.2
Approach		2358	8.0	0.908	43.8	LOS D	53.7	399.7	0.96	0.95	45.4
All Vehicles		5755	8.3	0.982	48.6	LOS D	53.7	399.7	0.86	0.84	41.9

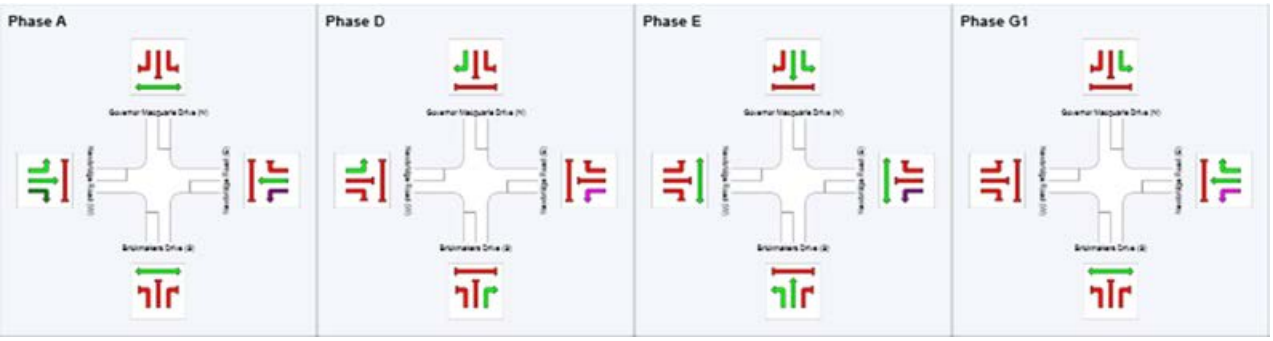
PHASING SUMMARY

Site: I-12 2014 BASE AM

Newbridge Road / Governor Macquarie Drive
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	66	88	112
Green Time (sec)	60	16	18	22
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	66	22	24	28
Phase Split	47 %	16 %	17 %	20 %



MOVEMENT SUMMARY

Site: I-12 2014 BASE PM

Newbridge Road / Governor Macquarie Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	8	0.0	0.450	68.6	LOS E	5.9	43.2	0.98	0.77	27.2
2	T1	82	5.1	0.450	64.5	LOS E	5.9	43.2	0.98	0.77	26.9
3	R2	219	1.0	0.519	69.0	LOS E	7.2	51.0	0.99	0.79	32.8
Approach		309	2.0	0.519	67.8	LOS E	7.2	51.0	0.98	0.78	31.3
East: Newbridge Road (E)											
4	L2	578	1.5	0.420	9.2	LOS A	6.7	47.8	0.27	0.68	57.2
5	T1	2273	4.4	0.693	15.2	LOS B	36.4	264.2	0.64	0.59	59.1
6	R2	641	11.2	1.023	133.8	LOS F	32.6	249.9	1.00	1.12	26.0
Approach		3492	5.2	1.023	36.0	LOS C	36.4	264.2	0.65	0.70	47.4
North: Governor Macquarie Drive (N)											
7	L2	473	3.6	0.371	47.4	LOS D	12.7	91.4	0.84	0.80	41.9
8	T1	265	0.8	0.851	73.0	LOS F	19.0	133.8	1.00	0.94	25.2
9	R2	203	19.2	0.963	101.0	LOS F	17.4	141.9	1.00	1.06	25.1
Approach		941	6.2	0.963	66.2	LOS E	19.0	141.9	0.92	0.89	33.2
West: Newbridge Road (W)											
10	L2	151	16.8	0.628	35.6	LOS C	26.2	197.3	0.74	0.71	43.1
11	T1	1579	6.1	0.628	28.0	LOS B	26.2	197.3	0.72	0.65	52.1
12	R2	3	0.0	0.043	39.7	LOS C	0.1	1.0	0.67	0.68	35.1
Approach		1733	7.0	0.628	28.7	LOS C	26.2	197.3	0.72	0.66	51.3
All Vehicles		6475	5.7	1.023	39.9	LOS C	36.4	264.2	0.72	0.72	45.0

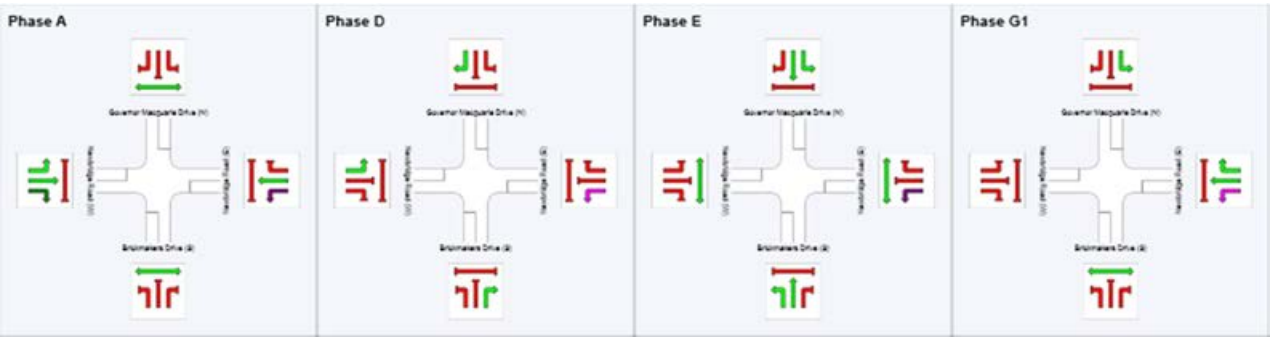
PHASING SUMMARY

Site: I-12 2014 BASE PM

Newbridge Road / Governor Macquarie Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

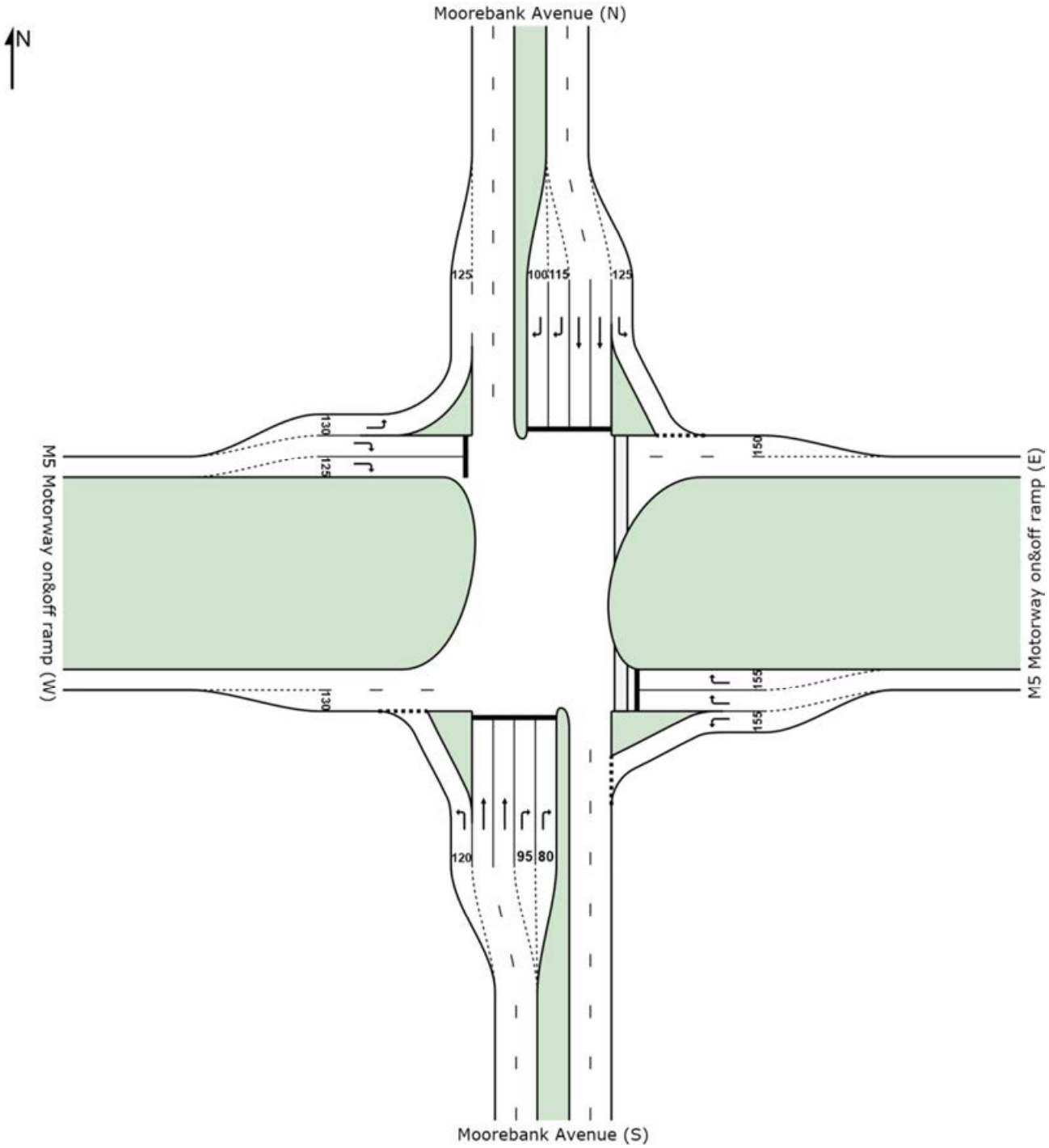
Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	67	89	110
Green Time (sec)	61	16	15	24
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	67	22	21	30
Phase Split	48 %	16 %	15 %	21 %



I-13 Intersection of Moorebank Avenue and M5 Motorway

INTERSECTION LAYOUT



MOVEMENT SUMMARY

Site: I-13 2014 BASE AM

Moorebank Avenue / the M5 Motorway
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	255	11.2	0.217	8.8	LOS A	2.7	20.7	0.40	0.66	50.6
2	T1	576	4.2	0.660	29.2	LOS C	9.9	71.5	0.96	0.83	39.3
3	R2	257	2.9	0.358	32.7	LOS C	4.4	31.9	0.89	0.77	37.0
Approach		1087	5.5	0.660	25.2	LOS B	9.9	71.5	0.81	0.77	40.8
East: M5 Motorway on&off ramp (E)											
4	L2	219	7.2	0.209	7.6	LOS A	1.5	11.4	0.35	0.65	51.8
6	R2	224	6.1	0.233	28.7	LOS C	3.2	23.7	0.82	0.75	40.5
Approach		443	6.7	0.233	18.3	LOS B	3.2	23.7	0.59	0.70	45.1
North: Moorebank Avenue (N)											
7	L2	43	48.8	0.042	7.5	LOS A	0.3	2.5	0.26	0.59	51.4
8	T1	143	12.5	0.173	25.1	LOS B	2.1	16.4	0.84	0.65	41.2
9	R2	409	26.2	0.699	36.2	LOS C	8.5	73.1	0.96	0.84	36.9
Approach		596	24.6	0.699	31.5	LOS C	8.5	73.1	0.88	0.78	38.6
West: M5 Motorway on&off ramp (W)											
10	L2	1462	8.2	0.833	6.1	LOS A	0.0	0.0	0.00	0.52	54.1
12	R2	324	4.2	0.333	29.5	LOS C	4.8	34.8	0.85	0.77	38.8
Approach		1786	7.5	0.833	10.3	LOS A	4.8	34.8	0.15	0.57	50.8
All Vehicles		3913	9.4	0.833	18.6	LOS B	9.9	73.1	0.50	0.67	45.1

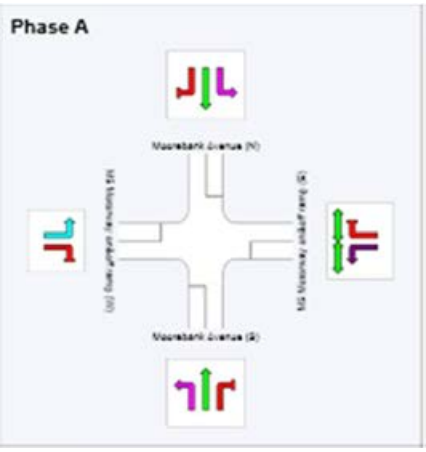
PHASING SUMMARY

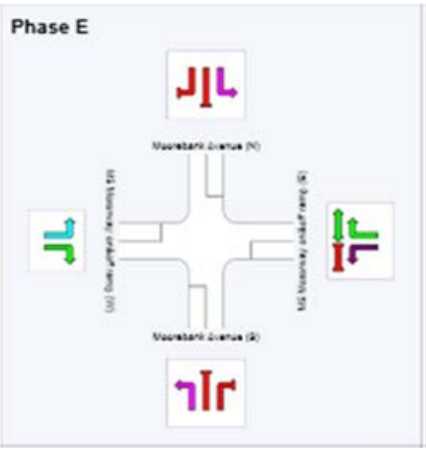
Site: I-13 2014 BASE AM

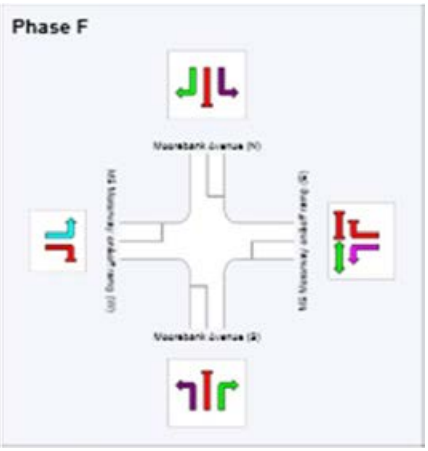
Moorebank Avenue / the M5 Motorway
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	F
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	24	51
Green Time (sec)	17	20	16
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	24	27	23
Phase Split	32 %	36 %	31 %







MOVEMENT SUMMARY

Site: I-13 2014 BASE PM

Moorebank Avenue / the M5 Motorway
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	271	3.1	0.320	16.5	LOS B	6.2	44.6	0.62	0.74	45.6
2	T1	151	7.7	0.381	44.1	LOS D	3.4	25.1	0.97	0.75	33.3
3	R2	234	2.3	0.194	27.6	LOS B	4.0	28.7	0.72	0.74	39.3
Approach		655	3.9	0.381	26.8	LOS B	6.2	44.6	0.74	0.74	39.9
East: M5 Motorway on&off ramp (E)											
4	L2	332	2.9	0.335	9.9	LOS A	4.6	32.9	0.47	0.69	50.1
6	R2	73	21.7	0.133	42.3	LOS C	1.4	12.0	0.88	0.72	35.0
Approach		404	6.3	0.335	15.8	LOS B	4.6	32.9	0.54	0.70	46.2
North: Moorebank Avenue (N)											
7	L2	109	6.7	0.084	6.7	LOS A	0.6	4.8	0.22	0.60	53.1
8	T1	609	3.6	0.654	35.0	LOS C	12.8	92.3	0.96	0.81	36.7
9	R2	1321	7.4	0.880	38.4	LOS C	28.4	211.5	0.99	1.03	36.3
Approach		2040	6.2	0.880	35.7	LOS C	28.4	211.5	0.94	0.94	37.1
West: M5 Motorway on&off ramp (W)											
10	L2	546	15.2	0.326	5.8	LOS A	0.0	0.0	0.00	0.52	54.3
12	R2	221	3.8	0.359	43.8	LOS D	4.6	33.3	0.93	0.78	33.2
Approach		767	11.9	0.359	16.7	LOS B	4.6	33.3	0.27	0.59	46.5
All Vehicles		3866	7.0	0.880	28.3	LOS B	28.4	211.5	0.73	0.81	40.0

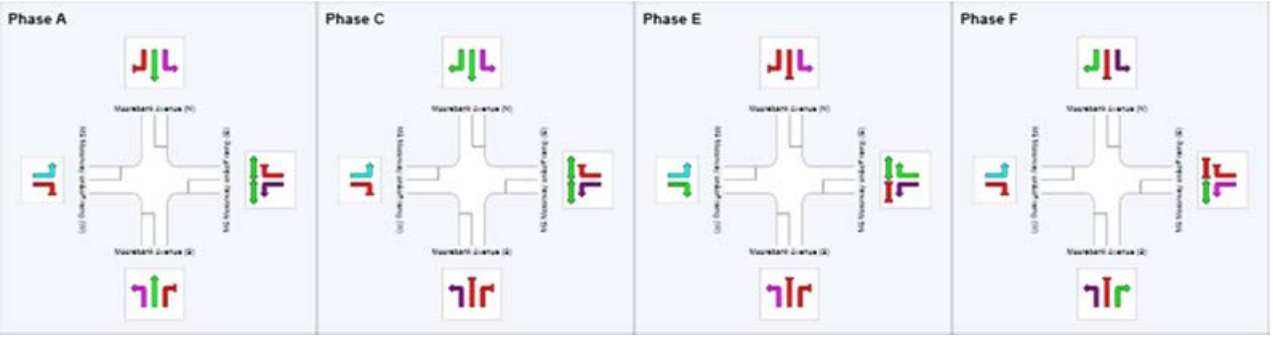
PHASING SUMMARY

Site: I-13 2014 BASE PM

Moorebank Avenue / the M5 Motorway
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

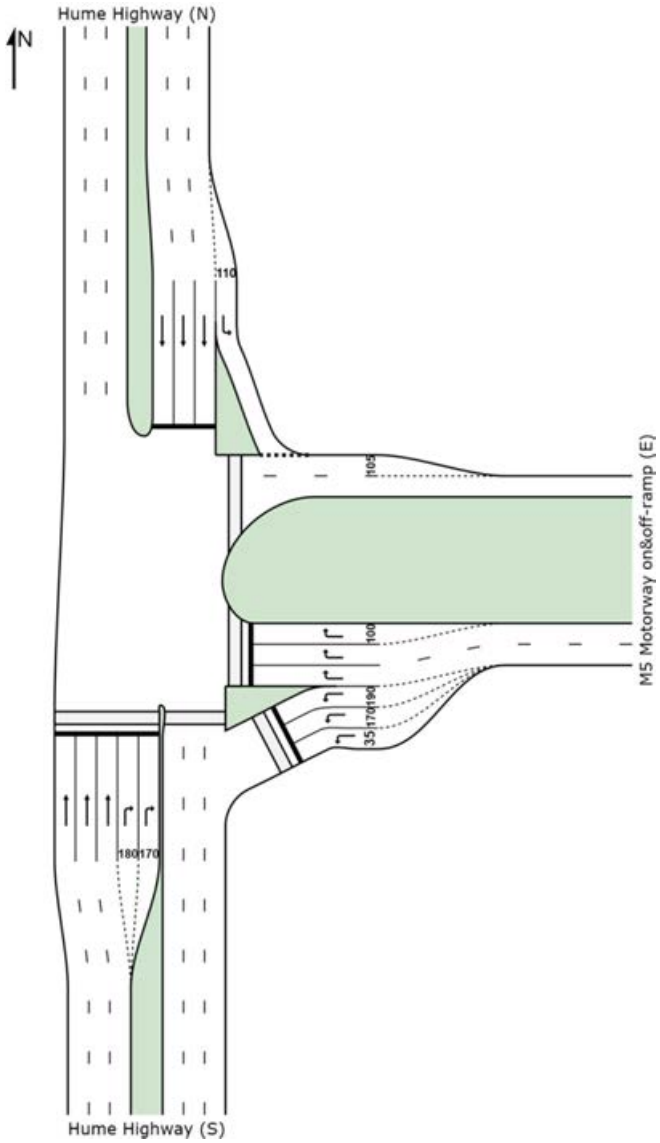
Phase Timing Results

Phase	A	C	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	17	30	53
Green Time (sec)	10	6	16	34
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	17	13	23	41
Phase Split	18 %	14 %	24 %	44 %



I-14 Intersection of M5 Motorway and Hume Highway

INTERSECTION LAYOUT



MOVEMENT SUMMARY

Site: I-14 2014 BASE AM

M5 Motorway / Hume Highway
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
2	T1	3674	4.5	0.886	2.0	LOS A	18.4	133.7	0.22	0.21	58.4
3	R2	553	4.2	0.761	37.2	LOS C	13.2	96.0	0.95	0.83	39.8
Approach		4226	4.5	0.886	6.6	LOS A	18.4	133.7	0.31	0.29	55.0
East: M5 Motorway on&off-ramp (E)											
4	L2	288	6.6	0.115	30.3	LOS C	4.1	30.0	0.59	0.70	42.0
6	R2	1001	3.9	1.030	144.1	LOS F	38.2	276.2	1.00	1.13	15.2
Approach		1289	4.5	1.030	118.7	LOS F	38.2	276.2	0.91	1.04	18.8
North: Hume Highway (N)											
7	L2	604	5.9	0.447	10.1	LOS A	12.9	94.9	0.37	0.68	48.9
8	T1	1140	7.0	0.463	28.1	LOS B	16.4	121.8	0.61	0.53	43.5
Approach		1744	6.6	0.463	21.8	LOS B	16.4	121.8	0.53	0.58	44.8
All Vehicles		7260	5.0	1.030	30.2	LOS C	38.2	276.2	0.47	0.49	41.5

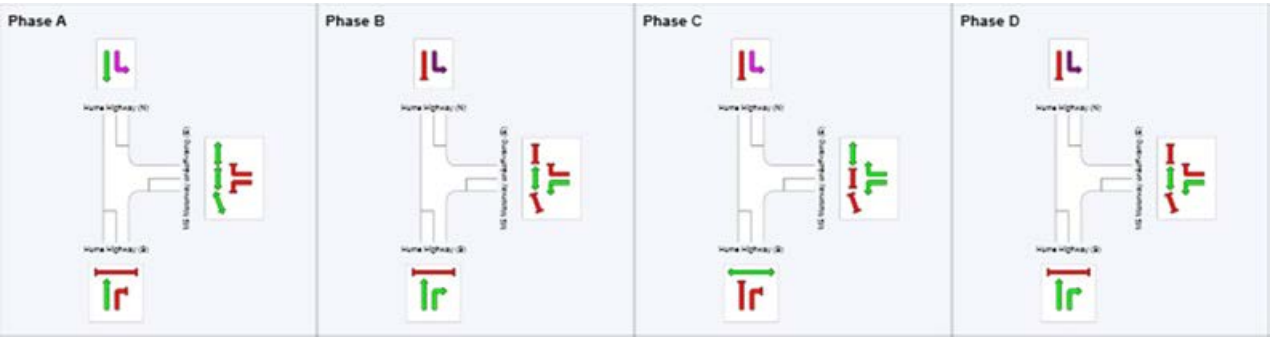
PHASING SUMMARY

Site: I-14 2014 BASE AM

M5 Motorway / Hume Highway
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	No	No	No	Yes
Phase Change Time (sec)	20	97	123	0
Green Time (sec)	70	19	29	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	77	26	36	20
Phase Split	48 %	16 %	23 %	13 %



MOVEMENT SUMMARY

Site: I-14 2014 BASE PM

M5 Motorway / Hume Highway
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
2	T1	2325	3.8	0.568	2.0	LOS A	5.7	40.9	0.11	0.10	58.4
3	R2	349	1.8	0.891	82.9	LOS F	14.3	101.8	1.00	0.91	28.2
Approach		2675	3.5	0.891	12.6	LOS A	14.3	101.8	0.22	0.20	51.2
East: M5 Motorway on&off-ramp (E)											
4	L2	1167	3.6	0.837	59.8	LOS E	38.9	280.8	0.91	0.89	32.8
6	R2	936	3.6	0.884	84.4	LOS F	26.3	189.9	1.00	0.95	21.9
Approach		2103	3.6	0.884	70.7	LOS F	38.9	280.8	0.95	0.92	28.0
North: Hume Highway (N)											
7	L2	743	2.1	0.518	8.8	LOS A	14.8	105.7	0.36	0.68	50.0
8	T1	2613	2.7	0.803	18.8	LOS B	41.2	294.9	0.68	0.63	47.8
Approach		3356	2.6	0.803	16.6	LOS B	41.2	294.9	0.61	0.64	48.2
All Vehicles		8134	3.1	0.891	29.3	LOS C	41.2	294.9	0.57	0.57	41.9

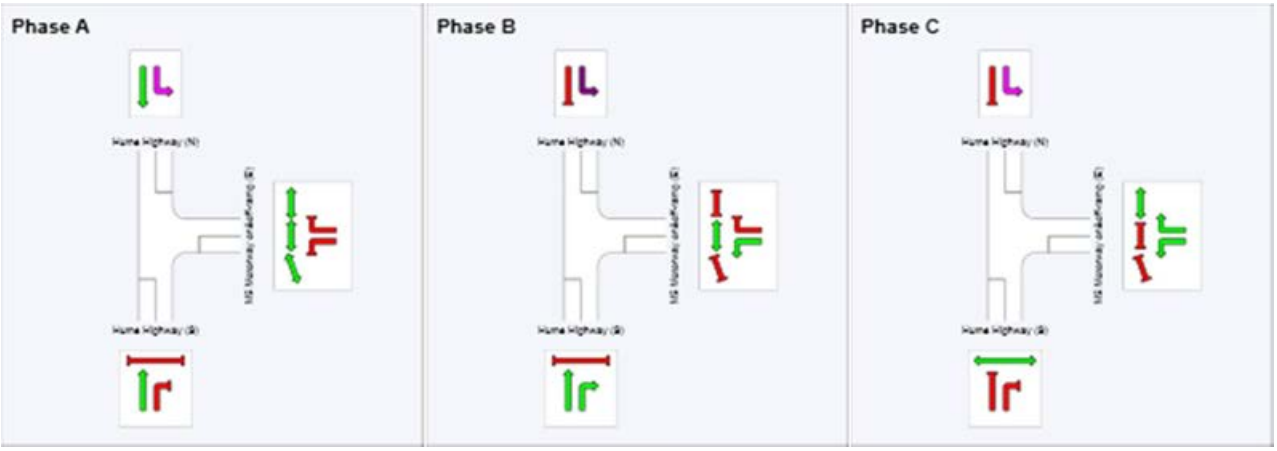
PHASING SUMMARY

Site: I-14 2014 BASE PM

M5 Motorway / Hume Highway
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

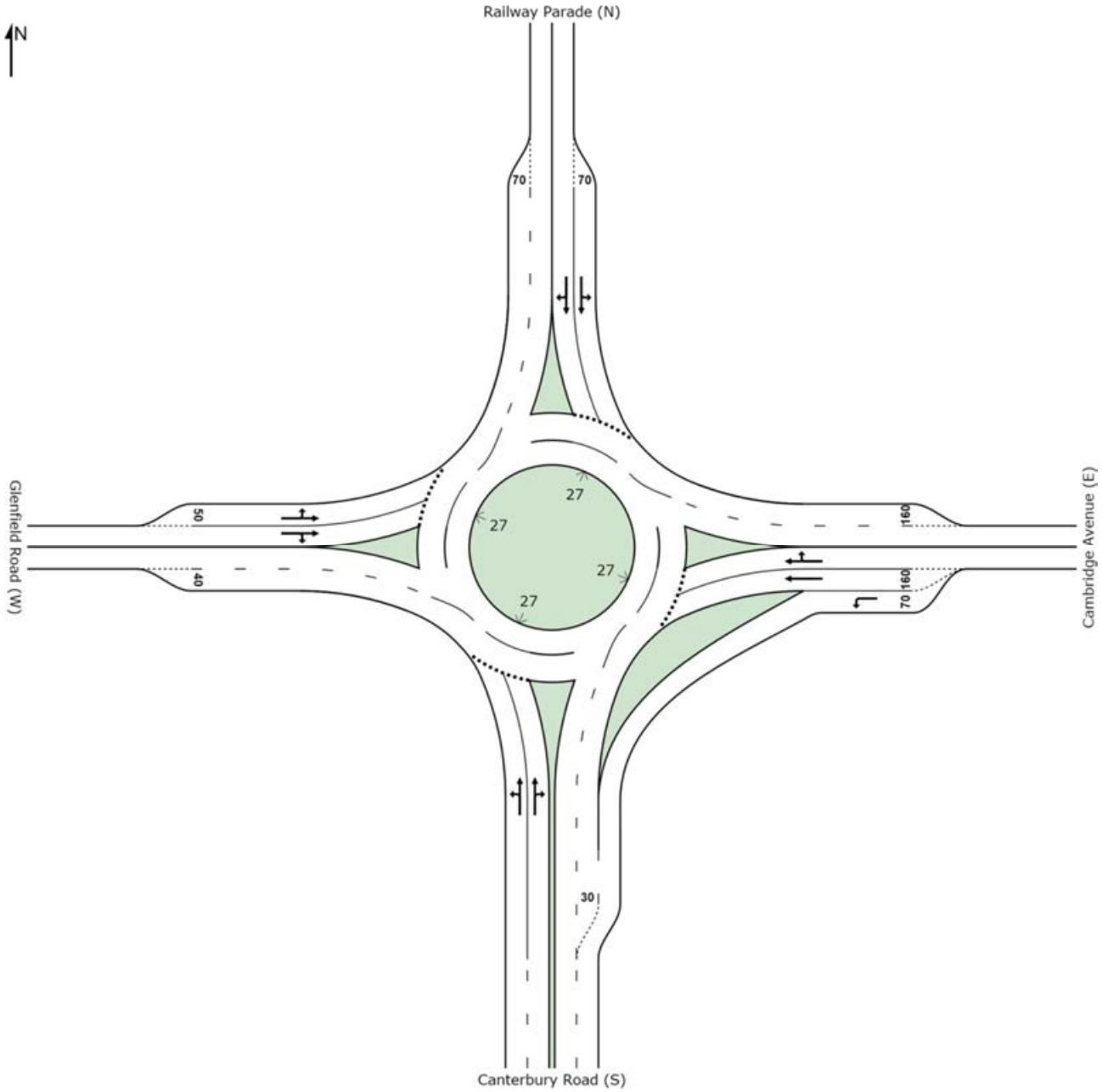
Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	97	121
Green Time (sec)	90	17	31
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	97	24	38
Phase Split	61 %	15 %	24 %



I-15 Intersection of Cambridge Avenue and Canterbury Road

INTERSECTION LAYOUT



MOVEMENT SUMMARY

Site: I-15 2014 BASE AM

Canterbury Road / Cambridge Avenue / Glenfield Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Canterbury Road (S)											
1	L2	357	3.5	0.369	5.3	LOS A	2.0	14.4	0.48	0.60	53.4
2	T1	6	0.0	0.617	5.1	LOS A	4.8	34.0	0.58	0.70	51.8
3	R2	788	2.1	0.617	10.5	LOS A	4.8	34.0	0.58	0.70	51.9
Approach		1152	2.6	0.617	8.8	LOS A	4.8	34.0	0.55	0.67	52.3
East: Cambridge Avenue (E)											
4	L2	235	3.1	0.125	3.5	LOS A	0.0	0.0	0.00	0.43	56.5
5	T1	63	8.3	0.063	5.0	LOS A	0.3	2.5	0.47	0.55	53.6
6	R2	42	10.0	0.063	10.3	LOS A	0.3	2.5	0.47	0.58	53.8
Approach		340	5.0	0.125	4.6	LOS A	0.3	2.5	0.15	0.47	55.6
North: Railway Parade (N)											
7	L2	239	3.1	0.364	10.2	LOS A	2.4	16.9	0.86	0.93	51.0
8	T1	3	33.3	0.290	11.5	LOS A	1.6	11.8	0.82	0.93	48.2
9	R2	136	8.5	0.290	16.8	LOS B	1.6	11.8	0.82	0.93	47.2
Approach		378	5.3	0.364	12.6	LOS A	2.4	16.9	0.84	0.93	49.6
West: Glenfield Road (W)											
10	L2	281	5.2	0.510	10.9	LOS A	4.3	31.8	0.90	0.98	49.3
11	T1	141	6.7	0.510	11.2	LOS A	4.3	31.8	0.90	1.00	49.4
12	R2	254	5.8	0.510	17.4	LOS B	4.0	29.7	0.89	1.03	47.4
Approach		676	5.8	0.510	13.4	LOS A	4.3	31.8	0.89	1.00	48.6
All Vehicles		2545	4.1	0.617	10.0	LOS A	4.8	34.0	0.63	0.77	51.4

MOVEMENT SUMMARY

Site: I-15 2014 BASE PM

Canterbury Road / Cambridge Avenue / Glenfield Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Canterbury Road (S)											
1	L2	237	2.2	0.264	6.2	LOS A	1.3	9.2	0.59	0.72	53.0
2	T1	5	0.0	0.240	5.7	LOS A	1.2	8.5	0.57	0.77	51.9
3	R2	240	1.3	0.240	11.1	LOS A	1.2	8.5	0.57	0.77	52.0
Approach		482	1.7	0.264	8.6	LOS A	1.3	9.2	0.58	0.75	52.4
East: Cambridge Avenue (E)											
4	L2	908	2.3	0.480	3.5	LOS A	0.0	0.0	0.00	0.43	56.4
5	T1	201	7.9	0.280	5.8	LOS A	1.8	12.7	0.58	0.64	52.8
6	R2	252	0.8	0.280	10.9	LOS A	1.8	12.7	0.60	0.68	53.0
Approach		1361	2.9	0.480	5.2	LOS A	1.8	12.7	0.20	0.51	55.2
North: Railway Parade (N)											
7	L2	81	1.3	0.103	6.5	LOS A	0.5	3.3	0.57	0.68	53.8
8	T1	1	0.0	0.161	6.0	LOS A	0.8	6.0	0.58	0.76	51.8
9	R2	153	8.3	0.161	11.4	LOS A	0.8	6.0	0.58	0.76	50.7
Approach		235	5.8	0.161	9.7	LOS A	0.8	6.0	0.57	0.73	51.8
West: Glenfield Road (W)											
10	L2	205	4.6	0.274	6.4	LOS A	1.4	10.5	0.58	0.68	52.8
11	T1	37	0.0	0.274	6.3	LOS A	1.4	10.5	0.58	0.68	54.9
12	R2	359	3.8	0.342	11.4	LOS A	2.0	14.5	0.60	0.76	50.7
Approach		601	3.9	0.342	9.4	LOS A	2.0	14.5	0.59	0.73	51.6
All Vehicles		2679	3.1	0.480	7.2	LOS A	2.0	14.5	0.39	0.62	53.6

Appendix D

2015 SIDRA results with and without Moorebank IMT

I-01 Intersection of the Hume Highway and Orange Grove Road

MOVEMENT SUMMARY

Site: I-01 2015 BASE AM

Hume Highway / Orange Grove Road
2015 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
NorthEast: Hume Highway (NE)											
25	T1	882	11.3	0.627	22.2	LOS B	17.4	133.4	0.81	0.73	37.1
26	R2	355	10.1	0.879	84.3	LOS F	14.9	113.4	1.00	0.90	24.2
Approach		1237	11.0	0.879	40.0	LOS C	17.4	133.4	0.86	0.78	30.8
NorthWest: Orange Grove Road (NW)											
27	L2	529	6.6	0.618	9.8	LOS A	8.6	63.4	0.25	0.64	50.9
29	R2	1175	6.6	0.866	67.8	LOS E	30.3	224.0	0.99	0.89	24.5
Approach		1704	6.6	0.866	49.8	LOS D	30.3	224.0	0.76	0.81	29.8
SouthWest: Hume Highway (SW)											
30	L2	1123	6.5	0.392	10.9	LOS A	11.3	83.5	0.31	0.69	52.8
31	T1	1945	4.9	0.698	19.6	LOS B	29.2	212.7	0.60	0.54	42.8
Approach		3068	5.5	0.698	16.4	LOS B	29.2	212.7	0.49	0.59	46.6
All Vehicles		6009	6.9	0.879	30.7	LOS C	30.3	224.0	0.64	0.70	36.2

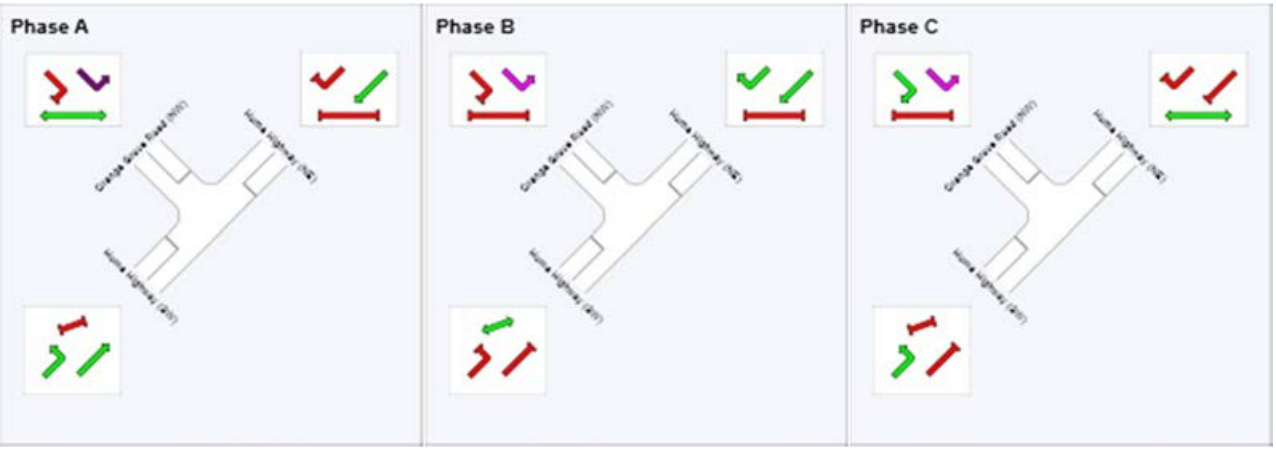
PHASING SUMMARY

Site: I-01 2015 BASE AM

Hume Highway / Orange Grove Road
2015 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	86	109
Green Time (sec)	79	16	35
Yellow Time (sec)	5	4	5
All-Red Time (sec)	2	2	2
Phase Time (sec)	86	22	42
Phase Split	57 %	15 %	28 %



MOVEMENT SUMMARY

Site: I-01 2015 BASE PM

Hume Highway / Orange Grove Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	1616	3.3	0.833	23.6	LOS B	33.3	239.3	0.79	0.76	36.2
26	R2	758	2.8	0.867	44.9	LOS D	17.8	127.5	1.00	0.93	34.1
Approach		2374	3.1	0.867	30.4	LOS C	33.3	239.3	0.86	0.82	35.3
NorthWest: Orange Grove Road (NW)											
27	L2	366	4.3	0.339	11.0	LOS A	5.2	37.9	0.23	0.62	50.4
29	R2	1254	3.1	0.958	83.1	LOS F	37.6	270.5	1.00	0.98	21.7
Approach		1620	3.4	0.958	66.8	LOS E	37.6	270.5	0.83	0.90	25.4
SouthWest: Hume Highway (SW)											
30	L2	1215	2.9	0.716	19.2	LOS B	18.4	132.1	0.76	0.82	46.0
31	T1	1036	5.3	0.930	73.7	LOS F	32.2	235.9	1.00	1.05	20.6
Approach		2251	4.0	0.930	44.3	LOS D	32.2	235.9	0.87	0.93	31.1
All Vehicles		6244	3.5	0.958	44.8	LOS D	37.6	270.5	0.85	0.88	30.4

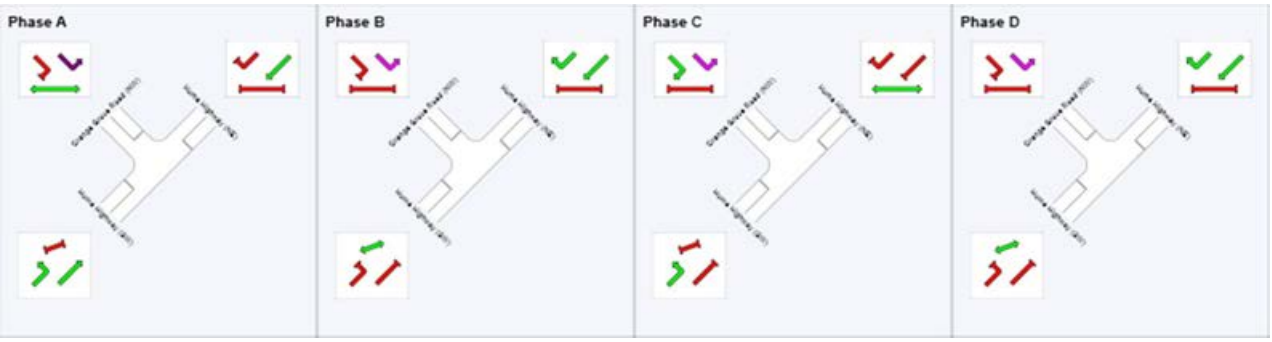
PHASING SUMMARY

Site: I-01 2015 BASE PM

Hume Highway / Orange Grove Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	81	124
Green Time (sec)	47	21	37	19
Yellow Time (sec)	5	4	5	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	54	27	44	25
Phase Split	36 %	18 %	29 %	17 %



MOVEMENT SUMMARY

Site: I-01 2015 MIMT AM

Hume Highway / Orange Grove Road
2015 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	884	11.3	0.628	22.2	LOS B	17.4	133.8	0.81	0.73	37.1
26	R2	355	10.1	0.879	84.6	LOS F	15.0	114.0	1.00	0.91	24.2
Approach		1239	11.0	0.879	40.1	LOS C	17.4	133.8	0.86	0.78	30.8
NorthWest: Orange Grove Road (NW)											
27	L2	529	6.6	0.618	9.8	LOS A	8.6	63.4	0.25	0.64	50.9
29	R2	1178	6.7	0.869	68.1	LOS E	30.6	226.2	0.99	0.89	24.4
Approach		1707	6.7	0.869	50.0	LOS D	30.6	226.2	0.76	0.82	29.7
SouthWest: Hume Highway (SW)											
30	L2	1124	6.5	0.393	10.9	LOS A	11.3	83.6	0.31	0.69	52.8
31	T1	1945	4.9	0.698	19.6	LOS B	29.2	212.7	0.60	0.54	42.8
Approach		3069	5.5	0.698	16.4	LOS B	29.2	212.7	0.49	0.60	46.6
All Vehicles		6016	7.0	0.879	30.8	LOS C	30.6	226.2	0.64	0.70	36.2

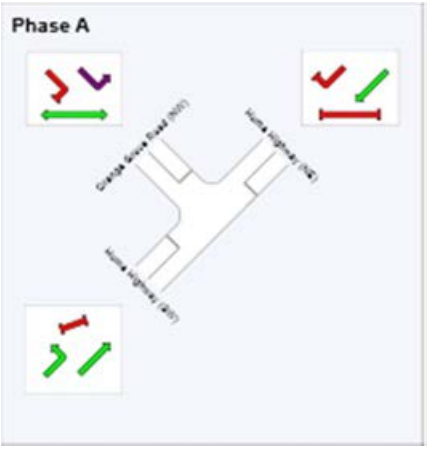
PHASING SUMMARY

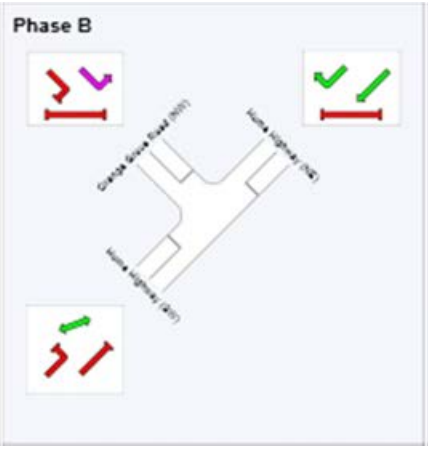
Site: I-01 2015 MIMT AM

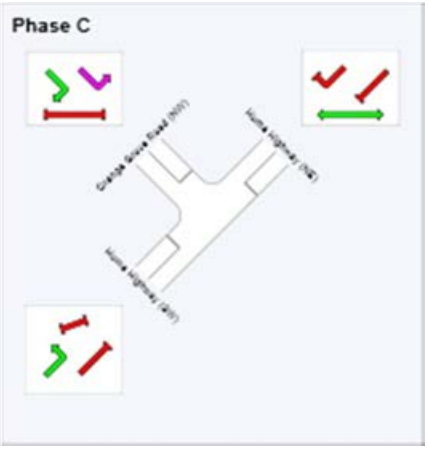
Hume Highway / Orange Grove Road
2015 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	86	109
Green Time (sec)	79	16	35
Yellow Time (sec)	5	4	5
All-Red Time (sec)	2	2	2
Phase Time (sec)	86	22	42
Phase Split	57 %	15 %	28 %







MOVEMENT SUMMARY

Site: I-01 2015 MIMT PM

Hume Highway / Orange Grove Road
2014 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	1616	3.3	0.833	23.6	LOS B	33.3	239.3	0.79	0.76	36.2
26	R2	758	2.8	0.867	44.9	LOS D	17.8	127.5	1.00	0.93	34.1
Approach		2374	3.1	0.867	30.4	LOS C	33.3	239.3	0.86	0.82	35.3
NorthWest: Orange Grove Road (NW)											
27	L2	366	4.3	0.339	11.0	LOS A	5.2	37.9	0.23	0.62	50.4
29	R2	1255	3.2	0.959	83.4	LOS F	37.8	271.6	1.00	0.99	21.6
Approach		1621	3.4	0.959	67.1	LOS E	37.8	271.6	0.83	0.90	25.3
SouthWest: Hume Highway (SW)											
30	L2	1217	3.0	0.718	19.2	LOS B	18.5	132.7	0.76	0.82	46.0
31	T1	1038	5.3	0.932	74.2	LOS F	32.5	237.6	1.00	1.05	20.5
Approach		2256	4.1	0.932	44.5	LOS D	32.5	237.6	0.87	0.93	30.9
All Vehicles		6250	3.5	0.959	45.0	LOS D	37.8	271.6	0.85	0.88	30.3

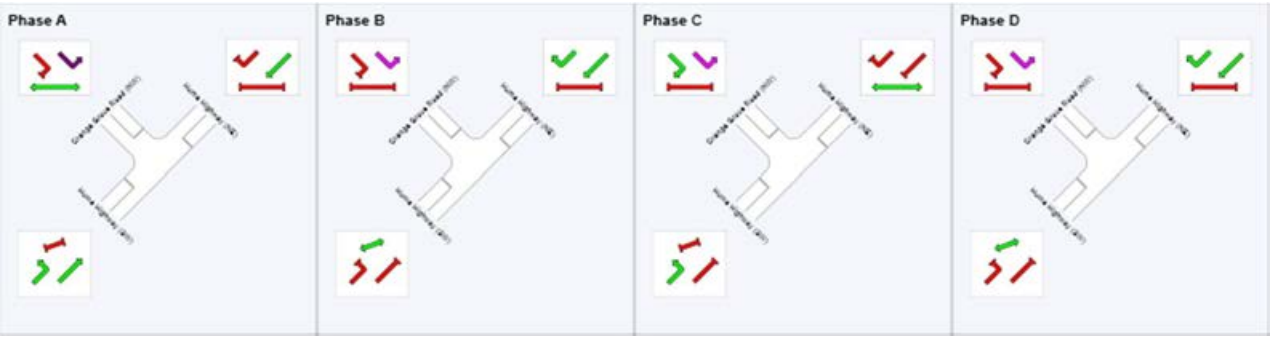
PHASING SUMMARY

Site: I-01 2015 MIMT PM

Hume Highway / Orange Grove Road
2014 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	81	124
Green Time (sec)	47	21	37	19
Yellow Time (sec)	5	4	5	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	54	27	44	25
Phase Split	36 %	18 %	29 %	17 %



I-02 Intersection of the Hume Highway and Elizabeth Drive

MOVEMENT SUMMARY

Site: I-02 2015 BASE AM

Hume Highway / Elizabeth Drive
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	117	5.4	0.129	21.1	LOS B	3.0	21.7	0.38	0.67	37.5
2	T1	2077	6.3	0.796	35.5	LOS C	40.8	301.3	0.85	0.77	27.5
Approach		2194	6.2	0.813	34.7	LOS C	40.8	301.3	0.82	0.76	28.0
East: Elizabeth Drive (E)											
4	L2	34	6.3	0.367	59.7	LOS E	8.7	63.8	0.91	0.81	18.6
5	T1	418	5.8	0.367	55.8	LOS D	9.8	72.3	0.89	0.82	23.7
6	R2	134	2.4	0.646	75.1	LOS F	9.6	68.9	1.00	0.81	15.2
Approach		585	5.0	0.646	60.5	LOS E	9.8	72.3	0.92	0.82	21.2
North: Hume Highway (N)											
7	L2	76	2.8	0.570	23.9	LOS B	19.3	144.4	0.54	0.52	32.8
8	T1	1587	8.8	0.570	17.9	LOS B	19.6	147.2	0.53	0.49	37.4
9	R2	308	9.6	1.109	196.6	LOS F	19.2	145.5	1.00	1.27	9.4
Approach		1972	8.6	1.109	46.1	LOS D	19.6	147.2	0.60	0.61	24.0
West: Elizabeth Drive (W)											
10	L2	547	5.4	0.923	73.5	LOS F	43.4	317.7	1.00	0.96	19.2
11	T1	936	3.0	0.928	75.6	LOS F	37.7	271.0	1.00	1.03	18.3
12	R2	439	6.5	1.091	185.7	LOS F	26.9	198.8	1.00	1.26	9.9
Approach		1922	4.5	1.091	100.2	LOS F	43.4	317.7	1.00	1.06	15.4
All Vehicles		6673	6.3	1.109	59.2	LOS E	43.4	317.7	0.82	0.81	21.0

\

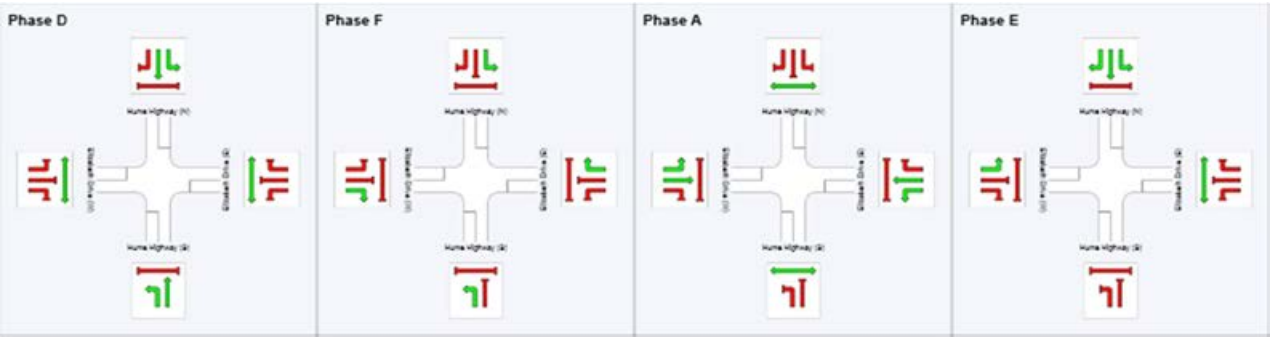
PHASING SUMMARY

Site: I-02 2015 BASE AM

Hume Highway / Elizabeth Drive
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	68	91	132
Green Time (sec)	62	17	35	12
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	68	23	41	18
Phase Split	45 %	15 %	27 %	12 %



MOVEMENT SUMMARY

Site: I-02 2015 BASE PM

Hume Highway / Elizabeth Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	287	4.4	0.427	39.9	LOS C	13.3	96.3	0.68	0.77	28.4
2	T1	1428	4.8	0.826	52.2	LOS D	32.8	239.0	0.94	0.87	21.9
Approach		1716	4.7	0.826	50.2	LOS D	32.8	239.0	0.90	0.85	22.9
East: Elizabeth Drive (E)											
4	L2	111	1.0	0.819	73.6	LOS F	23.0	163.6	1.00	0.91	16.0
5	T1	938	2.5	0.819	68.0	LOS E	28.3	202.3	1.00	0.92	20.7
6	R2	147	0.0	0.992	118.0	LOS F	14.1	98.5	1.00	1.15	10.8
Approach		1196	2.0	0.992	74.7	LOS F	28.3	202.3	1.00	0.95	18.6
North: Hume Highway (N)											
7	L2	61	5.2	0.790	20.2	LOS B	30.6	219.6	0.61	0.58	35.8
8	T1	2262	2.9	0.790	14.6	LOS B	31.3	224.5	0.61	0.57	40.2
9	R2	860	2.9	0.821	66.0	LOS E	29.9	214.2	0.99	0.89	21.5
Approach		3183	2.9	0.821	28.6	LOS C	31.3	224.5	0.71	0.65	31.6
West: Elizabeth Drive (W)											
10	L2	308	6.5	0.407	33.0	LOS C	12.5	92.2	0.60	0.75	30.1
11	T1	494	4.7	0.631	60.0	LOS E	15.9	115.9	0.93	0.80	21.3
12	R2	287	2.6	0.985	116.1	LOS F	13.5	96.8	1.00	1.09	14.3
Approach		1089	4.6	0.985	67.1	LOS E	15.9	115.9	0.86	0.86	20.3
All Vehicles		7184	3.5	0.992	47.3	LOS D	32.8	239.0	0.82	0.78	24.4

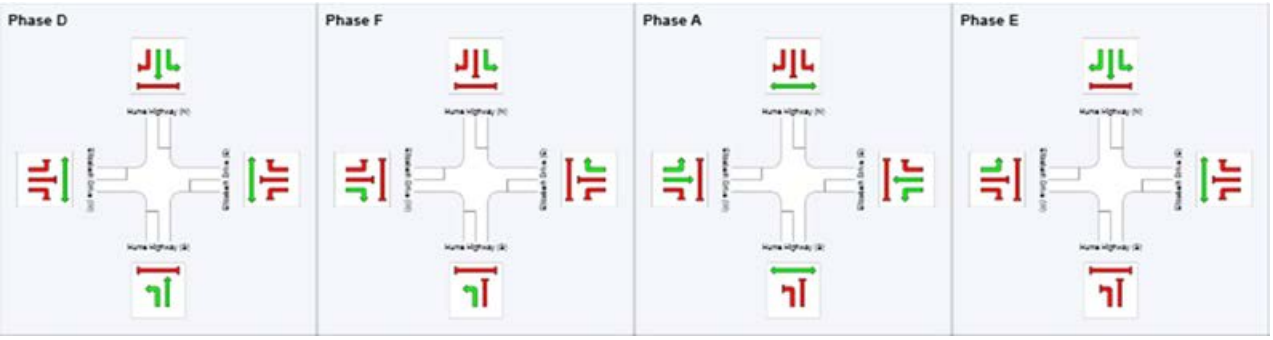
PHASING SUMMARY

Site: I-02 2015 BASE PM

Hume Highway / Elizabeth Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	71	108
Green Time (sec)	47	12	31	36
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	53	18	37	42
Phase Split	35 %	12 %	25 %	28 %



MOVEMENT SUMMARY

Site: I-02 2015 MIMT AM

Hume Highway / Elizabeth Drive
2014 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	117	5.4	0.129	21.1	LOS B	3.0	21.7	0.38	0.67	37.5
2	T1	2078	6.3	0.797	35.5	LOS C	40.9	301.8	0.85	0.77	27.5
Approach		2195	6.3	0.813	34.7	LOS C	40.9	301.8	0.82	0.76	28.0
East: Elizabeth Drive (E)											
4	L2	34	6.3	0.367	59.7	LOS E	8.7	63.8	0.91	0.81	18.6
5	T1	418	5.8	0.367	55.8	LOS D	9.8	72.3	0.89	0.82	23.7
6	R2	134	2.4	0.646	75.1	LOS F	9.6	68.9	1.00	0.81	15.2
Approach		585	5.0	0.646	60.5	LOS E	9.8	72.3	0.92	0.82	21.2
North: Hume Highway (N)											
7	L2	76	2.8	0.572	24.0	LOS B	19.4	145.2	0.54	0.52	32.8
8	T1	1593	8.8	0.572	17.9	LOS B	19.7	148.1	0.53	0.49	37.4
9	R2	308	9.6	1.109	196.6	LOS F	19.2	145.5	1.00	1.27	9.4
Approach		1977	8.7	1.109	46.0	LOS D	19.7	148.1	0.60	0.61	24.0
West: Elizabeth Drive (W)											
10	L2	547	5.4	0.923	73.5	LOS F	43.4	317.7	1.00	0.96	19.2
11	T1	936	3.0	0.928	75.6	LOS F	37.7	271.0	1.00	1.03	18.3
12	R2	440	6.5	1.092	186.9	LOS F	27.0	199.8	1.00	1.27	9.8
Approach		1923	4.5	1.092	100.5	LOS F	43.4	317.7	1.00	1.06	15.3
All Vehicles		6679	6.4	1.109	59.2	LOS E	43.4	317.7	0.82	0.81	20.9

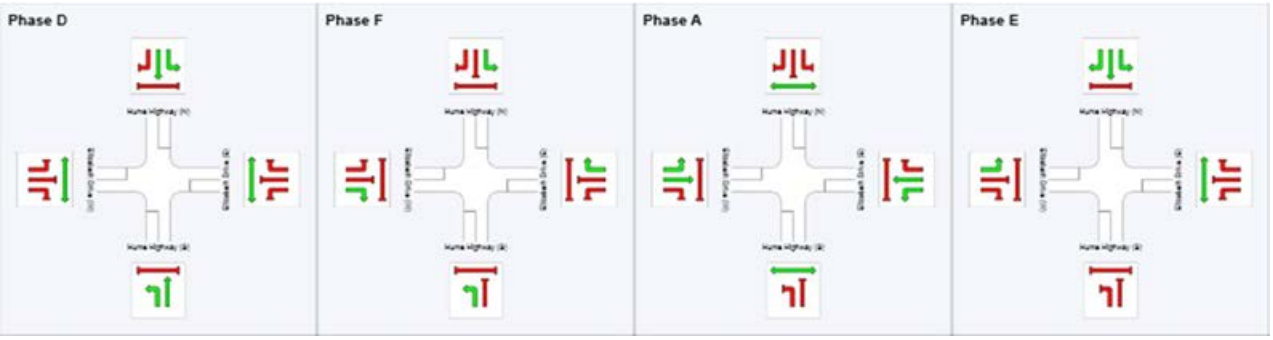
PHASING SUMMARY

Site: I-02 2015 MIMT AM

Hume Highway / Elizabeth Drive
2014 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	68	91	132
Green Time (sec)	62	17	35	12
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	68	23	41	18
Phase Split	45 %	15 %	27 %	12 %



MOVEMENT SUMMARY

Site: I-02 2015 MIMT PM

Hume Highway / Elizabeth Drive
2014 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	288	4.4	0.428	39.9	LOS C	13.3	96.5	0.68	0.77	28.4
2	T1	1434	4.8	0.822	52.0	LOS D	32.5	237.1	0.94	0.87	21.9
Approach		1722	4.8	0.822	50.0	LOS D	32.5	237.1	0.90	0.85	23.0
East: Elizabeth Drive (E)											
4	L2	111	1.0	0.818	73.6	LOS F	22.9	163.2	1.00	0.91	16.1
5	T1	938	2.5	0.818	67.9	LOS E	28.2	201.8	1.00	0.92	20.8
6	R2	147	0.0	0.992	118.0	LOS F	14.1	98.5	1.00	1.15	10.8
Approach		1196	2.0	0.992	74.6	LOS F	28.2	201.8	1.00	0.95	18.6
North: Hume Highway (N)											
7	L2	61	5.2	0.791	20.2	LOS B	30.6	220.0	0.61	0.58	35.8
8	T1	2263	2.9	0.791	14.6	LOS B	31.4	225.0	0.61	0.57	40.2
9	R2	860	2.9	0.821	66.0	LOS E	29.9	214.2	0.99	0.89	21.5
Approach		3184	3.0	0.821	28.6	LOS C	31.4	225.0	0.71	0.65	31.6
West: Elizabeth Drive (W)											
10	L2	308	6.5	0.407	33.0	LOS C	12.5	92.2	0.60	0.75	30.1
11	T1	494	4.7	0.631	60.0	LOS E	15.9	115.9	0.93	0.80	21.3
12	R2	287	2.6	0.985	116.1	LOS F	13.5	96.8	1.00	1.09	14.3
Approach		1089	4.6	0.985	67.1	LOS E	15.9	115.9	0.86	0.86	20.3
All Vehicles		7191	3.5	0.992	47.2	LOS D	32.5	237.1	0.83	0.78	24.4

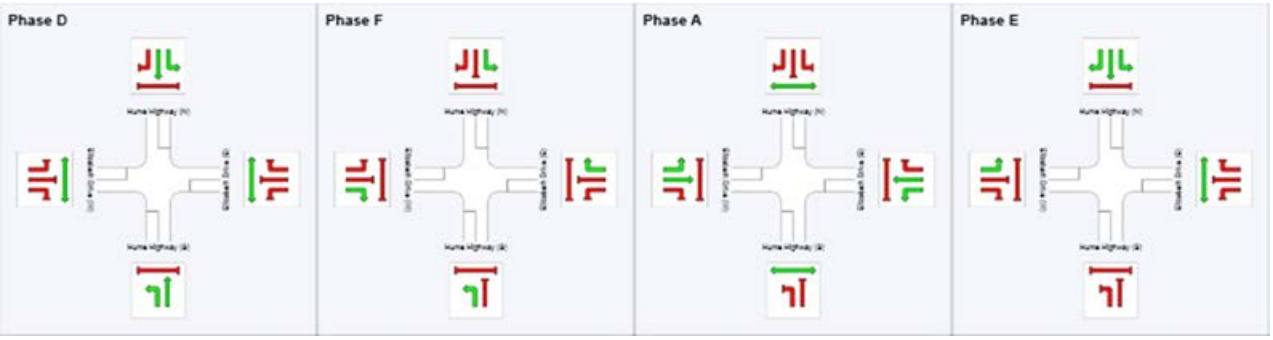
PHASING SUMMARY

Site: I-02 2015 MIMT PM

Hume Highway / Elizabeth Drive
2014 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	71	108
Green Time (sec)	47	12	31	36
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	53	18	37	42
Phase Split	35 %	12 %	25 %	28 %



I-03 Intersection of the Hume Highway and Memorial Avenue

MOVEMENT SUMMARY

Site: I-03 2015 BASE AM

Hume Highway / Memorial Avenue
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	139	1.5	0.844	41.0	LOS C	42.8	315.2	0.89	0.84	34.2
2	T1	1858	7.3	0.844	33.3	LOS C	42.9	318.8	0.83	0.78	33.9
3	R2	236	0.0	1.002	123.4	LOS F	23.4	164.1	1.00	1.09	14.9
Approach		2233	6.1	1.002	43.3	LOS D	42.9	318.8	0.85	0.81	30.1
East: Memorial Avenue (E)											
4	L2	22	19.0	1.008	127.7	LOS F	14.0	104.3	1.00	1.21	14.8
5	T1	138	5.3	1.008	122.9	LOS F	14.0	104.3	1.00	1.21	14.4
6	R2	108	12.6	1.008	127.6	LOS F	12.7	97.7	1.00	1.20	10.7
Approach		268	9.4	1.008	125.2	LOS F	14.0	104.3	1.00	1.20	13.0
North: Hume Highway (N)											
7	L2	105	6.0	0.089	12.3	LOS A	2.3	16.6	0.35	0.64	39.5
8	T1	1551	11.1	0.649	26.7	LOS B	25.2	192.9	0.67	0.60	37.2
9	R2	87	3.6	0.381	71.5	LOS F	6.0	43.1	0.96	0.78	21.5
Approach		1743	10.4	0.649	28.1	LOS B	25.2	192.9	0.67	0.61	35.9
West: Memorial Avenue (W)											
10	L2	111	2.9	1.014	112.0	LOS F	27.2	194.0	1.00	1.20	16.3
11	T1	397	1.6	1.014	114.8	LOS F	35.5	253.1	1.00	1.23	15.0
12	R2	140	3.0	1.014	126.4	LOS F	35.5	253.1	1.00	1.25	18.3
Approach		647	2.1	1.014	116.8	LOS F	35.5	253.1	1.00	1.23	16.0
All Vehicles		4892	7.3	1.014	52.1	LOS D	42.9	318.8	0.81	0.82	26.7

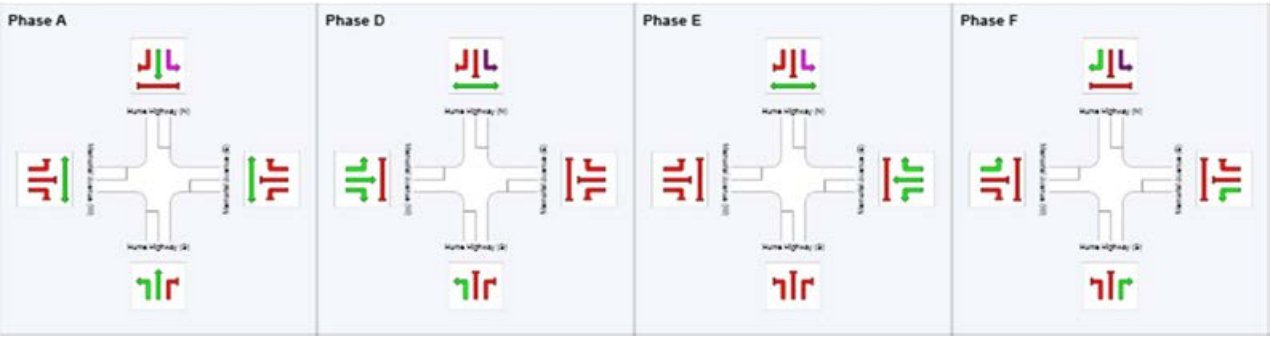
PHASING SUMMARY

Site: I-03 2015 BASE AM

Hume Highway / Memorial Avenue
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	75	108	125
Green Time (sec)	69	27	11	19
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	75	33	17	25
Phase Split	50 %	22 %	11 %	17 %



MOVEMENT SUMMARY

Site: I-03 2015 BASE PM

Hume Highway / Memorial Avenue
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	114	0.9	0.723	40.7	LOS C	30.2	219.9	0.82	0.77	34.3
2	T1	1533	5.7	0.723	32.9	LOS C	30.6	225.0	0.78	0.71	34.1
3	R2	111	0.0	0.744	83.3	LOS F	8.4	59.0	1.00	0.85	19.6
Approach		1757	5.0	0.744	36.6	LOS C	30.6	225.0	0.79	0.72	32.6
East: Memorial Avenue (E)											
4	L2	46	0.0	1.191	267.8	LOS F	37.3	265.5	1.00	1.69	8.2
5	T1	249	2.5	1.191	263.3	LOS F	37.3	265.5	1.00	1.67	8.0
6	R2	182	6.4	1.191	268.2	LOS F	34.3	251.8	1.00	1.60	5.7
Approach		478	3.7	1.191	265.6	LOS F	37.3	265.5	1.00	1.65	7.2
North: Hume Highway (N)											
7	L2	141	3.0	0.083	8.0	LOS A	1.8	12.6	0.23	0.61	43.9
8	T1	2715	3.0	0.836	10.1	LOS A	36.8	264.5	0.51	0.47	48.8
9	R2	198	2.1	0.751	51.8	LOS D	8.9	63.1	1.00	0.88	25.6
Approach		3054	3.0	0.836	12.7	LOS A	36.8	264.5	0.53	0.50	45.9
West: Memorial Avenue (W)											
10	L2	72	1.5	0.778	69.8	LOS E	12.7	90.1	1.00	0.92	22.1
11	T1	181	1.2	0.778	67.1	LOS E	15.9	111.8	1.00	0.91	20.9
12	R2	146	0.0	0.778	74.9	LOS F	15.9	111.8	1.00	0.89	25.0
Approach		399	0.8	0.778	70.5	LOS E	15.9	111.8	1.00	0.91	22.7
All Vehicles		5687	3.5	1.191	45.4	LOS D	37.3	265.5	0.68	0.69	28.8

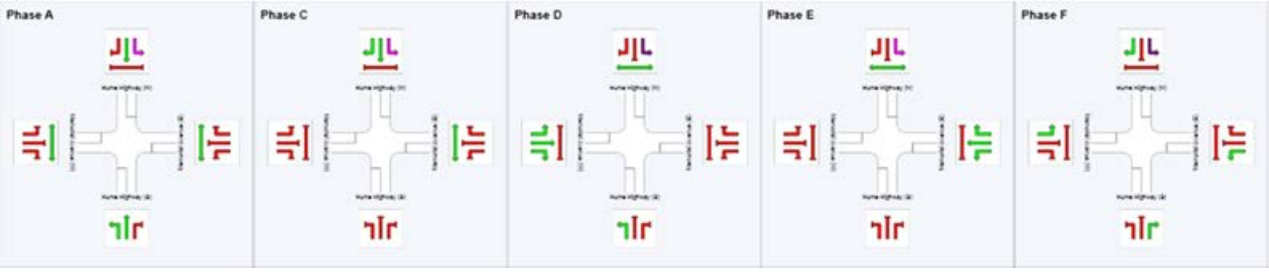
PHASING SUMMARY

Site: I-03 2015 BASE PM

Hume Highway / Memorial Avenue
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D	E	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	70	82	110	132
Green Time (sec)	64	6	22	16	12
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	70	12	28	22	18
Phase Split	47 %	8 %	19 %	15 %	12 %



MOVEMENT SUMMARY

Site: I-03 2015 MIMT AM

Hume Highway / Memorial Avenue
2014 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	139	1.5	0.844	41.1	LOS C	42.9	315.9	0.89	0.84	34.2
2	T1	1859	7.3	0.844	33.3	LOS C	42.9	319.4	0.83	0.78	33.8
3	R2	236	0.0	1.002	123.4	LOS F	23.4	164.1	1.00	1.09	14.9
Approach		2234	6.2	1.002	43.3	LOS D	42.9	319.4	0.85	0.81	30.1
East: Memorial Avenue (E)											
4	L2	22	19.0	1.008	127.7	LOS F	14.0	104.3	1.00	1.21	14.8
5	T1	138	5.3	1.008	122.9	LOS F	14.0	104.3	1.00	1.21	14.4
6	R2	108	12.6	1.008	127.6	LOS F	12.7	97.7	1.00	1.20	10.7
Approach		268	9.4	1.008	125.2	LOS F	14.0	104.3	1.00	1.20	13.0
North: Hume Highway (N)											
7	L2	105	6.0	0.089	12.3	LOS A	2.3	16.6	0.35	0.64	39.5
8	T1	1556	11.2	0.652	26.8	LOS B	25.3	194.2	0.67	0.60	37.2
9	R2	87	3.6	0.381	71.5	LOS F	6.0	43.1	0.96	0.78	21.5
Approach		1749	10.5	0.652	28.1	LOS B	25.3	194.2	0.67	0.62	35.9
West: Memorial Avenue (W)											
10	L2	111	2.9	1.014	112.3	LOS F	27.3	194.4	1.00	1.20	16.2
11	T1	397	1.6	1.014	115.1	LOS F	35.6	253.5	1.00	1.23	15.0
12	R2	140	3.0	1.014	126.7	LOS F	35.6	253.5	1.00	1.25	18.3
Approach		648	2.1	1.014	117.2	LOS F	35.6	253.5	1.00	1.23	16.0
All Vehicles		4899	7.3	1.014	52.2	LOS D	42.9	319.4	0.81	0.82	26.7

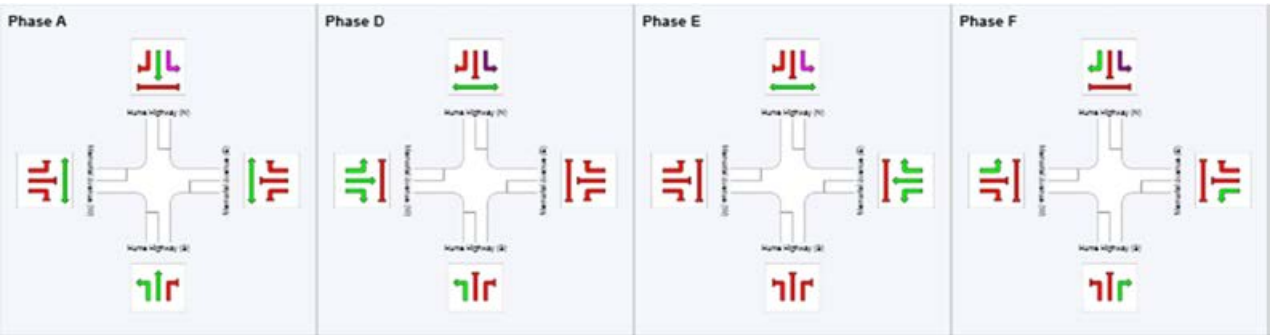
PHASING SUMMARY

Site: I-03 2015 MIMT AM

Hume Highway / Memorial Avenue
2014 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	75	108	125
Green Time (sec)	69	27	11	19
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	75	33	17	25
Phase Split	50 %	22 %	11 %	17 %



MOVEMENT SUMMARY

Site: I-03 2015 MIMT PM

Hume Highway / Memorial Avenue
2014 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	114	0.9	0.725	40.8	LOS C	30.4	221.3	0.82	0.78	34.3
2	T1	1538	5.7	0.725	32.9	LOS C	30.8	226.5	0.78	0.71	34.0
3	R2	111	0.0	0.744	83.3	LOS F	8.4	59.0	1.00	0.85	19.6
Approach		1763	5.1	0.744	36.6	LOS C	30.8	226.5	0.80	0.72	32.6
East: Memorial Avenue (E)											
4	L2	46	0.0	1.191	267.8	LOS F	37.3	265.5	1.00	1.69	8.2
5	T1	249	2.5	1.191	263.3	LOS F	37.3	265.5	1.00	1.67	8.0
6	R2	182	6.4	1.191	268.2	LOS F	34.3	251.8	1.00	1.60	5.7
Approach		478	3.7	1.191	265.6	LOS F	37.3	265.5	1.00	1.65	7.2
North: Hume Highway (N)											
7	L2	141	3.0	0.083	8.0	LOS A	1.8	12.6	0.23	0.61	43.9
8	T1	2716	3.1	0.837	10.1	LOS A	36.9	265.1	0.51	0.47	48.7
9	R2	198	2.1	0.751	51.8	LOS D	8.9	63.1	1.00	0.88	25.6
Approach		3055	3.0	0.837	12.7	LOS A	36.9	265.1	0.53	0.50	45.9
West: Memorial Avenue (W)											
10	L2	72	1.5	0.778	69.8	LOS E	12.7	90.1	1.00	0.92	22.1
11	T1	181	1.2	0.778	67.1	LOS E	15.9	111.8	1.00	0.91	20.9
12	R2	146	0.0	0.778	74.9	LOS F	15.9	111.8	1.00	0.89	25.0
Approach		399	0.8	0.778	70.5	LOS E	15.9	111.8	1.00	0.91	22.7
All Vehicles		5694	3.5	1.191	45.4	LOS D	37.3	265.5	0.68	0.69	28.8

PHASING SUMMARY

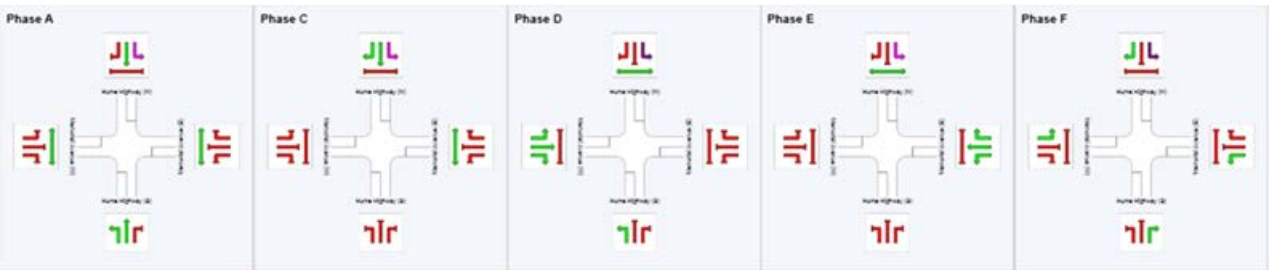
Site: I-03 2015 MIMT PM

Hume Highway / Memorial Avenue
2014 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase times specified by the user
Sequence: TCS 635 PM - Modified
Movement Class: All Movement Classes
Input Sequence: A, C, D, E, F
Output Sequence: A, C, D, E, F

Phase Timing Results

Phase	A	C	D	E	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	70	82	110	132
Green Time (sec)	64	6	22	16	12
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	70	12	28	22	18
Phase Split	47 %	8 %	19 %	15 %	12 %



I-04 Intersection of the Hume Highway and Hoxton Park Drive

MOVEMENT SUMMARY

Site: I-04 2015 BASE AM

Hume Highway / Hoxton Park Road / Macquarie Street
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	77	6.8	0.061	7.0	LOS A	0.3	2.3	0.06	0.56	52.3
2	T1	1922	5.1	0.716	24.9	LOS B	31.1	227.0	0.70	0.63	41.0
3	R2	1057	1.9	0.940	56.6	LOS E	27.8	197.4	1.00	0.99	25.1
Approach		3056	4.0	0.940	35.4	LOS C	31.1	227.0	0.78	0.75	34.9
East: Macquarie Street (E)											
4	L2	288	5.8	0.187	21.6	LOS B	4.4	32.6	0.65	0.72	38.8
5	T1	394	4.5	0.820	75.1	LOS F	15.1	109.8	1.00	0.93	23.4
Approach		682	5.1	0.820	52.5	LOS D	15.1	109.8	0.85	0.84	27.6
North: Hume Highway (N)											
7	L2	181	15.7	0.838	59.5	LOS E	34.3	262.1	0.95	1.00	26.4
8	T1	1334	8.1	0.838	53.7	LOS D	36.4	272.4	0.94	0.90	29.9
9	R2	186	19.2	0.951	103.5	LOS F	16.8	136.6	1.00	1.06	21.8
Approach		1701	10.1	0.951	59.8	LOS E	36.4	272.4	0.95	0.93	28.3
West: Hoxton Park Road (W)											
10	L2	272	16.3	0.471	46.6	LOS D	15.4	122.8	0.83	0.81	32.7
11	T1	1021	4.2	0.831	58.4	LOS E	24.1	174.6	0.95	0.90	27.0
12	R2	328	3.2	0.932	90.2	LOS F	15.1	108.3	1.00	0.96	22.7
Approach		1621	6.0	0.932	62.8	LOS E	24.1	174.6	0.94	0.90	26.8
All Vehicles		7060	6.1	0.951	49.2	LOS D	36.4	272.4	0.87	0.84	30.3

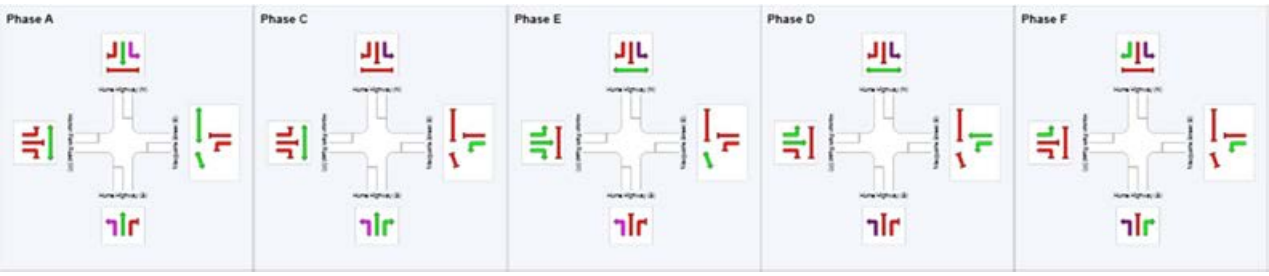
PHASING SUMMARY

Site: I-04 2015 BASE AM

Hume Highway / Hoxton Park Road / Macquarie Street
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	D	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	51	79	101	126
Green Time (sec)	45	22	16	19	18
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	51	28	22	25	24
Phase Split	34 %	19 %	15 %	17 %	16 %



MOVEMENT SUMMARY

Site: I-04 2015 BASE PM

Hume Highway / Hoxton Park Road / Macquarie Street
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	155	5.4	0.127	8.5	LOS A	1.2	8.9	0.12	0.58	51.1
2	T1	1509	5.2	0.574	22.5	LOS B	21.2	155.1	0.59	0.53	42.4
3	R2	417	1.3	0.923	93.6	LOS F	17.5	123.8	1.00	0.99	18.3
Approach		2081	4.4	0.923	35.7	LOS C	21.2	155.1	0.64	0.62	35.4
East: Macquarie Street (E)											
4	L2	701	1.5	0.907	67.9	LOS E	23.5	166.9	0.82	0.90	22.6
5	T1	612	3.3	0.941	84.6	LOS F	25.6	183.9	1.00	1.05	21.7
Approach		1313	2.3	0.941	75.7	LOS F	25.6	183.9	0.91	0.97	22.1
North: Hume Highway (N)											
7	L2	94	5.6	0.852	18.2	LOS B	39.2	281.0	0.63	0.63	45.4
8	T1	2602	2.6	0.852	12.8	LOS A	41.8	299.5	0.60	0.57	48.4
9	R2	225	6.5	1.190	268.9	LOS F	33.7	249.4	1.00	1.47	10.9
Approach		2921	3.0	1.190	32.7	LOS C	41.8	299.5	0.63	0.64	37.4
West: Hoxton Park Road (W)											
10	L2	228	3.7	0.364	44.6	LOS D	12.4	89.2	0.80	0.79	33.5
11	T1	600	3.9	0.367	45.5	LOS D	11.6	83.6	0.85	0.71	30.8
12	R2	331	1.6	1.046	123.9	LOS F	19.5	138.1	1.00	1.10	18.5
Approach		1159	3.2	1.046	67.7	LOS E	19.5	138.1	0.88	0.84	26.0
All Vehicles		7474	3.3	1.190	46.5	LOS D	41.8	299.5	0.72	0.72	31.4

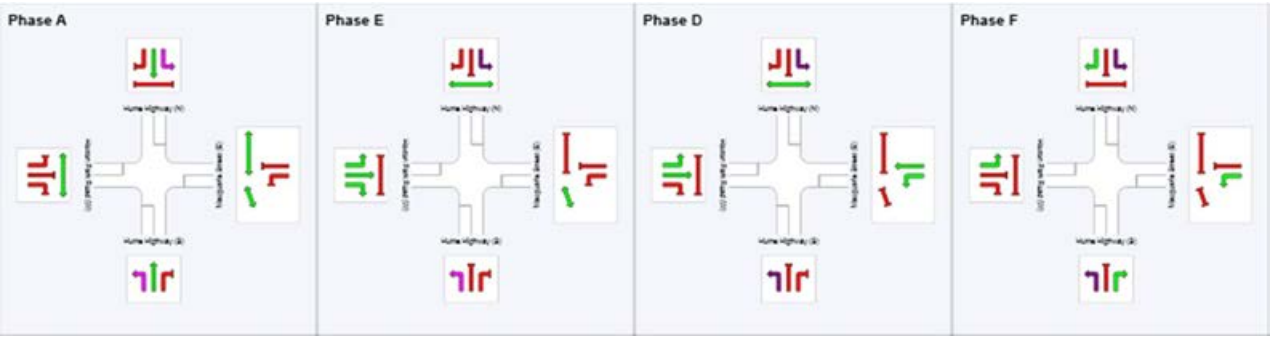
PHASING SUMMARY

Site: I-04 2015 BASE PM

Hume Highway / Hoxton Park Road / Macquarie Street
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	D	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	79	99	128
Green Time (sec)	73	14	23	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	79	20	29	22
Phase Split	53 %	13 %	19 %	15 %



MOVEMENT SUMMARY

Site: I-04 2015 MIMT AM

Hume Highway / Hoxton Park Road / Macquarie Street
2014 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	77	7.1	0.062	7.0	LOS A	0.3	2.3	0.06	0.56	52.3
2	T1	1923	5.1	0.717	24.9	LOS B	31.1	227.3	0.70	0.63	41.0
3	R2	1057	1.9	0.940	56.6	LOS E	27.8	197.4	1.00	0.99	25.1
Approach		3057	4.1	0.940	35.4	LOS C	31.1	227.3	0.78	0.75	34.9
East: Macquarie Street (E)											
4	L2	288	5.8	0.187	21.6	LOS B	4.4	32.6	0.65	0.72	38.8
5	T1	394	4.5	0.820	75.1	LOS F	15.1	109.8	1.00	0.93	23.4
Approach		682	5.1	0.820	52.5	LOS D	15.1	109.8	0.85	0.84	27.6
North: Hume Highway (N)											
7	L2	181	15.7	0.841	59.8	LOS E	34.7	264.7	0.96	1.00	26.3
8	T1	1340	8.2	0.841	54.0	LOS D	36.7	274.8	0.94	0.90	29.9
9	R2	186	19.2	0.951	103.5	LOS F	16.8	136.6	1.00	1.06	21.8
Approach		1707	10.2	0.951	60.0	LOS E	36.7	274.8	0.95	0.93	28.2
West: Hoxton Park Road (W)											
10	L2	272	16.3	0.471	46.6	LOS D	15.4	122.8	0.83	0.81	32.7
11	T1	1021	4.2	0.831	58.3	LOS E	24.1	174.5	0.95	0.90	27.0
12	R2	329	3.2	0.934	90.5	LOS F	15.1	108.8	1.00	0.96	22.7
Approach		1621	6.0	0.934	62.9	LOS E	24.1	174.5	0.94	0.90	26.8
All Vehicles		7068	6.1	0.951	49.3	LOS D	36.7	274.8	0.87	0.84	30.3

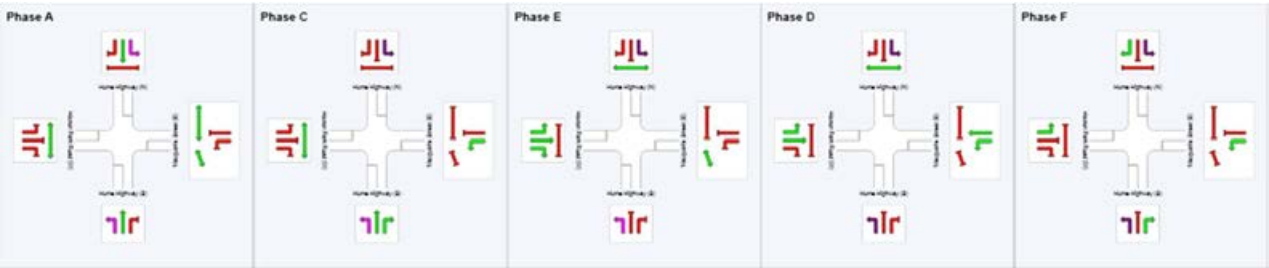
PHASING SUMMARY

Site: I-04 2015 MIMT AM

Hume Highway / Hoxton Park Road / Macquarie Street
2014 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	D	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	51	79	101	126
Green Time (sec)	45	22	16	19	18
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	51	28	22	25	24
Phase Split	34 %	19 %	15 %	17 %	16 %



MOVEMENT SUMMARY

Site: I-04 2015 MIMT PM

Hume Highway / Hoxton Park Road / Macquarie Street
2014 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	155	5.5	0.128	8.5	LOS A	1.2	8.9	0.12	0.58	51.1
2	T1	1516	5.2	0.577	22.5	LOS B	21.4	156.3	0.59	0.53	42.3
3	R2	417	1.3	0.923	93.6	LOS F	17.5	123.8	1.00	0.99	18.3
Approach		2088	4.4	0.923	35.7	LOS C	21.4	156.3	0.64	0.62	35.4
East: Macquarie Street (E)											
4	L2	701	1.5	0.907	67.9	LOS E	23.5	166.9	0.82	0.90	22.6
5	T1	612	3.3	0.941	84.6	LOS F	25.6	183.9	1.00	1.05	21.7
Approach		1313	2.3	0.941	75.7	LOS F	25.6	183.9	0.91	0.97	22.1
North: Hume Highway (N)											
7	L2	94	5.6	0.854	18.2	LOS B	39.3	282.3	0.63	0.63	45.4
8	T1	2603	2.7	0.854	12.8	LOS A	42.0	300.8	0.60	0.57	48.4
9	R2	225	6.5	1.190	268.9	LOS F	33.7	249.4	1.00	1.47	10.9
Approach		2922	3.1	1.190	32.7	LOS C	42.0	300.8	0.63	0.64	37.4
West: Hoxton Park Road (W)											
10	L2	228	3.7	0.364	44.6	LOS D	12.4	89.2	0.80	0.79	33.5
11	T1	600	3.9	0.367	45.5	LOS D	11.6	83.6	0.85	0.71	30.8
12	R2	331	1.7	1.047	124.4	LOS F	19.5	138.6	1.00	1.10	18.4
Approach		1159	3.2	1.047	67.8	LOS E	19.5	138.6	0.88	0.84	26.0
All Vehicles		7481	3.3	1.190	46.5	LOS D	42.0	300.8	0.72	0.72	31.4

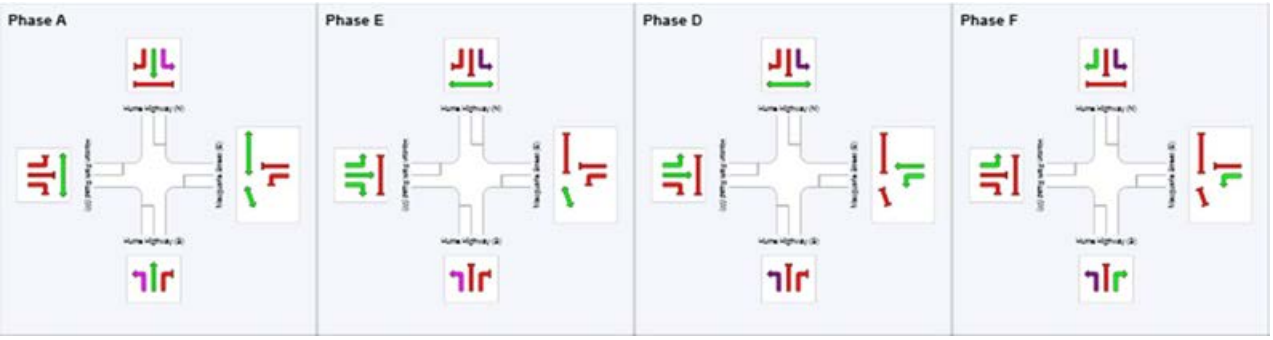
PHASING SUMMARY

Site: I-04 2015 MIMT PM

Hume Highway / Hoxton Park Road / Macquarie Street
2014 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	D	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	79	99	128
Green Time (sec)	73	14	23	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	79	20	29	22
Phase Split	53 %	13 %	19 %	15 %



I-05 Intersection of the Hume Highway and Reilly Street

MOVEMENT SUMMARY

Site: I-05 2015 BASE AM

Hume Highway / Reilly Street
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Hignway (S)											
1	L2	73	2.9	0.822	17.9	LOS B	37.9	273.7	0.59	0.57	43.7
2	T1	2836	3.6	0.822	11.7	LOS A	37.9	273.7	0.57	0.54	46.0
3	R2	13	8.3	0.076	20.1	LOS B	0.4	3.0	0.45	0.66	38.4
Approach		2921	3.6	0.822	11.9	LOS A	37.9	273.7	0.57	0.54	45.8
East: Congressional Drive (E)											
4	L2	42	2.5	0.234	59.6	LOS E	5.1	36.7	0.89	0.73	24.4
5	T1	40	5.3	0.234	55.0	LOS D	5.1	36.7	0.89	0.73	23.9
6	R2	78	4.1	0.354	66.2	LOS E	5.2	37.5	0.93	0.77	18.9
Approach		160	3.9	0.354	61.7	LOS E	5.2	37.5	0.91	0.75	21.6
North: Hume Hignway (N)											
7	L2	28	3.7	0.488	15.5	LOS B	20.2	150.1	0.48	0.45	41.5
8	T1	1651	7.2	0.488	9.5	LOS A	20.3	150.9	0.46	0.42	48.1
9	R2	88	1.2	0.597	32.4	LOS C	4.7	33.4	0.99	0.85	30.7
Approach		1767	6.8	0.597	10.7	LOS A	20.3	150.9	0.48	0.44	46.6
West: Reilly Street (W)											
10	L2	100	4.2	0.233	50.5	LOS D	6.3	46.1	0.82	0.75	24.4
11	T1	12	9.1	0.233	45.9	LOS D	6.3	46.1	0.82	0.75	25.6
12	R2	212	2.0	0.899	87.2	LOS F	17.7	126.2	1.00	1.01	20.8
Approach		323	2.9	0.899	74.4	LOS F	17.7	126.2	0.94	0.92	21.8
All Vehicles		5172	4.7	0.899	16.9	LOS B	37.9	273.7	0.57	0.54	41.3

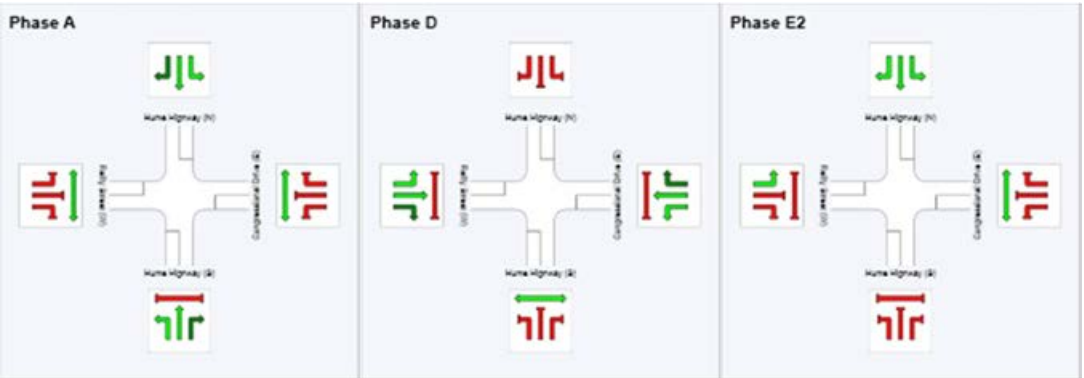
PHASING SUMMARY

Site: I-05 2015 BASE AM

Hume Highway / Reilly Street
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	100	137
Green Time (sec)	94	31	7
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	100	37	13
Phase Split	67 %	25 %	9 %



MOVEMENT SUMMARY

Site: I-05 2015 BASE PM

Hume Highway / Reilly Street
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Hignway (S)											
1	L2	219	0.5	0.629	19.3	LOS B	23.7	170.7	0.50	0.55	42.0
2	T1	1955	4.5	0.629	11.3	LOS A	23.7	170.7	0.43	0.42	46.0
3	R2	21	5.0	0.371	28.0	LOS B	1.0	7.1	0.59	0.72	34.4
Approach		2195	4.1	0.629	12.2	LOS A	23.7	170.7	0.44	0.44	45.3
East: Congressional Drive (E)											
4	L2	36	2.9	0.163	59.6	LOS E	3.5	24.8	0.88	0.72	24.3
5	T1	21	0.0	0.163	55.0	LOS D	3.5	24.8	0.88	0.72	23.8
6	R2	44	0.0	0.180	62.1	LOS E	2.8	19.5	0.89	0.74	19.8
Approach		101	1.0	0.180	59.7	LOS E	3.5	24.8	0.88	0.73	22.3
North: Hume Hignway (N)											
7	L2	62	0.0	0.920	14.0	LOS A	41.5	295.9	0.45	0.47	42.8
8	T1	3377	2.2	0.920	10.0	LOS A	41.5	295.9	0.36	0.38	47.6
9	R2	163	1.3	0.784	44.7	LOS D	10.4	73.3	1.00	0.97	26.5
Approach		3602	2.2	0.920	11.6	LOS A	41.5	295.9	0.39	0.41	45.8
West: Reilly Street (W)											
10	L2	57	0.0	0.193	53.9	LOS D	4.9	34.4	0.84	0.72	24.0
11	T1	27	0.0	0.193	49.3	LOS D	4.9	34.4	0.84	0.72	25.0
12	R2	233	1.8	0.938	96.4	LOS F	20.7	147.5	1.00	1.06	19.6
Approach		317	1.3	0.938	84.7	LOS F	20.7	147.5	0.96	0.97	20.5
All Vehicles		6215	2.8	0.938	16.3	LOS B	41.5	295.9	0.45	0.45	41.8

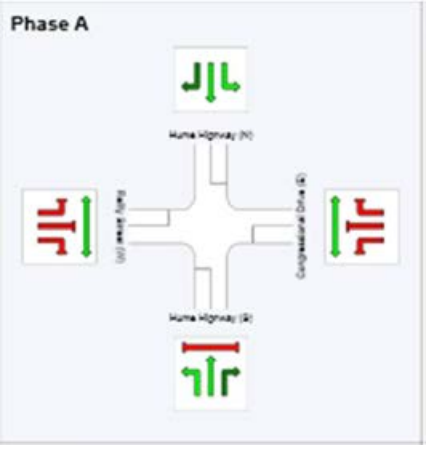
PHASING SUMMARY

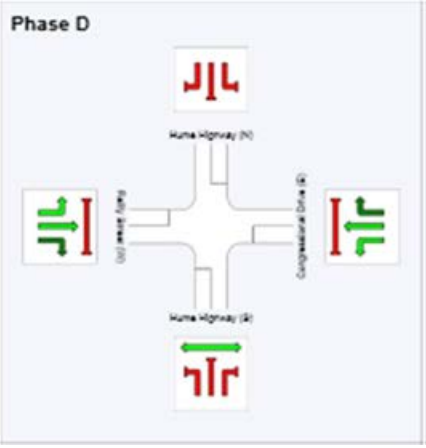
Site: I-05 2015 BASE PM

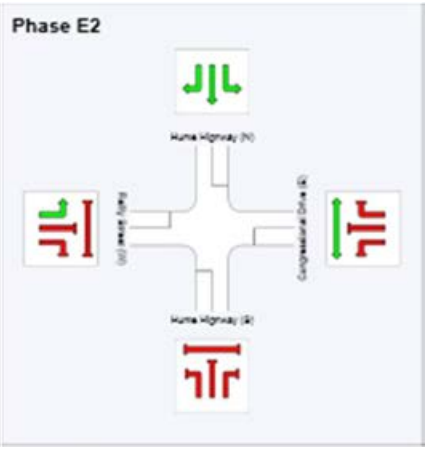
Hume Highway / Reilly Street
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	98	135
Green Time (sec)	92	31	9
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	98	37	15
Phase Split	65 %	25 %	10 %







MOVEMENT SUMMARY

Site: I-05 2015 MIMT AM

Hume Highway / Reilly Street
2015 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Hignway (S)											
1	L2	73	2.9	0.823	17.9	LOS B	38.0	274.3	0.59	0.57	43.7
2	T1	2837	3.7	0.823	11.7	LOS A	38.0	274.3	0.57	0.54	45.9
3	R2	13	8.3	0.076	20.1	LOS B	0.4	3.1	0.45	0.66	38.4
Approach		2922	3.7	0.823	11.9	LOS A	38.0	274.3	0.57	0.54	45.8
East: Congressional Drive (E)											
4	L2	42	2.5	0.234	59.6	LOS E	5.1	36.7	0.89	0.73	24.4
5	T1	40	5.3	0.234	55.0	LOS D	5.1	36.7	0.89	0.73	23.9
6	R2	78	4.1	0.354	66.2	LOS E	5.2	37.5	0.93	0.77	18.9
Approach		160	3.9	0.354	61.7	LOS E	5.2	37.5	0.91	0.75	21.6
North: Hume Hignway (N)											
7	L2	28	3.7	0.497	15.6	LOS B	20.8	154.8	0.48	0.46	41.4
8	T1	1657	7.2	0.497	9.6	LOS A	20.9	155.6	0.46	0.42	48.0
9	R2	88	1.2	0.597	32.4	LOS C	4.7	33.5	0.99	0.85	30.7
Approach		1774	6.9	0.597	10.8	LOS A	20.9	155.6	0.49	0.45	46.5
West: Reilly Street (W)											
10	L2	100	4.2	0.233	50.5	LOS D	6.3	46.1	0.82	0.75	24.4
11	T1	12	9.1	0.233	45.9	LOS D	6.3	46.1	0.82	0.75	25.6
12	R2	212	2.0	0.901	87.6	LOS F	17.8	126.8	1.00	1.01	20.8
Approach		324	2.9	0.901	74.7	LOS F	17.8	126.8	0.94	0.92	21.8
All Vehicles		5180	4.7	0.901	17.0	LOS B	38.0	274.3	0.57	0.54	41.3

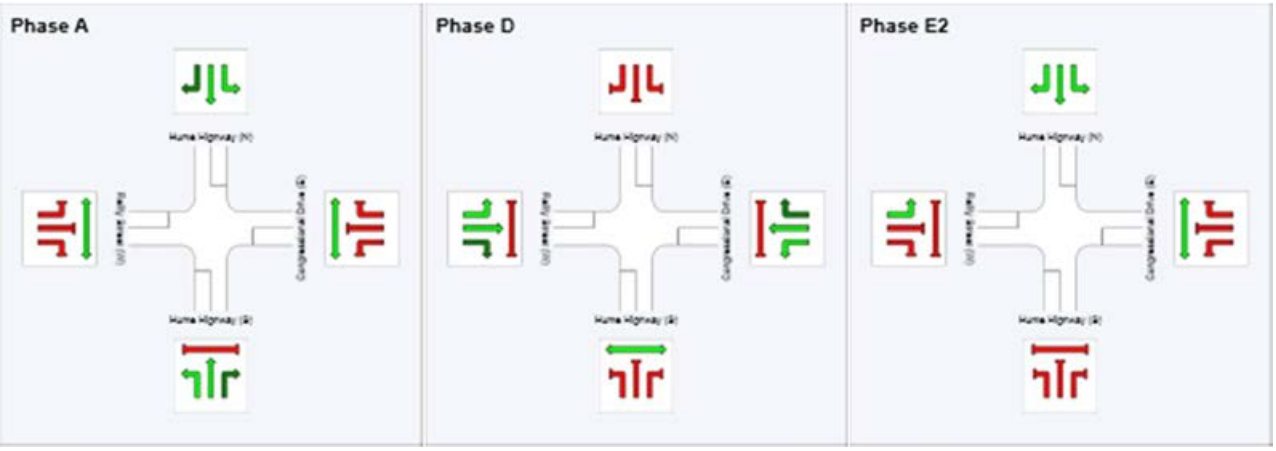
PHASING SUMMARY

Site: I-05 2015 MIMT AM

Hume Highway / Reilly Street
2015 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	100	137
Green Time (sec)	94	31	7
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	100	37	13
Phase Split	67 %	25 %	9 %



MOVEMENT SUMMARY

Site: I-05 2015 MIMT PM

Hume Highway / Reilly Street
2015 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Hignway (S)											
1	L2	219	0.5	0.631	19.3	LOS B	23.9	171.8	0.51	0.55	42.0
2	T1	1961	4.6	0.631	11.3	LOS A	23.9	171.8	0.43	0.42	46.0
3	R2	21	5.0	0.372	28.0	LOS B	1.0	7.1	0.59	0.72	34.4
Approach		2202	4.2	0.631	12.2	LOS A	23.9	171.8	0.44	0.44	45.3
East: Congressional Drive (E)											
4	L2	36	2.9	0.163	59.6	LOS E	3.5	24.8	0.88	0.72	24.3
5	T1	21	0.0	0.163	55.0	LOS D	3.5	24.8	0.88	0.72	23.8
6	R2	44	0.0	0.180	62.1	LOS E	2.8	19.5	0.89	0.74	19.8
Approach		101	1.0	0.180	59.7	LOS E	3.5	24.8	0.88	0.73	22.3
North: Hume Hignway (N)											
7	L2	62	0.0	0.921	14.2	LOS A	42.0	299.3	0.46	0.47	42.6
8	T1	3378	2.3	0.921	10.2	LOS A	42.0	299.3	0.36	0.38	47.3
9	R2	163	1.3	0.786	45.5	LOS D	10.4	73.6	1.00	0.97	26.2
Approach		3603	2.2	0.921	11.9	LOS A	42.0	299.3	0.39	0.41	45.6
West: Reilly Street (W)											
10	L2	57	0.0	0.193	53.9	LOS D	4.9	34.4	0.84	0.72	24.0
11	T1	27	0.0	0.193	49.3	LOS D	4.9	34.4	0.84	0.72	25.0
12	R2	233	1.8	0.938	96.4	LOS F	20.8	147.6	1.00	1.06	19.6
Approach		317	1.3	0.938	84.7	LOS F	20.8	147.6	0.96	0.97	20.5
All Vehicles		6223	2.8	0.938	16.5	LOS B	42.0	299.3	0.45	0.45	41.7

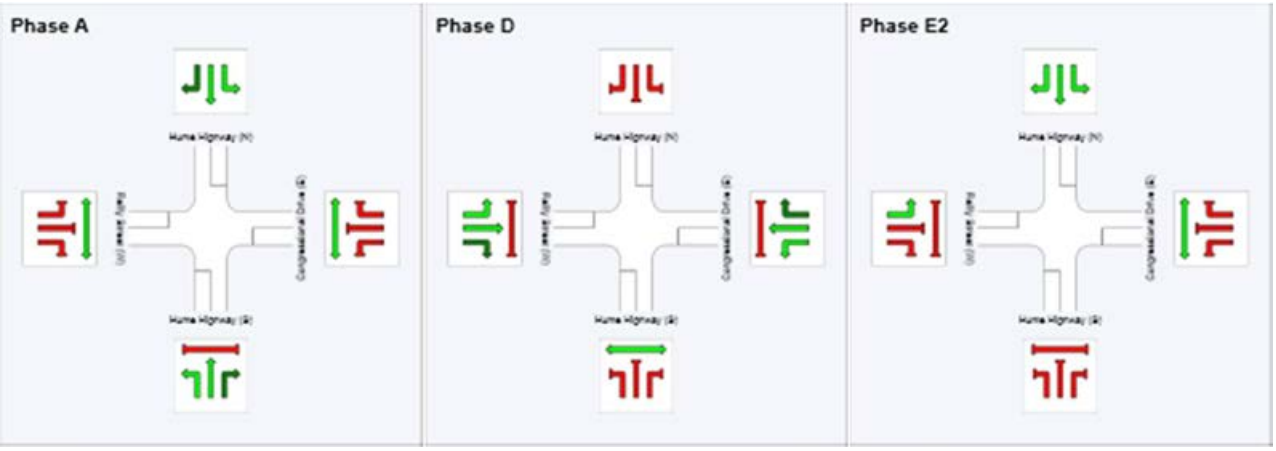
PHASING SUMMARY

Site: I-05 2015 MIMT PM

Hume Highway / Reilly Street
2015 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	98	135
Green Time (sec)	92	31	9
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	98	37	15
Phase Split	65 %	25 %	10 %



I-06 Intersection of Newbridge Road and Moorebank Avenue

MOVEMENT SUMMARY

Site: I-06 2015 BASE AM

Network: 2015 BASE AM

Newbridge Road / Moorebank Avenue
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	1225	3.2	1225	3.2	0.632	18.9	LOS B	13.4	96.6	0.56	0.82	42.3
3	R2	1084	9.0	1084	9.0	0.637	14.9	LOS B	12.7	95.7	0.39	0.68	52.8
Approach		2309	5.9	2309	5.9	0.637	17.0	LOS B	13.4	96.6	0.48	0.75	47.9
East: Newbridge Road (E)													
4	L2	468	19.8	468	19.8	0.389	17.2	LOS B	5.0	41.0	0.63	0.76	52.9
5	T1	709	5.2	709	5.2	0.926	75.3	LOS F	27.3	199.7	1.00	1.07	36.6
Approach		1178	11.0	1178	11.0	0.926	52.2	LOS D	27.3	199.7	0.85	0.95	40.3
West: Newbridge Road (W)													
11	T1	1149	6.4	1149	6.4	0.619	8.9	LOS A	13.0	96.1	0.38	0.34	63.2
12	R2	587	7.3	587	7.3	0.913	56.0	LOS D	16.5	123.1	1.00	0.99	24.9
Approach		1737	6.7	1737	6.7	0.913	24.8	LOS B	16.5	123.1	0.59	0.56	50.7
All Vehicles		5224	7.3	5224	7.3	0.926	27.5	LOS B	27.3	199.7	0.60	0.73	46.5

PHASING SUMMARY

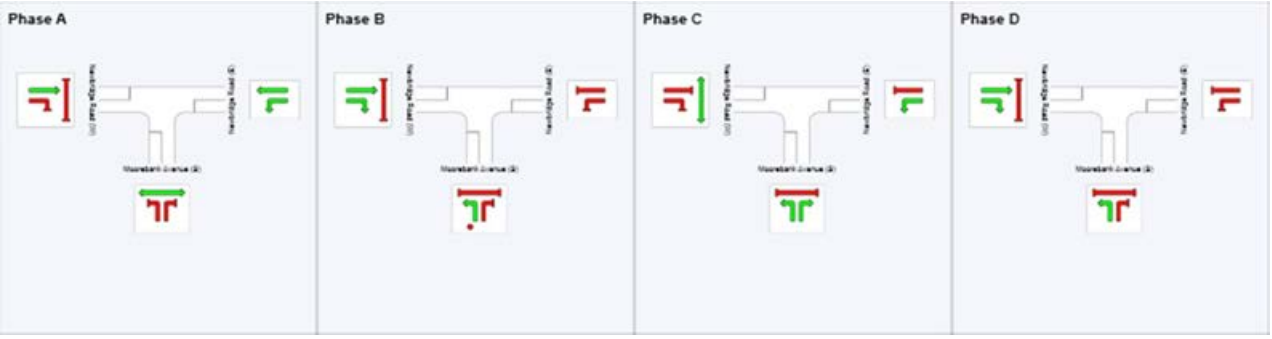
Site: I-06 2015 BASE AM

Network: 2015 BASE AM

Newbridge Road / Moorebank Avenue
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	33	55	116
Green Time (sec)	27	16	55	11
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	22	61	17
Phase Split	25 %	17 %	46 %	13 %



MOVEMENT SUMMARY

Site: I-06 2015 BASE PM

Network: 2015 BASE PM

Newbridge Road / Moorebank Avenue
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	718	3.4	718	3.4	0.410	21.5	LOS B	9.7	70.0	0.52	0.73	40.5
3	R2	714	10.8	714	10.8	0.923	54.5	LOS D	17.1	130.6	1.00	0.96	34.5
Approach		1432	7.1	1432	7.1	0.923	37.9	LOS C	17.1	130.6	0.76	0.84	36.6
East: Newbridge Road (E)													
4	L2	1055	5.1	1055	5.1	0.695	26.3	LOS B	23.8	173.7	0.73	0.82	46.6
5	T1	1144	4.7	1144	4.7	0.769	36.5	LOS C	27.5	200.3	0.91	0.81	48.5
Approach		2199	4.9	2199	4.9	0.769	31.6	LOS C	27.5	200.3	0.82	0.81	47.8
West: Newbridge Road (W)													
11	T1	925	3.8	925	3.8	0.361	8.7	LOS A	11.1	80.2	0.47	0.41	63.4
12	R2	953	2.7	953	2.7	0.894	44.2	LOS D	27.1	194.4	0.97	0.92	28.8
Approach		1878	3.2	1878	3.2	0.894	26.7	LOS B	27.1	194.4	0.72	0.67	47.5
All Vehicles		5508	4.9	5508	4.9	0.923	31.6	LOS C	27.5	200.3	0.77	0.77	44.9

PHASING SUMMARY

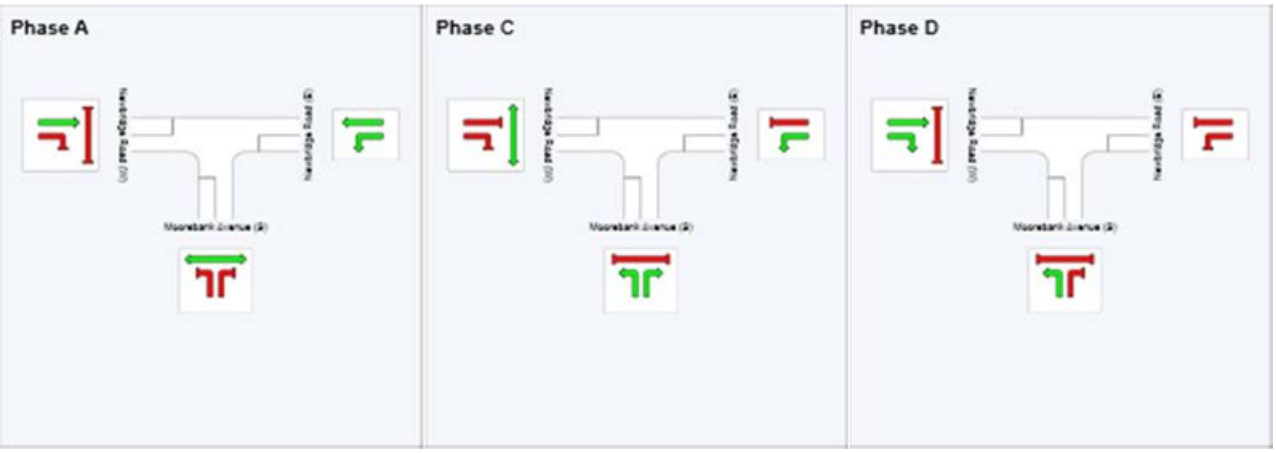
Site: I-06 2015 BASE PM

Network: 2015 BASE PM

Newbridge Road / Moorebank Avenue
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	44	76
Green Time (sec)	38	26	34
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	44	32	40
Phase Split	38 %	28 %	34 %



MOVEMENT SUMMARY

Site: I-06 2015 MIMT AM

Network: 2015 MIMT AM

Newbridge Road / Moorebank Avenue
2015 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	1225	3.2	1225	3.2	0.632	18.9	LOS B	13.4	96.6	0.56	0.82	42.3
3	R2	1085	9.1	1085	9.1	0.638	14.9	LOS B	12.7	96.0	0.39	0.68	52.8
Approach		2311	6.0	2311	6.0	0.638	17.0	LOS B	13.4	96.6	0.48	0.75	47.9
East: Newbridge Road (E)													
4	L2	472	19.9	472	19.9	0.392	17.2	LOS B	5.0	41.3	0.64	0.76	52.9
5	T1	709	5.2	709	5.2	0.926	75.3	LOS F	27.3	199.7	1.00	1.07	36.6
Approach		1181	11.1	1181	11.1	0.926	52.1	LOS D	27.3	199.7	0.85	0.95	40.3
West: Newbridge Road (W)													
11	T1	1149	6.4	1149	6.4	0.619	8.9	LOS A	13.0	96.1	0.38	0.34	63.2
12	R2	589	7.3	589	7.3	0.923	57.9	LOS E	17.1	126.9	1.00	1.00	24.4
Approach		1739	6.7	1739	6.7	0.923	25.5	LOS B	17.1	126.9	0.59	0.56	50.3
All Vehicles		5231	7.4	5231	7.4	0.926	27.8	LOS B	27.3	199.7	0.60	0.73	46.3

PHASING SUMMARY

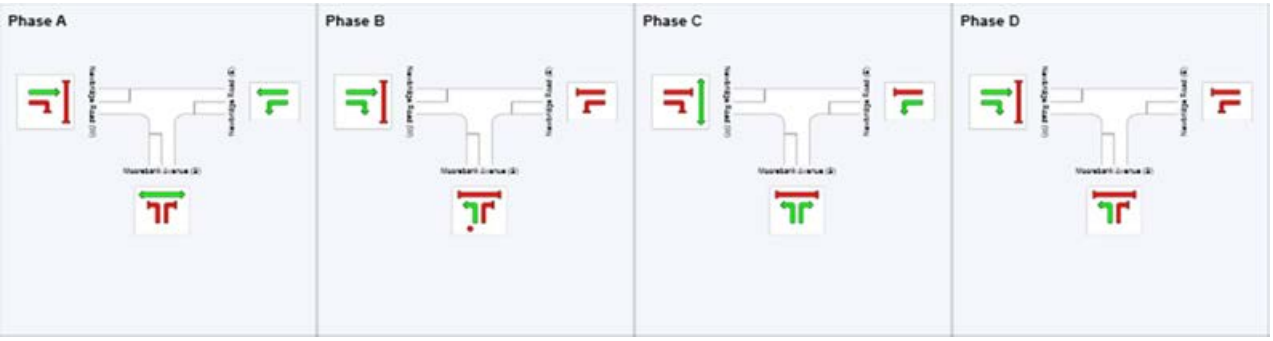
Site: I-06 2015 MIMT AM

Network: 2015 MIMT AM

Newbridge Road / Moorebank Avenue
2015 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	33	55	116
Green Time (sec)	27	16	55	11
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	22	61	17
Phase Split	25 %	17 %	46 %	13 %



MOVEMENT SUMMARY

Site: I-06 2015 MIMT PM

Network: 2015 MIMT PM

Newbridge Road / Moorebank Avenue
2015 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	720	3.4	720	3.4	0.411	21.5	LOS B	9.8	70.3	0.52	0.73	40.5
3	R2	717	10.9	717	10.9	0.928	55.3	LOS D	17.1	130.6	1.00	0.97	34.3
Approach		1437	7.1	1437	7.1	0.928	38.3	LOS C	17.1	130.6	0.76	0.85	36.4
East: Newbridge Road (E)													
4	L2	1056	5.2	1056	5.2	0.700	26.4	LOS B	23.9	174.4	0.73	0.82	46.6
5	T1	1144	4.7	1144	4.7	0.769	36.5	LOS C	27.5	200.3	0.91	0.81	48.5
Approach		2200	4.9	2200	4.9	0.769	31.6	LOS C	27.5	200.3	0.83	0.81	47.8
West: Newbridge Road (W)													
11	T1	925	3.8	925	3.8	0.361	8.7	LOS A	11.1	80.2	0.47	0.41	63.4
12	R2	953	2.7	953	2.7	0.896	44.4	LOS D	27.3	195.3	0.97	0.92	28.7
Approach		1878	3.2	1878	3.2	0.896	26.8	LOS B	27.3	195.3	0.72	0.67	47.5
All Vehicles		5515	4.9	5515	4.9	0.928	31.7	LOS C	27.5	200.3	0.77	0.77	44.8

PHASING SUMMARY

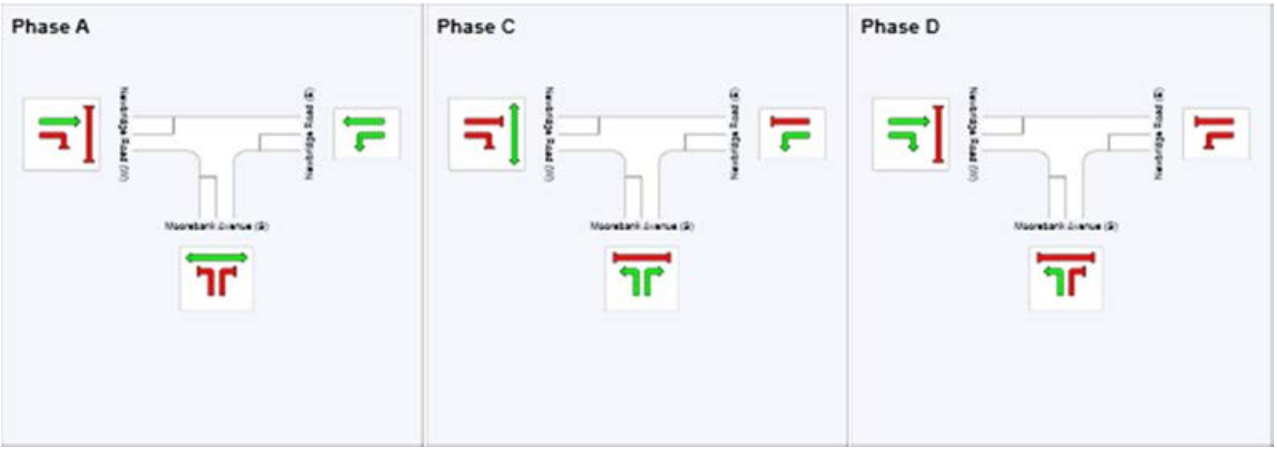
Site: I-06 2015 MIMT PM

Network: 2015 MIMT PM

Newbridge Road / Moorebank Avenue
2015 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	44	76
Green Time (sec)	38	26	34
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	44	32	40
Phase Split	38 %	28 %	34 %



I-07 Intersection of Moorebank Avenue and Heathcote Road

MOVEMENT SUMMARY

Site: I-07 2015 BASE AM

Network: 2015 BASE AM

Moorebank Avenue / Heathcote Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	1554	5.7	1554	5.7	0.903	20.2	LOS B	42.3	310.8	0.69	0.70	27.8
3	R2	20	21.1	20	21.1	0.183	71.8	LOS F	1.3	10.6	0.98	0.71	30.5
Approach		1574	5.9	1574	5.9	0.903	20.8	LOS B	42.3	310.8	0.69	0.70	27.9
East: Heathcote Road (E)													
4	L2	22	57.1	22	57.1	1.002	114.6	LOS F	38.9	292.9	1.00	1.16	21.0
6	R2	748	6.0	748	6.0	1.002	93.5	LOS F	38.9	292.9	1.00	1.08	23.8
Approach		771	7.5	771	7.5	1.002	94.2	LOS F	38.9	292.9	1.00	1.08	23.7
North: Moorebank Avenue (N)													
7	L2	528	7.8	528	7.8	0.311	10.5	LOS A	9.9	74.0	0.52	0.70	51.6
8	T1	553	17.0	553	17.0	0.312	20.6	LOS B	10.4	83.2	0.63	0.54	13.5
Approach		1081	12.5	1081	12.5	0.312	15.6	LOS B	10.4	83.2	0.58	0.62	41.5
All Vehicles		3425	8.3	3425	8.3	1.002	35.7	LOS C	42.3	310.8	0.73	0.76	29.0

PHASING SUMMARY

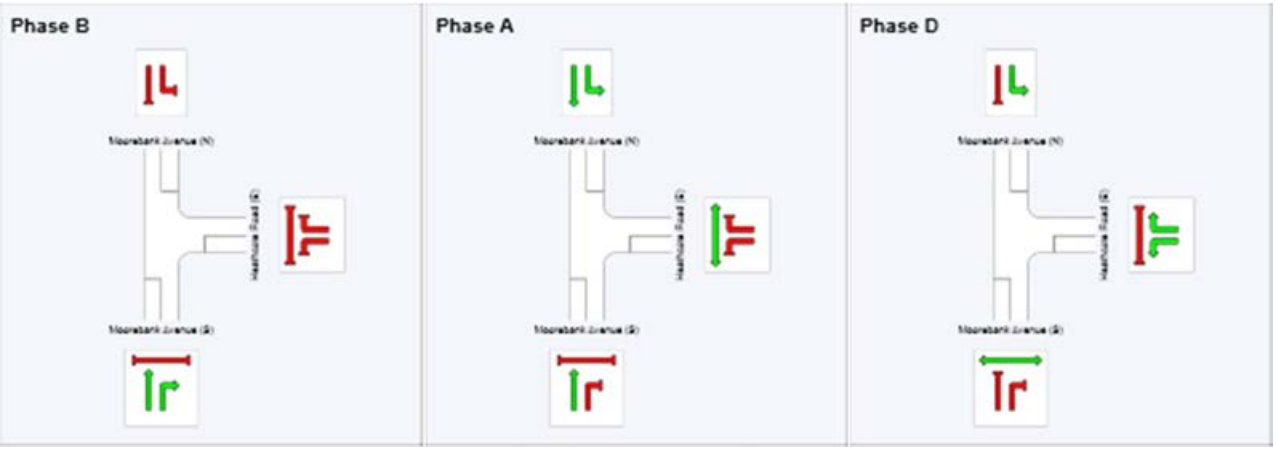
Site: I-07 2015 BASE AM

Network: 2015 BASE AM

Moorebank Avenue / Heathcote Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	15	88
Green Time (sec)	9	67	39
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	73	45
Phase Split	11 %	55 %	34 %



MOVEMENT SUMMARY

Site: I-07 2015 BASE PM

Network: 2015 BASE PM

Moorebank Avenue / Heathcote Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	878	8.4	878	8.4	0.651	13.8	LOS A	17.9	134.2	0.66	0.60	33.4
3	R2	39	8.1	39	8.1	0.322	64.2	LOS E	2.2	16.6	0.99	0.73	32.3
Approach		917	8.4	917	8.4	0.651	16.0	LOS B	17.9	134.2	0.67	0.60	33.2
East: Heathcote Road (E)													
4	L2	64	19.7	64	19.7	0.913	52.7	LOS D	25.3	188.6	1.00	0.96	32.3
6	R2	560	5.1	560	5.1	0.913	48.0	LOS D	25.3	188.6	0.96	0.92	33.7
Approach		624	6.6	624	6.6	0.913	48.5	LOS D	25.3	188.6	0.96	0.92	33.5
North: Moorebank Avenue (N)													
7	L2	762	3.6	762	3.6	0.357	7.5	LOS A	5.0	36.4	0.24	0.61	53.8
8	T1	1241	4.1	1241	4.1	0.632	6.1	LOS A	10.5	76.0	0.33	0.29	29.7
Approach		2003	3.9	2003	3.9	0.632	6.6	LOS A	10.5	76.0	0.29	0.41	48.8
All Vehicles		3544	5.5	3544	5.5	0.913	16.4	LOS B	25.3	188.6	0.51	0.55	39.8

PHASING SUMMARY

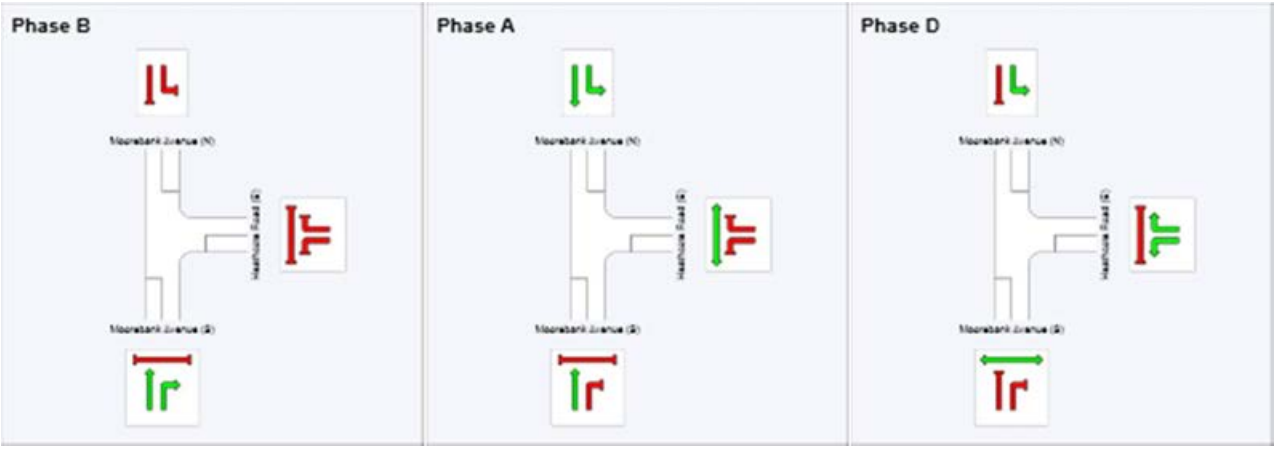
Site: I-07 2015 BASE PM

Network: 2015 BASE PM

Moorebank Avenue / Heathcote Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	14	80
Green Time (sec)	8	60	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	66	36
Phase Split	12 %	57 %	31 %



MOVEMENT SUMMARY

Site: I-07 2015 MIMT AM

Network: 2015 MIMT AM

Moorebank Avenue / Heathcote Road
2015 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	1555	5.8	1555	5.8	0.906	20.8	LOS B	43.1	316.9	0.69	0.71	27.3
3	R2	20	21.1	20	21.1	0.183	71.8	LOS F	1.3	10.6	0.98	0.71	30.5
Approach		1575	5.9	1575	5.9	0.906	21.4	LOS B	43.1	316.9	0.70	0.71	27.5
East: Heathcote Road (E)													
4	L2	22	57.1	22	57.1	1.005	116.5	LOS F	39.2	295.4	1.00	1.16	20.8
6	R2	748	6.0	748	6.0	1.005	94.9	LOS F	39.2	295.4	1.00	1.09	23.6
Approach		771	7.5	771	7.5	1.005	95.5	LOS F	39.2	295.4	1.00	1.09	23.5
North: Moorebank Avenue (N)													
7	L2	528	7.8	528	7.8	0.311	10.5	LOS A	9.9	74.0	0.52	0.70	51.6
8	T1	558	17.0	558	17.0	0.315	20.6	LOS B	10.5	84.2	0.63	0.54	13.5
Approach		1086	12.5	1086	12.5	0.315	15.7	LOS B	10.5	84.2	0.58	0.62	41.5
All Vehicles		3432	8.4	3432	8.4	1.005	36.2	LOS C	43.1	316.9	0.73	0.76	28.7

PHASING SUMMARY

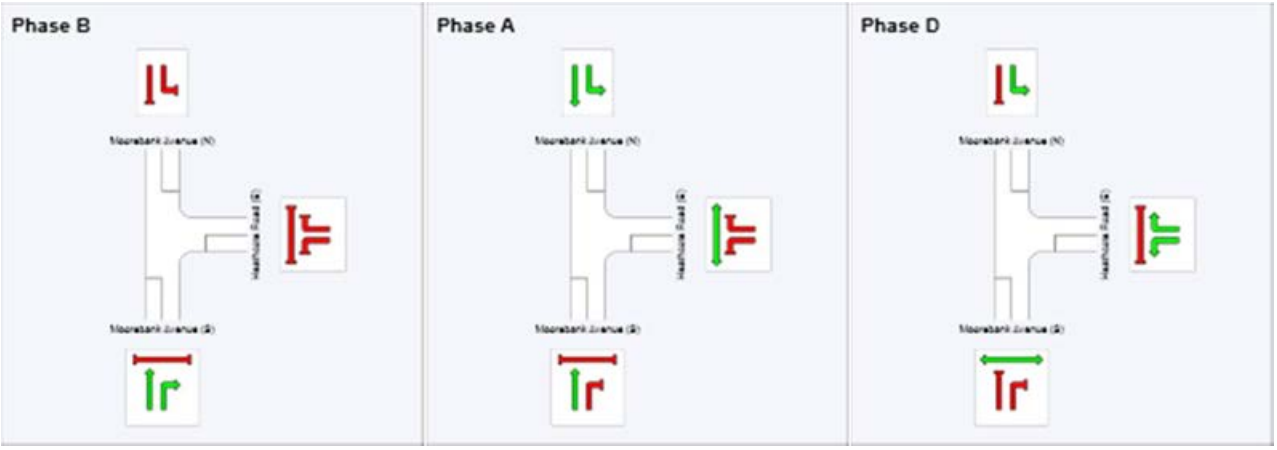
Site: I-07 2015 MIMT AM

Network: 2015 MIMT AM

Moorebank Avenue / Heathcote Road
2015 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	15	88
Green Time (sec)	9	67	39
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	73	45
Phase Split	11 %	55 %	34 %



MOVEMENT SUMMARY

Site: I-06 2015 MIMT PM

Network: 2015 MIMT PM

Newbridge Road / Moorebank Avenue
2015 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	720	3.4	720	3.4	0.411	21.5	LOS B	9.8	70.3	0.52	0.73	40.5
3	R2	717	10.9	717	10.9	0.928	55.3	LOS D	17.1	130.6	1.00	0.97	34.3
Approach		1437	7.1	1437	7.1	0.928	38.3	LOS C	17.1	130.6	0.76	0.85	36.4
East: Newbridge Road (E)													
4	L2	1056	5.2	1056	5.2	0.700	26.4	LOS B	23.9	174.4	0.73	0.82	46.6
5	T1	1144	4.7	1144	4.7	0.769	36.5	LOS C	27.5	200.3	0.91	0.81	48.5
Approach		2200	4.9	2200	4.9	0.769	31.6	LOS C	27.5	200.3	0.83	0.81	47.8
West: Newbridge Road (W)													
11	T1	925	3.8	925	3.8	0.361	8.7	LOS A	11.1	80.2	0.47	0.41	63.4
12	R2	953	2.7	953	2.7	0.896	44.4	LOS D	27.3	195.3	0.97	0.92	28.7
Approach		1878	3.2	1878	3.2	0.896	26.8	LOS B	27.3	195.3	0.72	0.67	47.5
All Vehicles		5515	4.9	5515	4.9	0.928	31.7	LOS C	27.5	200.3	0.77	0.77	44.8

PHASING SUMMARY

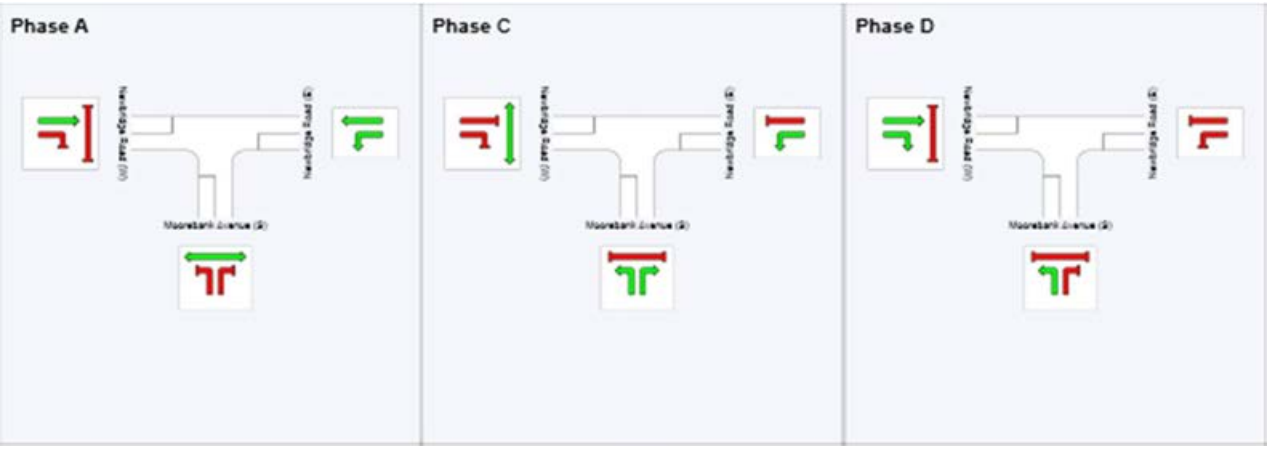
Site: I-06 2015 MIMT PM

Network: 2015 MIMT PM

Newbridge Road / Moorebank Avenue
2015 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	44	76
Green Time (sec)	38	26	34
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	44	32	40
Phase Split	38 %	28 %	34 %



I-08 Intersection of Moorebank Avenue and Industry Park Access

MOVEMENT SUMMARY

Site: I-08 2015 BASE AM

Network: 2015 BASE AM

Moorebank Avenue / Industry Park Access
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (Network Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	77	1.4	77	1.4	0.065	8.4	LOS A	1.0	6.8	0.26	0.61	41.5
2	T1	1569	4.9	1569	4.9	0.494	2.7	LOS A	13.0	94.8	0.28	0.26	55.0
Approach		1646	4.7	1646	4.7	0.494	3.0	LOS A	13.0	94.8	0.28	0.28	53.8
North: Moorebank Avenue (N)													
8	T1	529	16.1	529	16.1	0.177	1.8	LOS A	2.9	23.5	0.19	0.16	57.7
9	R2	52	38.8	52	38.8	0.489	14.1	LOS A	1.5	13.8	0.43	0.69	32.9
Approach		581	18.1	581	18.1	0.489	2.9	LOS A	2.9	23.5	0.21	0.21	55.1
West: Industry Park Access (W)													
10	L2	20	63.2	20	63.2	0.108	3.8	LOS A	0.2	2.6	0.23	0.35	26.8
12	R2	47	71.1	47	71.1	0.456	72.1	LOS F	2.3	26.0	0.99	0.73	19.3
Approach		67	68.7	67	68.8	0.456	51.8	LOS D	2.3	26.0	0.77	0.62	20.0
All Vehicles		2295	10.0	2295	10.0	0.494	4.4	LOS A	13.0	94.8	0.28	0.27	51.6

PHASING SUMMARY

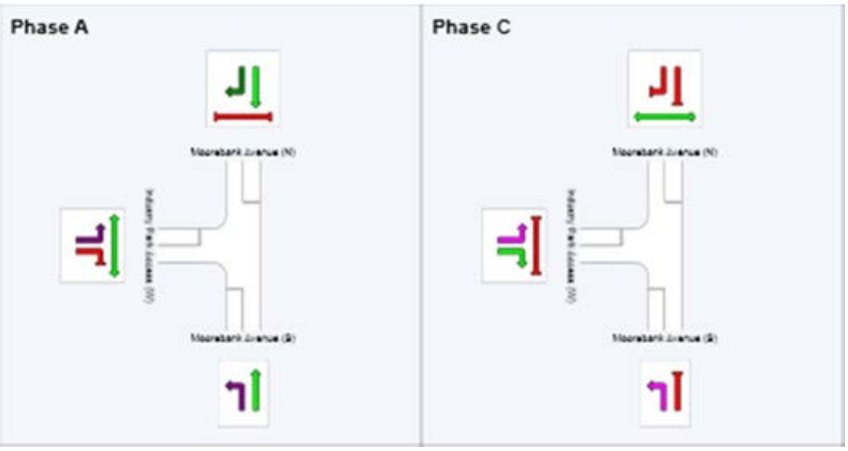
Site: I-08 2015 BASE AM

Network: 2015 BASE AM

Moorebank Avenue / Industry Park Access
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (Network Cycle Time)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	119
Green Time (sec)	113	8
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	119	14
Phase Split	89 %	11 %



MOVEMENT SUMMARY

Site: I-07 2015 BASE PM

Network: 2015 BASE PM

Moorebank Avenue / Heathcote Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	878	8.4	878	8.4	0.651	13.8	LOS A	17.9	134.2	0.66	0.60	33.4
3	R2	39	8.1	39	8.1	0.322	64.2	LOS E	2.2	16.6	0.99	0.73	32.3
Approach		917	8.4	917	8.4	0.651	16.0	LOS B	17.9	134.2	0.67	0.60	33.2
East: Heathcote Road (E)													
4	L2	64	19.7	64	19.7	0.913	52.7	LOS D	25.3	188.6	1.00	0.96	32.3
6	R2	560	5.1	560	5.1	0.913	48.0	LOS D	25.3	188.6	0.96	0.92	33.7
Approach		624	6.6	624	6.6	0.913	48.5	LOS D	25.3	188.6	0.96	0.92	33.5
North: Moorebank Avenue (N)													
7	L2	762	3.6	762	3.6	0.357	7.5	LOS A	5.0	36.4	0.24	0.61	53.8
8	T1	1241	4.1	1241	4.1	0.632	6.1	LOS A	10.5	76.0	0.33	0.29	29.7
Approach		2003	3.9	2003	3.9	0.632	6.6	LOS A	10.5	76.0	0.29	0.41	48.8
All Vehicles		3544	5.5	3544	5.5	0.913	16.4	LOS B	25.3	188.6	0.51	0.55	39.8

PHASING SUMMARY

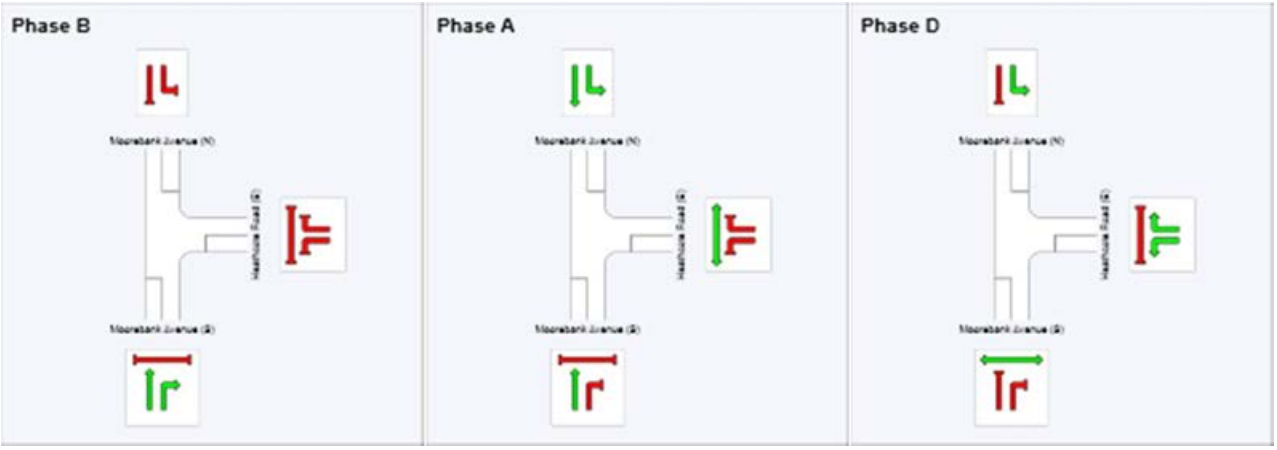
Site: I-07 2015 BASE PM

Network: 2015 BASE PM

Moorebank Avenue / Heathcote Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	14	80
Green Time (sec)	8	60	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	66	36
Phase Split	12 %	57 %	31 %



MOVEMENT SUMMARY

Site: I-08 2015 MIMT AM

Network: 2015 MIMT AM

Moorebank Avenue / Industry Park Access
2015 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (Network Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	77	1.4	77	1.4	0.065	8.4	LOS A	1.0	6.8	0.26	0.61	41.5
2	T1	1571	5.0	1571	5.0	0.498	2.7	LOS A	13.2	96.1	0.28	0.26	55.0
Approach		1647	4.8	1647	4.8	0.498	3.0	LOS A	13.2	96.1	0.28	0.28	53.8
North: Moorebank Avenue (N)													
8	T1	535	16.1	535	16.1	0.178	1.9	LOS A	3.0	23.8	0.19	0.17	57.7
9	R2	52	38.8	52	38.8	0.493	14.1	LOS A	1.5	13.9	0.43	0.69	32.9
Approach		586	18.1	586	18.1	0.493	2.9	LOS A	3.0	23.8	0.21	0.21	55.1
West: Industry Park Access (W)													
10	L2	20	63.2	20	63.2	0.110	3.8	LOS A	0.2	2.6	0.23	0.35	26.7
12	R2	47	71.1	47	71.1	0.456	72.1	LOS F	2.3	26.0	0.99	0.73	19.3
Approach		67	68.7	67	68.8	0.456	51.8	LOS D	2.3	26.0	0.77	0.62	20.0
All Vehicles		2301	10.1	2301	10.1	0.498	4.4	LOS A	13.2	96.1	0.28	0.27	51.6

PHASING SUMMARY

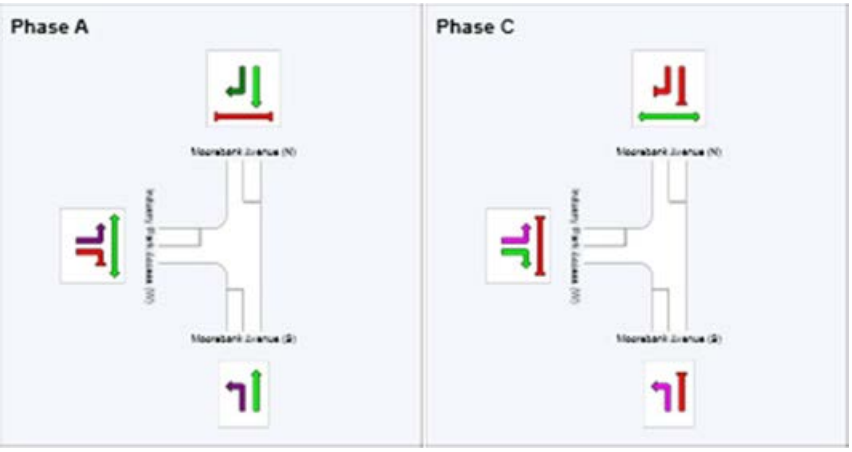
Site: I-08 2015 MIMT AM

Network: 2015 MIMT AM

Moorebank Avenue / Industry Park Access
2015 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (Network Cycle Time)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	119
Green Time (sec)	113	8
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	119	14
Phase Split	89 %	11 %



MOVEMENT SUMMARY

Site: I-06 2015 MIMT PM

Network: 2015 MIMT PM

Newbridge Road / Moorebank Avenue
2015 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	720	3.4	720	3.4	0.411	21.5	LOS B	9.8	70.3	0.52	0.73	40.5
3	R2	717	10.9	717	10.9	0.928	55.3	LOS D	17.1	130.6	1.00	0.97	34.3
Approach		1437	7.1	1437	7.1	0.928	38.3	LOS C	17.1	130.6	0.76	0.85	36.4
East: Newbridge Road (E)													
4	L2	1056	5.2	1056	5.2	0.700	26.4	LOS B	23.9	174.4	0.73	0.82	46.6
5	T1	1144	4.7	1144	4.7	0.769	36.5	LOS C	27.5	200.3	0.91	0.81	48.5
Approach		2200	4.9	2200	4.9	0.769	31.6	LOS C	27.5	200.3	0.83	0.81	47.8
West: Newbridge Road (W)													
11	T1	925	3.8	925	3.8	0.361	8.7	LOS A	11.1	80.2	0.47	0.41	63.4
12	R2	953	2.7	953	2.7	0.896	44.4	LOS D	27.3	195.3	0.97	0.92	28.7
Approach		1878	3.2	1878	3.2	0.896	26.8	LOS B	27.3	195.3	0.72	0.67	47.5
All Vehicles		5515	4.9	5515	4.9	0.928	31.7	LOS C	27.5	200.3	0.77	0.77	44.8

PHASING SUMMARY

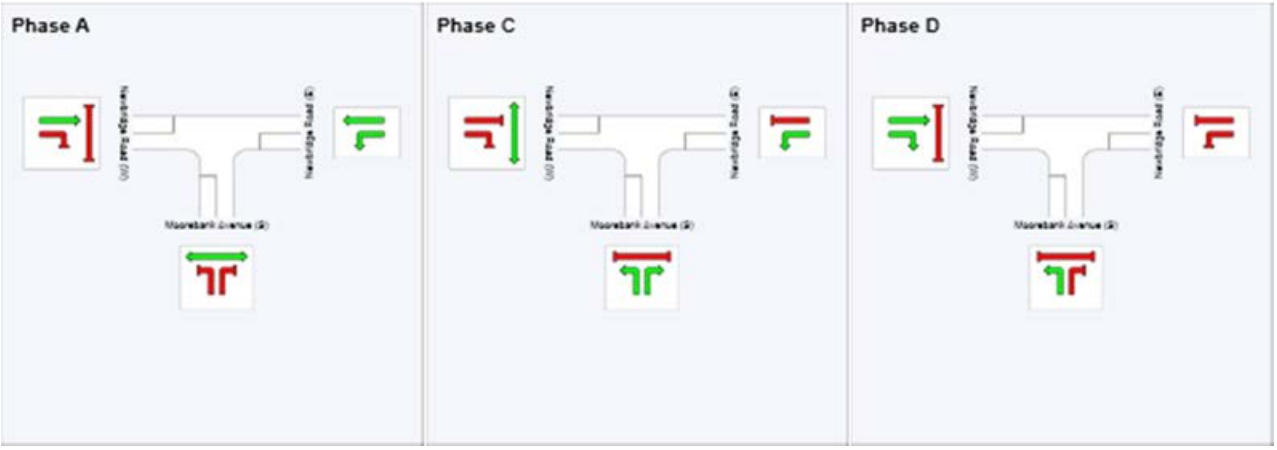
Site: I-06 2015 MIMT PM

Network: 2015 MIMT PM

Newbridge Road / Moorebank Avenue
2015 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	44	76
Green Time (sec)	38	26	34
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	44	32	40
Phase Split	38 %	28 %	34 %



I-09 Intersection of Moorebank Avenue and Church Road

MOVEMENT SUMMARY

Site: I-09 2015 BASE AM

Moorebank Avenue / Church Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1737	6.4	0.564	2.4	LOS A	8.1	59.8	0.24	0.10	57.2
3	R2	233	7.7	0.564	15.1	LOS B	8.1	59.8	1.00	0.42	45.9
Approach		1969	6.6	0.705	3.9	NA	8.1	59.8	0.33	0.14	55.5
East: Church Road (E)											
4	L2	172	14.1	0.187	6.3	LOS A	0.7	5.7	0.40	0.62	48.1
6	R2	6	0.0	0.143	77.8	LOS F	0.4	2.5	0.98	0.99	24.7
Approach		178	13.6	0.187	8.9	LOS A	0.7	5.7	0.42	0.64	46.5
North: Moorebank Avenue (N)											
7	L2	27	0.0	0.167	5.6	LOS A	0.0	0.0	0.00	0.06	57.7
8	T1	546	21.2	0.167	0.0	LOS A	0.0	0.0	0.00	0.03	59.6
Approach		574	20.2	0.167	0.3	NA	0.0	0.0	0.00	0.03	59.5
All Vehicles		2721	9.9	0.705	3.5	NA	8.1	59.8	0.27	0.15	55.6

MOVEMENT SUMMARY

Site: I-09 2015 BASE PM

Moorebank Avenue / Church Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	936	11.9	0.402	4.9	LOS A	5.4	41.5	0.22	0.07	55.1
3	R2	85	11.1	0.402	27.4	LOS B	5.4	41.5	1.00	0.34	39.8
Approach		1021	11.9	0.402	6.8	NA	5.4	41.5	0.29	0.10	53.3
East: Church Road (E)											
4	L2	364	4.3	0.926	88.7	LOS F	26.5	192.4	1.00	2.53	23.0
6	R2	1	0.0	0.029	97.9	LOS F	0.1	0.6	0.97	0.99	21.7
Approach		365	4.3	0.926	88.8	LOS F	26.5	192.4	1.00	2.53	23.0
North: Moorebank Avenue (N)											
7	L2	12	9.1	0.759	6.1	LOS A	0.0	0.0	0.00	0.01	57.0
8	T1	1425	4.5	0.759	0.5	LOS A	0.0	0.0	0.00	0.00	58.9
Approach		1437	4.5	0.759	0.6	NA	0.0	0.0	0.00	0.00	58.9
All Vehicles		2823	7.2	0.926	14.2	NA	26.5	192.4	0.23	0.36	47.3

MOVEMENT SUMMARY

Site: I-09 2015 MIMT AM

Moorebank Avenue / Church Road
2015 MIMT AM PEAK 7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	1738	6.5	0.566	2.5	LOS A	8.1	59.9	0.24	0.10	57.1
3	R2	233	7.7	0.566	15.3	LOS B	8.1	59.9	1.00	0.43	45.8
Approach		1971	6.6	0.708	4.0	NA	8.1	59.9	0.33	0.14	55.5
East: Church Road (E)											
4	L2	172	14.2	0.187	6.3	LOS A	0.7	5.7	0.41	0.63	48.1
6	R2	6	0.0	0.147	79.8	LOS F	0.4	2.6	0.98	0.99	24.4
Approach		178	13.7	0.187	8.9	LOS A	0.7	5.7	0.43	0.64	46.5
North: Moorebank Avenue (N)											
7	L2	27	0.0	0.168	5.6	LOS A	0.0	0.0	0.00	0.06	57.7
8	T1	551	21.1	0.168	0.0	LOS A	0.0	0.0	0.00	0.03	59.6
Approach		579	20.1	0.168	0.3	NA	0.0	0.0	0.00	0.03	59.6
All Vehicles		2728	10.0	0.708	3.5	NA	8.1	59.9	0.27	0.15	55.6

MOVEMENT SUMMARY

Site: I-09 2015 MIMT PM

Moorebank Avenue / Church Road
2015 MIMT PM PEAK 4:30 pm - 5:30 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	941	11.9	0.404	4.9	LOS A	5.4	41.9	0.22	0.07	55.0
3	R2	85	11.2	0.404	27.6	LOS B	5.4	41.9	1.00	0.34	39.8
Approach		1026	11.9	0.404	6.8	NA	5.4	41.9	0.29	0.10	53.3
East: Church Road (E)											
4	L2	364	4.4	0.928	89.2	LOS F	26.6	193.3	1.00	2.54	23.0
6	R2	1	0.0	0.029	99.4	LOS F	0.1	0.6	0.97	0.99	21.5
Approach		365	4.4	0.928	89.2	LOS F	26.6	193.3	1.00	2.54	22.9
North: Moorebank Avenue (N)											
7	L2	12	9.1	0.760	6.1	LOS A	0.0	0.0	0.00	0.01	57.0
8	T1	1426	4.6	0.760	0.5	LOS A	0.0	0.0	0.00	0.00	58.9
Approach		1438	4.6	0.760	0.6	NA	0.0	0.0	0.00	0.00	58.9
All Vehicles		2829	7.2	0.928	14.3	NA	26.6	193.3	0.23	0.36	47.3

I-10 Intersection of Heathcote Road and Nuwarra Road

MOVEMENT SUMMARY

Site: I-10 2015 BASE AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
SouthEast: Heathcote Road (SE)											
4	L2	192	1.1	0.129	7.5	LOS A	2.1	14.6	0.23	0.61	49.0
5	T1	1439	5.3	0.847	28.5	LOS B	36.9	270.2	0.80	0.75	40.6
6	R2	494	3.2	0.966	66.8	LOS E	14.3	103.0	1.00	1.06	28.6
Approach		2124	4.4	0.966	35.5	LOS C	36.9	270.2	0.79	0.81	37.2
NorthEast: Nuwarra Road (NE)											
7	L2	335	4.7	0.364	16.6	LOS B	10.0	72.8	0.55	0.73	46.6
8	T1	198	8.5	0.319	52.2	LOS D	5.6	42.2	0.92	0.73	26.5
9	R2	387	5.7	1.045	181.2	LOS F	25.6	188.3	1.00	1.33	14.7
Approach		920	5.9	1.045	93.6	LOS F	25.6	188.3	0.82	0.98	22.4
NorthWest: Heathcote Road (NW)											
10	L2	211	12.0	0.278	21.0	LOS B	6.3	48.6	0.67	0.75	42.9
11	T1	848	11.5	0.748	34.3	LOS C	22.0	169.1	0.80	0.70	38.1
12	R2	197	6.4	0.660	72.1	LOS F	6.5	47.7	1.00	0.82	20.5
Approach		1256	10.8	0.748	38.0	LOS C	22.0	169.1	0.81	0.73	35.5
SouthWest: Wattle Grove Drive (SW)											
1	L2	464	2.0	0.568	33.4	LOS C	20.7	147.3	0.84	0.96	30.8
2	T1	464	4.3	0.634	56.1	LOS D	14.0	101.3	0.99	0.82	25.1
3	R2	214	3.9	1.037	131.9	LOS F	20.5	148.5	1.00	1.27	14.1
Approach		1142	3.3	1.037	61.1	LOS E	20.7	148.5	0.93	0.96	23.3
All Vehicles		5442	5.9	1.045	51.3	LOS D	36.9	270.2	0.83	0.85	30.4

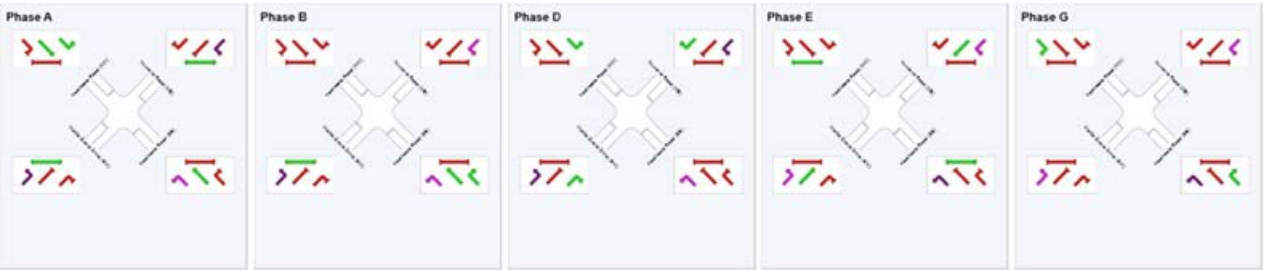
PHASING SUMMARY

Site: I-10 2015 BASE AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	D	E	G
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	54	67	86	114
Green Time (sec)	48	7	13	22	11
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	54	13	19	28	17
Phase Split	41 %	10 %	15 %	21 %	13 %



MOVEMENT SUMMARY

Site: I-10 2015 BASE PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Heathcote Road (SE)											
4	L2	285	2.6	0.234	13.0	LOS A	6.9	49.0	0.41	0.67	44.1
5	T1	1103	5.4	0.764	34.4	LOS C	30.2	221.6	0.84	0.75	38.0
6	R2	398	3.2	0.952	96.8	LOS F	16.6	119.5	1.00	1.06	23.3
Approach		1786	4.5	0.952	44.9	LOS D	30.2	221.6	0.80	0.80	33.4
NorthEast: Nuwarra Road (NE)											
7	L2	519	2.4	0.668	37.2	LOS C	23.5	167.6	0.86	0.98	37.1
8	T1	548	1.2	0.842	65.4	LOS E	20.1	141.9	1.00	0.94	23.2
9	R2	472	6.0	0.944	88.1	LOS F	20.0	147.6	1.00	1.01	23.9
Approach		1539	3.1	0.944	62.9	LOS E	23.5	167.6	0.95	0.98	27.5
NorthWest: Heathcote Road (NW)											
10	L2	212	6.0	0.195	21.9	LOS B	7.0	51.5	0.53	0.72	42.6
11	T1	1332	2.7	0.947	56.7	LOS E	47.8	342.6	0.88	0.96	30.7
12	R2	383	1.9	0.847	77.1	LOS F	14.3	101.8	1.00	0.91	19.6
Approach		1926	2.9	0.947	56.9	LOS E	47.8	342.6	0.87	0.92	29.4
SouthWest: Wattle Grove Drive (SW)											
1	L2	254	1.7	0.294	23.1	LOS B	10.3	73.2	0.66	0.74	35.7
2	T1	281	1.1	0.382	55.7	LOS D	8.5	59.9	0.93	0.76	25.2
3	R2	264	1.2	0.987	106.9	LOS F	23.6	167.0	1.00	1.14	16.4
Approach		799	1.3	0.987	62.3	LOS E	23.6	167.0	0.87	0.88	23.1
All Vehicles		6051	3.2	0.987	55.6	LOS D	47.8	342.6	0.87	0.90	29.2

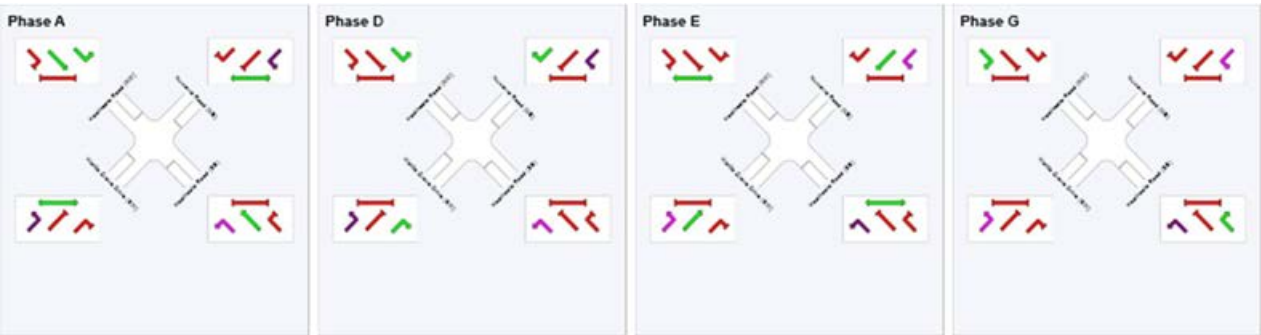
PHASING SUMMARY

Site: I-10 2015 BASE PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	61	87	117
Green Time (sec)	55	20	24	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	61	26	30	22
Phase Split	44 %	19 %	22 %	16 %



MOVEMENT SUMMARY

Site: I-10 2015 MIMT AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2015 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Heathcote Road (SE)											
4	L2	194	1.1	0.131	7.5	LOS A	2.1	14.9	0.23	0.61	49.0
5	T1	1439	5.3	0.847	28.5	LOS C	36.9	270.2	0.80	0.75	40.6
6	R2	494	3.2	0.966	66.8	LOS E	14.3	103.0	1.00	1.06	28.6
Approach		2127	4.4	0.966	35.5	LOS C	36.9	270.2	0.79	0.81	37.2
NorthEast: Nuwarra Road (NE)											
7	L2	335	4.7	0.364	16.6	LOS B	10.0	72.8	0.55	0.73	46.6
8	T1	201	8.4	0.324	52.2	LOS D	5.7	43.0	0.92	0.73	26.5
9	R2	387	5.7	1.045	181.2	LOS F	25.6	188.3	1.00	1.33	14.7
Approach		923	5.9	1.045	93.4	LOS F	25.6	188.3	0.82	0.98	22.4
NorthWest: Heathcote Road (NW)											
10	L2	211	12.0	0.278	21.0	LOS B	6.3	48.6	0.67	0.75	42.9
11	T1	848	11.5	0.748	34.3	LOS C	22.0	169.1	0.80	0.70	38.1
12	R2	197	6.4	0.660	72.1	LOS F	6.5	47.7	1.00	0.82	20.5
Approach		1256	10.8	0.748	38.0	LOS C	22.0	169.1	0.81	0.73	35.5
SouthWest: Wattle Grove Drive (SW)											
1	L2	464	2.0	0.568	33.4	LOS C	20.7	147.3	0.84	0.96	30.8
2	T1	464	4.3	0.634	56.1	LOS D	14.0	101.3	0.99	0.82	25.1
3	R2	214	3.9	1.037	131.9	LOS F	20.5	148.5	1.00	1.27	14.1
Approach		1142	3.3	1.037	61.1	LOS E	20.7	148.5	0.93	0.96	23.3
All Vehicles		5448	5.9	1.045	51.2	LOS D	36.9	270.2	0.83	0.85	30.4

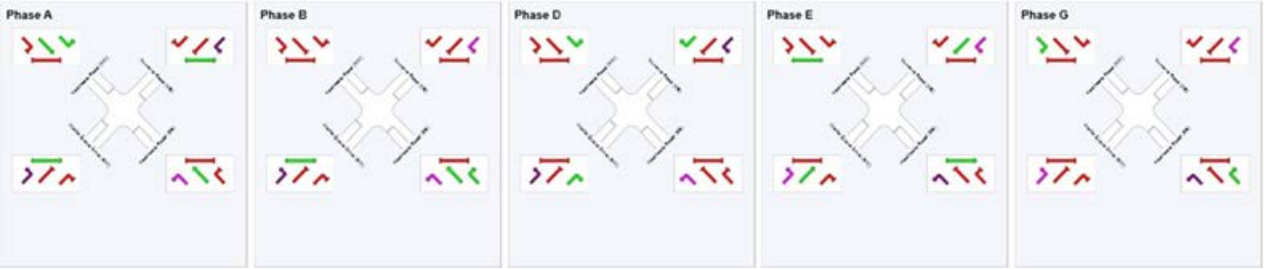
PHASING SUMMARY

Site: I-10 2015 MIMT AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2015 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	D	E	G
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	54	67	86	114
Green Time (sec)	48	7	13	22	11
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	54	13	19	28	17
Phase Split	41 %	10 %	15 %	21 %	13 %



MOVEMENT SUMMARY

Site: I-10 2015 MIMT PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2015 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Heathcote Road (SE)											
4	L2	285	2.6	0.234	13.0	LOS A	6.9	49.0	0.41	0.67	44.1
5	T1	1103	5.4	0.764	34.4	LOS C	30.3	221.6	0.84	0.75	38.0
6	R2	398	3.2	0.952	96.8	LOS F	16.6	119.5	1.00	1.06	23.3
Approach		1786	4.5	0.952	44.9	LOS D	30.3	221.6	0.80	0.80	33.4
NorthEast: Nuwarra Road (NE)											
7	L2	519	2.4	0.669	37.4	LOS C	23.5	167.8	0.86	0.99	37.0
8	T1	548	1.2	0.842	65.4	LOS E	20.1	141.9	1.00	0.94	23.2
9	R2	472	6.0	0.944	88.1	LOS F	20.0	147.6	1.00	1.01	23.9
Approach		1539	3.1	0.944	62.9	LOS E	23.5	167.8	0.95	0.98	27.5
NorthWest: Heathcote Road (NW)											
10	L2	212	6.0	0.195	21.9	LOS B	7.0	51.5	0.53	0.72	42.6
11	T1	1332	2.7	0.947	56.7	LOS E	47.8	342.6	0.88	0.96	30.7
12	R2	383	1.9	0.847	77.1	LOS F	14.3	101.8	1.00	0.91	19.6
Approach		1926	2.9	0.947	56.9	LOS E	47.8	342.6	0.87	0.92	29.4
SouthWest: Wattle Grove Drive (SW)											
1	L2	254	1.7	0.294	23.1	LOS B	10.3	73.2	0.66	0.74	35.7
2	T1	284	1.1	0.387	55.8	LOS D	8.6	60.7	0.93	0.76	25.1
3	R2	267	1.2	0.998	112.5	LOS F	24.5	173.3	1.00	1.16	15.8
Approach		805	1.3	0.998	64.2	LOS E	24.5	173.3	0.87	0.89	22.6
All Vehicles		6057	3.2	0.998	55.9	LOS D	47.8	342.6	0.87	0.90	29.1

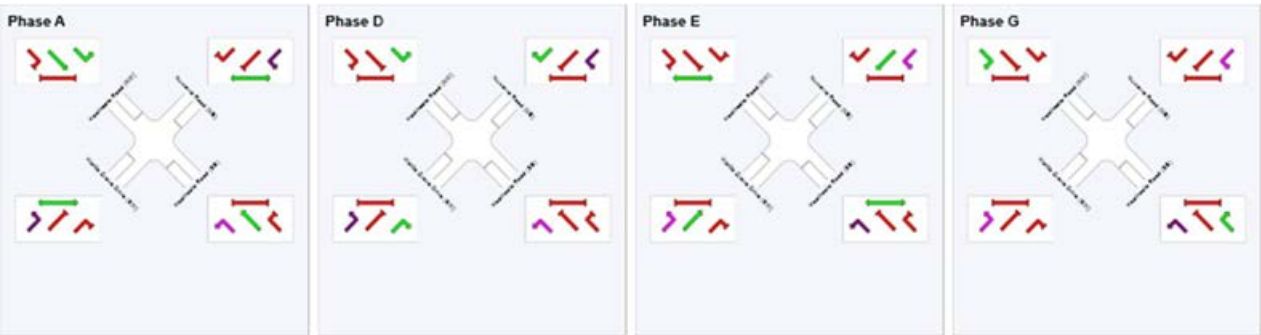
PHASING SUMMARY

Site: I-10 2015 MIMT PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2015 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	61	87	117
Green Time (sec)	55	20	24	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	61	26	30	22
Phase Split	44 %	19 %	22 %	16 %



I-11 Intersection of Newbridge Road and Nuwarra Road

MOVEMENT SUMMARY

Site: I-11 2015 BASE AM

Newbridge Road / Nuwarra Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Nuwarra Road (S)											
1	L2	28	7.4	0.539	47.3	LOS D	18.2	130.0	0.88	0.80	38.2
2	T1	299	1.8	0.539	44.3	LOS D	18.2	130.0	0.88	0.80	31.6
3	R2	698	6.8	1.015	130.5	LOS F	38.9	288.0	1.00	1.16	20.8
Approach		1025	5.3	1.015	103.1	LOS F	38.9	288.0	0.96	1.05	23.5
East: Newbridge Road (E)											
4	L2	260	17.8	0.452	21.9	LOS B	12.0	95.5	0.63	0.71	48.0
5	T1	901	11.3	0.452	20.5	LOS B	13.5	103.8	0.57	0.52	52.9
Approach		1161	12.8	0.452	20.8	LOS B	13.5	103.8	0.58	0.56	51.8
North: Nuwarra Road (N)											
7	L2	6	0.0	0.772	78.2	LOS F	7.3	51.2	1.00	0.91	26.6
8	T1	123	0.9	0.964	82.7	LOS F	11.8	85.3	1.00	0.98	24.8
9	R2	108	4.9	0.964	100.5	LOS F	11.8	85.3	1.00	1.17	24.1
Approach		238	2.7	0.964	90.7	LOS F	11.8	85.3	1.00	1.06	24.5
West: Newbridge Road (W)											
10	L2	238	2.2	0.858	43.2	LOS D	38.5	284.5	0.91	0.89	36.1
11	T1	1713	9.0	0.912	39.6	LOS C	46.7	352.2	0.92	0.92	43.3
Approach		1951	8.1	0.912	40.0	LOS C	46.7	352.2	0.92	0.92	42.3
All Vehicles		4375	8.4	1.015	52.5	LOS D	46.7	352.2	0.84	0.86	36.3

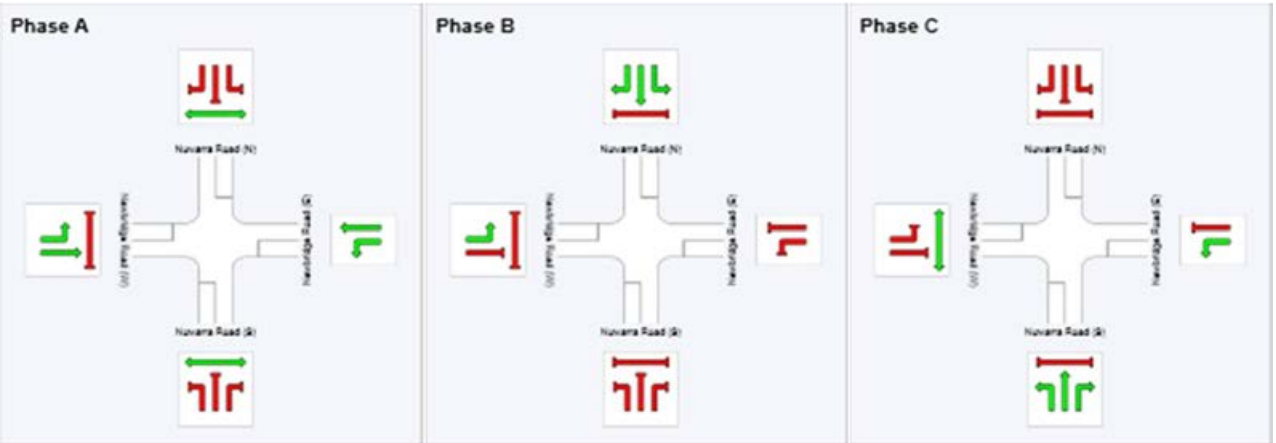
PHASING SUMMARY

Site: I-11 2015 BASE AM

Newbridge Road / Nuwarra Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	72	89
Green Time (sec)	66	11	45
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	72	17	51
Phase Split	51 %	12 %	36 %



MOVEMENT SUMMARY

Site: I-11 2015 BASE PM

Newbridge Road / Nuwarra Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nuwarra Road (S)											
1	L2	48	6.5	0.648	67.0	LOS E	12.1	86.1	0.99	0.82	32.8
2	T1	136	0.8	0.648	62.6	LOS E	12.1	86.1	0.99	0.82	29.7
3	R2	464	6.1	0.870	78.9	LOS F	17.4	128.1	1.00	0.94	28.2
Approach		648	5.0	0.870	74.6	LOS F	17.4	128.1	1.00	0.91	28.9
East: Newbridge Road (E)											
4	L2	662	4.5	0.635	13.7	LOS A	16.4	119.7	0.38	0.68	53.0
5	T1	1858	5.8	0.635	12.3	LOS A	24.7	181.8	0.47	0.47	58.5
Approach		2520	5.4	0.635	12.6	LOS A	24.7	181.8	0.45	0.53	57.1
North: Nuwarra Road (N)											
7	L2	15	0.0	0.779	71.0	LOS F	15.0	105.4	1.00	0.91	30.1
8	T1	261	0.8	0.973	74.6	LOS F	21.1	149.3	1.00	0.96	27.6
9	R2	180	1.2	0.973	102.6	LOS F	21.1	149.3	1.00	1.13	25.3
Approach		456	0.9	0.973	85.6	LOS F	21.1	149.3	1.00	1.03	26.7
West: Newbridge Road (W)											
10	L2	83	0.0	0.403	18.3	LOS B	10.7	79.3	0.40	0.43	50.1
11	T1	1296	7.8	0.458	11.2	LOS A	11.6	86.9	0.38	0.36	59.4
Approach		1379	7.3	0.458	11.7	LOS A	11.6	86.9	0.38	0.36	58.8
All Vehicles		5003	5.5	0.973	27.0	LOS B	24.7	181.8	0.55	0.58	47.1

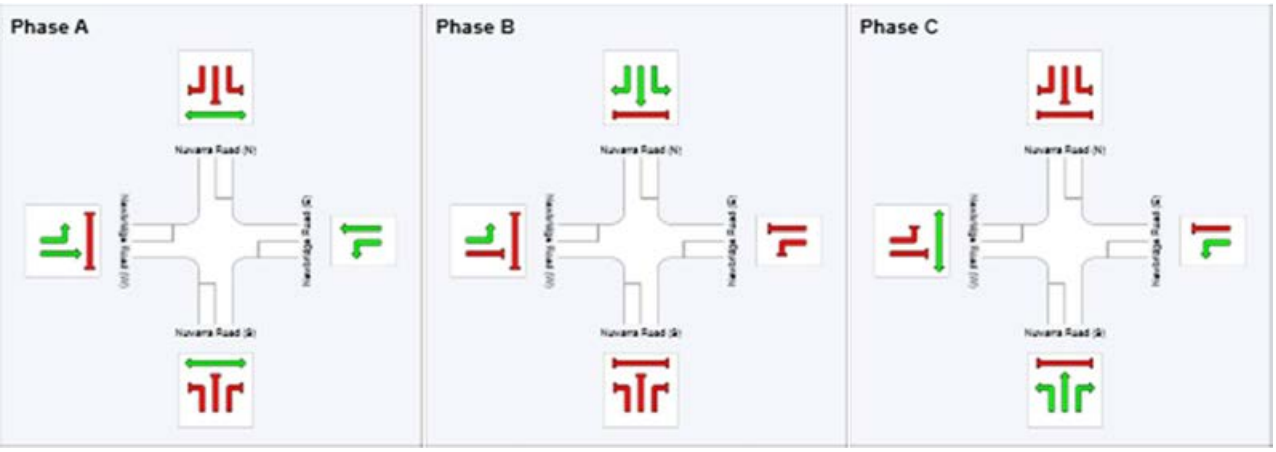
PHASING SUMMARY

Site: I-11 2015 BASE PM

Newbridge Road / Nuwarra Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	87	113
Green Time (sec)	81	20	21
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	87	26	27
Phase Split	62 %	19 %	19 %



MOVEMENT SUMMARY

Site: I-11 2015 MIMT AM

Newbridge Road / Nuwarra Road
2015 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nuwarra Road (S)											
1	L2	28	7.4	0.539	47.3	LOS D	18.2	130.0	0.88	0.80	38.2
2	T1	299	1.8	0.539	44.3	LOS D	18.2	130.0	0.88	0.80	31.6
3	R2	698	6.8	1.015	130.5	LOS F	38.9	288.0	1.00	1.16	20.8
Approach		1025	5.3	1.015	103.1	LOS F	38.9	288.0	0.96	1.05	23.5
East: Newbridge Road (E)											
4	L2	262	17.7	0.454	21.9	LOS B	12.1	95.8	0.63	0.71	48.0
5	T1	903	11.4	0.454	20.5	LOS B	13.6	104.3	0.57	0.52	52.9
Approach		1165	12.8	0.454	20.8	LOS B	13.6	104.3	0.58	0.56	51.8
North: Nuwarra Road (N)											
7	L2	6	0.0	0.774	78.3	LOS F	7.3	51.4	1.00	0.92	26.6
8	T1	124	0.8	0.968	83.1	LOS F	11.9	86.1	1.00	0.98	24.7
9	R2	109	4.8	0.968	101.6	LOS F	11.9	86.1	1.00	1.18	23.9
Approach		239	2.6	0.968	91.4	LOS F	11.9	86.1	1.00	1.07	24.4
West: Newbridge Road (W)											
10	L2	238	2.2	0.858	43.3	LOS D	38.6	285.4	0.91	0.89	36.1
11	T1	1714	9.0	0.913	39.8	LOS C	46.9	353.7	0.92	0.93	43.3
Approach		1952	8.2	0.913	40.2	LOS C	46.9	353.7	0.92	0.92	42.2
All Vehicles		4380	8.5	1.015	52.5	LOS D	46.9	353.7	0.84	0.86	36.3

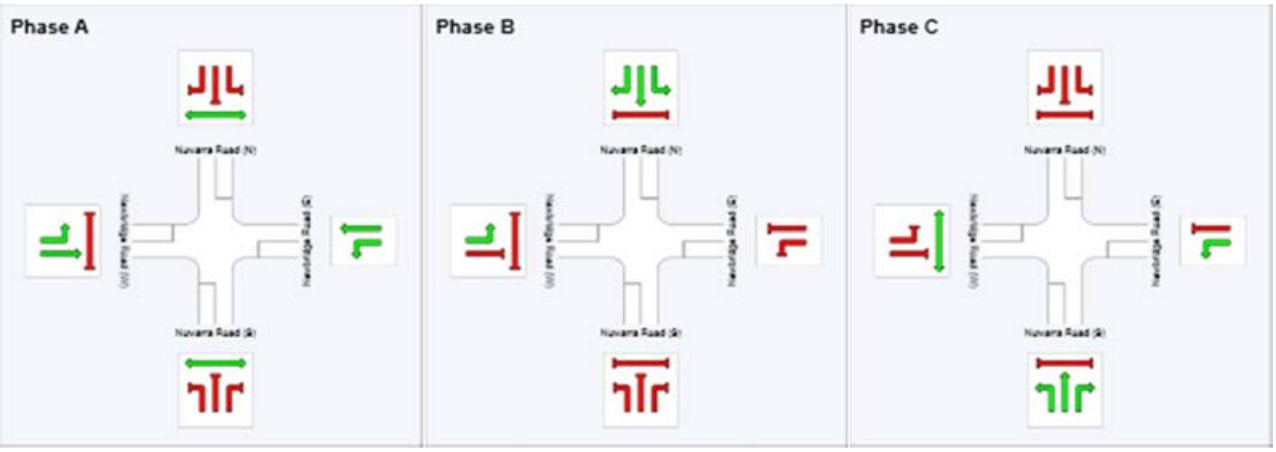
PHASING SUMMARY

Site: I-11 2015 MIMT AM

Newbridge Road / Nuwarra Road
2015 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	72	89
Green Time (sec)	66	11	45
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	72	17	51
Phase Split	51 %	12 %	36 %



MOVEMENT SUMMARY

Site: I-11 2015 MIMT PM

Newbridge Road / Nuwarra Road
2015 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nuwarra Road (S)											
1	L2	48	6.5	0.651	67.1	LOS E	12.1	86.5	0.99	0.82	32.8
2	T1	137	0.8	0.651	62.7	LOS E	12.1	86.5	0.99	0.82	29.7
3	R2	466	6.1	0.873	79.2	LOS F	17.5	129.0	1.00	0.95	28.2
Approach		651	5.0	0.873	74.9	LOS F	17.5	129.0	1.00	0.91	28.8
East: Newbridge Road (E)											
4	L2	662	4.5	0.635	13.7	LOS A	16.5	120.0	0.38	0.68	53.0
5	T1	1859	5.8	0.635	12.3	LOS A	24.8	182.1	0.47	0.47	58.5
Approach		2521	5.5	0.635	12.6	LOS A	24.8	182.1	0.45	0.53	57.1
North: Nuwarra Road (N)											
7	L2	15	0.0	0.779	70.9	LOS F	15.0	105.4	1.00	0.91	30.1
8	T1	261	0.8	0.973	74.6	LOS F	21.1	149.2	1.00	0.96	27.6
9	R2	180	1.2	0.973	102.6	LOS F	21.1	149.2	1.00	1.13	25.3
Approach		456	0.9	0.973	85.5	LOS F	21.1	149.2	1.00	1.03	26.7
West: Newbridge Road (W)											
10	L2	83	0.0	0.404	18.3	LOS B	10.8	79.5	0.40	0.43	50.1
11	T1	1298	7.8	0.459	11.2	LOS A	11.7	87.2	0.38	0.36	59.4
Approach		1381	7.4	0.459	11.7	LOS A	11.7	87.2	0.38	0.36	58.8
All Vehicles		5008	5.5	0.973	27.1	LOS B	24.8	182.1	0.55	0.58	47.1

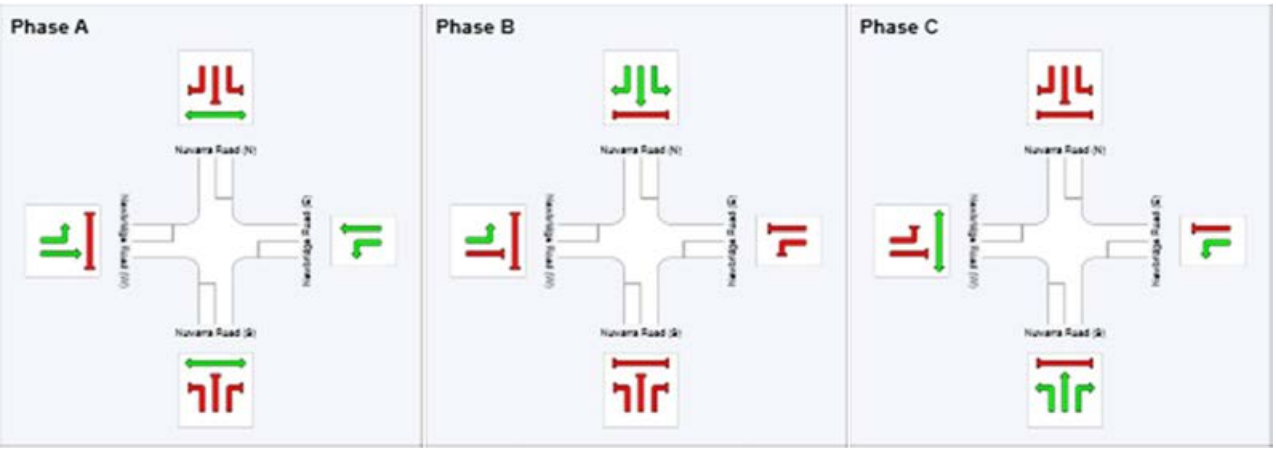
PHASING SUMMARY

Site: I-11 2015 MIMT PM

Newbridge Road / Nuwarra Road
2015 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	87	113
Green Time (sec)	81	20	21
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	87	26	27
Phase Split	62 %	19 %	19 %



I-12 Intersection of Newbridge Road and Governor Macquarie Drive

MOVEMENT SUMMARY

Site: I-12 2015 BASE AM

Newbridge Road / Governor Macquarie Drive
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Brickmakers Drive (S)											
1	L2	9	0.0	0.772	72.4	LOS F	13.2	93.1	1.00	0.90	26.5
2	T1	179	1.2	0.772	68.0	LOS E	13.2	93.1	1.00	0.90	26.1
3	R2	581	1.1	1.000	111.1	LOS F	26.3	186.0	1.00	1.15	25.5
Approach		769	1.1	1.000	100.6	LOS F	26.3	186.0	1.00	1.09	25.6
East: Newbridge Road (E)											
4	L2	187	2.8	0.135	7.5	LOS A	1.4	10.2	0.16	0.63	58.3
5	T1	1037	11.0	0.302	12.5	LOS A	10.6	80.9	0.49	0.43	60.8
6	R2	592	10.3	0.818	72.6	LOS F	20.7	157.4	1.00	0.89	35.9
Approach		1816	9.9	0.818	31.6	LOS C	20.7	157.4	0.62	0.60	49.2
North: Governor Macquarie Drive (N)											
7	L2	625	8.9	0.597	50.5	LOS D	18.2	137.0	0.91	0.84	40.8
8	T1	117	2.7	0.474	63.5	LOS E	7.6	54.1	0.97	0.78	27.1
9	R2	144	35.0	0.849	82.1	LOS F	10.9	98.9	1.00	0.94	27.9
Approach		886	12.4	0.849	57.4	LOS E	18.2	137.0	0.93	0.85	36.9
West: Newbridge Road (W)											
10	L2	116	30.9	0.931	57.0	LOS E	57.8	440.4	0.99	1.02	35.6
11	T1	2299	6.8	0.931	49.0	LOS D	59.1	437.8	0.99	1.01	43.8
12	R2	4	25.0	0.023	32.1	LOS C	0.2	1.4	0.60	0.66	38.2
Approach		2419	8.0	0.931	49.4	LOS D	59.1	440.4	0.99	1.01	43.5
All Vehicles		5891	8.3	1.000	51.8	LOS D	59.1	440.4	0.87	0.87	40.9

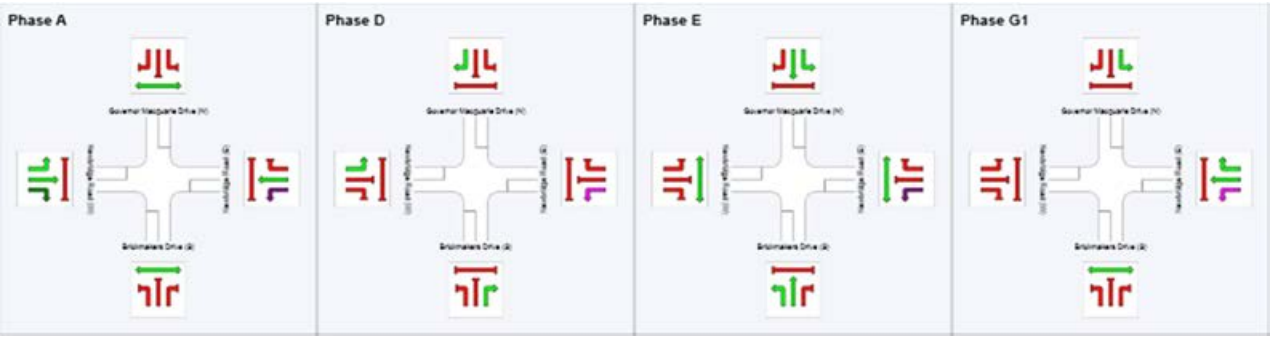
PHASING SUMMARY

Site: I-12 2015 BASE AM

Newbridge Road / Governor Macquarie Drive
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	66	88	112
Green Time (sec)	60	16	18	22
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	66	22	24	28
Phase Split	47 %	16 %	17 %	20 %



MOVEMENT SUMMARY

Site: I-12 2015 BASE PM

Newbridge Road / Governor Macquarie Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	8	0.0	0.455	68.6	LOS E	6.0	43.7	0.98	0.77	27.2
2	T1	83	5.1	0.455	64.5	LOS E	6.0	43.7	0.98	0.77	26.9
3	R2	222	0.9	0.527	69.1	LOS E	7.3	51.8	0.99	0.79	32.8
Approach		314	2.0	0.527	67.9	LOS E	7.3	51.8	0.99	0.78	31.3
East: Newbridge Road (E)											
4	L2	584	1.4	0.424	9.3	LOS A	6.8	48.4	0.27	0.68	57.2
5	T1	2297	4.4	0.702	15.3	LOS B	37.2	270.4	0.65	0.59	59.0
6	R2	647	11.2	1.040	145.3	LOS F	34.3	263.4	1.00	1.15	24.8
Approach		3528	5.2	1.040	38.2	LOS C	37.2	270.4	0.65	0.71	46.6
North: Governor Macquarie Drive (N)											
7	L2	479	3.5	0.376	47.5	LOS D	12.9	92.7	0.84	0.80	41.8
8	T1	268	0.8	0.861	73.7	LOS F	19.3	136.3	1.00	0.95	25.0
9	R2	205	19.0	0.972	104.3	LOS F	17.9	145.9	1.00	1.07	24.6
Approach		953	6.1	0.972	67.1	LOS E	19.3	145.9	0.92	0.90	33.0
West: Newbridge Road (W)											
10	L2	152	16.7	0.640	35.8	LOS C	27.0	203.0	0.75	0.71	43.0
11	T1	1611	6.1	0.640	28.2	LOS B	27.0	203.0	0.72	0.66	52.0
12	R2	3	0.0	0.043	40.5	LOS C	0.2	1.1	0.67	0.68	34.8
Approach		1765	7.0	0.640	28.9	LOS C	27.0	203.0	0.73	0.66	51.3
All Vehicles		6560	5.6	1.040	41.3	LOS C	37.2	270.4	0.73	0.73	44.5

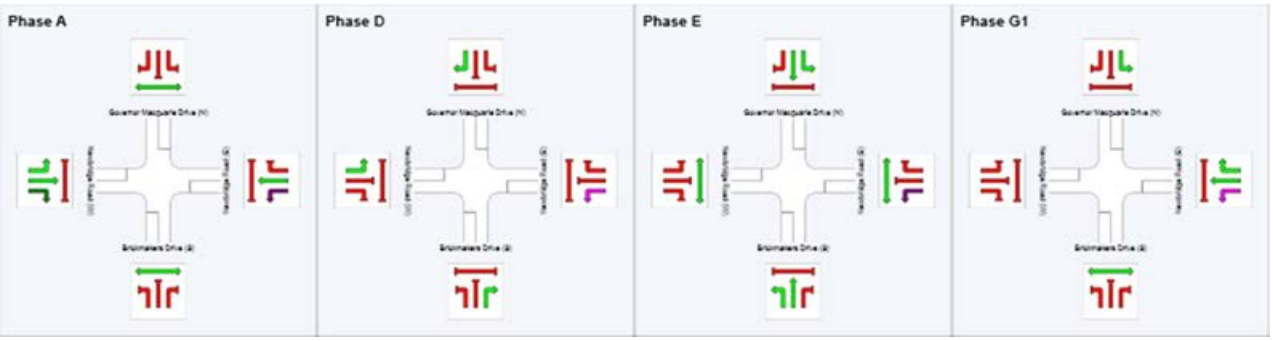
PHASING SUMMARY

Site: I-12 2015 BASE PM

Newbridge Road / Governor Macquarie Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	67	89	110
Green Time (sec)	61	16	15	24
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	67	22	21	30
Phase Split	48 %	16 %	15 %	21 %



MOVEMENT SUMMARY

Site: I-12 2015 MIMT AM

Newbridge Road / Governor Macquarie Drive
2015 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	9	0.0	0.772	72.4	LOS F	13.2	93.1	1.00	0.90	26.5
2	T1	179	1.2	0.772	68.0	LOS E	13.2	93.1	1.00	0.90	26.1
3	R2	581	1.1	1.000	111.1	LOS F	26.3	186.0	1.00	1.15	25.5
Approach		769	1.1	1.000	100.6	LOS F	26.3	186.0	1.00	1.09	25.6
East: Newbridge Road (E)											
4	L2	187	2.8	0.135	7.5	LOS A	1.4	10.2	0.16	0.63	58.3
5	T1	1040	11.0	0.303	12.5	LOS A	10.6	81.3	0.49	0.43	60.8
6	R2	592	10.3	0.818	72.6	LOS F	20.7	157.4	1.00	0.89	35.9
Approach		1819	9.9	0.818	31.5	LOS C	20.7	157.4	0.62	0.60	49.2
North: Governor Macquarie Drive (N)											
7	L2	625	8.9	0.597	50.5	LOS D	18.2	137.0	0.91	0.84	40.8
8	T1	117	2.7	0.474	63.5	LOS E	7.6	54.1	0.97	0.78	27.1
9	R2	144	35.0	0.850	82.1	LOS F	10.9	99.0	1.00	0.94	27.9
Approach		886	12.3	0.850	57.4	LOS E	18.2	137.0	0.93	0.85	36.9
West: Newbridge Road (W)											
10	L2	116	30.9	0.932	57.2	LOS E	58.0	441.9	1.00	1.02	35.5
11	T1	2300	6.8	0.932	49.2	LOS D	59.3	439.3	0.99	1.01	43.8
12	R2	4	25.0	0.023	32.1	LOS C	0.2	1.4	0.60	0.66	38.2
Approach		2420	8.0	0.932	49.6	LOS D	59.3	441.9	0.99	1.01	43.4
All Vehicles		5895	8.4	1.000	51.8	LOS D	59.3	441.9	0.87	0.87	40.9

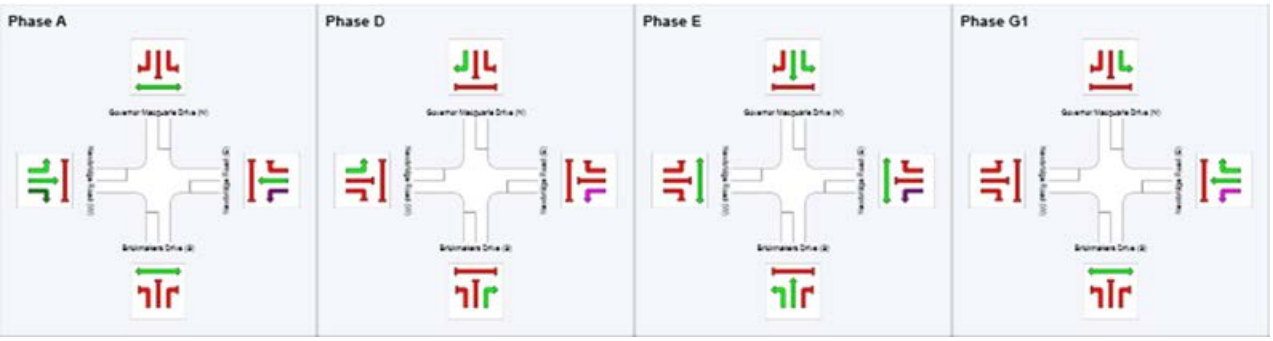
PHASING SUMMARY

Site: I-12 2015 MIMT AM

Newbridge Road / Governor Macquarie Drive
2015 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	66	88	112
Green Time (sec)	60	16	18	22
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	66	22	24	28
Phase Split	47 %	16 %	17 %	20 %



MOVEMENT SUMMARY

Site: I-12 2015 MIMT PM

Newbridge Road / Governor Macquarie Drive
2015 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	8	0.0	0.455	68.6	LOS E	6.0	43.7	0.98	0.77	27.2
2	T1	83	5.1	0.455	64.5	LOS E	6.0	43.7	0.98	0.77	26.9
3	R2	222	0.9	0.527	69.1	LOS E	7.3	51.8	0.99	0.79	32.8
Approach		314	2.0	0.527	67.9	LOS E	7.3	51.8	0.99	0.78	31.3
East: Newbridge Road (E)											
4	L2	584	1.4	0.424	9.3	LOS A	6.8	48.4	0.27	0.68	57.2
5	T1	2298	4.5	0.702	15.3	LOS B	37.2	270.6	0.65	0.59	59.0
6	R2	647	11.2	1.040	145.3	LOS F	34.3	263.4	1.00	1.15	24.8
Approach		3529	5.2	1.040	38.2	LOS C	37.2	270.6	0.65	0.71	46.6
North: Governor Macquarie Drive (N)											
7	L2	479	3.5	0.376	47.5	LOS D	12.9	92.7	0.84	0.80	41.8
8	T1	268	0.8	0.861	73.7	LOS F	19.3	136.3	1.00	0.95	25.0
9	R2	205	19.0	0.972	104.5	LOS F	17.9	146.1	1.00	1.07	24.6
Approach		953	6.1	0.972	67.1	LOS E	19.3	146.1	0.92	0.90	33.0
West: Newbridge Road (W)											
10	L2	152	16.7	0.641	35.9	LOS C	27.0	203.7	0.75	0.71	43.0
11	T1	1614	6.1	0.641	28.2	LOS B	27.0	203.7	0.72	0.66	52.0
12	R2	3	0.0	0.043	40.5	LOS C	0.2	1.1	0.67	0.68	34.8
Approach		1769	7.0	0.641	28.9	LOS C	27.0	203.7	0.73	0.66	51.2
All Vehicles		6564	5.7	1.040	41.3	LOS C	37.2	270.6	0.73	0.73	44.5

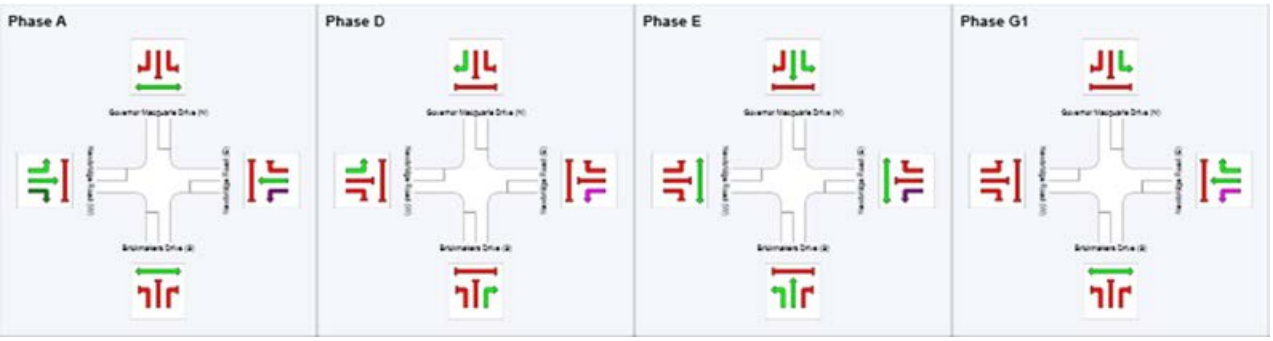
PHASING SUMMARY

Site: I-12 2015 MIMT PM

Newbridge Road / Governor Macquarie Drive
2015 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	67	89	110
Green Time (sec)	61	16	15	24
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	67	22	21	30
Phase Split	48 %	16 %	15 %	21 %



I-13 Intersection of Moorebank Avenue and M5 Motorway

MOVEMENT SUMMARY

Site: I-13 2015 BASE AM

Moorebank Avenue / the M5 Motorway
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
1	L2	256	11.1	0.218	8.8	LOS A	2.7	20.9	0.40	0.66	50.6
2	T1	580	4.2	0.665	29.3	LOS C	10.0	72.2	0.96	0.83	39.2
3	R2	257	2.9	0.358	32.7	LOS C	4.4	31.9	0.89	0.77	37.0
Approach		1093	5.5	0.665	25.3	LOS B	10.0	72.2	0.81	0.78	40.8
East: M5 Motorway on&off ramp (E)											
4	L2	220	7.2	0.210	7.7	LOS A	1.5	11.4	0.35	0.65	51.8
6	R2	225	6.1	0.234	28.7	LOS C	3.2	23.8	0.82	0.75	40.5
Approach		445	6.6	0.234	18.3	LOS B	3.2	23.8	0.59	0.70	45.1
North: Moorebank Avenue (N)											
7	L2	43	48.8	0.042	7.5	LOS A	0.3	2.5	0.26	0.59	51.4
8	T1	145	12.3	0.175	25.1	LOS B	2.1	16.6	0.84	0.65	41.2
9	R2	412	26.3	0.704	36.3	LOS C	8.6	73.8	0.96	0.84	36.8
Approach		600	24.6	0.704	31.5	LOS C	8.6	73.8	0.88	0.78	38.6
West: M5 Motorway on&off ramp (W)											
10	L2	1488	8.2	0.848	6.1	LOS A	0.0	0.0	0.00	0.52	54.0
12	R2	329	4.2	0.338	29.5	LOS C	4.9	35.4	0.85	0.77	38.8
Approach		1818	7.5	0.848	10.3	LOS A	4.9	35.4	0.15	0.57	50.7
All Vehicles		3956	9.4	0.848	18.6	LOS B	10.0	73.8	0.49	0.67	45.1

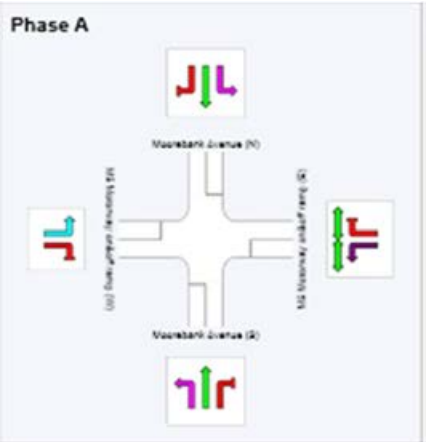
PHASING SUMMARY

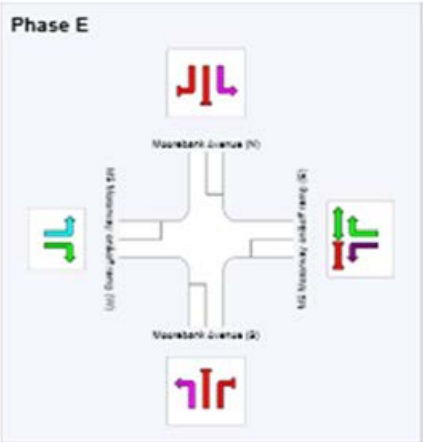
Site: I-13 2015 BASE AM

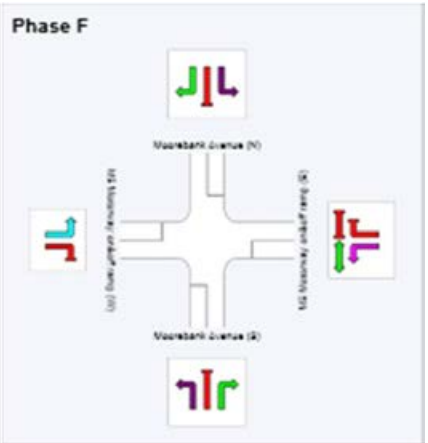
Moorebank Avenue / the M5 Motorway
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	F
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	24	51
Green Time (sec)	17	20	16
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	24	27	23
Phase Split	32 %	36 %	31 %







MOVEMENT SUMMARY

Site: I-13 2015 BASE PM

Moorebank Avenue / the M5 Motorway
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	273	3.1	0.323	16.5	LOS B	6.3	45.1	0.62	0.74	45.6
2	T1	153	7.6	0.386	44.1	LOS D	3.4	25.5	0.97	0.75	33.3
3	R2	238	2.2	0.197	27.6	LOS B	4.1	29.2	0.72	0.74	39.3
Approach		663	3.8	0.386	26.9	LOS B	6.3	45.1	0.74	0.74	39.9
East: M5 Motorway on&off ramp (E)											
4	L2	339	2.8	0.343	10.0	LOS A	4.7	34.0	0.47	0.70	50.1
6	R2	74	21.4	0.134	42.4	LOS C	1.5	12.2	0.88	0.72	35.0
Approach		413	6.1	0.343	15.8	LOS B	4.7	34.0	0.55	0.70	46.2
North: Moorebank Avenue (N)											
7	L2	112	6.6	0.086	6.7	LOS A	0.7	4.9	0.22	0.60	53.1
8	T1	614	3.6	0.658	35.0	LOS C	12.9	93.1	0.96	0.81	36.7
9	R2	1332	7.4	0.887	39.7	LOS C	29.3	218.2	0.99	1.04	35.9
Approach		2057	6.2	0.887	36.5	LOS C	29.3	218.2	0.94	0.94	36.8
West: M5 Motorway on&off ramp (W)											
10	L2	552	15.3	0.329	5.8	LOS A	0.0	0.0	0.00	0.52	54.3
12	R2	223	3.8	0.362	43.8	LOS D	4.7	33.6	0.93	0.78	33.2
Approach		775	12.0	0.362	16.8	LOS B	4.7	33.6	0.27	0.59	46.5
All Vehicles		3907	7.0	0.887	28.8	LOS C	29.3	218.2	0.73	0.81	39.8

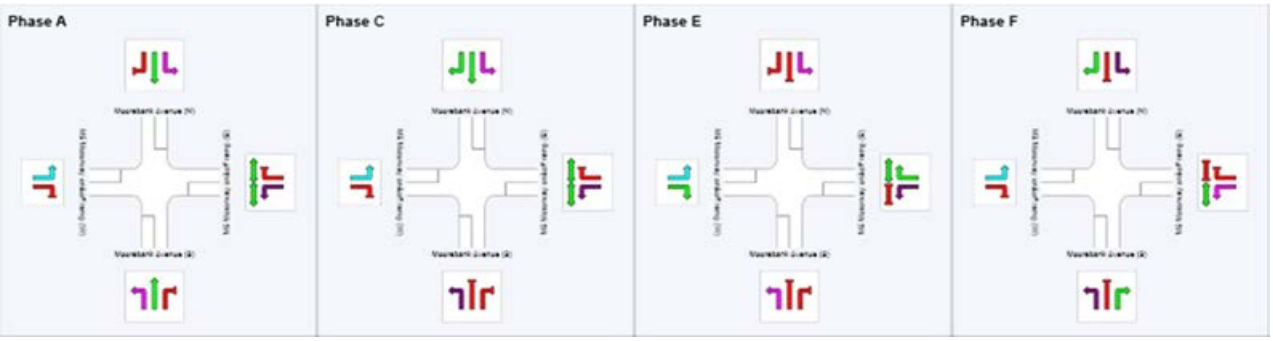
PHASING SUMMARY

Site: I-13 2015 BASE PM

Moorebank Avenue / the M5 Motorway
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	17	30	53
Green Time (sec)	10	6	16	34
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	17	13	23	41
Phase Split	18 %	14 %	24 %	44 %



MOVEMENT SUMMARY

Site: I-13 2015 MIMT AM

Moorebank Avenue / the M5 Motorway
2015 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	259	12.4	0.223	8.9	LOS A	2.8	21.4	0.40	0.66	50.6
2	T1	582	4.4	0.668	29.3	LOS C	10.0	72.7	0.96	0.83	39.2
3	R2	257	3.0	0.359	32.7	LOS C	4.5	32.0	0.89	0.77	37.0
Approach		1098	6.0	0.668	25.3	LOS B	10.0	72.7	0.81	0.78	40.8
East: M5 Motorway on&off ramp (E)											
4	L2	229	7.3	0.222	7.7	LOS A	1.6	12.0	0.36	0.65	51.8
6	R2	225	6.1	0.234	28.7	LOS C	3.2	23.8	0.82	0.75	40.5
Approach		454	6.7	0.234	18.1	LOS B	3.2	23.8	0.59	0.70	45.2
North: Moorebank Avenue (N)											
7	L2	43	48.8	0.042	7.5	LOS A	0.3	2.5	0.26	0.59	51.4
8	T1	150	12.5	0.182	25.2	LOS B	2.2	17.3	0.84	0.65	41.2
9	R2	412	26.3	0.704	36.3	LOS C	8.6	73.8	0.96	0.84	36.8
Approach		605	24.5	0.704	31.5	LOS C	8.6	73.8	0.88	0.78	38.6
West: M5 Motorway on&off ramp (W)											
10	L2	1488	8.2	0.848	6.1	LOS A	0.0	0.0	0.00	0.52	54.0
12	R2	355	4.9	0.366	29.7	LOS C	5.3	38.7	0.85	0.78	38.6
Approach		1844	7.6	0.848	10.7	LOS A	5.3	38.7	0.16	0.57	50.5
All Vehicles		4001	9.6	0.848	18.7	LOS B	10.0	73.8	0.50	0.67	45.0

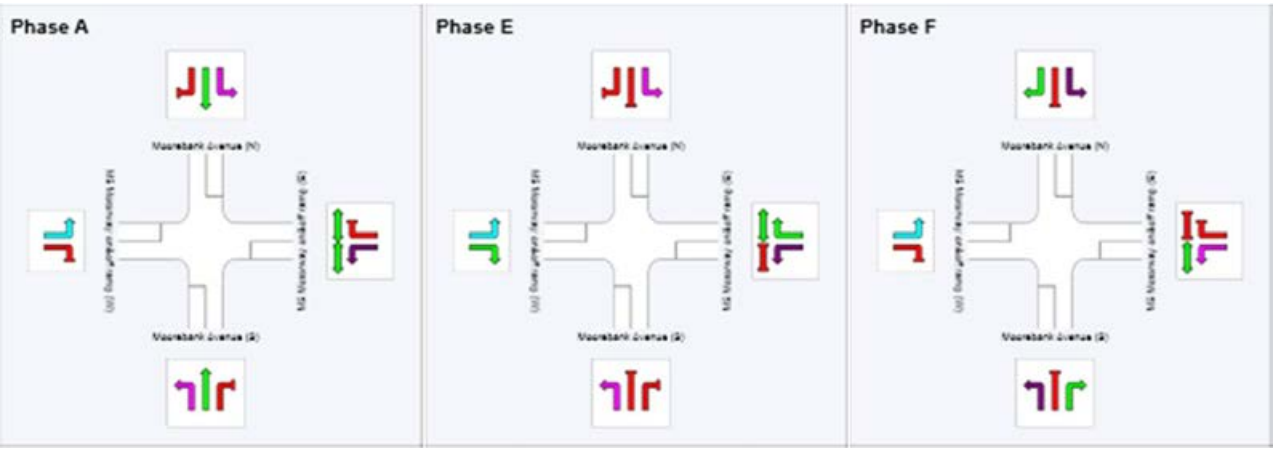
PHASING SUMMARY

Site: I-13 2015 MIMT AM

Moorebank Avenue / the M5 Motorway
2015 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	F
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	24	51
Green Time (sec)	17	20	16
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	24	27	23
Phase Split	32 %	36 %	31 %



MOVEMENT SUMMARY

Site: I-13 2015 MIMT PM

Moorebank Avenue / the M5 Motorway
2015 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	298	4.0	0.356	16.8	LOS B	7.0	50.8	0.64	0.75	45.4
2	T1	158	7.8	0.400	44.2	LOS D	3.5	26.4	0.97	0.75	33.3
3	R2	247	2.6	0.205	27.7	LOS B	4.3	30.5	0.72	0.74	39.2
Approach		703	4.4	0.400	26.8	LOS B	7.0	50.8	0.74	0.75	39.9
East: M5 Motorway on&off ramp (E)											
4	L2	340	3.0	0.346	10.0	LOS A	4.8	34.2	0.47	0.70	50.1
6	R2	74	21.4	0.134	42.4	LOS C	1.5	12.2	0.88	0.72	35.0
Approach		413	6.3	0.346	15.8	LOS B	4.8	34.2	0.55	0.70	46.2
North: Moorebank Avenue (N)											
7	L2	112	6.6	0.086	6.7	LOS A	0.7	4.9	0.22	0.60	53.1
8	T1	615	3.8	0.660	35.0	LOS C	12.9	93.4	0.96	0.81	36.7
9	R2	1332	7.4	0.887	39.7	LOS C	29.3	218.2	0.99	1.04	35.9
Approach		2058	6.3	0.887	36.5	LOS C	29.3	218.2	0.94	0.95	36.8
West: M5 Motorway on&off ramp (W)											
10	L2	552	15.3	0.329	5.8	LOS A	0.0	0.0	0.00	0.52	54.3
12	R2	227	5.4	0.373	43.9	LOS D	4.7	34.8	0.93	0.78	33.2
Approach		779	12.4	0.373	16.9	LOS B	4.7	34.8	0.27	0.59	46.4
All Vehicles		3952	7.2	0.887	28.8	LOS C	29.3	218.2	0.73	0.81	39.8

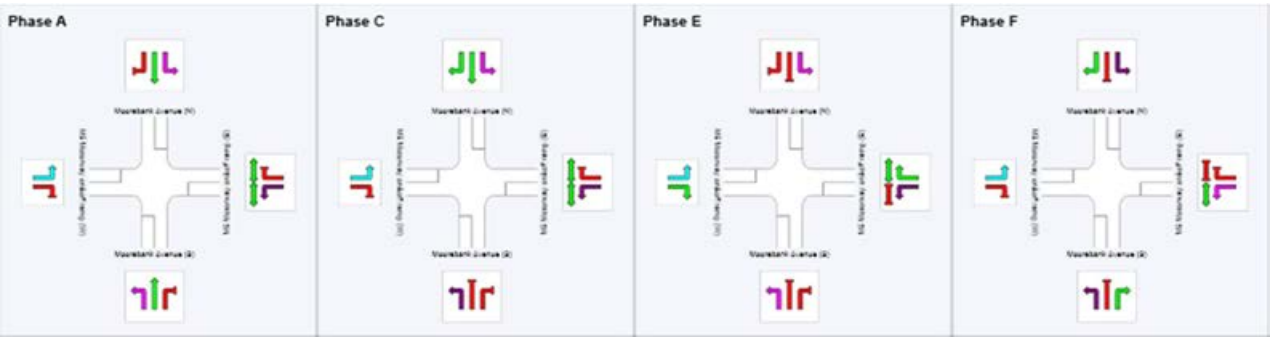
PHASING SUMMARY

Site: I-13 2015 MIMT PM

Moorebank Avenue / the M5 Motorway
2015 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	17	30	53
Green Time (sec)	10	6	16	34
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	17	13	23	41
Phase Split	18 %	14 %	24 %	44 %



I-14 Intersection of M5 Motorway and Hume Highway

MOVEMENT SUMMARY

Site: I-14 2015 BASE AM

M5 Motorway / Hume Highway
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
2	T1	3684	4.5	0.888	2.0	LOS A	18.8	136.4	0.22	0.21	58.4
3	R2	554	4.2	0.763	37.2	LOS C	13.3	96.3	0.95	0.83	39.7
Approach		4238	4.4	0.888	6.6	LOS A	18.8	136.4	0.32	0.29	55.0
East: M5 Motorway on&off-ramp (E)											
4	L2	289	6.5	0.115	30.3	LOS C	4.1	30.1	0.59	0.70	42.0
6	R2	1004	3.9	1.033	146.2	LOS F	38.6	279.0	1.00	1.14	15.0
Approach		1294	4.5	1.033	120.3	LOS F	38.6	279.0	0.91	1.04	18.6
North: Hume Highway (N)											
7	L2	605	5.9	0.448	10.1	LOS A	12.9	95.2	0.37	0.68	48.9
8	T1	1142	7.0	0.464	28.1	LOS B	16.5	122.1	0.61	0.54	43.5
Approach		1747	6.6	0.464	21.8	LOS B	16.5	122.1	0.53	0.58	44.8
All Vehicles		7279	5.0	1.033	30.5	LOS C	38.6	279.0	0.47	0.50	41.4

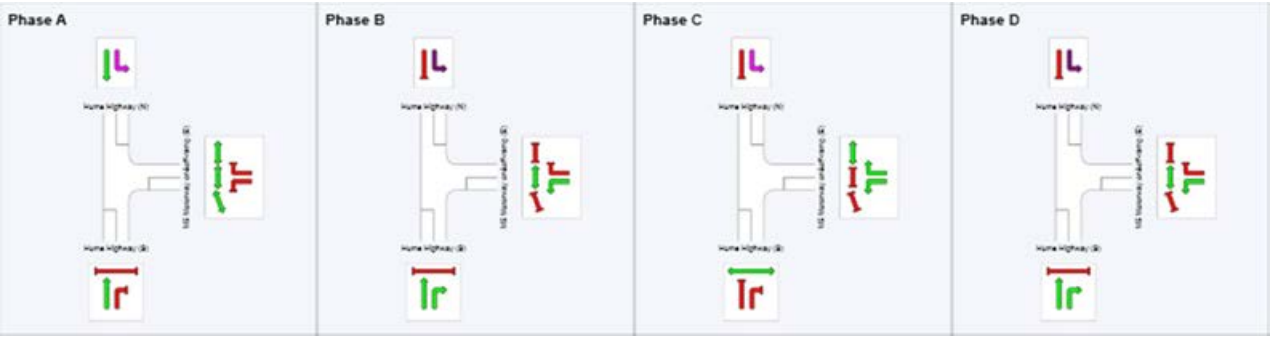
PHASING SUMMARY

Site: I-14 2015 BASE AM

M5 Motorway / Hume Highway
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	No	No	No	Yes
Phase Change Time (sec)	20	97	123	0
Green Time (sec)	70	19	29	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	77	26	36	20
Phase Split	48 %	16 %	23 %	13 %



MOVEMENT SUMMARY

Site: I-14 2015 BASE PM

M5 Motorway / Hume Highway
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
2	T1	2339	3.7	0.571	2.0	LOS A	5.7	41.4	0.11	0.10	58.4
3	R2	353	1.8	0.899	83.6	LOS F	14.5	103.4	1.00	0.91	28.1
Approach		2692	3.5	0.899	12.7	LOS A	14.5	103.4	0.22	0.20	51.2
East: M5 Motorway on&off-ramp (E)											
4	L2	1191	3.6	0.856	62.6	LOS E	41.0	296.2	0.92	0.91	32.1
6	R2	955	3.6	0.902	87.6	LOS F	27.5	198.8	1.00	0.96	21.4
Approach		2145	3.6	0.902	73.8	LOS F	41.0	296.2	0.96	0.93	27.3
North: Hume Highway (N)											
7	L2	751	2.1	0.524	8.8	LOS A	15.2	108.1	0.36	0.68	50.0
8	T1	2620	2.7	0.805	18.8	LOS B	41.5	297.0	0.68	0.63	47.8
Approach		3371	2.6	0.805	16.6	LOS B	41.5	297.0	0.61	0.64	48.1
All Vehicles		8207	3.1	0.902	30.3	LOS C	41.5	297.0	0.57	0.57	41.5

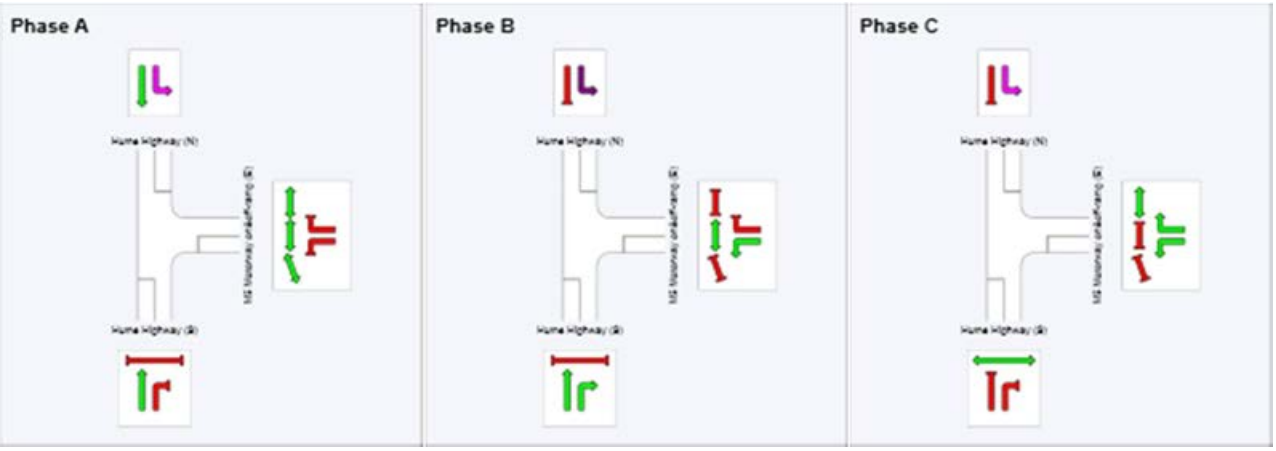
PHASING SUMMARY

Site: I-14 2015 BASE PM

M5 Motorway / Hume Highway
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	97	121
Green Time (sec)	90	17	31
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	97	24	38
Phase Split	61 %	15 %	24 %



MOVEMENT SUMMARY

Site: I-14 2015 MIMT AM

M5 Motorway / Hume Highway
2015 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
2	T1	3684	4.5	0.888	2.0	LOS A	18.8	136.4	0.22	0.21	58.4
3	R2	558	4.1	0.769	37.4	LOS C	13.5	97.6	0.95	0.84	39.7
Approach		4243	4.4	0.888	6.7	LOS A	18.8	136.4	0.32	0.29	55.0
East: M5 Motorway on&off-ramp (E)											
4	L2	289	6.5	0.115	30.3	LOS C	4.1	30.1	0.59	0.70	42.0
6	R2	1005	4.0	1.035	147.5	LOS F	38.8	280.9	1.00	1.14	14.9
Approach		1295	4.6	1.035	121.3	LOS F	38.8	280.9	0.91	1.04	18.5
North: Hume Highway (N)											
7	L2	612	6.0	0.454	10.4	LOS A	13.5	99.6	0.38	0.68	48.6
8	T1	1142	7.0	0.464	28.1	LOS B	16.5	122.1	0.61	0.54	43.5
Approach		1754	6.7	0.464	21.9	LOS B	16.5	122.1	0.53	0.59	44.7
All Vehicles		7292	5.0	1.035	30.7	LOS C	38.8	280.9	0.47	0.50	41.3

PHASING SUMMARY

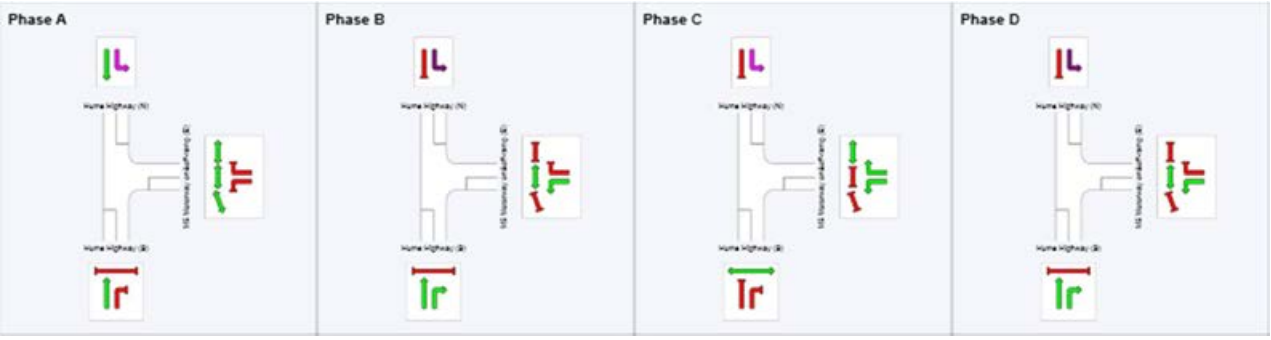
Site: I-14 2015 MIMT AM

M5 Motorway / Hume Highway
2015 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase times specified by the user
Sequence: TCS 2305 AM
Movement Class: All Movement Classes
Input Sequence: A, B, C, D
Output Sequence: A, B, C, D

Phase Timing Results

Phase	A	B	C	D
Reference Phase	No	No	No	Yes
Phase Change Time (sec)	20	97	123	0
Green Time (sec)	70	19	29	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	77	26	36	20
Phase Split	48 %	16 %	23 %	13 %



MOVEMENT SUMMARY

Site: I-14 2015 MIMT PM

M5 Motorway / Hume Highway
2015 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
2	T1	2339	3.7	0.571	2.0	LOS A	5.7	41.4	0.11	0.10	58.4
3	R2	353	1.8	0.899	83.6	LOS F	14.5	103.4	1.00	0.91	28.1
Approach		2692	3.5	0.899	12.7	LOS A	14.5	103.4	0.22	0.20	51.2
East: M5 Motorway on&off-ramp (E)											
4	L2	1195	3.6	0.860	63.3	LOS E	41.5	299.5	0.92	0.91	32.0
6	R2	962	3.7	0.909	89.2	LOS F	28.1	202.7	1.00	0.97	21.2
Approach		2157	3.7	0.909	74.8	LOS F	41.5	299.5	0.96	0.94	27.1
North: Hume Highway (N)											
7	L2	752	2.3	0.525	8.9	LOS A	15.2	108.6	0.36	0.68	50.0
8	T1	2620	2.7	0.805	18.8	LOS B	41.5	297.0	0.68	0.63	47.8
Approach		3372	2.6	0.805	16.6	LOS B	41.5	297.0	0.61	0.64	48.1
All Vehicles		8220	3.2	0.909	30.6	LOS C	41.5	299.5	0.57	0.58	41.3

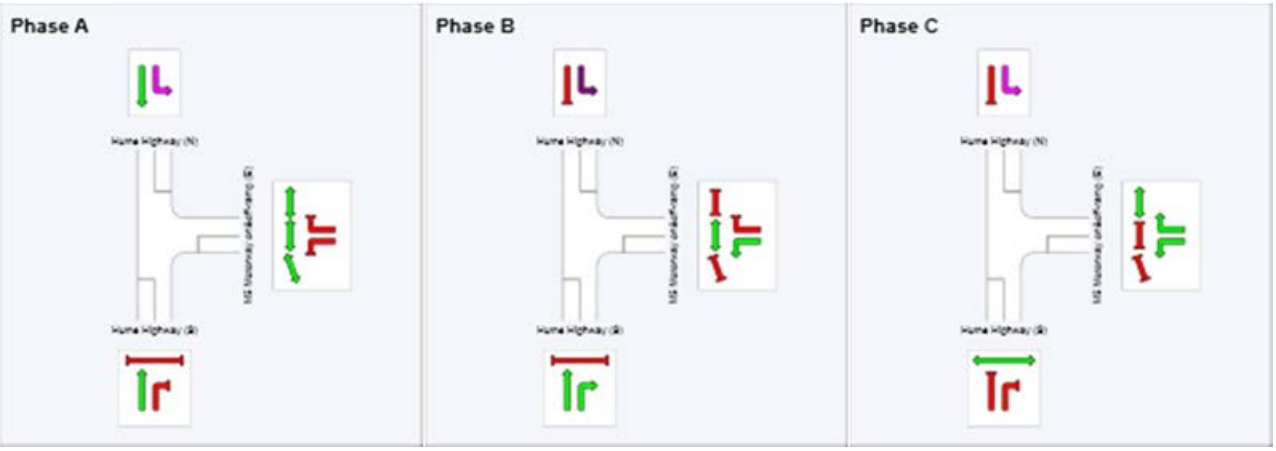
PHASING SUMMARY

Site: I-14 2015 MIMT PM

M5 Motorway / Hume Highway
2015 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	97	121
Green Time (sec)	90	17	31
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	97	24	38
Phase Split	61 %	15 %	24 %



I-15 Intersection of Cambridge Avenue and Canterbury Road

MOVEMENT SUMMARY

Site: I-15 2015 BASE AM

Canterbury Road / Cambridge Avenue / Glenfield Road
2014 BASE AM PEAK 7:45 am - 8:45 am Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	358	3.5	0.373	5.3	LOS A	2.0	14.6	0.48	0.60	53.4
2	T1	6	0.0	0.625	5.2	LOS A	5.0	35.4	0.59	0.70	51.8
3	R2	798	2.1	0.625	10.6	LOS A	5.0	35.4	0.59	0.70	51.9
Approach		1162	2.5	0.625	8.9	LOS A	5.0	35.4	0.55	0.67	52.3
East: Cambridge Avenue (E)											
4	L2	239	3.1	0.127	3.5	LOS A	0.0	0.0	0.00	0.43	56.5
5	T1	64	8.2	0.064	5.0	LOS A	0.3	2.6	0.48	0.55	53.6
6	R2	42	10.0	0.064	10.3	LOS A	0.3	2.6	0.47	0.58	53.8
Approach		345	4.9	0.127	4.6	LOS A	0.3	2.6	0.15	0.47	55.6
North: Railway Parade (N)											
7	L2	244	3.0	0.378	10.6	LOS A	2.5	18.0	0.87	0.95	50.7
8	T1	3	33.3	0.300	11.7	LOS A	1.6	12.3	0.82	0.94	48.0
9	R2	138	8.4	0.300	17.0	LOS B	1.6	12.3	0.82	0.94	47.1
Approach		385	5.2	0.378	12.9	LOS A	2.5	18.0	0.85	0.94	49.4
West: Glenfield Road (W)											
10	L2	284	5.2	0.524	11.3	LOS A	4.6	33.6	0.91	1.00	49.0
11	T1	143	6.6	0.524	11.7	LOS A	4.6	33.6	0.91	1.01	49.1
12	R2	258	5.7	0.524	17.8	LOS B	4.2	31.2	0.90	1.04	47.1
Approach		685	5.7	0.524	13.8	LOS A	4.6	33.6	0.91	1.02	48.3
All Vehicles		2578	4.1	0.625	10.2	LOS A	5.0	35.4	0.64	0.78	51.2

MOVEMENT SUMMARY

Site: I-15 2015 BASE PM

Canterbury Road / Cambridge Avenue / Glenfield Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	239	2.2	0.268	6.2	LOS A	1.3	9.4	0.60	0.72	53.0
2	T1	5	0.0	0.244	5.7	LOS A	1.2	8.7	0.58	0.77	51.8
3	R2	243	1.3	0.244	11.1	LOS A	1.2	8.7	0.58	0.77	52.0
Approach		487	1.7	0.268	8.6	LOS A	1.3	9.4	0.59	0.75	52.4
East: Cambridge Avenue (E)											
4	L2	915	2.3	0.483	3.5	LOS A	0.0	0.0	0.00	0.43	56.4
5	T1	204	7.7	0.284	5.8	LOS A	1.8	13.0	0.58	0.64	52.8
6	R2	255	0.8	0.284	10.9	LOS A	1.8	13.0	0.60	0.69	53.0
Approach		1374	2.8	0.483	5.2	LOS A	1.8	13.0	0.20	0.51	55.2
North: Railway Parade (N)											
7	L2	83	1.3	0.106	6.5	LOS A	0.5	3.4	0.57	0.68	53.8
8	T1	0	0.0	0.000	0.0	NA	0.0	0.0	0.00	0.00	0.0
9	R2	156	8.1	0.164	11.5	LOS A	0.8	6.1	0.58	0.76	50.6
Approach		239	5.7	0.164	9.7	LOS A	0.8	6.1	0.58	0.73	51.8
West: Glenfield Road (W)											
10	L2	207	4.6	0.278	6.5	LOS A	1.5	10.7	0.59	0.68	52.8
11	T1	38	0.0	0.278	6.4	LOS A	1.5	10.7	0.59	0.68	54.8
12	R2	361	3.8	0.346	11.5	LOS A	2.0	14.8	0.61	0.76	50.7
Approach		606	3.8	0.346	9.5	LOS A	2.0	14.8	0.60	0.73	51.6
All Vehicles		2706	3.1	0.483	7.2	LOS A	2.0	14.8	0.39	0.62	53.6

MOVEMENT SUMMARY

Site: I-15 2015 MIMT AM

Canterbury Road / Cambridge Avenue / Glenfield Road
2015 MIMT AM PEAK 7:45 am - 8:45 am - Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Canterbury Road (S)											
1	L2	358	3.5	0.374	5.3	LOS A	2.0	14.7	0.48	0.60	53.4
2	T1	6	0.0	0.634	5.2	LOS A	5.1	36.7	0.59	0.70	51.7
3	R2	810	2.1	0.634	10.6	LOS A	5.1	36.7	0.59	0.70	51.9
Approach		1174	2.5	0.634	9.0	LOS A	5.1	36.7	0.56	0.67	52.3
East: Cambridge Avenue (E)											
4	L2	239	3.1	0.127	3.5	LOS A	0.0	0.0	0.00	0.43	56.5
5	T1	64	8.2	0.064	5.0	LOS A	0.3	2.6	0.48	0.55	53.5
6	R2	42	10.0	0.064	10.3	LOS A	0.3	2.6	0.47	0.58	53.8
Approach		345	4.9	0.127	4.6	LOS A	0.3	2.6	0.15	0.47	55.6
North: Railway Parade (N)											
7	L2	247	3.0	0.388	10.9	LOS A	2.6	18.8	0.88	0.96	50.5
8	T1	3	33.3	0.305	11.9	LOS A	1.7	12.5	0.83	0.94	47.9
9	R2	138	8.4	0.305	17.2	LOS B	1.7	12.5	0.83	0.94	46.9
Approach		388	5.1	0.388	13.2	LOS A	2.6	18.8	0.86	0.95	49.2
West: Glenfield Road (W)											
10	L2	284	5.2	0.535	11.7	LOS A	4.8	34.9	0.92	1.01	48.7
11	T1	145	6.5	0.535	12.1	LOS A	4.8	34.9	0.92	1.03	48.8
12	R2	258	5.7	0.535	18.3	LOS B	4.4	32.3	0.91	1.05	46.8
Approach		688	5.7	0.535	14.2	LOS A	4.8	34.9	0.92	1.03	48.0
All Vehicles		2595	4.1	0.634	10.4	LOS A	5.1	36.7	0.64	0.78	51.1

MOVEMENT SUMMARY

Site: I-15 2015 MIMT PM

Canterbury Road / Cambridge Avenue / Glenfield Road
2015 MIMT PM PEAK 4:30 pm - 5:30 pm - Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Canterbury Road (S)											
1	L2	239	2.2	0.269	6.2	LOS A	1.3	9.5	0.60	0.73	52.9
2	T1	5	0.0	0.245	5.7	LOS A	1.2	8.8	0.58	0.78	51.8
3	R2	243	1.3	0.245	11.1	LOS A	1.2	8.8	0.58	0.78	52.0
Approach		487	1.7	0.269	8.7	LOS A	1.3	9.5	0.59	0.75	52.4
East: Cambridge Avenue (E)											
4	L2	926	2.3	0.489	3.5	LOS A	0.0	0.0	0.00	0.43	56.4
5	T1	207	7.6	0.288	5.9	LOS A	1.8	13.2	0.58	0.65	52.8
6	R2	258	0.8	0.288	10.9	LOS A	1.8	13.2	0.61	0.69	53.0
Approach		1391	2.8	0.489	5.2	LOS A	1.8	13.2	0.20	0.51	55.2
North: Railway Parade (N)											
7	L2	83	1.3	0.106	6.5	LOS A	0.5	3.4	0.57	0.68	53.8
8	T1	1	0.0	0.165	6.0	LOS A	0.8	6.1	0.58	0.76	51.8
9	R2	156	8.1	0.165	11.5	LOS A	0.8	6.1	0.58	0.76	50.7
Approach		240	5.7	0.165	9.7	LOS A	0.8	6.1	0.58	0.73	51.8
West: Glenfield Road (W)											
10	L2	207	4.6	0.279	6.5	LOS A	1.5	10.8	0.59	0.68	52.8
11	T1	38	0.0	0.279	6.4	LOS A	1.5	10.8	0.59	0.68	54.8
12	R2	361	3.8	0.347	11.5	LOS A	2.1	14.8	0.61	0.76	50.7
Approach		606	3.8	0.347	9.5	LOS A	2.1	14.8	0.60	0.73	51.6
All Vehicles		2724	3.1	0.489	7.2	LOS A	2.1	14.8	0.39	0.62	53.6

I-0A Intersection of Moorebank Avenue and Anzac Road

MOVEMENT SUMMARY

Site: I-0A 2015 BASE AM

Intersection of Moorebank Avenue and Anzac Road
2015 BASE AM PEAK
Signals - Fixed Time Cycle Time = 103 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	912	3.5	0.684	9.5	LOS A	26.0	187.5	0.63	0.58	47.8
3	R2	346	3.3	0.535	25.3	LOS B	13.1	94.5	0.84	0.83	41.5
Approach		1258	3.4	0.684	13.8	LOS A	26.0	187.5	0.69	0.65	45.1
East: Anzac Road (E)											
4	L2	219	3.4	0.265	24.0	LOS B	6.7	48.6	0.66	0.75	42.1
6	R2	193	13.7	0.733	54.0	LOS D	9.9	77.3	1.00	0.87	21.0
Approach		412	8.2	0.733	38.1	LOS C	9.9	77.3	0.82	0.81	31.2
North: Moorebank Avenue (N)											
7	L2	274	10.0	0.179	6.1	LOS A	0.9	7.2	0.15	0.59	49.8
8	T1	569	3.3	0.527	22.4	LOS B	15.9	114.3	0.76	0.65	37.4
Approach		843	5.5	0.527	17.1	LOS B	15.9	114.3	0.56	0.63	40.7
All Vehicles		2513	4.9	0.733	18.9	LOS B	26.0	187.5	0.67	0.67	40.4

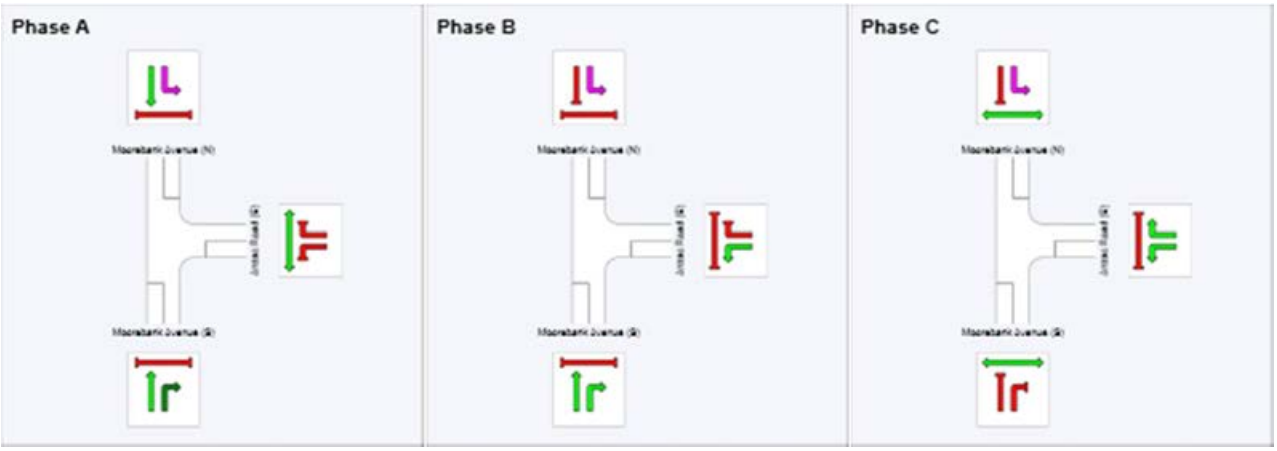
PHASING SUMMARY

Site: I-0A 2015 BASE AM

Intersection of Moorebank Avenue and Anzac Road
2015 BASE AM PEAK
Signals - Fixed Time Cycle Time = 103 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	50	78
Green Time (sec)	44	22	19
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	50	28	25
Phase Split	49 %	27 %	24 %



MOVEMENT SUMMARY

Site: I-0A 2015 BASE PM

Intersection of Moorebank Avenue and Anzac Road
2015 BASE PM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	282	3.7	0.236	9.5	LOS A	6.5	46.9	0.47	0.40	47.8
3	R2	171	1.2	0.788	58.5	LOS E	9.7	68.5	1.00	1.00	30.2
Approach		453	2.8	0.788	27.9	LOS B	9.7	68.5	0.67	0.63	37.0
East: Anzac Road (E)											
4	L2	419	2.3	0.615	35.8	LOS C	18.3	130.5	0.87	0.84	37.1
6	R2	279	5.7	0.661	47.2	LOS D	13.8	101.0	0.96	0.84	22.5
Approach		698	3.6	0.661	40.3	LOS C	18.3	130.5	0.91	0.84	31.2
North: Moorebank Avenue (N)											
7	L2	291	4.0	0.181	6.0	LOS A	1.0	7.3	0.14	0.59	50.2
8	T1	1117	2.5	0.847	25.1	LOS B	41.4	295.6	0.85	0.80	35.7
Approach		1407	2.8	0.847	21.2	LOS B	41.4	295.6	0.70	0.76	38.0
All Vehicles		2558	3.0	0.847	27.6	LOS B	41.4	295.6	0.75	0.76	35.3

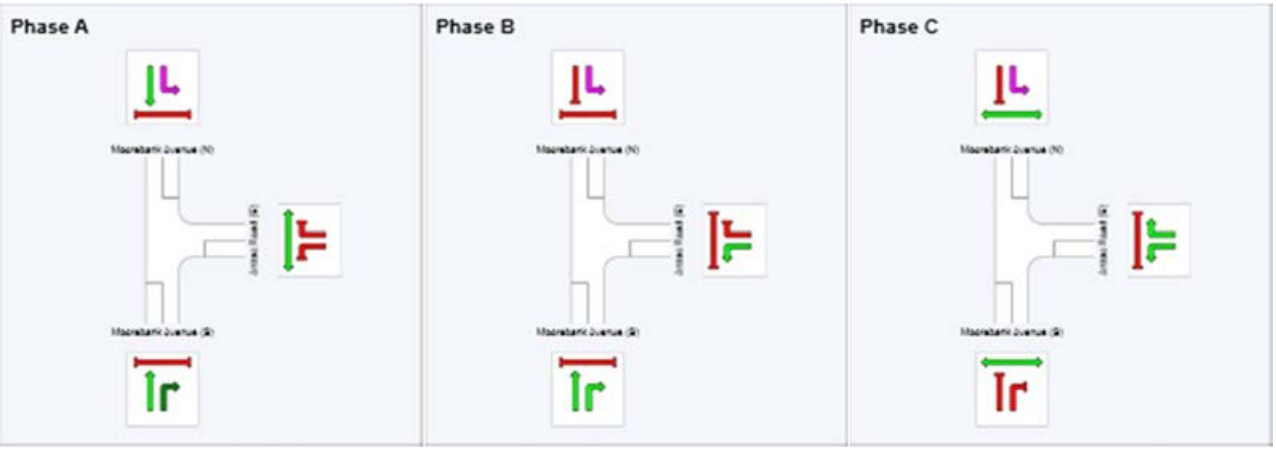
PHASING SUMMARY

Site: I-0A 2015 BASE PM

Intersection of Moorebank Avenue and Anzac Road
2015 BASE PM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	63	75
Green Time (sec)	57	6	29
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	63	12	35
Phase Split	57 %	11 %	32 %



MOVEMENT SUMMARY

Site: I-0A 2015 MINT AM

Intersection of Moorebank Avenue and Anzac Road
2015 MINT AM PEAK
Signals - Fixed Time Cycle Time = 103 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	917	4.0	0.690	9.6	LOS A	26.4	191.1	0.63	0.59	47.7
3	R2	346	3.3	0.551	26.9	LOS B	13.4	96.5	0.86	0.85	40.8
Approach		1263	3.8	0.690	14.3	LOS A	26.4	191.1	0.70	0.66	44.8
East: Anzac Road (E)											
4	L2	225	3.3	0.272	24.1	LOS B	7.0	50.1	0.66	0.75	42.1
6	R2	193	13.7	0.733	54.0	LOS D	9.9	77.3	1.00	0.87	21.0
Approach		418	8.1	0.733	37.9	LOS C	9.9	77.3	0.82	0.81	31.3
North: Moorebank Avenue (N)											
7	L2	271	8.9	0.175	6.1	LOS A	0.9	7.0	0.15	0.59	49.9
8	T1	606	3.6	0.562	22.8	LOS B	17.2	124.5	0.77	0.67	37.1
Approach		877	5.3	0.562	17.6	LOS B	17.2	124.5	0.58	0.64	40.3
All Vehicles		2558	5.0	0.733	19.3	LOS B	26.4	191.1	0.68	0.68	40.1

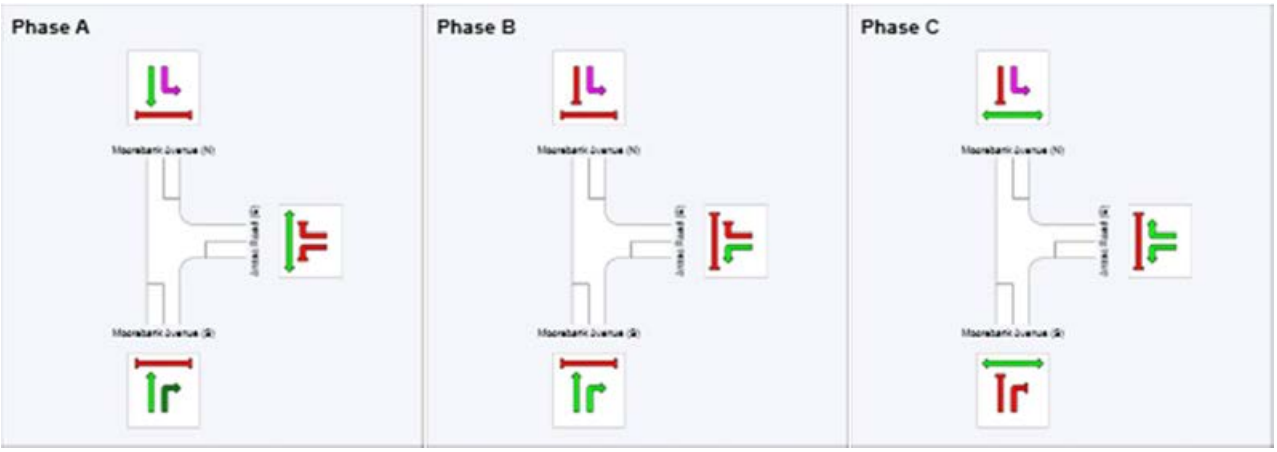
PHASING SUMMARY

Site: I-0A 2015 MINT AM

Intersection of Moorebank Avenue and Anzac Road
2015 MINT AM PEAK
Signals - Fixed Time Cycle Time = 103 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	50	78
Green Time (sec)	44	22	19
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	50	28	25
Phase Split	49 %	27 %	24 %



MOVEMENT SUMMARY

Site: I-0A 2015 MINT PM

Intersection of Moorebank Avenue and Anzac Road
2015 MINT PM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	321	4.9	0.271	9.7	LOS A	7.6	55.4	0.48	0.42	47.5
3	R2	177	1.2	0.827	62.2	LOS E	10.4	73.3	1.00	1.04	29.3
Approach		498	3.6	0.827	28.4	LOS B	10.4	73.3	0.67	0.64	36.6
East: Anzac Road (E)											
4	L2	419	2.3	0.615	35.8	LOS C	18.3	130.5	0.87	0.84	37.1
6	R2	279	5.7	0.661	47.2	LOS D	13.8	101.0	0.96	0.84	22.5
Approach		698	3.6	0.661	40.3	LOS C	18.3	130.5	0.91	0.84	31.2
North: Moorebank Avenue (N)											
7	L2	291	4.0	0.181	6.0	LOS A	1.0	7.3	0.14	0.59	50.2
8	T1	1122	2.9	0.853	25.8	LOS B	42.3	303.3	0.85	0.81	35.3
Approach		1413	3.1	0.853	21.7	LOS B	42.3	303.3	0.71	0.77	37.7
All Vehicles		2608	3.3	0.853	28.0	LOS B	42.3	303.3	0.75	0.76	35.1

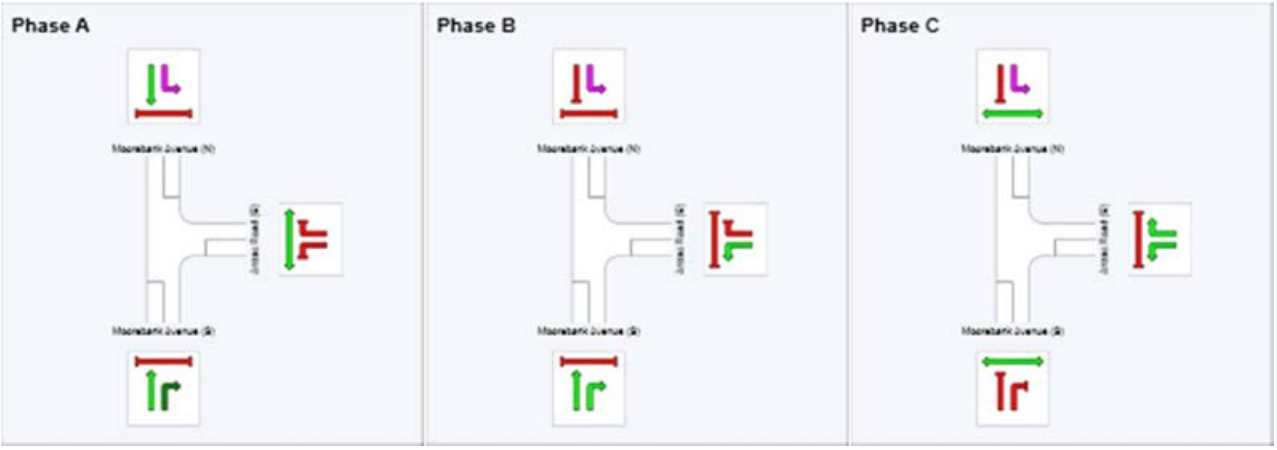
PHASING SUMMARY

Site: I-0A 2015 MINT PM

Intersection of Moorebank Avenue and Anzac Road
2015 MINT PM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	63	75
Green Time (sec)	57	6	29
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	63	12	35
Phase Split	57 %	11 %	32 %



Appendix E

2016 SIDRA results with and without Moorebank IMT

I-01 Intersection of the Hume Highway and Orange Grove Road

MOVEMENT SUMMARY

Site: I-01 2016 BASE AM

Hume Highway / Orange Grove Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
NorthEast: Hume Highway (NE)											
25	T1	887	11.4	0.630	22.3	LOS B	17.5	134.6	0.81	0.73	37.0
26	R2	356	10.1	0.881	84.8	LOS F	15.1	114.6	1.00	0.92	24.1
Approach		1243	11.0	0.881	40.2	LOS C	17.5	134.6	0.86	0.79	30.7
NorthWest: Orange Grove Road (NW)											
27	L2	534	6.5	0.623	9.9	LOS A	8.7	64.2	0.26	0.65	50.8
29	R2	1186	6.7	0.875	68.5	LOS E	31.0	229.7	0.99	0.90	24.3
Approach		1720	6.6	0.875	50.3	LOS D	31.0	229.7	0.76	0.82	29.6
SouthWest: Hume Highway (SW)											
30	L2	1127	6.4	0.394	10.9	LOS A	11.4	83.9	0.31	0.69	52.8
31	T1	1955	4.9	0.701	19.6	LOS B	29.4	214.7	0.60	0.55	42.7
Approach		3082	5.5	0.701	16.5	LOS B	29.4	214.7	0.49	0.60	46.6
All Vehicles		6045	6.9	0.881	31.0	LOS C	31.0	229.7	0.65	0.70	36.1

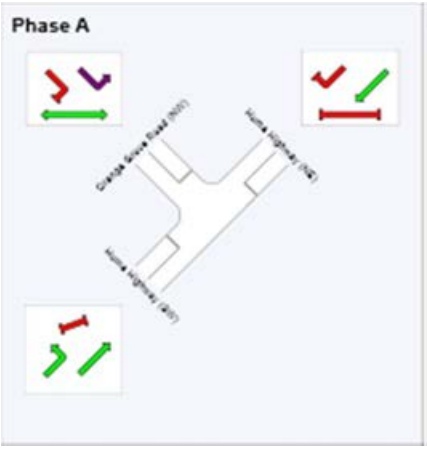
PHASING SUMMARY

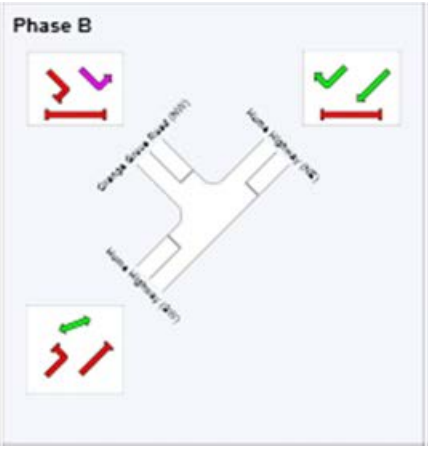
Site: I-01 2016 BASE AM

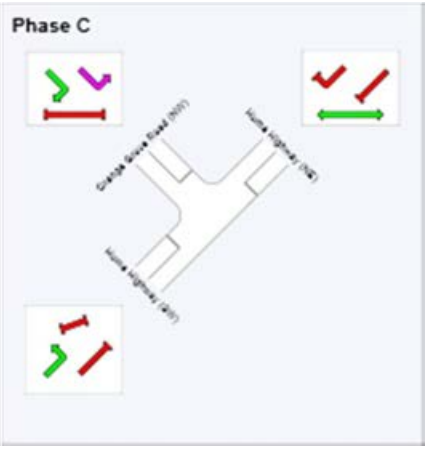
Hume Highway / Orange Grove Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	86	109
Green Time (sec)	79	16	35
Yellow Time (sec)	5	4	5
All-Red Time (sec)	2	2	2
Phase Time (sec)	86	22	42
Phase Split	57 %	15 %	28 %







MOVEMENT SUMMARY

Site: I-01 2016 BASE PM

Hume Highway / Orange Grove Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	1626	3.2	0.838	24.4	LOS B	34.1	245.2	0.80	0.77	35.7
26	R2	762	2.8	0.872	45.6	LOS D	18.1	129.6	1.00	0.94	33.9
Approach		2388	3.1	0.872	31.2	LOS C	34.1	245.2	0.86	0.83	34.9
NorthWest: Orange Grove Road (NW)											
27	L2	367	4.3	0.340	11.0	LOS A	5.2	38.1	0.23	0.62	50.3
29	R2	1256	3.1	0.960	83.5	LOS F	37.8	271.9	1.00	0.99	21.6
Approach		1623	3.4	0.960	67.1	LOS E	37.8	271.9	0.83	0.90	25.3
SouthWest: Hume Highway (SW)											
30	L2	1221	2.9	0.720	19.2	LOS B	18.6	133.2	0.76	0.83	46.0
31	T1	1042	5.3	0.936	75.1	LOS F	32.8	240.3	1.00	1.06	20.3
Approach		2263	4.0	0.936	45.0	LOS D	32.8	240.3	0.87	0.93	30.8
All Vehicles		6275	3.5	0.960	45.4	LOS D	37.8	271.9	0.86	0.88	30.2

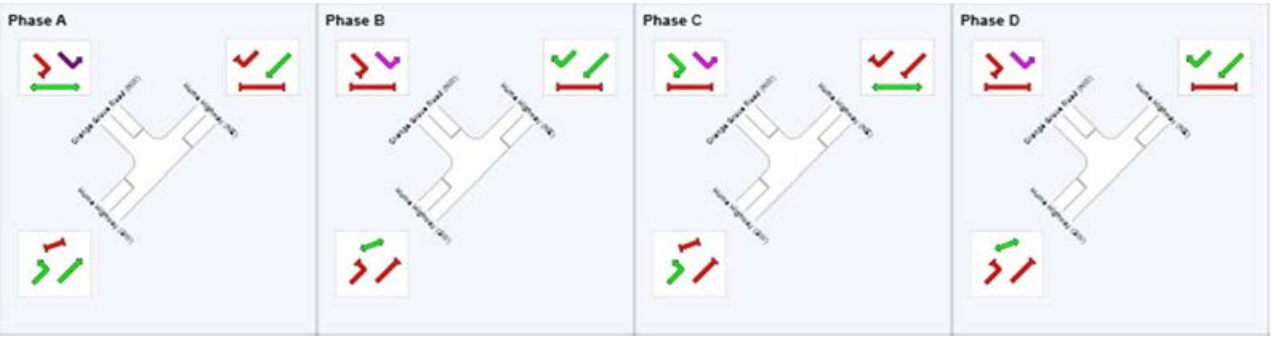
PHASING SUMMARY

Site: I-01 2016 BASE PM

Hume Highway / Orange Grove Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	81	124
Green Time (sec)	47	21	37	19
Yellow Time (sec)	5	4	5	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	54	27	44	25
Phase Split	36 %	18 %	29 %	17 %



MOVEMENT SUMMARY

Site: I-01 2016 MIMT AM

Hume Highway / Orange Grove Road
2014 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	894	11.3	0.635	22.4	LOS B	17.7	135.9	0.81	0.74	36.9
26	R2	356	10.1	0.881	84.8	LOS F	15.1	114.6	1.00	0.92	24.1
Approach		1250	10.9	0.881	40.2	LOS C	17.7	135.9	0.87	0.79	30.7
NorthWest: Orange Grove Road (NW)											
27	L2	534	6.5	0.623	9.9	LOS A	8.7	64.2	0.26	0.65	50.8
29	R2	1205	7.6	0.894	70.3	LOS E	32.4	241.7	0.99	0.91	23.9
Approach		1738	7.3	0.894	51.7	LOS D	32.4	241.7	0.77	0.83	29.2
SouthWest: Hume Highway (SW)											
30	L2	1140	7.5	0.401	11.0	LOS A	11.6	86.3	0.31	0.69	52.7
31	T1	1955	4.9	0.701	19.6	LOS B	29.4	214.7	0.60	0.55	42.7
Approach		3095	5.9	0.701	16.5	LOS B	29.4	214.7	0.49	0.60	46.5
All Vehicles		6083	7.3	0.894	31.4	LOS C	32.4	241.7	0.65	0.70	35.9

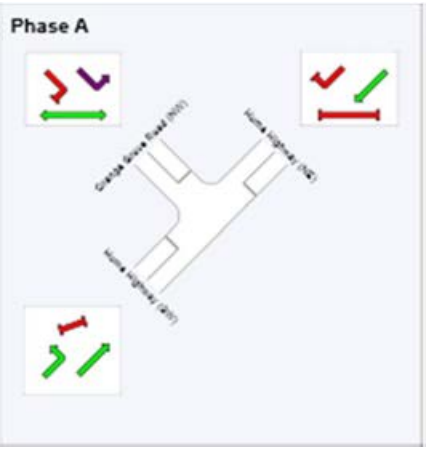
PHASING SUMMARY

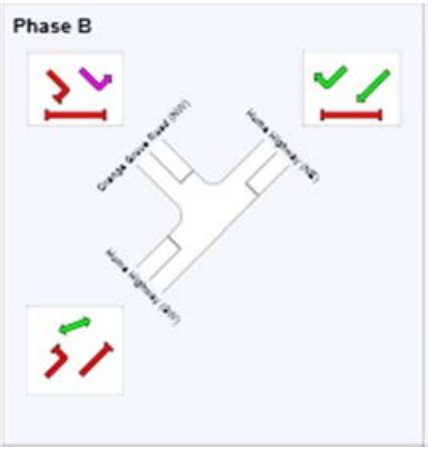
Site: I-01 2016 MIMT AM

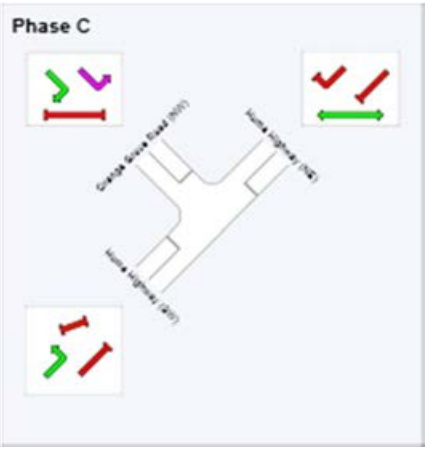
Hume Highway / Orange Grove Road
2014 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	86	109
Green Time (sec)	79	16	35
Yellow Time (sec)	5	4	5
All-Red Time (sec)	2	2	2
Phase Time (sec)	86	22	42
Phase Split	57 %	15 %	28 %







MOVEMENT SUMMARY

Site: I-01 2016 MIMT PM

Hume Highway / Orange Grove Road
2014 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	1628	3.3	0.839	24.6	LOS B	34.2	246.4	0.80	0.77	35.6
26	R2	762	2.8	0.872	45.6	LOS D	18.1	129.6	1.00	0.94	33.9
Approach		2390	3.1	0.872	31.3	LOS C	34.2	246.4	0.86	0.83	34.9
NorthWest: Orange Grove Road (NW)											
27	L2	367	4.3	0.341	11.4	LOS A	5.5	40.1	0.24	0.63	50.0
29	R2	1269	4.1	0.977	88.9	LOS F	40.0	289.8	1.00	1.01	20.8
Approach		1636	4.1	0.977	71.5	LOS F	40.0	289.8	0.83	0.92	24.4
SouthWest: Hume Highway (SW)											
30	L2	1238	3.9	0.735	19.4	LOS B	19.1	138.2	0.77	0.83	45.8
31	T1	1050	5.3	0.943	77.2	LOS F	33.6	246.3	1.00	1.07	20.0
Approach		2288	4.5	0.943	45.9	LOS D	33.6	246.3	0.88	0.94	30.4
All Vehicles		6314	3.9	0.977	47.0	LOS D	40.0	289.8	0.86	0.89	29.7

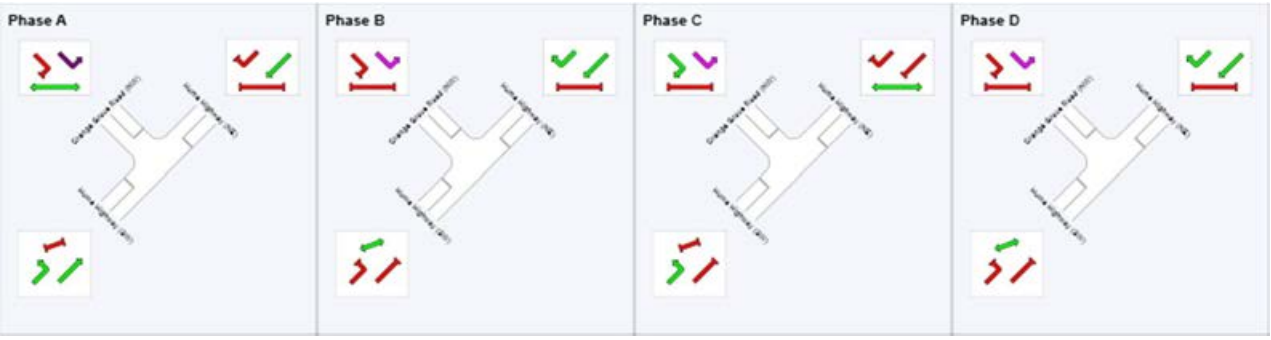
PHASING SUMMARY

Site: I-01 2016 MIMT PM

Hume Highway / Orange Grove Road
2014 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	81	124
Green Time (sec)	47	21	37	19
Yellow Time (sec)	5	4	5	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	54	27	44	25
Phase Split	36 %	18 %	29 %	17 %



I-02 Intersection of the Hume Highway and Elizabeth Drive

MOVEMENT SUMMARY

Site: I-02 2016 BASE AM

Hume Highway / Elizabeth Drive
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	118	5.4	0.130	21.1	LOS B	3.0	21.9	0.38	0.67	37.5
2	T1	2087	6.3	0.801	35.6	LOS C	41.3	304.4	0.85	0.77	27.4
Approach		2205	6.3	0.817	34.8	LOS C	41.3	304.4	0.83	0.77	27.9
East: Elizabeth Drive (E)											
4	L2	34	6.3	0.372	59.7	LOS E	8.8	64.8	0.91	0.81	18.5
5	T1	424	5.7	0.372	55.9	LOS D	10.0	73.4	0.89	0.82	23.7
6	R2	135	2.3	0.651	75.2	LOS F	9.7	69.5	1.00	0.82	15.2
Approach		593	5.0	0.651	60.5	LOS E	10.0	73.4	0.92	0.82	21.2
North: Hume Highway (N)											
7	L2	76	2.8	0.573	24.0	LOS B	19.5	145.8	0.54	0.52	32.8
8	T1	1597	8.8	0.573	17.9	LOS B	19.8	148.7	0.53	0.49	37.4
9	R2	312	9.5	1.119	205.5	LOS F	19.9	150.5	1.00	1.29	9.0
Approach		1984	8.6	1.119	47.6	LOS D	19.9	150.5	0.60	0.62	23.5
West: Elizabeth Drive (W)											
10	L2	551	5.4	0.928	74.8	LOS F	44.1	323.1	1.00	0.96	19.0
11	T1	942	3.0	0.934	77.0	LOS F	38.4	276.1	1.00	1.04	18.1
12	R2	442	6.4	1.098	191.7	LOS F	27.6	203.6	1.00	1.28	9.6
Approach		1935	4.5	1.098	102.6	LOS F	44.1	323.1	1.00	1.07	15.1
All Vehicles		6717	6.3	1.119	60.4	LOS E	44.1	323.1	0.82	0.81	20.7

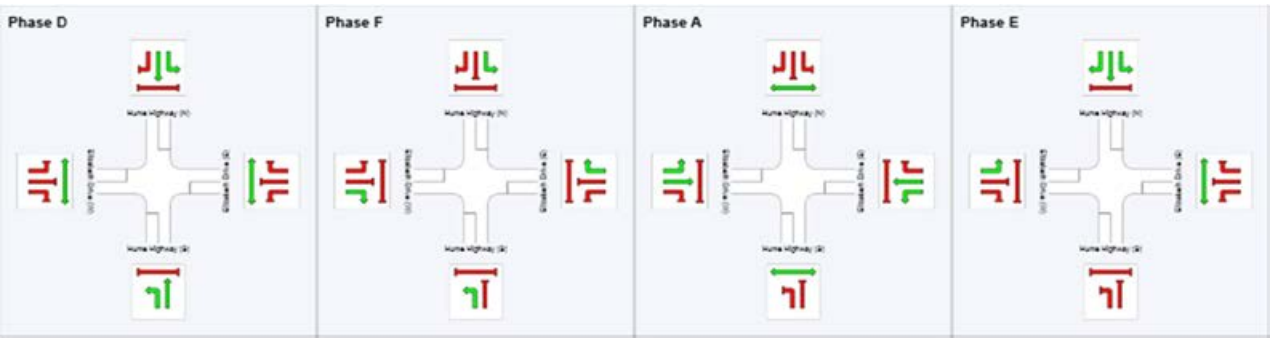
PHASING SUMMARY

Site: I-02 2016 BASE AM

Hume Highway / Elizabeth Drive
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	68	91	132
Green Time (sec)	62	17	35	12
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	68	23	41	18
Phase Split	45 %	15 %	27 %	12 %



MOVEMENT SUMMARY

Site: I-02 2016 BASE PM

Hume Highway / Elizabeth Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	288	4.4	0.429	40.0	LOS C	13.3	96.7	0.68	0.77	28.4
2	T1	1438	4.8	0.825	52.2	LOS D	32.8	238.8	0.94	0.87	21.9
Approach		1726	4.7	0.825	50.2	LOS D	32.8	238.8	0.90	0.85	22.9
East: Elizabeth Drive (E)											
4	L2	112	0.9	0.819	73.7	LOS F	23.0	163.5	1.00	0.92	16.0
5	T1	938	2.5	0.819	68.0	LOS E	28.3	202.4	1.00	0.92	20.7
6	R2	148	0.0	0.999	121.5	LOS F	14.4	100.8	1.00	1.16	10.6
Approach		1198	2.0	0.999	75.2	LOS F	28.3	202.4	1.00	0.95	18.5
North: Hume Highway (N)											
7	L2	61	5.2	0.795	20.3	LOS B	31.1	223.3	0.61	0.59	35.8
8	T1	2277	2.9	0.795	14.7	LOS B	31.8	228.3	0.61	0.57	40.1
9	R2	863	2.9	0.824	66.2	LOS E	30.0	215.6	0.99	0.89	21.5
Approach		3201	2.9	0.824	28.7	LOS C	31.8	228.3	0.71	0.66	31.6
West: Elizabeth Drive (W)											
10	L2	309	6.5	0.409	33.0	LOS C	12.5	92.6	0.60	0.75	30.1
11	T1	495	4.7	0.632	60.0	LOS E	16.0	116.1	0.93	0.80	21.3
12	R2	287	2.6	0.985	116.1	LOS F	13.5	96.8	1.00	1.09	14.3
Approach		1092	4.6	0.985	67.1	LOS E	16.0	116.1	0.86	0.86	20.3
All Vehicles		7217	3.5	0.999	47.4	LOS D	32.8	238.8	0.83	0.78	24.3

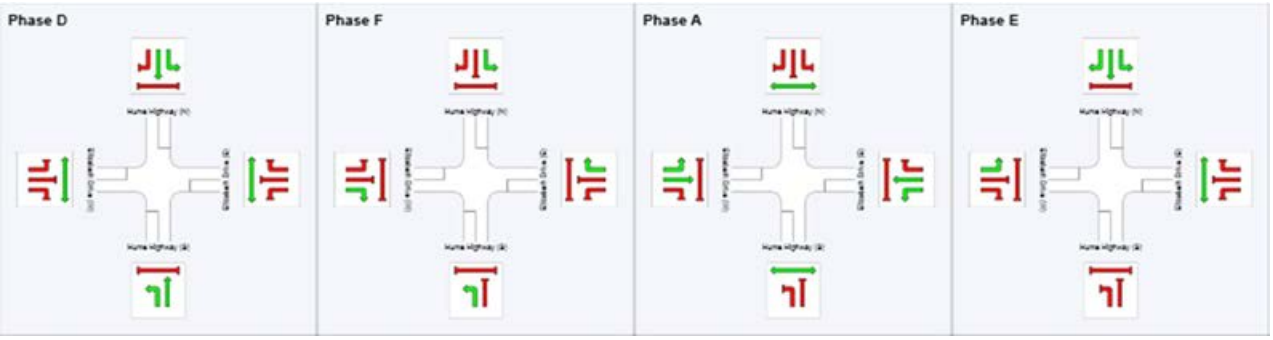
PHASING SUMMARY

Site: I-02 2016 BASE PM

Hume Highway / Elizabeth Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	71	108
Green Time (sec)	47	12	31	36
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	53	18	37	42
Phase Split	35 %	12 %	25 %	28 %



MOVEMENT SUMMARY

Site: I-02 2016 MIMT AM

Hume Highway / Elizabeth Drive
2014 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	118	5.4	0.130	21.1	LOS B	3.0	21.9	0.38	0.67	37.5
2	T1	2100	6.9	0.809	35.9	LOS C	41.9	310.4	0.86	0.78	27.3
Approach		2218	6.8	0.826	35.2	LOS C	41.9	310.4	0.83	0.77	27.8
East: Elizabeth Drive (E)											
4	L2	34	6.3	0.372	59.7	LOS E	8.8	64.8	0.91	0.81	18.5
5	T1	424	5.7	0.372	55.9	LOS D	10.0	73.4	0.89	0.82	23.7
6	R2	135	2.3	0.651	75.2	LOS F	9.7	69.5	1.00	0.82	15.2
Approach		593	5.0	0.651	60.5	LOS E	10.0	73.4	0.92	0.82	21.2
North: Hume Highway (N)											
7	L2	76	2.8	0.584	24.1	LOS B	20.1	150.7	0.55	0.53	32.7
8	T1	1622	9.4	0.584	18.1	LOS B	20.3	153.7	0.54	0.50	37.2
9	R2	312	9.5	1.119	205.5	LOS F	19.9	150.5	1.00	1.29	9.0
Approach		2009	9.2	1.119	47.4	LOS D	20.3	153.7	0.61	0.62	23.6
West: Elizabeth Drive (W)											
10	L2	551	5.4	0.928	74.8	LOS F	44.1	323.1	1.00	0.96	19.0
11	T1	942	3.0	0.934	77.0	LOS F	38.4	276.1	1.00	1.04	18.1
12	R2	445	6.7	1.108	199.5	LOS F	28.4	210.0	1.00	1.29	9.3
Approach		1938	4.5	1.108	104.5	LOS F	44.1	323.1	1.00	1.08	14.9
All Vehicles		6758	6.7	1.119	60.9	LOS E	44.1	323.1	0.82	0.82	20.6

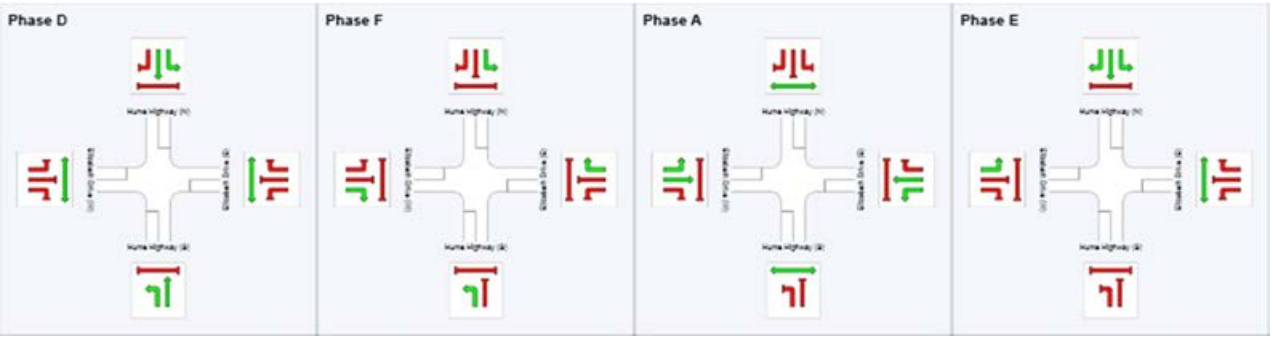
PHASING SUMMARY

Site: I-02 2016 MIMT AM

Hume Highway / Elizabeth Drive
2014 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	68	91	132
Green Time (sec)	62	17	35	12
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	68	23	41	18
Phase Split	45 %	15 %	27 %	12 %



MOVEMENT SUMMARY

Site: I-02 2016 MIMT PM

Hume Highway / Elizabeth Drive
2014 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	291	4.9	0.435	40.1	LOS C	13.5	98.5	0.68	0.77	28.3
2	T1	1463	5.6	0.855	55.0	LOS D	35.3	258.9	0.96	0.91	21.2
Approach		1754	5.5	0.855	52.5	LOS D	35.3	258.9	0.91	0.88	22.3
East: Elizabeth Drive (E)											
4	L2	112	0.9	0.821	73.8	LOS F	23.0	163.9	1.00	0.92	16.0
5	T1	938	2.5	0.821	68.1	LOS E	28.4	203.1	1.00	0.92	20.7
6	R2	148	0.0	0.999	121.5	LOS F	14.4	100.8	1.00	1.16	10.6
Approach		1198	2.0	0.999	75.3	LOS F	28.4	203.1	1.00	0.95	18.5
North: Hume Highway (N)											
7	L2	61	5.2	0.803	20.4	LOS B	31.8	229.5	0.62	0.59	35.7
8	T1	2291	3.5	0.803	14.8	LOS B	32.6	234.6	0.62	0.58	40.0
9	R2	863	2.9	0.824	66.2	LOS E	30.0	215.6	0.99	0.89	21.5
Approach		3215	3.4	0.824	28.7	LOS C	32.6	234.6	0.72	0.67	31.5
West: Elizabeth Drive (W)											
10	L2	309	6.5	0.409	33.0	LOS C	12.5	92.6	0.60	0.75	30.1
11	T1	495	4.7	0.632	60.0	LOS E	16.0	116.1	0.93	0.80	21.3
12	R2	287	2.6	0.985	116.1	LOS F	13.5	96.8	1.00	1.09	14.3
Approach		1092	4.6	0.985	67.1	LOS E	16.0	116.1	0.86	0.86	20.3
All Vehicles		7259	3.8	0.999	47.9	LOS D	35.3	258.9	0.83	0.79	24.1

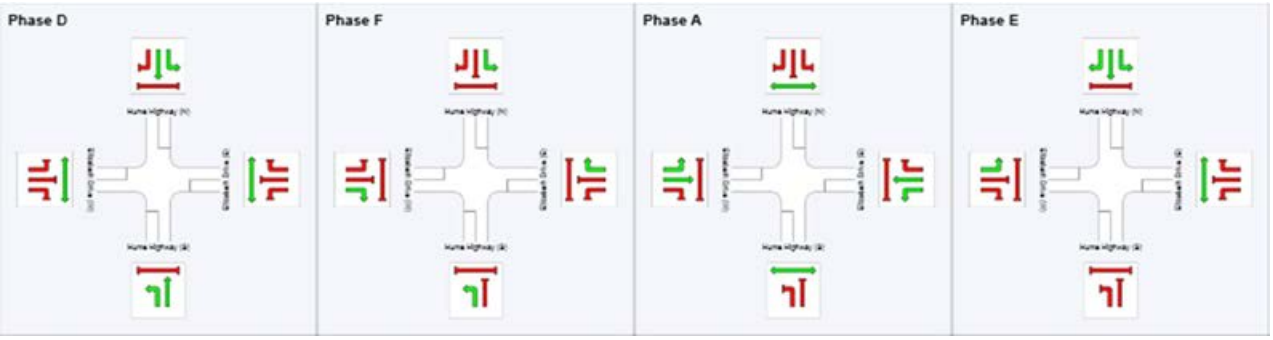
PHASING SUMMARY

Site: I-02 2016 MIMT PM

Hume Highway / Elizabeth Drive
2014 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	71	108
Green Time (sec)	47	12	31	36
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	53	18	37	42
Phase Split	35 %	12 %	25 %	28 %



I-03 Intersection of the Hume Highway and Memorial Avenue

MOVEMENT SUMMARY

Site: I-03 2016 BASE AM

Hume Highway / Memorial Avenue
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	140	1.5	0.848	41.5	LOS C	43.5	320.2	0.90	0.85	34.0
2	T1	1867	7.3	0.848	33.8	LOS C	43.6	323.9	0.83	0.78	33.7
3	R2	237	0.0	1.007	125.9	LOS F	23.8	166.5	1.00	1.10	14.7
Approach		2244	6.1	1.007	44.0	LOS D	43.6	323.9	0.85	0.82	29.8
East: Memorial Avenue (E)											
4	L2	22	19.0	1.016	132.0	LOS F	14.4	107.0	1.00	1.22	14.5
5	T1	139	5.3	1.016	127.3	LOS F	14.4	107.0	1.00	1.22	14.1
6	R2	109	12.5	1.016	132.0	LOS F	13.0	100.2	1.00	1.21	10.4
Approach		271	9.3	1.016	129.6	LOS F	14.4	107.0	1.00	1.22	12.7
North: Hume Highway (N)											
7	L2	106	5.9	0.090	12.3	LOS A	2.3	16.8	0.35	0.64	39.5
8	T1	1559	11.1	0.653	26.8	LOS B	25.4	194.7	0.68	0.61	37.2
9	R2	87	3.6	0.381	71.5	LOS F	6.0	43.1	0.96	0.78	21.5
Approach		1753	10.5	0.653	28.1	LOS B	25.4	194.7	0.67	0.62	35.9
West: Memorial Avenue (W)											
10	L2	112	2.8	1.023	118.0	LOS F	28.2	201.1	1.00	1.22	15.7
11	T1	401	1.6	1.023	120.8	LOS F	36.7	261.5	1.00	1.25	14.5
12	R2	141	3.0	1.023	132.4	LOS F	36.7	261.5	1.00	1.28	17.7
Approach		654	2.1	1.023	122.8	LOS F	36.7	261.5	1.00	1.25	15.5
All Vehicles		4921	7.3	1.023	53.5	LOS D	43.6	323.9	0.82	0.83	26.3

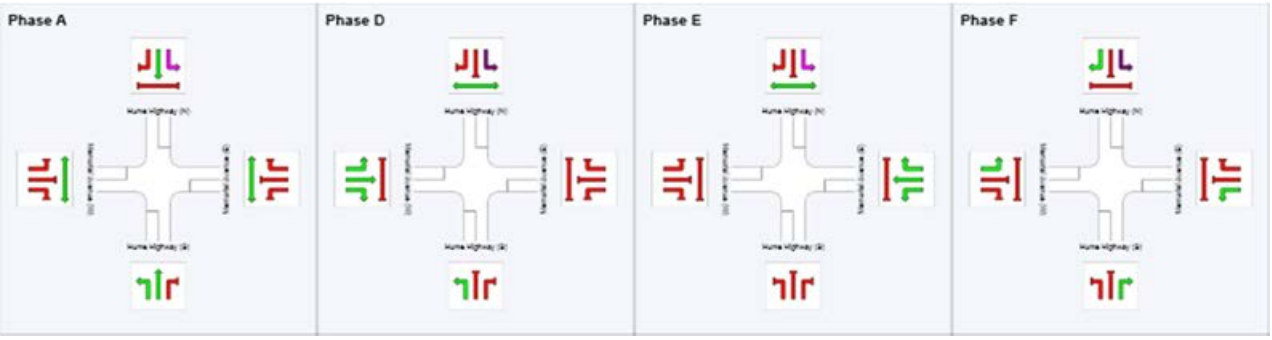
PHASING SUMMARY

Site: I-03 2016 BASE AM

Hume Highway / Memorial Avenue
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	75	108	125
Green Time (sec)	69	27	11	19
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	75	33	17	25
Phase Split	50 %	22 %	11 %	17 %



MOVEMENT SUMMARY

Site: I-03 2016 BASE PM

Hume Highway / Memorial Avenue
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	115	0.9	0.728	40.8	LOS C	30.6	222.6	0.82	0.78	34.2
2	T1	1543	5.7	0.728	33.0	LOS C	31.0	227.8	0.78	0.71	34.0
3	R2	112	0.0	0.751	83.5	LOS F	8.5	59.6	1.00	0.85	19.6
Approach		1769	5.1	0.751	36.7	LOS C	31.0	227.8	0.80	0.72	32.6
East: Memorial Avenue (E)											
4	L2	46	0.0	1.201	276.8	LOS F	38.3	272.6	1.00	1.71	8.0
5	T1	252	2.5	1.201	272.3	LOS F	38.3	272.6	1.00	1.70	7.7
6	R2	184	6.3	1.201	277.2	LOS F	35.3	258.6	1.00	1.62	5.5
Approach		482	3.7	1.201	274.6	LOS F	38.3	272.6	1.00	1.67	6.9
North: Hume Highway (N)											
7	L2	142	3.0	0.084	8.0	LOS A	1.8	12.7	0.23	0.61	43.9
8	T1	2734	3.0	0.843	10.2	LOS A	37.8	271.5	0.52	0.48	48.6
9	R2	199	2.1	0.755	52.1	LOS D	8.9	63.6	1.00	0.88	25.6
Approach		3075	3.0	0.843	12.8	LOS A	37.8	271.5	0.53	0.51	45.8
West: Memorial Avenue (W)											
10	L2	73	1.4	0.787	70.2	LOS E	12.9	91.5	1.00	0.93	22.0
11	T1	183	1.1	0.787	67.6	LOS E	16.2	113.5	1.00	0.92	20.9
12	R2	147	0.0	0.787	75.3	LOS F	16.2	113.5	1.00	0.90	24.9
Approach		403	0.8	0.787	70.9	LOS F	16.2	113.5	1.00	0.91	22.7
All Vehicles		5729	3.5	1.201	46.3	LOS D	38.3	272.6	0.69	0.70	28.5

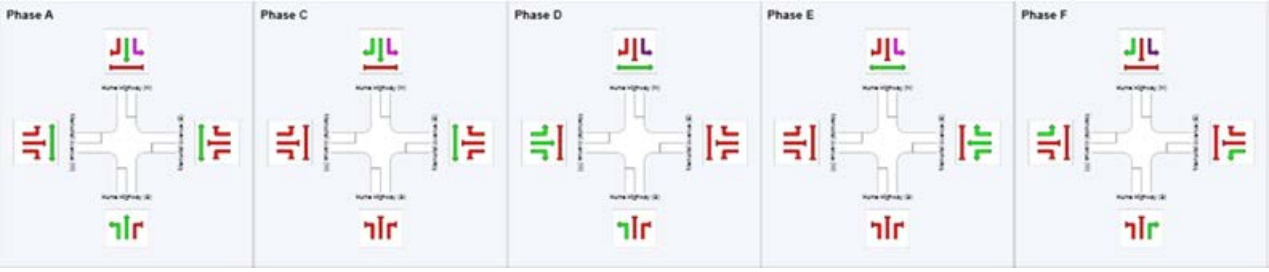
PHASING SUMMARY

Site: I-03 2016 BASE PM

Hume Highway / Memorial Avenue
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D	E	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	70	82	110	132
Green Time (sec)	64	6	22	16	12
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	70	12	28	22	18
Phase Split	47 %	8 %	19 %	15 %	12 %



MOVEMENT SUMMARY

Site: I-03 2016 MIMT AM

Hume Highway / Memorial Avenue
2014 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	140	1.5	0.856	42.5	LOS C	44.6	329.7	0.90	0.86	33.7
2	T1	1880	7.9	0.856	34.7	LOS C	44.7	334.0	0.84	0.80	33.3
3	R2	237	0.0	1.007	125.9	LOS F	23.8	166.5	1.00	1.10	14.7
Approach		2257	6.7	1.007	44.8	LOS D	44.7	334.0	0.86	0.83	29.6
East: Memorial Avenue (E)											
4	L2	22	19.0	1.016	132.0	LOS F	14.4	107.0	1.00	1.22	14.5
5	T1	139	5.3	1.016	127.3	LOS F	14.4	107.0	1.00	1.22	14.1
6	R2	109	12.5	1.016	132.0	LOS F	13.0	100.2	1.00	1.21	10.4
Approach		271	9.3	1.016	129.6	LOS F	14.4	107.0	1.00	1.22	12.7
North: Hume Highway (N)											
7	L2	106	5.9	0.090	12.3	LOS A	2.3	16.8	0.35	0.64	39.5
8	T1	1587	11.9	0.668	27.0	LOS B	26.3	202.7	0.69	0.61	37.0
9	R2	87	3.6	0.381	71.5	LOS F	6.0	43.1	0.96	0.78	21.5
Approach		1781	11.1	0.668	28.3	LOS B	26.3	202.7	0.68	0.62	35.8
West: Memorial Avenue (W)											
10	L2	112	2.8	1.025	119.0	LOS F	28.4	202.3	1.00	1.23	15.6
11	T1	401	1.6	1.025	121.8	LOS F	36.9	262.8	1.00	1.25	14.4
12	R2	142	3.0	1.025	133.4	LOS F	36.9	262.8	1.00	1.28	17.6
Approach		655	2.1	1.025	123.8	LOS F	36.9	262.8	1.00	1.26	15.4
All Vehicles		4963	7.8	1.025	53.9	LOS D	44.7	334.0	0.82	0.83	26.2

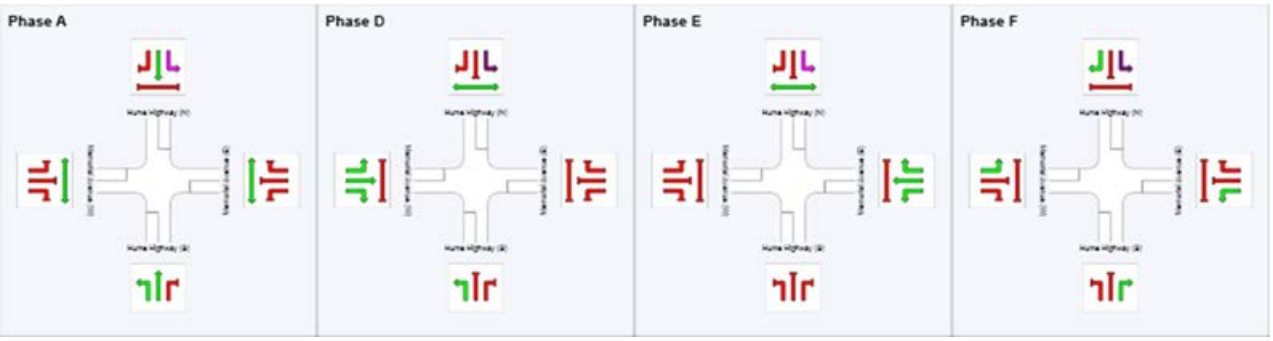
PHASING SUMMARY

Site: I-03 2016 MIMT AM

Hume Highway / Memorial Avenue
2014 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	75	108	125
Green Time (sec)	69	27	11	19
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	75	33	17	25
Phase Split	50 %	22 %	11 %	17 %



MOVEMENT SUMMARY

Site: I-03 2016 MIMT PM

Hume Highway / Memorial Avenue
2014 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	116	0.9	0.744	41.2	LOS C	31.5	231.0	0.83	0.79	34.1
2	T1	1571	6.6	0.744	33.3	LOS C	32.0	236.7	0.79	0.72	33.9
3	R2	112	0.0	0.751	83.5	LOS F	8.5	59.6	1.00	0.85	19.6
Approach		1799	5.8	0.751	36.9	LOS C	32.0	236.7	0.81	0.73	32.5
East: Memorial Avenue (E)											
4	L2	46	0.0	1.201	276.8	LOS F	38.3	272.6	1.00	1.71	8.0
5	T1	252	2.5	1.201	272.3	LOS F	38.3	272.6	1.00	1.70	7.7
6	R2	184	6.3	1.201	277.2	LOS F	35.3	258.6	1.00	1.62	5.5
Approach		482	3.7	1.201	274.6	LOS F	38.3	272.6	1.00	1.67	6.9
North: Hume Highway (N)											
7	L2	142	3.0	0.084	8.0	LOS A	1.8	12.7	0.23	0.61	43.9
8	T1	2748	3.5	0.850	10.3	LOS A	38.8	279.9	0.53	0.48	48.5
9	R2	199	2.1	0.755	52.1	LOS D	8.9	63.6	1.00	0.88	25.6
Approach		3089	3.4	0.850	12.9	LOS A	38.8	279.9	0.54	0.52	45.7
West: Memorial Avenue (W)											
10	L2	73	1.4	0.787	70.2	LOS E	12.9	91.5	1.00	0.93	22.0
11	T1	183	1.1	0.787	67.6	LOS E	16.2	113.5	1.00	0.92	20.9
12	R2	147	0.0	0.787	75.3	LOS F	16.2	113.5	1.00	0.90	24.9
Approach		403	0.8	0.787	70.9	LOS F	16.2	113.5	1.00	0.91	22.7
All Vehicles		5773	4.0	1.201	46.3	LOS D	38.8	279.9	0.70	0.71	28.5

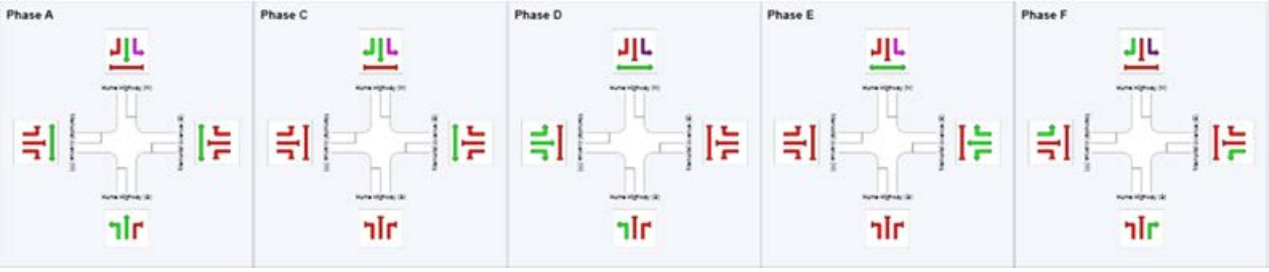
PHASING SUMMARY

Site: I-03 2016 MIMT PM

Hume Highway / Memorial Avenue
2014 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D	E	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	70	82	110	132
Green Time (sec)	64	6	22	16	12
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	70	12	28	22	18
Phase Split	47 %	8 %	19 %	15 %	12 %



I-04 Intersection of the Hume Highway and Hoxton Park Drive

MOVEMENT SUMMARY

Site: I-04 2016 BASE AM

Hume Highway / Hoxton Park Road / Macquarie Street
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	78	6.8	0.062	7.0	LOS A	0.3	2.4	0.06	0.56	52.3
2	T1	1926	5.1	0.718	25.0	LOS B	31.2	228.0	0.70	0.63	41.0
3	R2	1062	1.9	0.945	58.1	LOS E	28.3	201.6	1.00	1.00	24.7
Approach		3066	4.0	0.945	36.0	LOS C	31.2	228.0	0.79	0.76	34.6
East: Macquarie Street (E)											
4	L2	291	5.8	0.188	21.6	LOS B	4.5	32.9	0.65	0.72	38.8
5	T1	398	4.5	0.829	75.7	LOS F	15.3	111.6	1.00	0.94	23.2
Approach		688	5.0	0.829	52.9	LOS D	15.3	111.6	0.85	0.85	27.5
North: Hume Highway (N)											
7	L2	185	15.9	0.845	60.3	LOS E	34.9	266.9	0.96	1.01	26.1
8	T1	1341	8.2	0.845	54.3	LOS D	37.0	277.0	0.94	0.91	29.8
9	R2	188	19.0	0.960	106.7	LOS F	17.2	140.4	1.00	1.08	21.4
Approach		1715	10.2	0.960	60.7	LOS E	37.0	277.0	0.95	0.94	28.1
West: Hoxton Park Road (W)											
10	L2	276	16.4	0.478	46.7	LOS D	15.7	125.3	0.84	0.81	32.7
11	T1	1045	4.2	0.858	61.6	LOS E	25.9	187.6	0.95	0.94	26.2
12	R2	333	3.2	0.948	92.8	LOS F	15.6	112.1	1.00	0.98	22.3
Approach		1654	6.0	0.948	65.4	LOS E	25.9	187.6	0.94	0.93	26.2
All Vehicles		7123	6.1	0.960	50.4	LOS D	37.0	277.0	0.87	0.85	29.9

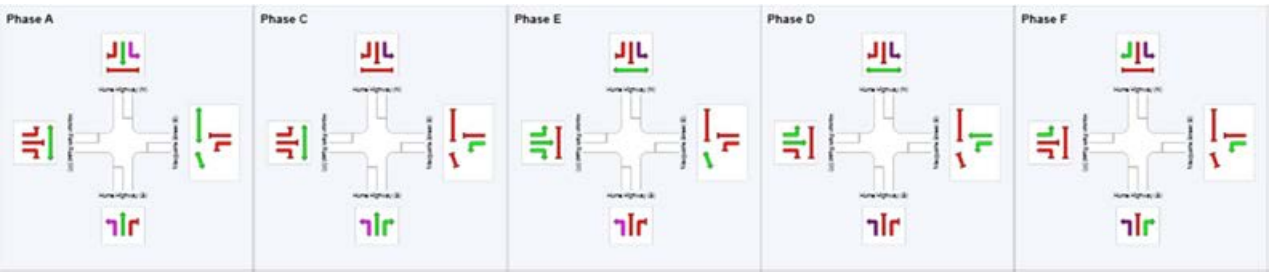
PHASING SUMMARY

Site: I-04 2016 BASE AM

Hume Highway / Hoxton Park Road / Macquarie Street
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	D	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	51	79	101	126
Green Time (sec)	45	22	16	19	18
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	51	28	22	25	24
Phase Split	34 %	19 %	15 %	17 %	16 %



MOVEMENT SUMMARY

Site: I-04 2016 BASE PM

Hume Highway / Hoxton Park Road / Macquarie Street
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	159	5.3	0.131	8.5	LOS A	1.2	9.1	0.12	0.58	51.1
2	T1	1515	5.1	0.577	22.5	LOS B	21.4	156.3	0.59	0.53	42.4
3	R2	418	1.3	0.925	94.1	LOS F	17.6	124.5	1.00	0.99	18.3
Approach		2092	4.4	0.925	35.7	LOS C	21.4	156.3	0.64	0.62	35.3
East: Macquarie Street (E)											
4	L2	702	1.5	0.909	68.3	LOS E	23.7	167.8	0.82	0.90	22.5
5	T1	612	3.3	0.941	84.6	LOS F	25.6	183.9	1.00	1.05	21.7
Approach		1314	2.3	0.941	75.9	LOS F	25.6	183.9	0.91	0.97	22.1
North: Hume Highway (N)											
7	L2	94	5.6	0.861	18.3	LOS B	40.6	291.5	0.64	0.65	45.4
8	T1	2619	2.6	0.861	13.0	LOS A	43.3	310.0	0.61	0.58	48.2
9	R2	232	6.4	1.222	296.6	LOS F	36.6	270.1	1.00	1.53	10.0
Approach		2944	3.0	1.222	35.5	LOS C	43.3	310.0	0.64	0.66	36.2
West: Hoxton Park Road (W)											
10	L2	231	3.7	0.367	44.6	LOS D	12.5	90.1	0.80	0.79	33.5
11	T1	605	3.8	0.370	45.6	LOS D	11.7	84.4	0.85	0.71	30.7
12	R2	334	1.6	1.056	128.2	LOS F	20.1	142.8	1.00	1.11	18.0
Approach		1169	3.2	1.056	69.0	LOS E	20.1	142.8	0.88	0.84	25.7
All Vehicles		7519	3.3	1.222	47.8	LOS D	43.3	310.0	0.72	0.73	31.0

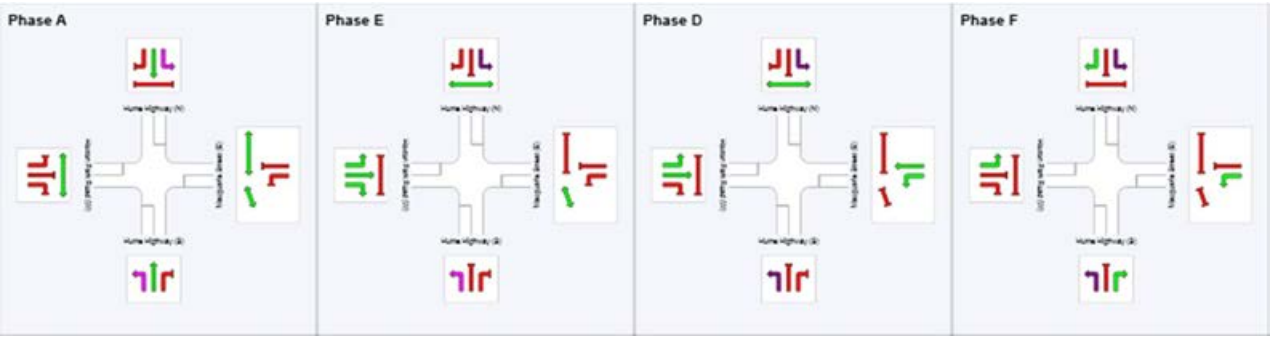
PHASING SUMMARY

Site: I-04 2016 BASE PM

Hume Highway / Hoxton Park Road / Macquarie Street
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	D	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	79	99	128
Green Time (sec)	73	14	23	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	79	20	29	22
Phase Split	53 %	13 %	19 %	15 %



MOVEMENT SUMMARY

Site: I-04 2016 MIMT AM

Hume Highway / Hoxton Park Road / Macquarie Street
2014 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	81	10.1	0.066	7.0	LOS A	0.3	2.5	0.06	0.56	52.2
2	T1	1939	5.7	0.727	25.1	LOS B	31.8	233.6	0.70	0.64	40.9
3	R2	1062	1.9	0.945	58.1	LOS E	28.3	201.6	1.00	1.00	24.7
Approach		3082	4.5	0.945	36.0	LOS C	31.8	233.6	0.79	0.76	34.6
East: Macquarie Street (E)											
4	L2	291	5.8	0.188	21.6	LOS B	4.5	32.9	0.65	0.72	38.8
5	T1	398	4.5	0.829	75.7	LOS F	15.3	111.6	1.00	0.94	23.2
Approach		688	5.0	0.829	52.9	LOS D	15.3	111.6	0.85	0.85	27.5
North: Hume Highway (N)											
7	L2	185	15.9	0.864	62.6	LOS E	36.9	283.4	0.97	1.03	25.6
8	T1	1370	9.1	0.864	56.4	LOS D	38.7	292.1	0.95	0.93	29.2
9	R2	188	19.0	0.960	106.7	LOS F	17.2	140.4	1.00	1.08	21.4
Approach		1744	10.9	0.960	62.5	LOS E	38.7	292.1	0.96	0.96	27.6
West: Hoxton Park Road (W)											
10	L2	276	16.4	0.478	46.7	LOS D	15.7	125.3	0.84	0.81	32.7
11	T1	1045	4.2	0.859	61.7	LOS E	25.9	187.7	0.95	0.94	26.2
12	R2	335	3.6	0.961	95.4	LOS F	16.0	115.5	1.00	0.99	22.0
Approach		1656	6.1	0.961	66.0	LOS E	25.9	187.7	0.94	0.93	26.1
All Vehicles		7170	6.5	0.961	51.0	LOS D	38.7	292.1	0.87	0.86	29.8

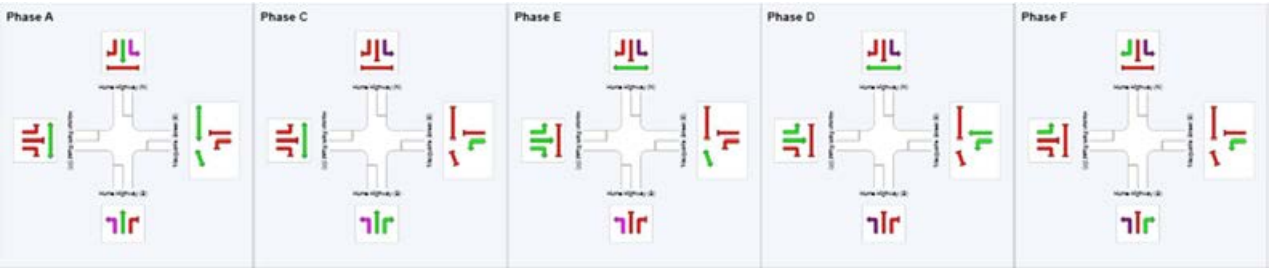
PHASING SUMMARY

Site: I-04 2016 MIMT AM

Hume Highway / Hoxton Park Road / Macquarie Street
2014 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	D	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	51	79	101	126
Green Time (sec)	45	22	16	19	18
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	51	28	22	25	24
Phase Split	34 %	19 %	15 %	17 %	16 %



MOVEMENT SUMMARY

Site: I-04 2016 MIMT PM

Hume Highway / Hoxton Park Road / Macquarie Street
2014 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	161	6.0	0.133	8.5	LOS A	1.3	9.4	0.12	0.58	51.1
2	T1	1544	6.0	0.592	22.7	LOS B	22.2	163.3	0.60	0.54	42.2
3	R2	418	1.3	0.925	94.1	LOS F	17.6	124.5	1.00	0.99	18.3
Approach		2123	5.1	0.925	35.7	LOS C	22.2	163.3	0.64	0.63	35.4
East: Macquarie Street (E)											
4	L2	702	1.5	0.909	68.3	LOS E	23.7	167.8	0.82	0.90	22.5
5	T1	612	3.3	0.941	84.6	LOS F	25.6	183.9	1.00	1.05	21.7
Approach		1314	2.3	0.941	75.9	LOS F	25.6	183.9	0.91	0.97	22.1
North: Hume Highway (N)											
7	L2	94	5.6	0.872	18.9	LOS B	42.8	308.2	0.67	0.67	44.9
8	T1	2633	3.1	0.872	13.7	LOS A	45.4	326.6	0.62	0.60	47.7
9	R2	232	6.4	1.222	296.6	LOS F	36.6	270.1	1.00	1.53	10.0
Approach		2958	3.5	1.222	36.0	LOS C	45.4	326.6	0.65	0.67	36.0
West: Hoxton Park Road (W)											
10	L2	231	3.7	0.367	44.6	LOS D	12.5	90.1	0.80	0.79	33.5
11	T1	605	3.8	0.370	45.6	LOS D	11.7	84.4	0.85	0.71	30.7
12	R2	337	2.4	1.072	135.8	LOS F	21.1	150.9	1.00	1.14	17.3
Approach		1172	3.4	1.072	71.3	LOS F	21.1	150.9	0.88	0.85	25.3
All Vehicles		7567	3.7	1.222	48.3	LOS D	45.4	326.6	0.73	0.74	30.9

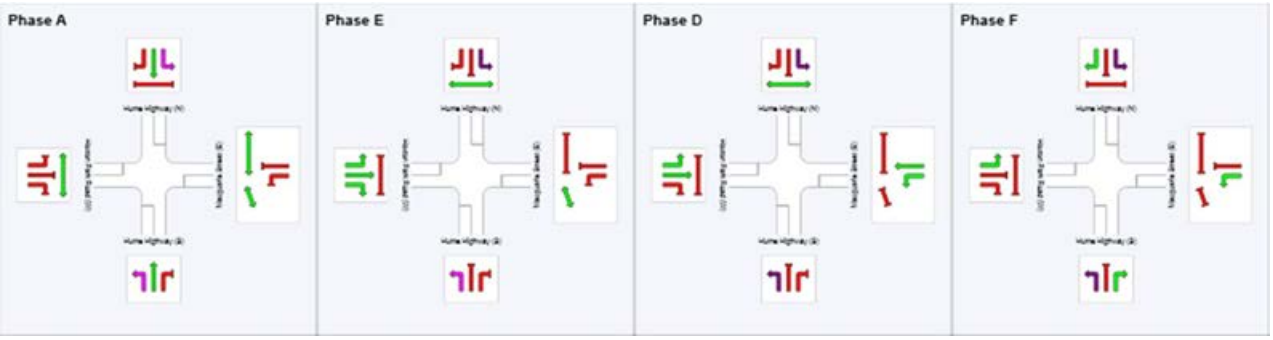
PHASING SUMMARY

Site: I-04 2016 MIMT PM

Hume Highway / Hoxton Park Road / Macquarie Street
2014 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	D	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	79	99	128
Green Time (sec)	73	14	23	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	79	20	29	22
Phase Split	53 %	13 %	19 %	15 %



I-05 Intersection of the Hume Highway and Reilly Street

MOVEMENT SUMMARY

Site: I-05 2016 BASE AM

Hume Highway / Reilly Street
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Hignway (S)											
1	L2	73	2.9	0.823	17.9	LOS B	38.1	274.6	0.59	0.57	43.7
2	T1	2839	3.6	0.823	11.7	LOS A	38.1	274.6	0.57	0.54	45.9
3	R2	13	8.3	0.076	20.1	LOS B	0.4	3.0	0.45	0.66	38.4
Approach		2924	3.6	0.823	11.9	LOS A	38.1	274.6	0.57	0.54	45.8
East: Congressional Drive (E)											
4	L2	42	2.5	0.234	59.6	LOS E	5.1	36.7	0.89	0.73	24.4
5	T1	40	5.3	0.234	55.0	LOS D	5.1	36.7	0.89	0.73	23.9
6	R2	79	4.0	0.360	66.3	LOS E	5.3	38.1	0.94	0.77	18.9
Approach		161	3.9	0.360	61.8	LOS E	5.3	38.1	0.91	0.75	21.6
North: Hume Hignway (N)											
7	L2	28	3.7	0.492	15.5	LOS B	20.5	152.3	0.48	0.45	41.4
8	T1	1654	7.2	0.492	9.5	LOS A	20.6	153.1	0.46	0.42	48.0
9	R2	88	1.2	0.597	32.4	LOS C	4.7	33.5	0.99	0.85	30.7
Approach		1771	6.8	0.597	10.8	LOS A	20.6	153.1	0.48	0.44	46.6
West: Reilly Street (W)											
10	L2	101	4.2	0.235	50.5	LOS D	6.4	46.6	0.82	0.75	24.4
11	T1	12	9.1	0.235	45.9	LOS D	6.4	46.6	0.82	0.75	25.6
12	R2	213	2.0	0.905	88.6	LOS F	18.0	128.0	1.00	1.01	20.6
Approach		325	2.9	0.905	75.2	LOS F	18.0	128.0	0.94	0.92	21.6
All Vehicles		5181	4.7	0.905	17.0	LOS B	38.1	274.6	0.57	0.54	41.2

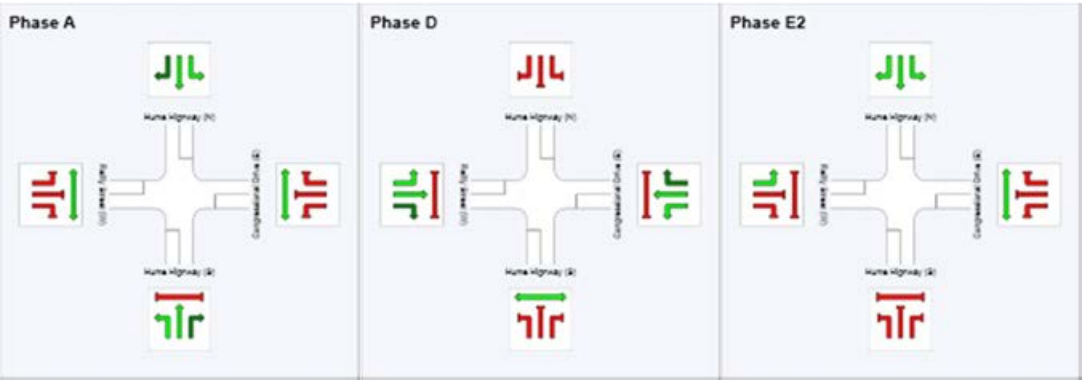
PHASING SUMMARY

Site: I-05 2016 BASE AM

Hume Highway / Reilly Street
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	100	137
Green Time (sec)	94	31	7
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	100	37	13
Phase Split	67 %	25 %	9 %



MOVEMENT SUMMARY

Site: I-05 2016 BASE PM

Hume Highway / Reilly Street
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Hignway (S)											
1	L2	219	0.5	0.635	19.3	LOS B	24.1	173.4	0.51	0.56	42.0
2	T1	1975	4.5	0.635	11.3	LOS A	24.1	173.4	0.44	0.42	46.0
3	R2	21	5.0	0.372	28.7	LOS C	1.0	7.2	0.59	0.72	34.1
Approach		2215	4.1	0.635	12.3	LOS A	24.1	173.4	0.44	0.44	45.3
East: Congressional Drive (E)											
4	L2	36	2.9	0.163	59.6	LOS E	3.5	24.8	0.88	0.72	24.3
5	T1	21	0.0	0.163	55.0	LOS D	3.5	24.8	0.88	0.72	23.8
6	R2	44	0.0	0.180	62.1	LOS E	2.8	19.5	0.89	0.74	19.8
Approach		101	1.0	0.180	59.7	LOS E	3.5	24.8	0.88	0.73	22.3
North: Hume Hignway (N)											
7	L2	62	0.0	0.924	15.0	LOS B	43.8	311.9	0.47	0.48	41.9
8	T1	3386	2.2	0.924	11.0	LOS A	43.8	311.9	0.37	0.40	46.6
9	R2	163	1.3	0.790	47.0	LOS D	10.5	74.1	1.00	0.98	25.8
Approach		3612	2.2	0.924	12.7	LOS A	43.8	311.9	0.40	0.42	44.8
West: Reilly Street (W)											
10	L2	58	0.0	0.195	53.9	LOS D	5.0	34.8	0.84	0.73	24.0
11	T1	27	0.0	0.195	49.4	LOS D	5.0	34.8	0.84	0.73	25.0
12	R2	234	1.8	0.944	98.2	LOS F	21.1	149.8	1.00	1.06	19.3
Approach		319	1.3	0.944	86.0	LOS F	21.1	149.8	0.96	0.97	20.3
All Vehicles		6246	2.8	0.944	17.1	LOS B	43.8	311.9	0.45	0.46	41.2

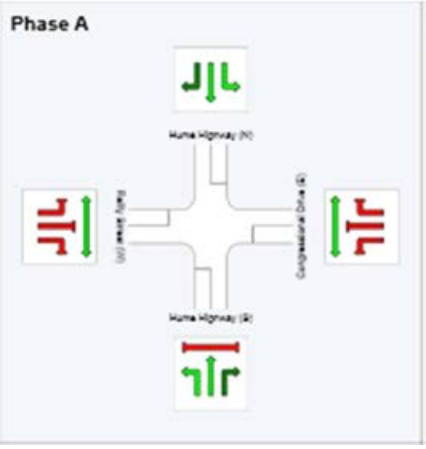
PHASING SUMMARY

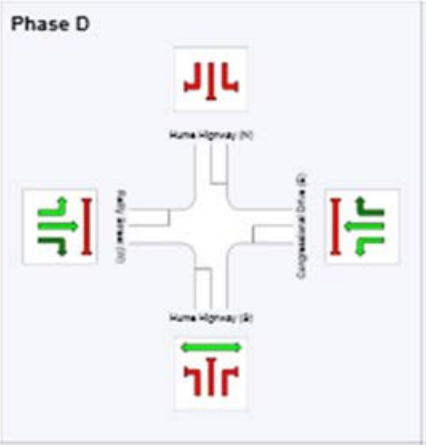
Site: I-05 2016 BASE PM

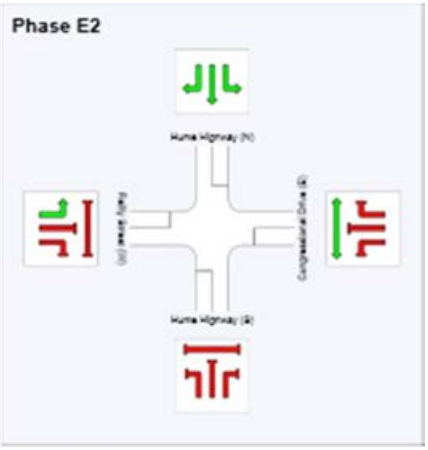
Hume Highway / Reilly Street
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	98	135
Green Time (sec)	92	31	9
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	98	37	15
Phase Split	65 %	25 %	10 %







MOVEMENT SUMMARY

Site: I-05 2016 MIMT AM

Hume Highway / Reilly Street
2016 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Hignway (S)											
1	L2	73	2.9	0.831	18.1	LOS B	39.1	283.3	0.61	0.59	43.6
2	T1	2855	4.2	0.831	11.8	LOS A	39.1	283.3	0.58	0.55	45.8
3	R2	13	8.3	0.079	20.6	LOS B	0.4	3.1	0.45	0.66	38.1
Approach		2940	4.1	0.831	12.0	LOS A	39.1	283.3	0.58	0.55	45.7
East: Congressional Drive (E)											
4	L2	42	2.5	0.234	59.6	LOS E	5.1	36.7	0.89	0.73	24.4
5	T1	40	5.3	0.234	55.0	LOS D	5.1	36.7	0.89	0.73	23.9
6	R2	79	4.0	0.360	66.3	LOS E	5.3	38.1	0.94	0.77	18.9
Approach		161	3.9	0.360	61.8	LOS E	5.3	38.1	0.91	0.75	21.6
North: Hume Hignway (N)											
7	L2	28	3.7	0.520	15.9	LOS B	22.3	166.5	0.49	0.47	41.2
8	T1	1685	8.0	0.520	9.8	LOS A	22.4	167.4	0.47	0.43	47.8
9	R2	88	1.2	0.600	33.6	LOS C	4.8	34.1	1.00	0.85	30.2
Approach		1802	7.6	0.600	11.1	LOS A	22.4	167.4	0.50	0.46	46.3
West: Reilly Street (W)											
10	L2	101	4.2	0.235	50.5	LOS D	6.4	46.6	0.82	0.75	24.4
11	T1	12	9.1	0.235	45.9	LOS D	6.4	46.6	0.82	0.75	25.6
12	R2	214	2.0	0.912	90.0	LOS F	18.2	129.8	1.00	1.02	20.4
Approach		326	2.9	0.912	76.2	LOS F	18.2	129.8	0.94	0.93	21.5
All Vehicles		5229	5.3	0.912	17.2	LOS B	39.1	283.3	0.58	0.55	41.1

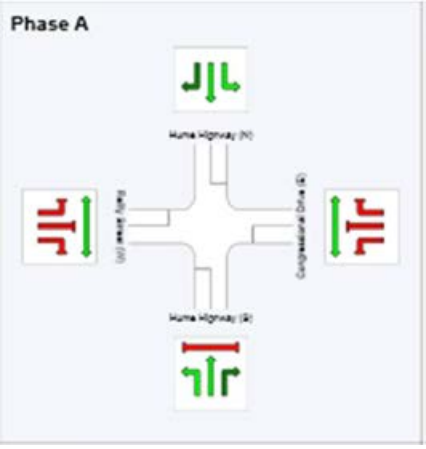
PHASING SUMMARY

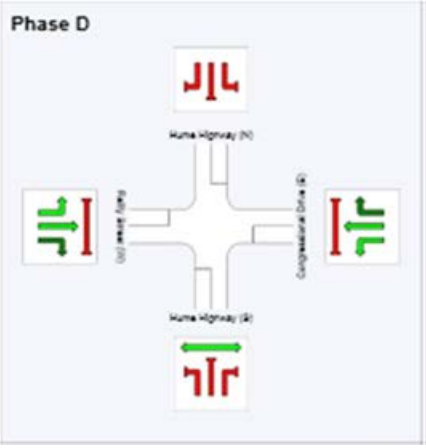
Site: I-05 2016 MIMT AM

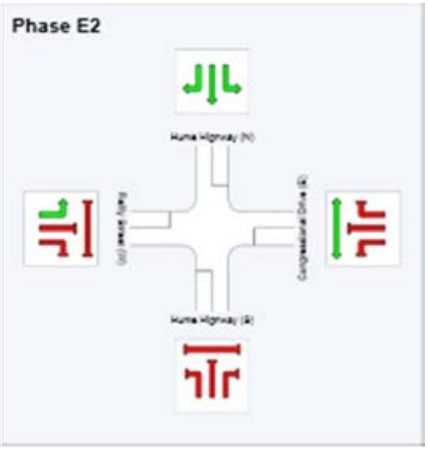
Hume Highway / Reilly Street
2016 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	100	137
Green Time (sec)	94	31	7
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	100	37	13
Phase Split	67 %	25 %	9 %







MOVEMENT SUMMARY

Site: I-05 2016 MIMT PM

Hume Highway / Reilly Street
2016 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Hignway (S)											
1	L2	220	0.5	0.647	19.5	LOS B	24.8	179.6	0.52	0.56	41.9
2	T1	2006	5.3	0.647	11.5	LOS A	24.8	179.6	0.44	0.43	45.9
3	R2	21	5.0	0.374	29.3	LOS C	1.0	7.3	0.60	0.73	33.8
Approach		2247	4.8	0.647	12.4	LOS A	24.8	179.6	0.45	0.45	45.2
East: Congressional Drive (E)											
4	L2	36	2.9	0.163	59.6	LOS E	3.5	24.8	0.88	0.72	24.3
5	T1	21	0.0	0.163	55.0	LOS D	3.5	24.8	0.88	0.72	23.8
6	R2	44	0.0	0.180	62.1	LOS E	2.8	19.5	0.89	0.74	19.8
Approach		101	1.0	0.180	59.7	LOS E	3.5	24.8	0.88	0.73	22.3
North: Hume Hignway (N)											
7	L2	62	0.0	0.935	18.1	LOS B	50.6	362.1	0.51	0.54	39.3
8	T1	3403	2.7	0.935	14.4	LOS A	50.6	362.1	0.40	0.44	43.6
9	R2	163	1.3	0.803	51.2	LOS D	10.7	76.0	1.00	0.99	24.7
Approach		3629	2.6	0.935	16.1	LOS B	50.6	362.1	0.43	0.47	42.0
West: Reilly Street (W)											
10	L2	58	0.0	0.195	53.9	LOS D	5.0	34.8	0.84	0.73	24.0
11	T1	27	0.0	0.195	49.4	LOS D	5.0	34.8	0.84	0.73	25.0
12	R2	234	1.8	0.944	98.3	LOS F	21.1	149.8	1.00	1.06	19.3
Approach		319	1.3	0.944	86.1	LOS F	21.1	149.8	0.96	0.97	20.3
All Vehicles		6296	3.3	0.944	19.1	LOS B	50.6	362.1	0.47	0.49	39.9

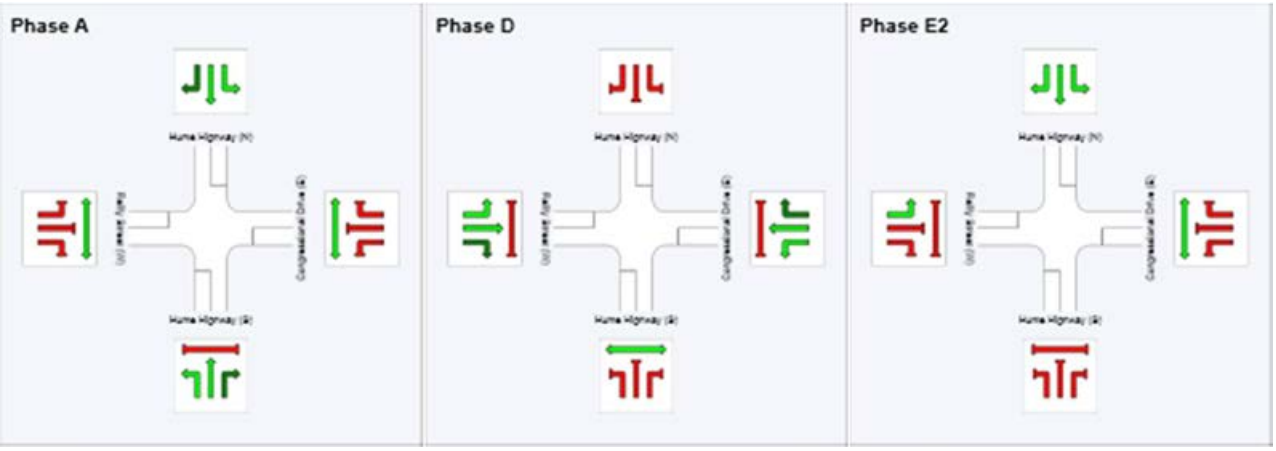
PHASING SUMMARY

Site: I-05 2016 MIMT PM

Hume Highway / Reilly Street
2016 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	98	135
Green Time (sec)	92	31	9
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	98	37	15
Phase Split	65 %	25 %	10 %



I-06 Intersection of Newbridge Road and Moorebank Avenue

MOVEMENT SUMMARY

Site: I-06 2016 BASE AM

Network: 2016 BASE AM

Newbridge Road / Moorebank Avenue
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	1248	3.2	1242	3.2	0.641	19.1	LOS B	13.9	100.1	0.57	0.82	42.2
3	R2	1108	9.0	1102	9.0	0.647	15.0	LOS B	13.1	99.1	0.40	0.68	52.8
Approach		2357	5.9	2344 N1	5.9	0.647	17.2	LOS B	13.9	100.1	0.49	0.76	47.9
East: Newbridge Road (E)													
4	L2	484	19.8	484	19.8	0.402	17.3	LOS B	5.2	42.7	0.64	0.77	52.8
5	T1	728	5.2	728	5.2	0.951	82.7	LOS F	29.5	216.0	1.00	1.12	35.0
Approach		1213	11.0	1213	11.0	0.951	56.6	LOS E	29.5	216.0	0.86	0.98	38.9
West: Newbridge Road (W)													
11	T1	1179	6.4	1179	6.4	0.635	9.0	LOS A	13.7	101.3	0.39	0.35	63.1
12	R2	604	7.3	604	7.3	0.961	67.4	LOS E	19.5	145.1	1.00	1.04	22.0
Approach		1783	6.7	1783	6.7	0.961	28.8	LOS C	19.5	145.1	0.60	0.59	48.6
All Vehicles		5353	7.4	5340 N1	7.4	0.961	30.0	LOS C	29.5	216.0	0.61	0.75	45.2

PHASING SUMMARY

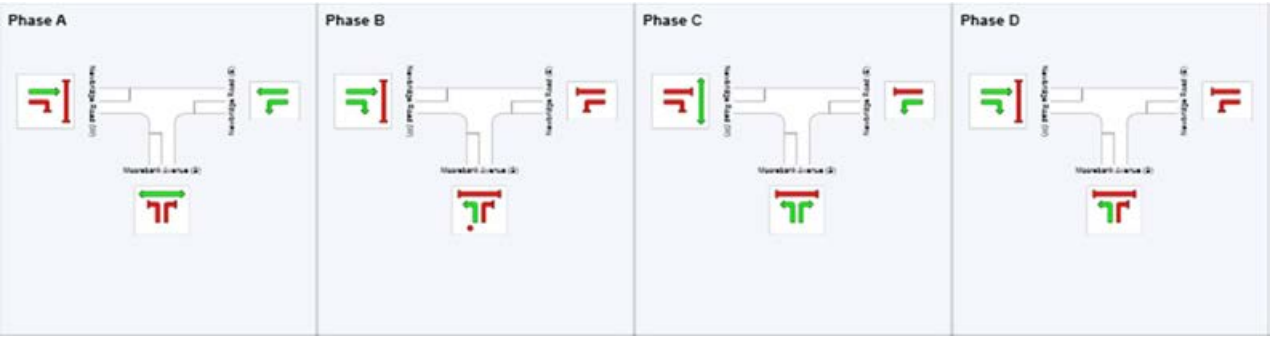
Site: I-06 2016 BASE AM

Network: 2016 BASE AM

Newbridge Road / Moorebank Avenue
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	33	55	116
Green Time (sec)	27	16	55	11
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	22	61	17
Phase Split	25 %	17 %	46 %	13 %



MOVEMENT SUMMARY

Site: I-06 2016 BASE PM

Network: 2016 BASE PM

Newbridge Road / Moorebank Avenue
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	736	3.4	736	3.4	0.420	21.6	LOS B	10.1	72.5	0.52	0.73	40.5
3	R2	731	10.8	731	10.8	0.945	58.8	LOS E	17.1	130.6	1.00	0.99	33.3
Approach		1466	7.1	1466	7.1	0.945	40.1	LOS C	17.1	130.6	0.76	0.86	35.7
East: Newbridge Road (E)													
4	L2	1057	5.1	1057	5.1	0.705	26.4	LOS B	23.9	174.9	0.73	0.82	46.5
5	T1	1157	4.7	1157	4.7	0.778	36.9	LOS C	28.1	204.7	0.92	0.82	48.4
Approach		2214	4.9	2214	4.9	0.778	31.9	LOS C	28.1	204.7	0.83	0.82	47.7
West: Newbridge Road (W)													
11	T1	933	3.7	933	3.7	0.364	8.7	LOS A	11.2	81.0	0.47	0.42	63.3
12	R2	953	2.7	953	2.7	0.901	45.0	LOS D	27.6	197.5	0.98	0.93	28.5
Approach		1885	3.2	1885	3.2	0.901	27.1	LOS B	27.6	197.5	0.73	0.68	47.3
All Vehicles		5565	4.9	5565	4.9	0.945	32.4	LOS C	28.1	204.7	0.78	0.78	44.5

PHASING SUMMARY

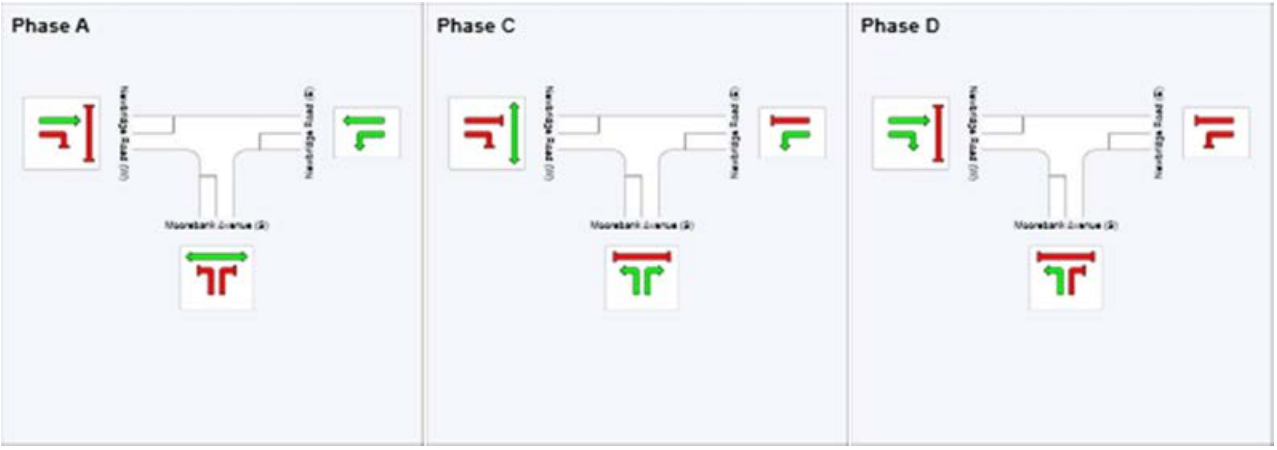
Site: I-06 2016 BASE PM

Network: 2016 BASE PM

Newbridge Road / Moorebank Avenue
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	44	76
Green Time (sec)	38	26	34
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	44	32	40
Phase Split	38 %	28 %	34 %



MOVEMENT SUMMARY

Site: I-06 2016 MIMT AM

Network: 2016 MIMT AM

Newbridge Road / Moorebank Avenue
2016 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	1249	3.3	1234	3.3	0.637	19.0	LOS B	13.7	98.7	0.57	0.82	42.2
3	R2	1127	10.6	1114	10.6	0.661	15.0	LOS B	13.6	103.9	0.41	0.68	52.6
Approach		2377	6.7	2348 N1	6.7	0.661	17.1	LOS B	13.7	103.9	0.49	0.76	47.8
East: Newbridge Road (E)													
4	L2	498	20.9	498	20.9	0.417	17.4	LOS B	5.4	44.7	0.65	0.77	52.7
5	T1	728	5.2	728	5.2	0.951	82.7	LOS F	29.5	216.0	1.00	1.12	35.0
Approach		1226	11.6	1226	11.6	0.951	56.2	LOS D	29.5	216.0	0.86	0.97	38.9
West: Newbridge Road (W)													
11	T1	1179	6.4	1179	6.4	0.635	9.0	LOS A	13.7	101.3	0.39	0.35	63.1
12	R2	612	7.4	612	7.4	1.010	77.9	LOS F	23.5	174.7	1.00	1.07	19.9
Approach		1791	6.8	1791	6.8	1.010	32.5	LOS C	23.5	174.7	0.60	0.60	46.7
All Vehicles		5394	7.8	5365 N1	7.9	1.010	31.2	LOS C	29.5	216.0	0.61	0.75	44.6

PHASING SUMMARY

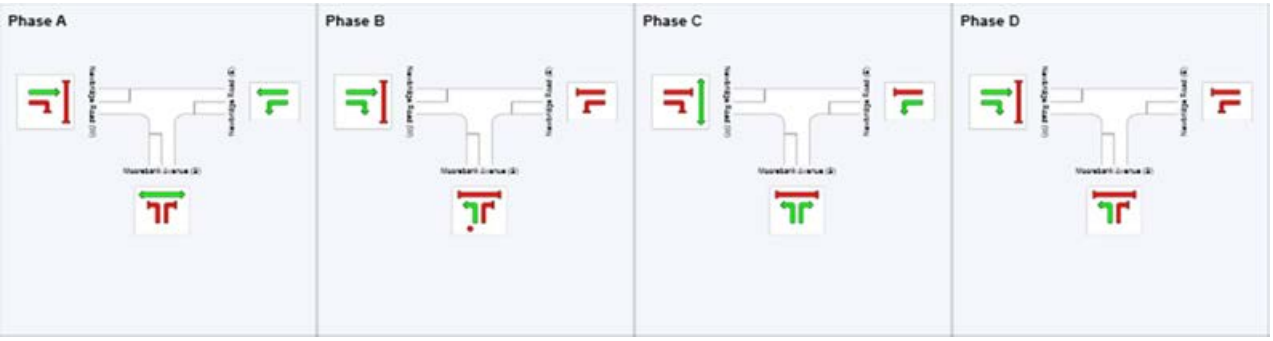
Site: I-06 2016 MIMT AM

Network: 2016 MIMT AM

Newbridge Road / Moorebank Avenue
2016 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	33	55	116
Green Time (sec)	27	16	55	11
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	22	61	17
Phase Split	25 %	17 %	46 %	13 %



MOVEMENT SUMMARY

Site: I-06 2016 MIMT PM

Network: 2016 MIMT PM

Newbridge Road / Moorebank Avenue
2016 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	742	3.4	742	3.4	0.424	21.6	LOS B	10.2	73.3	0.53	0.73	40.4
3	R2	744	11.7	744	11.7	0.969	65.5	LOS E	16.9	130.6	1.00	1.02	31.5
Approach		1486	7.6	1486	7.6	0.969	43.6	LOS D	16.9	130.6	0.76	0.88	34.4
East: Newbridge Road (E)													
4	L2	1069	6.2	1069	6.2	0.770	27.0	LOS B	25.1	184.8	0.75	0.82	46.2
5	T1	1157	4.7	1157	4.7	0.778	36.9	LOS C	28.1	204.7	0.92	0.82	48.4
Approach		2226	5.4	2226	5.4	0.778	32.1	LOS C	28.1	204.7	0.84	0.82	47.6
West: Newbridge Road (W)													
11	T1	933	3.7	933	3.7	0.364	8.7	LOS A	11.2	81.0	0.47	0.42	63.3
12	R2	953	2.7	953	2.7	0.925	48.9	LOS D	29.4	210.6	1.00	0.96	27.1
Approach		1885	3.2	1885	3.2	0.925	29.0	LOS C	29.4	210.6	0.74	0.69	46.3
All Vehicles		5598	5.2	5598	5.2	0.969	34.1	LOS C	29.4	210.6	0.78	0.79	43.7

PHASING SUMMARY

Site: I-06 2016 MIMT PM

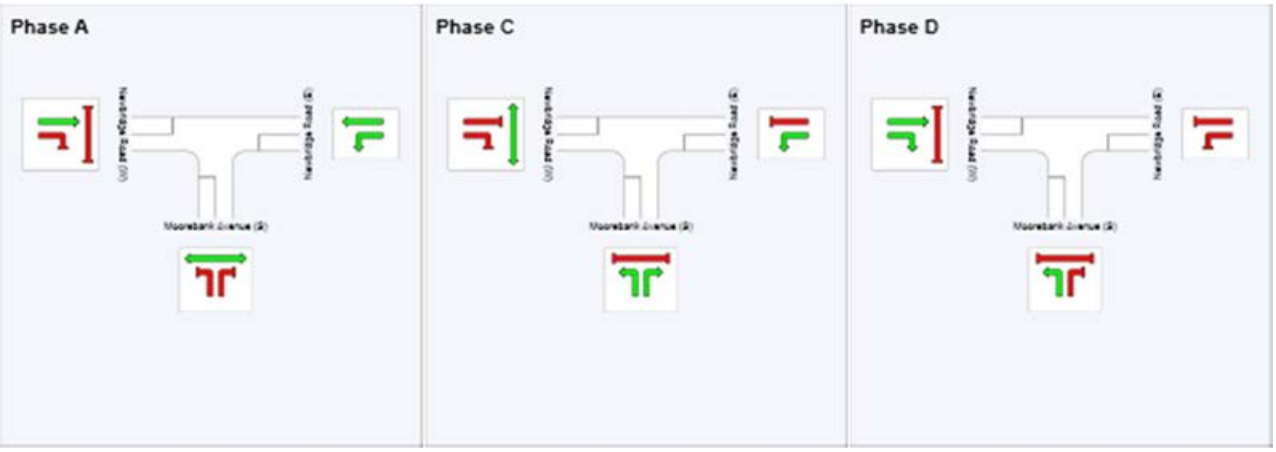
Network: 2016 MIMT PM

Newbridge Road / Moorebank Avenue
2016 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase times specified by the user
Sequence: TCS 714 PM
Movement Class: All Movement Classes
Input Sequence: A, C, D
Output Sequence: A, C, D

Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	44	76
Green Time (sec)	38	26	34
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	44	32	40
Phase Split	38 %	28 %	34 %



MOVEMENT SUMMARY

Site: I-06 2016 MIMT AM

Network: 2016 MIMT AM - Upgrade Option

Newbridge Road / Moorebank Avenue
2016 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	1249	3.3	1249	3.3	0.645	19.2	LOS B	14.2	101.9	0.57	0.83	42.1
3	R2	1127	10.6	1127	10.6	0.669	15.1	LOS B	14.0	106.7	0.42	0.69	52.6
Approach		2377	6.7	2377	6.7	0.669	17.2	LOS B	14.2	106.7	0.50	0.76	47.8
East: Newbridge Road (E)													
4	L2	498	20.9	498	20.9	0.417	17.4	LOS B	5.4	44.7	0.65	0.77	52.7
5	T1	728	5.2	728	5.2	0.951	82.7	LOS F	29.5	216.0	1.00	1.12	35.0
Approach		1226	11.6	1226	11.6	0.951	56.2	LOS D	29.5	216.0	0.86	0.97	38.9
West: Newbridge Road (W)													
11	T1	1179	6.4	1179	6.4	0.635	9.0	LOS A	13.7	101.3	0.39	0.35	63.1
12	R2	612	7.4	612	7.4	1.001	74.2	LOS F	22.6	168.4	1.00	1.06	20.6
Approach		1791	6.8	1791	6.8	1.001	31.2	LOS C	22.6	168.4	0.60	0.59	47.3
All Vehicles		5394	7.8	5394	7.8	1.001	30.7	LOS C	29.5	216.0	0.61	0.75	44.8

PHASING SUMMARY

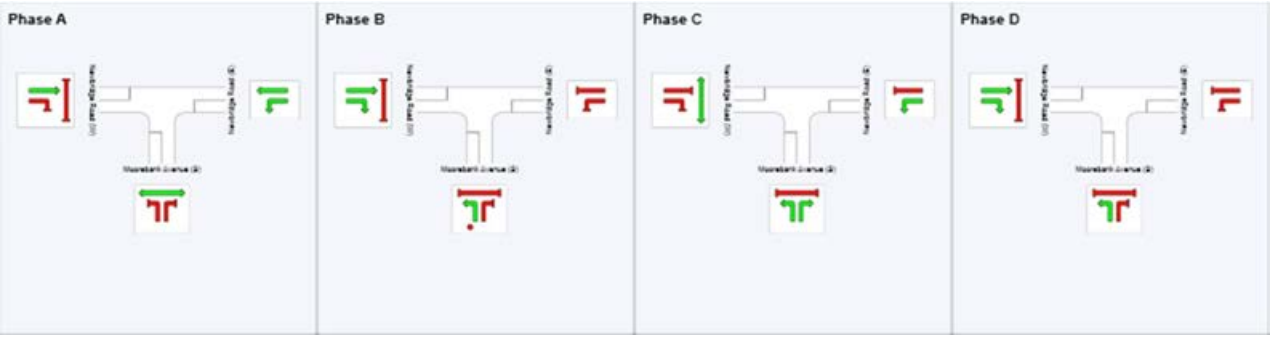
Site: I-06 2016 MIMT AM

Network: 2016 MIMT AM - Upgrade Option

Newbridge Road / Moorebank Avenue
2016 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	33	55	116
Green Time (sec)	27	16	55	11
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	22	61	17
Phase Split	25 %	17 %	46 %	13 %



MOVEMENT SUMMARY

Site: I-06 2016 MIMT PM

Network: 2016 MIMT PM - Upgrade Option

Newbridge Road / Moorebank Avenue
2016 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	742	3.4	742	3.4	0.424	21.6	LOS B	10.2	73.3	0.53	0.73	40.4
3	R2	744	11.7	744	11.7	0.969	65.5	LOS E	16.9	130.6	1.00	1.02	31.5
Approach		1486	7.6	1486	7.6	0.969	43.6	LOS D	16.9	130.6	0.76	0.88	34.4
East: Newbridge Road (E)													
4	L2	1069	6.2	1069	6.2	0.770	27.0	LOS B	25.1	184.8	0.75	0.82	46.2
5	T1	1157	4.7	1157	4.7	0.778	36.9	LOS C	28.1	204.7	0.92	0.82	48.4
Approach		2226	5.4	2226	5.4	0.778	32.1	LOS C	28.1	204.7	0.84	0.82	47.6
West: Newbridge Road (W)													
11	T1	933	3.7	933	3.7	0.364	8.7	LOS A	11.2	81.0	0.47	0.42	63.3
12	R2	953	2.7	953	2.7	0.925	48.9	LOS D	29.4	210.6	1.00	0.96	27.1
Approach		1885	3.2	1885	3.2	0.925	29.0	LOS C	29.4	210.6	0.74	0.69	46.3
All Vehicles		5598	5.2	5598	5.2	0.969	34.1	LOS C	29.4	210.6	0.78	0.79	43.7

PHASING SUMMARY

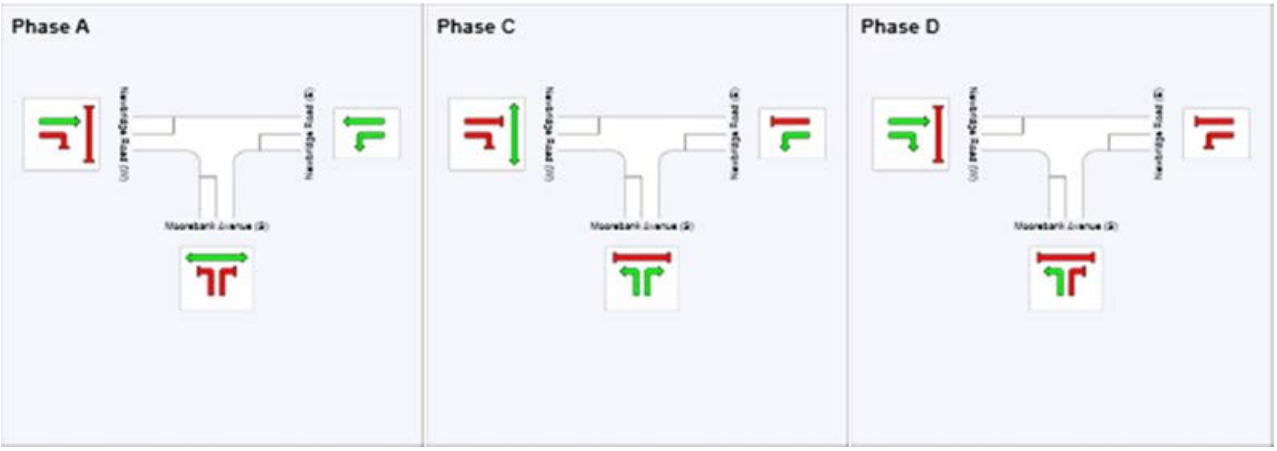
Site: I-06 2016 MIMT PM

Network: 2016 MIMT PM - Upgrade Option

Newbridge Road / Moorebank Avenue
2016 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	44	76
Green Time (sec)	38	26	34
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	44	32	40
Phase Split	38 %	28 %	34 %



I-07 Intersection of Moorebank Avenue and Heathcote Road

MOVEMENT SUMMARY

Site: I-07 2016 BASE AM

Network: 2016 BASE AM

Moorebank Avenue / Heathcote Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	1583	5.7	1583	5.7	0.960	35.7	LOS C	60.0	440.5	0.83	0.91	19.7
3	R2	20	21.1	20	21.1	0.183	71.8	LOS F	1.3	10.6	0.98	0.71	30.5
Approach		1603	5.9	1603	5.9	0.960	36.1	LOS C	60.0	440.5	0.83	0.91	20.0
East: Heathcote Road (E)													
4	L2	22	57.1	22	57.1	1.064	156.3	LOS F	46.2	347.8	1.00	1.28	17.0
6	R2	762	6.1	762	6.1	1.064	123.8	LOS F	46.2	347.8	1.00	1.18	19.9
Approach		784	7.5	784	7.5	1.064	124.8	LOS F	46.2	347.8	1.00	1.18	19.8
North: Moorebank Avenue (N)													
7	L2	545	7.7	545	7.7	0.324	10.5	LOS A	10.3	77.1	0.53	0.70	51.6
8	T1	565	16.9	565	16.9	0.319	20.7	LOS B	10.7	85.5	0.63	0.55	13.5
Approach		1111	12.4	1111	12.4	0.324	15.7	LOS B	10.7	85.5	0.58	0.62	41.6
All Vehicles		3498	8.3	3498	8.3	1.064	49.5	LOS D	60.0	440.5	0.79	0.88	24.2

PHASING SUMMARY

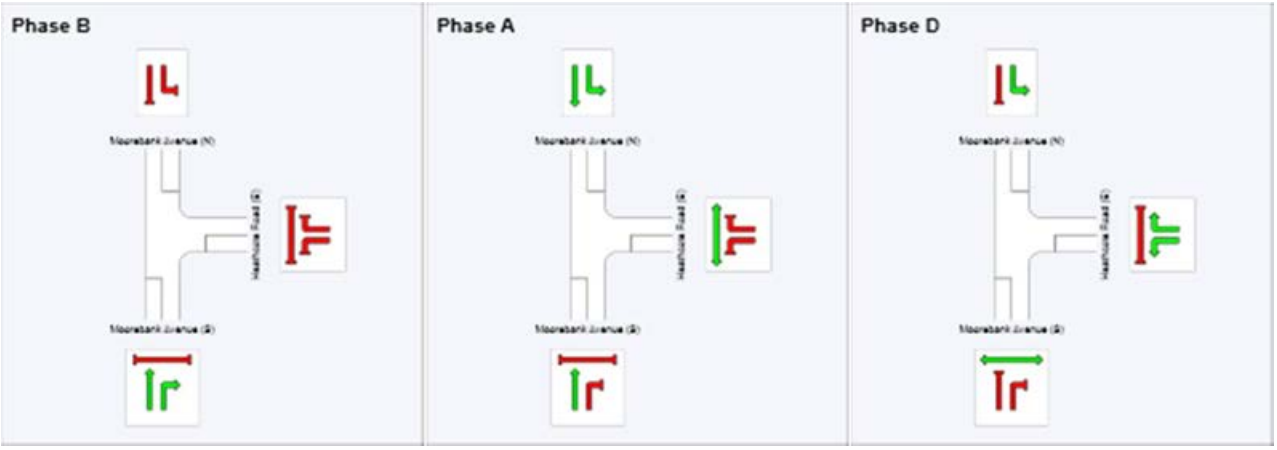
Site: I-07 2016 BASE AM

Network: 2016 BASE AM

Moorebank Avenue / Heathcote Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	15	88
Green Time (sec)	9	67	39
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	73	45
Phase Split	11 %	55 %	34 %



MOVEMENT SUMMARY

Site: I-07 2016 BASE PM

Network: 2016 BASE PM

Moorebank Avenue / Heathcote Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	899	8.4	899	8.4	0.667	14.1	LOS A	18.6	139.9	0.67	0.61	33.2
3	R2	40	7.9	40	7.9	0.330	64.2	LOS E	2.3	17.1	0.99	0.74	32.3
Approach		939	8.4	939	8.4	0.667	16.2	LOS B	18.6	139.9	0.68	0.62	33.0
East: Heathcote Road (E)													
4	L2	64	19.7	64	19.7	0.936	56.9	LOS E	27.3	203.2	1.00	0.99	31.2
6	R2	576	5.1	576	5.1	0.936	50.9	LOS D	27.3	203.2	0.96	0.93	32.8
Approach		640	6.6	640	6.6	0.936	51.5	LOS D	27.3	203.2	0.96	0.94	32.6
North: Moorebank Avenue (N)													
7	L2	764	3.6	764	3.6	0.359	7.5	LOS A	5.1	36.5	0.24	0.61	53.8
8	T1	1247	4.1	1247	4.1	0.635	6.1	LOS A	10.6	76.9	0.33	0.30	29.7
Approach		2012	3.9	2012	3.9	0.635	6.6	LOS A	10.6	76.9	0.29	0.41	48.7
All Vehicles		3591	5.5	3591	5.5	0.936	17.1	LOS B	27.3	203.2	0.52	0.56	39.2

PHASING SUMMARY

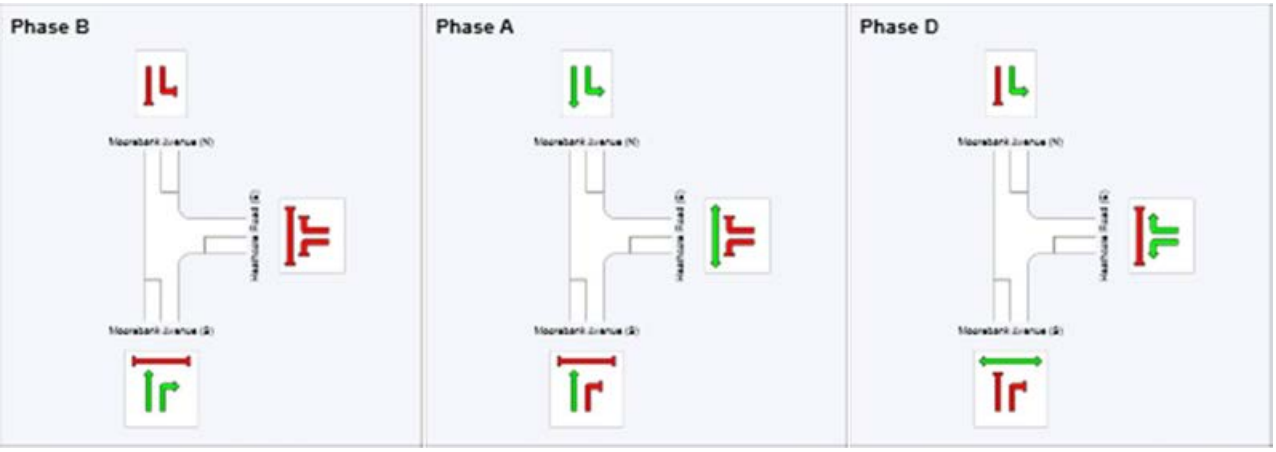
Site: I-07 2016 BASE PM

Network: 2016 BASE PM

Moorebank Avenue / Heathcote Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	14	80
Green Time (sec)	8	60	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	66	36
Phase Split	12 %	57 %	31 %



MOVEMENT SUMMARY

Site: I-07 2016 MIMT AM

Network: 2016 MIMT AM

Moorebank Avenue / Heathcote Road
2016 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	1603	6.9	1603	6.9	1.006	57.0	LOS E	59.4	440.6	0.92	1.12	14.0
3	R2	20	21.1	20	21.1	0.183	71.8	LOS F	1.3	10.6	0.98	0.71	30.5
Approach		1623	7.1	1623	7.1	1.006	57.1	LOS E	59.4	440.6	0.93	1.12	14.4
East: Heathcote Road (E)													
4	L2	22	57.1	22	57.1	1.109	191.9	LOS F	52.1	392.1	1.00	1.37	14.6
6	R2	762	6.1	762	6.1	1.109	153.3	LOS F	52.1	392.1	1.00	1.27	17.2
Approach		784	7.5	784	7.5	1.109	154.4	LOS F	52.1	392.1	1.00	1.27	17.1
North: Moorebank Avenue (N)													
7	L2	545	7.7	545	7.7	0.324	10.5	LOS A	10.3	77.1	0.53	0.70	51.6
8	T1	587	17.9	587	17.9	0.334	20.8	LOS B	11.2	90.3	0.64	0.55	13.4
Approach		1133	13.0	1133	13.0	0.334	15.9	LOS B	11.2	90.3	0.58	0.62	41.2
All Vehicles		3540	9.1	3540	9.1	1.109	65.5	LOS E	59.4	440.6	0.83	0.99	20.2

PHASING SUMMARY

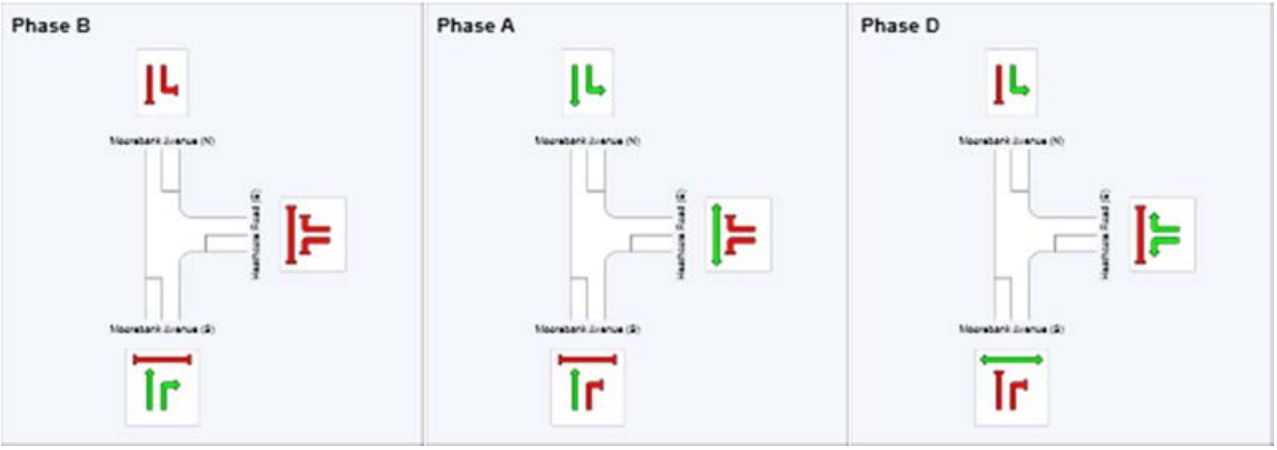
Site: I-07 2016 MIMT AM

Network: 2016 MIMT AM

Moorebank Avenue / Heathcote Road
2016 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	15	88
Green Time (sec)	9	67	39
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	73	45
Phase Split	11 %	55 %	34 %



MOVEMENT SUMMARY

Site: I-07 2016 MIMT PM

Network: 2016 MIMT PM

Moorebank Avenue / Heathcote Road
2016 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	920	9.2	920	9.2	0.686	14.4	LOS A	19.5	147.0	0.69	0.62	32.9
3	R2	40	7.9	40	7.9	0.330	64.2	LOS E	2.3	17.1	0.99	0.74	32.3
Approach		960	9.1	960	9.1	0.686	16.4	LOS B	19.5	147.0	0.70	0.63	32.8
East: Heathcote Road (E)													
4	L2	64	19.7	64	19.7	0.939	57.8	LOS E	27.5	204.9	1.00	0.99	30.9
6	R2	576	5.1	576	5.1	0.939	51.5	LOS D	27.5	204.9	0.96	0.94	32.6
Approach		640	6.6	640	6.6	0.939	52.1	LOS D	27.5	204.9	0.96	0.94	32.5
North: Moorebank Avenue (N)													
7	L2	764	3.6	764	3.6	0.359	7.5	LOS A	5.1	36.5	0.24	0.61	53.8
8	T1	1260	5.0	1260	5.0	0.645	6.2	LOS A	10.9	79.9	0.33	0.30	29.6
Approach		2024	4.5	2024	4.5	0.645	6.6	LOS A	10.9	79.9	0.30	0.42	48.7
All Vehicles		3624	6.1	3624	6.1	0.939	17.3	LOS B	27.5	204.9	0.52	0.57	39.0

PHASING SUMMARY

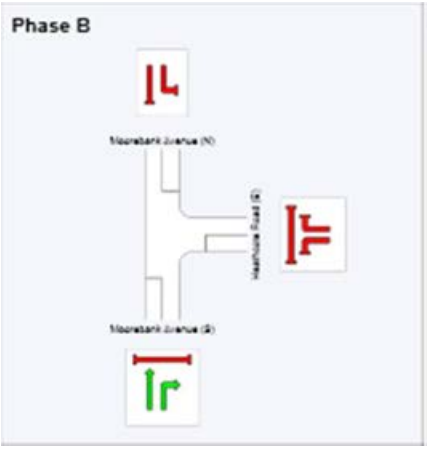
Site: I-07 2016 MIMT PM

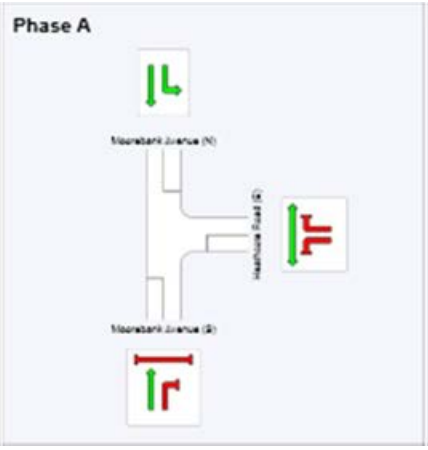
Network: 2016 MIMT PM

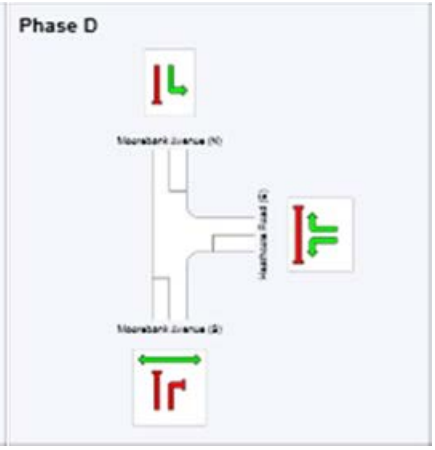
Moorebank Avenue / Heathcote Road
2016 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	14	80
Green Time (sec)	8	60	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	66	36
Phase Split	12 %	57 %	31 %







MOVEMENT SUMMARY

Site: I-07 2016 MIMT AM - Upgrade Option

Network: 2016 MIMT AM - Upgrade Option

Moorebank Avenue / Heathcote Road
2016 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	1603	6.9	1603	6.9	1.031	71.2	LOS F	59.4	440.6	0.96	1.23	11.9
3	R2	20	21.1	20	21.1	0.183	71.8	LOS F	1.3	10.6	0.98	0.71	30.6
Approach		1623	7.1	1623	7.1	1.031	71.2	LOS F	59.4	440.6	0.96	1.22	12.3
East: Heathcote Road (E)													
4	L2	22	57.1	22	57.1	0.930	84.0	LOS F	19.1	146.1	0.95	1.05	25.4
6	R2	762	6.1	762	6.1	0.837	75.8	LOS F	20.2	148.7	0.97	1.01	26.9
Approach		784	7.5	784	7.5	0.930	76.0	LOS F	20.2	148.7	0.97	1.01	26.8
North: Moorebank Avenue (N)													
7	L2	545	7.7	545	7.7	0.323	10.5	LOS A	10.4	77.5	0.53	0.70	51.6
8	T1	587	17.9	587	17.9	0.329	20.2	LOS B	11.0	88.9	0.63	0.54	14.1
Approach		1133	13.0	1133	13.0	0.329	15.5	LOS B	11.0	88.9	0.58	0.62	41.5
All Vehicles		3540	9.1	3540	9.1	1.031	54.5	LOS D	59.4	440.6	0.84	0.98	22.8

PHASING SUMMARY

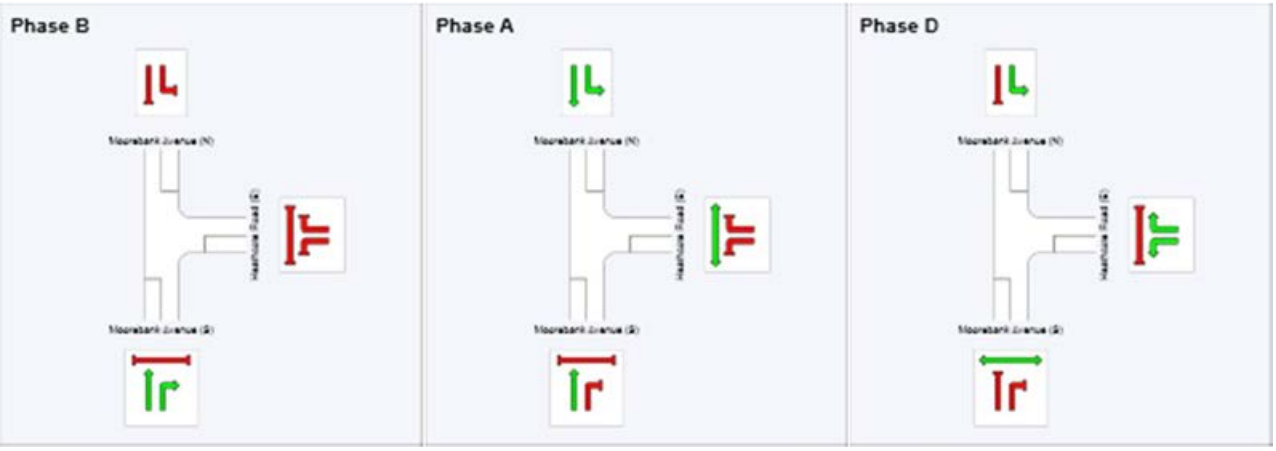
Site: I-07 2016 MIMT AM - Upgrade Option

Network: 2016 MIMT AM - Upgrade Option

Moorebank Avenue / Heathcote Road
2016 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	15	89
Green Time (sec)	9	68	38
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	74	44
Phase Split	11 %	56 %	33 %



MOVEMENT SUMMARY

Site: I-07 2016 MIMT PM - Upgrade Option

Network: 2016 MIMT PM - Upgrade Option

Moorebank Avenue / Heathcote Road
2016 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	920	9.2	920	9.2	0.535	12.2	LOS A	19.1	144.3	0.59	0.53	35.4
3	R2	40	7.9	40	7.9	0.330	64.2	LOS E	2.3	17.1	0.99	0.74	32.4
Approach		960	9.1	960	9.1	0.535	14.4	LOS A	19.1	144.3	0.60	0.54	34.9
East: Heathcote Road (E)													
4	L2	64	19.7	64	19.7	0.873	48.5	LOS D	14.4	108.2	0.86	0.89	33.6
6	R2	576	5.1	576	5.1	0.873	46.7	LOS D	14.4	108.2	0.90	0.89	34.1
Approach		640	6.6	640	6.6	0.873	46.9	LOS D	14.4	108.2	0.89	0.89	34.0
North: Moorebank Avenue (N)													
7	L2	764	3.6	764	3.6	0.359	7.5	LOS A	5.1	36.5	0.24	0.61	53.8
8	T1	1260	5.0	1260	5.0	0.645	6.2	LOS A	10.9	79.9	0.33	0.30	30.1
Approach		2024	4.5	2024	4.5	0.645	6.6	LOS A	10.9	79.9	0.30	0.42	48.7
All Vehicles		3624	6.1	3624	6.1	0.873	15.8	LOS B	19.1	144.3	0.48	0.53	40.3

PHASING SUMMARY

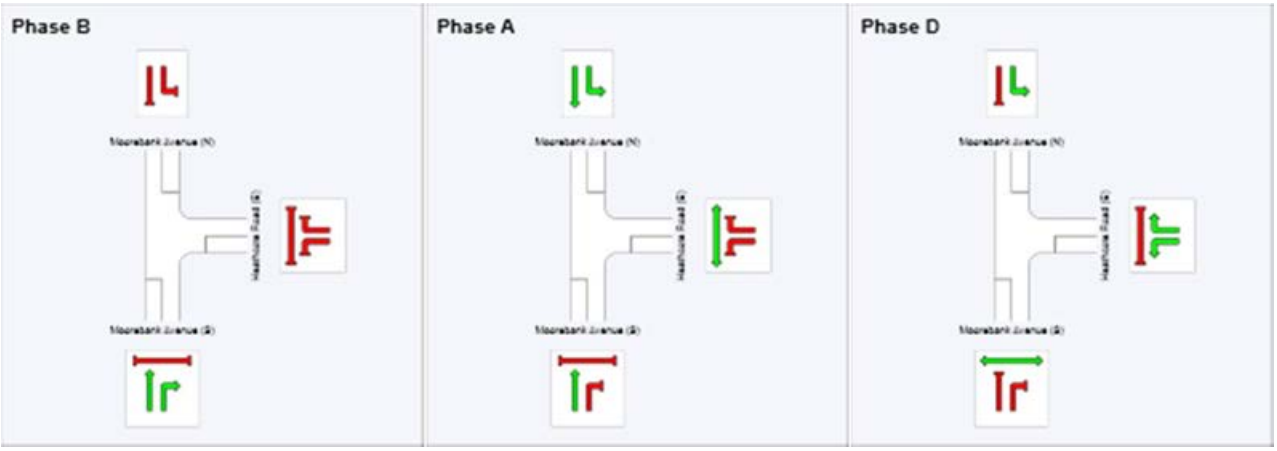
Site: I-07 2016 MIMT PM - Upgrade Option

Network: 2016 MIMT PM - Upgrade Option

Moorebank Avenue / Heathcote Road
2016 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	14	80
Green Time (sec)	8	60	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	66	36
Phase Split	12 %	57 %	31 %



I-08 Intersection of Moorebank Avenue and Industry Park Access

MOVEMENT SUMMARY

Site: I-08 2016 BASE AM

Network: 2016 BASE AM

Moorebank Avenue / Industry Park Access
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (Network Cycle Time)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	78	1.4	78	1.4	0.069	10.3	LOS A	1.3	9.1	0.32	0.63	40.3
2	T1	1599	4.9	1599	4.9	0.635	3.4	LOS A	19.8	144.6	0.36	0.33	53.8
Approach		1677	4.7	1677	4.7	0.635	3.8	LOS A	19.8	144.6	0.35	0.35	52.6
North: Moorebank Avenue (N)													
8	T1	538	16.0	537	16.0	0.179	1.9	LOS A	3.0	23.9	0.19	0.17	57.7
9	R2	52	38.8	51	38.7	0.578	23.2	LOS B	2.1	20.0	0.57	0.77	28.3
Approach		589	18.0	589	18.0	0.578	3.7	LOS A	3.0	23.9	0.22	0.22	54.3
West: Industry Park Access (W)													
10	L2	20	63.2	20	63.2	0.186	6.8	LOS A	0.4	4.5	0.35	0.43	24.6
12	R2	47	71.1	47	71.1	0.456	72.1	LOS F	2.3	26.0	0.99	0.73	19.3
Approach		67	68.7	67	68.8	0.456	52.7	LOS D	2.3	26.0	0.80	0.64	19.8
All Vehicles		2334	9.9	2333 N1	9.9	0.635	5.2	LOS A	19.8	144.6	0.33	0.32	50.6

PHASING SUMMARY

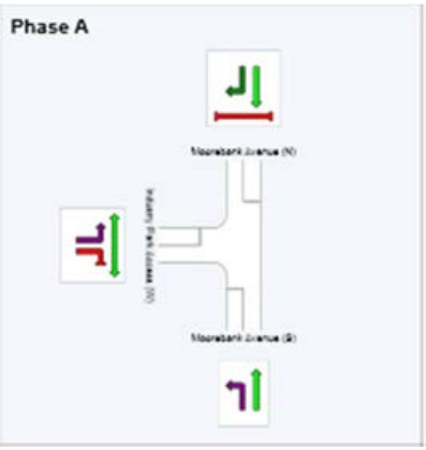
Site: I-08 2016 BASE AM

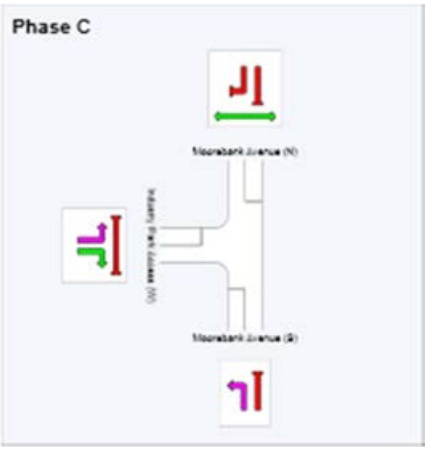
Network: 2016 BASE AM

Moorebank Avenue / Industry Park Access
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (Network Cycle Time)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	119
Green Time (sec)	113	8
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	119	14
Phase Split	89 %	11 %





MOVEMENT SUMMARY

Site: I-08 2016 BASE PM

Network: 2016 BASE PM

Moorebank Avenue / Industry Park Access
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 65 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	7	14.3	7	14.3	0.006	6.5	LOS A	0.0	0.2	0.21	0.57	42.8
2	T1	917	7.6	917	7.6	0.356	4.4	LOS A	5.9	44.1	0.44	0.39	52.3
Approach		924	7.6	924	7.6	0.356	4.4	LOS A	5.9	44.1	0.44	0.39	52.2
North: Moorebank Avenue (N)													
8	T1	1294	3.8	1294	3.8	0.491	5.0	LOS A	9.5	69.0	0.50	0.45	54.1
9	R2	22	61.9	22	61.9	0.093	12.6	LOS A	0.3	3.4	0.44	0.65	33.9
Approach		1316	4.8	1316	4.8	0.491	5.1	LOS A	9.5	69.0	0.50	0.45	53.7
West: Industry Park Access (W)													
10	L2	28	14.8	28	14.8	0.047	3.1	LOS A	0.2	1.4	0.30	0.39	27.2
12	R2	162	9.1	162	9.1	0.378	32.1	LOS C	2.5	19.1	0.96	0.75	28.3
Approach		191	9.9	191	9.9	0.378	27.7	LOS B	2.5	19.1	0.86	0.70	28.2
All Vehicles		2431	6.3	2431	6.3	0.491	6.6	LOS A	9.5	69.0	0.50	0.45	49.8

PHASING SUMMARY

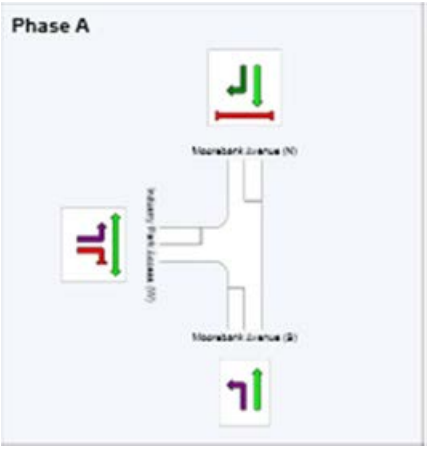
Site: I-08 2016 BASE PM

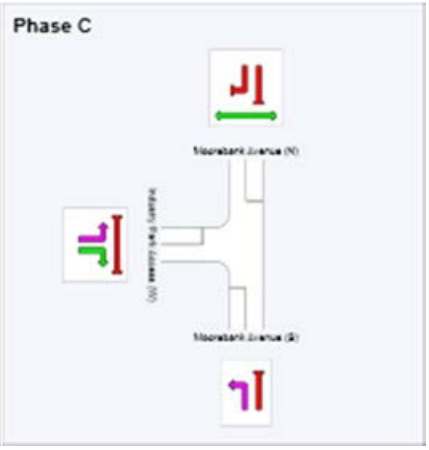
Network: 2016 BASE PM

Moorebank Avenue / Industry Park Access
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 65 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	51
Green Time (sec)	45	8
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	51	14
Phase Split	78 %	22 %





MOVEMENT SUMMARY

Site: I-08 2016 MIMT AM

Network: 2016 MIMT AM

Moorebank Avenue / Industry Park Access
2016 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (Network Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	79	2.7	79	2.7	0.068	11.8	LOS A	1.5	10.7	0.36	0.64	39.4
2	T1	1619	6.0	1619	6.0	0.858	11.7	LOS A	36.1	265.9	0.58	0.59	43.1
Approach		1698	5.9	1698	5.9	0.858	11.7	LOS A	36.1	265.9	0.57	0.59	42.8
North: Moorebank Avenue (N)													
8	T1	560	17.1	559	17.0	0.187	1.9	LOS A	3.1	25.2	0.19	0.17	57.7
9	R2	52	38.8	51	38.6	0.689	52.2	LOS D	3.4	31.9	0.85	0.92	19.7
Approach		612	18.9	610 N1	18.8	0.689	6.1	LOS A	3.4	31.9	0.25	0.23	51.8
West: Industry Park Access (W)													
10	L2	20	63.2	20	63.2	0.256	23.6	LOS B	0.9	9.6	0.65	0.61	16.9
12	R2	48	71.7	48	71.7	0.468	72.2	LOS F	2.4	26.7	0.99	0.73	19.2
Approach		68	69.2	68	69.2	0.468	58.0	LOS E	2.4	26.7	0.90	0.69	18.9
All Vehicles		2378	11.1	2376 N1	11.1	0.858	11.6	LOS A	36.1	265.9	0.50	0.50	43.7

PHASING SUMMARY

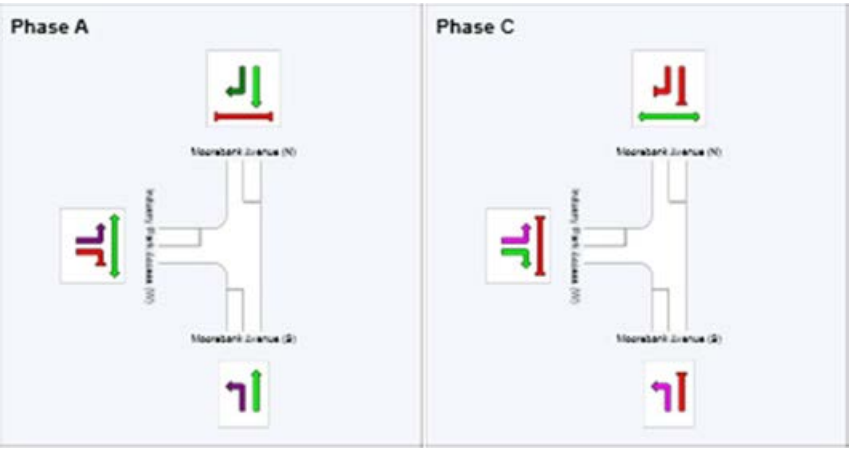
Site: I-08 2016 MIMT AM

Network: 2016 MIMT AM

Moorebank Avenue / Industry Park Access
2016 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (Network Cycle Time)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	119
Green Time (sec)	113	8
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	119	14
Phase Split	89 %	11 %



MOVEMENT SUMMARY

Site: I-08 2016 MIMT PM

Network: 2016 MIMT PM

Moorebank Avenue / Industry Park Access
2016 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 65 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	8	25.0	8	25.0	0.007	6.6	LOS A	0.0	0.2	0.21	0.57	42.8
2	T1	938	8.3	938	8.3	0.366	4.4	LOS A	6.1	45.8	0.44	0.39	52.2
Approach		946	8.5	946	8.5	0.366	4.4	LOS A	6.1	45.8	0.44	0.39	52.1
North: Moorebank Avenue (N)													
8	T1	1306	4.8	1306	4.8	0.499	5.0	LOS A	9.7	70.8	0.51	0.46	54.1
9	R2	22	61.9	22	61.9	0.096	12.6	LOS A	0.3	3.4	0.44	0.65	33.9
Approach		1328	5.7	1328	5.7	0.499	5.2	LOS A	9.7	70.8	0.51	0.46	53.7
West: Industry Park Access (W)													
10	L2	28	14.8	28	14.8	0.047	3.1	LOS A	0.2	1.4	0.30	0.39	27.2
12	R2	163	9.7	163	9.7	0.382	32.1	LOS C	2.5	19.3	0.96	0.75	28.2
Approach		192	10.4	192	10.4	0.382	27.8	LOS B	2.5	19.3	0.86	0.70	28.2
All Vehicles		2466	7.1	2466	7.1	0.499	6.6	LOS A	9.7	70.8	0.51	0.45	49.7

PHASING SUMMARY

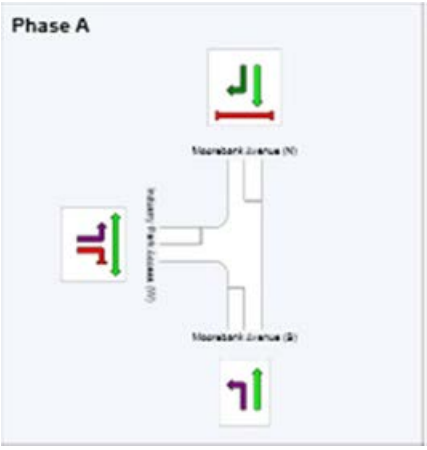
Site: I-08 2016 MIMT PM

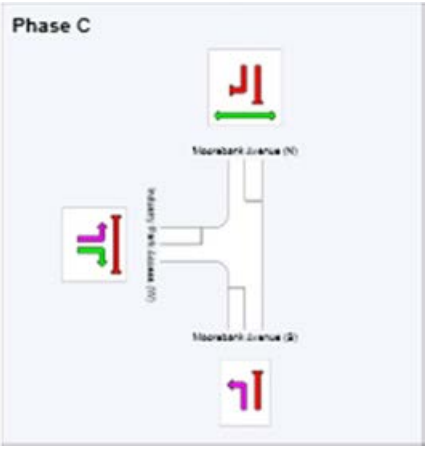
Network: 2016 MIMT PM

Moorebank Avenue / Industry Park Access
2016 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 65 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	51
Green Time (sec)	45	8
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	51	14
Phase Split	78 %	22 %





MOVEMENT SUMMARY

Site: I-08 2016 MIMT AM

Network: 2016 MIMT AM - Upgrade Option

Moorebank Avenue / Industry Park Access
2016 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (Network Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	79	2.7	79	2.7	0.069	12.1	LOS A	1.5	11.0	0.37	0.64	39.3
2	T1	1619	6.0	1619	6.0	0.849	9.7	LOS A	33.9	249.3	0.57	0.56	45.3
Approach		1698	5.9	1698	5.9	0.849	9.8	LOS A	33.9	249.3	0.56	0.57	44.8
North: Moorebank Avenue (N)													
8	T1	560	17.1	560	17.1	0.188	1.9	LOS A	3.2	25.3	0.19	0.17	57.7
9	R2	52	38.8	52	38.8	0.688	50.9	LOS D	3.4	31.7	0.83	0.92	19.9
Approach		612	18.9	612	18.9	0.688	6.0	LOS A	3.4	31.7	0.25	0.23	51.9
West: Industry Park Access (W)													
10	L2	20	63.2	20	63.2	0.255	22.2	LOS B	0.9	9.4	0.64	0.60	17.4
12	R2	48	71.7	48	71.7	0.468	72.2	LOS F	2.4	26.7	0.99	0.73	19.2
Approach		68	69.2	68	69.2	0.468	57.6	LOS E	2.4	26.7	0.89	0.69	19.0
All Vehicles		2378	11.1	2378	11.1	0.849	10.2	LOS A	33.9	249.3	0.49	0.48	45.1

PHASING SUMMARY

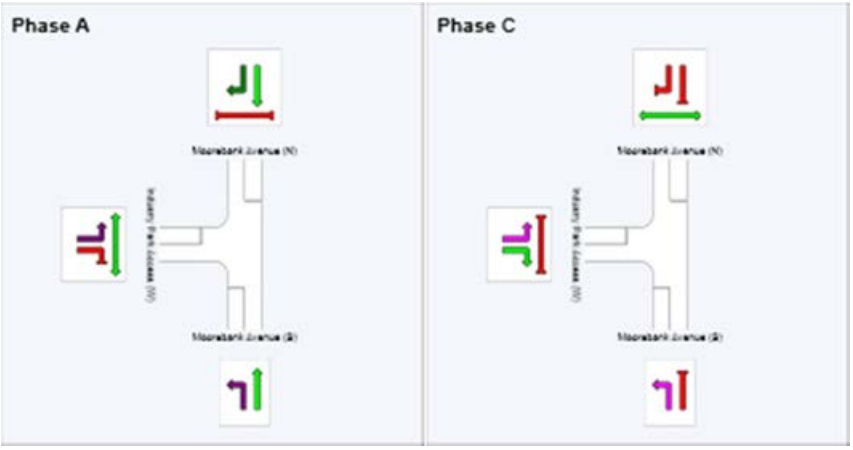
Site: I-08 2016 MIMT AM

Network: 2016 MIMT AM - Upgrade Option

Moorebank Avenue / Industry Park Access
2016 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (Network Cycle Time)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	119
Green Time (sec)	113	8
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	119	14
Phase Split	89 %	11 %



MOVEMENT SUMMARY

Site: I-08 2016 MIMT PM

Network: 2016 MIMT PM - Upgrade Option

Moorebank Avenue / Industry Park Access
2016 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 65 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	8	25.0	8	25.0	0.007	6.6	LOS A	0.0	0.2	0.21	0.57	42.8
2	T1	938	8.3	938	8.3	0.366	4.4	LOS A	6.1	45.8	0.44	0.39	52.2
Approach		946	8.5	946	8.5	0.366	4.4	LOS A	6.1	45.8	0.44	0.39	52.1
North: Moorebank Avenue (N)													
8	T1	1306	4.8	1306	4.8	0.499	5.0	LOS A	9.7	70.8	0.51	0.46	54.1
9	R2	22	61.9	22	61.9	0.096	12.6	LOS A	0.3	3.4	0.44	0.65	33.9
Approach		1328	5.7	1328	5.7	0.499	5.2	LOS A	9.7	70.8	0.51	0.46	53.7
West: Industry Park Access (W)													
10	L2	28	14.8	28	14.8	0.047	3.1	LOS A	0.2	1.4	0.30	0.39	27.2
12	R2	163	9.7	163	9.7	0.382	32.1	LOS C	2.5	19.3	0.96	0.75	28.2
Approach		192	10.4	192	10.4	0.382	27.8	LOS B	2.5	19.3	0.86	0.70	28.2
All Vehicles		2466	7.1	2466	7.1	0.499	6.6	LOS A	9.7	70.8	0.51	0.45	49.7

PHASING SUMMARY

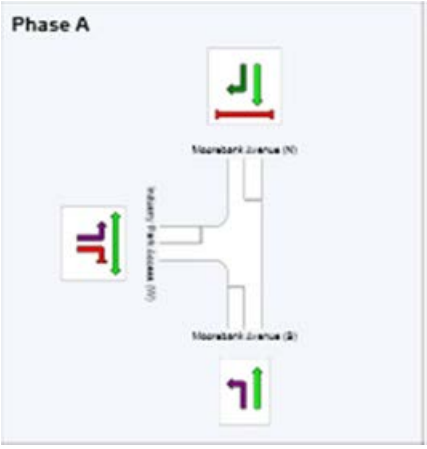
Site: I-08 2016 MIMT PM

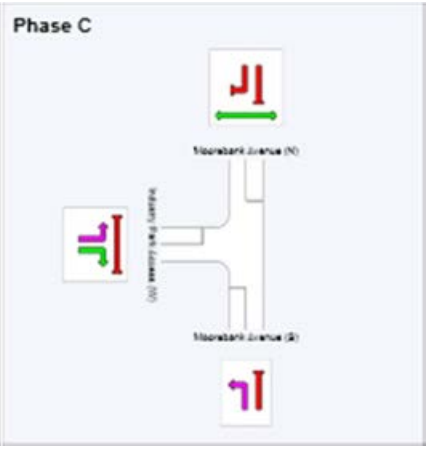
Network: 2016 MIMT PM - Upgrade Option

Moorebank Avenue / Industry Park Access
2016 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 65 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	51
Green Time (sec)	45	8
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	51	14
Phase Split	78 %	22 %





I-09 Intersection of Moorebank Avenue and Church Road

MOVEMENT SUMMARY

Site: I-09 2016 BASE AM

Moorebank Avenue / Church Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1769	6.4	0.577	2.5	LOS A	8.3	61.3	0.24	0.10	57.1
3	R2	237	7.6	0.577	15.6	LOS B	8.3	61.3	1.00	0.43	45.6
Approach		2006	6.6	0.721	4.1	NA	8.3	61.3	0.33	0.14	55.4
East: Church Road (E)											
4	L2	173	14.0	0.189	6.4	LOS A	0.7	5.8	0.41	0.63	48.0
6	R2	6	0.0	0.166	91.4	LOS F	0.4	2.9	0.98	0.99	22.6
Approach		179	13.5	0.189	9.4	LOS A	0.7	5.8	0.43	0.64	46.2
North: Moorebank Avenue (N)											
7	L2	27	0.0	0.170	5.6	LOS A	0.0	0.0	0.00	0.06	57.7
8	T1	556	21.2	0.170	0.0	LOS A	0.0	0.0	0.00	0.03	59.7
Approach		583	20.2	0.170	0.3	NA	0.0	0.0	0.00	0.03	59.6
All Vehicles		2768	9.9	0.721	3.6	NA	8.3	61.3	0.26	0.15	55.5

MOVEMENT SUMMARY

Site: I-09 2016 BASE PM

Moorebank Avenue / Church Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	954	11.9	0.411	5.0	LOS A	5.5	42.6	0.22	0.07	55.0
3	R2	86	11.0	0.411	28.1	LOS B	5.5	42.6	1.00	0.34	39.5
Approach		1040	11.8	0.411	6.9	NA	5.5	42.6	0.28	0.10	53.2
East: Church Road (E)											
4	L2	367	4.3	0.941	93.7	LOS F	27.9	202.5	1.00	2.61	22.3
6	R2	1	0.0	0.031	104.5	LOS F	0.1	0.6	0.97	0.99	20.9
Approach		368	4.3	0.941	93.7	LOS F	27.9	202.5	1.00	2.61	22.3
North: Moorebank Avenue (N)											
7	L2	12	9.1	0.764	6.1	LOS A	0.0	0.0	0.00	0.01	57.0
8	T1	1436	4.5	0.764	0.5	LOS A	0.0	0.0	0.00	0.00	58.9
Approach		1447	4.5	0.764	0.6	NA	0.0	0.0	0.00	0.00	58.9
All Vehicles		2856	7.2	0.941	14.9	NA	27.9	202.5	0.23	0.37	46.9

MOVEMENT SUMMARY

Site: I-09 2016 MIMT AM

Moorebank Avenue / Church Road
2016 MIMT AM PEAK 7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	1790	7.5	0.592	2.7	LOS A	8.4	63.0	0.23	0.10	56.9
3	R2	239	8.3	0.592	16.6	LOS B	8.4	63.0	1.00	0.44	45.0
Approach		2029	7.6	0.741	4.4	NA	8.4	63.0	0.32	0.14	55.1
East: Church Road (E)											
4	L2	174	14.9	0.195	6.5	LOS A	0.8	6.0	0.42	0.64	47.9
6	R2	6	0.0	0.201	114.1	LOS F	0.5	3.5	0.98	1.00	19.8
Approach		181	14.3	0.201	10.2	LOS A	0.8	6.0	0.44	0.65	45.7
North: Moorebank Avenue (N)											
7	L2	27	0.0	0.177	5.6	LOS A	0.0	0.0	0.00	0.05	57.7
8	T1	579	22.2	0.177	0.0	LOS A	0.0	0.0	0.00	0.03	59.7
Approach		606	21.2	0.177	0.3	NA	0.0	0.0	0.00	0.03	59.6
All Vehicles		2815	10.9	0.741	3.9	NA	8.4	63.0	0.26	0.15	55.3

MOVEMENT SUMMARY

Site: I-09 2016 MIMT PM

Moorebank Avenue / Church Road
2016 MIMT PM PEAK 4:30 pm - 5:30 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	976	12.6	0.428	5.1	LOS A	5.7	44.4	0.21	0.07	54.9
3	R2	88	12.6	0.428	29.8	LOS C	5.7	44.4	1.00	0.35	38.8
Approach		1063	12.6	0.428	7.1	NA	5.7	44.4	0.27	0.10	53.0
East: Church Road (E)											
4	L2	369	4.7	0.961	101.5	LOS F	29.8	216.8	1.00	2.72	21.3
6	R2	1	0.0	0.035	116.7	LOS F	0.1	0.7	0.98	0.99	19.5
Approach		370	4.7	0.961	101.6	LOS F	29.8	216.8	1.00	2.72	21.3
North: Moorebank Avenue (N)											
7	L2	12	9.1	0.776	6.1	LOS A	0.0	0.0	0.00	0.01	56.9
8	T1	1450	5.4	0.776	0.6	LOS A	0.0	0.0	0.00	0.00	58.8
Approach		1461	5.4	0.776	0.6	NA	0.0	0.0	0.00	0.00	58.8
All Vehicles		2895	8.0	0.961	15.9	NA	29.8	216.8	0.23	0.39	46.2

MOVEMENT SUMMARY

Site: I-09 2016 MIMT AM - Upgrade Option

Moorebank Avenue / Church Road
2016 MIMT AM PEAK 7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	1790	7.5	0.590	2.7	LOS A	8.5	63.2	0.23	0.10	56.9
3	R2	239	8.3	0.590	16.6	LOS B	8.5	63.2	1.00	0.44	44.8
Approach		2029	7.6	0.738	4.4	NA	8.5	63.2	0.32	0.14	55.1
East: Church Road (E)											
4	L2	174	14.9	0.195	6.5	LOS A	0.8	6.0	0.42	0.64	47.9
Approach		174	14.9	0.195	6.5	LOS A	0.8	6.0	0.42	0.64	47.9
North: Moorebank Avenue (N)											
7	L2	27	0.0	0.177	5.6	LOS A	0.0	0.0	0.00	0.05	57.7
8	T1	579	22.2	0.177	0.0	LOS A	0.0	0.0	0.00	0.03	59.7
Approach		606	21.2	0.177	0.3	NA	0.0	0.0	0.00	0.03	59.6
All Vehicles		2809	11.0	0.738	3.6	NA	8.5	63.2	0.26	0.15	55.4

MOVEMENT SUMMARY

Site: I-09 2016 MIMT PM - Upgrade Option

Moorebank Avenue / Church Road
2016 MIMT PM PEAK 4:30 pm - 5:30 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	976	12.6	0.428	5.1	LOS A	5.7	44.4	0.21	0.07	54.9
3	R2	88	12.6	0.428	29.8	LOS C	5.7	44.4	1.00	0.35	38.6
Approach		1063	12.6	0.428	7.1	NA	5.7	44.4	0.27	0.10	53.0
East: Church Road (E)											
4	L2	369	4.7	0.959	100.9	LOS F	29.6	215.7	1.00	2.71	21.4
Approach		369	4.7	0.959	100.9	LOS F	29.6	215.7	1.00	2.71	21.4
North: Moorebank Avenue (N)											
7	L2	12	9.1	0.776	6.1	LOS A	0.0	0.0	0.00	0.01	56.9
8	T1	1450	5.4	0.776	0.6	LOS A	0.0	0.0	0.00	0.00	58.8
Approach		1461	5.4	0.776	0.6	NA	0.0	0.0	0.00	0.00	58.8
All Vehicles		2894	8.0	0.959	15.8	NA	29.6	215.7	0.23	0.38	46.3

I-10 Intersection of Heathcote Road and Nuwarra Road

MOVEMENT SUMMARY

Site: I-10 2016 BASE AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
SouthEast: Heathcote Road (SE)											
4	L2	194	1.1	0.130	7.5	LOS A	2.1	14.8	0.23	0.61	49.0
5	T1	1460	5.3	0.862	30.1	LOS C	38.6	282.3	0.81	0.77	39.9
6	R2	501	3.2	0.981	71.6	LOS F	15.3	110.3	1.00	1.09	27.6
Approach		2155	4.4	0.981	37.7	LOS C	38.6	282.3	0.80	0.83	36.3
NorthEast: Nuwarra Road (NE)											
7	L2	337	4.7	0.367	17.1	LOS B	10.2	74.6	0.56	0.73	46.3
8	T1	199	8.5	0.320	52.2	LOS D	5.7	42.5	0.92	0.73	26.5
9	R2	391	5.7	1.083	185.2	LOS F	24.0	176.4	1.00	1.35	14.5
Approach		926	5.9	1.083	95.5	LOS F	24.0	176.4	0.82	0.99	22.1
NorthWest: Heathcote Road (NW)											
10	L2	213	11.9	0.281	21.1	LOS B	6.4	49.1	0.67	0.75	42.9
11	T1	856	11.6	0.756	34.5	LOS C	22.4	172.7	0.80	0.71	38.0
12	R2	199	6.3	0.667	72.2	LOS F	6.5	48.3	1.00	0.82	20.5
Approach		1267	10.8	0.756	38.2	LOS C	22.4	172.7	0.81	0.73	35.4
SouthWest: Wattle Grove Drive (SW)											
1	L2	469	2.0	0.577	34.1	LOS C	20.9	149.1	0.85	0.97	30.5
2	T1	471	4.3	0.642	56.2	LOS D	14.2	102.8	0.99	0.82	25.1
3	R2	216	3.9	1.046	138.8	LOS F	21.3	154.0	1.00	1.29	13.5
Approach		1156	3.3	1.046	62.6	LOS E	21.3	154.0	0.93	0.97	22.9
All Vehicles		5504	5.9	1.083	52.8	LOS D	38.6	282.3	0.83	0.86	30.0

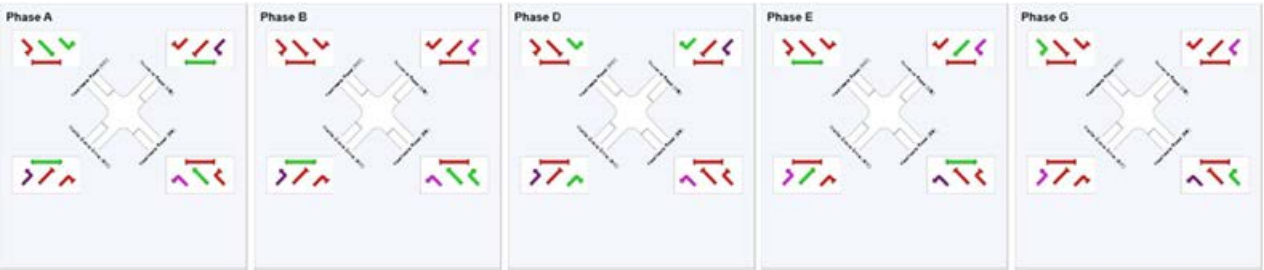
PHASING SUMMARY

Site: I-10 2016 BASE AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	D	E	G
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	54	67	86	114
Green Time (sec)	48	7	13	22	11
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	54	13	19	28	17
Phase Split	41 %	10 %	15 %	21 %	13 %



MOVEMENT SUMMARY

Site: I-10 2016 BASE PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Heathcote Road (SE)											
4	L2	287	2.6	0.236	13.4	LOS A	7.0	50.2	0.42	0.67	43.9
5	T1	1108	5.4	0.768	34.5	LOS C	30.6	223.9	0.84	0.75	38.0
6	R2	401	3.1	0.959	99.2	LOS F	17.0	122.1	1.00	1.07	22.9
Approach		1797	4.5	0.959	45.6	LOS D	30.6	223.9	0.81	0.81	33.2
NorthEast: Nuwarra Road (NE)											
7	L2	525	2.4	0.679	38.0	LOS C	23.8	169.9	0.87	0.99	36.8
8	T1	556	1.1	0.853	66.3	LOS E	20.6	145.4	1.00	0.95	23.0
9	R2	476	6.0	0.952	90.1	LOS F	20.5	151.2	1.00	1.02	23.6
Approach		1557	3.0	0.952	64.0	LOS E	23.8	169.9	0.96	0.99	27.2
NorthWest: Heathcote Road (NW)											
10	L2	214	5.9	0.197	21.9	LOS B	7.1	52.0	0.53	0.72	42.6
11	T1	1346	2.7	0.958	60.8	LOS E	50.2	359.7	0.89	0.99	29.7
12	R2	387	1.9	0.856	77.7	LOS F	14.6	103.6	1.00	0.91	19.5
Approach		1947	2.9	0.958	59.9	LOS E	50.2	359.7	0.87	0.95	28.6
SouthWest: Wattle Grove Drive (SW)											
1	L2	256	1.6	0.298	23.6	LOS B	10.5	74.8	0.67	0.74	35.4
2	T1	284	1.1	0.386	55.8	LOS D	8.6	60.6	0.93	0.76	25.1
3	R2	267	1.2	1.000	113.5	LOS F	24.7	174.5	1.00	1.17	15.7
Approach		807	1.3	1.000	64.7	LOS E	24.7	174.5	0.87	0.89	22.5
All Vehicles		6108	3.2	1.000	57.4	LOS E	50.2	359.7	0.87	0.91	28.7

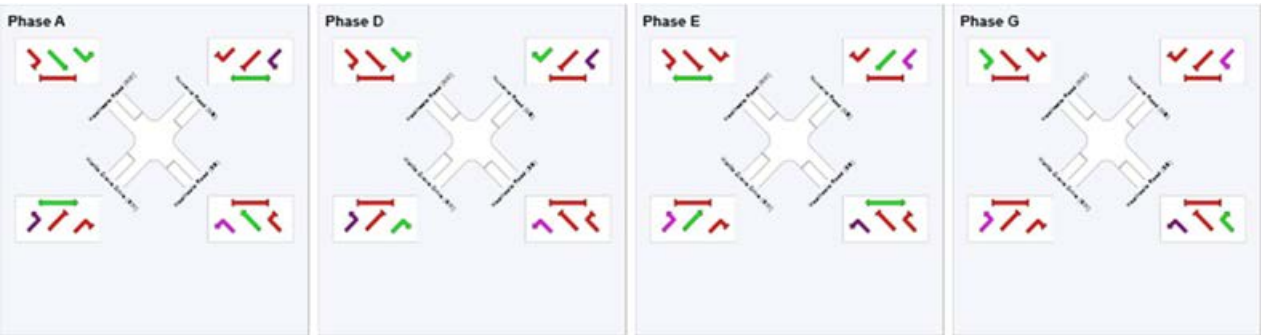
PHASING SUMMARY

Site: I-10 2016 BASE PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	61	87	117
Green Time (sec)	55	20	24	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	61	26	30	22
Phase Split	44 %	19 %	22 %	16 %



MOVEMENT SUMMARY

Site: I-10 2016 MIMT AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2016 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Heathcote Road (SE)											
4	L2	201	1.0	0.136	7.5	LOS A	2.2	15.5	0.23	0.62	48.9
5	T1	1460	5.3	0.863	30.2	LOS C	38.6	282.3	0.81	0.78	39.8
6	R2	501	3.2	0.981	71.6	LOS F	15.3	110.3	1.00	1.09	27.6
Approach		2162	4.4	0.981	37.7	LOS C	38.6	282.3	0.80	0.83	36.3
NorthEast: Nuwarra Road (NE)											
7	L2	337	4.7	0.367	17.1	LOS B	10.2	74.6	0.56	0.73	46.3
8	T1	209	8.1	0.335	52.3	LOS D	5.9	44.5	0.93	0.74	26.4
9	R2	391	5.7	1.083	185.2	LOS F	24.0	176.4	1.00	1.35	14.5
Approach		936	5.8	1.083	95.1	LOS F	24.0	176.4	0.83	0.99	22.1
NorthWest: Heathcote Road (NW)											
10	L2	213	11.9	0.281	21.1	LOS B	6.4	49.1	0.67	0.75	42.9
11	T1	856	11.6	0.757	34.5	LOS C	22.5	172.9	0.80	0.71	38.0
12	R2	199	6.3	0.667	72.2	LOS F	6.5	48.3	1.00	0.82	20.5
Approach		1268	10.8	0.757	38.2	LOS C	22.5	172.9	0.81	0.73	35.4
SouthWest: Wattle Grove Drive (SW)											
1	L2	469	2.0	0.577	34.2	LOS C	20.9	149.2	0.85	0.97	30.5
2	T1	471	4.3	0.642	56.2	LOS D	14.2	102.8	0.99	0.82	25.1
3	R2	216	3.9	1.046	138.8	LOS F	21.3	154.0	1.00	1.29	13.5
Approach		1156	3.3	1.046	62.7	LOS E	21.3	154.0	0.93	0.97	22.9
All Vehicles		5522	5.9	1.083	52.7	LOS D	38.6	282.3	0.83	0.86	30.0

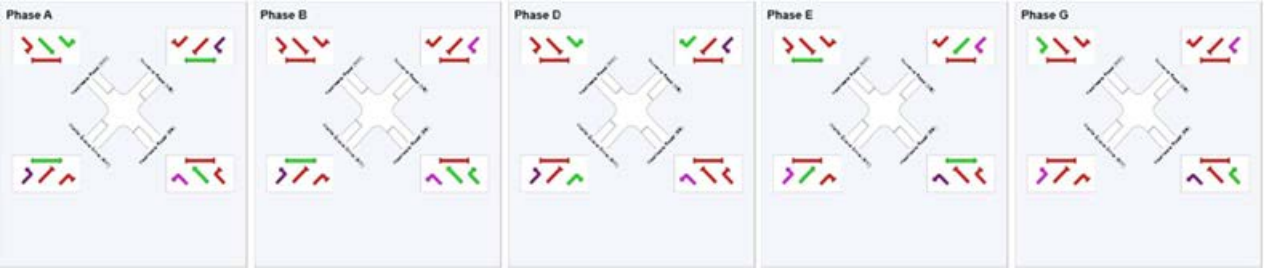
PHASING SUMMARY

Site: I-10 2016 MIMT AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2016 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	D	E	G
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	54	67	86	114
Green Time (sec)	48	7	13	22	11
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	54	13	19	28	17
Phase Split	41 %	10 %	15 %	21 %	13 %



MOVEMENT SUMMARY

Site: I-10 2016 MIMT PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2016 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Heathcote Road (SE)											
4	L2	287	2.6	0.236	13.4	LOS A	7.0	50.2	0.42	0.67	43.9
5	T1	1109	5.4	0.769	34.5	LOS C	30.6	224.1	0.84	0.75	38.0
6	R2	401	3.1	0.959	99.2	LOS F	17.0	122.1	1.00	1.07	22.9
Approach		1797	4.5	0.959	45.6	LOS D	30.6	224.1	0.81	0.81	33.2
NorthEast: Nuwarra Road (NE)											
7	L2	525	2.4	0.693	39.8	LOS C	23.9	171.0	0.88	1.01	36.1
8	T1	556	1.1	0.853	66.3	LOS E	20.6	145.4	1.00	0.95	23.0
9	R2	476	6.0	0.952	90.1	LOS F	20.5	151.2	1.00	1.02	23.6
Approach		1557	3.0	0.952	64.6	LOS E	23.9	171.0	0.96	0.99	27.1
NorthWest: Heathcote Road (NW)											
10	L2	214	5.9	0.197	21.9	LOS B	7.1	52.0	0.53	0.72	42.6
11	T1	1346	2.7	0.958	60.9	LOS E	50.3	360.0	0.89	0.99	29.7
12	R2	387	1.9	0.856	77.7	LOS F	14.6	103.6	1.00	0.91	19.5
Approach		1948	2.9	0.958	59.9	LOS E	50.3	360.0	0.87	0.95	28.6
SouthWest: Wattle Grove Drive (SW)											
1	L2	256	1.6	0.298	23.6	LOS B	10.5	74.9	0.67	0.74	35.4
2	T1	294	1.1	0.399	55.9	LOS D	8.9	62.8	0.94	0.77	25.1
3	R2	275	1.1	1.027	136.5	LOS F	27.4	193.8	1.00	1.22	13.7
Approach		824	1.3	1.027	72.8	LOS F	27.4	193.8	0.87	0.91	21.0
All Vehicles		6126	3.2	1.027	58.6	LOS E	50.3	360.0	0.88	0.91	28.4

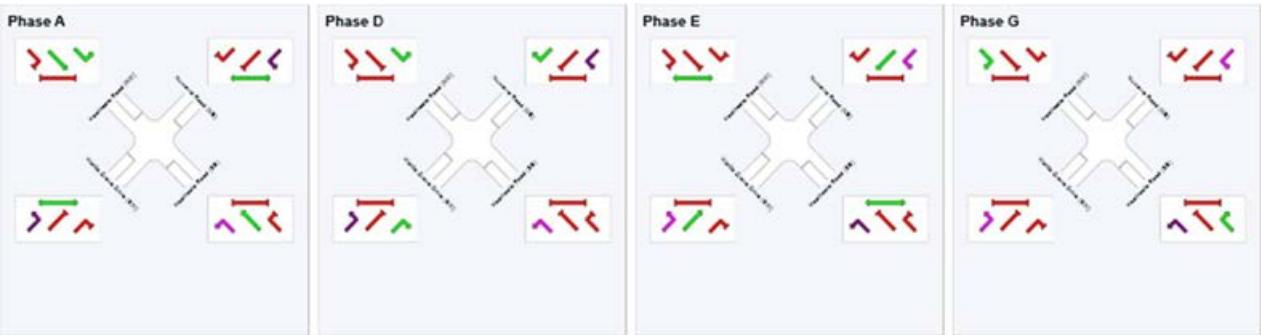
PHASING SUMMARY

Site: I-10 2016 MIMT PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2016 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	61	87	117
Green Time (sec)	55	20	24	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	61	26	30	22
Phase Split	44 %	19 %	22 %	16 %



I-11 Intersection of Newbridge Road and Nuwarra Road

MOVEMENT SUMMARY

Site: I-11 2016 BASE AM

Newbridge Road / Nuwarra Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Nuwarra Road (S)											
1	L2	29	7.1	0.549	47.5	LOS D	18.7	133.1	0.88	0.80	38.2
2	T1	304	1.7	0.549	44.5	LOS D	18.7	133.1	0.88	0.80	31.6
3	R2	713	6.8	1.036	144.5	LOS F	41.7	309.1	1.00	1.20	19.4
Approach		1046	5.3	1.036	112.7	LOS F	41.7	309.1	0.96	1.07	22.3
East: Newbridge Road (E)											
4	L2	265	17.9	0.467	22.6	LOS B	12.8	101.3	0.63	0.72	47.7
5	T1	933	11.3	0.467	20.7	LOS B	14.1	108.6	0.57	0.53	52.8
Approach		1198	12.7	0.467	21.1	LOS B	14.1	108.6	0.59	0.57	51.7
North: Nuwarra Road (N)											
7	L2	6	0.0	0.782	78.5	LOS F	7.4	52.0	1.00	0.92	26.5
8	T1	124	0.8	0.977	84.0	LOS F	12.2	88.6	1.00	0.99	24.6
9	R2	111	4.8	0.977	105.1	LOS F	12.2	88.6	1.00	1.19	23.5
Approach		241	2.6	0.977	93.6	LOS F	12.2	88.6	1.00	1.08	24.1
West: Newbridge Road (W)											
10	L2	242	2.2	0.879	46.7	LOS D	41.8	308.9	0.93	0.92	35.2
11	T1	1758	9.0	0.935	44.6	LOS D	51.9	391.0	0.95	0.98	41.4
Approach		2000	8.2	0.935	44.9	LOS D	51.9	391.0	0.95	0.97	40.5
All Vehicles		4485	8.4	1.036	57.0	LOS E	51.9	391.0	0.86	0.89	35.0

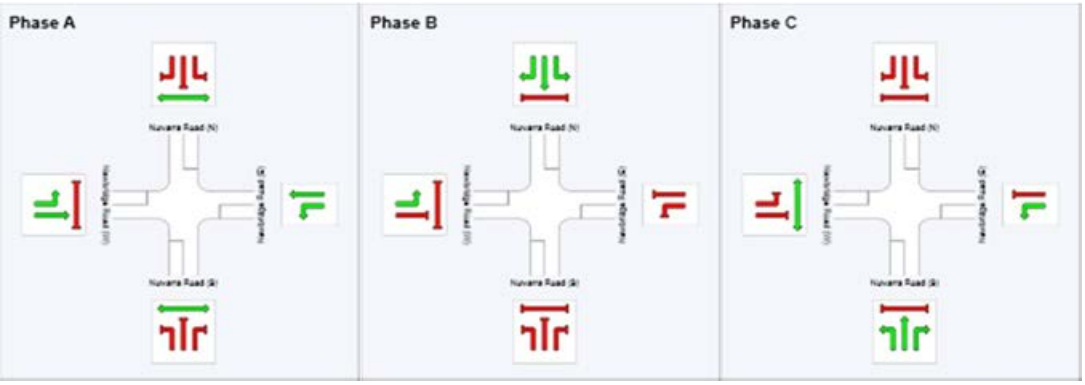
PHASING SUMMARY

Site: I-11 2016 BASE AM

Newbridge Road / Nuwarra Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	72	89
Green Time (sec)	66	11	45
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	72	17	51
Phase Split	51 %	12 %	36 %



MOVEMENT SUMMARY

Site: I-11 2016 BASE PM

Newbridge Road / Nuwarra Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nuwarra Road (S)											
1	L2	48	6.5	0.656	67.2	LOS E	12.2	87.3	1.00	0.82	32.8
2	T1	138	0.8	0.656	62.8	LOS E	12.2	87.3	1.00	0.82	29.7
3	R2	472	6.0	0.883	80.6	LOS F	17.9	132.0	1.00	0.95	27.9
Approach		658	5.0	0.883	75.9	LOS F	17.9	132.0	1.00	0.92	28.6
East: Newbridge Road (E)											
4	L2	669	4.4	0.642	13.7	LOS A	16.9	123.0	0.38	0.68	53.0
5	T1	1878	5.8	0.642	12.4	LOS A	25.3	185.7	0.48	0.48	58.5
Approach		2547	5.4	0.642	12.7	LOS A	25.3	185.7	0.45	0.53	57.0
North: Nuwarra Road (N)											
7	L2	15	0.0	0.790	71.5	LOS F	15.3	107.7	1.00	0.92	30.0
8	T1	264	0.8	0.988	76.5	LOS F	22.0	155.7	1.00	0.97	27.2
9	R2	182	1.2	0.988	109.3	LOS F	22.0	155.7	1.00	1.16	24.4
Approach		461	0.9	0.988	89.3	LOS F	22.0	155.7	1.00	1.05	26.1
West: Newbridge Road (W)											
10	L2	84	0.0	0.411	18.3	LOS B	11.0	81.5	0.41	0.43	50.1
11	T1	1322	7.8	0.467	11.3	LOS A	12.0	89.7	0.39	0.36	59.4
Approach		1406	7.3	0.467	11.7	LOS A	12.0	89.7	0.39	0.37	58.7
All Vehicles		5073	5.5	0.988	27.6	LOS B	25.3	185.7	0.56	0.58	46.8

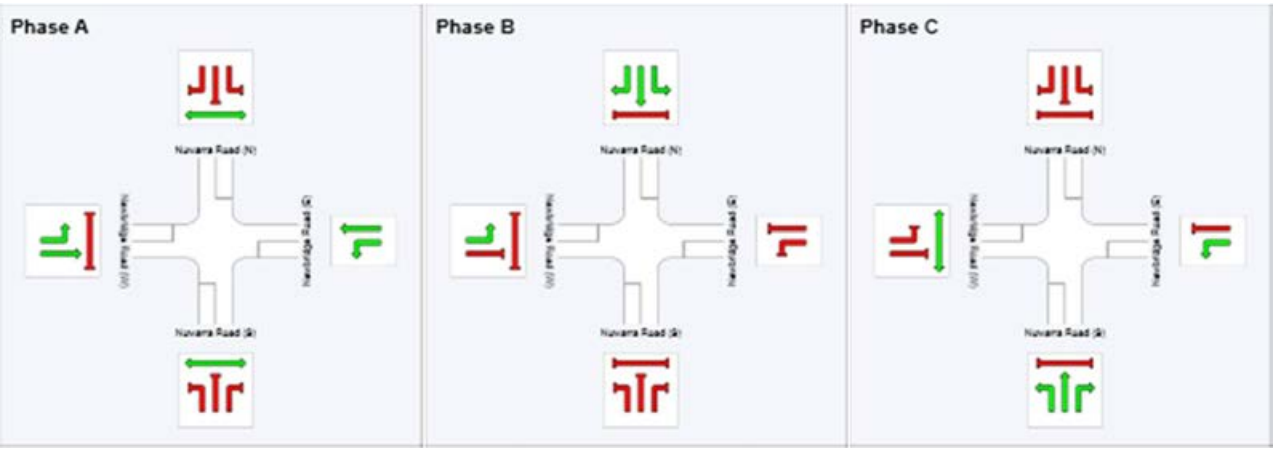
PHASING SUMMARY

Site: I-11 2016 BASE PM

Newbridge Road / Nuwarra Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	87	113
Green Time (sec)	81	20	21
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	87	26	27
Phase Split	62 %	19 %	19 %



MOVEMENT SUMMARY

Site: I-11 2016 MIMT AM

Newbridge Road / Nuwarra Road
2016 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nuwarra Road (S)											
1	L2	29	7.1	0.549	47.5	LOS D	18.7	133.1	0.88	0.80	38.2
2	T1	304	1.7	0.549	44.5	LOS D	18.7	133.1	0.88	0.80	31.6
3	R2	713	6.8	1.036	144.5	LOS F	41.7	309.1	1.00	1.20	19.4
Approach		1046	5.3	1.036	112.7	LOS F	41.7	309.1	0.96	1.07	22.3
East: Newbridge Road (E)											
4	L2	270	17.5	0.474	22.7	LOS B	13.1	103.9	0.64	0.72	47.6
5	T1	944	11.9	0.474	20.8	LOS B	14.4	111.1	0.58	0.53	52.7
Approach		1214	13.2	0.474	21.2	LOS B	14.4	111.1	0.59	0.57	51.6
North: Nuwarra Road (N)											
7	L2	6	0.0	0.789	78.9	LOS F	7.5	52.7	1.00	0.93	26.5
8	T1	126	0.8	0.987	85.3	LOS F	12.6	91.3	1.00	1.00	24.4
9	R2	111	4.7	0.987	109.2	LOS F	12.6	91.3	1.00	1.21	23.0
Approach		243	2.6	0.987	96.0	LOS F	12.6	91.3	1.00	1.10	23.8
West: Newbridge Road (W)											
10	L2	242	2.2	0.891	48.5	LOS D	43.6	323.7	0.94	0.94	34.7
11	T1	1776	9.9	0.948	48.1	LOS D	54.8	416.3	0.97	1.02	40.1
Approach		2018	9.0	0.948	48.1	LOS D	54.8	416.3	0.96	1.01	39.4
All Vehicles		4521	8.9	1.036	58.4	LOS E	54.8	416.3	0.86	0.91	34.6

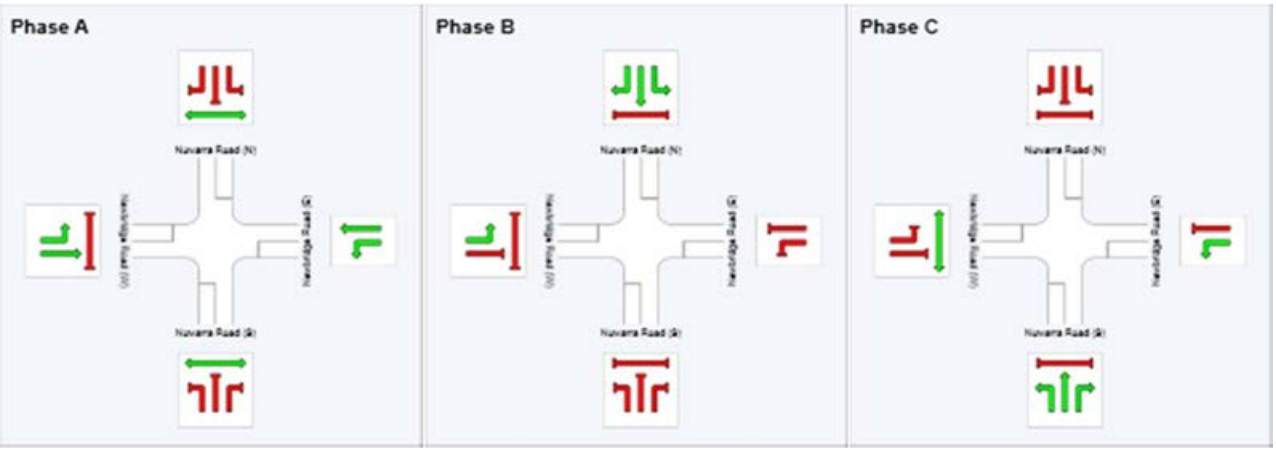
PHASING SUMMARY

Site: I-11 2016 MIMT AM

Newbridge Road / Nuwarra Road
2016 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	72	89
Green Time (sec)	66	11	45
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	72	17	51
Phase Split	51 %	12 %	36 %



MOVEMENT SUMMARY

Site: I-11 2016 MIMT PM

Newbridge Road / Nuwarra Road
2016 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nuwarra Road (S)											
1	L2	48	6.5	0.663	67.3	LOS E	12.4	88.4	1.00	0.83	32.7
2	T1	140	0.8	0.663	62.9	LOS E	12.4	88.4	1.00	0.83	29.7
3	R2	476	6.0	0.891	81.8	LOS F	18.3	134.6	1.00	0.96	27.7
Approach		665	4.9	0.891	76.8	LOS F	18.3	134.6	1.00	0.92	28.4
East: Newbridge Road (E)											
4	L2	669	4.4	0.647	13.9	LOS A	17.3	126.3	0.39	0.69	52.9
5	T1	1891	6.4	0.647	12.4	LOS A	25.6	189.0	0.48	0.48	58.4
Approach		2560	5.9	0.647	12.8	LOS A	25.6	189.0	0.46	0.53	57.0
North: Nuwarra Road (N)											
7	L2	15	0.0	0.790	71.5	LOS F	15.3	107.7	1.00	0.92	30.0
8	T1	264	0.8	0.988	76.5	LOS F	22.0	155.7	1.00	0.97	27.2
9	R2	182	1.2	0.988	109.3	LOS F	22.0	155.7	1.00	1.16	24.4
Approach		461	0.9	0.988	89.3	LOS F	22.0	155.7	1.00	1.05	26.1
West: Newbridge Road (W)											
10	L2	85	0.0	0.416	18.4	LOS B	11.2	82.9	0.41	0.43	50.1
11	T1	1334	8.3	0.473	11.4	LOS A	12.2	91.4	0.39	0.37	59.4
Approach		1419	7.9	0.473	11.8	LOS A	12.2	91.4	0.39	0.37	58.7
All Vehicles		5104	5.9	0.988	27.8	LOS B	25.6	189.0	0.56	0.59	46.7

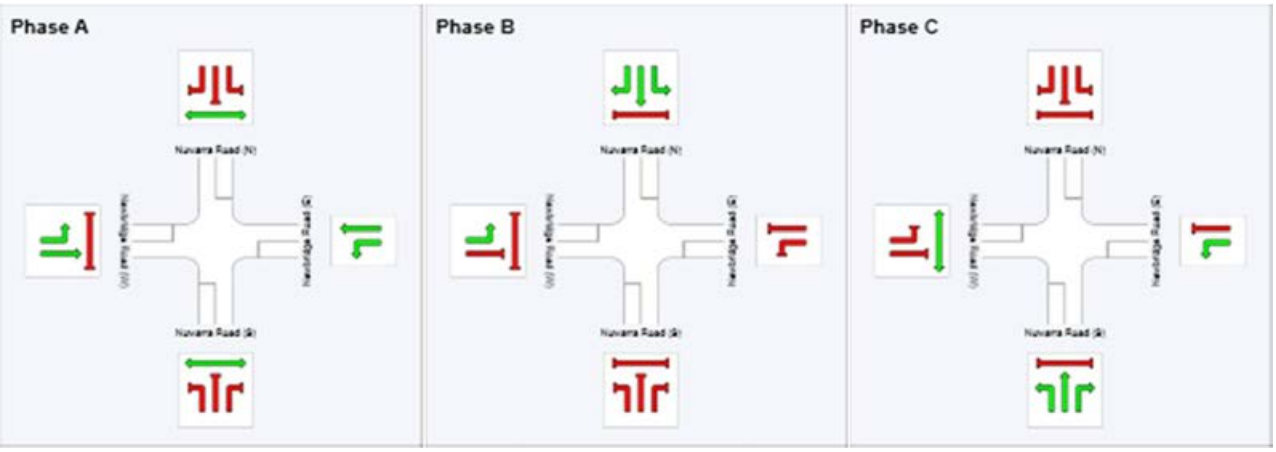
PHASING SUMMARY

Site: I-11 2016 MIMT PM

Newbridge Road / Nuwarra Road
2016 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	87	113
Green Time (sec)	81	20	21
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	87	26	27
Phase Split	62 %	19 %	19 %



I-12 Intersection of Newbridge Road and Governor Macquarie Drive

MOVEMENT SUMMARY

Site: I-12 2016 BASE AM

Newbridge Road / Governor Macquarie Drive
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Brickmakers Drive (S)											
1	L2	9	0.0	0.780	72.8	LOS F	13.4	94.6	1.00	0.91	26.4
2	T1	181	1.2	0.780	68.4	LOS E	13.4	94.6	1.00	0.91	26.1
3	R2	592	1.1	1.018	121.3	LOS F	28.1	198.2	1.00	1.19	24.1
Approach		782	1.1	1.018	108.4	LOS F	28.1	198.2	1.00	1.12	24.5
East: Newbridge Road (E)											
4	L2	192	2.7	0.139	7.5	LOS A	1.5	10.4	0.16	0.63	58.3
5	T1	1074	11.0	0.313	12.6	LOS A	11.0	84.5	0.50	0.44	60.7
6	R2	598	10.4	0.834	73.6	LOS F	21.1	161.0	1.00	0.90	35.7
Approach		1863	9.9	0.834	31.7	LOS C	21.1	161.0	0.62	0.60	49.2
North: Governor Macquarie Drive (N)											
7	L2	637	8.9	0.608	50.7	LOS D	18.6	140.1	0.91	0.84	40.7
8	T1	118	2.7	0.478	63.5	LOS E	7.6	54.6	0.98	0.78	27.1
9	R2	147	35.0	0.868	83.9	LOS F	11.3	102.6	1.00	0.96	27.6
Approach		902	12.4	0.868	57.8	LOS E	18.6	140.1	0.94	0.85	36.8
West: Newbridge Road (W)											
10	L2	117	30.6	0.955	65.0	LOS E	64.3	489.4	1.00	1.07	33.4
11	T1	2360	6.8	0.955	56.8	LOS E	65.7	486.7	1.00	1.07	41.4
12	R2	4	25.0	0.024	32.2	LOS C	0.2	1.4	0.60	0.66	38.2
Approach		2481	7.9	0.955	57.2	LOS E	65.7	489.4	1.00	1.07	41.0
All Vehicles		6028	8.3	1.018	56.0	LOS D	65.7	489.4	0.87	0.90	39.7

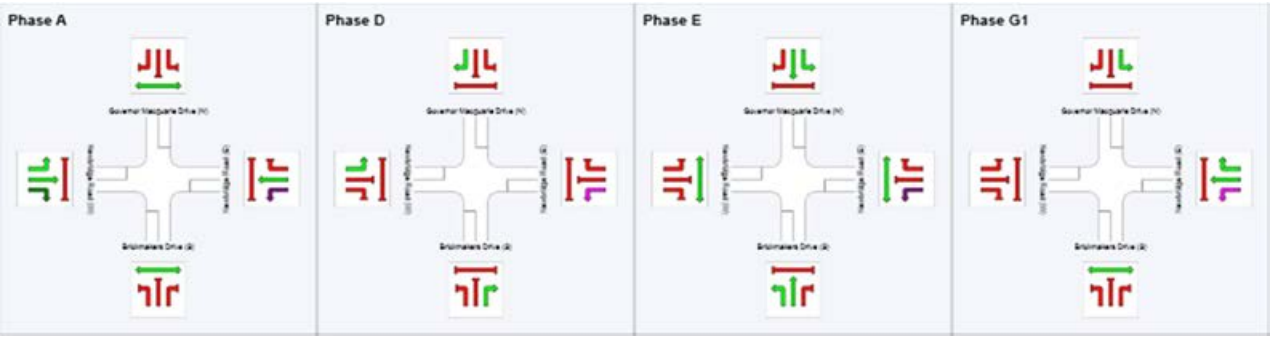
PHASING SUMMARY

Site: I-12 2016 BASE AM

Newbridge Road / Governor Macquarie Drive
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	66	88	112
Green Time (sec)	60	16	18	22
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	66	22	24	28
Phase Split	47 %	16 %	17 %	20 %



MOVEMENT SUMMARY

Site: I-12 2016 BASE PM

Newbridge Road / Governor Macquarie Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	8	0.0	0.460	68.7	LOS E	6.1	44.2	0.98	0.77	27.2
2	T1	84	5.0	0.460	64.6	LOS E	6.1	44.2	0.98	0.77	26.9
3	R2	225	0.9	0.534	69.1	LOS E	7.5	52.6	0.99	0.79	32.8
Approach		318	2.0	0.534	67.9	LOS E	7.5	52.6	0.99	0.79	31.3
East: Newbridge Road (E)											
4	L2	591	1.4	0.429	9.4	LOS A	6.9	49.1	0.28	0.69	57.1
5	T1	2321	4.4	0.711	15.5	LOS B	38.1	276.7	0.65	0.60	59.0
6	R2	654	11.3	1.056	157.7	LOS F	36.2	277.6	1.00	1.18	23.5
Approach		3565	5.2	1.056	40.5	LOS C	38.1	277.6	0.65	0.72	45.7
North: Governor Macquarie Drive (N)											
7	L2	486	3.5	0.382	47.5	LOS D	13.1	94.3	0.85	0.80	41.8
8	T1	272	0.8	0.871	74.5	LOS F	19.7	139.0	1.00	0.96	24.9
9	R2	207	18.8	0.980	107.9	LOS F	18.5	150.0	1.00	1.09	24.1
Approach		965	6.0	0.980	68.1	LOS E	19.7	150.0	0.92	0.91	32.8
West: Newbridge Road (W)											
10	L2	153	16.6	0.652	36.0	LOS C	27.8	209.0	0.76	0.72	42.9
11	T1	1643	6.1	0.652	28.4	LOS B	27.8	204.5	0.73	0.67	51.9
12	R2	3	0.0	0.044	41.3	LOS C	0.2	1.1	0.68	0.68	34.5
Approach		1799	7.0	0.652	29.1	LOS C	27.8	209.0	0.73	0.67	51.2
All Vehicles		6647	5.6	1.056	42.7	LOS D	38.1	277.6	0.73	0.74	44.0

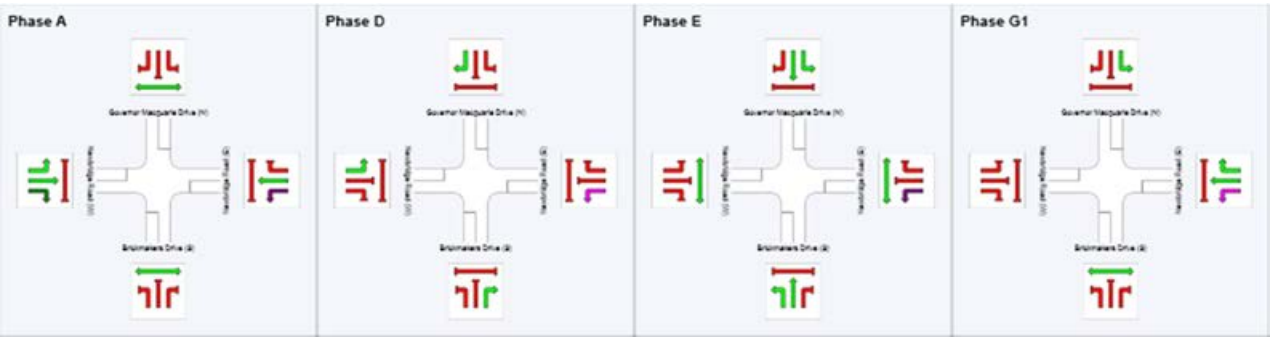
PHASING SUMMARY

Site: I-12 2016 BASE PM

Newbridge Road / Governor Macquarie Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	67	89	110
Green Time (sec)	61	16	15	24
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	67	22	21	30
Phase Split	48 %	16 %	15 %	21 %



MOVEMENT SUMMARY

Site: I-12 2016 MIMT AM

Newbridge Road / Governor Macquarie Drive
2016 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	9	0.0	0.780	72.8	LOS F	13.4	94.6	1.00	0.91	26.4
2	T1	181	1.2	0.780	68.4	LOS E	13.4	94.6	1.00	0.91	26.1
3	R2	592	1.1	1.018	121.3	LOS F	28.1	198.2	1.00	1.19	24.1
Approach		782	1.1	1.018	108.4	LOS F	28.1	198.2	1.00	1.12	24.5
East: Newbridge Road (E)											
4	L2	192	2.7	0.139	7.5	LOS A	1.5	10.4	0.16	0.63	58.3
5	T1	1089	11.5	0.318	12.7	LOS A	11.2	86.5	0.50	0.44	60.7
6	R2	598	10.4	0.834	73.6	LOS F	21.1	161.0	1.00	0.90	35.7
Approach		1878	10.3	0.834	31.6	LOS C	21.1	161.0	0.62	0.60	49.3
North: Governor Macquarie Drive (N)											
7	L2	637	8.9	0.608	50.7	LOS D	18.6	140.1	0.91	0.84	40.7
8	T1	118	2.7	0.478	63.5	LOS E	7.6	54.6	0.98	0.78	27.1
9	R2	148	34.9	0.870	84.1	LOS F	11.3	103.0	1.00	0.96	27.5
Approach		903	12.4	0.870	57.9	LOS E	18.6	140.1	0.94	0.85	36.8
West: Newbridge Road (W)											
10	L2	117	30.8	0.966	69.6	LOS E	67.3	514.9	1.00	1.09	32.2
11	T1	2377	7.5	0.966	61.3	LOS E	68.8	512.3	1.00	1.09	40.1
12	R2	4	25.0	0.024	32.2	LOS C	0.2	1.4	0.60	0.66	38.1
Approach		2499	8.6	0.966	61.6	LOS E	68.8	514.9	1.00	1.09	39.7
All Vehicles		6062	8.7	1.018	57.8	LOS E	68.8	514.9	0.87	0.91	39.2

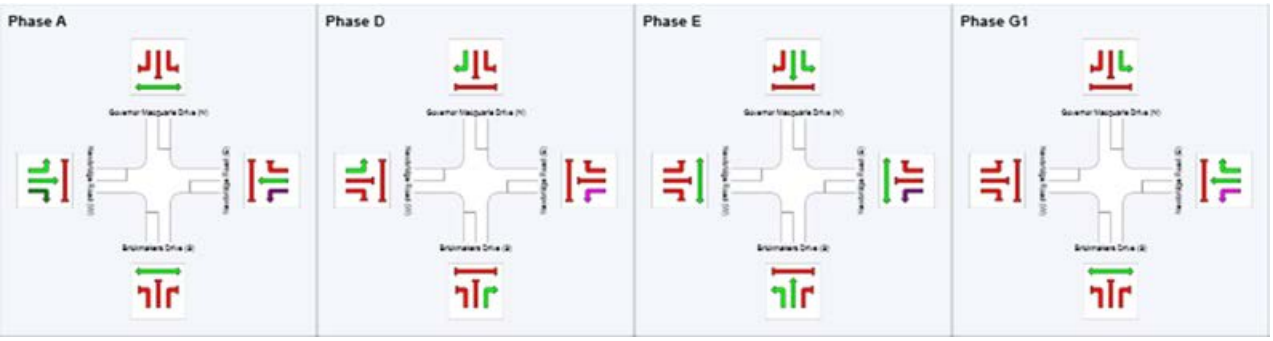
PHASING SUMMARY

Site: I-12 2016 MIMT AM

Newbridge Road / Governor Macquarie Drive
2016 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	66	88	112
Green Time (sec)	60	16	18	22
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	66	22	24	28
Phase Split	47 %	16 %	17 %	20 %



MOVEMENT SUMMARY

Site: I-12 2016 MIMT PM

Newbridge Road / Governor Macquarie Drive
2016 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	8	0.0	0.460	68.7	LOS E	6.1	44.2	0.98	0.77	27.2
2	T1	84	5.0	0.460	64.6	LOS E	6.1	44.2	0.98	0.77	26.9
3	R2	225	0.9	0.534	69.1	LOS E	7.5	52.6	0.99	0.79	32.8
Approach		318	2.0	0.534	67.9	LOS E	7.5	52.6	0.99	0.79	31.3
East: Newbridge Road (E)											
4	L2	591	1.4	0.429	9.4	LOS A	6.9	49.1	0.28	0.69	57.1
5	T1	2333	4.9	0.716	15.5	LOS B	38.5	280.5	0.65	0.60	58.9
6	R2	654	11.3	1.056	157.7	LOS F	36.2	277.6	1.00	1.18	23.5
Approach		3577	5.5	1.056	40.5	LOS C	38.5	280.5	0.66	0.72	45.7
North: Governor Macquarie Drive (N)											
7	L2	486	3.5	0.382	47.5	LOS D	13.1	94.3	0.85	0.80	41.8
8	T1	272	0.8	0.871	74.5	LOS F	19.7	139.0	1.00	0.96	24.9
9	R2	208	19.2	0.988	111.3	LOS F	18.9	153.9	1.00	1.10	23.6
Approach		966	6.1	0.988	68.9	LOS E	19.7	153.9	0.92	0.91	32.6
West: Newbridge Road (W)											
10	L2	154	17.1	0.660	36.2	LOS C	28.2	213.1	0.76	0.72	42.9
11	T1	1658	6.5	0.660	28.5	LOS C	28.2	208.6	0.74	0.67	51.8
12	R2	3	0.0	0.044	41.3	LOS C	0.2	1.1	0.68	0.68	34.5
Approach		1816	7.4	0.660	29.2	LOS C	28.2	213.1	0.74	0.67	51.1
All Vehicles		6677	5.9	1.056	42.8	LOS D	38.5	280.5	0.73	0.74	44.0

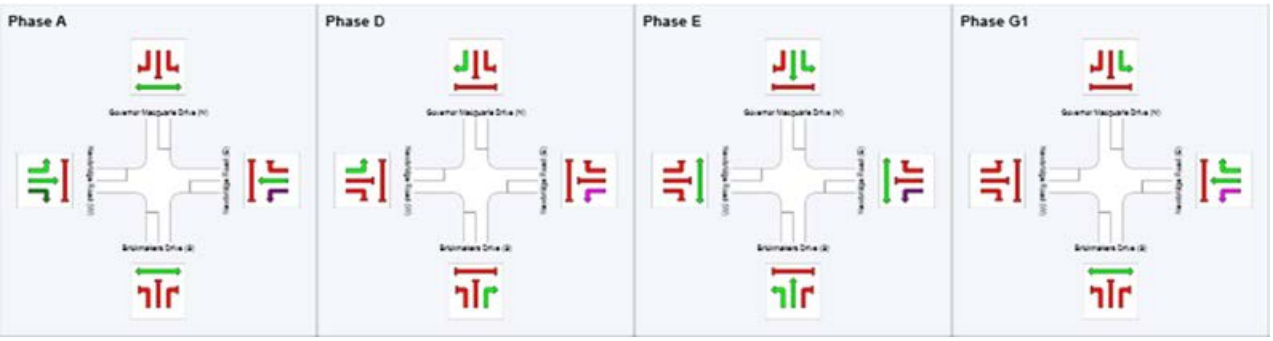
PHASING SUMMARY

Site: I-12 2016 MIMT PM

Newbridge Road / Governor Macquarie Drive
2016 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	67	89	110
Green Time (sec)	61	16	15	24
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	67	22	21	30
Phase Split	48 %	16 %	15 %	21 %



MOVEMENT SUMMARY

Site: I-12 2016 MIMT AM - Upgrade Option

Newbridge Road / Governor Macquarie Drive
2016 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	9	0.0	0.780	72.8	LOS F	13.4	94.6	1.00	0.91	26.4
2	T1	181	1.2	0.780	68.4	LOS E	13.4	94.6	1.00	0.91	26.1
3	R2	592	1.1	1.018	121.3	LOS F	28.1	198.2	1.00	1.19	24.1
Approach		782	1.1	1.018	108.4	LOS F	28.1	198.2	1.00	1.12	24.5
East: Newbridge Road (E)											
4	L2	192	2.7	0.139	7.5	LOS A	1.5	10.4	0.16	0.63	58.3
5	T1	1089	11.5	0.318	12.7	LOS A	11.2	86.5	0.50	0.44	60.7
6	R2	598	10.4	0.880	78.6	LOS F	22.1	168.3	1.00	0.93	34.6
Approach		1878	10.3	0.880	33.1	LOS C	22.1	168.3	0.62	0.62	48.6
North: Governor Macquarie Drive (N)											
7	L2	637	8.9	0.623	51.7	LOS D	18.8	141.7	0.92	0.84	40.4
8	T1	118	2.7	0.478	63.5	LOS E	7.6	54.6	0.98	0.78	27.1
9	R2	148	34.9	0.870	84.1	LOS F	11.3	103.0	1.00	0.96	27.5
Approach		903	12.4	0.870	58.6	LOS E	18.8	141.7	0.94	0.85	36.6
West: Newbridge Road (W)											
10	L2	117	30.8	0.950	62.2	LOS E	63.5	485.5	1.00	1.06	34.1
11	T1	2377	7.5	0.950	54.1	LOS D	64.8	482.8	1.00	1.05	42.2
12	R2	4	25.0	0.024	31.6	LOS C	0.2	1.4	0.59	0.66	38.4
Approach		2499	8.6	0.950	54.4	LOS D	64.8	485.5	1.00	1.05	41.9
All Vehicles		6062	8.7	1.018	55.4	LOS D	64.8	485.5	0.87	0.90	39.9

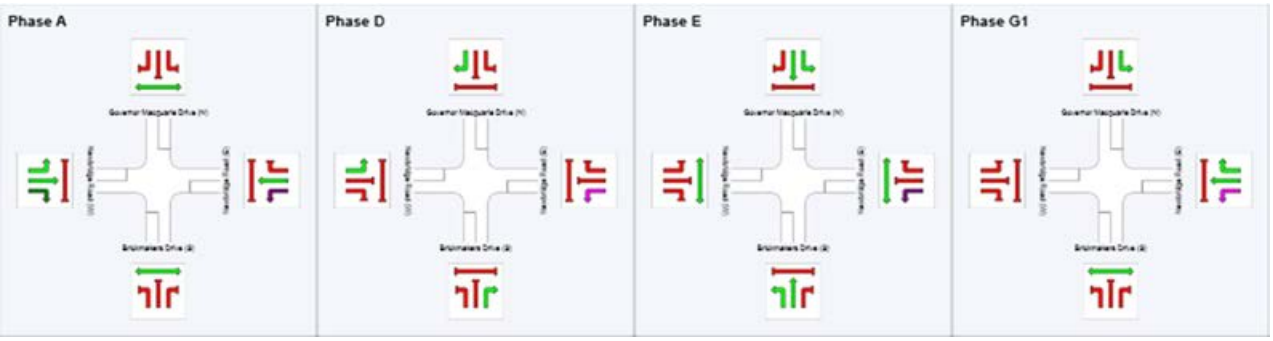
PHASING SUMMARY

Site: I-12 2016 MIMT AM - Upgrade Option

Newbridge Road / Governor Macquarie Drive
2016 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	67	89	113
Green Time (sec)	61	16	18	21
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	67	22	24	27
Phase Split	48 %	16 %	17 %	19 %



I-13 Intersection of Moorebank Avenue and M5 Motorway

MOVEMENT SUMMARY

Site: I-13 2016 BASE AM

Moorebank Avenue / the M5 Motorway
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
1	L2	257	11.1	0.219	8.8	LOS A	2.7	21.0	0.40	0.66	50.6
2	T1	584	4.1	0.670	29.4	LOS C	10.1	72.9	0.96	0.83	39.2
3	R2	257	2.9	0.358	32.7	LOS C	4.4	31.9	0.89	0.77	37.0
Approach		1098	5.5	0.670	25.3	LOS B	10.1	72.9	0.81	0.78	40.8
East: M5 Motorway on&off ramp (E)											
4	L2	221	7.1	0.212	7.7	LOS A	1.5	11.5	0.35	0.65	51.8
6	R2	226	6.0	0.235	28.7	LOS C	3.2	23.9	0.82	0.75	40.4
Approach		447	6.6	0.235	18.3	LOS B	3.2	23.9	0.59	0.70	45.1
North: Moorebank Avenue (N)											
7	L2	43	48.8	0.042	7.5	LOS A	0.3	2.5	0.26	0.59	51.4
8	T1	147	12.1	0.177	25.2	LOS B	2.2	16.9	0.84	0.65	41.2
9	R2	414	26.5	0.708	36.4	LOS C	8.7	74.4	0.96	0.85	36.8
Approach		604	24.6	0.708	31.6	LOS C	8.7	74.4	0.88	0.78	38.5
West: M5 Motorway on&off ramp (W)											
10	L2	1515	8.2	0.863	6.2	LOS A	0.0	0.0	0.00	0.52	54.0
12	R2	335	4.1	0.343	29.5	LOS C	5.0	36.0	0.85	0.78	38.7
Approach		1849	7.5	0.863	10.4	LOS A	5.0	36.0	0.15	0.57	50.7
All Vehicles		3999	9.4	0.863	18.6	LOS B	10.1	74.4	0.49	0.67	45.1

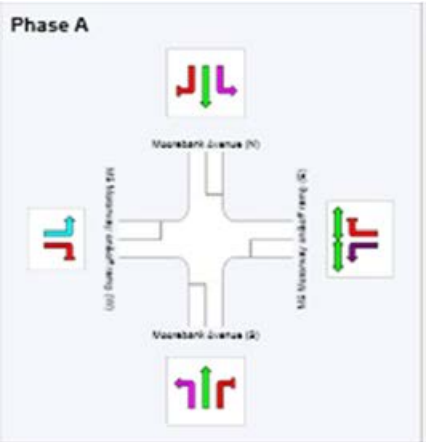
PHASING SUMMARY

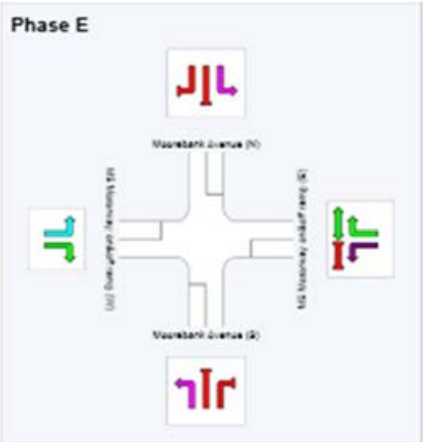
Site: I-13 2016 BASE AM

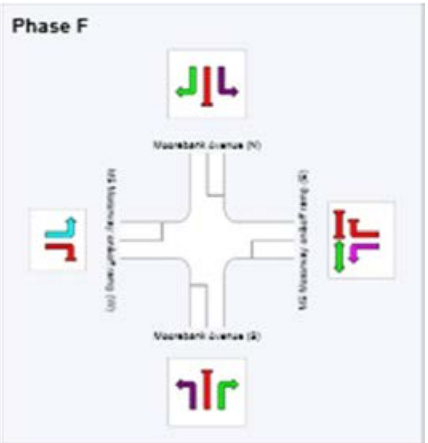
Moorebank Avenue / the M5 Motorway
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	F
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	24	51
Green Time (sec)	17	20	16
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	24	27	23
Phase Split	32 %	36 %	31 %







MOVEMENT SUMMARY

Site: I-13 2016 BASE PM

Moorebank Avenue / the M5 Motorway
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	275	3.1	0.326	17.0	LOS B	6.5	46.4	0.64	0.74	45.2
2	T1	155	7.5	0.391	44.2	LOS D	3.5	25.8	0.97	0.75	33.3
3	R2	242	2.2	0.201	27.6	LOS B	4.2	29.8	0.72	0.74	39.3
Approach		672	3.8	0.391	27.1	LOS B	6.5	46.4	0.74	0.74	39.8
East: M5 Motorway on&off ramp (E)											
4	L2	346	2.7	0.352	10.0	LOS A	4.9	35.1	0.48	0.70	50.1
6	R2	75	21.1	0.136	42.4	LOS C	1.5	12.3	0.88	0.72	35.0
Approach		421	6.0	0.352	15.8	LOS B	4.9	35.1	0.55	0.70	46.2
North: Moorebank Avenue (N)											
7	L2	114	6.5	0.088	6.7	LOS A	0.7	5.0	0.22	0.61	53.1
8	T1	618	3.6	0.663	35.1	LOS C	13.0	93.9	0.96	0.81	36.7
9	R2	1342	7.5	0.894	41.1	LOS C	30.3	225.3	1.00	1.05	35.4
Approach		2074	6.2	0.894	37.4	LOS C	30.3	225.3	0.94	0.95	36.4
West: M5 Motorway on&off ramp (W)											
10	L2	557	15.3	0.333	5.8	LOS A	0.0	0.0	0.00	0.52	54.3
12	R2	225	3.7	0.366	43.8	LOS D	4.7	34.0	0.93	0.78	33.2
Approach		782	12.0	0.366	16.8	LOS B	4.7	34.0	0.27	0.59	46.5
All Vehicles		3948	6.9	0.894	29.3	LOS C	30.3	225.3	0.73	0.82	39.6

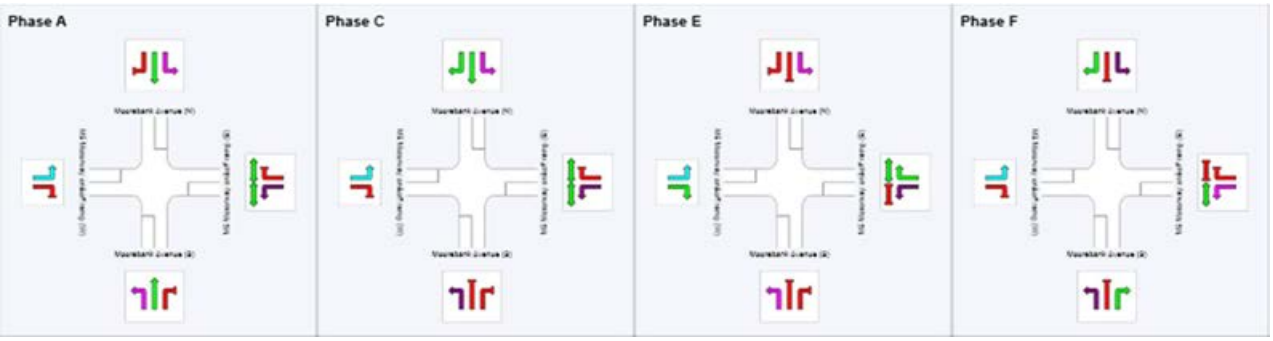
PHASING SUMMARY

Site: I-13 2016 BASE PM

Moorebank Avenue / the M5 Motorway
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	17	30	53
Green Time (sec)	10	6	16	34
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	17	13	23	41
Phase Split	18 %	14 %	24 %	44 %



MOVEMENT SUMMARY

Site: I-13 2016 MIMT AM

Moorebank Avenue / the M5 Motorway
2016 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	309	26.0	0.288	9.2	LOS A	3.5	29.8	0.42	0.67	49.9
2	T1	606	7.7	0.711	30.4	LOS C	10.7	80.2	0.98	0.87	38.7
3	R2	263	5.0	0.371	32.9	LOS C	4.6	33.3	0.89	0.78	36.9
Approach		1178	11.9	0.711	25.4	LOS B	10.7	80.2	0.81	0.80	40.7
East: M5 Motorway on&off ramp (E)											
4	L2	257	11.7	0.272	8.5	LOS A	2.3	18.1	0.42	0.67	51.0
6	R2	226	6.0	0.235	28.7	LOS C	3.2	23.9	0.82	0.75	40.4
Approach		483	9.0	0.272	18.0	LOS B	3.2	23.9	0.61	0.71	45.2
North: Moorebank Avenue (N)											
7	L2	43	48.8	0.042	7.6	LOS A	0.3	2.7	0.28	0.59	51.2
8	T1	172	17.5	0.214	25.5	LOS B	2.6	20.7	0.85	0.66	41.1
9	R2	414	26.5	0.708	36.4	LOS C	8.7	74.4	0.96	0.85	36.8
Approach		629	25.5	0.708	31.4	LOS C	8.7	74.4	0.88	0.78	38.6
West: M5 Motorway on&off ramp (W)											
10	L2	1515	8.2	0.863	6.2	LOS A	0.0	0.0	0.00	0.52	54.0
12	R2	450	14.9	0.496	31.0	LOS C	7.0	55.6	0.89	0.80	37.9
Approach		1965	9.7	0.863	11.8	LOS A	7.0	55.6	0.20	0.58	49.5
All Vehicles		4254	12.6	0.863	19.2	LOS B	10.7	80.2	0.52	0.69	44.6

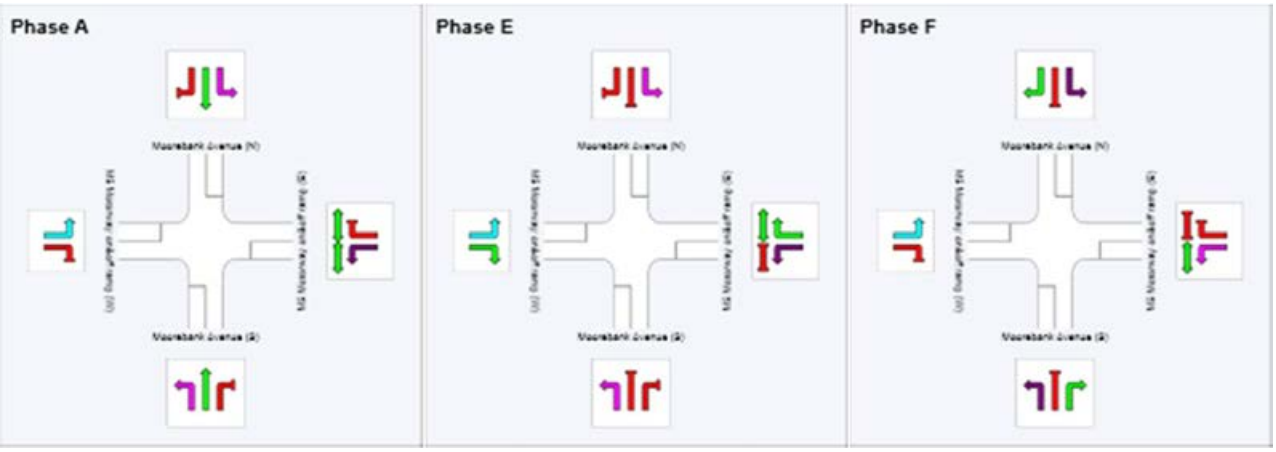
PHASING SUMMARY

Site: I-13 2016 MIMT AM

Moorebank Avenue / the M5 Motorway
2016 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	F
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	24	51
Green Time (sec)	17	20	16
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	24	27	23
Phase Split	32 %	36 %	31 %



MOVEMENT SUMMARY

Site: I-13 2016 MIMT PM

Moorebank Avenue / the M5 Motorway
2016 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	388	15.5	0.498	18.6	LOS B	10.3	81.5	0.71	0.78	44.0
2	T1	178	12.7	0.465	44.7	LOS D	4.0	31.4	0.98	0.76	33.1
3	R2	281	7.9	0.242	28.1	LOS B	4.9	36.9	0.73	0.75	38.9
Approach		847	12.4	0.498	27.2	LOS B	10.3	81.5	0.78	0.77	39.6
East: M5 Motorway on&off ramp (E)											
4	L2	356	5.5	0.384	10.8	LOS A	5.3	38.8	0.52	0.71	49.4
6	R2	75	21.1	0.136	42.4	LOS C	1.5	12.3	0.88	0.72	35.0
Approach		431	8.2	0.384	16.3	LOS B	5.3	38.8	0.59	0.71	45.9
North: Moorebank Avenue (N)											
7	L2	114	6.5	0.089	6.9	LOS A	0.7	5.5	0.23	0.61	53.0
8	T1	633	5.9	0.689	35.8	LOS C	13.6	99.9	0.97	0.84	36.4
9	R2	1342	7.5	0.894	41.1	LOS C	30.3	225.3	1.00	1.05	35.4
Approach		2089	6.9	0.894	37.7	LOS C	30.3	225.3	0.95	0.96	36.4
West: M5 Motorway on&off ramp (W)											
10	L2	557	15.3	0.333	5.8	LOS A	0.0	0.0	0.00	0.52	54.3
12	R2	280	22.4	0.513	45.5	LOS D	6.1	50.5	0.96	0.80	32.5
Approach		836	17.7	0.513	19.1	LOS B	6.1	50.5	0.32	0.61	44.9
All Vehicles		4204	10.3	0.894	29.7	LOS C	30.3	225.3	0.75	0.83	39.3

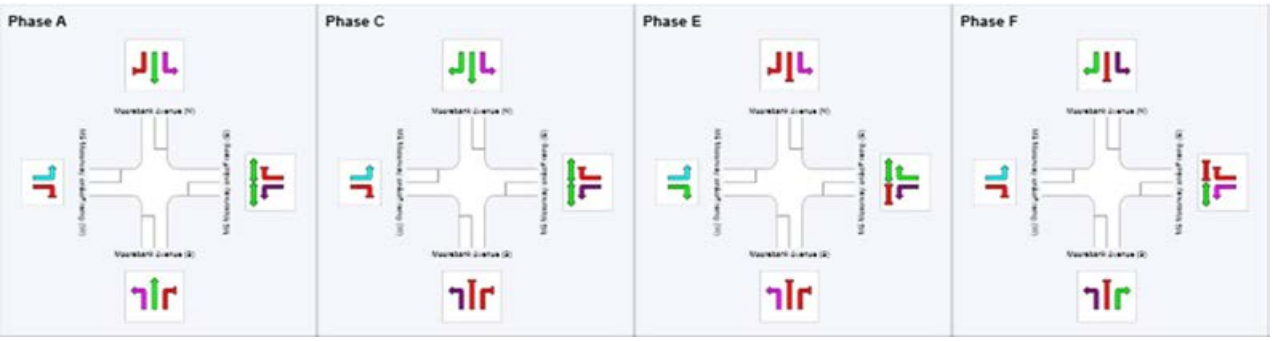
PHASING SUMMARY

Site: I-13 2016 MIMT PM

Moorebank Avenue / the M5 Motorway
2016 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	17	30	53
Green Time (sec)	10	6	16	34
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	17	13	23	41
Phase Split	18 %	14 %	24 %	44 %



I-14 Intersection of M5 Motorway and Hume Highway

MOVEMENT SUMMARY

Site: I-14 2016 BASE AM

M5 Motorway / Hume Highway
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
2	T1	3695	4.5	0.891	2.0	LOS A	19.2	139.3	0.23	0.21	58.4
3	R2	555	4.2	0.764	37.2	LOS C	13.3	96.6	0.95	0.84	39.7
Approach		4249	4.4	0.891	6.6	LOS A	19.2	139.3	0.32	0.30	55.0
East: M5 Motorway on&off-ramp (E)											
4	L2	291	6.5	0.116	30.3	LOS C	4.1	30.2	0.59	0.70	42.0
6	R2	1007	3.9	1.036	148.3	LOS F	39.0	281.9	1.00	1.14	14.9
Approach		1298	4.5	1.036	121.9	LOS F	39.0	281.9	0.91	1.05	18.5
North: Hume Highway (N)											
7	L2	606	5.9	0.449	10.1	LOS A	13.0	95.5	0.37	0.68	48.9
8	T1	1144	7.0	0.464	28.1	LOS B	16.5	122.4	0.61	0.54	43.5
Approach		1751	6.6	0.464	21.8	LOS B	16.5	122.4	0.53	0.59	44.8
All Vehicles		7298	5.0	1.036	30.8	LOS C	39.0	281.9	0.47	0.50	41.2

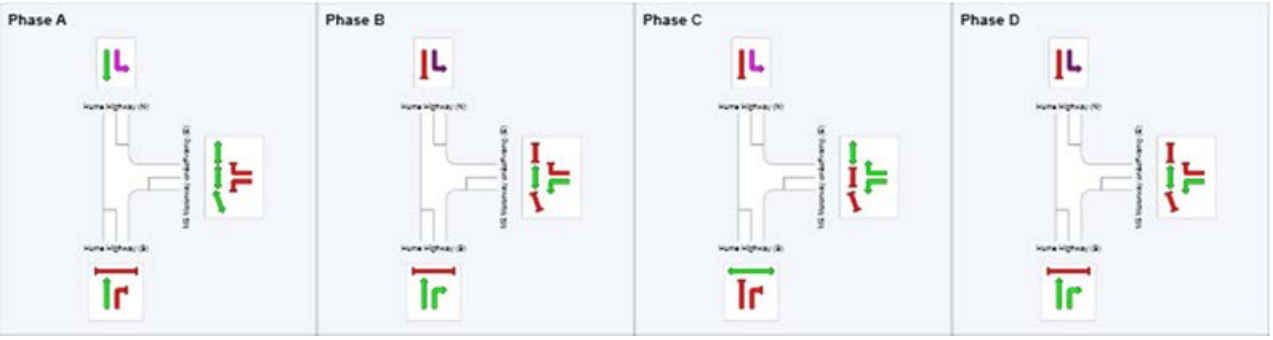
PHASING SUMMARY

Site: I-14 2016 BASE AM

M5 Motorway / Hume Highway
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	No	No	No	Yes
Phase Change Time (sec)	20	97	123	0
Green Time (sec)	70	19	29	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	77	26	36	20
Phase Split	48 %	16 %	23 %	13 %



MOVEMENT SUMMARY

Site: I-14 2016 BASE PM

M5 Motorway / Hume Highway
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
2	T1	2345	3.7	0.573	2.0	LOS A	5.8	41.7	0.11	0.10	58.4
3	R2	356	1.8	0.907	84.4	LOS F	14.8	105.0	1.00	0.92	27.9
Approach		2701	3.5	0.907	12.9	LOS A	14.8	105.0	0.22	0.21	51.1
East: M5 Motorway on&off-ramp (E)											
4	L2	1215	3.6	0.877	66.2	LOS E	43.5	314.2	0.92	0.92	31.3
6	R2	968	3.6	0.917	91.0	LOS F	28.7	207.1	1.00	0.98	20.9
Approach		2183	3.6	0.917	77.2	LOS F	43.5	314.2	0.96	0.95	26.7
North: Hume Highway (N)											
7	L2	758	2.1	0.529	9.1	LOS A	15.9	113.0	0.37	0.68	49.8
8	T1	2627	2.7	0.807	18.9	LOS B	41.8	299.1	0.68	0.63	47.8
Approach		3385	2.5	0.807	16.7	LOS B	41.8	299.1	0.61	0.64	48.1
All Vehicles		8269	3.1	0.917	31.4	LOS C	43.5	314.2	0.58	0.58	41.0

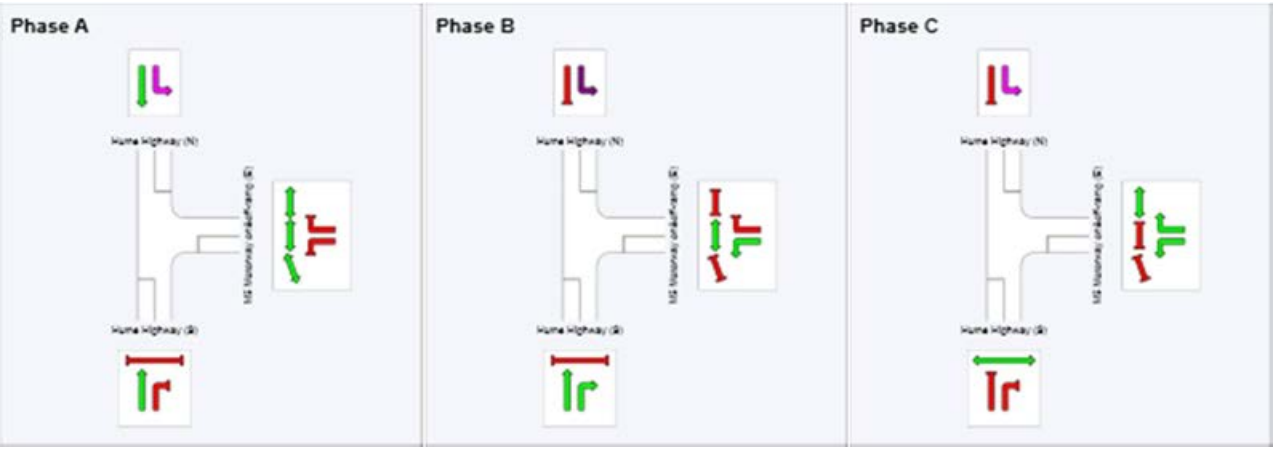
PHASING SUMMARY

Site: I-14 2016 BASE PM

M5 Motorway / Hume Highway
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	97	121
Green Time (sec)	90	17	31
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	97	24	38
Phase Split	61 %	15 %	24 %



MOVEMENT SUMMARY

Site: I-14 2016 MIMT AM

M5 Motorway / Hume Highway
2016 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
2	T1	3695	4.5	0.891	2.0	LOS A	19.2	139.3	0.23	0.21	58.4
3	R2	568	4.1	0.782	37.8	LOS C	13.9	100.4	0.95	0.84	39.5
Approach		4263	4.4	0.891	6.8	LOS A	19.2	139.3	0.32	0.30	54.9
East: M5 Motorway on&off-ramp (E)											
4	L2	291	6.5	0.116	30.3	LOS C	4.1	30.2	0.59	0.70	42.0
6	R2	1023	5.3	1.064	168.2	LOS F	42.2	309.0	1.00	1.19	13.5
Approach		1314	5.6	1.064	137.7	LOS F	42.2	309.0	0.91	1.08	16.9
North: Hume Highway (N)											
7	L2	639	8.1	0.482	10.6	LOS A	14.7	109.8	0.40	0.69	48.4
8	T1	1144	7.0	0.464	28.1	LOS B	16.5	122.4	0.61	0.54	43.5
Approach		1783	7.4	0.482	21.8	LOS B	16.5	122.4	0.53	0.59	44.7
All Vehicles		7359	5.4	1.064	33.8	LOS C	42.2	309.0	0.48	0.51	40.0

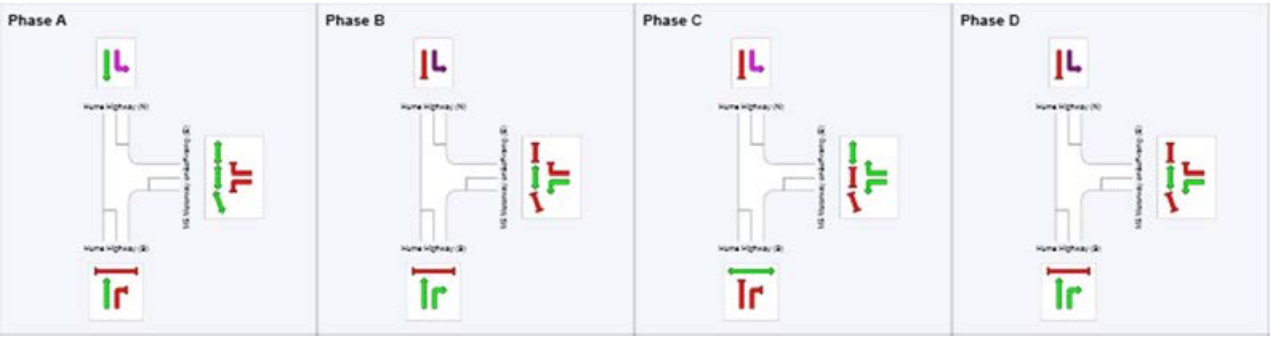
PHASING SUMMARY

Site: I-14 2016 MIMT AM

M5 Motorway / Hume Highway
2016 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	No	No	No	Yes
Phase Change Time (sec)	20	97	123	0
Green Time (sec)	70	19	29	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	77	26	36	20
Phase Split	48 %	16 %	23 %	13 %



MOVEMENT SUMMARY

Site: I-14 2016 MIMT PM

M5 Motorway / Hume Highway
2016 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
2	T1	2345	3.7	0.573	2.0	LOS A	5.8	41.7	0.11	0.10	58.4
3	R2	356	1.8	0.907	84.4	LOS F	14.8	105.0	1.00	0.92	27.9
Approach		2701	3.5	0.907	12.9	LOS A	14.8	105.0	0.22	0.21	51.1
East: M5 Motorway on&off-ramp (E)											
4	L2	1228	3.6	0.888	68.5	LOS E	45.0	324.8	0.92	0.93	30.8
6	R2	1001	5.1	0.976	111.6	LOS F	34.0	248.5	1.00	1.05	18.2
Approach		2229	4.3	0.976	87.9	LOS F	45.0	324.8	0.96	0.99	24.8
North: Hume Highway (N)											
7	L2	775	4.2	0.549	9.2	LOS A	16.7	121.4	0.38	0.68	49.6
8	T1	2627	2.7	0.807	18.9	LOS B	41.8	299.1	0.68	0.63	47.8
Approach		3402	3.0	0.807	16.7	LOS B	41.8	299.1	0.61	0.65	48.1
All Vehicles		8332	3.5	0.976	34.5	LOS C	45.0	324.8	0.58	0.59	39.7

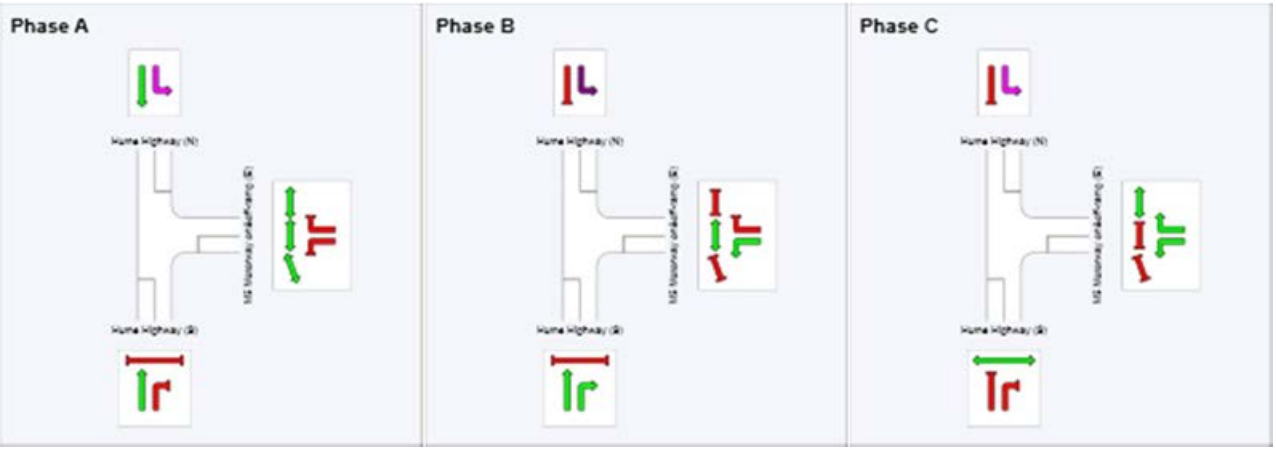
PHASING SUMMARY

Site: I-14 2016 MIMT PM

M5 Motorway / Hume Highway
2016 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	97	121
Green Time (sec)	90	17	31
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	97	24	38
Phase Split	61 %	15 %	24 %



I-15 Intersection of Cambridge Avenue and Canterbury Road

MOVEMENT SUMMARY

Site: I-15 2016 BASE AM

Canterbury Road / Cambridge Avenue / Glenfield Road
2014 BASE AM PEAK 7:45 am - 8:45 am Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	359	3.5	0.376	5.3	LOS A	2.0	14.7	0.48	0.60	53.4
2	T1	6	0.0	0.634	5.3	LOS A	5.2	36.8	0.60	0.71	51.7
3	R2	807	2.1	0.634	10.7	LOS A	5.2	36.8	0.60	0.71	51.9
Approach		1173	2.5	0.634	9.0	LOS A	5.2	36.8	0.56	0.68	52.2
East: Cambridge Avenue (E)											
4	L2	243	3.0	0.129	3.5	LOS A	0.0	0.0	0.00	0.43	56.5
5	T1	65	8.1	0.065	5.1	LOS A	0.4	2.6	0.48	0.55	53.5
6	R2	42	10.0	0.065	10.3	LOS A	0.4	2.6	0.48	0.58	53.8
Approach		351	4.8	0.129	4.6	LOS A	0.4	2.6	0.15	0.47	55.6
North: Railway Parade (N)											
7	L2	249	3.0	0.392	11.0	LOS A	2.7	19.1	0.88	0.96	50.5
8	T1	3	33.3	0.310	12.0	LOS A	1.7	12.7	0.83	0.94	47.9
9	R2	140	8.3	0.310	17.2	LOS B	1.7	12.7	0.83	0.94	46.9
Approach		393	5.1	0.392	13.2	LOS A	2.7	19.1	0.86	0.95	49.2
West: Glenfield Road (W)											
10	L2	287	5.1	0.539	11.7	LOS A	4.8	35.4	0.92	1.02	48.7
11	T1	145	6.5	0.539	12.1	LOS A	4.8	35.4	0.92	1.03	48.8
12	R2	262	5.6	0.539	18.3	LOS B	4.5	32.8	0.91	1.05	46.8
Approach		695	5.6	0.539	14.3	LOS A	4.8	35.4	0.92	1.03	47.9
All Vehicles		2611	4.0	0.634	10.5	LOS A	5.2	36.8	0.65	0.79	51.1

MOVEMENT SUMMARY

Site: I-15 2016 BASE PM

Canterbury Road / Cambridge Avenue / Glenfield Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	241	2.2	0.272	6.3	LOS A	1.4	9.6	0.60	0.73	52.9
2	T1	5	0.0	0.249	5.8	LOS A	1.3	8.9	0.59	0.78	51.8
3	R2	246	1.3	0.249	11.1	LOS A	1.3	8.9	0.59	0.78	52.0
Approach		493	1.7	0.272	8.7	LOS A	1.4	9.6	0.59	0.75	52.4
East: Cambridge Avenue (E)											
4	L2	921	2.3	0.486	3.5	LOS A	0.0	0.0	0.00	0.43	56.4
5	T1	207	7.6	0.289	5.9	LOS A	1.9	13.3	0.59	0.65	52.8
6	R2	258	0.8	0.289	11.0	LOS A	1.9	13.3	0.61	0.69	53.0
Approach		1386	2.8	0.486	5.3	LOS A	1.9	13.3	0.20	0.51	55.2
North: Railway Parade (N)											
7	L2	85	1.2	0.109	6.6	LOS A	0.5	3.5	0.58	0.68	53.8
8	T1	0	0.0	0.000	0.0	NA	0.0	0.0	0.00	0.00	0.0
9	R2	159	7.9	0.167	11.5	LOS A	0.8	6.2	0.58	0.76	50.6
Approach		244	5.6	0.167	9.8	LOS A	0.8	6.2	0.58	0.73	51.7
West: Glenfield Road (W)											
10	L2	209	4.5	0.283	6.5	LOS A	1.5	11.0	0.60	0.69	52.7
11	T1	39	0.0	0.283	6.4	LOS A	1.5	11.0	0.60	0.69	54.8
12	R2	363	3.8	0.349	11.5	LOS A	2.1	15.0	0.61	0.77	50.7
Approach		612	3.8	0.349	9.5	LOS A	2.1	15.0	0.61	0.73	51.6
All Vehicles		2735	3.1	0.486	7.2	LOS A	2.1	15.0	0.40	0.63	53.6

MOVEMENT SUMMARY

Site: I-15 2016 MIMT AM

Canterbury Road / Cambridge Avenue / Glenfield Road
2016 MIMT AM PEAK 7:45 am - 8:45 am Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Canterbury Road (S)											
1	L2	359	3.5	0.381	5.4	LOS A	2.1	15.0	0.49	0.61	53.4
2	T1	6	0.0	0.659	5.5	LOS A	5.7	40.8	0.62	0.72	51.6
3	R2	840	2.0	0.659	10.9	LOS A	5.7	40.8	0.62	0.72	51.8
Approach		1206	2.4	0.659	9.2	LOS A	5.7	40.8	0.58	0.68	52.2
East: Cambridge Avenue (E)											
4	L2	243	3.0	0.129	3.5	LOS A	0.0	0.0	0.00	0.43	56.5
5	T1	65	8.1	0.065	5.1	LOS A	0.4	2.7	0.48	0.55	53.5
6	R2	42	10.0	0.065	10.3	LOS A	0.4	2.7	0.48	0.58	53.8
Approach		351	4.8	0.129	4.6	LOS A	0.4	2.7	0.15	0.47	55.6
North: Railway Parade (N)											
7	L2	258	2.9	0.424	12.1	LOS A	3.0	21.7	0.90	0.99	49.7
8	T1	3	33.3	0.326	12.8	LOS A	1.8	13.8	0.85	0.96	47.4
9	R2	140	8.3	0.326	18.1	LOS B	1.8	13.8	0.85	0.96	46.3
Approach		402	5.0	0.424	14.2	LOS A	3.0	21.7	0.88	0.98	48.5
West: Glenfield Road (W)											
10	L2	287	5.1	0.572	13.1	LOS A	5.4	39.8	0.95	1.07	47.7
11	T1	152	6.2	0.572	13.5	LOS A	5.4	39.8	0.95	1.07	47.8
12	R2	262	5.6	0.572	19.8	LOS B	5.0	36.5	0.94	1.08	45.8
Approach		701	5.6	0.572	15.7	LOS B	5.4	39.8	0.95	1.07	47.0
All Vehicles		2659	4.0	0.659	11.1	LOS A	5.7	40.8	0.67	0.80	50.7

MOVEMENT SUMMARY

Site: I-15 2016 MIMT PM

Canterbury Road / Cambridge Avenue / Glenfield Road
2016 MIMT PM PEAK 4:30 pm - 5:30 pm Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Canterbury Road (S)											
1	L2	241	2.2	0.276	6.3	LOS A	1.4	9.8	0.61	0.74	52.9
2	T1	5	0.0	0.251	5.8	LOS A	1.3	9.1	0.59	0.78	51.8
3	R2	246	1.3	0.251	11.2	LOS A	1.3	9.1	0.59	0.78	52.0
Approach		493	1.7	0.276	8.8	LOS A	1.4	9.8	0.60	0.76	52.4
East: Cambridge Avenue (E)											
4	L2	954	2.2	0.503	3.5	LOS A	0.0	0.0	0.00	0.43	56.4
5	T1	214	7.4	0.299	5.9	LOS A	1.9	13.9	0.59	0.65	52.8
6	R2	267	0.8	0.299	11.0	LOS A	1.9	13.9	0.61	0.69	52.9
Approach		1435	2.7	0.503	5.3	LOS A	1.9	13.9	0.20	0.51	55.2
North: Railway Parade (N)											
7	L2	85	1.2	0.110	6.6	LOS A	0.5	3.5	0.58	0.68	53.8
8	T1	1	0.0	0.169	6.0	LOS A	0.8	6.3	0.58	0.76	51.8
9	R2	159	7.9	0.169	11.5	LOS A	0.8	6.3	0.58	0.76	50.6
Approach		245	5.6	0.169	9.8	LOS A	0.8	6.3	0.58	0.73	51.8
West: Glenfield Road (W)											
10	L2	209	4.5	0.285	6.6	LOS A	1.5	11.1	0.60	0.69	52.7
11	T1	39	0.0	0.285	6.5	LOS A	1.5	11.1	0.60	0.69	54.7
12	R2	363	3.8	0.352	11.6	LOS A	2.1	15.2	0.62	0.77	50.6
Approach		612	3.8	0.352	9.5	LOS A	2.1	15.2	0.61	0.74	51.5
All Vehicles		2784	3.0	0.503	7.2	LOS A	2.1	15.2	0.40	0.63	53.6

I-0A Intersection of Moorebank Avenue and Anzac Road

MOVEMENT SUMMARY

Site: I-0A 2016 BASE AM

Intersection of Moorebank Avenue and Anzac Road
2016 BASE AM PEAK
Signals - Fixed Time Cycle Time = 103 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	928	3.5	0.697	9.6	LOS A	27.0	194.4	0.64	0.59	47.6
3	R2	349	3.3	0.543	25.5	LOS B	13.4	96.5	0.85	0.83	41.4
Approach		1278	3.5	0.697	14.0	LOS A	27.0	194.4	0.70	0.66	45.0
East: Anzac Road (E)											
4	L2	220	3.3	0.266	24.1	LOS B	6.8	48.8	0.66	0.75	42.1
6	R2	194	13.6	0.736	54.1	LOS D	10.0	77.9	1.00	0.87	21.0
Approach		414	8.1	0.736	38.1	LOS C	10.0	77.9	0.82	0.81	31.1
North: Moorebank Avenue (N)											
7	L2	284	10.0	0.186	6.1	LOS A	1.0	7.5	0.15	0.59	49.8
8	T1	576	3.3	0.532	22.4	LOS B	16.1	115.9	0.76	0.66	37.3
Approach		860	5.5	0.532	17.0	LOS B	16.1	115.9	0.56	0.63	40.7
All Vehicles		2552	4.9	0.736	18.9	LOS B	27.0	194.4	0.67	0.67	40.3

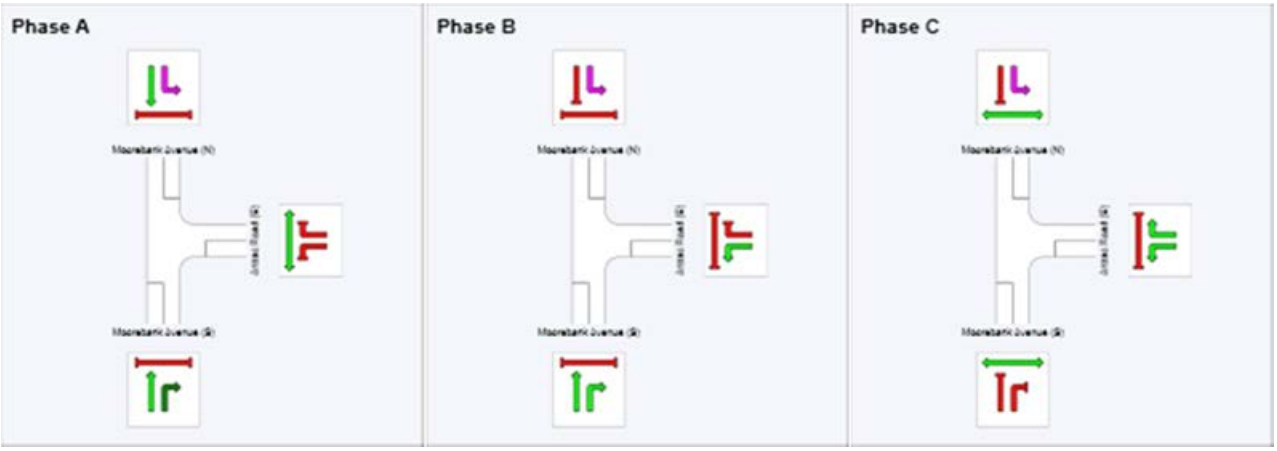
PHASING SUMMARY

Site: I-0A 2016 BASE AM

Intersection of Moorebank Avenue and Anzac Road
2016 BASE AM PEAK
Signals - Fixed Time Cycle Time = 103 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	50	78
Green Time (sec)	44	22	19
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	50	28	25
Phase Split	49 %	27 %	24 %



MOVEMENT SUMMARY

Site: I-0A 2016 BASE PM

Intersection of Moorebank Avenue and Anzac Road
2016 BASE PM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	284	3.7	0.238	9.5	LOS A	6.5	47.3	0.47	0.40	47.8
3	R2	172	1.2	0.801	59.8	LOS E	9.8	69.7	1.00	1.01	29.9
Approach		456	2.8	0.801	28.4	LOS B	9.8	69.7	0.67	0.63	36.8
East: Anzac Road (E)											
4	L2	432	2.2	0.633	36.0	LOS C	19.0	135.6	0.88	0.84	37.0
6	R2	287	5.5	0.680	47.6	LOS D	14.3	104.9	0.97	0.84	22.4
Approach		719	3.5	0.680	40.7	LOS C	19.0	135.6	0.91	0.84	31.1
North: Moorebank Avenue (N)											
7	L2	228	5.1	0.143	6.0	LOS A	0.8	5.6	0.13	0.59	50.2
8	T1	1124	2.4	0.852	25.7	LOS B	42.2	301.7	0.85	0.81	35.4
Approach		1353	2.9	0.852	22.4	LOS B	42.2	301.7	0.73	0.77	37.3
All Vehicles		2527	3.0	0.852	28.7	LOS C	42.2	301.7	0.77	0.77	34.8

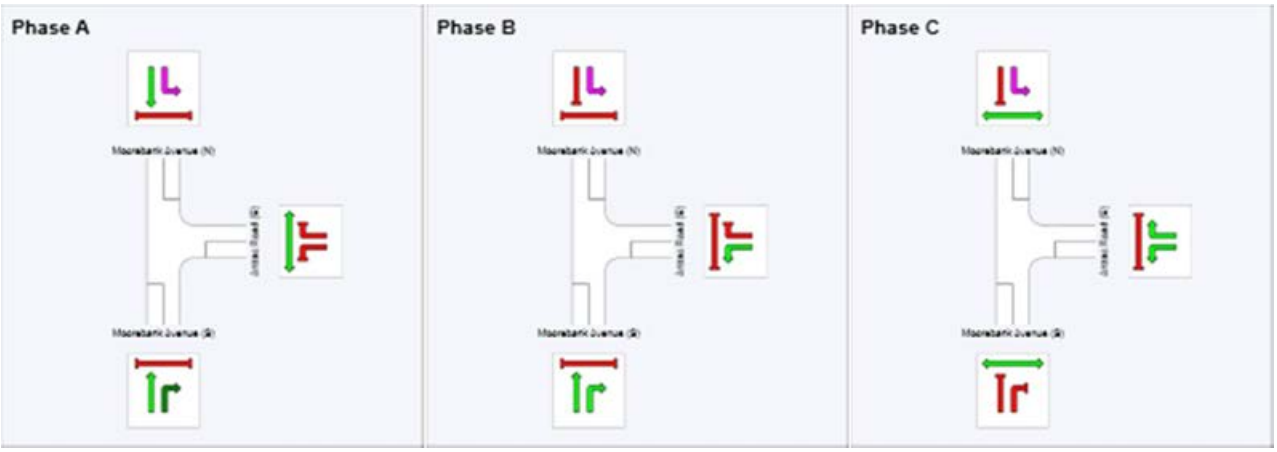
PHASING SUMMARY

Site: I-0A 2016 BASE PM

Intersection of Moorebank Avenue and Anzac Road
2016 BASE PM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	63	75
Green Time (sec)	57	6	29
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	63	12	35
Phase Split	57 %	11 %	32 %



MOVEMENT SUMMARY

Site: I-0A 2016 MINT AM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2016 MINT AM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	64	0.0	0.634	29.0	LOS C	17.7	127.1	0.75	0.71	31.5
2	T1	913	3.6	0.634	24.5	LOS B	18.2	131.5	0.76	0.69	38.6
3	R2	349	3.3	0.642	41.8	LOS C	16.4	117.8	0.92	0.84	32.0
Approach		1326	3.3	0.642	29.3	LOS C	18.2	131.5	0.80	0.73	36.2
East: Anzac Road (E)											
4	L2	183	4.0	0.188	10.0	LOS A	2.8	20.1	0.37	0.66	49.0
5	T1	20	0.0	0.113	52.2	LOS D	1.0	7.1	0.95	0.68	25.8
6	R2	191	13.8	0.620	61.0	LOS E	5.2	41.1	1.00	0.81	28.5
Approach		394	8.6	0.620	36.8	LOS C	5.2	41.1	0.70	0.73	34.8
North: Moorebank Avenue (N)											
7	L2	284	10.0	0.584	33.3	LOS C	16.4	122.8	0.81	0.78	38.4
8	T1	473	3.6	0.584	31.6	LOS C	16.4	122.8	0.82	0.72	34.8
9	R2	258	31.4	0.390	46.3	LOS D	6.0	53.6	0.90	0.78	25.0
Approach		1015	12.4	0.584	35.8	LOS C	16.4	122.8	0.84	0.76	33.3
West: MIMT Access Road (W)											
10	L2	83	97.5	0.130	24.2	LOS B	1.2	15.6	0.77	0.68	32.7
11	T1	1	0.0	0.007	52.0	LOS D	0.1	0.4	0.94	0.56	26.0
12	R2	1	0.0	0.008	56.3	LOS D	0.1	0.4	0.94	0.59	19.2
Approach		85	95.1	0.130	24.9	LOS B	1.2	15.6	0.77	0.68	32.4
All Vehicles		2820	10.1	0.642	32.6	LOS C	18.2	131.5	0.80	0.74	34.8

PHASING SUMMARY

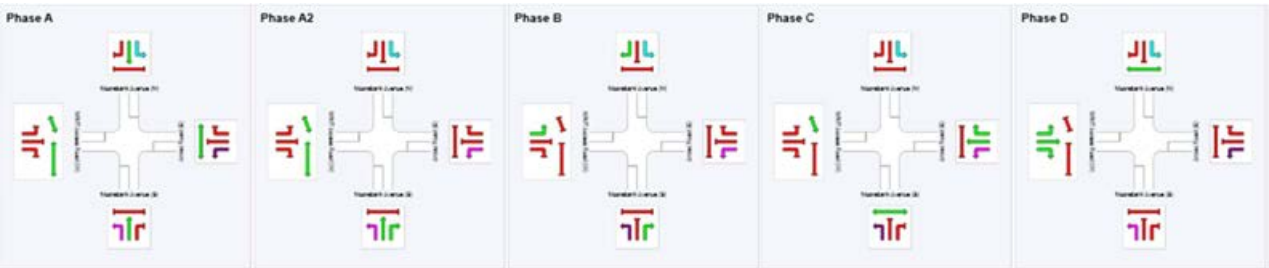
Site: I-0A 2016 MINT AM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2016 MINT AM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase times specified by the user
Sequence: NEW TCS 3094 AM
Movement Class: All Movement Classes
Input Sequence: A, A2, B, C, D
Output Sequence: A, A2, B, C, D

Phase Timing Results

Phase	A	A2	B	C	D
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	41	50	80	96
Green Time (sec)	35	3	24	10	8
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	41	9	30	16	14
Phase Split	37 %	8 %	27 %	15 %	13 %



MOVEMENT SUMMARY

Site: I-0A 2016 MINT PM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2016 MINT PM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	1	0.0	0.201	28.3	LOS B	4.2	30.1	0.59	0.49	32.4
2	T1	284	3.7	0.201	22.9	LOS B	4.2	30.6	0.59	0.48	39.7
3	R2	172	1.2	0.789	61.9	LOS E	9.8	69.1	1.00	0.90	26.3
Approach		457	2.8	0.789	37.5	LOS C	9.8	69.1	0.74	0.64	33.0
East: Anzac Road (E)											
4	L2	424	2.2	0.643	19.5	LOS B	14.8	105.7	0.76	0.82	42.4
5	T1	1	0.0	0.005	48.2	LOS D	0.1	0.4	0.91	0.56	26.9
6	R2	287	5.5	0.737	61.1	LOS E	8.0	59.0	1.00	0.87	28.6
Approach		713	3.5	0.737	36.3	LOS C	14.8	105.7	0.86	0.84	35.0
North: Moorebank Avenue (N)											
7	L2	286	4.0	0.749	23.0	LOS B	26.6	190.9	0.73	0.72	44.6
8	T1	1102	2.5	0.749	18.3	LOS B	26.6	190.9	0.72	0.67	42.0
9	R2	99	83.0	0.187	44.3	LOS D	2.2	26.3	0.84	0.73	24.5
Approach		1487	8.1	0.749	20.9	LOS B	26.6	190.9	0.73	0.69	41.1
West: MIMT Access Road (W)											
10	L2	266	31.2	0.292	23.3	LOS B	3.8	34.1	0.81	0.74	34.5
11	T1	22	0.0	0.156	54.1	LOS D	1.2	8.1	0.97	0.69	25.4
12	R2	56	0.0	0.413	60.1	LOS E	3.0	21.2	0.99	0.75	18.4
Approach		344	24.2	0.413	31.2	LOS C	3.8	34.1	0.85	0.74	30.2
All Vehicles		3001	8.1	0.789	28.3	LOS B	26.6	190.9	0.77	0.72	36.9

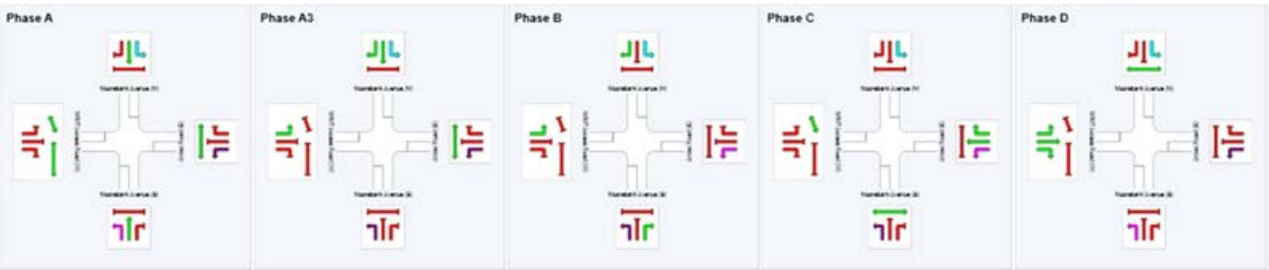
PHASING SUMMARY

Site: I-0A 2016 MINT PM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2016 MINT PM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	A3	B	C	D
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	47	59	78	96
Green Time (sec)	41	6	13	12	8
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	47	12	19	18	14
Phase Split	43 %	11 %	17 %	16 %	13 %



Appendix E
Traffic and Transport Impact Assessment

Appendix F

2019 SIDRA results with and without Moorebank IMT

I-01 Intersection of the Hume Highway and Orange Grove Road

MOVEMENT SUMMARY

Site: I-01 2019 BASE AM

Hume Highway / Orange Grove Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
NorthEast: Hume Highway (NE)											
25	T1	895	11.4	0.636	22.4	LOS B	17.7	136.2	0.81	0.74	36.9
26	R2	360	9.9	0.891	85.6	LOS F	15.4	116.9	1.00	0.92	24.0
Approach		1255	11.0	0.891	40.5	LOS C	17.7	136.2	0.87	0.79	30.6
NorthWest: Orange Grove Road (NW)											
27	L2	548	6.5	0.644	10.8	LOS A	10.0	74.3	0.29	0.68	50.1
29	R2	1211	6.7	0.893	70.1	LOS E	32.5	240.5	0.99	0.91	24.0
Approach		1759	6.6	0.893	51.6	LOS D	32.5	240.5	0.77	0.84	29.3
SouthWest: Hume Highway (SW)											
30	L2	1142	6.5	0.399	11.0	LOS A	11.6	85.5	0.31	0.69	52.8
31	T1	1984	4.9	0.712	19.8	LOS B	30.3	221.1	0.61	0.55	42.6
Approach		3126	5.5	0.712	16.6	LOS B	30.3	221.1	0.50	0.60	46.5
All Vehicles		6140	6.9	0.893	31.5	LOS C	32.5	240.5	0.65	0.71	35.8

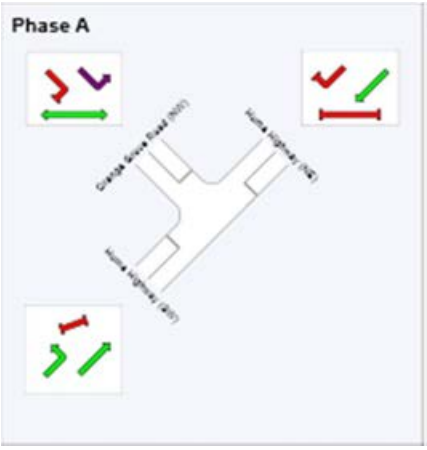
PHASING SUMMARY

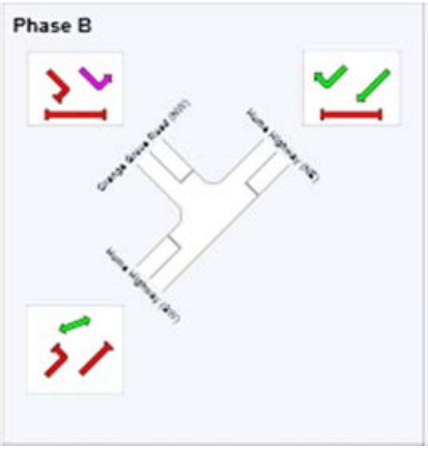
Site: I-01 2019 BASE AM

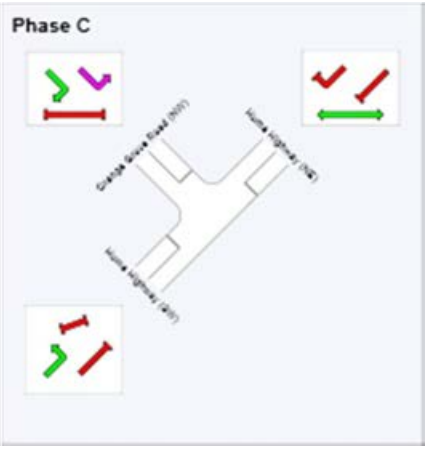
Hume Highway / Orange Grove Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	86	109
Green Time (sec)	79	16	35
Yellow Time (sec)	5	4	5
All-Red Time (sec)	2	2	2
Phase Time (sec)	86	22	42
Phase Split	57 %	15 %	28 %







MOVEMENT SUMMARY

Site: I-01 2019 BASE PM

Hume Highway / Orange Grove Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	1671	3.2	0.861	28.4	LOS B	37.9	272.9	0.83	0.82	33.5
26	R2	774	2.7	0.885	47.7	LOS D	18.9	135.6	1.00	0.95	33.2
Approach		2444	3.1	0.885	34.5	LOS C	37.9	272.9	0.88	0.86	33.3
NorthWest: Orange Grove Road (NW)											
27	L2	369	4.3	0.344	11.8	LOS A	5.9	42.6	0.25	0.63	49.7
29	R2	1278	3.1	0.978	89.2	LOS F	40.4	290.7	1.00	1.01	20.7
Approach		1647	3.4	0.978	71.9	LOS F	40.4	290.7	0.83	0.92	24.3
SouthWest: Hume Highway (SW)											
30	L2	1241	3.0	0.732	19.4	LOS B	19.1	137.0	0.77	0.83	45.9
31	T1	1064	5.2	0.955	81.0	LOS F	35.2	257.1	1.00	1.09	19.3
Approach		2305	4.0	0.955	47.8	LOS D	35.2	257.1	0.88	0.95	29.7
All Vehicles		6397	3.5	0.978	48.9	LOS D	40.4	290.7	0.87	0.91	29.0

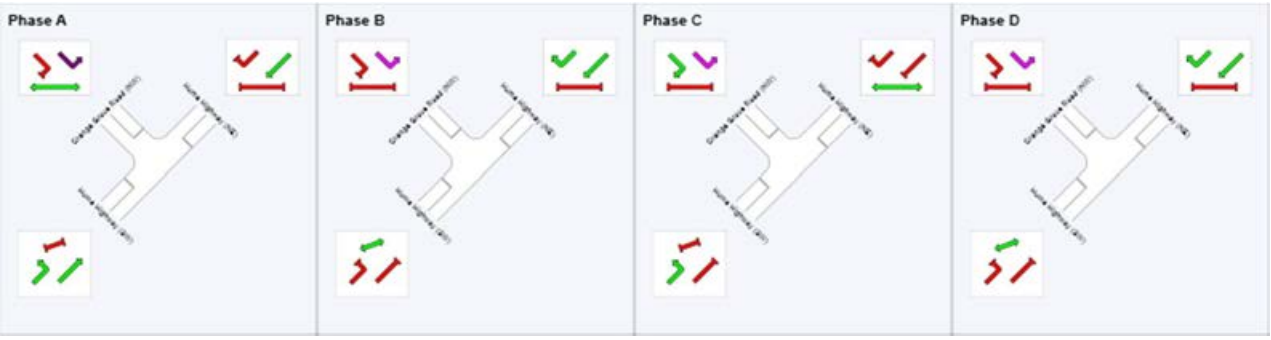
PHASING SUMMARY

Site: I-01 2019 BASE PM

Hume Highway / Orange Grove Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	81	124
Green Time (sec)	47	21	37	19
Yellow Time (sec)	5	4	5	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	54	27	44	25
Phase Split	36 %	18 %	29 %	17 %



MOVEMENT SUMMARY

Site: I-01 2019 MIMT AM

Hume Highway / Orange Grove Road
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	901	11.3	0.646	23.2	LOS B	18.0	138.5	0.82	0.74	36.5
26	R2	360	9.9	0.838	81.1	LOS F	14.7	111.8	1.00	0.89	24.8
Approach		1261	10.9	0.838	39.7	LOS C	18.0	138.5	0.87	0.79	30.9
NorthWest: Orange Grove Road (NW)											
27	L2	548	6.5	0.631	11.7	LOS A	11.5	84.8	0.33	0.68	49.5
29	R2	1230	7.8	0.894	69.7	LOS E	33.1	249.3	0.99	0.91	24.0
Approach		1779	7.4	0.894	51.8	LOS D	33.1	249.3	0.79	0.84	29.2
SouthWest: Hume Highway (SW)											
30	L2	1157	7.7	0.413	11.4	LOS A	12.3	92.7	0.32	0.69	50.7
31	T1	1984	4.9	0.730	21.6	LOS B	32.1	234.5	0.64	0.59	41.1
Approach		3141	5.9	0.730	17.8	LOS B	32.1	234.5	0.53	0.62	44.8
All Vehicles		6180	7.4	0.894	32.1	LOS C	33.1	249.3	0.67	0.72	35.4

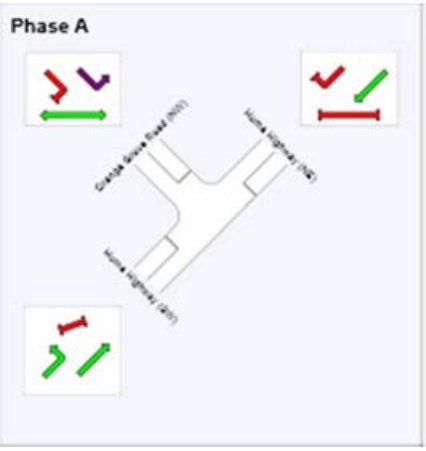
PHASING SUMMARY

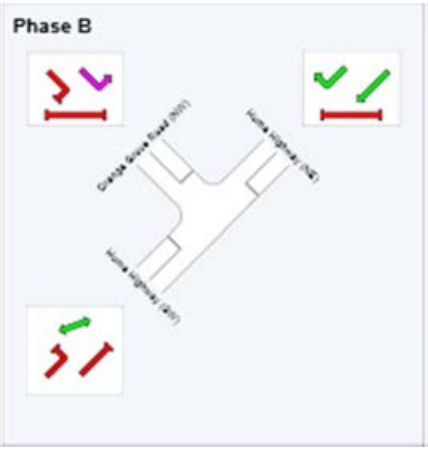
Site: I-01 2019 MIMT AM

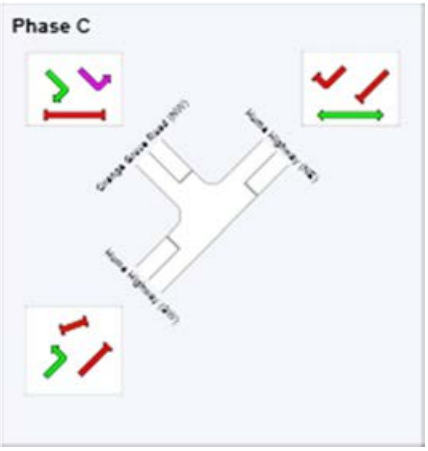
Hume Highway / Orange Grove Road
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	84	108
Green Time (sec)	77	17	36
Yellow Time (sec)	5	4	5
All-Red Time (sec)	2	2	2
Phase Time (sec)	84	23	43
Phase Split	56 %	15 %	29 %







MOVEMENT SUMMARY

Site: I-01 2019 MIMT PM

Hume Highway / Orange Grove Road
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	1672	3.3	0.872	31.3	LOS C	39.7	286.2	0.84	0.85	32.0
26	R2	774	2.7	0.907	52.6	LOS D	20.0	143.2	1.00	0.97	31.6
Approach		2446	3.1	0.907	38.0	LOS C	39.7	286.2	0.89	0.89	31.9
NorthWest: Orange Grove Road (NW)											
27	L2	369	4.3	0.344	11.9	LOS A	5.9	42.7	0.25	0.63	49.7
29	R2	1296	4.5	1.003	98.9	LOS F	44.9	330.1	1.00	1.04	19.3
Approach		1665	4.4	1.003	79.6	LOS F	44.9	330.1	0.83	0.95	22.8
SouthWest: Hume Highway (SW)											
30	L2	1262	4.2	0.747	19.3	LOS B	19.3	141.4	0.77	0.83	45.2
31	T1	1071	5.3	0.963	83.6	LOS F	36.1	264.2	1.00	1.10	18.8
Approach		2334	4.7	0.963	48.8	LOS D	36.1	264.2	0.88	0.96	29.2
All Vehicles		6445	4.0	1.003	52.7	LOS D	44.9	330.1	0.87	0.93	27.8

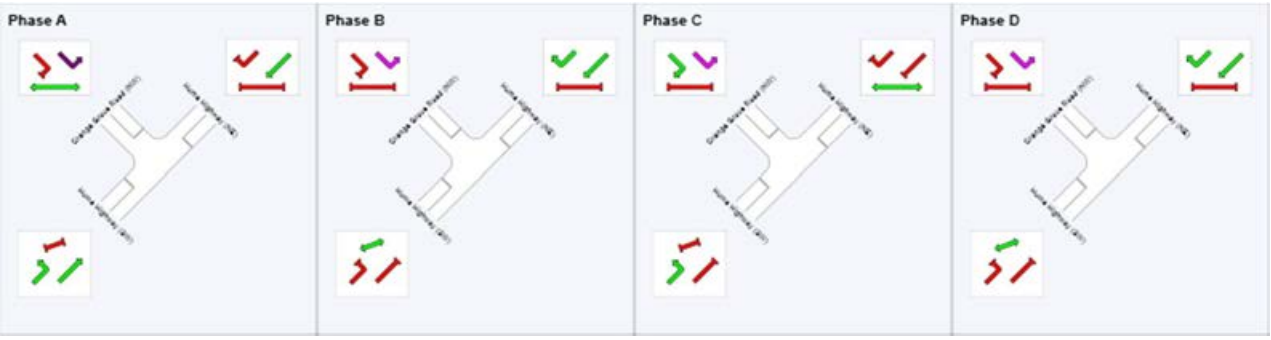
PHASING SUMMARY

Site: I-01 2019 MIMT PM

Hume Highway / Orange Grove Road
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	80	124
Green Time (sec)	47	20	38	19
Yellow Time (sec)	5	4	5	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	54	26	45	25
Phase Split	36 %	17 %	30 %	17 %



I-02 Intersection of the Hume Highway and Elizabeth Drive

MOVEMENT SUMMARY

Site: I-02 2019 BASE AM

Hume Highway / Elizabeth Drive
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	121	5.2	0.133	21.2	LOS B	3.1	22.5	0.38	0.67	37.5
2	T1	2120	6.3	0.815	36.1	LOS C	42.5	313.9	0.86	0.78	27.2
Approach		2241	6.2	0.831	35.3	LOS C	42.5	313.9	0.84	0.78	27.7
East: Elizabeth Drive (E)											
4	L2	35	6.1	0.389	60.0	LOS E	9.3	68.3	0.91	0.81	18.5
5	T1	445	5.7	0.389	56.1	LOS D	10.5	77.2	0.90	0.82	23.7
6	R2	139	2.3	0.671	75.6	LOS F	10.1	72.1	1.00	0.83	15.1
Approach		619	4.9	0.671	60.7	LOS E	10.5	77.2	0.92	0.82	21.1
North: Hume Highway (N)											
7	L2	77	2.7	0.583	24.1	LOS B	20.0	149.8	0.54	0.53	32.7
8	T1	1623	8.8	0.583	18.0	LOS B	20.3	152.8	0.54	0.50	37.3
9	R2	322	9.5	1.157	237.8	LOS F	22.3	168.9	1.00	1.36	7.9
Approach		2022	8.6	1.157	53.3	LOS D	22.3	168.9	0.61	0.63	22.0
West: Elizabeth Drive (W)											
10	L2	560	5.3	0.944	79.0	LOS F	46.5	340.4	1.00	0.97	18.3
11	T1	961	3.1	0.953	82.5	LOS F	40.9	293.6	1.00	1.08	17.2
12	R2	452	6.5	1.123	211.5	LOS F	29.7	219.5	1.00	1.32	8.8
Approach		1973	4.5	1.123	111.0	LOS F	46.5	340.4	1.00	1.10	14.2
All Vehicles		6855	6.3	1.157	64.7	LOS E	46.5	340.4	0.82	0.83	19.8

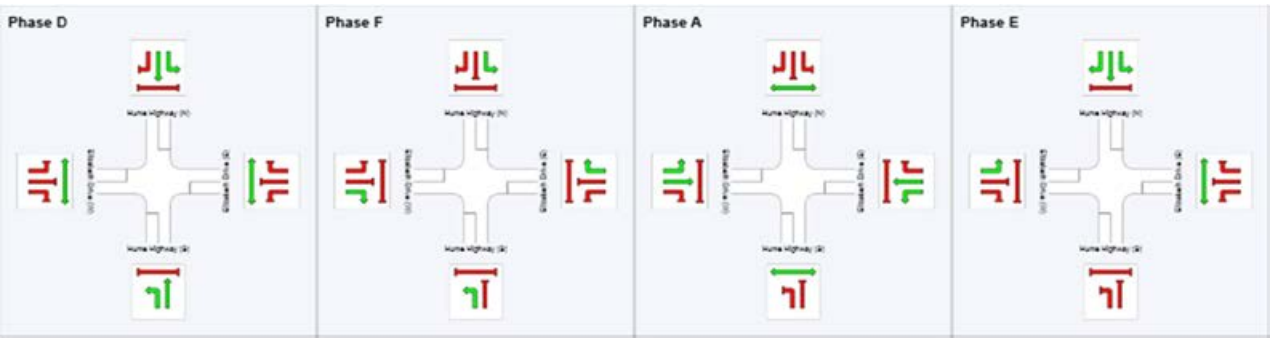
PHASING SUMMARY

Site: I-02 2019 BASE AM

Hume Highway / Elizabeth Drive
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	68	91	132
Green Time (sec)	62	17	35	12
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	68	23	41	18
Phase Split	45 %	15 %	27 %	12 %



MOVEMENT SUMMARY

Site: I-02 2019 BASE PM

Hume Highway / Elizabeth Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	292	4.3	0.434	40.0	LOS C	13.5	98.0	0.68	0.77	28.4
2	T1	1467	4.7	0.853	54.6	LOS D	35.2	256.5	0.96	0.90	21.3
Approach		1759	4.7	0.853	52.2	LOS D	35.2	256.5	0.91	0.88	22.3
East: Elizabeth Drive (E)											
4	L2	115	0.9	0.825	74.1	LOS F	23.2	164.8	1.00	0.92	16.0
5	T1	938	2.5	0.825	68.4	LOS E	28.7	205.0	1.00	0.92	20.7
6	R2	153	0.0	1.027	138.0	LOS F	15.8	110.8	1.00	1.22	9.5
Approach		1205	2.0	1.027	77.8	LOS F	28.7	205.0	1.00	0.96	18.0
North: Hume Highway (N)											
7	L2	62	5.1	0.815	20.6	LOS B	33.3	239.2	0.64	0.61	35.5
8	T1	2335	2.9	0.815	15.0	LOS B	34.1	244.6	0.64	0.60	39.8
9	R2	872	2.9	0.832	66.7	LOS E	30.6	219.4	0.99	0.89	21.4
Approach		3268	2.9	0.832	28.9	LOS C	34.1	244.6	0.73	0.68	31.4
West: Elizabeth Drive (W)											
10	L2	314	6.4	0.414	33.1	LOS C	12.8	94.1	0.60	0.75	30.1
11	T1	497	4.7	0.635	60.1	LOS E	16.0	116.7	0.93	0.80	21.3
12	R2	288	2.6	0.988	117.7	LOS F	13.7	97.9	1.00	1.10	14.2
Approach		1099	4.6	0.988	67.5	LOS E	16.0	116.7	0.86	0.86	20.2
All Vehicles		7332	3.4	1.027	48.3	LOS D	35.2	256.5	0.84	0.80	24.0

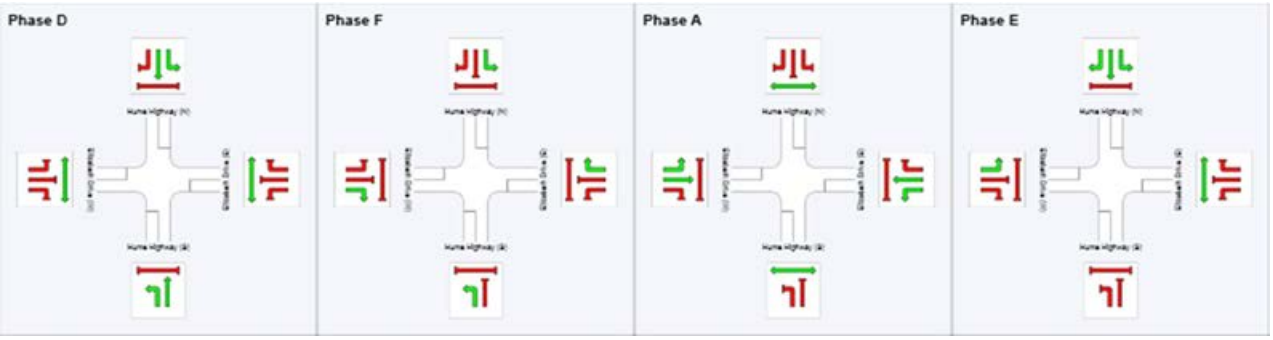
PHASING SUMMARY

Site: I-02 2019 BASE PM

Hume Highway / Elizabeth Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	71	108
Green Time (sec)	47	12	31	36
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	53	18	37	42
Phase Split	35 %	12 %	25 %	28 %



MOVEMENT SUMMARY

Site: I-02 2019 MIMT AM

Hume Highway / Elizabeth Drive
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	121	5.2	0.133	21.2	LOS B	3.1	22.5	0.38	0.67	37.5
2	T1	2135	7.0	0.827	36.8	LOS C	43.6	325.0	0.87	0.80	26.9
Approach		2256	6.9	0.844	35.9	LOS C	43.6	325.0	0.85	0.79	27.4
East: Elizabeth Drive (E)											
4	L2	35	6.1	0.389	60.0	LOS E	9.3	68.3	0.91	0.81	18.5
5	T1	445	5.7	0.389	56.1	LOS D	10.5	77.2	0.90	0.82	23.7
6	R2	139	2.3	0.671	75.6	LOS F	10.1	72.1	1.00	0.83	15.1
Approach		619	4.9	0.671	60.7	LOS E	10.5	77.2	0.92	0.82	21.1
North: Hume Highway (N)											
7	L2	77	2.7	0.596	24.3	LOS B	20.7	156.7	0.55	0.54	32.6
8	T1	1649	9.5	0.596	18.2	LOS B	21.0	159.8	0.55	0.50	37.1
9	R2	322	9.5	1.157	237.8	LOS F	22.3	168.9	1.00	1.36	7.9
Approach		2048	9.3	1.157	53.0	LOS D	22.3	168.9	0.62	0.64	22.0
West: Elizabeth Drive (W)											
10	L2	560	5.3	0.944	79.0	LOS F	46.5	340.4	1.00	0.97	18.3
11	T1	961	3.1	0.953	82.5	LOS F	40.9	293.6	1.00	1.08	17.2
12	R2	455	6.9	1.135	222.0	LOS F	30.7	228.3	1.00	1.34	8.5
Approach		1976	4.6	1.135	113.6	LOS F	46.5	340.4	1.00	1.11	14.0
All Vehicles		6898	6.7	1.157	65.5	LOS E	46.5	340.4	0.83	0.84	19.6

PHASING SUMMARY

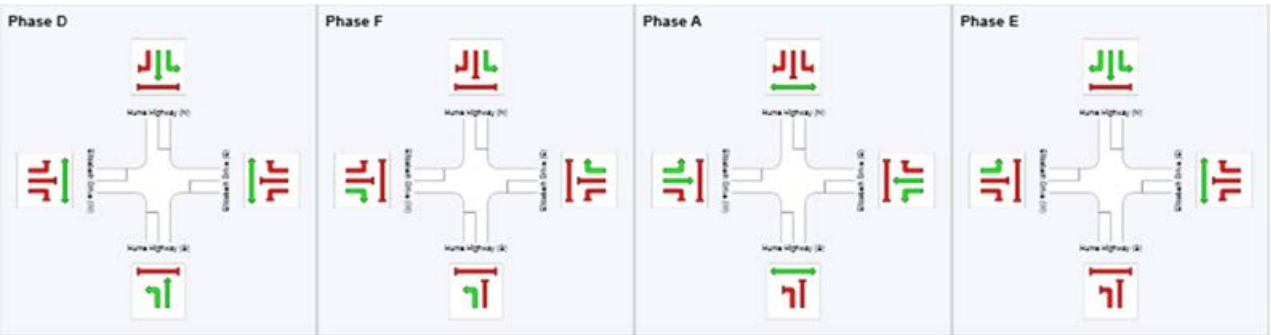
Site: I-02 2019 MIMT AM

Hume Highway / Elizabeth Drive
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase times specified by the user
Sequence: TCS 402 AM
Movement Class: All Movement Classes
Input Sequence: D, F, A, E
Output Sequence: D, F, A, E

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	68	91	132
Green Time (sec)	62	17	35	12
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	68	23	41	18
Phase Split	45 %	15 %	27 %	12 %



MOVEMENT SUMMARY

Site: I-02 2019 MIMT PM

Hume Highway / Elizabeth Drive
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	295	5.0	0.442	40.2	LOS C	13.7	100.9	0.69	0.77	28.2
2	T1	1496	5.8	0.882	58.4	LOS E	37.8	280.5	0.97	0.95	20.4
Approach		1791	5.7	0.882	55.4	LOS D	37.8	280.5	0.93	0.92	21.5
East: Elizabeth Drive (E)											
4	L2	115	0.9	0.823	74.0	LOS F	23.1	164.3	1.00	0.92	16.0
5	T1	938	2.5	0.823	68.3	LOS E	28.6	204.3	1.00	0.92	20.7
6	R2	153	0.0	1.027	138.0	LOS F	15.8	110.8	1.00	1.22	9.5
Approach		1205	2.0	1.027	77.7	LOS F	28.6	204.3	1.00	0.96	18.1
North: Hume Highway (N)											
7	L2	62	5.1	0.829	20.9	LOS B	34.7	252.2	0.66	0.63	35.3
8	T1	2354	3.7	0.829	15.3	LOS B	35.5	257.8	0.66	0.62	39.6
9	R2	872	2.9	0.832	66.7	LOS E	30.6	219.4	0.99	0.89	21.4
Approach		3288	3.5	0.832	29.0	LOS C	35.5	257.8	0.75	0.69	31.4
West: Elizabeth Drive (W)											
10	L2	314	6.4	0.414	33.1	LOS C	12.8	94.1	0.60	0.75	30.1
11	T1	497	4.7	0.635	60.1	LOS E	16.0	116.7	0.93	0.80	21.3
12	R2	288	2.6	0.988	117.7	LOS F	13.7	97.9	1.00	1.10	14.2
Approach		1099	4.6	0.988	67.5	LOS E	16.0	116.7	0.86	0.86	20.2
All Vehicles		7383	4.0	1.027	49.1	LOS D	37.8	280.5	0.85	0.82	23.8

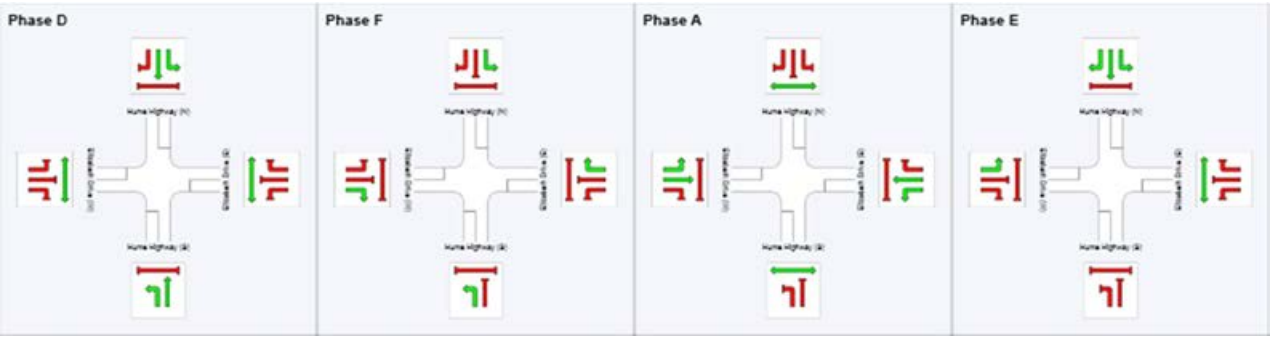
PHASING SUMMARY

Site: I-02 2019 MIMT PM

Hume Highway / Elizabeth Drive
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	71	108
Green Time (sec)	47	12	31	36
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	53	18	37	42
Phase Split	35 %	12 %	25 %	28 %



I-03 Intersection of the Hume Highway and Memorial Avenue

MOVEMENT SUMMARY

Site: I-03 2019 BASE AM

Hume Highway / Memorial Avenue
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	142	1.5	0.861	43.0	LOS D	45.5	334.9	0.91	0.87	33.5
2	T1	1896	7.3	0.861	35.2	LOS C	45.6	339.3	0.84	0.80	33.0
3	R2	240	0.0	1.020	133.8	LOS F	24.9	174.1	1.00	1.12	14.1
Approach		2278	6.1	1.020	46.1	LOS D	45.6	339.3	0.86	0.84	29.1
East: Memorial Avenue (E)											
4	L2	23	18.2	1.045	151.1	LOS F	15.9	118.2	1.00	1.28	13.1
5	T1	143	5.1	1.045	146.4	LOS F	15.9	118.2	1.00	1.28	12.7
6	R2	113	12.1	1.045	151.0	LOS F	14.4	110.7	1.00	1.27	9.3
Approach		279	9.1	1.045	148.6	LOS F	15.9	118.2	1.00	1.28	11.4
North: Hume Highway (N)											
7	L2	108	5.8	0.092	12.3	LOS A	2.3	17.1	0.35	0.64	39.5
8	T1	1595	11.2	0.669	27.0	LOS B	26.4	202.8	0.69	0.61	37.0
9	R2	88	3.6	0.385	71.5	LOS F	6.0	43.6	0.96	0.78	21.4
Approach		1792	10.5	0.669	28.3	LOS B	26.4	202.8	0.68	0.62	35.8
West: Memorial Avenue (W)											
10	L2	115	2.8	1.053	137.9	LOS F	31.5	224.0	1.00	1.29	14.0
11	T1	413	1.5	1.053	140.7	LOS F	40.5	288.5	1.00	1.32	13.0
12	R2	145	2.9	1.053	152.3	LOS F	40.5	288.5	1.00	1.35	16.1
Approach		673	2.0	1.053	142.7	LOS F	40.5	288.5	1.00	1.32	13.9
All Vehicles		5021	7.3	1.053	58.4	LOS E	45.6	339.3	0.82	0.85	25.1

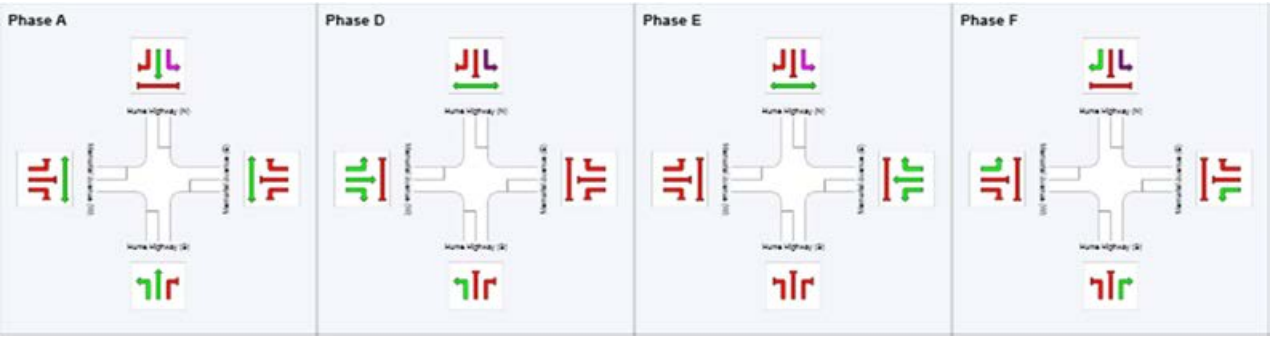
PHASING SUMMARY

Site: I-03 2019 BASE AM

Hume Highway / Memorial Avenue
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	75	108	125
Green Time (sec)	69	27	11	19
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	75	33	17	25
Phase Split	50 %	22 %	11 %	17 %



MOVEMENT SUMMARY

Site: I-03 2019 BASE PM

Hume Highway / Memorial Avenue
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	123	0.9	0.746	41.2	LOS C	31.8	231.6	0.84	0.79	34.1
2	T1	1576	5.7	0.746	33.3	LOS C	32.4	237.8	0.79	0.72	33.9
3	R2	114	0.0	0.765	84.0	LOS F	8.7	61.1	1.00	0.86	19.5
Approach		1813	5.1	0.765	37.0	LOS C	32.4	237.8	0.81	0.74	32.5
East: Memorial Avenue (E)											
4	L2	47	0.0	1.235	305.9	LOS F	41.5	295.8	1.00	1.79	7.3
5	T1	259	2.4	1.235	301.4	LOS F	41.5	295.8	1.00	1.77	7.1
6	R2	189	6.1	1.235	306.3	LOS F	38.3	280.5	1.00	1.69	5.1
Approach		496	3.6	1.235	303.7	LOS F	41.5	295.8	1.00	1.74	6.4
North: Hume Highway (N)											
7	L2	145	2.9	0.086	8.2	LOS A	1.9	13.5	0.24	0.61	43.7
8	T1	2789	3.1	0.861	10.6	LOS A	40.9	293.6	0.54	0.50	48.3
9	R2	203	2.1	0.771	53.3	LOS D	9.2	65.4	1.00	0.89	25.3
Approach		3138	3.0	0.861	13.3	LOS A	40.9	293.6	0.56	0.53	45.4
West: Memorial Avenue (W)											
10	L2	75	1.4	0.809	71.8	LOS F	13.5	95.7	1.00	0.95	21.7
11	T1	188	1.1	0.809	69.1	LOS E	16.9	118.4	1.00	0.94	20.6
12	R2	152	0.0	0.809	76.7	LOS F	16.9	118.4	1.00	0.92	24.6
Approach		415	0.8	0.809	72.3	LOS F	16.9	118.4	1.00	0.93	22.4
All Vehicles		5861	3.5	1.235	49.4	LOS D	41.5	295.8	0.70	0.73	27.5

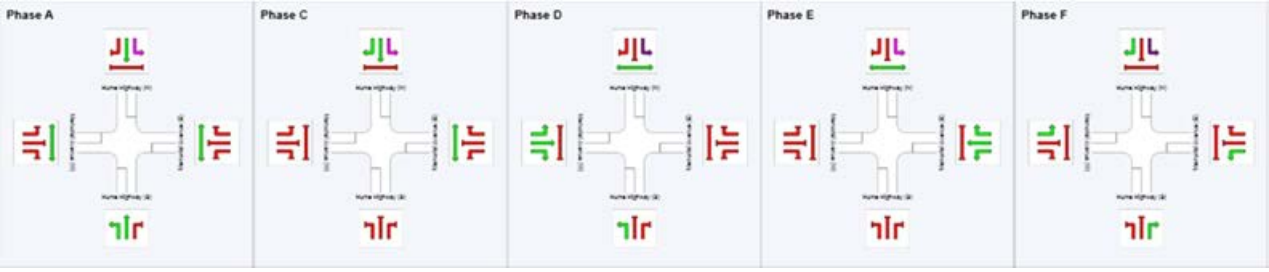
PHASING SUMMARY

Site: I-03 2019 BASE PM

Hume Highway / Memorial Avenue
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D	E	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	70	82	110	132
Green Time (sec)	64	6	22	16	12
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	70	12	28	22	18
Phase Split	47 %	8 %	19 %	15 %	12 %



MOVEMENT SUMMARY

Site: I-03 2019 MIMT AM

Hume Highway / Memorial Avenue
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	142	1.5	0.873	44.8	LOS D	47.3	351.5	0.92	0.89	32.9
2	T1	1911	8.0	0.873	37.0	LOS C	47.4	356.9	0.85	0.82	32.3
3	R2	240	0.0	1.020	133.8	LOS F	24.9	174.1	1.00	1.12	14.1
Approach		2293	6.8	1.020	47.6	LOS D	47.4	356.9	0.87	0.86	28.7
East: Memorial Avenue (E)											
4	L2	23	18.2	1.045	151.1	LOS F	15.9	118.2	1.00	1.28	13.1
5	T1	143	5.1	1.045	146.4	LOS F	15.9	118.2	1.00	1.28	12.7
6	R2	113	12.1	1.045	151.0	LOS F	14.4	110.7	1.00	1.27	9.3
Approach		279	9.1	1.045	148.6	LOS F	15.9	118.2	1.00	1.28	11.4
North: Hume Highway (N)											
7	L2	108	5.8	0.092	12.3	LOS A	2.3	17.1	0.35	0.64	39.5
8	T1	1623	12.0	0.688	27.4	LOS B	27.5	214.1	0.70	0.63	36.9
9	R2	88	3.6	0.385	71.5	LOS F	6.0	43.6	0.96	0.78	21.4
Approach		1820	11.2	0.688	28.6	LOS C	27.5	214.1	0.69	0.64	35.7
West: Memorial Avenue (W)											
10	L2	115	2.8	1.054	138.8	LOS F	31.6	225.2	1.00	1.29	13.9
11	T1	413	1.5	1.054	141.7	LOS F	40.7	289.8	1.00	1.32	12.9
12	R2	146	2.9	1.054	153.3	LOS F	40.7	289.8	1.00	1.35	16.0
Approach		674	2.0	1.054	143.7	LOS F	40.7	289.8	1.00	1.32	13.8
All Vehicles		5065	7.9	1.054	59.1	LOS E	47.4	356.9	0.83	0.86	24.9

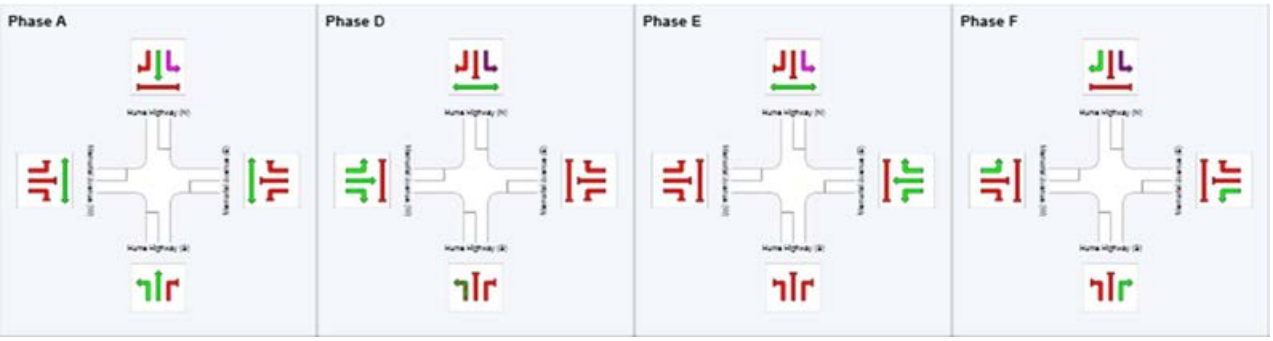
PHASING SUMMARY

Site: I-03 2019 MIMT AM

Hume Highway / Memorial Avenue
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	75	108	125
Green Time (sec)	69	27	11	19
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	75	33	17	25
Phase Split	50 %	22 %	11 %	17 %



MOVEMENT SUMMARY

Site: I-03 2019 MIMT PM

Hume Highway / Memorial Avenue
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	124	0.8	0.769	41.7	LOS C	33.1	245.2	0.85	0.80	33.9
2	T1	1608	6.9	0.769	33.8	LOS C	33.7	252.4	0.81	0.74	33.6
3	R2	114	0.0	0.765	84.0	LOS F	8.7	61.1	1.00	0.86	19.5
Approach		1845	6.1	0.769	37.4	LOS C	33.7	252.4	0.83	0.75	32.3
East: Memorial Avenue (E)											
4	L2	47	0.0	1.235	305.9	LOS F	41.5	295.8	1.00	1.79	7.3
5	T1	259	2.4	1.235	301.4	LOS F	41.5	295.8	1.00	1.77	7.1
6	R2	189	6.1	1.235	306.3	LOS F	38.3	280.5	1.00	1.69	5.1
Approach		496	3.6	1.235	303.7	LOS F	41.5	295.8	1.00	1.74	6.4
North: Hume Highway (N)											
7	L2	145	2.9	0.086	8.2	LOS A	1.9	13.5	0.24	0.61	43.7
8	T1	2809	3.7	0.874	11.4	LOS A	43.2	313.8	0.56	0.52	47.6
9	R2	203	2.1	0.771	53.3	LOS D	9.2	65.4	1.00	0.89	25.3
Approach		3157	3.6	0.874	13.9	LOS A	43.2	313.8	0.57	0.55	44.9
West: Memorial Avenue (W)											
10	L2	75	1.4	0.809	71.8	LOS F	13.5	95.7	1.00	0.95	21.7
11	T1	188	1.1	0.809	69.1	LOS E	16.9	118.4	1.00	0.94	20.6
12	R2	152	0.0	0.809	76.7	LOS F	16.9	118.4	1.00	0.92	24.6
Approach		415	0.8	0.809	72.3	LOS F	16.9	118.4	1.00	0.93	22.4
All Vehicles		5913	4.2	1.235	49.7	LOS D	43.2	313.8	0.72	0.74	27.4

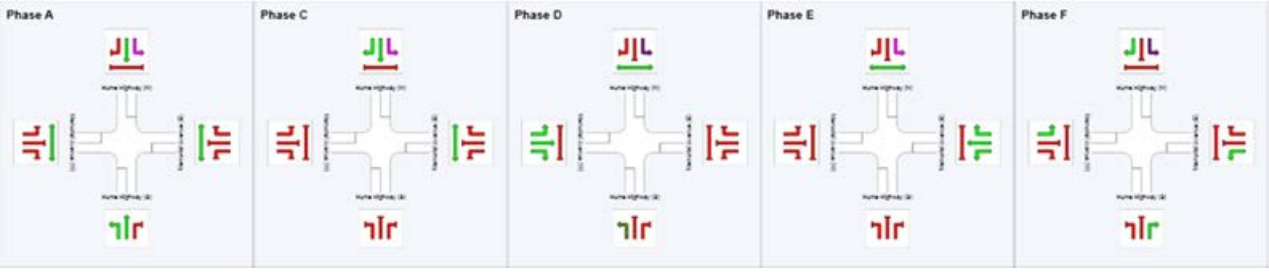
PHASING SUMMARY

Site: I-03 2019 MIMT PM

Hume Highway / Memorial Avenue
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D	E	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	70	82	110	132
Green Time (sec)	64	6	22	16	12
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	70	12	28	22	18
Phase Split	47 %	8 %	19 %	15 %	12 %



I-04 Intersection of the Hume Highway and Hoxton Park Drive

MOVEMENT SUMMARY

Site: I-04 2019 BASE AM

Hume Highway / Hoxton Park Road / Macquarie Street
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	80	6.6	0.064	7.3	LOS A	0.4	2.8	0.07	0.56	52.1
2	T1	1944	5.1	0.725	25.1	LOS B	31.8	232.4	0.70	0.64	41.0
3	R2	1083	1.8	0.963	65.6	LOS E	31.3	222.4	1.00	1.02	23.1
Approach		3107	4.0	0.963	38.7	LOS C	31.8	232.4	0.79	0.77	33.6
East: Macquarie Street (E)											
4	L2	297	5.7	0.192	21.6	LOS B	4.6	33.6	0.65	0.72	38.8
5	T1	414	4.6	0.862	78.6	LOS F	16.4	119.1	1.00	0.97	22.7
Approach		711	5.0	0.862	54.8	LOS D	16.4	119.1	0.85	0.87	27.0
North: Hume Highway (N)											
7	L2	199	15.9	0.859	61.9	LOS E	36.3	277.9	0.97	1.04	25.7
8	T1	1354	8.2	0.859	55.8	LOS D	38.4	287.6	0.95	0.93	29.4
9	R2	196	18.8	0.996	122.7	LOS F	19.4	157.5	1.00	1.14	19.5
Approach		1748	10.2	0.996	64.0	LOS E	38.4	287.6	0.96	0.96	27.3
West: Hoxton Park Road (W)											
10	L2	288	16.4	0.500	47.1	LOS D	16.6	132.3	0.84	0.82	32.6
11	T1	1122	4.2	0.942	81.4	LOS F	33.7	244.6	0.97	1.10	22.2
12	R2	345	3.0	0.997	104.5	LOS F	17.6	126.7	1.00	1.03	20.7
Approach		1756	6.0	0.997	80.3	LOS F	33.7	244.6	0.95	1.04	23.3
All Vehicles		7322	6.1	0.997	56.3	LOS D	38.4	287.6	0.88	0.89	28.3

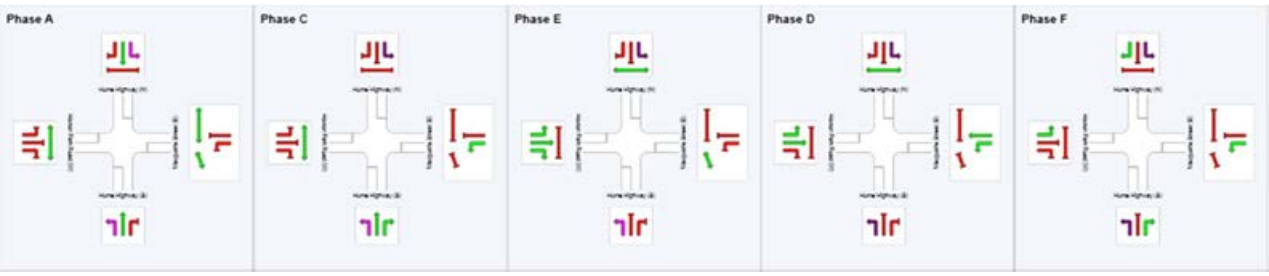
PHASING SUMMARY

Site: I-04 2019 BASE AM

Hume Highway / Hoxton Park Road / Macquarie Street
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	D	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	51	79	101	126
Green Time (sec)	45	22	16	19	18
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	51	28	22	25	24
Phase Split	34 %	19 %	15 %	17 %	16 %



MOVEMENT SUMMARY

Site: I-04 2019 BASE PM

Hume Highway / Hoxton Park Road / Macquarie Street
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	174	5.5	0.143	8.5	LOS A	1.4	10.1	0.12	0.58	51.1
2	T1	1531	5.2	0.586	22.6	LOS B	21.9	160.2	0.59	0.53	42.3
3	R2	420	1.3	0.930	95.1	LOS F	17.8	125.9	1.00	1.00	18.1
Approach		2124	4.4	0.930	35.8	LOS C	21.9	160.2	0.64	0.63	35.3
East: Macquarie Street (E)											
4	L2	705	1.5	0.915	69.6	LOS E	24.1	170.6	0.82	0.91	22.3
5	T1	612	3.3	0.941	84.6	LOS F	25.6	183.9	1.00	1.05	21.7
Approach		1317	2.3	0.941	76.6	LOS F	25.6	183.9	0.91	0.97	22.0
North: Hume Highway (N)											
7	L2	94	5.6	0.885	19.9	LOS B	46.1	330.7	0.69	0.70	44.2
8	T1	2672	2.6	0.885	14.8	LOS B	48.7	348.6	0.64	0.62	47.0
9	R2	252	6.3	1.327	389.1	LOS F	46.0	339.5	1.00	1.70	8.0
Approach		3017	3.0	1.327	46.1	LOS D	48.7	348.6	0.67	0.71	32.4
West: Hoxton Park Road (W)											
10	L2	248	3.8	0.396	45.1	LOS D	13.6	98.4	0.81	0.80	33.4
11	T1	623	3.9	0.381	45.7	LOS D	12.1	87.3	0.85	0.71	30.7
12	R2	343	1.5	1.085	142.3	LOS F	22.2	157.6	1.00	1.15	16.8
Approach		1215	3.2	1.085	72.9	LOS F	22.2	157.6	0.88	0.86	24.9
All Vehicles		7673	3.3	1.327	52.7	LOS D	48.7	348.6	0.74	0.76	29.6

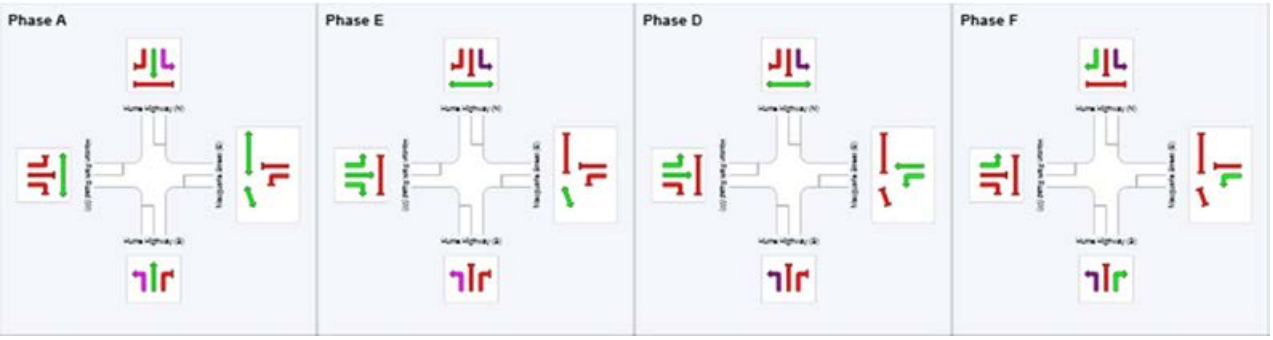
PHASING SUMMARY

Site: I-04 2019 BASE PM

Hume Highway / Hoxton Park Road / Macquarie Street
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	D	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	79	99	128
Green Time (sec)	73	14	23	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	79	20	29	22
Phase Split	53 %	13 %	19 %	15 %



MOVEMENT SUMMARY

Site: I-04 2019 MIMT AM

Hume Highway / Hoxton Park Road / Macquarie Street
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	83	10.3	0.070	7.3	LOS A	0.4	3.1	0.07	0.56	51.9
2	T1	1959	5.8	0.739	25.3	LOS B	32.7	241.6	0.71	0.65	40.8
3	R2	1083	1.8	0.963	65.6	LOS E	31.3	222.4	1.00	1.02	23.1
Approach		3126	4.6	0.963	38.8	LOS C	32.7	241.6	0.79	0.78	33.5
East: Macquarie Street (E)											
4	L2	297	5.7	0.192	21.6	LOS B	4.6	33.6	0.65	0.72	38.8
5	T1	414	4.6	0.862	78.6	LOS F	16.4	119.1	1.00	0.97	22.7
Approach		711	5.0	0.862	54.8	LOS D	16.4	119.1	0.85	0.87	27.0
North: Hume Highway (N)											
7	L2	199	15.9	0.884	65.5	LOS E	39.0	301.9	0.99	1.07	24.9
8	T1	1383	9.2	0.884	59.1	LOS E	40.7	310.1	0.96	0.96	28.5
9	R2	196	18.8	0.996	122.7	LOS F	19.4	157.5	1.00	1.14	19.5
Approach		1778	11.0	0.996	66.8	LOS E	40.7	310.1	0.97	1.00	26.6
West: Hoxton Park Road (W)											
10	L2	288	16.4	0.500	47.1	LOS D	16.6	132.3	0.84	0.82	32.6
11	T1	1122	4.2	0.943	81.7	LOS F	33.8	244.9	0.97	1.10	22.2
12	R2	348	3.5	1.011	112.2	LOS F	18.4	133.5	1.00	1.05	19.8
Approach		1758	6.1	1.011	82.1	LOS F	33.8	244.9	0.95	1.04	23.0
All Vehicles		7372	6.5	1.011	57.4	LOS E	40.7	310.1	0.88	0.90	28.0

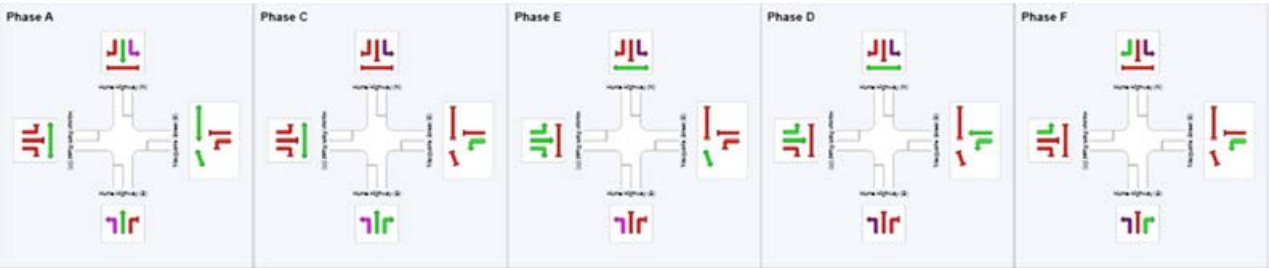
PHASING SUMMARY

Site: I-04 2019 MIMT AM

Hume Highway / Hoxton Park Road / Macquarie Street
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	D	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	51	79	101	126
Green Time (sec)	45	22	16	19	18
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	51	28	22	25	24
Phase Split	34 %	19 %	15 %	17 %	16 %



MOVEMENT SUMMARY

Site: I-04 2019 MIMT PM

Hume Highway / Hoxton Park Road / Macquarie Street
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	176	6.4	0.147	8.5	LOS A	1.4	10.5	0.12	0.58	51.1
2	T1	1563	6.3	0.609	22.9	LOS B	23.0	171.6	0.61	0.54	42.1
3	R2	420	1.3	0.930	95.1	LOS F	17.8	125.9	1.00	1.00	18.1
Approach		2159	5.4	0.930	35.8	LOS C	23.0	171.6	0.64	0.64	35.3
East: Macquarie Street (E)											
4	L2	705	1.5	0.915	69.6	LOS E	24.1	170.5	0.82	0.91	22.3
5	T1	612	3.3	0.941	84.6	LOS F	25.6	183.9	1.00	1.05	21.7
Approach		1317	2.3	0.941	76.6	LOS F	25.6	183.9	0.91	0.97	22.0
North: Hume Highway (N)											
7	L2	94	5.6	0.898	21.1	LOS B	49.2	356.8	0.72	0.73	43.3
8	T1	2691	3.3	0.898	16.1	LOS B	51.7	374.4	0.66	0.65	46.1
9	R2	252	6.3	1.327	389.1	LOS F	46.0	339.5	1.00	1.70	8.0
Approach		3036	3.6	1.327	47.1	LOS D	51.7	374.4	0.69	0.74	32.1
West: Hoxton Park Road (W)											
10	L2	248	3.8	0.396	45.1	LOS D	13.6	98.4	0.81	0.80	33.4
11	T1	623	3.9	0.381	45.7	LOS D	12.1	87.3	0.85	0.71	30.7
12	R2	347	2.7	1.115	158.4	LOS F	24.1	174.1	1.00	1.20	15.5
Approach		1219	3.5	1.115	77.7	LOS F	24.1	174.1	0.88	0.87	24.0
All Vehicles		7731	3.9	1.327	53.8	LOS D	51.7	374.4	0.75	0.77	29.3

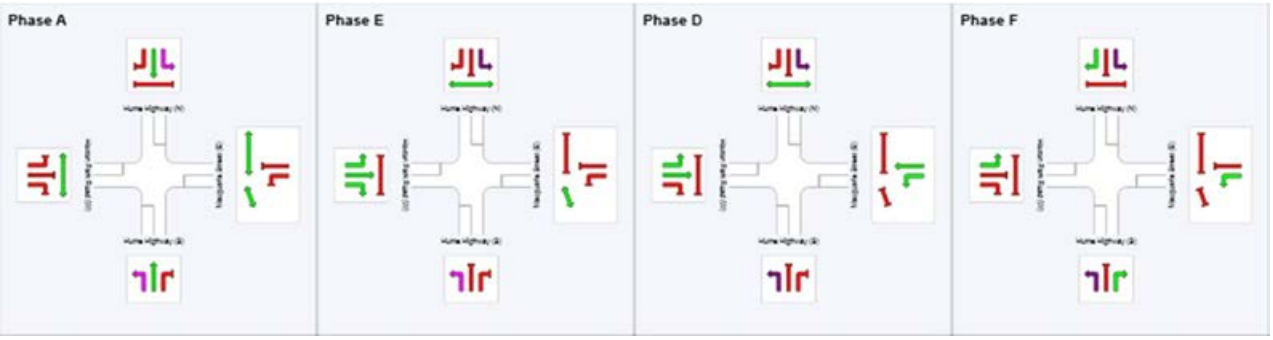
PHASING SUMMARY

Site: I-04 2019 MIMT PM

Hume Highway / Hoxton Park Road / Macquarie Street
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	D	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	79	99	128
Green Time (sec)	73	14	23	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	79	20	29	22
Phase Split	53 %	13 %	19 %	15 %



I-05 Intersection of the Hume Highway and Reilly Street

MOVEMENT SUMMARY

Site: I-05 2019 BASE AM

Hume Highway / Reilly Street
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Hignway (S)											
1	L2	73	2.9	0.839	18.2	LOS B	40.4	291.2	0.62	0.60	43.5
2	T1	2891	3.6	0.839	11.9	LOS A	40.4	291.2	0.59	0.56	45.7
3	R2	13	8.3	0.077	20.1	LOS B	0.4	3.1	0.45	0.66	38.4
Approach		2976	3.6	0.839	12.1	LOS A	40.4	291.2	0.59	0.56	45.6
East: Congressional Drive (E)											
4	L2	43	2.4	0.239	59.7	LOS E	5.2	37.7	0.89	0.73	24.4
5	T1	41	5.1	0.239	55.1	LOS D	5.2	37.7	0.89	0.73	23.9
6	R2	81	3.9	0.374	66.5	LOS E	5.4	39.2	0.94	0.78	18.8
Approach		165	3.8	0.374	61.9	LOS E	5.4	39.2	0.91	0.75	21.6
North: Hume Hignway (N)											
7	L2	28	3.7	0.503	15.7	LOS B	21.2	157.7	0.49	0.46	41.3
8	T1	1664	7.2	0.503	9.6	LOS A	21.3	158.5	0.46	0.43	47.9
9	R2	88	1.2	0.603	34.4	LOS C	4.9	34.6	1.00	0.85	29.9
Approach		1781	6.9	0.603	11.0	LOS A	21.3	158.5	0.49	0.45	46.4
West: Reilly Street (W)											
10	L2	105	4.0	0.243	50.6	LOS D	6.7	48.4	0.83	0.75	24.4
11	T1	12	9.1	0.243	46.1	LOS D	6.7	48.4	0.83	0.75	25.5
12	R2	217	1.9	0.940	97.8	LOS F	19.4	138.3	1.00	1.06	19.4
Approach		334	2.8	0.940	81.1	LOS F	19.4	138.3	0.94	0.95	20.7
All Vehicles		5256	4.7	0.940	17.7	LOS B	40.4	291.2	0.59	0.55	40.8

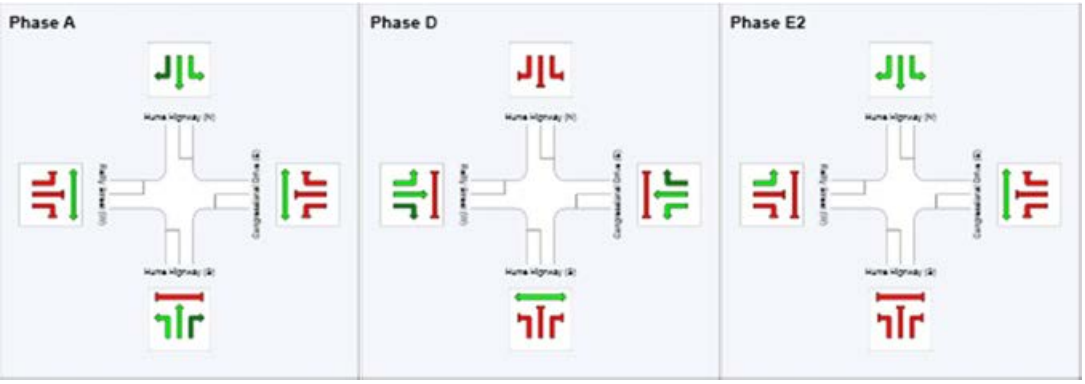
PHASING SUMMARY

Site: I-05 2019 BASE AM

Hume Highway / Reilly Street
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	100	137
Green Time (sec)	94	31	7
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	100	37	13
Phase Split	67 %	25 %	9 %



MOVEMENT SUMMARY

Site: I-05 2019 BASE PM

Hume Highway / Reilly Street
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Hignway (S)											
1	L2	219	0.5	0.643	19.4	LOS B	24.7	177.5	0.51	0.56	42.0
2	T1	2004	4.5	0.643	11.4	LOS A	24.7	177.5	0.44	0.43	45.9
3	R2	21	5.0	0.375	29.3	LOS C	1.0	7.3	0.60	0.73	33.8
Approach		2244	4.1	0.643	12.4	LOS A	24.7	177.5	0.45	0.44	45.2
East: Congressional Drive (E)											
4	L2	37	2.9	0.169	59.6	LOS E	3.6	25.7	0.88	0.72	24.3
5	T1	22	0.0	0.169	55.0	LOS D	3.6	25.7	0.88	0.72	23.8
6	R2	45	0.0	0.187	62.2	LOS E	2.9	20.0	0.89	0.74	19.7
Approach		104	1.0	0.187	59.8	LOS E	3.6	25.7	0.88	0.73	22.3
North: Hume Hignway (N)											
7	L2	63	0.0	0.937	18.5	LOS B	51.7	368.3	0.52	0.54	39.0
8	T1	3417	2.2	0.937	14.8	LOS B	51.7	368.3	0.41	0.45	43.3
9	R2	164	1.3	0.805	51.3	LOS D	10.8	76.6	1.00	0.99	24.7
Approach		3644	2.2	0.937	16.5	LOS B	51.7	368.3	0.44	0.47	41.8
West: Reilly Street (W)											
10	L2	60	0.0	0.202	54.0	LOS D	5.2	36.2	0.85	0.73	24.0
11	T1	28	0.0	0.202	49.5	LOS D	5.2	36.2	0.85	0.73	25.0
12	R2	238	1.8	0.972	109.4	LOS F	22.8	161.7	1.00	1.11	18.0
Approach		326	1.3	0.972	94.0	LOS F	22.8	161.7	0.96	1.01	19.2
All Vehicles		6319	2.8	0.972	19.8	LOS B	51.7	368.3	0.48	0.49	39.4

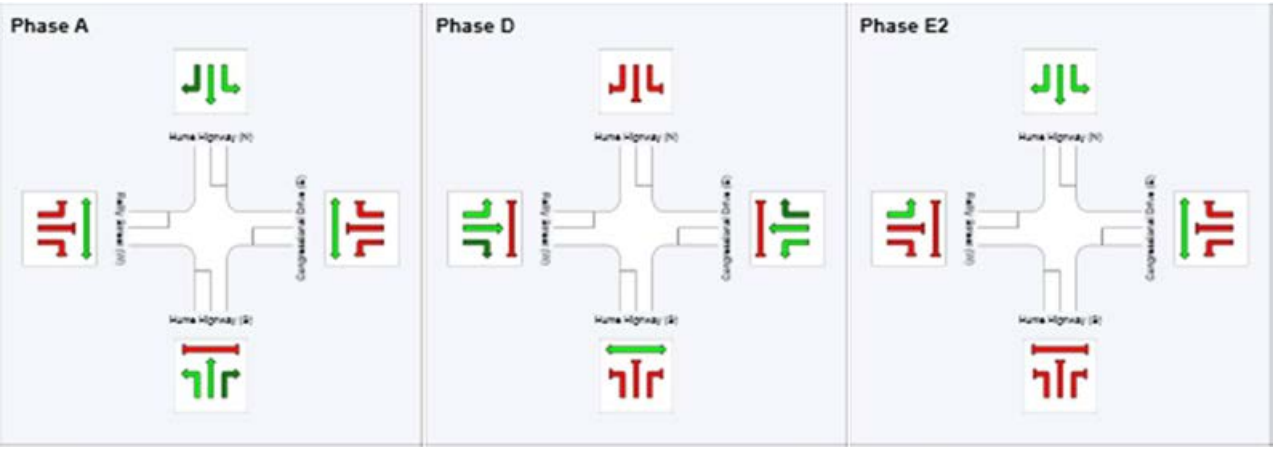
PHASING SUMMARY

Site: I-05 2019 BASE PM

Hume Highway / Reilly Street
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	98	135
Green Time (sec)	92	31	9
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	98	37	15
Phase Split	65 %	25 %	10 %



MOVEMENT SUMMARY

Site: I-05 2019 MIMT AM

Hume Highway / Reilly Street
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Hignway (S)											
1	L2	73	2.9	0.851	18.4	LOS B	42.1	306.6	0.64	0.62	43.4
2	T1	2909	4.2	0.851	12.1	LOS A	42.1	306.6	0.61	0.58	45.6
3	R2	13	8.3	0.083	21.7	LOS B	0.4	3.2	0.47	0.66	37.6
Approach		2994	4.2	0.851	12.3	LOS A	42.1	306.6	0.61	0.58	45.5
East: Congressional Drive (E)											
4	L2	43	2.4	0.231	58.7	LOS E	5.2	37.3	0.88	0.73	24.6
5	T1	41	5.1	0.231	54.1	LOS D	5.2	37.3	0.88	0.73	24.1
6	R2	81	3.9	0.361	65.5	LOS E	5.4	38.8	0.93	0.78	19.0
Approach		165	3.8	0.361	60.9	LOS E	5.4	38.8	0.91	0.75	21.8
North: Hume Hignway (N)											
7	L2	28	3.7	0.530	17.6	LOS B	19.9	150.0	0.51	0.55	39.7
8	T1	1696	8.2	0.530	10.8	LOS A	23.1	174.4	0.48	0.47	46.8
9	R2	88	1.2	0.664	38.8	LOS C	5.2	36.7	1.00	0.88	28.3
Approach		1813	7.8	0.664	12.3	LOS A	23.1	174.4	0.51	0.49	45.2
West: Reilly Street (W)											
10	L2	105	4.0	0.240	49.8	LOS D	6.6	48.0	0.82	0.75	24.6
11	T1	12	9.1	0.240	45.2	LOS D	6.6	48.0	0.82	0.75	25.7
12	R2	218	1.9	0.909	89.0	LOS F	18.5	131.8	1.00	1.02	20.6
Approach		335	2.8	0.909	75.2	LOS F	18.5	131.8	0.94	0.93	21.7
All Vehicles		5307	5.3	0.909	17.7	LOS B	42.1	306.6	0.61	0.58	40.7

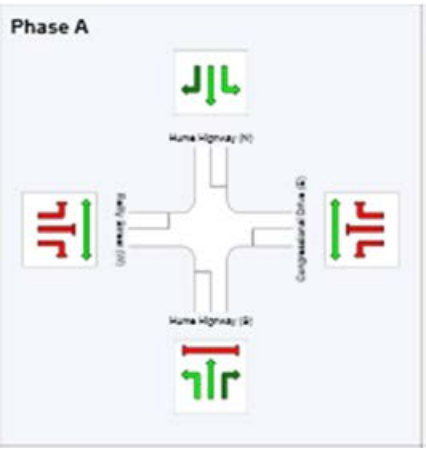
PHASING SUMMARY

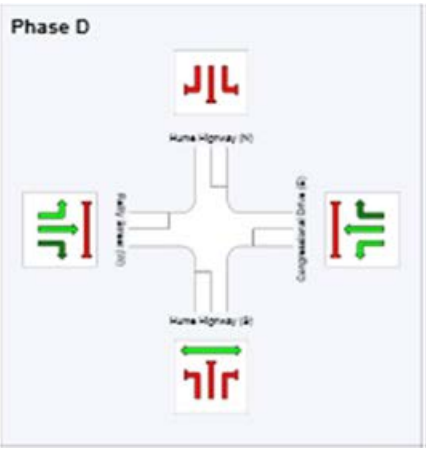
Site: I-05 2019 MIMT AM

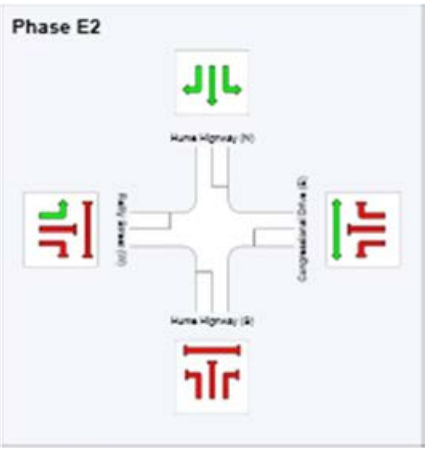
Hume Highway / Reilly Street
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	100	138
Green Time (sec)	94	32	6
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	100	38	12
Phase Split	67 %	25 %	8 %







MOVEMENT SUMMARY

Site: I-05 2019 MIMT PM

Hume Highway / Reilly Street
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Hignway (S)											
1	L2	220	0.5	0.660	19.6	LOS B	25.7	187.3	0.52	0.57	41.9
2	T1	2039	5.5	0.660	11.6	LOS A	25.7	187.3	0.45	0.44	45.7
3	R2	21	5.0	0.379	30.7	LOS C	1.0	7.5	0.62	0.73	33.2
Approach		2280	5.0	0.660	12.6	LOS A	25.7	187.3	0.46	0.45	45.1
East: Congressional Drive (E)											
4	L2	37	2.9	0.169	59.6	LOS E	3.6	25.7	0.88	0.72	24.3
5	T1	22	0.0	0.169	55.0	LOS D	3.6	25.7	0.88	0.72	23.8
6	R2	45	0.0	0.187	62.2	LOS E	2.9	20.0	0.89	0.74	19.7
Approach		104	1.0	0.187	59.8	LOS E	3.6	25.7	0.88	0.73	22.3
North: Hume Hignway (N)											
7	L2	63	0.0	0.954	25.0	LOS B	64.9	467.8	0.60	0.65	34.5
8	T1	3440	2.9	0.954	21.5	LOS B	64.9	467.8	0.47	0.54	38.5
9	R2	164	1.3	0.824	58.0	LOS E	11.2	79.2	1.00	1.01	23.0
Approach		3668	2.8	0.954	23.2	LOS B	64.9	467.8	0.50	0.56	37.3
West: Reilly Street (W)											
10	L2	60	0.0	0.202	54.0	LOS D	5.2	36.2	0.85	0.73	24.0
11	T1	28	0.0	0.202	49.5	LOS D	5.2	36.2	0.85	0.73	25.0
12	R2	238	1.8	0.972	109.5	LOS F	22.8	161.8	1.00	1.11	18.0
Approach		326	1.3	0.972	94.1	LOS F	22.8	161.8	0.96	1.01	19.2
All Vehicles		6378	3.5	0.972	23.6	LOS B	64.9	467.8	0.52	0.55	37.0

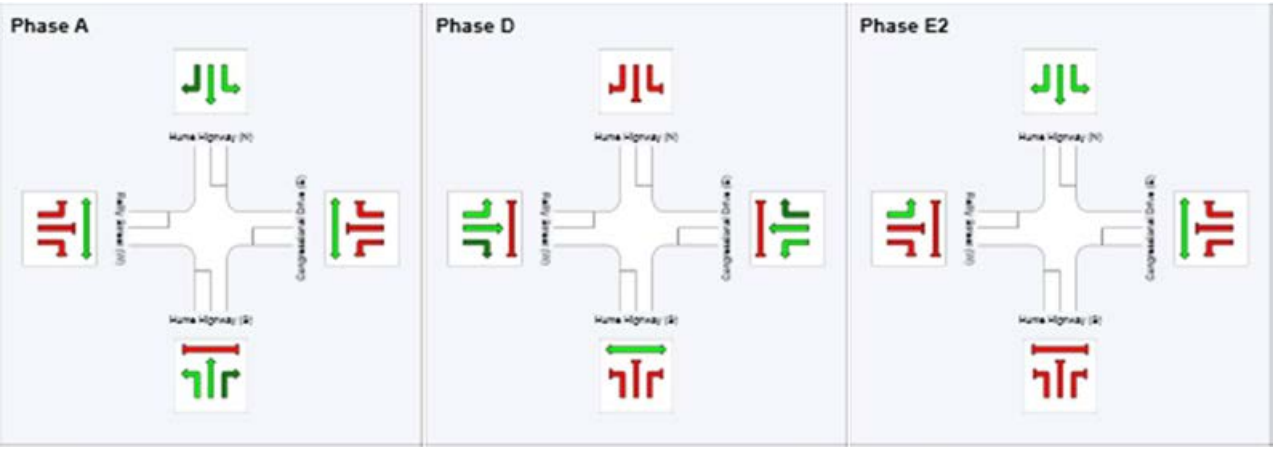
PHASING SUMMARY

Site: I-05 2019 MIMT PM

Hume Highway / Reilly Street
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	98	135
Green Time (sec)	92	31	9
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	98	37	15
Phase Split	65 %	25 %	10 %



I-06 Intersection of Newbridge Road and Moorebank Avenue

MOVEMENT SUMMARY

Site: I-06 2019 BASE AM

Network: 2019 BASE AM

Newbridge Road / Moorebank Avenue
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	1308	3.2	1245	3.2	0.642	19.1	LOS B	14.0	100.8	0.57	0.82	42.2
3	R2	1175	9.1	1118	9.1	0.656	15.0	LOS B	13.5	102.2	0.41	0.68	52.7
Approach		2483	6.0	2362 N1	6.0	0.656	17.2	LOS B	14.0	102.2	0.49	0.76	47.9
East: Newbridge Road (E)													
4	L2	534	19.7	534	19.7	0.443	17.6	LOS B	5.9	48.4	0.66	0.77	52.6
5	T1	789	5.2	789	5.2	1.031	123.5	LOS F	39.2	286.8	1.00	1.30	28.1
Approach		1323	11.1	1323	11.1	1.031	80.8	LOS F	39.2	286.8	0.86	1.09	32.6
West: Newbridge Road (W)													
11	T1	1272	6.5	1272	6.5	0.685	9.3	LOS A	16.2	119.7	0.43	0.39	62.9
12	R2	657	7.4	657	7.4	1.115	132.5	LOS F	34.6	257.2	1.00	1.21	13.3
Approach		1928	6.8	1928	6.8	1.115	51.3	LOS D	34.6	257.2	0.62	0.67	39.1
All Vehicles		5735	7.4	5614 N1	7.6	1.115	43.9	LOS D	39.2	286.8	0.63	0.80	39.2

PHASING SUMMARY

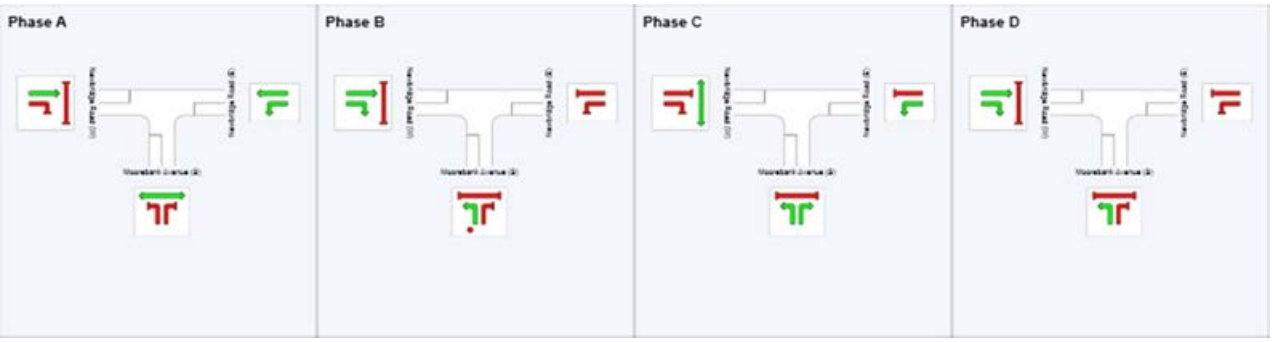
Site: I-06 2019 BASE AM

Network: 2019 BASE AM

Newbridge Road / Moorebank Avenue
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	33	55	116
Green Time (sec)	27	16	55	11
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	22	61	17
Phase Split	25 %	17 %	46 %	13 %



MOVEMENT SUMMARY

Site: I-06 2019 BASE PM

Network: 2019 BASE PM

Newbridge Road / Moorebank Avenue
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	796	3.4	790	3.4	0.451	21.9	LOS B	11.1	80.1	0.54	0.74	40.2
3	R2	783	10.8	777	10.8	1.006	82.1	LOS F	17.1	130.6	1.00	1.09	27.9
Approach		1579	7.1	1567 N1	7.1	1.006	51.7	LOS D	17.1	130.6	0.77	0.91	31.6
East: Newbridge Road (E)													
4	L2	1074	5.1	1074	5.1	0.762	26.8	LOS B	24.9	182.2	0.75	0.82	46.3
5	T1	1195	4.8	1195	4.8	0.803	38.1	LOS C	30.0	218.3	0.93	0.85	47.9
Approach		2268	4.9	2268	4.9	0.803	32.7	LOS C	30.0	218.3	0.84	0.84	47.3
West: Newbridge Road (W)													
11	T1	945	2.7	945	2.7	0.367	8.7	LOS A	11.4	81.6	0.47	0.42	63.3
12	R2	963	2.6	963	2.6	0.959	56.9	LOS E	33.4	239.3	0.99	0.99	24.7
Approach		1908	2.6	1908	2.6	0.959	33.0	LOS C	33.4	239.3	0.73	0.71	44.2
All Vehicles		5756	4.8	5744 N1	4.8	1.006	38.0	LOS C	33.4	239.3	0.79	0.81	41.9

PHASING SUMMARY

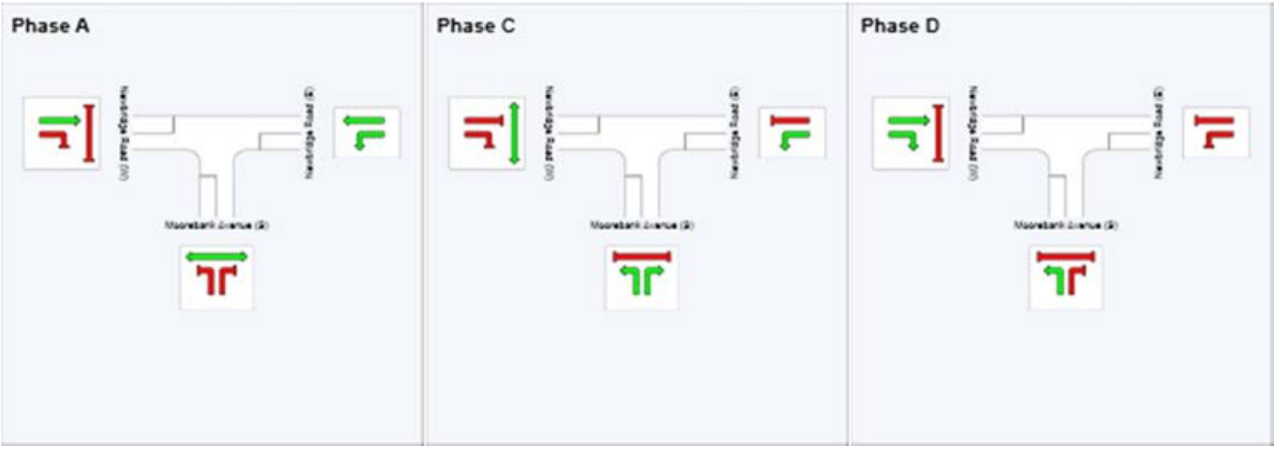
Site: I-06 2019 BASE PM

Network: 2019 BASE PM

Newbridge Road / Moorebank Avenue
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	44	76
Green Time (sec)	38	26	34
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	44	32	40
Phase Split	38 %	28 %	34 %



MOVEMENT SUMMARY

Site: I-06 2019 MIMT AM

Network: 2019 MIMT AM

Newbridge Road / Moorebank Avenue
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	1308	3.2	1229	3.2	0.634	19.0	LOS B	13.6	97.5	0.56	0.82	42.3
3	R2	1197	10.7	1125	10.8	0.674	15.1	LOS B	14.1	109.3	0.42	0.69	52.5
Approach		2505	6.8	2354 N1	6.8	0.674	17.1	LOS B	14.1	109.3	0.50	0.76	47.9
East: Newbridge Road (E)													
4	L2	549	21.1	549	21.1	0.427	17.5	LOS B	6.1	51.3	0.65	0.77	52.7
5	T1	789	5.2	789	5.2	1.031	123.5	LOS F	39.2	286.8	1.00	1.30	28.1
Approach		1339	11.7	1339	11.7	1.031	80.0	LOS F	39.2	286.8	0.86	1.08	32.7
West: Newbridge Road (W)													
11	T1	1272	6.5	1272	6.5	0.685	9.3	LOS A	16.2	119.7	0.43	0.39	62.9
12	R2	662	7.3	662	7.3	1.099	154.4	LOS F	32.5	241.6	1.00	1.26	11.7
Approach		1934	6.8	1934	6.8	1.099	59.0	LOS E	32.5	241.6	0.63	0.69	36.7
All Vehicles		5778	7.9	5627 N1	8.1	1.099	46.5	LOS D	39.2	286.8	0.63	0.81	38.3

PHASING SUMMARY

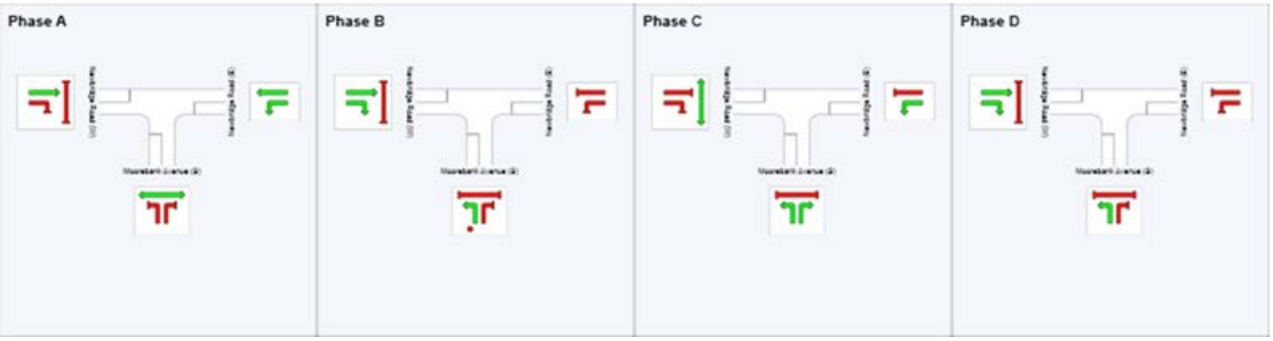
Site: I-06 2019 MIMT AM

Network: 2019 MIMT AM

Newbridge Road / Moorebank Avenue
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	33	55	116
Green Time (sec)	27	16	55	11
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	22	61	17
Phase Split	25 %	17 %	46 %	13 %



MOVEMENT SUMMARY

Site: I-06 2019 MIMT PM

Network: 2019 MIMT PM

Newbridge Road / Moorebank Avenue
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	801	3.4	794	3.4	0.454	21.9	LOS B	11.2	80.7	0.54	0.74	40.2
3	R2	800	12.0	794	12.0	1.043	105.9	LOS F	16.7	130.6	1.00	1.17	23.8
Approach		1601	7.7	1588 N1	7.7	1.043	63.9	LOS E	16.7	130.6	0.77	0.95	28.2
East: Newbridge Road (E)													
4	L2	1092	6.7	1092	6.7	0.843	36.0	LOS C	25.7	192.7	0.77	0.87	41.5
5	T1	1195	4.8	1195	4.8	0.803	38.1	LOS C	30.0	218.3	0.93	0.85	47.9
Approach		2286	5.7	2286	5.7	0.843	37.1	LOS C	30.0	218.3	0.85	0.86	45.3
West: Newbridge Road (W)													
11	T1	956	3.7	956	3.7	0.373	8.8	LOS A	11.6	83.7	0.47	0.42	63.3
12	R2	963	2.6	963	2.6	1.016	85.7	LOS F	38.9	278.2	1.00	1.08	18.6
Approach		1919	3.2	1919	3.2	1.016	47.4	LOS D	38.9	278.2	0.74	0.75	38.1
All Vehicles		5806	5.4	5793 N1	5.4	1.043	47.8	LOS D	38.9	278.2	0.79	0.85	38.0

PHASING SUMMARY

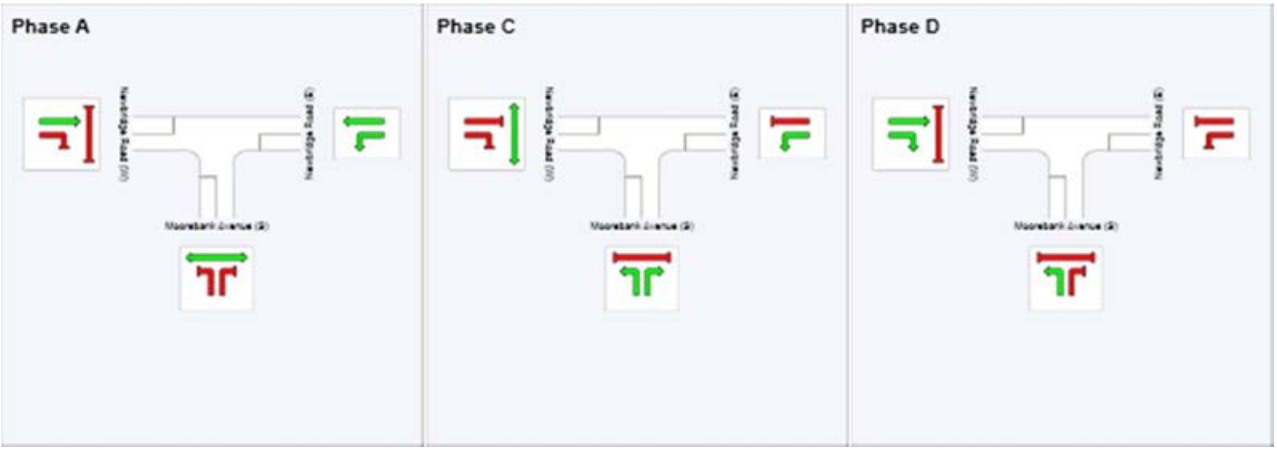
Site: I-06 2019 MIMT PM

Network: 2019 MIMT PM

Newbridge Road / Moorebank Avenue
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	44	76
Green Time (sec)	38	26	34
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	44	32	40
Phase Split	38 %	28 %	34 %



MOVEMENT SUMMARY

Site: I-06 2019 MIMT AM

Network: 2019 MIMT AM - Upgrade Option

Newbridge Road / Moorebank Avenue
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	1308	3.2	1239	3.2	0.639	19.1	LOS B	13.8	99.5	0.57	0.82	42.2
3	R2	1197	10.7	1133	10.7	0.679	15.1	LOS B	14.3	111.1	0.42	0.69	52.5
Approach		2505	6.8	2372 N1	6.8	0.679	17.2	LOS B	14.3	111.1	0.50	0.76	47.8
East: Newbridge Road (E)													
4	L2	549	21.1	549	21.1	0.409	17.3	LOS B	6.0	50.1	0.64	0.77	52.8
5	T1	789	5.2	789	5.2	1.031	123.5	LOS F	39.2	286.8	1.00	1.30	28.1
Approach		1339	11.7	1339	11.7	1.031	79.9	LOS F	39.2	286.8	0.85	1.08	32.7
West: Newbridge Road (W)													
11	T1	1272	6.5	1272	6.5	0.685	9.3	LOS A	16.2	119.7	0.43	0.39	62.9
12	R2	662	7.3	662	7.3	1.068	130.5	LOS F	28.9	214.8	1.00	1.20	13.4
Approach		1934	6.8	1934	6.8	1.068	50.8	LOS D	28.9	214.8	0.63	0.67	39.3
All Vehicles		5778	7.9	5645 N1	8.1	1.068	43.6	LOS D	39.2	286.8	0.63	0.81	39.3

PHASING SUMMARY

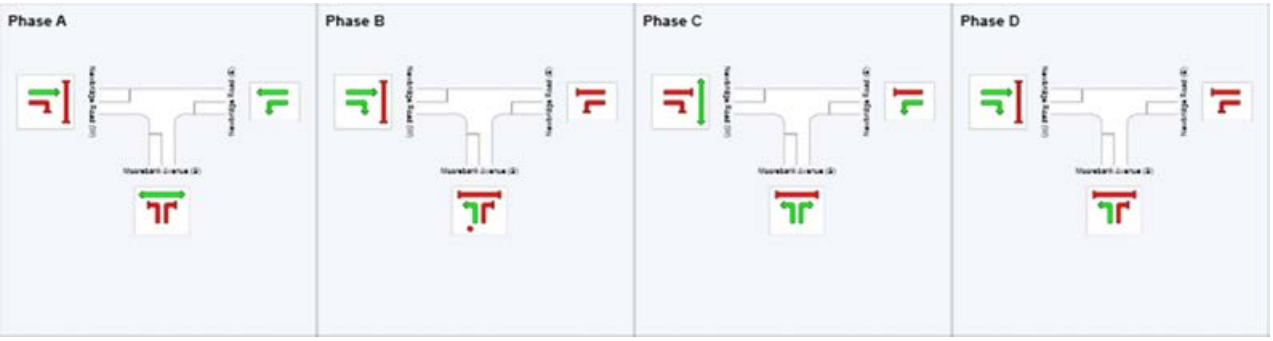
Site: I-06 2019 MIMT AM

Network: 2019 MIMT AM - Upgrade Option

Newbridge Road / Moorebank Avenue
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	33	55	116
Green Time (sec)	27	16	55	11
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	22	61	17
Phase Split	25 %	17 %	46 %	13 %



MOVEMENT SUMMARY

Site: I-06 2019 MIMT PM

Network: 2019 MIMT PM - Upgrade Option

Newbridge Road / Moorebank Avenue
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	801	3.4	801	3.4	0.458	22.0	LOS B	11.3	81.6	0.54	0.74	40.2
3	R2	800	12.0	800	12.0	1.051	111.9	LOS F	16.7	130.6	1.00	1.19	23.0
Approach		1601	7.7	1601	7.7	1.051	66.9	LOS E	16.7	130.6	0.77	0.96	27.5
East: Newbridge Road (E)													
4	L2	1092	6.7	1092	6.7	0.843	36.0	LOS C	25.7	192.7	0.77	0.87	41.5
5	T1	1195	4.8	1195	4.8	0.803	38.1	LOS C	30.0	218.3	0.93	0.85	47.9
Approach		2286	5.7	2286	5.7	0.843	37.1	LOS C	30.0	218.3	0.85	0.86	45.3
West: Newbridge Road (W)													
11	T1	956	3.7	956	3.7	0.373	8.8	LOS A	11.6	83.7	0.47	0.42	63.3
12	R2	963	2.6	963	2.6	1.016	85.7	LOS F	38.9	278.2	1.00	1.08	18.6
Approach		1919	3.2	1919	3.2	1.016	47.4	LOS D	38.9	278.2	0.74	0.75	38.1
All Vehicles		5806	5.4	5806	5.4	1.051	48.7	LOS D	38.9	278.2	0.79	0.85	37.7

PHASING SUMMARY

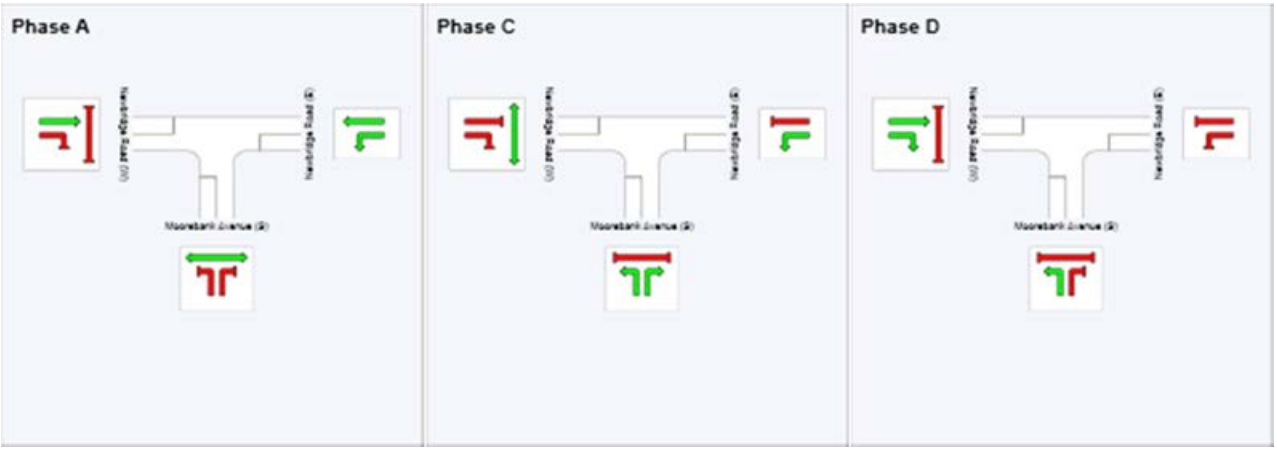
Site: I-06 2019 MIMT PM

Network: 2019 MIMT PM - Upgrade Option

Newbridge Road / Moorebank Avenue
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	44	76
Green Time (sec)	38	26	34
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	44	32	40
Phase Split	38 %	28 %	34 %



I-07 Intersection of Moorebank Avenue and Heathcote Road

MOVEMENT SUMMARY

Site: I-07 2019 BASE AM

Network: 2019 BASE AM

Moorebank Avenue / Heathcote Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	1674	5.7	1674	5.7	1.041	76.9	LOS F	60.0	440.6	0.98	1.27	11.1
3	R2	21	20.0	21	20.0	0.191	71.9	LOS F	1.4	11.1	0.98	0.71	30.5
Approach		1695	5.9	1695	5.9	1.041	76.8	LOS F	60.0	440.6	0.98	1.27	11.4
East: Heathcote Road (E)													
4	L2	23	59.1	23	59.1	1.157	231.3	LOS F	59.9	451.5	1.00	1.46	12.6
6	R2	804	6.0	804	6.0	1.157	186.1	LOS F	59.9	451.5	1.00	1.35	14.9
Approach		827	7.5	827	7.5	1.157	187.3	LOS F	59.9	451.5	1.00	1.36	14.8
North: Moorebank Avenue (N)													
7	L2	599	7.7	582	7.8	0.352	10.6	LOS A	11.3	84.4	0.53	0.71	51.5
8	T1	607	17.0	591	17.2	0.334	20.8	LOS B	11.2	90.3	0.64	0.55	13.4
Approach		1206	12.4	1172 N1	12.5	0.352	15.8	LOS B	11.3	90.3	0.59	0.63	41.6
All Vehicles		3728	8.4	3694 N1	8.4	1.157	82.2	LOS F	60.0	451.5	0.86	1.08	17.4

PHASING SUMMARY

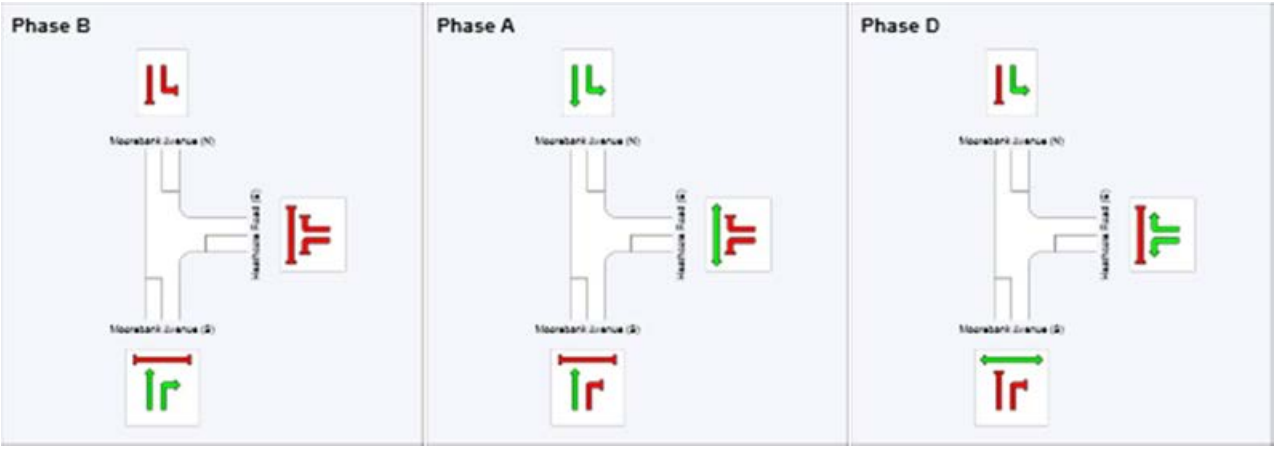
Site: I-07 2019 BASE AM

Network: 2019 BASE AM

Moorebank Avenue / Heathcote Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	15	88
Green Time (sec)	9	67	39
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	73	45
Phase Split	11 %	55 %	34 %



MOVEMENT SUMMARY

Site: I-07 2019 BASE PM

Network: 2019 BASE PM

Moorebank Avenue / Heathcote Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	963	8.4	963	8.4	0.727	15.3	LOS B	21.1	158.7	0.72	0.66	31.9
3	R2	42	7.5	42	7.5	0.346	64.3	LOS E	2.4	17.9	0.99	0.74	32.3
Approach		1005	8.4	1005	8.4	0.727	17.4	LOS B	21.1	158.7	0.73	0.66	31.9
East: Heathcote Road (E)													
4	L2	65	19.4	65	19.4	1.067	126.4	LOS F	43.0	319.8	1.00	1.24	19.6
6	R2	624	5.1	624	5.1	1.067	95.5	LOS F	43.0	319.8	0.98	1.12	23.5
Approach		689	6.4	689	6.4	1.067	98.4	LOS F	43.0	319.8	0.99	1.13	23.1
North: Moorebank Avenue (N)													
7	L2	771	3.6	771	3.6	0.366	7.5	LOS A	5.1	37.1	0.24	0.61	53.8
8	T1	1268	4.1	1268	4.1	0.645	6.2	LOS A	11.0	79.8	0.34	0.30	29.6
Approach		2039	3.9	2039	3.9	0.645	6.7	LOS A	11.0	79.8	0.30	0.42	48.7
All Vehicles		3734	5.6	3734	5.6	1.067	26.5	LOS B	43.0	319.8	0.54	0.62	33.0

PHASING SUMMARY

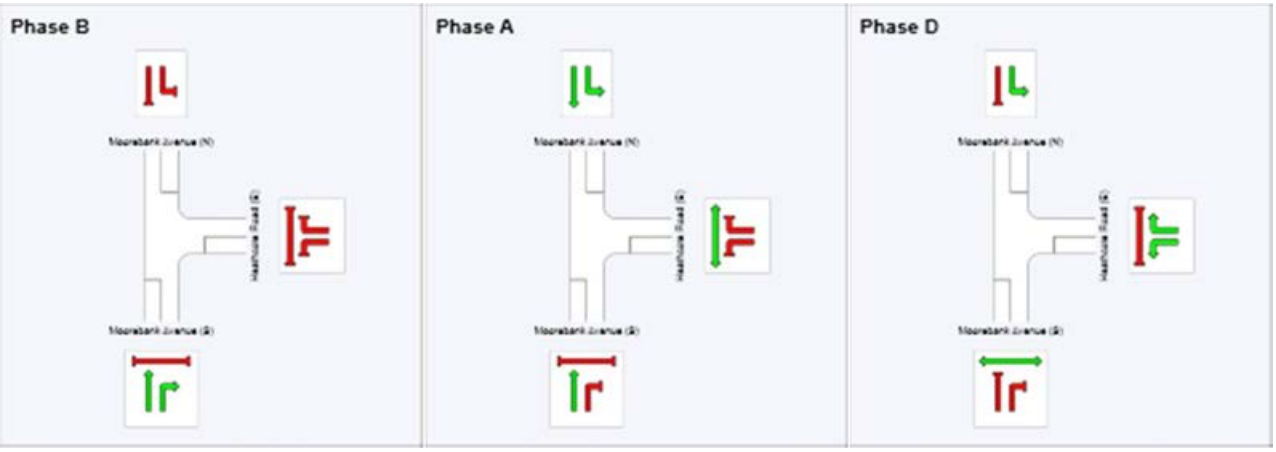
Site: I-07 2019 BASE PM

Network: 2019 BASE PM

Moorebank Avenue / Heathcote Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	14	80
Green Time (sec)	8	60	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	66	36
Phase Split	12 %	57 %	31 %



MOVEMENT SUMMARY

Site: I-07 2019 MIMT AM

Network: 2019 MIMT AM

Moorebank Avenue / Heathcote Road
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	1697	7.0	1697	7.0	1.052	126.9	LOS F	58.7	440.6	1.00	1.54	7.2
3	R2	21	20.0	21	20.0	0.191	71.9	LOS F	1.4	11.1	0.98	0.71	30.5
Approach		1718	7.2	1718	7.2	1.108	126.3	LOS F	58.7	440.6	1.00	1.53	7.5
East: Heathcote Road (E)													
4	L2	23	59.1	23	59.1	1.230	294.4	LOS F	69.8	525.4	1.00	1.60	10.4
6	R2	804	6.0	804	6.0	1.230	244.6	LOS F	69.8	525.4	1.00	1.49	12.0
Approach		827	7.5	827	7.5	1.230	246.0	LOS F	69.8	525.4	1.00	1.50	12.0
North: Moorebank Avenue (N)													
7	L2	599	7.7	570	7.9	0.344	10.6	LOS A	11.0	82.2	0.53	0.70	51.5
8	T1	628	18.1	600	18.5	0.345	21.0	LOS B	11.5	94.5	0.64	0.56	13.3
Approach		1227	13.0	1171 N1	13.3	0.345	15.9	LOS B	11.5	94.5	0.59	0.63	41.3
All Vehicles		3773	9.2	3716 N1	9.3	1.230	118.2	LOS F	69.8	525.4	0.87	1.24	13.2

PHASING SUMMARY

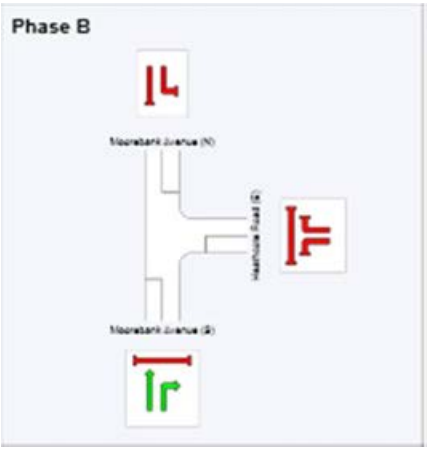
Site: I-07 2019 MIMT AM

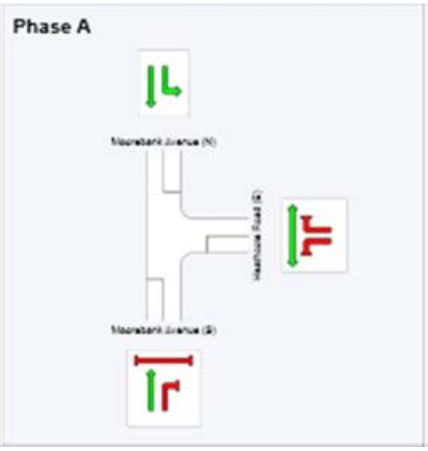
Network: 2019 MIMT AM

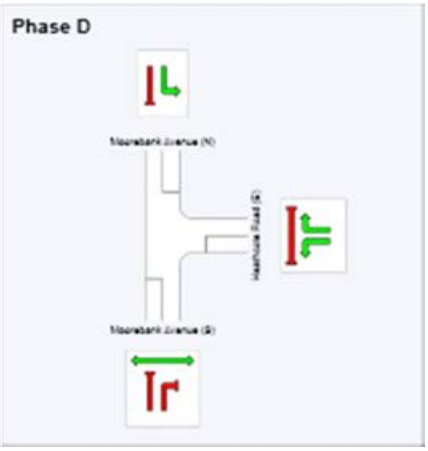
Moorebank Avenue / Heathcote Road
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	15	88
Green Time (sec)	9	67	39
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	73	45
Phase Split	11 %	55 %	34 %







MOVEMENT SUMMARY

Site: I-07 2019 MIMT PM

Network: 2019 MIMT PM

Moorebank Avenue / Heathcote Road
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	985	9.4	985	9.4	0.753	16.6	LOS B	22.3	170.4	0.74	0.69	30.7
3	R2	42	7.5	42	7.5	0.346	64.3	LOS E	2.4	17.9	0.99	0.74	32.3
Approach		1027	9.3	1027	9.3	0.753	18.5	LOS B	22.3	170.4	0.75	0.69	31.0
East: Heathcote Road (E)													
4	L2	65	19.4	65	19.4	1.072	130.6	LOS F	43.7	324.5	1.00	1.26	19.2
6	R2	624	5.1	624	5.1	1.072	98.1	LOS F	43.7	324.5	0.98	1.13	23.1
Approach		689	6.4	689	6.4	1.072	101.2	LOS F	43.7	324.5	0.99	1.14	22.7
North: Moorebank Avenue (N)													
7	L2	771	3.6	765	3.6	0.360	7.5	LOS A	5.1	36.6	0.24	0.61	53.8
8	T1	1286	5.4	1278	5.4	0.660	6.2	LOS A	11.4	84.7	0.35	0.31	29.4
Approach		2057	4.7	2044 N1	4.7	0.660	6.7	LOS A	11.4	84.7	0.30	0.42	48.5
All Vehicles		3774	6.3	3760 N1	6.3	1.072	27.3	LOS B	43.7	324.5	0.55	0.63	32.5

PHASING SUMMARY

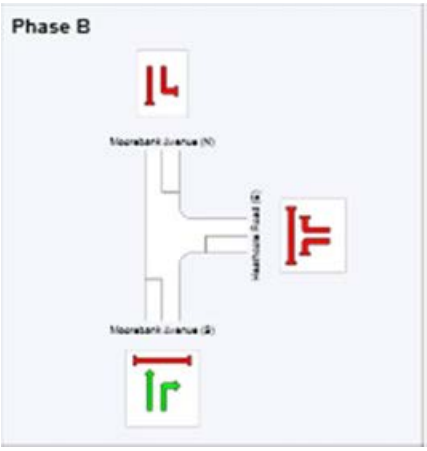
Site: I-07 2019 MIMT PM

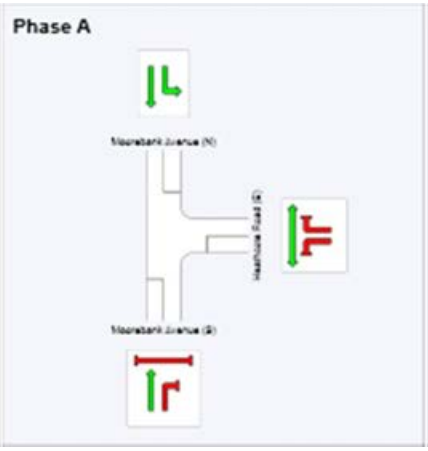
Network: 2019 MIMT PM

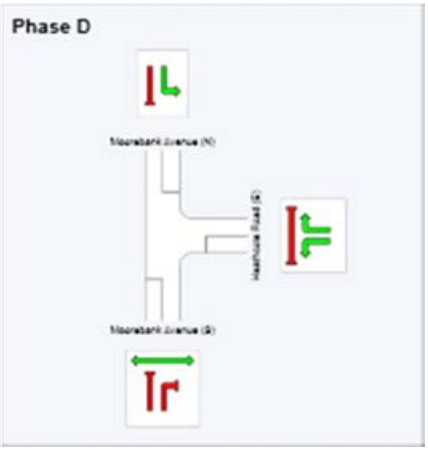
Moorebank Avenue / Heathcote Road
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	14	80
Green Time (sec)	8	60	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	66	36
Phase Split	12 %	57 %	31 %







MOVEMENT SUMMARY

Site: I-07 2019 MIMT AM - Upgrade Option

Network: 2019 MIMT AM - Upgrade Option

Moorebank Avenue / Heathcote Road
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	1697	7.0	1697	7.0	1.070	96.5	LOS F	58.7	440.6	1.00	1.41	9.2
3	R2	21	20.0	21	20.0	0.191	71.9	LOS F	1.4	11.1	0.98	0.71	30.6
Approach		1718	7.2	1718	7.2	1.070	96.2	LOS F	58.7	440.6	1.00	1.40	9.6
East: Heathcote Road (E)													
4	L2	23	59.1	23	59.1	1.096	207.1	LOS F	33.0	251.7	1.00	1.35	13.8
6	R2	804	6.0	804	6.0	1.096	169.3	LOS F	33.0	251.7	1.00	1.28	16.0
Approach		827	7.5	827	7.5	1.096	170.4	LOS F	33.0	251.7	1.00	1.28	15.9
North: Moorebank Avenue (N)													
7	L2	599	7.7	579	7.9	0.350	10.6	LOS A	11.2	83.8	0.53	0.71	51.5
8	T1	628	18.1	609	18.4	0.330	18.5	LOS B	11.0	90.1	0.61	0.53	15.0
Approach		1227	13.0	1187 N1	13.2	0.350	14.7	LOS B	11.2	90.1	0.57	0.61	42.4
All Vehicles		3773	9.2	3733 N1	9.2	1.096	86.7	LOS F	58.7	440.6	0.86	1.12	16.7

PHASING SUMMARY

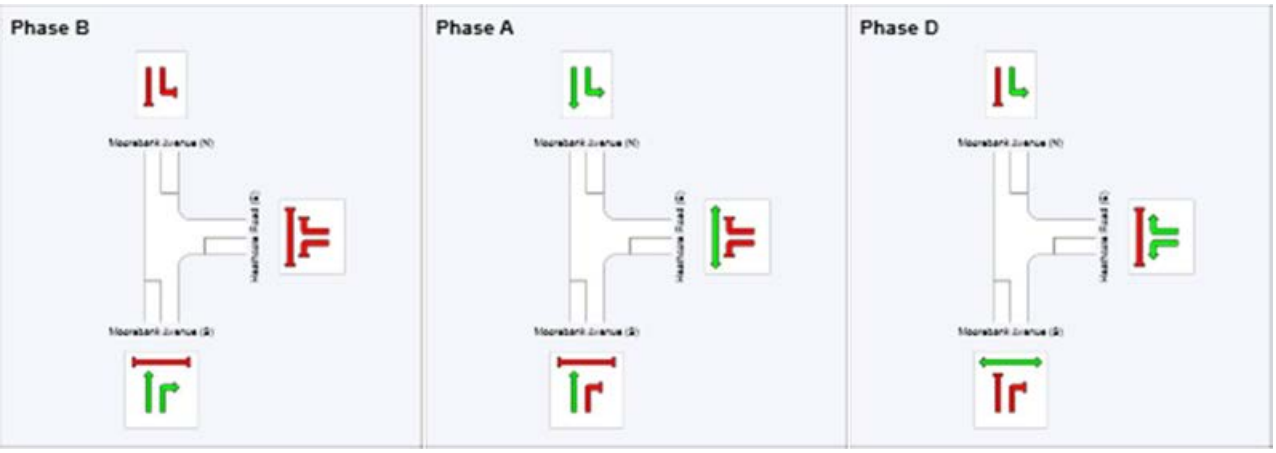
Site: I-07 2019 MIMT AM - Upgrade Option

Network: 2019 MIMT AM - Upgrade Option

Moorebank Avenue / Heathcote Road
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	15	92
Green Time (sec)	9	71	35
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	77	41
Phase Split	11 %	58 %	31 %



MOVEMENT SUMMARY

Site: I-07 2019 MIMT PM - Upgrade Option

Network: 2019 MIMT PM - Upgrade Option

Moorebank Avenue / Heathcote Road
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	985	9.4	985	9.4	0.617	13.3	LOS A	21.5	164.5	0.64	0.58	34.2
3	R2	42	7.5	42	7.5	0.346	64.3	LOS E	2.4	17.9	0.99	0.74	32.4
Approach		1027	9.3	1027	9.3	0.617	15.4	LOS B	21.5	164.5	0.65	0.59	33.9
East: Heathcote Road (E)													
4	L2	65	19.4	65	19.4	1.014	114.3	LOS F	22.7	170.6	0.98	1.13	21.0
6	R2	624	5.1	624	5.1	1.014	87.4	LOS F	22.7	170.6	0.97	1.07	24.8
Approach		689	6.4	689	6.4	1.014	89.9	LOS F	22.7	170.6	0.97	1.07	24.3
North: Moorebank Avenue (N)													
7	L2	771	3.6	765	3.6	0.360	7.5	LOS A	5.1	36.6	0.24	0.61	53.8
8	T1	1286	5.4	1278	5.4	0.660	6.2	LOS A	11.4	84.7	0.35	0.31	29.9
Approach		2057	4.7	2044 N1	4.7	0.660	6.7	LOS A	11.4	84.7	0.30	0.42	48.6
All Vehicles		3774	6.3	3760 N1	6.3	1.014	24.3	LOS B	22.7	170.6	0.52	0.59	34.2

PHASING SUMMARY

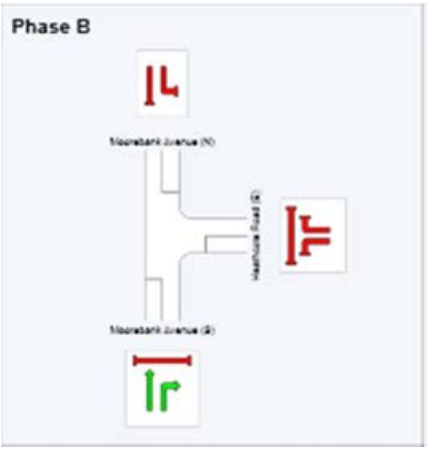
Site: I-07 2019 MIMT PM - Upgrade Option

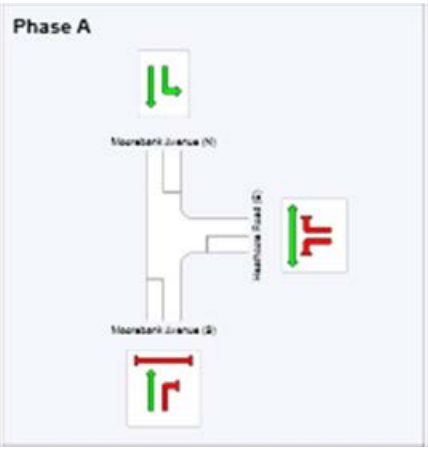
Network: 2019 MIMT PM - Upgrade Option

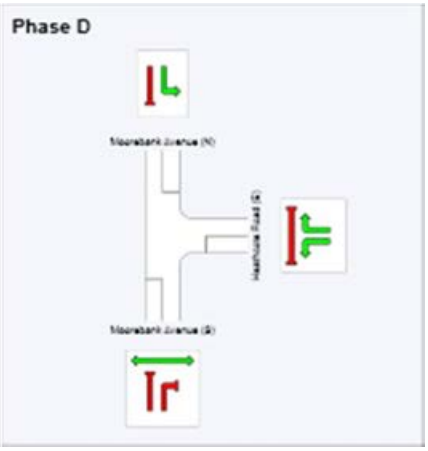
Moorebank Avenue / Heathcote Road
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	14	80
Green Time (sec)	8	60	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	66	36
Phase Split	12 %	57 %	31 %







I-08 Intersection of Moorebank Avenue and Industry Park Access

MOVEMENT SUMMARY

Site: I-08 2019 BASE AM — **Network: 2019 BASE AM**

Moorebank Avenue / Industry Park Access
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (Network Cycle Time)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	80	1.3	80	1.3	0.048	6.0	LOS A	0.3	2.2	0.12	0.58	43.1
2	T1	1699	4.9	1699	4.9	1.075	137.5	LOS F	110.3	804.2	1.00	1.59	10.7
Approach		1779	4.7	1779	4.7	1.075	131.6	LOS F	110.3	804.2	0.96	1.54	11.2
North: Moorebank Avenue (N)													
8	T1	569	16.1	552	16.1	0.184	1.9	LOS A	3.1	24.7	0.19	0.17	57.7
9	R2	54	39.2	52	39.2	0.982	102.4	LOS F	4.2	39.5	1.00	1.01	12.9
Approach		623	18.1	604 N1	18.1	0.982	10.5	LOS A	4.2	39.5	0.26	0.24	47.7
West: Industry Park Access (W)													
10	L2	20	63.2	20	63.2	0.301	66.6	LOS E	1.3	14.5	0.96	0.69	9.4
12	R2	48	71.7	48	71.7	0.468	72.2	LOS F	2.4	26.7	0.99	0.73	19.2
Approach		68	69.2	68	69.2	0.468	70.5	LOS F	2.4	26.7	0.98	0.72	17.0
All Vehicles		2471	9.9	2451 N1	10.0	1.075	100.1	LOS F	110.3	804.2	0.79	1.20	15.1

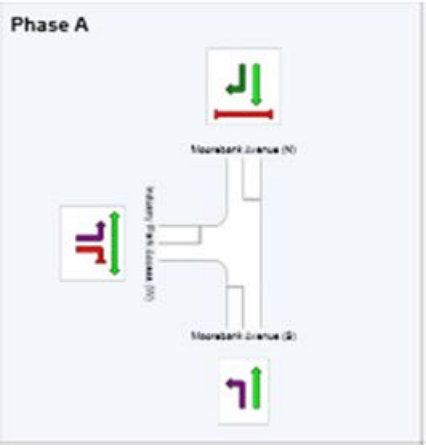
PHASING SUMMARY

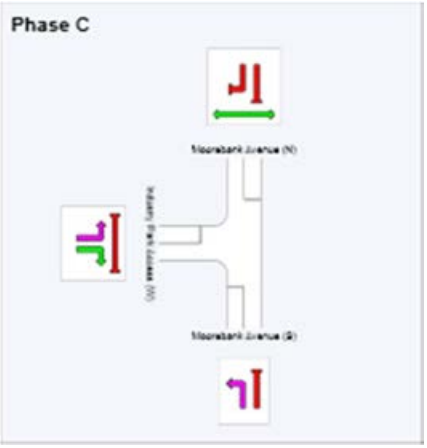
Site: I-08 2019 BASE AM — **Network: 2019 BASE AM**

Moorebank Avenue / Industry Park Access
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (Network Cycle Time)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	119
Green Time (sec)	113	8
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	119	14
Phase Split	89 %	11 %





MOVEMENT SUMMARY

Site: I-08 2019 BASE PM

Network: 2019 BASE PM

Moorebank Avenue / Industry Park Access
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 65 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	7	14.3	7	14.3	0.006	6.5	LOS A	0.0	0.2	0.21	0.57	42.8
2	T1	971	7.6	971	7.6	0.377	4.5	LOS A	6.4	47.6	0.45	0.40	52.2
Approach		978	7.6	978	7.6	0.377	4.5	LOS A	6.4	47.6	0.45	0.40	52.1
North: Moorebank Avenue (N)													
8	T1	1318	3.8	1316	3.8	0.499	5.1	LOS A	9.8	70.8	0.51	0.46	54.1
9	R2	22	61.9	22	61.8	0.100	13.1	LOS A	0.3	3.5	0.46	0.66	33.6
Approach		1340	4.8	1338 N1	4.8	0.499	5.2	LOS A	9.8	70.8	0.51	0.46	53.7
West: Industry Park Access (W)													
10	L2	29	14.3	29	14.3	0.050	3.3	LOS A	0.2	1.6	0.32	0.40	27.0
12	R2	166	8.9	166	8.9	0.387	32.1	LOS C	2.6	19.5	0.96	0.75	28.3
Approach		196	9.7	196	9.7	0.387	27.8	LOS B	2.6	19.5	0.86	0.70	28.2
All Vehicles		2514	6.3	2512 N1	6.3	0.499	6.7	LOS A	9.8	70.8	0.51	0.45	49.7

PHASING SUMMARY

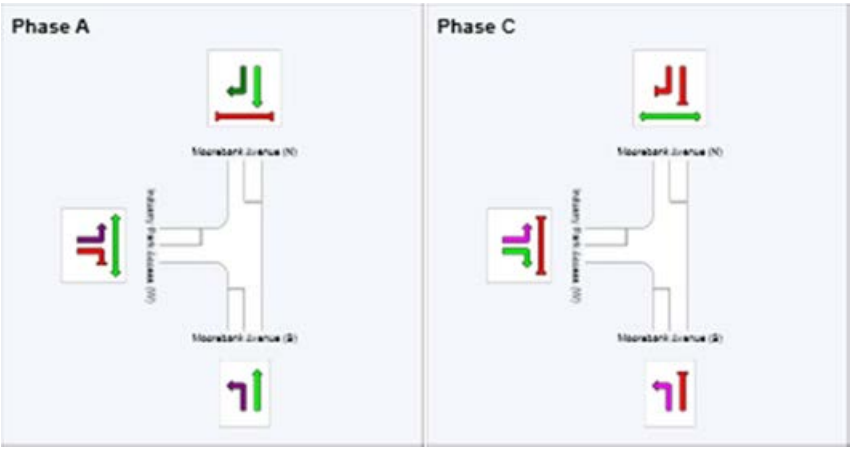
Site: I-08 2019 BASE PM

Network: 2019 BASE PM

Moorebank Avenue / Industry Park Access
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 65 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	51
Green Time (sec)	45	8
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	51	14
Phase Split	78 %	22 %



MOVEMENT SUMMARY

Site: I-08 2019 MIMT AM

Network: 2019 MIMT AM

Moorebank Avenue / Industry Park Access
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	81	2.6	81	2.6	0.050	6.1	LOS A	0.3	2.3	0.12	0.58	43.1
2	T1	1722	6.2	1722	6.2	1.136	188.9	LOS F	126.5	942.7	1.00	1.81	8.2
Approach		1803	6.0	1803	6.0	1.136	180.7	LOS F	126.5	942.7	0.96	1.76	8.6
North: Moorebank Avenue (N)													
8	T1	591	17.3	562	17.5	0.196	2.5	LOS A	3.7	29.8	0.22	0.19	56.9
9	R2	54	39.2	51	39.5	0.968	97.9	LOS F	4.1	38.0	1.00	0.99	13.3
Approach		644	19.1	613 N1	19.3	0.968	10.4	LOS A	4.1	38.0	0.29	0.26	47.8
West: Industry Park Access (W)													
10	L2	20	63.2	20	63.2	0.247	63.2	LOS E	1.3	14.2	0.94	0.67	9.8
12	R2	49	72.3	49	72.3	0.353	67.6	LOS E	2.3	26.7	0.98	0.73	19.9
Approach		69	69.7	69	69.7	0.353	66.4	LOS E	2.3	26.7	0.96	0.71	17.6
All Vehicles		2517	11.1	2486 N1	11.3	1.136	135.5	LOS F	126.5	942.7	0.79	1.36	12.0

PHASING SUMMARY

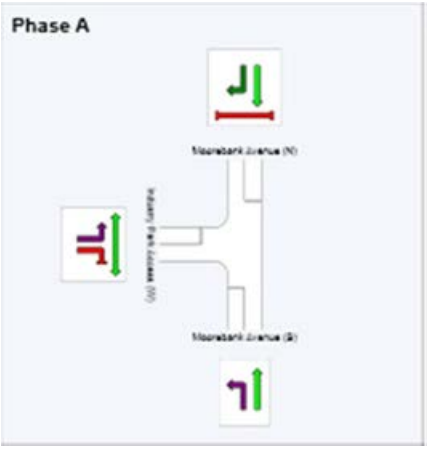
Site: I-08 2019 MIMT AM

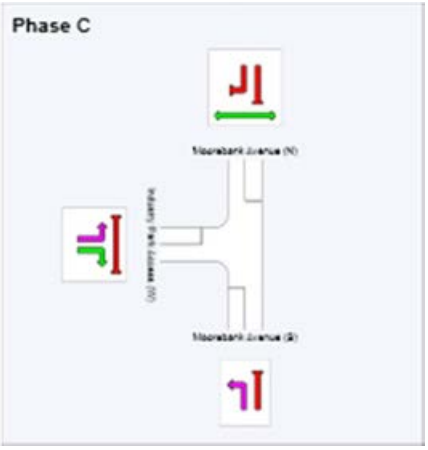
Network: 2019 MIMT AM

Moorebank Avenue / Industry Park Access
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	116
Green Time (sec)	110	11
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	116	17
Phase Split	87 %	13 %





MOVEMENT SUMMARY

Site: I-08 2019 MIMT PM

Network: 2019 MIMT PM

Moorebank Avenue / Industry Park Access
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	8	25.0	8	25.0	0.008	6.4	LOS A	0.0	0.3	0.13	0.56	43.0
2	T1	993	8.6	993	8.6	0.345	3.9	LOS A	8.1	61.5	0.32	0.29	53.1
Approach		1001	8.7	1001	8.7	0.345	3.9	LOS A	8.1	61.5	0.32	0.29	52.9
North: Moorebank Avenue (N)													
8	T1	1336	5.1	1326	5.1	0.451	4.4	LOS A	12.2	90.3	0.36	0.33	54.8
9	R2	22	61.9	22	61.9	0.112	12.3	LOS A	0.4	4.4	0.33	0.64	34.1
Approach		1358	6.0	1348 N1	6.0	0.451	4.5	LOS A	12.2	90.3	0.36	0.33	54.4
West: Industry Park Access (W)													
10	L2	29	14.3	29	14.3	0.052	2.8	LOS A	0.2	1.8	0.20	0.34	27.5
12	R2	167	9.4	167	9.4	0.431	55.7	LOS D	4.6	35.0	0.98	0.77	22.5
Approach		197	10.2	197	10.2	0.431	47.8	LOS D	4.6	35.0	0.86	0.70	22.7
All Vehicles		2556	7.4	2546 N1	7.4	0.451	7.6	LOS A	12.2	90.3	0.38	0.35	48.7

PHASING SUMMARY

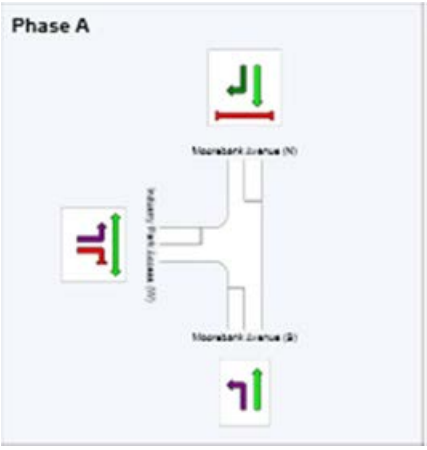
Site: I-08 2019 MIMT PM

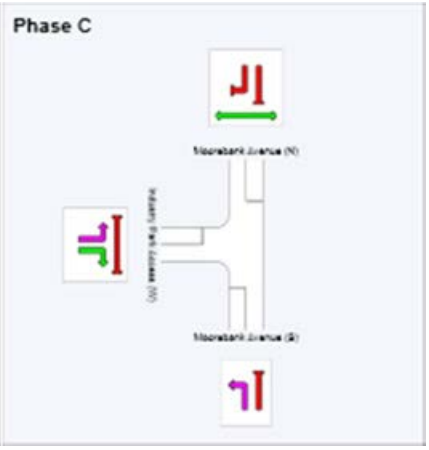
Network: 2019 MIMT PM

Moorebank Avenue / Industry Park Access
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	97
Green Time (sec)	91	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	97	19
Phase Split	84 %	16 %





MOVEMENT SUMMARY

Site: I-08 2019 MIMT AM

Network: 2019 MIMT AM - Upgrade Option

Moorebank Avenue / Industry Park Access
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	81	2.6	81	2.6	0.050	6.1	LOS A	0.3	2.3	0.12	0.58	43.1
2	T1	1722	6.2	1722	6.2	1.136	188.9	LOS F	126.5	942.7	1.00	1.81	8.2
Approach		1803	6.0	1803	6.0	1.136	180.7	LOS F	126.5	942.7	0.96	1.76	8.6
North: Moorebank Avenue (N)													
8	T1	591	17.3	571	17.4	0.199	2.5	LOS A	3.7	30.4	0.22	0.19	56.9
9	R2	54	39.2	52	39.4	0.982	102.4	LOS F	4.2	39.6	1.00	1.01	12.9
Approach		644	19.1	623 N1	19.3	0.982	10.8	LOS A	4.2	39.6	0.29	0.26	47.5
West: Industry Park Access (W)													
10	L2	20	63.2	20	63.2	0.247	63.2	LOS E	1.3	14.2	0.94	0.67	9.8
12	R2	49	72.3	49	72.3	0.353	67.6	LOS E	2.3	26.7	0.98	0.73	19.9
Approach		69	69.7	69	69.7	0.353	66.4	LOS E	2.3	26.7	0.96	0.71	17.6
All Vehicles		2517	11.1	2496 N1	11.2	1.136	135.1	LOS F	126.5	942.7	0.79	1.36	12.0

PHASING SUMMARY

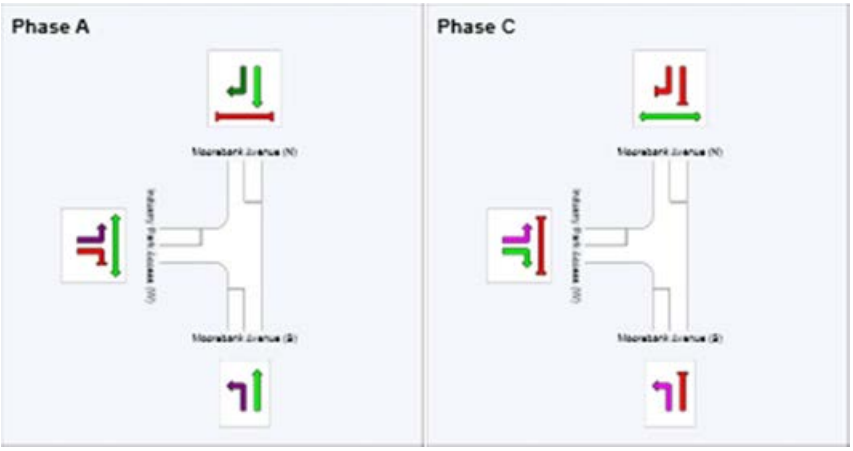
Site: I-08 2019 MIMT AM

Network: 2019 MIMT AM - Upgrade Option

Moorebank Avenue / Industry Park Access
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	116
Green Time (sec)	110	11
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	116	17
Phase Split	87 %	13 %



MOVEMENT SUMMARY

Site: I-08 2019 MIMT PM

Network: 2019 MIMT PM - Upgrade Option

Moorebank Avenue / Industry Park Access
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	8	25.0	8	25.0	0.008	6.4	LOS A	0.0	0.3	0.13	0.56	43.0
2	T1	993	8.6	993	8.6	0.345	3.9	LOS A	8.1	61.5	0.32	0.29	53.1
Approach		1001	8.7	1001	8.7	0.345	3.9	LOS A	8.1	61.5	0.32	0.29	52.9
North: Moorebank Avenue (N)													
8	T1	1336	5.1	1328	5.1	0.452	4.4	LOS A	12.3	90.6	0.36	0.33	54.8
9	R2	22	61.9	22	62.0	0.112	12.3	LOS A	0.4	4.4	0.33	0.64	34.1
Approach		1358	6.0	1350 N1	6.1	0.452	4.5	LOS A	12.3	90.6	0.36	0.34	54.4
West: Industry Park Access (W)													
10	L2	29	14.3	29	14.3	0.052	2.8	LOS A	0.2	1.8	0.20	0.34	27.5
12	R2	167	9.4	167	9.4	0.431	55.7	LOS D	4.6	35.0	0.98	0.77	22.5
Approach		197	10.2	197	10.2	0.431	47.8	LOS D	4.6	35.0	0.86	0.70	22.7
All Vehicles		2556	7.4	2548 N1	7.4	0.452	7.6	LOS A	12.3	90.6	0.38	0.35	48.7

PHASING SUMMARY

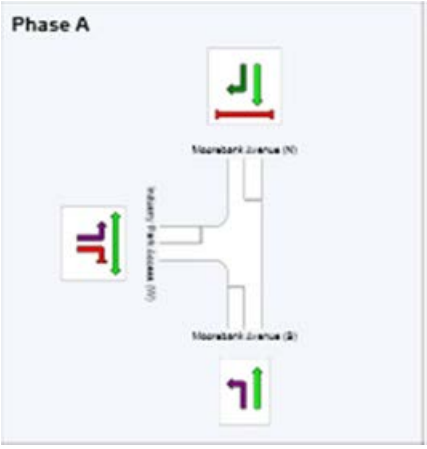
Site: I-08 2019 MIMT PM

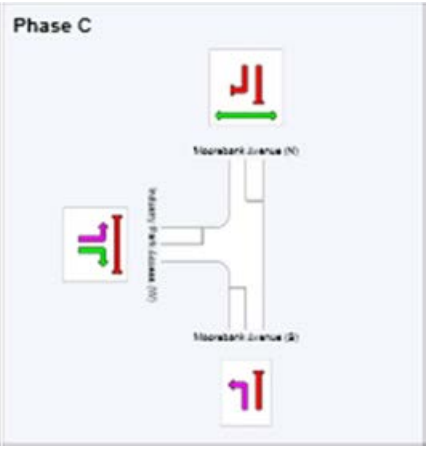
Network: 2019 MIMT PM - Upgrade Option

Moorebank Avenue / Industry Park Access
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	97
Green Time (sec)	91	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	97	19
Phase Split	84 %	16 %





I-09 Intersection of Moorebank Avenue and Church Road

MOVEMENT SUMMARY

Site: I-09 2019 BASE AM

Moorebank Avenue / Church Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1873	6.4	0.617	2.9	LOS A	9.0	66.7	0.23	0.10	56.8
3	R2	251	7.6	0.617	17.2	LOS B	9.0	66.7	1.00	0.45	44.7
Approach		2123	6.5	0.771	4.6	NA	9.0	66.7	0.32	0.15	55.0
East: Church Road (E)											
4	L2	178	14.2	0.198	6.5	LOS A	0.8	6.1	0.42	0.64	48.0
6	R2	6	0.0	0.270	163.1	LOS F	0.7	4.6	0.99	1.00	15.6
Approach		184	13.7	0.270	11.8	LOS A	0.8	6.1	0.44	0.65	44.8
North: Moorebank Avenue (N)											
7	L2	28	0.0	0.177	5.6	LOS A	0.0	0.0	0.00	0.06	57.7
8	T1	582	21.2	0.177	0.0	LOS A	0.0	0.0	0.00	0.03	59.7
Approach		611	20.2	0.177	0.3	NA	0.0	0.0	0.00	0.03	59.6
All Vehicles		2918	9.8	0.771	4.1	NA	9.0	66.7	0.26	0.15	55.0

MOVEMENT SUMMARY

Site: I-09 2019 BASE PM

Moorebank Avenue / Church Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1008	11.9	0.444	5.1	LOS A	5.9	45.6	0.20	0.07	54.9
3	R2	92	11.5	0.444	30.6	LOS C	5.9	45.6	1.00	0.36	38.5
Approach		1100	11.9	0.444	7.2	NA	5.9	45.6	0.27	0.10	52.9
East: Church Road (E)											
4	L2	378	4.2	0.988	113.5	LOS F	33.2	241.1	1.00	2.90	19.9
6	R2	1	0.0	0.040	131.0	LOS F	0.1	0.7	0.98	0.99	18.1
Approach		379	4.2	0.988	113.5	LOS F	33.2	241.1	1.00	2.90	19.9
North: Moorebank Avenue (N)											
7	L2	12	9.1	0.782	6.1	LOS A	0.0	0.0	0.00	0.01	56.9
8	T1	1469	4.4	0.782	0.6	LOS A	0.0	0.0	0.00	0.00	58.8
Approach		1481	4.5	0.782	0.6	NA	0.0	0.0	0.00	0.00	58.8
All Vehicles		2960	7.2	0.988	17.5	NA	33.2	241.1	0.23	0.41	45.3

MOVEMENT SUMMARY

Site: I-09 2019 MIMT AM

Moorebank Avenue / Church Road
2019 MIMT AM PEAK 7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	1896	7.6	0.641	3.2	LOS A	9.3	70.2	0.22	0.11	56.5
3	R2	253	8.4	0.641	19.0	LOS B	9.3	70.2	1.00	0.48	43.7
Approach		2149	7.7	0.802	5.1	NA	9.3	70.2	0.31	0.15	54.5
East: Church Road (E)											
4	L2	180	15.1	0.207	6.7	LOS A	0.8	6.5	0.44	0.65	47.8
6	R2	6	0.0	0.376	252.1	LOS F	0.9	6.3	0.99	1.01	11.3
Approach		186	14.6	0.376	15.0	LOS B	0.9	6.5	0.46	0.67	43.1
North: Moorebank Avenue (N)											
7	L2	28	0.0	0.187	5.6	LOS A	0.0	0.0	0.00	0.05	57.7
8	T1	605	22.4	0.187	0.0	LOS A	0.0	0.0	0.00	0.03	59.7
Approach		633	21.4	0.187	0.3	NA	0.0	0.0	0.00	0.03	59.6
All Vehicles		2969	11.0	0.802	4.7	NA	9.3	70.2	0.25	0.16	54.6

MOVEMENT SUMMARY

Site: I-09 2019 MIMT PM

Moorebank Avenue / Church Road
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	1032	12.9	0.479	5.0	LOS A	6.0	47.3	0.17	0.07	55.0
3	R2	94	13.6	0.479	34.8	LOS C	6.0	47.3	1.00	0.42	36.7
Approach		1126	12.9	0.479	7.5	NA	6.0	47.3	0.24	0.10	52.7
East: Church Road (E)											
4	L2	380	4.8	1.031	135.6	LOS F	38.0	278.4	1.00	3.17	17.7
6	R2	1	0.0	0.050	160.2	LOS F	0.1	0.9	0.98	0.99	15.8
Approach		381	4.7	1.031	135.7	LOS F	38.0	278.4	1.00	3.16	17.7
North: Moorebank Avenue (N)											
7	L2	12	9.1	0.803	6.2	LOS A	0.0	0.0	0.00	0.01	56.7
8	T1	1488	5.7	0.803	0.7	LOS A	0.0	0.0	0.00	0.00	58.6
Approach		1500	5.7	0.803	0.7	NA	0.0	0.0	0.00	0.00	58.6
All Vehicles		3007	8.3	1.031	20.4	NA	38.0	278.4	0.22	0.44	43.7

MOVEMENT SUMMARY

Site: I-09 2019 MIMT AM - Upgrade Option

Moorebank Avenue / Church Road
2019 MIMT AM PEAK 7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	1896	7.6	0.640	3.2	LOS A	9.3	70.3	0.22	0.11	56.5
3	R2	253	8.4	0.640	19.0	LOS B	9.3	70.3	1.00	0.48	43.5
Approach		2149	7.7	0.801	5.1	NA	9.3	70.3	0.31	0.15	54.5
East: Church Road (E)											
4	L2	180	15.1	0.207	6.7	LOS A	0.8	6.5	0.44	0.65	47.8
Approach		180	15.1	0.207	6.7	LOS A	0.8	6.5	0.44	0.65	47.8
North: Moorebank Avenue (N)											
7	L2	28	0.0	0.187	5.6	LOS A	0.0	0.0	0.00	0.05	57.7
8	T1	605	22.4	0.187	0.0	LOS A	0.0	0.0	0.00	0.03	59.7
Approach		633	21.4	0.187	0.3	NA	0.0	0.0	0.00	0.03	59.6
All Vehicles		2962	11.1	0.801	4.1	NA	9.3	70.3	0.25	0.15	55.0

MOVEMENT SUMMARY

Site: I-09 2019 MIMT PM - Upgrade Option

Moorebank Avenue / Church Road
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	1032	12.9	0.478	5.1	LOS A	6.1	47.7	0.17	0.07	54.9
3	R2	94	13.6	0.478	34.8	LOS C	6.1	47.7	1.00	0.41	36.5
Approach		1126	12.9	0.478	7.6	NA	6.1	47.7	0.24	0.10	52.6
East: Church Road (E)											
4	L2	380	4.8	1.030	134.7	LOS F	37.8	277.1	1.00	3.16	17.8
Approach		380	4.8	1.030	134.7	LOS F	37.8	277.1	1.00	3.16	17.8
North: Moorebank Avenue (N)											
7	L2	12	9.1	0.803	6.2	LOS A	0.0	0.0	0.00	0.01	56.7
8	T1	1488	5.7	0.803	0.7	LOS A	0.0	0.0	0.00	0.00	58.6
Approach		1500	5.7	0.803	0.7	NA	0.0	0.0	0.00	0.00	58.6
All Vehicles		3006	8.3	1.030	20.2	NA	37.8	277.1	0.22	0.44	43.7

I-10 Intersection of Heathcote Road and Nuwarra Road

MOVEMENT SUMMARY

Site: I-10 2019 BASE AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
SouthEast: Heathcote Road (SE)											
4	L2	201	1.0	0.136	7.5	LOS A	2.2	15.5	0.23	0.62	48.9
5	T1	1524	5.2	0.920	39.9	LOS C	45.6	333.9	0.84	0.88	35.9
6	R2	525	3.2	1.028	88.3	LOS F	17.6	126.3	1.00	1.14	24.6
Approach		2251	4.4	1.028	48.3	LOS D	45.6	333.9	0.83	0.92	32.7
NorthEast: Nuwarra Road (NE)											
7	L2	344	4.6	0.378	17.7	LOS B	10.8	78.5	0.58	0.74	46.0
8	T1	203	8.3	0.327	52.3	LOS D	5.8	43.4	0.92	0.73	26.4
9	R2	401	5.8	1.133	209.9	LOS F	24.9	182.7	1.00	1.40	13.1
Approach		948	5.9	1.133	106.4	LOS F	24.9	182.7	0.83	1.02	20.6
NorthWest: Heathcote Road (NW)											
10	L2	221	11.9	0.292	21.1	LOS B	6.7	51.3	0.68	0.76	42.9
11	T1	879	11.6	0.783	35.3	LOS C	24.0	185.1	0.81	0.73	37.7
12	R2	204	6.2	0.684	72.5	LOS F	6.7	49.7	1.00	0.83	20.4
Approach		1304	10.8	0.783	38.7	LOS C	24.0	185.1	0.82	0.75	35.2
SouthWest: Wattle Grove Drive (SW)											
1	L2	484	2.0	0.597	34.9	LOS C	21.6	154.0	0.86	0.98	30.2
2	T1	489	4.3	0.673	56.5	LOS D	14.9	108.4	0.99	0.83	25.0
3	R2	221	3.8	1.071	157.2	LOS F	23.3	168.7	1.00	1.34	12.3
Approach		1195	3.3	1.071	66.4	LOS E	23.3	168.7	0.94	0.99	22.2
All Vehicles		5698	5.9	1.133	59.6	LOS E	45.6	333.9	0.85	0.91	28.2

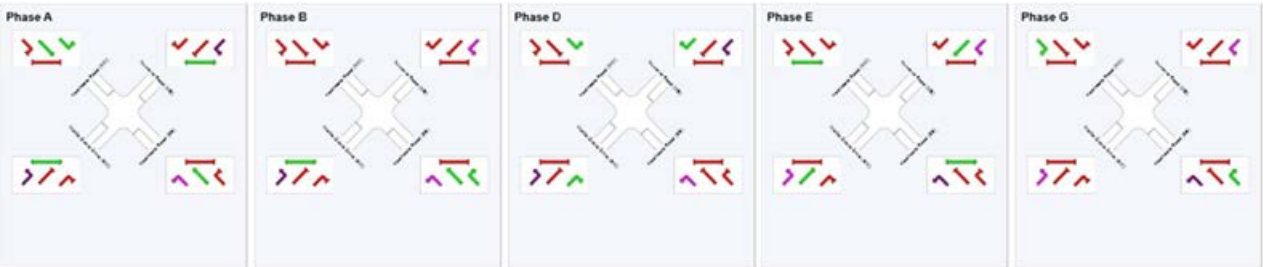
PHASING SUMMARY

Site: I-10 2019 BASE AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	D	E	G
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	54	67	86	114
Green Time (sec)	48	7	13	22	11
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	54	13	19	28	17
Phase Split	41 %	10 %	15 %	21 %	13 %



MOVEMENT SUMMARY

Site: I-10 2019 BASE PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Heathcote Road (SE)											
4	L2	294	2.5	0.242	13.4	LOS A	7.2	51.8	0.42	0.67	43.8
5	T1	1125	5.4	0.786	35.1	LOS C	31.8	233.2	0.85	0.76	37.8
6	R2	412	3.1	0.984	109.0	LOS F	18.4	132.1	1.00	1.11	21.6
Approach		1831	4.4	0.984	48.2	LOS D	31.8	233.2	0.81	0.82	32.4
NorthEast: Nuwarra Road (NE)											
7	L2	545	2.3	0.726	41.6	LOS C	24.9	177.8	0.90	1.03	35.5
8	T1	577	1.1	0.885	69.4	LOS E	22.1	156.5	1.00	0.99	22.3
9	R2	491	6.0	0.982	99.0	LOS F	22.6	166.4	1.00	1.07	22.3
Approach		1613	3.0	0.982	69.0	LOS E	24.9	177.8	0.97	1.02	26.1
NorthWest: Heathcote Road (NW)											
10	L2	221	5.7	0.203	22.0	LOS B	7.3	54.0	0.54	0.72	42.6
11	T1	1394	2.6	0.995	78.6	LOS F	59.4	425.0	0.91	1.11	25.9
12	R2	400	1.8	0.884	80.0	LOS F	15.4	109.6	1.00	0.94	19.2
Approach		2015	2.8	0.995	72.6	LOS F	59.4	425.0	0.89	1.03	25.8
SouthWest: Wattle Grove Drive (SW)											
1	L2	261	1.6	0.307	25.0	LOS B	11.2	79.2	0.69	0.75	34.7
2	T1	294	1.1	0.399	55.9	LOS D	8.9	62.8	0.94	0.77	25.1
3	R2	278	1.1	1.039	144.0	LOS F	28.6	201.8	1.00	1.25	13.2
Approach		833	1.3	1.039	75.6	LOS F	28.6	201.8	0.88	0.92	20.5
All Vehicles		6291	3.1	1.039	65.0	LOS E	59.4	425.0	0.89	0.96	26.9

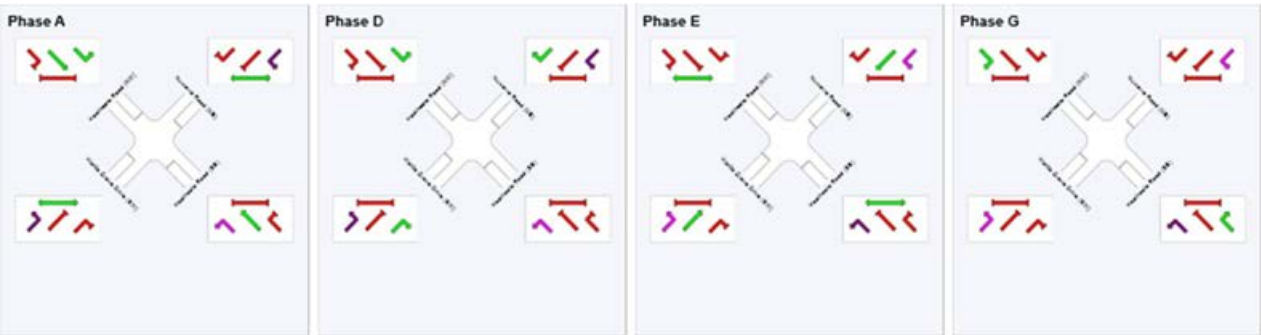
PHASING SUMMARY

Site: I-10 2019 BASE PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	61	87	117
Green Time (sec)	55	20	24	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	61	26	30	22
Phase Split	44 %	19 %	22 %	16 %



MOVEMENT SUMMARY

Site: I-10 2019 MIMT AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Heathcote Road (SE)											
4	L2	207	1.0	0.140	7.5	LOS A	2.3	16.1	0.23	0.62	48.9
5	T1	1524	5.3	0.922	40.3	LOS C	45.7	334.6	0.84	0.88	35.8
6	R2	525	3.2	1.028	88.3	LOS F	17.6	126.3	1.00	1.14	24.6
Approach		2257	4.4	1.028	48.5	LOS D	45.7	334.6	0.82	0.92	32.7
NorthEast: Nuwarra Road (NE)											
7	L2	344	4.6	0.378	17.7	LOS B	10.8	78.6	0.58	0.74	46.0
8	T1	212	8.0	0.340	52.4	LOS D	6.0	45.1	0.93	0.74	26.4
9	R2	401	5.8	1.133	209.9	LOS F	24.9	182.7	1.00	1.40	13.1
Approach		957	5.8	1.133	106.0	LOS F	24.9	182.7	0.83	1.02	20.7
NorthWest: Heathcote Road (NW)											
10	L2	221	11.9	0.292	21.1	LOS B	6.7	51.3	0.68	0.76	42.9
11	T1	879	11.6	0.783	35.3	LOS C	24.1	185.4	0.81	0.73	37.6
12	R2	204	6.2	0.684	72.5	LOS F	6.7	49.7	1.00	0.83	20.4
Approach		1304	10.8	0.783	38.7	LOS C	24.1	185.4	0.82	0.75	35.2
SouthWest: Wattle Grove Drive (SW)											
1	L2	484	2.0	0.597	34.9	LOS C	21.6	154.0	0.86	0.98	30.2
2	T1	489	4.3	0.673	56.5	LOS D	14.9	108.4	0.99	0.83	25.0
3	R2	221	3.8	1.071	157.2	LOS F	23.3	168.7	1.00	1.34	12.3
Approach		1195	3.3	1.071	66.4	LOS E	23.3	168.7	0.94	0.99	22.2
All Vehicles		5713	5.9	1.133	59.6	LOS E	45.7	334.6	0.85	0.91	28.2

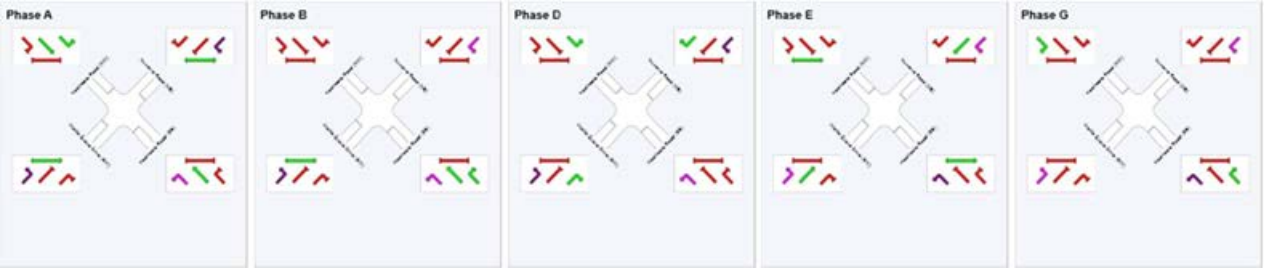
PHASING SUMMARY

Site: I-10 2019 MIMT AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	D	E	G
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	54	67	86	114
Green Time (sec)	48	7	13	22	11
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	54	13	19	28	17
Phase Split	41 %	10 %	15 %	21 %	13 %



MOVEMENT SUMMARY

Site: I-10 2019 MIMT PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Heathcote Road (SE)											
4	L2	294	2.5	0.242	13.4	LOS A	7.2	51.8	0.42	0.67	43.8
5	T1	1126	5.5	0.786	35.1	LOS C	31.9	233.5	0.85	0.76	37.7
6	R2	412	3.1	0.984	109.0	LOS F	18.4	132.1	1.00	1.11	21.6
Approach		1831	4.4	0.984	48.2	LOS D	31.9	233.5	0.81	0.83	32.4
NorthEast: Nuwarra Road (NE)											
7	L2	545	2.3	0.726	41.6	LOS C	24.9	177.8	0.90	1.03	35.5
8	T1	577	1.1	0.885	69.4	LOS E	22.1	156.5	1.00	0.99	22.3
9	R2	491	6.0	0.982	99.0	LOS F	22.6	166.4	1.00	1.07	22.3
Approach		1613	3.0	0.982	69.0	LOS E	24.9	177.8	0.97	1.02	26.1
NorthWest: Heathcote Road (NW)											
10	L2	221	5.7	0.203	22.0	LOS B	7.3	54.0	0.54	0.72	42.6
11	T1	1394	2.7	0.995	78.7	LOS F	59.4	425.6	0.91	1.11	25.8
12	R2	400	1.8	0.884	80.0	LOS F	15.4	109.6	1.00	0.94	19.2
Approach		2015	2.8	0.995	72.7	LOS F	59.4	425.6	0.89	1.03	25.8
SouthWest: Wattle Grove Drive (SW)											
1	L2	261	1.6	0.307	25.0	LOS B	11.2	79.3	0.69	0.75	34.7
2	T1	302	1.0	0.411	56.0	LOS D	9.2	64.7	0.94	0.77	25.1
3	R2	284	1.1	1.062	160.9	LOS F	31.0	219.2	1.00	1.30	12.1
Approach		847	1.2	1.062	81.7	LOS F	31.0	219.2	0.88	0.94	19.5
All Vehicles		6306	3.1	1.062	65.9	LOS E	59.4	425.6	0.89	0.96	26.7

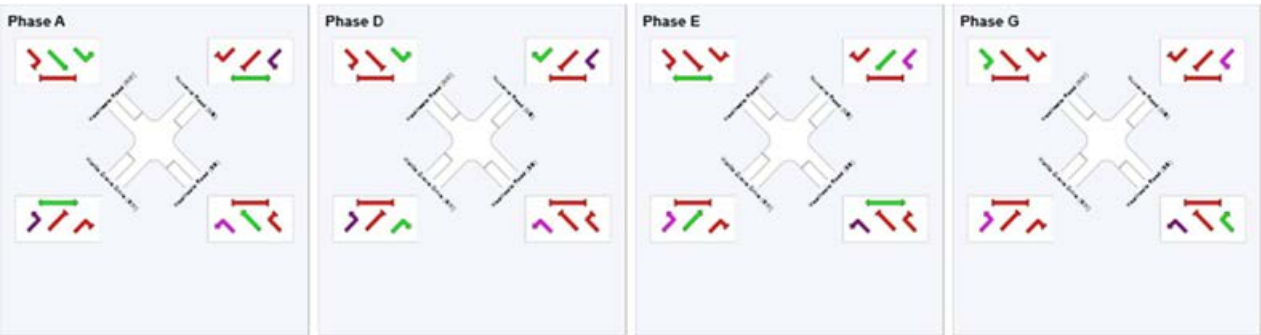
PHASING SUMMARY

Site: I-10 2019 MIMT PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	61	87	117
Green Time (sec)	55	20	24	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	61	26	30	22
Phase Split	44 %	19 %	22 %	16 %



I-11 Intersection of Newbridge Road and Nuwarra Road

MOVEMENT SUMMARY

Site: I-11 2019 BASE AM

Newbridge Road / Nuwarra Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Nuwarra Road (S)											
1	L2	32	6.7	0.595	47.9	LOS D	19.8	141.2	0.89	0.81	38.0
2	T1	319	1.7	0.595	44.9	LOS D	19.8	141.2	0.89	0.81	31.5
3	R2	760	6.8	1.105	195.1	LOS F	51.7	382.9	1.00	1.32	15.7
Approach		1111	5.3	1.105	147.8	LOS F	51.7	382.9	0.97	1.16	18.8
East: Newbridge Road (E)											
4	L2	282	17.9	0.514	24.6	LOS B	15.2	120.8	0.66	0.73	46.6
5	T1	1035	11.3	0.514	21.5	LOS B	16.2	124.8	0.60	0.55	52.3
Approach		1317	12.7	0.514	22.2	LOS B	16.2	124.8	0.61	0.59	51.1
North: Nuwarra Road (N)											
7	L2	6	0.0	0.812	79.9	LOS F	7.8	54.8	1.00	0.95	26.3
8	T1	126	0.8	1.015	88.8	LOS F	13.9	100.6	1.00	1.02	23.9
9	R2	118	4.5	1.015	124.2	LOS F	13.9	100.6	1.00	1.27	21.4
Approach		251	2.5	1.015	105.2	LOS F	13.9	100.6	1.00	1.14	22.7
West: Newbridge Road (W)											
10	L2	256	2.1	0.948	65.3	LOS E	56.0	413.4	1.00	1.07	30.8
11	T1	1901	9.0	1.009	72.5	LOS F	73.0	550.4	1.00	1.17	33.0
Approach		2157	8.2	1.009	71.7	LOS F	73.0	550.4	1.00	1.16	32.7
All Vehicles		4835	8.4	1.105	77.4	LOS F	73.0	550.4	0.89	1.00	30.2

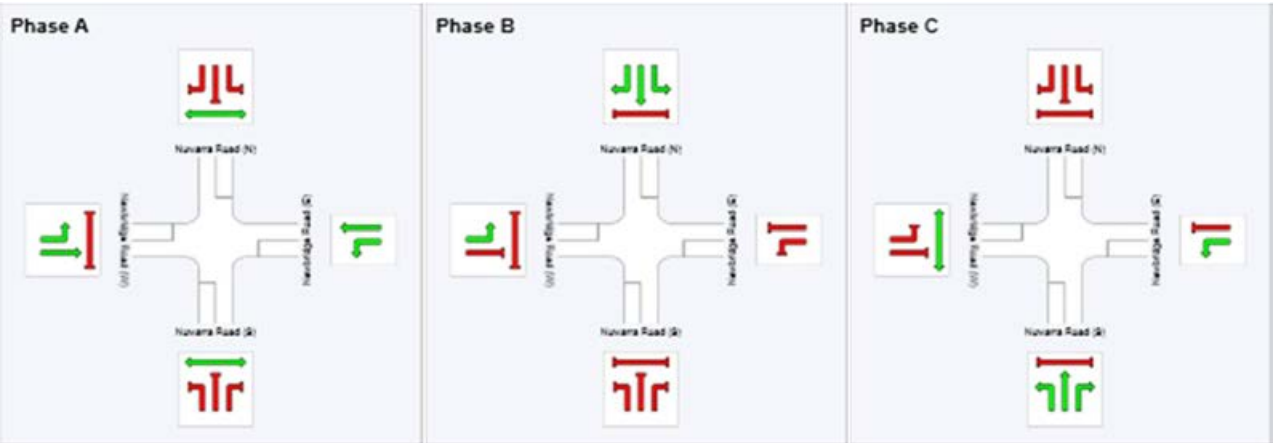
PHASING SUMMARY

Site: I-11 2019 BASE AM

Newbridge Road / Nuwarra Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	72	89
Green Time (sec)	66	11	45
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	72	17	51
Phase Split	51 %	12 %	36 %



MOVEMENT SUMMARY

Site: I-11 2019 BASE PM

Newbridge Road / Nuwarra Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nuwarra Road (S)											
1	L2	49	6.4	0.677	67.7	LOS E	12.7	90.9	1.00	0.84	32.6
2	T1	143	0.7	0.677	63.3	LOS E	12.7	90.9	1.00	0.84	29.6
3	R2	495	6.0	0.926	88.4	LOS F	20.0	147.0	1.00	1.00	26.5
Approach		687	4.9	0.926	81.7	LOS F	20.0	147.0	1.00	0.95	27.5
East: Newbridge Road (E)											
4	L2	694	4.4	0.663	14.0	LOS A	18.3	133.4	0.40	0.69	52.8
5	T1	1939	5.8	0.663	12.6	LOS A	27.0	198.3	0.50	0.49	58.3
Approach		2633	5.4	0.663	13.0	LOS A	27.0	198.3	0.47	0.54	56.8
North: Nuwarra Road (N)											
7	L2	16	0.0	0.824	73.5	LOS F	16.2	114.1	1.00	0.95	29.6
8	T1	275	0.8	1.030	85.4	LOS F	25.5	180.4	1.00	1.02	25.7
9	R2	187	1.1	1.030	140.1	LOS F	25.5	180.4	1.00	1.25	21.0
Approach		478	0.9	1.030	106.4	LOS F	25.5	180.4	1.00	1.11	23.6
West: Newbridge Road (W)											
10	L2	88	0.0	0.436	18.6	LOS B	12.0	88.6	0.42	0.44	50.0
11	T1	1403	7.8	0.496	11.6	LOS A	13.2	98.5	0.40	0.38	59.2
Approach		1492	7.3	0.496	12.0	LOS A	13.2	98.5	0.40	0.38	58.6
All Vehicles		5289	5.5	1.030	30.1	LOS C	27.0	198.3	0.57	0.60	45.6

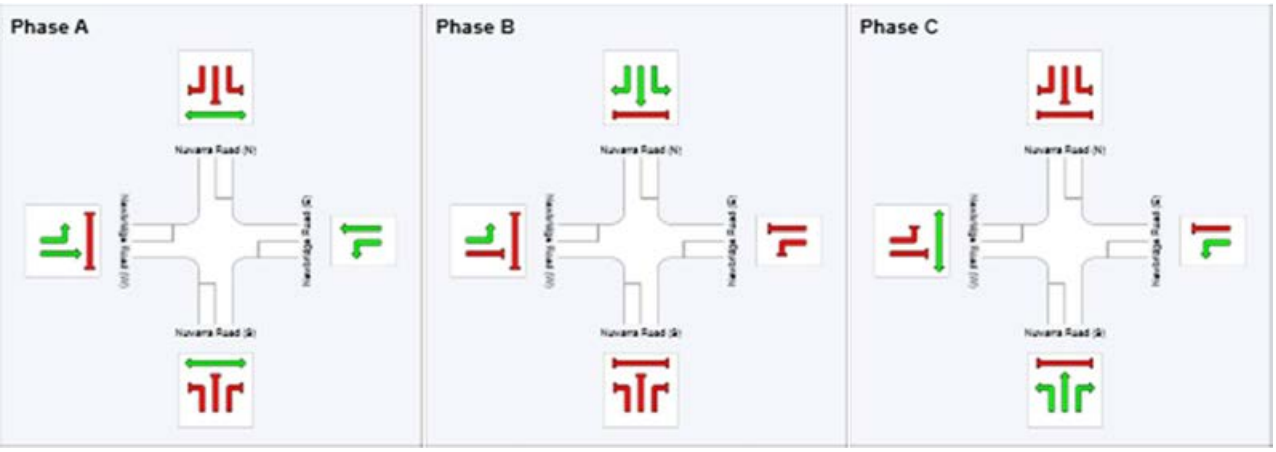
PHASING SUMMARY

Site: I-11 2019 BASE PM

Newbridge Road / Nuwarra Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	87	113
Green Time (sec)	81	20	21
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	87	26	27
Phase Split	62 %	19 %	19 %



MOVEMENT SUMMARY

Site: I-11 2019 MIMT AM

Newbridge Road / Nuwarra Road
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nuwarra Road (S)											
1	L2	32	6.7	0.595	47.9	LOS D	19.8	141.2	0.89	0.81	38.0
2	T1	319	1.7	0.595	44.9	LOS D	19.8	141.2	0.89	0.81	31.5
3	R2	760	6.8	1.105	195.1	LOS F	51.7	382.9	1.00	1.32	15.7
Approach		1111	5.3	1.105	147.8	LOS F	51.7	382.9	0.97	1.16	18.8
East: Newbridge Road (E)											
4	L2	286	17.7	0.523	24.9	LOS B	15.7	124.6	0.66	0.74	46.5
5	T1	1046	12.0	0.523	21.7	LOS B	16.6	128.6	0.61	0.56	52.2
Approach		1333	13.2	0.523	22.3	LOS B	16.6	128.6	0.62	0.60	51.0
North: Nuwarra Road (N)											
7	L2	6	0.0	0.819	80.3	LOS F	7.9	55.4	1.00	0.96	26.3
8	T1	128	0.8	1.024	90.3	LOS F	14.3	103.5	1.00	1.04	23.7
9	R2	118	4.5	1.024	129.2	LOS F	14.3	103.5	1.00	1.29	20.9
Approach		253	2.5	1.024	108.3	LOS F	14.3	103.5	1.00	1.15	22.3
West: Newbridge Road (W)											
10	L2	256	2.1	0.966	73.5	LOS F	60.6	452.0	1.00	1.10	29.2
11	T1	1922	9.9	1.028	83.5	LOS F	77.6	594.6	1.00	1.23	30.6
Approach		2177	9.0	1.028	82.4	LOS F	77.6	594.6	1.00	1.21	30.4
All Vehicles		4873	9.0	1.105	82.2	LOS F	77.6	594.6	0.89	1.03	29.3

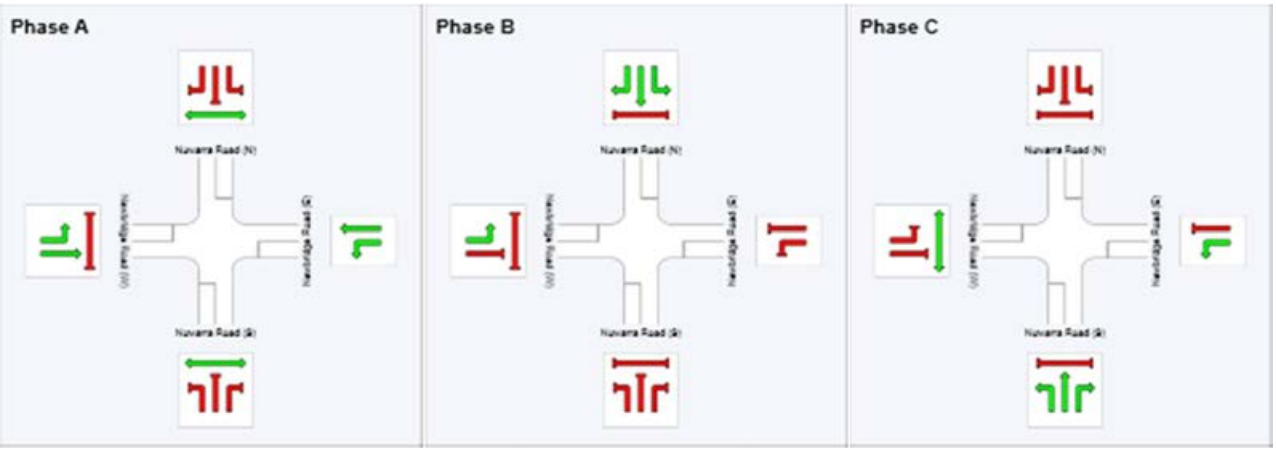
PHASING SUMMARY

Site: I-11 2019 MIMT AM

Newbridge Road / Nuwarra Road
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	72	89
Green Time (sec)	66	11	45
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	72	17	51
Phase Split	51 %	12 %	36 %



MOVEMENT SUMMARY

Site: I-11 2019 MIMT PM

Newbridge Road / Nuwarra Road
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nuwarra Road (S)											
1	L2	49	6.4	0.732	70.3	LOS E	13.2	94.5	1.00	0.87	32.0
2	T1	145	0.7	0.732	65.9	LOS E	13.2	94.5	1.00	0.87	29.1
3	R2	499	5.9	0.933	90.3	LOS F	20.4	150.1	1.00	1.01	26.2
Approach		693	4.9	0.933	83.8	LOS F	20.4	150.1	1.00	0.97	27.1
East: Newbridge Road (E)											
4	L2	694	4.4	0.672	14.2	LOS A	19.1	139.8	0.41	0.70	52.7
5	T1	1956	6.6	0.672	12.7	LOS A	27.6	205.3	0.50	0.50	58.2
Approach		2650	6.0	0.672	13.1	LOS A	27.6	205.3	0.48	0.55	56.7
North: Nuwarra Road (N)											
7	L2	16	0.0	0.824	73.5	LOS F	16.2	114.1	1.00	0.95	29.6
8	T1	275	0.8	1.030	85.4	LOS F	25.5	180.4	1.00	1.02	25.7
9	R2	187	1.1	1.030	140.1	LOS F	25.5	180.4	1.00	1.25	21.0
Approach		478	0.9	1.030	106.4	LOS F	25.5	180.4	1.00	1.11	23.6
West: Newbridge Road (W)											
10	L2	89	0.0	0.444	18.6	LOS B	12.2	91.2	0.42	0.44	49.9
11	T1	1418	8.5	0.504	11.6	LOS A	13.5	101.8	0.40	0.38	59.1
Approach		1506	8.0	0.504	12.0	LOS A	13.5	101.8	0.40	0.38	58.5
All Vehicles		5327	6.0	1.030	30.4	LOS C	27.6	205.3	0.57	0.61	45.5

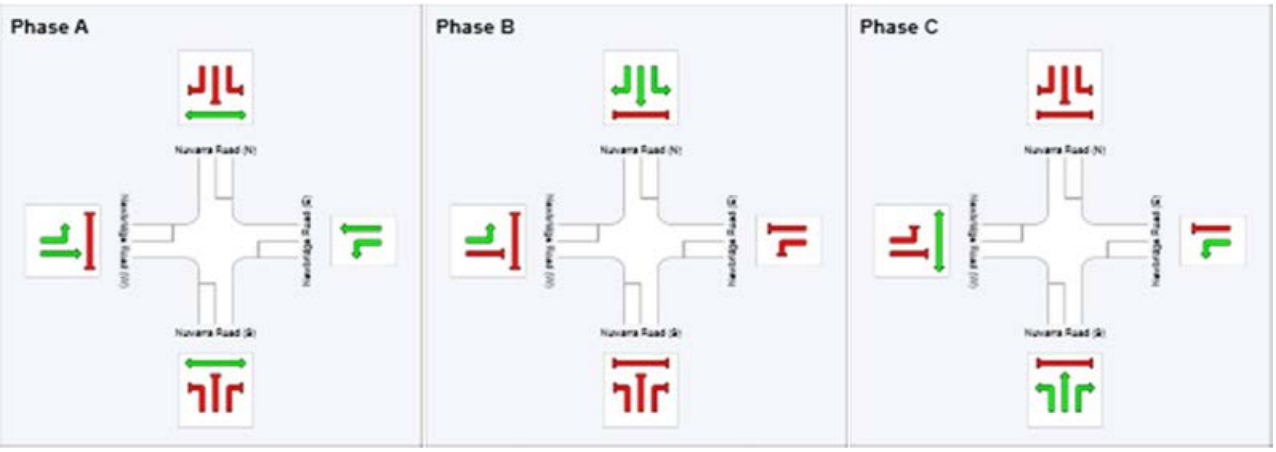
PHASING SUMMARY

Site: I-11 2019 MIMT PM

Newbridge Road / Nuwarra Road
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	87	113
Green Time (sec)	81	20	21
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	87	26	27
Phase Split	62 %	19 %	19 %



I-12 Intersection of Newbridge Road and Governor Macquarie Drive

MOVEMENT SUMMARY

Site: I-12 2019 BASE AM

Newbridge Road / Governor Macquarie Drive
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Brickmakers Drive (S)											
1	L2	11	0.0	0.807	74.2	LOS F	14.0	99.2	1.00	0.93	26.1
2	T1	186	1.1	0.807	69.8	LOS E	14.0	99.2	1.00	0.93	25.8
3	R2	624	1.0	1.073	160.6	LOS F	34.3	242.1	1.00	1.31	20.1
Approach		821	1.0	1.073	138.9	LOS F	34.3	242.1	1.00	1.22	21.0
East: Newbridge Road (E)											
4	L2	204	2.6	0.148	7.7	LOS A	1.7	12.0	0.17	0.63	58.3
5	T1	1178	11.0	0.343	12.9	LOS A	12.4	95.0	0.51	0.45	60.5
6	R2	616	10.4	0.883	78.2	LOS F	22.7	173.4	1.00	0.93	34.7
Approach		1998	10.0	0.883	32.5	LOS C	22.7	173.4	0.63	0.62	48.9
North: Governor Macquarie Drive (N)											
7	L2	673	8.9	0.642	51.3	LOS D	19.9	149.9	0.93	0.84	40.5
8	T1	121	2.6	0.491	63.7	LOS E	7.8	56.2	0.98	0.78	27.1
9	R2	157	34.9	0.923	92.7	LOS F	12.8	116.4	1.00	1.02	26.1
Approach		951	12.4	0.923	59.7	LOS E	19.9	149.9	0.94	0.87	36.4
West: Newbridge Road (W)											
10	L2	120	30.7	1.024	103.0	LOS F	86.8	661.0	1.00	1.25	25.8
11	T1	2534	6.9	1.024	95.0	LOS F	88.9	659.5	1.00	1.26	32.5
12	R2	4	25.0	0.027	32.4	LOS C	0.2	1.4	0.60	0.66	38.1
Approach		2658	8.0	1.024	95.3	LOS F	88.9	661.0	1.00	1.26	32.2
All Vehicles		6427	8.4	1.073	76.1	LOS F	88.9	661.0	0.88	1.00	34.7

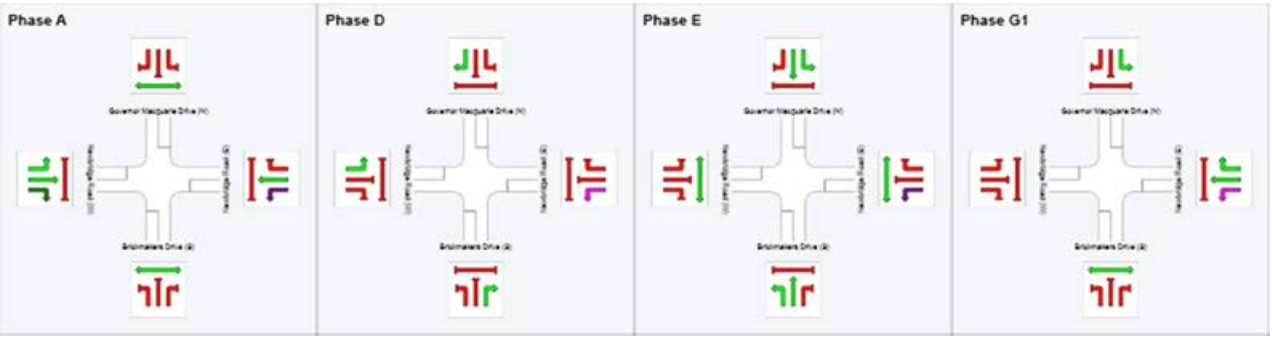
PHASING SUMMARY

Site: I-12 2019 BASE AM

Newbridge Road / Governor Macquarie Drive
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	66	88	112
Green Time (sec)	60	16	18	22
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	66	22	24	28
Phase Split	47 %	16 %	17 %	20 %



MOVEMENT SUMMARY

Site: I-12 2019 BASE PM

Newbridge Road / Governor Macquarie Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	8	0.0	0.470	68.8	LOS E	6.2	45.3	0.98	0.77	27.2
2	T1	86	4.9	0.470	64.7	LOS E	6.2	45.3	0.98	0.77	26.8
3	R2	236	0.9	0.559	69.4	LOS E	7.8	55.2	0.99	0.79	32.7
Approach		331	1.9	0.559	68.1	LOS E	7.8	55.2	0.99	0.79	31.2
East: Newbridge Road (E)											
4	L2	608	1.4	0.438	9.2	LOS A	7.0	49.9	0.27	0.68	57.2
5	T1	2396	4.4	0.726	15.8	LOS B	39.6	287.8	0.66	0.61	58.8
6	R2	674	11.3	1.093	186.1	LOS F	40.6	311.6	1.00	1.24	21.1
Approach		3678	5.2	1.093	45.9	LOS D	40.6	311.6	0.66	0.74	43.8
North: Governor Macquarie Drive (N)											
7	L2	508	3.5	0.399	47.8	LOS D	13.8	99.2	0.85	0.80	41.7
8	T1	280	0.8	0.898	77.2	LOS F	20.8	146.8	1.00	1.00	24.4
9	R2	214	18.7	1.010	122.9	LOS F	20.4	165.8	1.00	1.13	22.2
Approach		1002	6.0	1.010	72.0	LOS F	20.8	165.8	0.92	0.93	31.9
West: Newbridge Road (W)											
10	L2	158	16.7	0.691	36.7	LOS C	30.4	228.8	0.78	0.74	42.7
11	T1	1743	6.1	0.691	29.0	LOS C	30.5	224.8	0.76	0.69	51.6
12	R2	3	0.0	0.046	42.2	LOS C	0.2	1.1	0.69	0.68	34.2
Approach		1904	7.0	0.691	29.7	LOS C	30.5	228.8	0.76	0.69	50.9
All Vehicles		6915	5.6	1.093	46.3	LOS D	40.6	311.6	0.74	0.76	42.8

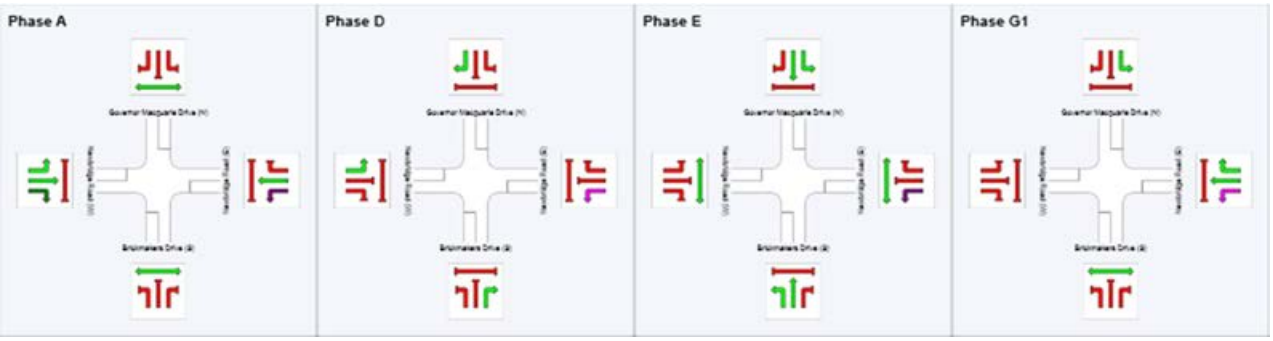
PHASING SUMMARY

Site: I-12 2019 BASE PM

Newbridge Road / Governor Macquarie Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	67	89	110
Green Time (sec)	61	16	15	24
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	67	22	21	30
Phase Split	48 %	16 %	15 %	21 %



MOVEMENT SUMMARY

Site: I-12 2019 MIMT AM

Newbridge Road / Governor Macquarie Drive
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	11	0.0	0.807	74.2	LOS F	14.0	99.2	1.00	0.93	26.1
2	T1	186	1.1	0.807	69.8	LOS E	14.0	99.2	1.00	0.93	25.8
3	R2	624	1.0	1.073	160.6	LOS F	34.3	242.1	1.00	1.31	20.1
Approach		821	1.0	1.073	138.9	LOS F	34.3	242.1	1.00	1.22	21.0
East: Newbridge Road (E)											
4	L2	204	2.6	0.148	7.7	LOS A	1.7	12.0	0.17	0.63	58.3
5	T1	1193	11.6	0.350	13.0	LOS A	12.6	97.8	0.51	0.45	60.5
6	R2	616	10.4	0.883	78.2	LOS F	22.7	173.4	1.00	0.93	34.7
Approach		2013	10.3	0.883	32.4	LOS C	22.7	173.4	0.63	0.62	48.9
North: Governor Macquarie Drive (N)											
7	L2	673	8.9	0.642	51.3	LOS D	19.9	149.9	0.93	0.84	40.5
8	T1	121	2.6	0.491	63.7	LOS E	7.8	56.2	0.98	0.78	27.1
9	R2	157	34.8	0.925	93.1	LOS F	12.9	116.9	1.00	1.03	26.0
Approach		951	12.4	0.925	59.8	LOS E	19.9	149.9	0.94	0.87	36.3
West: Newbridge Road (W)											
10	L2	120	30.9	1.041	114.5	LOS F	91.6	704.8	1.00	1.31	24.1
11	T1	2554	7.7	1.041	106.6	LOS F	93.8	704.2	1.00	1.32	30.5
12	R2	4	25.0	0.028	32.4	LOS C	0.2	1.5	0.60	0.66	38.0
Approach		2678	8.7	1.041	106.8	LOS F	93.8	704.8	1.00	1.32	30.2
All Vehicles		6464	8.8	1.073	80.8	LOS F	93.8	704.8	0.88	1.02	33.7

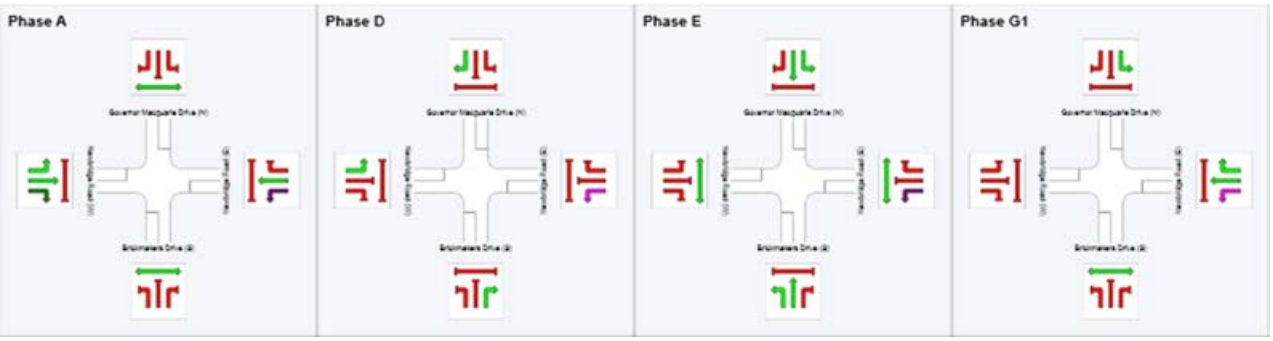
PHASING SUMMARY

Site: I-12 2019 MIMT AM

Newbridge Road / Governor Macquarie Drive
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	66	88	112
Green Time (sec)	60	16	18	22
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	66	22	24	28
Phase Split	47 %	16 %	17 %	20 %



MOVEMENT SUMMARY

Site: I-12 2019 MIMT PM

Newbridge Road / Governor Macquarie Drive
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	8	0.0	0.485	69.8	LOS E	6.3	45.6	0.99	0.78	27.0
2	T1	86	4.9	0.485	65.7	LOS E	6.3	45.6	0.99	0.78	26.6
3	R2	236	0.9	0.559	69.4	LOS E	7.8	55.2	0.99	0.79	32.7
Approach		331	1.9	0.559	68.4	LOS E	7.8	55.2	0.99	0.79	31.2
East: Newbridge Road (E)											
4	L2	608	1.4	0.438	9.2	LOS A	7.0	49.9	0.27	0.68	57.2
5	T1	2412	5.1	0.734	16.0	LOS B	40.2	295.5	0.67	0.62	58.6
6	R2	674	11.3	1.093	186.1	LOS F	40.6	311.6	1.00	1.24	21.1
Approach		3694	5.6	1.093	45.9	LOS D	40.6	311.6	0.67	0.74	43.8
North: Governor Macquarie Drive (N)											
7	L2	508	3.5	0.399	47.8	LOS D	13.8	99.2	0.85	0.80	41.7
8	T1	280	0.8	0.898	77.2	LOS F	20.8	146.8	1.00	1.00	24.4
9	R2	215	19.3	1.023	131.0	LOS F	21.3	174.2	1.00	1.15	21.3
Approach		1004	6.1	1.023	73.8	LOS F	21.3	174.2	0.92	0.93	31.6
West: Newbridge Road (W)											
10	L2	160	17.4	0.702	37.0	LOS C	31.0	235.6	0.79	0.75	42.5
11	T1	1760	6.6	0.702	29.3	LOS C	31.2	231.6	0.77	0.70	51.5
12	R2	3	0.0	0.046	43.0	LOS D	0.2	1.1	0.70	0.68	33.9
Approach		1923	7.5	0.702	29.9	LOS C	31.2	235.6	0.77	0.70	50.8
All Vehicles		6951	6.0	1.093	46.6	LOS D	40.6	311.6	0.75	0.76	42.7

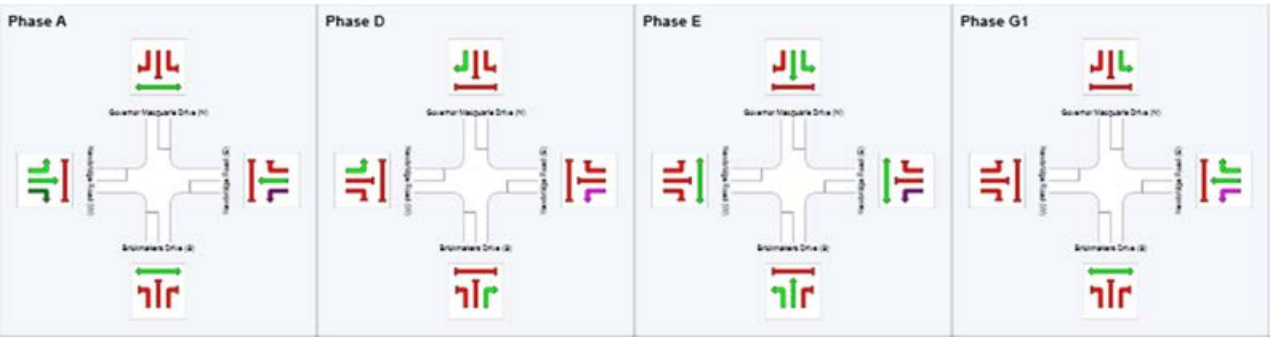
PHASING SUMMARY

Site: I-12 2019 MIMT PM

Newbridge Road / Governor Macquarie Drive
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	67	89	110
Green Time (sec)	61	16	15	24
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	67	22	21	30
Phase Split	48 %	16 %	15 %	21 %



MOVEMENT SUMMARY

Site: I-12 2019 MIMT AM - Upgrade Option

Newbridge Road / Governor Macquarie Drive
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	11	0.0	0.807	74.2	LOS F	14.0	99.2	1.00	0.93	26.1
2	T1	186	1.1	0.807	69.8	LOS E	14.0	99.2	1.00	0.93	25.8
3	R2	624	1.0	1.073	160.6	LOS F	34.3	242.1	1.00	1.31	20.1
Approach		821	1.0	1.073	138.9	LOS F	34.3	242.1	1.00	1.22	21.0
East: Newbridge Road (E)											
4	L2	204	2.6	0.148	7.7	LOS A	1.7	12.0	0.17	0.63	58.3
5	T1	1193	11.6	0.350	13.0	LOS A	12.6	97.8	0.51	0.45	60.5
6	R2	616	10.4	0.931	87.3	LOS F	24.4	185.7	1.00	0.98	32.9
Approach		2013	10.3	0.931	35.2	LOS C	24.4	185.7	0.63	0.63	47.8
North: Governor Macquarie Drive (N)											
7	L2	673	8.9	0.658	52.3	LOS D	20.1	151.6	0.94	0.85	40.3
8	T1	121	2.6	0.491	63.7	LOS E	7.8	56.2	0.98	0.78	27.1
9	R2	157	34.8	0.925	93.1	LOS F	12.9	116.9	1.00	1.03	26.0
Approach		951	12.4	0.925	60.5	LOS E	20.1	151.6	0.95	0.87	36.2
West: Newbridge Road (W)											
10	L2	120	30.9	1.024	101.8	LOS F	87.4	672.8	1.00	1.25	25.9
11	T1	2554	7.7	1.024	93.8	LOS F	89.5	671.6	1.00	1.26	32.7
12	R2	4	25.0	0.027	31.8	LOS C	0.2	1.4	0.59	0.66	38.3
Approach		2678	8.7	1.024	94.0	LOS F	89.5	672.8	1.00	1.26	32.4
All Vehicles		6464	8.8	1.073	76.5	LOS F	89.5	672.8	0.88	1.00	34.6

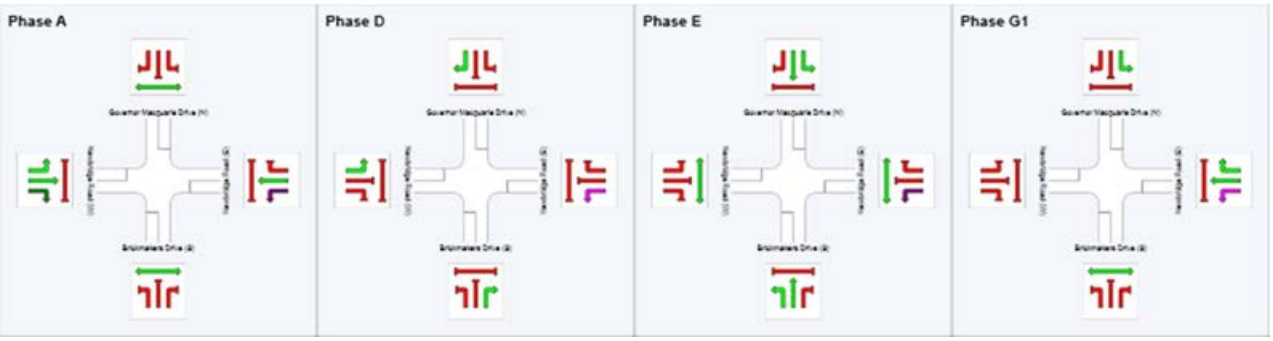
PHASING SUMMARY

Site: I-12 2019 MIMT AM - Upgrade Option

Newbridge Road / Governor Macquarie Drive
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	67	89	113
Green Time (sec)	61	16	18	21
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	67	22	24	27
Phase Split	48 %	16 %	17 %	19 %



I-13 Intersection of Moorebank Avenue and M5 Motorway

MOVEMENT SUMMARY

Site: I-13 2019 BASE AM

Moorebank Avenue / the M5 Motorway
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
1	L2	260	10.9	0.223	9.1	LOS A	2.9	22.1	0.41	0.66	50.4
2	T1	627	4.2	0.719	30.6	LOS C	11.2	81.0	0.98	0.88	38.6
3	R2	257	2.9	0.358	32.7	LOS C	4.4	31.9	0.89	0.77	37.0
Approach		1144	5.4	0.719	26.2	LOS B	11.2	81.0	0.83	0.80	40.4
East: M5 Motorway on&off ramp (E)											
4	L2	240	7.0	0.237	7.9	LOS A	1.9	13.8	0.38	0.66	51.6
6	R2	228	6.0	0.237	28.8	LOS C	3.3	24.1	0.82	0.75	40.4
Approach		468	6.5	0.237	18.1	LOS B	3.3	24.1	0.59	0.71	45.2
North: Moorebank Avenue (N)											
7	L2	47	48.9	0.046	7.5	LOS A	0.3	2.8	0.26	0.59	51.4
8	T1	169	12.4	0.204	25.4	LOS B	2.5	19.6	0.85	0.66	41.1
9	R2	433	26.5	0.740	37.0	LOS C	9.3	79.8	0.97	0.86	36.6
Approach		649	24.5	0.740	31.8	LOS C	9.3	79.8	0.88	0.79	38.4
West: M5 Motorway on&off ramp (W)											
10	L2	1598	8.2	0.911	6.4	LOS A	0.0	0.0	0.00	0.52	53.5
12	R2	380	4.2	0.390	29.9	LOS C	5.7	41.5	0.86	0.78	38.6
Approach		1978	7.4	0.911	10.9	LOS A	5.7	41.5	0.17	0.57	50.1
All Vehicles		4240	9.4	0.911	19.0	LOS B	11.2	81.0	0.50	0.68	44.7

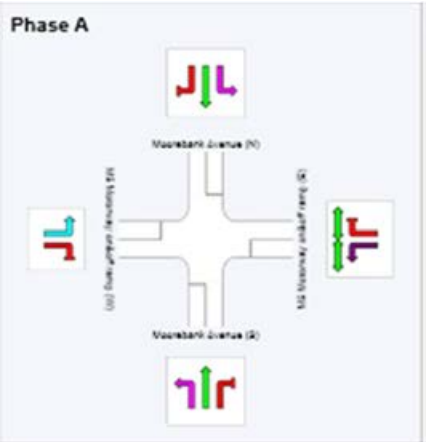
PHASING SUMMARY

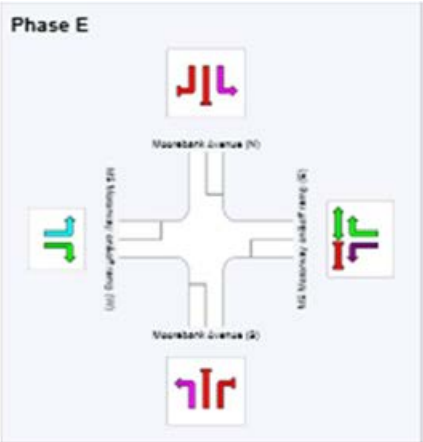
Site: I-13 2019 BASE AM

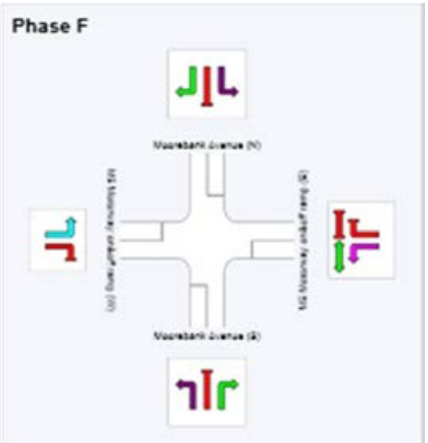
Moorebank Avenue / the M5 Motorway
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	F
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	24	51
Green Time (sec)	17	20	16
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	24	27	23
Phase Split	32 %	36 %	31 %







MOVEMENT SUMMARY

Site: I-13 2019 BASE PM

Moorebank Avenue / the M5 Motorway
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	281	3.0	0.336	17.6	LOS B	6.8	48.7	0.65	0.75	44.9
2	T1	160	7.2	0.404	44.3	LOS D	3.6	26.7	0.97	0.75	33.3
3	R2	256	2.1	0.212	27.7	LOS B	4.4	31.6	0.72	0.74	39.2
Approach		697	3.6	0.404	27.4	LOS B	6.8	48.7	0.75	0.75	39.6
East: M5 Motorway on&off ramp (E)											
4	L2	372	2.8	0.380	10.4	LOS A	5.5	39.6	0.50	0.70	49.8
6	R2	80	21.1	0.146	42.4	LOS C	1.6	13.2	0.89	0.73	35.0
Approach		452	6.1	0.380	16.1	LOS B	5.5	39.6	0.56	0.71	46.0
North: Moorebank Avenue (N)											
7	L2	120	6.1	0.092	6.7	LOS A	0.7	5.3	0.22	0.61	53.2
8	T1	634	3.7	0.680	35.5	LOS C	13.5	97.4	0.96	0.83	36.5
9	R2	1375	7.4	0.916	46.1	LOS D	33.4	249.0	1.00	1.07	33.8
Approach		2128	6.2	0.916	40.8	LOS C	33.4	249.0	0.94	0.97	35.2
West: M5 Motorway on&off ramp (W)											
10	L2	572	15.3	0.341	5.8	LOS A	0.0	0.0	0.00	0.52	54.3
12	R2	232	3.6	0.376	43.9	LOS D	4.8	35.0	0.93	0.78	33.2
Approach		803	11.9	0.376	16.8	LOS B	4.8	35.0	0.27	0.59	46.5
All Vehicles		4080	6.9	0.916	31.0	LOS C	33.4	249.0	0.74	0.83	38.8

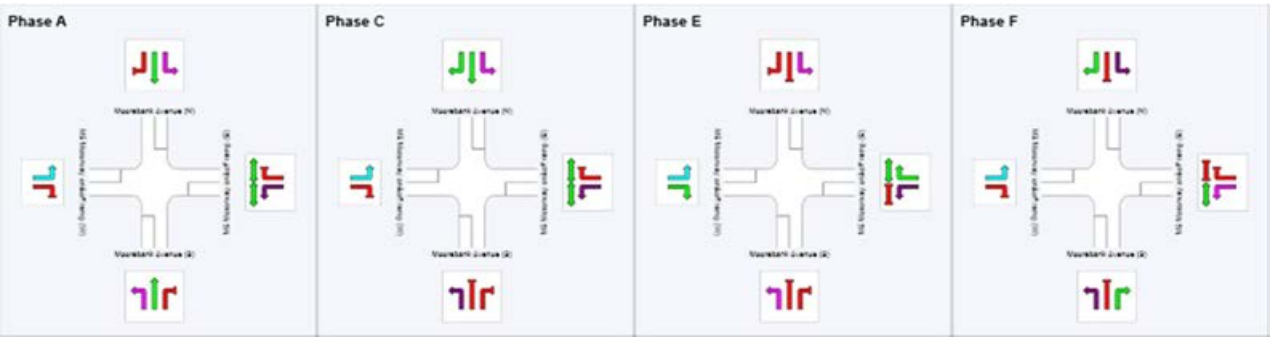
PHASING SUMMARY

Site: I-13 2019 BASE PM

Moorebank Avenue / the M5 Motorway
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	17	30	53
Green Time (sec)	10	6	16	34
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	17	13	23	41
Phase Split	18 %	14 %	24 %	44 %



MOVEMENT SUMMARY

Site: I-13 2019 MIMT AM

Moorebank Avenue / the M5 Motorway
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	320	27.7	0.328	9.6	LOS A	3.8	37.4	0.44	0.67	49.4
2	T1	653	8.0	0.782	33.0	LOS C	12.3	94.9	1.00	0.94	37.5
3	R2	264	5.3	0.378	32.9	LOS C	4.6	34.3	0.89	0.78	36.9
Approach		1237	12.5	0.782	26.9	LOS B	12.3	94.9	0.83	0.84	39.9
East: M5 Motorway on&off ramp (E)											
4	L2	275	12.1	0.316	9.4	LOS A	2.9	23.7	0.49	0.69	50.2
6	R2	228	6.0	0.237	28.8	LOS C	3.3	24.1	0.82	0.75	40.4
Approach		503	9.3	0.316	18.2	LOS B	3.3	24.1	0.64	0.72	45.0
North: Moorebank Avenue (N)											
7	L2	47	48.9	0.046	7.6	LOS A	0.3	3.0	0.28	0.60	51.2
8	T1	194	18.1	0.250	25.8	LOS B	2.9	25.1	0.86	0.68	40.9
9	R2	433	26.5	0.740	37.0	LOS C	9.3	79.8	0.97	0.86	36.6
Approach		674	25.7	0.740	31.7	LOS C	9.3	79.8	0.89	0.79	38.5
West: M5 Motorway on&off ramp (W)											
10	L2	1598	8.2	0.911	6.4	LOS A	0.0	0.0	0.00	0.52	53.5
12	R2	496	15.7	0.582	31.8	LOS C	8.0	69.6	0.92	0.82	37.5
Approach		2094	10.0	0.911	12.5	LOS A	8.0	69.6	0.22	0.59	49.0
All Vehicles		4509	12.9	0.911	20.0	LOS B	12.3	94.9	0.53	0.70	44.1

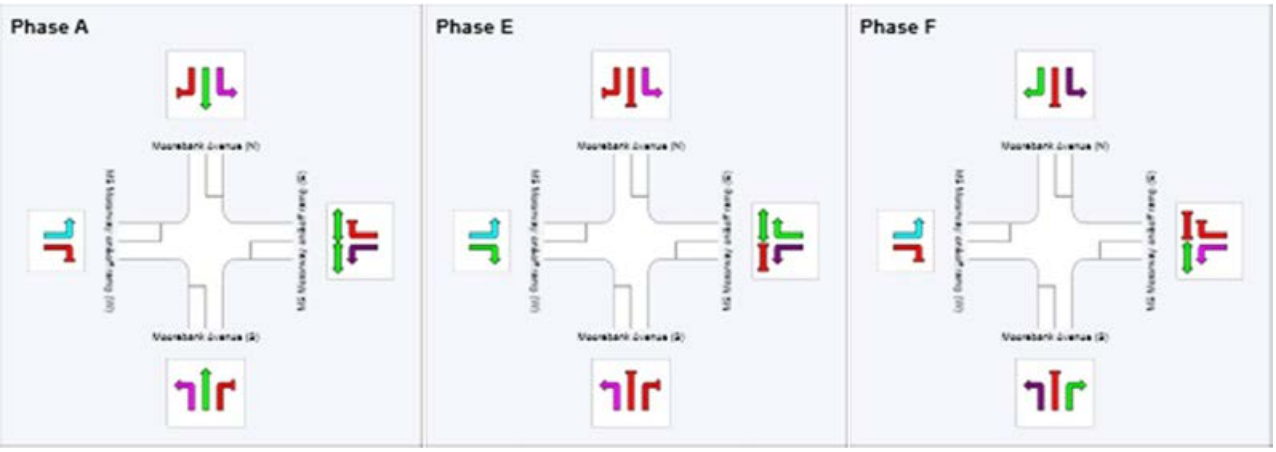
PHASING SUMMARY

Site: I-13 2019 MIMT AM

Moorebank Avenue / the M5 Motorway
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	F
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	24	51
Green Time (sec)	17	20	16
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	24	27	23
Phase Split	32 %	36 %	31 %



MOVEMENT SUMMARY

Site: I-13 2019 MIMT PM

Moorebank Avenue / the M5 Motorway
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	406	19.6	0.575	19.9	LOS B	11.5	106.5	0.76	0.80	43.0
2	T1	186	14.4	0.509	45.1	LOS D	4.3	35.6	0.99	0.77	33.0
3	R2	298	9.6	0.270	28.4	LOS B	5.3	42.8	0.74	0.76	38.7
Approach		890	15.2	0.575	28.0	LOS B	11.5	106.5	0.80	0.78	39.1
East: M5 Motorway on&off ramp (E)											
4	L2	386	6.3	0.445	11.8	LOS A	6.2	46.8	0.58	0.73	48.6
6	R2	80	21.1	0.146	42.4	LOS C	1.6	13.2	0.89	0.73	35.0
Approach		466	8.9	0.445	17.1	LOS B	6.2	46.8	0.63	0.73	45.3
North: Moorebank Avenue (N)											
7	L2	120	6.1	0.096	7.1	LOS A	0.9	6.3	0.25	0.61	52.9
8	T1	655	6.8	0.728	37.2	LOS C	14.5	110.0	0.98	0.87	35.9
9	R2	1375	7.4	0.916	46.1	LOS D	33.4	249.0	1.00	1.07	33.8
Approach		2150	7.2	0.916	41.2	LOS C	33.4	249.0	0.95	0.99	35.1
West: M5 Motorway on&off ramp (W)											
10	L2	572	15.3	0.341	5.8	LOS A	0.0	0.0	0.00	0.52	54.3
12	R2	306	27.1	0.641	47.6	LOS D	6.9	70.1	0.98	0.84	31.7
Approach		878	19.4	0.641	20.4	LOS B	6.9	70.1	0.34	0.63	44.1
All Vehicles		4383	11.4	0.916	31.8	LOS C	33.4	249.0	0.77	0.85	38.3

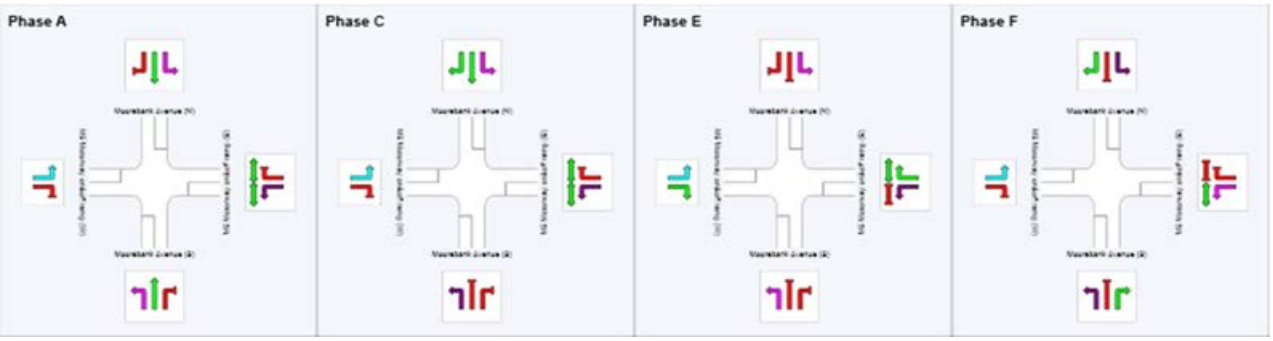
PHASING SUMMARY

Site: I-13 2019 MIMT PM

Moorebank Avenue / the M5 Motorway
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	17	30	53
Green Time (sec)	10	6	16	34
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	17	13	23	41
Phase Split	18 %	14 %	24 %	44 %



I-14 Intersection of M5 Motorway and Hume Highway

MOVEMENT SUMMARY

Site: I-14 2019 BASE AM

M5 Motorway / Hume Highway
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
2	T1	3727	4.5	0.899	2.1	LOS A	20.5	149.0	0.24	0.23	58.4
3	R2	557	4.2	0.767	37.3	LOS C	13.4	97.2	0.95	0.84	39.7
Approach		4284	4.4	0.899	6.7	LOS A	20.5	149.0	0.33	0.31	55.0
East: M5 Motorway on&off-ramp (E)											
4	L2	293	6.5	0.116	30.3	LOS C	4.1	30.5	0.59	0.70	42.0
6	R2	1016	3.8	1.044	154.1	LOS F	40.1	289.7	1.00	1.16	14.4
Approach		1308	4.4	1.044	126.4	LOS F	40.1	289.7	0.91	1.06	18.0
North: Hume Highway (N)											
7	L2	608	5.9	0.451	10.1	LOS A	13.1	96.1	0.37	0.68	48.9
8	T1	1151	7.0	0.467	28.1	LOS B	16.6	123.3	0.61	0.54	43.4
Approach		1759	6.6	0.467	21.9	LOS B	16.6	123.3	0.53	0.59	44.7
All Vehicles		7352	4.9	1.044	31.6	LOS C	40.1	289.7	0.48	0.51	40.9

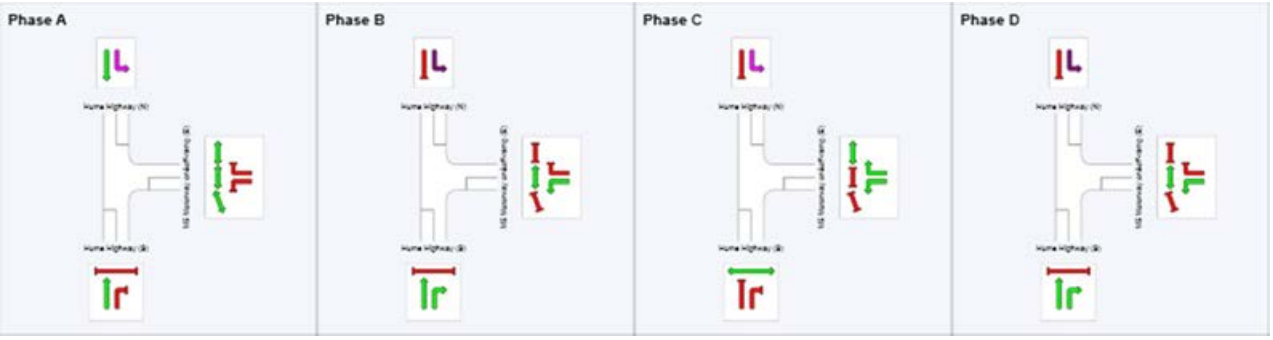
PHASING SUMMARY

Site: I-14 2019 BASE AM

M5 Motorway / Hume Highway
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	No	No	No	Yes
Phase Change Time (sec)	20	97	123	0
Green Time (sec)	70	19	29	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	77	26	36	20
Phase Split	48 %	16 %	23 %	13 %



MOVEMENT SUMMARY

Site: I-14 2019 BASE PM

M5 Motorway / Hume Highway
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
2	T1	2376	3.7	0.580	2.1	LOS A	5.9	42.9	0.11	0.10	58.4
3	R2	366	1.7	0.934	87.8	LOS F	15.6	111.1	1.00	0.94	27.3
Approach		2742	3.5	0.934	13.5	LOS A	15.6	111.1	0.23	0.21	50.7
East: M5 Motorway on&off-ramp (E)											
4	L2	1289	3.7	0.951	88.5	LOS F	54.1	390.7	0.93	1.01	27.0
6	R2	1018	3.6	0.985	115.7	LOS F	35.4	255.2	1.00	1.07	17.8
Approach		2307	3.6	0.985	100.5	LOS F	54.1	390.7	0.96	1.03	22.9
North: Hume Highway (N)											
7	L2	780	2.0	0.546	9.2	LOS A	16.9	120.7	0.38	0.69	49.7
8	T1	2652	2.7	0.815	19.0	LOS B	42.8	306.3	0.69	0.64	47.7
Approach		3432	2.5	0.815	16.8	LOS B	42.8	306.3	0.62	0.65	48.0
All Vehicles		8481	3.1	0.985	38.5	LOS C	54.1	390.7	0.59	0.61	38.3

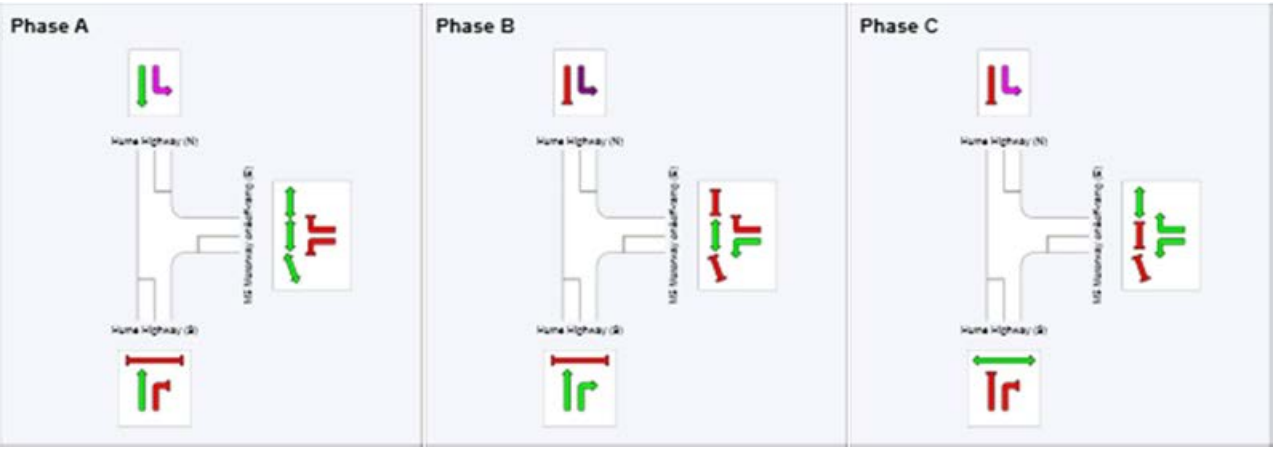
PHASING SUMMARY

Site: I-14 2019 BASE PM

M5 Motorway / Hume Highway
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	97	121
Green Time (sec)	90	17	31
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	97	24	38
Phase Split	61 %	15 %	24 %



MOVEMENT SUMMARY

Site: I-14 2019 MIMT AM

M5 Motorway / Hume Highway
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
2	T1	3727	4.5	0.899	2.1	LOS A	20.5	149.0	0.24	0.23	58.4
3	R2	569	4.1	0.783	37.8	LOS C	13.9	100.5	0.96	0.84	39.5
Approach		4296	4.4	0.899	6.8	LOS A	20.5	149.0	0.33	0.31	54.9
East: M5 Motorway on&off-ramp (E)											
4	L2	293	6.5	0.116	30.3	LOS C	4.1	30.5	0.59	0.70	42.0
6	R2	1034	5.5	1.088	187.1	LOS F	45.1	335.4	1.00	1.23	12.4
Approach		1327	5.7	1.088	152.5	LOS F	45.1	335.4	0.91	1.11	15.7
North: Hume Highway (N)											
7	L2	641	8.5	0.491	10.6	LOS A	14.9	114.5	0.40	0.69	48.3
8	T1	1151	7.0	0.467	28.1	LOS B	16.6	123.3	0.61	0.54	43.4
Approach		1792	7.5	0.491	21.9	LOS B	16.6	123.3	0.54	0.59	44.7
All Vehicles		7414	5.4	1.088	36.5	LOS C	45.1	335.4	0.49	0.52	39.0

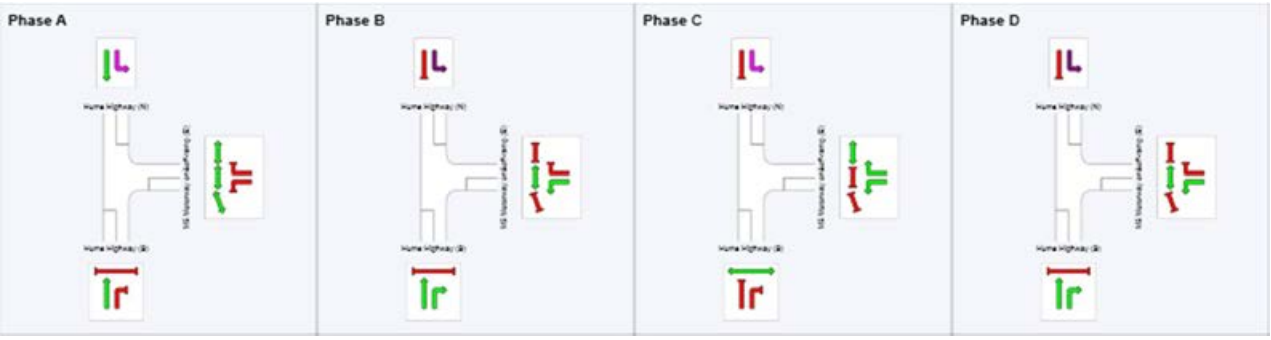
PHASING SUMMARY

Site: I-14 2019 MIMT AM

M5 Motorway / Hume Highway
2019 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	No	No	No	Yes
Phase Change Time (sec)	20	97	123	0
Green Time (sec)	70	19	29	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	77	26	36	20
Phase Split	48 %	16 %	23 %	13 %



MOVEMENT SUMMARY

Site: I-14 2019 MIMT PM

M5 Motorway / Hume Highway
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
2	T1	2376	3.7	0.580	2.1	LOS A	5.9	42.9	0.11	0.10	58.4
3	R2	366	1.7	0.934	87.8	LOS F	15.6	111.1	1.00	0.94	27.3
Approach		2742	3.5	0.934	13.5	LOS A	15.6	111.1	0.23	0.21	50.7
East: M5 Motorway on&off-ramp (E)											
4	L2	1301	3.6	0.963	94.0	LOS F	56.3	406.1	0.93	1.02	26.2
6	R2	1054	5.6	1.062	168.5	LOS F	44.5	331.9	1.00	1.19	13.5
Approach		2355	4.5	1.062	127.4	LOS F	56.3	406.1	0.96	1.10	19.7
North: Hume Highway (N)											
7	L2	803	4.9	0.581	9.5	LOS A	18.6	139.0	0.41	0.69	49.3
8	T1	2652	2.7	0.815	19.0	LOS B	42.8	306.3	0.69	0.64	47.7
Approach		3455	3.2	0.815	16.8	LOS B	42.8	306.3	0.63	0.66	48.0
All Vehicles		8552	3.6	1.062	46.2	LOS D	56.3	406.1	0.59	0.64	35.7

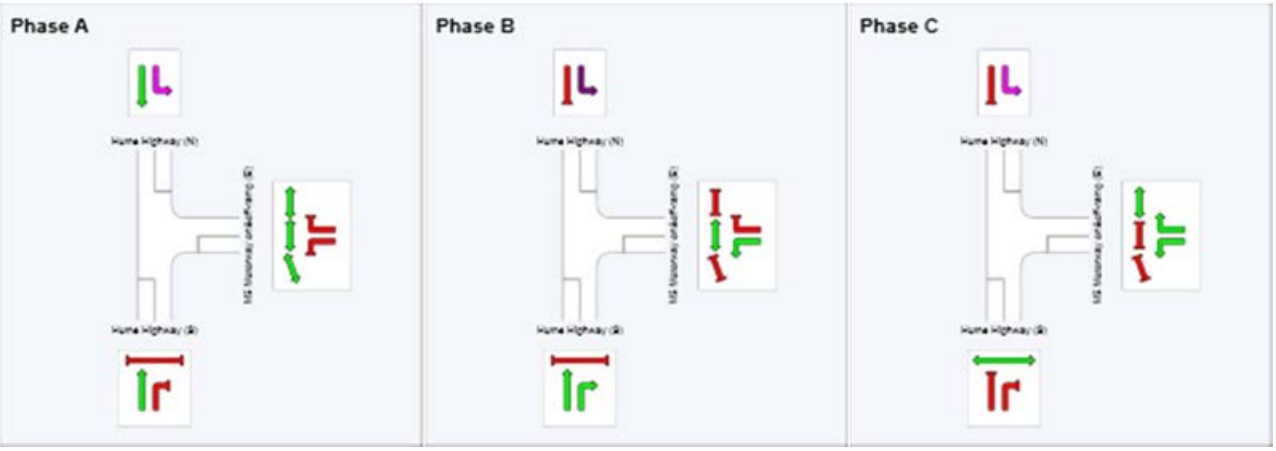
PHASING SUMMARY

Site: I-14 2019 MIMT PM

M5 Motorway / Hume Highway
2019 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	97	121
Green Time (sec)	90	17	31
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	97	24	38
Phase Split	61 %	15 %	24 %



I-15 Intersection of Cambridge Avenue and Canterbury Road

MOVEMENT SUMMARY

Site: I-15 2019 BASE AM

Canterbury Road / Cambridge Avenue / Glenfield Road
2014 BASE AM PEAK 7:45 am - 8:45 am Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	363	3.5	0.386	5.4	LOS A	2.1	15.3	0.50	0.61	53.3
2	T1	6	0.0	0.663	5.6	LOS A	5.9	41.8	0.63	0.73	51.6
3	R2	839	2.1	0.663	11.0	LOS A	5.9	41.8	0.63	0.73	51.7
Approach		1208	2.5	0.663	9.3	LOS A	5.9	41.8	0.59	0.69	52.1
East: Cambridge Avenue (E)											
4	L2	256	2.9	0.136	3.5	LOS A	0.0	0.0	0.00	0.43	56.5
5	T1	67	7.8	0.068	5.1	LOS A	0.4	2.8	0.50	0.56	53.5
6	R2	43	9.8	0.068	10.4	LOS A	0.4	2.8	0.50	0.58	53.8
Approach		366	4.6	0.136	4.6	LOS A	0.4	2.8	0.15	0.47	55.6
North: Railway Parade (N)											
7	L2	265	2.8	0.441	12.6	LOS A	3.2	23.1	0.91	1.01	49.4
8	T1	3	33.3	0.342	13.3	LOS A	2.0	14.7	0.85	0.97	47.1
9	R2	145	8.0	0.342	18.6	LOS B	2.0	14.7	0.85	0.97	46.0
Approach		414	4.8	0.441	14.7	LOS B	3.2	23.1	0.89	0.99	48.2
West: Glenfield Road (W)											
10	L2	300	5.3	0.600	13.8	LOS A	5.9	43.6	0.97	1.10	47.2
11	T1	155	6.8	0.600	14.2	LOS A	5.9	43.6	0.96	1.10	47.4
12	R2	277	5.7	0.600	20.5	LOS B	5.4	39.9	0.95	1.10	45.3
Approach		732	5.8	0.600	16.4	LOS B	5.9	43.6	0.96	1.10	46.5
All Vehicles		2720	4.0	0.663	11.4	LOS A	5.9	43.6	0.68	0.82	50.4

MOVEMENT SUMMARY

Site: I-15 2019 BASE PM

Canterbury Road / Cambridge Avenue / Glenfield Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	247	2.1	0.287	6.4	LOS A	1.4	10.3	0.62	0.75	52.9
2	T1	5	0.0	0.264	5.9	LOS A	1.4	9.6	0.61	0.79	51.7
3	R2	256	1.2	0.264	11.3	LOS A	1.4	9.6	0.61	0.79	51.9
Approach		508	1.7	0.287	8.9	LOS A	1.4	10.3	0.61	0.77	52.3
East: Cambridge Avenue (E)											
4	L2	941	2.2	0.497	3.5	LOS A	0.0	0.0	0.00	0.43	56.4
5	T1	217	7.8	0.306	6.0	LOS A	2.0	14.4	0.61	0.66	52.7
6	R2	268	0.8	0.306	11.1	LOS A	2.0	14.4	0.63	0.70	52.9
Approach		1426	2.8	0.497	5.3	LOS A	2.0	14.4	0.21	0.52	55.1
North: Railway Parade (N)											
7	L2	93	1.1	0.120	6.7	LOS A	0.6	3.9	0.59	0.69	53.7
8	T1	0	0.0	0.000	0.0	NA	0.0	0.0	0.00	0.00	0.0
9	R2	171	8.0	0.182	11.6	LOS A	0.9	6.9	0.60	0.77	50.6
Approach		263	5.6	0.182	9.9	LOS A	0.9	6.9	0.59	0.75	51.7
West: Glenfield Road (W)											
10	L2	218	4.3	0.299	6.7	LOS A	1.6	11.8	0.61	0.70	52.6
11	T1	41	0.0	0.299	6.6	LOS A	1.6	11.8	0.61	0.70	54.6
12	R2	371	3.7	0.362	11.7	LOS A	2.2	15.8	0.63	0.78	50.6
Approach		629	3.7	0.362	9.6	LOS A	2.2	15.8	0.62	0.75	51.5
All Vehicles		2827	3.1	0.497	7.3	LOS A	2.2	15.8	0.41	0.63	53.5

MOVEMENT SUMMARY

Site: I-15 2019 MIMT AM

Canterbury Road / Cambridge Avenue / Glenfield Road
2019 MIMT AM PEAK 7:45 am - 8:45 am Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Canterbury Road (S)											
1	L2	363	3.5	0.391	5.5	LOS A	2.2	15.5	0.50	0.62	53.3
2	T1	6	0.0	0.684	5.8	LOS A	6.4	45.7	0.65	0.73	51.5
3	R2	868	2.1	0.684	11.2	LOS A	6.4	45.7	0.65	0.73	51.7
Approach		1237	2.5	0.684	9.5	LOS A	6.4	45.7	0.61	0.70	52.1
East: Cambridge Avenue (E)											
4	L2	256	2.9	0.136	3.5	LOS A	0.0	0.0	0.00	0.43	56.5
5	T1	67	7.8	0.068	5.1	LOS A	0.4	2.8	0.50	0.56	53.5
6	R2	43	9.8	0.068	10.4	LOS A	0.4	2.8	0.50	0.58	53.8
Approach		366	4.6	0.136	4.6	LOS A	0.4	2.8	0.15	0.47	55.6
North: Railway Parade (N)											
7	L2	273	2.7	0.472	13.8	LOS A	3.6	25.9	0.93	1.04	48.6
8	T1	3	33.3	0.359	14.3	LOS A	2.1	15.8	0.87	0.98	46.5
9	R2	145	8.0	0.359	19.5	LOS B	2.1	15.8	0.87	0.98	45.4
Approach		421	4.7	0.472	15.8	LOS B	3.6	25.9	0.91	1.02	47.5
West: Glenfield Road (W)											
10	L2	300	5.3	0.633	15.4	LOS B	6.6	48.6	0.99	1.14	46.1
11	T1	160	6.6	0.633	15.9	LOS B	6.6	48.6	0.99	1.14	46.2
12	R2	277	5.7	0.633	22.3	LOS B	6.0	44.1	0.97	1.14	44.3
Approach		737	5.7	0.633	18.1	LOS B	6.6	48.6	0.98	1.14	45.4
All Vehicles		2762	4.0	0.684	12.1	LOS A	6.6	48.6	0.69	0.84	50.0

MOVEMENT SUMMARY

Site: I-15 2019 MIMT PM

Canterbury Road / Cambridge Avenue / Glenfield Road
2019 MIMT PM PEAK 4:30 pm - 5:30 pm Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Canterbury Road (S)											
1	L2	247	2.1	0.290	6.5	LOS A	1.5	10.4	0.63	0.76	52.8
2	T1	5	0.0	0.266	5.9	LOS A	1.4	9.8	0.61	0.80	51.7
3	R2	256	1.2	0.266	11.3	LOS A	1.4	9.8	0.61	0.80	51.9
Approach		508	1.7	0.290	8.9	LOS A	1.5	10.4	0.62	0.78	52.3
East: Cambridge Avenue (E)											
4	L2	970	2.2	0.512	3.5	LOS A	0.0	0.0	0.00	0.43	56.4
5	T1	223	7.6	0.315	6.0	LOS A	2.1	14.9	0.61	0.66	52.7
6	R2	276	0.8	0.315	11.1	LOS A	2.1	14.9	0.64	0.70	52.9
Approach		1468	2.7	0.512	5.3	LOS A	2.1	14.9	0.21	0.52	55.1
North: Railway Parade (N)											
7	L2	93	1.1	0.120	6.7	LOS A	0.6	3.9	0.59	0.69	53.7
8	T1	1	0.0	0.183	6.1	LOS A	0.9	7.0	0.60	0.77	51.7
9	R2	171	8.0	0.183	11.6	LOS A	0.9	7.0	0.60	0.77	50.6
Approach		264	5.6	0.183	9.8	LOS A	0.9	7.0	0.60	0.75	51.7
West: Glenfield Road (W)											
10	L2	218	4.3	0.301	6.7	LOS A	1.7	11.9	0.62	0.71	52.6
11	T1	41	0.0	0.301	6.6	LOS A	1.7	11.9	0.62	0.71	54.6
12	R2	371	3.7	0.365	11.7	LOS A	2.2	16.0	0.64	0.78	50.6
Approach		629	3.7	0.365	9.7	LOS A	2.2	16.0	0.63	0.75	51.5
All Vehicles		2870	3.0	0.512	7.3	LOS A	2.2	16.0	0.41	0.63	53.5

I-0A Intersection of Moorebank Avenue and Anzac Road

MOVEMENT SUMMARY

Site: I-0A 2019 BASE AM

Intersection of Moorebank Avenue and Anzac Road
2019 BASE AM PEAK
Signals - Fixed Time Cycle Time = 103 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	965	3.5	0.724	10.0	LOS A	29.1	210.0	0.66	0.62	47.2
3	R2	393	3.2	0.621	28.8	LOS C	15.2	109.3	0.89	0.89	39.9
Approach		1358	3.4	0.724	15.4	LOS B	29.1	210.0	0.73	0.70	44.0
East: Anzac Road (E)											
4	L2	222	3.3	0.268	24.1	LOS B	6.9	49.3	0.66	0.75	42.1
6	R2	196	13.4	0.744	54.4	LOS D	10.1	78.9	1.00	0.88	20.9
Approach		418	8.1	0.744	38.3	LOS C	10.1	78.9	0.82	0.81	31.1
North: Moorebank Avenue (N)											
7	L2	319	9.9	0.208	6.1	LOS A	1.1	8.7	0.15	0.59	49.8
8	T1	600	3.3	0.555	22.7	LOS B	17.0	122.4	0.77	0.67	37.2
Approach		919	5.6	0.555	16.9	LOS B	17.0	122.4	0.55	0.64	40.8
All Vehicles		2695	4.9	0.744	19.5	LOS B	29.1	210.0	0.68	0.69	40.0

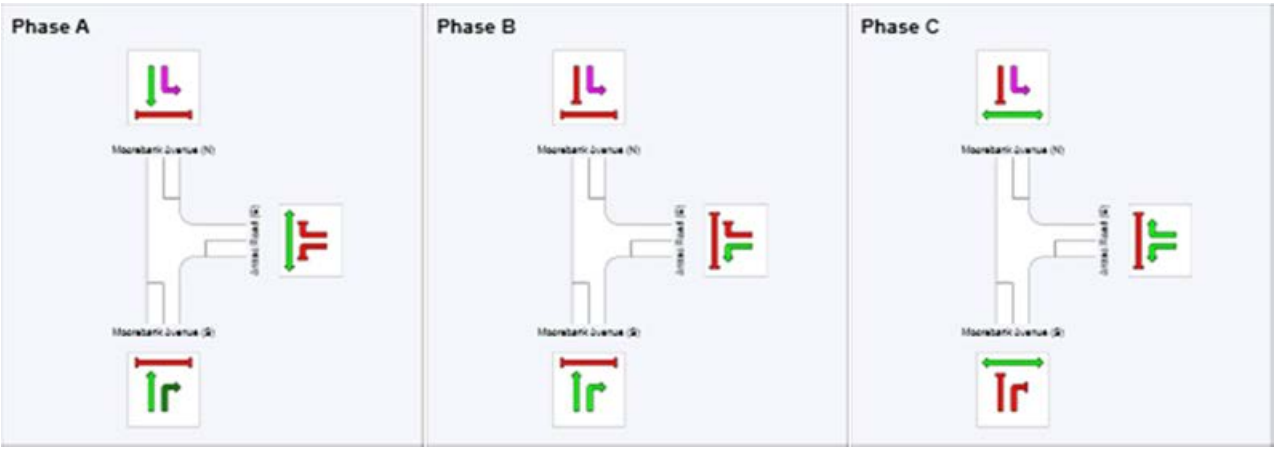
PHASING SUMMARY

Site: I-0A 2019 BASE AM

Intersection of Moorebank Avenue and Anzac Road
2019 BASE AM PEAK
Signals - Fixed Time Cycle Time = 103 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	50	78
Green Time (sec)	44	22	19
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	50	28	25
Phase Split	49 %	27 %	24 %



MOVEMENT SUMMARY

Site: I-0A 2019 BASE PM

Intersection of Moorebank Avenue and Anzac Road
2019 BASE PM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	289	3.6	0.242	9.5	LOS A	6.7	48.3	0.47	0.41	47.7
3	R2	174	1.2	0.839	64.2	LOS E	10.3	72.6	1.00	1.05	28.8
Approach		463	2.7	0.839	30.0	LOS C	10.3	72.6	0.67	0.65	36.0
East: Anzac Road (E)											
4	L2	472	2.2	0.692	37.0	LOS C	21.4	152.7	0.91	0.85	36.7
6	R2	314	5.4	0.742	49.8	LOS D	16.3	119.3	0.99	0.87	21.9
Approach		785	3.5	0.742	42.1	LOS C	21.4	152.7	0.94	0.86	30.7
North: Moorebank Avenue (N)											
7	L2	296	3.9	0.184	6.0	LOS A	1.0	7.5	0.14	0.59	50.2
8	T1	1148	2.5	0.871	27.7	LOS B	45.3	324.1	0.87	0.84	34.3
Approach		1444	2.8	0.871	23.2	LOS B	45.3	324.1	0.72	0.79	36.7
All Vehicles		2693	3.0	0.871	29.9	LOS C	45.3	324.1	0.77	0.78	34.2

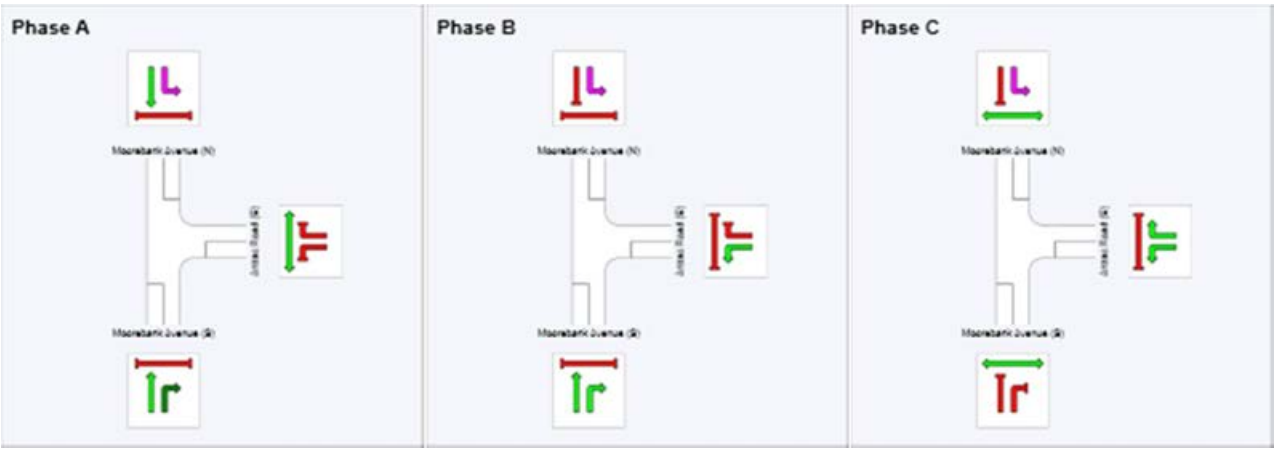
PHASING SUMMARY

Site: I-0A 2019 BASE PM

Intersection of Moorebank Avenue and Anzac Road
2019 BASE PM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	63	75
Green Time (sec)	57	6	29
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	63	12	35
Phase Split	57 %	11 %	32 %



MOVEMENT SUMMARY

Site: I-0A 2019 MINT AM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2019 MINT AM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	58	0.0	0.661	29.9	LOS C	19.0	136.3	0.77	0.72	31.1
2	T1	959	3.6	0.661	25.1	LOS B	19.4	140.2	0.77	0.70	38.3
3	R2	388	3.3	0.713	43.1	LOS D	18.8	135.2	0.95	0.86	31.6
Approach		1405	3.4	0.713	30.3	LOS C	19.4	140.2	0.82	0.74	35.8
East: Anzac Road (E)											
4	L2	187	3.9	0.195	10.3	LOS A	3.0	21.4	0.38	0.66	48.8
5	T1	18	0.0	0.101	52.1	LOS D	0.9	6.3	0.95	0.68	25.8
6	R2	196	14.0	0.638	61.3	LOS E	5.4	42.5	1.00	0.82	28.5
Approach		401	8.7	0.638	37.1	LOS C	5.4	42.5	0.71	0.74	34.7
North: Moorebank Avenue (N)											
7	L2	318	9.9	0.618	33.9	LOS C	17.8	133.7	0.83	0.80	38.1
8	T1	484	3.5	0.618	32.2	LOS C	17.8	133.7	0.83	0.74	34.5
9	R2	261	35.9	0.464	47.5	LOS D	6.3	70.6	0.92	0.79	24.5
Approach		1063	13.4	0.618	36.5	LOS C	17.8	133.7	0.85	0.77	33.1
West: MIMT Access Road (W)											
10	L2	96	97.8	0.195	25.1	LOS B	1.5	27.0	0.79	0.70	31.8
11	T1	1	0.0	0.007	52.0	LOS D	0.1	0.4	0.94	0.56	26.0
12	R2	1	0.0	0.008	56.3	LOS D	0.1	0.4	0.94	0.59	19.2
Approach		98	95.7	0.195	25.7	LOS B	1.5	27.0	0.79	0.70	31.5
All Vehicles		2967	10.7	0.713	33.3	LOS C	19.4	140.2	0.82	0.75	34.5

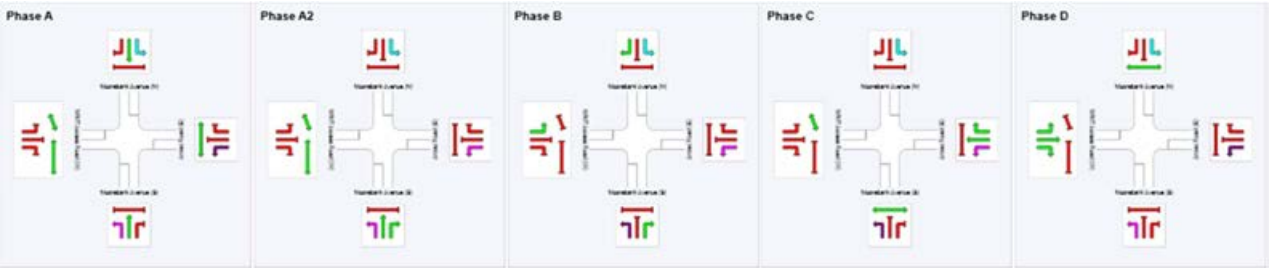
PHASING SUMMARY

Site: I-0A 2019 MINT AM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2019 MINT AM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	A2	B	C	D
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	41	50	80	96
Green Time (sec)	35	3	24	10	8
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	41	9	30	16	14
Phase Split	37 %	8 %	27 %	15 %	13 %



MOVEMENT SUMMARY

Site: I-0A 2019 MINT PM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2019 MINT PM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	1	0.0	0.209	28.7	LOS C	4.3	31.4	0.59	0.49	32.2
2	T1	295	3.9	0.209	23.1	LOS B	4.4	31.9	0.59	0.49	39.6
3	R2	178	1.2	0.817	63.3	LOS E	10.3	72.9	1.00	0.92	26.0
Approach		474	2.9	0.817	38.2	LOS C	10.3	72.9	0.74	0.65	32.8
East: Anzac Road (E)											
4	L2	462	2.3	0.696	20.5	LOS B	17.2	123.0	0.81	0.84	41.8
5	T1	1	0.0	0.005	48.2	LOS D	0.1	0.4	0.91	0.56	26.9
6	R2	316	5.7	0.811	64.0	LOS E	9.2	67.3	1.00	0.92	27.9
Approach		779	3.6	0.811	38.1	LOS C	17.2	123.0	0.89	0.87	34.3
North: Moorebank Avenue (N)											
7	L2	299	4.2	0.790	23.6	LOS B	29.5	212.2	0.77	0.75	44.2
8	T1	1140	2.5	0.790	19.2	LOS B	29.5	212.2	0.74	0.70	41.5
9	R2	129	86.2	0.317	46.5	LOS D	3.0	52.2	0.87	0.76	23.7
Approach		1568	9.7	0.790	22.3	LOS B	29.5	212.2	0.76	0.71	40.1
West: MIMT Access Road (W)											
10	L2	286	39.3	0.382	24.3	LOS B	4.3	50.3	0.83	0.76	33.6
11	T1	20	0.0	0.141	53.9	LOS D	1.0	7.3	0.97	0.68	25.4
12	R2	49	0.0	0.366	59.8	LOS E	2.7	18.7	0.99	0.74	18.5
Approach		356	31.7	0.382	30.9	LOS C	4.3	50.3	0.86	0.75	30.2
All Vehicles		3177	9.7	0.817	29.5	LOS C	29.5	212.2	0.80	0.75	36.2

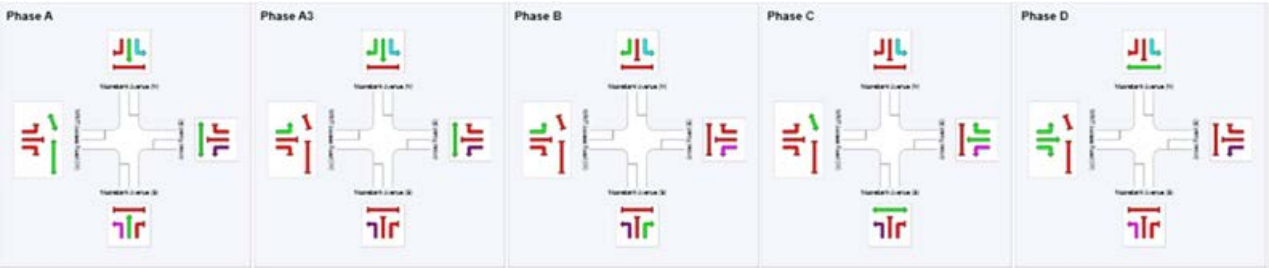
PHASING SUMMARY

Site: I-0A 2019 MINT PM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2019 MINT PM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	A3	B	C	D
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	47	59	78	96
Green Time (sec)	41	6	13	12	8
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	47	12	19	18	14
Phase Split	43 %	11 %	17 %	16 %	13 %



Appendix G

2023 SIDRA results with and without Moorebank IMT

I-01 Intersection of the Hume Highway and Orange Grove Road

AM BASE

MOVEMENT SUMMARY

Site: I-01 2023 BASE AM

Hume Highway / Orange Grove Road
2023 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
NorthEast: Hume Highway (NE)											
25	T1	901	11.4	0.640	22.5	LOS B	17.9	137.6	0.82	0.74	36.9
26	R2	367	10.0	0.909	87.5	LOS F	16.0	121.9	1.00	0.94	23.7
Approach		1268	11.0	0.909	41.4	LOS C	17.9	137.6	0.87	0.80	30.3
NorthWest: Orange Grove Road (NW)											
27	L2	565	6.5	0.670	12.6	LOS A	12.4	91.9	0.36	0.72	48.9
29	R2	1239	6.7	0.914	72.4	LOS F	34.4	254.7	1.00	0.92	23.5
Approach		1804	6.7	0.914	53.6	LOS D	34.4	254.7	0.80	0.86	28.7
SouthWest: Hume Highway (SW)											
30	L2	1172	6.5	0.409	11.0	LOS A	12.0	88.9	0.31	0.69	52.7
31	T1	2040	4.9	0.732	20.1	LOS B	32.1	234.0	0.62	0.57	42.3
Approach		3212	5.5	0.732	16.8	LOS B	32.1	234.0	0.51	0.61	46.3
All Vehicles		6284	6.9	0.914	32.3	LOS C	34.4	254.7	0.66	0.72	35.4

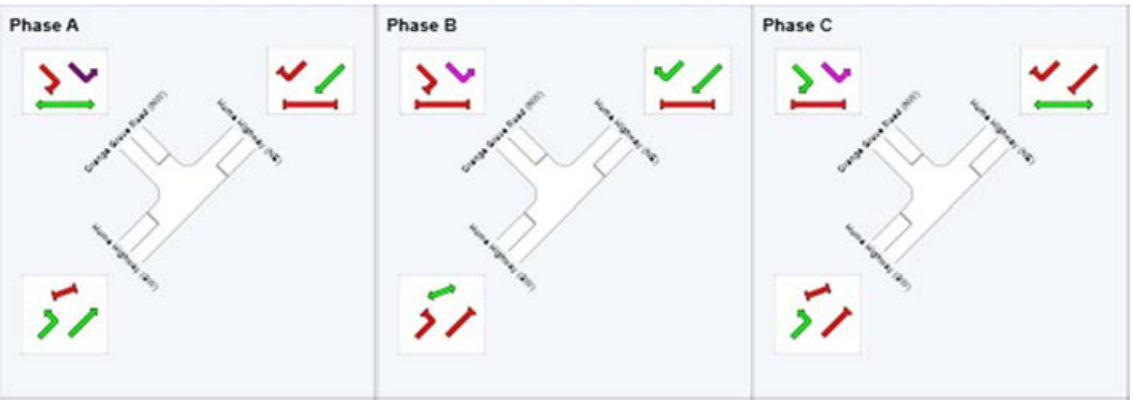
PHASING SUMMARY

Site: I-01 2023 BASE AM

Hume Highway / Orange Grove Road
2023 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	86	109
Green Time (sec)	79	16	35
Yellow Time (sec)	5	4	5
All-Red Time (sec)	2	2	2
Phase Time (sec)	86	22	42
Phase Split	57 %	15 %	28 %



PM BASE

MOVEMENT SUMMARY

Site: I-01 2023 BASE PM

Hume Highway / Orange Grove Road
2023 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
NorthEast: Hume Highway (NE)											
25	T1	1729	3.2	0.900	38.6	LOS C	45.8	329.2	0.88	0.92	28.9
26	R2	787	2.7	0.923	56.5	LOS E	21.3	152.5	1.00	0.99	30.5
Approach		2517	3.1	0.923	44.2	LOS D	45.8	329.2	0.92	0.94	29.6
NorthWest: Orange Grove Road (NW)											
27	L2	374	4.2	0.348	11.9	LOS A	6.0	43.5	0.26	0.63	49.7
29	R2	1309	3.1	0.987	91.7	LOS F	42.9	308.1	1.00	1.02	20.4
Approach		1683	3.4	0.987	74.0	LOS F	42.9	308.1	0.83	0.93	23.9
SouthWest: Hume Highway (SW)											
30	L2	1257	2.9	0.732	19.1	LOS B	18.9	135.6	0.76	0.83	46.1
31	T1	1079	5.3	0.969	85.7	LOS F	36.8	269.6	1.00	1.11	18.5
Approach		2336	4.0	0.969	49.8	LOS D	36.8	269.6	0.87	0.96	29.1
All Vehicles		6536	3.5	0.987	53.9	LOS D	45.8	329.2	0.88	0.95	27.5

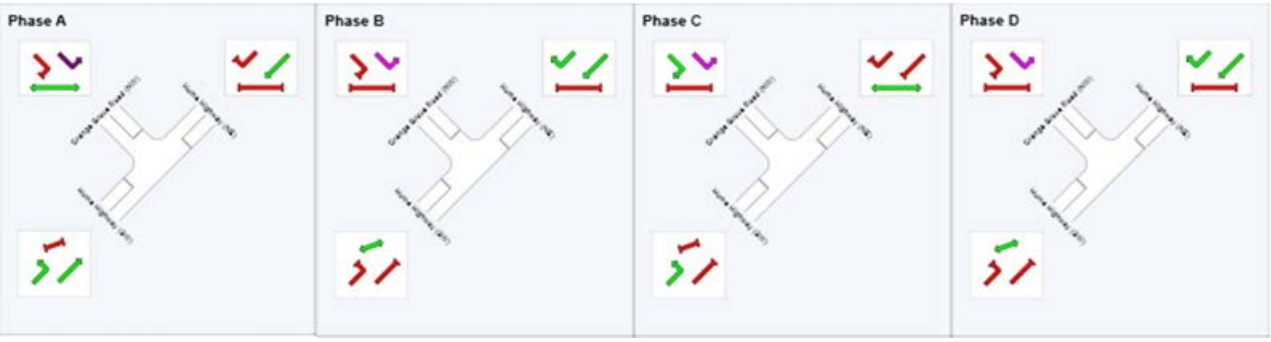
PHASING SUMMARY

Site: I-01 2023 BASE PM

Hume Highway / Orange Grove Road
2023 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	80	124
Green Time (sec)	47	20	38	19
Yellow Time (sec)	5	4	5	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	54	26	45	25
Phase Split	36 %	17 %	30 %	17 %



AM With Moorebank IMT – No upgrade

MOVEMENT SUMMARY

Site: I-01 2023 IMT AM

Hume Highway / Orange Grove Road
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
NorthEast: Hume Highway (NE)											
25	T1	909	11.3	0.652	23.3	LOS B	18.3	140.4	0.82	0.75	36.4
26	R2	367	10.0	0.856	82.2	LOS F	15.2	115.7	1.00	0.90	24.6
Approach		1276	11.0	0.856	40.3	LOS C	18.3	140.4	0.88	0.79	30.7
NorthWest: Orange Grove Road (NW)											
27	L2	565	6.5	0.656	13.5	LOS A	13.7	101.1	0.39	0.72	48.2
29	R2	1267	8.3	0.927	73.6	LOS F	36.1	274.2	1.00	0.93	23.3
Approach		1833	7.8	0.927	55.1	LOS D	36.1	274.2	0.81	0.87	28.3
SouthWest: Hume Highway (SW)											
30	L2	1193	8.2	0.429	11.5	LOS A	12.9	98.3	0.33	0.69	50.4
31	T1	2040	4.9	0.751	21.9	LOS B	34.0	248.1	0.66	0.60	40.9
Approach		3233	6.1	0.751	18.1	LOS B	34.0	248.1	0.54	0.64	44.5
All Vehicles		6342	7.6	0.927	33.2	LOS C	36.1	274.2	0.68	0.73	34.8

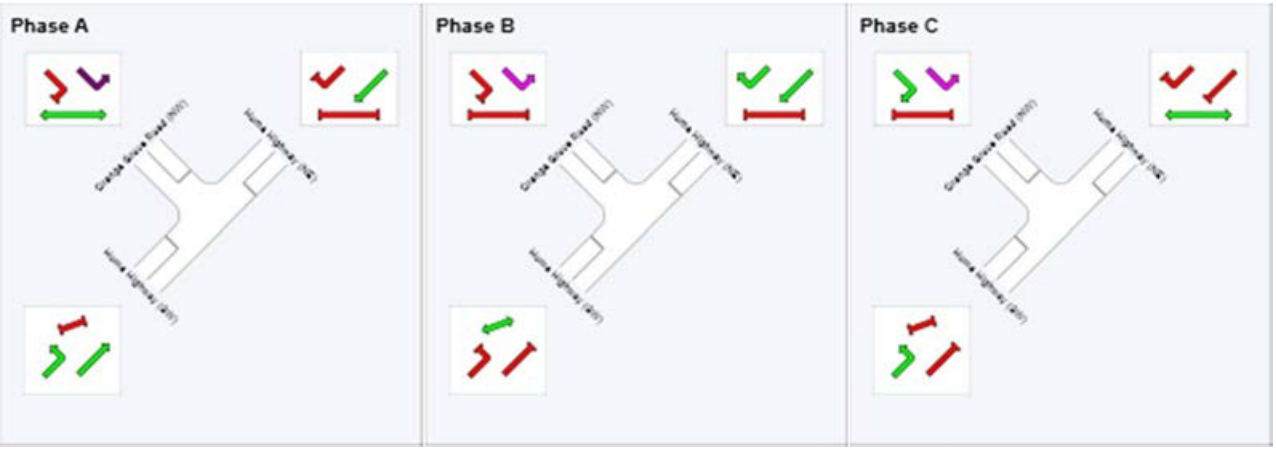
PHASING SUMMARY

Site: I-01 2023 IMT AM

Hume Highway / Orange Grove Road
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	84	108
Green Time (sec)	77	17	36
Yellow Time (sec)	5	4	5
All-Red Time (sec)	2	2	2
Phase Time (sec)	84	23	43
Phase Split	56 %	15 %	29 %



PM With Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-01 2023 IMT PM

Hume Highway / Orange Grove Road
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
NorthEast: Hume Highway (NE)											
25	T1	1732	3.4	0.903	39.4	LOS C	46.3	333.9	0.89	0.93	28.6
26	R2	787	2.7	0.923	56.5	LOS E	21.3	152.5	1.00	0.99	30.5
Approach		2519	3.1	0.923	44.7	LOS D	46.3	333.9	0.92	0.95	29.4
NorthWest: Orange Grove Road (NW)											
27	L2	374	4.2	0.349	12.3	LOS A	6.3	45.6	0.27	0.63	49.4
29	R2	1336	5.0	1.048	125.0	LOS F	52.0	385.9	1.00	1.11	16.4
Approach		1709	4.8	1.048	100.3	LOS F	52.0	385.9	0.84	1.01	19.7
SouthWest: Hume Highway (SW)											
30	L2	1288	4.8	0.767	19.5	LOS B	20.1	148.6	0.79	0.84	44.9
31	T1	1089	5.4	0.979	89.8	LOS F	38.2	280.2	1.00	1.13	17.9
Approach		2377	5.1	0.979	51.7	LOS D	38.2	280.2	0.88	0.97	28.2
All Vehicles		6605	4.3	1.048	61.6	LOS E	52.0	385.9	0.89	0.97	25.4

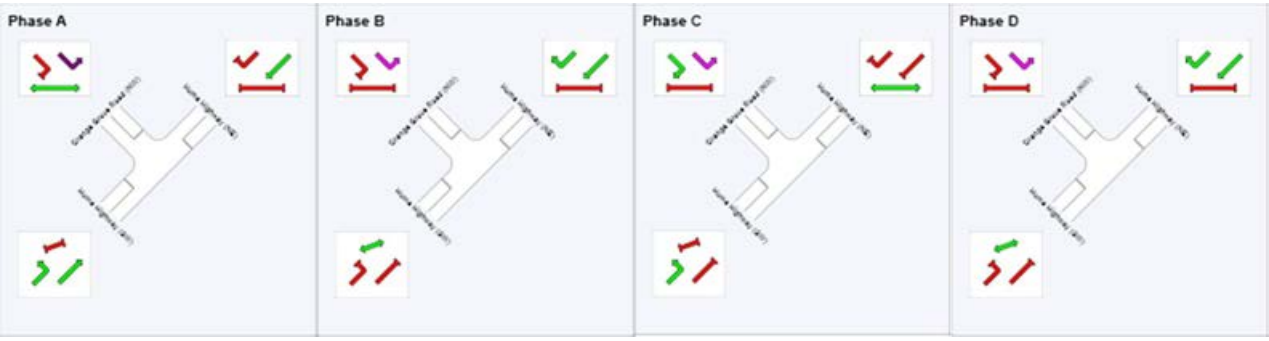
PHASING SUMMARY

Site: I-01 2023 IMT PM

Hume Highway / Orange Grove Road
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	80	124
Green Time (sec)	47	20	38	19
Yellow Time (sec)	5	4	5	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	54	26	45	25
Phase Split	36 %	17 %	30 %	17 %



AM With Moorebank IMT – with upgrade

MOVEMENT SUMMARY

Site: I-01 2023 IMT AM upgrade

Hume Highway / Orange Grove Road
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
NorthEast: Hume Highway (NE)											
25	T1	909	11.3	0.652	23.3	LOS B	18.3	140.4	0.82	0.75	36.4
26	R2	367	10.0	0.856	82.2	LOS F	15.2	115.7	1.00	0.90	24.6
Approach		1276	11.0	0.856	40.3	LOS C	18.3	140.4	0.88	0.79	30.7
NorthWest: Orange Grove Road (NW)											
27	L2	565	6.5	0.656	13.5	LOS A	13.7	101.1	0.39	0.72	48.2
29	R2	1267	8.3	0.927	73.6	LOS F	36.1	274.2	1.00	0.93	23.3
Approach		1833	7.8	0.927	55.1	LOS D	36.1	274.2	0.81	0.87	28.3
SouthWest: Hume Highway (SW)											
30	L2	1193	8.2	0.429	11.5	LOS A	12.9	98.3	0.33	0.69	50.4
31	T1	2040	4.9	0.751	21.9	LOS B	34.0	248.1	0.66	0.60	40.9
Approach		3233	6.1	0.751	18.1	LOS B	34.0	248.1	0.54	0.64	44.5
All Vehicles		6342	7.6	0.927	33.2	LOS C	36.1	274.2	0.68	0.73	34.8

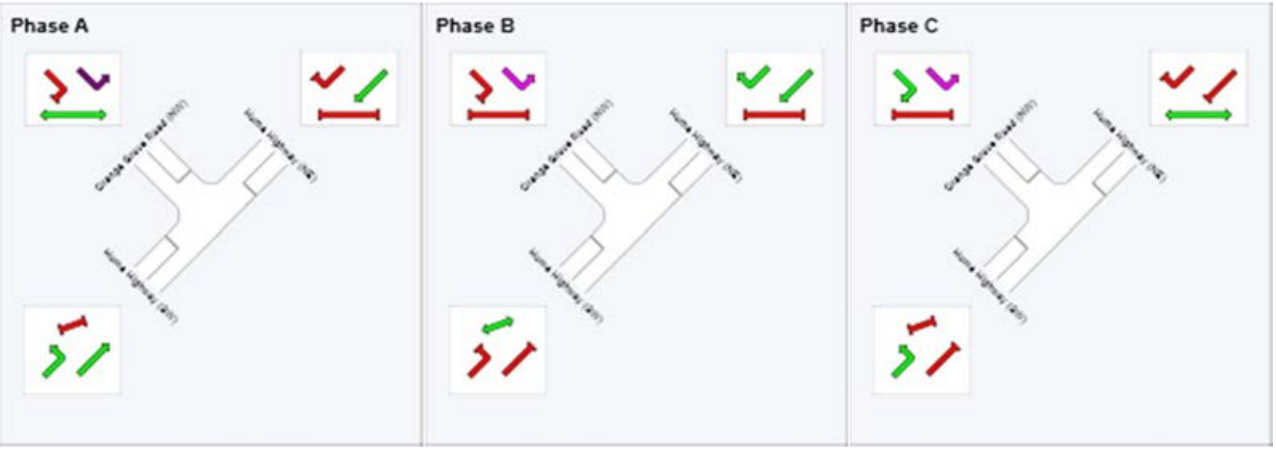
PHASING SUMMARY

Site: I-01 2023 IMT AM upgrade

Hume Highway / Orange Grove Road
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	84	108
Green Time (sec)	77	17	36
Yellow Time (sec)	5	4	5
All-Red Time (sec)	2	2	2
Phase Time (sec)	84	23	43
Phase Split	56 %	15 %	29 %



PM With Moorebank IMT – with upgrade

MOVEMENT SUMMARY

Site: I-01 2023 IMT PM upgrade

Hume Highway / Orange Grove Road
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
NorthEast: Hume Highway (NE)											
25	T1	1732	3.4	0.922	46.7	LOS D	50.1	361.0	0.92	0.99	26.1
26	R2	787	2.7	0.973	75.1	LOS F	24.8	177.5	1.00	1.06	26.1
Approach		2519	3.1	0.973	55.6	LOS D	50.1	361.0	0.95	1.01	26.1
NorthWest: Orange Grove Road (NW)											
27	L2	374	4.2	0.349	12.3	LOS A	6.3	45.6	0.27	0.63	49.4
29	R2	1336	5.0	1.003	97.7	LOS F	46.9	348.3	1.00	1.04	19.5
Approach		1709	4.8	1.003	79.0	LOS F	46.9	348.3	0.84	0.95	22.9
SouthWest: Hume Highway (SW)											
30	L2	1288	4.8	0.750	18.7	LOS B	19.4	143.8	0.76	0.83	45.4
31	T1	1089	5.4	0.979	89.8	LOS F	38.2	280.2	1.00	1.13	17.9
Approach		2377	5.1	0.979	51.3	LOS D	38.2	280.2	0.87	0.97	28.4
All Vehicles		6605	4.3	1.003	60.1	LOS E	50.1	361.0	0.89	0.98	25.8

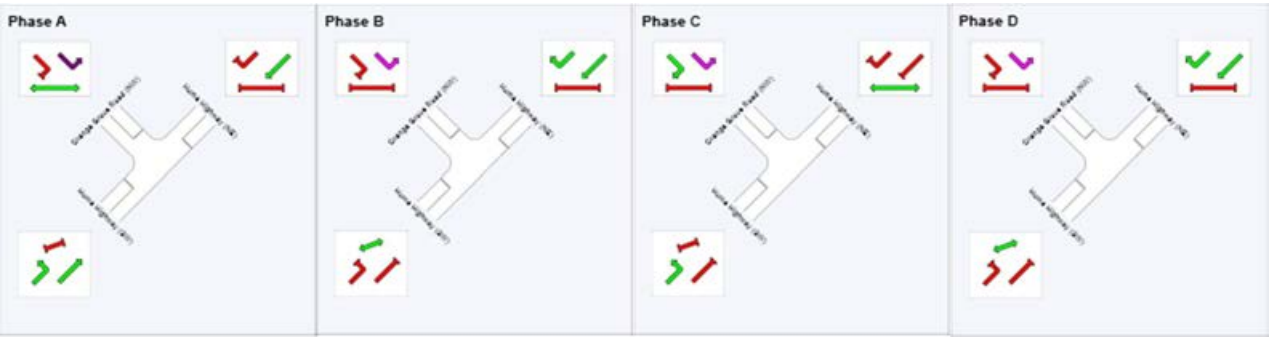
PHASING SUMMARY

Site: I-01 2023 IMT PM upgrade

Hume Highway / Orange Grove Road
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	79	125
Green Time (sec)	47	19	40	18
Yellow Time (sec)	5	4	5	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	54	25	47	24
Phase Split	36 %	17 %	31 %	16 %



I-02 Intersection of the Hume Highway and Elizabeth Drive
AM BASE

MOVEMENT SUMMARY

Site: I-02 2023 BASE AM

Hume Highway / Elizabeth Drive
2023 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	125	5.0	0.138	21.2	LOS B	3.2	23.4	0.38	0.67	37.5
2	T1	2179	6.3	0.839	37.5	LOS C	45.5	335.8	0.88	0.81	26.7
Approach		2304	6.3	0.856	36.6	LOS C	45.5	335.8	0.86	0.80	27.2
East: Elizabeth Drive (E)											
4	L2	36	5.9	0.405	60.2	LOS E	9.7	71.4	0.91	0.81	18.5
5	T1	464	5.7	0.405	56.3	LOS D	11.0	80.7	0.90	0.82	23.6
6	R2	144	2.2	0.696	76.3	LOS F	10.6	75.3	1.00	0.84	15.0
Approach		644	4.9	0.696	61.0	LOS E	11.0	80.7	0.92	0.82	21.1
North: Hume Highway (N)											
7	L2	78	2.7	0.592	24.2	LOS B	20.6	153.8	0.55	0.53	32.6
8	T1	1648	8.7	0.592	18.2	LOS B	20.8	156.9	0.54	0.50	37.2
9	R2	332	9.5	1.192	267.7	LOS F	24.5	185.8	1.00	1.42	7.2
Approach		2058	8.6	1.192	58.6	LOS E	24.5	185.8	0.62	0.65	20.7
West: Elizabeth Drive (W)											
10	L2	578	5.3	0.974	90.4	LOS F	52.0	380.5	1.00	1.01	16.7
11	T1	995	3.1	0.987	96.1	LOS F	46.0	330.5	1.00	1.16	15.5
12	R2	467	6.5	1.162	244.5	LOS F	33.3	245.9	1.00	1.38	7.8
Approach		2040	4.5	1.162	128.5	LOS F	52.0	380.5	1.00	1.17	12.7
All Vehicles		7046	6.3	1.192	71.9	LOS F	52.0	380.5	0.83	0.87	18.4

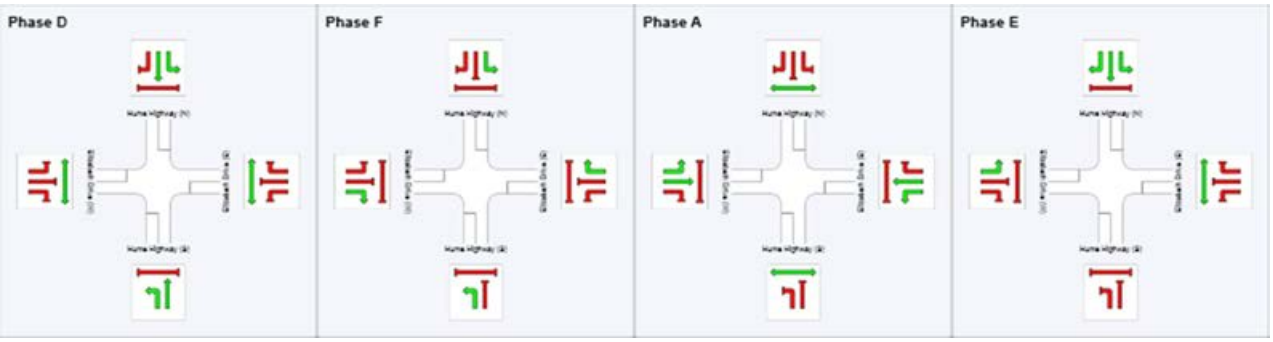
PHASING SUMMARY

Site: I-02 2023 BASE AM

Hume Highway / Elizabeth Drive
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	68	91	132
Green Time (sec)	62	17	35	12
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	68	23	41	18
Phase Split	45 %	15 %	27 %	12 %



PM BASE

MOVEMENT SUMMARY Site: I-02 2023 BASE PM

Hume Highway / Elizabeth Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

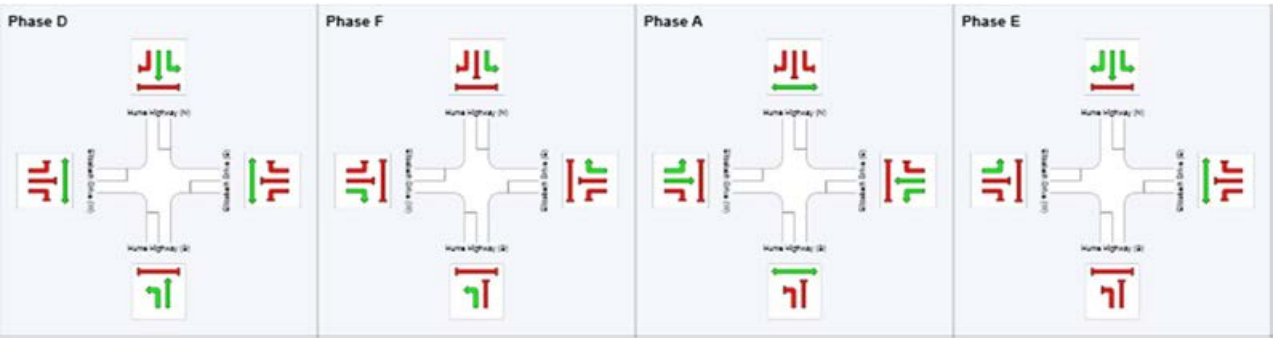
Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	300	4.2	0.446	40.2	LOS C	14.0	101.5	0.69	0.77	28.3
2	T1	1487	4.7	0.868	56.3	LOS D	36.7	267.1	0.96	0.92	20.9
Approach		1787	4.7	0.868	53.6	LOS D	36.7	267.1	0.92	0.90	22.0
East: Elizabeth Drive (E)											
4	L2	119	0.9	0.869	78.1	LOS F	25.5	181.1	1.00	0.97	15.4
5	T1	983	2.5	0.869	72.7	LOS F	31.6	225.9	1.00	0.97	19.8
6	R2	159	0.0	1.070	168.1	LOS F	18.3	128.2	1.00	1.30	8.1
Approach		1261	2.0	1.070	85.2	LOS F	31.6	225.9	1.00	1.01	16.9
North: Hume Highway (N)											
7	L2	63	5.0	0.834	21.0	LOS B	35.5	255.2	0.67	0.64	35.2
8	T1	2388	2.9	0.834	15.4	LOS B	36.4	260.8	0.67	0.63	39.6
9	R2	903	2.9	0.862	69.2	LOS E	32.8	235.2	1.00	0.91	20.8
Approach		3355	2.9	0.862	30.0	LOS C	36.4	260.8	0.76	0.70	30.9
West: Elizabeth Drive (W)											
10	L2	319	6.3	0.421	33.2	LOS C	13.0	96.1	0.61	0.75	30.0
11	T1	506	4.6	0.647	60.2	LOS E	16.4	119.3	0.94	0.80	21.2
12	R2	294	2.5	1.006	126.7	LOS F	14.5	103.7	1.00	1.12	13.4
Approach		1119	4.5	1.006	70.0	LOS E	16.4	119.3	0.86	0.87	19.7
All Vehicles		7522	3.4	1.070	50.8	LOS D	36.7	267.1	0.85	0.83	23.3

PHASING SUMMARY Site: I-02 2023 BASE PM

Hume Highway / Elizabeth Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	71	108
Green Time (sec)	47	12	31	36
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	53	18	37	42
Phase Split	35 %	12 %	25 %	28 %



AM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-02 2023 IMT AM

Hume Highway / Elizabeth Drive
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	125	5.0	0.138	21.2	LOS B	3.2	23.4	0.38	0.67	37.5
2	T1	2201	7.3	0.858	39.3	LOS C	47.8	358.3	0.90	0.84	26.0
Approach		2326	7.1	0.875	38.4	LOS C	47.8	358.3	0.87	0.83	26.5
East: Elizabeth Drive (E)											
4	L2	36	5.9	0.405	60.2	LOS E	9.7	71.4	0.91	0.81	18.5
5	T1	464	5.7	0.405	56.3	LOS D	11.0	80.7	0.90	0.82	23.6
6	R2	144	2.2	0.696	76.3	LOS F	10.6	75.3	1.00	0.84	15.0
Approach		644	4.9	0.696	61.0	LOS E	11.0	80.7	0.92	0.82	21.1
North: Hume Highway (N)											
7	L2	78	2.7	0.612	24.5	LOS B	21.6	164.0	0.56	0.55	32.4
8	T1	1685	9.9	0.612	18.5	LOS B	21.8	167.4	0.56	0.51	36.9
9	R2	332	9.5	1.192	267.7	LOS F	24.5	185.8	1.00	1.42	7.2
Approach		2094	9.6	1.192	58.1	LOS E	24.5	185.8	0.63	0.66	20.8
West: Elizabeth Drive (W)											
10	L2	578	5.3	0.974	90.4	LOS F	52.0	380.5	1.00	1.01	16.7
11	T1	995	3.1	0.987	96.1	LOS F	46.0	330.5	1.00	1.16	15.5
12	R2	472	7.1	1.180	260.2	LOS F	34.7	259.0	1.00	1.41	7.4
Approach		2044	4.6	1.180	132.4	LOS F	52.0	380.5	1.00	1.17	12.4
All Vehicles		7109	6.9	1.192	73.3	LOS F	52.0	380.5	0.84	0.88	18.2

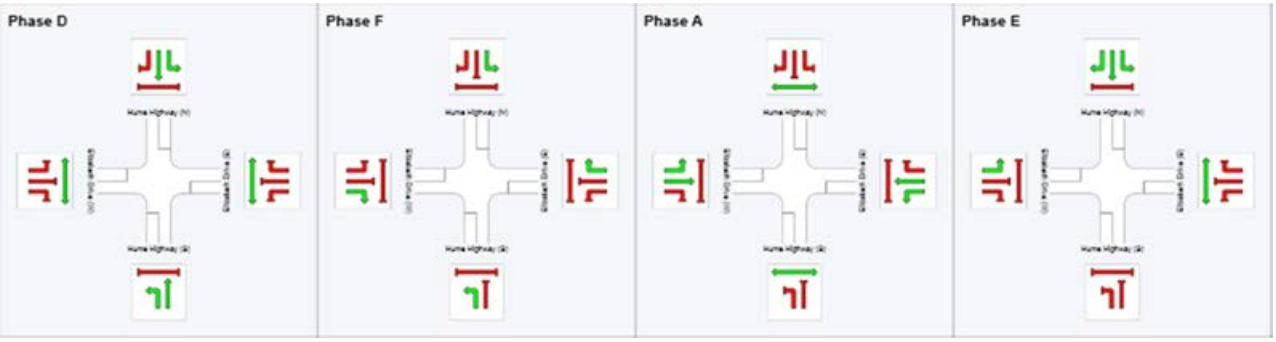
PHASING SUMMARY

Site: I-02 2023 IMT AM

Hume Highway / Elizabeth Drive
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	68	91	132
Green Time (sec)	62	17	35	12
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	68	23	41	18
Phase Split	45 %	15 %	27 %	12 %



PM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-02 2023 IMT PM

Hume Highway / Elizabeth Drive
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	305	5.2	0.458	40.5	LOS C	14.3	105.9	0.70	0.78	28.1
2	T1	1528	6.4	0.917	64.7	LOS E	41.9	313.4	0.98	1.00	19.0
Approach		1833	6.2	0.917	60.7	LOS E	41.9	313.4	0.93	0.96	20.3
East: Elizabeth Drive (E)											
4	L2	119	0.9	0.869	78.1	LOS F	25.5	181.1	1.00	0.97	15.4
5	T1	983	2.5	0.869	72.7	LOS F	31.6	225.9	1.00	0.97	19.8
6	R2	159	0.0	1.070	168.1	LOS F	18.3	128.2	1.00	1.30	8.1
Approach		1261	2.0	1.070	85.2	LOS F	31.6	225.9	1.00	1.01	16.9
North: Hume Highway (N)											
7	L2	63	5.0	0.854	22.9	LOS B	39.0	284.9	0.70	0.68	33.8
8	T1	2417	4.0	0.854	17.1	LOS B	39.6	289.5	0.70	0.67	38.1
9	R2	903	2.9	0.862	69.2	LOS E	32.8	235.2	1.00	0.91	20.8
Approach		3383	3.7	0.862	31.1	LOS C	39.6	289.5	0.78	0.73	30.3
West: Elizabeth Drive (W)											
10	L2	319	6.3	0.421	33.2	LOS C	13.0	96.1	0.61	0.75	30.0
11	T1	506	4.6	0.647	60.2	LOS E	16.4	119.3	0.94	0.80	21.2
12	R2	294	2.5	1.006	126.7	LOS F	14.5	103.7	1.00	1.12	13.4
Approach		1119	4.5	1.006	70.0	LOS E	16.4	119.3	0.86	0.87	19.7
All Vehicles		7596	4.1	1.070	53.0	LOS D	41.9	313.4	0.87	0.86	22.7

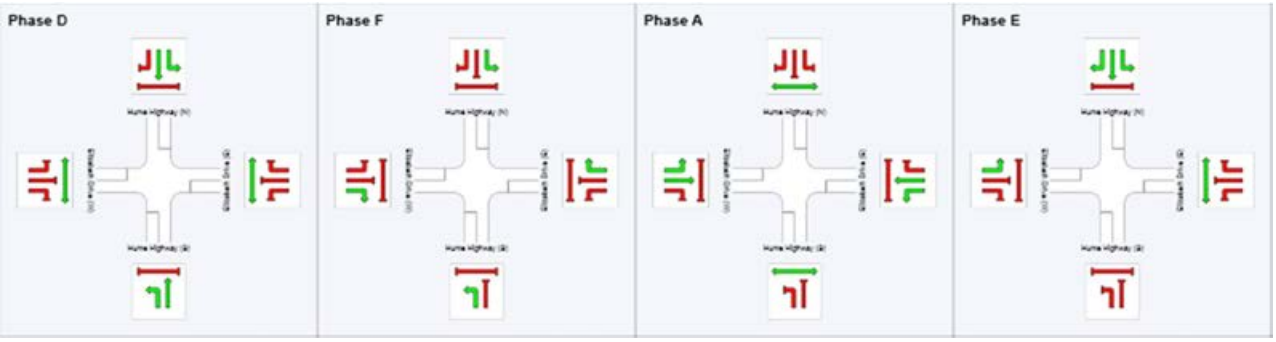
PHASING SUMMARY

Site: I-02 2023 IMT PM

Hume Highway / Elizabeth Drive
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	71	108
Green Time (sec)	47	12	31	36
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	53	18	37	42
Phase Split	35 %	12 %	25 %	28 %



I-03 Intersection of the Hume Highway and Memorial Avenue

AM BASE

MOVEMENT SUMMARY

Site: I-03 2023 BASE AM

Hume Highway / Memorial Avenue
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	146	1.4	0.885	46.6	LOS D	49.7	365.9	0.94	0.91	32.4
2	T1	1948	7.3	0.885	38.7	LOS C	50.0	371.7	0.87	0.85	31.6
3	R2	246	0.0	1.047	151.6	LOS F	27.2	190.7	1.00	1.16	12.8
Approach		2341	6.2	1.047	51.1	LOS D	50.0	371.7	0.88	0.88	27.6
East: Memorial Avenue (E)											
4	L2	24	17.4	1.089	183.9	LOS F	18.4	136.8	1.00	1.37	11.2
5	T1	148	5.0	1.089	179.2	LOS F	18.4	136.8	1.00	1.37	10.9
6	R2	118	12.5	1.089	183.9	LOS F	16.7	128.3	1.00	1.36	7.9
Approach		291	9.1	1.089	181.5	LOS F	18.4	136.8	1.00	1.36	9.7
North: Hume Highway (N)											
7	L2	109	5.8	0.093	12.3	LOS A	2.4	17.3	0.35	0.64	39.5
8	T1	1634	11.1	0.686	27.3	LOS B	27.6	211.8	0.70	0.63	36.9
9	R2	89	3.5	0.390	71.5	LOS F	6.1	44.2	0.96	0.78	21.4
Approach		1833	10.5	0.686	28.6	LOS C	27.6	211.8	0.69	0.63	35.7
West: Memorial Avenue (W)											
10	L2	119	2.7	1.093	168.7	LOS F	36.4	258.7	1.00	1.38	12.0
11	T1	429	1.5	1.093	171.6	LOS F	46.2	329.1	1.00	1.42	11.2
12	R2	151	2.8	1.093	183.2	LOS F	46.2	329.1	1.00	1.46	14.1
Approach		699	2.0	1.093	173.6	LOS F	46.2	329.1	1.00	1.42	12.0
All Vehicles		5163	7.3	1.093	67.0	LOS E	50.0	371.7	0.84	0.89	23.2

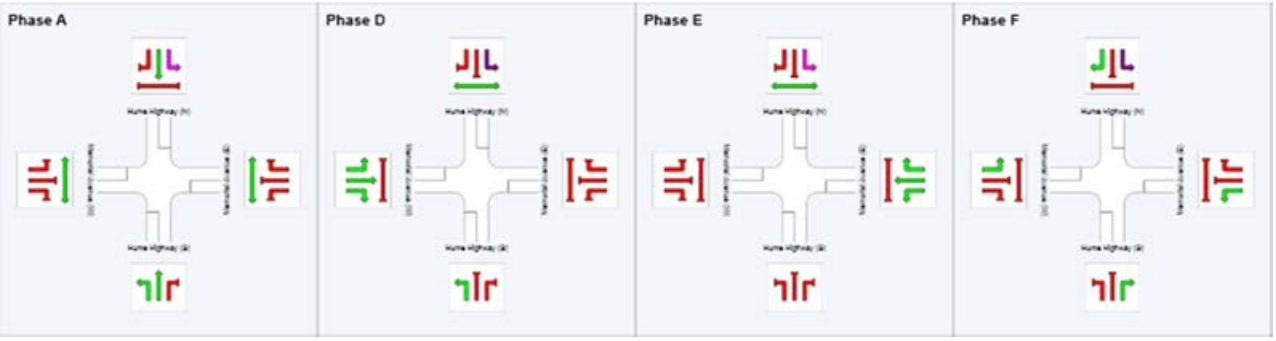
PHASING SUMMARY

Site: I-03 2023 BASE AM

Hume Highway / Memorial Avenue
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	75	108	125
Green Time (sec)	69	27	11	19
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	75	33	17	25
Phase Split	50 %	22 %	11 %	17 %



PM BASE

MOVEMENT SUMMARY

Site: I-03 2023 BASE PM

Hume Highway / Memorial Avenue
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	125	0.8	0.757	41.4	LOS C	32.6	237.1	0.85	0.80	34.0
2	T1	1598	5.7	0.757	33.5	LOS C	33.2	243.6	0.80	0.73	33.8
3	R2	115	0.0	0.772	84.2	LOS F	8.8	61.8	1.00	0.86	19.5
Approach		1838	5.0	0.772	37.2	LOS C	33.2	243.6	0.82	0.74	32.4
East: Memorial Avenue (E)											
4	L2	49	0.0	1.283	348.6	LOS F	46.4	329.8	1.00	1.90	6.5
5	T1	269	2.3	1.283	344.1	LOS F	46.4	329.8	1.00	1.88	6.3
6	R2	197	5.9	1.283	349.0	LOS F	42.8	312.8	1.00	1.79	4.5
Approach		516	3.5	1.283	346.4	LOS F	46.4	329.8	1.00	1.84	5.7
North: Hume Highway (N)											
7	L2	148	2.8	0.088	8.2	LOS A	1.9	13.8	0.24	0.61	43.7
8	T1	2855	3.1	0.883	12.0	LOS A	45.7	328.0	0.57	0.54	47.1
9	R2	207	2.0	0.787	54.5	LOS D	9.5	67.3	1.00	0.90	25.0
Approach		3211	3.0	0.883	14.6	LOS B	45.7	328.0	0.58	0.56	44.4
West: Memorial Avenue (W)											
10	L2	78	1.4	0.842	74.5	LOS F	14.5	102.3	1.00	0.98	21.2
11	T1	196	1.1	0.842	71.7	LOS F	18.0	126.3	1.00	0.97	20.2
12	R2	158	0.0	0.842	79.2	LOS F	18.0	126.3	1.00	0.95	24.2
Approach		432	0.7	0.842	74.9	LOS F	18.0	126.3	1.00	0.96	22.0
All Vehicles		5996	3.5	1.283	54.4	LOS D	46.4	329.8	0.72	0.76	26.1

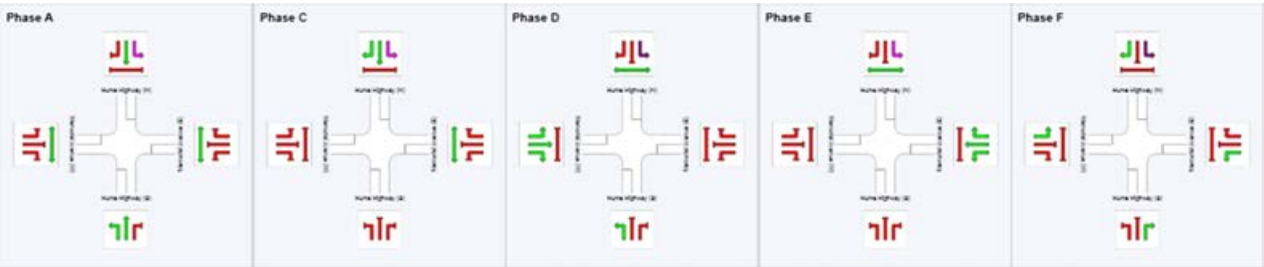
PHASING SUMMARY

Site: I-03 2023 BASE PM

Hume Highway / Memorial Avenue
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D	E	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	70	82	110	132
Green Time (sec)	64	6	22	16	12
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	70	12	28	22	18
Phase Split	47 %	8 %	19 %	15 %	12 %



AM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-03 2023 IMT AM

Hume Highway / Memorial Avenue
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	146	1.4	0.903	50.1	LOS D	52.9	395.0	0.96	0.95	31.3
2	T1	1970	8.3	0.903	42.2	LOS C	53.2	402.5	0.89	0.88	30.4
3	R2	246	0.0	1.047	151.6	LOS F	27.2	190.7	1.00	1.16	12.8
Approach		2363	7.0	1.047	54.1	LOS D	53.2	402.5	0.90	0.92	26.8
East: Memorial Avenue (E)											
4	L2	24	17.4	1.089	183.9	LOS F	18.4	136.8	1.00	1.37	11.2
5	T1	148	5.0	1.089	179.2	LOS F	18.4	136.8	1.00	1.37	10.9
6	R2	118	12.5	1.089	183.9	LOS F	16.7	128.3	1.00	1.36	7.9
Approach		291	9.1	1.089	181.5	LOS F	18.4	136.8	1.00	1.36	9.7
North: Hume Highway (N)											
7	L2	109	5.8	0.093	12.3	LOS A	2.4	17.3	0.35	0.64	39.5
8	T1	1674	12.4	0.714	27.8	LOS B	29.2	228.8	0.72	0.64	36.6
9	R2	89	3.5	0.390	71.5	LOS F	6.1	44.2	0.96	0.78	21.4
Approach		1873	11.6	0.714	29.0	LOS C	29.2	228.8	0.71	0.65	35.5
West: Memorial Avenue (W)											
10	L2	119	2.7	1.095	170.1	LOS F	36.6	260.3	1.00	1.38	11.9
11	T1	429	1.5	1.095	173.0	LOS F	46.5	330.9	1.00	1.42	11.1
12	R2	152	2.8	1.095	184.7	LOS F	46.5	330.9	1.00	1.46	14.0
Approach		700	2.0	1.095	175.0	LOS F	46.5	330.9	1.00	1.42	11.9
All Vehicles		5227	8.1	1.095	68.4	LOS E	53.2	402.5	0.85	0.91	22.9

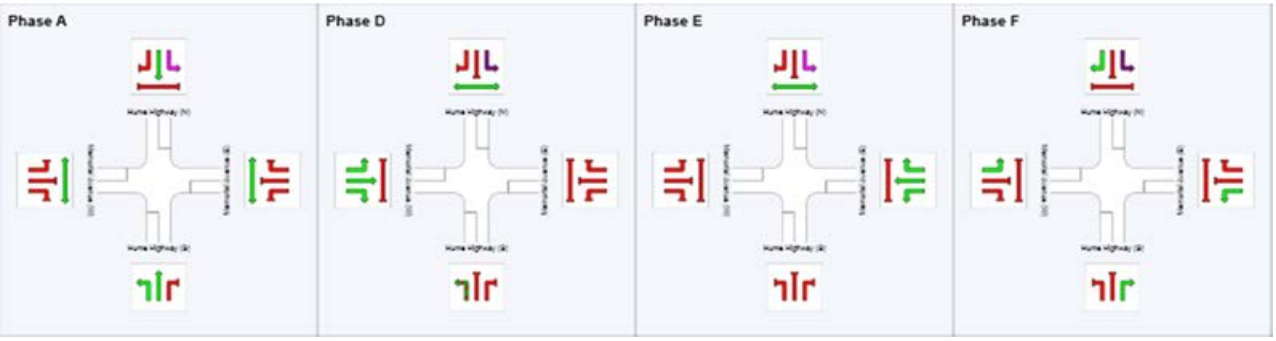
PHASING SUMMARY

Site: I-03 2023 IMT AM

Hume Highway / Memorial Avenue
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	75	108	125
Green Time (sec)	69	27	11	19
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	75	33	17	25
Phase Split	50 %	22 %	11 %	17 %



PM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-03 2023 IMT PM

Hume Highway / Memorial Avenue
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	126	0.8	0.790	42.2	LOS C	34.6	257.4	0.87	0.82	33.7
2	T1	1643	7.4	0.790	34.3	LOS C	35.2	265.6	0.83	0.76	33.4
3	R2	115	0.0	0.772	84.2	LOS F	8.8	61.8	1.00	0.86	19.5
Approach		1885	6.5	0.790	37.9	LOS C	35.2	265.6	0.84	0.77	32.1
East: Memorial Avenue (E)											
4	L2	49	0.0	1.283	348.6	LOS F	46.4	329.8	1.00	1.90	6.5
5	T1	269	2.3	1.283	344.1	LOS F	46.4	329.8	1.00	1.88	6.3
6	R2	197	5.9	1.283	349.0	LOS F	42.8	312.8	1.00	1.79	4.5
Approach		516	3.5	1.283	346.4	LOS F	46.4	329.8	1.00	1.84	5.7
North: Hume Highway (N)											
7	L2	148	2.8	0.088	8.2	LOS A	1.9	13.8	0.24	0.61	43.7
8	T1	2883	4.0	0.902	14.0	LOS A	50.7	369.9	0.60	0.58	45.5
9	R2	207	2.0	0.787	54.5	LOS D	9.5	67.3	1.00	0.90	25.0
Approach		3239	3.8	0.902	16.3	LOS B	50.7	369.9	0.61	0.60	43.1
West: Memorial Avenue (W)											
10	L2	78	1.4	0.842	74.5	LOS F	14.5	102.3	1.00	0.98	21.2
11	T1	196	1.1	0.842	71.7	LOS F	18.0	126.3	1.00	0.97	20.2
12	R2	158	0.0	0.842	79.2	LOS F	18.0	126.3	1.00	0.95	24.2
Approach		432	0.7	0.842	74.9	LOS F	18.0	126.3	1.00	0.96	22.0
All Vehicles		6071	4.4	1.283	55.2	LOS D	50.7	369.9	0.74	0.78	25.9

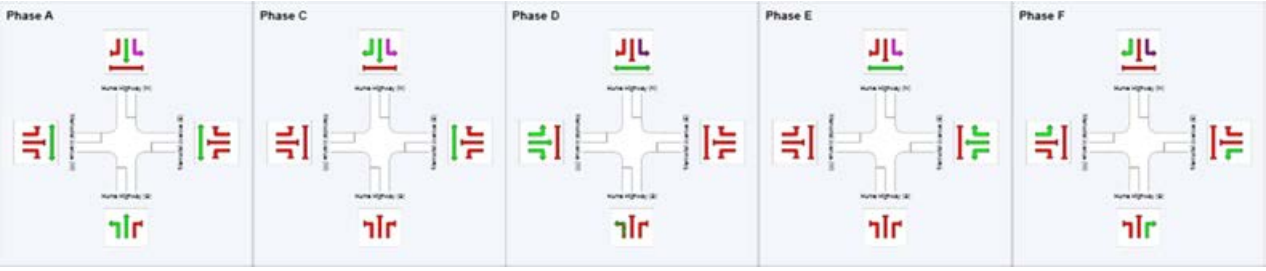
PHASING SUMMARY

Site: I-03 2023 IMT PM

Hume Highway / Memorial Avenue
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D	E	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	70	82	110	132
Green Time (sec)	64	6	22	16	12
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	70	12	28	22	18
Phase Split	47 %	8 %	19 %	15 %	12 %



I-04 Intersection of the Hume Highway and Hoxton Park Drive

AM BASE

MOVEMENT SUMMARY

Site: I-04 2023 BASE AM

Hume Highway / Hoxton Park Road / Macquarie Street
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	89	7.1	0.073	8.1	LOS A	0.6	4.5	0.10	0.57	51.4
2	T1	1999	5.1	0.748	25.5	LOS B	33.8	246.7	0.72	0.65	40.8
3	R2	1131	1.9	1.003	86.5	LOS F	38.8	275.8	1.00	1.09	19.3
Approach		3219	4.0	1.003	46.4	LOS D	38.8	275.8	0.80	0.80	30.9
East: Macquarie Street (E)											
4	L2	316	5.7	0.204	21.7	LOS B	4.9	36.0	0.66	0.73	38.8
5	T1	458	4.6	0.955	96.4	LOS F	20.5	149.0	1.00	1.11	19.9
Approach		774	5.0	0.955	66.0	LOS E	20.5	149.0	0.86	0.95	24.3
North: Hume Highway (N)											
7	L2	214	15.8	0.881	66.9	LOS E	38.8	297.0	0.99	1.09	24.6
8	T1	1375	8.2	0.881	59.0	LOS E	40.8	305.6	0.96	0.96	28.5
9	R2	217	18.9	1.104	197.5	LOS F	27.6	224.3	1.00	1.33	13.9
Approach		1805	10.4	1.104	76.6	LOS F	40.8	305.6	0.97	1.02	24.6
West: Hoxton Park Road (W)											
10	L2	303	16.3	0.526	47.6	LOS D	17.6	140.5	0.85	0.82	32.4
11	T1	1206	4.2	1.027	149.5	LOS F	47.9	347.2	1.00	1.33	14.6
12	R2	361	2.9	1.046	125.3	LOS F	20.9	149.6	1.00	1.10	18.3
Approach		1871	5.9	1.046	128.3	LOS F	47.9	347.2	0.98	1.21	17.0
All Vehicles		7668	6.1	1.104	75.5	LOS F	47.9	347.2	0.89	0.97	24.0

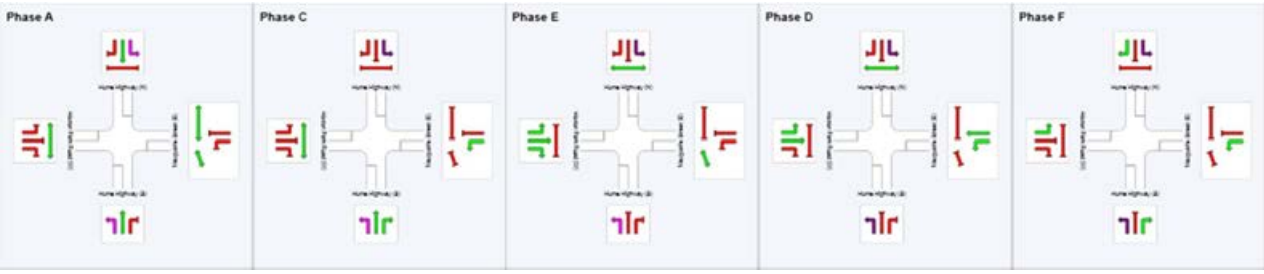
PHASING SUMMARY

Site: I-04 2023 BASE AM

Hume Highway / Hoxton Park Road / Macquarie Street
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	D	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	51	79	101	126
Green Time (sec)	45	22	16	19	18
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	51	28	22	25	24
Phase Split	34 %	19 %	15 %	17 %	16 %



PM BASE

MOVEMENT SUMMARY

Site: I-04 2023 BASE PM

Hume Highway / Hoxton Park Road / Macquarie Street
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	186	5.6	0.155	8.9	LOS A	1.6	12.0	0.13	0.58	50.8
2	T1	1543	5.2	0.593	22.7	LOS B	22.4	163.5	0.60	0.54	42.3
3	R2	425	1.2	0.942	97.9	LOS F	18.3	129.8	1.00	1.01	17.8
Approach		2155	4.4	0.942	36.3	LOS C	22.4	163.5	0.64	0.63	35.1
East: Macquarie Street (E)											
4	L2	729	1.4	0.958	83.0	LOS F	27.6	195.7	0.83	0.96	19.9
5	T1	641	3.3	0.986	100.5	LOS F	29.5	212.1	1.00	1.14	19.4
Approach		1371	2.3	0.986	91.2	LOS F	29.5	212.1	0.91	1.04	19.6
North: Hume Highway (N)											
7	L2	96	5.5	0.902	21.6	LOS B	50.8	364.0	0.73	0.74	43.1
8	T1	2713	2.6	0.902	16.5	LOS B	53.3	381.3	0.67	0.66	45.9
9	R2	269	6.3	1.421	473.1	LOS F	54.6	402.6	1.00	1.83	6.7
Approach		3078	3.0	1.421	56.6	LOS E	54.6	402.6	0.70	0.76	29.3
West: Hoxton Park Road (W)											
10	L2	256	3.7	0.408	45.3	LOS D	14.1	101.7	0.81	0.80	33.3
11	T1	652	3.9	0.398	46.0	LOS D	12.7	91.8	0.86	0.72	30.6
12	R2	355	1.5	1.122	161.7	LOS F	24.9	176.8	1.00	1.21	15.3
Approach		1262	3.2	1.122	78.4	LOS F	24.9	176.8	0.89	0.87	23.9
All Vehicles		7865	3.3	1.421	60.6	LOS E	54.6	402.6	0.75	0.79	27.5

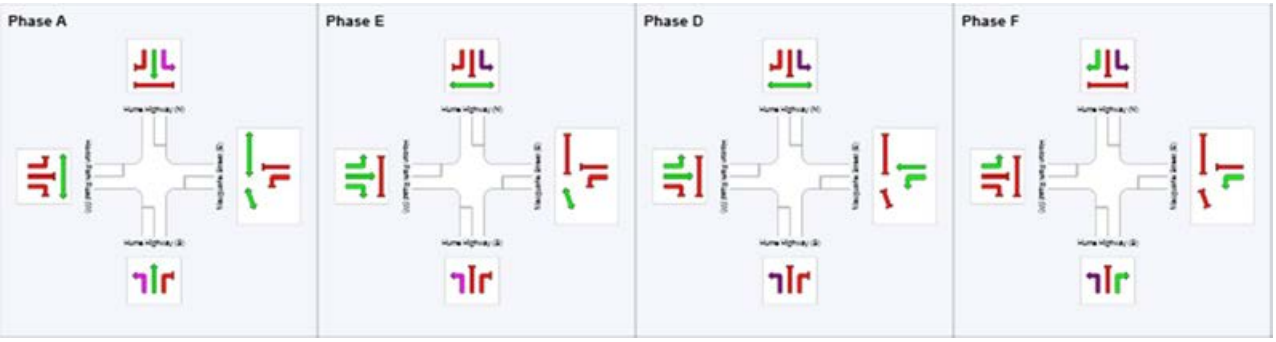
PHASING SUMMARY

Site: I-04 2023 BASE PM

Hume Highway / Hoxton Park Road / Macquarie Street
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	D	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	79	99	128
Green Time (sec)	73	14	23	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	79	20	29	22
Phase Split	53 %	13 %	19 %	15 %



AM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-04 2023 IMT AM

Hume Highway / Hoxton Park Road / Macquarie Street
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	94	11.9	0.082	8.2	LOS A	0.6	5.2	0.10	0.57	51.1
2	T1	2021	6.1	0.768	25.8	LOS B	35.2	261.3	0.74	0.67	40.6
3	R2	1131	1.9	1.003	86.5	LOS F	38.8	275.8	1.00	1.09	19.3
Approach		3246	4.8	1.003	46.4	LOS D	38.8	275.8	0.81	0.81	30.9
East: Macquarie Street (E)											
4	L2	316	5.7	0.204	21.7	LOS B	4.9	36.0	0.66	0.73	38.8
5	T1	458	4.6	0.955	96.4	LOS F	20.5	149.0	1.00	1.11	19.9
Approach		774	5.0	0.955	66.0	LOS E	20.5	149.0	0.86	0.95	24.3
North: Hume Highway (N)											
7	L2	214	15.8	0.918	73.5	LOS F	43.4	337.3	1.00	1.14	23.2
8	T1	1417	9.7	0.918	65.6	LOS E	44.8	344.3	0.97	1.02	27.0
9	R2	217	18.9	1.104	197.5	LOS F	27.6	224.3	1.00	1.33	13.9
Approach		1847	11.5	1.104	82.0	LOS F	44.8	344.3	0.98	1.07	23.7
West: Hoxton Park Road (W)											
10	L2	303	16.3	0.526	47.6	LOS D	17.6	140.5	0.85	0.82	32.4
11	T1	1206	4.2	1.029	150.7	LOS F	47.9	347.7	1.00	1.34	14.5
12	R2	365	3.6	1.073	137.8	LOS F	22.6	164.3	1.00	1.14	17.1
Approach		1874	6.0	1.073	131.5	LOS F	47.9	347.7	0.98	1.22	16.7
All Vehicles		7741	6.7	1.104	77.5	LOS F	47.9	347.7	0.90	0.99	23.6

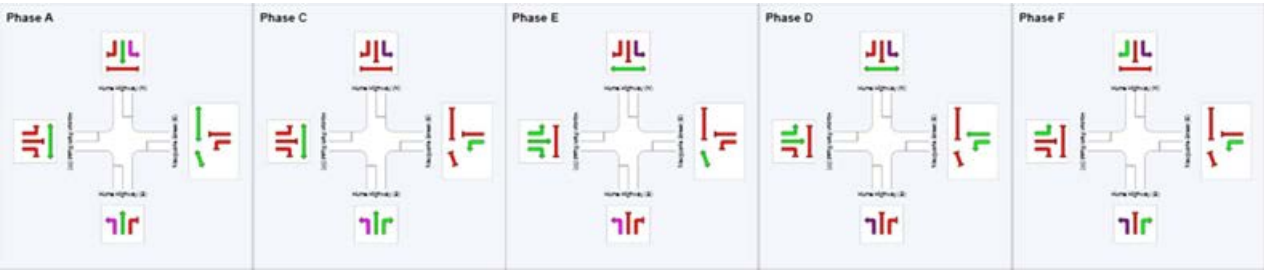
PHASING SUMMARY

Site: I-04 2023 IMT AM

Hume Highway / Hoxton Park Road / Macquarie Street
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	D	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	51	79	101	126
Green Time (sec)	45	22	16	19	18
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	51	28	22	25	24
Phase Split	34 %	19 %	15 %	17 %	16 %



PM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-04 2023 IMT PM

Hume Highway / Hoxton Park Road / Macquarie Street
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	190	6.9	0.160	8.9	LOS A	1.7	12.6	0.13	0.58	50.7
2	T1	1590	6.9	0.626	23.2	LOS B	24.0	180.6	0.62	0.55	42.0
3	R2	425	1.2	0.942	97.9	LOS F	18.3	129.8	1.00	1.01	17.8
Approach		2205	5.8	0.942	36.3	LOS C	24.0	180.6	0.65	0.65	35.1
East: Macquarie Street (E)											
4	L2	729	1.4	0.958	83.0	LOS F	27.6	195.7	0.83	0.96	19.9
5	T1	641	3.3	0.986	100.5	LOS F	29.5	212.1	1.00	1.14	19.4
Approach		1371	2.3	0.986	91.2	LOS F	29.5	212.1	0.91	1.04	19.6
North: Hume Highway (N)											
7	L2	96	5.5	0.920	24.1	LOS B	56.3	410.4	0.78	0.80	41.4
8	T1	2741	3.6	0.920	19.1	LOS B	58.6	426.7	0.71	0.71	44.2
9	R2	269	6.3	1.421	473.1	LOS F	54.6	402.6	1.00	1.83	6.7
Approach		3106	3.9	1.421	58.7	LOS E	58.6	426.7	0.73	0.81	28.8
West: Hoxton Park Road (W)											
10	L2	256	3.7	0.408	45.3	LOS D	14.1	101.7	0.81	0.80	33.3
11	T1	652	3.9	0.398	46.0	LOS D	12.7	91.8	0.86	0.72	30.6
12	R2	361	3.1	1.170	191.8	LOS F	28.0	204.3	1.00	1.29	13.4
Approach		1268	3.6	1.170	87.3	LOS F	28.0	204.3	0.89	0.90	22.4
All Vehicles		7950	4.1	1.421	62.6	LOS E	58.6	426.7	0.77	0.82	27.0

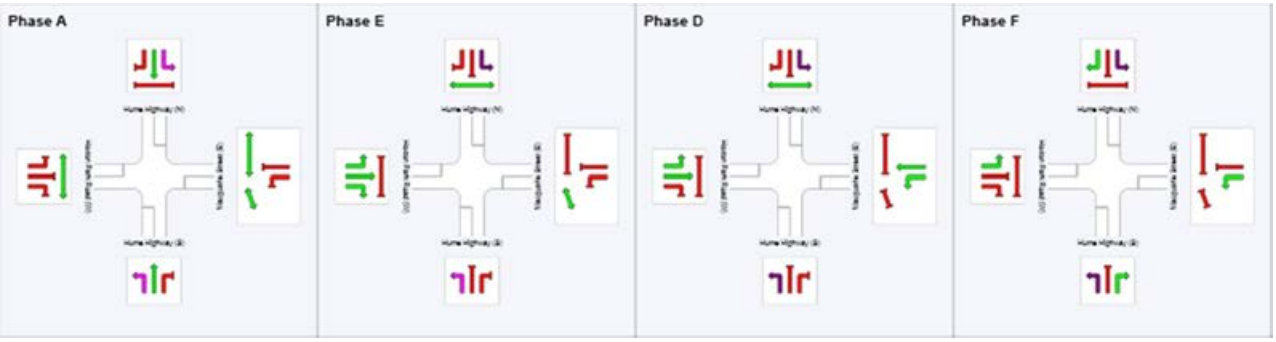
PHASING SUMMARY

Site: I-04 2023 IMT PM

Hume Highway / Hoxton Park Road / Macquarie Street
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	D	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	79	99	128
Green Time (sec)	73	14	23	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	79	20	29	22
Phase Split	53 %	13 %	19 %	15 %



I-05 Intersection of the Hume Highway and Reilly Street

AM BASE

MOVEMENT SUMMARY

Site: I-05 2023 BASE AM

Hume Highway / Reilly Street
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Hignway (S)											
1	L2	75	2.8	0.880	19.7	LOS B	48.3	348.6	0.69	0.67	42.6
2	T1	3024	3.7	0.880	13.5	LOS A	48.3	348.6	0.66	0.63	44.3
3	R2	13	8.3	0.080	20.7	LOS B	0.4	3.1	0.45	0.66	38.1
Approach		3112	3.7	0.880	13.7	LOS A	48.3	348.6	0.66	0.63	44.3
East: Congressional Drive (E)											
4	L2	45	2.3	0.251	59.8	LOS E	5.5	39.6	0.89	0.74	24.4
5	T1	43	4.9	0.251	55.3	LOS D	5.5	39.6	0.89	0.74	23.9
6	R2	84	3.8	0.395	67.6	LOS E	5.7	41.1	0.95	0.78	18.6
Approach		173	3.7	0.395	62.5	LOS E	5.7	41.1	0.92	0.76	21.5
North: Hume Hignway (N)											
7	L2	29	3.6	0.517	15.8	LOS B	22.2	164.6	0.49	0.47	41.2
8	T1	1698	7.2	0.517	9.8	LOS A	22.3	165.5	0.47	0.43	47.8
9	R2	91	1.2	0.631	41.6	LOS C	5.2	36.9	1.00	0.87	27.4
Approach		1818	6.8	0.631	11.4	LOS A	22.3	165.5	0.50	0.45	45.9
West: Reilly Street (W)											
10	L2	109	3.8	0.250	50.0	LOS D	6.9	49.8	0.82	0.75	24.5
11	T1	12	9.1	0.250	45.4	LOS D	6.9	49.8	0.82	0.75	25.7
12	R2	223	1.9	0.991	119.3	LOS F	22.2	158.0	1.00	1.14	17.0
Approach		344	2.8	0.991	94.8	LOS F	22.2	158.0	0.94	1.01	18.8
All Vehicles		5446	4.7	0.991	19.6	LOS B	48.3	348.6	0.63	0.60	39.4

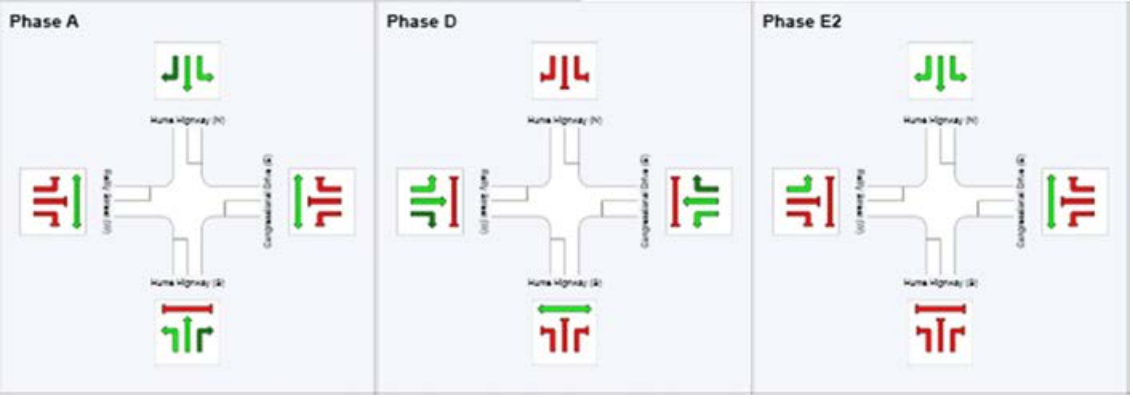
PHASING SUMMARY

Site: I-05 2023 BASE AM

Hume Highway / Reilly Street
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	100	137
Green Time (sec)	94	31	7
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	100	37	13
Phase Split	67 %	25 %	9 %



PM BASE

MOVEMENT SUMMARY

Site: I-05 2023 BASE PM

Hume Highway / Reilly Street
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Hignway (S)											
1	L2	219	0.5	0.643	19.4	LOS B	24.7	177.5	0.51	0.56	42.0
2	T1	2004	4.5	0.643	11.4	LOS A	24.7	177.5	0.44	0.43	45.9
3	R2	21	5.0	0.381	31.4	LOS C	1.0	7.6	0.62	0.73	32.9
Approach		2244	4.1	0.643	12.4	LOS A	24.7	177.5	0.45	0.44	45.2
East: Congressional Drive (E)											
4	L2	38	2.8	0.175	59.7	LOS E	3.8	26.6	0.88	0.72	24.3
5	T1	23	0.0	0.175	55.1	LOS D	3.8	26.6	0.88	0.72	23.8
6	R2	47	0.0	0.197	62.4	LOS E	3.0	21.0	0.89	0.74	19.7
Approach		108	1.0	0.197	59.9	LOS E	3.8	26.6	0.89	0.73	22.2
North: Hume Hignway (N)											
7	L2	64	0.0	0.962	28.2	LOS B	72.8	519.3	0.65	0.71	32.7
8	T1	3493	2.3	0.962	24.8	LOS B	72.8	519.3	0.51	0.59	36.5
9	R2	167	1.3	0.820	55.1	LOS D	11.3	80.2	1.00	1.01	23.7
Approach		3724	2.2	0.962	26.2	LOS B	72.8	519.3	0.54	0.61	35.5
West: Reilly Street (W)											
10	L2	62	0.0	0.209	54.1	LOS D	5.4	37.6	0.85	0.73	24.0
11	T1	29	0.0	0.209	49.6	LOS D	5.4	37.6	0.85	0.73	25.0
12	R2	245	1.7	0.981	112.8	LOS F	23.8	169.2	1.00	1.12	17.7
Approach		337	1.3	0.981	96.5	LOS F	23.8	169.2	0.96	1.01	18.9
All Vehicles		6414	2.8	0.981	25.6	LOS B	72.8	519.3	0.53	0.58	35.9

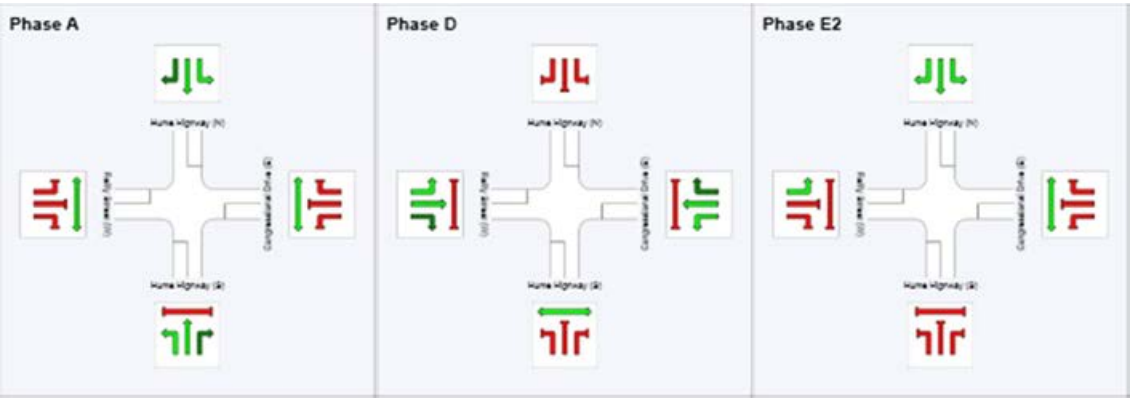
PHASING SUMMARY

Site: I-05 2023 BASE PM

Hume Highway / Reilly Street
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	98	135
Green Time (sec)	92	31	9
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	98	37	15
Phase Split	65 %	25 %	10 %



AM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-05 2023 IMT AM

Hume Highway / Reilly Street
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Hignway (S)											
1	L2	75	2.8	0.899	22.9	LOS B	54.4	397.5	0.74	0.72	40.7
2	T1	3051	4.5	0.899	16.6	LOS B	54.4	397.5	0.69	0.68	41.8
3	R2	13	8.3	0.088	22.3	LOS B	0.4	3.3	0.48	0.67	37.2
Approach		3138	4.5	0.899	16.8	LOS B	54.4	397.5	0.69	0.68	41.8
East: Congressional Drive (E)											
4	L2	45	2.3	0.243	58.9	LOS E	5.4	39.2	0.88	0.73	24.6
5	T1	43	4.9	0.243	54.3	LOS D	5.4	39.2	0.88	0.73	24.1
6	R2	84	3.8	0.379	65.7	LOS E	5.6	40.5	0.93	0.78	19.0
Approach		173	3.7	0.379	61.1	LOS E	5.6	40.5	0.91	0.75	21.8
North: Hume Hignway (N)											
7	L2	29	3.6	0.539	17.7	LOS B	20.4	155.1	0.52	0.55	39.6
8	T1	1744	8.6	0.539	10.9	LOS A	23.6	179.6	0.49	0.48	46.7
9	R2	91	1.2	0.696	47.6	LOS D	5.4	38.4	1.00	0.89	25.6
Approach		1864	8.1	0.696	12.8	LOS A	23.6	179.6	0.51	0.50	44.8
West: Reilly Street (W)											
10	L2	109	3.8	0.247	49.9	LOS D	6.8	49.7	0.82	0.75	24.6
11	T1	12	9.1	0.247	45.3	LOS D	6.8	49.7	0.82	0.75	25.7
12	R2	224	1.9	0.967	107.4	LOS F	21.1	150.4	1.00	1.10	18.3
Approach		345	2.7	0.967	87.1	LOS F	21.1	150.4	0.94	0.98	19.8
All Vehicles		5520	5.6	0.967	21.2	LOS B	54.4	397.5	0.66	0.64	38.4

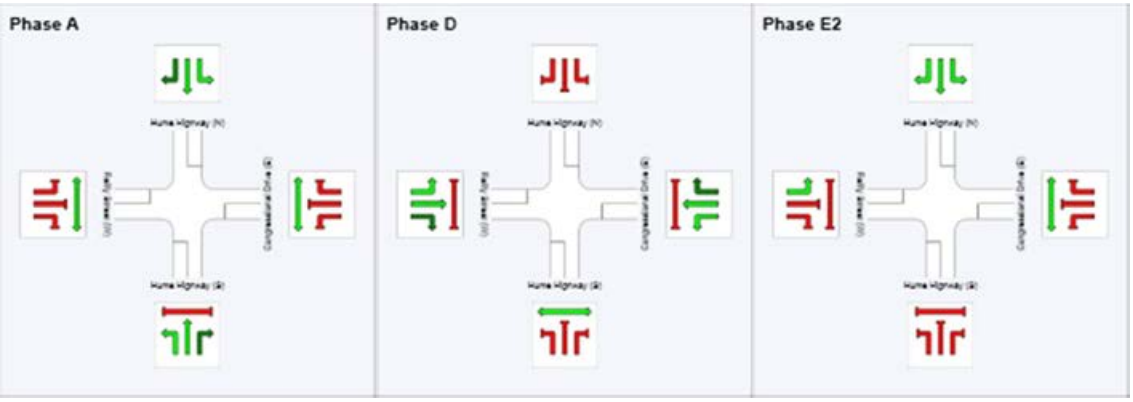
PHASING SUMMARY

Site: I-05 2023 IMT AM

Hume Highway / Reilly Street
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	100	138
Green Time (sec)	94	32	6
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	100	38	12
Phase Split	67 %	25 %	8 %



PM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-05 2023 IMT PM

Hume Highway / Reilly Street
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Hignway (S)											
1	L2	220	0.5	0.736	20.5	LOS B	31.8	232.9	0.58	0.61	41.4
2	T1	2179	5.9	0.736	12.2	LOS A	31.8	232.9	0.49	0.47	45.2
3	R2	21	5.0	0.385	33.4	LOS C	1.1	7.8	0.65	0.74	32.1
Approach		2420	5.4	0.736	13.1	LOS A	31.8	232.9	0.50	0.49	44.6
East: Congressional Drive (E)											
4	L2	38	2.8	0.175	59.7	LOS E	3.8	26.6	0.88	0.72	24.3
5	T1	23	0.0	0.175	55.1	LOS D	3.8	26.6	0.88	0.72	23.8
6	R2	47	0.0	0.197	62.4	LOS E	3.0	21.0	0.89	0.74	19.7
Approach		108	1.0	0.197	59.9	LOS E	3.8	26.6	0.89	0.73	22.2
North: Hume Hignway (N)											
7	L2	64	0.0	0.981	38.3	LOS C	94.6	685.0	0.81	0.91	28.0
8	T1	3527	3.2	0.981	34.8	LOS C	94.6	685.0	0.64	0.75	31.5
9	R2	167	1.3	0.884	80.8	LOS F	12.9	91.4	1.00	1.09	18.9
Approach		3759	3.1	0.981	36.9	LOS C	94.6	685.0	0.65	0.77	30.5
West: Reilly Street (W)											
10	L2	62	0.0	0.209	54.1	LOS D	5.4	37.6	0.85	0.73	24.0
11	T1	29	0.0	0.209	49.6	LOS D	5.4	37.6	0.85	0.73	25.0
12	R2	245	1.7	0.981	112.8	LOS F	23.8	169.2	1.00	1.12	17.7
Approach		337	1.3	0.981	96.5	LOS F	23.8	169.2	0.96	1.01	18.9
All Vehicles		6624	3.8	0.981	31.6	LOS C	94.6	685.0	0.62	0.68	32.9

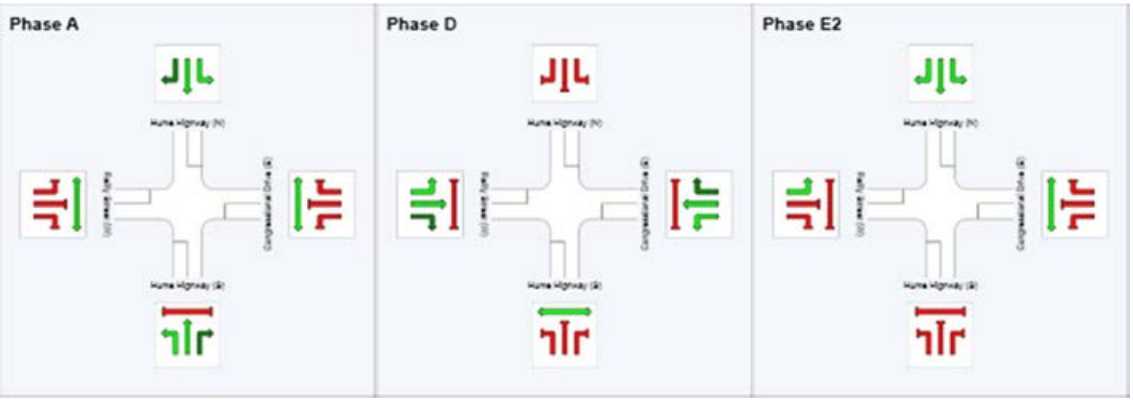
PHASING SUMMARY

Site: I-05 2023 IMT PM

Hume Highway / Reilly Street
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	98	135
Green Time (sec)	92	31	9
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	98	37	15
Phase Split	65 %	25 %	10 %



I-06 Intersection of Newbridge Road and Moorebank Avenue

AM BASE

MOVEMENT SUMMARY

Site: I-06 2023 BASE AM

Network: 2023 BASE AM

Newbridge Road / Moorebank Avenue
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	1416	3.2	1268	3.2	0.654	19.4	LOS B	14.7	105.8	0.58	0.83	42.0
3	R2	1273	9.0	1140	9.0	0.669	15.1	LOS B	14.1	106.7	0.42	0.69	52.7
Approach		2688	6.0	2408 N1	6.0	0.669	17.3	LOS B	14.7	106.7	0.50	0.76	47.8
East: Newbridge Road (E)													
4	L2	601	19.8	601	19.8	0.500	18.0	LOS B	6.9	56.7	0.68	0.78	52.3
5	T1	868	5.2	868	5.2	1.134	202.9	LOS F	55.4	405.3	1.00	1.58	20.3
Approach		1469	11.2	1469	11.2	1.134	127.3	LOS F	55.4	405.3	0.87	1.26	24.9
West: Newbridge Road (W)													
11	T1	1373	6.4	1373	6.4	0.739	9.7	LOS A	19.5	144.2	0.48	0.44	62.6
12	R2	725	7.4	725	7.4	1.291	266.0	LOS F	55.0	409.4	1.00	1.47	7.3
Approach		2098	6.8	2098	6.8	1.291	98.3	LOS F	55.0	409.4	0.66	0.79	27.8
All Vehicles		6256	7.5	5975 N1	7.8	1.291	72.8	LOS F	55.4	409.4	0.65	0.90	30.8

PHASING SUMMARY

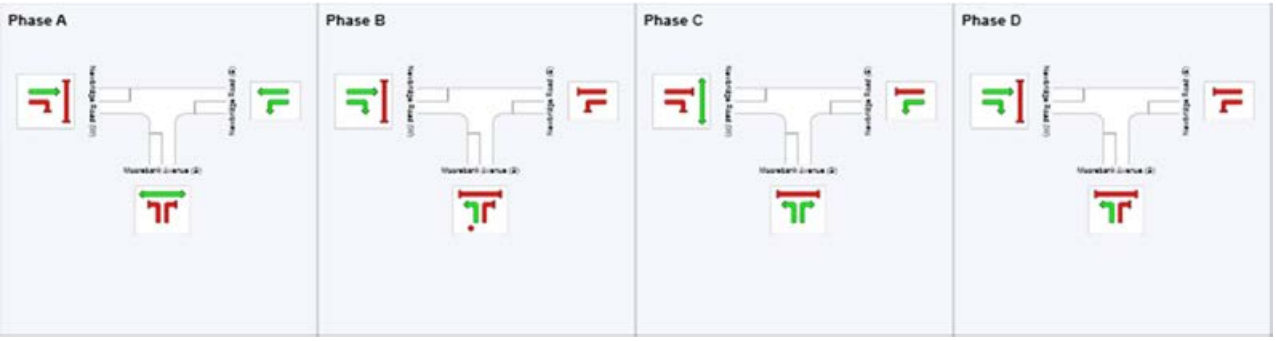
Site: I-06 2023 BASE AM

Network: 2023 BASE AM

Newbridge Road / Moorebank Avenue
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	33	55	116
Green Time (sec)	27	16	55	11
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	22	61	17
Phase Split	25 %	17 %	46 %	13 %



PM BASE

MOVEMENT SUMMARY

Site: I-06 2023 BASE PM

Network: 2023 BASE PM

Newbridge Road / Moorebank Avenue
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	895	3.4	851	3.5	0.486	22.3	LOS B	12.4	89.1	0.56	0.74	40.0
3	R2	868	10.8	827	10.9	1.071	127.1	LOS F	17.1	130.6	1.00	1.24	21.2
Approach		1763	7.0	1678 N1	7.1	1.071	73.9	LOS F	17.1	130.6	0.78	0.99	25.9
East: Newbridge Road (E)													
4	L2	1128	5.1	1128	5.1	0.935	45.0	LOS D	37.0	270.2	0.77	0.90	37.6
5	T1	1257	4.8	1257	4.8	0.845	40.9	LOS C	33.5	243.7	0.96	0.90	46.8
Approach		2385	4.9	2385	4.9	0.935	42.8	LOS D	37.0	270.2	0.87	0.90	43.0
West: Newbridge Road (W)													
11	T1	994	3.7	994	3.7	0.388	8.9	LOS A	12.2	88.2	0.48	0.43	63.2
12	R2	992	2.7	992	2.7	1.048	107.0	LOS F	44.3	316.9	1.00	1.15	15.7
Approach		1985	3.2	1985	3.2	1.048	57.9	LOS E	44.3	316.9	0.74	0.79	34.7
All Vehicles		6134	5.0	6049 N1	5.0	1.071	56.4	LOS D	44.3	316.9	0.80	0.89	35.2

PHASING SUMMARY

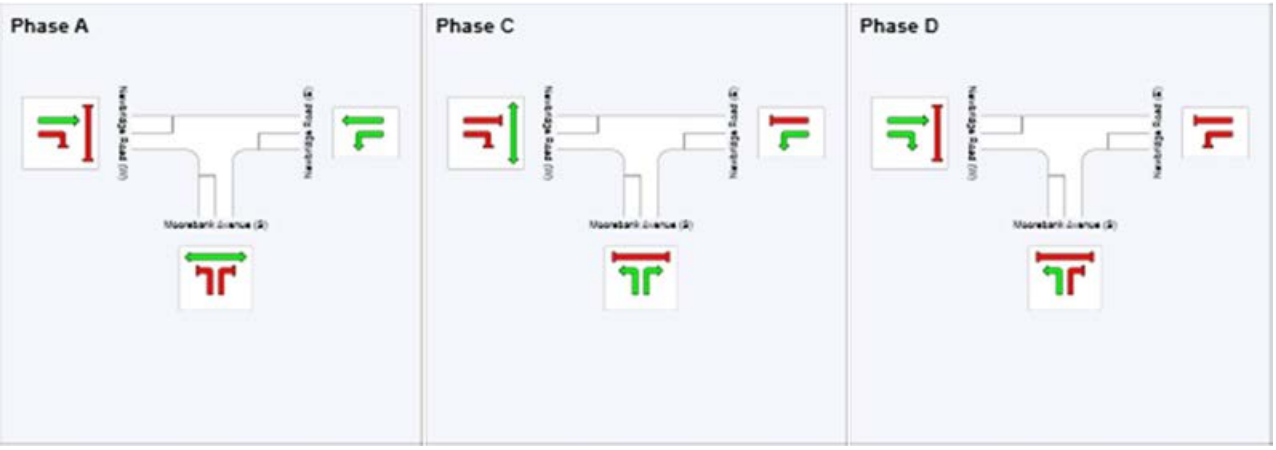
Site: I-06 2023 BASE PM

Network: 2023 BASE PM

Newbridge Road / Moorebank Avenue
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	44	76
Green Time (sec)	38	26	34
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	44	32	40
Phase Split	38 %	28 %	34 %



AM With Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-06 2023 IMT AM

Network: 2023 IMT AM

Newbridge Road / Moorebank Avenue
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	1417	3.3	1225	3.3	0.633	19.0	LOS B	13.5	96.9	0.56	0.82	42.3
3	R2	1304	11.2	1128	11.3	0.681	15.2	LOS B	14.3	112.0	0.43	0.69	52.4
Approach		2721	7.1	2353 N1	7.1	0.681	17.1	LOS B	14.3	112.0	0.50	0.76	47.8
East: Newbridge Road (E)													
4	L2	623	21.6	623	21.6	0.514	18.1	LOS B	7.4	62.4	0.69	0.79	52.2
5	T1	868	5.2	868	5.2	1.134	202.9	LOS F	55.4	405.3	1.00	1.58	20.3
Approach		1492	12.1	1492	12.1	1.134	125.7	LOS F	55.4	405.3	0.87	1.25	25.0
West: Newbridge Road (W)													
11	T1	1373	6.4	1373	6.4	0.739	9.7	LOS A	19.5	144.2	0.48	0.44	62.6
12	R2	734	7.5	734	7.5	1.291	319.2	LOS F	54.9	409.6	1.00	1.56	6.2
Approach		2106	6.8	2106	6.8	1.291	117.5	LOS F	54.9	409.6	0.66	0.83	24.8
All Vehicles		6319	8.2	5951 N1	8.7	1.291	79.9	LOS F	55.4	409.6	0.65	0.91	29.2

PHASING SUMMARY

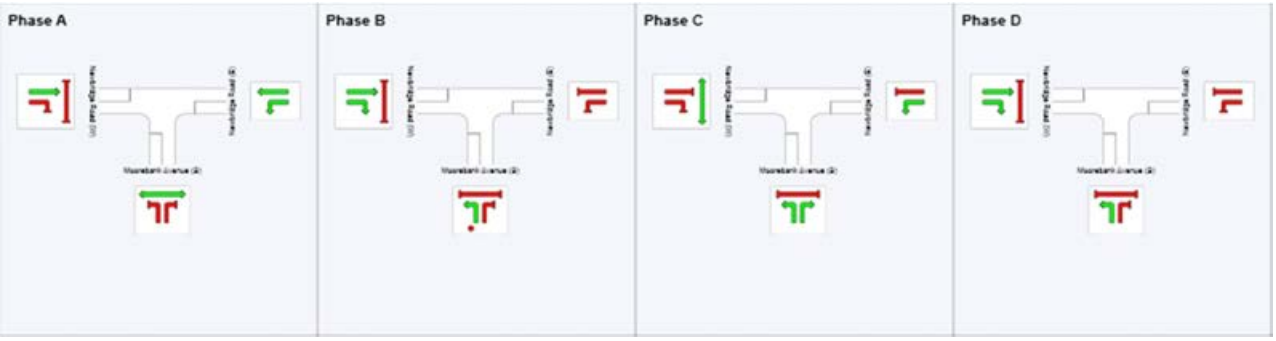
Site: I-06 2023 IMT AM

Network: 2023 IMT AM

Newbridge Road / Moorebank Avenue
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	33	55	116
Green Time (sec)	27	16	55	11
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	22	61	17
Phase Split	25 %	17 %	46 %	13 %



PM With Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-06 2023 IMT PM

Network: 2023 IMT PM

Newbridge Road / Moorebank Avenue
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	902	3.4	856	3.4	0.489	22.3	LOS B	12.5	89.9	0.56	0.74	40.0
3	R2	893	12.5	849	12.7	1.124	170.8	LOS F	16.6	130.6	1.00	1.37	17.2
Approach		1795	7.9	1706 N1	8.1	1.124	96.2	LOS F	16.6	130.6	0.78	1.06	21.9
East: Newbridge Road (E)													
4	L2	1155	7.3	1155	7.3	1.022	127.5	LOS F	58.2	440.7	1.00	1.15	20.4
5	T1	1257	4.8	1257	4.8	0.845	40.9	LOS C	33.5	243.7	0.96	0.90	46.8
Approach		2412	6.0	2412	6.0	1.022	82.3	LOS F	58.2	440.7	0.98	1.02	31.7
West: Newbridge Road (W)													
11	T1	994	3.7	994	3.7	0.388	8.9	LOS A	12.2	88.2	0.48	0.43	63.2
12	R2	992	2.7	992	2.7	1.072	125.2	LOS F	48.4	346.5	1.00	1.20	13.9
Approach		1985	3.2	1985	3.2	1.072	67.0	LOS E	48.4	346.5	0.74	0.81	32.1
All Vehicles		6192	5.6	6102 N1	5.7	1.124	81.2	LOS F	58.2	440.7	0.84	0.96	29.0

PHASING SUMMARY

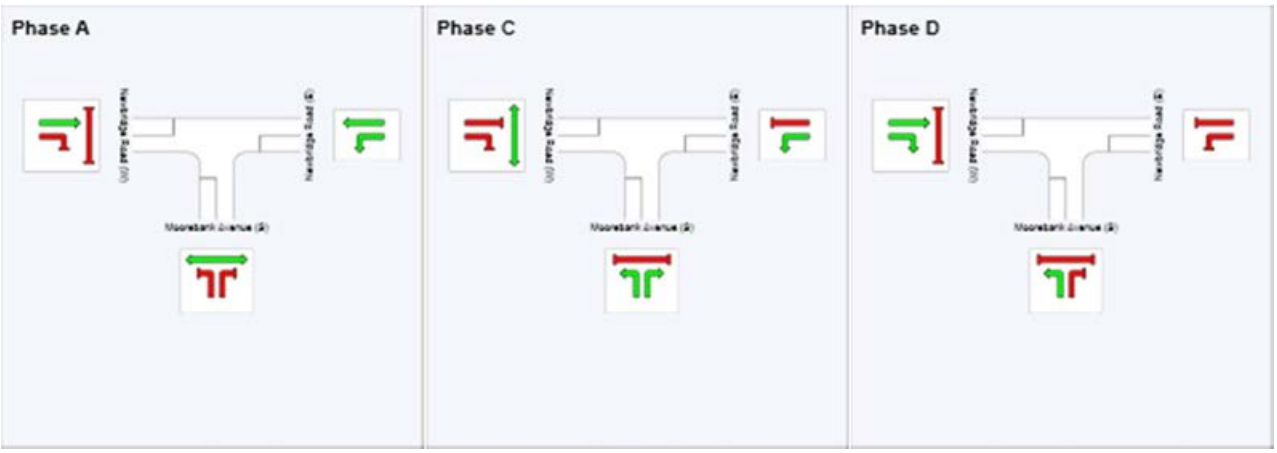
Site: I-06 2023 IMT PM

Network: 2023 IMT PM

Newbridge Road / Moorebank Avenue
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	44	76
Green Time (sec)	38	26	34
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	44	32	40
Phase Split	38 %	28 %	34 %



AM With Moorebank IMT - upgrade

MOVEMENT SUMMARY

Site: I-06 2023 IMT AM

Network: 2023 IMT AM - Upgrade Option

Newbridge Road / Moorebank Avenue
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	1417	3.3	1251	3.3	0.646	19.2	LOS B	14.2	102.5	0.57	0.83	42.1
3	R2	1304	11.2	1152	11.2	0.694	15.2	LOS B	15.0	117.3	0.44	0.69	52.4
Approach		2721	7.1	2403 N1	7.1	0.694	17.3	LOS B	15.0	117.3	0.51	0.76	47.7
East: Newbridge Road (E)													
4	L2	623	21.6	623	21.6	0.496	18.0	LOS B	7.2	61.1	0.68	0.78	52.3
5	T1	868	5.2	868	5.2	1.134	202.9	LOS F	55.4	405.3	1.00	1.58	20.3
Approach		1492	12.1	1492	12.1	1.134	125.7	LOS F	55.4	405.3	0.87	1.25	25.0
West: Newbridge Road (W)													
11	T1	1373	6.4	1373	6.4	0.739	9.7	LOS A	19.5	144.2	0.48	0.44	62.6
12	R2	734	7.5	734	7.5	1.262	293.6	LOS F	51.3	383.0	1.00	1.52	6.7
Approach		2106	6.8	2106	6.8	1.262	108.6	LOS F	51.3	383.0	0.66	0.81	26.1
All Vehicles		6319	8.2	6001 N1	8.6	1.262	76.3	LOS F	55.4	405.3	0.65	0.90	30.0

PHASING SUMMARY

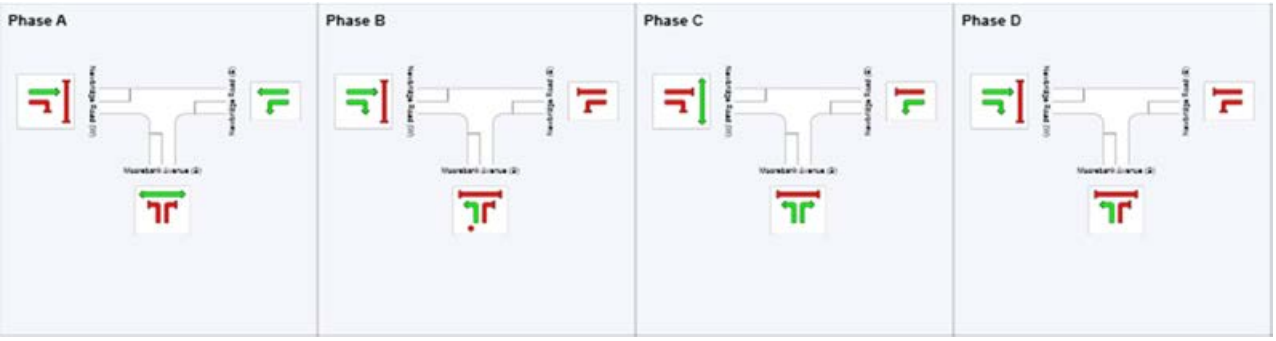
Site: I-06 2023 IMT AM

Network: 2023 IMT AM - Upgrade Option

Newbridge Road / Moorebank Avenue
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	33	55	116
Green Time (sec)	27	16	55	11
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	22	61	17
Phase Split	25 %	17 %	46 %	13 %



PM With Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-06 2023 IMT PM - Upgrade Option

Network: 2023 IMT PM - Upgrade Option

Newbridge Road / Moorebank Avenue
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	902	3.4	879	3.4	0.511	23.3	LOS B	13.4	96.5	0.58	0.75	39.3
3	R2	893	12.5	871	12.6	0.935	51.6	LOS D	16.6	130.6	1.00	0.98	35.4
Approach		1795	7.9	1750 N1	8.0	0.935	37.4	LOS C	16.6	130.6	0.79	0.87	36.8
East: Newbridge Road (E)													
4	L2	1155	7.3	1155	7.3	0.800	26.7	LOS B	22.9	173.5	0.70	0.83	46.4
5	T1	1257	4.8	1257	4.8	0.845	40.9	LOS C	33.5	243.7	0.96	0.90	46.8
Approach		2412	6.0	2412	6.0	0.845	34.1	LOS C	33.5	243.7	0.84	0.87	46.7
West: Newbridge Road (W)													
11	T1	994	3.7	994	3.7	0.420	11.9	LOS A	14.2	102.3	0.55	0.49	61.2
12	R2	992	2.7	992	2.7	1.202	238.0	LOS F	67.0	479.9	1.00	1.46	8.1
Approach		1985	3.2	1985	3.2	1.202	124.8	LOS F	67.0	479.9	0.78	0.98	21.9
All Vehicles		6192	5.6	6147 N1	5.7	1.202	64.3	LOS E	67.0	479.9	0.80	0.90	32.9

PHASING SUMMARY

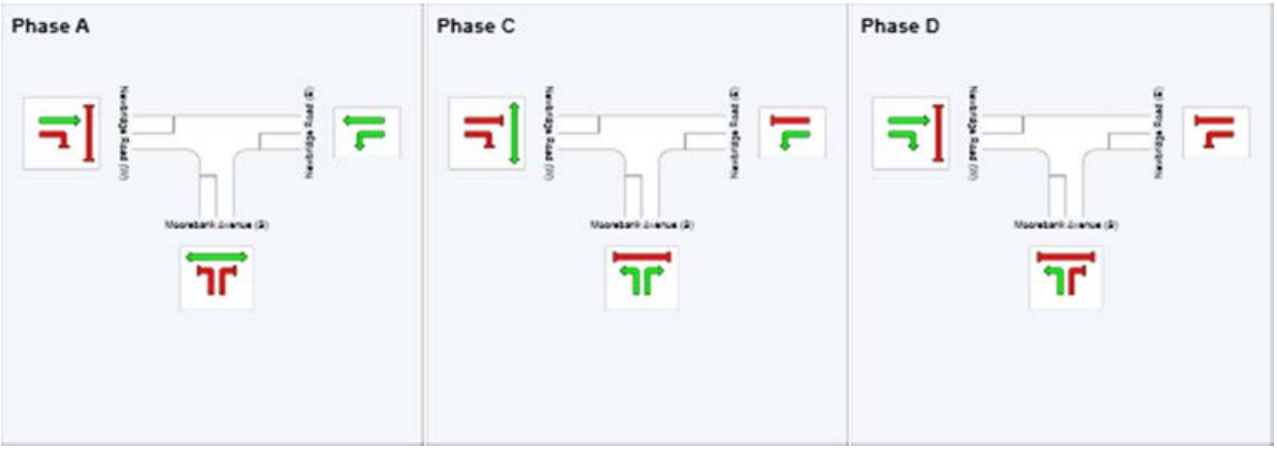
Site: I-06 2023 IMT PM - Upgrade Option

Network: 2023 IMT PM - Upgrade Option

Newbridge Road / Moorebank Avenue
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	44	82
Green Time (sec)	38	32	28
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	44	38	34
Phase Split	38 %	33 %	29 %



I-07 Intersection of Moorebank Avenue and Heathcote Road

AM BASE

MOVEMENT SUMMARY

Site: I-07 2023 BASE AM

Network: 2023 BASE AM

Moorebank Avenue / Heathcote Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
2	T1	1807	5.7	1807	5.7	1.133	194.5	LOS F	60.0	440.6	1.00	1.84	4.9
3	R2	22	19.0	22	19.0	0.200	71.9	LOS F	1.4	11.6	0.98	0.71	30.5
Approach		1829	5.9	1829	5.9	1.193	193.0	LOS F	60.0	440.6	1.00	1.83	5.1
East: Heathcote Road (E)													
4	L2	25	58.3	25	58.3	1.336	387.7	LOS F	85.6	644.7	1.00	1.79	8.2
6	R2	877	6.0	877	6.0	1.336	329.4	LOS F	85.6	644.7	1.00	1.67	9.4
Approach		902	7.5	902	7.5	1.336	331.0	LOS F	85.6	644.7	1.00	1.68	9.4
North: Moorebank Avenue (N)													
7	L2	679	7.8	611	8.1	0.376	10.7	LOS A	12.1	90.6	0.54	0.71	51.4
8	T1	663	17.0	600	17.7	0.340	20.9	LOS B	11.5	92.4	0.64	0.56	13.3
Approach		1342	12.3	1211 N1	12.9	0.376	15.7	LOS B	12.1	92.4	0.59	0.63	41.8
All Vehicles		4074	8.3	3942 N1	8.6	1.336	170.2	LOS F	85.6	644.7	0.87	1.43	9.9

PHASING SUMMARY

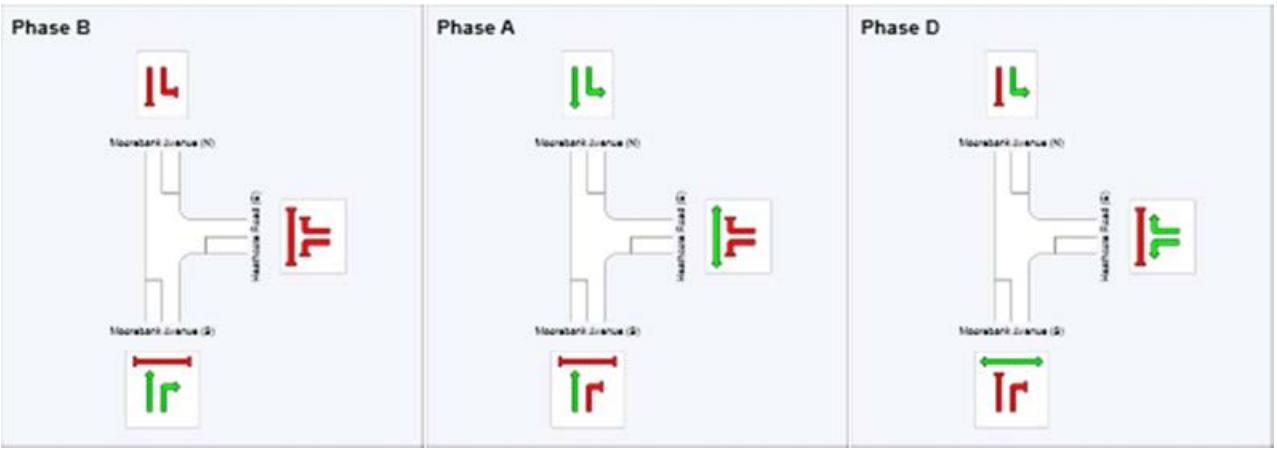
Site: I-07 2023 BASE AM

Network: 2023 BASE AM

Moorebank Avenue / Heathcote Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	15	88
Green Time (sec)	9	67	39
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	73	45
Phase Split	11 %	55 %	34 %



PM BASE

MOVEMENT SUMMARY

Site: I-07 2023 BASE PM

Network: 2023 BASE PM

Moorebank Avenue / Heathcote Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	1042	8.4	1042	8.4	0.804	21.8	LOS B	26.8	201.2	0.79	0.78	26.6
3	R2	45	7.0	45	7.0	0.371	64.4	LOS E	2.6	19.2	0.99	0.74	32.2
Approach		1087	8.3	1087	8.3	0.804	23.5	LOS B	26.8	201.2	0.80	0.78	27.4
East: Heathcote Road (E)													
4	L2	69	19.7	69	19.7	1.299	325.8	LOS F	78.2	580.6	1.00	1.77	9.5
6	R2	709	5.0	709	5.0	1.299	237.8	LOS F	78.2	580.6	1.00	1.54	12.3
Approach		779	6.4	779	6.4	1.299	245.6	LOS F	78.2	580.6	1.00	1.56	12.0
North: Moorebank Avenue (N)													
7	L2	807	3.5	791	3.5	0.384	7.5	LOS A	5.4	38.6	0.24	0.61	53.8
8	T1	1331	4.0	1304	4.1	0.663	6.2	LOS A	11.7	85.0	0.35	0.31	29.4
Approach		2138	3.8	2095 N1	3.9	0.663	6.7	LOS A	11.7	85.0	0.31	0.43	48.6
All Vehicles		4004	5.5	3961 N1	5.6	1.299	58.3	LOS E	78.2	580.6	0.58	0.74	21.6

PHASING SUMMARY

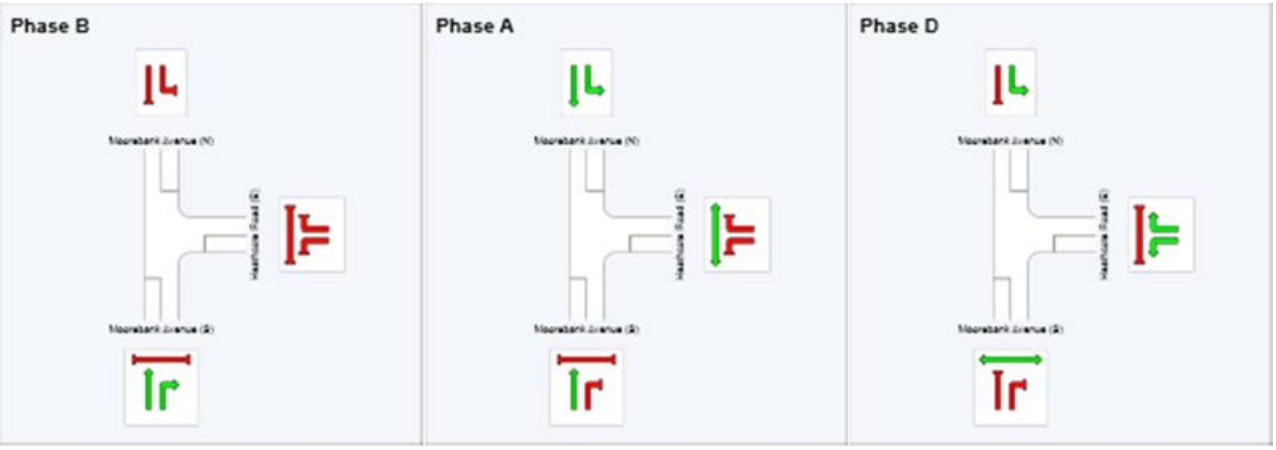
Site: I-07 2023 BASE PM

Network: 2023 BASE PM

Moorebank Avenue / Heathcote Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	14	80
Green Time (sec)	8	60	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	66	36
Phase Split	12 %	57 %	31 %



AM With Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-07 2023 IMT AM

Network: 2023 IMT AM

Moorebank Avenue / Heathcote Road
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	1841	7.4	1782	7.5	1.189	193.3	LOS F	58.3	440.6	1.00	1.84	5.0
3	R2	22	19.0	21	19.1	0.194	71.8	LOS F	1.4	11.2	0.98	0.71	30.5
Approach		1863	7.6	1803 N1	7.6	1.189	191.9	LOS F	58.3	440.6	1.00	1.82	5.2
East: Heathcote Road (E)													
4	L2	25	58.3	25	58.3	1.377	423.9	LOS F	92.6	697.0	1.00	1.85	7.6
6	R2	877	6.0	877	6.0	1.377	366.0	LOS F	92.6	697.0	1.00	1.75	8.6
Approach		902	7.5	902	7.5	1.377	367.6	LOS F	92.6	697.0	1.00	1.75	8.6
North: Moorebank Avenue (N)													
7	L2	679	7.8	596	8.2	0.365	10.6	LOS A	11.7	87.7	0.53	0.71	51.5
8	T1	694	18.5	614	19.6	0.356	21.2	LOS B	11.9	98.8	0.65	0.56	13.2
Approach		1373	13.2	1211 N1	14.0	0.365	16.0	LOS B	11.9	98.8	0.59	0.63	41.4
All Vehicles		4138	9.4	3916 N1	9.9	1.377	178.0	LOS F	92.6	697.0	0.87	1.44	9.5

PHASING SUMMARY

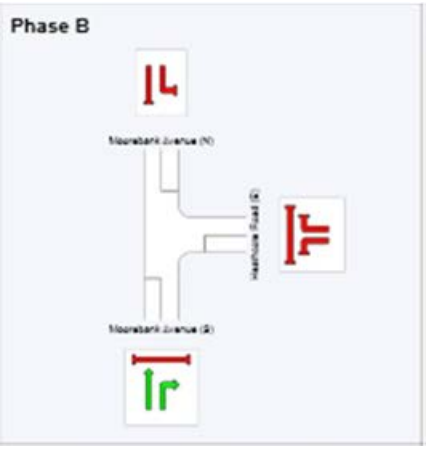
Site: I-07 2023 IMT AM

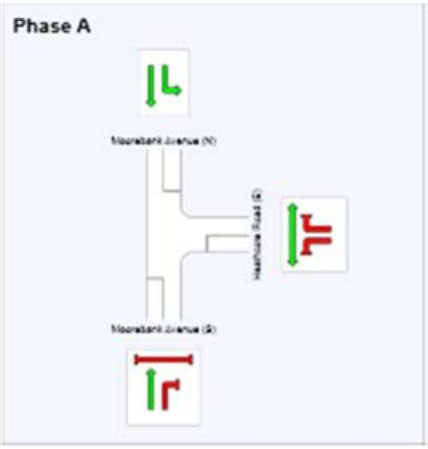
Network: 2023 IMT AM

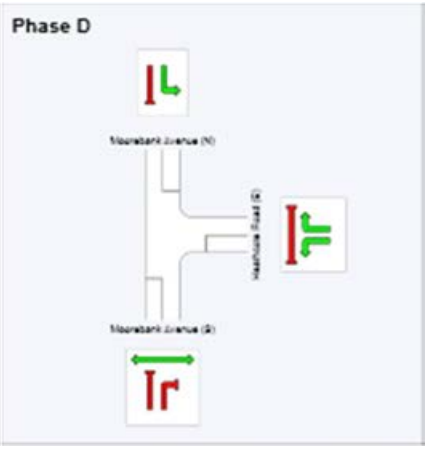
Moorebank Avenue / Heathcote Road
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	15	88
Green Time (sec)	9	67	39
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	73	45
Phase Split	11 %	55 %	34 %







PM With Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-07 2023 IMT PM

Network: 2023 IMT PM

Moorebank Avenue / Heathcote Road
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	1075	9.8	1075	9.8	0.844	28.2	LOS B	31.5	241.8	0.83	0.86	22.9
3	R2	45	7.0	45	7.0	0.371	64.4	LOS E	2.6	19.2	0.99	0.74	32.2
Approach		1120	9.7	1120	9.7	0.844	29.6	LOS C	31.5	241.8	0.84	0.86	24.0
East: Heathcote Road (E)													
4	L2	69	19.7	69	19.7	1.307	333.6	LOS F	79.0	586.8	1.00	1.79	9.3
6	R2	709	5.0	709	5.0	1.307	244.0	LOS F	79.0	586.8	1.00	1.56	12.1
Approach		779	6.4	779	6.4	1.307	252.0	LOS F	79.0	586.8	1.00	1.58	11.8
North: Moorebank Avenue (N)													
7	L2	807	3.5	773	3.6	0.368	7.5	LOS A	5.2	37.3	0.24	0.61	53.8
8	T1	1357	5.9	1299	6.0	0.675	6.3	LOS A	12.0	89.6	0.36	0.32	29.2
Approach		2164	5.0	2071 N1	5.1	0.675	6.7	LOS A	12.0	89.6	0.31	0.43	48.4
All Vehicles		4063	6.6	3970 N1	6.7	1.307	61.3	LOS E	79.0	586.8	0.60	0.78	20.8

PHASING SUMMARY

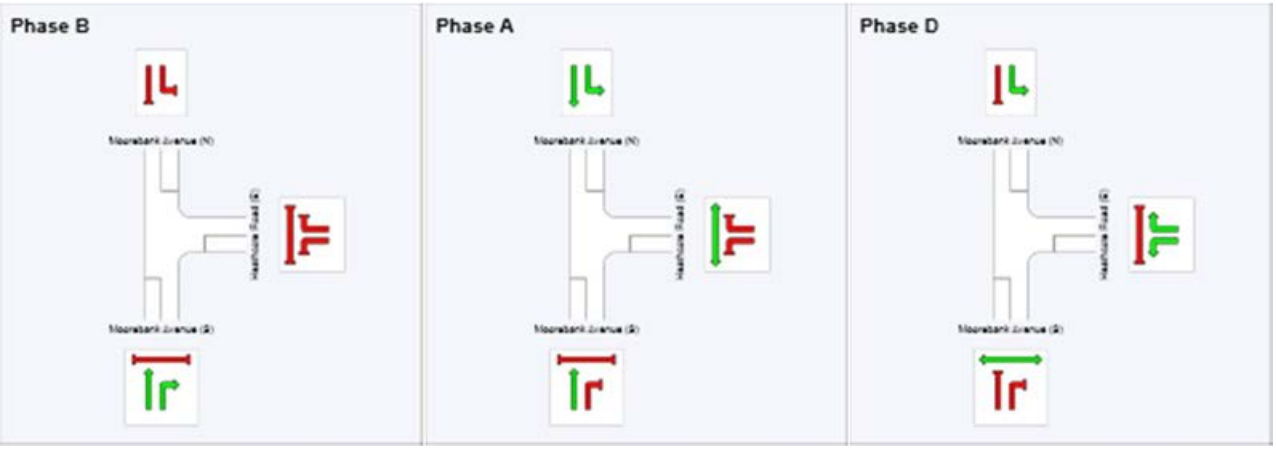
Site: I-07 2023 IMT PM

Network: 2023 IMT PM

Moorebank Avenue / Heathcote Road
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	14	80
Green Time (sec)	8	60	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	66	36
Phase Split	12 %	57 %	31 %



AM With Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-07 2023 IMT AM - Upgrade Option

Network: 2023 IMT AM - Upgrade Option

Moorebank Avenue / Heathcote Road
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
2	T1	1841	7.4	1818	7.4	1.234	230.7	LOS F	58.3	440.6	1.00	2.00	4.2
3	R2	22	19.0	22	19.1	0.197	71.9	LOS F	1.4	11.4	0.98	0.71	30.6
Approach		1863	7.6	1840 N1	7.6	1.234	228.8	LOS F	58.3	440.6	1.00	1.98	4.4
East: Heathcote Road (E)													
4	L2	25	58.3	25	58.3	1.234	321.3	LOS F	47.4	361.4	1.00	1.61	9.6
6	R2	877	6.0	877	6.0	1.234	273.6	LOS F	47.4	361.4	1.00	1.53	11.0
Approach		902	7.5	902	7.5	1.234	274.9	LOS F	47.4	361.4	1.00	1.53	11.0
North: Moorebank Avenue (N)													
7	L2	679	7.8	603	8.2	0.369	10.6	LOS A	11.9	88.9	0.54	0.71	51.5
8	T1	694	18.5	620	19.5	0.344	19.3	LOS B	11.5	95.3	0.62	0.54	14.6
Approach		1373	13.2	1223 N1	13.9	0.369	15.0	LOS B	11.9	95.3	0.58	0.62	42.2
All Vehicles		4138	9.4	3965 N1	9.8	1.234	173.4	LOS F	58.3	440.6	0.87	1.46	9.7

PHASING SUMMARY

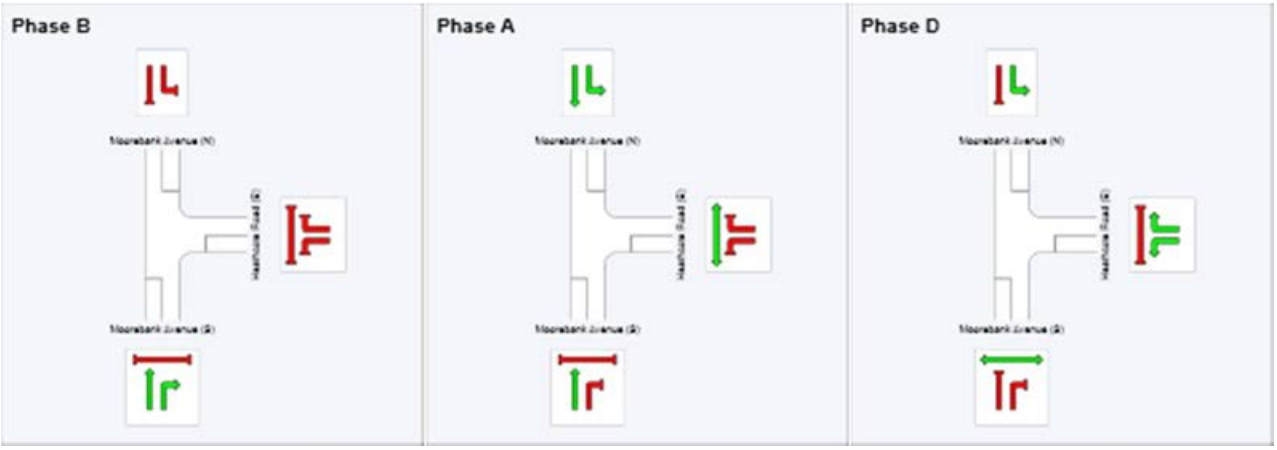
Site: I-07 2023 IMT AM - Upgrade Option

Network: 2023 IMT AM - Upgrade Option

Moorebank Avenue / Heathcote Road
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	15	91
Green Time (sec)	9	70	36
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	76	42
Phase Split	11 %	57 %	32 %



PM With Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-07 2023 IMT PM - Upgrade Option

Network: 2023 IMT PM - Upgrade Option

Moorebank Avenue / Heathcote Road
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
2	T1	1075	9.8	1075	9.8	0.758	16.7	LOS B	25.9	198.9	0.75	0.70	30.8
3	R2	45	7.0	45	7.0	0.371	64.5	LOS E	2.6	19.2	0.99	0.74	32.3
Approach		1120	9.7	1120	9.7	0.758	18.6	LOS B	25.9	198.9	0.76	0.70	31.0
East: Heathcote Road (E)													
4	L2	69	19.7	69	19.7	1.184	243.2	LOS F	39.0	292.6	0.99	1.52	12.1
6	R2	709	5.0	709	5.0	1.184	182.6	LOS F	39.0	292.6	1.00	1.38	15.1
Approach		779	6.4	779	6.4	1.184	188.0	LOS F	39.0	292.6	1.00	1.39	14.8
North: Moorebank Avenue (N)													
7	L2	807	3.5	745	3.6	0.343	7.4	LOS A	4.9	35.3	0.23	0.61	53.8
8	T1	1357	5.9	1253	6.1	0.653	6.2	LOS A	11.1	82.9	0.34	0.31	30.0
Approach		2164	5.0	1998 N1	5.2	0.653	6.7	LOS A	11.1	82.9	0.30	0.42	48.6
All Vehicles		4063	6.6	3897 N1	6.8	1.184	46.3	LOS D	39.0	292.6	0.57	0.69	24.8

PHASING SUMMARY

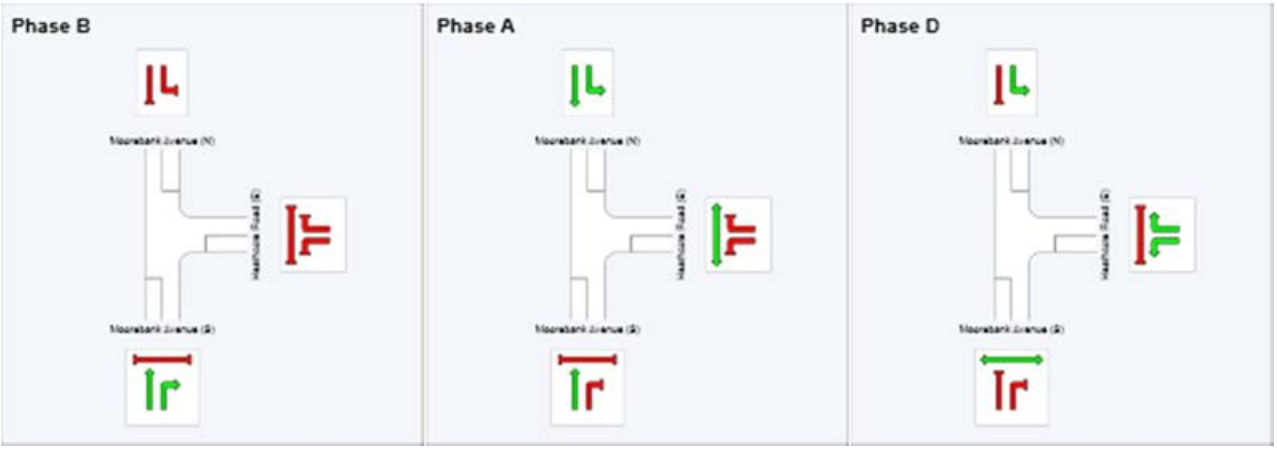
Site: I-07 2023 IMT PM - Upgrade Option

Network: 2023 IMT PM - Upgrade Option

Moorebank Avenue / Heathcote Road
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	14	80
Green Time (sec)	8	60	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	66	36
Phase Split	12 %	57 %	31 %



I-08 Intersection of Moorebank Avenue and Industry Park Access

AM BASE

MOVEMENT SUMMARY

Site: I-08 2023 BASE AM

Network: 2023 BASE AM

Moorebank Avenue / Industry Park Access
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (Network Cycle Time)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	83	1.3	83	1.3	0.050	6.0	LOS A	0.3	2.3	0.12	0.58	43.1
2	T1	1816	4.9	1816	4.9	1.142	192.4	LOS F	134.3	979.1	1.00	1.83	8.0
Approach		1899	4.7	1899	4.7	1.142	184.2	LOS F	134.3	979.1	0.96	1.78	8.5
North: Moorebank Avenue (N)													
8	T1	615	16.1	554	16.6	0.185	1.9	LOS A	3.1	24.9	0.19	0.17	57.7
9	R2	56	39.6	51	40.5	0.960	96.1	LOS F	4.0	37.4	1.00	0.99	13.5
Approach		671	18.1	604 N1	18.6	0.960	9.8	LOS A	4.0	37.4	0.26	0.24	48.4
West: Industry Park Access (W)													
10	L2	20	63.2	20	63.2	0.301	66.6	LOS E	1.3	14.5	0.96	0.69	9.4
12	R2	51	70.8	51	70.8	0.486	72.3	LOS F	2.5	27.7	0.99	0.73	19.2
Approach		71	68.7	71	68.7	0.486	70.7	LOS F	2.5	27.7	0.99	0.72	17.1
All Vehicles		2640	9.8	2574 N1	10.1	1.142	140.1	LOS F	134.3	979.1	0.80	1.39	11.6

PHASING SUMMARY

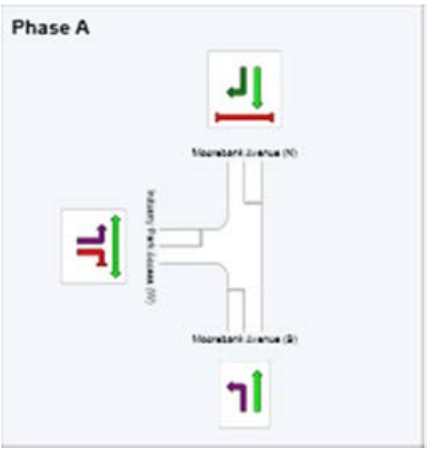
Site: I-08 2023 BASE AM

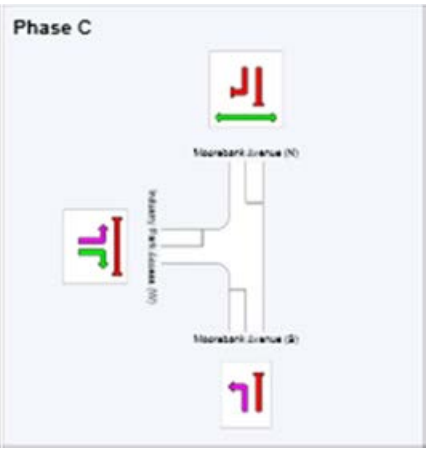
Network: 2023 BASE AM

Moorebank Avenue / Industry Park Access
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (Network Cycle Time)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	119
Green Time (sec)	113	8
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	119	14
Phase Split	89 %	11 %





PM BASE

MOVEMENT SUMMARY

Site: I-08 2023 BASE PM

Network: 2023 BASE PM

Moorebank Avenue / Industry Park Access
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 65 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	7	14.3	7	14.3	0.006	6.5	LOS A	0.0	0.2	0.21	0.57	42.8
2	T1	1056	7.6	1056	7.6	0.410	4.6	LOS A	7.2	53.5	0.46	0.41	52.0
Approach		1063	7.6	1063	7.6	0.410	4.6	LOS A	7.2	53.5	0.46	0.41	51.8
North: Moorebank Avenue (N)													
8	T1	1384	3.8	1345	3.7	0.510	5.1	LOS A	10.1	73.1	0.51	0.46	54.0
9	R2	23	63.6	22	63.0	0.113	13.3	LOS A	0.3	3.6	0.47	0.66	33.5
Approach		1407	4.8	1367 N1	4.7	0.510	5.2	LOS A	10.1	73.1	0.51	0.47	53.6
West: Industry Park Access (W)													
10	L2	31	13.8	31	13.8	0.055	3.3	LOS A	0.2	1.7	0.32	0.40	27.0
12	R2	174	9.1	174	9.1	0.405	32.2	LOS C	2.7	20.5	0.96	0.76	28.2
Approach		204	9.8	204	9.8	0.405	27.9	LOS B	2.7	20.5	0.87	0.70	28.1
All Vehicles		2675	6.3	2634 N1	6.4	0.510	6.7	LOS A	10.1	73.1	0.52	0.46	49.6

PHASING SUMMARY

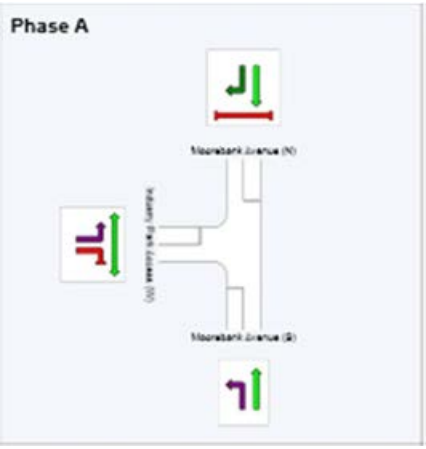
Site: I-08 2023 BASE PM

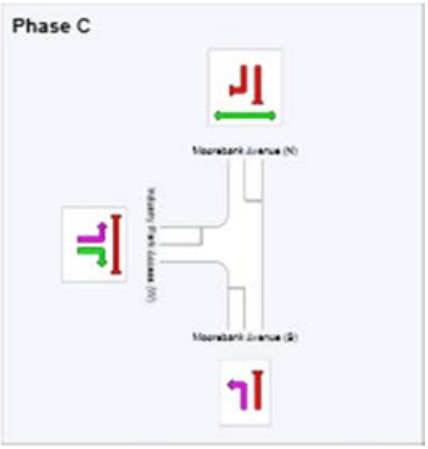
Network: 2023 BASE PM

Moorebank Avenue / Industry Park Access
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 65 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	51
Green Time (sec)	45	8
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	51	14
Phase Split	78 %	22 %





AM With Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-08 2023 IMT AM

Network: 2023 IMT AM

Moorebank Avenue / Industry Park Access
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	85	3.7	85	3.7	0.053	6.1	LOS A	0.3	2.5	0.12	0.58	43.1
2	T1	1849	6.6	1849	6.6	1.206	249.4	LOS F	151.0	1133.0	1.00	2.06	6.4
Approach		1935	6.5	1935	6.5	1.206	238.6	LOS F	151.0	1133.0	0.96	2.00	6.8
North: Moorebank Avenue (N)													
8	T1	645	17.8	569	18.6	0.200	2.5	LOS A	3.7	30.8	0.22	0.19	56.9
9	R2	56	39.6	50	40.8	0.942	92.9	LOS F	3.8	36.1	1.00	0.97	13.8
Approach		701	19.5	619 N1	20.4	0.942	9.8	LOS A	3.8	36.1	0.28	0.26	48.5
West: Industry Park Access (W)													
10	L2	20	63.2	20	63.2	0.247	63.2	LOS E	1.3	14.2	0.94	0.67	9.8
12	R2	53	72.0	53	72.0	0.375	67.8	LOS E	2.5	28.3	0.98	0.73	19.9
Approach		73	69.6	73	69.6	0.375	66.5	LOS E	2.5	28.3	0.97	0.71	17.7
All Vehicles		2708	11.5	2626 N1	11.9	1.206	180.0	LOS F	151.0	1133.0	0.80	1.55	9.5

PHASING SUMMARY

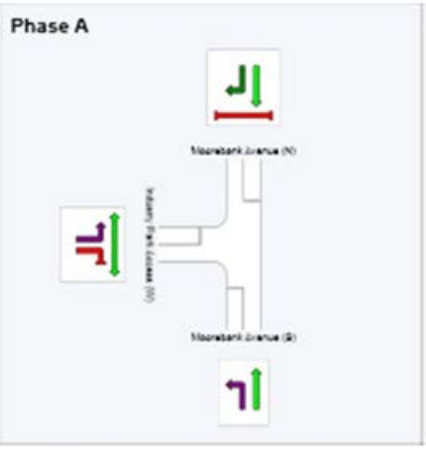
Site: I-08 2023 IMT AM

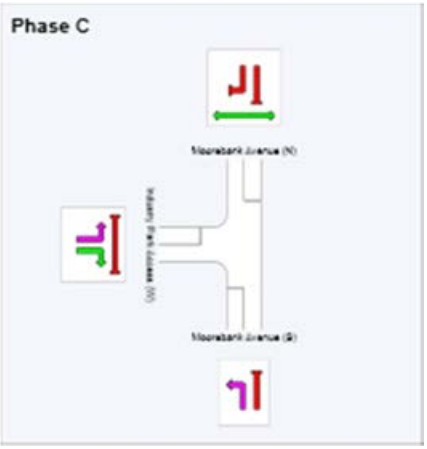
Network: 2023 IMT AM

Moorebank Avenue / Industry Park Access
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	116
Green Time (sec)	110	11
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	116	17
Phase Split	87 %	13 %





PM With Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-08 2023 IMT PM

Network: 2023 IMT PM

Moorebank Avenue / Industry Park Access
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	9	33.3	9	33.3	0.009	6.6	LOS A	0.0	0.4	0.13	0.56	43.0
2	T1	1088	9.0	1088	9.0	0.379	4.0	LOS A	9.2	70.6	0.33	0.30	52.8
Approach		1098	9.2	1098	9.2	0.379	4.1	LOS A	9.2	70.6	0.33	0.30	52.7
North: Moorebank Avenue (N)													
8	T1	1411	5.6	1339	5.6	0.458	4.4	LOS A	12.5	92.8	0.36	0.33	54.7
9	R2	23	63.6	22	63.3	0.132	12.9	LOS A	0.4	4.7	0.35	0.64	33.7
Approach		1434	6.5	1361 N1	6.5	0.458	4.6	LOS A	12.5	92.8	0.36	0.34	54.4
West: Industry Park Access (W)													
10	L2	31	13.8	31	13.8	0.059	2.9	LOS A	0.3	2.0	0.21	0.35	27.3
12	R2	176	10.2	176	10.2	0.455	55.9	LOS D	4.8	37.1	0.98	0.77	22.5
Approach		206	10.7	206	10.7	0.455	48.0	LOS D	4.8	37.1	0.87	0.71	22.7
All Vehicles		2738	7.9	2665 N1	8.1	0.458	7.7	LOS A	12.5	92.8	0.39	0.35	48.5

PHASING SUMMARY

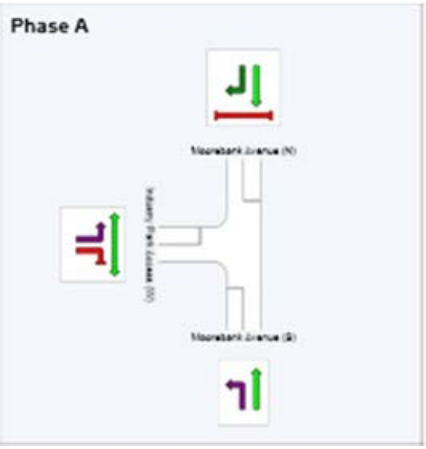
Site: I-08 2023 IMT PM

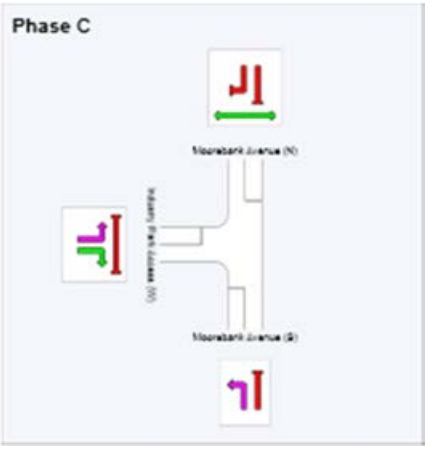
Network: 2023 IMT PM

Moorebank Avenue / Industry Park Access
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	97
Green Time (sec)	91	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	97	19
Phase Split	84 %	16 %





AM With Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-08 2023 IMT AM

Network: 2023 IMT AM - Upgrade Option

Moorebank Avenue / Industry Park Access
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	85	3.7	85	3.7	0.053	6.1	LOS A	0.3	2.5	0.12	0.58	43.1
2	T1	1849	6.6	1849	6.6	1.206	249.4	LOS F	151.0	1133.0	1.00	2.06	6.4
Approach		1935	6.5	1935	6.5	1.206	238.6	LOS F	151.0	1133.0	0.96	2.00	6.8
North: Moorebank Avenue (N)													
8	T1	645	17.8	576	18.6	0.203	2.5	LOS A	3.8	31.3	0.22	0.20	56.9
9	R2	56	39.6	50	40.9	0.955	95.1	LOS F	3.9	37.1	1.00	0.98	13.5
Approach		701	19.5	627 N1	20.4	0.955	9.9	LOS A	3.9	37.1	0.29	0.26	48.3
West: Industry Park Access (W)													
10	L2	20	63.2	20	63.2	0.247	63.2	LOS E	1.3	14.2	0.94	0.67	9.8
12	R2	53	72.0	53	72.0	0.375	67.8	LOS E	2.5	28.3	0.98	0.73	19.9
Approach		73	69.6	73	69.6	0.375	66.5	LOS E	2.5	28.3	0.97	0.71	17.7
All Vehicles		2708	11.5	2634 N1	11.9	1.206	179.5	LOS F	151.0	1133.0	0.80	1.55	9.5

PHASING SUMMARY

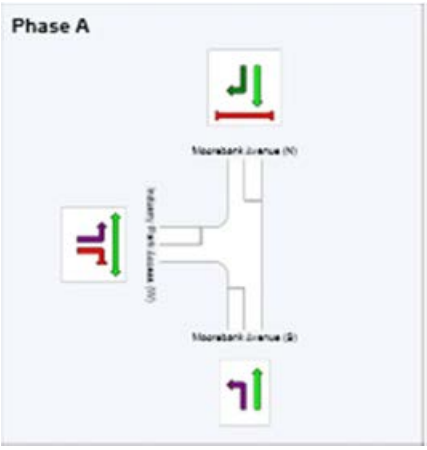
Site: I-08 2023 IMT AM

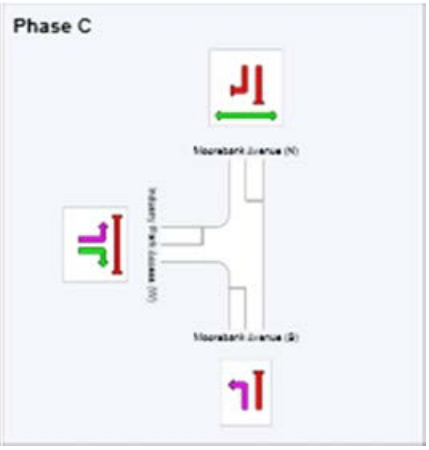
Network: 2023 IMT AM - Upgrade Option

Moorebank Avenue / Industry Park Access
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	116
Green Time (sec)	110	11
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	116	17
Phase Split	87 %	13 %





PM With Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-08 2023 IMT PM

Network: 2023 IMT PM - Upgrade Option

Moorebank Avenue / Industry Park Access
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	9	33.3	9	33.3	0.009	6.6	LOS A	0.0	0.4	0.13	0.56	43.0
2	T1	1088	9.0	1088	9.0	0.379	4.0	LOS A	9.2	70.6	0.33	0.30	52.8
Approach		1098	9.2	1098	9.2	0.379	4.1	LOS A	9.2	70.6	0.33	0.30	52.7
North: Moorebank Avenue (N)													
8	T1	1411	5.6	1302	5.8	0.446	4.4	LOS A	11.9	89.2	0.36	0.33	54.8
9	R2	23	63.6	22	64.2	0.133	12.9	LOS A	0.4	4.7	0.35	0.64	33.7
Approach		1434	6.5	1324 N1	6.8	0.446	4.5	LOS A	11.9	89.2	0.36	0.33	54.4
West: Industry Park Access (W)													
10	L2	31	13.8	31	13.8	0.059	2.9	LOS A	0.3	2.0	0.21	0.35	27.3
12	R2	176	10.2	176	10.2	0.455	55.9	LOS D	4.8	37.1	0.98	0.77	22.5
Approach		206	10.7	206	10.7	0.455	48.0	LOS D	4.8	37.1	0.87	0.71	22.7
All Vehicles		2738	7.9	2628 N1	8.3	0.455	7.7	LOS A	11.9	89.2	0.39	0.35	48.5

PHASING SUMMARY

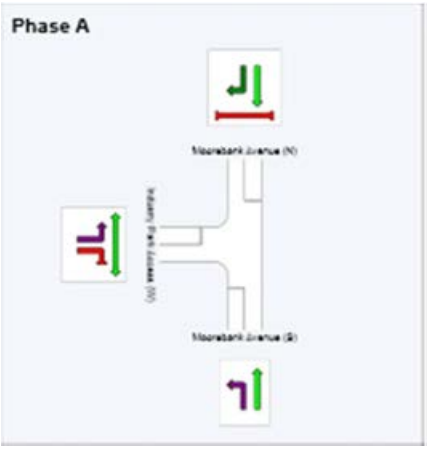
Site: I-08 2023 IMT PM

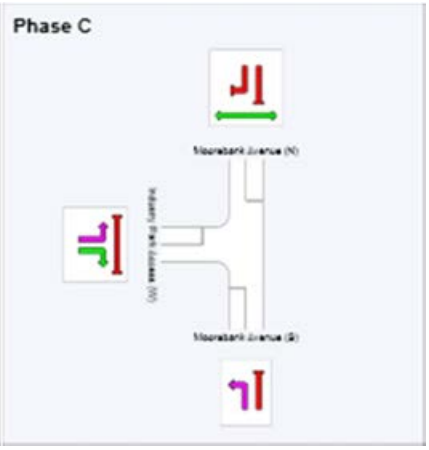
Network: 2023 IMT PM - Upgrade Option

Moorebank Avenue / Industry Park Access
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	97
Green Time (sec)	91	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	97	19
Phase Split	84 %	16 %





I-09 Intersection of Moorebank Avenue and Church Road

AM BASE

MOVEMENT SUMMARY

Site: I-09 2023 BASE AM

Moorebank Avenue / Church Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1993	6.4	0.670	3.4	LOS A	10.0	73.8	0.21	0.11	56.3
3	R2	267	7.5	0.670	20.1	LOS B	10.0	73.8	1.00	0.50	43.1
Approach		2260	6.5	0.837	5.4	NA	10.0	73.8	0.31	0.15	54.3
East: Church Road (E)											
4	L2	185	14.2	0.212	6.7	LOS A	0.8	6.6	0.44	0.66	47.8
6	R2	6	0.0	0.555	442.7	LOS F	1.3	9.3	1.00	1.02	7.1
Approach		192	13.7	0.555	21.0	LOS B	1.3	9.3	0.46	0.67	40.2
North: Moorebank Avenue (N)											
7	L2	31	0.0	0.191	5.6	LOS A	0.0	0.0	0.00	0.06	57.7
8	T1	628	21.1	0.191	0.0	LOS A	0.0	0.0	0.00	0.03	59.6
Approach		659	20.1	0.191	0.3	NA	0.0	0.0	0.00	0.03	59.6
All Vehicles		3111	9.8	0.837	5.3	NA	10.0	73.8	0.25	0.16	54.1

PM BASE

MOVEMENT SUMMARY

Site: I-09 2023 BASE PM

Moorebank Avenue / Church Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1098	11.9	0.506	5.1	LOS A	6.4	49.3	0.17	0.07	54.9
3	R2	100	11.6	0.506	36.0	LOS C	6.4	49.3	1.00	0.43	36.3
Approach		1198	11.9	0.506	7.7	NA	6.4	49.3	0.24	0.10	52.6
East: Church Road (E)											
4	L2	394	4.3	1.082	166.1	LOS F	45.6	331.1	1.00	3.53	15.4
6	R2	1	0.0	0.064	203.3	LOS F	0.2	1.2	0.99	0.99	13.3
Approach		395	4.3	1.082	166.2	LOS F	45.6	331.1	1.00	3.53	15.4
North: Moorebank Avenue (N)											
7	L2	13	8.3	0.822	6.2	LOS A	0.0	0.0	0.00	0.01	56.6
8	T1	1544	4.4	0.822	0.7	LOS A	0.0	0.0	0.00	0.00	58.5
Approach		1557	4.5	0.822	0.8	NA	0.0	0.0	0.00	0.00	58.5
All Vehicles		3149	7.3	1.082	24.1	NA	45.6	331.1	0.21	0.48	41.7

AM With Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-09 2023 IMT AM

Moorebank Avenue / Church Road
2023 IMT AM PEAK 7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	2027	8.0	0.707	4.0	LOS A	10.7	80.9	0.20	0.11	55.7
3	R2	271	8.6	0.707	23.3	LOS B	10.7	80.9	1.00	0.55	41.4
Approach		2298	8.1	0.884	6.3	NA	10.7	80.9	0.29	0.16	53.5
East: Church Road (E)											
4	L2	188	15.5	0.227	7.0	LOS A	0.9	7.2	0.47	0.68	47.6
6	R2	6	0.0	0.810	773.0	LOS F	2.0	13.9	1.00	1.04	4.3
Approach		194	15.0	0.810	31.9	LOS C	2.0	13.9	0.48	0.69	35.9
North: Moorebank Avenue (N)											
7	L2	31	0.0	0.205	5.6	LOS A	0.0	0.0	0.00	0.05	57.7
8	T1	661	22.8	0.205	0.0	LOS A	0.0	0.0	0.00	0.03	59.7
Approach		691	21.8	0.205	0.3	NA	0.0	0.0	0.00	0.03	59.6
All Vehicles		3184	11.5	0.884	6.5	NA	10.7	80.9	0.24	0.16	53.0

PM With Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-09 2023 IMT PM

Moorebank Avenue / Church Road
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1132	13.2	0.566	4.1	LOS A	6.1	48.9	0.11	0.06	55.8
3	R2	103	14.3	0.566	42.7	LOS D	6.1	48.9	1.00	0.57	33.8
Approach		1235	13.3	0.566	7.4	NA	6.1	48.9	0.18	0.10	52.8
East: Church Road (E)											
4	L2	397	5.1	1.154	216.2	LOS F	55.3	406.9	1.00	4.01	12.7
6	R2	1	0.0	0.093	286.0	LOS F	0.2	1.6	0.99	1.00	10.2
Approach		398	5.1	1.154	216.4	LOS F	55.3	406.9	1.00	4.00	12.7
North: Moorebank Avenue (N)											
7	L2	13	8.3	0.853	6.4	LOS A	0.0	0.0	0.00	0.01	56.3
8	T1	1572	6.1	0.853	1.0	LOS A	0.0	0.0	0.00	0.00	58.1
Approach		1585	6.1	0.853	1.0	NA	0.0	0.0	0.00	0.00	58.1
All Vehicles		3218	8.8	1.154	30.1	NA	55.3	406.9	0.19	0.54	38.9

AM With Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-09 2023 IMT AM - Upgrade Option

Moorebank Avenue / Church Road
2023 IMT AM PEAK 7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	2027	8.0	0.707	4.0	LOS A	10.7	80.9	0.20	0.11	55.7
3	R2	271	8.6	0.707	23.3	LOS B	10.7	80.9	1.00	0.55	41.2
Approach		2298	8.1	0.884	6.3	NA	10.7	80.9	0.29	0.16	53.5
East: Church Road (E)											
4	L2	188	15.5	0.227	7.0	LOS A	0.9	7.2	0.47	0.68	47.6
Approach		188	15.5	0.227	7.0	LOS A	0.9	7.2	0.47	0.68	47.6
North: Moorebank Avenue (N)											
7	L2	31	0.0	0.205	5.6	LOS A	0.0	0.0	0.00	0.05	57.7
8	T1	661	22.8	0.205	0.0	LOS A	0.0	0.0	0.00	0.03	59.7
Approach		691	21.8	0.205	0.3	NA	0.0	0.0	0.00	0.03	59.6
All Vehicles		3178	11.5	0.884	5.0	NA	10.7	80.9	0.24	0.16	54.3

PM With Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-09 2023 IMT PM - Upgrade Option

Moorebank Avenue / Church Road
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1132	13.2	0.564	4.3	LOS A	6.2	49.6	0.11	0.06	55.6
3	R2	103	14.3	0.564	42.8	LOS D	6.2	49.6	1.00	0.56	33.6
Approach		1235	13.3	0.564	7.5	NA	6.2	49.6	0.19	0.10	52.7
East: Church Road (E)											
4	L2	397	5.1	1.152	215.1	LOS F	55.1	405.4	1.00	4.00	12.8
Approach		397	5.1	1.152	215.1	LOS F	55.1	405.4	1.00	4.00	12.8
North: Moorebank Avenue (N)											
7	L2	13	8.3	0.853	6.4	LOS A	0.0	0.0	0.00	0.01	56.3
8	T1	1572	6.1	0.853	0.9	LOS A	0.0	0.0	0.00	0.00	58.1
Approach		1585	6.1	0.853	1.0	NA	0.0	0.0	0.00	0.00	58.1
All Vehicles		3217	8.8	1.152	29.9	NA	55.1	405.4	0.20	0.54	38.9

I-10 Intersection of Heathcote Road and Nuwarra Road

AM BASE

MOVEMENT SUMMARY

Site: I-10 2023 BASE AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
SouthEast: Heathcote Road (SE)											
4	L2	217	1.0	0.148	7.7	LOS A	2.5	17.9	0.24	0.62	48.7
5	T1	1708	5.2	1.039	104.7	LOS F	82.3	602.2	1.00	1.35	21.7
6	R2	567	3.2	1.110	138.0	LOS F	25.5	183.4	1.00	1.26	18.5
Approach		2493	4.4	1.110	103.9	LOS F	82.3	602.2	0.93	1.27	21.6
NorthEast: Nuwarra Road (NE)											
7	L2	369	4.6	0.416	20.1	LOS B	12.8	93.1	0.63	0.76	44.6
8	T1	217	8.3	0.349	52.5	LOS D	6.2	46.5	0.93	0.74	26.4
9	R2	436	5.8	1.231	294.6	LOS F	32.8	240.7	1.00	1.59	10.0
Approach		1022	5.9	1.231	144.0	LOS F	32.8	240.7	0.85	1.11	16.8
NorthWest: Heathcote Road (NW)											
10	L2	234	11.7	0.308	21.3	LOS B	7.1	54.6	0.69	0.76	42.8
11	T1	946	11.6	0.854	39.2	LOS C	29.5	226.9	0.85	0.79	36.2
12	R2	217	6.3	0.727	73.5	LOS F	7.2	53.5	1.00	0.85	20.2
Approach		1397	10.8	0.854	41.5	LOS C	29.5	226.9	0.84	0.80	34.2
SouthWest: Wattle Grove Drive (SW)											
1	L2	535	2.0	0.709	44.4	LOS D	24.1	171.8	0.92	1.06	26.9
2	T1	509	4.3	0.709	57.4	LOS E	16.0	116.2	1.00	0.85	24.8
3	R2	239	4.0	1.159	229.6	LOS F	31.2	225.6	1.00	1.54	9.1
Approach		1283	3.3	1.159	84.0	LOS F	31.2	225.6	0.97	1.07	19.0
All Vehicles		6195	5.8	1.231	92.3	LOS F	82.3	602.2	0.91	1.09	21.9

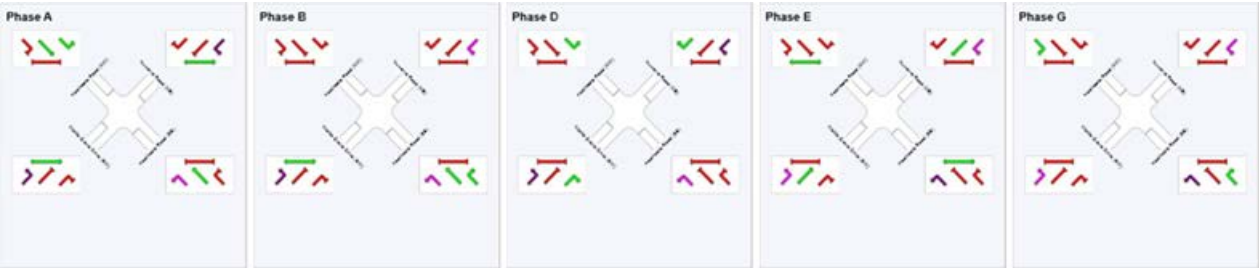
PHASING SUMMARY

Site: I-10 2023 BASE AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	D	E	G
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	54	67	86	114
Green Time (sec)	48	7	13	22	11
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	54	13	19	28	17
Phase Split	41 %	10 %	15 %	21 %	13 %



PM BASE

MOVEMENT SUMMARY

Site: I-10 2023 BASE PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
SouthEast: Heathcote Road (SE)											
4	L2	308	2.4	0.257	14.2	LOS A	8.0	57.2	0.44	0.68	43.2
5	T1	1196	5.5	0.876	42.7	LOS D	36.6	268.1	0.88	0.86	34.9
6	R2	432	3.2	1.032	136.3	LOS F	21.7	156.3	1.00	1.19	18.6
Approach		1936	4.5	1.032	59.0	LOS E	36.6	268.1	0.84	0.90	29.4
NorthEast: Nuwarra Road (NE)											
7	L2	583	2.3	0.823	51.2	LOS D	29.9	213.6	0.97	1.08	32.5
8	T1	600	1.1	0.920	74.5	LOS F	24.3	171.4	1.00	1.03	21.4
9	R2	516	5.9	1.032	121.5	LOS F	26.9	197.8	1.00	1.14	19.5
Approach		1699	3.0	1.032	80.8	LOS F	29.9	213.6	0.99	1.08	23.8
NorthWest: Heathcote Road (NW)											
10	L2	235	5.8	0.216	22.1	LOS B	7.9	57.8	0.54	0.73	42.5
11	T1	1507	2.7	1.073	143.8	LOS F	85.0	608.2	1.00	1.45	17.6
12	R2	424	1.7	0.937	87.1	LOS F	17.5	124.4	1.00	0.99	18.1
Approach		2166	2.8	1.073	119.5	LOS F	85.0	608.2	0.95	1.28	18.9
SouthWest: Wattle Grove Drive (SW)											
1	L2	278	1.5	0.336	30.0	LOS C	12.5	88.6	0.73	0.79	32.3
2	T1	304	1.0	0.413	56.1	LOS D	9.2	65.2	0.94	0.77	25.1
3	R2	305	1.0	1.136	219.5	LOS F	39.6	279.5	1.00	1.46	9.4
Approach		887	1.2	1.136	104.1	LOS F	39.6	279.5	0.89	1.01	16.5
All Vehicles		6688	3.1	1.136	90.1	LOS F	85.0	608.2	0.92	1.09	22.2

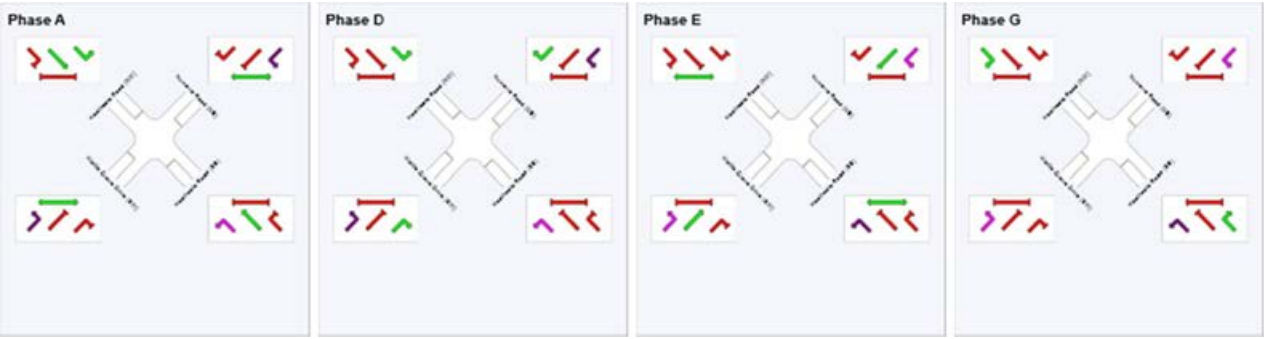
PHASING SUMMARY

Site: I-10 2023 BASE PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	61	87	117
Green Time (sec)	55	20	24	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	61	26	30	22
Phase Split	44 %	19 %	22 %	16 %



AM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-10 2023 IMT AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
SouthEast: Heathcote Road (SE)											
4	L2	225	0.9	0.154	7.8	LOS A	2.7	18.8	0.25	0.62	48.7
5	T1	1709	5.3	1.041	106.6	LOS F	83.1	608.0	1.00	1.36	21.5
6	R2	567	3.2	1.110	138.0	LOS F	25.5	183.4	1.00	1.26	18.5
Approach		2501	4.4	1.110	104.8	LOS F	83.1	608.0	0.93	1.27	21.4
NorthEast: Nuwarra Road (NE)											
7	L2	369	4.6	0.416	20.1	LOS B	12.8	93.2	0.63	0.76	44.6
8	T1	228	7.8	0.366	52.7	LOS D	6.5	48.9	0.93	0.74	26.3
9	R2	436	5.8	1.231	294.6	LOS F	32.8	240.7	1.00	1.59	10.0
Approach		1033	5.8	1.231	143.1	LOS F	32.8	240.7	0.85	1.11	16.8
NorthWest: Heathcote Road (NW)											
10	L2	234	11.7	0.308	21.3	LOS B	7.1	54.6	0.69	0.76	42.8
11	T1	947	11.6	0.855	39.3	LOS C	29.6	227.6	0.85	0.80	36.1
12	R2	217	6.3	0.727	73.5	LOS F	7.2	53.5	1.00	0.85	20.2
Approach		1397	10.8	0.855	41.6	LOS C	29.6	227.6	0.84	0.80	34.2
SouthWest: Wattle Grove Drive (SW)											
1	L2	535	2.0	0.709	44.4	LOS D	24.1	171.8	0.92	1.06	26.9
2	T1	509	4.3	0.709	57.4	LOS E	16.0	116.2	1.00	0.85	24.8
3	R2	239	4.0	1.159	229.6	LOS F	31.2	225.6	1.00	1.54	9.1
Approach		1283	3.3	1.159	84.0	LOS F	31.2	225.6	0.97	1.07	19.0
All Vehicles		6215	5.8	1.231	92.7	LOS F	83.1	608.0	0.91	1.09	21.9

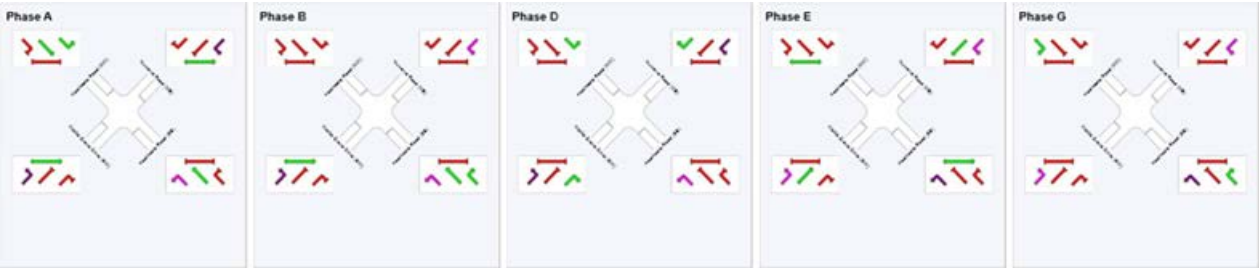
PHASING SUMMARY

Site: I-10 2023 IMT AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	D	E	G
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	54	67	86	114
Green Time (sec)	48	7	13	22	11
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	54	13	19	28	17
Phase Split	41 %	10 %	15 %	21 %	13 %



PM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-10 2023 IMT PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
SouthEast: Heathcote Road (SE)											
4	L2	308	2.4	0.257	14.2	LOS A	8.0	57.2	0.44	0.68	43.2
5	T1	1196	5.5	0.877	42.9	LOS D	36.8	269.5	0.88	0.86	34.9
6	R2	432	3.2	1.032	136.3	LOS F	21.7	156.3	1.00	1.19	18.6
Approach		1936	4.5	1.032	59.2	LOS E	36.8	269.5	0.84	0.91	29.3
NorthEast: Nuwarra Road (NE)											
7	L2	583	2.3	0.823	51.2	LOS D	29.9	213.6	0.97	1.08	32.5
8	T1	600	1.1	0.920	74.5	LOS F	24.3	171.4	1.00	1.03	21.4
9	R2	516	5.9	1.032	121.5	LOS F	26.9	197.8	1.00	1.14	19.5
Approach		1699	3.0	1.032	80.8	LOS F	29.9	213.6	0.99	1.08	23.8
NorthWest: Heathcote Road (NW)											
10	L2	235	5.8	0.216	22.1	LOS B	7.9	57.8	0.54	0.73	42.5
11	T1	1508	2.7	1.074	144.1	LOS F	85.1	609.2	1.00	1.45	17.5
12	R2	424	1.7	0.937	87.1	LOS F	17.5	124.4	1.00	0.99	18.1
Approach		2167	2.8	1.074	119.7	LOS F	85.1	609.2	0.95	1.28	18.9
SouthWest: Wattle Grove Drive (SW)											
1	L2	278	1.5	0.336	30.0	LOS C	12.5	88.6	0.73	0.79	32.3
2	T1	316	1.0	0.429	56.2	LOS D	9.6	67.9	0.94	0.77	25.0
3	R2	314	1.0	1.168	246.9	LOS F	43.5	306.8	1.00	1.53	8.5
Approach		907	1.2	1.168	114.1	LOS F	43.5	306.8	0.90	1.04	15.5
All Vehicles		6709	3.1	1.168	91.6	LOS F	85.1	609.2	0.92	1.09	22.0

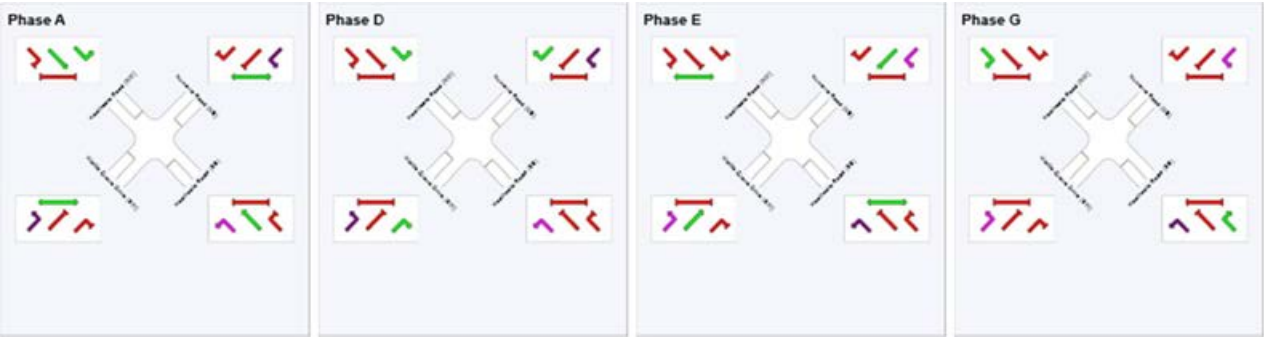
PHASING SUMMARY

Site: I-10 2023 IMT PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	61	87	117
Green Time (sec)	55	20	24	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	61	26	30	22
Phase Split	44 %	19 %	22 %	16 %



I-11 Intersection of Newbridge Road and Nuwarra Road

AM BASE

MOVEMENT SUMMARY

Site: I-11 2023 BASE AM

Newbridge Road / Nuwarra Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Nuwarra Road (S)											
1	L2	34	6.3	0.705	48.3	LOS D	20.9	148.5	0.90	0.82	37.9
2	T1	332	1.6	0.705	45.4	LOS D	20.9	148.5	0.90	0.82	31.4
3	R2	796	6.7	1.156	237.1	LOS F	59.8	442.7	1.00	1.41	13.5
Approach		1161	5.3	1.156	176.9	LOS F	59.8	442.7	0.97	1.22	16.6
East: Newbridge Road (E)											
4	L2	306	17.9	0.567	26.2	LOS B	18.0	142.9	0.69	0.75	45.8
5	T1	1146	11.3	0.567	22.4	LOS B	18.9	144.9	0.63	0.58	51.8
Approach		1453	12.7	0.567	23.2	LOS B	18.9	144.9	0.64	0.62	50.5
North: Nuwarra Road (N)											
7	L2	6	0.0	0.866	83.6	LOS F	8.5	60.2	1.00	1.02	25.7
8	T1	135	0.8	1.082	101.7	LOS F	17.7	127.4	1.00	1.11	22.3
9	R2	126	4.2	1.082	171.5	LOS F	17.7	127.4	1.00	1.42	17.6
Approach		267	2.4	1.082	134.2	LOS F	17.7	127.4	1.00	1.26	19.7
West: Newbridge Road (W)											
10	L2	273	1.9	1.047	123.1	LOS F	84.2	621.9	1.00	1.31	22.3
11	T1	2108	9.0	1.113	142.5	LOS F	104.7	789.5	1.00	1.50	21.9
Approach		2381	8.2	1.113	140.3	LOS F	104.7	789.5	1.00	1.47	22.0
All Vehicles		5262	8.5	1.156	115.7	LOS F	104.7	789.5	0.89	1.17	24.0

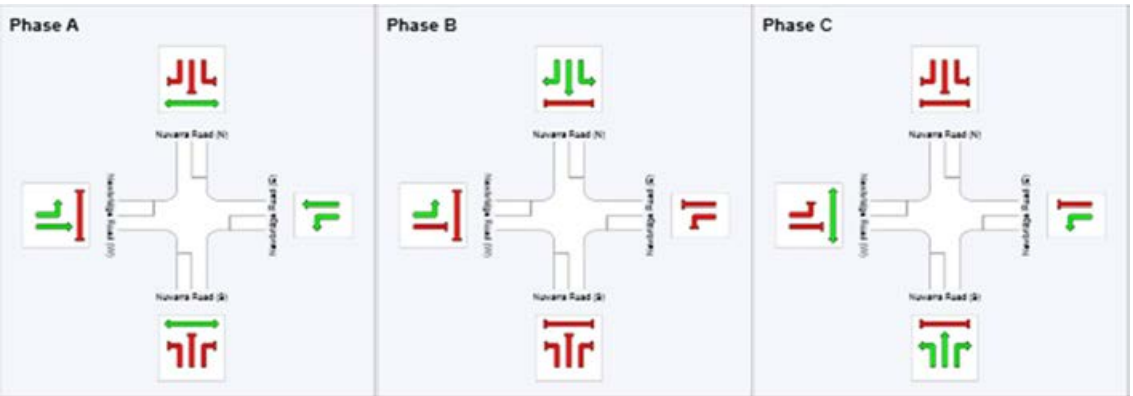
PHASING SUMMARY

Site: I-11 2023 BASE AM

Newbridge Road / Nuwarra Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	72	89
Green Time (sec)	66	11	45
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	72	17	51
Phase Split	51 %	12 %	36 %



PM BASE

MOVEMENT SUMMARY

Site: I-11 2023 BASE PM

Newbridge Road / Nuwarra Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Nuwarra Road (S)											
1	L2	52	6.1	0.703	68.4	LOS E	13.4	95.3	1.00	0.85	32.5
2	T1	148	0.7	0.703	64.0	LOS E	13.4	95.3	1.00	0.85	29.4
3	R2	524	6.0	0.981	107.5	LOS F	23.7	174.5	1.00	1.08	23.6
Approach		724	4.9	0.981	95.8	LOS F	23.7	174.5	1.00	1.01	25.1
East: Newbridge Road (E)											
4	L2	725	4.4	0.697	14.4	LOS A	21.0	152.9	0.43	0.71	52.5
5	T1	2041	5.8	0.697	13.1	LOS A	30.0	220.3	0.53	0.52	57.9
Approach		2766	5.4	0.697	13.4	LOS A	30.0	220.3	0.50	0.57	56.5
North: Nuwarra Road (N)											
7	L2	17	0.0	0.874	78.1	LOS F	17.3	121.5	1.00	1.02	28.7
8	T1	286	0.7	1.093	101.5	LOS F	31.8	224.2	1.00	1.11	23.4
9	R2	196	1.1	1.093	186.3	LOS F	31.8	224.2	1.00	1.39	17.4
Approach		499	0.8	1.093	134.0	LOS F	31.8	224.2	1.00	1.22	20.6
West: Newbridge Road (W)											
10	L2	94	0.0	0.470	18.9	LOS B	13.4	99.1	0.43	0.45	49.8
11	T1	1516	7.8	0.535	11.9	LOS A	15.0	111.7	0.42	0.39	58.9
Approach		1609	7.3	0.535	12.3	LOS A	15.0	111.7	0.42	0.40	58.3
All Vehicles		5599	5.5	1.093	34.5	LOS C	31.8	224.2	0.58	0.63	43.7

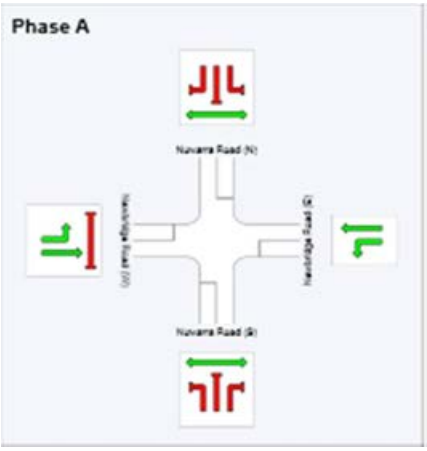
PHASING SUMMARY

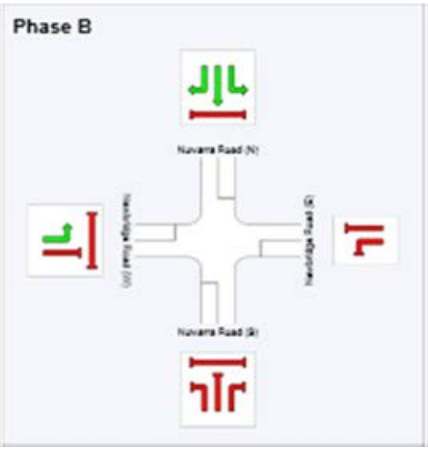
Site: I-11 2023 BASE PM

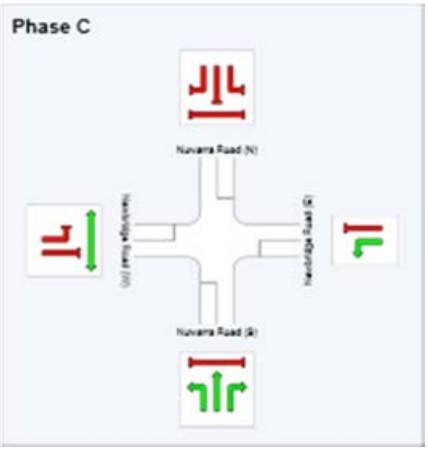
Newbridge Road / Nuwarra Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	87	113
Green Time (sec)	81	20	21
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	87	26	27
Phase Split	62 %	19 %	19 %







AM With Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-11 2023 IMT AM

Newbridge Road / Nuwarra Road
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Nuwarra Road (S)											
1	L2	34	6.3	0.705	48.3	LOS D	20.9	148.5	0.90	0.82	37.9
2	T1	332	1.6	0.705	45.4	LOS D	20.9	148.5	0.90	0.82	31.4
3	R2	796	6.7	1.156	237.1	LOS F	59.8	442.7	1.00	1.41	13.5
Approach		1161	5.3	1.156	176.9	LOS F	59.8	442.7	0.97	1.22	16.6
East: Newbridge Road (E)											
4	L2	312	17.6	0.580	26.6	LOS B	18.7	148.9	0.70	0.76	45.6
5	T1	1163	12.2	0.580	22.6	LOS B	19.4	151.1	0.64	0.59	51.6
Approach		1475	13.3	0.580	23.5	LOS B	19.4	151.1	0.65	0.63	50.4
North: Nuwarra Road (N)											
7	L2	6	0.0	0.875	84.4	LOS F	8.7	61.2	1.00	1.03	25.6
8	T1	137	0.8	1.094	104.8	LOS F	18.4	132.4	1.00	1.13	21.9
9	R2	127	4.2	1.094	180.4	LOS F	18.4	132.4	1.00	1.45	17.0
Approach		270	2.3	1.094	139.8	LOS F	18.4	132.4	1.00	1.28	19.2
West: Newbridge Road (W)											
10	L2	273	1.9	1.074	143.6	LOS F	91.5	685.7	1.00	1.39	20.3
11	T1	2139	10.3	1.142	165.3	LOS F	112.6	867.2	1.00	1.59	19.8
Approach		2411	9.3	1.142	162.8	LOS F	112.6	867.2	1.00	1.57	19.8
All Vehicles		5318	9.2	1.156	126.1	LOS F	112.6	867.2	0.90	1.22	22.7

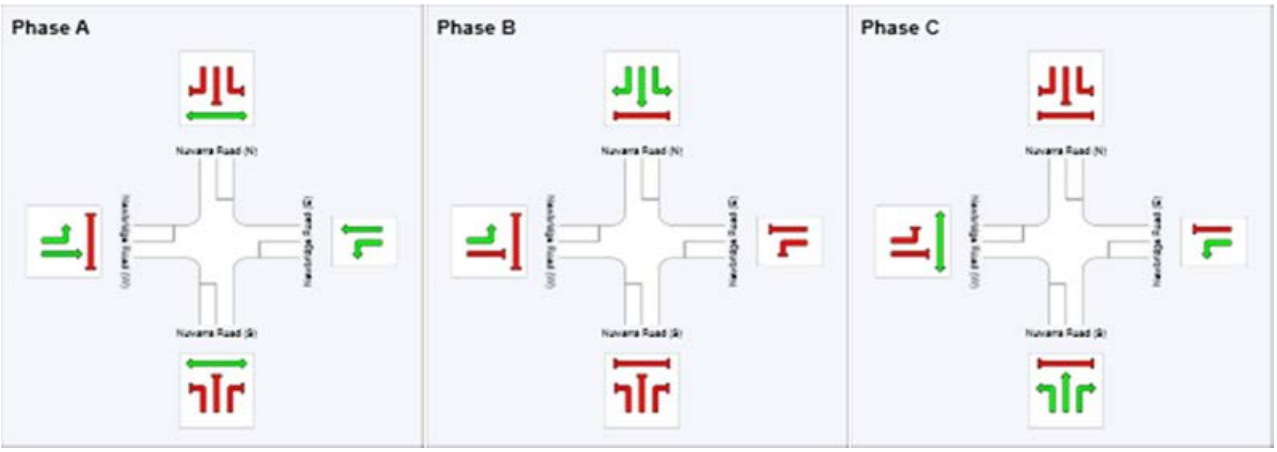
PHASING SUMMARY

Site: I-11 2023 IMT AM

Newbridge Road / Nuwarra Road
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	72	89
Green Time (sec)	66	11	45
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	72	17	51
Phase Split	51 %	12 %	36 %



PM With Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-11 2023 IMT PM

Newbridge Road / Nuwarra Road
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Nuwarra Road (S)											
1	L2	52	6.1	0.762	71.5	LOS F	14.0	99.7	1.00	0.89	31.8
2	T1	151	0.7	0.762	67.1	LOS E	14.0	99.7	1.00	0.89	28.8
3	R2	530	6.0	0.991	112.4	LOS F	24.5	180.6	1.00	1.09	22.9
Approach		732	4.9	0.991	100.2	LOS F	24.5	180.6	1.00	1.03	24.5
East: Newbridge Road (E)											
4	L2	725	4.4	0.711	14.8	LOS B	22.3	163.3	0.44	0.71	52.3
5	T1	2067	6.9	0.711	13.2	LOS A	30.9	231.8	0.54	0.53	57.8
Approach		2792	6.3	0.711	13.6	LOS A	30.9	231.8	0.51	0.58	56.4
North: Nuwarra Road (N)											
7	L2	17	0.0	0.874	78.1	LOS F	17.3	121.5	1.00	1.02	28.7
8	T1	286	0.7	1.093	101.5	LOS F	31.8	224.2	1.00	1.11	23.4
9	R2	196	1.1	1.093	186.3	LOS F	31.8	224.2	1.00	1.39	17.4
Approach		499	0.8	1.093	134.0	LOS F	31.8	224.2	1.00	1.22	20.6
West: Newbridge Road (W)											
10	L2	94	0.0	0.482	19.0	LOS B	13.8	103.2	0.44	0.46	49.8
11	T1	1537	8.8	0.548	12.0	LOS A	15.4	117.1	0.42	0.40	58.9
Approach		1631	8.3	0.548	12.4	LOS A	15.4	117.1	0.42	0.40	58.2
All Vehicles		5654	6.2	1.093	35.1	LOS C	31.8	231.8	0.59	0.64	43.4

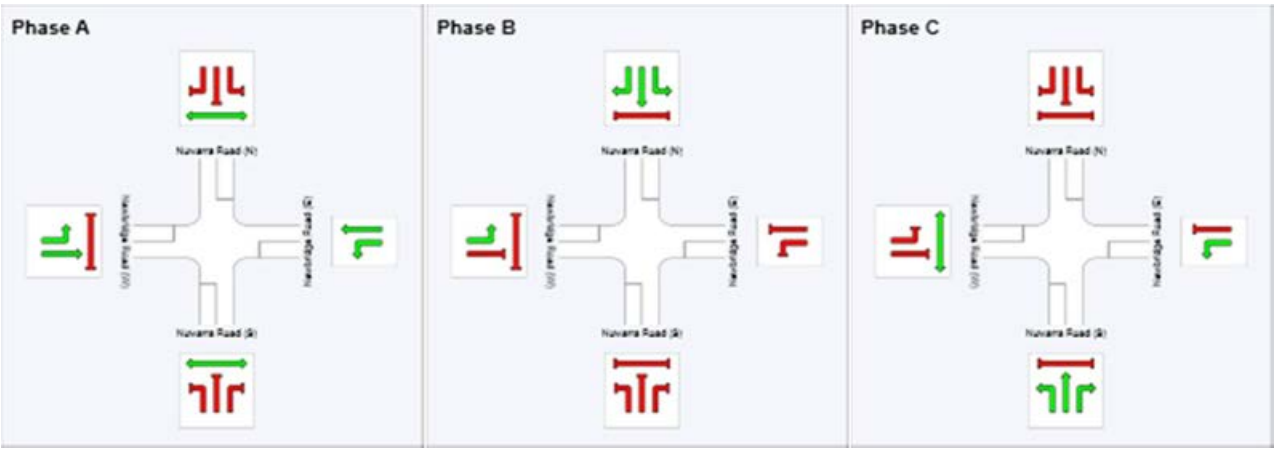
PHASING SUMMARY

Site: I-11 2023 IMT PM

Newbridge Road / Nuwarra Road
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	87	113
Green Time (sec)	81	20	21
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	87	26	27
Phase Split	62 %	19 %	19 %



AM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-11 2023 IMT AM - Upgrade Option

Newbridge Road / Nuwarra Road
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nuwarra Road (S)											
1	L2	34	6.3	0.774	52.5	LOS D	22.1	157.2	0.92	0.86	36.6
2	T1	332	1.6	0.774	49.5	LOS D	22.1	157.2	0.92	0.86	30.4
3	R2	796	6.7	1.201	275.6	LOS F	64.0	474.1	1.00	1.48	12.0
Approach		1161	5.3	1.201	204.6	LOS F	64.0	474.1	0.97	1.29	14.9
East: Newbridge Road (E)											
4	L2	312	17.6	0.564	25.2	LOS B	17.9	142.3	0.67	0.75	46.4
5	T1	1163	12.2	0.564	20.9	LOS B	18.4	143.3	0.61	0.57	52.7
Approach		1475	13.3	0.564	21.8	LOS B	18.4	143.3	0.62	0.60	51.3
North: Nuwarra Road (N)											
7	L2	6	0.0	0.875	84.4	LOS F	8.7	61.2	1.00	1.03	25.6
8	T1	137	0.8	1.094	104.8	LOS F	18.4	132.4	1.00	1.13	21.9
9	R2	127	4.2	1.094	180.4	LOS F	18.4	132.4	1.00	1.45	17.0
Approach		270	2.3	1.094	139.8	LOS F	18.4	132.4	1.00	1.28	19.2
West: Newbridge Road (W)											
10	L2	273	1.9	1.042	118.3	LOS F	84.7	634.5	1.00	1.30	22.8
11	T1	2139	10.3	1.108	137.3	LOS F	104.9	807.6	1.00	1.48	22.5
Approach		2411	9.3	1.108	135.2	LOS F	104.9	807.6	1.00	1.46	22.5
All Vehicles		5318	9.2	1.201	119.1	LOS F	104.9	807.6	0.89	1.17	23.6

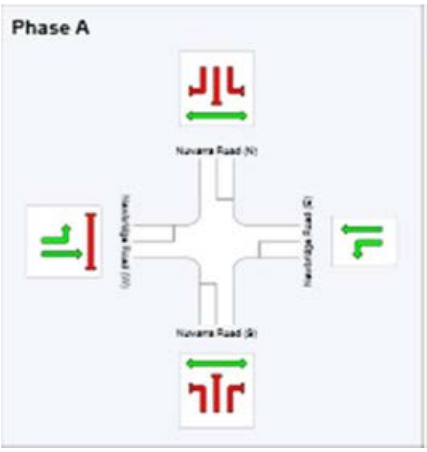
PHASING SUMMARY

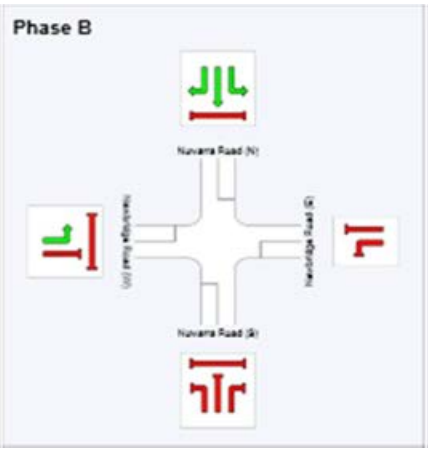
Site: I-11 2023 IMT AM - Upgrade Option

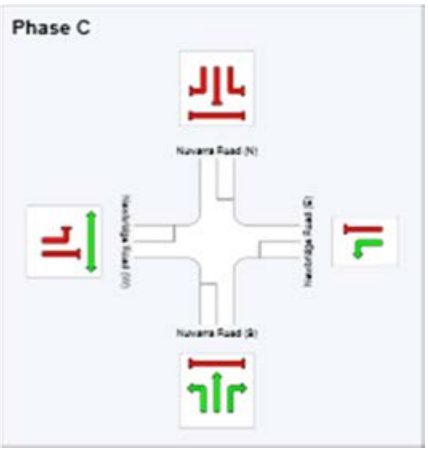
Newbridge Road / Nuwarra Road
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	74	91
Green Time (sec)	68	11	43
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	74	17	49
Phase Split	53 %	12 %	35 %







I-12 Intersection of Newbridge Road and Governor Macquarie Drive

AM BASE

MOVEMENT SUMMARY

Site: I-12 2023 BASE AM

Newbridge Road / Governor Macquarie Drive
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Brickmakers Drive (S)											
1	L2	12	0.0	0.842	76.6	LOS F	15.0	105.9	1.00	0.97	25.6
2	T1	194	1.1	0.842	72.2	LOS F	15.0	105.9	1.00	0.97	25.3
3	R2	666	0.9	1.145	219.7	LOS F	43.4	306.4	1.00	1.47	16.1
Approach		872	1.0	1.145	185.0	LOS F	43.4	306.4	1.00	1.35	17.2
East: Newbridge Road (E)											
4	L2	219	2.4	0.159	7.7	LOS A	1.8	13.0	0.18	0.63	58.2
5	T1	1305	11.0	0.380	13.4	LOS A	14.2	108.6	0.53	0.47	60.2
6	R2	640	10.4	0.947	91.2	LOS F	26.0	198.5	1.00	1.00	32.2
Approach		2164	9.9	0.947	35.8	LOS C	26.0	198.5	0.63	0.64	47.6
North: Governor Macquarie Drive (N)											
7	L2	719	8.9	0.686	52.1	LOS D	21.6	163.0	0.94	0.85	40.3
8	T1	126	2.5	0.512	63.9	LOS E	8.2	58.7	0.98	0.79	27.1
9	R2	168	35.0	0.992	116.7	LOS F	15.7	142.8	1.00	1.12	22.8
Approach		1014	12.5	0.992	64.3	LOS E	21.6	163.0	0.96	0.89	35.2
West: Newbridge Road (W)											
10	L2	124	30.5	1.120	177.1	LOS F	121.0	919.5	1.00	1.57	17.8
11	T1	2777	6.9	1.120	169.4	LOS F	124.2	921.2	1.00	1.60	22.9
12	R2	4	25.0	0.031	32.6	LOS C	0.2	1.5	0.60	0.67	38.0
Approach		2905	8.0	1.120	169.5	LOS F	124.2	921.2	1.00	1.60	22.7
All Vehicles		6955	8.4	1.145	114.5	LOS F	124.2	921.2	0.88	1.17	27.9

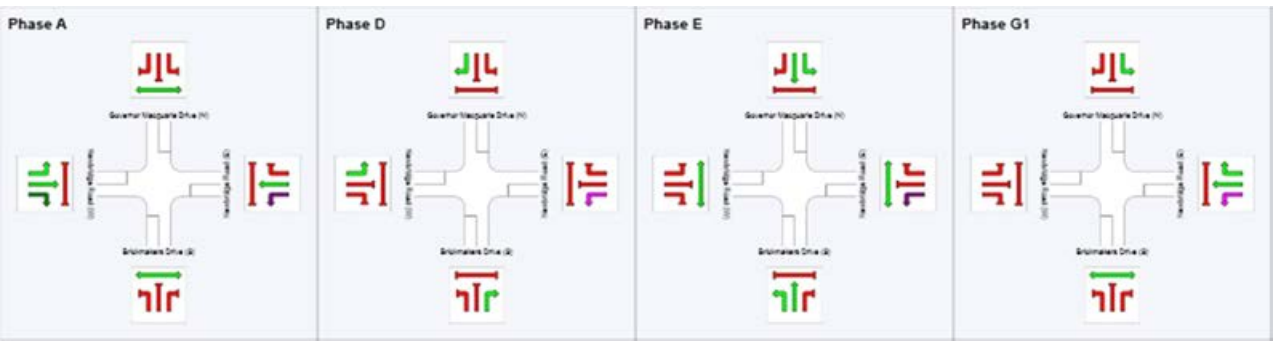
PHASING SUMMARY

Site: I-12 2023 BASE AM

Newbridge Road / Governor Macquarie Drive
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	66	88	112
Green Time (sec)	60	16	18	22
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	66	22	24	28
Phase Split	47 %	16 %	17 %	20 %



PM BASE

MOVEMENT SUMMARY

Site: I-12 2023 BASE PM

Newbridge Road / Governor Macquarie Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Brickmakers Drive (S)											
1	L2	8	0.0	0.485	68.9	LOS E	6.4	46.8	0.98	0.78	27.2
2	T1	89	4.7	0.485	64.8	LOS E	6.4	46.8	0.98	0.78	26.8
3	R2	249	0.8	0.591	69.6	LOS E	8.3	58.7	1.00	0.80	32.7
Approach		347	1.8	0.591	68.4	LOS E	8.3	58.7	0.99	0.79	31.2
East: Newbridge Road (E)											
4	L2	636	1.3	0.454	9.3	LOS A	7.4	52.2	0.28	0.69	57.2
5	T1	2520	4.4	0.762	18.2	LOS B	43.6	316.6	0.69	0.65	57.3
6	R2	701	11.3	1.138	222.5	LOS F	46.6	357.8	1.00	1.31	18.6
Approach		3857	5.2	1.138	53.9	LOS D	46.6	357.8	0.68	0.78	41.2
North: Governor Macquarie Drive (N)											
7	L2	539	3.5	0.423	48.1	LOS D	14.7	106.0	0.86	0.81	41.6
8	T1	292	0.7	0.935	83.1	LOS F	22.7	160.2	1.00	1.06	23.4
9	R2	224	18.8	1.060	156.2	LOS F	24.3	197.6	1.00	1.22	18.9
Approach		1055	6.0	1.060	80.8	LOS F	24.3	197.6	0.93	0.96	30.2
West: Newbridge Road (W)											
10	L2	164	16.7	0.744	37.7	LOS C	34.4	258.6	0.82	0.77	42.3
11	T1	1884	6.1	0.744	30.0	LOS C	34.7	255.7	0.80	0.73	51.1
12	R2	3	0.0	0.049	46.3	LOS D	0.2	1.1	0.73	0.68	32.8
Approach		2052	6.9	0.744	30.7	LOS C	34.7	258.6	0.80	0.73	50.5
All Vehicles		7311	5.6	1.138	51.9	LOS D	46.6	357.8	0.76	0.79	41.0

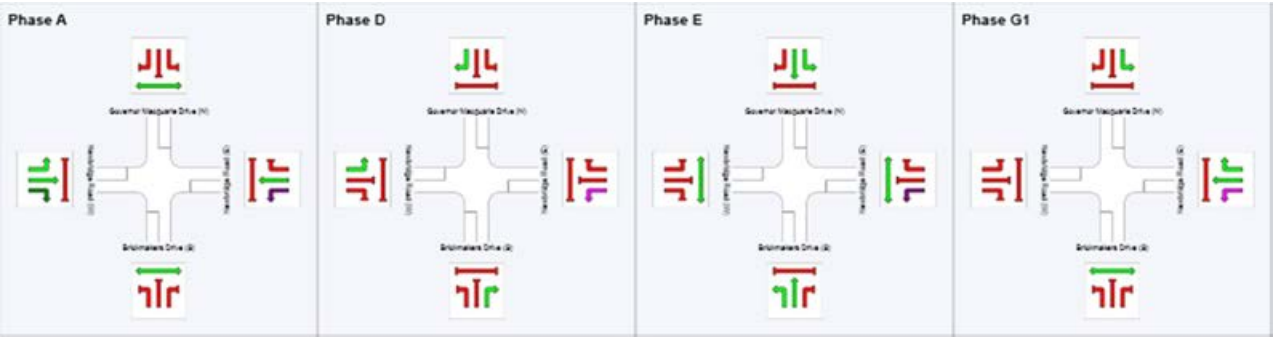
PHASING SUMMARY

Site: I-12 2023 BASE PM

Newbridge Road / Governor Macquarie Drive
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	67	89	110
Green Time (sec)	61	16	15	24
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	67	22	21	30
Phase Split	48 %	16 %	15 %	21 %



AM With Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-12 2023 IMT AM

Newbridge Road / Governor Macquarie Drive
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	12	0.0	0.842	76.6	LOS F	15.0	105.9	1.00	0.97	25.6
2	T1	194	1.1	0.842	72.2	LOS F	15.0	105.9	1.00	0.97	25.3
3	R2	666	0.9	1.145	219.7	LOS F	43.4	306.4	1.00	1.47	16.1
Approach		872	1.0	1.145	185.0	LOS F	43.4	306.4	1.00	1.35	17.2
East: Newbridge Road (E)											
4	L2	219	2.4	0.159	7.7	LOS A	1.8	13.0	0.18	0.63	58.2
5	T1	1327	11.7	0.390	13.5	LOS A	14.5	112.8	0.53	0.47	60.2
6	R2	640	10.4	0.947	91.2	LOS F	26.0	198.5	1.00	1.00	32.2
Approach		2186	10.4	0.947	35.6	LOS C	26.0	198.5	0.63	0.64	47.6
North: Governor Macquarie Drive (N)											
7	L2	719	8.9	0.686	52.1	LOS D	21.6	163.0	0.94	0.85	40.3
8	T1	126	2.5	0.512	63.9	LOS E	8.2	58.7	0.98	0.79	27.1
9	R2	169	34.9	0.994	117.9	LOS F	15.8	143.9	1.00	1.13	22.6
Approach		1014	12.5	0.994	64.5	LOS E	21.6	163.0	0.96	0.89	35.2
West: Newbridge Road (W)											
10	L2	125	30.7	1.143	197.5	LOS F	128.9	993.9	1.00	1.65	16.4
11	T1	2806	7.9	1.143	189.8	LOS F	132.3	997.1	1.00	1.68	21.2
12	R2	4	25.0	0.032	32.7	LOS C	0.2	1.5	0.60	0.67	37.9
Approach		2935	8.9	1.143	189.9	LOS F	132.3	997.1	1.00	1.68	21.0
All Vehicles		7007	8.9	1.145	123.0	LOS F	132.3	997.1	0.88	1.20	26.7

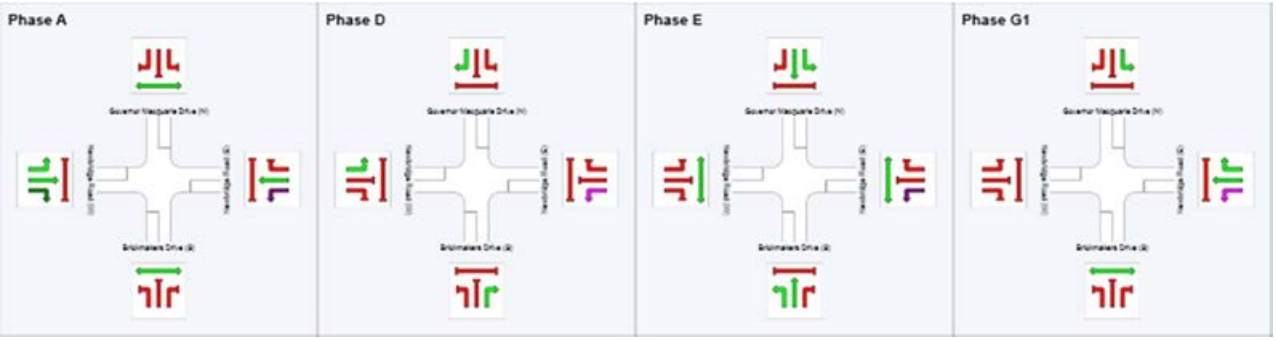
PHASING SUMMARY

Site: I-12 2023 IMT AM

Newbridge Road / Governor Macquarie Drive
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	66	88	112
Green Time (sec)	60	16	18	22
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	66	22	24	28
Phase Split	47 %	16 %	17 %	20 %



PM With Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-12 2023 IMT PM

Newbridge Road / Governor Macquarie Drive
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Brickmakers Drive (S)											
1	L2	8	0.0	0.500	69.9	LOS E	6.5	47.1	0.99	0.78	27.0
2	T1	89	4.7	0.500	65.8	LOS E	6.5	47.1	0.99	0.78	26.6
3	R2	249	0.8	0.591	69.6	LOS E	8.3	58.7	1.00	0.80	32.7
Approach		347	1.8	0.591	68.6	LOS E	8.3	58.7	1.00	0.79	31.2
East: Newbridge Road (E)											
4	L2	636	1.3	0.453	9.3	LOS A	7.4	52.2	0.28	0.69	57.2
5	T1	2543	5.3	0.775	19.9	LOS B	44.6	329.2	0.70	0.67	56.4
6	R2	701	11.3	1.138	222.5	LOS F	46.6	357.8	1.00	1.31	18.6
Approach		3880	5.7	1.138	54.7	LOS D	46.6	357.8	0.69	0.79	41.0
North: Governor Macquarie Drive (N)											
7	L2	539	3.5	0.423	48.1	LOS D	14.7	106.0	0.86	0.81	41.6
8	T1	292	0.7	0.935	83.1	LOS F	22.7	160.2	1.00	1.06	23.4
9	R2	226	19.5	1.080	171.3	LOS F	25.8	212.3	1.00	1.25	17.8
Approach		1057	6.2	1.080	84.2	LOS F	25.8	212.3	0.93	0.97	29.6
West: Newbridge Road (W)											
10	L2	167	17.7	0.760	38.1	LOS C	35.4	269.5	0.84	0.78	42.1
11	T1	1908	6.8	0.760	30.4	LOS C	35.8	266.7	0.81	0.74	51.0
12	R2	3	0.0	0.049	47.1	LOS D	0.2	1.2	0.73	0.68	32.5
Approach		2078	7.6	0.760	31.0	LOS C	35.8	269.5	0.81	0.74	50.3
All Vehicles		7363	6.1	1.138	52.9	LOS D	46.6	357.8	0.77	0.80	40.7

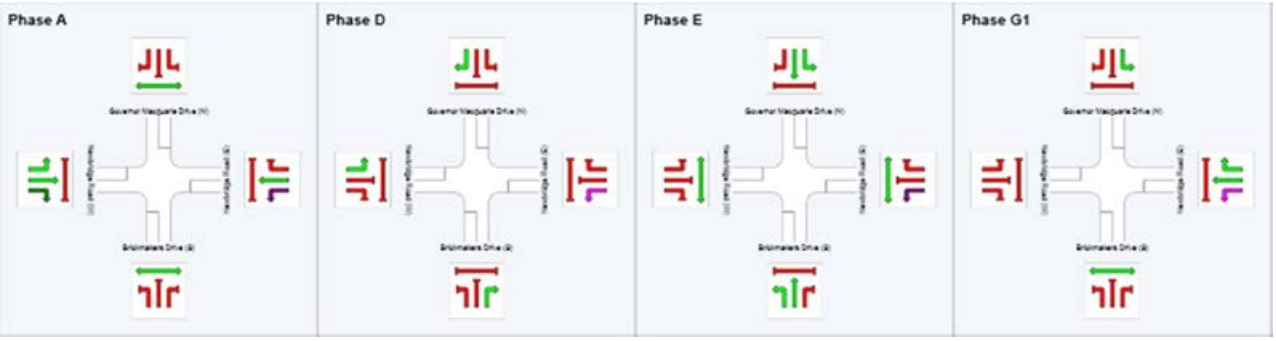
PHASING SUMMARY

Site: I-12 2023 IMT PM

Newbridge Road / Governor Macquarie Drive
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	67	89	110
Green Time (sec)	61	16	15	24
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	67	22	21	30
Phase Split	48 %	16 %	15 %	21 %



AM With Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-12 2023 IMT AM - Upgrade Option

Newbridge Road / Governor Macquarie Drive
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	12	0.0	0.842	76.6	LOS F	15.0	105.9	1.00	0.97	25.6
2	T1	194	1.1	0.842	72.2	LOS F	15.0	105.9	1.00	0.97	25.3
3	R2	666	0.9	1.145	219.7	LOS F	43.4	306.4	1.00	1.47	16.1
Approach		872	1.0	1.145	185.0	LOS F	43.4	306.4	1.00	1.35	17.2
East: Newbridge Road (E)											
4	L2	219	2.4	0.159	7.7	LOS A	1.8	13.0	0.18	0.63	58.2
5	T1	1327	11.7	0.390	13.5	LOS A	14.5	112.8	0.53	0.47	60.2
6	R2	640	10.4	0.998	112.9	LOS F	29.3	223.2	1.00	1.07	28.7
Approach		2186	10.4	0.998	42.0	LOS C	29.3	223.2	0.63	0.66	45.2
North: Governor Macquarie Drive (N)											
7	L2	719	8.9	0.703	53.1	LOS D	21.9	164.8	0.95	0.85	40.0
8	T1	126	2.5	0.512	63.9	LOS E	8.2	58.7	0.98	0.79	27.1
9	R2	169	34.9	0.994	117.9	LOS F	15.8	143.9	1.00	1.13	22.6
Approach		1014	12.5	0.994	65.2	LOS E	21.9	164.8	0.96	0.89	35.0
West: Newbridge Road (W)											
10	L2	125	30.7	1.125	180.8	LOS F	123.9	955.4	1.00	1.59	17.6
11	T1	2806	7.9	1.125	173.1	LOS F	127.1	957.8	1.00	1.62	22.6
12	R2	4	25.0	0.032	32.0	LOS C	0.2	1.4	0.59	0.67	38.2
Approach		2935	8.9	1.125	173.2	LOS F	127.1	957.8	1.00	1.62	22.4
All Vehicles		7007	8.9	1.145	118.1	LOS F	127.1	957.8	0.88	1.18	27.4

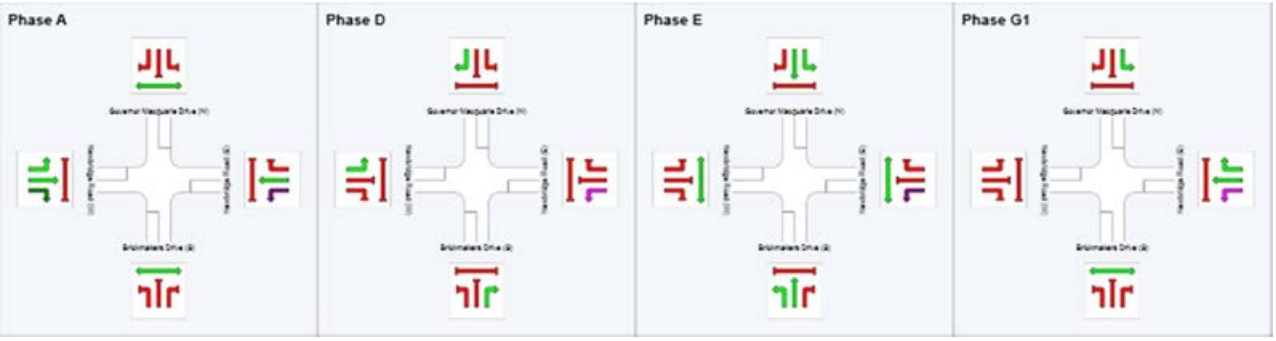
PHASING SUMMARY

Site: I-12 2023 IMT AM - Upgrade Option

Newbridge Road / Governor Macquarie Drive
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	67	89	113
Green Time (sec)	61	16	18	21
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	67	22	24	27
Phase Split	48 %	16 %	17 %	19 %



I-13 Intersection of Moorebank Avenue and M5 Motorway

AM BASE

MOVEMENT SUMMARY

Site: I-13 2023 BASE AM

Moorebank Avenue / the M5 Motorway
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
1	L2	263	10.8	0.228	9.2	LOS A	3.0	22.9	0.42	0.66	50.4
2	T1	681	4.2	0.781	32.8	LOS C	12.8	92.5	1.00	0.94	37.6
3	R2	271	2.7	0.376	32.8	LOS C	4.7	33.7	0.89	0.78	37.0
Approach		1215	5.3	0.781	27.7	LOS B	12.8	92.5	0.85	0.84	39.7
East: M5 Motorway on&off ramp (E)											
4	L2	243	6.9	0.245	8.1	LOS A	1.9	14.0	0.40	0.67	51.5
6	R2	232	5.9	0.240	28.8	LOS C	3.3	24.5	0.82	0.75	40.4
Approach		475	6.4	0.245	18.2	LOS B	3.3	24.5	0.60	0.71	45.1
North: Moorebank Avenue (N)											
7	L2	52	49.0	0.051	7.7	LOS A	0.3	3.3	0.28	0.60	51.2
8	T1	195	12.4	0.235	25.6	LOS B	2.9	22.7	0.85	0.67	41.0
9	R2	460	26.5	0.787	38.3	LOS C	10.3	88.4	0.98	0.88	36.1
Approach		706	24.3	0.787	32.5	LOS C	10.3	88.4	0.89	0.80	38.1
West: M5 Motorway on&off ramp (W)											
10	L2	1679	8.2	0.957	7.2	LOS A	0.0	0.0	0.00	0.51	52.4
12	R2	400	4.2	0.410	30.1	LOS C	6.1	44.0	0.87	0.79	38.5
Approach		2079	7.4	0.957	11.6	LOS A	6.1	44.0	0.17	0.56	49.3
All Vehicles		4475	9.4	0.957	20.0	LOS B	12.8	92.5	0.51	0.69	44.1

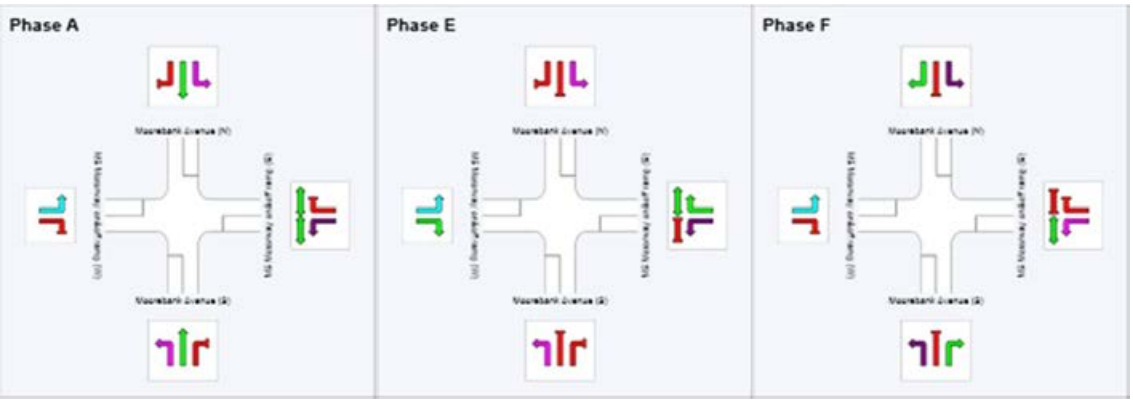
PHASING SUMMARY

Site: I-13 2023 BASE AM

Moorebank Avenue / the M5 Motorway
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	F
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	24	51
Green Time (sec)	17	20	16
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	24	27	23
Phase Split	32 %	36 %	31 %



PM BASE

MOVEMENT SUMMARY

Site: I-13 2023 BASE PM

Moorebank Avenue / the M5 Motorway
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
1	L2	289	2.9	0.350	18.7	LOS B	7.3	52.5	0.68	0.75	44.2
2	T1	169	7.5	0.428	44.4	LOS D	3.8	28.4	0.98	0.76	33.2
3	R2	277	1.9	0.229	27.9	LOS B	4.8	34.4	0.73	0.75	39.2
Approach		736	3.6	0.428	28.1	LOS B	7.3	52.5	0.77	0.75	39.3
East: M5 Motorway on&off ramp (E)											
4	L2	404	2.9	0.419	10.9	LOS A	6.4	45.9	0.52	0.71	49.5
6	R2	86	20.7	0.157	42.5	LOS D	1.7	14.3	0.89	0.73	34.9
Approach		491	6.0	0.419	16.4	LOS B	6.4	45.9	0.58	0.71	45.8
North: Moorebank Avenue (N)											
7	L2	131	6.5	0.102	6.9	LOS A	0.9	6.4	0.23	0.61	53.0
8	T1	666	3.6	0.715	36.6	LOS C	14.5	104.9	0.97	0.86	36.1
9	R2	1419	7.4	0.945	55.3	LOS D	38.6	287.7	1.00	1.12	31.2
Approach		2216	6.2	0.945	46.8	LOS D	38.6	287.7	0.95	1.01	33.3
West: M5 Motorway on&off ramp (W)											
10	L2	598	15.3	0.357	5.8	LOS A	0.0	0.0	0.00	0.52	54.3
12	R2	241	3.5	0.391	44.0	LOS D	5.1	36.5	0.93	0.78	33.2
Approach		839	11.9	0.391	16.8	LOS B	5.1	36.5	0.27	0.59	46.5
All Vehicles		4281	6.9	0.945	34.2	LOS C	38.6	287.7	0.74	0.85	37.5

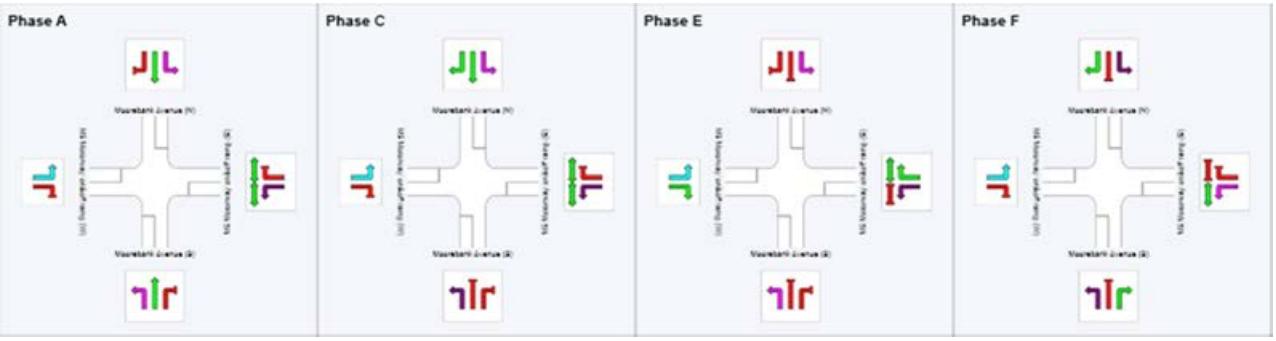
PHASING SUMMARY

Site: I-13 2023 BASE PM

Moorebank Avenue / the M5 Motorway
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	17	30	53
Green Time (sec)	10	6	16	34
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	17	13	23	41
Phase Split	18 %	14 %	24 %	44 %



AM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-13 2023 IMT AM

Moorebank Avenue / the M5 Motorway
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	352	33.3	0.383	9.9	LOS A	4.5	46.8	0.46	0.68	48.9
2	T1	719	9.2	0.872	39.7	LOS C	15.2	119.9	1.00	1.07	34.9
3	R2	280	6.1	0.406	33.1	LOS C	4.9	37.3	0.90	0.78	36.8
Approach		1351	14.9	0.872	30.6	LOS C	15.2	119.9	0.84	0.91	38.2
East: M5 Motorway on&off ramp (E)											
4	L2	293	14.0	0.365	10.4	LOS A	3.6	29.8	0.55	0.72	49.4
6	R2	232	5.9	0.240	28.8	LOS C	3.3	24.5	0.82	0.75	40.4
Approach		524	10.4	0.365	18.5	LOS B	3.6	29.8	0.67	0.73	44.7
North: Moorebank Avenue (N)											
7	L2	52	49.0	0.051	7.7	LOS A	0.3	3.3	0.28	0.60	51.2
8	T1	230	19.5	0.301	26.2	LOS B	3.5	30.9	0.87	0.69	40.7
9	R2	460	26.5	0.787	38.3	LOS C	10.3	88.4	0.98	0.88	36.1
Approach		742	25.9	0.787	32.4	LOS C	10.3	88.4	0.89	0.81	38.2
West: M5 Motorway on&off ramp (W)											
10	L2	1679	8.2	0.957	7.2	LOS A	0.0	0.0	0.00	0.51	52.4
12	R2	565	19.2	0.687	33.9	LOS C	9.7	88.8	0.95	0.86	36.5
Approach		2244	10.9	0.957	13.9	LOS A	9.7	88.8	0.24	0.60	47.6
All Vehicles		4861	14.3	0.957	21.9	LOS B	15.2	119.9	0.55	0.73	42.9

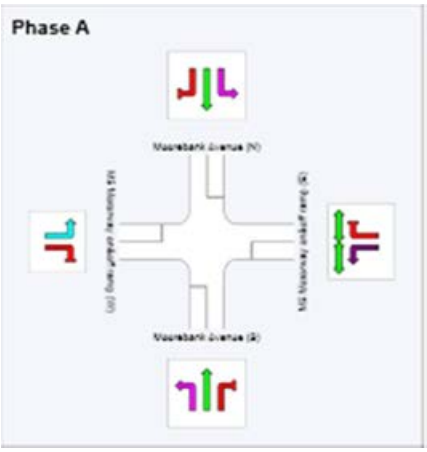
PHASING SUMMARY

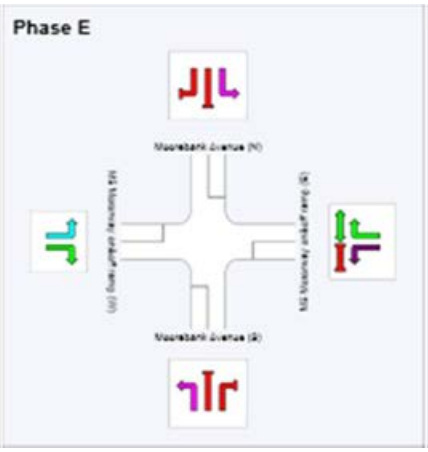
Site: I-13 2023 IMT AM

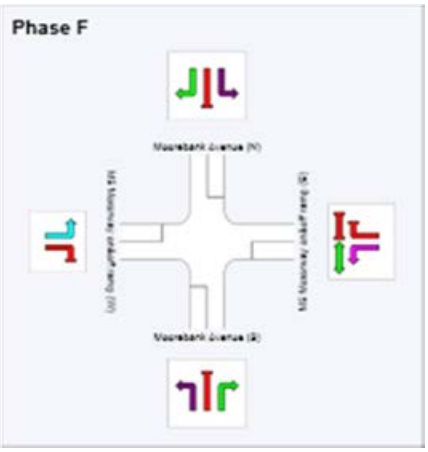
Moorebank Avenue / the M5 Motorway
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	F
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	24	51
Green Time (sec)	17	20	16
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	24	27	23
Phase Split	32 %	36 %	31 %







PM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-13 2023 IMT PM

Moorebank Avenue / the M5 Motorway
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	467	24.2	0.697	22.4	LOS B	14.8	145.8	0.85	0.83	41.6
2	T1	207	17.0	0.581	45.8	LOS D	4.8	41.7	1.00	0.80	32.8
3	R2	337	11.8	0.313	28.8	LOS C	6.1	51.0	0.75	0.76	38.4
Approach		1011	18.6	0.697	29.3	LOS C	14.8	145.8	0.85	0.80	38.4
East: M5 Motorway on&off ramp (E)											
4	L2	425	7.6	0.522	14.5	LOS A	7.0	53.9	0.66	0.78	46.8
6	R2	86	20.7	0.157	42.5	LOS D	1.7	14.3	0.89	0.73	34.9
Approach		511	9.8	0.522	19.2	LOS B	7.0	53.9	0.69	0.77	44.0
North: Moorebank Avenue (N)											
7	L2	131	6.5	0.106	7.3	LOS A	1.0	7.5	0.26	0.62	52.7
8	T1	698	7.9	0.786	39.8	LOS C	16.2	125.8	1.00	0.93	34.9
9	R2	1419	7.4	0.945	55.3	LOS D	38.6	287.7	1.00	1.12	31.2
Approach		2247	7.5	0.945	47.7	LOS D	38.6	287.7	0.96	1.03	33.0
West: M5 Motorway on&off ramp (W)											
10	L2	598	15.3	0.357	5.8	LOS A	0.0	0.0	0.00	0.52	54.3
12	R2	351	33.7	0.783	52.7	LOS D	8.7	95.0	1.00	0.93	30.1
Approach		949	22.1	0.783	23.1	LOS B	8.7	95.0	0.37	0.67	42.5
All Vehicles		4718	13.1	0.945	35.7	LOS C	38.6	287.7	0.79	0.88	36.7

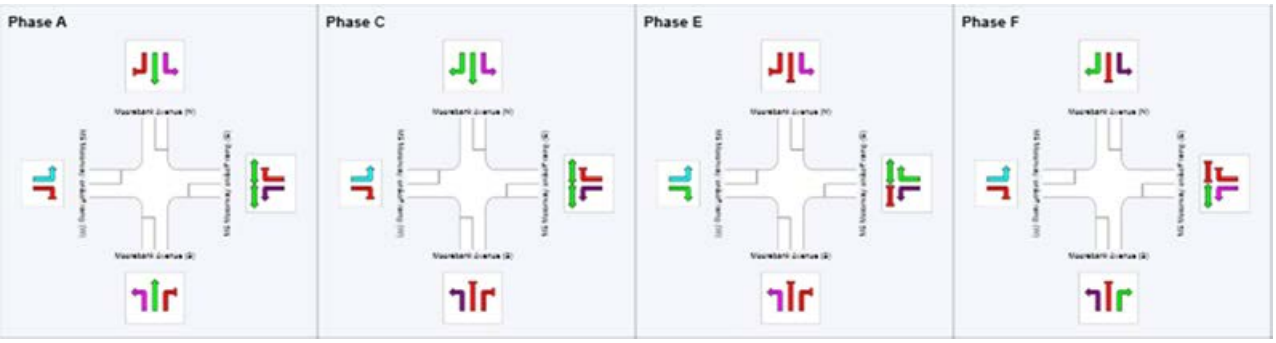
PHASING SUMMARY

Site: I-13 2023 IMT PM

Moorebank Avenue / the M5 Motorway
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	17	30	53
Green Time (sec)	10	6	16	34
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	17	13	23	41
Phase Split	18 %	14 %	24 %	44 %



I-14 Intersection of M5 Motorway and Hume Highway

AM BASE

MOVEMENT SUMMARY

Site: I-14 2023 BASE AM

M5 Motorway / Hume Highway
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
2	T1	3886	4.5	0.937	8.4	LOS A	37.0	269.0	0.34	0.35	53.9
3	R2	577	4.2	0.795	38.2	LOS C	14.2	103.1	0.96	0.85	39.4
Approach		4463	4.4	0.937	12.2	LOS A	37.0	269.0	0.42	0.42	51.4
East: M5 Motorway on&off-ramp (E)											
4	L2	297	6.4	0.118	30.3	LOS C	4.2	30.9	0.59	0.70	42.0
6	R2	1033	3.9	1.062	166.9	LOS F	42.4	306.7	1.00	1.19	13.6
Approach		1329	4.4	1.062	136.4	LOS F	42.4	306.7	0.91	1.08	17.1
North: Hume Highway (N)											
7	L2	631	5.8	0.470	10.7	LOS A	14.6	107.4	0.40	0.69	48.4
8	T1	1174	7.0	0.476	28.3	LOS B	17.1	126.8	0.62	0.54	43.4
Approach		1804	6.6	0.476	22.1	LOS B	17.1	126.8	0.54	0.59	44.6
All Vehicles		7597	4.9	1.062	36.3	LOS C	42.4	306.7	0.53	0.57	39.1

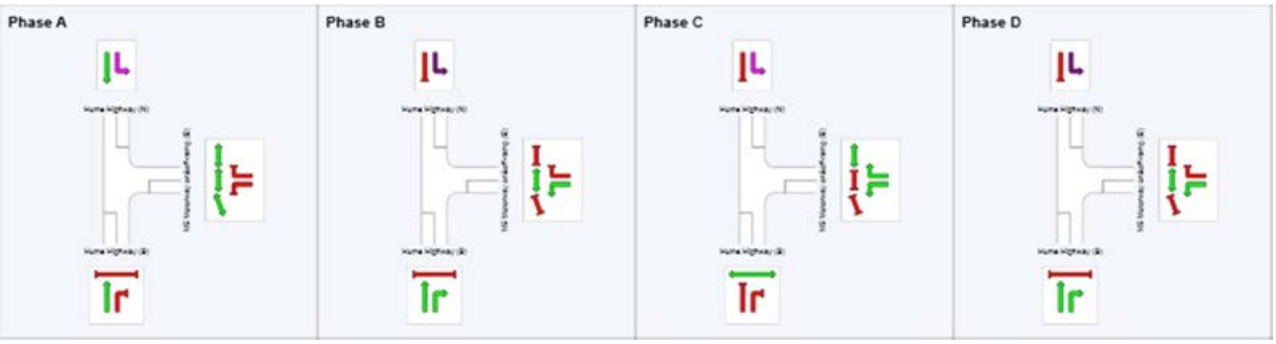
PHASING SUMMARY

Site: I-14 2023 BASE AM

M5 Motorway / Hume Highway
2014 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	No	No	No	Yes
Phase Change Time (sec)	20	97	123	0
Green Time (sec)	70	19	29	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	77	26	36	20
Phase Split	48 %	16 %	23 %	13 %



PM BASE

MOVEMENT SUMMARY

Site: I-14 2023 BASE PM

M5 Motorway / Hume Highway
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
2	T1	2438	3.7	0.595	2.1	LOS A	6.3	45.5	0.11	0.10	58.3
3	R2	382	1.7	0.974	97.4	LOS F	17.3	123.2	1.00	0.99	25.8
Approach		2820	3.4	0.974	15.0	LOS B	17.3	123.2	0.23	0.22	49.8
East: M5 Motorway on&off-ramp (E)											
4	L2	1377	3.7	1.038	167.9	LOS F	72.2	521.2	1.00	1.16	18.2
6	R2	1086	3.6	1.065	170.3	LOS F	46.0	331.7	1.00	1.19	13.4
Approach		2463	3.6	1.065	168.9	LOS F	72.2	521.2	1.00	1.18	16.2
North: Hume Highway (N)											
7	L2	814	2.1	0.572	9.7	LOS A	19.1	136.2	0.41	0.70	49.3
8	T1	2711	2.7	0.833	19.4	LOS B	45.3	324.8	0.72	0.67	47.5
Approach		3524	2.6	0.833	17.2	LOS B	45.3	324.8	0.65	0.68	47.8
All Vehicles		8807	3.1	1.065	58.9	LOS E	72.2	521.2	0.61	0.67	32.1

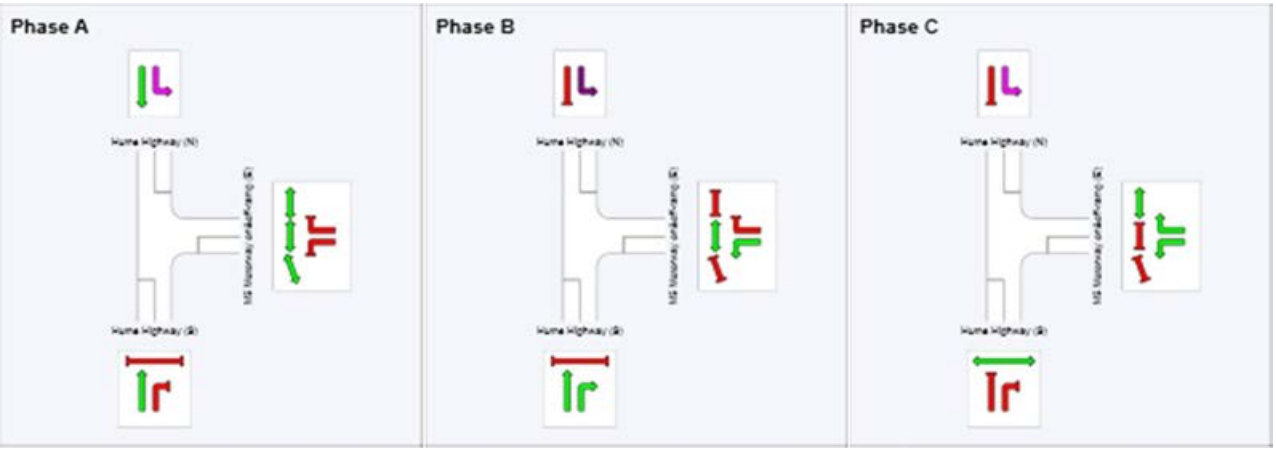
PHASING SUMMARY

Site: I-14 2023 BASE PM

M5 Motorway / Hume Highway
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	97	121
Green Time (sec)	90	17	31
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	97	24	38
Phase Split	61 %	15 %	24 %



AM With Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-14 2023 IMT AM

M5 Motorway / Hume Highway
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
2	T1	3886	4.5	0.937	8.4	LOS A	37.0	269.0	0.34	0.35	53.9
3	R2	593	4.1	0.816	39.0	LOS C	14.9	107.9	0.97	0.86	39.1
Approach		4479	4.4	0.937	12.4	LOS A	37.0	269.0	0.42	0.42	51.3
East: M5 Motorway on&off-ramp (E)											
4	L2	297	6.4	0.118	30.3	LOS C	4.2	30.9	0.59	0.70	42.0
6	R2	1059	6.3	1.126	218.0	LOS F	50.1	377.1	1.00	1.29	11.0
Approach		1356	6.3	1.126	177.0	LOS F	50.1	377.1	0.91	1.16	14.1
North: Hume Highway (N)											
7	L2	677	9.5	0.528	11.2	LOS A	17.0	132.8	0.43	0.70	47.8
8	T1	1174	7.0	0.476	28.3	LOS B	17.1	126.8	0.62	0.54	43.4
Approach		1851	7.9	0.528	22.0	LOS B	17.1	132.8	0.55	0.60	44.5
All Vehicles		7686	5.6	1.126	43.8	LOS D	50.1	377.1	0.54	0.59	36.4

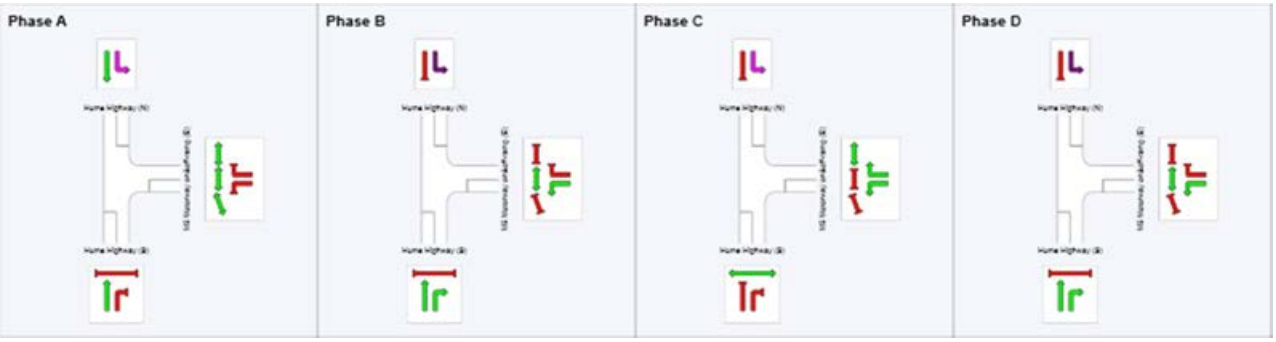
PHASING SUMMARY

Site: I-14 2023 IMT AM

M5 Motorway / Hume Highway
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	No	No	No	Yes
Phase Change Time (sec)	20	97	123	0
Green Time (sec)	70	19	29	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	77	26	36	20
Phase Split	48 %	16 %	23 %	13 %



PM With Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-14 2023 IMT PM

M5 Motorway / Hume Highway
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
2	T1	2438	3.7	0.595	2.1	LOS A	6.3	45.5	0.11	0.10	58.3
3	R2	382	1.7	0.974	97.4	LOS F	17.3	123.2	1.00	0.99	25.8
Approach		2820	3.4	0.974	15.0	LOS B	17.3	123.2	0.23	0.22	49.8
East: M5 Motorway on&off-ramp (E)											
4	L2	1393	3.6	1.050	176.2	LOS F	75.0	541.6	1.00	1.18	17.6
6	R2	1138	6.3	1.157	245.7	LOS F	58.5	441.5	1.00	1.34	10.0
Approach		2531	4.8	1.157	207.5	LOS F	75.0	541.6	1.00	1.25	13.8
North: Hume Highway (N)											
7	L2	848	6.0	0.624	10.1	LOS A	22.0	167.4	0.45	0.71	48.8
8	T1	2711	2.7	0.833	19.4	LOS B	45.3	324.8	0.72	0.67	47.5
Approach		3559	3.5	0.833	17.2	LOS B	45.3	324.8	0.66	0.68	47.7
All Vehicles		8909	3.9	1.157	70.6	LOS F	75.0	541.6	0.62	0.70	29.4

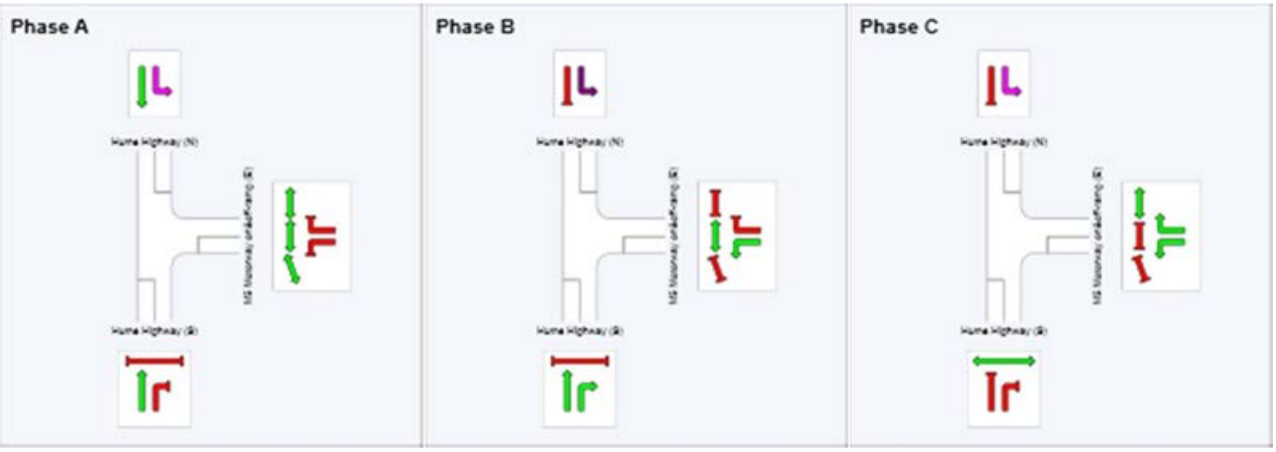
PHASING SUMMARY

Site: I-14 2023 IMT PM

M5 Motorway / Hume Highway
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	97	121
Green Time (sec)	90	17	31
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	97	24	38
Phase Split	61 %	15 %	24 %



AM With Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-14 2023 IMT AM upgrade

M5 Motorway / Hume Highway
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
2	T1	3886	4.5	0.945	12.0	LOS A	49.0	356.3	0.44	0.46	51.6
3	R2	593	4.1	0.816	38.7	LOS C	14.7	106.7	0.97	0.86	39.2
Approach		4479	4.4	0.945	15.6	LOS B	49.0	356.3	0.51	0.52	49.5
East: M5 Motorway on&off-ramp (E)											
4	L2	297	6.4	0.117	29.7	LOS C	4.1	30.5	0.58	0.70	42.3
6	R2	1059	6.3	1.066	168.9	LOS F	43.3	326.3	1.00	1.19	13.5
Approach		1356	6.3	1.066	138.4	LOS F	43.3	326.3	0.91	1.09	16.8
North: Hume Highway (N)											
7	L2	677	9.5	0.528	11.2	LOS A	17.0	132.6	0.43	0.70	47.8
8	T1	1174	7.0	0.483	29.2	LOS C	17.4	129.4	0.63	0.55	43.0
Approach		1851	7.9	0.528	22.6	LOS B	17.4	132.6	0.56	0.61	44.2
All Vehicles		7686	5.6	1.066	38.9	LOS C	49.0	356.3	0.59	0.64	38.1

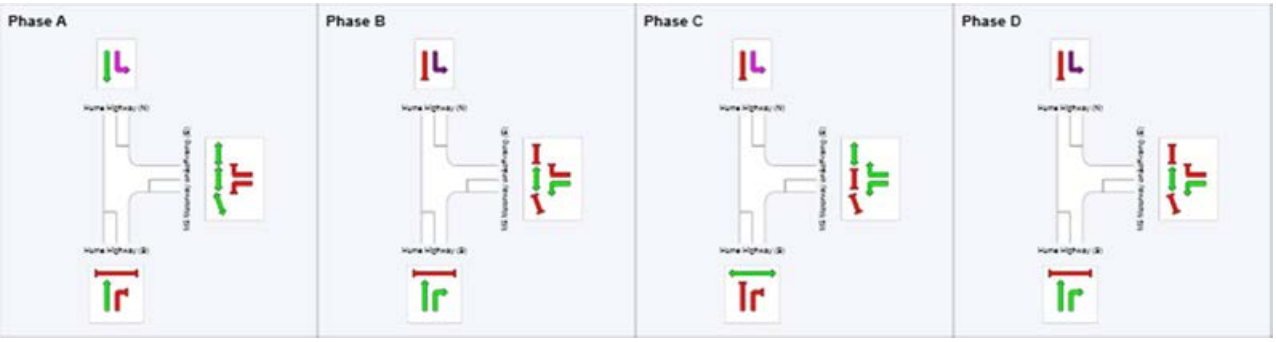
PHASING SUMMARY

Site: I-14 2023 IMT AM upgrade

M5 Motorway / Hume Highway
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	No	No	No	Yes
Phase Change Time (sec)	20	96	122	0
Green Time (sec)	69	19	30	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	76	26	37	20
Phase Split	48 %	16 %	23 %	13 %



PM With Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-14 2023 IMT PM upgrade

M5 Motorway / Hume Highway
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
2	T1	2438	3.7	0.611	3.5	LOS A	9.9	71.4	0.18	0.16	57.3
3	R2	382	1.7	0.974	97.4	LOS F	17.3	123.2	1.00	0.99	25.8
Approach		2820	3.4	0.974	16.2	LOS B	17.3	123.2	0.29	0.28	49.2
East: M5 Motorway on&off-ramp (E)											
4	L2	1393	3.6	1.008	147.4	LOS F	67.8	489.4	1.00	1.11	19.9
6	R2	1138	6.3	1.008	130.7	LOS F	42.5	321.1	1.00	1.11	16.3
Approach		2531	4.8	1.008	139.9	LOS F	67.8	489.4	1.00	1.11	18.4
North: Hume Highway (N)											
7	L2	848	6.0	0.627	10.1	LOS A	22.1	167.9	0.45	0.71	48.8
8	T1	2711	2.7	0.862	22.4	LOS B	50.1	358.6	0.79	0.74	46.0
Approach		3559	3.5	0.862	19.5	LOS B	50.1	358.6	0.71	0.73	46.5
All Vehicles		8909	3.9	1.008	52.6	LOS D	67.8	489.4	0.66	0.69	33.7

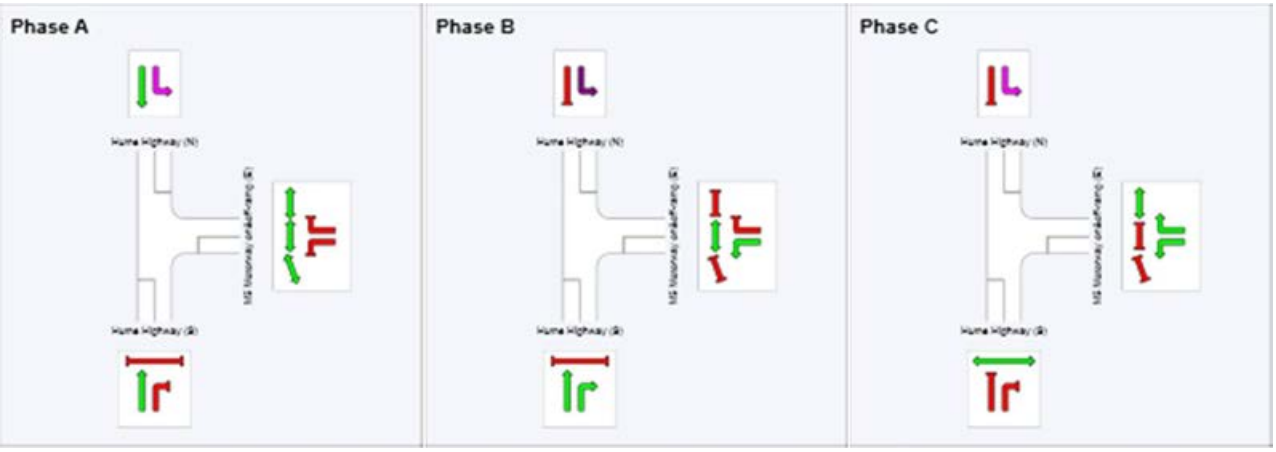
PHASING SUMMARY

Site: I-14 2023 IMT PM upgrade

M5 Motorway / Hume Highway
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	94	118
Green Time (sec)	87	17	34
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	94	24	41
Phase Split	59 %	15 %	26 %



I-15 Intersection of Cambridge Avenue and Canterbury Road

AM + PM BASE

MOVEMENT SUMMARY

Site: I-15 2023 BASE AM

Canterbury Road / Cambridge Avenue / Glenfield Road
2014 BASE AM PEAK 7:45 am - 8:45 am
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Canterbury Road (S)											
1	L2	392	3.5	0.424	5.6	LOS A	2.4	17.4	0.53	0.64	53.2
2	T1	6	0.0	0.724	6.4	LOS A	7.6	54.4	0.71	0.77	51.4
3	R2	903	2.1	0.724	11.8	LOS A	7.6	54.4	0.71	0.77	51.5
Approach		1301	2.5	0.724	9.9	LOS A	7.6	54.4	0.66	0.73	51.9
East: Cambridge Avenue (E)											
4	L2	276	3.1	0.146	3.5	LOS A	0.0	0.0	0.00	0.43	56.5
5	T1	73	7.2	0.076	5.3	LOS A	0.4	3.3	0.54	0.57	53.3
6	R2	46	9.1	0.076	10.5	LOS A	0.4	3.3	0.54	0.60	53.6
Approach		395	4.5	0.146	4.6	LOS A	0.4	3.3	0.16	0.48	55.6
North: Railway Parade (N)											
7	L2	289	2.9	0.550	17.6	LOS B	4.7	33.7	0.97	1.11	46.2
8	T1	3	33.3	0.429	17.5	LOS B	2.7	20.5	0.90	1.03	44.8
9	R2	158	8.0	0.429	22.7	LOS B	2.7	20.5	0.90	1.03	43.5
Approach		451	4.9	0.550	19.4	LOS B	4.7	33.7	0.95	1.09	45.3
West: Glenfield Road (W)											
10	L2	333	5.4	0.755	22.3	LOS B	9.9	72.4	1.00	1.27	41.9
11	T1	172	6.7	0.755	22.9	LOS B	9.9	72.4	1.00	1.26	42.1
12	R2	308	5.8	0.755	29.6	LOS C	8.8	64.4	1.00	1.26	40.3
Approach		813	5.8	0.755	25.2	LOS B	9.9	72.4	1.00	1.26	41.3
All Vehicles		2959	4.1	0.755	14.9	LOS B	9.9	72.4	0.73	0.90	48.1

MOVEMENT SUMMARY

Site: I-15 2023 BASE PM

Canterbury Road / Cambridge Avenue / Glenfield Road
2014 BASE PM PEAK 4:30 pm - 5:30 pm
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Canterbury Road (S)											
1	L2	277	2.3	0.342	6.9	LOS A	1.8	12.9	0.68	0.80	52.6
2	T1	5	0.0	0.308	6.2	LOS A	1.7	11.8	0.66	0.83	51.6
3	R2	284	1.1	0.308	11.6	LOS A	1.7	11.8	0.66	0.83	51.7
Approach		566	1.7	0.342	9.3	LOS A	1.8	12.9	0.67	0.81	52.1
East: Cambridge Avenue (E)											
4	L2	1003	2.2	0.529	3.5	LOS A	0.0	0.0	0.00	0.43	56.4
5	T1	244	7.8	0.353	6.4	LOS A	2.5	17.7	0.66	0.69	52.5
6	R2	291	0.7	0.353	11.5	LOS A	2.5	17.7	0.69	0.73	52.7
Approach		1538	2.8	0.529	5.5	LOS A	2.5	17.7	0.23	0.53	55.0
North: Railway Parade (N)											
7	L2	106	1.0	0.145	7.0	LOS A	0.7	4.9	0.62	0.73	53.4
8	T1	0	0.0	0.000	0.0	NA	0.0	0.0	0.00	0.00	0.0
9	R2	196	8.1	0.219	11.9	LOS A	1.2	8.7	0.64	0.80	50.4
Approach		302	5.6	0.219	10.2	LOS A	1.2	8.7	0.64	0.78	51.5
West: Glenfield Road (W)											
10	L2	238	4.4	0.342	7.2	LOS A	2.0	14.2	0.66	0.74	52.2
11	T1	46	0.0	0.342	7.0	LOS A	2.0	14.2	0.66	0.74	54.2
12	R2	399	3.7	0.406	12.1	LOS A	2.6	18.6	0.68	0.81	50.4
Approach		683	3.7	0.406	10.0	LOS A	2.6	18.6	0.68	0.78	51.2
All Vehicles		3089	3.1	0.529	7.6	LOS A	2.6	18.6	0.45	0.66	53.3

AM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-15 2023 IMT AM

Canterbury Road / Cambridge Avenue / Glenfield Road
2023 IMT AM PEAK 7:45 am - 8:45 am
Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	392	3.5	0.430	5.7	LOS A	2.5	17.7	0.54	0.64	53.1
2	T1	6	0.0	0.754	6.8	LOS A	8.7	61.6	0.74	0.79	51.2
3	R2	942	2.0	0.754	12.2	LOS A	8.7	61.6	0.74	0.79	51.4
Approach		1340	2.4	0.754	10.3	LOS A	8.7	61.6	0.68	0.75	51.8
East: Cambridge Avenue (E)											
4	L2	276	3.1	0.146	3.5	LOS A	0.0	0.0	0.00	0.43	56.5
5	T1	73	7.2	0.076	5.3	LOS A	0.4	3.3	0.54	0.57	53.3
6	R2	46	9.1	0.076	10.5	LOS A	0.4	3.3	0.54	0.60	53.6
Approach		395	4.5	0.146	4.6	LOS A	0.4	3.3	0.16	0.48	55.6
North: Railway Parade (N)											
7	L2	300	2.8	0.607	21.1	LOS B	5.6	40.3	1.00	1.17	44.3
8	T1	3	33.3	0.461	19.7	LOS B	3.0	22.8	0.92	1.06	43.7
9	R2	158	8.0	0.461	24.9	LOS B	3.0	22.8	0.92	1.06	42.3
Approach		461	4.8	0.607	22.4	LOS B	5.6	40.3	0.97	1.13	43.6
West: Glenfield Road (W)											
10	L2	333	5.4	0.819	29.7	LOS C	12.4	91.2	1.00	1.37	38.2
11	T1	179	6.5	0.819	30.5	LOS C	12.4	91.2	1.00	1.37	38.3
12	R2	308	5.8	0.819	37.5	LOS C	10.9	79.9	1.00	1.35	36.8
Approach		820	5.8	0.819	32.8	LOS C	12.4	91.2	1.00	1.37	37.7
All Vehicles		3016	4.0	0.819	17.5	LOS B	12.4	91.2	0.75	0.94	46.5

PM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-15 2023 IMT PM

Canterbury Road / Cambridge Avenue / Glenfield Road
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	277	2.3	0.347	7.0	LOS A	1.8	13.1	0.69	0.81	52.5
2	T1	5	0.0	0.311	6.3	LOS A	1.7	12.0	0.67	0.83	51.5
3	R2	284	1.1	0.311	11.7	LOS A	1.7	12.0	0.67	0.83	51.7
Approach		566	1.7	0.347	9.4	LOS A	1.8	13.1	0.68	0.82	52.1
East: Cambridge Avenue (E)											
4	L2	1042	2.1	0.550	3.5	LOS A	0.0	0.0	0.00	0.43	56.4
5	T1	252	7.5	0.365	6.4	LOS A	2.6	18.5	0.66	0.69	52.5
6	R2	301	0.7	0.365	11.5	LOS A	2.6	18.5	0.70	0.73	52.7
Approach		1595	2.7	0.550	5.5	LOS A	2.6	18.5	0.24	0.53	55.0
North: Railway Parade (N)											
7	L2	106	1.0	0.145	7.0	LOS A	0.7	4.9	0.62	0.73	53.4
8	T1	1	0.0	0.220	6.5	LOS A	1.2	8.7	0.64	0.80	51.6
9	R2	196	8.1	0.220	12.0	LOS A	1.2	8.7	0.64	0.80	50.4
Approach		303	5.6	0.220	10.2	LOS A	1.2	8.7	0.64	0.78	51.5
West: Glenfield Road (W)											
10	L2	238	4.4	0.346	7.2	LOS A	2.0	14.4	0.67	0.75	52.2
11	T1	46	0.0	0.346	7.1	LOS A	2.0	14.4	0.67	0.75	54.1
12	R2	399	3.7	0.410	12.2	LOS A	2.6	19.0	0.69	0.81	50.4
Approach		683	3.7	0.410	10.1	LOS A	2.6	19.0	0.68	0.79	51.2
All Vehicles		3148	3.0	0.550	7.6	LOS A	2.6	19.0	0.45	0.66	53.3

I-0A Intersection of Moorebank Avenue and Anzac Road

AM BASE

MOVEMENT SUMMARY

Site: I-0A 2023 BASE AM

Intersection of Moorebank Avenue and Anzac Road
2023 BASE AM PEAK
Signals - Fixed Time Cycle Time = 103 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1021	3.5	0.896	22.5	LOS B	42.5	306.1	0.71	0.75	37.3
3	R2	427	3.2	0.685	30.9	LOS C	16.6	119.4	0.92	0.93	39.0
Approach		1448	3.4	0.896	25.0	LOS B	42.5	306.1	0.77	0.80	38.0
East: Anzac Road (E)											
4	L2	231	3.2	0.278	24.2	LOS B	7.2	51.4	0.66	0.76	42.0
6	R2	203	13.5	0.772	55.5	LOS D	10.7	83.3	1.00	0.89	20.7
Approach		434	8.0	0.772	38.8	LOS C	10.7	83.3	0.82	0.82	30.9
North: Moorebank Avenue (N)											
7	L2	351	9.9	0.229	6.1	LOS A	1.3	9.7	0.16	0.59	49.8
8	T1	617	3.2	0.570	22.9	LOS B	17.6	126.8	0.77	0.67	37.1
Approach		967	5.7	0.570	16.8	LOS B	17.6	126.8	0.55	0.64	40.9
All Vehicles		2849	4.9	0.896	24.3	LOS B	42.5	306.1	0.70	0.75	37.3

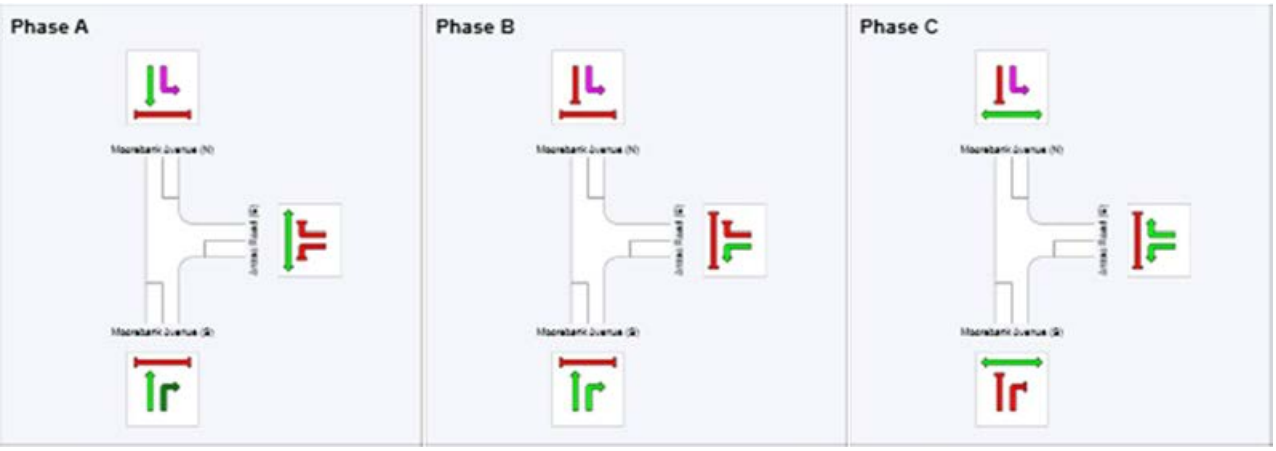
PHASING SUMMARY

Site: I-0A 2023 BASE AM

Intersection of Moorebank Avenue and Anzac Road
2023 BASE AM PEAK
Signals - Fixed Time Cycle Time = 103 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	50	78
Green Time (sec)	44	22	19
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	50	28	25
Phase Split	49 %	27 %	24 %



PM BASE

MOVEMENT SUMMARY

Site: I-0A 2023 BASE PM

Intersection of Moorebank Avenue and Anzac Road
2023 BASE PM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	303	3.8	0.254	9.6	LOS A	7.1	51.1	0.47	0.41	47.6
3	R2	184	1.1	0.961	89.0	LOS F	12.9	91.2	1.00	1.20	24.1
Approach		487	2.8	0.961	39.6	LOS C	12.9	91.2	0.67	0.71	32.0
East: Anzac Road (E)											
4	L2	507	2.3	0.745	38.2	LOS C	23.8	170.1	0.93	0.87	36.2
6	R2	343	5.5	0.813	53.7	LOS D	19.0	139.2	1.00	0.92	21.1
Approach		851	3.6	0.813	44.4	LOS D	23.8	170.1	0.96	0.89	30.0
North: Moorebank Avenue (N)											
7	L2	315	4.0	0.196	6.0	LOS A	1.1	8.1	0.14	0.59	50.2
8	T1	1204	2.4	0.913	34.2	LOS C	54.1	386.9	0.90	0.92	31.2
Approach		1519	2.8	0.913	28.4	LOS B	54.1	386.9	0.74	0.85	33.8
All Vehicles		2857	3.0	0.961	35.1	LOS C	54.1	386.9	0.79	0.84	32.0

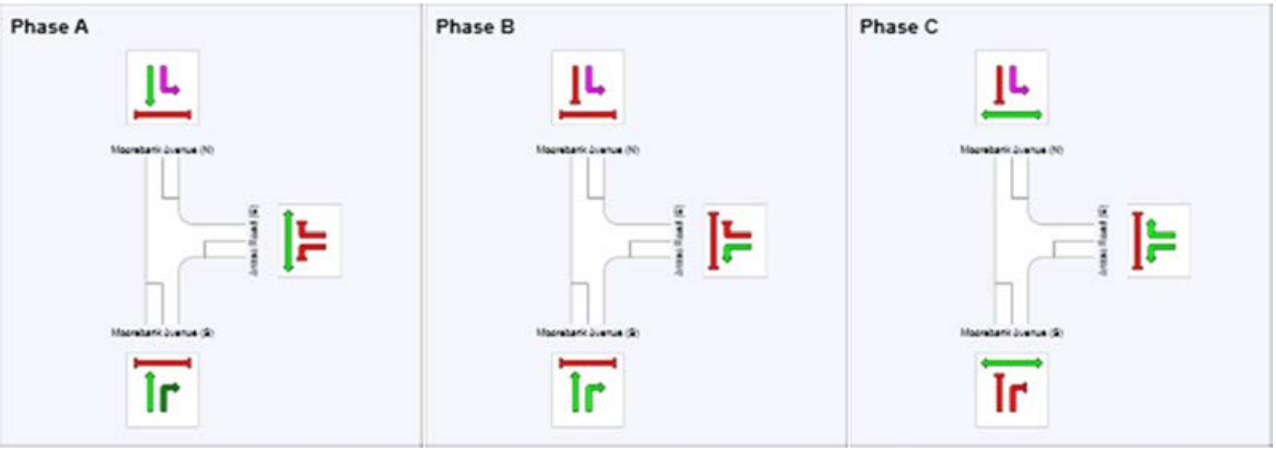
PHASING SUMMARY

Site: I-0A 2023 BASE PM

Intersection of Moorebank Avenue and Anzac Road
2023 BASE PM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	63	75
Green Time (sec)	57	6	29
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	63	12	35
Phase Split	57 %	11 %	32 %



AM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-0A 2023 MINT AM

Intersection of Moorebank Avenue, Anzac Road and IMT Access Road
2023 MINT AM PEAK - Upgrade 1
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
1	L2	74	0.0	0.699	30.5	LOS C	20.7	148.8	0.80	0.75	30.7
2	T1	1004	3.6	0.699	25.7	LOS B	21.2	153.1	0.80	0.73	37.9
3	R2	427	3.2	0.785	46.5	LOS D	22.2	159.4	0.98	0.90	30.5
Approach		1505	3.3	0.785	31.9	LOS C	22.2	159.4	0.85	0.78	35.0
East: Anzac Road (E)											
4	L2	192	3.8	0.203	10.9	LOS A	3.2	23.5	0.40	0.67	48.3
5	T1	23	0.0	0.131	52.4	LOS D	1.2	8.3	0.95	0.69	25.8
6	R2	200	13.7	0.650	61.5	LOS E	5.6	43.4	1.00	0.82	28.4
Approach		415	8.4	0.650	37.6	LOS C	5.6	43.4	0.72	0.74	34.4
North: Moorebank Avenue (N)											
7	L2	351	9.9	0.652	34.6	LOS C	19.2	144.2	0.85	0.81	37.7
8	T1	495	3.2	0.652	32.8	LOS C	19.2	144.2	0.85	0.75	34.3
9	R2	338	40.8	0.627	49.7	LOS D	8.5	101.1	0.96	0.83	23.8
Approach		1183	15.9	0.652	38.2	LOS C	19.2	144.2	0.88	0.79	32.2
West: IMT Access Road (W)											
10	L2	140	98.5	0.287	25.8	LOS B	2.2	41.0	0.81	0.73	31.4
11	T1	1	0.0	0.007	52.0	LOS D	0.1	0.4	0.94	0.56	26.0
12	R2	1	0.0	0.008	56.3	LOS D	0.1	0.4	0.94	0.59	19.2
Approach		142	97.0	0.287	26.2	LOS B	2.2	41.0	0.81	0.72	31.3
All Vehicles		3245	12.7	0.785	34.7	LOS C	22.2	159.4	0.84	0.78	33.7

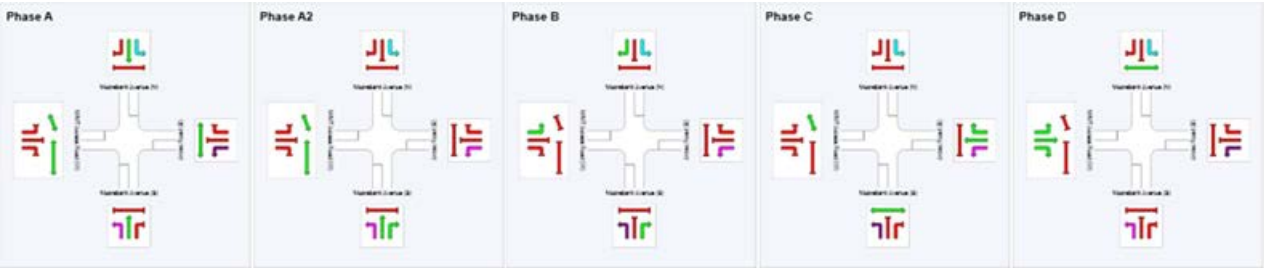
PHASING SUMMARY

Site: I-0A 2023 MINT AM

Intersection of Moorebank Avenue, Anzac Road and IMT Access Road
2023 MINT AM PEAK - Upgrade 1
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	A2	B	C	D
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	41	50	80	96
Green Time (sec)	35	3	24	10	8
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	41	9	30	16	14
Phase Split	37 %	8 %	27 %	15 %	13 %



PM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-0A 2023 MINT PM

Intersection of Moorebank Avenue, Anzac Road and IMT Access Road
2023 MINT PM PEAK - Upgrade 1
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
1	L2	1	0.0	0.214	29.1	LOS C	4.5	32.4	0.59	0.49	31.9
2	T1	303	3.8	0.214	23.3	LOS B	4.6	32.9	0.59	0.49	39.4
3	R2	184	1.1	0.846	65.1	LOS E	10.9	77.1	1.00	0.95	25.6
Approach		488	2.8	0.846	39.1	LOS C	10.9	77.1	0.75	0.66	32.4
East: Anzac Road (E)											
4	L2	499	2.3	0.751	23.1	LOS B	20.7	147.5	0.88	0.87	40.3
5	T1	1	0.0	0.005	48.2	LOS D	0.1	0.4	0.91	0.56	26.9
6	R2	343	5.5	0.880	69.1	LOS E	10.5	77.2	1.00	0.99	26.8
Approach		843	3.6	0.880	41.9	LOS C	20.7	147.5	0.93	0.92	33.0
North: Moorebank Avenue (N)											
7	L2	309	4.1	0.831	27.2	LOS B	34.8	250.1	0.83	0.81	42.2
8	T1	1178	2.5	0.831	22.2	LOS B	34.8	250.1	0.77	0.74	39.6
9	R2	182	90.2	0.458	48.2	LOS D	4.4	78.9	0.91	0.79	23.2
Approach		1669	12.4	0.831	25.9	LOS B	34.8	250.1	0.79	0.76	37.9
West: IMT Access Road (W)											
10	L2	372	44.5	0.518	25.4	LOS B	5.9	72.7	0.88	0.79	32.9
11	T1	25	0.0	0.178	54.2	LOS D	1.3	9.3	0.97	0.70	25.4
12	R2	65	0.0	0.483	60.5	LOS E	3.6	25.0	1.00	0.76	18.3
Approach		462	35.8	0.518	31.9	LOS C	5.9	72.7	0.90	0.78	29.7
All Vehicles		3463	12.0	0.880	32.5	LOS C	34.8	250.1	0.83	0.79	34.7

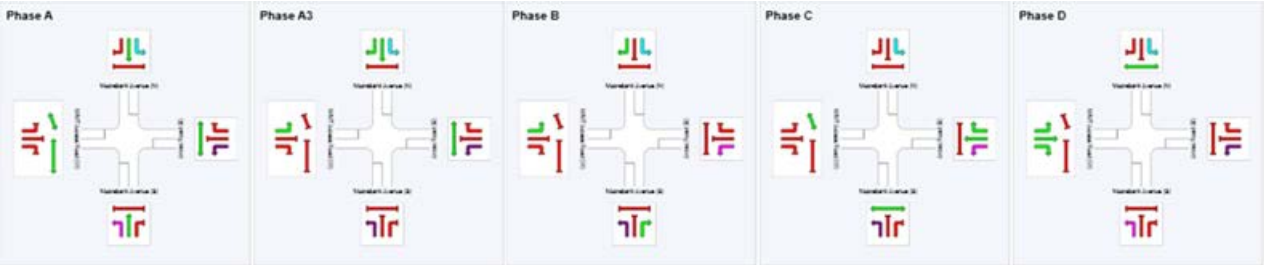
PHASING SUMMARY

Site: I-0A 2023 MINT PM

Intersection of Moorebank Avenue, Anzac Road and IMT Access Road
2023 MINT PM PEAK - Upgrade 1
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	A3	B	C	D
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	47	59	78	96
Green Time (sec)	41	6	13	12	8
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	47	12	19	18	14
Phase Split	43 %	11 %	17 %	16 %	13 %



Appendix H

2025 SIDRA results with and without Moorebank IMT

I-01 Intersection of the Hume Highway and Orange Grove Road

AM BASE

MOVEMENT SUMMARY

Site: I-01 2025 BASE AM

Hume Highway / Orange Grove Road
2025 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
NorthEast: Hume Highway (NE)											
25	T1	904	11.4	0.643	22.6	LOS B	18.0	138.2	0.82	0.74	36.8
26	R2	371	9.9	0.917	88.4	LOS F	16.3	124.0	1.00	0.95	23.5
Approach		1275	11.0	0.917	41.7	LOS C	18.0	138.2	0.87	0.80	30.2
NorthWest: Orange Grove Road (NW)											
27	L2	572	6.4	0.681	13.5	LOS A	13.6	100.1	0.39	0.73	48.2
29	R2	1244	6.7	0.918	72.8	LOS F	34.8	257.4	1.00	0.93	23.4
Approach		1816	6.6	0.918	54.1	LOS D	34.8	257.4	0.80	0.87	28.6
SouthWest: Hume Highway (SW)											
30	L2	1192	6.4	0.416	11.1	LOS A	12.3	91.1	0.32	0.69	52.7
31	T1	2076	4.9	0.745	20.3	LOS B	33.3	242.7	0.63	0.58	42.2
Approach		3267	5.5	0.745	16.9	LOS B	33.3	242.7	0.52	0.62	46.1
All Vehicles		6358	6.9	0.918	32.5	LOS C	34.8	257.4	0.67	0.73	35.3

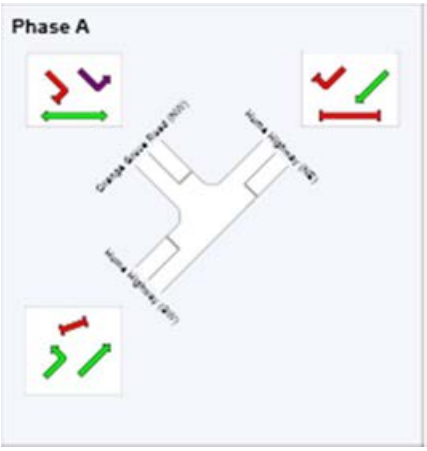
PHASING SUMMARY

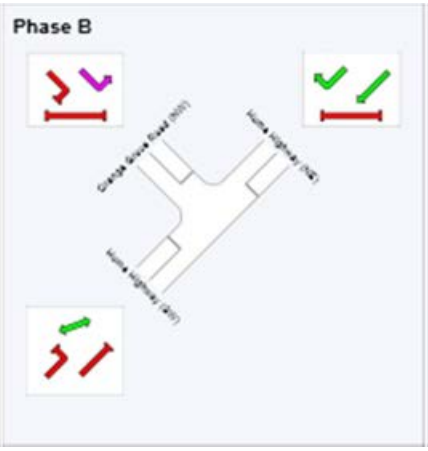
Site: I-01 2025 BASE AM

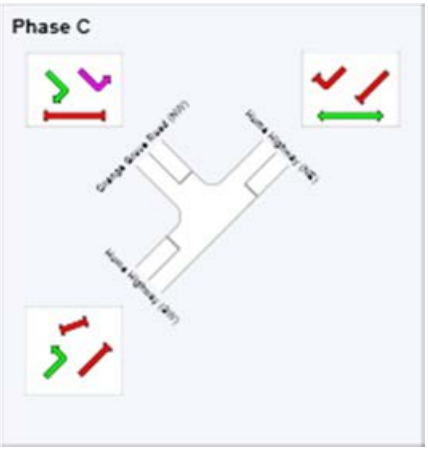
Hume Highway / Orange Grove Road
2025 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	86	109
Green Time (sec)	79	16	35
Yellow Time (sec)	5	4	5
All-Red Time (sec)	2	2	2
Phase Time (sec)	86	22	42
Phase Split	57 %	15 %	28 %







PM BASE

MOVEMENT SUMMARY

Site: I-01 2025 BASE PM

Hume Highway / Orange Grove Road
2025 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
NorthEast: Hume Highway (NE)											
25	T1	1737	3.2	0.904	39.7	LOS C	46.6	335.3	0.89	0.93	28.5
26	R2	793	2.7	0.929	58.2	LOS E	21.8	156.3	1.00	1.00	30.0
Approach		2529	3.0	0.929	45.5	LOS D	46.6	335.3	0.92	0.95	29.1
NorthWest: Orange Grove Road (NW)											
27	L2	377	4.2	0.351	11.9	LOS A	6.1	44.0	0.26	0.63	49.7
29	R2	1321	3.1	1.008	100.7	LOS F	46.3	332.8	1.00	1.05	19.1
Approach		1698	3.3	1.008	81.0	LOS F	46.3	332.8	0.84	0.96	22.6
SouthWest: Hume Highway (SW)											
30	L2	1260	2.9	0.734	19.1	LOS B	19.0	136.2	0.76	0.83	46.1
31	T1	1079	5.3	0.969	85.7	LOS F	36.8	269.6	1.00	1.11	18.5
Approach		2339	4.0	0.969	49.8	LOS D	36.8	269.6	0.87	0.96	29.1
All Vehicles		6566	3.5	1.008	56.2	LOS D	46.6	335.3	0.88	0.96	26.9

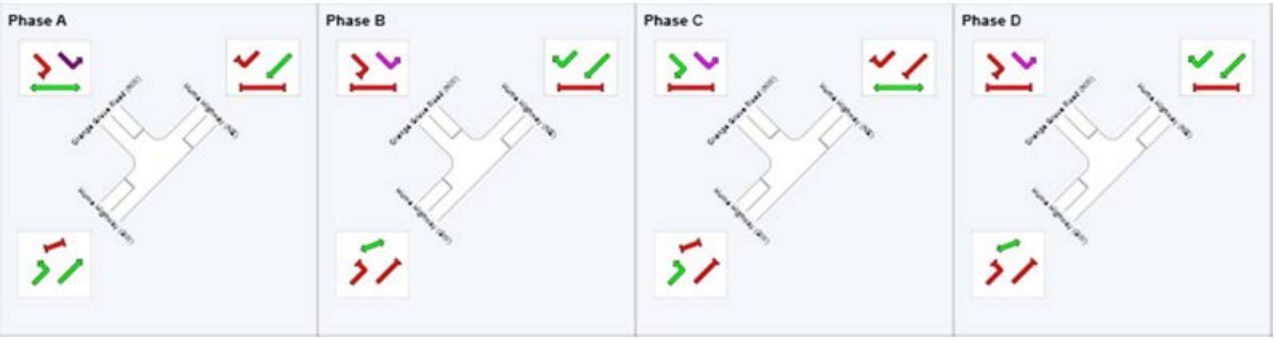
PHASING SUMMARY

Site: I-01 2025 BASE PM

Hume Highway / Orange Grove Road
2025 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	80	124
Green Time (sec)	47	20	38	19
Yellow Time (sec)	5	4	5	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	54	26	45	25
Phase Split	36 %	17 %	30 %	17 %



AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-01 2023 IMT AM

Hume Highway / Orange Grove Road
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	909	11.3	0.652	23.3	LOS B	18.3	140.4	0.82	0.75	36.4
26	R2	367	10.0	0.856	82.2	LOS F	15.2	115.7	1.00	0.90	24.6
Approach		1276	11.0	0.856	40.3	LOS C	18.3	140.4	0.88	0.79	30.7
NorthWest: Orange Grove Road (NW)											
27	L2	565	6.5	0.656	13.5	LOS A	13.7	101.1	0.39	0.72	48.2
29	R2	1267	8.3	0.927	73.6	LOS F	36.1	274.2	1.00	0.93	23.3
Approach		1833	7.8	0.927	55.1	LOS D	36.1	274.2	0.81	0.87	28.3
SouthWest: Hume Highway (SW)											
30	L2	1193	8.2	0.429	11.5	LOS A	12.9	98.3	0.33	0.69	50.4
31	T1	2040	4.9	0.751	21.9	LOS B	34.0	248.1	0.66	0.60	40.9
Approach		3233	6.1	0.751	18.1	LOS B	34.0	248.1	0.54	0.64	44.5
All Vehicles		6342	7.6	0.927	33.2	LOS C	36.1	274.2	0.68	0.73	34.8

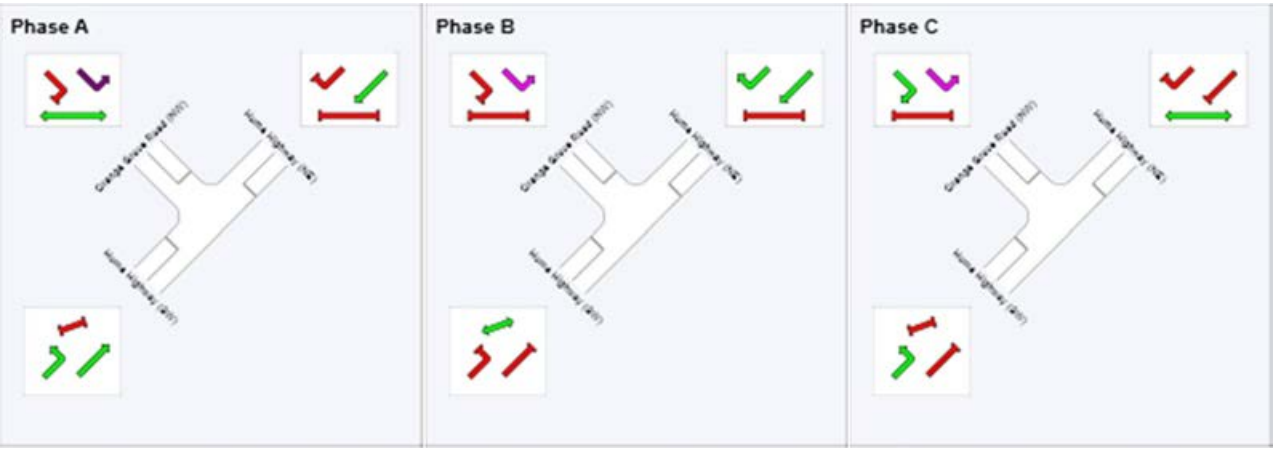
PHASING SUMMARY

Site: I-01 2023 IMT AM

Hume Highway / Orange Grove Road
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	84	108
Green Time (sec)	77	17	36
Yellow Time (sec)	5	4	5
All-Red Time (sec)	2	2	2
Phase Time (sec)	84	23	43
Phase Split	56 %	15 %	29 %



PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-01 2023 IMT PM

Hume Highway / Orange Grove Road
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	1732	3.4	0.903	39.4	LOS C	46.3	333.9	0.89	0.93	28.6
26	R2	787	2.7	0.923	56.5	LOS E	21.3	152.5	1.00	0.99	30.5
Approach		2519	3.1	0.923	44.7	LOS D	46.3	333.9	0.92	0.95	29.4
NorthWest: Orange Grove Road (NW)											
27	L2	374	4.2	0.349	12.3	LOS A	6.3	45.6	0.27	0.63	49.4
29	R2	1336	5.0	1.048	125.0	LOS F	52.0	385.9	1.00	1.11	16.4
Approach		1709	4.8	1.048	100.3	LOS F	52.0	385.9	0.84	1.01	19.7
SouthWest: Hume Highway (SW)											
30	L2	1288	4.8	0.767	19.5	LOS B	20.1	148.6	0.79	0.84	44.9
31	T1	1089	5.4	0.979	89.8	LOS F	38.2	280.2	1.00	1.13	17.9
Approach		2377	5.1	0.979	51.7	LOS D	38.2	280.2	0.88	0.97	28.2
All Vehicles		6605	4.3	1.048	61.6	LOS E	52.0	385.9	0.89	0.97	25.4

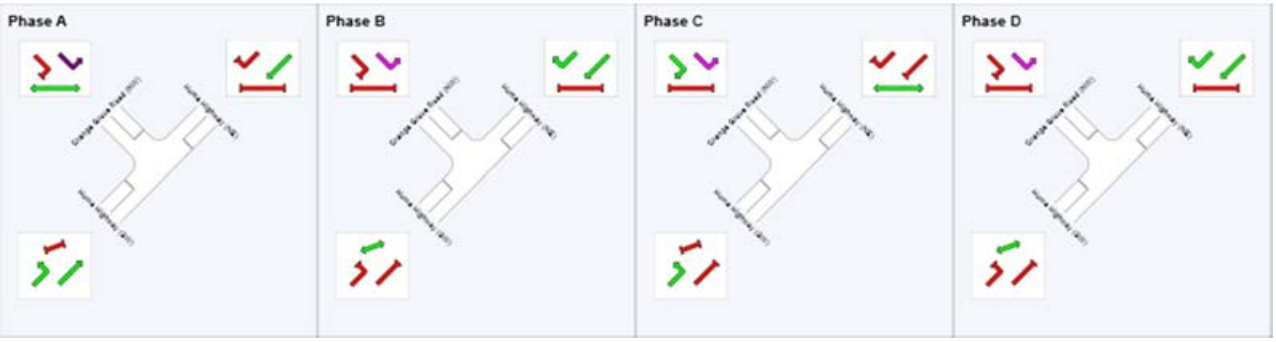
PHASING SUMMARY

Site: I-01 2023 IMT PM

Hume Highway / Orange Grove Road
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	80	124
Green Time (sec)	47	20	38	19
Yellow Time (sec)	5	4	5	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	54	26	45	25
Phase Split	36 %	17 %	30 %	17 %



AM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-01 2023 IMT AM upgrade

Hume Highway / Orange Grove Road
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	909	11.3	0.652	23.3	LOS B	18.3	140.4	0.82	0.75	36.4
26	R2	367	10.0	0.856	82.2	LOS F	15.2	115.7	1.00	0.90	24.6
Approach		1276	11.0	0.856	40.3	LOS C	18.3	140.4	0.88	0.79	30.7
NorthWest: Orange Grove Road (NW)											
27	L2	565	6.5	0.656	13.5	LOS A	13.7	101.1	0.39	0.72	48.2
29	R2	1267	8.3	0.927	73.6	LOS F	36.1	274.2	1.00	0.93	23.3
Approach		1833	7.8	0.927	55.1	LOS D	36.1	274.2	0.81	0.87	28.3
SouthWest: Hume Highway (SW)											
30	L2	1193	8.2	0.429	11.5	LOS A	12.9	98.3	0.33	0.69	50.4
31	T1	2040	4.9	0.751	21.9	LOS B	34.0	248.1	0.66	0.60	40.9
Approach		3233	6.1	0.751	18.1	LOS B	34.0	248.1	0.54	0.64	44.5
All Vehicles		6342	7.6	0.927	33.2	LOS C	36.1	274.2	0.68	0.73	34.8

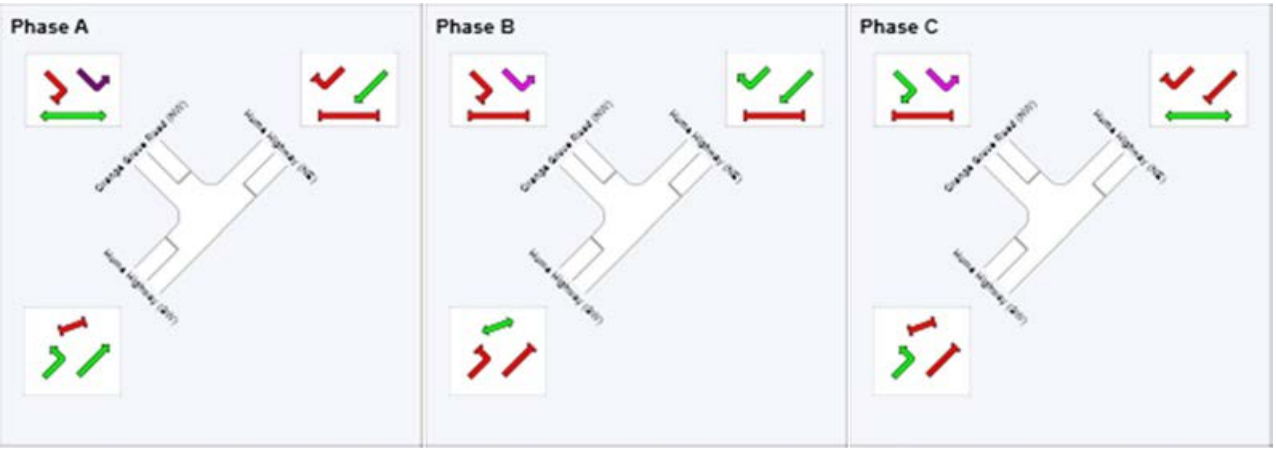
PHASING SUMMARY

Site: I-01 2023 IMT AM upgrade

Hume Highway / Orange Grove Road
2023 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	84	108
Green Time (sec)	77	17	36
Yellow Time (sec)	5	4	5
All-Red Time (sec)	2	2	2
Phase Time (sec)	84	23	43
Phase Split	56 %	15 %	29 %



PM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-01 2023 IMT PM upgrade

Hume Highway / Orange Grove Road
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
NorthEast: Hume Highway (NE)											
25	T1	1732	3.4	0.922	46.7	LOS D	50.1	361.0	0.92	0.99	26.1
26	R2	787	2.7	0.973	75.1	LOS F	24.8	177.5	1.00	1.06	26.1
Approach		2519	3.1	0.973	55.6	LOS D	50.1	361.0	0.95	1.01	26.1
NorthWest: Orange Grove Road (NW)											
27	L2	374	4.2	0.349	12.3	LOS A	6.3	45.6	0.27	0.63	49.4
29	R2	1336	5.0	1.003	97.7	LOS F	46.9	348.3	1.00	1.04	19.5
Approach		1709	4.8	1.003	79.0	LOS F	46.9	348.3	0.84	0.95	22.9
SouthWest: Hume Highway (SW)											
30	L2	1288	4.8	0.750	18.7	LOS B	19.4	143.8	0.76	0.83	45.4
31	T1	1089	5.4	0.979	89.8	LOS F	38.2	280.2	1.00	1.13	17.9
Approach		2377	5.1	0.979	51.3	LOS D	38.2	280.2	0.87	0.97	28.4
All Vehicles		6605	4.3	1.003	60.1	LOS E	50.1	361.0	0.89	0.98	25.8

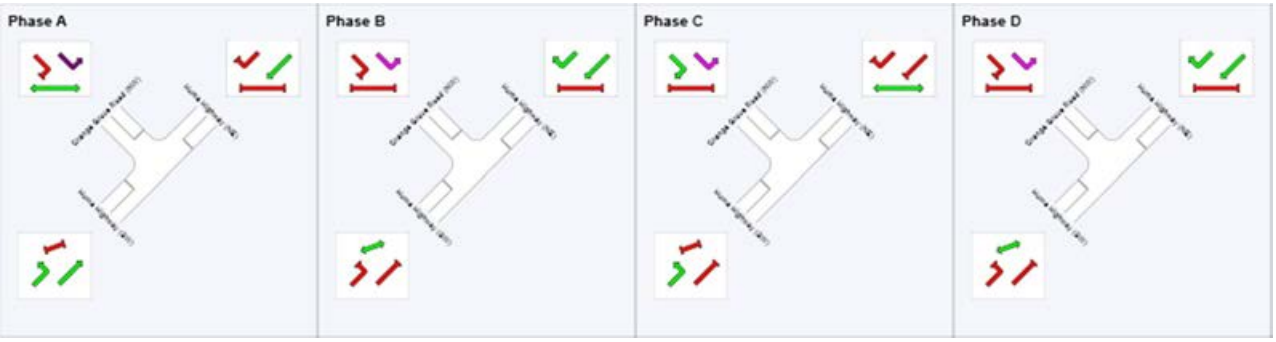
PHASING SUMMARY

Site: I-01 2023 IMT PM upgrade

Hume Highway / Orange Grove Road
2023 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	79	125
Green Time (sec)	47	19	40	18
Yellow Time (sec)	5	4	5	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	54	25	47	24
Phase Split	36 %	17 %	31 %	16 %



I-02 Intersection of the Hume Highway and Elizabeth Drive

AM BASE

MOVEMENT SUMMARY

Site: I-02 2025 BASE AM

Hume Highway / Elizabeth Drive
2025 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	127	5.0	0.140	21.2	LOS B	3.3	23.8	0.38	0.67	37.5
2	T1	2216	6.3	0.854	38.9	LOS C	47.7	352.2	0.90	0.83	26.1
Approach		2343	6.2	0.872	37.9	LOS C	47.7	352.2	0.87	0.82	26.6
East: Elizabeth Drive (E)											
4	L2	37	5.7	0.410	60.2	LOS E	9.8	72.1	0.92	0.81	18.5
5	T1	468	5.6	0.410	56.4	LOS D	11.1	81.7	0.90	0.82	23.6
6	R2	147	2.1	0.711	76.7	LOS F	10.9	77.4	1.00	0.85	15.0
Approach		653	4.8	0.711	61.2	LOS E	11.1	81.7	0.92	0.83	21.0
North: Hume Highway (N)											
7	L2	78	2.7	0.594	24.3	LOS B	20.7	155.0	0.55	0.54	32.6
8	T1	1656	8.8	0.594	18.2	LOS B	21.0	158.1	0.54	0.50	37.1
9	R2	334	9.5	1.199	273.9	LOS F	25.0	189.3	1.00	1.43	7.0
Approach		2067	8.7	1.199	59.7	LOS E	25.0	189.3	0.62	0.65	20.4
West: Elizabeth Drive (W)											
10	L2	589	5.4	0.994	100.5	LOS F	56.2	411.6	1.00	1.04	15.5
11	T1	1017	3.1	1.009	108.2	LOS F	49.9	358.4	1.00	1.22	14.2
12	R2	478	6.6	1.189	267.5	LOS F	35.7	264.2	1.00	1.43	7.2
Approach		2084	4.5	1.189	142.6	LOS F	56.2	411.6	1.00	1.21	11.7
All Vehicles		7147	6.3	1.199	76.9	LOS F	56.2	411.6	0.84	0.89	17.6

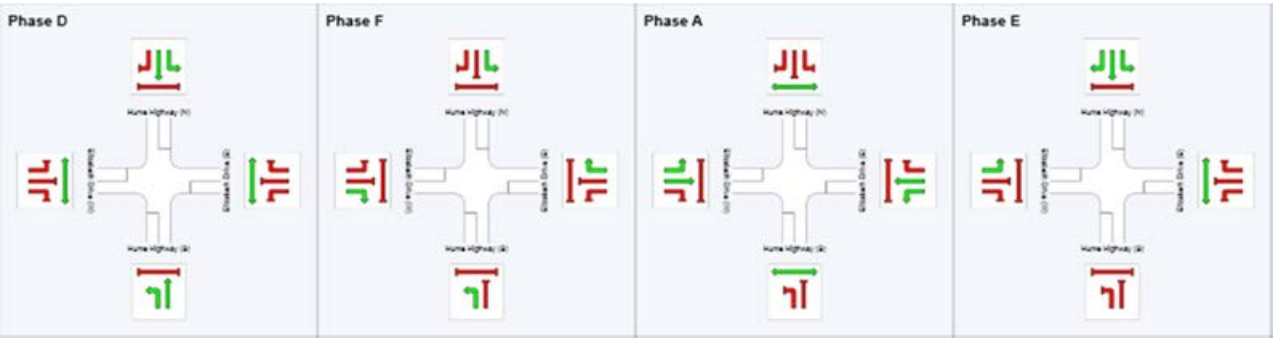
PHASING SUMMARY

Site: I-02 2025 BASE AM

Hume Highway / Elizabeth Drive
2025 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	68	91	132
Green Time (sec)	62	17	35	12
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	68	23	41	18
Phase Split	45 %	15 %	27 %	12 %



PM BASE

MOVEMENT SUMMARY

Site: I-02 2025 BASE PM

Hume Highway / Elizabeth Drive
2025 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	307	4.1	0.456	40.4	LOS C	14.4	104.7	0.69	0.78	28.2
2	T1	1487	4.7	0.868	56.4	LOS D	36.7	267.7	0.96	0.92	20.8
Approach		1795	4.6	0.868	53.6	LOS D	36.7	267.7	0.92	0.90	22.0
East: Elizabeth Drive (E)											
4	L2	121	0.9	0.906	83.1	LOS F	28.0	199.0	1.00	1.02	14.7
5	T1	1031	2.5	0.906	78.3	LOS F	34.7	247.9	1.00	1.03	18.8
6	R2	162	0.0	1.091	184.7	LOS F	19.7	137.6	1.00	1.34	7.5
Approach		1314	2.0	1.091	91.9	LOS F	34.7	247.9	1.00	1.07	16.0
North: Hume Highway (N)											
7	L2	64	4.9	0.837	21.0	LOS B	36.0	258.7	0.67	0.64	35.2
8	T1	2399	2.9	0.837	15.4	LOS B	36.9	264.5	0.67	0.63	39.5
9	R2	929	2.9	0.887	72.1	LOS F	34.9	250.4	1.00	0.93	20.3
Approach		3393	2.9	0.887	31.1	LOS C	36.9	264.5	0.76	0.71	30.4
West: Elizabeth Drive (W)											
10	L2	321	6.2	0.423	33.2	LOS C	13.1	96.9	0.61	0.75	30.0
11	T1	514	4.5	0.656	60.4	LOS E	16.7	121.4	0.94	0.80	21.2
12	R2	298	2.5	1.020	134.9	LOS F	15.2	108.7	1.00	1.14	12.8
Approach		1133	4.5	1.020	72.3	LOS F	16.7	121.4	0.86	0.88	19.3
All Vehicles		7634	3.4	1.091	52.9	LOS D	36.9	267.7	0.85	0.84	22.7

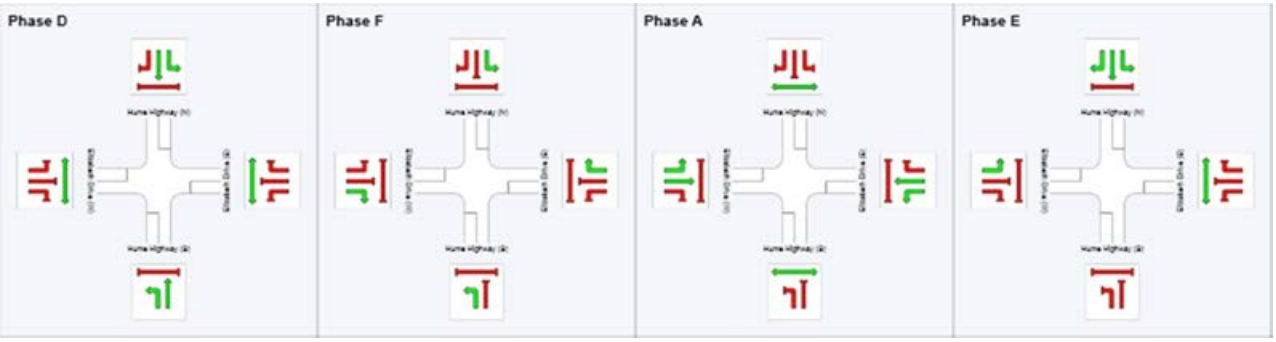
PHASING SUMMARY

Site: I-02 2025 BASE PM

Hume Highway / Elizabeth Drive
2025 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	71	108
Green Time (sec)	47	12	31	36
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	53	18	37	42
Phase Split	35 %	12 %	25 %	28 %



AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-02 2025 IMT AM

Hume Highway / Elizabeth Drive
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	127	5.0	0.140	21.2	LOS B	3.3	23.8	0.38	0.67	37.5
2	T1	2240	7.3	0.876	41.5	LOS C	50.7	381.1	0.91	0.87	25.2
Approach		2368	7.2	0.894	40.4	LOS C	50.7	381.1	0.89	0.86	25.7
East: Elizabeth Drive (E)											
4	L2	37	5.7	0.410	60.2	LOS E	9.8	72.1	0.92	0.81	18.5
5	T1	468	5.6	0.410	56.4	LOS D	11.1	81.7	0.90	0.82	23.6
6	R2	147	2.1	0.711	76.7	LOS F	10.9	77.4	1.00	0.85	15.0
Approach		653	4.8	0.711	61.2	LOS E	11.1	81.7	0.92	0.83	21.0
North: Hume Highway (N)											
7	L2	78	2.7	0.614	24.6	LOS B	21.6	165.3	0.57	0.55	32.4
8	T1	1685	10.1	0.614	18.5	LOS B	21.9	168.7	0.56	0.52	36.9
9	R2	334	9.5	1.199	273.9	LOS F	25.0	189.3	1.00	1.43	7.0
Approach		2097	9.7	1.199	59.4	LOS E	25.0	189.3	0.63	0.66	20.5
West: Elizabeth Drive (W)											
10	L2	589	5.4	0.994	100.5	LOS F	56.2	411.6	1.00	1.04	15.5
11	T1	1017	3.1	1.009	108.2	LOS F	49.9	358.4	1.00	1.22	14.2
12	R2	481	7.2	1.000	283.3	LOS F	37.2	277.9	1.00	1.46	6.9
Approach		2088	4.7	1.009	146.4	LOS F	56.2	411.6	1.00	1.22	11.5
All Vehicles		7205	7.0	1.199	78.5	LOS F	56.2	411.6	0.85	0.90	17.3

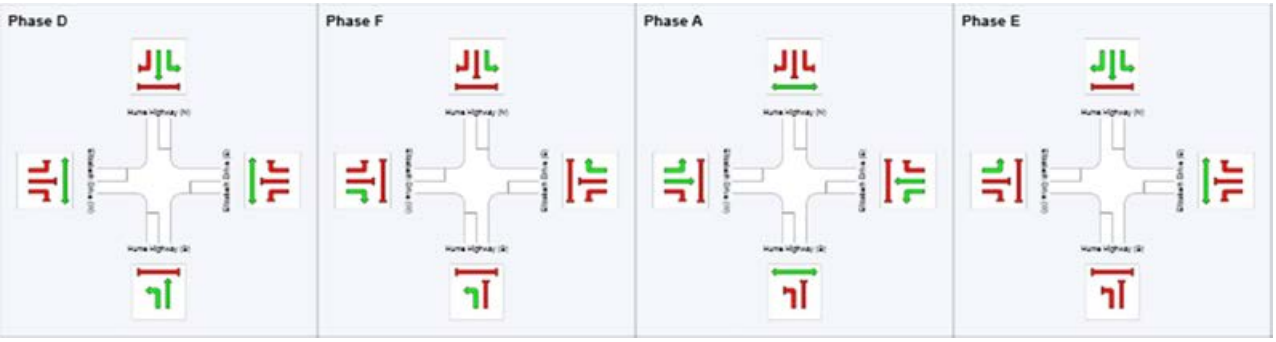
PHASING SUMMARY

Site: I-02 2025 IMT AM

Hume Highway / Elizabeth Drive
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	68	91	132
Green Time (sec)	62	17	35	12
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	68	23	41	18
Phase Split	45 %	15 %	27 %	12 %



PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-02 2025 IMT PM

Hume Highway / Elizabeth Drive
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	312	5.2	0.470	40.6	LOS C	14.8	109.3	0.70	0.78	28.1
2	T1	1522	6.6	0.919	65.3	LOS E	42.0	316.6	0.98	1.01	18.9
Approach		1834	6.4	0.919	61.1	LOS E	42.0	316.6	0.93	0.97	20.2
East: Elizabeth Drive (E)											
4	L2	121	0.9	0.906	83.1	LOS F	28.0	199.0	1.00	1.02	14.7
5	T1	1031	2.5	0.906	78.3	LOS F	34.7	247.9	1.00	1.03	18.8
6	R2	162	0.0	1.091	184.7	LOS F	19.7	137.6	1.00	1.34	7.5
Approach		1314	2.0	1.091	91.9	LOS F	34.7	247.9	1.00	1.07	16.0
North: Hume Highway (N)											
7	L2	64	4.9	0.862	23.9	LOS B	40.5	297.6	0.71	0.69	33.1
8	T1	2432	4.2	0.862	18.1	LOS B	41.2	302.5	0.71	0.68	37.3
9	R2	929	2.9	0.887	72.1	LOS F	34.9	250.4	1.00	0.93	20.3
Approach		3425	3.8	0.887	32.8	LOS C	41.2	302.5	0.79	0.75	29.5
West: Elizabeth Drive (W)											
10	L2	321	6.2	0.423	33.2	LOS C	13.1	96.9	0.61	0.75	30.0
11	T1	514	4.5	0.656	60.4	LOS E	16.7	121.4	0.94	0.80	21.2
12	R2	298	2.5	1.020	134.9	LOS F	15.2	108.7	1.00	1.14	12.8
Approach		1133	4.5	1.020	72.3	LOS F	16.7	121.4	0.86	0.88	19.3
All Vehicles		7706	4.2	1.091	55.4	LOS D	42.0	316.6	0.87	0.88	22.1

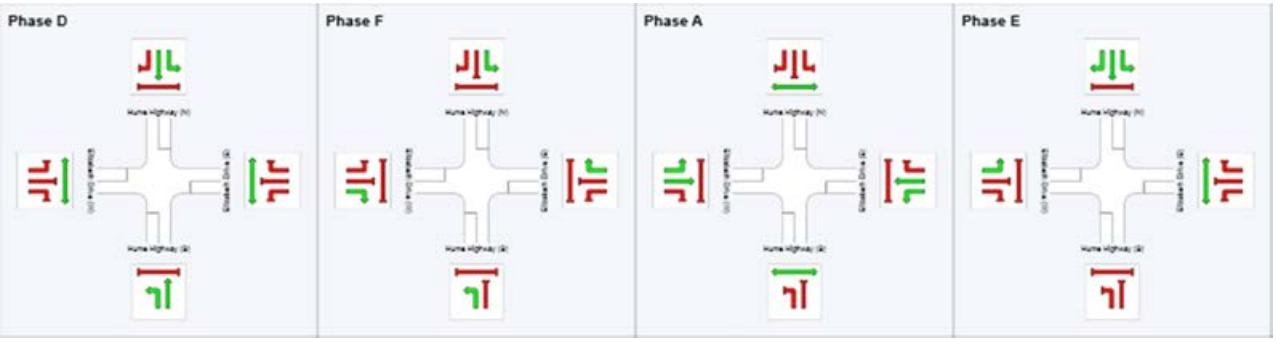
PHASING SUMMARY

Site: I-02 2025 IMT PM

Hume Highway / Elizabeth Drive
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	71	108
Green Time (sec)	47	12	31	36
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	53	18	37	42
Phase Split	35 %	12 %	25 %	28 %



I-03 Intersection of the Hume Highway and Memorial Avenue

AM BASE

MOVEMENT SUMMARY

Site: I-03 2025 BASE AM

Hume Highway / Memorial Avenue
2025 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	148	1.4	0.900	49.3	LOS D	52.7	387.9	0.95	0.94	31.5
2	T1	1982	7.3	0.900	41.4	LOS C	53.1	394.7	0.88	0.88	30.6
3	R2	251	0.0	1.065	164.7	LOS F	28.9	202.5	1.00	1.19	12.0
Approach		2381	6.1	1.065	54.9	LOS D	53.1	394.7	0.90	0.91	26.6
East: Memorial Avenue (E)											
4	L2	24	17.4	1.108	199.0	LOS F	19.6	145.2	1.00	1.41	10.5
5	T1	152	4.9	1.108	194.4	LOS F	19.6	145.2	1.00	1.40	10.2
6	R2	120	12.3	1.108	199.1	LOS F	17.8	136.3	1.00	1.39	7.4
Approach		296	8.9	1.108	196.7	LOS F	19.6	145.2	1.00	1.40	9.1
North: Hume Highway (N)											
7	L2	109	5.8	0.093	12.3	LOS A	2.4	17.3	0.35	0.64	39.5
8	T1	1655	11.1	0.695	27.5	LOS B	28.2	216.6	0.70	0.63	36.8
9	R2	89	3.5	0.390	71.5	LOS F	6.1	44.2	0.96	0.78	21.4
Approach		1854	10.4	0.695	28.7	LOS C	28.2	216.6	0.69	0.64	35.7
West: Memorial Avenue (W)											
10	L2	121	2.6	1.114	185.6	LOS F	39.0	277.6	1.00	1.42	11.1
11	T1	438	1.4	1.114	188.5	LOS F	49.3	351.2	1.00	1.47	10.4
12	R2	154	2.7	1.114	200.2	LOS F	49.3	351.2	1.00	1.51	13.1
Approach		713	1.9	1.114	190.6	LOS F	49.3	351.2	1.00	1.47	11.2
All Vehicles		5243	7.2	1.114	72.1	LOS F	53.1	394.7	0.85	0.92	22.2

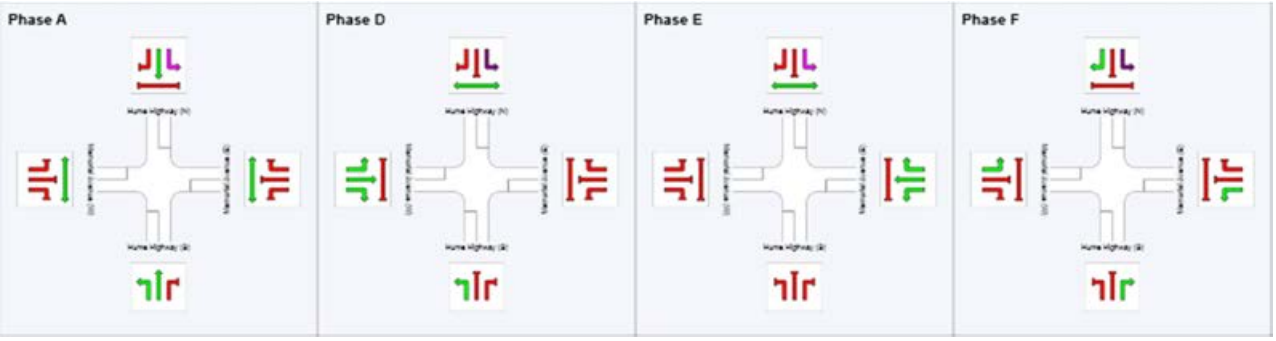
PHASING SUMMARY

Site: I-03 2025 BASE AM

Hume Highway / Memorial Avenue
2025 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	75	108	125
Green Time (sec)	69	27	11	19
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	75	33	17	25
Phase Split	50 %	22 %	11 %	17 %



PM BASE

MOVEMENT SUMMARY

Site: I-03 2025 BASE PM

Hume Highway / Memorial Avenue
2025 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	119	0.9	0.754	41.4	LOS C	32.4	235.9	0.84	0.79	34.0
2	T1	1598	5.7	0.754	33.5	LOS C	32.9	241.9	0.80	0.73	33.8
3	R2	115	0.0	0.772	84.2	LOS F	8.8	61.8	1.00	0.86	19.5
Approach		1832	5.1	0.772	37.2	LOS C	32.9	241.9	0.81	0.74	32.4
East: Memorial Avenue (E)											
4	L2	51	0.0	1.309	371.2	LOS F	48.9	347.9	1.00	1.95	6.1
5	T1	275	2.3	1.309	366.8	LOS F	48.9	347.9	1.00	1.93	6.0
6	R2	201	5.8	1.309	371.6	LOS F	45.2	329.9	1.00	1.83	4.2
Approach		526	3.4	1.309	369.1	LOS F	48.9	347.9	1.00	1.89	5.4
North: Hume Highway (N)											
7	L2	149	2.8	0.089	8.4	LOS A	2.0	14.5	0.24	0.61	43.5
8	T1	2882	3.1	0.892	12.8	LOS A	48.2	346.0	0.58	0.55	46.4
9	R2	209	2.0	0.795	55.2	LOS D	9.6	68.3	1.00	0.91	24.8
Approach		3241	3.0	0.892	15.3	LOS B	48.2	346.0	0.60	0.58	43.8
West: Memorial Avenue (W)											
10	L2	79	1.3	0.858	76.3	LOS F	15.0	106.1	1.00	1.00	20.9
11	T1	200	1.1	0.858	73.4	LOS F	18.6	130.5	1.00	0.99	19.9
12	R2	161	0.0	0.858	80.7	LOS F	18.6	130.5	1.00	0.96	24.0
Approach		440	0.7	0.858	76.6	LOS F	18.6	130.5	1.00	0.98	21.7
All Vehicles		6039	3.5	1.309	57.3	LOS E	48.9	347.9	0.73	0.77	25.4

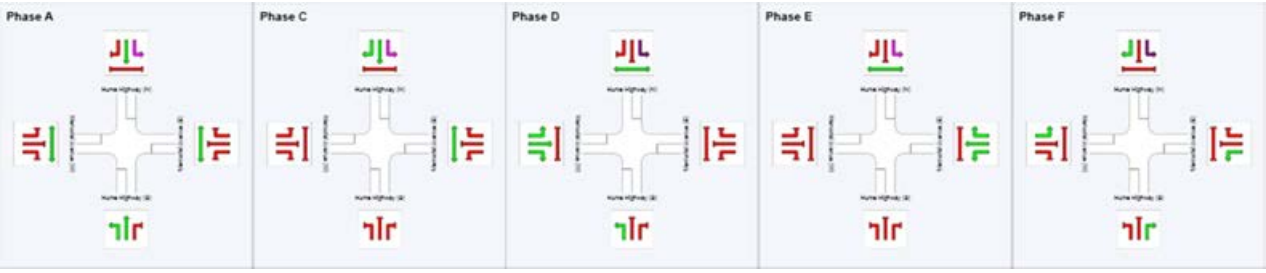
PHASING SUMMARY

Site: I-03 2025 BASE PM

Hume Highway / Memorial Avenue
2025 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D	E	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	70	82	110	132
Green Time (sec)	64	6	22	16	12
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	70	12	28	22	18
Phase Split	47 %	8 %	19 %	15 %	12 %



AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-03 2025 IMT AM

Hume Highway / Memorial Avenue
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	148	1.4	0.921	54.4	LOS D	56.9	426.1	0.98	0.99	30.1
2	T1	2007	8.4	0.921	46.5	LOS D	57.3	435.2	0.91	0.92	28.9
3	R2	251	0.0	1.065	164.7	LOS F	28.9	202.5	1.00	1.19	12.0
Approach		2405	7.1	1.065	59.3	LOS E	57.3	435.2	0.92	0.96	25.5
East: Memorial Avenue (E)											
4	L2	24	17.4	1.108	199.0	LOS F	19.6	145.2	1.00	1.41	10.5
5	T1	152	4.9	1.108	194.4	LOS F	19.6	145.2	1.00	1.40	10.2
6	R2	120	12.3	1.108	199.1	LOS F	17.8	136.3	1.00	1.39	7.4
Approach		296	8.9	1.108	196.7	LOS F	19.6	145.2	1.00	1.40	9.1
North: Hume Highway (N)											
7	L2	109	5.8	0.093	12.3	LOS A	2.4	17.3	0.35	0.64	39.5
8	T1	1688	12.6	0.722	27.9	LOS B	29.7	234.1	0.72	0.65	36.6
9	R2	89	3.5	0.390	71.5	LOS F	6.1	44.2	0.96	0.78	21.4
Approach		1887	11.7	0.722	29.1	LOS C	29.7	234.1	0.71	0.66	35.5
West: Memorial Avenue (W)											
10	L2	121	2.6	1.115	186.1	LOS F	39.1	278.1	1.00	1.43	11.1
11	T1	438	1.4	1.115	189.0	LOS F	49.4	351.8	1.00	1.47	10.4
12	R2	154	2.7	1.115	200.7	LOS F	49.4	351.8	1.00	1.51	13.1
Approach		713	1.9	1.115	191.1	LOS F	49.4	351.8	1.00	1.47	11.1
All Vehicles		5301	8.2	1.115	73.9	LOS F	57.3	435.2	0.86	0.94	21.8

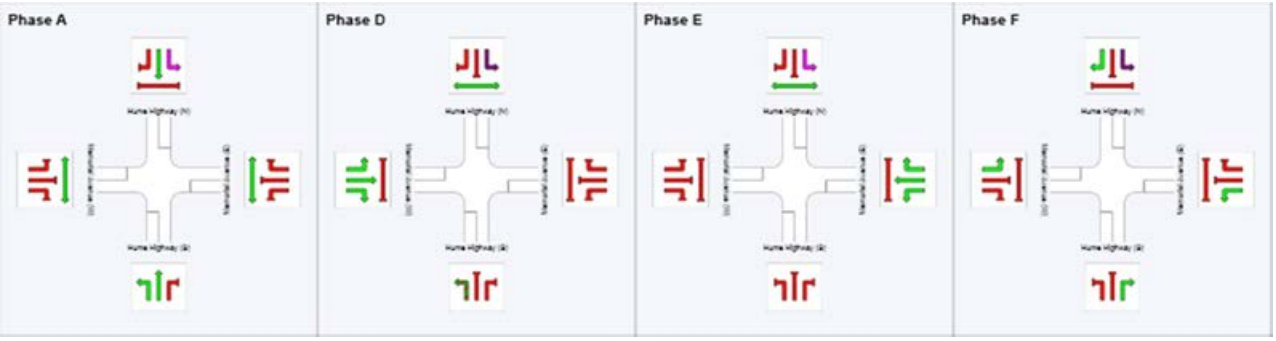
PHASING SUMMARY

Site: I-03 2025 IMT AM

Hume Highway / Memorial Avenue
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	75	108	125
Green Time (sec)	69	27	11	19
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	75	33	17	25
Phase Split	50 %	22 %	11 %	17 %



PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-03 2025 IMT PM

Hume Highway / Memorial Avenue
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	119	0.9	0.787	42.2	LOS C	34.3	256.8	0.87	0.81	33.8
2	T1	1637	7.7	0.787	34.3	LOS C	34.8	264.6	0.83	0.75	33.4
3	R2	115	0.0	0.772	84.2	LOS F	8.8	61.8	1.00	0.86	19.5
Approach		1871	6.8	0.787	37.8	LOS C	34.8	264.6	0.84	0.76	32.1
East: Memorial Avenue (E)											
4	L2	51	0.0	1.309	371.2	LOS F	48.9	347.9	1.00	1.95	6.1
5	T1	275	2.3	1.309	366.8	LOS F	48.9	347.9	1.00	1.93	6.0
6	R2	201	5.8	1.309	371.6	LOS F	45.2	329.9	1.00	1.83	4.2
Approach		526	3.4	1.309	369.1	LOS F	48.9	347.9	1.00	1.89	5.4
North: Hume Highway (N)											
7	L2	149	2.8	0.089	8.4	LOS A	2.0	14.5	0.24	0.61	43.5
8	T1	2915	4.2	0.915	15.6	LOS B	54.8	401.4	0.62	0.61	44.2
9	R2	209	2.0	0.795	55.2	LOS D	9.6	68.3	1.00	0.91	24.8
Approach		3274	4.0	0.915	17.8	LOS B	54.8	401.4	0.63	0.63	42.1
West: Memorial Avenue (W)											
10	L2	79	1.3	0.858	76.3	LOS F	15.0	106.1	1.00	1.00	20.9
11	T1	200	1.1	0.858	73.4	LOS F	18.6	130.5	1.00	0.99	19.9
12	R2	161	0.0	0.858	80.7	LOS F	18.6	130.5	1.00	0.96	24.0
Approach		440	0.7	0.858	76.6	LOS F	18.6	130.5	1.00	0.98	21.7
All Vehicles		6111	4.5	1.309	58.4	LOS E	54.8	401.4	0.75	0.80	25.1

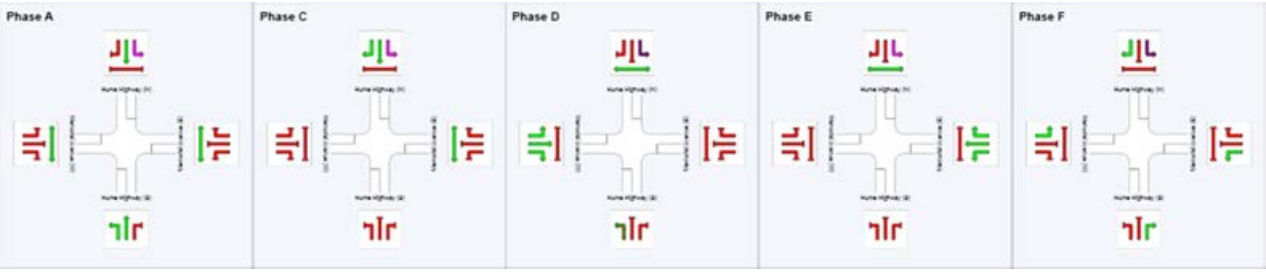
PHASING SUMMARY

Site: I-03 2025 IMT PM

Hume Highway / Memorial Avenue
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D	E	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	70	82	110	132
Green Time (sec)	64	6	22	16	12
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	70	12	28	22	18
Phase Split	47 %	8 %	19 %	15 %	12 %



I-04 Intersection of the Hume Highway and Hoxton Park Drive

AM BASE

MOVEMENT SUMMARY

Site: I-04 2025 BASE AM

Hume Highway / Hoxton Park Road / Macquarie Street
2025 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	96	6.6	0.079	8.4	LOS A	0.7	5.3	0.11	0.57	51.2
2	T1	2042	5.1	0.766	25.8	LOS B	35.4	258.4	0.74	0.67	40.6
3	R2	1157	1.8	1.014	101.6	LOS F	45.5	323.8	1.00	1.13	17.3
Approach		3295	4.0	1.014	51.9	LOS D	45.5	323.8	0.81	0.83	29.2
East: Macquarie Street (E)											
4	L2	331	5.7	0.214	21.8	LOS B	5.2	37.9	0.66	0.73	38.7
5	T1	495	4.7	1.032	135.4	LOS F	26.3	191.7	1.00	1.26	15.7
Approach		825	5.1	1.032	89.9	LOS F	26.3	191.7	0.86	1.05	20.1
North: Hume Highway (N)											
7	L2	220	15.8	0.889	67.8	LOS E	39.7	304.2	0.99	1.10	24.4
8	T1	1380	8.2	0.889	60.1	LOS E	41.7	312.4	0.96	0.98	28.3
9	R2	227	19.0	1.158	242.3	LOS F	32.3	262.9	1.00	1.42	11.8
Approach		1827	10.4	1.158	83.7	LOS F	41.7	312.4	0.97	1.05	23.4
West: Hoxton Park Road (W)											
10	L2	309	16.3	0.537	47.8	LOS D	18.1	144.1	0.86	0.83	32.4
11	T1	1238	4.2	1.054	168.1	LOS F	52.3	379.3	1.00	1.41	13.3
12	R2	368	2.9	1.074	138.1	LOS F	22.9	164.4	1.00	1.14	17.1
Approach		1916	5.9	1.074	142.9	LOS F	52.3	379.3	0.98	1.26	15.8
All Vehicles		7863	6.1	1.158	85.4	LOS F	52.3	379.3	0.89	1.01	22.2

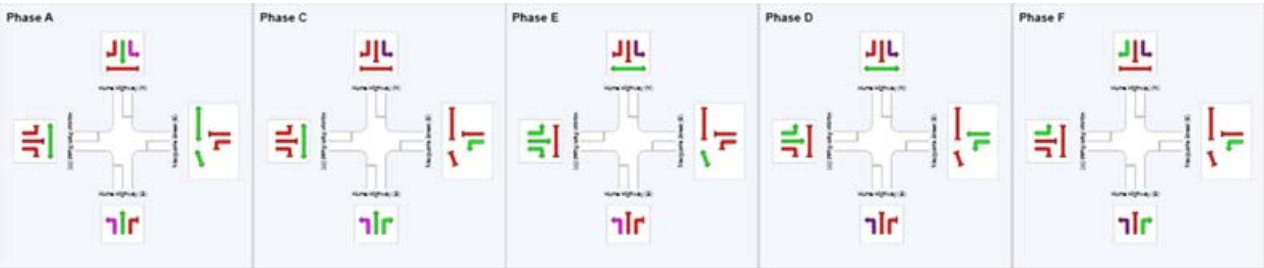
PHASING SUMMARY

Site: I-04 2025 BASE AM

Hume Highway / Hoxton Park Road / Macquarie Street
2025 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	D	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	51	79	101	126
Green Time (sec)	45	22	16	19	18
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	51	28	22	25	24
Phase Split	34 %	19 %	15 %	17 %	16 %



PM BASE

MOVEMENT SUMMARY

Site: I-04 2025 BASE PM

Hume Highway / Hoxton Park Road / Macquarie Street
2025 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	188	5.6	0.157	9.2	LOS A	1.8	13.0	0.14	0.58	50.6
2	T1	1544	5.2	0.594	22.7	LOS B	22.4	163.9	0.60	0.54	42.2
3	R2	427	1.2	0.946	99.1	LOS F	18.6	131.4	1.00	1.02	17.6
Approach		2160	4.4	0.946	36.6	LOS C	22.4	163.9	0.64	0.64	35.0
East: Macquarie Street (E)											
4	L2	753	1.4	0.999	102.9	LOS F	32.0	226.8	0.84	1.02	17.2
5	T1	672	3.3	1.033	127.6	LOS F	34.7	249.9	1.00	1.25	16.4
Approach		1424	2.3	1.033	114.6	LOS F	34.7	249.9	0.92	1.13	16.8
North: Hume Highway (N)											
7	L2	97	5.4	0.904	21.8	LOS B	51.4	368.7	0.74	0.75	42.9
8	T1	2717	2.6	0.904	16.8	LOS B	53.9	385.9	0.67	0.66	45.7
9	R2	273	6.2	1.437	487.4	LOS F	56.1	413.3	1.00	1.86	6.5
Approach		3086	3.0	1.437	58.5	LOS E	56.1	413.3	0.70	0.77	28.8
West: Hoxton Park Road (W)											
10	L2	259	3.7	0.413	45.3	LOS D	14.3	103.2	0.81	0.80	33.3
11	T1	668	3.9	0.409	46.2	LOS D	13.1	94.6	0.86	0.72	30.5
12	R2	362	1.5	1.145	175.2	LOS F	26.7	189.3	1.00	1.24	14.4
Approach		1289	3.2	1.145	82.2	LOS F	26.7	189.3	0.89	0.89	23.2
All Vehicles		7960	3.3	1.437	66.4	LOS E	56.1	413.3	0.75	0.82	26.1

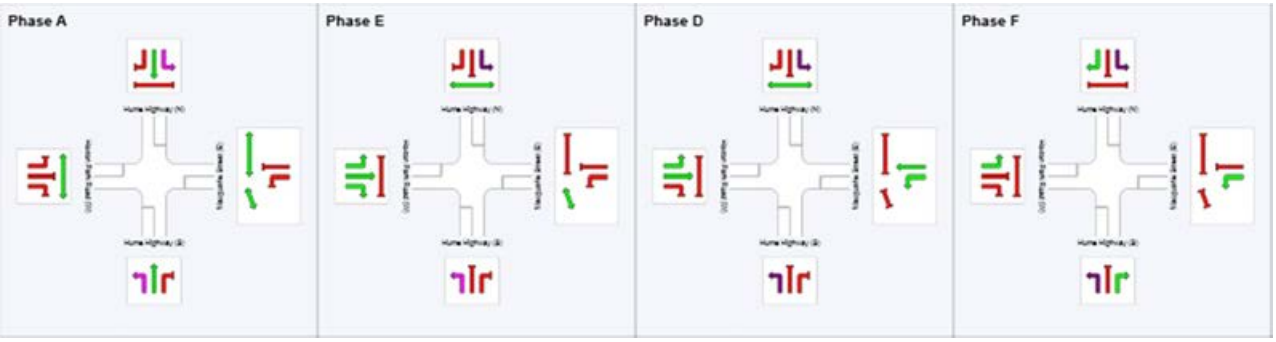
PHASING SUMMARY

Site: I-04 2025 BASE PM

Hume Highway / Hoxton Park Road / Macquarie Street
2025 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	D	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	79	99	128
Green Time (sec)	73	14	23	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	79	20	29	22
Phase Split	53 %	13 %	19 %	15 %



AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-04 2025 IMT AM

Hume Highway / Hoxton Park Road / Macquarie Street
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	101	11.7	0.089	8.5	LOS A	0.8	6.2	0.11	0.57	50.9
2	T1	2067	6.2	0.789	26.2	LOS B	37.1	276.4	0.75	0.69	40.4
3	R2	1157	1.8	1.014	101.6	LOS F	45.5	323.8	1.00	1.13	17.3
Approach		3325	4.9	1.014	51.9	LOS D	45.5	323.8	0.82	0.84	29.2
East: Macquarie Street (E)											
4	L2	331	5.7	0.214	21.8	LOS B	5.2	37.9	0.66	0.73	38.7
5	T1	495	4.7	1.032	135.4	LOS F	26.3	191.7	1.00	1.26	15.7
Approach		825	5.1	1.032	89.9	LOS F	26.3	191.7	0.86	1.05	20.1
North: Hume Highway (N)											
7	L2	220	15.8	0.924	74.8	LOS F	44.2	345.8	1.00	1.15	22.9
8	T1	1414	9.9	0.924	67.1	LOS E	45.6	352.7	0.97	1.03	26.6
9	R2	227	19.0	1.158	242.3	LOS F	32.3	262.9	1.00	1.42	11.8
Approach		1861	11.7	1.158	89.4	LOS F	45.6	352.7	0.98	1.09	22.4
West: Hoxton Park Road (W)											
10	L2	309	16.3	0.537	47.8	LOS D	18.1	144.1	0.86	0.83	32.4
11	T1	1238	4.2	1.056	169.2	LOS F	52.4	379.7	1.00	1.41	13.2
12	R2	372	3.6	1.107	156.0	LOS F	25.3	183.6	1.00	1.19	15.7
Approach		1919	6.0	1.107	147.0	LOS F	52.4	379.7	0.98	1.27	15.4
All Vehicles		7930	6.8	1.158	87.7	LOS F	52.4	379.7	0.90	1.03	21.9

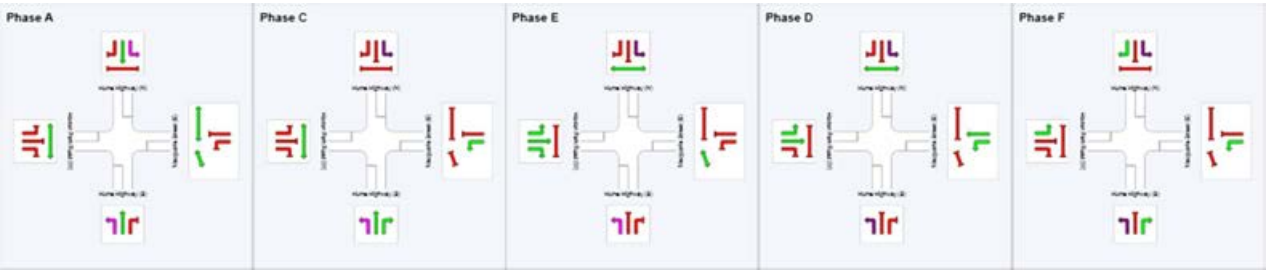
PHASING SUMMARY

Site: I-04 2025 IMT AM

Hume Highway / Hoxton Park Road / Macquarie Street
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	D	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	51	79	101	126
Green Time (sec)	45	22	16	19	18
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	51	28	22	25	24
Phase Split	34 %	19 %	15 %	17 %	16 %



PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-04 2025 IMT PM

Hume Highway / Hoxton Park Road / Macquarie Street
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	192	7.0	0.162	9.2	LOS A	1.8	13.7	0.14	0.58	50.5
2	T1	1584	7.2	0.628	23.2	LOS B	24.0	181.8	0.62	0.55	42.0
3	R2	427	1.2	0.946	99.1	LOS F	18.6	131.4	1.00	1.02	17.6
Approach		2203	6.0	0.946	36.7	LOS C	24.0	181.8	0.65	0.65	35.0
East: Macquarie Street (E)											
4	L2	753	1.4	0.999	102.9	LOS F	32.0	226.9	0.84	1.02	17.2
5	T1	672	3.3	1.033	127.6	LOS F	34.7	249.9	1.00	1.25	16.4
Approach		1424	2.3	1.033	114.6	LOS F	34.7	249.9	0.92	1.13	16.8
North: Hume Highway (N)											
7	L2	97	5.4	0.926	25.1	LOS B	58.3	426.2	0.80	0.82	40.8
8	T1	2749	3.8	0.926	20.1	LOS B	60.5	442.2	0.72	0.72	43.6
9	R2	273	6.2	1.437	487.4	LOS F	56.1	413.3	1.00	1.86	6.5
Approach		3119	4.0	1.437	61.1	LOS E	60.5	442.2	0.75	0.83	28.2
West: Hoxton Park Road (W)											
10	L2	259	3.7	0.413	45.3	LOS D	14.3	103.2	0.81	0.80	33.3
11	T1	668	3.9	0.409	46.2	LOS D	13.1	94.6	0.86	0.72	30.5
12	R2	369	3.3	1.204	216.1	LOS F	30.6	223.9	1.00	1.34	12.2
Approach		1296	3.7	1.204	94.4	LOS F	30.6	223.9	0.89	0.91	21.3
All Vehicles		8043	4.2	1.437	69.3	LOS E	60.5	442.2	0.77	0.85	25.5

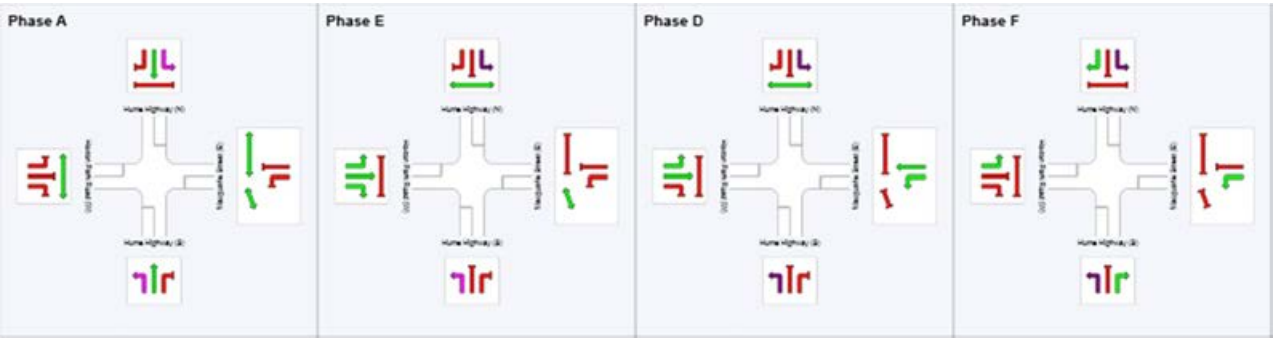
PHASING SUMMARY

Site: I-04 2025 IMT PM

Hume Highway / Hoxton Park Road / Macquarie Street
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	D	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	79	99	128
Green Time (sec)	73	14	23	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	79	20	29	22
Phase Split	53 %	13 %	19 %	15 %



I-05 Intersection of the Hume Highway and Reilly Street

AM BASE

MOVEMENT SUMMARY

Site: I-05 2025 BASE AM

Hume Highway / Reilly Street
2025 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Hignway (S)											
1	L2	77	2.7	0.892	21.6	LOS B	52.4	378.2	0.72	0.70	41.4
2	T1	3063	3.6	0.892	15.3	LOS B	52.4	378.2	0.68	0.66	42.8
3	R2	13	8.3	0.083	20.7	LOS B	0.4	3.1	0.45	0.66	38.1
Approach		3153	3.6	0.892	15.5	LOS B	52.4	378.2	0.68	0.66	42.8
East: Congressional Drive (E)											
4	L2	46	2.3	0.257	59.9	LOS E	5.6	40.6	0.89	0.74	24.3
5	T1	44	4.8	0.257	55.3	LOS D	5.6	40.6	0.89	0.74	23.9
6	R2	86	3.7	0.407	67.8	LOS E	5.8	42.2	0.95	0.78	18.6
Approach		177	3.6	0.407	62.6	LOS E	5.8	42.2	0.92	0.76	21.4
North: Hume Hignway (N)											
7	L2	29	3.6	0.523	15.9	LOS B	22.5	167.3	0.50	0.47	41.1
8	T1	1725	7.2	0.523	9.8	LOS A	22.6	168.2	0.47	0.44	47.7
9	R2	92	1.1	0.642	44.3	LOS D	5.3	37.5	1.00	0.87	26.6
Approach		1846	6.8	0.642	11.6	LOS A	22.6	168.2	0.50	0.46	45.8
West: Reilly Street (W)											
10	L2	112	3.8	0.254	50.1	LOS D	7.0	50.7	0.82	0.76	24.5
11	T1	12	9.1	0.254	45.5	LOS D	7.0	50.7	0.82	0.76	25.7
12	R2	227	1.9	1.014	138.5	LOS F	24.1	171.5	1.00	1.18	15.3
Approach		351	2.7	1.014	107.3	LOS F	24.1	171.5	0.94	1.03	17.3
All Vehicles		5526	4.6	1.014	21.5	LOS B	52.4	378.2	0.65	0.62	38.2

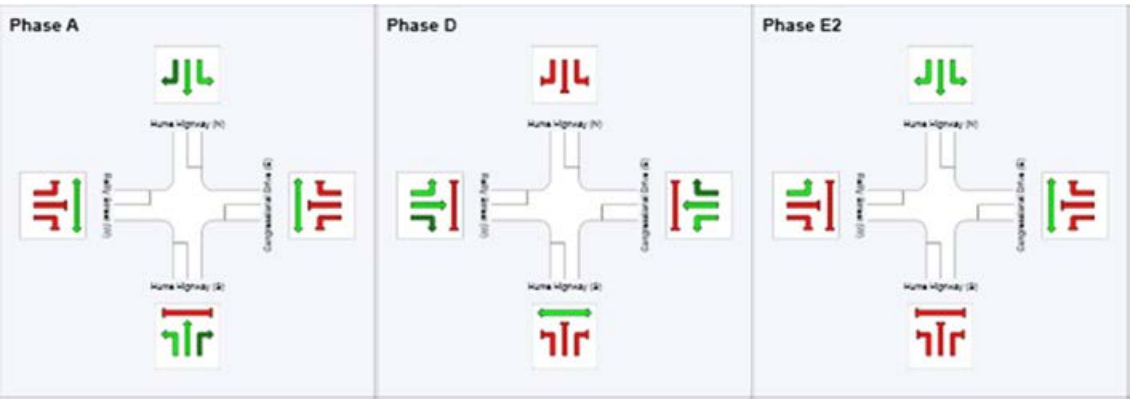
PHASING SUMMARY

Site: I-05 2025 BASE AM

Hume Highway / Reilly Street
2025 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	100	137
Green Time (sec)	94	31	7
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	100	37	13
Phase Split	67 %	25 %	9 %



PM BASE

MOVEMENT SUMMARY

Site: I-05 2025 BASE PM

Hume Highway / Reilly Street
2025 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Hignway (S)											
1	L2	219	0.5	0.643	19.4	LOS B	24.7	177.5	0.51	0.56	42.0
2	T1	2004	4.5	0.643	11.4	LOS A	24.7	177.5	0.44	0.43	45.9
3	R2	21	5.0	0.384	32.7	LOS C	1.1	7.8	0.64	0.73	32.4
Approach		2244	4.1	0.643	12.4	LOS A	24.7	177.5	0.45	0.44	45.2
East: Congressional Drive (E)											
4	L2	39	2.7	0.178	59.7	LOS E	3.8	27.1	0.88	0.72	24.2
5	T1	23	0.0	0.178	55.2	LOS D	3.8	27.1	0.88	0.72	23.8
6	R2	48	0.0	0.203	63.3	LOS E	3.1	21.7	0.90	0.74	19.5
Approach		111	1.0	0.203	60.3	LOS E	3.8	27.1	0.89	0.73	22.1
North: Hume Hignway (N)											
7	L2	65	0.0	0.977	35.7	LOS C	90.1	642.1	0.78	0.86	29.0
8	T1	3548	2.3	0.977	32.3	LOS C	90.1	642.1	0.61	0.71	32.6
9	R2	171	1.2	0.835	59.3	LOS E	11.9	84.0	1.00	1.02	22.8
Approach		3784	2.2	0.977	33.6	LOS C	90.1	642.1	0.63	0.73	31.9
West: Reilly Street (W)											
10	L2	63	0.0	0.214	54.2	LOS D	5.5	38.5	0.85	0.73	23.9
11	T1	31	0.0	0.214	49.6	LOS D	5.5	38.5	0.85	0.73	25.0
12	R2	249	1.7	1.002	130.1	LOS F	25.7	182.8	1.00	1.16	16.0
Approach		343	1.2	1.002	109.0	LOS F	25.7	182.8	0.96	1.04	17.4
All Vehicles		6482	2.8	1.002	30.7	LOS C	90.1	642.1	0.59	0.65	33.3

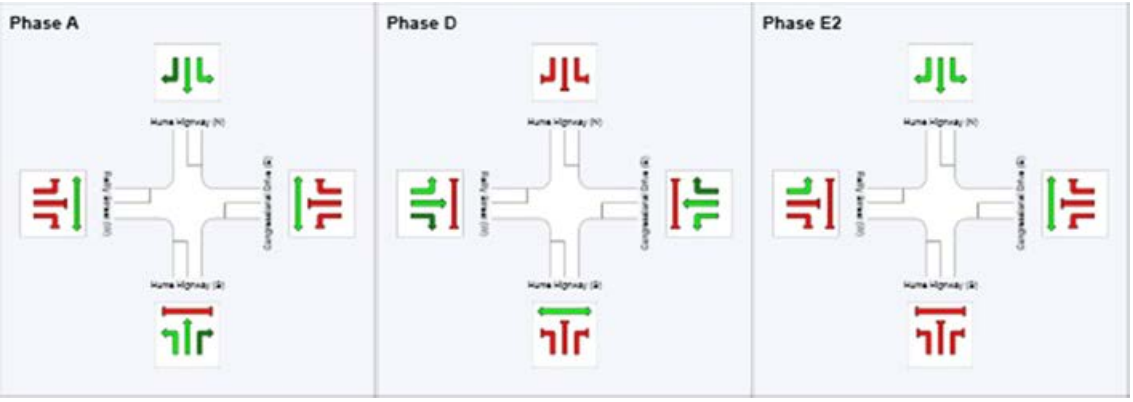
PHASING SUMMARY

Site: I-05 2025 BASE PM

Hume Highway / Reilly Street
2025 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	98	135
Green Time (sec)	92	31	9
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	98	37	15
Phase Split	65 %	25 %	10 %



AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-05 2025 IMT AM

Hume Highway / Reilly Street
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Hignway (S)											
1	L2	77	2.7	0.914	25.9	LOS B	60.1	440.9	0.77	0.77	39.1
2	T1	3093	4.6	0.914	19.7	LOS B	60.1	440.9	0.73	0.72	39.6
3	R2	13	8.3	0.089	21.3	LOS B	0.4	3.2	0.46	0.66	37.7
Approach		3183	4.5	0.914	19.8	LOS B	60.1	440.9	0.73	0.72	39.6
East: Congressional Drive (E)											
4	L2	46	2.3	0.257	59.9	LOS E	5.6	40.6	0.89	0.74	24.3
5	T1	44	4.8	0.257	55.3	LOS D	5.6	40.6	0.89	0.74	23.9
6	R2	86	3.7	0.407	67.8	LOS E	5.8	42.2	0.95	0.78	18.6
Approach		177	3.6	0.407	62.6	LOS E	5.8	42.2	0.92	0.76	21.4
North: Hume Hignway (N)											
7	L2	29	3.6	0.537	16.1	LOS B	23.1	176.6	0.50	0.48	41.0
8	T1	1762	8.8	0.537	10.0	LOS A	23.2	177.6	0.48	0.44	47.6
9	R2	92	1.1	0.647	47.0	LOS D	5.3	37.5	1.00	0.87	25.8
Approach		1883	8.3	0.647	11.9	LOS A	23.2	177.6	0.51	0.46	45.6
West: Reilly Street (W)											
10	L2	112	3.8	0.254	50.1	LOS D	7.0	50.7	0.82	0.76	24.5
11	T1	12	9.1	0.254	45.5	LOS D	7.0	50.7	0.82	0.76	25.7
12	R2	228	1.8	1.016	139.4	LOS F	24.2	172.4	1.00	1.18	15.3
Approach		351	2.7	1.016	107.9	LOS F	24.2	172.4	0.94	1.03	17.2
All Vehicles		5593	5.7	1.016	24.0	LOS B	60.1	440.9	0.67	0.66	36.7

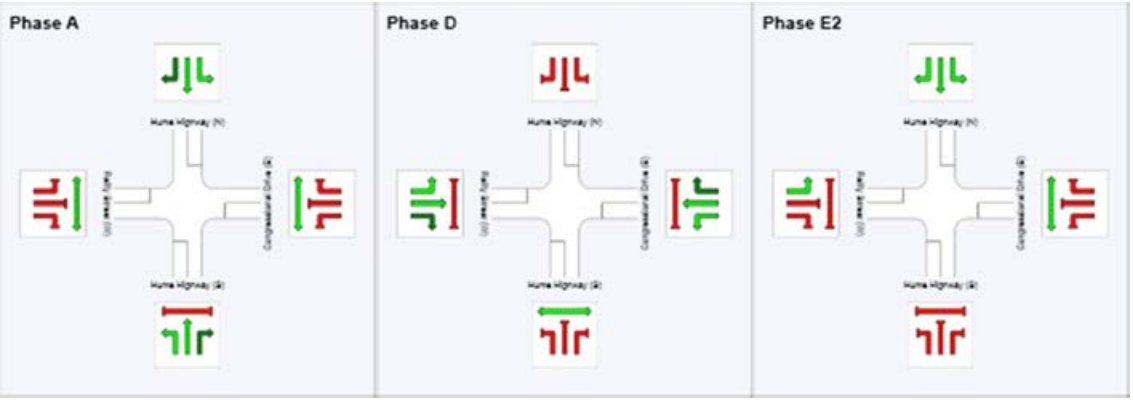
PHASING SUMMARY

Site: I-05 2025 IMT AM

Hume Highway / Reilly Street
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	100	137
Green Time (sec)	94	31	7
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	100	37	13
Phase Split	67 %	25 %	9 %



PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-05 2025 IMT PM

Hume Highway / Reilly Street
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Hignway (S)											
1	L2	219	0.5	0.668	19.7	LOS B	26.1	192.2	0.53	0.57	41.8
2	T1	2047	6.2	0.668	11.7	LOS A	26.1	192.2	0.46	0.45	45.6
3	R2	21	5.0	0.389	36.2	LOS C	1.1	8.2	0.67	0.74	31.0
Approach		2288	5.7	0.668	12.7	LOS A	26.1	192.2	0.47	0.46	44.9
East: Congressional Drive (E)											
4	L2	39	2.7	0.178	59.7	LOS E	3.8	27.1	0.88	0.72	24.2
5	T1	23	0.0	0.178	55.2	LOS D	3.8	27.1	0.88	0.72	23.8
6	R2	48	0.0	0.203	63.3	LOS E	3.1	21.7	0.90	0.74	19.5
Approach		111	1.0	0.203	60.3	LOS E	3.8	27.1	0.89	0.73	22.1
North: Hume Hignway (N)											
7	L2	65	0.0	0.996	47.7	LOS D	120.6	875.8	1.00	1.12	24.6
8	T1	3588	3.3	0.996	44.0	LOS D	120.6	875.8	0.78	0.93	28.0
9	R2	171	1.2	0.864	70.7	LOS F	12.6	89.1	1.00	1.06	20.5
Approach		3824	3.2	0.996	45.3	LOS D	120.6	876.3	0.79	0.94	27.5
West: Reilly Street (W)											
10	L2	63	0.0	0.214	54.2	LOS D	5.5	38.5	0.85	0.73	23.9
11	T1	31	0.0	0.214	49.6	LOS D	5.5	38.5	0.85	0.73	25.0
12	R2	249	1.7	1.002	130.1	LOS F	25.7	182.8	1.00	1.16	16.0
Approach		343	1.2	1.002	109.0	LOS F	25.7	182.8	0.96	1.04	17.4
All Vehicles		6565	3.9	1.002	37.5	LOS C	120.6	876.3	0.69	0.77	30.4

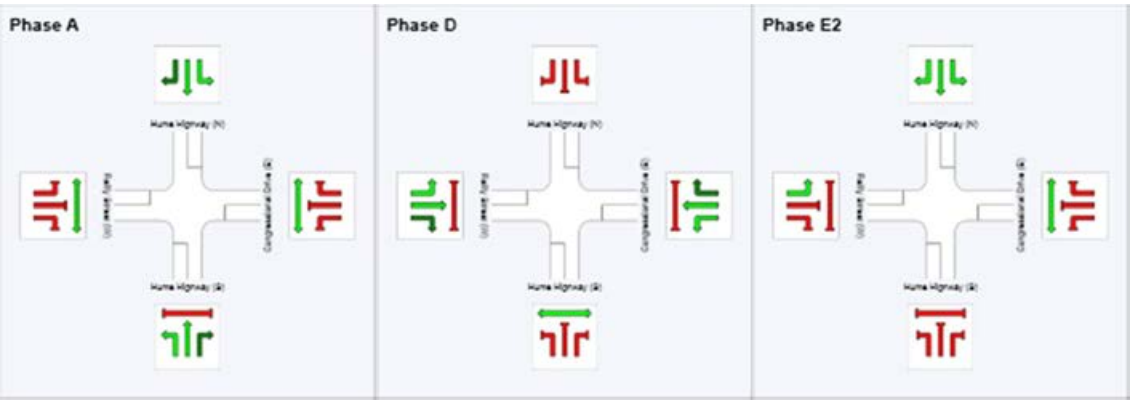
PHASING SUMMARY

Site: I-05 2025 IMT PM

Hume Highway / Reilly Street
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	98	135
Green Time (sec)	92	31	9
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	98	37	15
Phase Split	65 %	25 %	10 %



I-06 Intersection of Newbridge Road and Moorebank Avenue

AM BASE

MOVEMENT SUMMARY

Site: I-06 2025 BASE AM

Network: 2025 BASE AM

Newbridge Road / Moorebank Avenue
2025 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effe Stop per
South: Moorebank Avenue (S)												
1	L2	1447	3.2	1270	3.2	0.655	19.4	LOS B	14.8	106.2	0.58	
3	R2	1293	9.0	1134	9.1	0.666	15.1	LOS B	14.0	105.6	0.41	
Approach		2740	6.0	2404 N1	6.0	0.666	17.3	LOS B	14.8	106.2	0.50	
East: Newbridge Road (E)												
4	L2	634	19.8	634	19.8	0.527	18.2	LOS B	7.5	61.0	0.69	
5	T1	906	5.2	906	5.2	1.184	245.0	LOS F	63.9	467.2	1.00	
Approach		1540	11.2	1540	11.2	1.184	151.7	LOS F	63.9	467.2	0.87	
West: Newbridge Road (W)												
11	T1	1448	6.5	1448	6.5	0.780	10.0	LOS A	22.6	166.8	0.53	
12	R2	756	7.4	756	7.4	1.381	340.8	LOS F	64.5	480.2	1.00	
Approach		2204	6.8	2204	6.8	1.381	123.4	LOS F	64.5	480.2	0.69	
All Vehicles		6484	7.5	6148 N1	7.9	1.381	89.0	LOS F	64.5	480.2	0.66	

PHASING SUMMARY

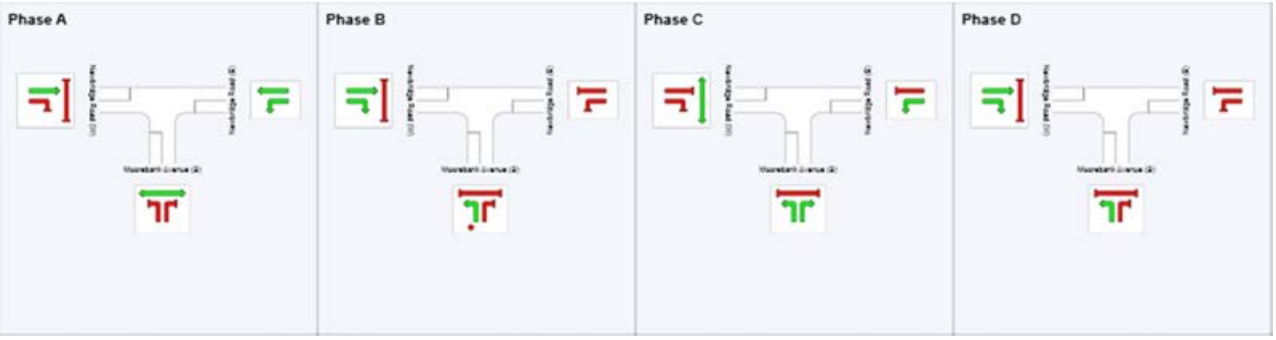
Network: 2025 BASE AM

Site: I-06 2025 BASE AM

Newbridge Road / Moorebank Avenue
2025 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	33	55	116
Green Time (sec)	27	16	55	11
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	22	61	17
Phase Split	25 %	17 %	46 %	13 %



PM BASE

MOVEMENT SUMMARY

Site: I-06 2025 BASE PM

Network: 2025 BASE PM

Newbridge Road / Moorebank Avenue
2025 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	952	3.4	868	3.5	0.496	22.4	LOS B	12.7	91.9	0.56	0.75	39.9
3	R2	912	10.7	833	11.0	1.080	134.1	LOS F	17.0	130.6	1.00	1.26	20.4
Approach		1863	7.0	1702 N1	7.2	1.080	77.1	LOS F	17.0	130.6	0.78	1.00	25.2
East: Newbridge Road (E)													
4	L2	1169	5.1	1169	5.1	0.991	86.5	LOS F	44.6	325.7	0.80	1.04	26.4
5	T1	1295	4.8	1295	4.8	0.871	43.2	LOS D	36.0	262.2	0.98	0.94	46.0
Approach		2464	5.0	2464	5.0	0.991	63.7	LOS E	44.6	325.7	0.89	0.99	36.2
West: Newbridge Road (W)													
11	T1	1038	3.8	1038	3.8	0.405	9.0	LOS A	13.0	93.7	0.49	0.44	63.1
12	R2	1029	2.7	1029	2.7	1.103	150.4	LOS F	54.7	391.6	1.00	1.27	11.9
Approach		2067	3.2	2067	3.2	1.103	79.4	LOS F	54.7	391.6	0.74	0.85	29.2
All Vehicles		6395	5.0	6233 N1	5.1	1.103	72.6	LOS F	54.7	391.6	0.81	0.94	30.9

PHASING SUMMARY

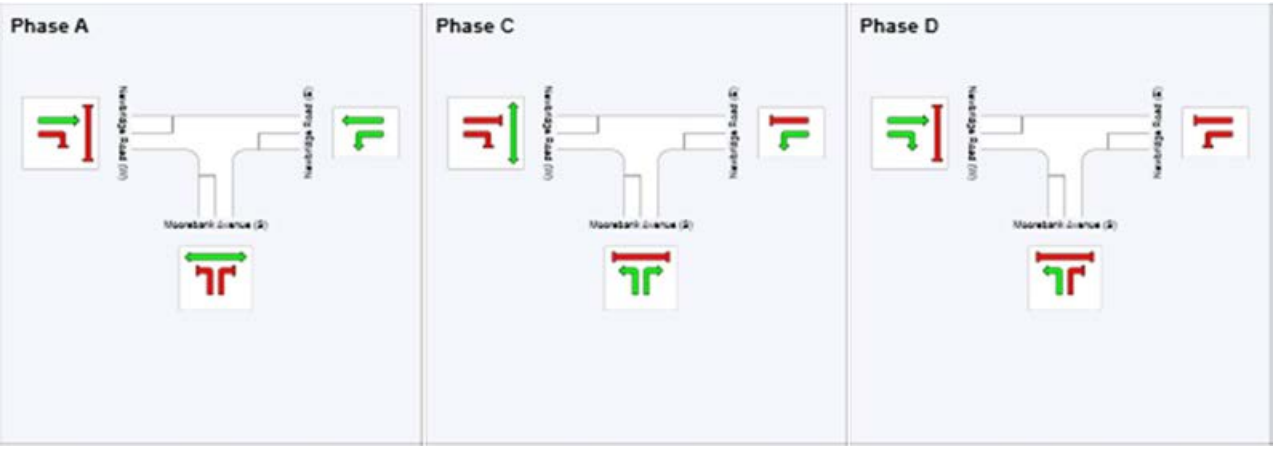
Site: I-06 2025 BASE PM

Network: 2025 BASE PM

Newbridge Road / Moorebank Avenue
2025 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	44	76
Green Time (sec)	38	26	34
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	44	32	40
Phase Split	38 %	28 %	34 %



AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-06 2025 IMT AM

Network: 2025 IMT AM

Newbridge Road / Moorebank Avenue
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	1449	3.3	1220	3.3	0.630	18.9	LOS B	13.3	95.9	0.56	0.82	42.3
3	R2	1329	11.5	1120	11.6	0.680	15.1	LOS B	14.2	111.9	0.43	0.69	52.4
Approach		2777	7.2	2340 N1	7.3	0.680	17.1	LOS B	14.2	111.9	0.50	0.76	47.8
East: Newbridge Road (E)													
4	L2	653	21.8	653	21.8	0.553	18.5	LOS B	7.9	67.4	0.71	0.79	52.0
5	T1	906	5.2	906	5.2	1.184	245.0	LOS F	63.9	467.2	1.00	1.71	17.7
Approach		1559	12.2	1559	12.2	1.184	150.1	LOS F	63.9	467.2	0.88	1.33	22.2
West: Newbridge Road (W)													
11	T1	1448	6.5	1448	6.5	0.780	10.0	LOS A	22.6	166.8	0.53	0.48	62.4
12	R2	760	7.5	760	7.5	1.377	395.7	LOS F	63.7	475.3	1.00	1.67	5.1
Approach		2208	6.8	2208	6.8	1.377	142.7	LOS F	63.7	475.3	0.69	0.89	21.9
All Vehicles		6545	8.3	6107 N1	8.9	1.377	96.5	LOS F	63.9	475.3	0.66	0.95	26.2

PHASING SUMMARY

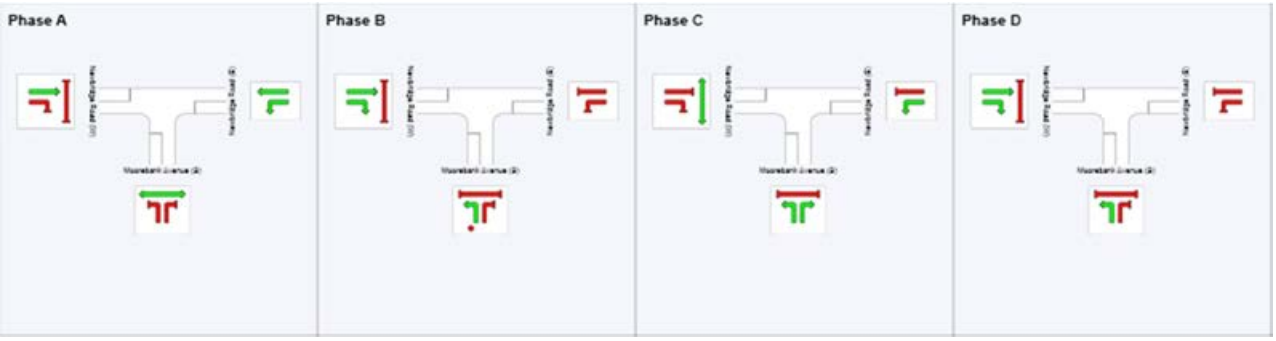
Site: I-06 2025 IMT AM

Network: 2025 IMT AM

Newbridge Road / Moorebank Avenue
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	33	55	116
Green Time (sec)	27	16	55	11
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	22	61	17
Phase Split	25 %	17 %	46 %	13 %



PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-06 2025 IMT PM

Network: 2025 IMT PM

Newbridge Road / Moorebank Avenue
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	954	3.4	872	3.5	0.499	22.4	LOS B	12.8	92.5	0.56	0.75	39.9
3	R2	934	12.6	857	13.1	1.141	185.2	LOS F	16.4	130.6	1.00	1.41	16.1
Approach		1888	8.0	1730 N1	8.2	1.141	103.1	LOS F	16.4	130.6	0.78	1.08	20.9
East: Newbridge Road (E)													
4	L2	1199	7.5	1199	7.5	1.069	161.3	LOS F	68.4	521.5	1.00	1.24	17.1
5	T1	1295	4.8	1295	4.8	0.871	43.2	LOS D	36.0	262.2	0.98	0.94	46.0
Approach		2494	6.1	2494	6.1	1.069	100.0	LOS F	68.4	521.5	0.99	1.08	28.3
West: Newbridge Road (W)													
11	T1	1038	3.8	1038	3.8	0.405	9.0	LOS A	13.0	93.7	0.49	0.44	63.1
12	R2	1029	2.7	1029	2.7	1.117	161.6	LOS F	57.2	409.3	1.00	1.30	11.2
Approach		2067	3.2	2067	3.2	1.117	85.0	LOS F	57.2	409.3	0.74	0.86	28.1
All Vehicles		6450	5.7	6291 N1	5.9	1.141	95.9	LOS F	68.4	521.5	0.85	1.01	26.3

PHASING SUMMARY

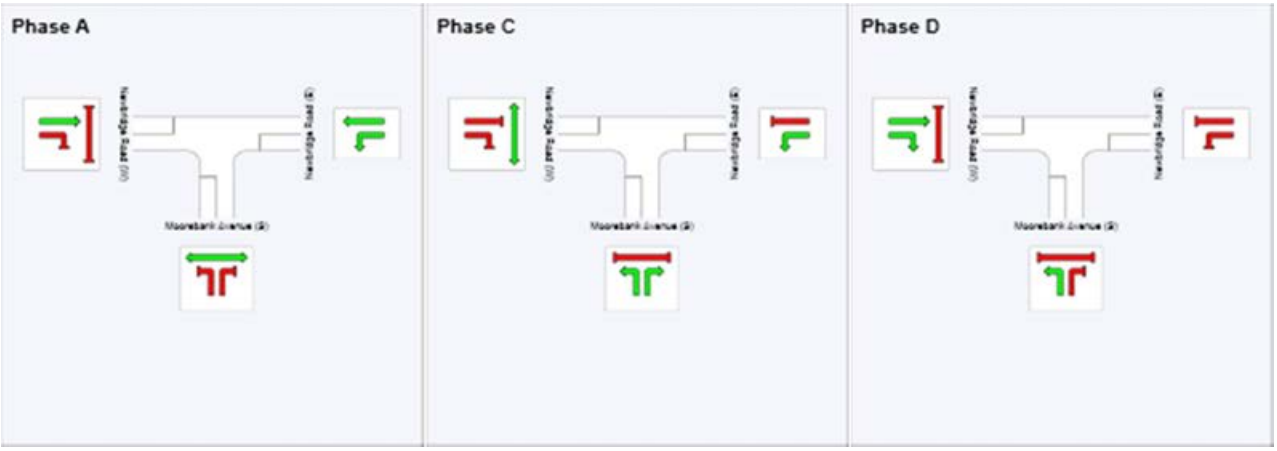
Network: 2025 IMT PM

Site: I-06 2025 IMT PM

Newbridge Road / Moorebank Avenue
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	44	76
Green Time (sec)	38	26	34
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	44	32	40
Phase Split	38 %	28 %	34 %



AM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-06 2025 IMT AM

Network: 2025 IMT AM - Upgrade Option

Newbridge Road / Moorebank Avenue
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	1449	3.3	1247	3.3	0.644	19.2	LOS B	14.1	101.7	0.57	0.83	42.1
3	R2	1329	11.5	1144	11.5	0.694	15.2	LOS B	14.9	117.5	0.44	0.69	52.3
Approach		2777	7.2	2392 N1	7.2	0.694	17.3	LOS B	14.9	117.5	0.51	0.76	47.7
East: Newbridge Road (E)													
4	L2	653	21.8	653	21.8	0.527	18.2	LOS B	7.7	65.4	0.70	0.79	52.1
5	T1	906	5.2	906	5.2	1.184	245.0	LOS F	63.9	467.2	1.00	1.71	17.7
Approach		1559	12.2	1559	12.2	1.184	150.1	LOS F	63.9	467.2	0.87	1.33	22.3
West: Newbridge Road (W)													
11	T1	1448	6.5	1448	6.5	0.780	10.0	LOS A	22.6	166.8	0.53	0.48	62.4
12	R2	760	7.5	760	7.5	1.335	357.9	LOS F	58.6	437.4	1.00	1.62	5.6
Approach		2208	6.8	2208	6.8	1.335	129.7	LOS F	58.6	437.4	0.69	0.87	23.3
All Vehicles		6545	8.3	6159 N1	8.8	1.335	91.2	LOS F	63.9	467.2	0.67	0.95	27.1

PHASING SUMMARY

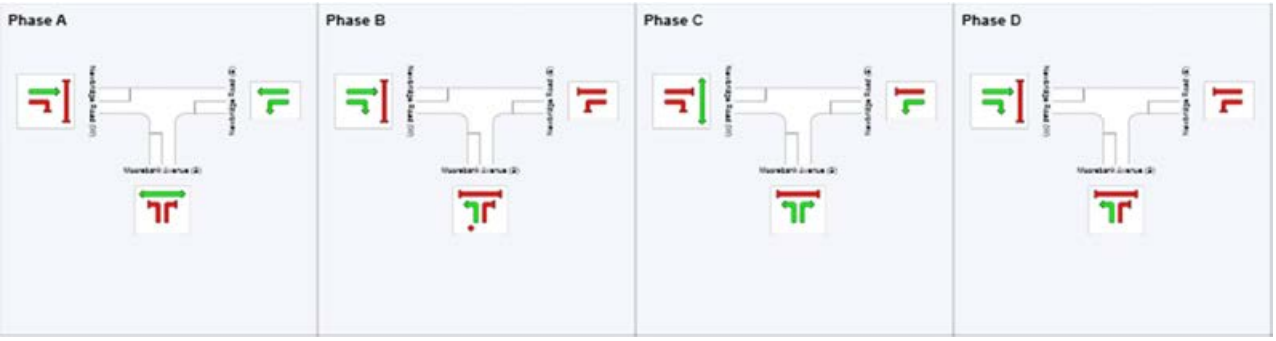
Site: I-06 2025 IMT AM

Network: 2025 IMT AM - Upgrade Option

Newbridge Road / Moorebank Avenue
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	33	55	116
Green Time (sec)	27	16	55	11
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	22	61	17
Phase Split	25 %	17 %	46 %	13 %



PM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-08 2025 IMT PM

Network: 2025 IMT PM - Upgrade Option

Moorebank Avenue / Industry Park Access
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	9	31.5	9	31.5	0.009	6.5	LOS A	0.0	0.4	0.13	0.56	43.0
2	T1	1121	9.2	1121	9.2	0.392	4.1	LOS A	9.7	74.2	0.34	0.30	52.7
Approach		1130	9.4	1130	9.4	0.392	4.1	LOS A	9.7	74.2	0.33	0.31	52.6
North: Moorebank Avenue (N)													
8	T1	1462	5.8	1310	6.1	0.451	4.4	LOS A	12.1	91.0	0.36	0.33	54.8
9	R2	23	63.6	21	64.3	0.137	13.3	LOS A	0.4	4.7	0.36	0.64	33.5
Approach		1486	6.7	1331 N1	7.0	0.451	4.5	LOS A	12.1	91.0	0.36	0.33	54.4
West: Industry Park Access (W)													
10	L2	32	13.3	32	13.3	0.063	3.1	LOS A	0.3	2.2	0.22	0.36	27.2
12	R2	179	10.0	179	10.0	0.463	55.9	LOS D	4.9	37.9	0.98	0.77	22.5
Approach		210	10.5	210	10.5	0.463	48.0	LOS D	4.9	37.9	0.87	0.71	22.7
All Vehicles		2826	8.1	2672 N1	8.5	0.463	7.8	LOS A	12.1	91.0	0.39	0.35	48.4

PHASING SUMMARY

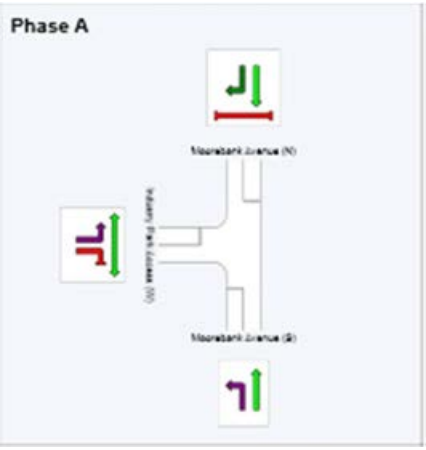
Site: I-08 2025 IMT PM

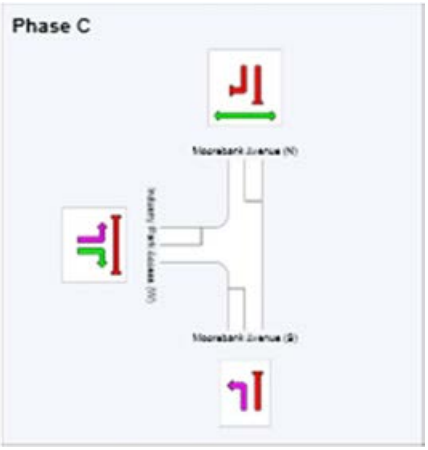
Network: 2025 IMT PM - Upgrade Option

Moorebank Avenue / Industry Park Access
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	97
Green Time (sec)	91	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	97	19
Phase Split	84 %	16 %





I-07 Intersection of Moorebank Avenue and Heathcote Road

AM BASE

MOVEMENT SUMMARY

Site: I-07 2025 BASE AM

Network: 2025 BASE AM

Moorebank Avenue / Heathcote Road
2025 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	1844	5.7	1844	5.7	1.149	208.5	LOS F	60.0	440.6	1.00	1.90	4.6
3	R2	23	18.2	23	18.2	0.208	71.9	LOS F	1.5	12.1	0.98	0.71	30.5
Approach		1867	5.9	1867	5.9	1.210	206.8	LOS F	60.0	440.6	1.00	1.89	4.8
East: Heathcote Road (E)													
4	L2	26	60.0	26	60.0	1.365	413.6	LOS F	90.9	685.3	1.00	1.83	7.8
6	R2	904	6.1	904	6.1	1.365	353.3	LOS F	90.9	685.3	1.00	1.72	8.9
Approach		931	7.6	931	7.6	1.365	355.0	LOS F	90.9	685.3	1.00	1.72	8.9
North: Moorebank Avenue (N)													
7	L2	722	7.7	630	8.2	0.390	10.7	LOS A	12.6	94.4	0.54	0.71	51.4
8	T1	689	16.9	605	17.9	0.344	21.0	LOS B	11.6	93.7	0.64	0.56	13.3
Approach		1412	12.2	1235 N1	13.0	0.390	15.7	LOS B	12.6	94.4	0.59	0.64	41.9
All Vehicles		4209	8.4	4033 N1	8.7	1.365	182.4	LOS F	90.9	685.3	0.87	1.47	9.4

PHASING SUMMARY

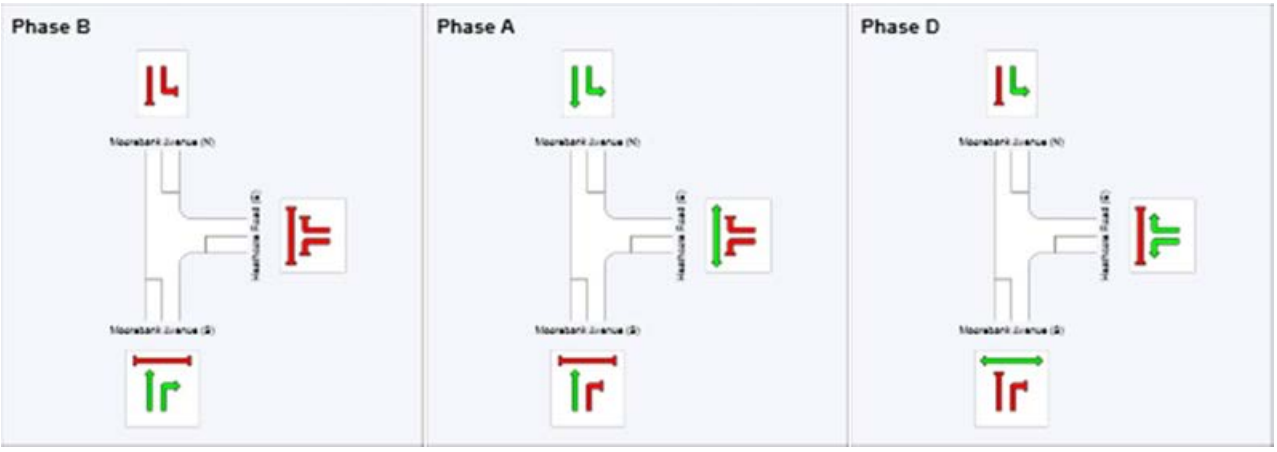
Site: I-07 2025 BASE AM

Network: 2025 BASE AM

Moorebank Avenue / Heathcote Road
2025 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	15	88
Green Time (sec)	9	67	39
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	73	45
Phase Split	11 %	55 %	34 %



PM BASE

MOVEMENT SUMMARY

Site: I-07 2025 BASE PM

Network: 2025 BASE PM

Moorebank Avenue / Heathcote Road
2025 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	1106	8.4	1106	8.4	0.860	31.0	LOS C	34.0	254.7	0.85	0.90	21.5
3	R2	47	6.7	47	6.7	0.387	64.5	LOS E	2.7	20.1	0.99	0.74	32.2
Approach		1154	8.3	1154	8.3	0.860	32.4	LOS C	34.0	254.7	0.86	0.89	22.7
East: Heathcote Road (E)													
4	L2	72	19.1	72	19.1	1.304	331.1	LOS F	76.9	571.7	1.00	1.78	9.4
6	R2	764	5.1	764	5.1	1.304	330.5	LOS F	76.9	571.7	1.00	1.79	9.4
Approach		836	6.3	836	6.3	1.304	330.5	LOS F	76.9	571.7	1.00	1.79	9.4
North: Moorebank Avenue (N)													
7	L2	841	3.5	805	3.6	0.397	7.5	LOS A	5.5	39.7	0.24	0.61	53.8
8	T1	1381	4.0	1323	4.1	0.673	6.3	LOS A	12.1	88.0	0.35	0.32	29.2
Approach		2222	3.8	2128 N1	3.9	0.673	6.7	LOS A	12.1	88.0	0.31	0.43	48.5
All Vehicles		4212	5.5	4118 N1	5.7	1.304	79.7	LOS F	76.9	571.7	0.60	0.84	17.6

PHASING SUMMARY

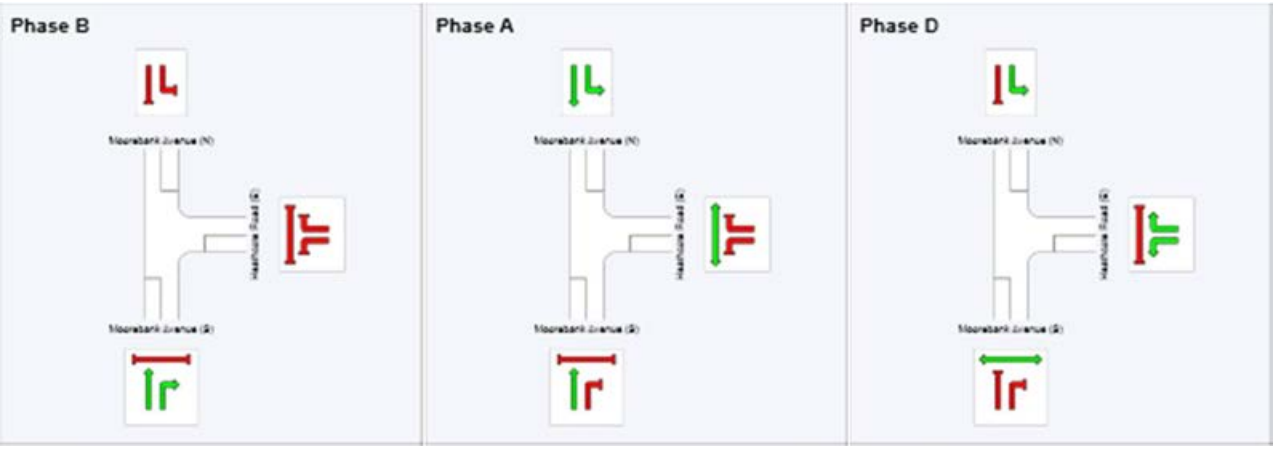
Site: I-07 2025 BASE PM

Network: 2025 BASE PM

Moorebank Avenue / Heathcote Road
2025 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	14	80
Green Time (sec)	8	60	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	66	36
Phase Split	12 %	57 %	31 %



AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-07 2025 IMT AM

Network: 2025 IMT AM

Moorebank Avenue / Heathcote Road
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	1882	7.6	1758	7.6	1.170	177.6	LOS F	58.0	440.6	1.00	1.77	5.3
3	R2	23	18.2	22	18.3	0.195	71.8	LOS F	1.4	11.3	0.98	0.71	30.6
Approach		1905	7.7	1779 N1	7.8	1.170	176.4	LOS F	58.0	440.6	1.00	1.76	5.6
East: Heathcote Road (E)													
4	L2	26	60.0	26	60.0	1.416	459.2	LOS F	99.6	750.6	1.00	1.91	7.1
6	R2	904	6.1	904	6.1	1.416	399.5	LOS F	99.6	750.6	1.00	1.81	8.0
Approach		931	7.6	931	7.6	1.416	401.2	LOS F	99.6	750.6	1.00	1.81	8.0
North: Moorebank Avenue (N)													
7	L2	722	7.7	616	8.3	0.380	10.7	LOS A	12.2	91.8	0.54	0.71	51.4
8	T1	713	19.0	615	20.3	0.360	21.2	LOS B	11.9	100.3	0.65	0.56	13.2
Approach		1435	13.3	1231 N1	14.3	0.380	15.9	LOS B	12.2	100.3	0.59	0.64	41.6
All Vehicles		4270	9.6	3941 N1	10.4	1.416	179.3	LOS F	99.6	750.6	0.87	1.42	9.6

PHASING SUMMARY

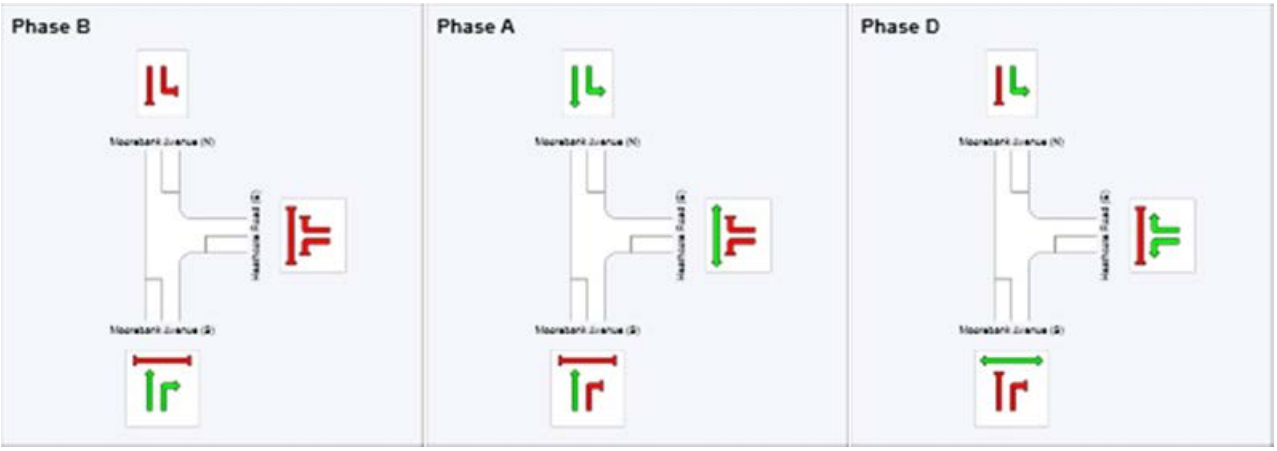
Network: 2025 IMT AM

Site: I-07 2025 IMT AM

Moorebank Avenue / Heathcote Road
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	15	88
Green Time (sec)	9	67	39
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	73	45
Phase Split	11 %	55 %	34 %



PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-07 2025 IMT PM

Network: 2025 IMT PM

Moorebank Avenue / Heathcote Road
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
2	T1	1131	10.0	1131	10.0	0.898	41.3	LOS C	40.0	308.9	0.90	1.01	17.8
3	R2	47	6.7	47	6.7	0.387	64.5	LOS E	2.7	20.1	0.99	0.74	32.2
Approach		1179	9.8	1179	9.8	0.898	42.2	LOS C	40.0	308.9	0.90	1.00	19.1
East: Heathcote Road (E)													
4	L2	72	19.1	72	19.1	1.434	446.5	LOS F	98.2	728.7	1.00	2.02	7.3
6	R2	764	5.1	764	5.1	1.434	343.1	LOS F	98.2	728.7	1.00	1.79	9.1
Approach		836	6.3	836	6.3	1.434	351.9	LOS F	98.2	728.7	1.00	1.81	8.9
North: Moorebank Avenue (N)													
7	L2	841	3.5	772	3.5	0.367	7.5	LOS A	5.2	37.2	0.24	0.61	53.8
8	T1	1411	6.1	1295	6.1	0.676	6.3	LOS A	12.0	90.1	0.36	0.32	29.2
Approach		2252	5.1	2067 N1	5.2	0.676	6.7	LOS A	12.0	90.1	0.31	0.43	48.4
All Vehicles		4266	6.6	4082 N1	7.0	1.434	87.7	LOS F	98.2	728.7	0.62	0.88	16.3

PHASING SUMMARY

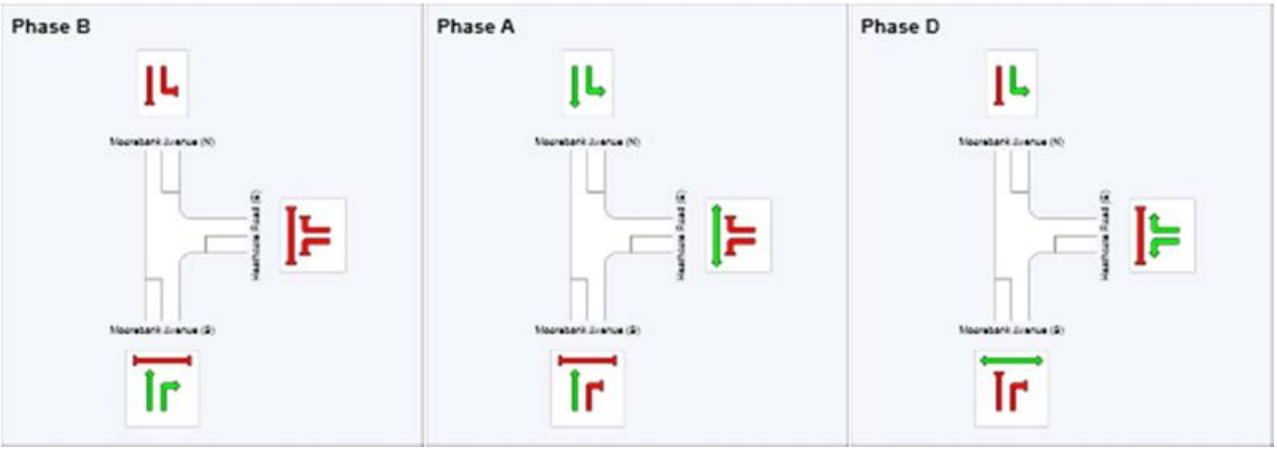
Network: 2025 IMT PM

Site: I-07 2025 IMT PM

Moorebank Avenue / Heathcote Road
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	14	80
Green Time (sec)	8	60	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	66	36
Phase Split	12 %	57 %	31 %



AM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-07 2025 IMT AM - Upgrade Option

Network: 2025 IMT AM - Upgrade Option

Moorebank Avenue / Heathcote Road
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
2	T1	1882	7.6	1802	7.6	1.208	208.2	LOS F	58.0	440.6	1.00	1.91	4.7
3	R2	23	18.2	22	18.3	0.200	71.9	LOS F	1.4	11.6	0.98	0.71	30.6
Approach		1905	7.7	1825 N1	7.8	1.208	206.6	LOS F	58.0	440.6	1.00	1.90	4.9
East: Heathcote Road (E)													
4	L2	26	60.0	26	60.0	1.301	379.5	LOS F	53.9	412.1	1.00	1.72	8.4
6	R2	904	6.1	904	6.1	1.301	329.0	LOS F	53.9	412.1	1.00	1.65	9.4
Approach		931	7.6	931	7.6	1.301	330.5	LOS F	53.9	412.1	1.00	1.65	9.4
North: Moorebank Avenue (N)													
7	L2	722	7.7	625	8.3	0.386	10.7	LOS A	12.5	93.5	0.54	0.71	51.4
8	T1	713	19.0	623	20.2	0.344	18.7	LOS B	11.3	95.5	0.61	0.53	14.9
Approach		1435	13.3	1248 N1	14.2	0.386	14.7	LOS B	12.5	95.5	0.58	0.62	42.6
All Vehicles		4270	9.6	4003 N1	10.2	1.301	175.6	LOS F	58.0	440.6	0.87	1.44	9.7

PHASING SUMMARY

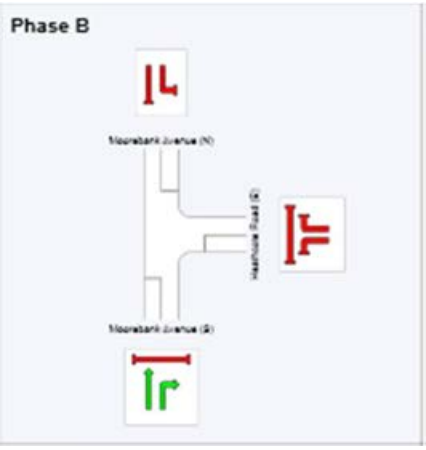
Site: I-07 2025 IMT AM - Upgrade Option

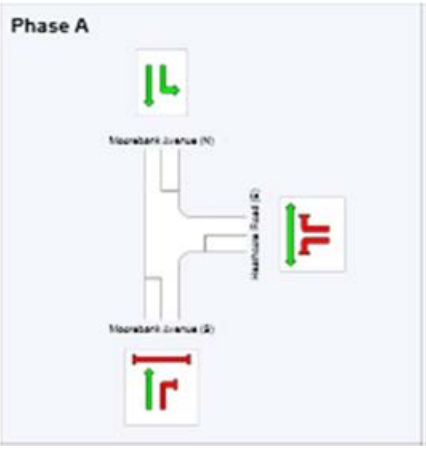
Network: 2025 IMT AM - Upgrade Option

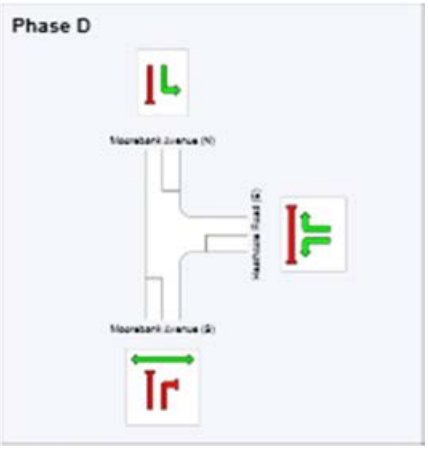
Moorebank Avenue / Heathcote Road
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	15	92
Green Time (sec)	9	71	35
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	77	41
Phase Split	11 %	58 %	31 %







PM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-07 2025 IMT PM - Upgrade Option

Network: 2025 IMT PM - Upgrade Option

Moorebank Avenue / Heathcote Road
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
2	T1	1131	10.0	1131	10.0	0.834	25.2	LOS B	32.7	252.3	0.82	0.83	24.7
3	R2	47	6.7	47	6.7	0.387	64.5	LOS E	2.7	20.1	0.99	0.74	32.3
Approach		1179	9.8	1179	9.8	0.834	26.8	LOS B	32.7	252.3	0.83	0.83	25.6
East: Heathcote Road (E)													
4	L2	72	19.1	72	19.1	1.285	330.8	LOS F	49.5	370.5	1.00	1.74	9.4
6	R2	764	5.1	764	5.1	1.285	254.8	LOS F	49.5	370.5	1.00	1.57	11.6
Approach		836	6.3	836	6.3	1.285	261.3	LOS F	49.5	370.5	1.00	1.59	11.4
North: Moorebank Avenue (N)													
7	L2	841	3.5	754	3.7	0.351	7.5	LOS A	5.0	35.8	0.23	0.61	53.8
8	T1	1411	6.1	1268	6.4	0.664	6.3	LOS A	11.4	86.4	0.35	0.31	29.8
Approach		2252	5.1	2023 N1	5.4	0.664	6.7	LOS A	11.4	86.4	0.31	0.42	48.5
All Vehicles		4266	6.6	4037 N1	7.0	1.285	65.3	LOS E	49.5	370.5	0.60	0.78	20.1

PHASING SUMMARY

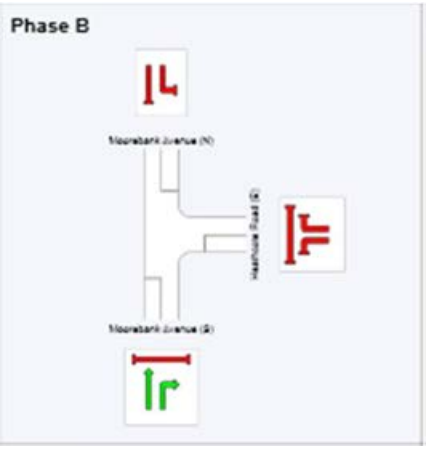
Site: I-07 2025 IMT PM - Upgrade Option

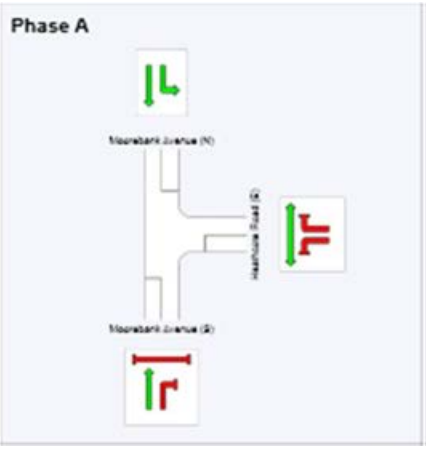
Network: 2025 IMT PM - Upgrade Option

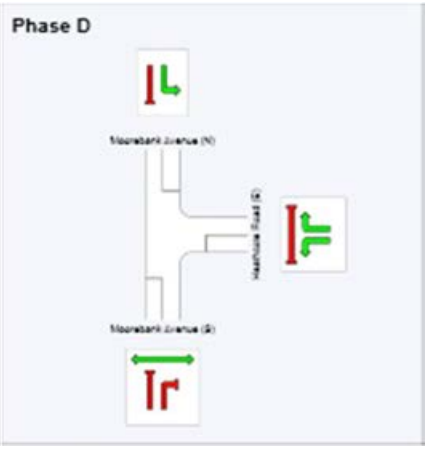
Moorebank Avenue / Heathcote Road
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	14	80
Green Time (sec)	8	60	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	66	36
Phase Split	12 %	57 %	31 %







I-08 Intersection of Moorebank Avenue and Industry Park Access

AM BASE

MOVEMENT SUMMARY

Site: I-08 2025 BASE AM

Network: 2025 BASE AM

Moorebank Avenue / Industry Park Access
2025 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (Network Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	85	1.2	85	1.2	0.051	6.0	LOS A	0.3	2.4	0.12	0.58	43.1
2	T1	1854	4.9	1854	4.9	1.154	202.5	LOS F	138.8	1012.2	1.00	1.88	7.7
Approach		1939	4.7	1939	4.7	1.154	193.9	LOS F	138.8	1012.2	0.96	1.82	8.1
North: Moorebank Avenue (N)													
8	T1	642	16.1	561	16.7	0.188	1.9	LOS A	3.2	25.3	0.19	0.17	57.7
9	R2	57	38.9	50	40.1	0.951	94.3	LOS F	3.9	36.6	1.00	0.98	13.6
Approach		699	17.9	611 N1	18.6	0.951	9.5	LOS A	3.9	36.6	0.26	0.23	48.7
West: Industry Park Access (W)													
10	L2	20	63.2	20	63.2	0.301	66.6	LOS E	1.3	14.5	0.96	0.69	9.4
12	R2	52	71.4	52	71.4	0.498	72.4	LOS F	2.5	28.4	0.99	0.73	19.2
Approach		72	69.1	72	69.1	0.498	70.7	LOS F	2.5	28.4	0.99	0.72	17.1
All Vehicles		2709	9.8	2622 N1	10.2	1.154	147.5	LOS F	138.8	1012.2	0.80	1.42	11.1

PHASING SUMMARY

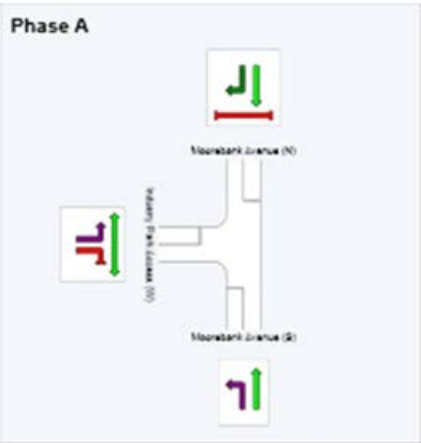
Network: 2025 BASE AM

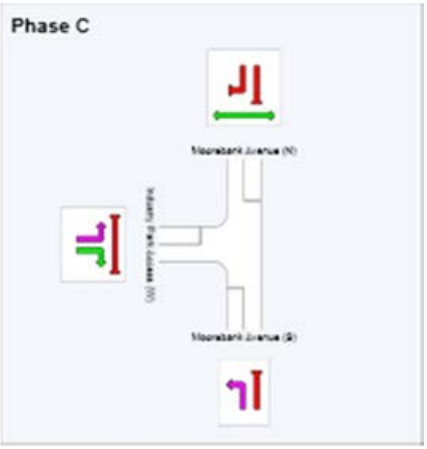
Site: I-08 2025 BASE AM

Moorebank Avenue / Industry Park Access
2025 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (Network Cycle Time)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	119
Green Time (sec)	113	8
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	119	14
Phase Split	89 %	11 %





PM BASE

MOVEMENT SUMMARY

Site: I-08 2025 BASE PM

Network: 2025 BASE PM

Moorebank Avenue / Industry Park Access
2025 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 65 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	7	14.3	7	14.3	0.006	6.5	LOS A	0.0	0.2	0.21	0.57	42.8
2	T1	1096	7.6	1096	7.6	0.426	4.7	LOS A	7.6	56.4	0.47	0.42	51.8
Approach		1103	7.6	1103	7.6	0.426	4.7	LOS A	7.6	56.4	0.47	0.42	51.7
North: Moorebank Avenue (N)													
8	T1	1433	3.8	1361	3.8	0.516	5.1	LOS A	10.3	74.5	0.52	0.47	54.0
9	R2	23	63.6	22	63.3	0.116	13.8	LOS A	0.3	3.7	0.48	0.66	33.2
Approach		1456	4.8	1383 N1	4.7	0.516	5.3	LOS A	10.3	74.5	0.52	0.47	53.6
West: Industry Park Access (W)													
10	L2	32	13.3	32	13.3	0.058	3.6	LOS A	0.2	1.9	0.34	0.41	26.8
12	R2	177	8.9	177	8.9	0.411	32.2	LOS C	2.8	20.9	0.96	0.76	28.2
Approach		208	9.6	208	9.6	0.411	27.9	LOS B	2.8	20.9	0.87	0.70	28.1
All Vehicles		2767	6.3	2694 N1	6.4	0.516	6.8	LOS A	10.3	74.5	0.52	0.47	49.5

PHASING SUMMARY

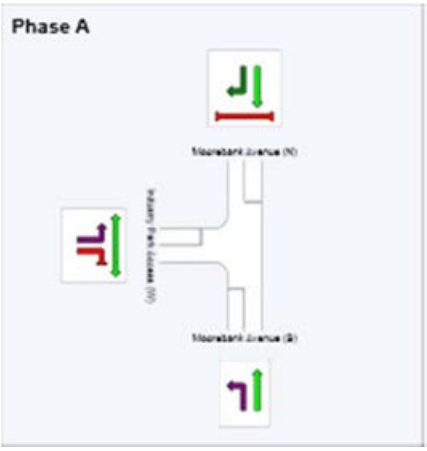
Site: I-08 2025 BASE PM

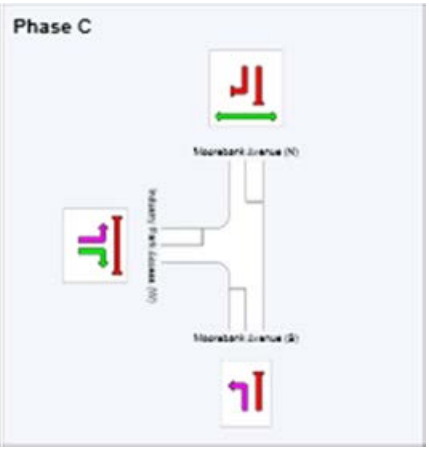
Network: 2025 BASE PM

Moorebank Avenue / Industry Park Access
2025 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 65 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	51
Green Time (sec)	45	8
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	51	14
Phase Split	78 %	22 %





AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-08 2025 IMT AM

Network: 2025 IMT AM

Moorebank Avenue / Industry Park Access
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	87	3.0	87	3.0	0.053	6.1	LOS A	0.3	2.5	0.12	0.58	43.1
2	T1	1891	6.8	1891	6.8	1.238	277.1	LOS F	161.7	1220.3	1.00	2.16	5.8
Approach		1978	6.6	1978	6.6	1.238	265.2	LOS F	161.7	1220.3	0.96	2.09	6.2
North: Moorebank Avenue (N)													
8	T1	665	18.3	571	19.3	0.203	2.5	LOS A	3.7	31.4	0.22	0.20	56.9
9	R2	57	38.9	49	40.4	0.935	91.9	LOS F	3.8	35.5	1.00	0.96	13.9
Approach		722	19.9	621 N1	21.0	0.935	9.6	LOS A	3.8	35.5	0.28	0.26	48.6
West: Industry Park Access (W)													
10	L2	20	63.2	20	63.2	0.247	63.2	LOS E	1.3	14.2	0.94	0.67	9.8
12	R2	53	72.3	53	72.3	0.380	67.8	LOS E	2.5	28.8	0.98	0.73	19.9
Approach		73	69.8	73	69.8	0.380	66.6	LOS E	2.5	28.8	0.97	0.71	17.7
All Vehicles		2773	11.7	2672 N1	12.2	1.238	200.4	LOS F	161.7	1220.3	0.80	1.63	8.6

PHASING SUMMARY

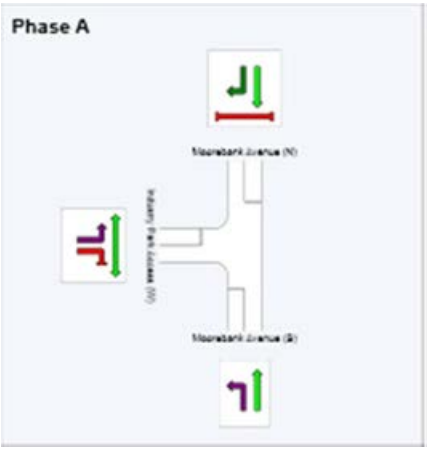
Network: 2025 IMT AM

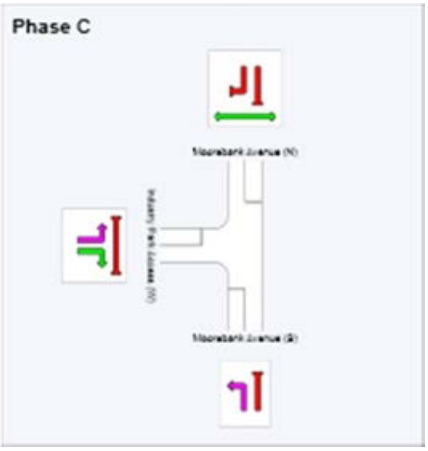
Site: I-08 2025 IMT AM

Moorebank Avenue / Industry Park Access
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	116
Green Time (sec)	110	11
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	116	17
Phase Split	87 %	13 %





PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-08 2025 IMT PM

Network: 2025 IMT PM

Moorebank Avenue / Industry Park Access
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	9	31.5	9	31.5	0.009	6.5	LOS A	0.0	0.4	0.13	0.56	43.0
2	T1	1121	9.2	1121	9.2	0.392	4.1	LOS A	9.7	74.2	0.34	0.30	52.7
Approach		1130	9.4	1130	9.4	0.392	4.1	LOS A	9.7	74.2	0.33	0.31	52.6
North: Moorebank Avenue (N)													
8	T1	1462	5.8	1329	5.7	0.456	4.4	LOS A	12.3	92.4	0.36	0.33	54.7
9	R2	23	63.6	21	63.1	0.134	13.3	LOS A	0.4	4.6	0.36	0.64	33.5
Approach		1486	6.7	1349 N1	6.6	0.456	4.6	LOS A	12.3	92.4	0.36	0.34	54.4
West: Industry Park Access (W)													
10	L2	32	13.3	32	13.3	0.063	3.1	LOS A	0.3	2.2	0.22	0.36	27.2
12	R2	179	10.0	179	10.0	0.463	55.9	LOS D	4.9	37.9	0.98	0.77	22.5
Approach		210	10.5	210	10.5	0.463	48.0	LOS D	4.9	37.9	0.87	0.71	22.7
All Vehicles		2826	8.1	2690 N1	8.5	0.463	7.8	LOS A	12.3	92.4	0.39	0.35	48.5

PHASING SUMMARY

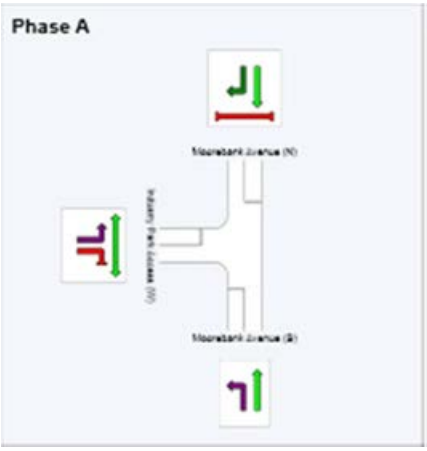
Network: 2025 IMT PM

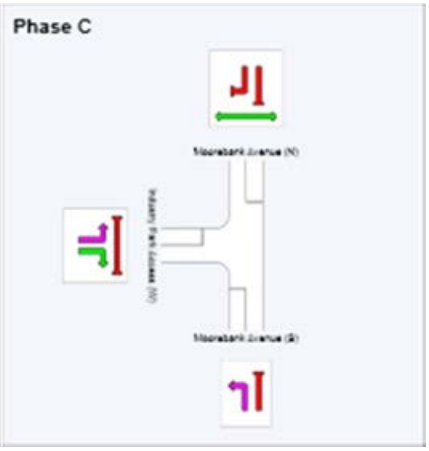
Site: I-08 2025 IMT PM

Moorebank Avenue / Industry Park Access
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	97
Green Time (sec)	91	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	97	19
Phase Split	84 %	16 %





AM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-08 2025 IMT AM

Network: 2025 IMT AM - Upgrade Option

Moorebank Avenue / Industry Park Access
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	87	3.0	87	3.0	0.053	6.1	LOS A	0.3	2.5	0.12	0.58	43.1
2	T1	1891	6.8	1891	6.8	1.238	277.1	LOS F	161.7	1220.3	1.00	2.16	5.8
Approach		1978	6.6	1978	6.6	1.238	265.2	LOS F	161.7	1220.3	0.96	2.09	6.2
North: Moorebank Avenue (N)													
8	T1	665	18.3	580	19.3	0.206	2.5	LOS A	3.8	31.9	0.22	0.20	56.9
9	R2	57	38.9	50	40.3	0.949	94.0	LOS F	3.9	36.5	1.00	0.97	13.7
Approach		722	19.9	630 N1	21.0	0.949	9.8	LOS A	3.9	36.5	0.29	0.26	48.4
West: Industry Park Access (W)													
10	L2	20	63.2	20	63.2	0.247	63.2	LOS E	1.3	14.2	0.94	0.67	9.8
12	R2	53	72.3	53	72.3	0.380	67.8	LOS E	2.5	28.8	0.98	0.73	19.9
Approach		73	69.8	73	69.8	0.380	66.6	LOS E	2.5	28.8	0.97	0.71	17.7
All Vehicles		2773	11.7	2681 N1	12.1	1.238	199.8	LOS F	161.7	1220.3	0.80	1.63	8.7

PHASING SUMMARY

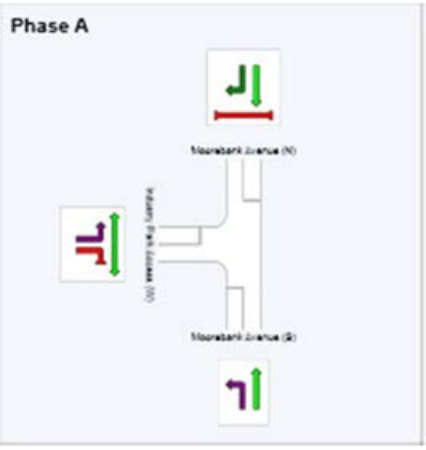
Site: I-08 2025 IMT AM

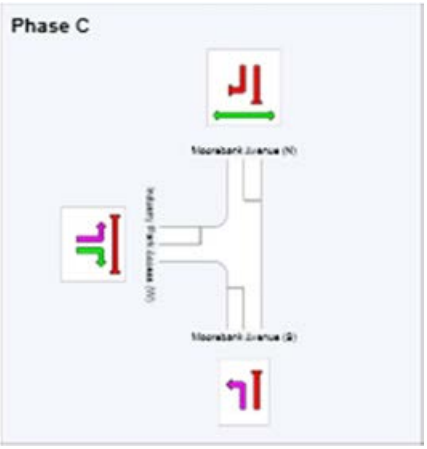
Network: 2025 IMT AM - Upgrade Option

Moorebank Avenue / Industry Park Access
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	116
Green Time (sec)	110	11
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	116	17
Phase Split	87 %	13 %





PM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-08 2025 IMT PM

Network: 2025 IMT PM - Upgrade Option

Moorebank Avenue / Industry Park Access
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	9	31.5	9	31.5	0.009	6.5	LOS A	0.0	0.4	0.13	0.56	43.0
2	T1	1121	9.2	1121	9.2	0.392	4.1	LOS A	9.7	74.2	0.34	0.30	52.7
Approach		1130	9.4	1130	9.4	0.392	4.1	LOS A	9.7	74.2	0.33	0.31	52.6
North: Moorebank Avenue (N)													
8	T1	1462	5.8	1310	6.1	0.451	4.4	LOS A	12.1	91.0	0.36	0.33	54.8
9	R2	23	63.6	21	64.3	0.137	13.3	LOS A	0.4	4.7	0.36	0.64	33.5
Approach		1486	6.7	1331 N1	7.0	0.451	4.5	LOS A	12.1	91.0	0.36	0.33	54.4
West: Industry Park Access (W)													
10	L2	32	13.3	32	13.3	0.063	3.1	LOS A	0.3	2.2	0.22	0.36	27.2
12	R2	179	10.0	179	10.0	0.463	55.9	LOS D	4.9	37.9	0.98	0.77	22.5
Approach		210	10.5	210	10.5	0.463	48.0	LOS D	4.9	37.9	0.87	0.71	22.7
All Vehicles		2826	8.1	2672 N1	8.5	0.463	7.8	LOS A	12.1	91.0	0.39	0.35	48.4

PHASING SUMMARY

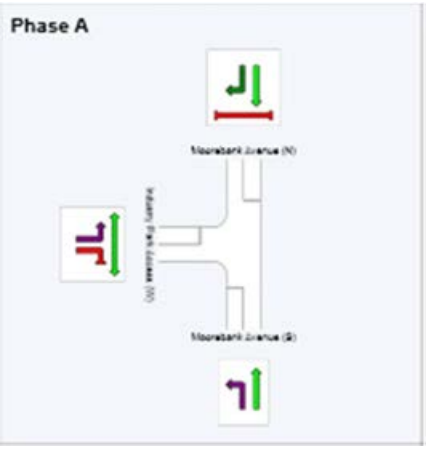
Site: I-08 2025 IMT PM

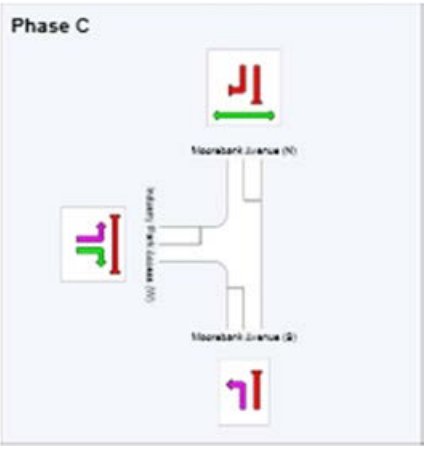
Network: 2025 IMT PM - Upgrade Option

Moorebank Avenue / Industry Park Access
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	97
Green Time (sec)	91	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	97	19
Phase Split	84 %	16 %





I-09 Intersection of Moorebank Avenue and Church Road

AM BASE

MOVEMENT SUMMARY

Site: I-09 2025 BASE AM

Moorebank Avenue / Church Road
2025 BASE AM PEAK 7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	2042	6.4	0.698	3.7	LOS A	10.4	77.4	0.20	0.11	56.0
3	R2	276	7.6	0.698	21.9	LOS B	10.4	77.4	1.00	0.54	42.1
Approach		2318	6.5	0.872	5.9	NA	10.4	77.4	0.30	0.16	53.8
East: Church Road (E)											
4	L2	189	14.4	0.222	6.8	LOS A	0.9	6.9	0.46	0.67	47.7
6	R2	6	0.0	0.810	778.8	LOS F	2.0	14.0	1.00	1.04	4.3
Approach		196	14.0	0.810	31.7	LOS C	2.0	14.0	0.47	0.68	35.9
North: Moorebank Avenue (N)											
7	L2	32	0.0	0.200	5.6	LOS A	0.0	0.0	0.00	0.05	57.7
8	T1	658	21.1	0.200	0.0	LOS A	0.0	0.0	0.00	0.03	59.6
Approach		689	20.2	0.200	0.3	NA	0.0	0.0	0.00	0.03	59.6
All Vehicles		3203	9.9	0.872	6.3	NA	10.4	77.4	0.24	0.16	53.3

PM BASE

MOVEMENT SUMMARY

Site: I-09 2025 BASE PM

Moorebank Avenue / Church Road
2025 BASE PM PEAK 4:30 pm - 5:30 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1140	11.9	0.546	4.6	LOS A	6.4	49.3	0.13	0.07	55.3
3	R2	105	12.0	0.546	39.7	LOS C	6.4	49.3	1.00	0.51	34.9
Approach		1245	11.9	0.546	7.6	NA	6.4	49.3	0.21	0.11	52.6
East: Church Road (E)											
4	L2	401	4.2	1.142	207.6	LOS F	54.3	393.7	1.00	3.94	13.1
6	R2	1	0.0	0.086	266.2	LOS F	0.2	1.5	0.99	1.00	10.8
Approach		402	4.2	1.142	207.7	LOS F	54.3	393.7	1.00	3.93	13.1
North: Moorebank Avenue (N)											
7	L2	13	8.3	0.850	6.4	LOS A	0.0	0.0	0.00	0.01	56.4
8	T1	1597	4.4	0.850	0.9	LOS A	0.0	0.0	0.00	0.00	58.2
Approach		1609	4.4	0.850	1.0	NA	0.0	0.0	0.00	0.00	58.1
All Vehicles		3257	7.3	1.142	29.0	NA	54.3	393.7	0.20	0.53	39.4

AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-09 2025 IMT AM

Moorebank Avenue / Church Road
2025 IMT AM PEAK 7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	2081	8.1	0.740	4.6	LOS A	11.4	87.0	0.19	0.11	55.3
3	R2	279	8.8	0.740	25.8	LOS B	11.4	87.0	1.00	0.60	40.3
Approach		2360	8.2	0.925	7.1	NA	11.4	87.0	0.28	0.17	52.9
East: Church Road (E)											
4	L2	193	15.9	0.239	7.1	LOS A	0.9	7.6	0.48	0.70	47.5
6	R2	6	0.0	0.810	763.2	LOS F	2.0	13.7	1.00	1.04	4.3
Approach		199	15.4	0.810	31.1	LOS C	2.0	13.7	0.50	0.71	36.1
North: Moorebank Avenue (N)											
7	L2	32	0.0	0.213	5.6	LOS A	0.0	0.0	0.00	0.05	57.7
8	T1	683	23.3	0.213	0.0	LOS A	0.0	0.0	0.00	0.03	59.6
Approach		714	22.3	0.213	0.3	NA	0.0	0.0	0.00	0.03	59.6
All Vehicles		3274	11.7	0.925	7.1	NA	11.4	87.0	0.23	0.17	52.6

PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-09 2025 IMT PM

Moorebank Avenue / Church Road
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1167	13.5	0.623	2.2	LOS A	5.2	41.7	0.05	0.04	57.6
3	R2	109	15.0	0.623	45.8	LOS D	5.2	41.7	1.00	0.81	32.5
Approach		1276	13.7	0.623	6.0	NA	5.2	41.7	0.13	0.11	54.0
East: Church Road (E)											
4	L2	405	5.1	1.234	279.0	LOS F	67.2	495.3	1.00	4.52	10.4
6	R2	1	0.0	0.133	406.1	LOS F	0.3	2.3	0.99	1.00	7.6
Approach		406	5.1	1.234	279.3	LOS F	67.2	495.3	1.00	4.51	10.4
North: Moorebank Avenue (N)											
7	L2	13	8.3	0.886	6.7	LOS A	0.0	0.0	0.00	0.01	55.8
8	T1	1629	6.3	0.886	1.3	LOS A	0.0	0.0	0.00	0.00	57.5
Approach		1641	6.3	0.886	1.3	NA	0.0	0.0	0.00	0.00	57.5
All Vehicles		3323	9.0	1.234	37.1	NA	67.2	495.3	0.17	0.60	36.1

AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-09 2025 IMT AM - Upgrade Option

Moorebank Avenue / Church Road
2025 IMT AM PEAK 7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	2081	8.1	0.740	4.6	LOS A	11.4	87.0	0.19	0.11	55.3
3	R2	279	8.8	0.740	25.8	LOS B	11.4	87.0	1.00	0.60	40.1
Approach		2360	8.2	0.925	7.1	NA	11.4	87.0	0.28	0.17	52.8
East: Church Road (E)											
4	L2	193	15.9	0.239	7.1	LOS A	0.9	7.6	0.48	0.70	47.5
Approach		193	15.9	0.239	7.1	LOS A	0.9	7.6	0.48	0.70	47.5
North: Moorebank Avenue (N)											
7	L2	32	0.0	0.213	5.6	LOS A	0.0	0.0	0.00	0.05	57.7
8	T1	683	23.3	0.213	0.0	LOS A	0.0	0.0	0.00	0.03	59.6
Approach		714	22.3	0.213	0.3	NA	0.0	0.0	0.00	0.03	59.6
All Vehicles		3267	11.7	0.925	5.6	NA	11.4	87.0	0.23	0.17	53.8

PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-09 2025 IMT PM - Upgrade Option

Moorebank Avenue / Church Road
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1167	13.5	0.617	2.7	LOS A	5.5	44.7	0.06	0.05	57.2
3	R2	109	15.0	0.617	46.5	LOS D	5.5	44.7	1.00	0.76	32.3
Approach		1276	13.7	0.617	6.4	NA	5.5	44.7	0.14	0.11	53.5
East: Church Road (E)											
4	L2	405	5.1	1.233	277.7	LOS F	67.0	493.8	1.00	4.51	10.5
Approach		405	5.1	1.233	277.7	LOS F	67.0	493.8	1.00	4.51	10.5
North: Moorebank Avenue (N)											
7	L2	13	8.3	0.886	6.7	LOS A	0.0	0.0	0.00	0.01	55.7
8	T1	1629	6.3	0.886	1.3	LOS A	0.0	0.0	0.00	0.00	57.5
Approach		1641	6.3	0.886	1.3	NA	0.0	0.0	0.00	0.00	57.5
All Vehicles		3322	9.0	1.233	37.0	NA	67.0	493.8	0.18	0.59	36.1

I-10 Intersection of Heathcote Road and Nuwarra Road

AM BASE

MOVEMENT SUMMARY

Site: I-10 2025 BASE AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2025 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
SouthEast: Heathcote Road (SE)											
4	L2	228	0.9	0.156	8.0	LOS A	2.8	19.9	0.26	0.62	48.5
5	T1	1862	5.3	1.131	178.1	LOS F	114.1	834.5	1.00	1.70	15.0
6	R2	595	3.2	1.052	180.4	LOS F	31.2	224.2	1.00	1.35	15.3
Approach		2685	4.4	1.131	164.1	LOS F	114.1	834.5	0.94	1.53	15.7
NorthEast: Nuwarra Road (NE)											
7	L2	391	4.6	0.448	22.5	LOS B	14.6	106.2	0.67	0.77	43.4
8	T1	228	8.3	0.368	52.7	LOS D	6.6	49.2	0.93	0.75	26.3
9	R2	465	5.9	1.315	368.9	LOS F	39.7	291.7	1.00	1.74	8.3
Approach		1084	5.9	1.315	177.5	LOS F	39.7	291.7	0.87	1.18	14.4
NorthWest: Heathcote Road (NW)											
10	L2	241	11.8	0.318	21.4	LOS B	7.4	56.7	0.69	0.76	42.8
11	T1	1001	11.6	0.912	45.6	LOS D	35.8	275.4	0.88	0.88	34.0
12	R2	226	6.5	0.759	74.5	LOS F	7.6	56.5	1.00	0.87	20.1
Approach		1468	10.8	0.912	46.1	LOS D	35.8	275.4	0.87	0.86	32.7
SouthWest: Wattle Grove Drive (SW)											
1	L2	578	2.0	0.767	45.6	LOS D	26.1	186.0	0.95	1.08	26.5
2	T1	516	4.3	0.719	57.7	LOS E	16.3	118.4	1.00	0.86	24.7
3	R2	254	4.1	1.232	293.1	LOS F	38.0	275.6	1.00	1.70	7.4
Approach		1347	3.3	1.232	96.8	LOS F	38.0	275.6	0.98	1.11	17.3
All Vehicles		6585	5.9	1.315	126.2	LOS F	114.1	834.5	0.92	1.24	17.8

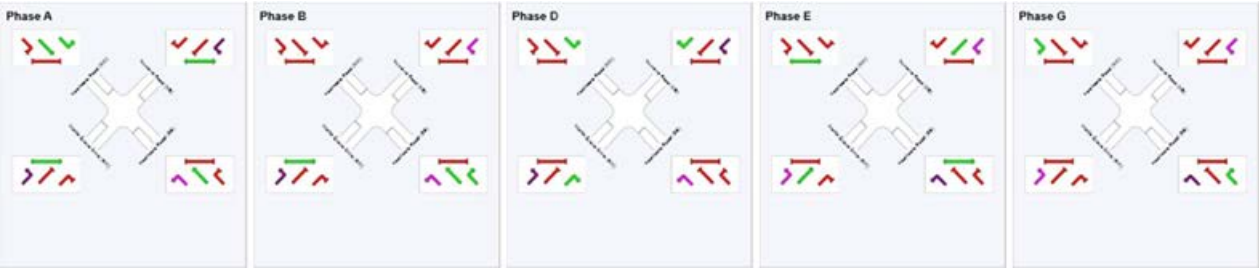
PHASING SUMMARY

Site: I-10 2025 BASE AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2025 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	D	E	G
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	54	67	86	114
Green Time (sec)	48	7	13	22	11
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	54	13	19	28	17
Phase Split	41 %	10 %	15 %	21 %	13 %



PM BASE

MOVEMENT SUMMARY

Site: I-10 2025 BASE PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2025 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Heathcote Road (SE)											
4	L2	319	2.3	0.269	15.0	LOS B	8.6	61.6	0.45	0.68	42.6
5	T1	1257	5.4	0.964	65.5	LOS E	51.4	376.9	0.92	1.05	28.6
6	R2	444	3.1	1.062	157.1	LOS F	24.1	173.3	1.00	1.24	16.9
Approach		2020	4.4	1.062	77.7	LOS F	51.4	376.9	0.86	1.03	25.3
NorthEast: Nuwarra Road (NE)											
7	L2	608	2.4	0.859	55.5	LOS D	33.9	242.6	0.99	1.11	31.3
8	T1	608	1.0	0.933	76.9	LOS F	25.2	177.8	1.00	1.05	20.9
9	R2	533	5.9	1.065	141.9	LOS F	30.2	222.3	1.00	1.20	17.5
Approach		1749	3.0	1.065	89.3	LOS F	33.9	242.6	1.00	1.12	22.5
NorthWest: Heathcote Road (NW)											
10	L2	242	5.7	0.223	22.2	LOS B	8.2	59.8	0.54	0.73	42.5
11	T1	1579	2.7	1.122	183.4	LOS F	100.2	717.7	1.00	1.63	14.7
12	R2	440	1.7	0.971	95.2	LOS F	19.4	137.8	1.00	1.03	17.0
Approach		2261	2.8	1.122	149.0	LOS F	100.2	717.7	0.95	1.41	16.2
SouthWest: Wattle Grove Drive (SW)											
1	L2	292	1.4	0.354	31.1	LOS C	13.1	93.1	0.74	0.81	31.8
2	T1	308	1.0	0.419	56.1	LOS D	9.4	66.2	0.94	0.77	25.1
3	R2	326	1.0	1.210	282.6	LOS F	48.8	344.2	1.00	1.62	7.6
Approach		926	1.1	1.210	128.1	LOS F	48.8	344.2	0.90	1.08	14.2
All Vehicles		6957	3.1	1.210	110.5	LOS F	100.2	717.7	0.93	1.19	19.5

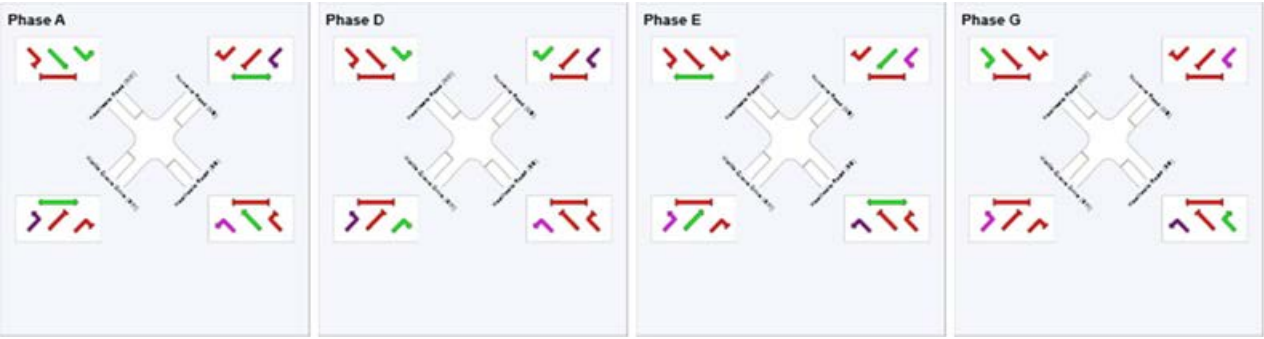
PHASING SUMMARY

Site: I-10 2025 BASE PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2025 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	61	87	117
Green Time (sec)	55	20	24	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	61	26	30	22
Phase Split	44 %	19 %	22 %	16 %



AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-10 2025 IMT AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
SouthEast: Heathcote Road (SE)											
4	L2	231	0.9	0.158	8.0	LOS A	2.9	20.3	0.26	0.62	48.5
5	T1	1862	5.3	1.132	179.0	LOS F	114.5	837.5	1.00	1.71	15.0
6	R2	595	3.2	1.052	180.4	LOS F	31.2	224.2	1.00	1.35	15.3
Approach		2688	4.4	1.132	164.6	LOS F	114.5	837.5	0.94	1.54	15.7
NorthEast: Nuwarra Road (NE)											
7	L2	391	4.6	0.448	22.5	LOS B	14.6	106.2	0.67	0.77	43.4
8	T1	232	8.2	0.373	52.7	LOS D	6.7	50.0	0.93	0.75	26.3
9	R2	465	5.9	1.315	368.9	LOS F	39.7	291.7	1.00	1.74	8.3
Approach		1088	5.9	1.315	177.1	LOS F	39.7	291.7	0.87	1.18	14.4
NorthWest: Heathcote Road (NW)											
10	L2	241	11.8	0.318	21.4	LOS B	7.4	56.7	0.69	0.76	42.8
11	T1	1002	11.6	0.913	45.8	LOS D	35.9	276.5	0.88	0.88	33.9
12	R2	226	6.5	0.759	74.5	LOS F	7.6	56.5	1.00	0.87	20.1
Approach		1469	10.9	0.913	46.2	LOS D	35.9	276.5	0.87	0.86	32.7
SouthWest: Wattle Grove Drive (SW)											
1	L2	578	2.0	0.767	45.6	LOS D	26.1	186.0	0.95	1.08	26.5
2	T1	516	4.3	0.719	57.7	LOS E	16.3	118.4	1.00	0.86	24.7
3	R2	254	4.1	1.232	293.1	LOS F	38.0	275.6	1.00	1.70	7.4
Approach		1347	3.3	1.232	96.8	LOS F	38.0	275.6	0.98	1.11	17.3
All Vehicles		6593	5.9	1.315	126.4	LOS F	114.5	837.5	0.92	1.24	17.8

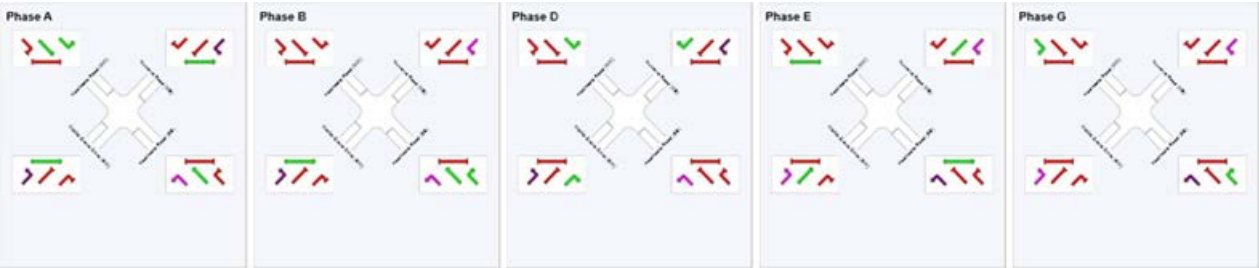
PHASING SUMMARY

Site: I-10 2025 IMT AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	D	E	G
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	54	67	86	114
Green Time (sec)	48	7	13	22	11
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	54	13	19	28	17
Phase Split	41 %	10 %	15 %	21 %	13 %



PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-10 2025 IMT PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Heathcote Road (SE)											
4	L2	319	2.3	0.269	15.0	LOS B	8.6	61.6	0.45	0.68	42.6
5	T1	1257	5.5	0.965	65.9	LOS E	51.6	378.5	0.92	1.05	28.5
6	R2	444	3.1	1.062	157.1	LOS F	24.1	173.3	1.00	1.24	16.9
Approach		2021	4.5	1.062	77.9	LOS F	51.6	378.5	0.86	1.03	25.3
NorthEast: Nuwarra Road (NE)											
7	L2	608	2.4	0.859	55.5	LOS D	33.9	242.6	0.99	1.11	31.3
8	T1	608	1.0	0.933	76.9	LOS F	25.2	177.8	1.00	1.05	20.9
9	R2	533	5.9	1.065	141.9	LOS F	30.2	222.3	1.00	1.20	17.5
Approach		1749	3.0	1.065	89.3	LOS F	33.9	242.6	1.00	1.12	22.5
NorthWest: Heathcote Road (NW)											
10	L2	242	5.7	0.223	22.2	LOS B	8.2	59.8	0.54	0.73	42.5
11	T1	1579	2.7	1.123	183.8	LOS F	100.4	719.0	1.00	1.63	14.7
12	R2	440	1.7	0.971	95.2	LOS F	19.4	137.8	1.00	1.03	17.0
Approach		2261	2.8	1.123	149.3	LOS F	100.4	719.0	0.95	1.42	16.2
SouthWest: Wattle Grove Drive (SW)											
1	L2	292	1.4	0.354	31.1	LOS C	13.1	93.1	0.74	0.81	31.8
2	T1	312	1.0	0.424	56.2	LOS D	9.5	67.1	0.94	0.77	25.0
3	R2	329	1.0	1.221	292.0	LOS F	50.1	353.6	1.00	1.64	7.4
Approach		933	1.1	1.221	131.6	LOS F	50.1	353.6	0.90	1.09	13.9
All Vehicles		6964	3.1	1.221	111.1	LOS F	100.4	719.0	0.93	1.19	19.4

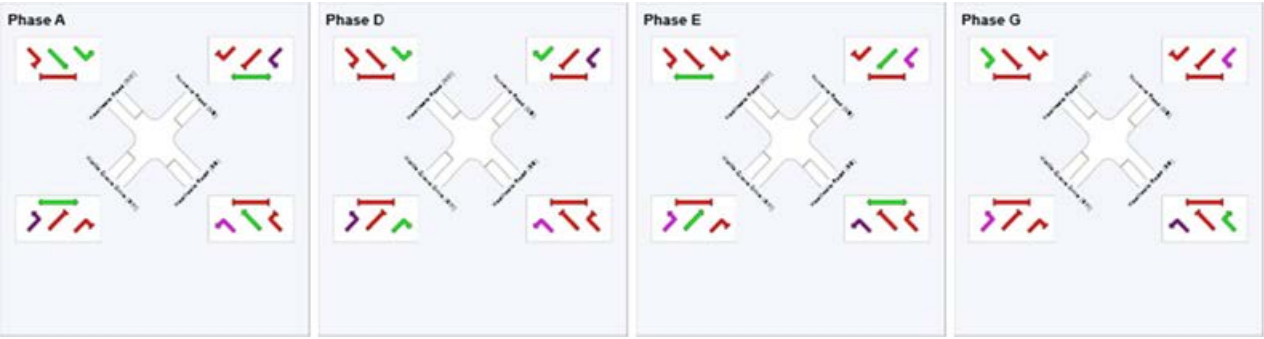
PHASING SUMMARY

Site: I-10 2025 IMT PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	61	87	117
Green Time (sec)	55	20	24	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	61	26	30	22
Phase Split	44 %	19 %	22 %	16 %



I-11 Intersection of Newbridge Road and Nuwarra Road

AM BASE

MOVEMENT SUMMARY

Site: I-11 2025 BASE AM

Newbridge Road / Nuwarra Road
2025 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Nuwarra Road (S)											
1	L2	35	6.1	0.727	48.5	LOS D	21.1	150.2	0.90	0.82	37.8
2	T1	334	1.6	0.727	45.5	LOS D	21.1	150.2	0.90	0.82	31.3
3	R2	798	6.7	1.159	239.7	LOS F	60.3	446.4	1.00	1.41	13.4
Approach		1166	5.2	1.159	178.4	LOS F	60.3	446.4	0.97	1.22	16.5
East: Newbridge Road (E)											
4	L2	320	17.8	0.587	26.6	LOS B	19.1	151.4	0.70	0.76	45.6
5	T1	1185	11.3	0.587	22.7	LOS B	20.0	153.2	0.64	0.60	51.6
Approach		1505	12.7	0.587	23.5	LOS B	20.0	153.2	0.66	0.63	50.3
North: Nuwarra Road (N)											
7	L2	6	0.0	0.899	87.2	LOS F	9.1	64.3	1.00	1.07	25.2
8	T1	142	0.7	1.124	113.1	LOS F	20.3	146.2	1.00	1.17	21.0
9	R2	129	4.1	1.124	205.2	LOS F	20.3	146.2	1.00	1.52	15.6
Approach		278	2.3	1.124	155.4	LOS F	20.3	146.2	1.00	1.33	18.0
West: Newbridge Road (W)											
10	L2	281	1.9	1.078	146.9	LOS F	93.6	691.7	1.00	1.40	20.0
11	T1	2172	9.0	1.147	168.9	LOS F	115.7	872.4	1.00	1.61	19.5
Approach		2453	8.2	1.147	166.4	LOS F	115.7	872.4	1.00	1.58	19.5
All Vehicles		5402	8.5	1.159	128.6	LOS F	115.7	872.4	0.90	1.23	22.4

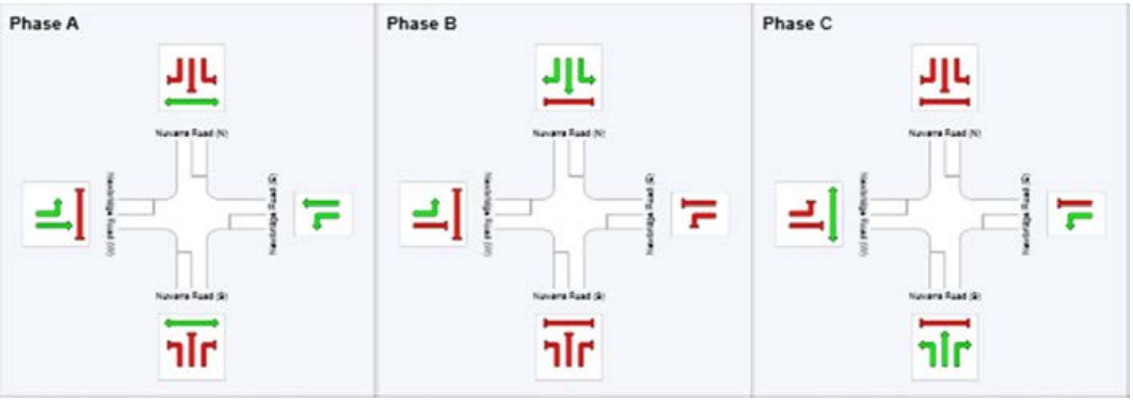
PHASING SUMMARY

Site: I-11 2025 BASE AM

Newbridge Road / Nuwarra Road
2025 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	72	89
Green Time (sec)	66	11	45
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	72	17	51
Phase Split	51 %	12 %	36 %



PM BASE

MOVEMENT SUMMARY

Site: I-11 2025 BASE PM

Newbridge Road / Nuwarra Road
2025 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nuwarra Road (S)											
1	L2	53	6.0	0.710	68.6	LOS E	13.6	96.6	1.00	0.85	32.4
2	T1	149	0.7	0.710	64.3	LOS E	13.6	96.6	1.00	0.85	29.4
3	R2	538	6.1	1.007	121.0	LOS F	25.9	190.8	1.00	1.11	21.9
Approach		740	5.0	1.007	105.8	LOS F	25.9	190.8	1.00	1.04	23.7
East: Newbridge Road (E)											
4	L2	742	4.4	0.717	14.7	LOS B	22.8	165.7	0.44	0.72	52.3
5	T1	2102	5.8	0.717	13.3	LOS A	31.9	234.4	0.54	0.54	57.7
Approach		2844	5.4	0.717	13.7	LOS A	31.9	234.4	0.52	0.58	56.3
North: Nuwarra Road (N)											
7	L2	17	0.0	0.893	80.6	LOS F	17.9	125.8	1.00	1.05	28.2
8	T1	291	0.7	1.117	108.2	LOS F	34.3	242.2	1.00	1.15	22.6
9	R2	201	1.0	1.117	205.3	LOS F	34.3	242.2	1.00	1.44	16.2
Approach		508	0.8	1.117	145.7	LOS F	34.3	242.2	1.00	1.26	19.5
West: Newbridge Road (W)											
10	L2	97	0.0	0.489	19.0	LOS B	14.2	105.0	0.44	0.46	49.7
11	T1	1575	7.8	0.555	12.1	LOS A	16.0	119.3	0.43	0.40	58.8
Approach		1672	7.3	0.555	12.5	LOS A	16.0	119.3	0.43	0.41	58.2
All Vehicles		5764	5.5	1.117	36.8	LOS C	34.3	242.2	0.60	0.65	42.7

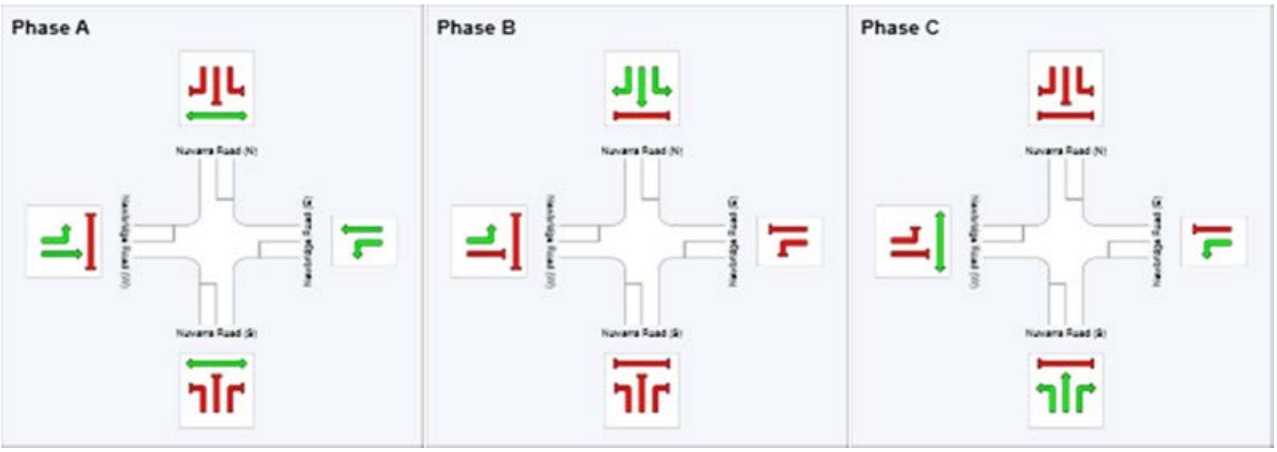
PHASING SUMMARY

Site: I-11 2025 BASE PM

Newbridge Road / Nuwarra Road
2025 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	87	113
Green Time (sec)	81	20	21
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	87	26	27
Phase Split	62 %	19 %	19 %



AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-11 2025 IMT AM

Newbridge Road / Nuwarra Road
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Nuwarra Road (S)											
1	L2	35	6.1	0.727	48.5	LOS D	21.1	150.2	0.90	0.82	37.8
2	T1	334	1.6	0.727	45.5	LOS D	21.1	150.2	0.90	0.82	31.3
3	R2	798	6.7	1.159	239.7	LOS F	60.3	446.4	1.00	1.41	13.4
Approach		1166	5.2	1.159	178.4	LOS F	60.3	446.4	0.97	1.22	16.5
East: Newbridge Road (E)											
4	L2	322	17.7	0.600	27.1	LOS B	19.8	157.7	0.71	0.77	45.4
5	T1	1201	12.3	0.600	22.9	LOS B	20.4	159.5	0.65	0.60	51.4
Approach		1523	13.4	0.600	23.8	LOS B	20.4	159.5	0.66	0.64	50.1
North: Nuwarra Road (N)											
7	L2	6	0.0	0.902	87.6	LOS F	9.2	64.7	1.00	1.08	25.1
8	T1	143	0.7	1.128	114.3	LOS F	20.5	147.9	1.00	1.18	20.9
9	R2	130	4.1	1.128	208.3	LOS F	20.5	147.9	1.00	1.53	15.4
Approach		279	2.3	1.128	157.4	LOS F	20.5	147.9	1.00	1.34	17.9
West: Newbridge Road (W)											
10	L2	281	1.9	1.109	172.3	LOS F	102.5	770.0	1.00	1.49	18.0
11	T1	2205	10.4	1.180	196.4	LOS F	125.0	965.8	1.00	1.72	17.4
Approach		2486	9.4	1.180	193.7	LOS F	125.0	965.8	1.00	1.69	17.5
All Vehicles		5454	9.3	1.180	141.2	LOS F	125.0	965.8	0.90	1.28	21.1

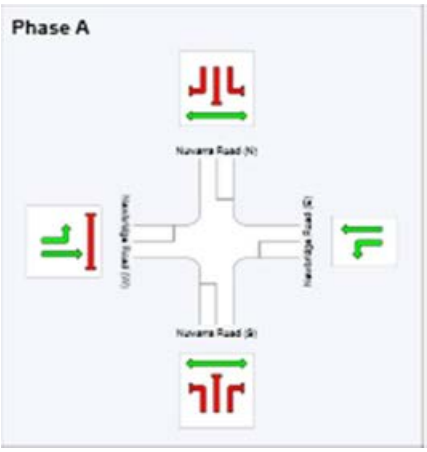
PHASING SUMMARY

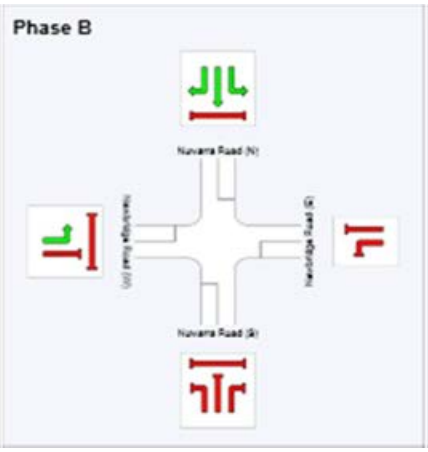
Site: I-11 2025 IMT AM

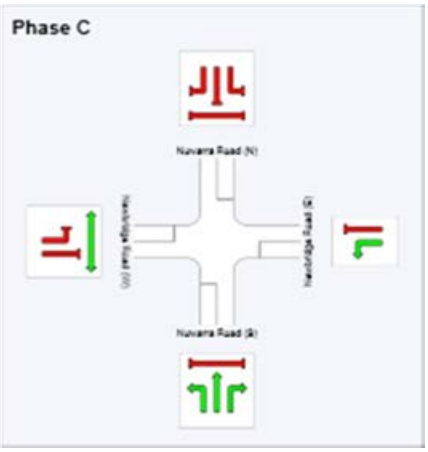
Newbridge Road / Nuwarra Road
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	72	89
Green Time (sec)	66	11	45
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	72	17	51
Phase Split	51 %	12 %	36 %







PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-11 2025 IMT PM

Newbridge Road / Nuwarra Road
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nuwarra Road (S)											
1	L2	53	6.0	0.765	71.6	LOS F	14.1	100.1	1.00	0.89	31.7
2	T1	150	0.7	0.765	67.2	LOS E	14.1	100.1	1.00	0.89	28.8
3	R2	540	6.0	1.011	122.9	LOS F	26.2	193.0	1.00	1.12	21.7
Approach		743	5.0	1.011	108.0	LOS F	26.2	193.0	1.00	1.06	23.4
East: Newbridge Road (E)											
4	L2	742	4.4	0.733	15.5	LOS B	25.2	184.3	0.48	0.73	51.9
5	T1	2131	7.1	0.733	13.6	LOS A	33.1	249.1	0.56	0.55	57.5
Approach		2873	6.4	0.733	14.1	LOS A	33.1	249.1	0.54	0.60	56.1
North: Nuwarra Road (N)											
7	L2	17	0.0	0.893	80.6	LOS F	17.9	125.8	1.00	1.05	28.2
8	T1	291	0.7	1.117	108.2	LOS F	34.3	242.2	1.00	1.15	22.6
9	R2	201	1.0	1.117	205.3	LOS F	34.3	242.2	1.00	1.44	16.2
Approach		508	0.8	1.117	145.7	LOS F	34.3	242.2	1.00	1.26	19.5
West: Newbridge Road (W)											
10	L2	97	0.0	0.501	19.2	LOS B	14.6	109.7	0.45	0.47	49.7
11	T1	1595	8.9	0.569	12.2	LOS A	16.5	125.5	0.43	0.41	58.7
Approach		1692	8.3	0.569	12.6	LOS A	16.5	125.5	0.43	0.41	58.1
All Vehicles		5817	6.3	1.117	37.1	LOS C	34.3	249.1	0.61	0.66	42.6

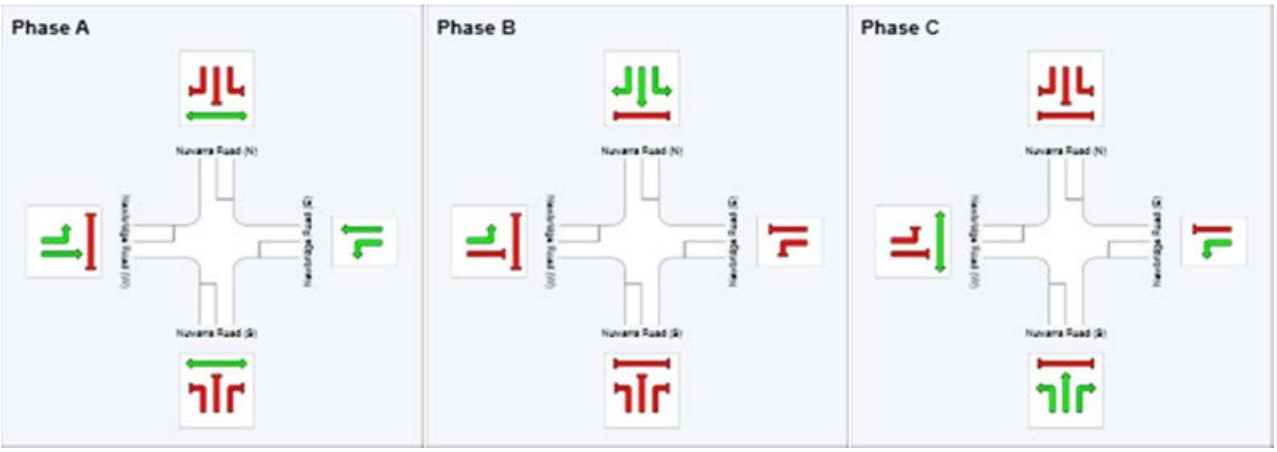
PHASING SUMMARY

Site: I-11 2025 IMT PM

Newbridge Road / Nuwarra Road
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	87	113
Green Time (sec)	81	20	21
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	87	26	27
Phase Split	62 %	19 %	19 %



AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-11 2025 IMT AM - Upgrade Option

Newbridge Road / Nuwarra Road
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Nuwarra Road (S)											
1	L2	35	6.1	0.797	54.0	LOS D	22.7	162.0	0.92	0.87	36.1
2	T1	334	1.6	0.797	51.1	LOS D	22.7	162.0	0.92	0.87	30.1
3	R2	798	6.7	1.205	278.4	LOS F	64.5	477.8	1.00	1.49	11.9
Approach		1166	5.2	1.205	206.7	LOS F	64.5	477.8	0.97	1.29	14.8
East: Newbridge Road (E)											
4	L2	322	17.7	0.583	25.7	LOS B	18.9	150.8	0.68	0.75	46.1
5	T1	1201	12.3	0.583	21.2	LOS B	19.3	151.3	0.62	0.58	52.5
Approach		1523	13.4	0.583	22.1	LOS B	19.3	151.3	0.63	0.61	51.1
North: Nuwarra Road (N)											
7	L2	6	0.0	0.902	87.6	LOS F	9.2	64.7	1.00	1.08	25.1
8	T1	143	0.7	1.128	114.3	LOS F	20.5	147.9	1.00	1.18	20.9
9	R2	130	4.1	1.128	208.3	LOS F	20.5	147.9	1.00	1.53	15.4
Approach		279	2.3	1.128	157.4	LOS F	20.5	147.9	1.00	1.34	17.9
West: Newbridge Road (W)											
10	L2	281	1.9	1.077	144.7	LOS F	95.2	715.3	1.00	1.40	20.2
11	T1	2205	10.4	1.145	166.5	LOS F	117.0	904.2	1.00	1.60	19.7
Approach		2486	9.4	1.145	164.0	LOS F	117.0	904.2	1.00	1.58	19.7
All Vehicles		5454	9.3	1.205	133.2	LOS F	117.0	904.2	0.89	1.24	21.9

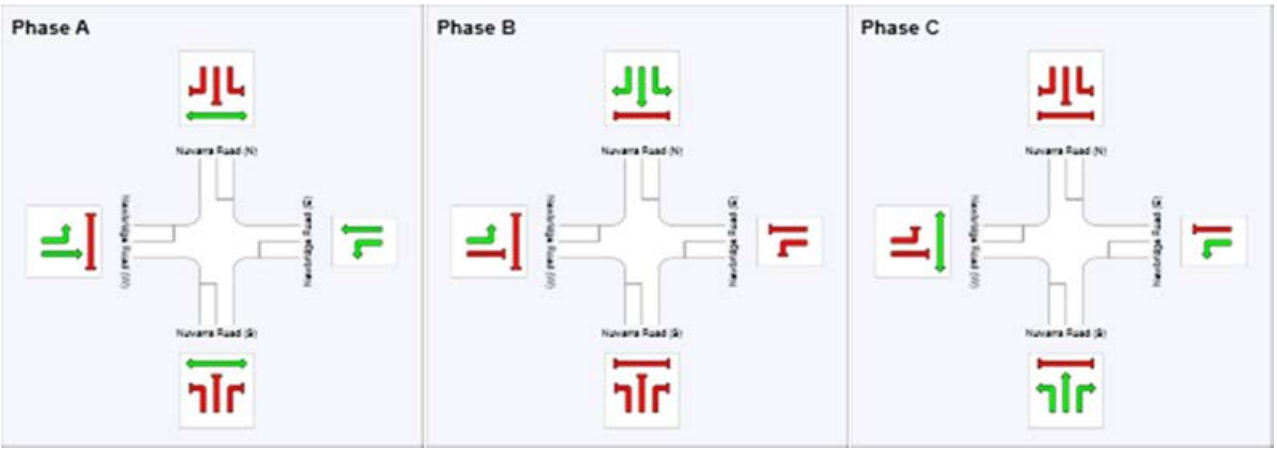
PHASING SUMMARY

Site: I-11 2025 IMT AM - Upgrade Option

Newbridge Road / Nuwarra Road
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	74	91
Green Time (sec)	68	11	43
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	74	17	49
Phase Split	53 %	12 %	35 %



I-12 Intersection of Newbridge Road and Governor Macquarie Drive

AM BASE

MOVEMENT SUMMARY

Site: I-12 2025 BASE AM

Newbridge Road / Governor Macquarie Drive
2025 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Brickmakers Drive (S)											
1	L2	12	0.0	0.859	78.1	LOS F	15.5	109.6	1.00	0.99	25.3
2	T1	198	1.1	0.859	73.7	LOS F	15.5	109.6	1.00	0.99	25.0
3	R2	686	0.9	1.179	249.0	LOS F	48.0	338.3	1.00	1.55	14.7
Approach		896	0.9	1.179	208.1	LOS F	48.0	338.3	1.00	1.42	15.8
East: Newbridge Road (E)											
4	L2	225	2.3	0.164	7.7	LOS A	1.9	13.5	0.18	0.63	58.2
5	T1	1351	11.0	0.394	13.5	LOS A	14.8	113.6	0.53	0.47	60.2
6	R2	653	10.3	0.981	103.9	LOS F	28.6	217.9	1.00	1.05	30.1
Approach		2228	9.9	0.981	39.4	LOS C	28.6	217.9	0.63	0.66	46.2
North: Governor Macquarie Drive (N)											
7	L2	741	8.9	0.707	52.5	LOS D	22.5	169.4	0.95	0.86	40.2
8	T1	128	2.5	0.520	63.9	LOS E	8.4	59.8	0.98	0.79	27.0
9	R2	174	35.2	1.023	134.6	LOS F	17.5	159.2	1.00	1.17	20.8
Approach		1043	12.5	1.023	67.6	LOS E	22.5	169.4	0.96	0.90	34.5
West: Newbridge Road (W)											
10	L2	127	30.6	1.153	205.5	LOS F	133.8	1016.6	1.00	1.68	16.0
11	T1	2860	6.9	1.153	197.8	LOS F	137.5	1019.5	1.00	1.72	20.6
12	R2	4	25.0	0.032	32.7	LOS C	0.2	1.5	0.60	0.67	37.9
Approach		2992	8.0	1.153	197.9	LOS F	137.5	1019.5	1.00	1.71	20.4
All Vehicles		7159	8.4	1.179	130.8	LOS F	137.5	1019.5	0.88	1.23	25.8

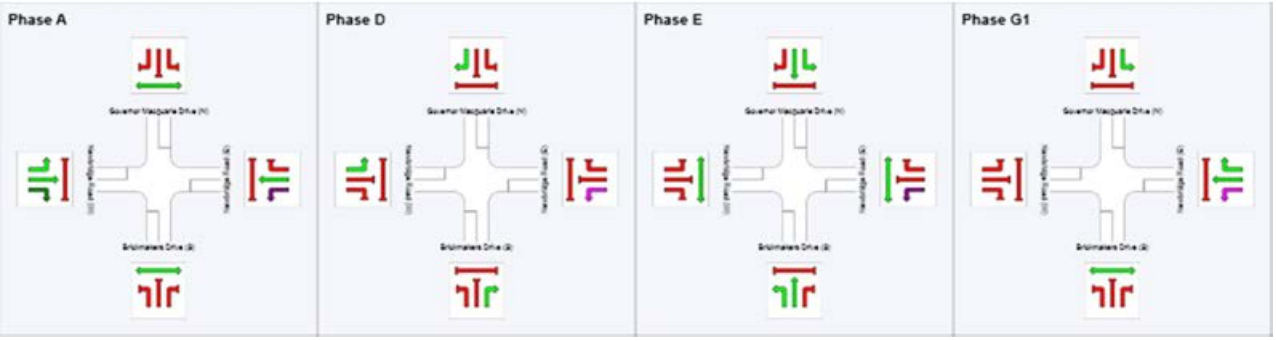
PHASING SUMMARY

Site: I-12 2025 BASE AM

Newbridge Road / Governor Macquarie Drive
2025 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	66	88	112
Green Time (sec)	60	16	18	22
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	66	22	24	28
Phase Split	47 %	16 %	17 %	20 %



PM BASE

MOVEMENT SUMMARY

Site: I-12 2025 BASE PM

Newbridge Road / Governor Macquarie Drive
2025 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	8	0.0	0.495	69.0	LOS E	6.6	47.8	0.98	0.78	27.2
2	T1	92	4.6	0.495	64.9	LOS E	6.6	47.8	0.98	0.78	26.8
3	R2	257	0.8	0.609	69.8	LOS E	8.6	60.5	1.00	0.80	32.6
Approach		357	1.8	0.609	68.5	LOS E	8.6	60.5	1.00	0.79	31.2
East: Newbridge Road (E)											
4	L2	652	1.3	0.464	9.4	LOS A	7.6	53.5	0.28	0.69	57.1
5	T1	2596	4.4	0.784	21.0	LOS B	46.2	335.4	0.71	0.68	55.8
6	R2	716	11.3	1.162	243.1	LOS F	50.0	383.9	1.00	1.35	17.5
Approach		3963	5.2	1.162	59.2	LOS E	50.0	383.9	0.69	0.81	39.7
North: Governor Macquarie Drive (N)											
7	L2	556	3.6	0.437	48.3	LOS D	15.2	109.9	0.86	0.81	41.6
8	T1	298	0.7	0.974	94.8	LOS F	25.0	176.2	1.00	1.14	21.6
9	R2	229	18.8	1.085	175.3	LOS F	26.5	215.3	1.00	1.26	17.5
Approach		1083	6.0	1.085	88.0	LOS F	26.5	215.3	0.93	1.00	28.9
West: Newbridge Road (W)											
10	L2	168	16.9	0.766	38.2	LOS C	36.1	271.6	0.84	0.78	42.1
11	T1	1939	6.1	0.766	30.5	LOS C	36.5	269.1	0.82	0.74	50.9
12	R2	3	0.0	0.050	48.0	LOS D	0.2	1.2	0.74	0.68	32.2
Approach		2111	6.9	0.766	31.1	LOS C	36.5	271.6	0.82	0.75	50.3
All Vehicles		7514	5.6	1.162	55.9	LOS D	50.0	383.9	0.78	0.82	39.8

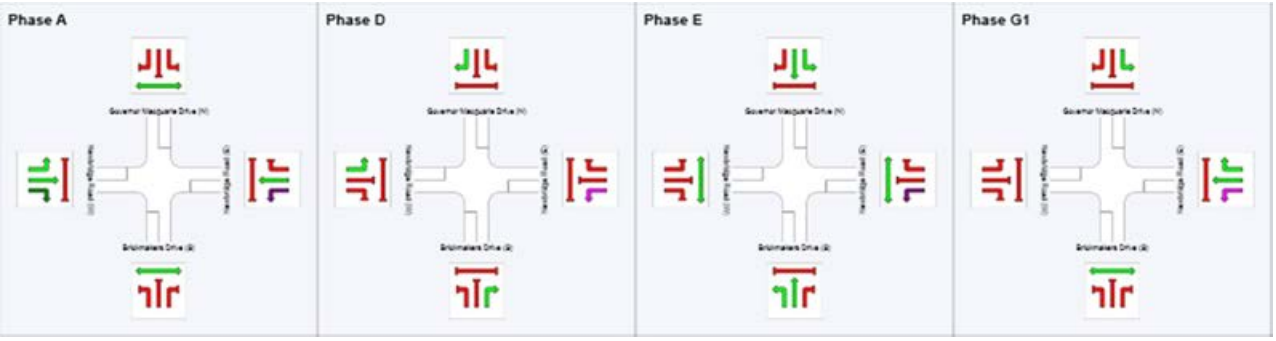
PHASING SUMMARY

Site: I-12 2025 BASE PM

Newbridge Road / Governor Macquarie Drive
2025 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	67	89	110
Green Time (sec)	61	16	15	24
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	67	22	21	30
Phase Split	48 %	16 %	15 %	21 %



AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-12 2025 IMT AM

Newbridge Road / Governor Macquarie Drive
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Brickmakers Drive (S)											
1	L2	12	0.0	0.859	78.1	LOS F	15.5	109.6	1.00	0.99	25.3
2	T1	198	1.1	0.859	73.7	LOS F	15.5	109.6	1.00	0.99	25.0
3	R2	686	0.9	1.179	249.0	LOS F	48.0	338.3	1.00	1.55	14.7
Approach		896	0.9	1.179	208.1	LOS F	48.0	338.3	1.00	1.42	15.8
East: Newbridge Road (E)											
4	L2	225	2.3	0.164	7.7	LOS A	1.9	13.5	0.18	0.63	58.2
5	T1	1368	11.9	0.403	13.6	LOS A	15.1	117.9	0.54	0.48	60.1
6	R2	653	10.3	0.981	103.9	LOS F	28.6	217.9	1.00	1.05	30.1
Approach		2246	10.5	0.981	39.3	LOS C	28.6	217.9	0.64	0.66	46.2
North: Governor Macquarie Drive (N)											
7	L2	741	8.9	0.707	52.5	LOS D	22.5	169.4	0.95	0.86	40.2
8	T1	128	2.5	0.520	63.9	LOS E	8.4	59.8	0.98	0.79	27.0
9	R2	174	35.1	1.024	135.1	LOS F	17.5	159.6	1.00	1.17	20.7
Approach		1043	12.5	1.024	67.7	LOS E	22.5	169.4	0.96	0.90	34.5
West: Newbridge Road (W)											
10	L2	128	30.8	1.181	229.7	LOS F	143.0	1105.6	1.00	1.78	14.6
11	T1	2893	8.0	1.181	222.1	LOS F	146.9	1110.2	1.00	1.81	18.9
12	R2	4	25.0	0.033	32.8	LOS C	0.2	1.5	0.60	0.67	37.9
Approach		3025	9.0	1.181	222.1	LOS F	146.9	1110.2	1.00	1.81	18.8
All Vehicles		7210	9.0	1.181	141.1	LOS F	146.9	1110.2	0.88	1.27	24.6

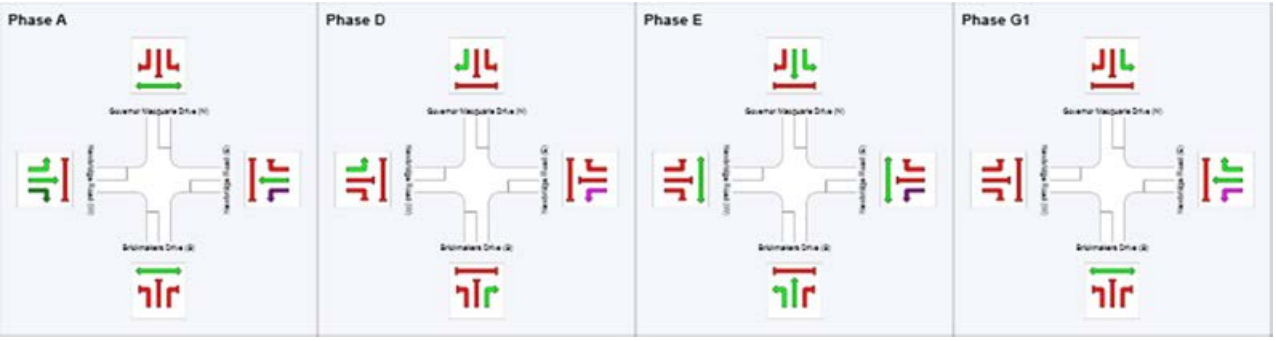
PHASING SUMMARY

Site: I-12 2025 IMT AM

Newbridge Road / Governor Macquarie Drive
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	66	88	112
Green Time (sec)	60	16	18	22
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	66	22	24	28
Phase Split	47 %	16 %	17 %	20 %



PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-12 2025 IMT PM

Newbridge Road / Governor Macquarie Drive
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	8	0.0	0.510	70.0	LOS E	6.6	48.2	0.99	0.78	26.9
2	T1	92	4.6	0.510	65.8	LOS E	6.6	48.2	0.99	0.78	26.6
3	R2	257	0.8	0.609	69.8	LOS E	8.6	60.5	1.00	0.80	32.6
Approach		357	1.8	0.609	68.8	LOS E	8.6	60.5	1.00	0.79	31.1
East: Newbridge Road (E)											
4	L2	652	1.3	0.461	9.4	LOS A	7.6	53.5	0.28	0.69	57.1
5	T1	2623	5.4	0.800	23.6	LOS B	47.5	351.3	0.72	0.71	54.4
6	R2	716	11.3	1.162	243.1	LOS F	50.0	383.9	1.00	1.35	17.5
Approach		3990	5.8	1.162	60.6	LOS E	50.0	383.9	0.70	0.82	39.3
North: Governor Macquarie Drive (N)											
7	L2	556	3.6	0.437	48.3	LOS D	15.2	109.9	0.86	0.81	41.6
8	T1	298	0.7	0.975	94.9	LOS F	25.0	176.4	1.00	1.14	21.6
9	R2	232	19.7	1.109	194.2	LOS F	28.3	233.7	1.00	1.30	16.2
Approach		1086	6.2	1.109	92.3	LOS F	28.3	233.7	0.93	1.01	28.2
West: Newbridge Road (W)											
10	L2	171	18.0	0.782	38.5	LOS C	37.0	283.0	0.85	0.79	41.9
11	T1	1959	6.9	0.782	30.8	LOS C	37.6	280.7	0.83	0.76	50.8
12	R2	3	0.0	0.051	50.5	LOS D	0.2	1.2	0.76	0.68	31.4
Approach		2133	7.8	0.782	31.4	LOS C	37.6	283.0	0.83	0.76	50.1
All Vehicles		7565	6.2	1.162	57.3	LOS E	50.0	383.9	0.78	0.83	39.4

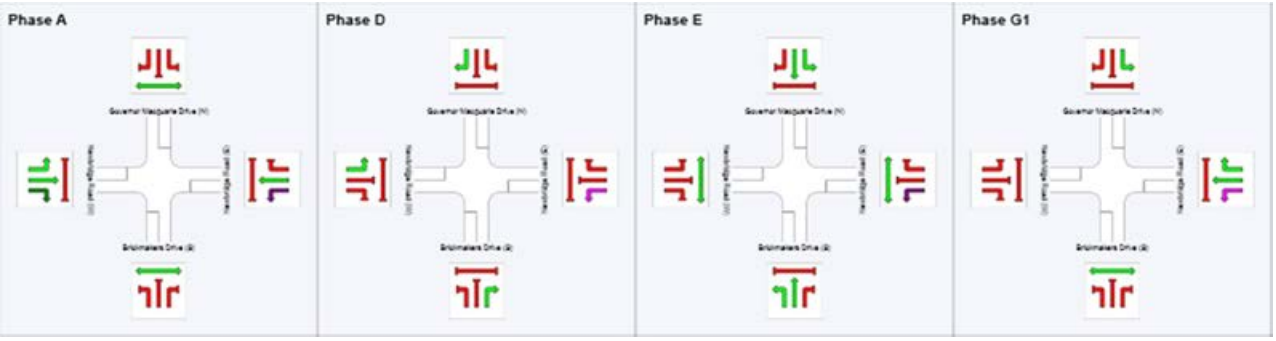
PHASING SUMMARY

Site: I-12 2025 IMT PM

Newbridge Road / Governor Macquarie Drive
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	67	89	110
Green Time (sec)	61	16	15	24
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	67	22	21	30
Phase Split	48 %	16 %	15 %	21 %



AM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-12 2025 IMT AM - Upgrade Option

Newbridge Road / Governor Macquarie Drive
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Brickmakers Drive (S)											
1	L2	12	0.0	0.859	78.1	LOS F	15.5	109.6	1.00	0.99	25.3
2	T1	198	1.1	0.859	73.7	LOS F	15.5	109.6	1.00	0.99	25.0
3	R2	686	0.9	1.048	141.4	LOS F	35.4	250.1	1.00	1.25	21.9
Approach		896	0.9	1.048	125.6	LOS F	35.4	250.1	1.00	1.19	22.4
East: Newbridge Road (E)											
4	L2	225	2.3	0.165	7.8	LOS A	1.9	13.9	0.19	0.64	58.1
5	T1	1368	11.9	0.403	13.6	LOS A	15.1	117.9	0.54	0.48	60.1
6	R2	653	10.3	1.033	140.7	LOS F	32.9	250.9	1.00	1.13	25.3
Approach		2246	10.5	1.033	50.0	LOS D	32.9	250.9	0.64	0.68	42.5
North: Governor Macquarie Drive (N)											
7	L2	741	8.9	0.900	65.0	LOS E	20.9	157.7	1.00	1.05	37.0
8	T1	128	2.5	0.805	72.7	LOS F	11.9	90.5	1.00	0.92	25.1
9	R2	174	35.1	0.805	78.5	LOS F	11.9	90.5	1.00	0.91	28.7
Approach		1043	12.5	0.900	68.2	LOS E	20.9	157.7	1.00	1.01	34.4
West: Newbridge Road (W)											
10	L2	128	30.8	1.161	212.2	LOS F	137.9	1066.0	1.00	1.71	15.6
11	T1	2893	8.0	1.161	204.6	LOS F	141.5	1069.9	1.00	1.75	20.1
12	R2	4	25.0	0.033	32.1	LOS C	0.2	1.5	0.59	0.67	38.2
Approach		3025	9.0	1.161	204.6	LOS F	141.5	1069.9	1.00	1.74	19.9
All Vehicles		7210	9.0	1.161	126.9	LOS F	141.5	1069.9	0.89	1.24	26.3

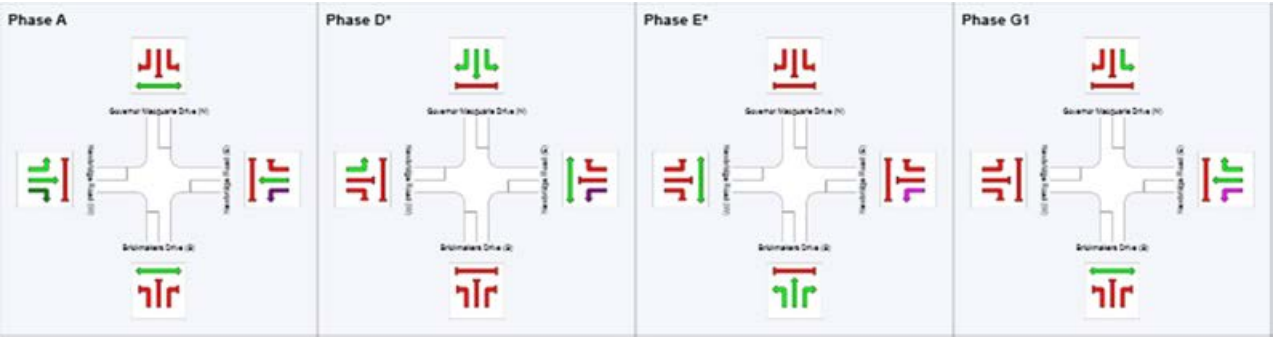
PHASING SUMMARY

Site: I-12 2025 IMT AM - Upgrade Option

Newbridge Road / Governor Macquarie Drive
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D*	E*	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	67	89	113
Green Time (sec)	61	16	18	21
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	67	22	24	27
Phase Split	48 %	16 %	17 %	19 %



PM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-12 2025 IMT PM - Upgrade Option 2

Newbridge Road / Governor Macquarie Drive
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	8	0.0	0.635	74.4	LOS F	6.9	50.2	1.00	0.81	26.0
2	T1	92	4.6	0.635	70.2	LOS E	6.9	50.2	1.00	0.81	25.7
3	R2	257	0.8	0.811	79.3	LOS F	9.4	66.2	1.00	0.92	30.7
Approach		357	1.8	0.811	76.8	LOS F	9.4	66.2	1.00	0.89	29.4
East: Newbridge Road (E)											
4	L2	652	1.3	0.468	9.5	LOS A	10.9	77.2	0.34	0.69	57.0
5	T1	2623	5.4	0.921	29.0	LOS C	52.7	389.9	0.72	0.74	51.8
6	R2	716	11.3	1.031	144.6	LOS F	37.6	289.1	1.00	1.14	24.8
Approach		3990	5.8	1.031	46.6	LOS D	52.7	389.9	0.71	0.80	43.6
North: Governor Macquarie Drive (N)											
7	L2	556	3.6	0.426	33.2	LOS C	11.9	86.1	0.85	0.79	46.7
8	T1	298	0.7	0.929	81.0	LOS F	25.0	178.7	1.00	1.05	23.7
9	R2	232	19.7	0.929	90.3	LOS F	25.0	178.7	1.00	1.02	26.8
Approach		1086	6.2	0.929	58.5	LOS E	25.0	178.7	0.92	0.91	35.2
West: Newbridge Road (W)											
10	L2	171	18.0	0.822	42.6	LOS D	39.8	304.3	0.90	0.84	40.3
11	T1	1959	6.9	0.822	34.7	LOS C	40.5	302.3	0.88	0.81	49.1
12	R2	3	0.0	0.052	52.3	LOS D	0.2	1.2	0.78	0.68	30.9
Approach		2133	7.8	0.822	35.4	LOS C	40.5	304.3	0.88	0.81	48.4
All Vehicles		7565	6.2	1.031	46.6	LOS D	52.7	389.9	0.80	0.83	42.7

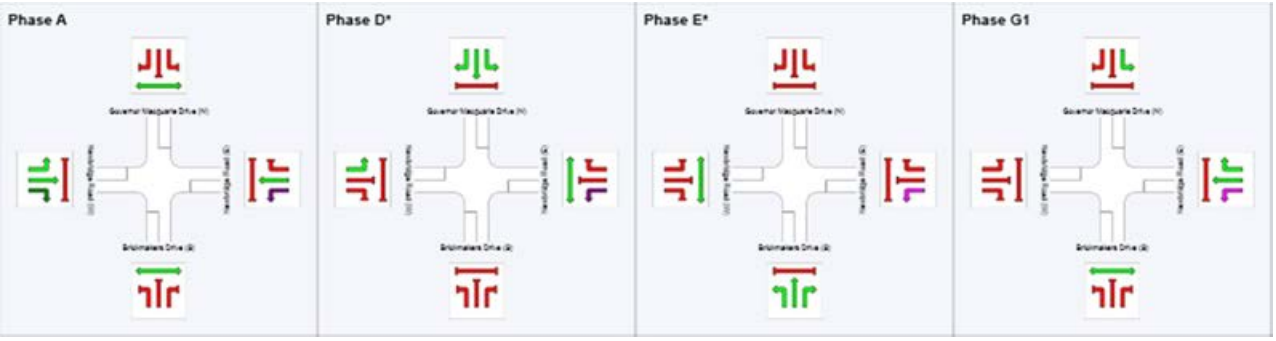
PHASING SUMMARY

Site: I-12 2025 IMT PM - Upgrade Option 2

Newbridge Road / Governor Macquarie Drive
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D*	E*	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	64	87	105
Green Time (sec)	58	17	12	29
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	64	23	18	35
Phase Split	46 %	16 %	13 %	25 %



I-13 Intersection of Moorebank Avenue and M5 Motorway

AM BASE

MOVEMENT SUMMARY

Site: I-13 2025 BASE AM

Moorebank Avenue / the M5 Motorway
2025 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
1	L2	264	10.8	0.227	9.1	LOS A	2.9	22.5	0.41	0.66	50.4
2	T1	659	4.2	0.755	31.8	LOS C	12.1	87.5	0.99	0.91	38.1
3	R2	285	2.6	0.397	33.0	LOS C	5.0	35.7	0.90	0.78	36.9
Approach		1208	5.2	0.755	27.1	LOS B	12.1	87.5	0.84	0.83	39.9
East: M5 Motorway on&off ramp (E)											
4	L2	238	7.1	0.239	8.1	LOS A	1.8	13.7	0.39	0.66	51.5
6	R2	234	5.9	0.243	28.8	LOS C	3.4	24.7	0.82	0.75	40.4
Approach		472	6.5	0.243	18.3	LOS B	3.4	24.7	0.61	0.71	45.0
North: Moorebank Avenue (N)											
7	L2	52	49.0	0.051	7.7	LOS A	0.3	3.3	0.28	0.60	51.2
8	T1	188	12.3	0.227	25.5	LOS B	2.8	21.9	0.85	0.67	41.0
9	R2	435	26.6	0.744	37.1	LOS C	9.4	80.5	0.97	0.86	36.5
Approach		675	24.3	0.744	31.6	LOS C	9.4	80.5	0.88	0.79	38.5
West: M5 Motorway on&off ramp (W)											
10	L2	1696	8.1	0.966	7.6	LOS A	0.0	0.0	0.00	0.50	51.9
12	R2	396	4.3	0.406	30.0	LOS C	6.0	43.5	0.87	0.79	38.5
Approach		2092	7.4	0.966	11.8	LOS A	6.0	43.5	0.16	0.56	49.0
All Vehicles		4446	9.3	0.966	19.7	LOS B	12.1	87.5	0.50	0.68	44.2

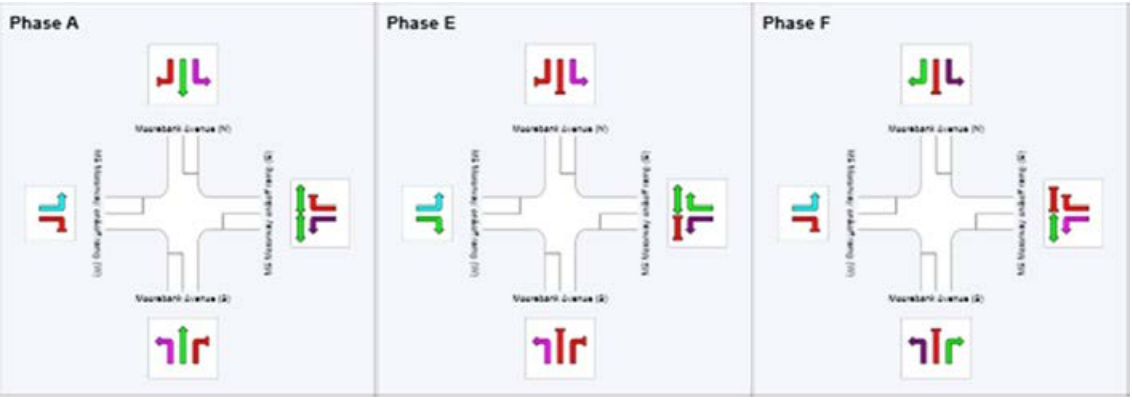
PHASING SUMMARY

Site: I-13 2025 BASE AM

Moorebank Avenue / the M5 Motorway
2025 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	F
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	24	51
Green Time (sec)	17	20	16
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	24	27	23
Phase Split	32 %	36 %	31 %



PM BASE

MOVEMENT SUMMARY

Site: I-13 2025 BASE PM

Moorebank Avenue / the M5 Motorway
2025 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	294	2.9	0.357	19.3	LOS B	7.6	54.4	0.69	0.76	43.9
2	T1	174	7.3	0.438	44.5	LOS D	3.9	29.1	0.98	0.76	33.2
3	R2	288	1.8	0.238	27.9	LOS B	5.1	36.0	0.73	0.75	39.1
Approach		756	3.5	0.438	28.4	LOS B	7.6	54.4	0.77	0.75	39.2
East: M5 Motorway on&off ramp (E)											
4	L2	419	2.8	0.439	11.2	LOS A	6.8	48.6	0.53	0.72	49.2
6	R2	89	21.2	0.163	42.6	LOS D	1.8	14.9	0.89	0.73	34.9
Approach		508	6.0	0.439	16.7	LOS B	6.8	48.6	0.60	0.72	45.6
North: Moorebank Avenue (N)											
7	L2	136	6.2	0.107	6.9	LOS A	0.9	6.7	0.24	0.61	53.0
8	T1	689	3.7	0.740	37.4	LOS C	15.3	110.7	0.98	0.88	35.7
9	R2	1442	7.4	0.961	61.5	LOS E	41.8	311.5	1.00	1.15	29.6
Approach		2267	6.2	0.961	50.9	LOS D	41.8	311.5	0.95	1.04	32.0
West: M5 Motorway on&off ramp (W)											
10	L2	614	15.3	0.366	5.8	LOS A	0.0	0.0	0.00	0.52	54.3
12	R2	247	3.4	0.401	44.1	LOS D	5.2	37.5	0.94	0.78	33.1
Approach		861	11.9	0.401	16.8	LOS B	5.2	37.5	0.27	0.59	46.4
All Vehicles		4393	6.8	0.961	36.4	LOS C	41.8	311.5	0.74	0.87	36.6

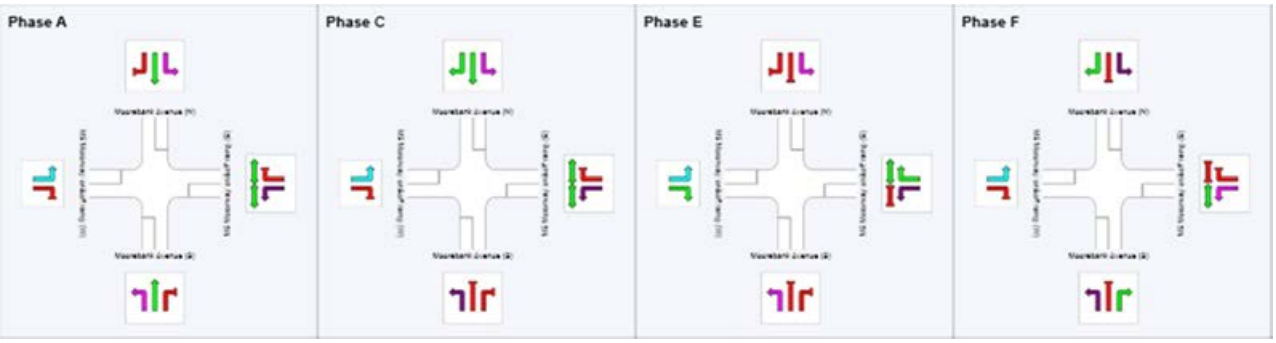
PHASING SUMMARY

Site: I-13 2025 BASE PM

Moorebank Avenue / the M5 Motorway
2025 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	17	30	53
Green Time (sec)	10	6	16	34
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	17	13	23	41
Phase Split	18 %	14 %	24 %	44 %



AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-13 2025 IMT AM

Moorebank Avenue / the M5 Motorway
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	363	35.1	0.406	10.0	LOS A	4.6	50.5	0.47	0.68	48.8
2	T1	701	9.9	0.861	38.5	LOS C	14.6	117.0	1.00	1.05	35.3
3	R2	296	6.0	0.430	33.3	LOS C	5.2	39.8	0.90	0.79	36.7
Approach		1360	15.8	0.861	29.8	LOS C	14.6	117.0	0.84	0.89	38.5
East: M5 Motorway on&off ramp (E)											
4	L2	274	16.2	0.347	10.1	LOS A	3.2	27.3	0.53	0.71	49.5
6	R2	234	5.9	0.243	28.8	LOS C	3.4	24.7	0.82	0.75	40.4
Approach		507	11.4	0.347	18.7	LOS B	3.4	27.3	0.66	0.73	44.6
North: Moorebank Avenue (N)											
7	L2	52	49.0	0.051	7.7	LOS A	0.3	3.3	0.28	0.60	51.2
8	T1	218	21.7	0.294	26.1	LOS B	3.4	30.4	0.87	0.69	40.7
9	R2	435	26.6	0.744	37.1	LOS C	9.4	80.5	0.97	0.86	36.5
Approach		704	26.8	0.744	31.6	LOS C	9.4	80.5	0.89	0.79	38.5
West: M5 Motorway on&off ramp (W)											
10	L2	1696	8.1	0.966	7.6	LOS A	0.0	0.0	0.00	0.50	51.9
12	R2	522	22.8	0.667	33.6	LOS C	8.9	86.8	0.94	0.85	36.6
Approach		2218	11.6	0.966	13.7	LOS A	8.9	86.8	0.22	0.58	47.6
All Vehicles		4789	15.0	0.966	21.4	LOS B	14.6	117.0	0.54	0.72	43.1

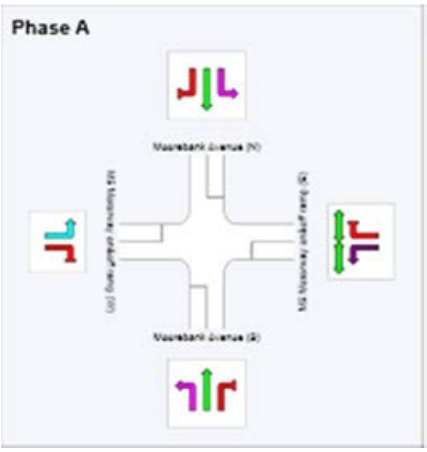
PHASING SUMMARY

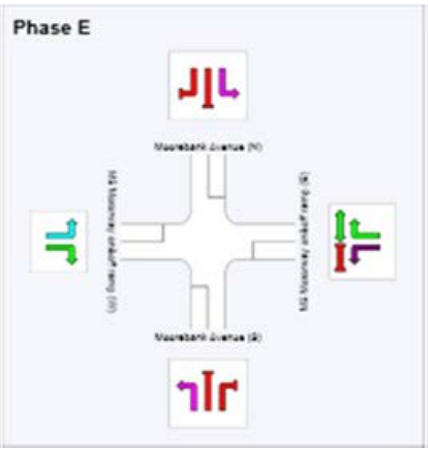
Site: I-13 2025 IMT AM

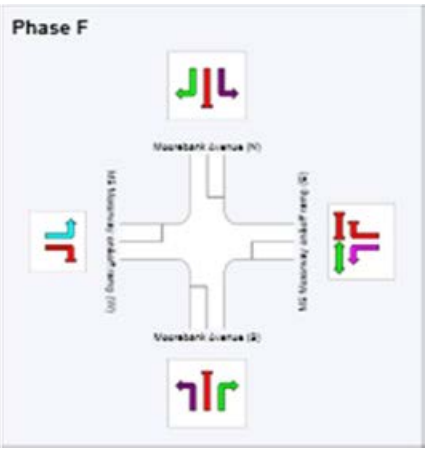
Moorebank Avenue / the M5 Motorway
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	F
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	24	51
Green Time (sec)	17	20	16
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	24	27	23
Phase Split	32 %	36 %	31 %







PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-13 2025 IMT PM

Moorebank Avenue / the M5 Motorway
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	438	29.3	0.695	23.0	LOS B	14.0	150.0	0.85	0.83	41.1
2	T1	204	18.6	0.588	46.0	LOS D	4.8	42.8	1.00	0.80	32.7
3	R2	336	13.2	0.319	29.0	LOS C	6.1	52.7	0.76	0.77	38.4
Approach		978	21.5	0.695	29.8	LOS C	14.0	150.0	0.85	0.80	38.1
East: M5 Motorway on&off ramp (E)											
4	L2	443	8.1	0.567	16.7	LOS B	8.7	68.5	0.71	0.81	45.3
6	R2	89	21.2	0.163	42.6	LOS D	1.8	14.9	0.89	0.73	34.9
Approach		533	10.3	0.567	21.1	LOS B	8.7	68.5	0.74	0.80	43.0
North: Moorebank Avenue (N)											
7	L2	136	6.2	0.111	7.3	LOS A	1.1	7.9	0.26	0.62	52.7
8	T1	725	8.4	0.824	42.3	LOS C	17.6	138.3	1.00	0.98	34.0
9	R2	1442	7.4	0.961	61.5	LOS E	41.8	311.5	1.00	1.15	29.6
Approach		2303	7.7	0.961	52.2	LOS D	41.8	311.5	0.96	1.07	31.6
West: M5 Motorway on&off ramp (W)											
10	L2	614	15.3	0.366	5.8	LOS A	0.0	0.0	0.00	0.52	54.3
12	R2	373	35.9	0.864	59.3	LOS E	10.0	115.7	1.00	1.02	28.4
Approach		986	23.1	0.864	26.0	LOS B	10.0	115.7	0.38	0.71	41.1
All Vehicles		4800	13.9	0.961	38.8	LOS C	41.8	311.5	0.79	0.91	35.5

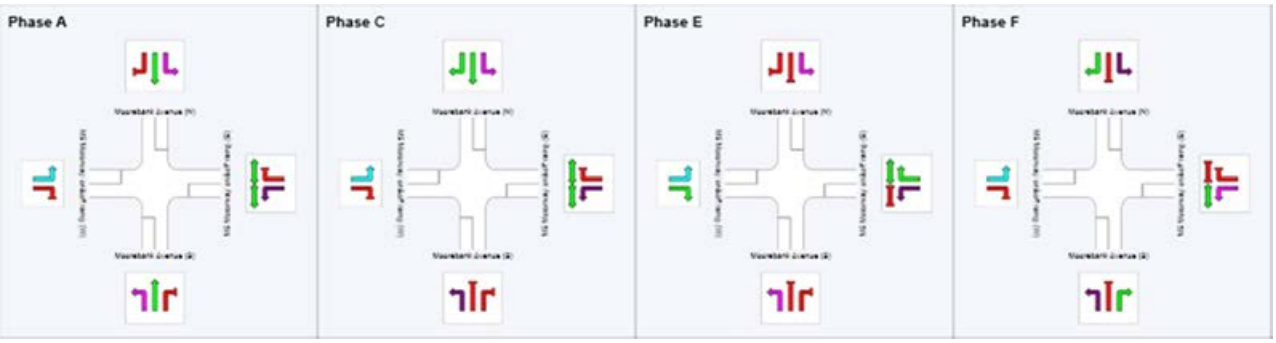
PHASING SUMMARY

Site: I-13 2025 IMT PM

Moorebank Avenue / the M5 Motorway
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	17	30	53
Green Time (sec)	10	6	16	34
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	17	13	23	41
Phase Split	18 %	14 %	24 %	44 %



I-14 Intersection of M5 Motorway and Hume Highway

AM BASE

MOVEMENT SUMMARY

Site: I-14 2025 BASE AM

M5 Motorway / Hume Highway
2025 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
2	T1	4027	4.5	0.971	22.2	LOS B	69.0	501.4	0.54	0.60	46.1
3	R2	597	4.2	0.823	39.3	LOS C	15.1	109.5	0.97	0.86	39.0
Approach		4624	4.4	0.971	24.4	LOS B	69.0	501.4	0.60	0.64	45.0
East: M5 Motorway on&off-ramp (E)											
4	L2	300	6.3	0.119	30.3	LOS C	4.2	31.2	0.59	0.70	42.0
6	R2	1042	3.8	1.072	174.0	LOS F	43.7	316.1	1.00	1.20	13.2
Approach		1342	4.4	1.072	141.9	LOS F	43.7	316.1	0.91	1.09	16.6
North: Hume Highway (N)											
7	L2	652	5.8	0.488	11.2	LOS A	15.9	116.5	0.41	0.69	48.0
8	T1	1193	7.0	0.484	28.4	LOS B	17.5	129.6	0.62	0.55	43.3
Approach		1844	6.6	0.488	22.3	LOS B	17.5	129.6	0.55	0.60	44.5
All Vehicles		7811	4.9	1.072	44.1	LOS D	69.0	501.4	0.64	0.71	36.4

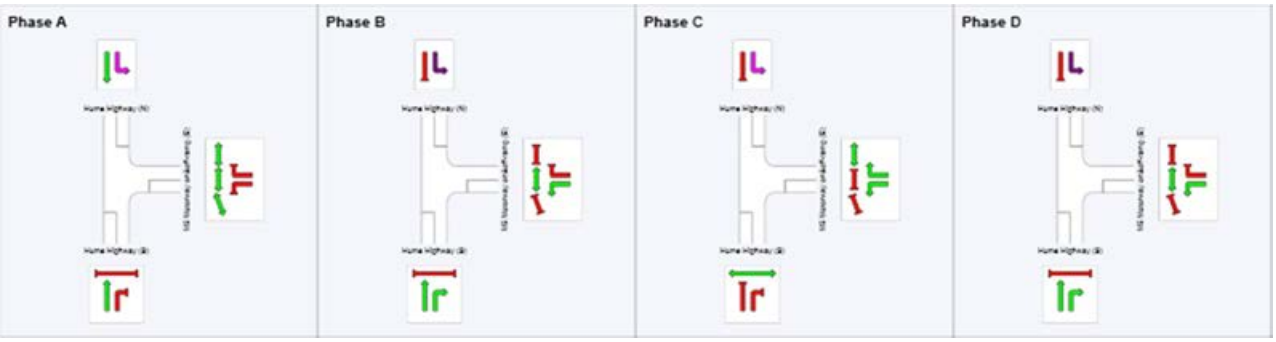
PHASING SUMMARY

Site: I-14 2025 BASE AM

M5 Motorway / Hume Highway
2025 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	No	No	No	Yes
Phase Change Time (sec)	20	97	123	0
Green Time (sec)	70	19	29	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	77	26	36	20
Phase Split	48 %	16 %	23 %	13 %



PM BASE

MOVEMENT SUMMARY

Site: I-14 2025 BASE PM

M5 Motorway / Hume Highway
2025 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
2	T1	2472	3.7	0.603	2.1	LOS A	6.5	47.0	0.11	0.11	58.3
3	R2	391	1.6	0.995	106.1	LOS F	18.6	131.7	1.00	1.02	24.6
Approach		2862	3.4	0.995	16.3	LOS B	18.6	131.7	0.23	0.23	49.1
East: M5 Motorway on&off-ramp (E)											
4	L2	1413	3.7	1.065	187.4	LOS F	78.8	568.6	1.00	1.21	16.8
6	R2	1115	3.6	1.093	191.8	LOS F	50.1	361.8	1.00	1.24	12.2
Approach		2527	3.6	1.093	189.3	LOS F	78.8	568.6	1.00	1.22	14.9
North: Hume Highway (N)											
7	L2	832	2.0	0.586	9.8	LOS A	20.2	143.8	0.42	0.70	49.2
8	T1	2754	2.7	0.846	19.7	LOS B	47.3	339.1	0.74	0.69	47.4
Approach		3585	2.6	0.846	17.4	LOS B	47.3	339.1	0.67	0.69	47.7
All Vehicles		8975	3.1	1.093	65.5	LOS E	78.8	568.6	0.62	0.69	30.6

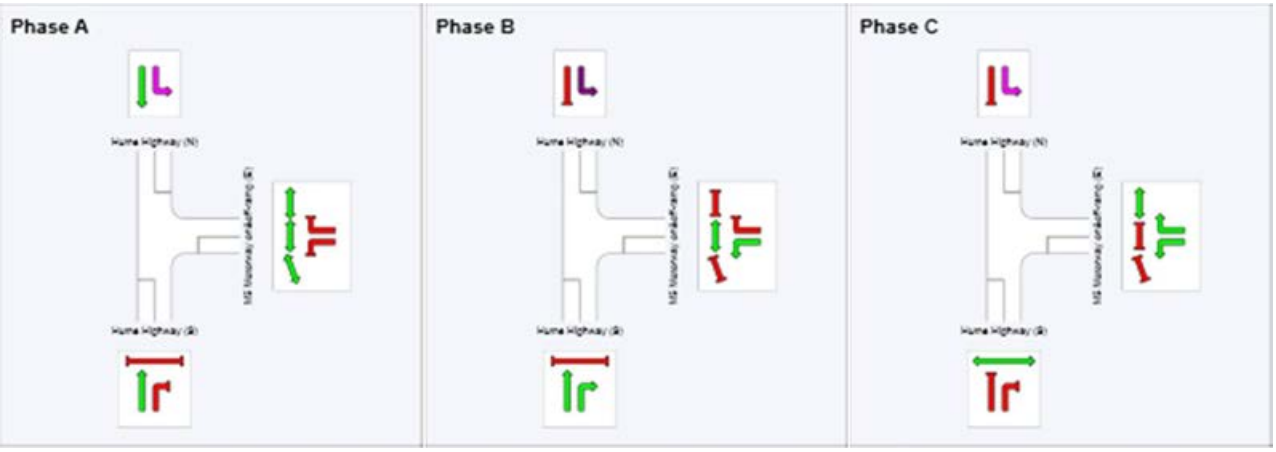
PHASING SUMMARY

Site: I-14 2025 BASE PM

M5 Motorway / Hume Highway
2025 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	97	121
Green Time (sec)	90	17	31
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	97	24	38
Phase Split	61 %	15 %	24 %



AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-14 2025 IMT AM

M5 Motorway / Hume Highway
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
2	T1	4027	4.5	0.971	22.2	LOS B	69.0	501.4	0.54	0.60	46.1
3	R2	602	4.2	0.830	39.6	LOS C	15.3	111.2	0.98	0.87	38.9
Approach		4629	4.4	0.971	24.5	LOS B	69.0	501.4	0.60	0.64	45.0
East: M5 Motorway on&off-ramp (E)											
4	L2	300	6.3	0.119	30.3	LOS C	4.2	31.2	0.59	0.70	42.0
6	R2	1072	6.5	1.146	234.6	LOS F	52.7	399.6	1.00	1.32	10.4
Approach		1372	6.4	1.146	189.9	LOS F	52.7	399.6	0.91	1.19	13.3
North: Hume Highway (N)											
7	L2	689	10.1	0.544	11.6	LOS A	18.1	143.2	0.45	0.71	47.5
8	T1	1193	7.0	0.484	28.4	LOS B	17.5	129.6	0.62	0.55	43.3
Approach		1882	8.1	0.544	22.3	LOS B	18.1	143.2	0.56	0.60	44.4
All Vehicles		7883	5.7	1.146	52.7	LOS D	69.0	501.4	0.64	0.73	33.7

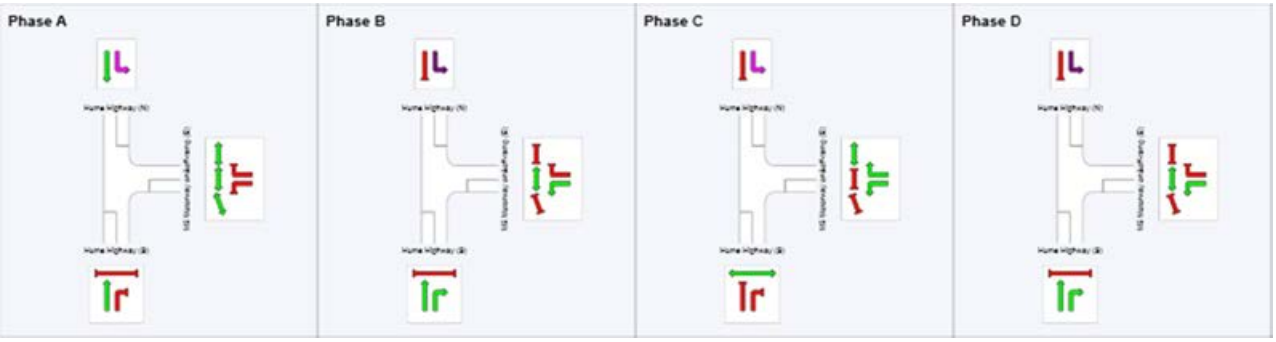
PHASING SUMMARY

Site: I-14 2025 IMT AM

M5 Motorway / Hume Highway
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	No	No	No	Yes
Phase Change Time (sec)	20	97	123	0
Green Time (sec)	70	19	29	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	77	26	36	20
Phase Split	48 %	16 %	23 %	13 %



PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-14 2025 IMT PM

M5 Motorway / Hume Highway
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
2	T1	2472	3.7	0.603	2.1	LOS A	6.5	47.0	0.11	0.11	58.3
3	R2	391	1.6	0.995	106.1	LOS F	18.6	131.7	1.00	1.02	24.6
Approach		2862	3.4	0.995	16.3	LOS B	18.6	131.7	0.23	0.23	49.1
East: M5 Motorway on&off-ramp (E)											
4	L2	1418	3.6	1.069	190.3	LOS F	79.7	575.6	1.00	1.22	16.6
6	R2	1158	6.6	1.187	271.2	LOS F	62.7	478.4	1.00	1.39	9.2
Approach		2576	5.0	1.187	226.7	LOS F	79.7	575.6	1.00	1.29	12.9
North: Hume Highway (N)											
7	L2	871	6.4	0.647	10.4	LOS A	23.9	183.8	0.47	0.72	48.5
8	T1	2754	2.7	0.846	19.7	LOS B	47.3	339.1	0.74	0.69	47.4
Approach		3624	3.6	0.846	17.5	LOS B	47.3	339.1	0.68	0.70	47.6
All Vehicles		9062	3.9	1.187	76.6	LOS F	79.7	575.6	0.63	0.72	28.2

PHASING SUMMARY

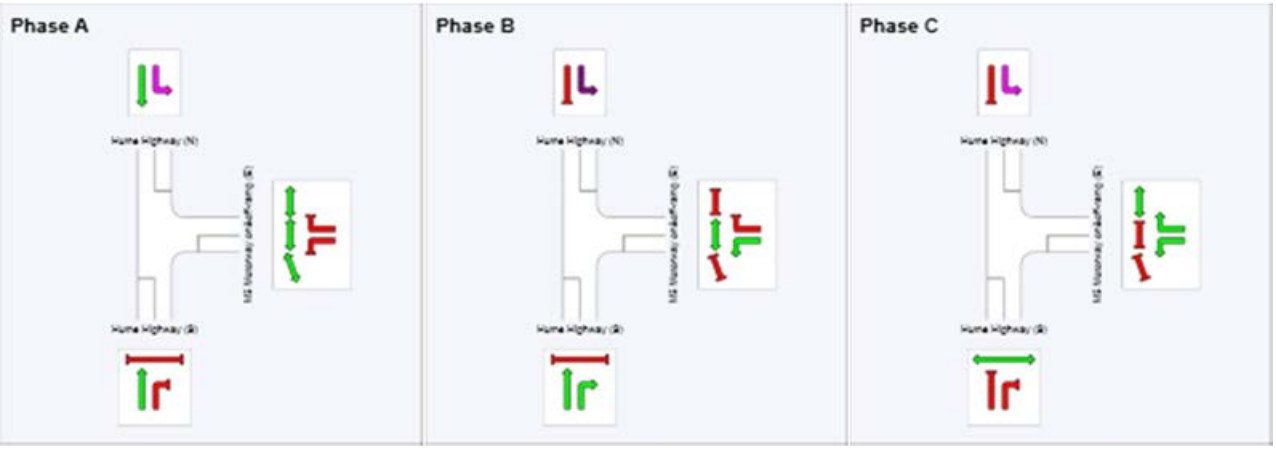
Site: I-14 2025 IMT PM

M5 Motorway / Hume Highway
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase times specified by the user
Sequence: TCS 2305 PM - Optimised
Movement Class: All Movement Classes
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	97	121
Green Time (sec)	90	17	31
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	97	24	38
Phase Split	61 %	15 %	24 %



AM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-14 2025 IMT AM - Upgrade

M5 Motorway / Hume Highway
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
2	T1	4027	4.5	0.971	22.2	LOS B	69.0	501.4	0.54	0.60	46.1
3	R2	602	4.2	0.830	39.6	LOS C	15.3	111.2	0.98	0.87	38.9
Approach		4629	4.4	0.971	24.5	LOS B	69.0	501.4	0.60	0.64	45.0
East: M5 Motorway on&off-ramp (E)											
4	L2	300	6.3	0.119	30.3	LOS C	4.2	31.2	0.59	0.70	42.0
6	R2	1072	6.5	1.122	212.9	LOS F	49.2	373.5	1.00	1.28	11.2
Approach		1372	6.4	1.122	173.0	LOS F	49.2	373.5	0.91	1.16	14.3
North: Hume Highway (N)											
7	L2	689	10.1	0.544	11.6	LOS A	18.1	143.2	0.45	0.71	47.5
8	T1	1193	7.0	0.484	28.4	LOS B	17.5	129.6	0.62	0.55	43.3
Approach		1882	8.1	0.544	22.3	LOS B	18.1	143.2	0.56	0.60	44.4
All Vehicles		7883	5.7	1.122	49.8	LOS D	69.0	501.4	0.64	0.72	34.6

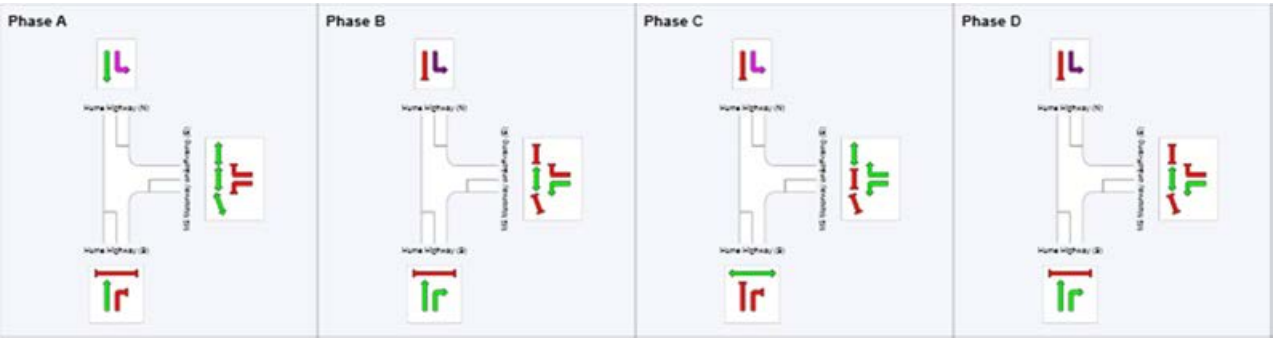
PHASING SUMMARY

Site: I-14 2025 IMT AM - Upgrade

M5 Motorway / Hume Highway
2025 IMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	No	No	No	Yes
Phase Change Time (sec)	20	97	123	0
Green Time (sec)	70	19	29	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	77	26	36	20
Phase Split	48 %	16 %	23 %	13 %



PM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-14 2025 IMT PM - Upgrade

M5 Motorway / Hume Highway
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
2	T1	2472	3.7	0.620	3.5	LOS A	10.2	73.7	0.18	0.17	57.3
3	R2	391	1.6	0.995	106.1	LOS F	18.6	131.7	1.00	1.02	24.6
Approach		2862	3.4	0.995	17.5	LOS B	18.6	131.7	0.29	0.28	48.5
East: M5 Motorway on&off-ramp (E)											
4	L2	1418	3.6	1.026	159.2	LOS F	72.1	520.4	1.00	1.14	18.9
6	R2	1158	6.6	1.025	147.6	LOS F	48.4	369.3	1.00	1.15	14.9
Approach		2576	5.0	1.026	153.9	LOS F	72.1	520.4	1.00	1.15	17.2
North: Hume Highway (N)											
7	L2	871	6.4	0.650	10.4	LOS A	23.9	184.3	0.48	0.72	48.5
8	T1	2754	2.7	0.939	38.1	LOS C	74.4	532.8	0.85	0.88	39.6
Approach		3624	3.6	0.939	31.4	LOS C	74.4	532.8	0.76	0.84	40.9
All Vehicles		9062	3.9	1.026	61.9	LOS E	74.4	532.8	0.68	0.75	31.4

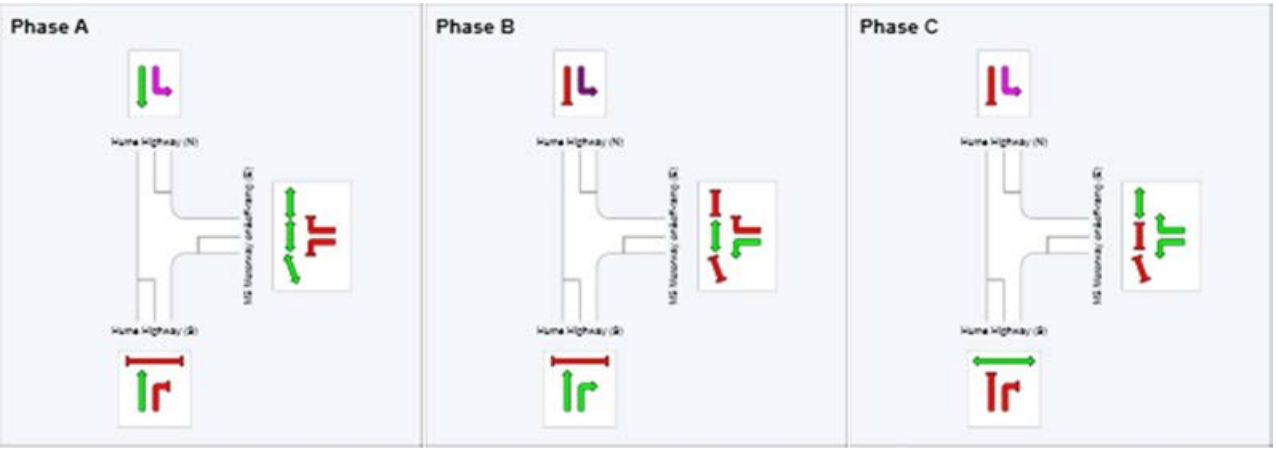
PHASING SUMMARY

Site: I-14 2025 IMT PM - Upgrade

M5 Motorway / Hume Highway
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	94	118
Green Time (sec)	87	17	34
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	94	24	41
Phase Split	59 %	15 %	26 %



I-15 Intersection of Cambridge Avenue and Canterbury Road

AM + PM BASE

MOVEMENT SUMMARY

Site: I-15 2025 BASE AM

Canterbury Road / Cambridge Avenue / Glenfield Road
2025 BASE AM PEAK 7:45 am - 8:45 am
Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Canterbury Road (S)											
1	L2	418	3.5	0.456	5.8	LOS A	2.7	19.4	0.56	0.66	53.0
2	T1	6	0.0	0.770	7.2	LOS A	9.3	66.1	0.77	0.82	51.1
3	R2	949	2.1	0.770	12.6	LOS A	9.3	66.1	0.77	0.82	51.3
Approach		1374	2.5	0.770	10.5	LOS A	9.3	66.1	0.71	0.77	51.7
East: Cambridge Avenue (E)											
4	L2	287	2.9	0.152	3.5	LOS A	0.0	0.0	0.00	0.43	56.5
5	T1	76	6.9	0.081	5.5	LOS A	0.5	3.6	0.56	0.58	53.2
6	R2	48	8.7	0.081	10.7	LOS A	0.5	3.6	0.57	0.61	53.6
Approach		412	4.3	0.152	4.7	LOS A	0.5	3.6	0.17	0.48	55.5
North: Railway Parade (N)											
7	L2	302	2.8	0.640	24.1	LOS B	6.2	44.7	1.00	1.21	42.8
8	T1	3	33.3	0.510	22.5	LOS B	3.5	26.7	0.94	1.09	42.3
9	R2	167	8.2	0.510	27.7	LOS B	3.5	26.7	0.94	1.09	40.9
Approach		473	4.9	0.640	25.4	LOS B	6.2	44.7	0.98	1.16	42.1
West: Glenfield Road (W)											
10	L2	358	5.3	0.899	43.0	LOS D	17.6	129.0	1.00	1.59	32.9
11	T1	184	6.9	0.899	43.9	LOS D	17.6	129.0	1.00	1.58	33.0
12	R2	332	5.7	0.899	51.3	LOS D	15.1	111.4	1.00	1.55	31.9
Approach		874	5.8	0.899	46.3	LOS D	17.6	129.0	1.00	1.57	32.6
All Vehicles		3132	4.0	0.899	22.0	LOS B	17.6	129.0	0.76	1.01	43.9

MOVEMENT SUMMARY

Site: I-15 2025 BASE PM

Canterbury Road / Cambridge Avenue / Glenfield Road
2025 BASE PM PEAK 4:30 pm - 5:30 pm
Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Canterbury Road (S)											
1	L2	304	2.4	0.396	7.5	LOS A	2.3	16.1	0.72	0.86	52.0
2	T1	5	0.0	0.348	6.5	LOS A	2.0	13.9	0.70	0.86	51.4
3	R2	308	1.0	0.348	11.9	LOS A	2.0	13.9	0.70	0.86	51.6
Approach		618	1.7	0.396	9.7	LOS A	2.3	16.1	0.71	0.86	51.8
East: Cambridge Avenue (E)											
4	L2	1054	2.2	0.556	3.5	LOS A	0.0	0.0	0.00	0.43	56.4
5	T1	267	7.9	0.393	6.7	LOS A	2.9	20.7	0.70	0.72	52.3
6	R2	305	0.7	0.393	11.8	LOS A	2.9	20.7	0.74	0.75	52.6
Approach		1626	2.8	0.556	5.6	LOS A	2.9	20.7	0.25	0.54	55.0
North: Railway Parade (N)											
7	L2	115	0.9	0.164	7.4	LOS A	0.8	5.7	0.65	0.76	53.1
8	T1	0	0.0	0.000	0.0	NA	0.0	0.0	0.00	0.00	0.0
9	R2	214	7.9	0.249	12.3	LOS A	1.4	10.2	0.68	0.83	50.3
Approach		328	5.4	0.249	10.6	LOS A	1.4	10.2	0.67	0.80	51.3
West: Glenfield Road (W)											
10	L2	254	4.6	0.380	7.6	LOS A	2.3	16.3	0.70	0.78	51.9
11	T1	51	0.0	0.380	7.4	LOS A	2.3	16.3	0.70	0.78	53.9
12	R2	424	3.7	0.447	12.6	LOS A	3.1	22.1	0.73	0.84	50.2
Approach		728	3.8	0.447	10.5	LOS A	3.1	22.1	0.72	0.81	51.0
All Vehicles		3301	3.1	0.556	8.0	LOS A	3.1	22.1	0.48	0.69	53.1

AM + PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-15 2025 IMT AM

Canterbury Road / Cambridge Avenue / Glenfield Road
2025 IMT AM PEAK 7:45 am - 8:45 am
Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	418	3.5	0.458	5.8	LOS A	2.7	19.5	0.57	0.66	53.0
2	T1	6	0.0	0.780	7.4	LOS A	9.7	69.0	0.79	0.82	51.1
3	R2	962	2.1	0.780	12.8	LOS A	9.7	69.0	0.79	0.82	51.2
Approach		1386	2.5	0.780	10.6	LOS A	9.7	69.0	0.72	0.77	51.7
East: Cambridge Avenue (E)											
4	L2	287	2.9	0.152	3.5	LOS A	0.0	0.0	0.00	0.43	56.5
5	T1	76	6.9	0.081	5.5	LOS A	0.5	3.6	0.56	0.58	53.2
6	R2	48	8.7	0.081	10.7	LOS A	0.5	3.6	0.57	0.61	53.6
Approach		412	4.3	0.152	4.7	LOS A	0.5	3.6	0.17	0.48	55.5
North: Railway Parade (N)											
7	L2	305	2.8	0.662	26.0	LOS B	6.7	47.7	1.00	1.23	41.8
8	T1	3	33.3	0.524	23.6	LOS B	3.7	27.7	0.94	1.10	41.8
9	R2	167	8.2	0.524	28.8	LOS C	3.7	27.7	0.94	1.10	40.3
Approach		476	4.9	0.662	26.9	LOS B	6.7	47.7	0.98	1.18	41.3
West: Glenfield Road (W)											
10	L2	358	5.3	0.924	50.5	LOS D	20.0	146.8	1.00	1.69	30.6
11	T1	186	6.8	0.924	51.4	LOS D	20.0	146.8	1.00	1.68	30.7
12	R2	332	5.7	0.924	59.0	LOS E	17.1	125.8	1.00	1.64	29.7
Approach		876	5.8	0.924	53.9	LOS D	20.0	146.8	1.00	1.67	30.3
All Vehicles		3149	4.0	0.924	24.3	LOS B	20.0	146.8	0.76	1.05	42.7

MOVEMENT SUMMARY

Site: I-15 2025 IMT PM

Canterbury Road / Cambridge Avenue / Glenfield Road
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	304	2.4	0.397	7.6	LOS A	2.3	16.2	0.73	0.86	52.0
2	T1	5	0.0	0.349	6.6	LOS A	2.0	14.0	0.70	0.86	51.4
3	R2	308	1.0	0.349	12.0	LOS A	2.0	14.0	0.70	0.86	51.6
Approach		618	1.7	0.397	9.8	LOS A	2.3	16.2	0.71	0.86	51.8
East: Cambridge Avenue (E)											
4	L2	1066	2.2	0.563	3.5	LOS A	0.0	0.0	0.00	0.43	56.4
5	T1	269	7.8	0.397	6.7	LOS A	2.9	21.0	0.70	0.72	52.3
6	R2	308	0.7	0.397	11.8	LOS A	2.9	21.0	0.75	0.75	52.6
Approach		1644	2.8	0.563	5.6	LOS A	2.9	21.0	0.26	0.54	55.0
North: Railway Parade (N)											
7	L2	115	0.9	0.164	7.4	LOS A	0.8	5.7	0.65	0.76	53.1
8	T1	1	0.0	0.250	6.8	LOS A	1.4	10.2	0.68	0.83	51.4
9	R2	214	7.9	0.250	12.3	LOS A	1.4	10.2	0.68	0.83	50.3
Approach		329	5.4	0.250	10.6	LOS A	1.4	10.2	0.67	0.80	51.3
West: Glenfield Road (W)											
10	L2	254	4.6	0.382	7.6	LOS A	2.3	16.4	0.71	0.78	51.9
11	T1	51	0.0	0.382	7.5	LOS A	2.3	16.4	0.71	0.78	53.8
12	R2	424	3.7	0.448	12.7	LOS A	3.1	22.2	0.73	0.84	50.2
Approach		728	3.8	0.448	10.5	LOS A	3.1	22.2	0.72	0.82	51.0
All Vehicles		3320	3.1	0.563	8.0	LOS A	3.1	22.2	0.48	0.69	53.1

AM + PM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-15 2025 IMT AM - Upgrade

Canterbury Road / Cambridge Avenue / Glenfield Road
2025 IMT AM PEAK 7:45 am - 8:45 am
Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	418	3.5	0.593	5.5	LOS A	4.5	32.2	0.60	0.69	51.3
2	T1	6	0.0	0.593	5.4	LOS A	4.5	32.2	0.60	0.69	54.0
3	R2	962	2.1	0.593	11.1	LOS A	4.5	32.1	0.61	0.74	52.5
Approach		1386	2.5	0.593	9.4	LOS A	4.5	32.2	0.61	0.72	52.2
East: Cambridge Avenue (E)											
4	L2	287	2.9	0.152	3.5	LOS A	0.0	0.0	0.00	0.43	56.5
5	T1	76	6.9	0.080	5.5	LOS A	0.5	3.4	0.55	0.58	53.3
6	R2	48	8.7	0.080	10.7	LOS A	0.5	3.4	0.55	0.61	53.6
Approach		412	4.3	0.152	4.7	LOS A	0.5	3.4	0.17	0.48	55.5
North: Railway Parade (N)											
7	L2	305	2.8	0.464	11.3	LOS A	3.1	22.0	0.86	0.99	50.3
8	T1	3	33.3	0.371	12.5	LOS A	1.9	14.6	0.81	0.97	47.6
9	R2	167	8.2	0.371	17.8	LOS B	1.9	14.6	0.81	0.97	46.5
Approach		476	4.9	0.464	13.6	LOS A	3.1	22.0	0.84	0.98	49.0
West: Glenfield Road (W)											
10	L2	358	5.3	0.611	9.6	LOS A	4.6	33.9	0.84	1.00	50.3
11	T1	186	6.8	0.611	10.0	LOS A	4.6	33.9	0.84	1.01	50.6
12	R2	332	5.7	0.611	16.3	LOS B	4.3	31.4	0.84	1.03	48.0
Approach		876	5.8	0.611	12.2	LOS A	4.6	33.9	0.84	1.02	49.5
All Vehicles		3149	4.0	0.611	10.2	LOS A	4.6	33.9	0.65	0.81	51.3

MOVEMENT SUMMARY

Site: I-15 2025 IMT PM - Upgrade

Canterbury Road / Cambridge Avenue / Glenfield Road
2025 IMT PM PEAK 4:30 pm - 5:30 pm
Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	304	2.4	0.374	6.8	LOS A	2.1	15.3	0.71	0.82	52.2
2	T1	5	0.0	0.374	6.6	LOS A	2.1	15.3	0.71	0.82	54.8
3	R2	308	1.0	0.374	12.7	LOS A	2.1	15.3	0.72	0.90	51.6
Approach		618	1.7	0.374	9.7	LOS A	2.1	15.3	0.71	0.86	51.9
East: Cambridge Avenue (E)											
4	L2	1066	2.2	0.563	3.5	LOS A	0.0	0.0	0.00	0.43	56.4
5	T1	269	7.8	0.393	6.7	LOS A	2.9	20.6	0.69	0.71	52.3
6	R2	308	0.7	0.393	11.8	LOS A	2.9	20.6	0.74	0.75	52.6
Approach		1644	2.8	0.563	5.6	LOS A	2.9	20.6	0.25	0.54	55.0
North: Railway Parade (N)											
7	L2	115	0.9	0.159	7.2	LOS A	0.7	5.2	0.63	0.75	53.3
8	T1	1	0.0	0.242	6.7	LOS A	1.3	9.4	0.65	0.82	51.5
9	R2	214	7.9	0.242	12.1	LOS A	1.3	9.4	0.65	0.82	50.4
Approach		329	5.4	0.242	10.4	LOS A	1.3	9.4	0.64	0.80	51.4
West: Glenfield Road (W)											
10	L2	254	4.6	0.365	6.9	LOS A	2.0	14.2	0.65	0.75	52.4
11	T1	51	0.0	0.365	6.8	LOS A	2.0	14.2	0.65	0.75	54.4
12	R2	424	3.7	0.428	11.9	LOS A	2.6	18.7	0.67	0.83	50.4
Approach		728	3.8	0.428	9.8	LOS A	2.6	18.7	0.66	0.80	51.3
All Vehicles		3320	3.1	0.563	7.8	LOS A	2.9	20.6	0.47	0.68	53.2

I-0A Intersection of Moorebank Avenue and Anzac Road

AM BASE

MOVEMENT SUMMARY

Site: I-0A 2025 BASE AM

Intersection of Moorebank Avenue and Anzac Road
2025 BASE AM PEAK
Signals - Fixed Time Cycle Time = 103 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1060	3.5	1.020	90.7	LOS F	93.4	673.5	1.00	1.42	17.4
3	R2	446	3.3	0.723	32.9	LOS C	17.5	126.3	0.94	0.95	38.2
Approach		1506	3.4	1.020	73.6	LOS F	93.4	673.5	0.98	1.28	22.4
East: Anzac Road (E)											
4	L2	237	3.1	0.286	24.3	LOS B	7.4	53.0	0.67	0.76	42.0
6	R2	209	13.6	0.796	56.6	LOS E	11.2	87.4	1.00	0.91	20.5
Approach		446	8.0	0.796	39.4	LOS C	11.2	87.4	0.82	0.83	30.7
North: Moorebank Avenue (N)											
7	L2	363	9.9	0.237	6.1	LOS A	1.3	10.2	0.16	0.59	49.8
8	T1	631	3.2	0.582	23.0	LOS B	18.1	130.5	0.78	0.68	37.0
Approach		994	5.6	0.582	16.8	LOS B	18.1	130.5	0.55	0.65	40.9
All Vehicles		2946	4.9	1.020	49.3	LOS D	93.4	673.5	0.81	1.00	27.3

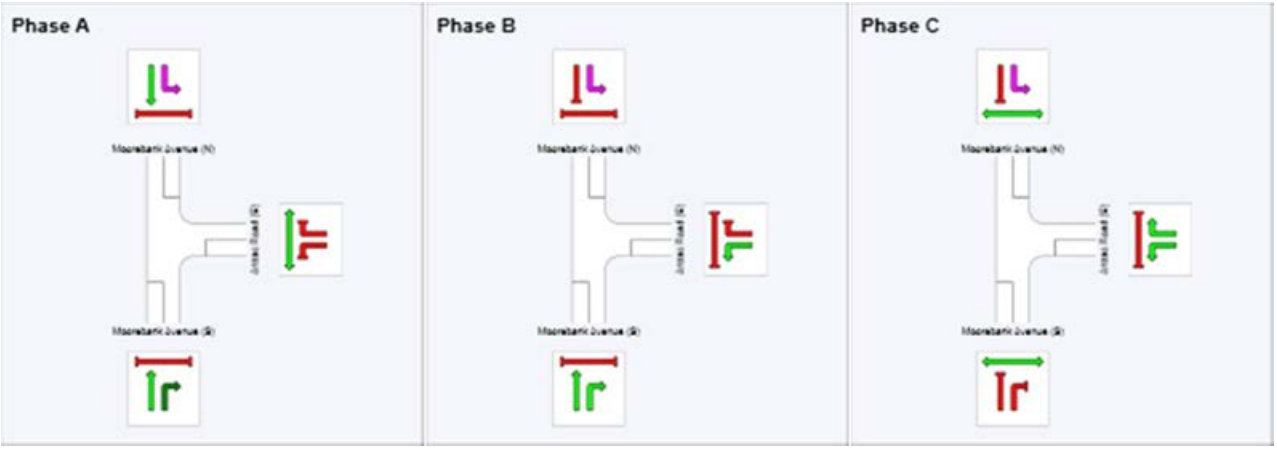
PHASING SUMMARY

Site: I-0A 2025 BASE AM

Intersection of Moorebank Avenue and Anzac Road
2025 BASE AM PEAK
Signals - Fixed Time Cycle Time = 103 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	50	78
Green Time (sec)	44	22	19
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	50	28	25
Phase Split	49 %	27 %	24 %



PM BASE

MOVEMENT SUMMARY

Site: I-0A 2025 BASE PM

Intersection of Moorebank Avenue and Anzac Road
2025 BASE PM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	312	3.7	0.261	9.6	LOS A	7.3	52.8	0.48	0.41	47.6
3	R2	193	1.1	1.062	114.1	LOS F	17.5	123.3	1.00	1.20	20.7
Approach		504	2.7	1.062	49.6	LOS D	17.5	123.3	0.68	0.71	28.7
East: Anzac Road (E)											
4	L2	545	2.3	0.801	41.6	LOS C	27.5	196.6	0.96	0.90	35.0
6	R2	368	5.4	0.872	59.5	LOS E	22.0	161.1	1.00	0.96	20.0
Approach		914	3.6	0.872	48.8	LOS D	27.5	196.6	0.98	0.93	28.7
North: Moorebank Avenue (N)											
7	L2	332	4.1	0.206	6.0	LOS A	1.2	8.6	0.14	0.59	50.2
8	T1	1245	2.5	0.944	41.7	LOS C	62.5	446.8	0.90	0.98	28.2
Approach		1577	2.8	0.944	34.2	LOS C	62.5	446.8	0.74	0.90	31.1
All Vehicles		2995	3.0	1.062	41.3	LOS C	62.5	446.8	0.80	0.87	29.8

PHASING SUMMARY

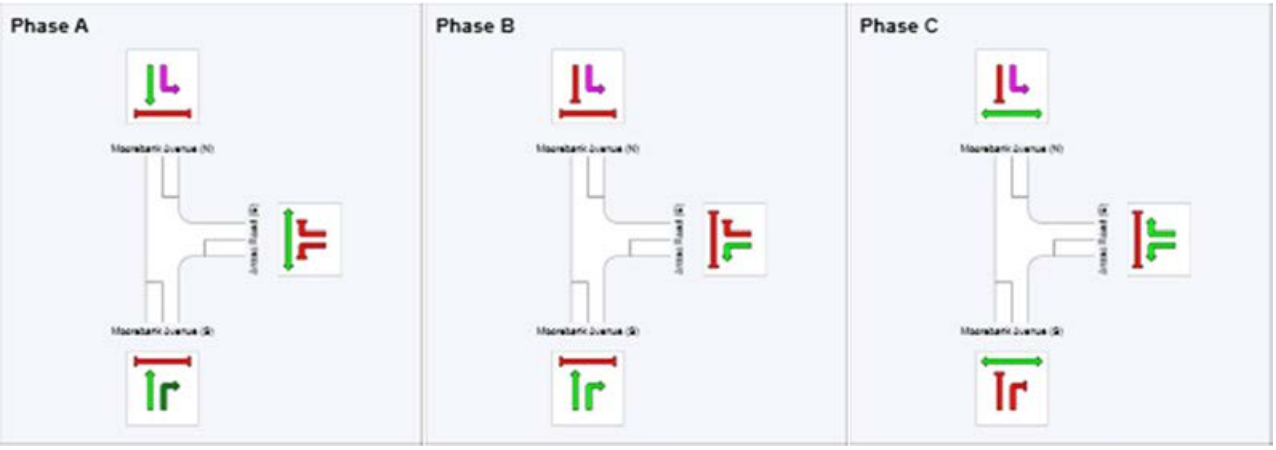
Site: I-0A 2025 BASE PM

Intersection of Moorebank Avenue and Anzac Road
2025 BASE PM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase times specified by the user
Sequence: TCS 3094 PM - Modified
Movement Class: All Movement Classes
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	63	75
Green Time (sec)	57	6	29
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	63	12	35
Phase Split	57 %	11 %	32 %



AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-0A 2025 MINT AM

Intersection of Moorebank Avenue, Anzac Road and IMT Access Road
2025 MINT AM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
1	L2	37	0.0	0.702	31.7	LOS C	21.1	152.0	0.80	0.74	30.2
2	T1	1039	3.5	0.702	26.3	LOS B	21.4	154.1	0.80	0.72	37.7
3	R2	446	3.3	0.820	49.1	LOS D	24.2	173.9	0.99	0.92	29.7
Approach		1522	3.4	0.820	33.1	LOS C	24.2	173.9	0.86	0.78	34.6
East: Anzac Road (E)											
4	L2	200	4.2	0.216	11.4	LOS A	3.5	25.6	0.42	0.67	47.9
5	T1	9	0.0	0.053	51.6	LOS D	0.5	3.3	0.94	0.65	26.0
6	R2	208	13.6	0.677	62.0	LOS E	5.8	45.6	1.00	0.84	28.3
Approach		418	8.8	0.677	37.5	LOS C	5.8	45.6	0.72	0.75	34.6
North: Moorebank Avenue (N)											
7	L2	356	8.0	0.680	34.9	LOS C	20.5	153.0	0.87	0.82	37.7
8	T1	521	6.9	0.680	33.1	LOS C	20.5	153.0	0.87	0.77	34.1
9	R2	251	49.2	0.534	48.9	LOS D	6.2	88.2	0.93	0.80	23.8
Approach		1127	16.6	0.680	37.2	LOS C	20.5	153.0	0.88	0.79	32.9
West: IMT Access Road (W)											
10	L2	156	98.6	0.333	26.2	LOS B	2.5	49.3	0.82	0.74	31.2
11	T1	1	0.0	0.007	52.0	LOS D	0.1	0.4	0.94	0.56	26.0
12	R2	1	0.0	0.008	56.3	LOS D	0.1	0.4	0.94	0.59	19.2
Approach		158	97.3	0.333	26.6	LOS B	2.5	49.3	0.83	0.73	31.0
All Vehicles		3225	13.3	0.820	34.8	LOS C	24.2	173.9	0.85	0.78	33.8

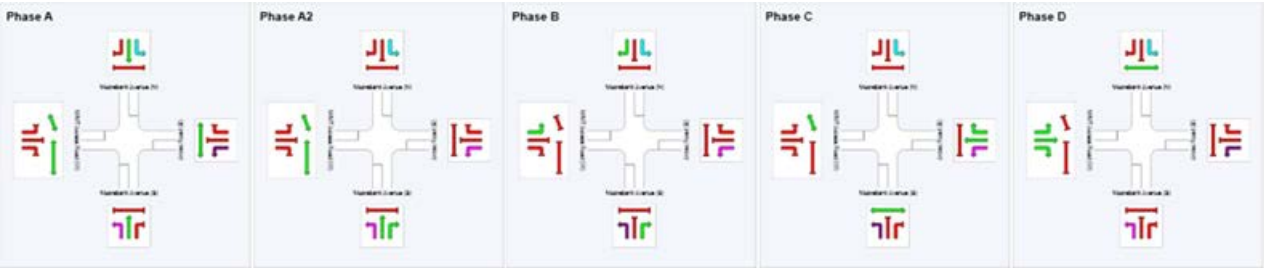
PHASING SUMMARY

Site: I-0A 2025 MINT AM

Intersection of Moorebank Avenue, Anzac Road and IMT Access Road
2025 MINT AM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	A2	B	C	D
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	41	50	80	96
Green Time (sec)	35	3	24	10	8
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	41	9	30	16	14
Phase Split	37 %	8 %	27 %	15 %	13 %



PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-0A 2025 MINT PM

Intersection of Moorebank Avenue, Anzac Road and IMT Access Road
2025 MINT PM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
1	L2	1	0.0	0.221	29.4	LOS C	4.6	33.6	0.59	0.50	31.7
2	T1	313	4.0	0.221	23.5	LOS B	4.7	34.1	0.60	0.50	39.3
3	R2	194	1.1	0.889	69.2	LOS E	12.0	84.5	1.00	1.00	24.7
Approach		507	2.9	0.889	41.0	LOS C	12.0	84.5	0.75	0.69	31.7
East: Anzac Road (E)											
4	L2	532	2.4	0.807	28.8	LOS C	25.8	184.4	0.95	0.93	37.5
5	T1	1	0.0	0.005	48.2	LOS D	0.1	0.4	0.91	0.56	26.9
6	R2	365	5.5	0.937	78.1	LOS F	12.1	88.9	1.00	1.08	25.0
Approach		898	3.6	0.937	48.9	LOS D	25.8	184.4	0.97	0.99	30.7
North: Moorebank Avenue (N)											
7	L2	327	4.2	0.867	30.5	LOS C	40.1	288.2	0.86	0.87	40.6
8	T1	1214	2.5	0.867	25.6	LOS B	40.1	288.2	0.79	0.80	37.7
9	R2	206	90.8	0.539	49.3	LOS D	5.1	96.5	0.93	0.80	22.9
Approach		1747	13.3	0.867	29.3	LOS C	40.1	288.2	0.82	0.81	36.1
West: IMT Access Road (W)											
10	L2	322	58.5	0.513	25.6	LOS B	5.1	74.8	0.87	0.78	32.4
11	T1	13	0.0	0.089	53.5	LOS D	0.7	4.6	0.96	0.66	25.6
12	R2	27	0.0	0.203	58.7	LOS E	1.5	10.2	0.97	0.71	18.7
Approach		362	52.0	0.513	29.1	LOS C	5.1	74.8	0.88	0.77	30.7
All Vehicles		3515	13.3	0.937	36.0	LOS C	40.1	288.2	0.86	0.83	33.3

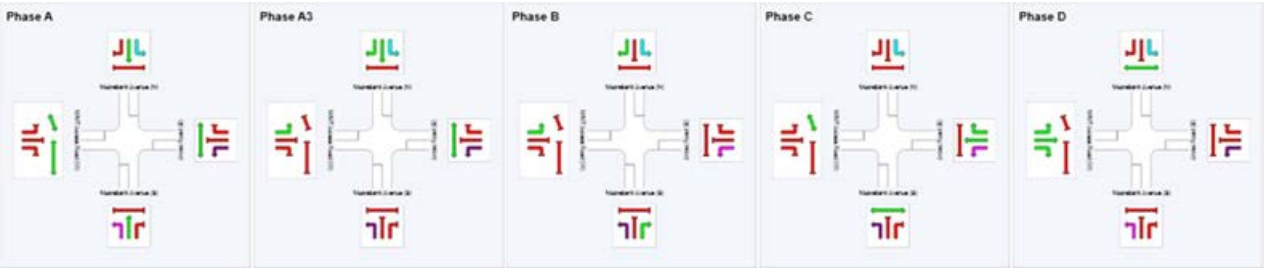
PHASING SUMMARY

Site: I-0A 2025 MINT PM

Intersection of Moorebank Avenue, Anzac Road and IMT Access Road
2025 MINT PM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	A3	B	C	D
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	47	59	78	96
Green Time (sec)	41	6	13	12	8
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	47	12	19	18	14
Phase Split	43 %	11 %	17 %	16 %	13 %



Appendix E
Traffic and Transport Impact Assessment

Appendix I

2028 SIDRA results with and without Moorebank IMT

I-01 Intersection of the Hume Highway and Orange Grove Road

AM BASE

MOVEMENT SUMMARY

Site: I-01 2028 BASE AM

Hume Highway / Orange Grove Road
2028 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
NorthEast: Hume Highway (NE)											
25	T1	926	11.4	0.658	23.0	LOS B	18.6	143.0	0.82	0.75	36.6
26	R2	380	10.0	0.940	91.9	LOS F	17.3	131.6	1.00	0.97	23.0
Approach		1306	11.0	0.940	43.0	LOS D	18.6	143.0	0.88	0.81	29.7
NorthWest: Orange Grove Road (NW)											
27	L2	587	6.5	0.705	15.4	LOS B	15.9	117.5	0.45	0.77	46.9
29	R2	1266	6.7	0.934	75.0	LOS F	36.5	270.0	1.00	0.94	23.0
Approach		1854	6.6	0.934	56.1	LOS D	36.5	270.0	0.82	0.88	28.0
SouthWest: Hume Highway (SW)											
30	L2	1221	6.5	0.426	11.1	LOS A	12.8	94.6	0.32	0.69	52.6
31	T1	2132	4.9	0.765	20.6	LOS B	35.2	256.9	0.65	0.60	41.9
Approach		3353	5.5	0.765	17.2	LOS B	35.2	256.9	0.53	0.63	45.9
All Vehicles		6513	6.9	0.940	33.5	LOS C	36.5	270.0	0.68	0.74	34.9

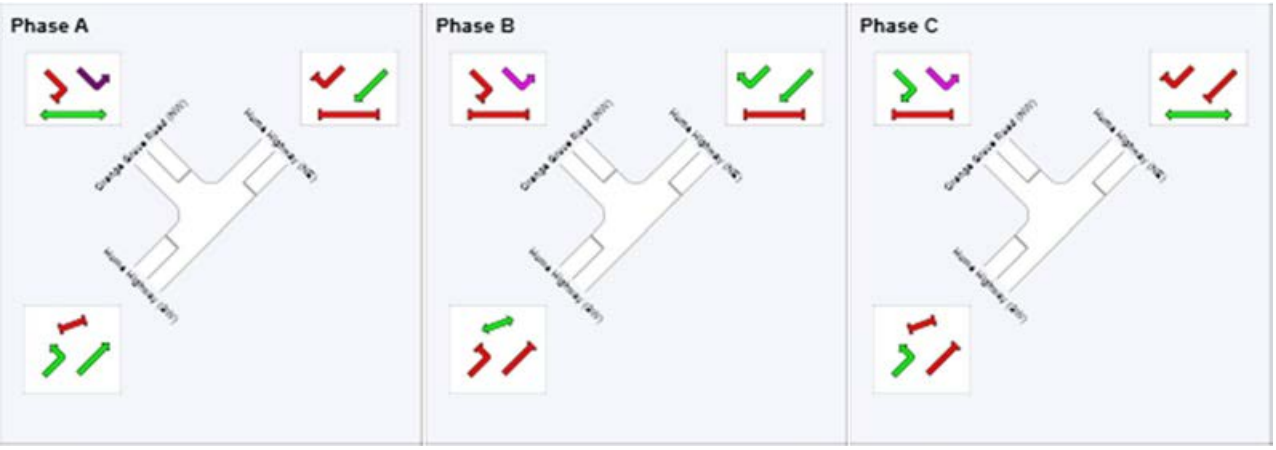
PHASING SUMMARY

Site: I-01 2028 BASE AM

Hume Highway / Orange Grove Road
2028 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	86	109
Green Time (sec)	79	16	35
Yellow Time (sec)	5	4	5
All-Red Time (sec)	2	2	2
Phase Time (sec)	86	22	42
Phase Split	57 %	15 %	28 %



PM BASE

MOVEMENT SUMMARY

Site: I-01 2028 BASE PM

Hume Highway / Orange Grove Road
2028 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
NorthEast: Hume Highway (NE)											
25	T1	1758	3.2	0.915	43.1	LOS D	49.2	354.2	0.90	0.96	27.3
26	R2	805	2.6	0.944	62.9	LOS E	23.2	166.3	1.00	1.02	28.8
Approach		2563	3.0	0.944	49.3	LOS D	49.2	354.2	0.93	0.98	27.9
NorthWest: Orange Grove Road (NW)											
27	L2	384	4.1	0.358	12.4	LOS A	6.5	47.2	0.27	0.63	49.4
29	R2	1348	3.1	1.033	115.6	LOS F	50.4	362.4	1.00	1.09	17.4
Approach		1733	3.3	1.033	92.7	LOS F	50.4	362.4	0.84	0.99	20.8
SouthWest: Hume Highway (SW)											
30	L2	1264	2.9	0.736	19.1	LOS B	19.1	137.0	0.77	0.83	46.1
31	T1	1081	5.3	0.971	86.3	LOS F	37.1	271.3	1.00	1.12	18.4
Approach		2345	4.0	0.971	50.1	LOS D	37.1	271.3	0.87	0.96	29.0
All Vehicles		6641	3.5	1.033	60.9	LOS E	50.4	362.4	0.89	0.98	25.6

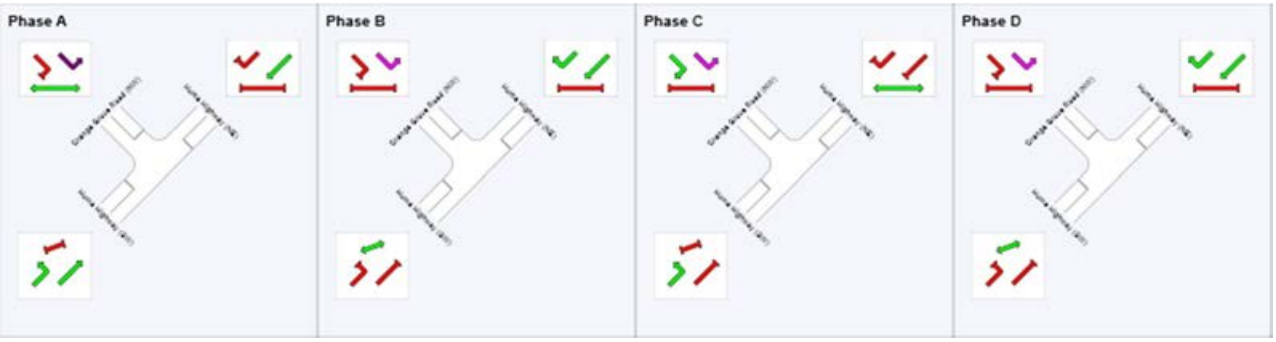
PHASING SUMMARY

Site: I-01 2028 BASE PM

Hume Highway / Orange Grove Road
2028 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	80	124
Green Time (sec)	47	20	38	19
Yellow Time (sec)	5	4	5	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	54	26	45	25
Phase Split	36 %	17 %	30 %	17 %



AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-01 2028 MIMT AM

Hume Highway / Orange Grove Road
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
NorthEast: Hume Highway (NE)											
25	T1	935	11.3	0.664	23.1	LOS B	18.9	144.9	0.83	0.75	36.5
26	R2	380	10.0	0.940	91.9	LOS F	17.3	131.6	1.00	0.97	23.0
Approach		1315	10.9	0.940	43.0	LOS D	18.9	144.9	0.88	0.82	29.7
NorthWest: Orange Grove Road (NW)											
27	L2	587	6.5	0.705	15.4	LOS B	15.9	117.5	0.45	0.77	46.9
29	R2	1311	9.3	1.010	122.3	LOS F	46.2	356.5	1.00	1.09	16.6
Approach		1898	8.4	1.063	89.2	LOS F	46.2	356.5	0.83	0.99	21.4
SouthWest: Hume Highway (SW)											
30	L2	1258	9.2	0.454	11.3	LOS A	13.7	105.5	0.33	0.70	50.2
31	T1	2132	4.9	0.765	20.6	LOS B	35.2	256.9	0.65	0.60	41.9
Approach		3390	6.5	0.765	17.2	LOS B	35.2	256.9	0.53	0.63	45.2
All Vehicles		6604	7.9	1.063	43.0	LOS D	46.2	356.5	0.69	0.77	30.7

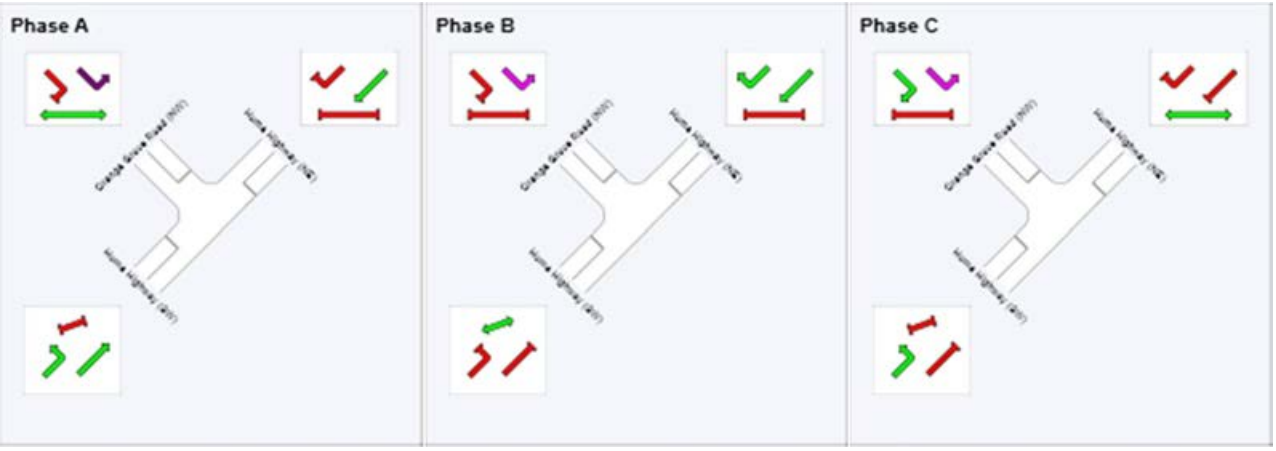
PHASING SUMMARY

Site: I-01 2028 MIMT AM

Hume Highway / Orange Grove Road
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	86	109
Green Time (sec)	79	16	35
Yellow Time (sec)	5	4	5
All-Red Time (sec)	2	2	2
Phase Time (sec)	86	22	42
Phase Split	57 %	15 %	28 %



PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-01 2028 MIMT PM

Hume Highway / Orange Grove Road
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	1762	3.5	0.920	44.7	LOS D	50.2	362.7	0.91	0.98	26.7
26	R2	805	2.6	0.944	62.9	LOS E	23.2	166.3	1.00	1.02	28.8
Approach		2567	3.2	0.944	50.4	LOS D	50.2	362.7	0.94	0.99	27.6
NorthWest: Orange Grove Road (NW)											
27	L2	384	4.1	0.360	12.4	LOS A	6.6	47.5	0.27	0.63	49.3
29	R2	1392	6.2	1.107	166.4	LOS F	62.5	472.0	1.00	1.22	13.3
Approach		1776	5.7	1.107	133.1	LOS F	62.5	472.0	0.84	1.09	16.2
SouthWest: Hume Highway (SW)											
30	L2	1313	5.9	0.793	19.8	LOS B	21.0	158.6	0.81	0.84	44.4
31	T1	1093	5.5	0.985	92.0	LOS F	38.9	285.7	1.00	1.14	17.5
Approach		2406	5.7	0.985	52.6	LOS D	38.9	285.7	0.89	0.98	27.9
All Vehicles		6749	4.8	1.107	72.9	LOS F	62.5	472.0	0.90	1.01	22.9

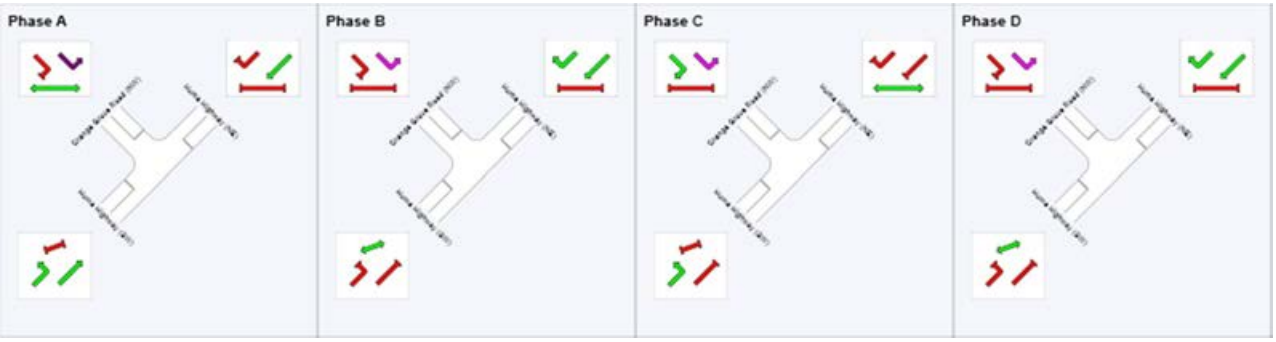
PHASING SUMMARY

Site: I-01 2028 MIMT PM

Hume Highway / Orange Grove Road
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	80	124
Green Time (sec)	47	20	38	19
Yellow Time (sec)	5	4	5	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	54	26	45	25
Phase Split	36 %	17 %	30 %	17 %



AM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-01 2028 MIMT AM - Upgrade

Hume Highway / Orange Grove Road
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	935	11.3	0.671	23.8	LOS B	19.0	146.1	0.83	0.76	36.1
26	R2	380	10.0	0.885	84.4	LOS F	16.1	122.7	1.00	0.92	24.3
Approach		1315	10.9	0.885	41.3	LOS C	19.0	146.1	0.88	0.81	30.4
NorthWest: Orange Grove Road (NW)											
27	L2	587	6.5	0.672	7.2	LOS A	3.7	27.3	0.10	0.62	53.1
29	R2	1311	9.3	0.990	111.6	LOS F	44.2	341.3	1.00	1.07	17.8
Approach		1898	8.4	1.042	79.3	LOS F	44.2	341.3	0.72	0.93	23.1
SouthWest: Hume Highway (SW)											
30	L2	1258	9.2	0.458	11.7	LOS A	14.1	109.2	0.34	0.70	49.9
31	T1	2132	4.9	0.694	19.9	LOS B	29.1	212.1	0.57	0.51	42.5
Approach		3390	6.5	0.694	16.9	LOS B	29.1	212.1	0.48	0.58	45.4
All Vehicles		6603	7.9	1.042	39.7	LOS C	44.2	341.3	0.63	0.73	32.1

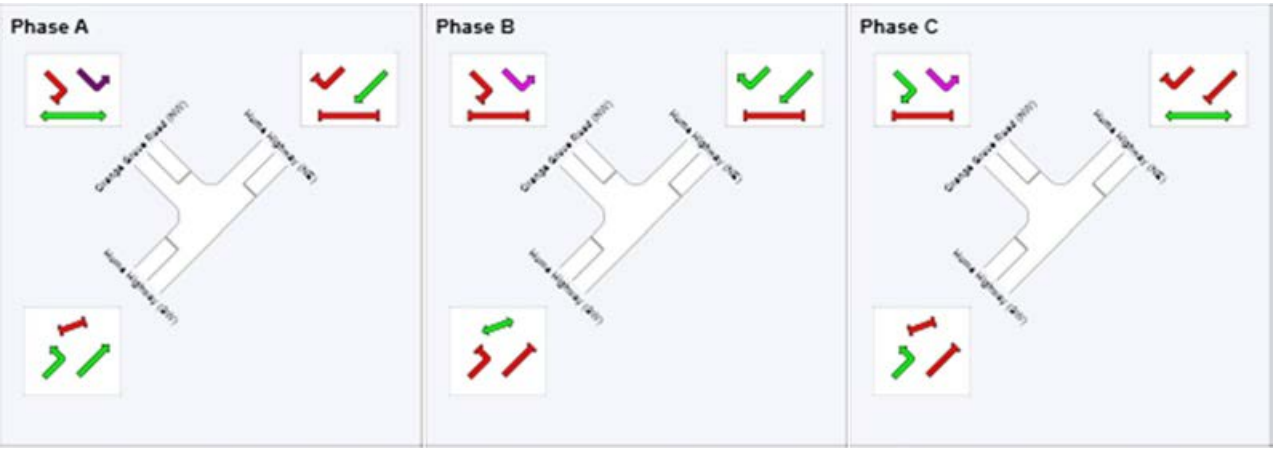
PHASING SUMMARY

Site: I-01 2028 MIMT AM - Upgrade

Hume Highway / Orange Grove Road
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	84	108
Green Time (sec)	77	17	36
Yellow Time (sec)	5	4	5
All-Red Time (sec)	2	2	2
Phase Time (sec)	84	23	43
Phase Split	56 %	15 %	29 %



PM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-01 2028 MIMT PM - Upgrade

Hume Highway / Orange Grove Road
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	1762	3.5	0.969	68.2	LOS E	61.0	440.2	0.99	1.15	20.7
26	R2	805	2.6	0.944	62.7	LOS E	22.2	158.9	1.00	1.02	29.0
Approach		2567	3.2	0.969	66.5	LOS E	61.0	440.2	0.99	1.11	23.5
NorthWest: Orange Grove Road (NW)											
27	L2	384	4.1	0.334	8.3	LOS A	3.2	23.4	0.14	0.59	52.5
29	R2	1392	6.2	0.984	88.5	LOS F	46.6	351.9	0.99	1.02	20.9
Approach		1776	5.7	0.984	71.1	LOS F	46.6	351.9	0.81	0.93	24.5
SouthWest: Hume Highway (SW)											
30	L2	1313	5.9	0.793	19.8	LOS B	20.9	157.8	0.81	0.84	44.4
31	T1	1093	5.5	0.893	68.0	LOS E	25.6	188.4	0.98	0.98	21.8
Approach		2406	5.7	0.893	41.7	LOS C	25.6	188.4	0.89	0.91	31.7
All Vehicles		6749	4.8	0.984	58.9	LOS E	61.0	440.2	0.91	0.99	26.1

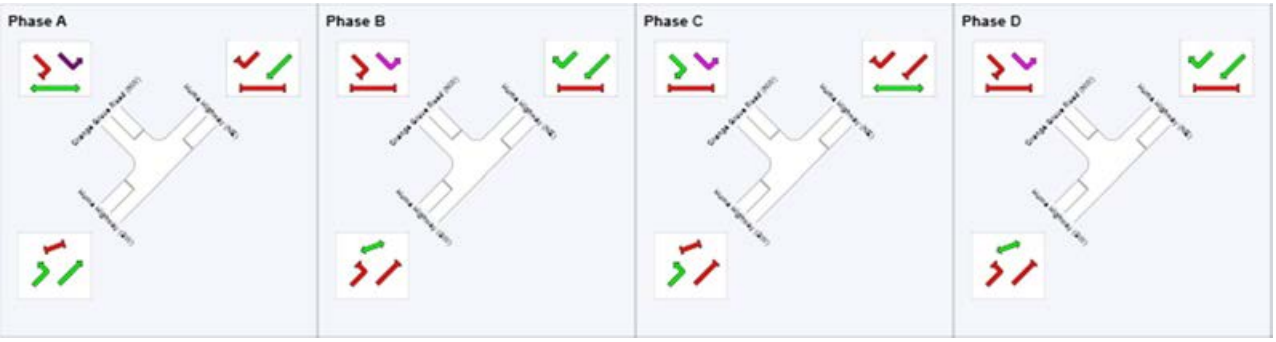
PHASING SUMMARY

Site: I-01 2028 MIMT PM - Upgrade

Hume Highway / Orange Grove Road
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	48	75	124
Green Time (sec)	42	20	43	19
Yellow Time (sec)	5	4	5	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	49	26	50	25
Phase Split	33 %	17 %	33 %	17 %



I-02 Intersection of the Hume Highway and Elizabeth Drive

AM BASE

MOVEMENT SUMMARY

Site: I-02 2028 BASE AM

Hume Highway / Elizabeth Drive
2028 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	132	4.8	0.145	21.2	LOS B	3.4	24.6	0.38	0.67	37.4
2	T1	2293	6.3	0.886	42.8	LOS D	53.1	391.9	0.92	0.88	24.7
Approach		2424	6.3	0.904	41.6	LOS C	53.1	391.9	0.89	0.87	25.3
East: Elizabeth Drive (E)											
4	L2	38	5.6	0.425	60.4	LOS E	10.2	75.2	0.92	0.82	18.4
5	T1	486	5.6	0.425	56.6	LOS E	11.6	85.1	0.90	0.82	23.5
6	R2	152	2.1	0.731	77.3	LOS F	11.2	80.1	1.00	0.86	14.9
Approach		676	4.8	0.731	61.5	LOS E	11.6	85.1	0.93	0.83	21.0
North: Hume Highway (N)											
7	L2	79	2.7	0.606	24.4	LOS B	21.4	160.3	0.56	0.54	32.5
8	T1	1688	8.8	0.606	18.4	LOS B	21.7	163.5	0.55	0.51	37.0
9	R2	343	9.5	1.233	304.1	LOS F	27.3	206.5	1.00	1.48	6.4
Approach		2111	8.7	1.233	65.1	LOS E	27.3	206.5	0.63	0.67	19.3
West: Elizabeth Drive (W)											
10	L2	612	5.3	1.031	123.4	LOS F	64.3	470.5	1.00	1.09	13.3
11	T1	1059	3.1	1.050	136.1	LOS F	57.8	415.1	1.00	1.34	11.9
12	R2	498	6.6	1.106	324.8	LOS F	53.0	391.7	1.00	1.52	6.1
Approach		2168	4.5	1.106	175.8	LOS F	64.3	470.5	1.00	1.31	9.9
All Vehicles		7379	6.3	1.233	89.6	LOS F	64.3	470.5	0.85	0.94	15.8

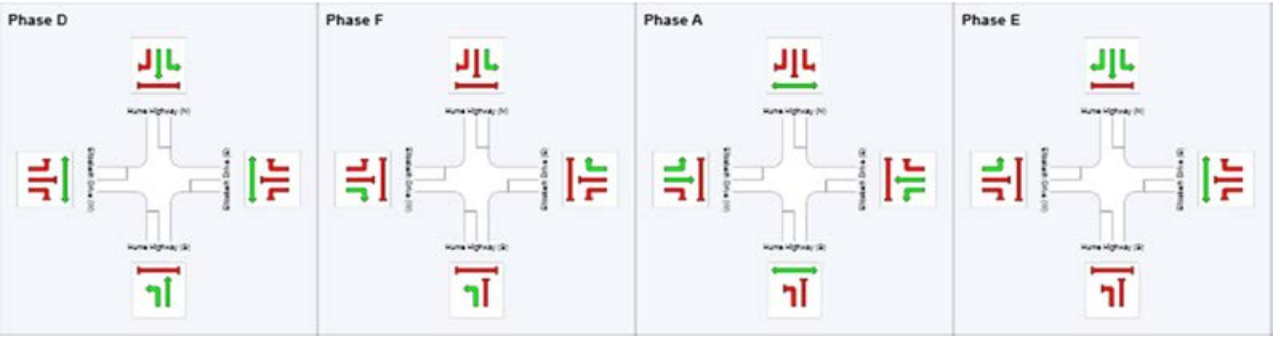
PHASING SUMMARY

Site: I-02 2028 BASE AM

Hume Highway / Elizabeth Drive
2028 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	68	91	132
Green Time (sec)	62	17	35	12
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	68	23	41	18
Phase Split	45 %	15 %	27 %	12 %



PM BASE

MOVEMENT SUMMARY

Site: I-02 2028 BASE PM

Hume Highway / Elizabeth Drive
2028 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	314	4.0	0.465	40.5	LOS C	14.8	107.4	0.70	0.78	28.2
2	T1	1491	4.7	0.864	55.9	LOS D	36.3	264.3	0.96	0.92	21.0
Approach		1804	4.6	0.864	53.2	LOS D	36.3	264.3	0.92	0.89	22.1
East: Elizabeth Drive (E)											
4	L2	124	0.8	0.939	90.6	LOS F	30.6	217.9	1.00	1.07	13.8
5	T1	1069	2.5	0.939	86.0	LOS F	38.1	272.2	1.00	1.09	17.5
6	R2	167	0.0	1.127	213.7	LOS F	22.0	153.9	1.00	1.41	6.6
Approach		1361	2.0	1.127	102.1	LOS F	38.1	272.2	1.00	1.13	14.8
North: Hume Highway (N)											
7	L2	65	4.8	0.848	22.1	LOS B	38.0	272.6	0.69	0.66	34.4
8	T1	2427	2.9	0.848	16.2	LOS B	38.6	277.0	0.69	0.65	38.8
9	R2	953	3.0	0.909	75.5	LOS F	37.0	265.9	1.00	0.95	19.7
Approach		3445	2.9	0.909	32.7	LOS C	38.6	277.0	0.78	0.73	29.6
West: Elizabeth Drive (W)											
10	L2	324	6.2	0.427	33.3	LOS C	13.3	98.1	0.61	0.76	30.0
11	T1	523	4.4	0.668	60.5	LOS E	17.1	124.1	0.94	0.81	21.1
12	R2	304	2.4	1.041	148.8	LOS F	16.4	116.9	1.00	1.18	11.8
Approach		1152	4.4	1.041	76.2	LOS F	17.1	124.1	0.86	0.89	18.7
All Vehicles		7762	3.4	1.127	56.1	LOS D	38.6	277.0	0.86	0.86	21.9

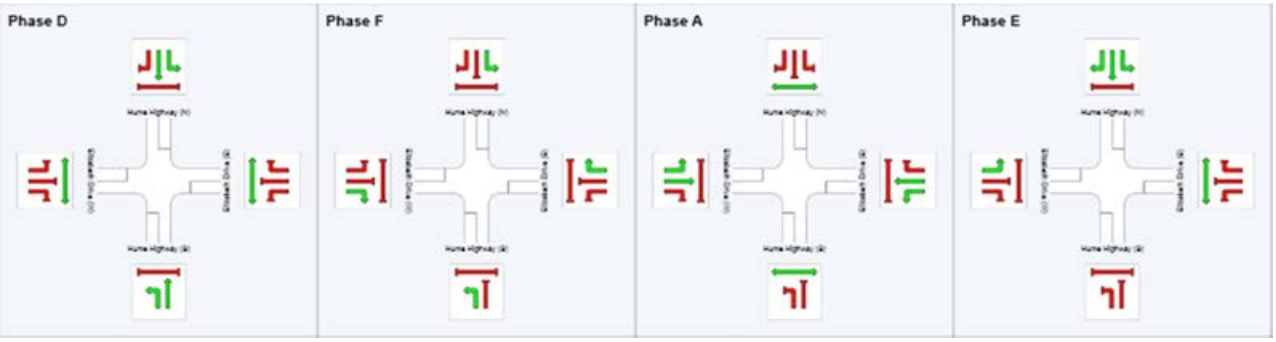
PHASING SUMMARY

Site: I-02 2028 BASE PM

Hume Highway / Elizabeth Drive
2028 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	71	108
Green Time (sec)	47	12	31	36
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	53	18	37	42
Phase Split	35 %	12 %	25 %	28 %



AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-02 2028 MIMT AM

Hume Highway / Elizabeth Drive
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	132	4.8	0.145	21.2	LOS B	3.4	24.6	0.38	0.67	37.4
2	T1	2330	7.8	0.917	48.7	LOS D	58.7	443.9	0.95	0.95	22.9
Approach		2461	7.7	0.936	47.2	LOS D	58.7	443.9	0.92	0.93	23.4
East: Elizabeth Drive (E)											
4	L2	38	5.6	0.425	60.4	LOS E	10.2	75.2	0.92	0.82	18.4
5	T1	486	5.6	0.425	56.6	LOS E	11.6	85.1	0.90	0.82	23.5
6	R2	152	2.1	0.731	77.3	LOS F	11.2	80.1	1.00	0.86	14.9
Approach		676	4.8	0.731	61.5	LOS E	11.6	85.1	0.93	0.83	21.0
North: Hume Highway (N)											
7	L2	79	2.7	0.637	24.9	LOS B	23.0	177.1	0.58	0.56	32.2
8	T1	1742	10.7	0.637	18.8	LOS B	23.3	180.8	0.57	0.53	36.7
9	R2	343	9.5	1.233	304.1	LOS F	27.3	206.5	1.00	1.48	6.4
Approach		2164	10.2	1.233	64.3	LOS E	27.3	206.5	0.64	0.68	19.4
West: Elizabeth Drive (W)											
10	L2	612	5.3	1.031	123.4	LOS F	64.3	470.5	1.00	1.09	13.3
11	T1	1059	3.1	1.050	136.1	LOS F	57.8	415.1	1.00	1.34	11.9
12	R2	504	7.4	1.118	353.3	LOS F	56.9	426.2	1.00	1.56	5.6
Approach		2175	4.7	1.118	182.9	LOS F	64.3	470.5	1.00	1.32	9.6
All Vehicles		7476	7.3	1.233	92.9	LOS F	64.3	470.5	0.86	0.96	15.3

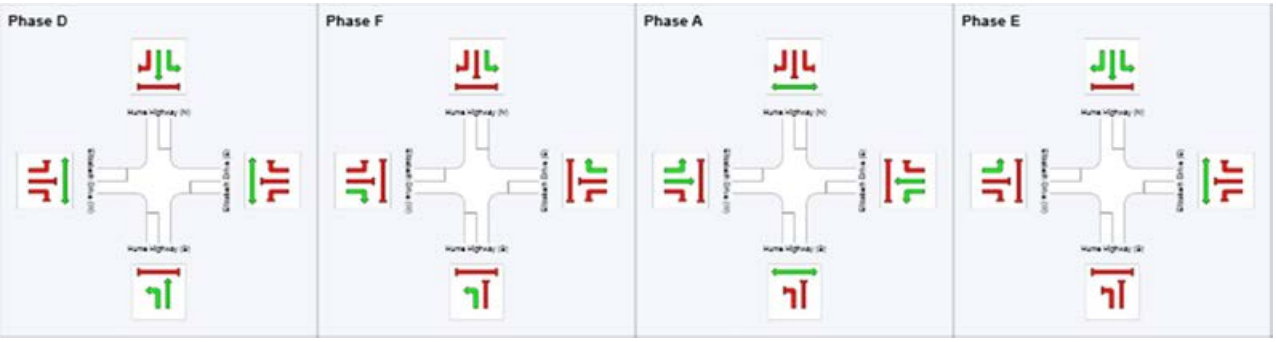
PHASING SUMMARY

Site: I-02 2028 MIMT AM

Hume Highway / Elizabeth Drive
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	68	91	132
Green Time (sec)	62	17	35	12
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	68	23	41	18
Phase Split	45 %	15 %	27 %	12 %



PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-02 2028 MIMT PM

Hume Highway / Elizabeth Drive
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	321	5.6	0.486	40.9	LOS C	15.4	114.4	0.71	0.78	27.9
2	T1	1551	7.4	0.948	73.6	LOS F	46.1	351.3	0.98	1.06	17.4
Approach		1872	7.1	0.948	68.0	LOS E	46.1	351.3	0.94	1.01	18.8
East: Elizabeth Drive (E)											
4	L2	124	0.8	0.939	90.6	LOS F	30.6	217.9	1.00	1.07	13.8
5	T1	1069	2.5	0.939	86.0	LOS F	38.1	272.2	1.00	1.09	17.5
6	R2	167	0.0	1.127	213.7	LOS F	22.0	153.9	1.00	1.41	6.6
Approach		1361	2.0	1.127	102.1	LOS F	38.1	272.2	1.00	1.13	14.8
North: Hume Highway (N)											
7	L2	65	4.8	0.882	26.9	LOS B	45.1	333.5	0.75	0.74	31.2
8	T1	2475	4.7	0.882	21.0	LOS B	45.8	339.1	0.75	0.73	35.2
9	R2	953	3.0	0.909	75.5	LOS F	37.0	265.9	1.00	0.95	19.7
Approach		3493	4.3	0.909	36.0	LOS C	45.8	339.1	0.82	0.79	28.2
West: Elizabeth Drive (W)											
10	L2	324	6.2	0.427	33.3	LOS C	13.3	98.1	0.61	0.76	30.0
11	T1	523	4.4	0.668	60.5	LOS E	17.1	124.1	0.94	0.81	21.1
12	R2	304	2.4	1.041	148.8	LOS F	16.4	116.9	1.00	1.18	11.8
Approach		1152	4.4	1.041	76.2	LOS F	17.1	124.1	0.86	0.89	18.7
All Vehicles		7878	4.6	1.127	60.9	LOS E	46.1	351.3	0.88	0.92	20.8

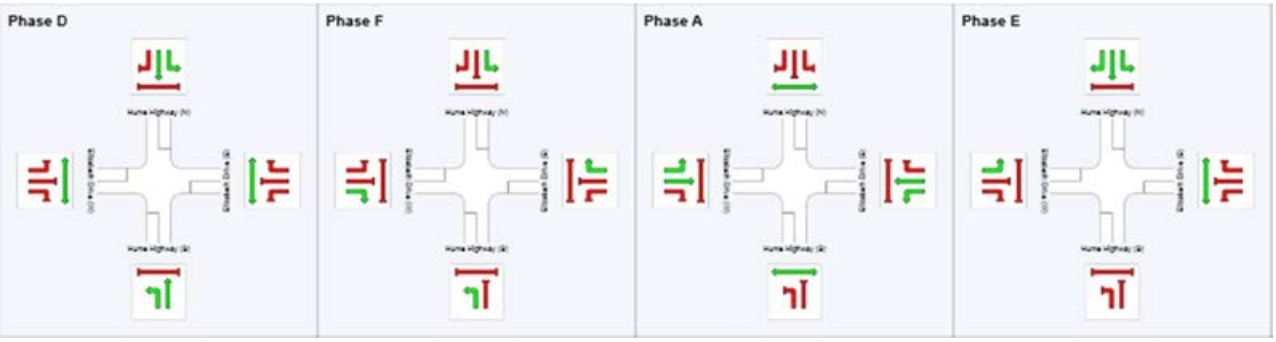
PHASING SUMMARY

Site: I-02 2028 MIMT PM

Hume Highway / Elizabeth Drive
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	71	108
Green Time (sec)	47	12	31	36
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	53	18	37	42
Phase Split	35 %	12 %	25 %	28 %



I-03 Intersection of the Hume Highway and Memorial Avenue

AM BASE

MOVEMENT SUMMARY

Site: I-03 2028 BASE AM

Hume Highway / Memorial Avenue
2028 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	154	1.4	0.931	57.2	LOS E	60.0	441.7	0.99	1.01	29.4
2	T1	2051	7.3	0.931	49.1	LOS D	60.7	451.2	0.92	0.95	28.1
3	R2	259	0.0	1.101	192.5	LOS F	32.5	227.4	1.00	1.24	10.6
Approach		2463	6.2	1.101	64.7	LOS E	60.7	451.2	0.93	0.98	24.2
East: Memorial Avenue (E)											
4	L2	25	16.7	1.137	223.4	LOS F	21.5	158.9	1.00	1.47	9.5
5	T1	156	4.7	1.137	218.7	LOS F	21.5	158.9	1.00	1.46	9.3
6	R2	123	12.0	1.137	223.5	LOS F	19.5	149.1	1.00	1.45	6.7
Approach		304	8.7	1.137	221.1	LOS F	21.5	158.9	1.00	1.46	8.3
North: Hume Highway (N)											
7	L2	117	5.4	0.099	12.3	LOS A	2.5	18.5	0.36	0.64	39.5
8	T1	1686	11.1	0.711	27.7	LOS B	29.4	225.4	0.71	0.64	36.7
9	R2	96	3.3	0.417	71.8	LOS F	6.6	47.4	0.97	0.78	21.4
Approach		1899	10.4	0.711	29.0	LOS C	29.4	225.4	0.70	0.65	35.5
West: Memorial Avenue (W)											
10	L2	124	2.5	1.145	211.2	LOS F	43.0	305.9	1.00	1.49	10.0
11	T1	451	1.4	1.145	214.1	LOS F	54.0	384.3	1.00	1.54	9.4
12	R2	158	2.7	1.145	225.8	LOS F	54.0	384.3	1.00	1.59	12.0
Approach		733	1.9	1.145	216.1	LOS F	54.0	384.3	1.00	1.55	10.1
All Vehicles		5399	7.2	1.145	81.5	LOS F	60.7	451.2	0.86	0.97	20.5

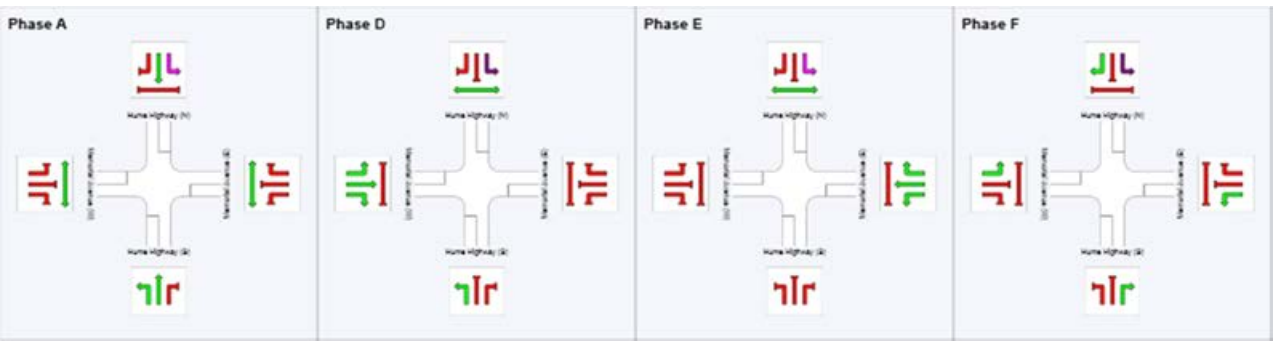
PHASING SUMMARY

Site: I-03 2028 BASE AM

Hume Highway / Memorial Avenue
2028 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	75	108	125
Green Time (sec)	69	27	11	19
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	75	33	17	25
Phase Split	50 %	22 %	11 %	17 %



PM BASE

MOVEMENT SUMMARY

Site: I-03 2028 BASE PM

Hume Highway / Memorial Avenue
2028 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	119	0.9	0.755	41.5	LOS C	32.5	236.5	0.84	0.79	34.0
2	T1	1601	5.7	0.755	33.5	LOS C	33.0	242.6	0.80	0.73	33.8
3	R2	115	0.0	0.772	84.2	LOS F	8.8	61.8	1.00	0.86	19.5
Approach		1835	5.0	0.772	37.2	LOS C	33.0	242.6	0.82	0.74	32.4
East: Memorial Avenue (E)											
4	L2	52	0.0	1.345	403.1	LOS F	52.5	373.2	1.00	2.02	5.7
5	T1	283	2.2	1.345	398.6	LOS F	52.5	373.2	1.00	2.00	5.6
6	R2	206	5.6	1.345	403.5	LOS F	48.5	354.0	1.00	1.90	3.9
Approach		541	3.3	1.345	400.9	LOS F	52.5	373.2	1.00	1.96	5.0
North: Hume Highway (N)											
7	L2	152	2.8	0.090	8.4	LOS A	2.1	14.7	0.24	0.61	43.5
8	T1	2916	3.1	0.903	14.0	LOS A	51.5	370.1	0.60	0.58	45.4
9	R2	212	2.0	0.802	55.8	LOS D	9.7	69.4	1.00	0.92	24.7
Approach		3279	3.0	0.903	16.4	LOS B	51.5	370.1	0.61	0.60	43.0
West: Memorial Avenue (W)											
10	L2	81	1.3	0.885	79.8	LOS F	16.0	112.7	1.00	1.04	20.3
11	T1	206	1.0	0.885	76.8	LOS F	19.7	138.2	1.00	1.02	19.4
12	R2	166	0.0	0.885	83.9	LOS F	19.7	138.2	1.00	0.99	23.4
Approach		454	0.7	0.885	80.0	LOS F	19.7	138.2	1.00	1.01	21.1
All Vehicles		6108	3.5	1.345	61.4	LOS E	52.5	373.2	0.74	0.80	24.4

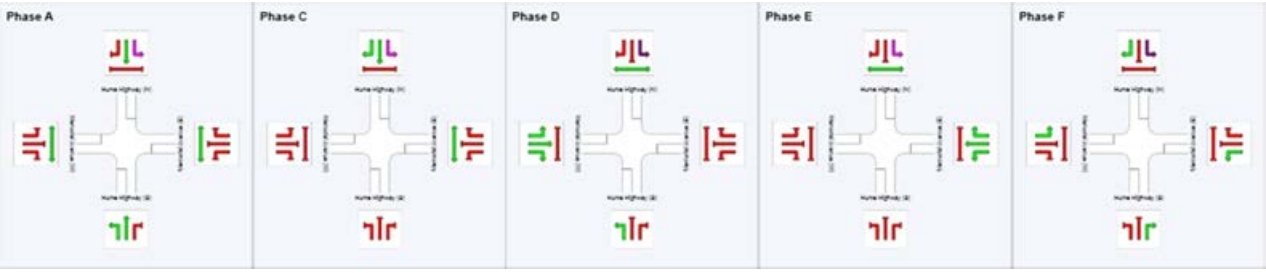
PHASING SUMMARY

Site: I-03 2028 BASE PM

Hume Highway / Memorial Avenue
2028 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D	E	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	70	82	110	132
Green Time (sec)	64	6	22	16	12
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	70	12	28	22	18
Phase Split	47 %	8 %	19 %	15 %	12 %



AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-03 2028 MIMT AM

Hume Highway / Memorial Avenue
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	154	1.4	0.961	68.6	LOS E	67.8	510.6	1.00	1.07	26.8
2	T1	2087	8.9	0.961	60.5	LOS E	68.7	524.7	0.94	1.03	25.0
3	R2	259	0.0	1.101	192.5	LOS F	32.5	227.4	1.00	1.24	10.6
Approach		2500	7.5	1.101	74.7	LOS F	68.7	524.7	0.95	1.05	22.2
East: Memorial Avenue (E)											
4	L2	25	16.7	1.137	223.4	LOS F	21.5	158.9	1.00	1.47	9.5
5	T1	156	4.7	1.137	218.7	LOS F	21.5	158.9	1.00	1.46	9.3
6	R2	123	12.0	1.137	223.5	LOS F	19.5	149.1	1.00	1.45	6.7
Approach		304	8.7	1.137	221.1	LOS F	21.5	158.9	1.00	1.46	8.3
North: Hume Highway (N)											
7	L2	117	5.4	0.099	12.3	LOS A	2.5	18.5	0.36	0.64	39.5
8	T1	1747	13.1	0.755	28.5	LOS B	32.1	254.1	0.74	0.67	36.3
9	R2	96	3.3	0.417	71.8	LOS F	6.6	47.4	0.97	0.78	21.4
Approach		1959	12.2	0.755	29.6	LOS C	32.1	254.1	0.73	0.68	35.2
West: Memorial Avenue (W)											
10	L2	124	2.5	1.147	213.0	LOS F	43.3	308.0	1.00	1.50	10.0
11	T1	451	1.4	1.147	215.9	LOS F	54.3	386.5	1.00	1.55	9.4
12	R2	159	2.6	1.147	227.6	LOS F	54.3	386.5	1.00	1.60	11.9
Approach		734	1.9	1.147	217.9	LOS F	54.3	386.5	1.00	1.55	10.0
All Vehicles		5498	8.5	1.147	85.9	LOS F	68.7	524.7	0.88	1.01	19.9

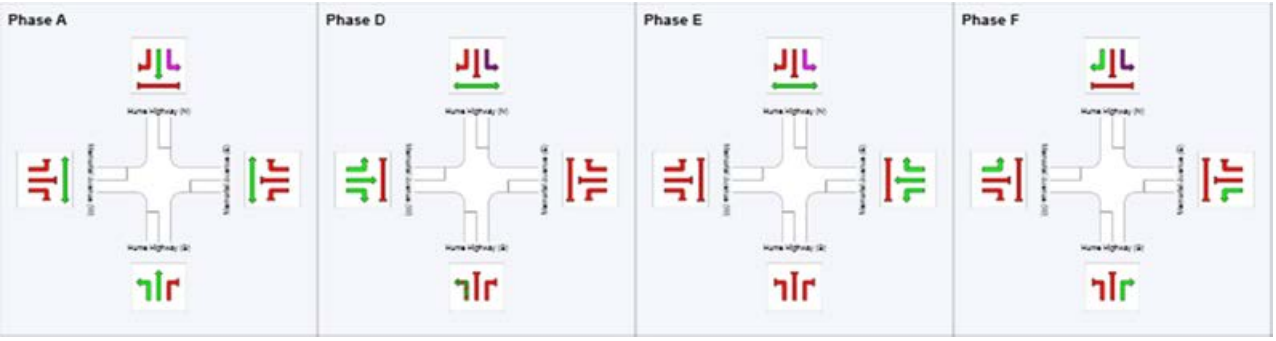
PHASING SUMMARY

Site: I-03 2028 MIMT AM

Hume Highway / Memorial Avenue
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	75	108	125
Green Time (sec)	69	27	11	19
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	75	33	17	25
Phase Split	50 %	22 %	11 %	17 %



PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-03 2028 MIMT PM

Hume Highway / Memorial Avenue
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	120	0.9	0.807	43.2	LOS D	35.8	271.0	0.88	0.83	33.5
2	T1	1669	8.5	0.807	35.3	LOS C	36.2	278.5	0.84	0.77	33.0
3	R2	115	0.0	0.772	84.2	LOS F	8.8	61.8	1.00	0.86	19.5
Approach		1904	7.5	0.807	38.7	LOS C	36.2	278.5	0.85	0.78	31.8
East: Memorial Avenue (E)											
4	L2	52	0.0	1.345	403.1	LOS F	52.5	373.2	1.00	2.02	5.7
5	T1	283	2.2	1.345	398.6	LOS F	52.5	373.2	1.00	2.00	5.6
6	R2	206	5.6	1.345	403.5	LOS F	48.5	354.0	1.00	1.90	3.9
Approach		541	3.3	1.345	400.9	LOS F	52.5	373.2	1.00	1.96	5.0
North: Hume Highway (N)											
7	L2	152	2.8	0.090	8.4	LOS A	2.1	14.7	0.24	0.61	43.5
8	T1	2963	4.6	0.935	19.1	LOS B	62.5	460.7	0.66	0.66	41.7
9	R2	212	2.0	0.802	55.8	LOS D	9.7	69.4	1.00	0.92	24.7
Approach		3327	4.4	0.935	21.0	LOS B	62.5	460.7	0.66	0.68	40.0
West: Memorial Avenue (W)											
10	L2	81	1.3	0.885	79.8	LOS F	16.0	112.7	1.00	1.04	20.3
11	T1	206	1.0	0.885	76.8	LOS F	19.7	138.2	1.00	1.02	19.4
12	R2	166	0.0	0.885	83.9	LOS F	19.7	138.2	1.00	0.99	23.4
Approach		454	0.7	0.885	80.0	LOS F	19.7	138.2	1.00	1.01	21.1
All Vehicles		6225	5.0	1.345	63.7	LOS E	62.5	460.7	0.78	0.85	23.9

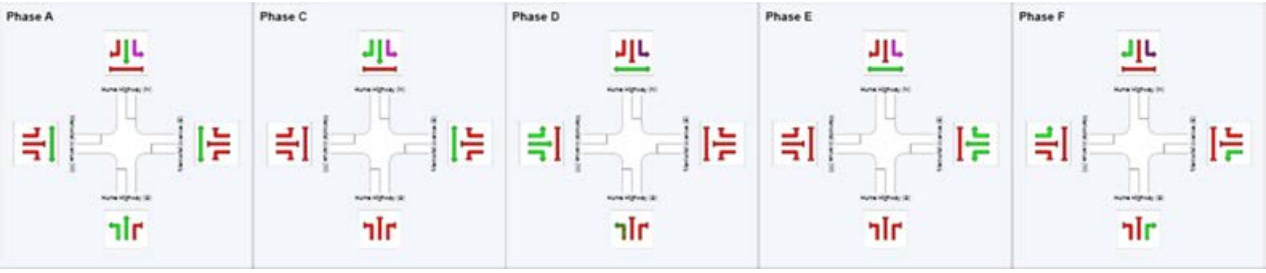
PHASING SUMMARY

Site: I-03 2028 MIMT PM

Hume Highway / Memorial Avenue
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D	E	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	70	82	110	132
Green Time (sec)	64	6	22	16	12
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	70	12	28	22	18
Phase Split	47 %	8 %	19 %	15 %	12 %



I-04 Intersection of the Hume Highway and Hoxton Park Drive

AM BASE

MOVEMENT SUMMARY

Site: I-04 2028 BASE AM

Hume Highway / Hoxton Park Road / Macquarie Street
2028 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	100	6.3	0.082	8.4	LOS A	0.7	5.5	0.11	0.57	51.2
2	T1	2083	5.1	0.782	26.1	LOS B	36.9	269.7	0.75	0.68	40.4
3	R2	1161	1.8	1.016	104.2	LOS F	46.7	332.0	1.00	1.14	17.0
Approach		3344	4.0	1.016	52.7	LOS D	46.7	332.0	0.82	0.84	29.0
East: Macquarie Street (E)											
4	L2	347	5.8	0.225	21.9	LOS B	5.4	40.0	0.66	0.73	38.7
5	T1	520	4.7	1.084	173.8	LOS F	31.4	228.5	1.00	1.38	13.0
Approach		867	5.1	1.084	112.9	LOS F	31.4	228.5	0.87	1.12	17.1
North: Hume Highway (N)											
7	L2	228	15.7	0.902	69.7	LOS E	41.4	317.4	1.00	1.13	23.9
8	T1	1394	8.2	0.902	62.2	LOS E	43.4	324.8	0.97	1.00	27.7
9	R2	238	19.0	1.212	288.7	LOS F	37.2	302.7	1.00	1.52	10.2
Approach		1860	10.5	1.212	92.1	LOS F	43.4	324.8	0.98	1.08	22.0
West: Hoxton Park Road (W)											
10	L2	324	16.2	0.562	48.2	LOS D	19.1	152.5	0.87	0.83	32.2
11	T1	1300	4.1	1.105	206.6	LOS F	61.6	446.6	1.00	1.56	11.3
12	R2	375	2.8	1.103	153.6	LOS F	25.2	180.8	1.00	1.18	15.9
Approach		1999	5.8	1.105	171.0	LOS F	61.6	446.6	0.98	1.37	13.8
All Vehicles		8071	6.1	1.212	97.5	LOS F	61.6	446.6	0.90	1.05	20.4

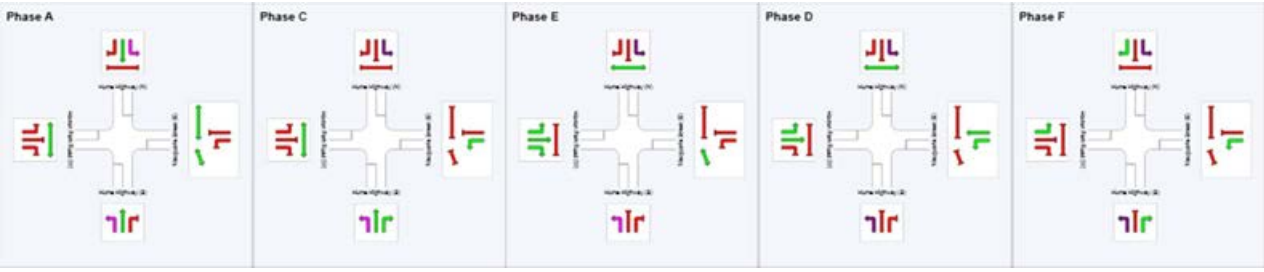
PHASING SUMMARY

Site: I-04 2028 BASE AM

Hume Highway / Hoxton Park Road / Macquarie Street
2028 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	D	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	51	79	101	126
Green Time (sec)	45	22	16	19	18
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	51	28	22	25	24
Phase Split	34 %	19 %	15 %	17 %	16 %



PM BASE

MOVEMENT SUMMARY

Site: I-04 2028 BASE PM

Hume Highway / Hoxton Park Road / Macquarie Street
2028 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	193	5.5	0.160	9.2	LOS A	1.8	13.3	0.14	0.58	50.6
2	T1	1545	5.2	0.595	22.7	LOS B	22.5	164.4	0.60	0.54	42.2
3	R2	436	1.2	0.965	105.0	LOS F	19.6	138.6	1.00	1.05	16.9
Approach		2174	4.4	0.965	38.0	LOS C	22.5	164.4	0.64	0.64	34.4
East: Macquarie Street (E)											
4	L2	774	1.4	1.027	165.8	LOS F	39.4	279.3	0.99	1.11	12.0
5	T1	697	3.3	1.072	156.3	LOS F	39.8	286.6	1.00	1.35	14.1
Approach		1471	2.3	1.072	161.3	LOS F	39.8	286.6	0.99	1.23	13.0
North: Hume Highway (N)											
7	L2	99	5.3	0.915	23.3	LOS B	55.1	395.2	0.77	0.78	41.9
8	T1	2748	2.6	0.915	18.3	LOS B	57.5	411.6	0.70	0.69	44.7
9	R2	279	6.0	1.469	515.9	LOS F	59.0	434.7	1.00	1.90	6.2
Approach		3126	3.0	1.469	62.8	LOS E	59.0	434.7	0.73	0.80	27.8
West: Hoxton Park Road (W)											
10	L2	258	2.0	0.406	45.2	LOS D	14.2	101.1	0.81	0.80	33.4
11	T1	711	4.0	0.435	46.6	LOS D	14.0	101.5	0.87	0.73	30.4
12	R2	374	2.5	1.195	209.0	LOS F	30.4	217.6	1.00	1.32	12.5
Approach		1342	3.2	1.195	91.5	LOS F	30.4	217.6	0.89	0.91	21.7
All Vehicles		8113	3.3	1.469	78.8	LOS F	59.0	434.7	0.78	0.85	23.6

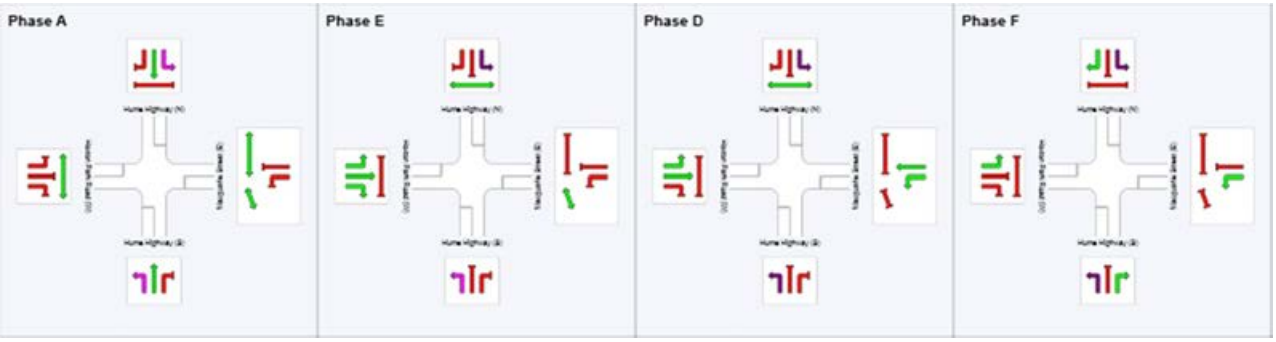
PHASING SUMMARY

Site: I-04 2028 BASE PM

Hume Highway / Hoxton Park Road / Macquarie Street
2028 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	D	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	79	99	128
Green Time (sec)	73	14	23	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	79	20	29	22
Phase Split	53 %	13 %	19 %	15 %



AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-04 2028 MIMT AM

Hume Highway / Hoxton Park Road / Macquarie Street
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	108	13.5	0.096	8.5	LOS A	0.8	6.8	0.12	0.57	50.8
2	T1	2120	6.8	0.816	26.9	LOS B	39.6	297.0	0.78	0.71	40.0
3	R2	1161	1.8	1.016	104.2	LOS F	46.7	332.0	1.00	1.14	17.0
Approach		3389	5.3	1.016	52.8	LOS D	46.7	332.0	0.83	0.85	29.0
East: Macquarie Street (E)											
4	L2	347	5.8	0.225	21.9	LOS B	5.4	40.0	0.66	0.73	38.7
5	T1	520	4.7	1.084	173.8	LOS F	31.4	228.5	1.00	1.38	13.0
Approach		867	5.1	1.084	112.9	LOS F	31.4	228.5	0.87	1.12	17.1
North: Hume Highway (N)											
7	L2	228	15.7	0.959	85.5	LOS F	50.3	395.2	1.00	1.20	21.1
8	T1	1455	10.7	0.959	77.7	LOS F	51.2	399.6	0.98	1.10	24.5
9	R2	238	19.0	1.212	288.7	LOS F	37.2	302.7	1.00	1.52	10.2
Approach		1922	12.3	1.212	104.8	LOS F	51.2	399.6	0.98	1.16	20.3
West: Hoxton Park Road (W)											
10	L2	324	16.2	0.562	48.2	LOS D	19.1	152.5	0.87	0.83	32.2
11	T1	1300	4.1	1.108	209.1	LOS F	61.7	447.4	1.00	1.56	11.2
12	R2	380	3.9	1.144	178.0	LOS F	28.2	205.6	1.00	1.25	14.2
Approach		2004	6.0	1.144	177.2	LOS F	61.7	447.4	0.98	1.39	13.4
All Vehicles		8183	7.1	1.212	101.9	LOS F	61.7	447.4	0.91	1.08	19.8

PHASING SUMMARY

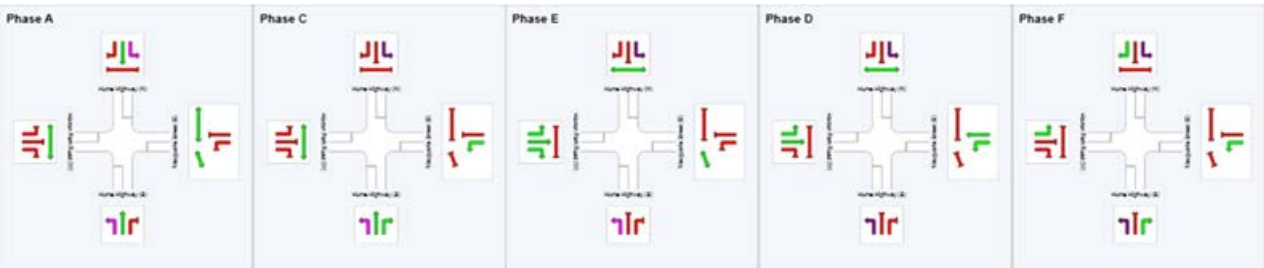
Site: I-04 2028 MIMT AM

Hume Highway / Hoxton Park Road / Macquarie Street
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase times specified by the user
Sequence: TCS 405 AM - Modified
Movement Class: All Movement Classes
Input Sequence: A, C, E, D, F
Output Sequence: A, C, E, D, F

Phase Timing Results

Phase	A	C	E	D	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	51	79	101	126
Green Time (sec)	45	22	16	19	18
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	51	28	22	25	24
Phase Split	34 %	19 %	15 %	17 %	16 %



PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-04 2028 MIMT PM

Hume Highway / Hoxton Park Road / Macquarie Street
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	198	7.5	0.169	9.2	LOS A	1.9	14.3	0.14	0.58	50.5
2	T1	1615	8.0	0.647	23.5	LOS B	25.0	192.0	0.63	0.57	41.8
3	R2	436	1.2	0.965	105.0	LOS F	19.6	138.6	1.00	1.05	16.9
Approach		2249	6.7	0.965	38.0	LOS C	25.0	192.0	0.66	0.66	34.5
East: Macquarie Street (E)											
4	L2	774	1.4	1.027	165.8	LOS F	39.4	279.3	0.99	1.11	12.0
5	T1	697	3.3	1.072	156.3	LOS F	39.8	286.6	1.00	1.35	14.1
Approach		1471	2.3	1.072	161.3	LOS F	39.8	286.6	0.99	1.23	13.0
North: Hume Highway (N)											
7	L2	99	5.3	0.946	29.4	LOS C	66.5	489.3	0.86	0.90	38.4
8	T1	2796	4.3	0.946	24.5	LOS B	68.4	503.2	0.77	0.79	41.1
9	R2	279	6.0	1.469	515.9	LOS F	59.0	434.7	1.00	1.90	6.2
Approach		3174	4.5	1.469	67.9	LOS E	68.4	503.2	0.79	0.89	26.6
West: Hoxton Park Road (W)											
10	L2	262	3.6	0.418	45.4	LOS D	14.5	104.6	0.81	0.80	33.3
11	T1	711	4.0	0.435	46.6	LOS D	14.0	101.5	0.87	0.73	30.4
12	R2	379	4.0	1.249	249.7	LOS F	33.8	250.0	1.00	1.41	10.9
Approach		1352	3.9	1.249	103.3	LOS F	33.8	250.0	0.89	0.94	20.0
All Vehicles		8245	4.6	1.469	82.2	LOS F	68.4	503.2	0.81	0.90	23.1

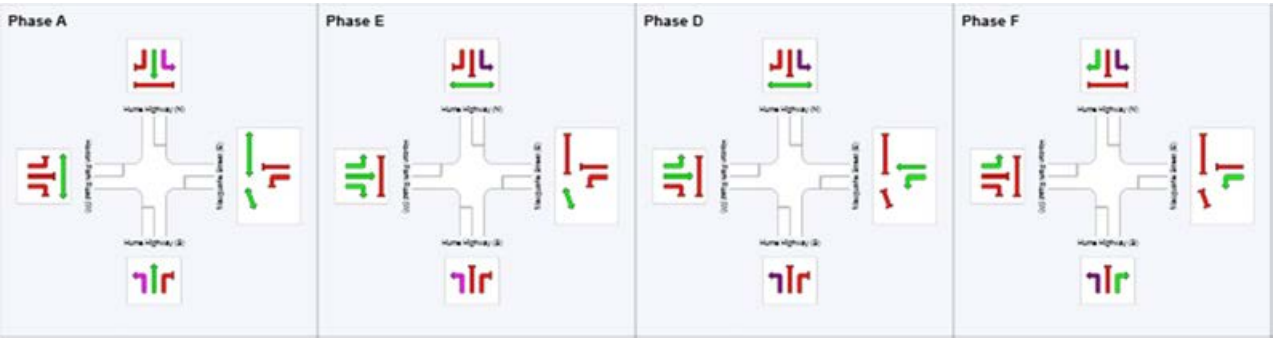
PHASING SUMMARY

Site: I-04 2028 MIMT PM

Hume Highway / Hoxton Park Road / Macquarie Street
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	D	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	79	99	128
Green Time (sec)	73	14	23	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	79	20	29	22
Phase Split	53 %	13 %	19 %	15 %



I-05 Intersection of the Hume Highway and Reilly Street

AM BASE

MOVEMENT SUMMARY

Site: I-05 2028 BASE AM

Hume Highway / Reilly Street
2028 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Hignway (S)											
1	L2	79	2.7	0.906	24.0	LOS B	57.4	414.2	0.75	0.75	40.1
2	T1	3103	3.6	0.906	17.8	LOS B	57.4	414.2	0.71	0.70	41.0
3	R2	13	8.3	0.087	21.3	LOS B	0.4	3.2	0.46	0.66	37.8
Approach		3195	3.6	0.906	17.9	LOS B	57.4	414.2	0.71	0.70	40.9
East: Congressional Drive (E)											
4	L2	47	2.2	0.263	60.0	LOS E	5.8	41.6	0.89	0.74	24.3
5	T1	45	4.7	0.263	55.4	LOS D	5.8	41.6	0.89	0.74	23.8
6	R2	88	3.6	0.423	68.0	LOS E	6.0	43.3	0.95	0.78	18.6
Approach		181	3.5	0.423	62.7	LOS E	6.0	43.3	0.92	0.76	21.4
North: Hume Hignway (N)											
7	L2	32	3.3	0.533	16.0	LOS B	23.3	172.8	0.50	0.48	41.0
8	T1	1765	7.2	0.533	9.9	LOS A	23.4	173.7	0.48	0.44	47.6
9	R2	96	1.1	0.675	49.2	LOS D	5.6	39.9	1.00	0.89	25.2
Approach		1893	6.8	0.675	12.0	LOS A	23.4	173.7	0.50	0.46	45.4
West: Reilly Street (W)											
10	L2	116	3.6	0.262	50.2	LOS D	7.2	52.5	0.83	0.76	24.5
11	T1	12	9.1	0.262	45.6	LOS D	7.2	52.5	0.83	0.76	25.6
12	R2	232	1.8	1.038	153.8	LOS F	26.0	184.6	1.00	1.22	14.2
Approach		359	2.6	1.038	116.9	LOS F	26.0	184.6	0.94	1.06	16.3
All Vehicles		5627	4.6	1.038	23.7	LOS B	57.4	414.2	0.66	0.65	36.9

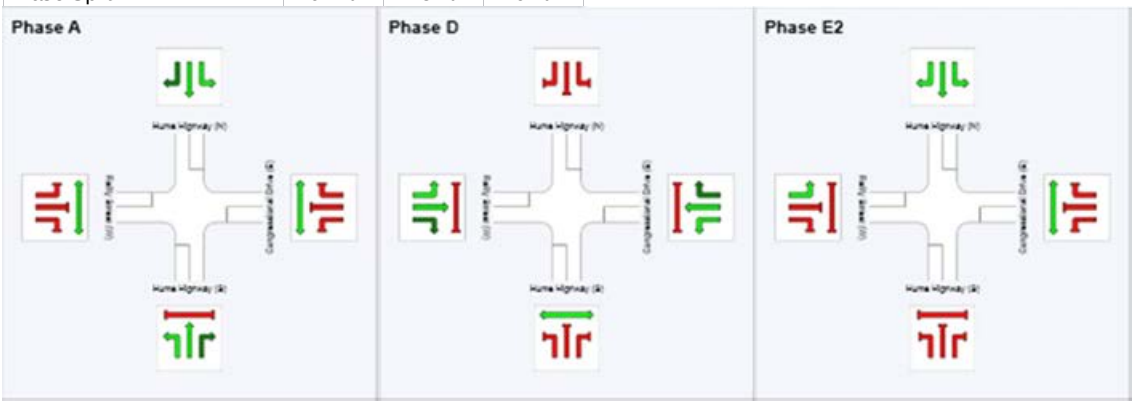
PHASING SUMMARY

Site: I-05 2028 BASE AM

Hume Highway / Reilly Street
2028 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	100	137
Green Time (sec)	94	31	7
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	100	37	13
Phase Split	67 %	25 %	9 %



PM BASE

MOVEMENT SUMMARY

Site: I-05 2028 BASE PM

Hume Highway / Reilly Street
2028 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Hignway (S)											
1	L2	220	0.5	0.644	19.4	LOS B	24.7	178.1	0.51	0.56	42.0
2	T1	2006	4.5	0.644	11.4	LOS A	24.7	178.1	0.44	0.43	45.9
3	R2	21	5.0	0.388	34.8	LOS C	1.1	8.0	0.66	0.74	31.6
Approach		2247	4.1	0.644	12.4	LOS A	24.7	178.1	0.45	0.44	45.2
East: Congressional Drive (E)											
4	L2	40	2.6	0.184	59.8	LOS E	4.0	28.1	0.88	0.72	24.2
5	T1	24	0.0	0.184	55.2	LOS D	4.0	28.1	0.88	0.72	23.8
6	R2	49	0.0	0.209	63.4	LOS E	3.2	22.2	0.90	0.74	19.5
Approach		114	0.9	0.209	60.4	LOS E	4.0	28.1	0.89	0.73	22.1
North: Hume Hignway (N)											
7	L2	66	0.0	0.990	43.5	LOS D	110.4	786.9	0.93	1.04	26.0
8	T1	3608	2.2	0.990	39.9	LOS C	110.4	786.9	0.72	0.86	29.5
9	R2	174	1.2	0.852	64.4	LOS E	12.5	88.4	1.00	1.04	21.7
Approach		3848	2.2	0.990	41.0	LOS C	110.4	786.9	0.74	0.87	28.9
West: Reilly Street (W)											
10	L2	65	0.0	0.222	54.3	LOS D	5.7	39.9	0.85	0.73	23.9
11	T1	32	0.0	0.222	49.7	LOS D	5.7	39.9	0.85	0.73	24.9
12	R2	256	1.6	1.032	148.6	LOS F	28.3	200.9	1.00	1.21	14.6
Approach		353	1.2	1.032	122.3	LOS F	28.3	200.9	0.96	1.08	16.1
All Vehicles		6562	2.8	1.032	35.9	LOS C	110.4	786.9	0.66	0.73	31.0

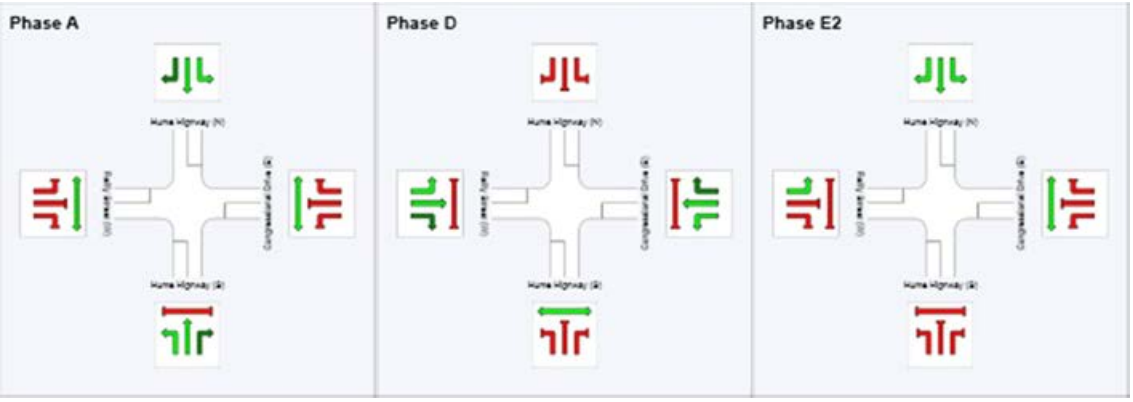
PHASING SUMMARY

Site: I-05 2028 BASE PM

Hume Highway / Reilly Street
2028 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	98	135
Green Time (sec)	92	31	9
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	98	37	15
Phase Split	65 %	25 %	10 %



AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-05 2028 MIMT AM

Hume Highway / Reilly Street
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Hignway (S)											
1	L2	79	2.7	0.938	32.6	LOS C	71.2	524.3	0.84	0.86	35.9
2	T1	3148	5.0	0.938	26.4	LOS B	71.2	524.3	0.78	0.81	35.6
3	R2	13	8.3	0.098	22.5	LOS B	0.4	3.3	0.48	0.67	37.1
Approach		3240	5.0	0.938	26.5	LOS B	71.2	524.3	0.78	0.81	35.6
East: Congressional Drive (E)											
4	L2	47	2.2	0.263	60.0	LOS E	5.8	41.6	0.89	0.74	24.3
5	T1	45	4.7	0.263	55.4	LOS D	5.8	41.6	0.89	0.74	23.8
6	R2	88	3.6	0.423	68.0	LOS E	6.0	43.3	0.95	0.78	18.6
Approach		181	3.5	0.423	62.7	LOS E	6.0	43.3	0.92	0.76	21.4
North: Hume Hignway (N)											
7	L2	32	3.3	0.552	16.3	LOS B	24.1	185.3	0.51	0.49	40.8
8	T1	1833	9.5	0.552	10.2	LOS A	24.2	186.4	0.49	0.45	47.4
9	R2	96	1.1	0.681	53.0	LOS D	5.6	39.5	1.00	0.89	24.2
Approach		1960	9.0	0.681	12.3	LOS A	24.2	186.4	0.51	0.47	45.1
West: Reilly Street (W)											
10	L2	116	3.6	0.262	50.2	LOS D	7.2	52.5	0.83	0.76	24.5
11	T1	12	9.1	0.262	45.6	LOS D	7.2	52.5	0.83	0.76	25.6
12	R2	233	1.8	1.044	157.5	LOS F	26.4	188.0	1.00	1.24	14.0
Approach		360	2.6	1.044	119.4	LOS F	26.4	188.0	0.94	1.07	16.1
All Vehicles		5741	6.1	1.044	28.6	LOS C	71.2	524.3	0.70	0.71	34.3

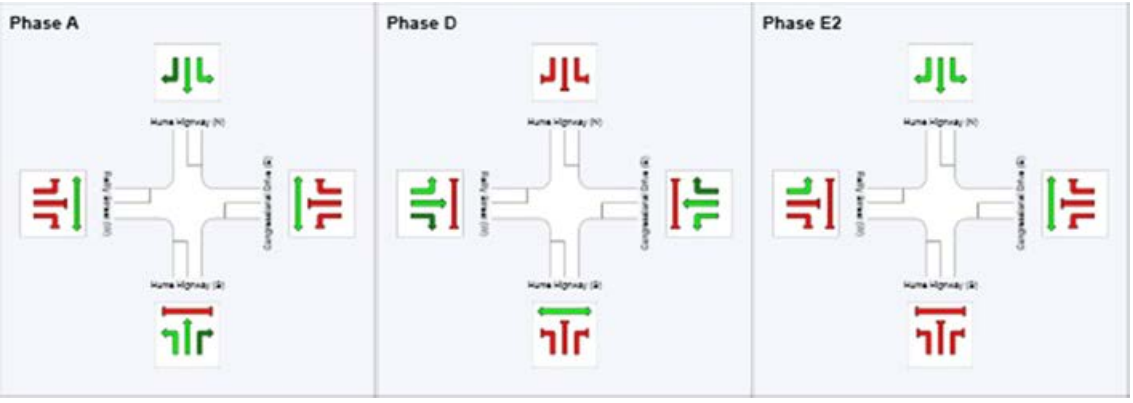
PHASING SUMMARY

Site: I-05 2028 MIMT AM

Hume Highway / Reilly Street
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	100	137
Green Time (sec)	94	31	7
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	100	37	13
Phase Split	67 %	25 %	9 %



PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-05 2028 MIMT PM

Hume Highway / Reilly Street
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Hignway (S)											
1	L2	221	0.5	0.683	19.9	LOS B	27.1	201.1	0.54	0.58	41.7
2	T1	2081	7.0	0.683	11.9	LOS A	27.1	201.1	0.47	0.46	45.5
3	R2	21	5.0	0.394	41.2	LOS C	1.2	8.7	0.72	0.75	29.3
Approach		2324	6.3	0.683	12.9	LOS A	27.1	201.1	0.48	0.47	44.8
East: Congressional Drive (E)											
4	L2	40	2.6	0.184	59.8	LOS E	4.0	28.1	0.88	0.72	24.2
5	T1	24	0.0	0.184	55.2	LOS D	4.0	28.1	0.88	0.72	23.8
6	R2	49	0.0	0.209	63.4	LOS E	3.2	22.2	0.90	0.74	19.5
Approach		114	0.9	0.209	60.4	LOS E	4.0	28.1	0.89	0.73	22.1
North: Hume Hignway (N)											
7	L2	66	0.0	1.017	62.0	LOS E	137.7	1006.3	1.00	1.19	20.9
8	T1	3666	3.8	1.017	58.9	LOS E	137.9	1009.5	0.81	1.02	23.7
9	R2	174	1.2	0.895	83.5	LOS F	13.7	97.2	1.00	1.10	18.5
Approach		3906	3.6	1.017	60.0	LOS E	137.9	1009.5	0.82	1.03	23.4
West: Reilly Street (W)											
10	L2	65	0.0	0.222	54.3	LOS D	5.7	39.9	0.85	0.73	23.9
11	T1	32	0.0	0.222	49.7	LOS D	5.7	39.9	0.85	0.73	24.9
12	R2	256	1.6	1.032	148.6	LOS F	28.3	200.9	1.00	1.21	14.6
Approach		353	1.2	1.032	122.3	LOS F	28.3	200.9	0.96	1.08	16.1
All Vehicles		6696	4.4	1.032	47.0	LOS D	137.9	1009.5	0.71	0.83	27.1

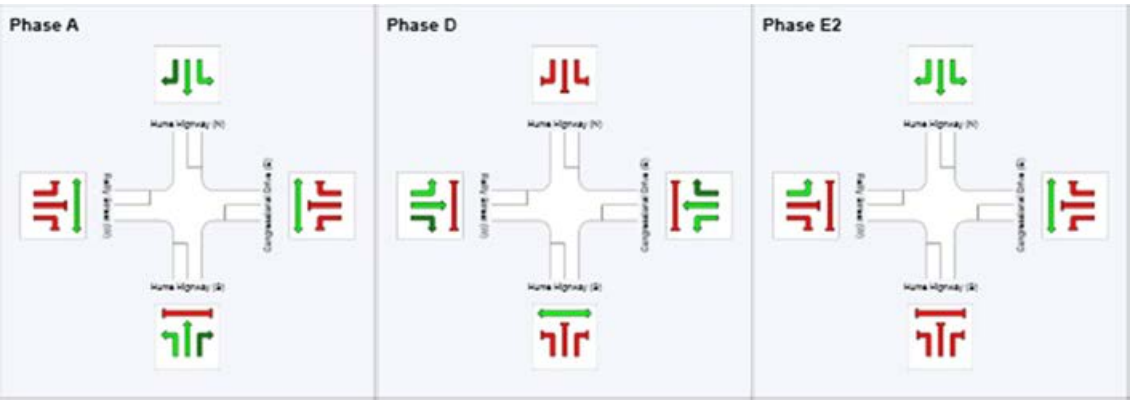
PHASING SUMMARY

Site: I-05 2028 MIMT PM

Hume Highway / Reilly Street
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	98	135
Green Time (sec)	92	31	9
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	98	37	15
Phase Split	65 %	25 %	10 %



I-06 Intersection of Newbridge Road and Moorebank Avenue

AM BASE

MOVEMENT SUMMARY

Site: I-06 2028 BASE AM

Network: 2028 BASE AM

Newbridge Road / Moorebank Avenue
2028 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	1449	3.2	1259	3.2	0.649	19.3	LOS B	14.4	103.7	0.58	0.83	42.1
3	R2	1296	9.0	1125	9.0	0.661	15.0	LOS B	13.7	103.6	0.41	0.68	52.7
Approach		2745	5.9	2384 N1	5.9	0.661	17.3	LOS B	14.4	103.7	0.50	0.76	47.8
East: Newbridge Road (E)													
4	L2	669	19.8	669	19.8	0.556	18.5	LOS B	8.0	65.9	0.71	0.80	51.9
5	T1	945	5.2	945	5.2	1.235	289.3	LOS F	72.8	532.4	1.00	1.85	15.5
Approach		1615	11.3	1615	11.3	1.235	177.0	LOS F	72.8	532.4	0.88	1.41	19.9
West: Newbridge Road (W)													
11	T1	1513	6.5	1513	6.5	0.814	10.4	LOS A	25.7	190.1	0.57	0.53	62.2
12	R2	802	7.3	802	7.3	1.499	442.0	LOS F	78.7	585.2	1.00	1.74	4.6
Approach		2315	6.8	2315	6.8	1.499	160.0	LOS F	78.7	585.2	0.72	0.95	20.2
All Vehicles		6675	7.5	6313 N1	8.0	1.499	110.4	LOS F	78.7	585.2	0.68	0.99	24.1

PHASING SUMMARY

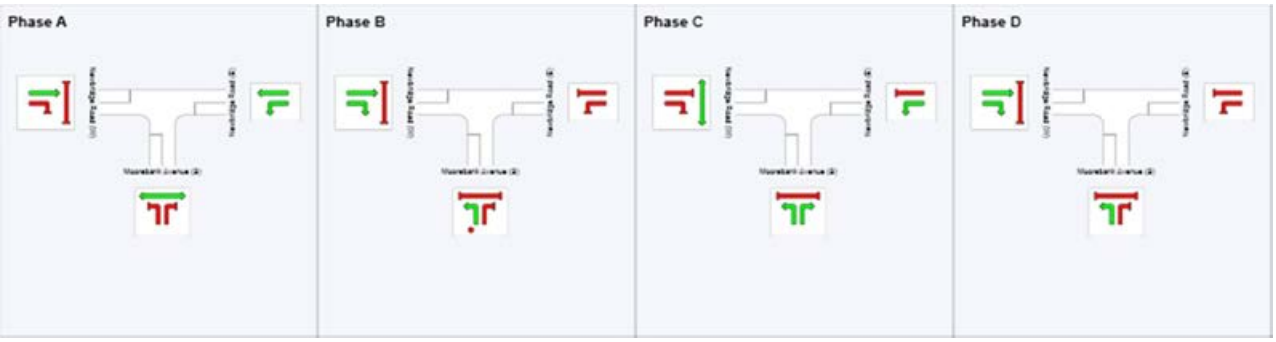
Site: I-06 2028 BASE AM

Network: 2028 BASE AM

Newbridge Road / Moorebank Avenue
2028 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	33	55	116
Green Time (sec)	27	16	55	11
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	22	61	17
Phase Split	25 %	17 %	46 %	13 %



PM BASE

MOVEMENT SUMMARY

Site: I-06 2028 BASE PM

Network: 2028 BASE PM

Newbridge Road / Moorebank Avenue
2028 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	964	3.4	865	3.5	0.494	22.4	LOS B	12.7	91.3	0.56	0.75	39.9
3	R2	915	10.7	822	11.0	1.065	122.7	LOS F	17.0	130.6	1.00	1.23	21.7
Approach		1879	6.9	1687 N1	7.2	1.065	71.2	LOS F	17.0	130.6	0.78	0.98	26.4
East: Newbridge Road (E)													
4	L2	1212	5.1	1212	5.1	1.030	132.4	LOS F	62.0	452.9	1.00	1.16	19.8
5	T1	1342	4.8	1342	4.8	0.903	47.3	LOS D	39.7	289.6	1.00	1.00	44.5
Approach		2554	4.9	2554	4.9	1.030	87.6	LOS F	62.0	452.9	1.00	1.08	30.6
West: Newbridge Road (W)													
11	T1	1088	3.8	1088	3.8	0.425	9.2	LOS A	13.8	100.1	0.50	0.45	63.0
12	R2	1073	2.6	1073	2.6	1.148	188.3	LOS F	64.0	457.9	1.00	1.36	9.9
Approach		2161	3.2	2161	3.2	1.148	98.1	LOS F	64.0	457.9	0.75	0.90	25.7
All Vehicles		6594	4.9	6402 N1	5.1	1.148	86.9	LOS F	64.0	457.9	0.85	0.99	28.0

PHASING SUMMARY

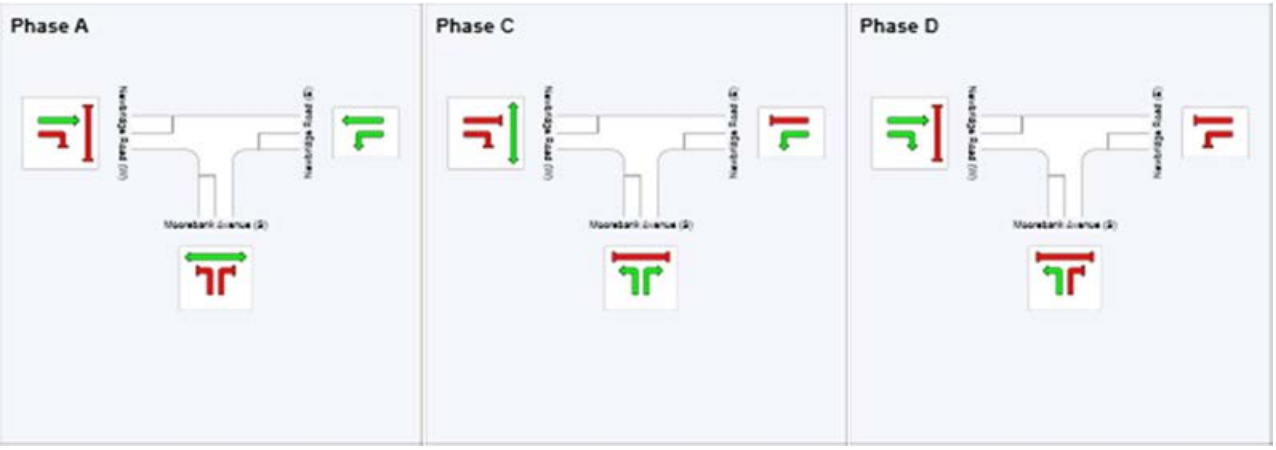
Site: I-06 2028 BASE PM

Network: 2028 BASE PM

Newbridge Road / Moorebank Avenue
2028 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	44	76
Green Time (sec)	38	26	34
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	44	32	40
Phase Split	38 %	28 %	34 %



AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-06 2028 MIMT AM

Network: 2028 MIMT AM

Newbridge Road / Moorebank Avenue
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	1452	3.3	1188	3.4	0.614	18.6	LOS B	12.6	90.8	0.55	0.81	42.6
3	R2	1350	12.7	1106	12.8	0.679	15.1	LOS B	14.0	112.2	0.42	0.69	52.3
Approach		2802	7.8	2294 N1	7.9	0.679	16.9	LOS B	14.0	112.2	0.49	0.75	47.9
East: Newbridge Road (E)													
4	L2	703	22.5	703	22.5	0.640	19.3	LOS B	9.3	79.4	0.75	0.81	51.4
5	T1	945	5.2	945	5.2	1.235	289.3	LOS F	72.8	532.4	1.00	1.85	15.5
Approach		1648	12.6	1648	12.6	1.235	174.1	LOS F	72.8	532.4	0.90	1.40	20.0
West: Newbridge Road (W)													
11	T1	1513	6.5	1513	6.5	0.814	10.4	LOS A	25.7	190.1	0.57	0.53	62.2
12	R2	813	7.5	813	7.5	1.545	546.7	LOS F	83.7	624.6	1.00	1.86	3.7
Approach		2326	6.8	2326	6.8	1.545	197.9	LOS F	83.7	624.6	0.72	0.99	17.2
All Vehicles		6776	8.7	6268 N1	9.4	1.545	125.4	LOS F	83.7	624.6	0.68	1.01	22.2

PHASING SUMMARY

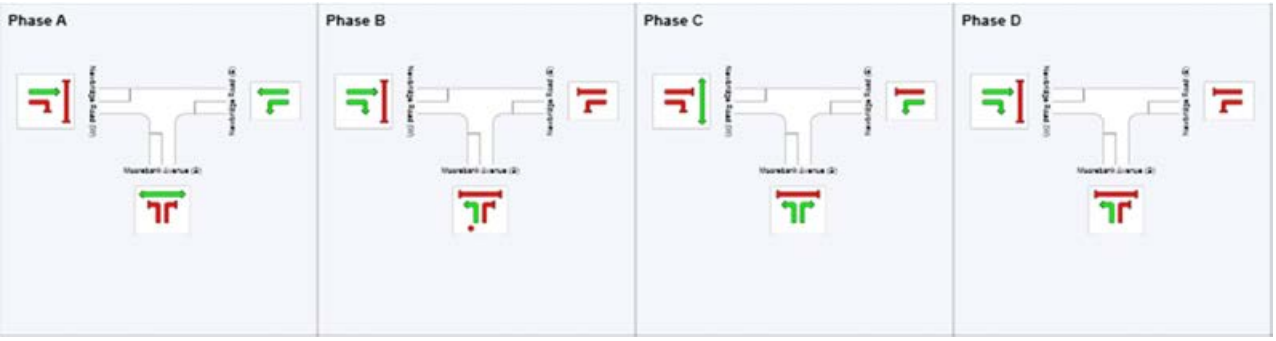
Site: I-06 2028 MIMT AM

Network: 2028 MIMT AM

Newbridge Road / Moorebank Avenue
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	33	55	116
Green Time (sec)	27	16	55	11
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	22	61	17
Phase Split	25 %	17 %	46 %	13 %



PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-06 2028 MIMT PM

Network: 2028 MIMT PM

Newbridge Road / Moorebank Avenue
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	973	3.4	873	3.5	0.499	22.4	LOS B	12.8	92.6	0.56	0.75	39.9
3	R2	952	13.4	859	14.0	1.153	196.0	LOS F	16.2	130.6	1.00	1.44	15.5
Approach		1925	8.3	1732 N1	8.7	1.153	108.5	LOS F	16.2	130.6	0.78	1.09	20.2
East: Newbridge Road (E)													
4	L2	1255	8.4	1255	8.4	1.132	211.0	LOS F	82.6	637.2	1.00	1.35	13.9
5	T1	1342	4.8	1342	4.8	0.903	47.3	LOS D	39.7	289.6	1.00	1.00	44.5
Approach		2597	6.5	2597	6.5	1.132	126.4	LOS F	82.6	637.2	1.00	1.17	24.5
West: Newbridge Road (W)													
11	T1	1088	3.8	1088	3.8	0.425	9.2	LOS A	13.8	100.1	0.50	0.45	63.0
12	R2	1073	2.6	1073	2.6	1.166	203.7	LOS F	67.3	481.9	1.00	1.40	9.2
Approach		2161	3.2	2161	3.2	1.166	105.7	LOS F	67.3	481.9	0.75	0.92	24.5
All Vehicles		6684	6.0	6491 N1	6.2	1.166	114.7	LOS F	82.6	637.2	0.86	1.07	23.5

PHASING SUMMARY

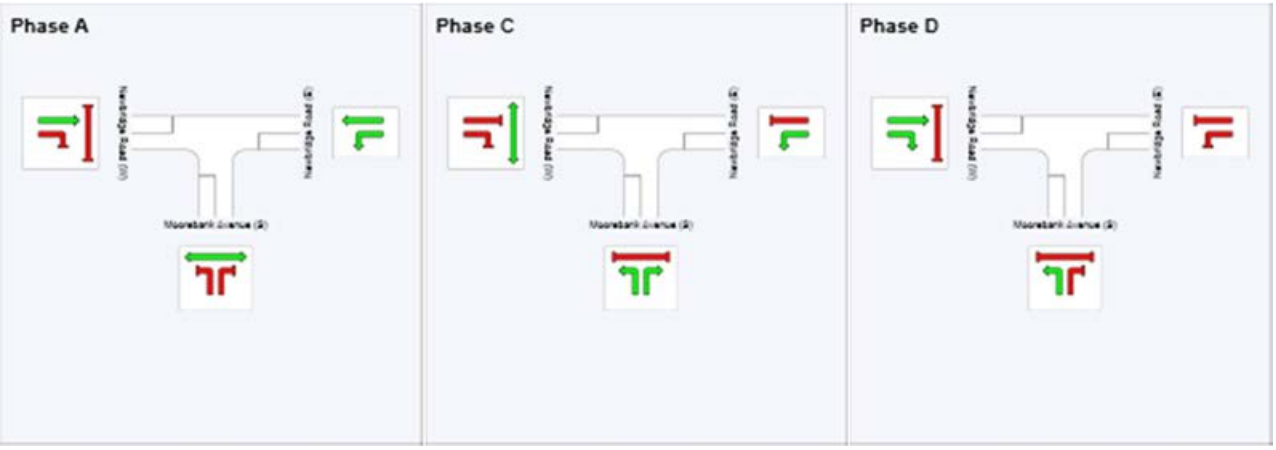
Site: I-06 2028 MIMT PM

Network: 2028 MIMT PM

Newbridge Road / Moorebank Avenue
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	44	76
Green Time (sec)	38	26	34
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	44	32	40
Phase Split	38 %	28 %	34 %



AM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-06 2028 MIMT AM

Network: 2028 MIMT AM - Upgrade Option

Newbridge Road / Moorebank Avenue
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	1452	3.3	1219	3.4	0.630	18.9	LOS B	13.3	95.9	0.56	0.82	42.3
3	R2	1350	12.7	1134	12.7	0.695	15.2	LOS B	14.8	118.4	0.44	0.69	52.2
Approach		2802	7.8	2353 N1	7.9	0.695	17.1	LOS B	14.8	118.4	0.50	0.76	47.8
East: Newbridge Road (E)													
4	L2	703	22.5	703	22.5	0.616	19.1	LOS B	9.0	77.2	0.74	0.81	51.5
5	T1	945	5.2	945	5.2	1.235	289.3	LOS F	72.8	532.4	1.00	1.85	15.5
Approach		1648	12.6	1648	12.6	1.235	174.0	LOS F	72.8	532.4	0.89	1.40	20.0
West: Newbridge Road (W)													
11	T1	1513	6.5	1513	6.5	0.814	10.4	LOS A	25.7	190.1	0.57	0.53	62.2
12	R2	813	7.5	813	7.5	1.506	511.7	LOS F	79.2	591.4	1.00	1.82	4.0
Approach		2326	6.8	2326	6.8	1.506	185.7	LOS F	79.2	591.4	0.72	0.98	18.1
All Vehicles		6776	8.7	6328 N1	9.3	1.506	120.0	LOS F	79.2	591.4	0.68	1.01	22.8

PHASING SUMMARY

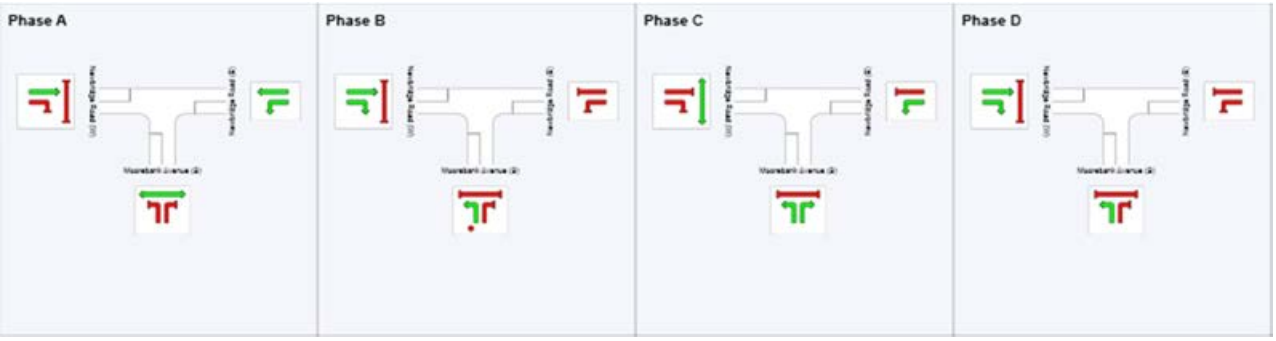
Site: I-06 2028 MIMT AM

Network: 2028 MIMT AM - Upgrade Option

Newbridge Road / Moorebank Avenue
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	33	55	116
Green Time (sec)	27	16	55	11
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	22	61	17
Phase Split	25 %	17 %	46 %	13 %



PM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-06 2028 MIMT PM - Upgrade Option

Network: 2028 MIMT PM - Upgrade Option

Newbridge Road / Moorebank Avenue
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	973	3.4	916	3.4	0.533	23.6	LOS B	14.3	102.7	0.60	0.76	39.2
3	R2	952	13.4	899	13.7	0.978	64.6	LOS E	16.3	130.6	1.00	1.04	31.6
Approach		1925	8.3	1815 N1	8.5	0.978	43.9	LOS D	16.3	130.6	0.80	0.90	34.2
East: Newbridge Road (E)													
4	L2	1255	8.4	1255	8.4	1.041	138.7	LOS F	67.0	516.9	1.00	1.19	19.2
5	T1	1342	4.8	1342	4.8	0.903	47.3	LOS D	39.7	289.6	1.00	1.00	44.5
Approach		2597	6.5	2597	6.5	1.041	91.5	LOS F	67.0	516.9	1.00	1.09	29.8
West: Newbridge Road (W)													
11	T1	1088	3.8	1088	3.8	0.461	12.4	LOS A	16.1	116.1	0.57	0.51	60.9
12	R2	1073	2.6	1073	2.6	1.361	379.8	LOS F	94.8	678.7	1.00	1.75	5.3
Approach		2161	3.2	2161	3.2	1.361	194.8	LOS F	94.8	678.7	0.78	1.13	15.8
All Vehicles		6684	6.0	6574 N1	6.1	1.361	112.3	LOS F	94.8	678.7	0.87	1.05	23.7

PHASING SUMMARY

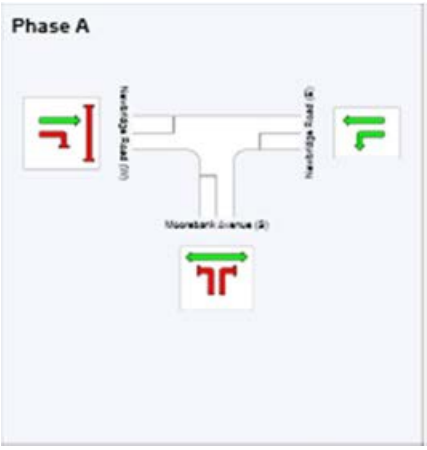
Site: I-06 2028 MIMT PM - Upgrade Option

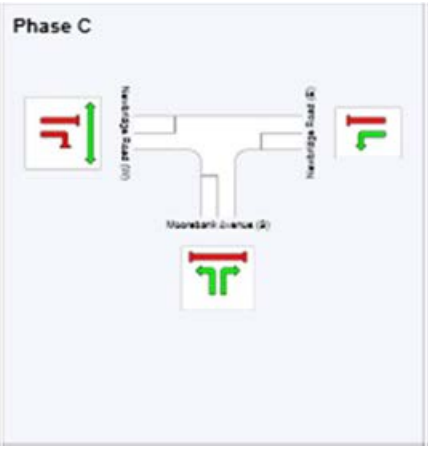
Network: 2028 MIMT PM - Upgrade Option

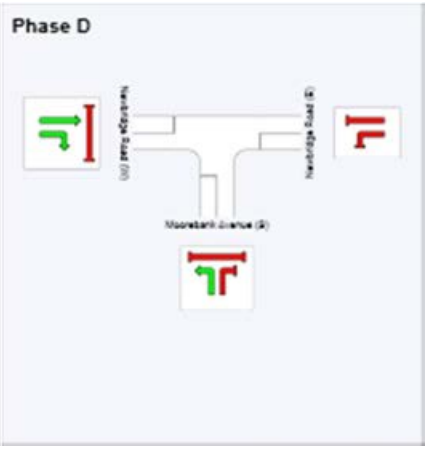
Newbridge Road / Moorebank Avenue
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	44	82
Green Time (sec)	38	32	28
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	44	38	34
Phase Split	38 %	33 %	29 %







I-07 Intersection of Moorebank Avenue and Heathcote Road

AM BASE

MOVEMENT SUMMARY

Site: I-07 2028 BASE AM

Network: 2028 BASE AM

Moorebank Avenue / Heathcote Road
2028 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
2	T1	1883	5.7	1873	5.7	1.196	196.3	LOS F	60.0	440.6	1.00	1.85	4.9
3	R2	23	18.2	23	18.2	0.207	71.9	LOS F	1.5	12.0	0.98	0.71	30.5
Approach		1906	5.9	1896 N1	5.9	1.196	194.8	LOS F	60.0	440.6	1.00	1.84	5.1
East: Heathcote Road (E)													
4	L2	28	59.3	28	59.3	1.365	413.5	LOS F	93.3	704.0	1.00	1.83	7.8
6	R2	926	6.0	926	6.0	1.365	353.1	LOS F	93.3	704.0	1.00	1.72	8.9
Approach		955	7.6	955	7.6	1.365	354.9	LOS F	93.3	704.0	1.00	1.72	8.9
North: Moorebank Avenue (N)													
7	L2	754	7.7	632	8.3	0.391	10.7	LOS A	12.6	94.9	0.54	0.71	51.4
8	T1	732	17.0	618	18.3	0.352	21.1	LOS B	11.9	96.4	0.65	0.56	13.3
Approach		1485	12.3	1250 N1	13.2	0.391	15.8	LOS B	12.6	96.4	0.59	0.64	41.7
All Vehicles		4346	8.4	4101 N1	8.9	1.365	177.5	LOS F	93.3	704.0	0.88	1.44	9.6

PHASING SUMMARY

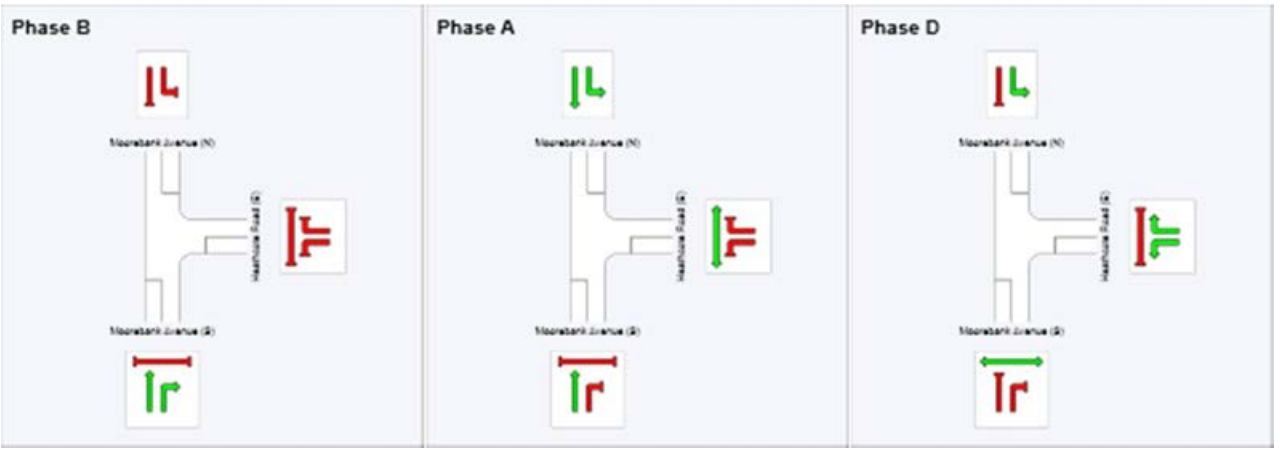
Site: I-07 2028 BASE AM

Network: 2028 BASE AM

Moorebank Avenue / Heathcote Road
2028 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	15	88
Green Time (sec)	9	67	39
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	73	45
Phase Split	11 %	55 %	34 %



PM BASE

MOVEMENT SUMMARY

Site: I-07 2028 BASE PM

Network: 2028 BASE PM

Moorebank Avenue / Heathcote Road
2028 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	1124	8.3	1124	8.3	0.872	33.7	LOS C	36.0	270.0	0.86	0.93	20.4
3	R2	47	6.7	47	6.7	0.387	64.5	LOS E	2.7	20.1	0.99	0.74	32.2
Approach		1172	8.3	1172	8.3	0.872	35.0	LOS C	36.0	270.0	0.87	0.92	21.7
East: Heathcote Road (E)													
4	L2	74	18.6	74	18.6	1.360	380.8	LOS F	87.0	646.0	1.00	1.89	8.3
6	R2	802	5.1	802	5.1	1.360	380.2	LOS F	87.0	646.0	1.00	1.90	8.3
Approach		876	6.3	876	6.3	1.360	380.3	LOS F	87.0	646.0	1.00	1.89	8.3
North: Moorebank Avenue (N)													
7	L2	871	3.5	804	3.6	0.396	7.5	LOS A	5.5	39.6	0.24	0.61	53.8
8	T1	1429	4.1	1321	4.1	0.672	6.3	LOS A	12.1	87.8	0.35	0.32	29.3
Approach		2300	3.8	2125 N1	3.9	0.672	6.7	LOS A	12.1	87.8	0.31	0.43	48.5
All Vehicles		4347	5.5	4173 N1	5.8	1.360	93.1	LOS F	87.0	646.0	0.61	0.88	15.8

PHASING SUMMARY

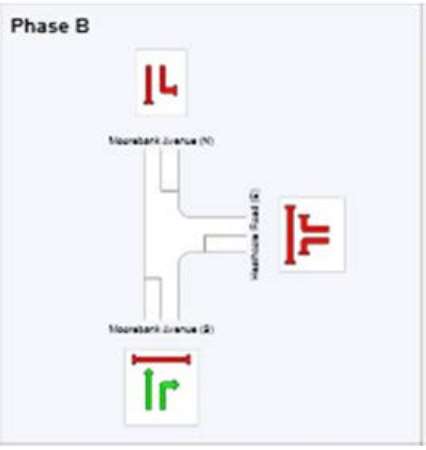
Site: I-07 2028 BASE PM

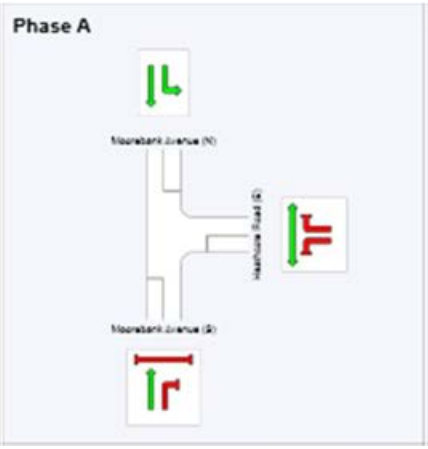
Network: 2028 BASE PM

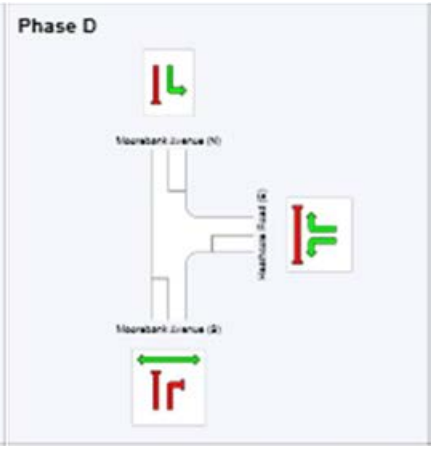
Moorebank Avenue / Heathcote Road
2028 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	14	80
Green Time (sec)	8	60	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	66	36
Phase Split	12 %	57 %	31 %







AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-07 2028 MIMT AM

Network: 2028 MIMT AM

Moorebank Avenue / Heathcote Road
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
2	T1	1940	8.4	1732	8.6	1.133	147.5	LOS F	57.4	440.6	1.00	1.64	6.3
3	R2	23	18.2	21	18.4	0.187	71.8	LOS F	1.3	10.8	0.98	0.71	30.6
Approach		1963	8.6	1753 N1	8.7	1.133	146.6	LOS F	57.4	440.6	1.00	1.63	6.6
East: Heathcote Road (E)													
4	L2	28	59.3	28	59.3	1.439	479.0	LOS F	105.5	794.9	1.00	1.94	6.8
6	R2	926	6.0	926	6.0	1.439	418.9	LOS F	105.5	794.9	1.00	1.84	7.7
Approach		955	7.6	955	7.6	1.439	420.7	LOS F	105.5	794.9	1.00	1.84	7.6
North: Moorebank Avenue (N)													
7	L2	754	7.7	610	8.5	0.376	10.7	LOS A	12.1	90.7	0.54	0.71	51.4
8	T1	776	19.6	638	21.6	0.377	21.4	LOS B	12.5	106.7	0.66	0.57	13.1
Approach		1530	13.7	1248 N1	15.2	0.377	16.2	LOS B	12.5	106.7	0.60	0.64	41.1
All Vehicles		4447	10.1	3956 N1	11.4	1.439	171.6	LOS F	105.5	794.9	0.87	1.37	9.9

PHASING SUMMARY

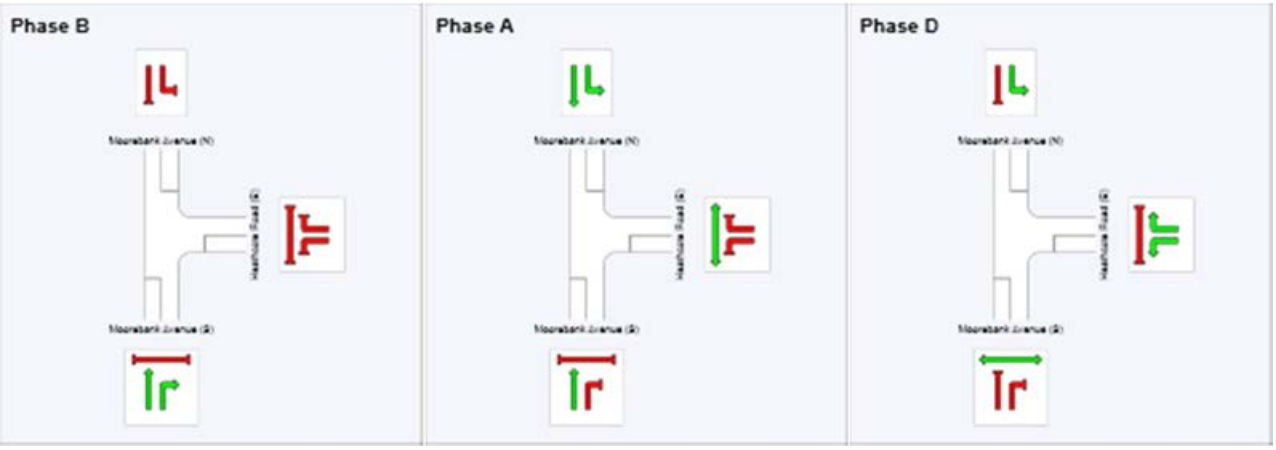
Site: I-07 2028 MIMT AM

Network: 2028 MIMT AM

Moorebank Avenue / Heathcote Road
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	15	88
Green Time (sec)	9	67	39
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	73	45
Phase Split	11 %	55 %	34 %



PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-07 2028 MIMT PM

Network: 2028 MIMT PM

Moorebank Avenue / Heathcote Road
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	1171	10.5	1171	10.5	0.933	54.4	LOS D	47.5	369.8	0.95	1.14	14.5
3	R2	47	6.7	47	6.7	0.387	64.5	LOS E	2.7	20.1	0.99	0.74	32.2
Approach		1218	10.4	1218	10.4	0.933	54.8	LOS D	47.5	369.8	0.95	1.12	15.9
East: Heathcote Road (E)													
4	L2	74	18.6	74	18.6	1.504	509.3	LOS F	110.0	815.6	1.00	2.13	6.5
6	R2	802	5.1	802	5.1	1.504	400.1	LOS F	110.0	815.6	1.00	1.91	8.0
Approach		876	6.3	876	6.2	1.504	409.3	LOS F	110.0	815.6	1.00	1.93	7.8
North: Moorebank Avenue (N)													
7	L2	871	3.5	760	3.5	0.355	7.5	LOS A	5.0	36.2	0.24	0.61	53.8
8	T1	1473	6.9	1286	6.9	0.676	6.3	LOS A	11.9	90.4	0.36	0.32	29.2
Approach		2344	5.6	2046 N1	5.7	0.676	6.7	LOS A	11.9	90.4	0.31	0.43	48.4
All Vehicles		4437	7.1	4140 N1	7.6	1.504	106.0	LOS F	110.0	815.6	0.64	0.95	14.2

PHASING SUMMARY

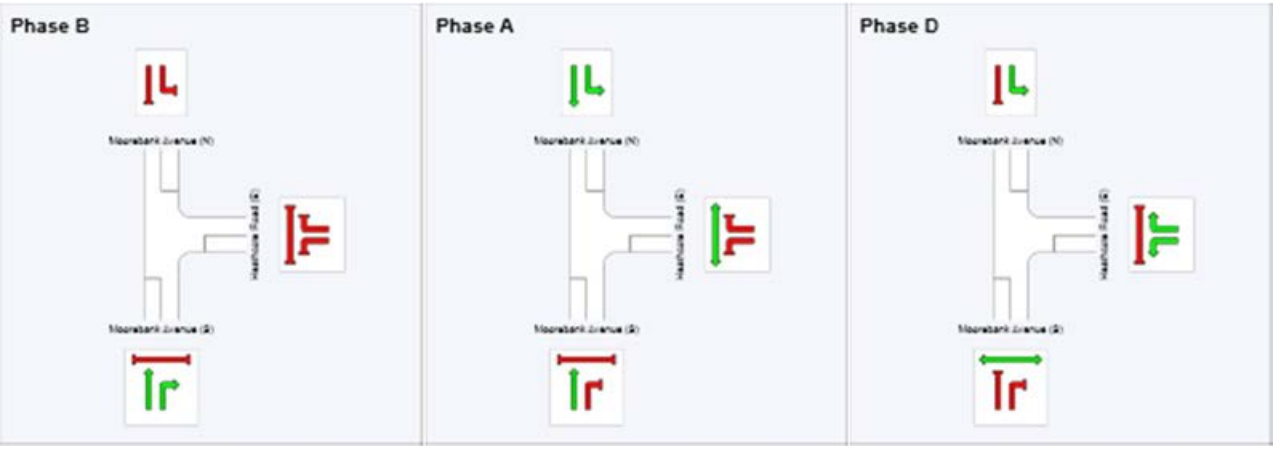
Site: I-07 2028 MIMT PM

Network: 2028 MIMT PM

Moorebank Avenue / Heathcote Road
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	14	80
Green Time (sec)	8	60	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	66	36
Phase Split	12 %	57 %	31 %



AM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-07 2028 MIMT AM - Upgrade Option

Network: 2028 MIMT AM - Upgrade Option

Moorebank Avenue / Heathcote Road
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
2	T1	1940	8.4	1757	8.5	1.157	167.0	LOS F	57.4	440.6	1.00	1.74	5.7
3	R2	23	18.2	21	18.4	0.189	71.8	LOS F	1.3	10.9	0.98	0.71	30.7
Approach		1963	8.6	1778 N1	8.7	1.157	165.9	LOS F	57.4	440.6	1.00	1.72	6.0
East: Heathcote Road (E)													
4	L2	28	59.3	28	59.3	1.295	376.6	LOS F	56.5	431.7	1.00	1.71	8.4
6	R2	926	6.0	926	6.0	1.295	325.6	LOS F	56.5	431.7	1.00	1.64	9.5
Approach		955	7.6	955	7.6	1.295	327.1	LOS F	56.5	431.7	1.00	1.64	9.5
North: Moorebank Avenue (N)													
7	L2	754	7.7	617	8.5	0.381	10.7	LOS A	12.3	92.0	0.54	0.71	51.4
8	T1	776	19.6	645	21.4	0.364	19.6	LOS B	12.1	102.9	0.63	0.55	14.4
Approach		1530	13.7	1261 N1	15.1	0.381	15.2	LOS B	12.3	102.9	0.58	0.63	41.9
All Vehicles		4447	10.1	3994 N1	11.3	1.295	156.9	LOS F	57.4	440.6	0.87	1.36	10.7

PHASING SUMMARY

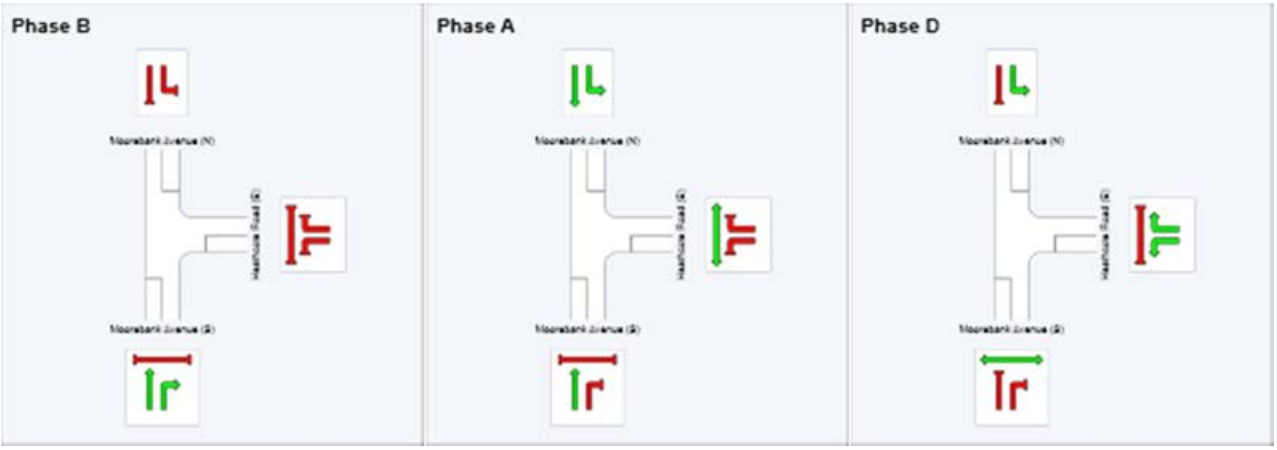
Site: I-07 2028 MIMT AM - Upgrade Option

Network: 2028 MIMT AM - Upgrade Option

Moorebank Avenue / Heathcote Road
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	15	91
Green Time (sec)	9	70	36
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	76	42
Phase Split	11 %	57 %	32 %



PM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-07 2028 MIMT PM - Upgrade Option

Network: 2028 MIMT PM - Upgrade Option

Moorebank Avenue / Heathcote Road
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
2	T1	1171	10.5	1171	10.5	0.872	33.0	LOS C	38.6	300.0	0.87	0.93	20.9
3	R2	47	6.7	47	6.7	0.387	64.5	LOS E	2.7	20.1	0.99	0.74	32.3
Approach		1218	10.4	1218	10.4	0.872	34.2	LOS C	38.6	300.0	0.87	0.92	22.0
East: Heathcote Road (E)													
4	L2	74	18.6	74	18.6	1.350	387.3	LOS F	56.6	423.2	1.00	1.86	8.2
6	R2	802	5.1	802	5.1	1.350	305.4	LOS F	56.6	423.2	1.00	1.69	10.0
Approach		876	6.3	876	6.3	1.350	312.3	LOS F	56.6	423.2	1.00	1.71	9.9
North: Moorebank Avenue (N)													
7	L2	871	3.5	746	3.7	0.344	7.4	LOS A	4.9	35.4	0.23	0.61	53.8
8	T1	1473	6.9	1266	7.4	0.668	6.3	LOS A	11.5	88.0	0.35	0.32	29.8
Approach		2344	5.6	2011 N1	6.0	0.668	6.7	LOS A	11.5	88.0	0.31	0.42	48.5
All Vehicles		4437	7.1	4105 N1	7.6	1.350	80.1	LOS F	56.6	423.2	0.62	0.85	17.5

PHASING SUMMARY

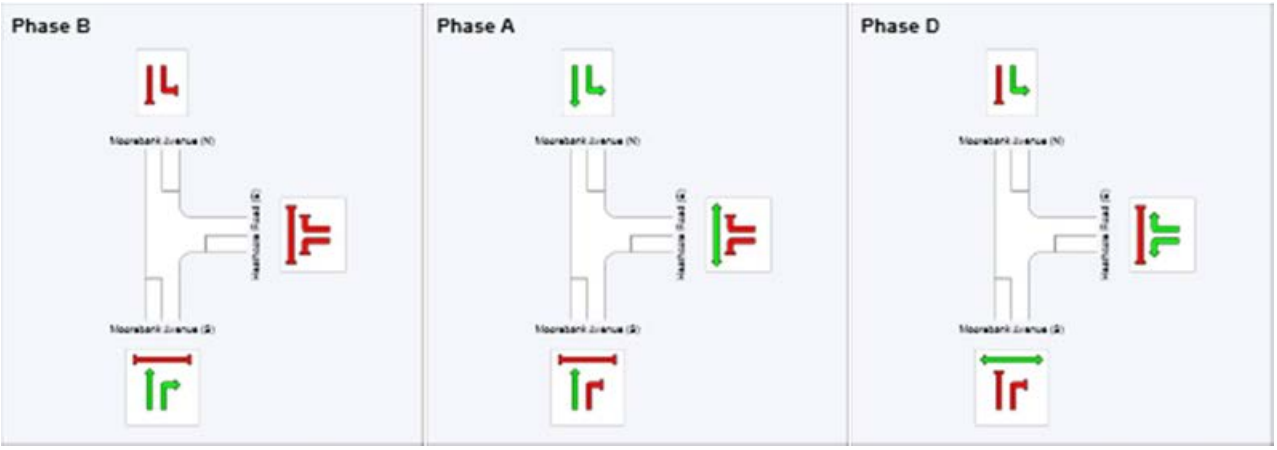
Site: I-07 2028 MIMT PM - Upgrade Option

Network: 2028 MIMT PM - Upgrade Option

Moorebank Avenue / Heathcote Road
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	14	80
Green Time (sec)	8	60	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	66	36
Phase Split	12 %	57 %	31 %



I-08 Intersection of Moorebank Avenue and Industry Park Access

AM BASE

MOVEMENT SUMMARY

Site: I-08 2028 BASE AM

Network: 2028 BASE AM

Moorebank Avenue / Industry Park Access
2028 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (Network Cycle Time)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	87	1.2	87	1.2	0.053	6.1	LOS A	0.4	2.7	0.12	0.58	43.1
2	T1	1884	4.9	1884	4.9	1.173	218.7	LOS F	145.8	1062.9	1.00	1.94	7.2
Approach		1972	4.7	1972	4.7	1.173	209.3	LOS F	145.8	1062.9	0.96	1.88	7.6
North: Moorebank Avenue (N)													
8	T1	677	16.0	570	17.0	0.191	1.9	LOS A	3.2	25.8	0.19	0.17	57.6
9	R2	64	39.3	55	41.0	1.042	136.5	LOS F	5.3	49.7	1.00	1.09	10.4
Approach		741	18.0	624 N1	19.1	1.042	13.7	LOS A	5.3	49.7	0.26	0.25	45.1
West: Industry Park Access (W)													
10	L2	31	62.1	31	62.1	0.458	67.7	LOS E	2.1	22.4	0.97	0.71	9.3
12	R2	53	72.0	53	72.0	0.509	72.5	LOS F	2.6	29.2	0.99	0.74	19.2
Approach		83	68.4	83	68.4	0.509	70.7	LOS F	2.6	29.2	0.99	0.73	16.3
All Vehicles		2796	10.1	2679 N1	10.6	1.173	159.4	LOS F	145.8	1062.9	0.80	1.47	10.4

PHASING SUMMARY

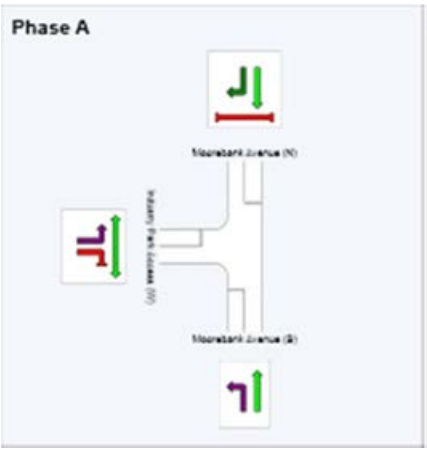
Site: I-08 2028 BASE AM

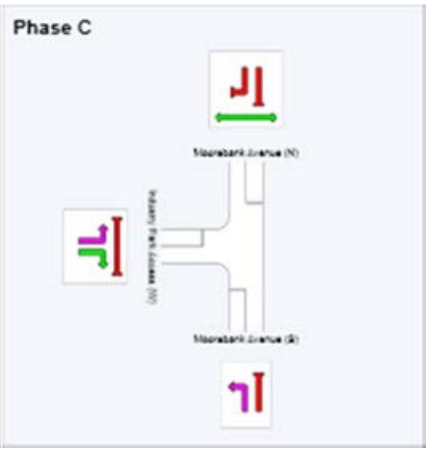
Network: 2028 BASE AM

Moorebank Avenue / Industry Park Access
2028 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (Network Cycle Time)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	119
Green Time (sec)	113	8
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	119	14
Phase Split	89 %	11 %





PM BASE

MOVEMENT SUMMARY

Site: I-08 2028 BASE PM

Network: 2028 BASE PM

Moorebank Avenue / Industry Park Access
2028 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 65 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	7	14.3	7	14.3	0.006	6.5	LOS A	0.0	0.2	0.21	0.57	42.8
2	T1	1116	7.5	1116	7.5	0.434	4.7	LOS A	7.8	57.8	0.47	0.42	51.8
Approach		1123	7.6	1123	7.6	0.434	4.7	LOS A	7.8	57.8	0.47	0.42	51.7
North: Moorebank Avenue (N)													
8	T1	1484	3.8	1360	3.8	0.516	5.1	LOS A	10.3	74.4	0.52	0.47	54.0
9	R2	23	63.6	21	63.3	0.115	13.8	LOS A	0.3	3.6	0.48	0.66	33.2
Approach		1507	4.7	1381 N1	4.7	0.516	5.3	LOS A	10.3	74.4	0.52	0.47	53.6
West: Industry Park Access (W)													
10	L2	33	12.9	33	12.9	0.061	3.6	LOS A	0.2	1.9	0.34	0.41	26.8
12	R2	182	8.7	182	8.7	0.423	32.3	LOS C	2.9	21.5	0.97	0.76	28.2
Approach		215	9.3	215	9.3	0.423	27.9	LOS B	2.9	21.5	0.87	0.71	28.1
All Vehicles		2845	6.2	2719 N1	6.5	0.516	6.8	LOS A	10.3	74.4	0.53	0.47	49.4

PHASING SUMMARY

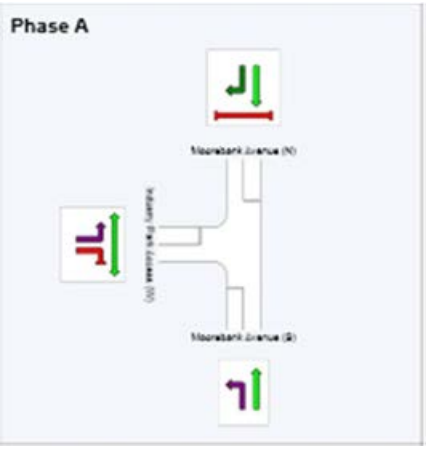
Site: I-08 2028 BASE PM

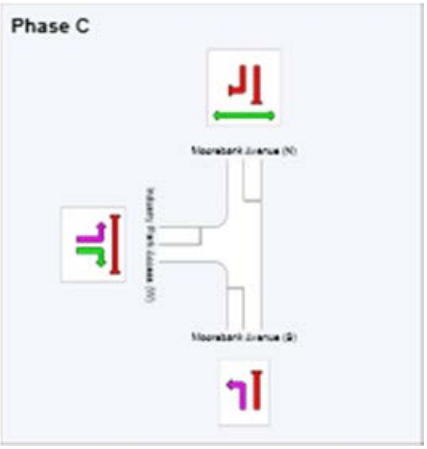
Network: 2028 BASE PM

Moorebank Avenue / Industry Park Access
2028 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 65 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	51
Green Time (sec)	45	8
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	51	14
Phase Split	78 %	22 %





AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-08 2028 MIMT AM

Network: 2028 MIMT AM

Moorebank Avenue / Industry Park Access
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	90	3.7	90	3.7	0.056	6.1	LOS A	0.4	3.0	0.12	0.58	43.1
2	T1	1941	7.6	1941	7.6	1.280	314.8	LOS F	175.7	1340.1	1.00	2.30	5.2
Approach		2030	7.5	2030	7.5	1.280	301.2	LOS F	175.7	1340.1	0.96	2.22	5.5
North: Moorebank Avenue (N)													
8	T1	721	18.9	591	20.5	0.212	2.5	LOS A	3.9	33.2	0.22	0.20	56.9
9	R2	64	39.3	53	41.6	1.016	118.6	LOS F	4.7	44.8	1.00	1.05	11.6
Approach		786	20.5	644 N1	22.3	1.016	12.2	LOS A	4.7	44.8	0.29	0.27	46.4
West: Industry Park Access (W)													
10	L2	31	62.1	31	62.1	0.376	64.3	LOS E	2.0	21.9	0.95	0.70	9.6
12	R2	55	73.3	55	73.3	0.397	68.0	LOS E	2.6	30.2	0.98	0.73	19.8
Approach		86	69.3	86	69.3	0.397	66.7	LOS E	2.6	30.2	0.97	0.72	16.9
All Vehicles		2902	12.8	2760 N1	13.5	1.280	226.5	LOS F	175.7	1340.1	0.80	1.72	7.8

PHASING SUMMARY

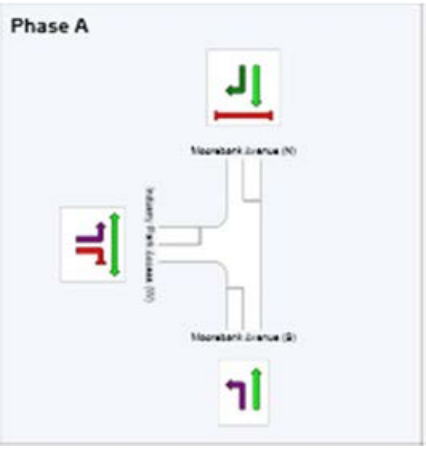
Site: I-08 2028 MIMT AM

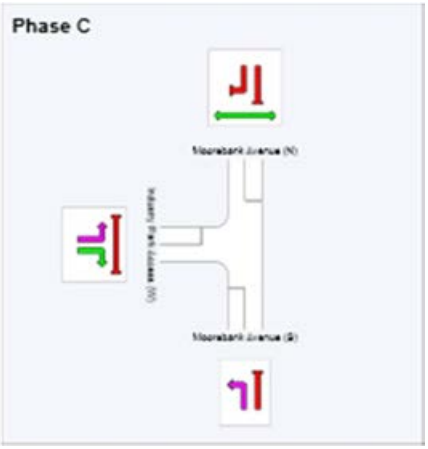
Network: 2028 MIMT AM

Moorebank Avenue / Industry Park Access
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	116
Green Time (sec)	110	11
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	116	17
Phase Split	87 %	13 %





PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-08 2028 MIMT PM

Network: 2028 MIMT PM

Moorebank Avenue / Industry Park Access
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	10	37.3	10	37.3	0.010	6.6	LOS A	0.0	0.5	0.13	0.56	43.0
2	T1	1162	9.8	1162	9.8	0.424	4.3	LOS A	10.8	83.4	0.35	0.32	52.5
Approach		1172	10.0	1172	10.0	0.424	4.3	LOS A	10.8	83.4	0.35	0.32	52.4
North: Moorebank Avenue (N)													
8	T1	1528	6.6	1321	6.5	0.456	4.4	LOS A	12.3	92.9	0.36	0.33	54.7
9	R2	23	63.6	20	63.1	0.140	13.8	LOS A	0.4	4.5	0.37	0.65	33.2
Approach		1551	7.4	1341 N1	7.3	0.456	4.6	LOS A	12.3	92.9	0.36	0.34	54.4
West: Industry Park Access (W)													
10	L2	33	12.9	33	12.9	0.073	3.3	LOS A	0.3	2.5	0.23	0.36	27.0
12	R2	185	10.1	185	10.1	0.481	56.1	LOS D	5.1	39.4	0.98	0.78	22.4
Approach		218	10.6	218	10.6	0.481	48.2	LOS D	5.1	39.4	0.87	0.71	22.6
All Vehicles		2941	8.7	2730 N1	9.4	0.481	7.9	LOS A	12.3	92.9	0.40	0.36	48.2

PHASING SUMMARY

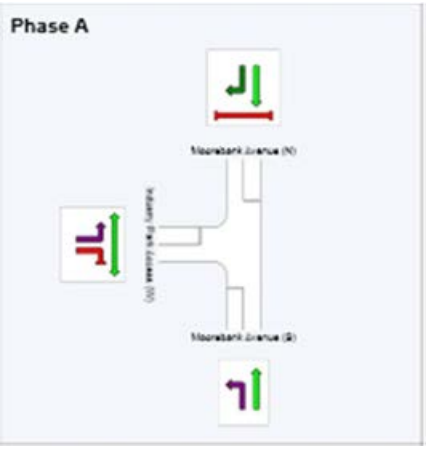
Site: I-08 2028 MIMT PM

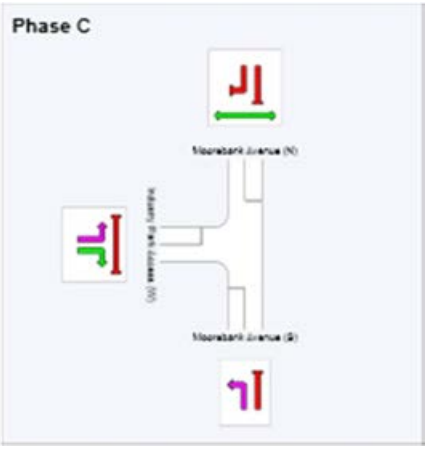
Network: 2028 MIMT PM

Moorebank Avenue / Industry Park Access
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	97
Green Time (sec)	91	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	97	19
Phase Split	84 %	16 %





AM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-08 2028 MIMT AM

Network: 2028 MIMT AM - Upgrade Option

Moorebank Avenue / Industry Park Access
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	90	3.7	90	3.7	0.056	6.1	LOS A	0.4	3.0	0.12	0.58	43.1
2	T1	1941	7.6	1941	7.6	1.280	314.8	LOS F	175.7	1340.1	1.00	2.30	5.2
Approach		2030	7.5	2030	7.5	1.280	301.2	LOS F	175.7	1340.1	0.96	2.22	5.5
North: Moorebank Avenue (N)													
8	T1	721	18.9	598	20.5	0.214	2.5	LOS A	4.0	33.7	0.23	0.20	56.9
9	R2	64	39.3	54	41.6	1.030	127.7	LOS F	5.0	47.4	1.00	1.07	11.0
Approach		786	20.5	653 N1	22.3	1.030	12.9	LOS A	5.0	47.4	0.29	0.27	45.8
West: Industry Park Access (W)													
10	L2	31	62.1	31	62.1	0.376	64.3	LOS E	2.0	21.9	0.95	0.70	9.6
12	R2	55	73.3	55	73.3	0.397	68.0	LOS E	2.6	30.2	0.98	0.73	19.8
Approach		86	69.3	86	69.3	0.397	66.7	LOS E	2.6	30.2	0.97	0.72	16.9
All Vehicles		2902	12.8	2769 N1	13.4	1.280	226.0	LOS F	175.7	1340.1	0.80	1.72	7.8

PHASING SUMMARY

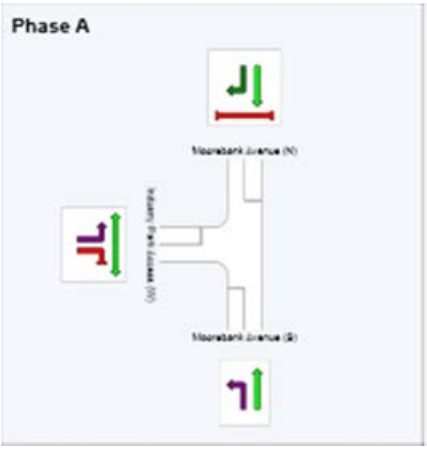
Site: I-08 2028 MIMT AM

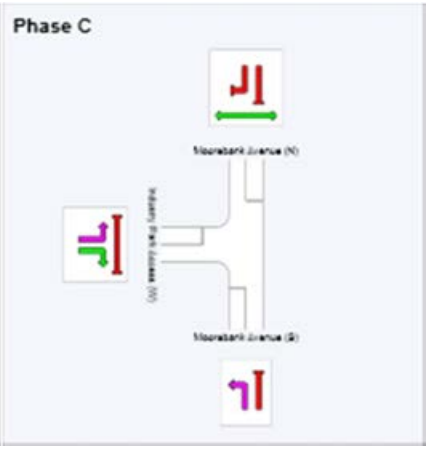
Network: 2028 MIMT AM - Upgrade Option

Moorebank Avenue / Industry Park Access
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	116
Green Time (sec)	110	11
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	116	17
Phase Split	87 %	13 %





PM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-08 2028 MIMT PM

Network: 2028 MIMT PM - Upgrade Option

Moorebank Avenue / Industry Park Access
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	10	37.3	10	37.3	0.010	6.6	LOS A	0.0	0.5	0.13	0.56	43.0
2	T1	1162	9.8	1162	9.8	0.409	4.2	LOS A	10.2	79.0	0.34	0.31	52.6
Approach		1172	10.0	1172	10.0	0.409	4.2	LOS A	10.2	79.0	0.34	0.31	52.5
North: Moorebank Avenue (N)													
8	T1	1528	6.6	1308	6.9	0.454	4.4	LOS A	12.1	92.2	0.36	0.33	54.8
9	R2	23	63.6	20	64.5	0.143	13.4	LOS A	0.4	4.6	0.36	0.64	33.4
Approach		1551	7.4	1329 N1	7.8	0.454	4.5	LOS A	12.1	92.2	0.36	0.34	54.4
West: Industry Park Access (W)													
10	L2	33	12.9	33	12.9	0.068	3.1	LOS A	0.3	2.3	0.22	0.36	27.2
12	R2	185	10.1	185	10.1	0.481	56.1	LOS D	5.1	39.4	0.98	0.78	22.4
Approach		218	10.6	218	10.6	0.481	48.1	LOS D	5.1	39.4	0.87	0.71	22.7
All Vehicles		2941	8.7	2718 N1	9.4	0.481	7.9	LOS A	12.1	92.2	0.39	0.36	48.3

PHASING SUMMARY

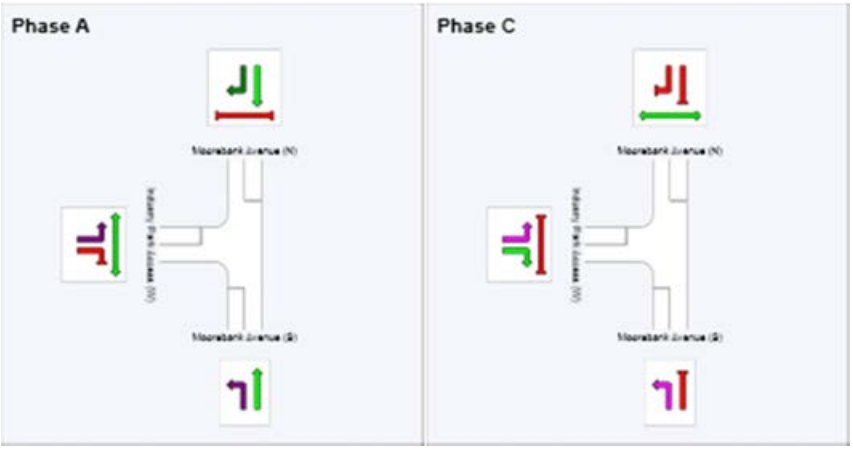
Site: I-08 2028 MIMT PM

Network: 2028 MIMT PM - Upgrade Option

Moorebank Avenue / Industry Park Access
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	97
Green Time (sec)	91	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	97	19
Phase Split	84 %	16 %



I-09 Intersection of Moorebank Avenue and Church Road

AM BASE

MOVEMENT SUMMARY

Site: I-09 2028 BASE AM

Moorebank Avenue / Church Road
2028 BASE AM PEAK 7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	2076	6.4	0.719	4.0	LOS A	10.8	80.1	0.19	0.11	55.7
3	R2	280	7.5	0.719	23.9	LOS B	10.8	80.1	1.00	0.57	41.1
Approach		2356	6.5	0.899	6.4	NA	10.8	80.1	0.29	0.16	53.4
East: Church Road (E)											
4	L2	196	14.5	0.235	7.0	LOS A	0.9	7.3	0.47	0.69	47.6
6	R2	6	0.0	0.810	767.5	LOS F	2.0	13.8	1.00	1.04	4.3
Approach		202	14.1	0.810	30.8	LOS C	2.0	13.8	0.49	0.70	36.3
North: Moorebank Avenue (N)											
7	L2	34	0.0	0.211	5.6	LOS A	0.0	0.0	0.00	0.06	57.7
8	T1	694	21.1	0.211	0.0	LOS A	0.0	0.0	0.00	0.03	59.6
Approach		727	20.1	0.211	0.3	NA	0.0	0.0	0.00	0.03	59.5
All Vehicles		3285	10.0	0.899	6.5	NA	10.8	80.1	0.23	0.17	53.0

PM BASE

MOVEMENT SUMMARY

Site: I-09 2028 BASE PM

Moorebank Avenue / Church Road
2028 BASE PM PEAK 4:30 pm - 5:30 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1167	11.9	0.580	3.9	LOS A	6.1	47.0	0.10	0.06	56.0
3	R2	107	11.8	0.580	42.9	LOS D	6.1	47.0	1.00	0.61	33.7
Approach		1275	11.9	0.580	7.1	NA	6.1	47.0	0.18	0.11	53.0
East: Church Road (E)											
4	L2	413	4.1	1.222	268.3	LOS F	66.7	483.1	1.00	4.47	10.7
6	R2	1	0.0	0.109	333.0	LOS F	0.3	1.9	0.99	1.00	9.0
Approach		414	4.1	1.222	268.5	LOS F	66.7	483.1	1.00	4.46	10.7
North: Moorebank Avenue (N)											
7	L2	13	8.3	0.879	6.6	LOS A	0.0	0.0	0.00	0.01	56.0
8	T1	1654	4.4	0.879	1.2	LOS A	0.0	0.0	0.00	0.00	57.7
Approach		1666	4.4	0.879	1.2	NA	0.0	0.0	0.00	0.00	57.7
All Vehicles		3355	7.2	1.222	36.4	NA	66.7	483.1	0.19	0.59	36.3

AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-09 2028 MIMT AM

Moorebank Avenue / Church Road
2028 MIMT AM PEAK 7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	2135	9.0	0.789	7.2	LOS A	12.5	96.3	0.16	0.11	53.1
3	R2	286	9.3	0.789	30.7	LOS C	12.5	96.3	1.00	0.70	38.1
Approach		2420	9.0	0.986	10.0	NA	12.5	96.3	0.26	0.18	50.7
East: Church Road (E)											
4	L2	201	16.6	0.262	7.5	LOS A	1.0	8.5	0.51	0.73	47.2
6	R2	6	0.0	0.810	778.3	LOS F	2.0	14.0	1.00	1.04	4.3
Approach		207	16.1	0.810	31.1	LOS C	2.0	14.0	0.52	0.74	36.1
North: Moorebank Avenue (N)											
7	L2	34	0.0	0.232	5.6	LOS A	0.0	0.0	0.00	0.05	57.7
8	T1	741	23.8	0.232	0.0	LOS A	0.0	0.0	0.00	0.02	59.6
Approach		774	22.8	0.232	0.3	NA	0.0	0.0	0.00	0.03	59.6
All Vehicles		3402	12.6	0.986	9.0	NA	12.5	96.3	0.22	0.18	51.1

PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-09 2028 MIMT PM

Moorebank Avenue / Church Road
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1216	14.1	0.689	0.2	LOS A	0.0	0.0	0.00	0.00	59.6
3	R2	113	16.0	0.742	59.3	LOS E	3.7	30.5	0.97	1.21	28.6
Approach		1329	14.2	0.742	5.2	NA	3.7	30.5	0.08	0.10	54.4
East: Church Road (E)											
4	L2	418	5.4	1.362	385.1	LOS F	85.9	635.9	1.00	5.23	8.0
6	R2	1	0.0	0.214	743.3	LOS F	0.5	3.6	1.00	1.00	4.4
Approach		419	5.4	1.362	386.0	LOS F	85.9	635.9	1.00	5.22	8.0
North: Moorebank Avenue (N)											
7	L2	13	8.3	0.931	7.4	LOS A	0.0	0.0	0.00	0.01	54.5
8	T1	1700	7.0	0.931	2.1	LOS A	0.0	0.0	0.00	0.00	55.9
Approach		1713	7.0	0.931	2.2	NA	0.0	0.0	0.00	0.00	55.9
All Vehicles		3461	9.6	1.362	49.8	NA	85.9	635.9	0.15	0.67	31.8

AM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-09 2028 MIMT AM - Upgrade Option

Moorebank Avenue / Church Road
2028 MIMT AM PEAK 7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	2135	9.0	0.789	7.2	LOS A	12.5	96.3	0.16	0.11	53.1
3	R2	286	9.3	0.789	30.7	LOS C	12.5	96.3	1.00	0.70	37.9
Approach		2420	9.0	0.986	9.9	NA	12.5	96.3	0.26	0.18	50.6
East: Church Road (E)											
4	L2	201	16.6	0.262	7.5	LOS A	1.0	8.5	0.51	0.73	47.2
Approach		201	16.6	0.262	7.5	LOS A	1.0	8.5	0.51	0.73	47.2
North: Moorebank Avenue (N)											
7	L2	34	0.0	0.232	5.6	LOS A	0.0	0.0	0.00	0.05	57.7
8	T1	741	23.8	0.232	0.0	LOS A	0.0	0.0	0.00	0.02	59.6
Approach		774	22.8	0.232	0.3	NA	0.0	0.0	0.00	0.03	59.6
All Vehicles		3395	12.6	0.986	7.6	NA	12.5	96.3	0.21	0.18	52.2

PM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-09 2028 MIMT PM - Upgrade Option

Moorebank Avenue / Church Road
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1216	14.1	0.687	0.3	LOS A	3.7	30.8	0.00	0.00	59.7
3	R2	113	16.0	0.687	52.8	LOS D	3.7	30.8	0.99	1.16	30.0
Approach		1329	14.2	0.687	4.8	NA	3.7	30.8	0.09	0.10	54.9
East: Church Road (E)											
4	L2	418	5.4	1.361	383.8	LOS F	85.7	634.6	1.00	5.22	8.0
Approach		418	5.4	1.361	383.8	LOS F	85.7	634.6	1.00	5.22	8.0
North: Moorebank Avenue (N)											
7	L2	13	8.3	0.931	7.4	LOS A	0.0	0.0	0.00	0.01	54.5
8	T1	1700	7.0	0.931	2.1	LOS A	0.0	0.0	0.00	0.00	55.9
Approach		1713	7.0	0.931	2.2	NA	0.0	0.0	0.00	0.00	55.9
All Vehicles		3460	9.6	1.361	49.3	NA	85.7	634.6	0.15	0.67	31.9

I-10 Intersection of Heathcote Road and Nuwarra Road

AM BASE

MOVEMENT SUMMARY

Site: I-10 2028 BASE AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2028 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
SouthEast: Heathcote Road (SE)											
4	L2	241	0.9	0.166	8.2	LOS A	3.2	22.2	0.27	0.63	48.3
5	T1	1971	5.2	1.198	235.5	LOS F	138.4	1012.4	1.00	1.95	12.1
6	R2	626	3.2	1.078	234.3	LOS F	41.5	298.6	1.00	1.47	12.5
Approach		2838	4.4	1.198	215.9	LOS F	138.4	1012.4	0.94	1.73	12.8
NorthEast: Nuwarra Road (NE)											
7	L2	408	4.6	0.474	23.9	LOS B	16.0	116.2	0.70	0.78	42.7
8	T1	240	8.3	0.386	52.9	LOS D	6.9	51.9	0.94	0.75	26.3
9	R2	495	6.0	1.399	443.8	LOS F	46.6	343.1	1.00	1.87	7.0
Approach		1143	6.0	1.399	211.7	LOS F	46.6	343.1	0.88	1.25	12.6
NorthWest: Heathcote Road (NW)											
10	L2	249	11.8	0.329	21.5	LOS B	7.7	59.0	0.69	0.76	42.7
11	T1	1038	11.6	0.952	53.5	LOS D	41.9	322.3	0.90	0.96	31.6
12	R2	234	6.3	0.783	75.3	LOS F	8.0	58.8	1.00	0.88	19.9
Approach		1521	10.8	0.952	51.6	LOS D	41.9	322.3	0.88	0.91	31.1
SouthWest: Wattle Grove Drive (SW)											
1	L2	620	2.0	0.823	49.2	LOS D	29.3	209.0	0.98	1.12	25.5
2	T1	532	4.4	0.794	60.5	LOS E	18.8	136.5	1.00	0.92	24.1
3	R2	263	4.0	1.277	332.6	LOS F	42.3	306.5	1.00	1.80	6.6
Approach		1415	3.3	1.277	106.2	LOS F	42.3	306.5	0.99	1.17	16.2
All Vehicles		6917	5.8	1.399	156.7	LOS F	138.4	1012.4	0.93	1.36	15.3

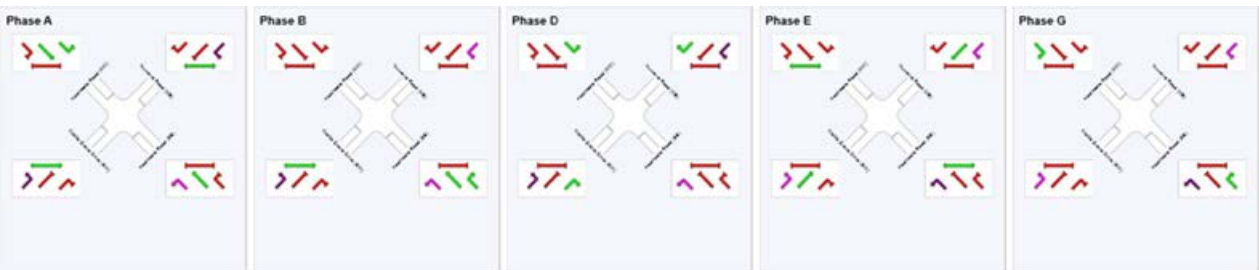
PHASING SUMMARY

Site: I-10 2028 BASE AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2028 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	D	E	G
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	54	67	86	114
Green Time (sec)	48	7	13	22	11
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	54	13	19	28	17
Phase Split	41 %	10 %	15 %	21 %	13 %



PM BASE

MOVEMENT SUMMARY

Site: I-10 2028 BASE PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2028 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
SouthEast: Heathcote Road (SE)											
4	L2	331	2.2	0.280	15.6	LOS B	9.0	64.4	0.46	0.69	42.2
5	T1	1311	5.5	1.005	95.2	LOS F	63.7	466.7	1.00	1.23	23.1
6	R2	459	3.0	1.096	183.7	LOS F	27.1	194.8	1.00	1.31	15.0
Approach		2100	4.4	1.096	102.0	LOS F	63.7	466.7	0.91	1.16	21.5
NorthEast: Nuwarra Road (NE)											
7	L2	632	2.5	0.893	61.2	LOS E	38.5	275.2	1.00	1.15	29.9
8	T1	616	1.0	0.944	79.3	LOS F	26.0	183.9	1.00	1.07	20.5
9	R2	545	6.0	1.091	159.6	LOS F	32.9	242.4	1.00	1.25	16.1
Approach		1793	3.1	1.091	97.4	LOS F	38.5	275.2	1.00	1.15	21.3
NorthWest: Heathcote Road (NW)											
10	L2	251	5.5	0.230	22.2	LOS B	8.5	62.1	0.55	0.73	42.5
11	T1	1654	2.7	1.174	227.0	LOS F	117.0	837.6	1.00	1.81	12.5
12	R2	457	1.6	1.008	108.6	LOS F	22.0	156.0	1.00	1.08	15.5
Approach		2361	2.8	1.174	182.4	LOS F	117.0	837.6	0.95	1.55	13.9
SouthWest: Wattle Grove Drive (SW)											
1	L2	302	1.4	0.385	37.4	LOS C	13.7	97.3	0.76	0.88	29.3
2	T1	317	1.0	0.431	56.3	LOS D	9.7	68.1	0.94	0.77	25.0
3	R2	346	0.9	1.281	345.1	LOS F	57.8	408.0	1.00	1.76	6.4
Approach		965	1.1	1.281	154.0	LOS F	57.8	408.0	0.91	1.16	12.3
All Vehicles		7219	3.1	1.281	134.1	LOS F	117.0	837.6	0.95	1.29	17.0

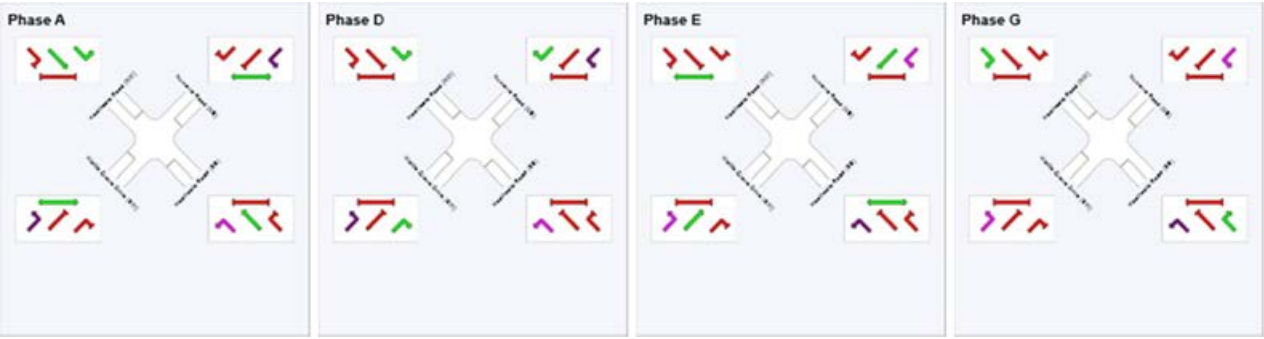
PHASING SUMMARY

Site: I-10 2028 BASE PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2028 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	61	87	117
Green Time (sec)	55	20	24	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	61	26	30	22
Phase Split	44 %	19 %	22 %	16 %



AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-10 2028 MIMT AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Heathcote Road (SE)											
4	L2	251	0.8	0.173	8.2	LOS A	3.3	23.4	0.27	0.63	48.3
5	T1	1971	5.3	1.201	238.2	LOS F	139.5	1020.9	1.00	1.96	12.0
6	R2	626	3.2	1.078	234.3	LOS F	41.5	298.6	1.00	1.47	12.5
Approach		2848	4.4	1.201	217.1	LOS F	139.5	1020.9	0.94	1.73	12.7
NorthEast: Nuwarra Road (NE)											
7	L2	408	4.6	0.474	24.4	LOS B	16.0	116.7	0.71	0.78	42.5
8	T1	253	7.9	0.406	53.1	LOS D	7.3	54.7	0.94	0.76	26.2
9	R2	495	6.0	1.399	443.8	LOS F	46.6	343.1	1.00	1.87	7.0
Approach		1156	5.9	1.399	210.1	LOS F	46.6	343.1	0.88	1.24	12.6
NorthWest: Heathcote Road (NW)											
10	L2	249	11.8	0.329	21.5	LOS B	7.7	59.0	0.69	0.76	42.7
11	T1	1039	11.6	0.953	53.9	LOS D	42.1	324.3	0.90	0.96	31.5
12	R2	234	6.3	0.783	75.3	LOS F	8.0	58.8	1.00	0.88	19.9
Approach		1522	10.8	0.953	51.8	LOS D	42.1	324.3	0.88	0.92	31.0
SouthWest: Wattle Grove Drive (SW)											
1	L2	620	2.0	0.823	49.2	LOS D	29.3	209.0	0.98	1.12	25.5
2	T1	532	4.4	0.794	60.5	LOS E	18.8	136.5	1.00	0.92	24.1
3	R2	263	4.0	1.277	332.6	LOS F	42.3	306.5	1.00	1.80	6.6
Approach		1415	3.3	1.277	106.2	LOS F	42.3	306.5	0.99	1.17	16.2
All Vehicles		6941	5.8	1.399	157.1	LOS F	139.5	1020.9	0.93	1.36	15.2

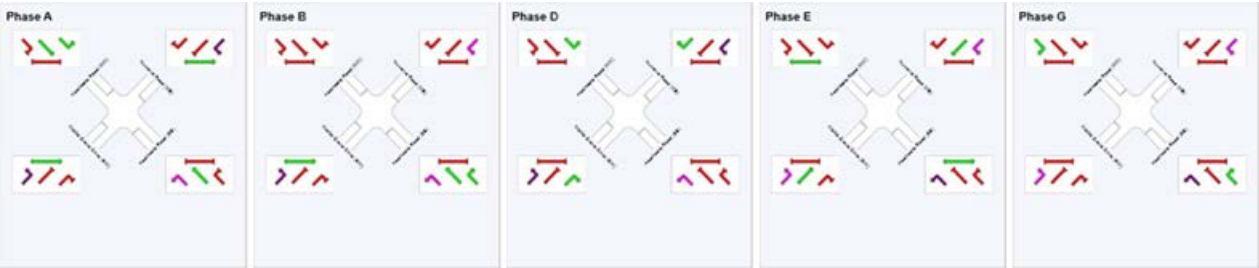
PHASING SUMMARY

Site: I-10 2028 MIMT AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	D	E	G
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	54	67	86	114
Green Time (sec)	48	7	13	22	11
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	54	13	19	28	17
Phase Split	41 %	10 %	15 %	21 %	13 %



PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-10 2028 MIMT PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Heathcote Road (SE)											
4	L2	331	2.2	0.280	15.6	LOS B	9.0	64.4	0.46	0.69	42.2
5	T1	1311	5.5	1.006	96.0	LOS F	64.0	469.1	1.00	1.23	23.0
6	R2	459	3.0	1.096	183.7	LOS F	27.1	194.8	1.00	1.31	15.0
Approach		2101	4.4	1.096	102.5	LOS F	64.0	469.1	0.91	1.16	21.4
NorthEast: Nuwarra Road (NE)											
7	L2	632	2.5	0.893	61.2	LOS E	38.5	275.2	1.00	1.15	29.9
8	T1	616	1.0	0.944	79.3	LOS F	26.0	183.9	1.00	1.07	20.5
9	R2	545	6.0	1.091	159.6	LOS F	32.9	242.4	1.00	1.25	16.1
Approach		1793	3.1	1.091	97.4	LOS F	38.5	275.2	1.00	1.15	21.3
NorthWest: Heathcote Road (NW)											
10	L2	251	5.5	0.230	22.2	LOS B	8.5	62.1	0.55	0.73	42.5
11	T1	1654	2.7	1.174	227.7	LOS F	117.2	839.5	1.00	1.81	12.4
12	R2	457	1.6	1.008	108.6	LOS F	22.0	156.0	1.00	1.08	15.5
Approach		2362	2.8	1.174	182.8	LOS F	117.2	839.5	0.95	1.55	13.9
SouthWest: Wattle Grove Drive (SW)											
1	L2	302	1.4	0.385	37.4	LOS C	13.7	97.3	0.76	0.88	29.3
2	T1	330	1.0	0.448	56.5	LOS D	10.1	71.2	0.95	0.78	25.0
3	R2	356	0.9	1.319	378.2	LOS F	62.5	441.0	1.00	1.83	5.9
Approach		988	1.1	1.319	166.6	LOS F	62.5	441.0	0.91	1.19	11.6
All Vehicles		7243	3.1	1.319	136.2	LOS F	117.2	839.5	0.95	1.29	16.8

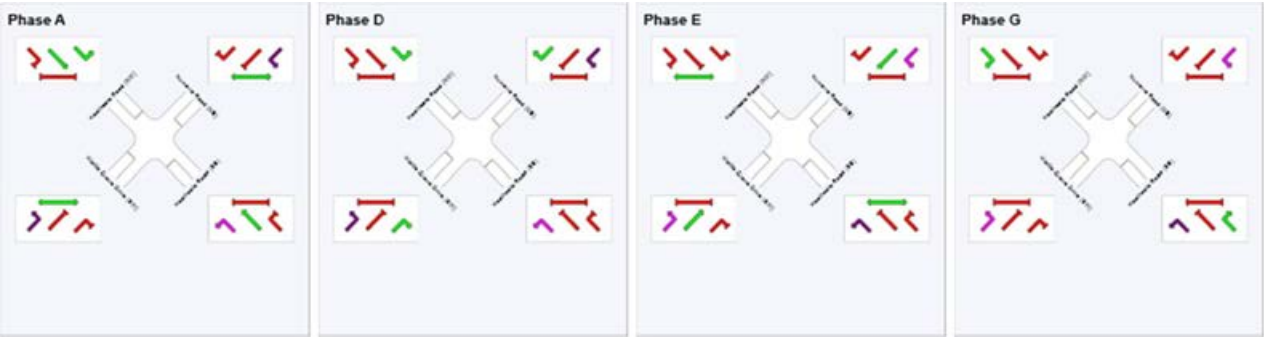
PHASING SUMMARY

Site: I-10 2028 MIMT PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	61	87	117
Green Time (sec)	55	20	24	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	61	26	30	22
Phase Split	44 %	19 %	22 %	16 %



I-11 Intersection of Newbridge Road and Nuwarra Road

AM BASE

MOVEMENT SUMMARY

Site: I-11 2028 BASE AM

Newbridge Road / Nuwarra Road
2028 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nuwarra Road (S)											
1	L2	36	5.9	0.799	52.6	LOS D	23.1	164.4	0.91	0.87	36.6
2	T1	343	1.5	0.799	49.6	LOS D	23.1	164.4	0.91	0.87	30.4
3	R2	805	6.7	1.170	248.8	LOS F	62.1	459.2	1.00	1.43	13.0
Approach		1184	5.2	1.170	185.2	LOS F	62.1	459.2	0.97	1.25	16.0
East: Newbridge Road (E)											
4	L2	336	17.9	0.616	27.3	LOS B	20.7	164.1	0.72	0.77	45.3
5	T1	1242	11.3	0.616	23.2	LOS B	21.5	165.3	0.66	0.61	51.3
Approach		1578	12.7	0.616	24.1	LOS B	21.5	165.3	0.67	0.65	50.0
North: Nuwarra Road (N)											
7	L2	6	0.0	0.939	94.5	LOS F	10.0	70.5	1.00	1.14	24.2
8	T1	149	0.7	1.174	128.8	LOS F	23.6	169.7	1.00	1.26	19.5
9	R2	135	3.9	1.174	247.8	LOS F	23.6	169.7	1.00	1.64	13.6
Approach		291	2.2	1.174	183.3	LOS F	23.6	169.7	1.00	1.43	16.2
West: Newbridge Road (W)											
10	L2	289	1.8	1.109	172.1	LOS F	103.5	764.4	1.00	1.49	18.0
11	T1	2235	8.9	1.180	196.2	LOS F	127.0	956.8	1.00	1.71	17.4
Approach		2524	8.1	1.180	193.4	LOS F	127.0	956.8	1.00	1.69	17.5
All Vehicles		5577	8.5	1.180	143.2	LOS F	127.0	956.8	0.90	1.29	20.9

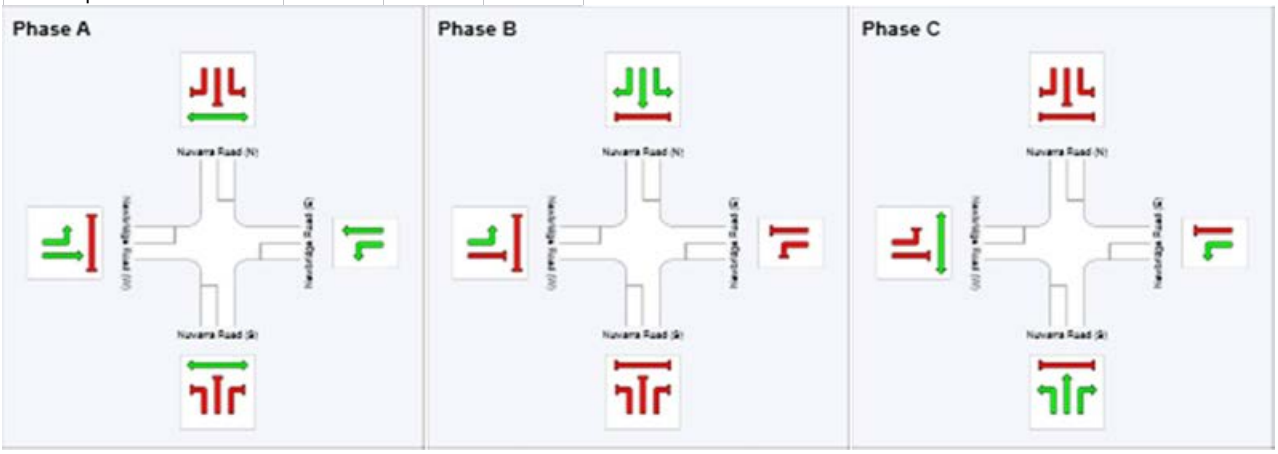
PHASING SUMMARY

Site: I-11 2028 BASE AM

Newbridge Road / Nuwarra Road
2028 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	72	89
Green Time (sec)	66	11	45
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	72	17	51
Phase Split	51 %	12 %	36 %



PM BASE

MOVEMENT SUMMARY

Site: I-11 2028 BASE PM

Newbridge Road / Nuwarra Road
2028 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nuwarra Road (S)											
1	L2	54	5.9	0.729	69.2	LOS E	14.0	99.9	1.00	0.86	32.3
2	T1	154	0.7	0.729	64.9	LOS E	14.0	99.9	1.00	0.86	29.3
3	R2	555	6.1	1.039	140.8	LOS F	28.9	212.9	1.00	1.17	19.8
Approach		762	5.0	1.039	120.4	LOS F	28.9	212.9	1.00	1.08	21.9
East: Newbridge Road (E)											
4	L2	760	4.4	0.741	15.1	LOS B	25.1	183.1	0.47	0.73	52.1
5	T1	2179	5.7	0.741	13.7	LOS A	34.4	253.0	0.57	0.56	57.5
Approach		2939	5.4	0.741	14.0	LOS A	34.4	253.0	0.54	0.60	56.1
North: Nuwarra Road (N)											
7	L2	18	0.0	0.919	85.3	LOS F	18.7	131.6	1.00	1.09	27.4
8	T1	294	0.7	1.149	118.8	LOS F	37.8	266.9	1.00	1.20	21.3
9	R2	207	1.0	1.149	232.0	LOS F	37.8	266.9	1.00	1.51	14.8
Approach		519	0.8	1.149	162.9	LOS F	37.8	266.9	1.00	1.32	18.1
West: Newbridge Road (W)											
10	L2	100	0.0	0.511	19.3	LOS B	15.2	112.5	0.45	0.47	49.6
11	T1	1648	7.7	0.581	12.3	LOS A	17.3	129.2	0.44	0.42	58.6
Approach		1748	7.3	0.581	12.7	LOS A	17.3	129.2	0.44	0.42	58.0
All Vehicles		5968	5.5	1.149	40.2	LOS C	37.8	266.9	0.61	0.67	41.4

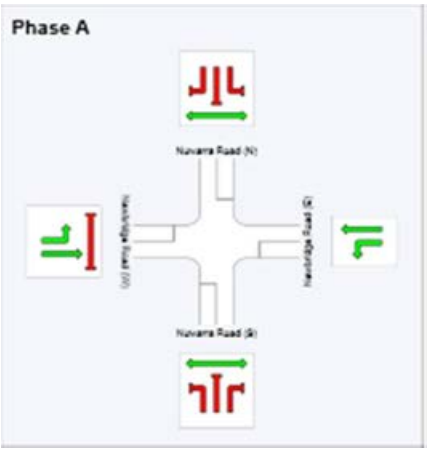
PHASING SUMMARY

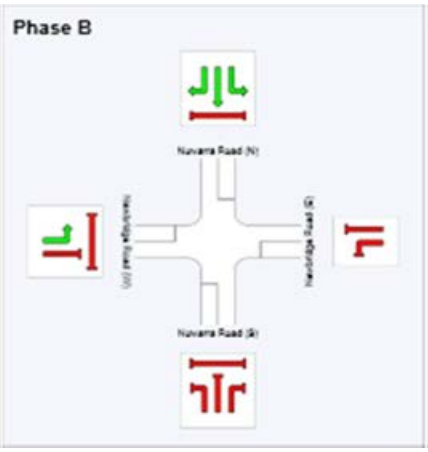
Site: I-11 2028 BASE PM

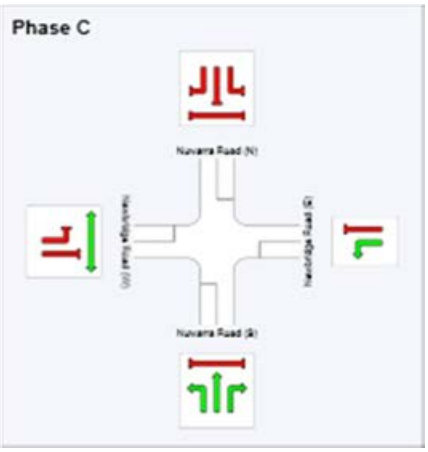
Newbridge Road / Nuwarra Road
2028 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	87	113
Green Time (sec)	81	20	21
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	87	26	27
Phase Split	62 %	19 %	19 %







AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-11 2028 MIMT AM

Newbridge Road / Nuwarra Road
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nuwarra Road (S)											
1	L2	36	5.9	0.799	52.6	LOS D	23.1	164.4	0.91	0.87	36.6
2	T1	343	1.5	0.799	49.6	LOS D	23.1	164.4	0.91	0.87	30.4
3	R2	805	6.7	1.170	248.8	LOS F	62.1	459.2	1.00	1.43	13.0
Approach		1184	5.2	1.170	185.2	LOS F	62.1	459.2	0.97	1.25	16.0
East: Newbridge Road (E)											
4	L2	342	17.5	0.636	27.9	LOS B	21.9	174.4	0.73	0.78	45.0
5	T1	1268	12.7	0.636	23.6	LOS B	22.4	175.9	0.68	0.63	51.1
Approach		1610	13.7	0.636	24.5	LOS B	22.4	175.9	0.69	0.66	49.8
North: Nuwarra Road (N)											
7	L2	6	0.0	0.950	97.2	LOS F	10.3	72.4	1.00	1.16	23.8
8	T1	152	0.7	1.187	134.3	LOS F	24.4	175.9	1.00	1.28	19.0
9	R2	135	3.9	1.187	259.0	LOS F	24.4	175.9	1.00	1.67	13.2
Approach		294	2.1	1.187	190.9	LOS F	24.4	175.9	1.00	1.46	15.7
West: Newbridge Road (W)											
10	L2	289	1.8	1.155	210.3	LOS F	116.7	880.9	1.00	1.62	15.7
11	T1	2286	11.0	1.228	236.8	LOS F	140.4	1093.2	1.00	1.87	15.1
Approach		2575	10.0	1.228	233.8	LOS F	140.4	1093.2	1.00	1.84	15.2
All Vehicles		5664	9.6	1.228	161.9	LOS F	140.4	1093.2	0.91	1.36	19.2

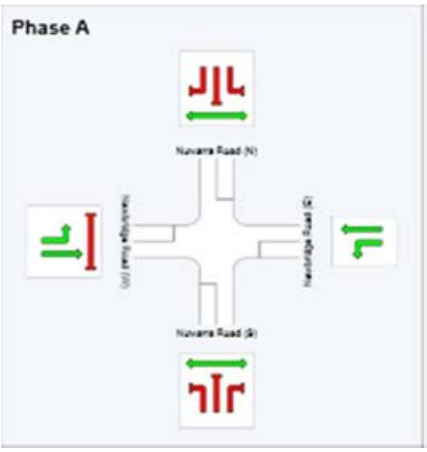
PHASING SUMMARY

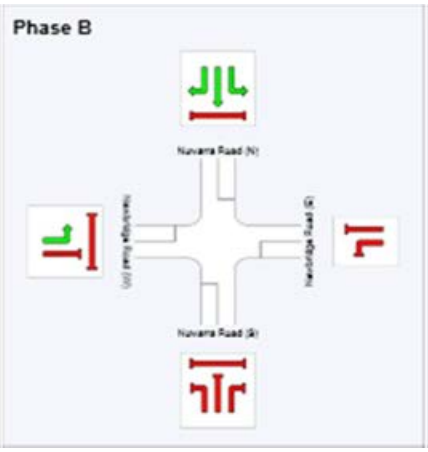
Site: I-11 2028 MIMT AM

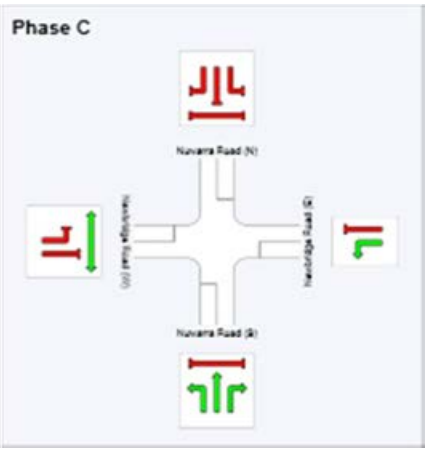
Newbridge Road / Nuwarra Road
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	72	89
Green Time (sec)	66	11	45
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	72	17	51
Phase Split	51 %	12 %	36 %







PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-11 2028 MIMT PM

Newbridge Road / Nuwarra Road
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Nuwarra Road (S)											
1	L2	54	5.9	0.791	72.9	LOS F	14.8	105.1	1.00	0.91	31.5
2	T1	156	0.7	0.791	68.5	LOS E	14.8	105.1	1.00	0.91	28.6
3	R2	561	6.0	1.050	148.8	LOS F	30.1	221.5	1.00	1.19	19.1
Approach		771	4.9	1.050	127.2	LOS F	30.1	221.5	1.00	1.11	21.1
East: Newbridge Road (E)											
4	L2	760	4.4	0.764	16.1	LOS B	28.5	209.3	0.51	0.75	51.5
5	T1	2222	7.6	0.764	14.0	LOS A	36.4	275.4	0.59	0.58	57.2
Approach		2982	6.8	0.764	14.6	LOS B	36.4	275.4	0.57	0.63	55.8
North: Nuwarra Road (N)											
7	L2	18	0.0	0.919	85.3	LOS F	18.7	131.6	1.00	1.09	27.4
8	T1	294	0.7	1.149	118.8	LOS F	37.8	266.9	1.00	1.20	21.3
9	R2	207	1.0	1.149	232.0	LOS F	37.8	266.9	1.00	1.51	14.8
Approach		519	0.8	1.149	162.9	LOS F	37.8	266.9	1.00	1.32	18.1
West: Newbridge Road (W)											
10	L2	101	0.0	0.529	19.5	LOS B	15.9	119.8	0.46	0.48	49.5
11	T1	1681	9.2	0.601	12.6	LOS A	18.2	139.0	0.45	0.43	58.5
Approach		1782	8.7	0.601	12.9	LOS A	18.2	139.0	0.45	0.43	57.9
All Vehicles		6054	6.6	1.149	41.1	LOS C	37.8	275.4	0.63	0.69	41.0

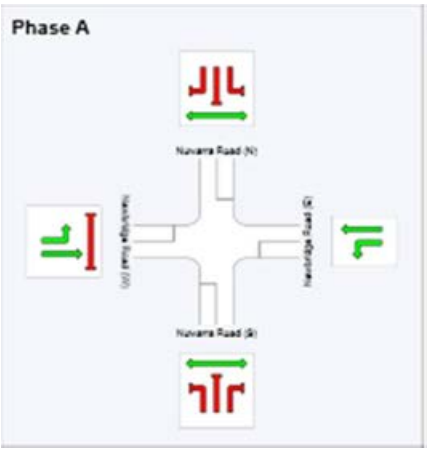
PHASING SUMMARY

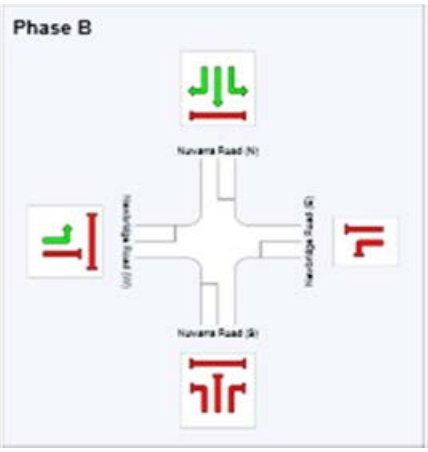
Site: I-11 2028 MIMT PM

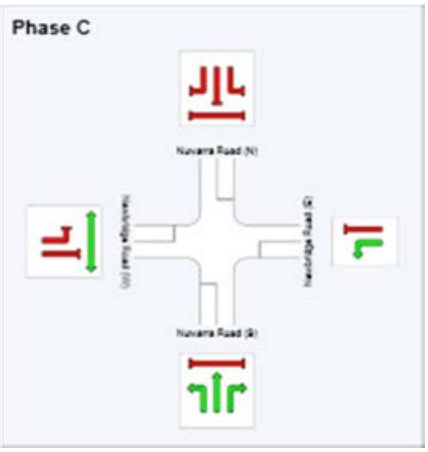
Newbridge Road / Nuwarra Road
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	87	113
Green Time (sec)	81	20	21
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	87	26	27
Phase Split	62 %	19 %	19 %







AM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-11 2028 MIMT AM - Upgrade Option

Newbridge Road / Nuwarra Road
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nuwarra Road (S)											
1	L2	36	5.9	0.871	62.5	LOS E	25.8	183.3	0.93	0.96	33.8
2	T1	343	1.5	0.871	59.5	LOS E	25.8	183.3	0.93	0.96	28.4
3	R2	805	6.7	1.216	288.0	LOS F	66.3	490.7	1.00	1.51	11.6
Approach		1184	5.2	1.216	215.0	LOS F	66.3	490.7	0.98	1.33	14.4
East: Newbridge Road (E)											
4	L2	342	17.5	0.618	26.5	LOS B	20.9	166.8	0.70	0.77	45.7
5	T1	1268	12.7	0.618	21.8	LOS B	21.2	166.9	0.64	0.60	52.1
Approach		1610	13.7	0.618	22.8	LOS B	21.2	166.9	0.66	0.64	50.7
North: Nuwarra Road (N)											
7	L2	6	0.0	0.950	97.2	LOS F	10.3	72.4	1.00	1.16	23.8
8	T1	152	0.7	1.187	134.3	LOS F	24.4	175.9	1.00	1.28	19.0
9	R2	135	3.9	1.187	259.0	LOS F	24.4	175.9	1.00	1.67	13.2
Approach		294	2.1	1.187	190.9	LOS F	24.4	175.9	1.00	1.46	15.7
West: Newbridge Road (W)											
10	L2	289	1.8	1.120	180.3	LOS F	109.0	823.3	1.00	1.53	17.5
11	T1	2286	11.0	1.192	204.9	LOS F	132.2	1029.9	1.00	1.75	16.9
Approach		2575	10.0	1.192	202.1	LOS F	132.2	1029.9	1.00	1.73	16.9
All Vehicles		5664	9.6	1.216	153.2	LOS F	132.2	1029.9	0.90	1.32	20.0

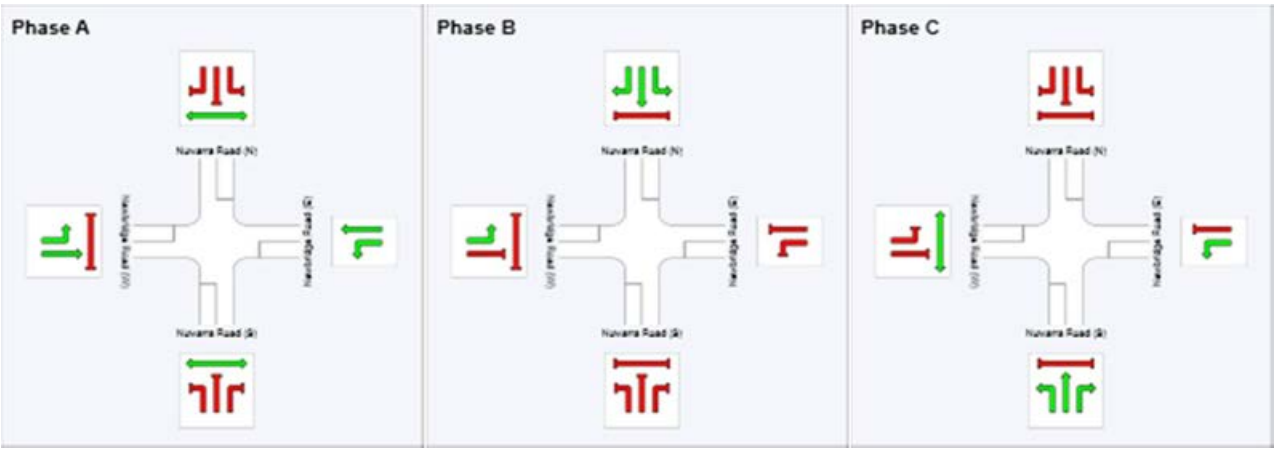
PHASING SUMMARY

Site: I-11 2028 MIMT AM - Upgrade Option

Newbridge Road / Nuwarra Road
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	74	91
Green Time (sec)	68	11	43
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	74	17	49
Phase Split	53 %	12 %	35 %



I-12 Intersection of Newbridge Road and Governor Macquarie Drive

AM BASE

MOVEMENT SUMMARY

Site: I-12 2028 BASE AM

Newbridge Road / Governor Macquarie Drive
2028 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Brickmakers Drive (S)											
1	L2	13	0.0	0.890	81.7	LOS F	16.6	117.0	1.00	1.04	24.6
2	T1	204	1.0	0.890	77.3	LOS F	16.6	117.0	1.00	1.04	24.3
3	R2	706	0.9	1.213	278.8	LOS F	52.5	370.6	1.00	1.62	13.4
Approach		923	0.9	1.213	231.5	LOS F	52.5	370.6	1.00	1.48	14.6
East: Newbridge Road (E)											
4	L2	234	2.3	0.170	7.9	LOS A	2.1	14.9	0.19	0.63	58.1
5	T1	1396	11.0	0.407	13.7	LOS A	15.5	118.8	0.54	0.48	60.1
6	R2	673	10.3	1.035	143.8	LOS F	34.3	261.1	1.00	1.13	24.9
Approach		2302	9.9	1.035	51.1	LOS D	34.3	261.1	0.64	0.69	42.2
North: Governor Macquarie Drive (N)											
7	L2	763	9.0	0.729	52.9	LOS D	23.3	176.0	0.96	0.86	40.1
8	T1	133	2.4	0.537	64.1	LOS E	8.7	61.8	0.98	0.79	27.0
9	R2	180	35.1	1.060	159.7	LOS F	19.8	180.6	1.00	1.24	18.5
Approach		1076	12.5	1.060	72.1	LOS F	23.3	180.6	0.97	0.91	33.5
West: Newbridge Road (W)											
10	L2	132	30.4	1.171	221.1	LOS F	140.7	1069.6	1.00	1.74	15.1
11	T1	2901	6.9	1.171	213.4	LOS F	144.7	1073.2	1.00	1.78	19.5
12	R2	4	25.0	0.034	32.8	LOS C	0.2	1.5	0.60	0.67	37.9
Approach		3037	8.0	1.171	213.5	LOS F	144.7	1073.2	1.00	1.77	19.3
All Vehicles		7338	8.4	1.213	144.1	LOS F	144.7	1073.2	0.88	1.27	24.2

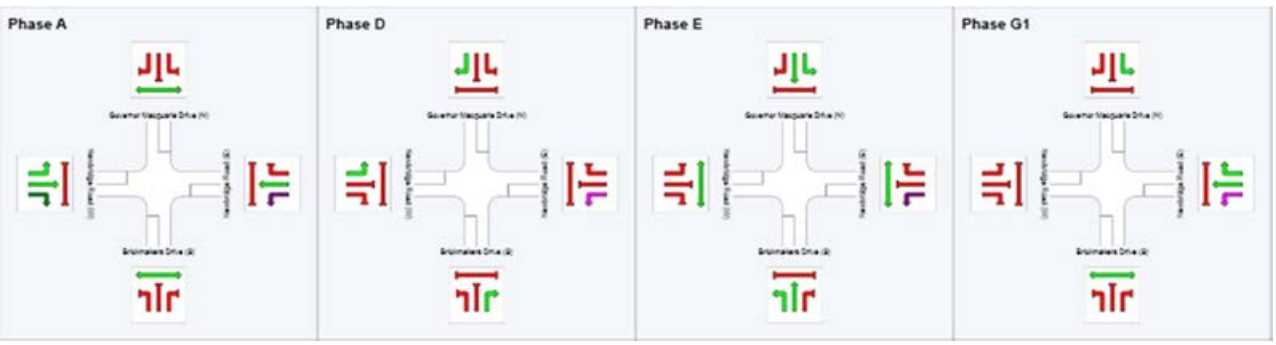
PHASING SUMMARY

Site: I-12 2028 BASE AM

Newbridge Road / Governor Macquarie Drive
2028 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	66	88	112
Green Time (sec)	60	16	18	22
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	66	22	24	28
Phase Split	47 %	16 %	17 %	20 %



PM BASE

MOVEMENT SUMMARY

Site: I-12 2028 BASE PM

Newbridge Road / Governor Macquarie Drive
2028 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	8	0.0	0.510	69.1	LOS E	6.8	49.4	0.99	0.78	27.1
2	T1	95	4.4	0.510	65.0	LOS E	6.8	49.4	0.99	0.78	26.8
3	R2	265	0.8	0.628	70.1	LOS E	8.9	62.8	1.00	0.81	32.6
Approach		368	1.7	0.628	68.8	LOS E	8.9	62.8	1.00	0.80	31.1
East: Newbridge Road (E)											
4	L2	673	1.3	0.475	9.4	LOS A	7.8	55.3	0.29	0.69	57.1
5	T1	2692	4.4	0.813	25.8	LOS B	49.7	361.1	0.73	0.73	53.3
6	R2	737	11.3	1.196	272.1	LOS F	54.8	420.7	1.00	1.41	16.1
Approach		4101	5.1	1.196	67.4	LOS E	54.8	420.7	0.71	0.85	37.5
North: Governor Macquarie Drive (N)											
7	L2	575	3.7	0.452	48.6	LOS D	15.8	114.4	0.87	0.81	41.5
8	T1	307	0.7	1.021	121.2	LOS F	29.1	204.6	1.00	1.24	18.4
9	R2	237	18.7	1.119	202.6	LOS F	29.6	240.4	1.00	1.32	15.7
Approach		1119	6.0	1.119	101.1	LOS F	29.6	240.4	0.93	1.04	26.8
West: Newbridge Road (W)											
10	L2	174	17.0	0.793	38.7	LOS C	38.4	288.8	0.86	0.80	41.8
11	T1	2011	6.1	0.793	31.0	LOS C	39.0	286.9	0.84	0.77	50.7
12	R2	3	0.0	0.052	51.4	LOS D	0.2	1.2	0.77	0.68	31.2
Approach		2187	6.9	0.793	31.7	LOS C	39.0	288.8	0.84	0.77	50.0
All Vehicles		7776	5.6	1.196	62.3	LOS E	54.8	420.7	0.79	0.85	38.1

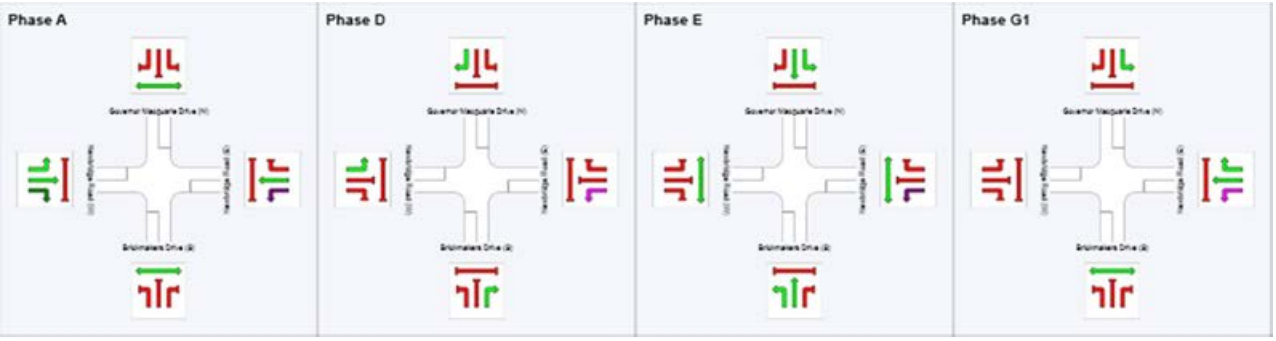
PHASING SUMMARY

Site: I-12 2028 BASE PM

Newbridge Road / Governor Macquarie Drive
2028 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	67	89	110
Green Time (sec)	61	16	15	24
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	67	22	21	30
Phase Split	48 %	16 %	15 %	21 %



AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-12 2028 MIMT AM

Newbridge Road / Governor Macquarie Drive
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	13	0.0	0.890	81.7	LOS F	16.6	117.0	1.00	1.04	24.6
2	T1	204	1.0	0.890	77.3	LOS F	16.6	117.0	1.00	1.04	24.3
3	R2	706	0.9	1.213	278.8	LOS F	52.5	370.6	1.00	1.62	13.4
Approach		923	0.9	1.213	231.5	LOS F	52.5	370.6	1.00	1.48	14.6
East: Newbridge Road (E)											
4	L2	234	2.3	0.170	7.9	LOS A	2.1	14.9	0.19	0.63	58.1
5	T1	1428	12.3	0.422	13.8	LOS A	16.1	125.7	0.55	0.49	59.9
6	R2	673	10.3	1.035	143.8	LOS F	34.3	261.1	1.00	1.13	24.9
Approach		2334	10.7	1.035	50.7	LOS D	34.3	261.1	0.64	0.69	42.3
North: Governor Macquarie Drive (N)											
7	L2	763	9.0	0.729	52.9	LOS D	23.3	176.0	0.96	0.86	40.1
8	T1	133	2.4	0.537	64.1	LOS E	8.7	61.8	0.98	0.79	27.0
9	R2	181	35.0	1.063	161.6	LOS F	20.0	182.2	1.00	1.24	18.4
Approach		1076	12.5	1.063	72.5	LOS F	23.3	182.2	0.97	0.92	33.4
West: Newbridge Road (W)											
10	L2	132	30.8	1.211	256.2	LOS F	154.2	1198.7	1.00	1.87	13.4
11	T1	2951	8.5	1.211	248.7	LOS F	158.3	1204.7	1.00	1.91	17.4
12	R2	4	25.0	0.036	32.9	LOS C	0.2	1.5	0.60	0.67	37.8
Approach		3088	9.5	1.211	248.7	LOS F	158.3	1204.7	1.00	1.91	17.3
All Vehicles		7421	9.2	1.213	158.7	LOS F	158.3	1204.7	0.88	1.33	22.8

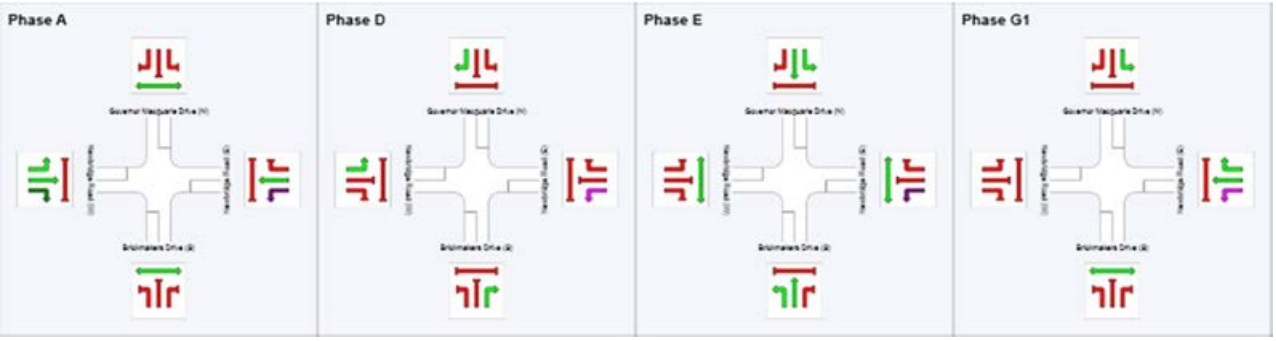
PHASING SUMMARY

Site: I-12 2028 MIMT AM

Newbridge Road / Governor Macquarie Drive
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	66	88	112
Green Time (sec)	60	16	18	22
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	66	22	24	28
Phase Split	47 %	16 %	17 %	20 %



PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-12 2028 MIMT PM

Newbridge Road / Governor Macquarie Drive
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	8	0.0	0.525	70.1	LOS E	6.9	49.7	0.99	0.78	26.9
2	T1	95	4.4	0.525	66.0	LOS E	6.9	49.7	0.99	0.78	26.6
3	R2	265	0.8	0.628	70.1	LOS E	8.9	62.8	1.00	0.81	32.6
Approach		368	1.7	0.628	69.1	LOS E	8.9	62.8	1.00	0.80	31.1
East: Newbridge Road (E)											
4	L2	673	1.3	0.471	9.4	LOS A	7.8	55.2	0.29	0.69	57.1
5	T1	2731	5.8	0.927	31.2	LOS C	53.4	397.1	0.75	0.78	50.8
6	R2	737	11.3	1.196	272.1	LOS F	54.8	420.7	1.00	1.41	16.1
Approach		4140	6.0	1.196	70.5	LOS F	54.8	420.7	0.72	0.88	36.7
North: Governor Macquarie Drive (N)											
7	L2	575	3.7	0.452	48.6	LOS D	15.8	114.4	0.87	0.81	41.5
8	T1	307	0.7	1.021	121.5	LOS F	29.1	204.8	1.00	1.24	18.4
9	R2	240	19.9	1.152	230.3	LOS F	32.3	267.1	1.00	1.38	14.3
Approach		1122	6.3	1.152	107.5	LOS F	32.3	267.1	0.93	1.05	25.9
West: Newbridge Road (W)											
10	L2	178	18.6	0.817	39.6	LOS C	40.1	308.1	0.88	0.82	41.5
11	T1	2046	7.2	0.817	31.6	LOS C	40.7	305.4	0.86	0.79	50.4
12	R2	3	0.0	0.053	54.9	LOS D	0.2	1.3	0.80	0.68	30.2
Approach		2227	8.1	0.817	32.3	LOS C	40.7	308.1	0.86	0.79	49.7
All Vehicles		7858	6.4	1.196	64.9	LOS E	54.8	420.7	0.81	0.87	37.4

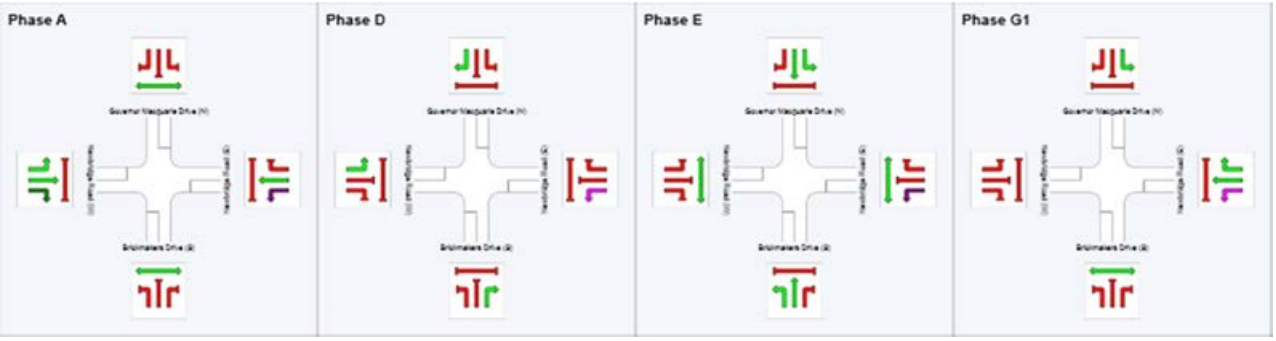
PHASING SUMMARY

Site: I-12 2028 MIMT PM

Newbridge Road / Governor Macquarie Drive
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	67	89	110
Green Time (sec)	61	16	15	24
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	67	22	21	30
Phase Split	48 %	16 %	15 %	21 %



AM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-12 2028 MIMT AM - Upgrade Option

Newbridge Road / Governor Macquarie Drive
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	13	0.0	0.890	81.7	LOS F	16.6	117.0	1.00	1.04	24.6
2	T1	204	1.0	0.890	77.3	LOS F	16.6	117.0	1.00	1.04	24.3
3	R2	706	0.9	1.079	164.3	LOS F	39.5	278.5	1.00	1.32	19.8
Approach		923	0.9	1.079	143.9	LOS F	39.5	278.5	1.00	1.25	20.5
East: Newbridge Road (E)											
4	L2	234	2.3	0.171	7.8	LOS A	2.0	14.5	0.20	0.64	58.1
5	T1	1428	12.3	0.422	13.8	LOS A	16.1	125.7	0.55	0.49	59.9
6	R2	673	10.3	1.064	163.3	LOS F	36.8	280.5	1.00	1.18	23.0
Approach		2334	10.7	1.064	56.3	LOS D	36.8	280.5	0.64	0.70	40.6
North: Governor Macquarie Drive (N)											
7	L2	763	9.0	0.927	71.9	LOS F	22.9	172.4	1.00	1.08	35.4
8	T1	133	2.4	0.834	74.6	LOS F	12.6	95.4	1.00	0.94	24.7
9	R2	181	35.0	0.834	80.4	LOS F	12.6	95.4	1.00	0.93	28.4
Approach		1076	12.5	0.927	73.6	LOS F	22.9	172.4	1.00	1.04	33.2
West: Newbridge Road (W)											
10	L2	132	30.8	1.191	238.2	LOS F	149.0	1158.6	1.00	1.81	14.2
11	T1	2951	8.5	1.191	230.6	LOS F	153.0	1163.9	1.00	1.85	18.4
12	R2	4	25.0	0.035	32.3	LOS C	0.2	1.5	0.59	0.67	38.1
Approach		3088	9.5	1.191	230.6	LOS F	153.0	1163.9	1.00	1.84	18.3
All Vehicles		7421	9.2	1.191	142.2	LOS F	153.0	1163.9	0.89	1.29	24.4

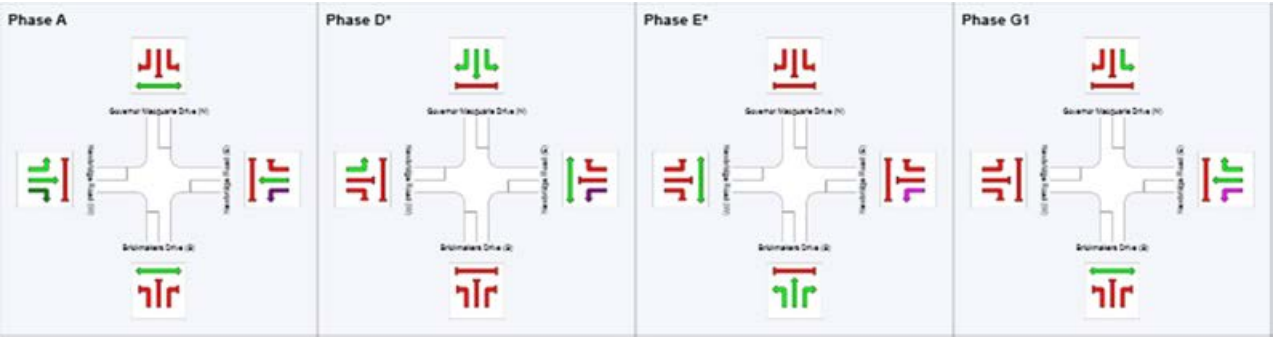
PHASING SUMMARY

Site: I-12 2028 MIMT AM - Upgrade Option

Newbridge Road / Governor Macquarie Drive
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D*	E*	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	67	89	113
Green Time (sec)	61	16	18	21
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	67	22	24	27
Phase Split	48 %	16 %	17 %	19 %



PM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-12 2028 MIMT PM - Upgrade Option 2

Newbridge Road / Governor Macquarie Drive
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	8	0.0	0.654	74.7	LOS F	7.2	51.9	1.00	0.82	25.9
2	T1	95	4.4	0.654	70.5	LOS F	7.2	51.9	1.00	0.82	25.6
3	R2	265	0.8	0.838	80.8	LOS F	9.8	69.3	1.00	0.95	30.4
Approach		368	1.7	0.838	78.0	LOS F	9.8	69.3	1.00	0.91	29.2
East: Newbridge Road (E)											
4	L2	673	1.3	0.479	9.6	LOS A	11.7	82.5	0.35	0.69	56.9
5	T1	2731	5.8	0.962	40.5	LOS C	66.5	494.2	0.75	0.83	46.9
6	R2	737	11.3	1.073	175.1	LOS F	42.5	326.3	1.00	1.21	22.0
Approach		4140	6.0	1.073	59.5	LOS E	66.5	494.2	0.73	0.88	39.6
North: Governor Macquarie Drive (N)											
7	L2	575	3.7	0.441	33.3	LOS C	12.4	89.6	0.85	0.80	46.6
8	T1	307	0.7	0.962	89.5	LOS F	27.5	196.1	1.00	1.12	22.3
9	R2	240	19.9	0.962	99.7	LOS F	27.5	196.1	1.00	1.06	25.3
Approach		1122	6.3	0.962	62.9	LOS E	27.5	196.1	0.93	0.94	34.1
West: Newbridge Road (W)											
10	L2	178	18.6	0.859	46.2	LOS D	44.6	342.3	0.94	0.89	39.0
11	T1	2046	7.2	0.859	38.0	LOS C	45.4	340.4	0.92	0.86	47.7
12	R2	3	0.0	0.053	57.6	LOS E	0.2	1.3	0.82	0.68	29.4
Approach		2227	8.1	0.859	38.7	LOS C	45.4	342.3	0.92	0.87	47.1
All Vehicles		7858	6.4	1.073	54.9	LOS D	66.5	494.2	0.82	0.88	40.1

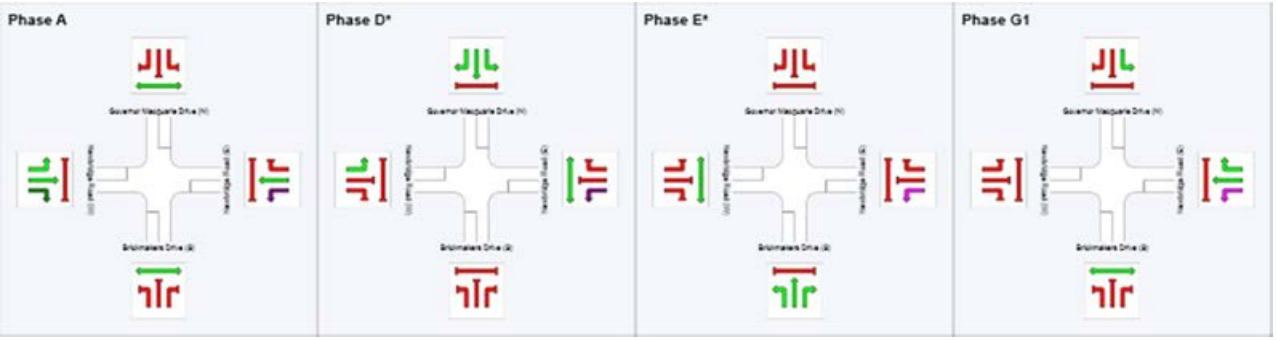
PHASING SUMMARY

Site: I-12 2028 MIMT PM - Upgrade Option 2

Newbridge Road / Governor Macquarie Drive
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D*	E*	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	64	87	105
Green Time (sec)	58	17	12	29
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	64	23	18	35
Phase Split	46 %	16 %	13 %	25 %



I-13 Intersection of Moorebank Avenue and M5 Motorway

AM BASE

MOVEMENT SUMMARY

Site: I-13 2028 BASE AM

Moorebank Avenue / the M5 Motorway
2028 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	274	10.8	0.236	9.2	LOS A	3.1	23.8	0.42	0.66	50.4
2	T1	664	4.1	0.761	32.0	LOS C	12.2	88.6	0.99	0.92	38.0
3	R2	300	2.5	0.417	33.1	LOS C	5.3	37.7	0.90	0.78	36.9
Approach		1238	5.2	0.761	27.2	LOS B	12.2	88.6	0.84	0.83	39.9
East: M5 Motorway on&off ramp (E)											
4	L2	240	7.0	0.240	8.1	LOS A	1.9	13.8	0.39	0.66	51.5
6	R2	236	5.8	0.245	28.8	LOS C	3.4	24.9	0.82	0.75	40.4
Approach		476	6.4	0.245	18.4	LOS B	3.4	24.9	0.61	0.71	45.0
North: Moorebank Avenue (N)											
7	L2	52	49.0	0.051	7.7	LOS A	0.3	3.3	0.28	0.60	51.2
8	T1	189	12.2	0.228	25.5	LOS B	2.8	22.0	0.85	0.67	41.0
9	R2	451	26.6	0.771	37.8	LOS C	9.9	85.3	0.97	0.88	36.3
Approach		692	24.4	0.771	32.2	LOS C	9.9	85.3	0.89	0.80	38.3
West: M5 Motorway on&off ramp (W)											
10	L2	1718	8.1	0.979	8.3	LOS A	0.0	0.0	0.00	0.49	50.9
12	R2	392	4.3	0.402	30.0	LOS C	5.9	43.0	0.86	0.79	38.5
Approach		2109	7.4	0.979	12.4	LOS A	5.9	43.0	0.16	0.55	48.3
All Vehicles		4515	9.3	0.979	20.1	LOS B	12.2	88.6	0.51	0.68	43.8

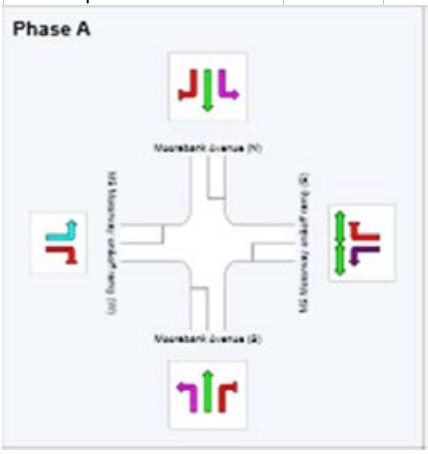
PHASING SUMMARY

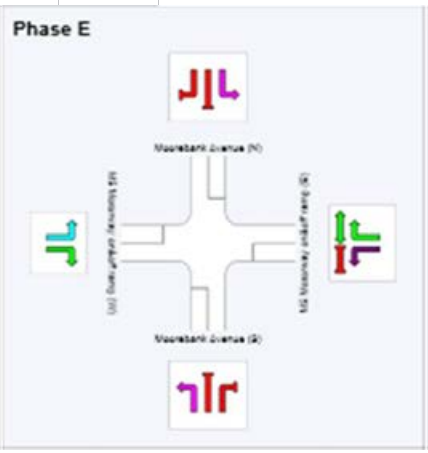
Site: I-13 2028 BASE AM

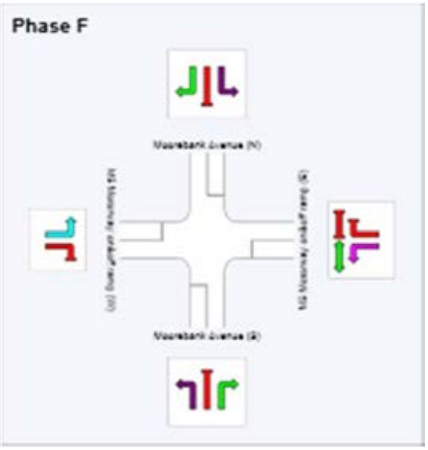
Moorebank Avenue / the M5 Motorway
2028 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	F
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	24	51
Green Time (sec)	17	20	16
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	24	27	23
Phase Split	32 %	36 %	31 %







PM BASE

MOVEMENT SUMMARY

Site: I-13 2028 BASE PM

Moorebank Avenue / the M5 Motorway
2028 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	300	2.8	0.367	19.9	LOS B	7.9	56.8	0.70	0.76	43.5
2	T1	177	7.1	0.446	44.5	LOS D	4.0	29.7	0.98	0.76	33.2
3	R2	296	1.8	0.244	28.0	LOS B	5.2	37.0	0.73	0.75	39.1
Approach		773	3.4	0.446	28.6	LOS C	7.9	56.8	0.78	0.76	39.1
East: M5 Motorway on&off ramp (E)											
4	L2	433	2.7	0.457	12.0	LOS A	7.0	50.3	0.55	0.74	48.7
6	R2	93	21.6	0.169	42.7	LOS D	1.9	15.5	0.89	0.73	34.9
Approach		525	6.0	0.457	17.4	LOS B	7.0	50.3	0.61	0.74	45.2
North: Moorebank Avenue (N)											
7	L2	139	6.1	0.109	6.9	LOS A	0.9	6.9	0.24	0.61	53.0
8	T1	714	3.7	0.766	38.5	LOS C	16.2	117.1	0.99	0.91	35.3
9	R2	1474	7.4	0.982	71.4	LOS F	46.6	347.2	1.00	1.20	27.4
Approach		2326	6.2	0.982	57.5	LOS E	46.6	347.2	0.95	1.07	30.2
West: M5 Motorway on&off ramp (W)											
10	L2	626	15.3	0.374	5.8	LOS A	0.0	0.0	0.00	0.52	54.3
12	R2	253	3.3	0.409	44.2	LOS D	5.3	38.3	0.94	0.78	33.1
Approach		879	11.9	0.409	16.8	LOS B	5.3	38.3	0.27	0.60	46.4
All Vehicles		4503	6.8	0.982	39.9	LOS C	46.6	347.2	0.75	0.89	35.3

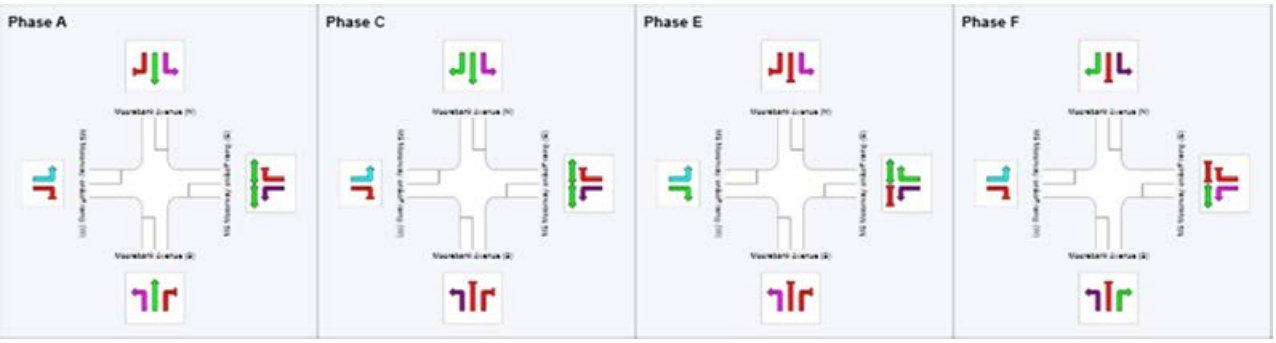
PHASING SUMMARY

Site: I-13 2028 BASE PM

Moorebank Avenue / the M5 Motorway
2028 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	17	30	53
Green Time (sec)	10	6	16	34
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	17	13	23	41
Phase Split	18 %	14 %	24 %	44 %



AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-13 2028 MIMT AM

Moorebank Avenue / the M5 Motorway
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	423	42.3	0.495	11.0	LOS A	5.4	63.0	0.51	0.72	48.0
2	T1	728	12.6	0.914	46.2	LOS D	16.9	139.5	1.00	1.16	32.7
3	R2	317	7.6	0.467	33.6	LOS C	5.7	43.9	0.91	0.79	36.5
Approach		1468	20.1	0.914	33.3	LOS C	16.9	139.5	0.84	0.96	36.9
East: M5 Motorway on&off ramp (E)											
4	L2	309	18.4	0.426	11.8	LOS A	4.5	39.7	0.62	0.74	48.2
6	R2	236	5.8	0.245	28.8	LOS C	3.4	24.9	0.82	0.75	40.4
Approach		545	12.9	0.426	19.2	LOS B	4.5	39.7	0.71	0.75	44.3
North: Moorebank Avenue (N)											
7	L2	52	49.0	0.052	7.9	LOS A	0.4	3.6	0.29	0.60	51.1
8	T1	241	24.0	0.330	26.4	LOS B	3.7	34.8	0.88	0.70	40.6
9	R2	451	26.6	0.771	37.8	LOS C	9.9	85.3	0.97	0.88	36.3
Approach		743	27.3	0.771	32.0	LOS C	9.9	85.3	0.89	0.80	38.3
West: M5 Motorway on&off ramp (W)											
10	L2	1718	8.1	0.979	8.3	LOS A	0.0	0.0	0.00	0.49	50.9
12	R2	631	27.2	0.829	41.3	LOS C	12.8	128.2	1.00	0.99	33.7
Approach		2348	13.3	0.979	17.2	LOS B	12.8	128.2	0.27	0.63	45.2
All Vehicles		5105	17.2	0.979	24.2	LOS B	16.9	139.5	0.57	0.76	41.5

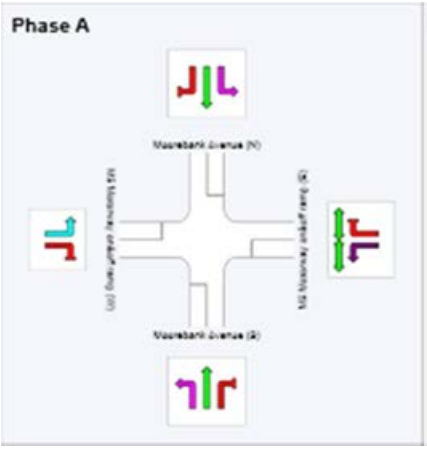
PHASING SUMMARY

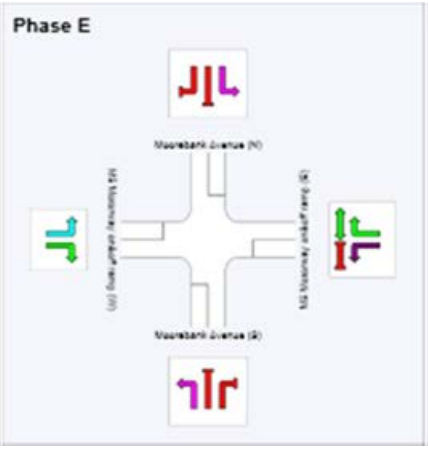
Site: I-13 2028 MIMT AM

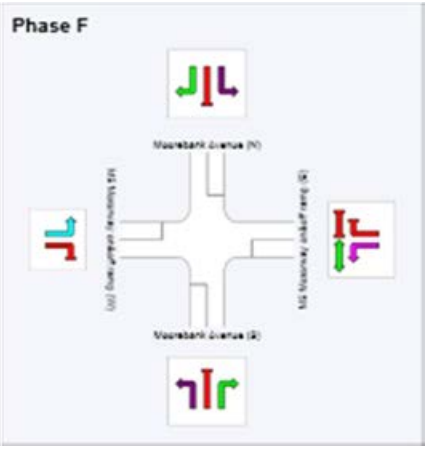
Moorebank Avenue / the M5 Motorway
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	F
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	24	51
Green Time (sec)	17	20	16
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	24	27	23
Phase Split	32 %	36 %	31 %







PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-13 2028 MIMT PM

Moorebank Avenue / the M5 Motorway
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	560	32.9	0.919	48.8	LOS D	29.6	321.3	1.00	1.05	31.2
2	T1	231	21.5	0.678	47.5	LOS D	5.5	51.1	1.00	0.85	32.3
3	R2	383	16.5	0.374	29.5	LOS C	7.2	63.8	0.77	0.78	38.0
Approach		1174	25.3	0.919	42.2	LOS C	29.6	321.3	0.92	0.92	33.3
East: M5 Motorway on&off ramp (E)											
4	L2	467	9.9	0.989	82.5	LOS F	32.6	261.9	1.00	1.26	23.9
6	R2	93	21.6	0.169	42.7	LOS D	1.9	15.5	0.89	0.73	34.9
Approach		560	11.8	0.989	75.9	LOS F	32.6	261.9	0.98	1.17	25.3
North: Moorebank Avenue (N)											
7	L2	139	6.1	0.116	7.7	LOS A	1.3	9.3	0.29	0.63	52.4
8	T1	766	10.3	0.885	49.0	LOS D	20.4	163.9	1.00	1.07	31.8
9	R2	1474	7.4	0.982	71.4	LOS F	46.6	347.2	1.00	1.20	27.4
Approach		2379	8.3	0.982	60.5	LOS E	46.6	347.2	0.96	1.12	29.5
West: M5 Motorway on&off ramp (W)											
10	L2	626	15.3	0.374	5.8	LOS A	0.0	0.0	0.00	0.52	54.3
12	R2	435	44.3	1.059	136.3	LOS F	19.1	233.6	1.00	1.44	17.1
Approach		1061	27.2	1.059	59.3	LOS E	19.1	233.6	0.41	0.90	29.6
All Vehicles		5174	16.4	1.059	57.8	LOS E	46.6	347.2	0.84	1.04	29.7

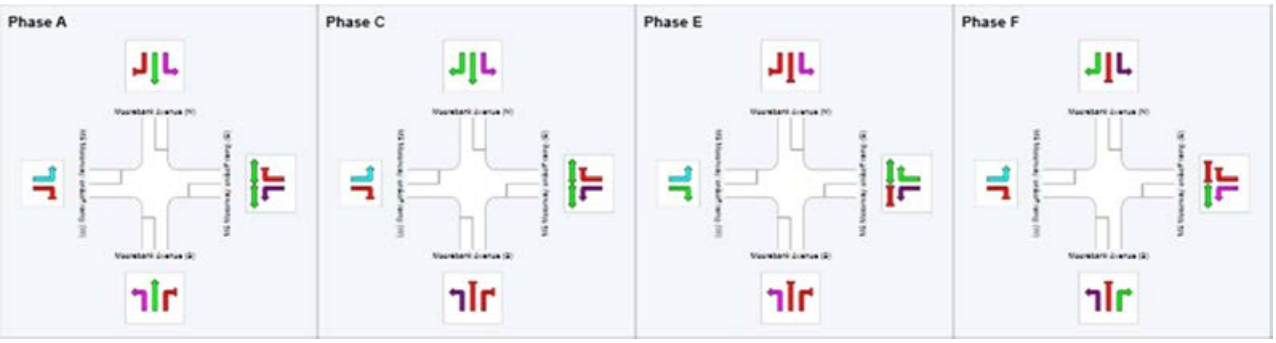
PHASING SUMMARY

Site: I-13 2028 MIMT PM

Moorebank Avenue / the M5 Motorway
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	17	30	53
Green Time (sec)	10	6	16	34
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	17	13	23	41
Phase Split	18 %	14 %	24 %	44 %



PM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-13 2028 MIMT PM - Upgrade

Moorebank Avenue / the M5 Motorway
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	560	32.9	0.935	54.3	LOS D	31.5	342.0	1.00	1.09	29.6
2	T1	231	21.5	0.754	50.2	LOS D	5.7	53.0	1.00	0.90	31.4
3	R2	383	16.5	0.374	29.5	LOS C	7.2	63.8	0.77	0.78	38.0
Approach		1174	25.3	0.935	45.4	LOS D	31.5	342.0	0.93	0.95	32.3
East: M5 Motorway on&off ramp (E)											
4	L2	467	9.9	0.989	82.5	LOS F	32.6	261.9	1.00	1.26	23.9
6	R2	93	21.6	0.169	42.7	LOS D	1.9	15.5	0.89	0.73	34.9
Approach		560	11.8	0.989	75.9	LOS F	32.6	261.9	0.98	1.17	25.3
North: Moorebank Avenue (N)											
7	L2	139	6.1	0.116	7.7	LOS A	1.3	9.3	0.29	0.63	52.4
8	T1	766	10.3	0.885	49.0	LOS D	20.4	163.9	1.00	1.07	31.8
9	R2	1474	7.4	0.958	58.9	LOS E	41.5	309.1	1.00	1.14	30.2
Approach		2379	8.3	0.958	52.7	LOS D	41.5	309.1	0.96	1.09	31.5
West: M5 Motorway on&off ramp (W)											
10	L2	626	15.3	0.374	5.8	LOS A	0.0	0.0	0.00	0.52	54.3
12	R2	435	44.3	1.059	136.3	LOS F	19.1	233.6	1.00	1.44	17.1
Approach		1061	27.2	1.059	59.3	LOS E	19.1	233.6	0.41	0.90	29.6
All Vehicles		5174	16.4	1.059	54.9	LOS D	41.5	342.0	0.84	1.03	30.5

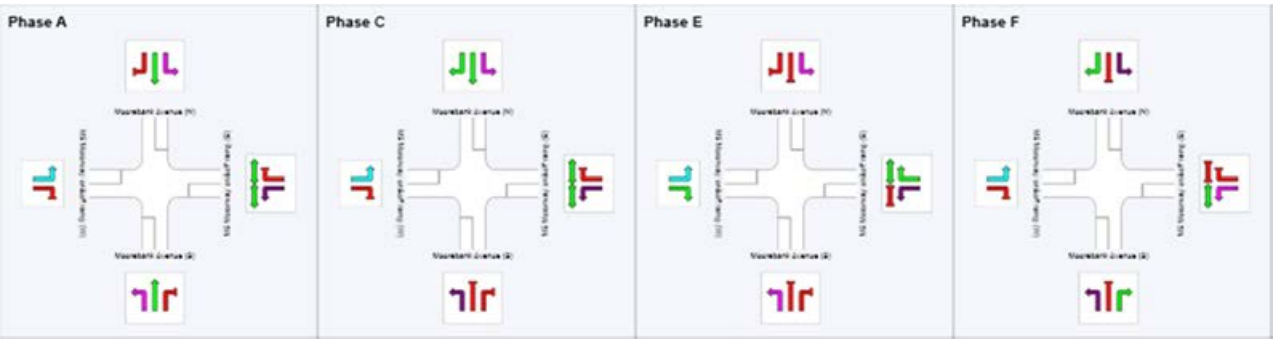
PHASING SUMMARY

Site: I-13 2028 MIMT PM - Upgrade

Moorebank Avenue / the M5 Motorway
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	16	30	53
Green Time (sec)	9	7	16	34
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	16	14	23	41
Phase Split	17 %	15 %	24 %	44 %



I-14 Intersection of M5 Motorway and Hume Highway

AM BASE

MOVEMENT SUMMARY

Site: I-14 2028 BASE AM

M5 Motorway / Hume Highway
2028 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
2	T1	4174	4.5	1.006	44.1	LOS D	140.0	1017.3	1.00	1.14	37.5
3	R2	624	4.2	0.860	41.3	LOS C	16.5	119.4	0.99	0.89	38.3
Approach		4798	4.4	1.006	43.8	LOS D	140.0	1017.3	1.00	1.11	37.6
East: M5 Motorway on&off-ramp (E)											
4	L2	320	6.3	0.127	30.4	LOS C	4.5	33.4	0.59	0.71	42.0
6	R2	1112	3.9	1.143	231.9	LOS F	54.1	391.3	1.00	1.32	10.5
Approach		1432	4.4	1.143	186.8	LOS F	54.1	391.3	0.91	1.18	13.5
North: Hume Highway (N)											
7	L2	682	5.9	0.515	11.7	LOS A	17.6	129.7	0.44	0.70	47.6
8	T1	1207	7.0	0.490	28.5	LOS B	17.8	131.9	0.62	0.55	43.3
Approach		1889	6.6	0.515	22.4	LOS B	17.8	131.9	0.56	0.60	44.4
All Vehicles		8119	4.9	1.143	64.0	LOS E	140.0	1017.3	0.88	1.00	30.9

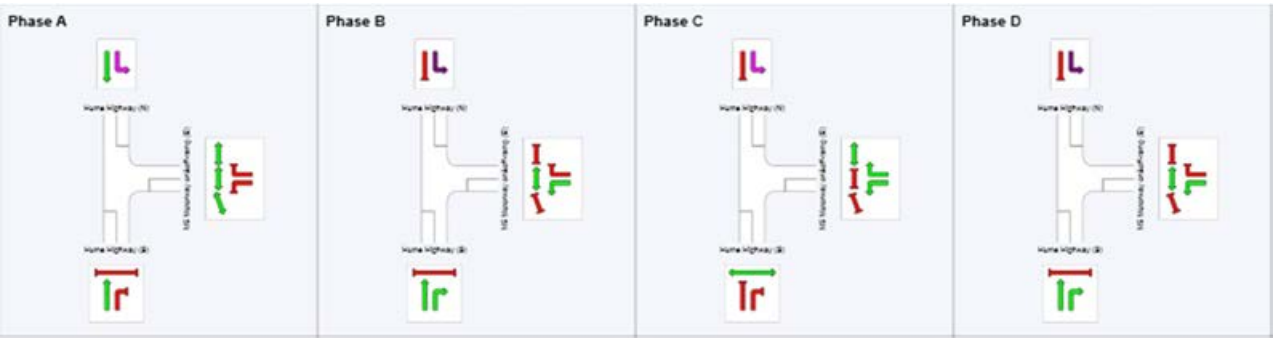
PHASING SUMMARY

Site: I-14 2028 BASE AM

M5 Motorway / Hume Highway
2028 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	No	No	No	Yes
Phase Change Time (sec)	20	97	123	0
Green Time (sec)	70	19	29	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	77	26	36	20
Phase Split	48 %	16 %	23 %	13 %



PM BASE

MOVEMENT SUMMARY

Site: I-14 2028 BASE PM

M5 Motorway / Hume Highway
2028 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
2	T1	2508	3.7	0.612	2.1	LOS A	6.7	48.7	0.12	0.11	58.3
3	R2	397	1.6	1.011	114.5	LOS F	19.6	138.9	1.00	1.05	23.5
Approach		2905	3.4	1.011	17.5	LOS B	19.6	138.9	0.24	0.24	48.5
East: M5 Motorway on&off-ramp (E)											
4	L2	1448	3.6	1.092	208.1	LOS F	85.6	618.0	1.00	1.26	15.6
6	R2	1143	3.6	1.121	214.3	LOS F	54.5	393.1	1.00	1.28	11.2
Approach		2592	3.6	1.121	210.8	LOS F	85.6	618.0	1.00	1.27	13.7
North: Hume Highway (N)											
7	L2	845	2.0	0.637	12.9	LOS A	26.3	187.4	0.56	0.78	46.9
8	T1	2808	2.7	0.863	20.1	LOS B	50.0	358.3	0.77	0.71	47.2
Approach		3654	2.5	0.863	18.4	LOS B	50.0	358.3	0.72	0.73	47.1
All Vehicles		9151	3.1	1.121	72.6	LOS F	85.6	618.0	0.65	0.73	29.0

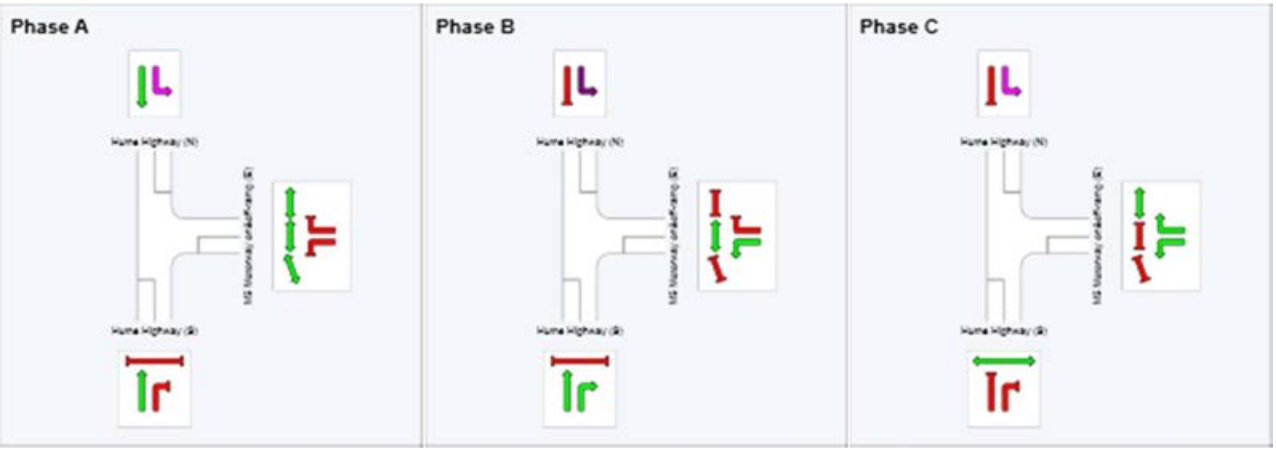
PHASING SUMMARY

Site: I-14 2028 BASE PM

M5 Motorway / Hume Highway
2028 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	97	121
Green Time (sec)	90	17	31
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	97	24	38
Phase Split	61 %	15 %	24 %



AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-14 2028 MIMT AM

M5 Motorway / Hume Highway
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
2	T1	4174	4.5	1.006	44.1	LOS D	140.0	1017.3	1.00	1.14	37.5
3	R2	642	4.1	0.884	43.2	LOS D	17.5	126.7	1.00	0.90	37.7
Approach		4816	4.4	1.006	44.0	LOS D	140.0	1017.3	1.00	1.11	37.6
East: M5 Motorway on&off-ramp (E)											
4	L2	320	6.3	0.127	30.4	LOS C	4.5	33.4	0.59	0.71	42.0
6	R2	1157	7.6	1.251	325.5	LOS F	67.6	519.8	1.00	1.48	7.9
Approach		1477	7.3	1.251	261.5	LOS F	67.6	519.8	0.91	1.32	10.3
North: Hume Highway (N)											
7	L2	752	11.6	0.608	12.9	LOS A	22.4	180.9	0.50	0.73	46.5
8	T1	1207	7.0	0.490	28.5	LOS B	17.8	131.9	0.62	0.55	43.3
Approach		1959	8.8	0.608	22.5	LOS B	22.4	180.9	0.58	0.62	44.2
All Vehicles		8252	6.0	1.251	77.8	LOS F	140.0	1017.3	0.88	1.03	27.9

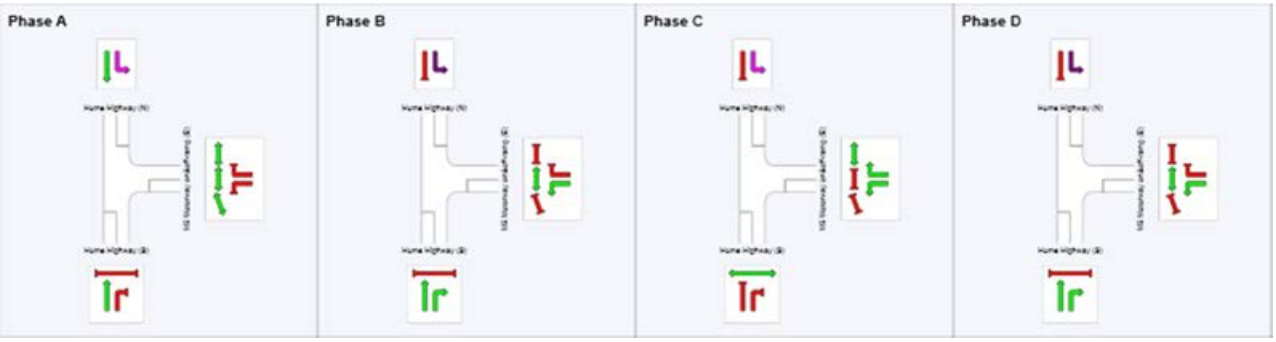
PHASING SUMMARY

Site: I-14 2028 MIMT AM

M5 Motorway / Hume Highway
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	No	No	No	Yes
Phase Change Time (sec)	20	97	123	0
Green Time (sec)	70	19	29	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	77	26	36	20
Phase Split	48 %	16 %	23 %	13 %



PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-14 2028 MIMT PM

M5 Motorway / Hume Highway
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
2	T1	2508	3.7	0.612	2.1	LOS A	6.7	48.7	0.12	0.11	58.3
3	R2	397	1.6	1.011	114.5	LOS F	19.6	138.9	1.00	1.05	23.5
Approach		2905	3.4	1.011	17.5	LOS B	19.6	138.9	0.24	0.24	48.5
East: M5 Motorway on&off-ramp (E)											
4	L2	1466	3.6	1.105	218.5	LOS F	89.1	642.8	1.00	1.28	15.0
6	R2	1220	7.9	1.266	340.6	LOS F	74.6	577.2	1.00	1.51	7.6
Approach		2686	5.5	1.266	274.0	LOS F	89.1	642.8	1.00	1.38	11.1
North: Hume Highway (N)											
7	L2	903	8.3	0.735	15.6	LOS B	28.3	222.8	0.64	0.84	44.8
8	T1	2808	2.7	0.863	20.1	LOS B	50.0	358.3	0.77	0.71	47.2
Approach		3712	4.1	0.863	19.0	LOS B	50.0	358.3	0.74	0.74	46.7
All Vehicles		9303	4.3	1.266	92.1	LOS F	89.1	642.8	0.66	0.77	25.4

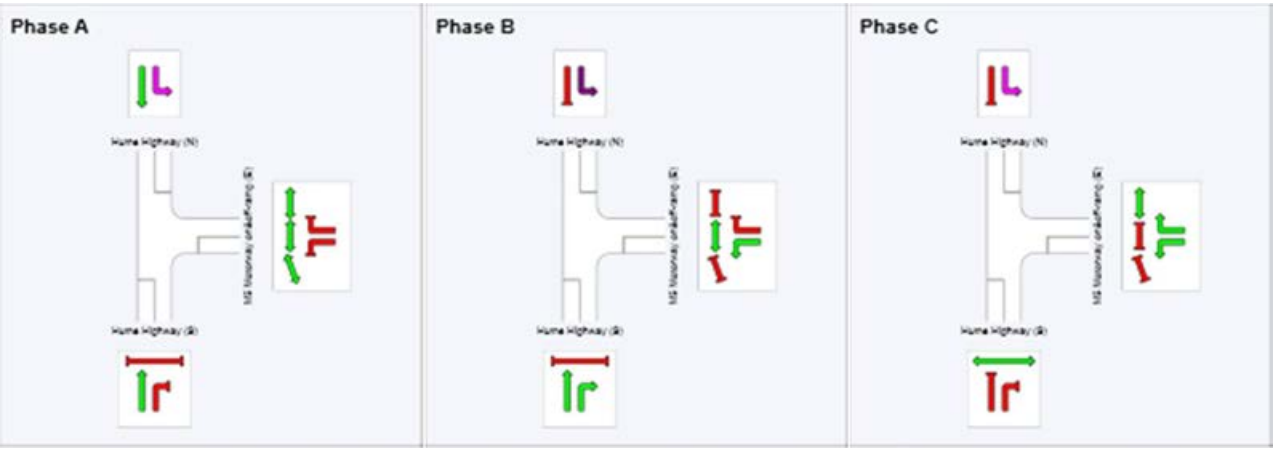
PHASING SUMMARY

Site: I-14 2028 MIMT PM

M5 Motorway / Hume Highway
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	97	121
Green Time (sec)	90	17	31
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	97	24	38
Phase Split	61 %	15 %	24 %



AM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-14 2028 MIMT AM - Upgrade

M5 Motorway / Hume Highway
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
2	T1	4174	4.5	1.006	44.1	LOS D	140.0	1017.3	1.00	1.14	37.5
3	R2	642	4.1	0.884	43.2	LOS D	17.5	126.7	1.00	0.90	37.7
Approach		4816	4.4	1.006	44.0	LOS D	140.0	1017.3	1.00	1.11	37.6
East: M5 Motorway on&off-ramp (E)											
4	L2	320	6.3	0.127	30.4	LOS C	4.5	33.4	0.59	0.71	42.0
6	R2	1157	7.6	1.223	299.8	LOS F	63.6	488.5	1.00	1.44	8.4
Approach		1477	7.3	1.223	241.4	LOS F	63.6	488.5	0.91	1.28	11.0
North: Hume Highway (N)											
7	L2	752	11.6	0.608	12.9	LOS A	22.4	180.9	0.50	0.73	46.5
8	T1	1207	7.0	0.490	28.5	LOS B	17.8	131.9	0.62	0.55	43.3
Approach		1959	8.8	0.608	22.5	LOS B	22.4	180.9	0.58	0.62	44.2
All Vehicles		8252	6.0	1.223	74.2	LOS F	140.0	1017.3	0.88	1.02	28.6

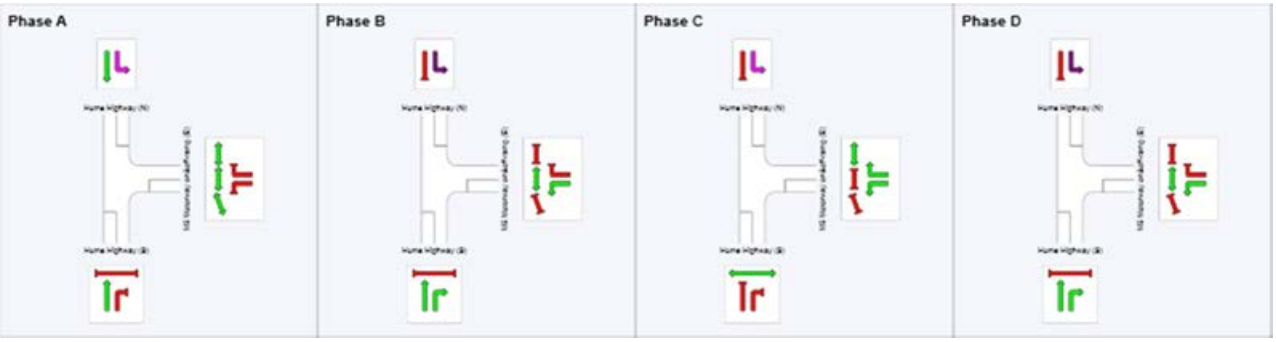
PHASING SUMMARY

Site: I-14 2028 MIMT AM - Upgrade

M5 Motorway / Hume Highway
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	No	No	No	Yes
Phase Change Time (sec)	20	97	123	0
Green Time (sec)	70	19	29	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	77	26	36	20
Phase Split	48 %	16 %	23 %	13 %



PM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-14 2028 MIMT PM - Upgrade

M5 Motorway / Hume Highway
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
2	T1	2508	3.7	0.623	3.1	LOS A	9.3	67.1	0.16	0.15	57.6
3	R2	397	1.6	1.074	160.0	LOS F	23.0	163.4	1.00	1.16	18.9
Approach		2905	3.4	1.074	24.5	LOS B	23.0	163.4	0.28	0.29	45.0
East: M5 Motorway on&off-ramp (E)											
4	L2	1466	3.6	1.090	206.4	LOS F	86.2	622.3	1.00	1.25	15.7
6	R2	1220	7.9	1.139	226.5	LOS F	58.3	451.1	1.00	1.32	10.7
Approach		2686	5.5	1.139	215.5	LOS F	86.2	622.3	1.00	1.28	13.4
North: Hume Highway (N)											
7	L2	903	8.3	0.734	15.1	LOS B	28.7	225.9	0.64	0.83	45.1
8	T1	2808	2.7	0.873	21.8	LOS B	52.4	375.0	0.79	0.74	46.3
Approach		3712	4.1	0.873	20.1	LOS B	52.4	375.0	0.76	0.76	46.1
All Vehicles		9303	4.3	1.139	77.9	LOS F	86.2	622.3	0.68	0.76	27.9

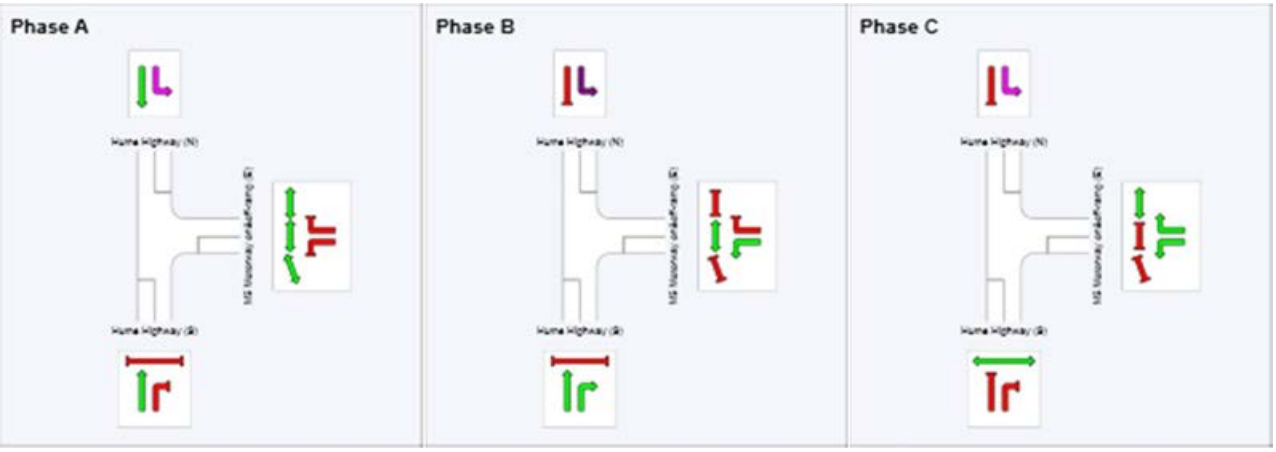
PHASING SUMMARY

Site: I-14 2028 MIMT PM - Upgrade

M5 Motorway / Hume Highway
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	96	119
Green Time (sec)	89	16	33
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	96	23	40
Phase Split	60 %	14 %	25 %



I-15 Intersection of Cambridge Avenue and Canterbury Road

AM + PM BASE

MOVEMENT SUMMARY

Site: I-15 2028 BASE AM

Canterbury Road / Cambridge Avenue / Glenfield Road
2028 BASE AM PEAK 7:45 am - 8:45 am
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Canterbury Road (S)											
1	L2	440	3.6	0.484	5.9	LOS A	3.0	21.3	0.59	0.68	52.9
2	T1	6	0.0	0.809	8.1	LOS A	11.0	78.6	0.83	0.86	50.6
3	R2	986	2.1	0.809	13.5	LOS A	11.0	78.6	0.83	0.86	50.8
Approach		1433	2.6	0.809	11.2	LOS A	11.0	78.6	0.76	0.81	51.3
East: Cambridge Avenue (E)											
4	L2	300	2.8	0.159	3.5	LOS A	0.0	0.0	0.00	0.43	56.5
5	T1	79	6.7	0.085	5.5	LOS A	0.5	3.8	0.57	0.59	53.1
6	R2	51	8.3	0.085	10.7	LOS A	0.5	3.8	0.58	0.61	53.5
Approach		429	4.2	0.159	4.7	LOS A	0.5	3.8	0.17	0.48	55.5
North: Railway Parade (N)											
7	L2	314	2.7	0.723	32.1	LOS C	8.0	57.4	1.00	1.30	39.1
8	T1	3	33.3	0.588	27.9	LOS B	4.4	33.2	0.96	1.14	39.9
9	R2	177	8.3	0.588	33.1	LOS C	4.4	33.2	0.96	1.14	38.3
Approach		494	4.9	0.723	32.5	LOS C	8.0	57.4	0.99	1.24	38.8
West: Glenfield Road (W)											
10	L2	382	5.2	1.051	111.1	LOS F	40.8	299.8	1.00	2.50	19.3
11	T1	195	7.0	1.051	112.1	LOS F	40.8	299.8	1.00	2.45	19.5
12	R2	353	5.7	1.051	119.8	LOS F	34.1	250.4	1.00	2.34	19.3
Approach		929	5.8	1.051	114.6	LOS F	40.8	299.8	1.00	2.43	19.3
All Vehicles		3285	4.0	1.051	42.8	LOS D	40.8	299.8	0.78	1.29	34.9

MOVEMENT SUMMARY

Site: I-15 2028 BASE PM

Canterbury Road / Cambridge Avenue / Glenfield Road
2028 BASE PM PEAK 4:30 pm - 5:30 pm
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Canterbury Road (S)											
1	L2	327	2.6	0.444	8.3	LOS A	2.7	19.5	0.76	0.90	51.4
2	T1	5	0.0	0.381	6.9	LOS A	2.2	15.8	0.73	0.88	51.3
3	R2	326	1.0	0.381	12.2	LOS A	2.2	15.8	0.73	0.88	51.5
Approach		659	1.8	0.444	10.2	LOS A	2.7	19.5	0.75	0.89	51.4
East: Cambridge Avenue (E)											
4	L2	1094	2.2	0.577	3.5	LOS A	0.0	0.0	0.00	0.43	56.4
5	T1	284	7.8	0.427	7.0	LOS A	3.3	23.4	0.74	0.74	52.1
6	R2	317	0.7	0.427	12.1	LOS A	3.3	23.4	0.78	0.77	52.4
Approach		1695	2.9	0.577	5.7	LOS A	3.3	23.4	0.27	0.55	54.9
North: Railway Parade (N)											
7	L2	122	0.9	0.182	7.7	LOS A	0.9	6.4	0.68	0.78	52.9
8	T1	0	0.0	0.000	0.0	NA	0.0	0.0	0.00	0.00	0.0
9	R2	229	7.8	0.276	12.6	LOS A	1.6	11.6	0.71	0.85	50.1
Approach		352	5.4	0.276	10.9	LOS A	1.6	11.6	0.70	0.83	51.1
West: Glenfield Road (W)											
10	L2	266	4.7	0.413	8.1	LOS A	2.6	18.8	0.73	0.82	51.5
11	T1	54	0.0	0.413	8.0	LOS A	2.6	18.8	0.73	0.82	53.4
12	R2	444	3.8	0.481	13.3	LOS A	3.6	25.8	0.76	0.88	49.7
Approach		764	3.9	0.481	11.1	LOS A	3.6	25.8	0.75	0.85	50.5
All Vehicles		3469	3.1	0.577	8.3	LOS A	3.6	25.8	0.51	0.71	52.9

AM + PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-15 2028 MIMT AM

Canterbury Road / Cambridge Avenue / Glenfield Road
2028 MIMT AM PEAK 7:45 am - 8:45 am
Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Canterbury Road (S)											
1	L2	440	3.6	0.491	6.0	LOS A	3.0	22.0	0.60	0.69	52.9
2	T1	6	0.0	0.844	9.0	LOS A	13.0	92.5	0.88	0.90	50.1
3	R2	1031	2.0	0.844	14.4	LOS A	13.0	92.5	0.88	0.90	50.2
Approach		1477	2.5	0.844	11.9	LOS A	13.0	92.5	0.80	0.84	50.9
East: Cambridge Avenue (E)											
4	L2	300	2.8	0.159	3.5	LOS A	0.0	0.0	0.00	0.43	56.5
5	T1	79	6.7	0.082	5.4	LOS A	0.5	3.5	0.54	0.58	53.3
6	R2	51	8.3	0.082	10.6	LOS A	0.5	3.5	0.54	0.60	53.6
Approach		429	4.2	0.159	4.7	LOS A	0.5	3.5	0.16	0.48	55.6
North: Railway Parade (N)											
7	L2	325	2.6	0.786	39.4	LOS C	9.7	69.8	1.00	1.38	36.3
8	T1	3	33.3	0.619	30.0	LOS C	4.8	35.9	0.98	1.16	39.1
9	R2	177	8.3	0.619	35.3	LOS C	4.8	35.9	0.98	1.16	37.4
Approach		505	4.8	0.786	37.9	LOS C	9.7	69.8	0.99	1.30	36.7
West: Glenfield Road (W)											
10	L2	382	5.2	1.177	207.2	LOS F	68.2	500.7	1.00	3.41	12.2
11	T1	203	6.7	1.177	208.1	LOS F	68.2	500.7	1.00	3.31	12.3
12	R2	353	5.7	1.177	215.5	LOS F	56.0	411.9	1.00	3.11	12.4
Approach		938	5.7	1.177	210.5	LOS F	68.2	500.7	1.00	3.27	12.3
All Vehicles		3349	4.0	1.177	70.5	LOS E	68.2	500.7	0.80	1.54	27.4

MOVEMENT SUMMARY

Site: I-15 2028 MIMT PM

Canterbury Road / Cambridge Avenue / Glenfield Road
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Canterbury Road (S)											
1	L2	327	2.6	0.452	8.5	LOS A	2.8	20.2	0.77	0.91	51.2
2	T1	5	0.0	0.387	7.0	LOS A	2.3	16.3	0.75	0.89	51.3
3	R2	326	1.0	0.387	12.4	LOS A	2.3	16.3	0.75	0.89	51.4
Approach		659	1.8	0.452	10.4	LOS A	2.8	20.2	0.76	0.90	51.3
East: Cambridge Avenue (E)											
4	L2	1138	2.1	0.600	3.6	LOS A	0.0	0.0	0.00	0.43	56.3
5	T1	293	7.6	0.442	7.0	LOS A	3.4	24.5	0.74	0.74	52.1
6	R2	328	0.6	0.442	12.2	LOS A	3.4	24.5	0.79	0.77	52.4
Approach		1759	2.8	0.600	5.7	LOS A	3.4	24.5	0.27	0.55	54.8
North: Railway Parade (N)											
7	L2	122	0.9	0.182	7.7	LOS A	0.9	6.4	0.68	0.78	52.9
8	T1	1	0.0	0.278	7.1	LOS A	1.6	11.7	0.71	0.85	51.3
9	R2	229	7.8	0.278	12.6	LOS A	1.6	11.7	0.71	0.85	50.2
Approach		353	5.4	0.278	10.9	LOS A	1.6	11.7	0.70	0.83	51.1
West: Glenfield Road (W)											
10	L2	266	4.7	0.418	8.3	LOS A	2.7	19.3	0.74	0.83	51.4
11	T1	54	0.0	0.418	8.1	LOS A	2.7	19.3	0.74	0.83	53.3
12	R2	444	3.8	0.487	13.5	LOS A	3.7	26.6	0.78	0.89	49.6
Approach		764	3.9	0.487	11.3	LOS A	3.7	26.6	0.76	0.86	50.4
All Vehicles		3535	3.1	0.600	8.3	LOS A	3.7	26.6	0.51	0.71	52.9

AM + PM with Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-15 2028 MIMT AM - Upgrade

Canterbury Road / Cambridge Avenue / Glenfield Road
2028 MIMT AM PEAK 7:45 am - 8:45 am
Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	440	3.6	0.639	6.0	LOS A	5.4	39.1	0.65	0.73	51.1
2	T1	6	0.0	0.639	5.9	LOS A	5.4	39.1	0.65	0.73	53.8
3	R2	1031	2.0	0.639	11.6	LOS A	5.4	39.1	0.66	0.77	52.3
Approach		1477	2.5	0.639	9.9	LOS A	5.4	39.1	0.66	0.76	52.0
East: Cambridge Avenue (E)											
4	L2	300	2.8	0.159	3.5	LOS A	0.0	0.0	0.00	0.43	56.5
5	T1	79	6.7	0.085	5.6	LOS A	0.5	3.8	0.57	0.60	53.1
6	R2	51	8.3	0.085	10.8	LOS A	0.5	3.8	0.58	0.62	53.5
Approach		429	4.2	0.159	4.7	LOS A	0.5	3.8	0.17	0.48	55.5
North: Railway Parade (N)											
7	L2	325	2.6	0.535	13.6	LOS A	3.9	27.9	0.90	1.05	48.7
8	T1	3	33.3	0.430	14.7	LOS B	2.4	18.1	0.85	1.01	46.3
9	R2	177	8.3	0.430	19.9	LOS B	2.4	18.1	0.85	1.01	45.2
Approach		505	4.8	0.535	15.8	LOS B	3.9	27.9	0.88	1.04	47.5
West: Glenfield Road (W)											
10	L2	382	5.2	0.696	11.5	LOS A	6.0	43.7	0.90	1.08	48.9
11	T1	203	6.7	0.696	11.9	LOS A	6.0	43.7	0.89	1.08	49.1
12	R2	353	5.7	0.696	18.5	LOS B	5.4	39.9	0.88	1.10	46.6
Approach		938	5.7	0.696	14.2	LOS A	6.0	43.7	0.89	1.09	48.0
All Vehicles		3349	4.0	0.696	11.4	LOS A	6.0	43.7	0.69	0.86	50.6

MOVEMENT SUMMARY

Site: I-15 2028 MIMT PM - Upgrade

Canterbury Road / Cambridge Avenue / Glenfield Road
2028 MIMT PM PEAK 4:30 pm - 5:30 pm
Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	327	2.6	0.420	7.4	LOS A	2.6	18.7	0.76	0.87	51.8
2	T1	5	0.0	0.420	7.3	LOS A	2.6	18.7	0.76	0.87	54.5
3	R2	326	1.0	0.420	13.4	LOS A	2.6	18.7	0.76	0.94	51.0
Approach		659	1.8	0.420	10.4	LOS A	2.6	18.7	0.76	0.91	51.4
East: Cambridge Avenue (E)											
4	L2	1138	2.1	0.600	3.6	LOS A	0.0	0.0	0.00	0.43	56.3
5	T1	293	7.6	0.437	7.0	LOS A	3.3	23.9	0.73	0.74	52.1
6	R2	328	0.6	0.437	12.2	LOS A	3.3	23.9	0.78	0.77	52.4
Approach		1759	2.8	0.600	5.7	LOS A	3.3	23.9	0.27	0.55	54.9
North: Railway Parade (N)											
7	L2	122	0.9	0.175	7.5	LOS A	0.8	5.9	0.65	0.77	53.0
8	T1	1	0.0	0.267	6.9	LOS A	1.4	10.7	0.68	0.84	51.4
9	R2	229	7.8	0.267	12.4	LOS A	1.4	10.7	0.68	0.84	50.3
Approach		353	5.4	0.267	10.7	LOS A	1.4	10.7	0.67	0.82	51.3
West: Glenfield Road (W)											
10	L2	266	4.7	0.397	7.4	LOS A	2.3	16.3	0.69	0.79	52.0
11	T1	54	0.0	0.397	7.2	LOS A	2.3	16.3	0.69	0.79	54.0
12	R2	444	3.8	0.462	12.5	LOS A	3.0	21.9	0.71	0.87	50.3
Approach		764	3.9	0.462	10.3	LOS A	3.0	21.9	0.70	0.84	51.1
All Vehicles		3535	3.1	0.600	8.1	LOS A	3.3	23.9	0.49	0.70	53.1

I-0A Intersection of Moorebank Avenue and Anzac Road

AM BASE

MOVEMENT SUMMARY

Site: I-0A 2028 BASE AM

Intersection of Moorebank Avenue and Anzac Road
2028 BASE AM PEAK
Signals - Fixed Time Cycle Time = 103 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1091	3.5	1.038	103.0	LOS F	101.5	732.0	1.00	1.51	15.9
3	R2	463	3.2	0.754	35.1	LOS C	18.8	135.1	0.95	0.98	37.3
Approach		1554	3.4	1.038	82.7	LOS F	101.5	732.0	0.99	1.35	20.8
East: Anzac Road (E)											
4	L2	249	3.4	0.301	24.4	LOS B	7.8	56.5	0.67	0.76	41.9
6	R2	219	13.5	0.832	58.8	LOS E	12.0	94.0	1.00	0.94	20.1
Approach		468	8.1	0.832	40.5	LOS C	12.0	94.0	0.82	0.84	30.4
North: Moorebank Avenue (N)											
7	L2	375	9.8	0.244	6.1	LOS A	1.4	10.6	0.16	0.59	49.8
8	T1	638	3.3	0.590	23.1	LOS B	18.4	132.7	0.78	0.68	36.9
Approach		1013	5.7	0.590	16.8	LOS B	18.4	132.7	0.55	0.65	40.9
All Vehicles		3035	4.9	1.038	54.2	LOS D	101.5	732.0	0.82	1.04	26.0

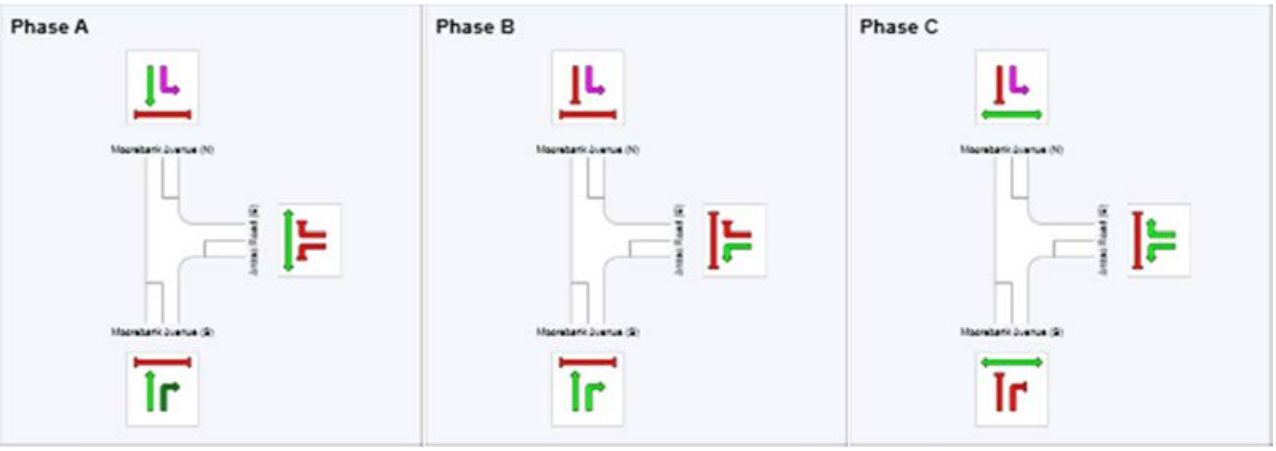
PHASING SUMMARY

Site: I-0A 2028 BASE AM

Intersection of Moorebank Avenue and Anzac Road
2028 BASE AM PEAK
Signals - Fixed Time Cycle Time = 103 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	50	78
Green Time (sec)	44	22	19
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	50	28	25
Phase Split	49 %	27 %	24 %



PM BASE

MOVEMENT SUMMARY

Site: I-0A 2028 BASE PM

Intersection of Moorebank Avenue and Anzac Road
2028 BASE PM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	320	3.9	0.268	9.7	LOS A	7.5	54.6	0.48	0.42	47.5
3	R2	203	1.0	1.183	208.2	LOS F	24.8	175.0	1.00	1.34	13.5
Approach		523	2.8	1.183	86.8	LOS F	24.8	175.0	0.68	0.77	20.8
East: Anzac Road (E)											
4	L2	572	2.2	0.839	45.0	LOS D	30.7	218.8	0.98	0.93	33.9
6	R2	386	5.4	0.914	66.8	LOS E	24.9	182.3	1.00	1.01	18.7
Approach		958	3.5	0.914	53.8	LOS D	30.7	218.8	0.99	0.96	27.4
North: Moorebank Avenue (N)											
7	L2	349	3.9	0.217	6.0	LOS A	1.3	9.2	0.14	0.59	50.2
8	T1	1287	2.5	0.976	52.6	LOS D	73.0	521.8	0.91	1.05	24.8
Approach		1637	2.8	0.976	42.7	LOS D	73.0	521.8	0.74	0.95	27.8
All Vehicles		3118	3.0	1.183	53.5	LOS D	73.0	521.8	0.81	0.93	26.1

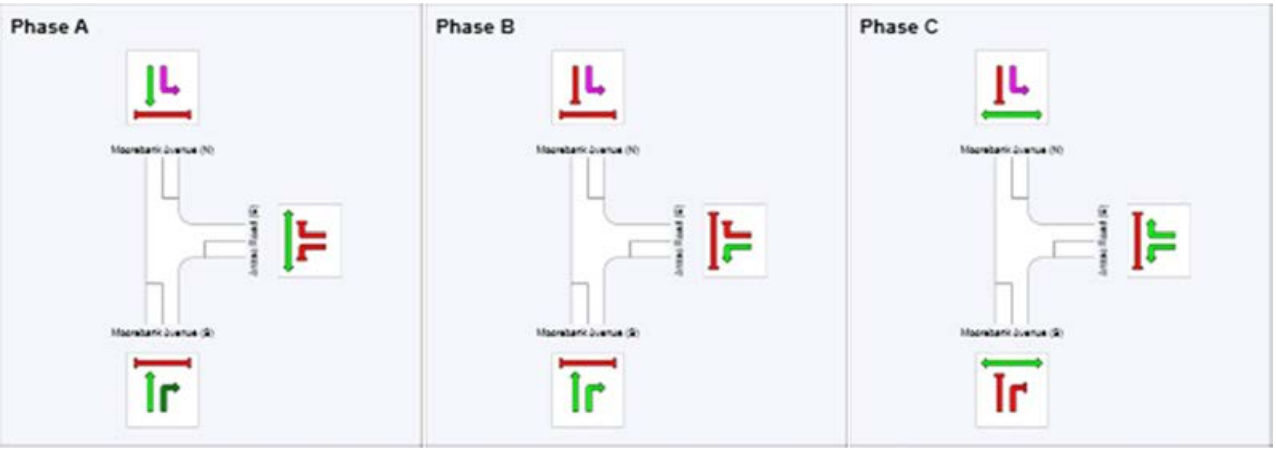
PHASING SUMMARY

Site: I-0A 2028 BASE PM

Intersection of Moorebank Avenue and Anzac Road
2028 BASE PM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	63	75
Green Time (sec)	57	6	29
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	63	12	35
Phase Split	57 %	11 %	32 %



AM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-0A 2028 MINT AM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2028 MINT AM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
1	L2	83	0.0	0.749	32.6	LOS C	23.3	167.2	0.83	0.81	29.5
2	T1	1073	3.5	0.749	27.1	LOS B	23.8	171.4	0.84	0.77	37.2
3	R2	463	3.2	0.850	52.1	LOS D	26.2	188.4	1.00	0.95	28.8
Approach		1619	3.3	0.850	34.5	LOS C	26.2	188.4	0.88	0.83	33.8
East: Anzac Road (E)											
4	L2	207	4.1	0.222	11.4	LOS A	3.7	26.7	0.42	0.68	47.9
5	T1	26	0.0	0.148	52.5	LOS D	1.3	9.4	0.95	0.69	25.7
6	R2	216	13.7	0.701	62.5	LOS E	6.1	47.5	1.00	0.85	28.2
Approach		449	8.4	0.701	38.3	LOS C	6.1	47.5	0.73	0.76	34.2
North: Moorebank Avenue (N)											
7	L2	375	9.8	0.680	35.1	LOS C	20.4	153.3	0.87	0.82	37.5
8	T1	507	3.1	0.680	33.3	LOS C	20.4	153.3	0.87	0.77	34.1
9	R2	454	51.0	1.035	138.0	LOS F	21.2	275.6	1.00	1.33	12.0
Approach		1336	21.3	1.035	69.3	LOS E	21.2	275.6	0.91	0.97	23.3
West: MIMT Access Road (W)											
10	L2	234	99.1	0.478	27.3	LOS B	3.9	73.2	0.87	0.77	30.8
11	T1	1	0.0	0.007	52.0	LOS D	0.1	0.4	0.94	0.56	26.0
12	R2	1	0.0	0.008	56.3	LOS D	0.1	0.4	0.94	0.59	19.2
Approach		236	98.2	0.478	27.5	LOS B	3.9	73.2	0.87	0.77	30.7
All Vehicles		3640	16.7	1.035	47.3	LOS D	26.2	275.6	0.87	0.87	28.9

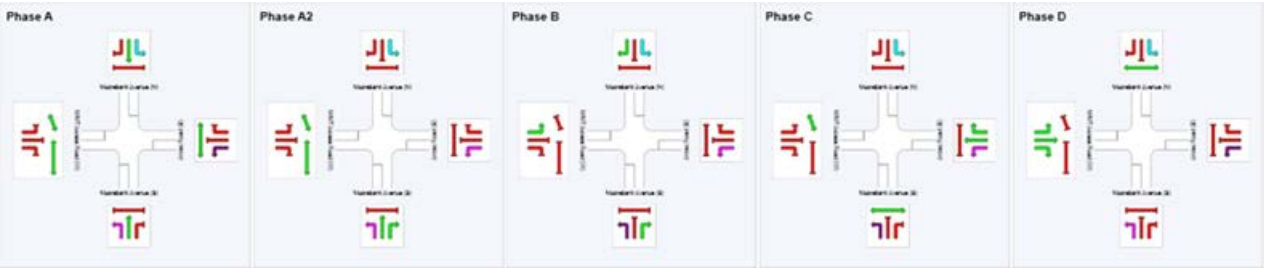
PHASING SUMMARY

Site: I-0A 2028 MINT AM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2028 MINT AM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	A2	B	C	D
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	41	50	80	96
Green Time (sec)	35	3	24	10	8
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	41	9	30	16	14
Phase Split	37 %	8 %	27 %	15 %	13 %



PM with Moorebank IMT – no upgrade

MOVEMENT SUMMARY

Site: I-0A 2028 MINT PM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2028 MINT PM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
1	L2	1	0.0	0.226	30.4	LOS C	4.8	34.5	0.60	0.50	31.2
2	T1	320	3.9	0.226	24.0	LOS B	4.8	35.0	0.60	0.50	39.0
3	R2	203	1.0	0.932	76.4	LOS F	13.4	94.4	1.00	1.06	23.3
Approach		524	2.8	0.932	44.3	LOS D	13.4	94.4	0.75	0.71	30.6
East: Anzac Road (E)											
4	L2	562	2.2	0.858	37.8	LOS C	31.0	221.1	1.00	0.99	33.6
5	T1	1	0.0	0.005	48.2	LOS D	0.1	0.4	0.91	0.56	26.9
6	R2	386	5.4	0.990	96.7	LOS F	14.5	106.5	1.00	1.17	22.0
Approach		949	3.5	0.990	61.8	LOS E	31.0	221.1	1.00	1.07	27.3
North: Moorebank Avenue (N)											
7	L2	343	4.0	0.912	39.1	LOS C	49.7	357.3	0.93	0.97	36.8
8	T1	1248	2.5	0.912	33.6	LOS C	49.7	357.3	0.83	0.88	33.9
9	R2	292	93.5	0.749	56.3	LOS D	8.2	149.2	0.98	0.92	21.2
Approach		1883	16.9	0.912	38.1	LOS C	49.7	357.3	0.87	0.91	32.1
West: MIMT Access Road (W)											
10	L2	503	54.4	0.755	31.2	LOS C	9.6	128.9	0.96	0.90	30.0
11	T1	29	0.0	0.208	54.4	LOS D	1.6	10.9	0.97	0.70	25.3
12	R2	74	0.0	0.546	60.9	LOS E	4.1	28.4	1.00	0.77	18.2
Approach		606	45.1	0.755	35.9	LOS C	9.6	128.9	0.97	0.87	28.0
All Vehicles		3963	16.1	0.990	44.3	LOS D	49.7	357.3	0.90	0.91	29.9

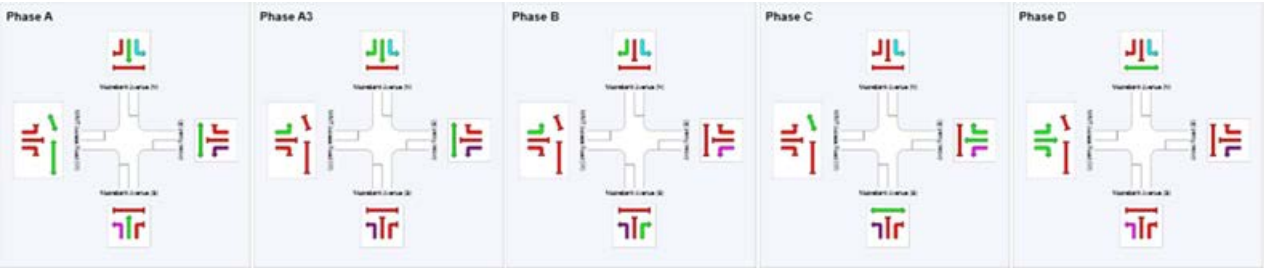
PHASING SUMMARY

Site: I-0A 2028 MINT PM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2028 MINT PM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	A3	B	C	D
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	47	59	78	96
Green Time (sec)	41	6	13	12	8
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	47	12	19	18	14
Phase Split	43 %	11 %	17 %	16 %	13 %



Appendix J

2030 SIDRA results with and without Moorebank IMT

I-01 Intersection of the Hume Highway and Orange Grove Road

AM BASE

MOVEMENT SUMMARY

Site: I-01 2030 BASE AM

Hume Highway / Orange Grove Road
2030 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
NorthEast: Hume Highway (NE)											
25	T1	953	11.3	0.683	24.2	LOS B	19.5	150.0	0.84	0.76	35.9
26	R2	389	10.0	0.907	86.6	LOS F	17.0	128.8	1.00	0.94	23.8
Approach		1342	10.9	0.907	42.3	LOS C	19.5	150.0	0.89	0.82	30.0
NorthWest: Orange Grove Road (NW)											
27	L2	603	6.6	0.715	18.9	LOS B	19.6	145.2	0.54	0.81	44.7
29	R2	1312	6.6	0.940	75.3	LOS F	38.2	282.7	1.00	0.94	23.0
Approach		1915	6.6	0.940	57.6	LOS E	38.2	282.7	0.86	0.90	27.7
SouthWest: Hume Highway (SW)											
30	L2	1252	6.5	0.441	11.5	LOS A	13.8	101.7	0.34	0.70	52.2
31	T1	2187	5.0	0.806	22.9	LOS B	39.5	288.4	0.71	0.65	40.1
Approach		3439	5.5	0.806	18.7	LOS B	39.5	288.4	0.57	0.67	44.6
All Vehicles		6696	6.9	0.940	34.6	LOS C	39.5	288.4	0.72	0.76	34.4

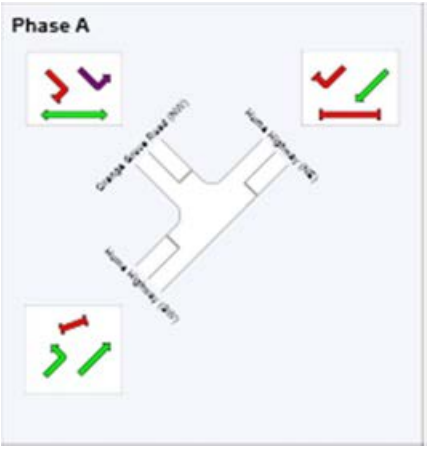
PHASING SUMMARY

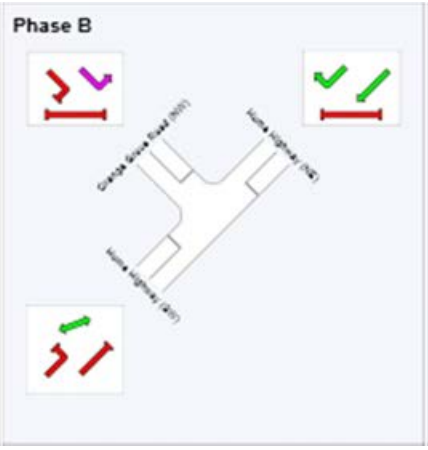
Site: I-01 2030 BASE AM

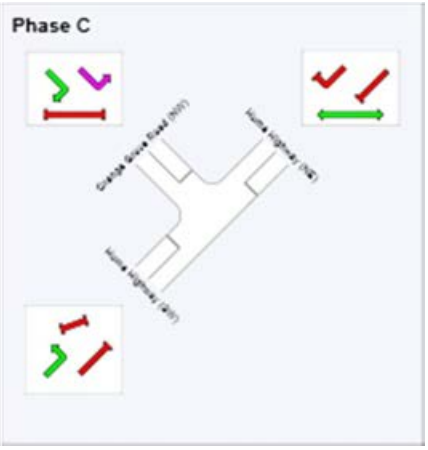
Hume Highway / Orange Grove Road
2030 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	84	108
Green Time (sec)	77	17	36
Yellow Time (sec)	5	4	5
All-Red Time (sec)	2	2	2
Phase Time (sec)	84	23	43
Phase Split	56 %	15 %	29 %







PM BASE

MOVEMENT SUMMARY

Site: I-01 2030 BASE PM

Hume Highway / Orange Grove Road
2030 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
NorthEast: Hume Highway (NE)											
25	T1	1762	3.3	0.918	44.0	LOS D	49.8	358.6	0.91	0.97	27.0
26	R2	816	2.8	0.958	68.1	LOS E	24.7	176.9	1.00	1.04	27.6
Approach		2578	3.1	0.958	51.6	LOS D	49.8	358.6	0.94	0.99	27.2
NorthWest: Orange Grove Road (NW)											
27	L2	391	4.3	0.365	12.4	LOS A	6.7	48.6	0.27	0.64	49.3
29	R2	1358	3.1	1.040	119.8	LOS F	51.7	371.7	1.00	1.10	17.0
Approach		1748	3.4	1.040	95.8	LOS F	51.7	371.7	0.84	1.00	20.3
SouthWest: Hume Highway (SW)											
30	L2	1278	3.0	0.745	19.2	LOS B	19.5	139.7	0.77	0.83	46.0
31	T1	1085	5.3	0.975	88.0	LOS F	37.6	275.5	1.00	1.12	18.1
Approach		2363	4.1	0.975	50.8	LOS D	37.6	275.5	0.88	0.97	28.8
All Vehicles		6689	3.5	1.040	62.9	LOS E	51.7	371.7	0.89	0.98	25.2

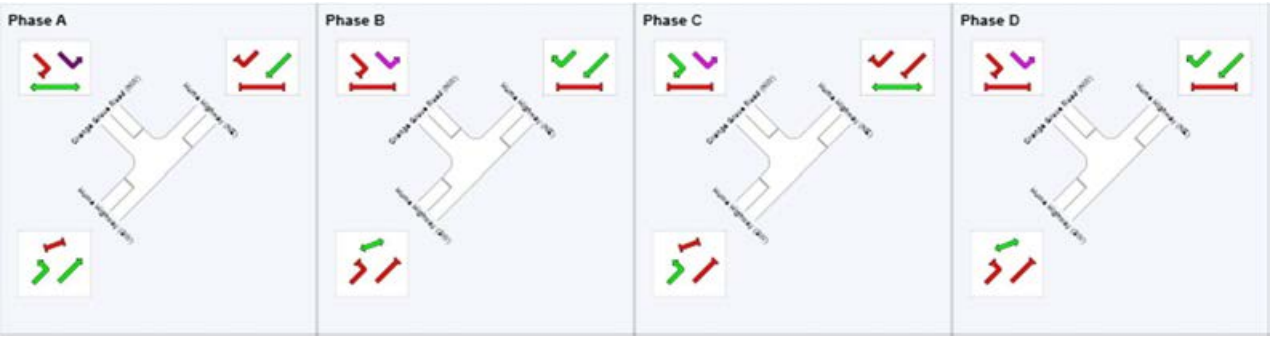
PHASING SUMMARY

Site: I-01 2030 BASE PM

Hume Highway / Orange Grove Road
2030 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	80	124
Green Time (sec)	47	20	38	19
Yellow Time (sec)	5	4	5	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	54	26	45	25
Phase Split	36 %	17 %	30 %	17 %



AM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-01 2030 MIMT AM

Hume Highway / Orange Grove Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	956	11.2	0.686	24.2	LOS B	19.6	150.8	0.84	0.77	35.8
26	R2	389	10.0	0.907	86.6	LOS F	17.0	128.8	1.00	0.94	23.8
Approach		1346	10.9	0.907	42.3	LOS C	19.6	150.8	0.89	0.82	30.0
NorthWest: Orange Grove Road (NW)											
27	L2	602	6.5	0.712	18.8	LOS B	19.5	144.4	0.54	0.81	44.8
29	R2	1350	9.0	1.016	125.5	LOS F	48.5	375.0	1.00	1.10	16.3
Approach		1952	8.2	1.069	92.6	LOS F	48.5	375.0	0.86	1.01	20.9
SouthWest: Hume Highway (SW)											
30	L2	1287	9.1	0.469	11.7	LOS A	14.7	113.6	0.35	0.70	49.9
31	T1	2186	4.9	0.805	22.9	LOS B	39.5	287.9	0.71	0.65	40.2
Approach		3474	6.5	0.805	18.7	LOS B	39.5	287.9	0.57	0.67	43.9
All Vehicles		6771	7.8	1.069	44.7	LOS D	48.5	375.0	0.72	0.80	30.2

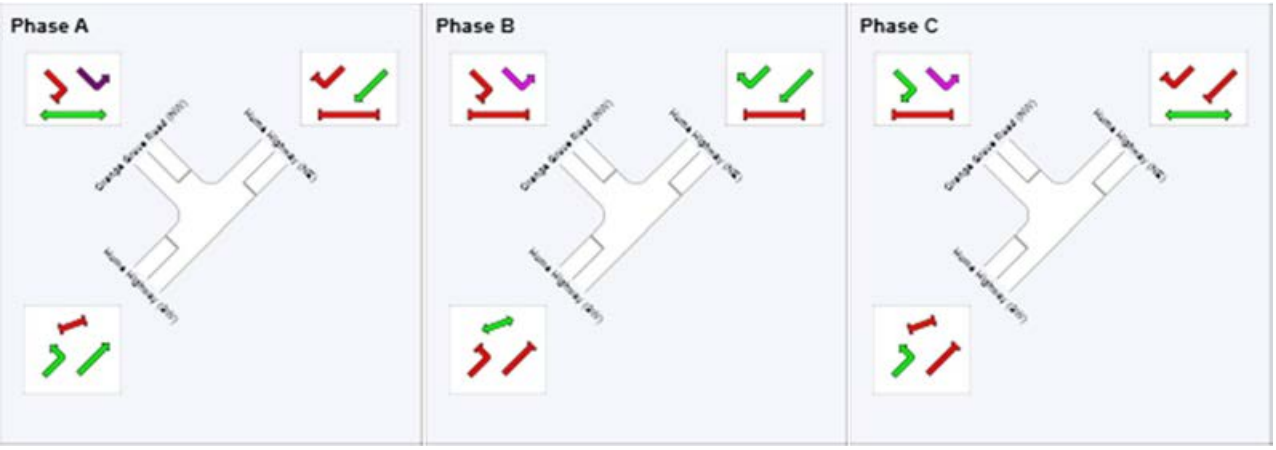
PHASING SUMMARY

Site: I-01 2030 MIMT AM

Hume Highway / Orange Grove Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	84	108
Green Time (sec)	77	17	36
Yellow Time (sec)	5	4	5
All-Red Time (sec)	2	2	2
Phase Time (sec)	84	23	43
Phase Split	56 %	15 %	29 %



PM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-01 2030 MIMT PM

Hume Highway / Orange Grove Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	1767	3.6	0.923	46.0	LOS D	51.1	369.4	0.92	0.99	26.3
26	R2	816	2.8	0.958	68.1	LOS E	24.7	176.9	1.00	1.04	27.6
Approach		2583	3.3	0.958	53.0	LOS D	51.1	369.4	0.94	1.00	26.8
NorthWest: Orange Grove Road (NW)											
27	L2	391	4.3	0.366	12.4	LOS A	6.7	48.8	0.27	0.64	49.3
29	R2	1401	6.1	1.118	174.4	LOS F	64.4	488.3	1.00	1.24	12.8
Approach		1792	5.7	1.118	139.1	LOS F	64.4	488.3	0.84	1.11	15.6
SouthWest: Hume Highway (SW)											
30	L2	1322	6.0	0.801	19.9	LOS B	21.4	161.8	0.81	0.85	44.3
31	T1	1092	5.6	0.984	91.9	LOS F	38.8	285.6	1.00	1.14	17.6
Approach		2414	5.8	0.984	52.5	LOS D	38.8	285.6	0.90	0.98	28.0
All Vehicles		6789	4.8	1.118	75.5	LOS F	64.4	488.3	0.90	1.02	22.4

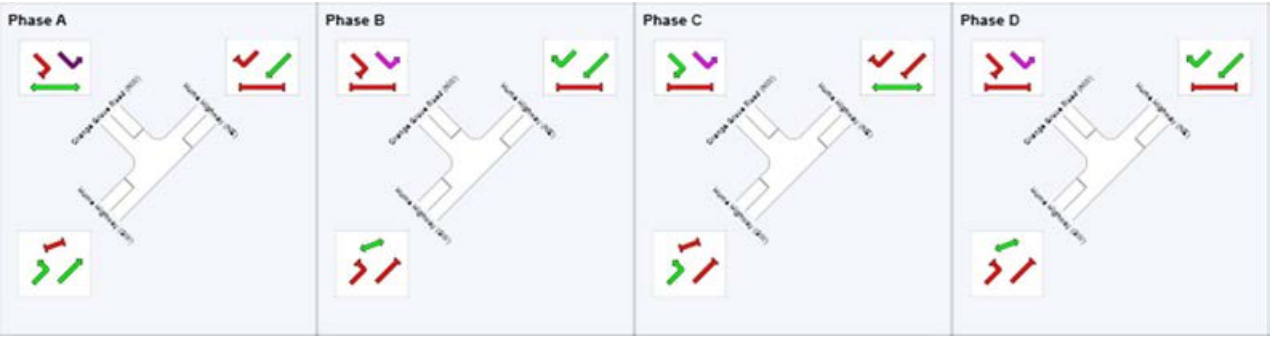
PHASING SUMMARY

Site: I-01 2030 MIMT PM

Hume Highway / Orange Grove Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	80	124
Green Time (sec)	47	20	38	19
Yellow Time (sec)	5	4	5	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	54	26	45	25
Phase Split	36 %	17 %	30 %	17 %



AM With Moorebank IMT – with upgrade

MOVEMENT SUMMARY

Site: I-01 2030 MIMT AM - Upgrade

Hume Highway / Orange Grove Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	956	11.2	0.686	24.2	LOS B	19.6	150.8	0.84	0.77	35.8
26	R2	389	10.0	0.907	86.6	LOS F	17.0	128.8	1.00	0.94	23.9
Approach		1346	10.9	0.907	42.3	LOS C	19.6	150.8	0.89	0.82	30.0
NorthWest: Orange Grove Road (NW)											
27	L2	602	6.5	0.694	7.3	LOS A	3.8	28.4	0.11	0.63	53.0
29	R2	1350	9.0	1.018	127.2	LOS F	49.0	378.7	1.00	1.11	16.3
Approach		1952	8.2	1.072	90.2	LOS F	49.0	378.7	0.72	0.96	21.3
SouthWest: Hume Highway (SW)											
30	L2	1287	9.1	0.469	11.7	LOS A	14.7	113.6	0.35	0.70	49.9
31	T1	2186	4.9	0.722	20.3	LOS B	31.4	229.3	0.58	0.53	42.2
Approach		3474	6.5	0.722	17.1	LOS B	31.4	229.3	0.50	0.59	45.3
All Vehicles		6771	7.8	1.072	43.2	LOS D	49.0	378.7	0.64	0.74	30.7

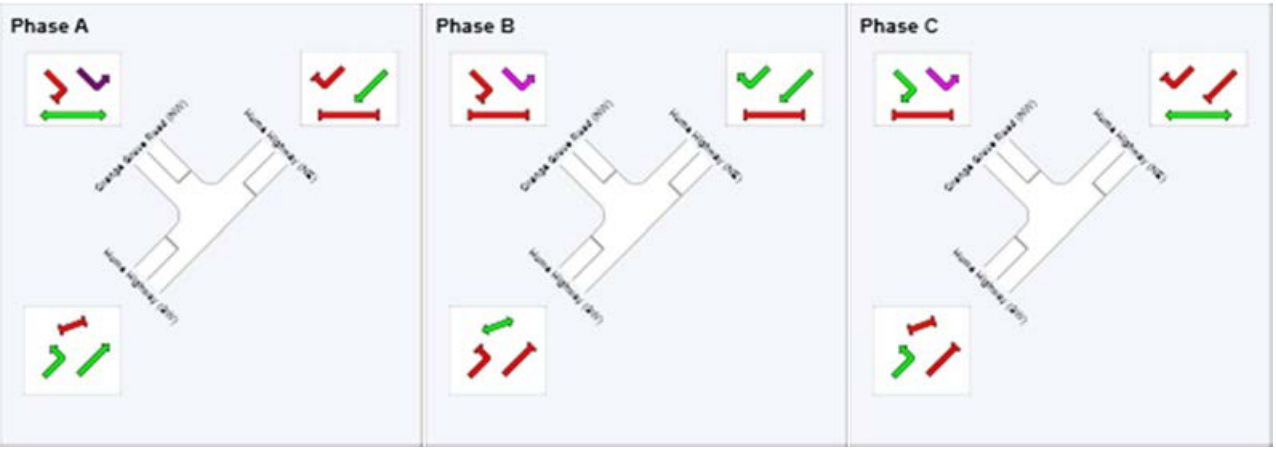
PHASING SUMMARY

Site: I-01 2030 MIMT AM - Upgrade

Hume Highway / Orange Grove Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	84	108
Green Time (sec)	77	17	36
Yellow Time (sec)	5	4	5
All-Red Time (sec)	2	2	2
Phase Time (sec)	84	23	43
Phase Split	56 %	15 %	29 %



PM With Moorebank IMT – with upgrade

MOVEMENT SUMMARY

Site: I-01 2030 MIMT PM - Upgrade

Hume Highway / Orange Grove Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	1767	3.6	0.972	70.1	LOS E	62.0	448.2	0.99	1.16	20.3
26	R2	816	2.8	0.958	67.9	LOS E	23.6	169.3	1.00	1.04	27.7
Approach		2583	3.3	0.972	69.4	LOS E	62.0	448.2	0.99	1.12	22.9
NorthWest: Orange Grove Road (NW)											
27	L2	391	4.3	0.340	8.3	LOS A	3.3	24.0	0.14	0.59	52.4
29	R2	1401	6.1	1.006	97.7	LOS F	50.4	382.2	0.99	1.05	19.6
Approach		1792	5.7	1.006	78.2	LOS F	50.4	382.2	0.81	0.95	23.1
SouthWest: Hume Highway (SW)											
30	L2	1322	6.0	0.801	19.9	LOS B	21.2	161.0	0.81	0.85	44.3
31	T1	1092	5.6	0.892	67.9	LOS E	25.6	188.3	0.98	0.98	21.8
Approach		2414	5.8	0.892	41.6	LOS C	25.6	188.3	0.89	0.91	31.7
All Vehicles		6789	4.8	1.006	61.9	LOS E	62.0	448.2	0.91	1.00	25.4

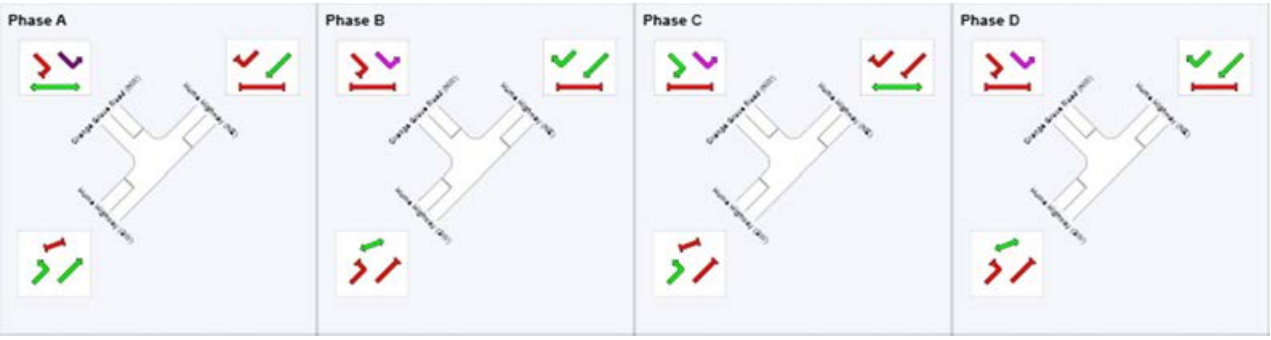
PHASING SUMMARY

Site: I-01 2030 MIMT PM - Upgrade

Hume Highway / Orange Grove Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	48	75	124
Green Time (sec)	42	20	43	19
Yellow Time (sec)	5	4	5	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	49	26	50	25
Phase Split	33 %	17 %	33 %	17 %



I-02 Intersection of the Hume Highway and Elizabeth Drive

AM BASE

MOVEMENT SUMMARY

Site: I-02 2030 BASE AM

Hume Highway / Elizabeth Drive
2030 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	137	5.4	0.151	21.3	LOS B	3.5	25.9	0.38	0.67	37.3
2	T1	2352	6.3	0.911	47.1	LOS D	58.1	428.7	0.95	0.93	23.4
Approach		2488	6.2	0.929	45.6	LOS D	58.1	428.7	0.91	0.92	23.9
East: Elizabeth Drive (E)											
4	L2	39	5.4	0.440	60.7	LOS E	10.6	78.2	0.92	0.82	18.4
5	T1	503	5.9	0.440	56.9	LOS E	12.0	88.5	0.91	0.83	23.5
6	R2	156	2.7	0.754	78.2	LOS F	11.7	83.5	1.00	0.87	14.8
Approach		698	5.1	0.754	61.8	LOS E	12.0	88.5	0.93	0.84	20.9
North: Hume Highway (N)											
7	L2	82	2.6	0.616	24.6	LOS B	22.1	164.8	0.57	0.55	32.4
8	T1	1715	8.7	0.616	18.5	LOS B	22.4	168.3	0.56	0.52	36.9
9	R2	353	9.6	1.268	334.6	LOS F	29.5	223.7	1.00	1.54	5.9
Approach		2149	8.6	1.268	70.6	LOS F	29.5	223.7	0.63	0.69	18.2
West: Elizabeth Drive (W)											
10	L2	627	5.2	1.057	141.9	LOS F	70.4	514.7	1.00	1.14	11.9
11	T1	1091	3.1	1.082	160.2	LOS F	64.4	462.4	1.00	1.44	10.4
12	R2	512	6.6	1.120	358.8	LOS F	58.3	431.0	1.00	1.57	5.6
Approach		2229	4.5	1.120	200.6	LOS F	70.4	514.7	1.00	1.38	8.9
All Vehicles		7565	6.3	1.268	99.9	LOS F	70.4	514.7	0.86	0.98	14.5

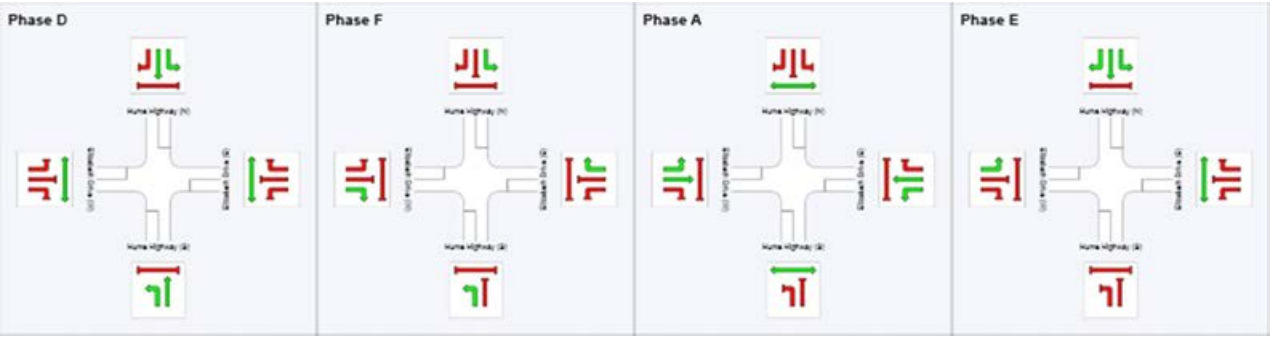
PHASING SUMMARY

Site: I-02 2030 BASE AM

Hume Highway / Elizabeth Drive
2030 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	68	91	132
Green Time (sec)	62	17	35	12
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	68	23	41	18
Phase Split	45 %	15 %	27 %	12 %



PM BASE

MOVEMENT SUMMARY

Site: I-02 2030 BASE PM

Hume Highway / Elizabeth Drive
2030 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	316	4.3	0.470	40.6	LOS C	15.0	108.7	0.70	0.78	28.1
2	T1	1496	4.9	0.868	56.3	LOS D	36.7	267.3	0.97	0.92	20.8
Approach		1812	4.8	0.868	53.6	LOS D	36.7	267.3	0.92	0.90	22.0
East: Elizabeth Drive (E)											
4	L2	128	0.8	0.954	95.2	LOS F	31.8	226.3	1.00	1.10	13.2
5	T1	1083	2.4	0.954	90.8	LOS F	39.9	285.4	1.00	1.12	16.8
6	R2	172	0.0	1.155	237.7	LOS F	23.9	167.3	1.00	1.46	6.0
Approach		1383	2.0	1.155	109.5	LOS F	39.9	285.4	1.00	1.16	14.0
North: Hume Highway (N)											
7	L2	66	4.8	0.854	22.7	LOS B	39.2	281.8	0.70	0.68	33.9
8	T1	2444	2.9	0.854	16.9	LOS B	39.9	286.3	0.70	0.66	38.3
9	R2	961	3.0	0.917	76.9	LOS F	37.9	271.9	1.00	0.96	19.4
Approach		3472	2.9	0.917	33.6	LOS C	39.9	286.3	0.78	0.75	29.2
West: Elizabeth Drive (W)											
10	L2	327	6.4	0.432	33.3	LOS C	13.5	99.7	0.61	0.76	30.0
11	T1	532	4.8	0.680	60.7	LOS E	17.4	126.9	0.95	0.81	21.1
12	R2	311	2.7	1.065	166.0	LOS F	17.7	126.9	1.00	1.22	10.8
Approach		1169	4.7	1.065	81.0	LOS F	17.7	126.9	0.87	0.90	17.9
All Vehicles		7836	3.5	1.155	58.7	LOS E	39.9	286.3	0.87	0.88	21.3

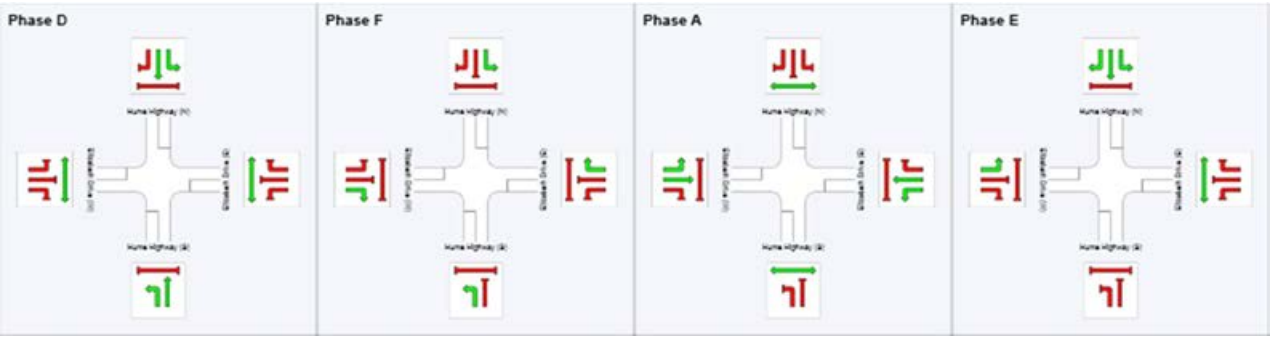
PHASING SUMMARY

Site: I-02 2030 BASE PM

Hume Highway / Elizabeth Drive
2030 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	71	108
Green Time (sec)	47	12	31	36
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	53	18	37	42
Phase Split	35 %	12 %	25 %	28 %



AM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-02 2030 MIMT AM

Hume Highway / Elizabeth Drive
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	137	5.4	0.151	21.3	LOS B	3.5	25.9	0.38	0.67	37.3
2	T1	2391	7.8	0.945	56.4	LOS D	65.7	497.7	0.97	1.01	20.8
Approach		2528	7.7	0.964	54.5	LOS D	65.7	497.7	0.94	0.99	21.4
East: Elizabeth Drive (E)											
4	L2	39	5.4	0.439	60.6	LOS E	10.6	77.9	0.92	0.82	18.4
5	T1	502	5.7	0.439	56.8	LOS E	12.0	88.1	0.91	0.82	23.5
6	R2	156	2.7	0.754	78.2	LOS F	11.7	83.5	1.00	0.87	14.8
Approach		697	5.0	0.754	61.8	LOS E	12.0	88.1	0.93	0.83	20.9
North: Hume Highway (N)											
7	L2	82	2.6	0.644	25.0	LOS B	23.5	180.4	0.59	0.57	32.1
8	T1	1757	10.5	0.644	18.9	LOS B	23.7	184.4	0.58	0.54	36.6
9	R2	353	9.6	1.268	334.6	LOS F	29.5	223.7	1.00	1.54	5.9
Approach		2191	10.1	1.268	70.0	LOS E	29.5	223.7	0.65	0.70	18.3
West: Elizabeth Drive (W)											
10	L2	627	5.2	1.057	141.9	LOS F	70.4	514.7	1.00	1.14	11.9
11	T1	1089	3.0	1.080	158.9	LOS F	64.0	459.7	1.00	1.44	10.5
12	R2	516	7.2	1.128	381.2	LOS F	61.2	458.5	1.00	1.60	5.3
Approach		2233	4.6	1.128	205.4	LOS F	70.4	514.7	1.00	1.39	8.7
All Vehicles		7649	7.2	1.268	103.6	LOS F	70.4	514.7	0.87	1.01	14.1

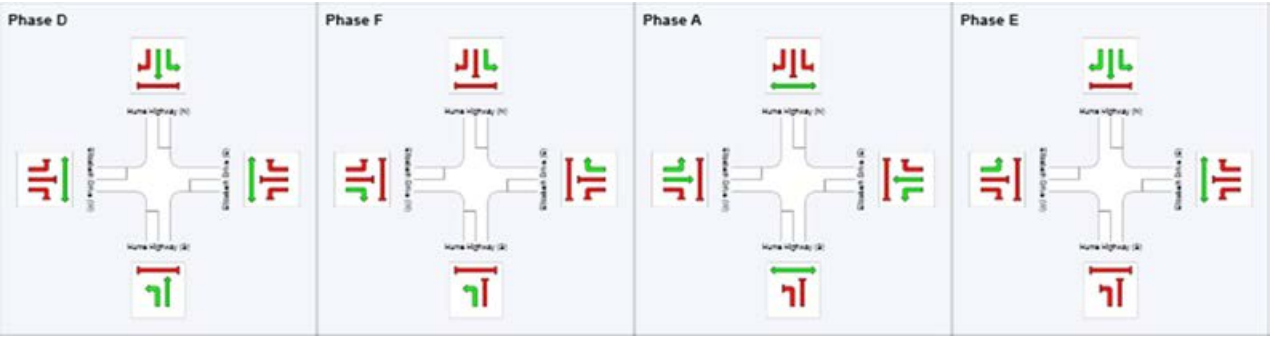
PHASING SUMMARY

Site: I-02 2030 MIMT AM

Hume Highway / Elizabeth Drive
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	68	91	132
Green Time (sec)	62	17	35	12
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	68	23	41	18
Phase Split	45 %	15 %	27 %	12 %



PM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-02 2030 MIMT PM

Hume Highway / Elizabeth Drive
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	322	5.9	0.489	41.0	LOS C	15.5	115.6	0.71	0.78	27.9
2	T1	1548	7.6	0.950	74.3	LOS F	46.3	354.7	0.98	1.07	17.2
Approach		1870	7.3	0.950	68.6	LOS E	46.3	354.7	0.94	1.02	18.7
East: Elizabeth Drive (E)											
4	L2	128	0.8	0.952	94.8	LOS F	31.7	225.4	1.00	1.10	13.3
5	T1	1082	2.3	0.952	90.4	LOS F	39.8	284.2	1.00	1.12	16.9
6	R2	172	0.0	1.155	237.7	LOS F	23.9	167.3	1.00	1.46	6.0
Approach		1382	1.9	1.155	109.1	LOS F	39.8	284.2	1.00	1.16	14.0
North: Hume Highway (N)											
7	L2	66	4.8	0.890	28.3	LOS B	47.2	350.1	0.77	0.77	30.3
8	T1	2493	4.8	0.890	22.4	LOS B	48.0	356.1	0.77	0.76	34.2
9	R2	961	3.0	0.917	76.9	LOS F	37.9	271.9	1.00	0.96	19.4
Approach		3520	4.3	0.917	37.4	LOS C	48.0	356.1	0.83	0.81	27.6
West: Elizabeth Drive (W)											
10	L2	325	5.8	0.428	33.3	LOS C	13.4	98.2	0.61	0.76	30.0
11	T1	529	4.4	0.676	60.6	LOS E	17.3	125.8	0.95	0.81	21.1
12	R2	309	2.4	1.059	161.4	LOS F	17.4	124.2	1.00	1.21	11.1
Approach		1164	4.2	1.059	79.8	LOS F	17.4	125.8	0.87	0.90	18.1
All Vehicles		7936	4.6	1.155	63.4	LOS E	48.0	356.1	0.89	0.93	20.2

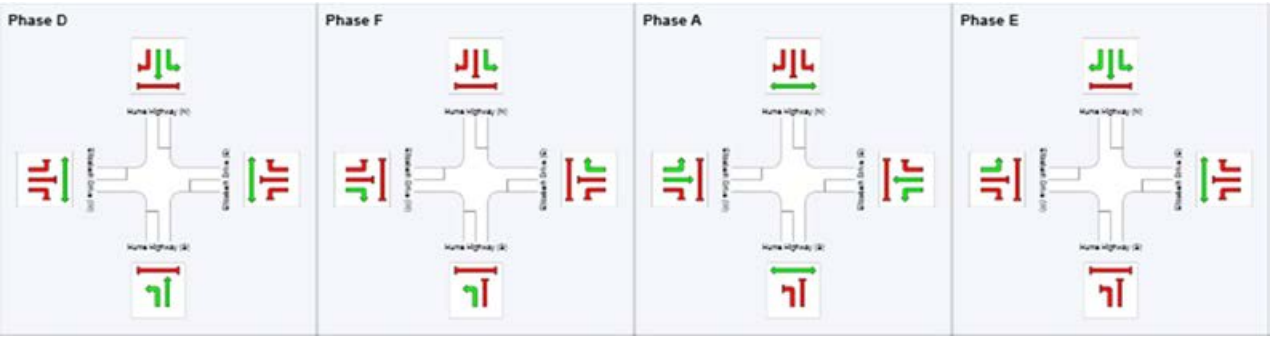
PHASING SUMMARY

Site: I-02 2030 MIMT PM

Hume Highway / Elizabeth Drive
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	71	108
Green Time (sec)	47	12	31	36
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	53	18	37	42
Phase Split	35 %	12 %	25 %	28 %



I-03 Intersection of the Hume Highway and Memorial Avenue

AM BASE

MOVEMENT SUMMARY

Site: I-03 2030 BASE AM

Hume Highway / Memorial Avenue
2030 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	157	1.3	0.955	65.8	LOS E	66.8	491.9	1.00	1.06	27.4
2	T1	2104	7.3	0.955	57.6	LOS E	67.8	504.3	0.93	1.01	25.7
3	R2	267	0.0	1.137	222.0	LOS F	36.2	253.5	1.00	1.30	9.4
Approach		2528	6.1	1.137	75.5	LOS F	67.8	504.3	0.94	1.04	22.0
East: Memorial Avenue (E)											
4	L2	26	20.0	1.170	251.7	LOS F	23.5	175.1	1.00	1.53	8.6
5	T1	160	5.3	1.170	247.0	LOS F	23.5	175.1	1.00	1.53	8.4
6	R2	125	12.6	1.170	251.8	LOS F	21.4	164.2	1.00	1.52	6.0
Approach		312	9.5	1.170	249.3	LOS F	23.5	175.1	1.00	1.52	7.5
North: Hume Highway (N)											
7	L2	121	6.1	0.103	12.4	LOS A	2.6	19.4	0.36	0.64	39.4
8	T1	1715	11.1	0.725	27.9	LOS B	30.5	233.5	0.72	0.65	36.6
9	R2	101	3.1	0.439	72.0	LOS F	7.0	50.1	0.97	0.79	21.4
Approach		1937	10.4	0.725	29.2	LOS C	30.5	233.5	0.71	0.66	35.4
West: Memorial Avenue (W)											
10	L2	128	3.3	1.178	239.1	LOS F	47.3	337.1	1.00	1.56	9.1
11	T1	460	1.6	1.178	242.0	LOS F	58.9	420.6	1.00	1.62	8.5
12	R2	163	3.2	1.178	253.8	LOS F	58.9	420.6	1.00	1.67	10.9
Approach		752	2.2	1.178	244.1	LOS F	58.9	420.6	1.00	1.62	9.2
All Vehicles		5528	7.3	1.178	92.0	LOS F	67.8	504.3	0.87	1.01	19.0

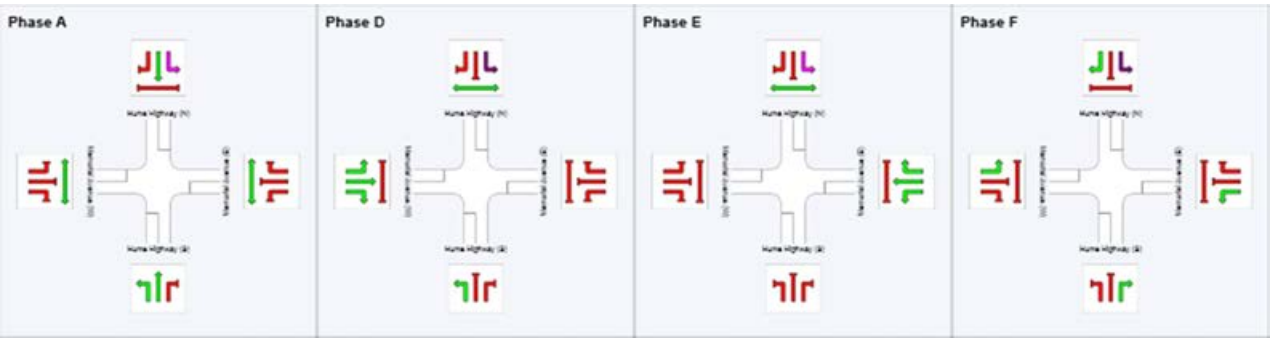
PHASING SUMMARY

Site: I-03 2030 BASE AM

Hume Highway / Memorial Avenue
2030 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	75	108	125
Green Time (sec)	69	27	11	19
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	75	33	17	25
Phase Split	50 %	22 %	11 %	17 %



PM BASE

MOVEMENT SUMMARY

Site: I-03 2030 BASE PM

Hume Highway / Memorial Avenue
2030 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	119	0.9	0.756	41.5	LOS C	32.6	237.2	0.84	0.79	34.0
2	T1	1604	5.6	0.756	33.5	LOS C	33.2	243.3	0.80	0.73	33.8
3	R2	116	0.0	0.779	84.5	LOS F	8.9	62.5	1.00	0.87	19.4
Approach		1839	5.0	0.779	37.3	LOS C	33.2	243.3	0.82	0.74	32.4
East: Memorial Avenue (E)											
4	L2	55	0.0	1.388	441.6	LOS F	56.8	404.4	1.00	2.11	5.2
5	T1	291	2.5	1.388	437.1	LOS F	56.8	404.4	1.00	2.08	5.1
6	R2	212	6.5	1.388	442.0	LOS F	52.3	383.6	1.00	1.98	3.6
Approach		557	3.8	1.388	439.5	LOS F	56.8	404.4	1.00	2.05	4.6
North: Hume Highway (N)											
7	L2	152	2.8	0.090	8.4	LOS A	2.1	14.7	0.24	0.62	43.5
8	T1	2933	3.0	0.909	14.6	LOS B	53.3	382.7	0.61	0.59	44.9
9	R2	214	2.0	0.810	56.5	LOS D	9.9	70.4	1.00	0.92	24.5
Approach		3298	2.9	0.909	17.0	LOS B	53.3	382.7	0.62	0.61	42.6
West: Memorial Avenue (W)											
10	L2	82	1.3	0.901	82.5	LOS F	16.6	117.4	1.00	1.06	19.9
11	T1	209	1.0	0.901	79.5	LOS F	20.5	143.6	1.00	1.04	19.0
12	R2	171	0.0	0.901	86.5	LOS F	20.5	143.6	1.00	1.01	23.0
Approach		462	0.7	0.901	82.6	LOS F	20.5	143.6	1.00	1.04	20.7
All Vehicles		6156	3.5	1.388	66.2	LOS E	56.8	404.4	0.74	0.81	23.3

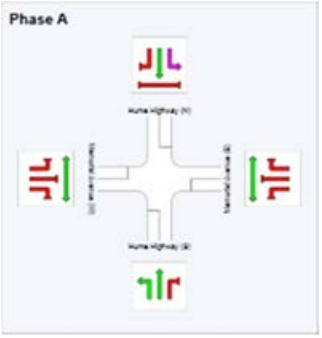
PHASING SUMMARY

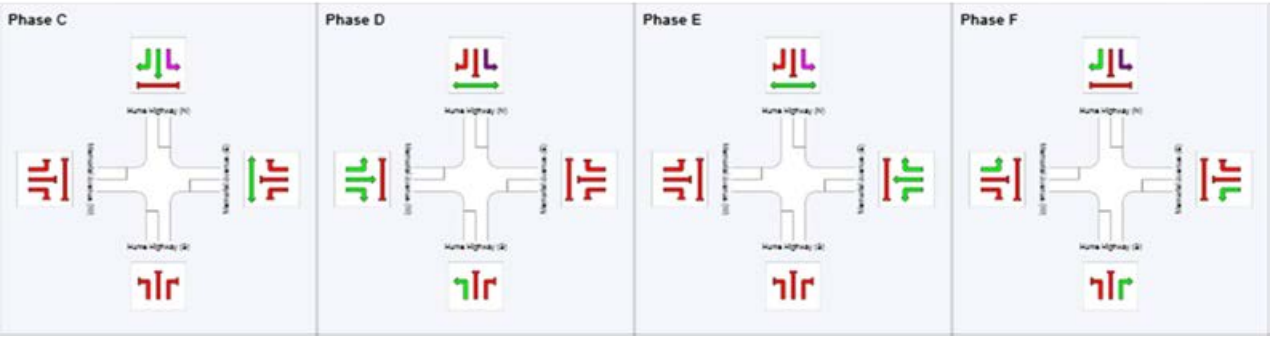
Site: I-03 2030 BASE PM

Hume Highway / Memorial Avenue
2030 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D	E	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	70	82	110	132
Green Time (sec)	64	6	22	16	12
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	70	12	28	22	18
Phase Split	47 %	8 %	19 %	15 %	12 %





AM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-03 2030 MIMT AM

Hume Highway / Memorial Avenue
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	157	1.3	0.983	79.5	LOS F	75.1	565.5	1.00	1.12	24.7
2	T1	2136	8.6	0.983	71.3	LOS F	76.4	583.2	0.94	1.08	22.7
3	R2	267	0.0	1.137	222.0	LOS F	36.2	253.5	1.00	1.30	9.4
Approach		2560	7.3	1.137	87.5	LOS F	76.4	583.2	0.95	1.11	20.0
East: Memorial Avenue (E)											
4	L2	29	28.6	1.264	333.5	LOS F	29.0	222.7	1.00	1.72	6.7
5	T1	164	7.7	1.264	328.8	LOS F	29.0	222.7	1.00	1.71	6.6
6	R2	134	18.1	1.264	333.8	LOS F	26.0	208.4	1.00	1.69	4.7
Approach		327	13.8	1.264	331.2	LOS F	29.0	222.7	1.00	1.71	5.8
North: Hume Highway (N)											
7	L2	121	6.1	0.103	12.4	LOS A	2.6	19.4	0.36	0.64	39.4
8	T1	1764	13.2	0.766	28.7	LOS C	32.9	261.5	0.75	0.68	36.2
9	R2	101	3.1	0.439	72.0	LOS F	7.0	50.1	0.97	0.79	21.4
Approach		1986	12.2	0.766	29.9	LOS C	32.9	261.5	0.74	0.68	35.1
West: Memorial Avenue (W)											
10	L2	128	3.3	1.179	239.8	LOS F	47.4	337.9	1.00	1.57	9.0
11	T1	460	1.6	1.179	242.8	LOS F	59.1	421.5	1.00	1.62	8.5
12	R2	164	3.2	1.179	254.5	LOS F	59.1	421.5	1.00	1.68	10.9
Approach		752	2.2	1.179	244.8	LOS F	59.1	421.5	1.00	1.62	9.1
All Vehicles		5625	8.7	1.264	102.4	LOS F	76.4	583.2	0.89	1.06	17.6

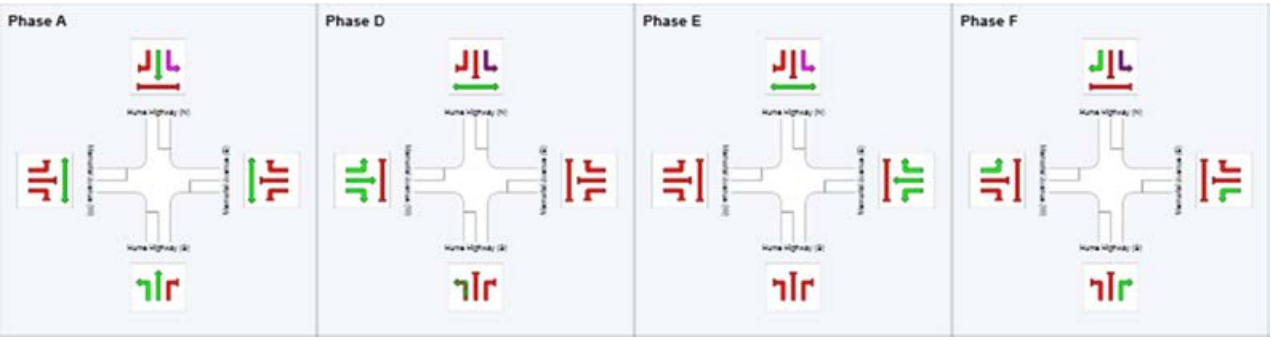
PHASING SUMMARY

Site: I-03 2030 MIMT AM

Hume Highway / Memorial Avenue
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	75	108	125
Green Time (sec)	69	27	11	19
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	75	33	17	25
Phase Split	50 %	22 %	11 %	17 %



PM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-03 2030 MIMT PM

Hume Highway / Memorial Avenue
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	119	0.9	0.801	42.8	LOS D	35.3	267.0	0.88	0.83	33.6
2	T1	1656	8.2	0.801	34.9	LOS C	35.7	274.6	0.84	0.77	33.2
3	R2	116	0.0	0.779	84.5	LOS F	8.9	62.5	1.00	0.87	19.4
Approach		1891	7.2	0.801	38.4	LOS C	35.7	274.6	0.85	0.78	31.9
East: Memorial Avenue (E)											
4	L2	55	0.0	1.379	433.9	LOS F	56.0	398.0	1.00	2.09	5.3
5	T1	289	2.2	1.379	429.4	LOS F	56.0	398.0	1.00	2.07	5.2
6	R2	211	6.0	1.379	434.3	LOS F	51.6	377.5	1.00	1.96	3.7
Approach		555	3.4	1.379	431.7	LOS F	56.0	398.0	1.00	2.03	4.7
North: Hume Highway (N)											
7	L2	152	2.8	0.090	8.4	LOS A	2.1	14.7	0.24	0.62	43.5
8	T1	2974	4.4	0.938	19.9	LOS B	64.0	472.3	0.67	0.67	41.2
9	R2	214	2.0	0.810	56.5	LOS D	9.9	70.4	1.00	0.92	24.5
Approach		3339	4.1	0.938	21.7	LOS B	64.0	472.3	0.67	0.69	39.5
West: Memorial Avenue (W)											
10	L2	82	1.3	0.901	82.5	LOS F	16.6	117.4	1.00	1.06	19.9
11	T1	209	1.0	0.901	79.5	LOS F	20.5	143.6	1.00	1.04	19.0
12	R2	171	0.0	0.901	86.5	LOS F	20.5	143.6	1.00	1.01	23.0
Approach		462	0.7	0.901	82.6	LOS F	20.5	143.6	1.00	1.04	20.7
All Vehicles		6247	4.7	1.379	67.7	LOS E	64.0	472.3	0.78	0.86	23.0

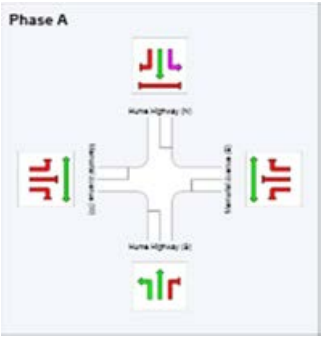
PHASING SUMMARY

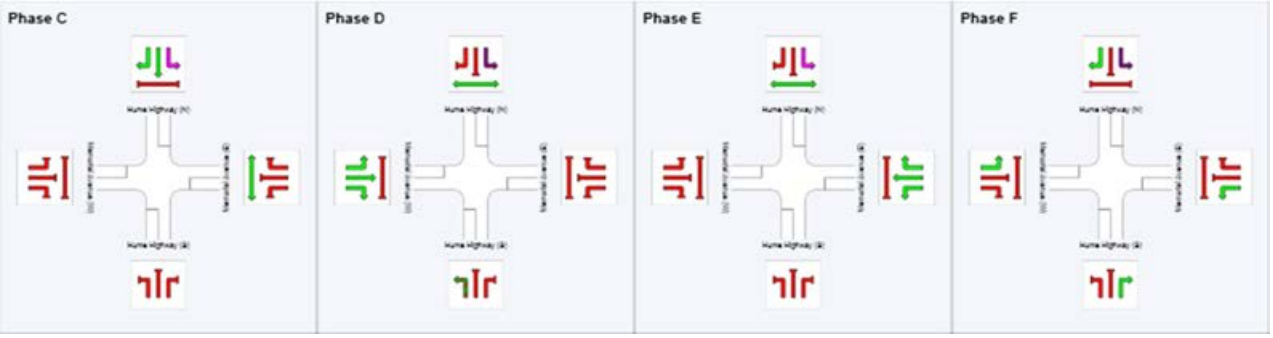
Site: I-03 2030 MIMT PM

Hume Highway / Memorial Avenue
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D	E	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	70	82	110	132
Green Time (sec)	64	6	22	16	12
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	70	12	28	22	18
Phase Split	47 %	8 %	19 %	15 %	12 %





AM With Moorebank IMT – with upgrade

MOVEMENT SUMMARY

Site: I-03 2030 MIMT AM - Upgraded

Hume Highway / Memorial Avenue
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	157	1.3	0.953	65.0	LOS E	65.2	490.4	1.00	1.06	27.5
2	T1	2136	8.6	0.953	56.7	LOS E	66.0	503.6	0.96	1.02	26.0
3	R2	267	0.0	0.568	73.3	LOS F	9.4	65.8	0.99	0.80	21.3
Approach		2560	7.3	0.953	59.0	LOS E	66.0	503.6	0.96	1.00	25.5
East: Memorial Avenue (E)											
4	L2	29	28.6	1.264	333.5	LOS F	29.0	222.7	1.00	1.72	6.7
5	T1	164	7.7	1.264	328.8	LOS F	29.0	222.7	1.00	1.71	6.6
6	R2	134	18.1	1.264	333.8	LOS F	26.0	208.4	1.00	1.69	4.7
Approach		327	13.8	1.264	331.2	LOS F	29.0	222.7	1.00	1.71	5.8
North: Hume Highway (N)											
7	L2	121	6.1	0.097	9.8	LOS A	2.0	15.1	0.29	0.63	41.9
8	T1	1764	13.2	0.765	28.7	LOS C	32.9	261.4	0.75	0.68	36.2
9	R2	101	3.1	0.439	72.0	LOS F	7.0	50.1	0.97	0.79	21.4
Approach		1986	12.2	0.765	29.7	LOS C	32.9	261.4	0.73	0.68	35.1
West: Memorial Avenue (W)											
10	L2	128	3.3	1.179	239.8	LOS F	47.4	337.9	1.00	1.57	9.0
11	T1	460	1.6	1.179	242.8	LOS F	59.1	421.5	1.00	1.63	8.5
12	R2	164	3.2	1.179	254.5	LOS F	59.1	421.5	1.00	1.69	10.9
Approach		752	2.2	1.179	244.8	LOS F	59.1	421.5	1.00	1.63	9.2
All Vehicles		5625	8.7	1.264	89.3	LOS F	66.0	503.6	0.89	1.01	19.3

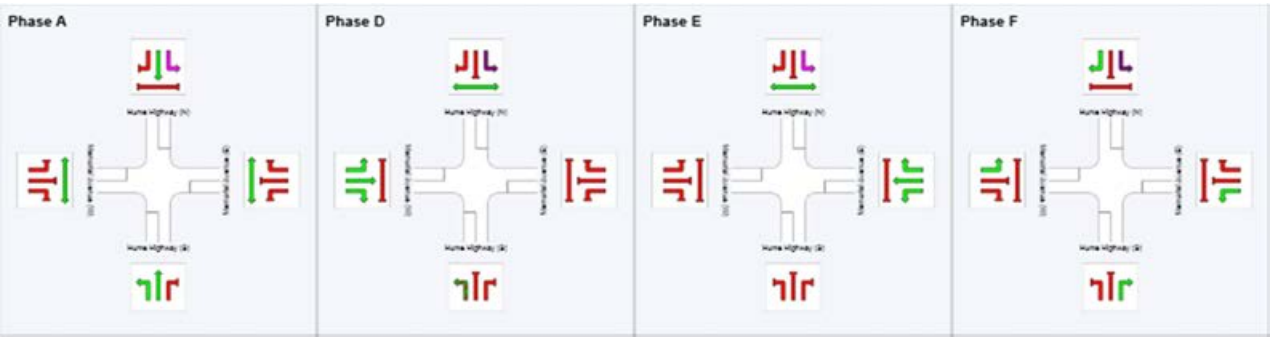
PHASING SUMMARY

Site: I-03 2030 MIMT AM - Upgraded

Hume Highway / Memorial Avenue
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	75	108	125
Green Time (sec)	69	27	11	19
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	75	33	17	25
Phase Split	50 %	22 %	11 %	17 %



PM With Moorebank IMT – with upgrade

MOVEMENT SUMMARY

Site: I-03 2030 MIMT PM - Upgraded

Hume Highway / Memorial Avenue
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	119	0.9	0.786	42.3	LOS C	34.0	257.2	0.87	0.82	33.7
2	T1	1656	8.2	0.786	34.5	LOS C	34.4	265.2	0.84	0.76	33.3
3	R2	116	0.0	0.468	81.4	LOS F	4.3	29.9	1.00	0.76	19.9
Approach		1891	7.2	0.786	37.9	LOS C	34.4	265.2	0.85	0.77	32.1
East: Memorial Avenue (E)											
4	L2	55	0.0	1.299	362.3	LOS F	50.9	362.0	1.00	1.96	6.3
5	T1	289	2.2	1.299	357.8	LOS F	50.9	362.0	1.00	1.93	6.1
6	R2	211	6.0	1.299	362.7	LOS F	47.0	343.9	1.00	1.82	4.3
Approach		555	3.4	1.299	360.1	LOS F	50.9	362.0	1.00	1.89	5.5
North: Hume Highway (N)											
7	L2	152	2.8	0.088	8.0	LOS A	1.9	13.5	0.23	0.61	43.9
8	T1	2974	4.4	0.925	16.3	LOS B	57.6	425.0	0.62	0.62	43.7
9	R2	214	2.0	0.858	55.5	LOS D	10.3	73.4	1.00	0.93	24.7
Approach		3339	4.1	0.925	18.5	LOS B	57.6	425.0	0.63	0.64	41.6
West: Memorial Avenue (W)											
10	L2	82	1.3	0.901	82.9	LOS F	16.6	117.5	1.00	1.06	19.9
11	T1	209	1.0	0.901	79.7	LOS F	20.5	143.7	1.00	1.05	19.0
12	R2	171	0.0	0.901	86.5	LOS F	20.5	143.7	1.00	1.02	23.1
Approach		462	0.7	0.901	82.8	LOS F	20.5	143.7	1.00	1.04	20.8
All Vehicles		6247	4.7	1.299	59.4	LOS E	57.6	425.0	0.75	0.82	24.9

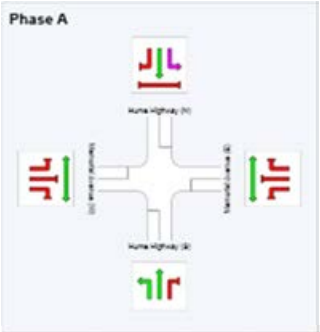
PHASING SUMMARY

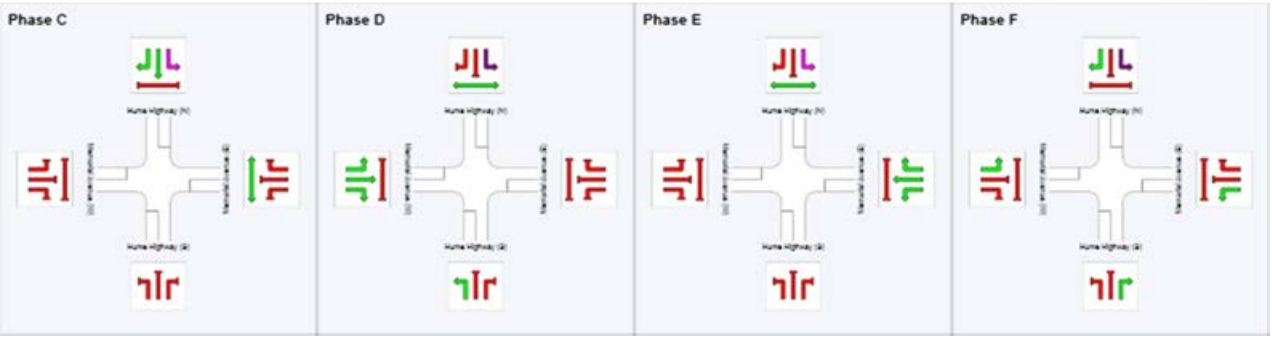
Site: I-03 2030 MIMT PM - Upgraded

Hume Highway / Memorial Avenue
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D	E	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	70	83	111	134
Green Time (sec)	64	7	22	17	10
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	70	13	28	23	16
Phase Split	47 %	9 %	19 %	15 %	11 %





I-04 Intersection of the Hume Highway and Hoxton Park Drive

AM BASE

MOVEMENT SUMMARY

Site: I-04 2030 BASE AM

Hume Highway / Hoxton Park Road / Macquarie Street
2030 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	102	7.2	0.084	8.4	LOS A	0.8	5.7	0.11	0.57	51.1
2	T1	2126	5.1	0.799	26.4	LOS B	38.6	281.8	0.77	0.70	40.3
3	R2	1213	1.9	1.079	138.1	LOS F	53.1	377.9	1.00	1.22	13.8
Approach		3441	4.0	1.079	65.3	LOS E	53.1	377.9	0.83	0.88	25.8
East: Macquarie Street (E)											
4	L2	361	5.8	0.234	22.0	LOS B	5.7	41.8	0.67	0.73	38.6
5	T1	545	4.6	1.137	216.5	LOS F	36.9	268.7	1.00	1.50	10.9
Approach		906	5.1	1.137	139.0	LOS F	36.9	268.7	0.87	1.20	14.7
North: Hume Highway (N)											
7	L2	236	15.6	0.926	74.7	LOS F	45.0	344.9	1.00	1.15	23.0
8	T1	1428	8.1	0.926	67.1	LOS E	46.8	350.0	0.97	1.03	26.6
9	R2	247	19.6	1.265	334.8	LOS F	41.9	342.5	1.00	1.61	9.1
Approach		1912	10.5	1.265	102.7	LOS F	46.8	350.0	0.98	1.12	20.5
West: Hoxton Park Road (W)											
10	L2	338	16.2	0.585	48.7	LOS D	20.1	160.6	0.88	0.83	32.1
11	T1	1363	4.2	1.159	251.3	LOS F	71.9	521.6	1.00	1.71	9.6
12	R2	384	3.3	1.143	177.1	LOS F	28.4	204.4	1.00	1.24	14.3
Approach		2085	6.0	1.159	204.8	LOS F	71.9	521.6	0.98	1.48	11.9
All Vehicles		8344	6.1	1.265	116.7	LOS F	71.9	521.6	0.90	1.12	18.1

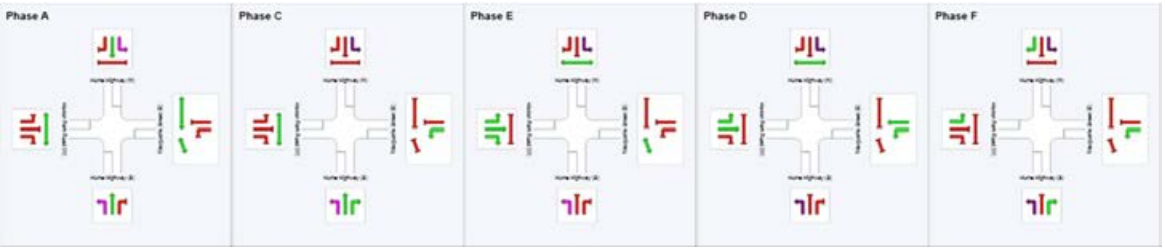
PHASING SUMMARY

Site: I-04 2030 BASE AM

Hume Highway / Hoxton Park Road / Macquarie Street
2030 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	D	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	51	79	101	126
Green Time (sec)	45	22	16	19	18
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	51	28	22	25	24
Phase Split	34 %	19 %	15 %	17 %	16 %



PM BASE

MOVEMENT SUMMARY

Site: I-04 2030 BASE PM

Hume Highway / Hoxton Park Road / Macquarie Street
2030 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	196	5.4	0.163	9.2	LOS A	1.9	13.6	0.14	0.58	50.6
2	T1	1549	5.2	0.598	22.7	LOS B	22.6	165.4	0.60	0.54	42.2
3	R2	448	1.2	0.992	116.8	LOS F	21.4	151.3	1.00	1.09	15.7
Approach		2194	4.4	0.992	40.7	LOS C	22.6	165.4	0.64	0.65	33.4
East: Macquarie Street (E)											
4	L2	785	1.5	1.043	176.8	LOS F	41.7	295.6	0.99	1.14	11.4
5	T1	706	3.3	1.087	167.6	LOS F	41.8	300.7	1.00	1.39	13.3
Approach		1492	2.3	1.087	172.5	LOS F	41.8	300.7	0.99	1.26	12.3
North: Hume Highway (N)											
7	L2	101	5.2	0.937	27.1	LOS B	63.3	454.4	0.83	0.86	39.7
8	T1	2813	2.7	0.937	22.1	LOS B	65.5	468.9	0.74	0.76	42.5
9	R2	284	6.7	1.503	546.6	LOS F	61.9	458.1	1.00	1.94	5.9
Approach		3198	3.1	1.503	68.9	LOS E	65.5	468.9	0.77	0.87	26.4
West: Hoxton Park Road (W)											
10	L2	251	3.8	0.400	45.1	LOS D	13.7	99.4	0.81	0.80	33.4
11	T1	714	3.8	0.436	46.6	LOS D	14.1	101.9	0.87	0.73	30.4
12	R2	380	1.7	1.207	217.5	LOS F	31.6	224.2	1.00	1.34	12.2
Approach		1344	3.2	1.207	94.6	LOS F	31.6	224.2	0.89	0.92	21.2
All Vehicles		8227	3.3	1.503	84.4	LOS F	65.5	468.9	0.80	0.89	22.7

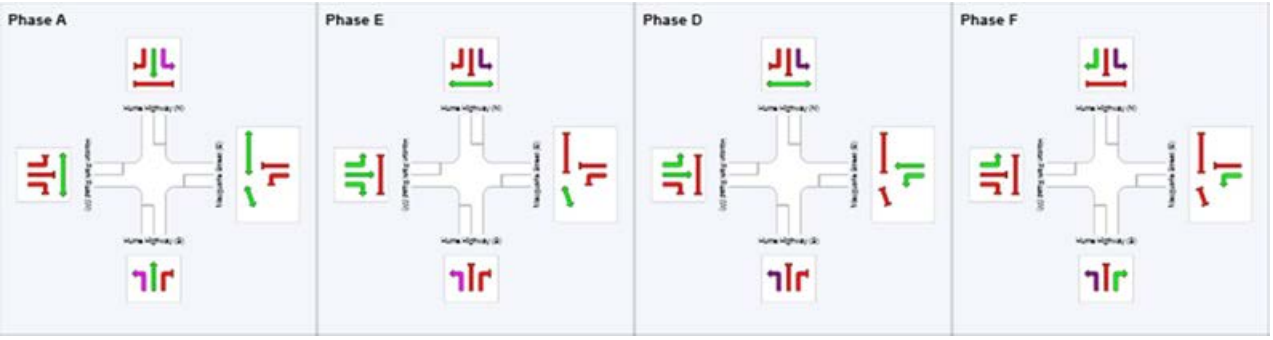
PHASING SUMMARY

Site: I-04 2030 BASE PM

Hume Highway / Hoxton Park Road / Macquarie Street
2030 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	D	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	79	99	128
Green Time (sec)	73	14	23	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	79	20	29	22
Phase Split	53 %	13 %	19 %	15 %



AM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-04 2030 MIMT AM

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	110	14.0	0.099	8.5	LOS A	0.8	7.0	0.12	0.57	50.7
2	T1	2160	6.6	0.832	27.8	LOS B	41.5	311.9	0.80	0.73	39.6
3	R2	1213	1.9	1.079	138.1	LOS F	53.1	377.9	1.00	1.22	13.8
Approach		3483	5.2	1.079	65.6	LOS E	53.1	377.9	0.85	0.90	25.8
East: Macquarie Street (E)											
4	L2	361	5.8	0.234	22.0	LOS B	5.7	41.8	0.67	0.73	38.6
5	T1	545	4.6	1.137	216.5	LOS F	36.9	268.7	1.00	1.50	10.9
Approach		906	5.1	1.137	139.0	LOS F	36.9	268.7	0.87	1.20	14.7
North: Hume Highway (N)											
7	L2	236	15.6	0.976	93.2	LOS F	54.1	425.7	1.00	1.24	19.9
8	T1	1476	10.5	0.976	85.2	LOS F	54.6	427.5	0.98	1.14	23.2
9	R2	246	19.2	1.257	327.7	LOS F	41.2	336.2	1.00	1.59	9.2
Approach		1958	12.2	1.257	116.7	LOS F	54.6	427.5	0.98	1.21	18.9
West: Hoxton Park Road (W)											
10	L2	345	18.0	0.605	49.1	LOS D	20.8	167.8	0.88	0.84	32.0
11	T1	1372	4.8	1.173	263.5	LOS F	74.0	539.3	1.00	1.75	9.2
12	R2	391	4.8	1.195	215.1	LOS F	32.1	236.3	1.00	1.33	12.3
Approach		2108	7.0	1.195	219.4	LOS F	74.0	539.3	0.98	1.52	11.3
All Vehicles		8455	7.3	1.257	123.7	LOS F	74.0	539.3	0.91	1.16	17.4

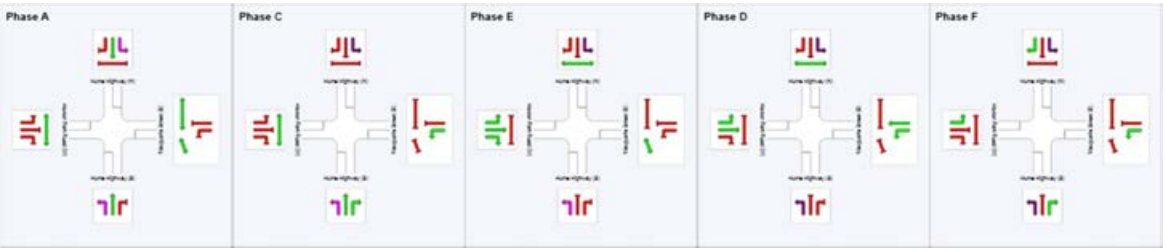
PHASING SUMMARY

Site: I-04 2030 MIMT AM

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	D	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	51	79	101	126
Green Time (sec)	45	22	16	19	18
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	51	28	22	25	24
Phase Split	34 %	19 %	15 %	17 %	16 %



PM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-04 2030 MIMT PM

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	201	7.4	0.171	9.2	LOS A	1.9	14.5	0.14	0.58	50.5
2	T1	1609	8.2	0.648	23.5	LOS B	25.0	192.8	0.63	0.57	41.8
3	R2	448	1.2	0.992	116.8	LOS F	21.4	151.3	1.00	1.09	15.7
Approach		2258	6.7	0.992	40.7	LOS C	25.0	192.8	0.66	0.67	33.4
East: Macquarie Street (E)											
4	L2	785	1.5	1.043	176.8	LOS F	41.7	295.6	0.99	1.14	11.4
5	T1	706	3.3	1.087	167.6	LOS F	41.8	300.7	1.00	1.39	13.3
Approach		1492	2.3	1.087	172.5	LOS F	41.8	300.7	0.99	1.26	12.3
North: Hume Highway (N)											
7	L2	101	5.2	0.967	35.9	LOS C	77.3	569.1	0.94	1.00	35.2
8	T1	2857	4.2	0.967	31.1	LOS C	78.7	579.6	0.82	0.88	38.0
9	R2	283	6.3	1.494	538.4	LOS F	61.2	451.8	1.00	1.93	6.0
Approach		3241	4.4	1.494	75.6	LOS F	78.7	579.6	0.84	0.97	25.0
West: Hoxton Park Road (W)											
10	L2	252	4.2	0.402	45.2	LOS D	13.8	100.2	0.81	0.80	33.3
11	T1	717	4.3	0.439	46.6	LOS D	14.2	102.8	0.87	0.73	30.4
12	R2	391	4.4	1.294	285.1	LOS F	37.1	276.4	1.00	1.48	9.7
Approach		1359	4.3	1.294	115.0	LOS F	37.1	276.4	0.89	0.96	18.6
All Vehicles		8351	4.6	1.494	89.9	LOS F	78.7	579.6	0.83	0.94	21.8

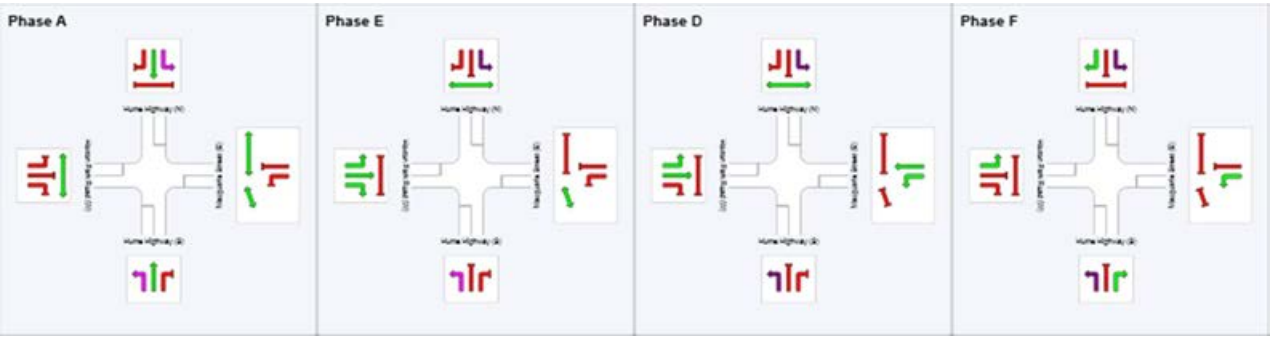
PHASING SUMMARY

Site: I-04 2030 MIMT PM

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	D	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	79	99	128
Green Time (sec)	73	14	23	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	79	20	29	22
Phase Split	53 %	13 %	19 %	15 %



AM With Moorebank IMT – with upgrade

MOVEMENT SUMMARY

Site: I-04 2030 MIMT AM - Upgrade

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	110	14.0	0.102	9.5	LOS A	1.1	8.9	0.15	0.58	50.0
2	T1	2160	6.6	0.927	47.7	LOS D	58.7	440.6	0.90	0.92	31.9
3	R2	1213	1.9	1.079	138.0	LOS F	52.3	372.0	1.00	1.22	13.8
Approach		3483	5.2	1.079	77.9	LOS F	58.7	440.6	0.91	1.02	23.3
East: Macquarie Street (E)											
4	L2	361	5.8	0.230	21.1	LOS B	5.4	39.8	0.66	0.73	39.1
5	T1	545	4.6	1.080	170.2	LOS F	32.6	237.6	1.00	1.38	13.2
Approach		906	5.1	1.080	110.8	LOS F	32.6	237.6	0.86	1.12	17.4
North: Hume Highway (N)											
7	L2	236	15.6	1.039	83.8	LOS F	54.2	426.6	1.00	1.10	21.3
8	T1	1476	10.5	1.039	117.6	LOS F	64.2	502.8	1.00	1.26	18.8
9	R2	246	19.2	1.131	219.1	LOS F	33.3	271.1	1.00	1.38	12.8
Approach		1958	12.2	1.131	126.3	LOS F	64.2	502.8	1.00	1.25	17.9
West: Hoxton Park Road (W)											
10	L2	345	18.0	0.552	44.7	LOS D	19.7	158.8	0.84	0.83	33.3
11	T1	1372	4.8	1.111	211.8	LOS F	66.5	484.9	1.00	1.59	11.1
12	R2	391	4.8	1.101	154.6	LOS F	26.4	194.3	1.00	1.18	15.8
Approach		2108	7.0	1.111	173.8	LOS F	66.5	484.9	0.97	1.39	13.6
All Vehicles		8455	7.3	1.131	116.6	LOS F	66.5	502.8	0.94	1.18	18.1

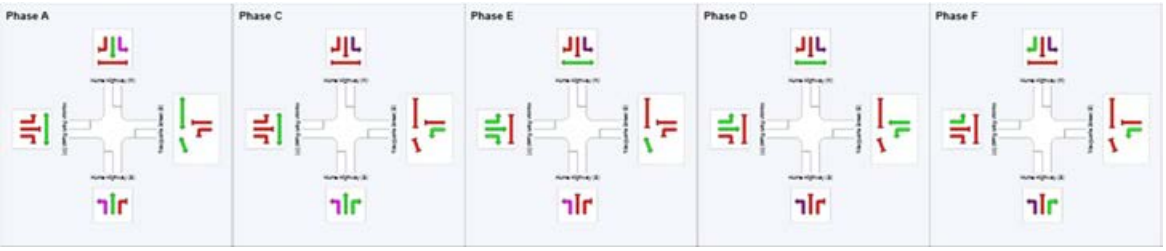
PHASING SUMMARY

Site: I-04 2030 MIMT AM - Upgrade

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	D	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	48	74	98	124
Green Time (sec)	42	20	18	20	20
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	48	26	24	26	26
Phase Split	32 %	17 %	16 %	17 %	17 %



PM With Moorebank IMT – with upgrade

MOVEMENT SUMMARY

Site: I-04 2030 MIMT PM - Upgrade

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	201	7.4	0.173	9.6	LOS A	2.1	15.7	0.16	0.59	50.2
2	T1	1609	8.2	0.648	23.5	LOS B	25.0	192.8	0.63	0.57	41.8
3	R2	448	1.2	0.934	95.5	LOS F	19.1	135.2	1.00	1.00	18.1
Approach		2258	6.7	0.934	36.5	LOS C	25.0	192.8	0.66	0.66	35.0
East: Macquarie Street (E)											
4	L2	785	1.5	1.024	163.1	LOS F	39.7	281.3	0.98	1.11	12.1
5	T1	706	3.3	1.087	167.6	LOS F	41.8	300.7	1.00	1.39	13.3
Approach		1492	2.3	1.087	165.2	LOS F	41.8	300.7	0.99	1.24	12.7
North: Hume Highway (N)											
7	L2	101	5.2	0.967	35.9	LOS C	77.3	569.1	0.94	1.00	35.2
8	T1	2857	4.2	0.967	31.1	LOS C	78.7	579.6	0.82	0.88	38.0
9	R2	283	6.3	1.406	459.4	LOS F	56.5	417.3	1.00	1.82	6.9
Approach		3241	4.4	1.406	68.7	LOS E	78.7	579.6	0.84	0.96	26.4
West: Hoxton Park Road (W)											
10	L2	252	4.2	0.402	45.2	LOS D	13.8	100.2	0.81	0.80	33.3
11	T1	717	4.3	0.450	47.6	LOS D	14.3	103.8	0.88	0.74	30.1
12	R2	391	4.4	1.376	350.0	LOS F	40.9	304.3	1.00	1.60	8.2
Approach		1359	4.3	1.376	134.1	LOS F	40.9	304.3	0.90	1.00	16.7
All Vehicles		8351	4.6	1.406	87.9	LOS F	78.7	579.6	0.83	0.94	22.1

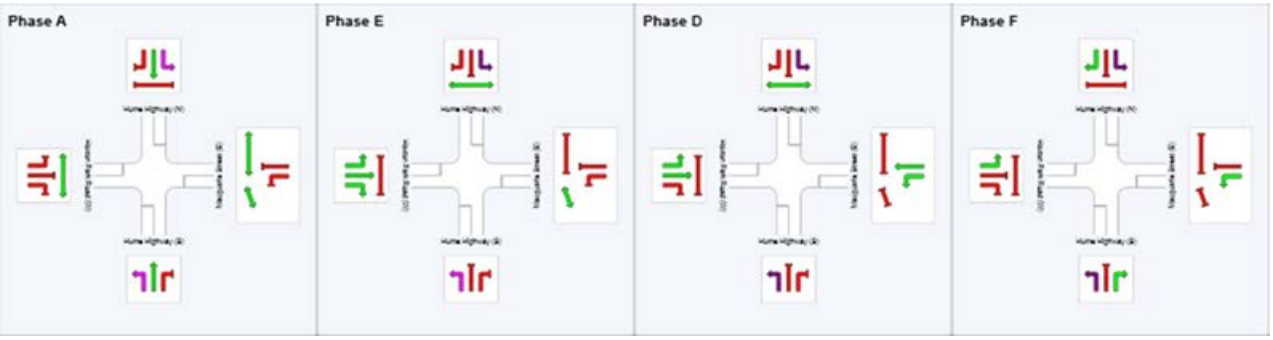
PHASING SUMMARY

Site: I-04 2030 MIMT PM - Upgrade

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	D	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	79	98	127
Green Time (sec)	73	13	23	17
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	79	19	29	23
Phase Split	53 %	13 %	19 %	15 %



I-05 Intersection of the Hume Highway and Reilly Street

AM BASE

MOVEMENT SUMMARY

Site: I-05 2030 BASE AM

Hume Highway / Reilly Street
2030 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Hignway (S)											
1	L2	80	2.6	0.922	27.6	LOS B	64.0	461.6	0.80	0.80	38.2
2	T1	3145	3.6	0.922	21.3	LOS B	64.0	461.6	0.74	0.74	38.6
3	R2	14	7.7	0.098	21.9	LOS B	0.5	3.5	0.47	0.67	37.4
Approach		3239	3.6	0.922	21.4	LOS B	64.0	461.6	0.74	0.75	38.6
East: Congressional Drive (E)											
4	L2	49	2.1	0.272	60.1	LOS E	6.0	43.0	0.89	0.74	24.3
5	T1	46	4.5	0.272	55.5	LOS D	6.0	43.0	0.89	0.74	23.8
6	R2	91	4.7	0.446	68.4	LOS E	6.2	45.0	0.95	0.79	18.5
Approach		186	4.0	0.446	63.0	LOS E	6.2	45.0	0.92	0.76	21.4
North: Hume Hignway (N)											
7	L2	32	3.3	0.542	16.1	LOS B	23.9	177.4	0.51	0.48	40.9
8	T1	1809	7.2	0.542	10.0	LOS A	24.0	178.4	0.48	0.45	47.5
9	R2	99	1.1	0.700	53.4	LOS D	5.9	41.6	1.00	0.90	24.1
Approach		1940	6.8	0.700	12.3	LOS A	24.0	178.4	0.51	0.47	45.1
West: Reilly Street (W)											
10	L2	121	4.3	0.281	51.2	LOS D	7.8	56.5	0.84	0.76	24.2
11	T1	14	7.7	0.281	46.6	LOS D	7.8	56.5	0.84	0.76	25.4
12	R2	235	1.8	1.061	170.1	LOS F	27.8	197.4	1.00	1.27	13.2
Approach		369	2.8	1.061	126.6	LOS F	27.8	197.4	0.94	1.08	15.4
All Vehicles		5735	4.7	1.061	26.5	LOS B	64.0	461.6	0.68	0.67	35.4

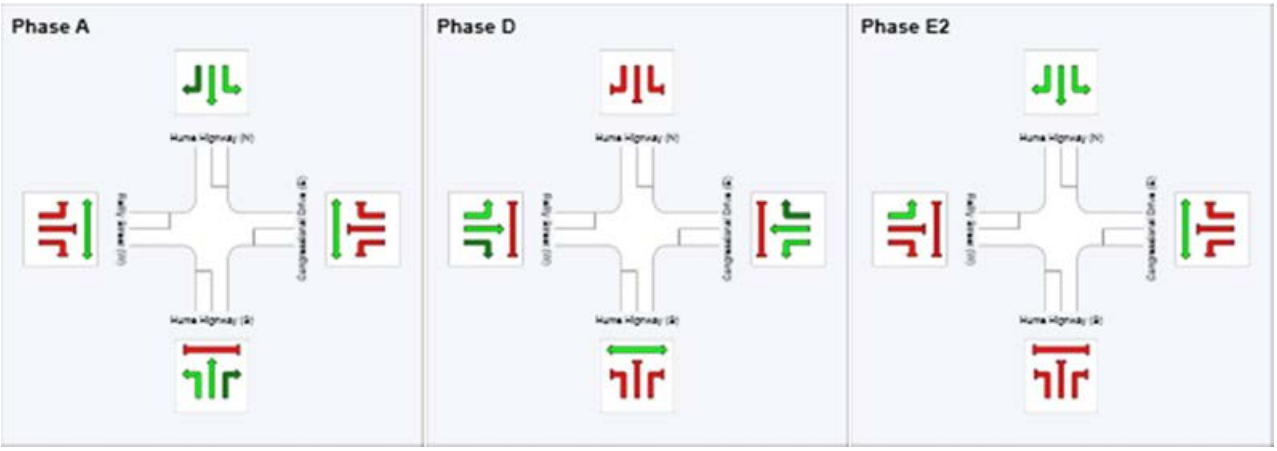
PHASING SUMMARY

Site: I-05 2030 BASE AM

Hume Highway / Reilly Street
2030 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	100	137
Green Time (sec)	94	31	7
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	100	37	13
Phase Split	67 %	25 %	9 %



PM BASE

MOVEMENT SUMMARY

Site: I-05 2030 BASE PM

Hume Highway / Reilly Street
2030 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Hignway (S)											
1	L2	223	0.5	0.645	19.5	LOS B	24.9	179.0	0.52	0.56	41.9
2	T1	2007	4.5	0.645	11.4	LOS A	24.9	179.0	0.44	0.43	45.9
3	R2	21	5.0	0.391	37.6	LOS C	1.1	8.4	0.69	0.74	30.5
Approach		2252	4.1	0.645	12.5	LOS A	24.9	179.0	0.45	0.45	45.1
East: Congressional Drive (E)											
4	L2	42	2.5	0.190	59.9	LOS E	4.1	29.0	0.88	0.73	24.2
5	T1	24	0.0	0.190	55.3	LOS D	4.1	29.0	0.88	0.73	23.7
6	R2	52	0.0	0.218	63.5	LOS E	3.3	23.2	0.90	0.75	19.5
Approach		118	0.9	0.218	60.5	LOS E	4.1	29.0	0.89	0.74	22.1
North: Hume Hignway (N)											
7	L2	67	0.0	1.003	51.6	LOS D	131.6	938.2	1.00	1.14	23.5
8	T1	3665	2.2	1.003	48.8	LOS D	131.9	940.7	0.81	0.97	26.5
9	R2	178	1.2	0.874	71.9	LOS F	13.4	94.8	1.00	1.07	20.3
Approach		3911	2.2	1.003	49.9	LOS D	131.9	940.7	0.82	0.98	26.1
West: Reilly Street (W)											
10	L2	65	0.0	0.222	54.3	LOS D	5.7	39.9	0.85	0.73	23.9
11	T1	32	0.0	0.222	49.7	LOS D	5.7	39.9	0.85	0.73	24.9
12	R2	262	2.0	1.063	170.3	LOS F	31.2	221.9	1.00	1.27	13.2
Approach		359	1.5	1.063	138.6	LOS F	31.2	221.9	0.96	1.12	14.8
All Vehicles		6639	2.8	1.063	42.2	LOS C	131.9	940.7	0.70	0.80	28.7

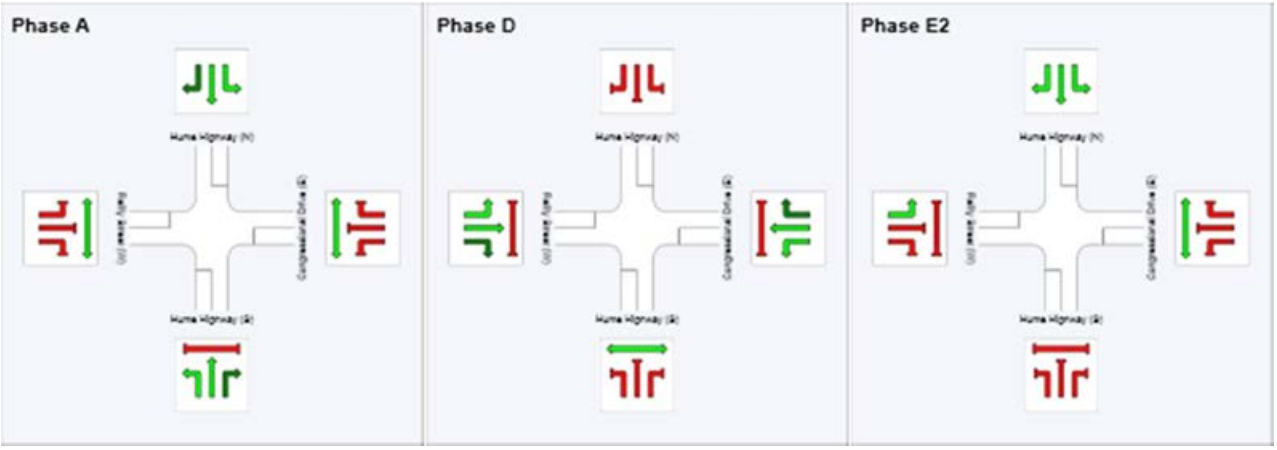
PHASING SUMMARY

Site: I-05 2030 BASE PM

Hume Highway / Reilly Street
2030 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	98	135
Green Time (sec)	92	31	9
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	98	37	15
Phase Split	65 %	25 %	10 %



AM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-05 2030 MIMT AM

Hume Highway / Reilly Street
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Hignway (S)											
1	L2	80	2.6	0.950	36.9	LOS C	77.7	572.1	0.88	0.92	34.1
2	T1	3183	4.8	0.950	30.6	LOS C	77.7	572.1	0.81	0.85	33.4
3	R2	14	7.7	0.110	23.2	LOS B	0.5	3.7	0.49	0.67	36.7
Approach		3276	4.7	0.950	30.7	LOS C	77.7	572.1	0.81	0.86	33.4
East: Congressional Drive (E)											
4	L2	49	2.1	0.272	60.1	LOS E	6.0	43.0	0.89	0.74	24.3
5	T1	46	4.5	0.272	55.5	LOS D	6.0	43.0	0.89	0.74	23.8
6	R2	91	4.7	0.444	68.3	LOS E	6.2	45.0	0.95	0.79	18.5
Approach		186	4.0	0.444	63.0	LOS E	6.2	45.0	0.92	0.76	21.4
North: Hume Hignway (N)											
7	L2	32	3.3	0.557	16.3	LOS B	24.4	188.0	0.52	0.49	40.7
8	T1	1865	9.5	0.557	10.2	LOS A	24.4	189.1	0.49	0.45	47.3
9	R2	99	1.1	0.706	56.5	LOS E	5.8	41.0	1.00	0.90	23.4
Approach		1995	9.0	0.706	12.6	LOS A	24.4	189.1	0.52	0.48	44.9
West: Reilly Street (W)											
10	L2	120	3.5	0.277	51.1	LOS D	7.7	55.7	0.84	0.76	24.3
11	T1	14	7.7	0.277	46.6	LOS D	7.7	55.7	0.84	0.76	25.4
12	R2	234	1.3	1.056	166.0	LOS F	27.4	193.7	1.00	1.26	13.4
Approach		368	2.3	1.056	124.1	LOS F	27.4	193.7	0.94	1.08	15.6
All Vehicles		5826	6.0	1.056	31.4	LOS C	77.7	572.1	0.72	0.74	32.9

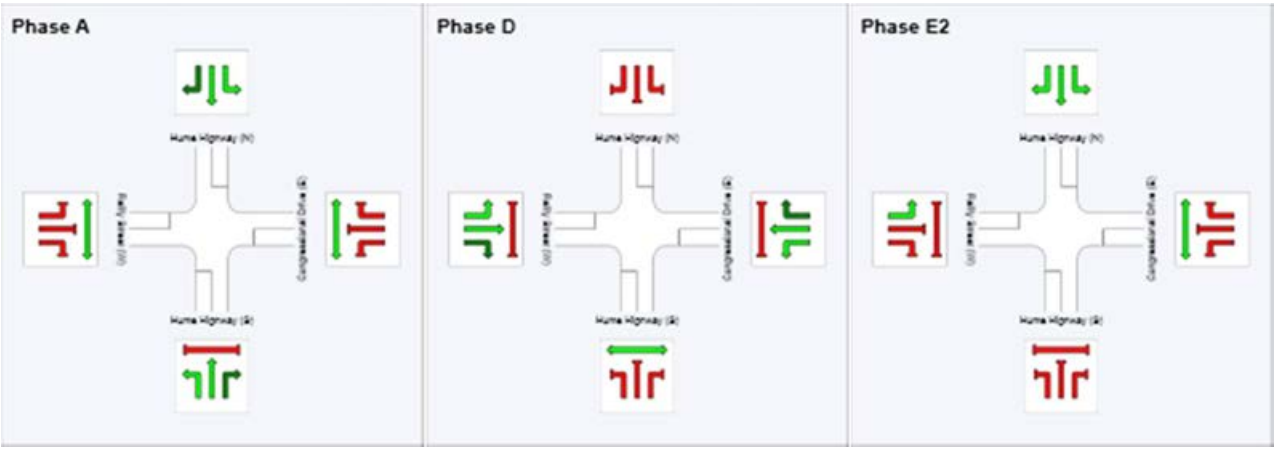
PHASING SUMMARY

Site: I-05 2030 MIMT AM

Hume Highway / Reilly Street
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	100	137
Green Time (sec)	94	31	7
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	100	37	13
Phase Split	67 %	25 %	9 %



PM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-05 2030 MIMT PM

Hume Highway / Reilly Street
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Hignway (S)											
1	L2	224	0.5	0.683	19.9	LOS B	27.1	201.5	0.54	0.58	41.7
2	T1	2072	7.1	0.683	11.9	LOS A	27.1	201.5	0.47	0.46	45.5
3	R2	21	5.0	0.397	44.9	LOS D	1.2	9.1	0.75	0.76	28.1
Approach		2317	6.4	0.683	13.0	LOS A	27.1	201.5	0.48	0.47	44.7
East: Congressional Drive (E)											
4	L2	42	2.5	0.190	59.9	LOS E	4.1	29.0	0.88	0.73	24.2
5	T1	24	0.0	0.190	55.3	LOS D	4.1	29.0	0.88	0.73	23.7
6	R2	52	0.0	0.218	63.5	LOS E	3.3	23.2	0.90	0.75	19.5
Approach		118	0.9	0.218	60.5	LOS E	4.1	29.0	0.89	0.74	22.1
North: Hume Hignway (N)											
7	L2	67	0.0	1.029	70.8	LOS F	144.5	1056.6	1.00	1.23	19.1
8	T1	3719	3.6	1.029	67.5	LOS E	144.7	1060.1	0.81	1.06	21.8
9	R2	178	1.2	0.917	92.5	LOS F	14.7	104.2	1.00	1.12	17.3
Approach		3964	3.5	1.029	68.7	LOS E	144.7	1060.1	0.82	1.07	21.5
West: Reilly Street (W)											
10	L2	65	0.0	0.222	54.3	LOS D	5.7	39.9	0.85	0.73	23.9
11	T1	32	0.0	0.222	49.7	LOS D	5.7	39.9	0.85	0.73	24.9
12	R2	261	1.6	1.057	165.8	LOS F	30.6	217.2	1.00	1.26	13.5
Approach		358	1.2	1.057	135.2	LOS F	30.6	217.2	0.96	1.11	15.0
All Vehicles		6756	4.3	1.057	53.0	LOS D	144.7	1060.1	0.71	0.86	25.4

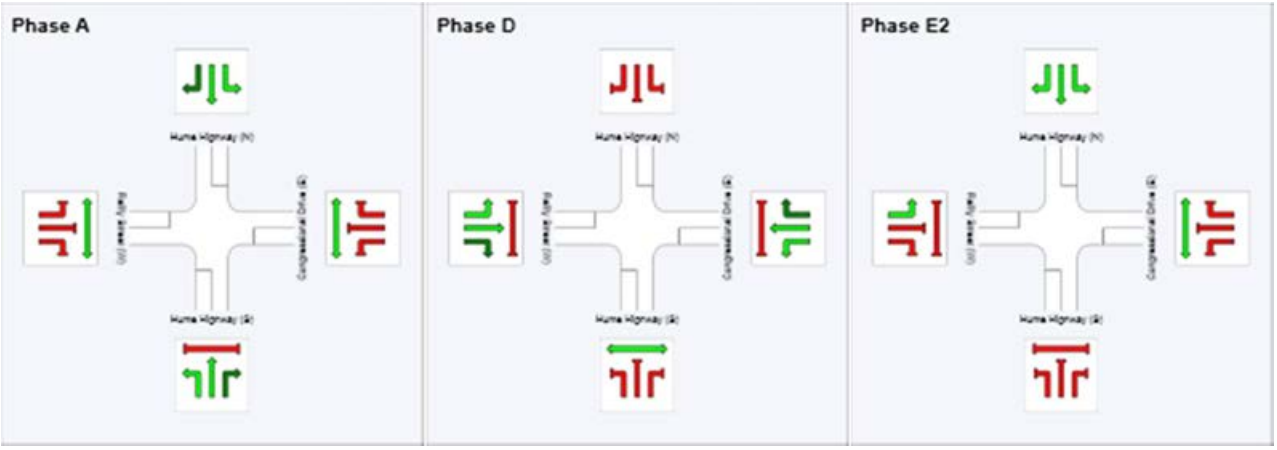
PHASING SUMMARY

Site: I-05 2030 MIMT PM

Hume Highway / Reilly Street
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	98	135
Green Time (sec)	92	31	9
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	98	37	15
Phase Split	65 %	25 %	10 %



I-06 Intersection of Newbridge Road and Moorebank Avenue

AM BASE

MOVEMENT SUMMARY

Site: I-06 2030 BASE AM — **Network: 2030 BASE AM**

Newbridge Road / Moorebank Avenue
2030 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	1535	3.2	1279	3.2	0.660	19.5	LOS B	15.0	108.2	0.58	0.83	41.9
3	R2	1365	9.0	1138	9.1	0.669	15.1	LOS B	14.1	106.4	0.42	0.69	52.7
Approach		2900	5.9	2417 N1	5.9	0.669	17.4	LOS B	15.0	108.2	0.51	0.76	47.7
East: Newbridge Road (E)													
4	L2	687	19.8	687	19.8	0.563	18.5	LOS B	8.3	68.3	0.71	0.80	51.9
5	T1	966	5.2	966	5.2	1.262	313.4	LOS F	77.6	567.9	1.00	1.91	14.6
Approach		1654	11.3	1654	11.3	1.262	190.8	LOS F	77.6	567.9	0.88	1.45	18.8
West: Newbridge Road (W)													
11	T1	1579	6.4	1579	6.4	0.850	12.2	LOS A	30.6	225.7	0.63	0.59	61.0
12	R2	867	7.4	867	7.4	1.577	575.4	LOS F	87.3	650.0	1.00	1.90	3.6
Approach		2446	6.8	2446	6.8	1.577	211.9	LOS F	87.3	650.0	0.76	1.06	16.3
All Vehicles		7000	7.5	6517 N1	8.0	1.577	134.4	LOS F	87.3	650.0	0.70	1.05	21.1

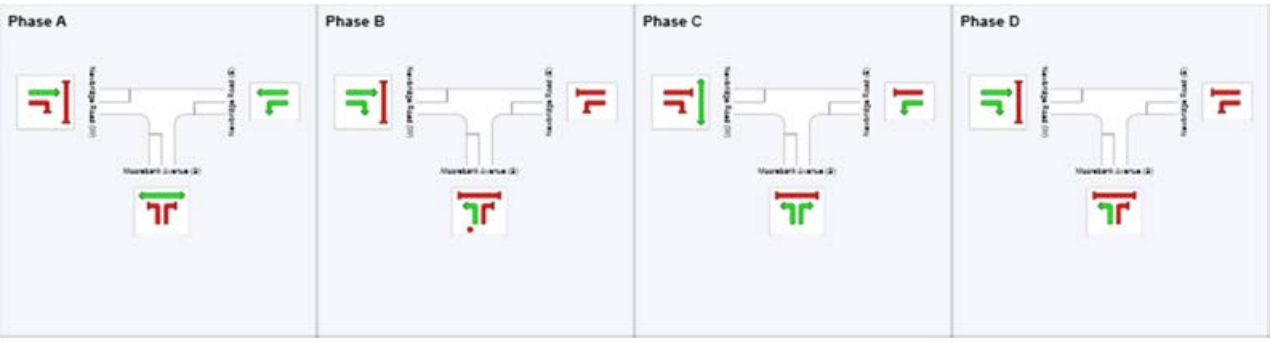
PHASING SUMMARY

Site: I-06 2030 BASE AM — **Network: 2030 BASE AM**

Newbridge Road / Moorebank Avenue
2030 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	33	55	116
Green Time (sec)	27	16	55	11
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	22	61	17
Phase Split	25 %	17 %	46 %	13 %



PM BASE

MOVEMENT SUMMARY

Site: I-06 2030 BASE PM

Network: 2030 BASE PM

Newbridge Road / Moorebank Avenue
2030 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	1001	3.3	887	3.4	0.507	22.5	LOS B	13.1	94.7	0.57	0.75	39.8
3	R2	953	10.7	847	11.1	1.097	148.5	LOS F	17.0	130.6	1.00	1.30	19.0
Approach		1954	6.9	1734 N1	7.1	1.097	84.0	LOS F	17.0	130.6	0.78	1.02	23.9
East: Newbridge Road (E)													
4	L2	1243	5.1	1243	5.1	1.047	144.1	LOS F	66.2	483.9	1.00	1.19	18.6
5	T1	1371	4.7	1371	4.7	0.921	50.6	LOS D	42.4	308.7	1.00	1.03	43.4
Approach		2614	4.9	2614	4.9	1.047	95.1	LOS F	66.2	483.9	1.00	1.11	29.2
West: Newbridge Road (W)													
11	T1	1127	3.8	1127	3.8	0.441	9.3	LOS A	14.6	105.3	0.50	0.45	62.9
12	R2	1118	2.6	1118	2.6	1.188	222.8	LOS F	72.6	519.7	1.00	1.44	8.5
Approach		2245	3.2	2245	3.2	1.188	115.6	LOS F	72.6	519.7	0.75	0.95	23.1
All Vehicles		6813	4.9	6593 N1	5.1	1.188	99.2	LOS F	72.6	519.7	0.86	1.03	25.8

PHASING SUMMARY

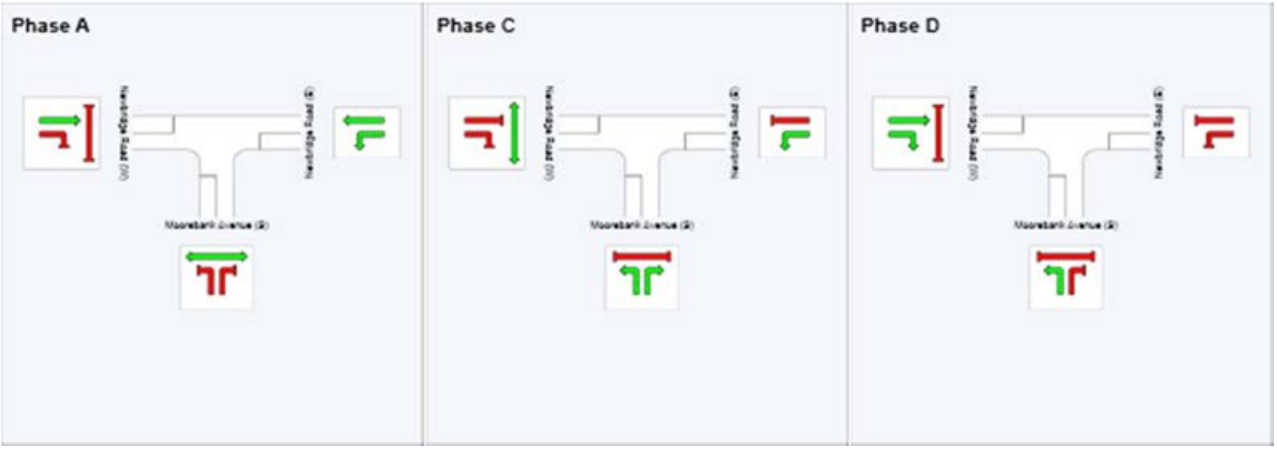
Site: I-06 2030 BASE PM

Network: 2030 BASE PM

Newbridge Road / Moorebank Avenue
2030 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	44	76
Green Time (sec)	38	26	34
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	44	32	40
Phase Split	38 %	28 %	34 %



AM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-06 2030 MIMT AM

Network: 2030 MIMT AM

Newbridge Road / Moorebank Avenue
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	1535	3.1	1211	3.2	0.626	18.8	LOS B	13.1	94.1	0.56	0.82	42.4
3	R2	1412	12.0	1117	12.3	0.685	15.2	LOS B	14.3	114.5	0.43	0.69	52.3
Approach		2946	7.4	2329 N1	7.6	0.685	17.1	LOS B	14.3	114.5	0.50	0.76	47.8
East: Newbridge Road (E)													
4	L2	712	22.1	712	22.1	0.666	19.6	LOS B	9.6	82.4	0.77	0.82	51.2
5	T1	965	5.1	965	5.1	1.260	311.5	LOS F	77.3	564.9	1.00	1.91	14.7
Approach		1678	12.3	1678	12.3	1.260	187.5	LOS F	77.3	564.9	0.90	1.44	19.0
West: Newbridge Road (W)													
11	T1	1581	6.5	1581	6.5	0.852	12.4	LOS A	30.8	227.8	0.63	0.60	60.9
12	R2	874	7.7	874	7.7	1.702	689.1	LOS F	101.5	759.4	1.00	2.00	3.0
Approach		2455	6.9	2455	6.9	1.702	253.3	LOS F	101.5	759.4	0.76	1.10	14.2
All Vehicles		7079	8.4	6461 N1	9.2	1.702	151.1	LOS F	101.5	759.4	0.70	1.06	19.5

PHASING SUMMARY

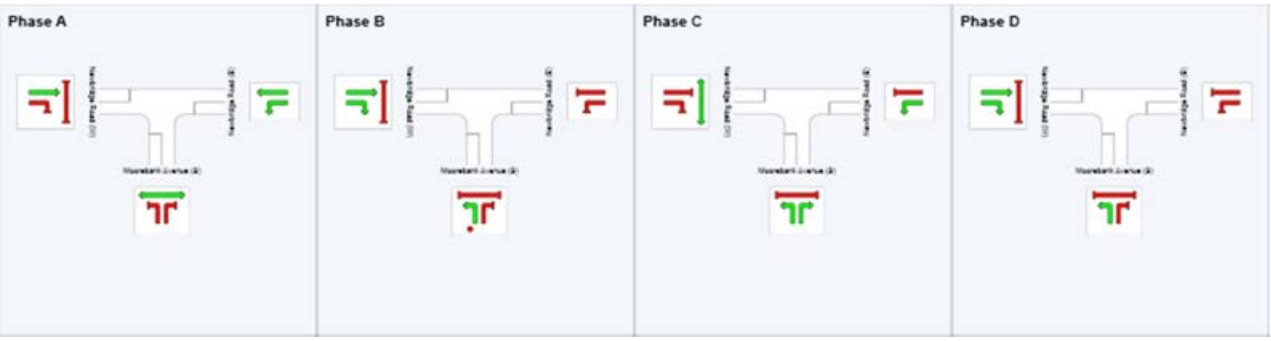
Site: I-06 2030 MIMT AM

Network: 2030 MIMT AM

Newbridge Road / Moorebank Avenue
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	33	55	116
Green Time (sec)	27	16	55	11
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	22	61	17
Phase Split	25 %	17 %	46 %	13 %



PM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-06 2030 MIMT PM

Network: 2030 MIMT PM

Newbridge Road / Moorebank Avenue
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	1002	2.9	888	3.1	0.506	22.5	LOS B	13.2	94.5	0.57	0.75	39.9
3	R2	975	12.4	869	13.0	1.163	204.2	LOS F	16.3	130.6	1.00	1.47	15.0
Approach		1976	7.6	1757 N1	8.0	1.163	112.4	LOS F	16.3	130.6	0.78	1.10	19.7
East: Newbridge Road (E)													
4	L2	1289	8.4	1289	8.4	1.156	231.1	LOS F	88.8	687.6	1.00	1.40	12.9
5	T1	1373	4.8	1373	4.8	0.923	51.1	LOS D	42.7	311.4	1.00	1.04	43.3
Approach		2661	6.6	2661	6.6	1.156	138.2	LOS F	88.8	687.6	1.00	1.21	23.1
West: Newbridge Road (W)													
11	T1	1129	4.0	1129	4.0	0.442	9.3	LOS A	14.6	105.8	0.50	0.45	62.9
12	R2	1120	2.8	1120	2.8	1.207	239.3	LOS F	76.1	545.5	1.00	1.48	8.0
Approach		2249	3.4	2249	3.4	1.207	123.8	LOS F	76.1	545.5	0.75	0.97	22.0
All Vehicles		6887	5.8	6668 N1	6.0	1.207	126.6	LOS F	88.8	687.6	0.86	1.10	22.0

PHASING SUMMARY

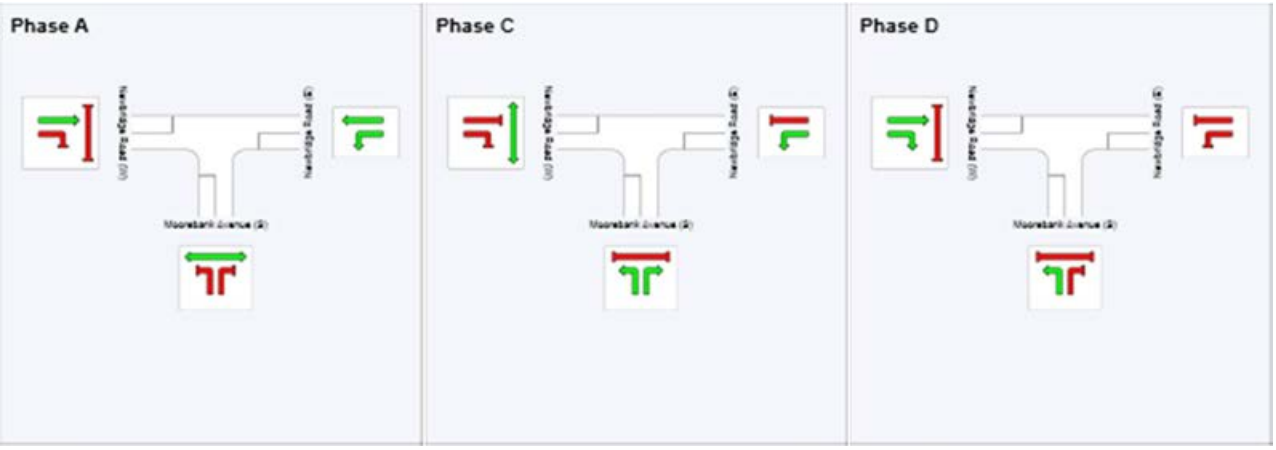
Site: I-06 2030 MIMT PM

Network: 2030 MIMT PM

Newbridge Road / Moorebank Avenue
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	44	76
Green Time (sec)	38	26	34
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	44	32	40
Phase Split	38 %	28 %	34 %



AM With Moorebank IMT – with upgrade

MOVEMENT SUMMARY

Site: I-06 2030 MIMT AM - Upgrade Option

Network: 2030 MIMT AM - Upgrade Option

Newbridge Road / Moorebank Avenue
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	1535	3.1	1170	3.2	0.604	18.4	LOS B	12.3	88.9	0.54	0.81	42.7
3	R2	1412	12.0	1077	12.1	0.697	18.1	LOS B	16.4	130.6	0.52	0.72	50.4
Approach		2946	7.4	2247 N1	7.5	0.697	18.3	LOS B	16.4	130.6	0.53	0.77	47.0
East: Newbridge Road (E)													
4	L2	712	22.1	712	22.1	0.725	21.2	LOS B	10.7	91.4	0.82	0.83	50.0
5	T1	965	5.1	965	5.1	1.260	311.5	LOS F	77.3	564.9	1.00	1.91	14.7
Approach		1678	12.3	1678	12.3	1.260	188.2	LOS F	77.3	564.9	0.92	1.45	18.9
West: Newbridge Road (W)													
11	T1	1581	6.5	1581	6.5	0.815	7.9	LOS A	23.1	171.0	0.50	0.46	63.9
12	R2	874	7.7	874	7.7	1.596	594.6	LOS F	94.4	706.0	1.00	1.95	3.5
Approach		2455	6.9	2455	6.9	1.596	216.8	LOS F	94.4	706.0	0.68	0.99	16.0
All Vehicles		7079	8.4	6379 N1	9.3	1.596	139.4	LOS F	94.4	706.0	0.69	1.03	20.7

PHASING SUMMARY

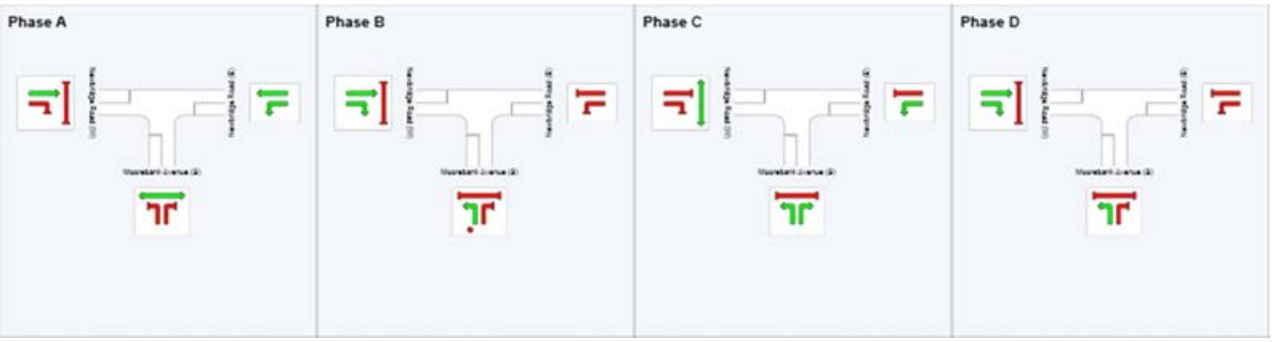
Site: I-06 2030 MIMT AM - Upgrade Option

Network: 2030 MIMT AM - Upgrade Option

Newbridge Road / Moorebank Avenue
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	33	55	113
Green Time (sec)	27	16	52	14
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	22	58	20
Phase Split	25 %	17 %	44 %	15 %



PM With Moorebank IMT – with upgrade

MOVEMENT SUMMARY

Site: I-06 2030 MIMT PM - Upgrade Option

Network: 2030 MIMT PM - Upgrade Option

Newbridge Road / Moorebank Avenue
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	1002	2.9	933	3.0	0.541	23.7	LOS B	14.6	105.1	0.60	0.76	39.1
3	R2	975	12.4	911	12.8	1.090	140.8	LOS F	16.3	130.6	1.00	1.29	19.7
Approach		1976	7.6	1845 N1	7.8	1.090	81.5	LOS F	16.3	130.6	0.80	1.02	24.4
East: Newbridge Road (E)													
4	L2	1289	8.4	1289	8.4	1.111	193.4	LOS F	81.2	628.5	1.00	1.32	14.9
5	T1	1373	4.8	1373	4.8	0.923	51.1	LOS D	42.7	311.4	1.00	1.04	43.3
Approach		2661	6.6	2661	6.6	1.111	120.0	LOS F	81.2	628.5	1.00	1.17	25.3
West: Newbridge Road (W)													
11	T1	1129	4.0	1129	4.0	0.460	10.9	LOS A	15.8	114.2	0.54	0.49	61.8
12	R2	1120	2.8	1120	2.8	1.288	312.6	LOS F	89.6	642.7	1.00	1.63	6.3
Approach		2249	3.4	2249	3.4	1.288	161.1	LOS F	89.6	642.7	0.77	1.06	18.3
All Vehicles		6887	5.8	6756 N1	6.0	1.288	123.2	LOS F	89.6	642.7	0.87	1.09	22.3

PHASING SUMMARY

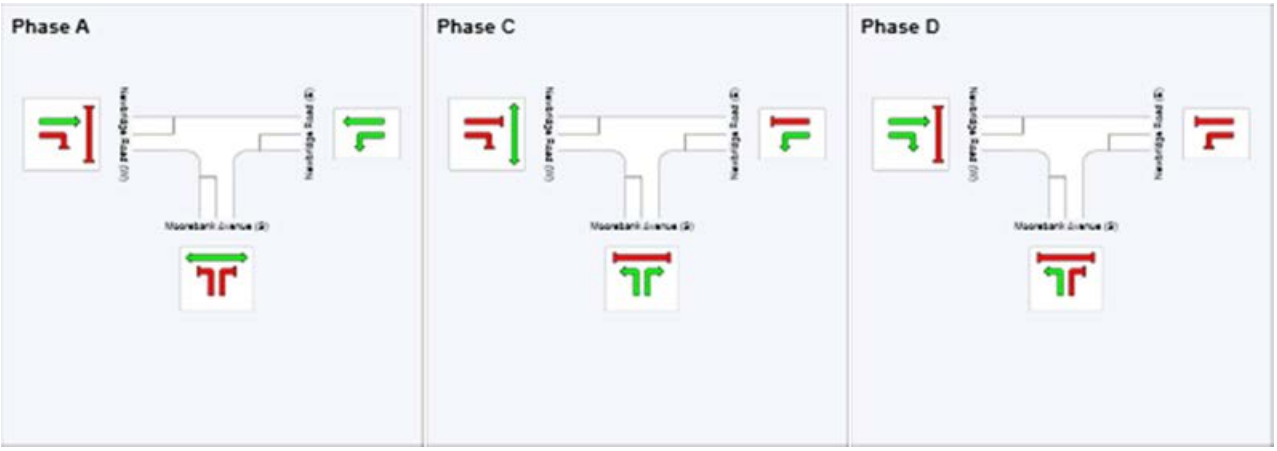
Site: I-06 2030 MIMT PM - Upgrade Option

Network: 2030 MIMT PM - Upgrade Option

Newbridge Road / Moorebank Avenue
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	44	79
Green Time (sec)	38	29	31
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	44	35	37
Phase Split	38 %	30 %	32 %



I-07 Intersection of Moorebank Avenue and Heathcote Road

AM BASE

MOVEMENT SUMMARY

Site: I-07 2030 BASE AM — **Network: 2030 BASE AM**

Moorebank Avenue / Heathcote Road
2030 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
2	T1	1920	5.6	1834	5.7	1.192	219.3	LOS F	60.0	440.6	1.00	1.95	4.4
3	R2	24	21.7	23	21.9	0.213	72.1	LOS F	1.5	12.4	0.98	0.71	30.5
Approach		1944	5.8	1857 N1	5.9	1.192	217.5	LOS F	60.0	440.6	1.00	1.93	4.6
East: Heathcote Road (E)													
4	L2	29	57.1	29	57.1	1.385	431.6	LOS F	92.8	700.6	1.00	1.86	7.5
6	R2	953	6.0	953	6.0	1.385	430.9	LOS F	95.9	705.9	1.00	1.87	7.5
Approach		982	7.5	982	7.5	1.385	430.9	LOS F	95.9	705.9	1.00	1.87	7.5
North: Moorebank Avenue (N)													
7	L2	794	7.8	632	8.7	0.393	10.7	LOS A	12.7	95.4	0.54	0.71	51.4
8	T1	783	16.9	631	18.6	0.360	21.2	LOS B	12.2	99.1	0.65	0.57	13.2
Approach		1577	12.3	1263 N1	13.6	0.393	15.9	LOS B	12.7	99.1	0.59	0.64	41.5
All Vehicles		4503	8.5	4102 N1	9.3	1.385	206.5	LOS F	95.9	705.9	0.88	1.52	8.5

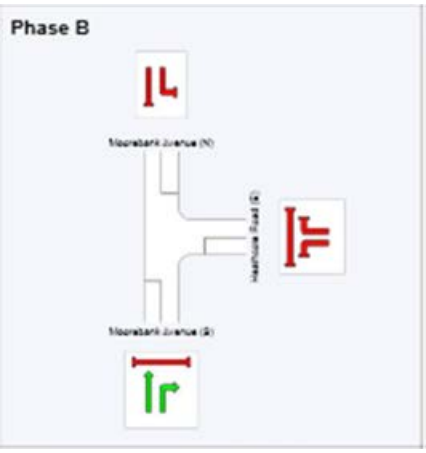
PHASING SUMMARY

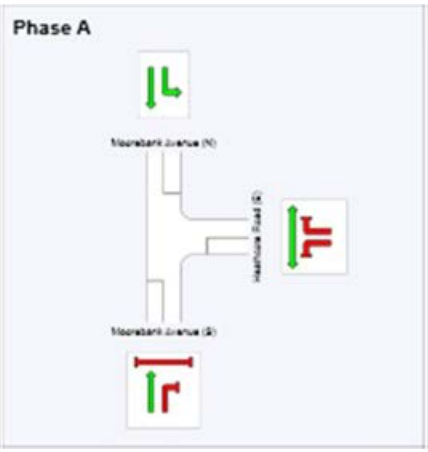
Site: I-07 2030 BASE AM — **Network: 2030 BASE AM**

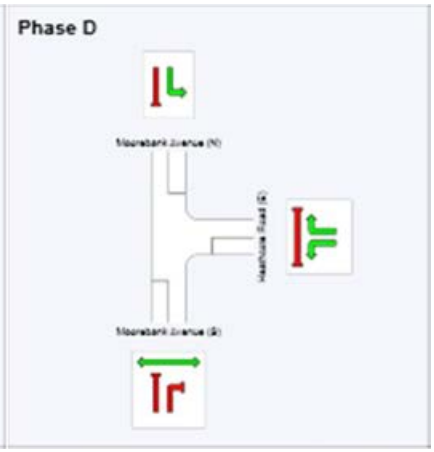
Moorebank Avenue / Heathcote Road
2030 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	15	88
Green Time (sec)	9	67	39
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	73	45
Phase Split	11 %	55 %	34 %







PM BASE

MOVEMENT SUMMARY

Site: I-07 2030 BASE PM

Network: 2030 BASE PM

Moorebank Avenue / Heathcote Road
2030 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	1163	8.3	1163	8.3	0.910	45.1	LOS D	42.9	321.6	0.91	1.05	16.7
3	R2	48	8.7	48	8.7	0.401	64.7	LOS E	2.8	20.9	1.00	0.74	32.2
Approach		1212	8.3	1212	8.3	0.910	45.9	LOS D	42.9	321.6	0.92	1.04	18.0
East: Heathcote Road (E)													
4	L2	76	19.4	76	19.4	1.415	430.1	LOS F	92.9	690.4	1.00	1.99	7.5
6	R2	811	5.1	811	5.1	1.415	429.4	LOS F	92.9	690.4	1.00	1.99	7.5
Approach		886	6.3	886	6.3	1.415	429.5	LOS F	92.9	690.4	1.00	1.99	7.5
North: Moorebank Avenue (N)													
7	L2	883	3.6	796	3.6	0.389	7.5	LOS A	5.4	39.0	0.24	0.61	53.8
8	T1	1454	4.1	1310	4.2	0.667	6.3	LOS A	11.9	86.2	0.35	0.32	29.3
Approach		2337	3.9	2106 N1	4.0	0.667	6.7	LOS A	11.9	86.2	0.31	0.43	48.6
All Vehicles		4435	5.6	4204 N1	5.9	1.415	107.1	LOS F	92.9	690.4	0.63	0.93	14.2

PHASING SUMMARY

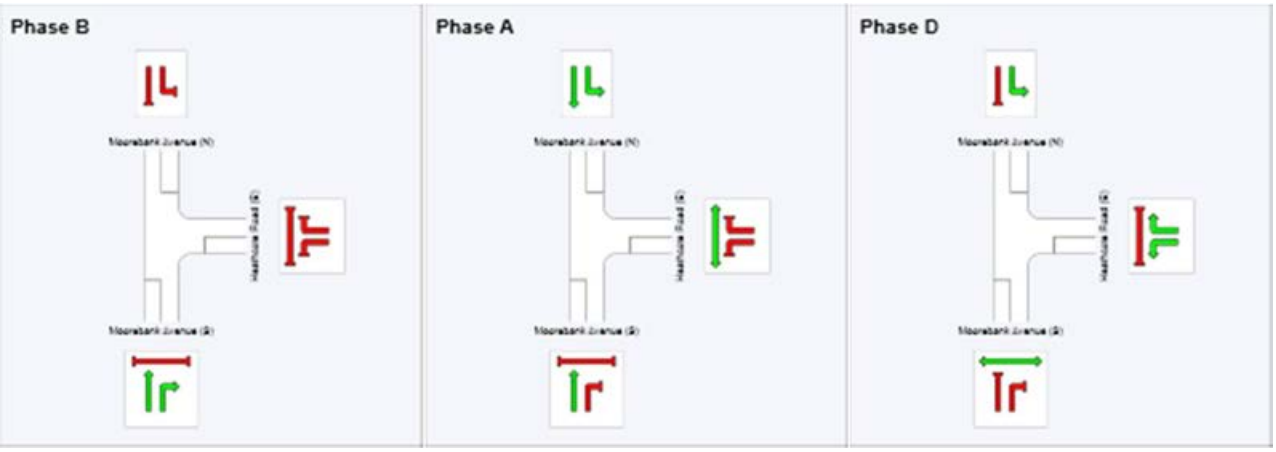
Site: I-07 2030 BASE PM

Network: 2030 BASE PM

Moorebank Avenue / Heathcote Road
2030 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	14	80
Green Time (sec)	8	60	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	66	36
Phase Split	12 %	57 %	31 %



AM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-07 2030 MIMT AM

Network: 2030 MIMT AM

Moorebank Avenue / Heathcote Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	1960	7.6	1744	7.7	1.149	182.7	LOS F	57.6	440.6	1.00	1.80	5.2
3	R2	23	18.2	21	18.5	0.186	71.8	LOS F	1.3	10.8	0.98	0.71	30.6
Approach		1983	7.7	1765 N1	7.8	1.149	181.4	LOS F	57.6	440.6	1.00	1.78	5.4
East: Heathcote Road (E)													
4	L2	29	57.1	29	57.1	1.450	489.4	LOS F	104.2	784.8	1.00	1.96	6.7
6	R2	952	5.9	952	5.9	1.450	489.4	LOS F	104.2	784.8	1.00	1.96	6.7
Approach		981	7.4	981	7.4	1.450	489.4	LOS F	104.2	784.8	1.00	1.96	6.7
North: Moorebank Avenue (N)													
7	L2	795	7.9	613	9.0	0.380	10.7	LOS A	12.2	91.8	0.54	0.71	51.4
8	T1	819	19.7	644	22.1	0.383	21.5	LOS B	12.7	109.0	0.66	0.58	13.1
Approach		1614	13.9	1257 N1	15.7	0.383	16.2	LOS B	12.7	109.0	0.60	0.64	41.0
All Vehicles		4578	9.8	4003 N1	11.2	1.450	205.0	LOS F	104.2	784.8	0.87	1.47	8.6

PHASING SUMMARY

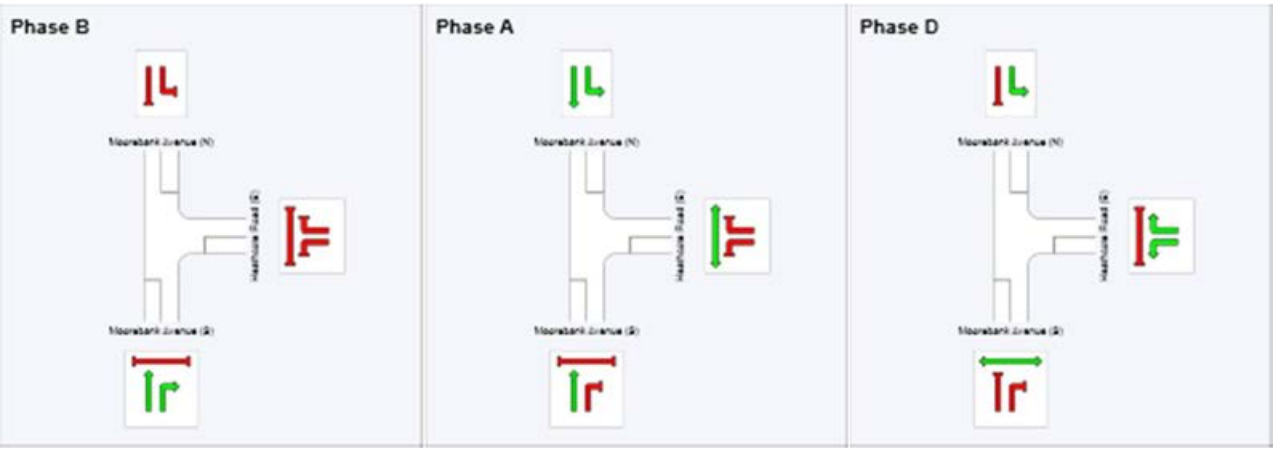
Site: I-07 2030 MIMT AM

Network: 2030 MIMT AM

Moorebank Avenue / Heathcote Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	15	88
Green Time (sec)	9	67	39
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	73	45
Phase Split	11 %	55 %	34 %



PM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-07 2030 MIMT PM

Network: 2030 MIMT PM

Moorebank Avenue / Heathcote Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	1194	10.1	1194	10.1	0.957	65.3	LOS E	53.1	412.9	0.98	1.23	12.6
3	R2	48	8.7	48	8.7	0.401	64.7	LOS E	2.8	20.9	1.00	0.74	32.2
Approach		1243	10.1	1243	10.1	0.957	65.3	LOS E	53.1	412.9	0.98	1.21	13.9
East: Heathcote Road (E)													
4	L2	76	19.4	76	19.4	1.415	430.1	LOS F	93.1	692.3	1.00	1.99	7.5
6	R2	812	5.2	812	5.2	1.415	429.3	LOS F	93.1	692.3	1.00	1.99	7.5
Approach		887	6.4	887	6.4	1.415	429.4	LOS F	93.1	692.3	1.00	1.99	7.5
North: Moorebank Avenue (N)													
7	L2	884	3.7	750	3.7	0.347	7.4	LOS A	4.9	35.5	0.23	0.61	53.8
8	T1	1499	7.0	1272	7.1	0.671	6.3	LOS A	11.6	88.9	0.35	0.32	29.3
Approach		2384	5.8	2022 N1	5.9	0.671	6.7	LOS A	11.6	88.9	0.31	0.43	48.4
All Vehicles		4514	7.1	4152 N1	7.7	1.415	114.6	LOS F	93.1	692.3	0.66	1.00	13.4

PHASING SUMMARY

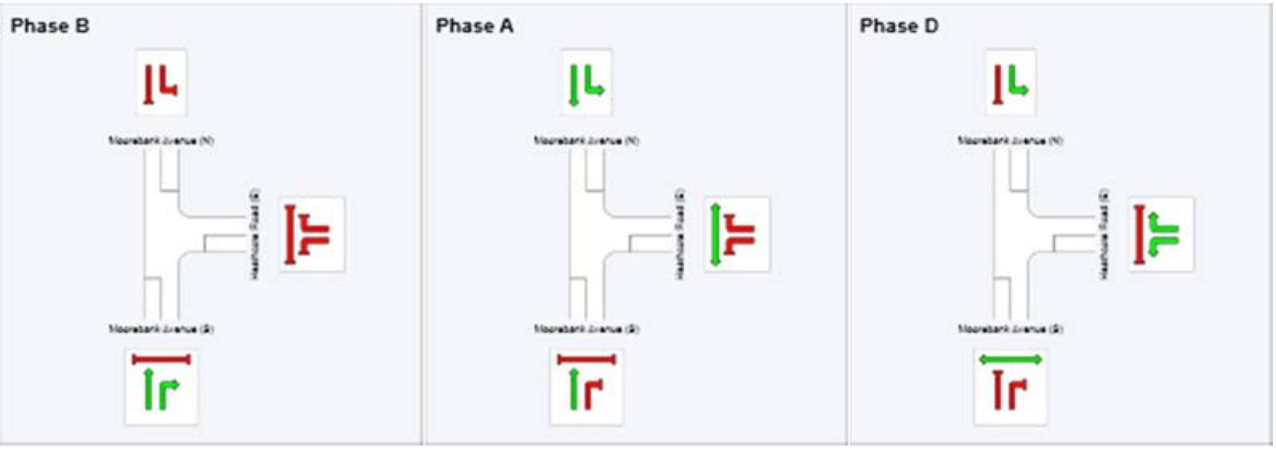
Site: I-07 2030 MIMT PM

Network: 2030 MIMT PM

Moorebank Avenue / Heathcote Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	14	80
Green Time (sec)	8	60	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	66	36
Phase Split	12 %	57 %	31 %



AM With Moorebank IMT – with upgrade

MOVEMENT SUMMARY

Site: I-07 2030 MIMT AM - Upgrade Option

Network: 2030 MIMT AM - Upgrade Option

Moorebank Avenue / Heathcote Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
2	T1	1960	7.6	1821	7.6	1.231	253.8	LOS F	57.6	440.6	1.00	2.08	3.9
3	R2	23	18.2	22	18.4	0.194	71.8	LOS F	1.4	11.2	0.98	0.71	30.7
Approach		1983	7.7	1843 N1	7.8	1.231	251.6	LOS F	57.6	440.6	1.00	2.07	4.1
East: Heathcote Road (E)													
4	L2	29	57.1	29	57.1	1.299	384.7	LOS F	62.1	472.5	1.00	1.71	8.3
6	R2	952	5.9	952	5.9	1.299	371.3	LOS F	62.1	472.5	1.00	1.73	8.5
Approach		981	7.4	981	7.4	1.299	371.7	LOS F	62.1	472.5	1.00	1.73	8.5
North: Moorebank Avenue (N)													
7	L2	795	7.9	631	8.8	0.391	10.7	LOS A	12.8	96.1	0.54	0.71	51.4
8	T1	819	19.7	661	21.8	0.392	21.6	LOS B	13.1	112.2	0.66	0.58	13.3
Approach		1614	13.9	1292 N1	15.5	0.392	16.3	LOS B	13.1	112.2	0.60	0.64	41.0
All Vehicles		4578	9.8	4115 N1	10.9	1.299	206.4	LOS F	62.1	472.5	0.88	1.54	8.5

PHASING SUMMARY

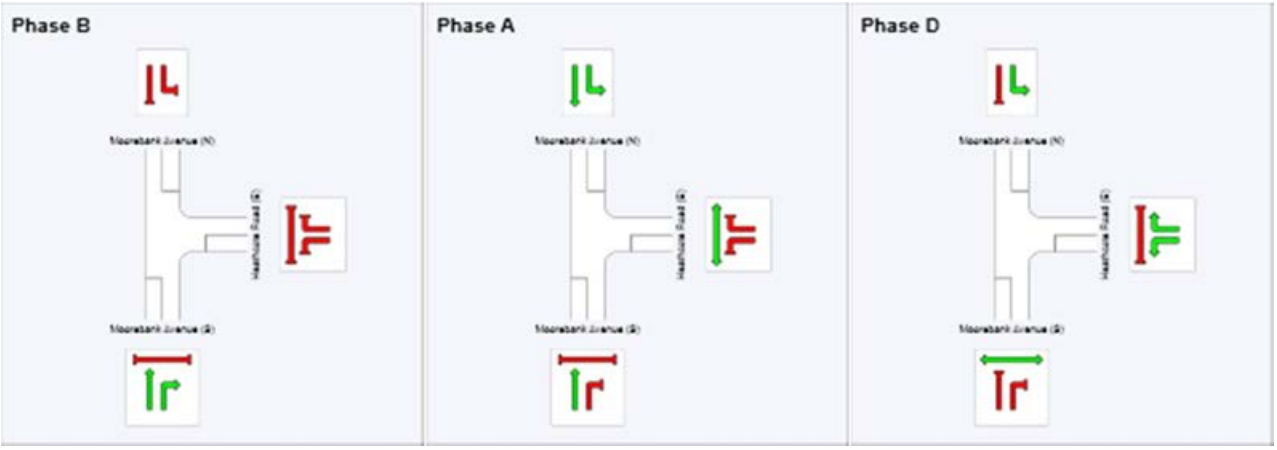
Site: I-07 2030 MIMT AM - Upgrade Option

Network: 2030 MIMT AM - Upgrade Option

Moorebank Avenue / Heathcote Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	15	88
Green Time (sec)	9	67	39
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	73	45
Phase Split	11 %	55 %	34 %



PM With Moorebank IMT – with upgrade

MOVEMENT SUMMARY

Site: I-07 2030 MIMT PM - Upgrade Option

Network: 2030 MIMT PM - Upgrade Option

Moorebank Avenue / Heathcote Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
2	T1	1194	10.1	1194	10.1	0.906	42.8	LOS D	44.4	345.3	0.91	1.03	17.5
3	R2	48	8.7	48	8.7	0.401	64.7	LOS E	2.8	20.9	1.00	0.74	32.3
Approach		1243	10.1	1243	10.1	0.906	43.6	LOS D	44.4	345.3	0.91	1.02	18.8
East: Heathcote Road (E)													
4	L2	76	19.4	76	19.4	1.284	329.2	LOS F	48.5	364.3	1.00	1.73	9.4
6	R2	812	5.2	812	5.2	1.284	318.9	LOS F	48.5	364.3	1.00	1.75	9.7
Approach		887	6.4	887	6.4	1.284	319.8	LOS F	48.5	364.3	1.00	1.75	9.7
North: Moorebank Avenue (N)													
7	L2	884	3.7	745	3.8	0.344	7.4	LOS A	4.9	35.4	0.23	0.61	53.8
8	T1	1499	7.0	1265	7.3	0.669	6.3	LOS A	11.5	88.2	0.35	0.32	29.8
Approach		2384	5.8	2010 N1	6.0	0.669	6.7	LOS A	11.5	88.2	0.31	0.42	48.5
All Vehicles		4514	7.1	4140 N1	7.7	1.284	84.9	LOS F	48.5	364.3	0.64	0.89	16.8

PHASING SUMMARY

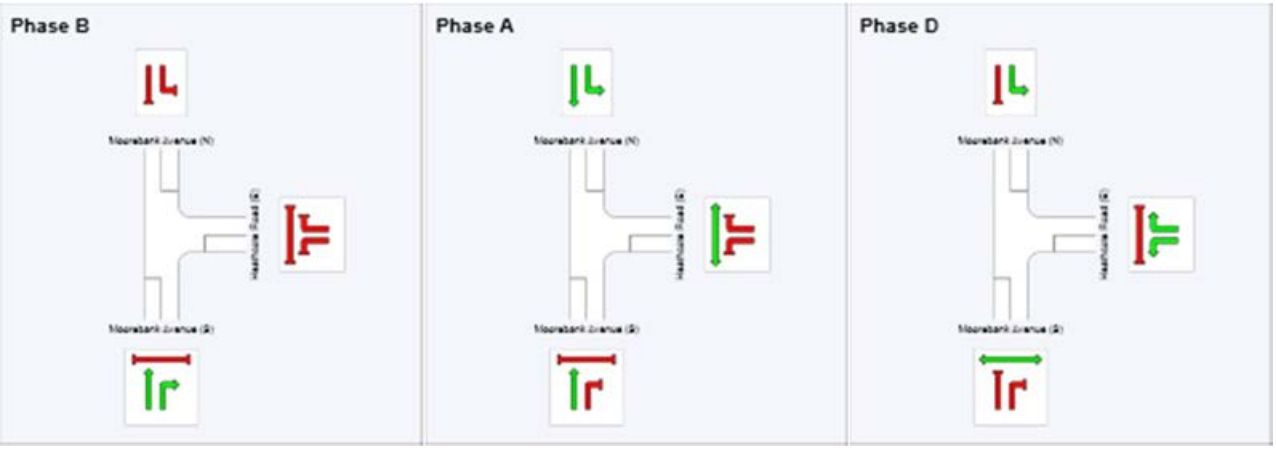
Site: I-07 2030 MIMT PM - Upgrade Option

Network: 2030 MIMT PM - Upgrade Option

Moorebank Avenue / Heathcote Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	14	80
Green Time (sec)	8	60	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	66	36
Phase Split	12 %	57 %	31 %



I-08 Intersection of Moorebank Avenue and Industry Park Access

AM BASE

MOVEMENT SUMMARY

Site: I-08 2030 BASE AM — **Network: 2030 BASE AM**

Moorebank Avenue / Industry Park Access
2030 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	88	1.2	88	1.2	0.053	6.1	LOS A	0.4	2.8	0.12	0.58	43.1
2	T1	1899	4.9	1899	4.9	1.215	256.5	LOS F	156.8	1144.3	1.00	2.09	6.2
Approach		1987	4.8	1987	4.8	1.215	245.3	LOS F	156.8	1144.3	0.96	2.02	6.6
North: Moorebank Avenue (N)													
8	T1	695	16.2	558	17.6	0.193	2.5	LOS A	3.6	29.1	0.22	0.19	56.9
9	R2	65	38.7	54	41.1	1.017	119.3	LOS F	4.7	44.9	1.00	1.06	11.5
Approach		760	18.1	612 N1	19.6	1.017	12.7	LOS A	4.7	44.9	0.29	0.27	45.9
West: Industry Park Access (W)													
10	L2	34	62.5	34	62.5	0.415	64.9	LOS E	2.3	24.3	0.95	0.73	9.6
12	R2	56	71.7	56	71.7	0.392	67.8	LOS E	2.6	29.5	0.98	0.73	19.9
Approach		89	68.2	89	68.2	0.415	66.7	LOS E	2.6	29.5	0.97	0.73	16.7
All Vehicles		2837	10.4	2688 N1	10.9	1.215	186.5	LOS F	156.8	1144.3	0.81	1.58	9.1

PHASING SUMMARY

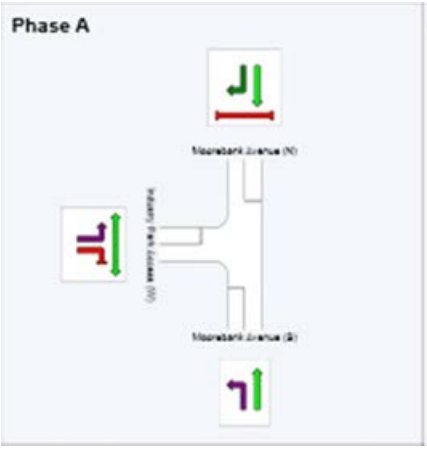
Site: I-08 2030 BASE AM — **Network: 2030 BASE AM**

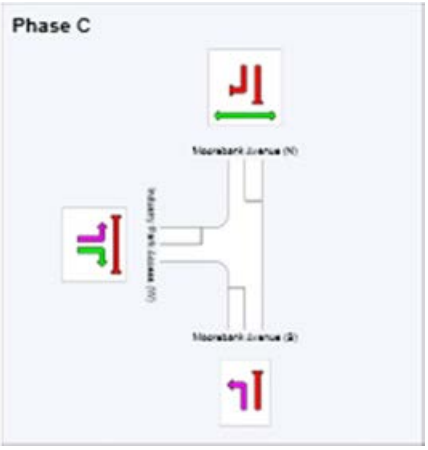
Moorebank Avenue / Industry Park Access
2030 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase times specified by the user
Sequence: TCS 3736 AM - Modified 2
Movement Class: All Movement Classes
Input Sequence: A, C
Output Sequence: A, C

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	116
Green Time (sec)	110	11
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	116	17
Phase Split	87 %	13 %





PM BASE

MOVEMENT SUMMARY

Site: I-08 2030 BASE PM

Network: 2030 BASE PM

Moorebank Avenue / Industry Park Access
2030 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 65 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	8	12.5	8	12.5	0.007	6.6	LOS A	0.0	0.3	0.22	0.58	42.7
2	T1	1133	7.6	1133	7.6	0.440	4.8	LOS A	7.9	59.1	0.48	0.42	51.7
Approach		1141	7.7	1141	7.7	0.440	4.8	LOS A	7.9	59.1	0.47	0.43	51.6
North: Moorebank Avenue (N)													
8	T1	1527	3.9	1366	3.8	0.518	5.2	LOS A	10.4	75.0	0.52	0.47	54.0
9	R2	25	62.5	22	62.1	0.124	13.9	LOS A	0.4	3.8	0.48	0.67	33.2
Approach		1553	4.8	1388 N1	4.7	0.518	5.3	LOS A	10.4	75.0	0.52	0.47	53.6
West: Industry Park Access (W)													
10	L2	34	15.6	34	15.6	0.065	3.6	LOS A	0.3	2.0	0.34	0.42	26.7
12	R2	187	9.0	187	9.0	0.436	32.4	LOS C	2.9	22.2	0.97	0.76	28.2
Approach		221	10.0	221	10.0	0.436	28.0	LOS B	2.9	22.2	0.87	0.71	28.1
All Vehicles		2915	6.3	2750 N1	6.7	0.518	6.9	LOS A	10.4	75.0	0.53	0.47	49.3

PHASING SUMMARY

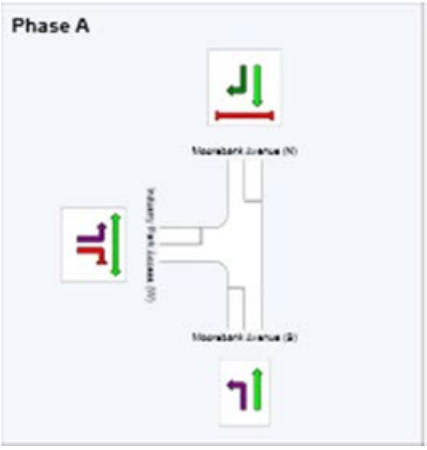
Site: I-08 2030 BASE PM

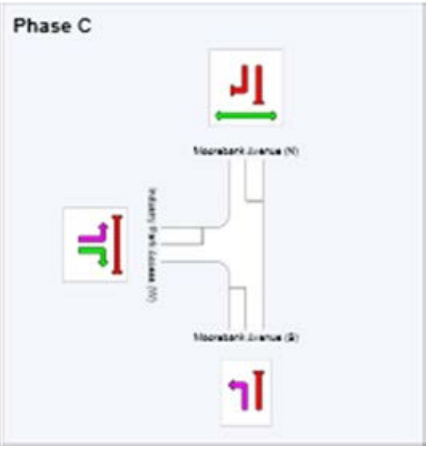
Network: 2030 BASE PM

Moorebank Avenue / Industry Park Access
2030 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 65 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	51
Green Time (sec)	45	8
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	51	14
Phase Split	78 %	22 %





AM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-08 2030 MIMT AM

Network: 2030 MIMT AM

Moorebank Avenue / Industry Park Access
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	91	3.6	91	3.6	0.056	6.1	LOS A	0.4	2.7	0.12	0.58	43.1
2	T1	1941	7.0	1941	7.0	1.278	313.2	LOS F	175.3	1335.4	1.00	2.29	5.2
Approach		2032	6.8	2032	6.8	1.278	299.5	LOS F	175.3	1335.4	0.96	2.22	5.5
North: Moorebank Avenue (N)													
8	T1	730	19.4	573	21.5	0.207	2.5	LOS A	3.8	32.5	0.22	0.20	56.9
9	R2	65	38.7	52	41.5	0.991	105.9	LOS F	4.3	41.0	1.00	1.02	12.6
Approach		796	21.0	625 N1	23.2	0.991	11.1	LOS A	4.3	41.0	0.29	0.27	47.2
West: Industry Park Access (W)													
10	L2	34	62.5	34	62.5	0.415	64.9	LOS E	2.3	24.3	0.95	0.73	9.6
12	R2	58	72.9	58	72.9	0.419	68.1	LOS E	2.7	32.0	0.98	0.74	19.8
Approach		92	69.1	92	69.1	0.419	66.9	LOS E	2.7	32.0	0.97	0.73	16.8
All Vehicles		2919	12.7	2749 N1	13.4	1.278	226.1	LOS F	175.3	1335.4	0.81	1.72	7.8

PHASING SUMMARY

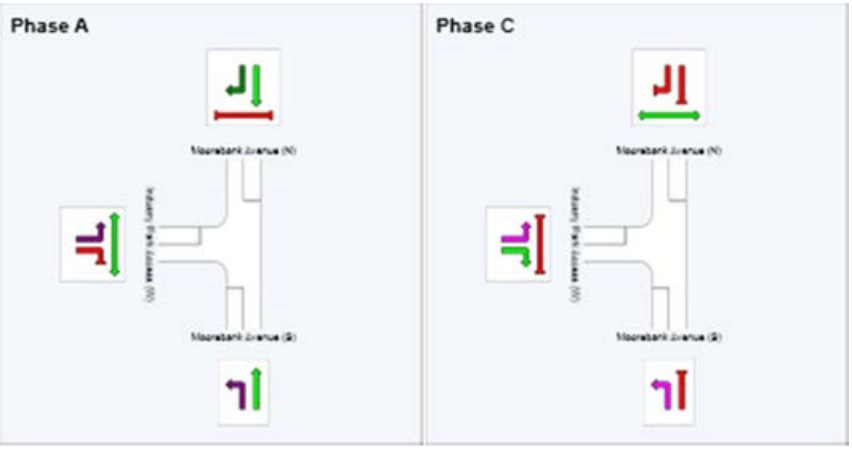
Site: I-08 2030 MIMT AM

Network: 2030 MIMT AM

Moorebank Avenue / Industry Park Access
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	116
Green Time (sec)	110	11
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	116	17
Phase Split	87 %	13 %



PM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-08 2030 MIMT PM

Network: 2030 MIMT PM

Moorebank Avenue / Industry Park Access
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	11	33.8	11	33.8	0.011	6.7	LOS A	0.1	0.6	0.14	0.56	42.9
2	T1	1164	9.5	1164	9.5	0.445	4.4	LOS A	11.6	89.9	0.36	0.33	52.3
Approach		1175	9.7	1175	9.7	0.445	4.4	LOS A	11.6	89.9	0.36	0.33	52.2
North: Moorebank Avenue (N)													
8	T1	1573	6.7	1329	6.6	0.461	4.4	LOS A	12.4	94.3	0.37	0.33	54.7
9	R2	25	62.5	21	62.2	0.153	14.3	LOS A	0.5	5.0	0.38	0.65	32.9
Approach		1598	7.5	1350 N1	7.5	0.461	4.6	LOS A	12.4	94.3	0.37	0.34	54.3
West: Industry Park Access (W)													
10	L2	34	15.6	34	15.6	0.087	3.6	LOS A	0.4	2.9	0.25	0.37	26.8
12	R2	190	10.4	190	10.4	0.496	56.2	LOS D	5.3	40.8	0.98	0.78	22.4
Approach		224	11.2	224	11.2	0.496	48.3	LOS D	5.3	40.8	0.87	0.72	22.6
All Vehicles		2997	8.7	2749 N1	9.5	0.496	8.1	LOS A	12.4	94.3	0.40	0.37	48.1

PHASING SUMMARY

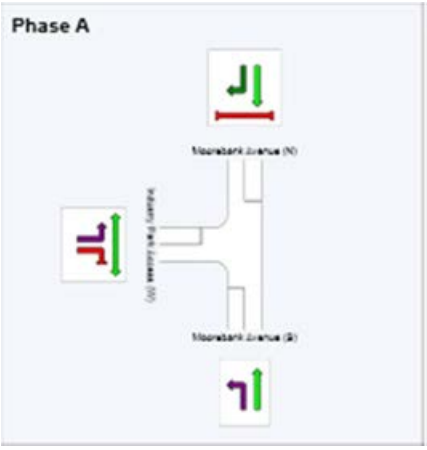
Site: I-08 2030 MIMT PM

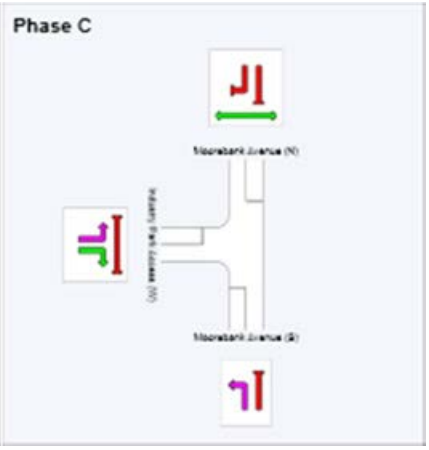
Network: 2030 MIMT PM

Moorebank Avenue / Industry Park Access
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	97
Green Time (sec)	91	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	97	19
Phase Split	84 %	16 %





AM With Moorebank IMT – with upgrade

MOVEMENT SUMMARY

Site: I-08 2030 MIMT AM - Upgrade Option

Network: 2030 MIMT AM - Upgrade Option

Moorebank Avenue / Industry Park Access
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	91	3.6	91	3.6	0.056	6.2	LOS A	0.4	3.0	0.12	0.58	43.1
2	T1	1941	7.0	1941	7.0	1.223	262.0	LOS F	163.0	1241.3	1.00	2.12	6.1
Approach		2032	6.8	2032	6.8	1.223	250.6	LOS F	163.0	1241.3	0.96	2.05	6.5
North: Moorebank Avenue (N)													
8	T1	730	19.4	590	21.3	0.204	1.5	LOS A	3.1	26.2	0.18	0.15	58.0
9	R2	65	38.7	54	41.2	1.018	119.6	LOS F	4.8	45.0	1.00	1.06	11.5
Approach		796	21.0	643 N1	23.0	1.018	11.4	LOS A	4.8	45.0	0.25	0.23	47.0
West: Industry Park Access (W)													
10	L2	34	62.5	34	62.5	0.591	71.7	LOS F	2.4	25.5	1.00	0.82	8.9
12	R2	58	72.9	58	72.9	0.768	78.8	LOS F	3.1	35.7	1.00	0.90	18.3
Approach		92	69.1	92	69.1	0.768	76.2	LOS F	3.1	35.7	1.00	0.87	15.6
All Vehicles		2919	12.7	2767 N1	13.3	1.223	189.2	LOS F	163.0	1241.3	0.80	1.59	9.1

PHASING SUMMARY

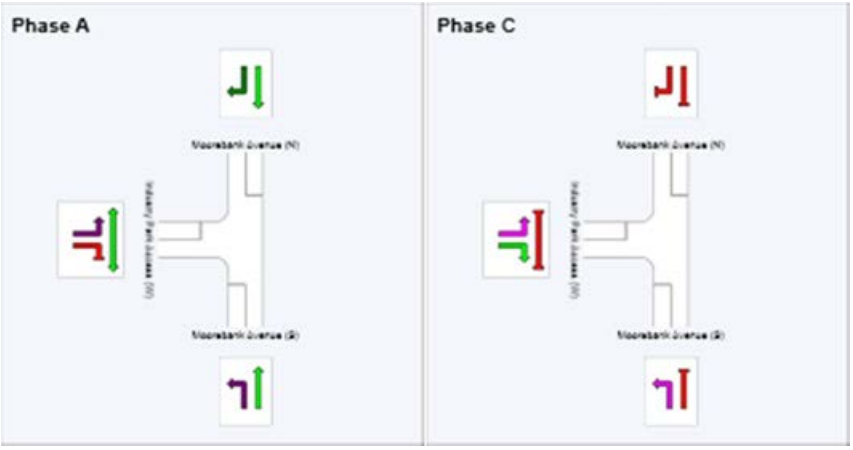
Site: I-08 2030 MIMT AM - Upgrade Option

Network: 2030 MIMT AM - Upgrade Option

Moorebank Avenue / Industry Park Access
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	121
Green Time (sec)	115	6
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	121	12
Phase Split	91 %	9 %



I-09 Intersection of Moorebank Avenue and Church Road

AM BASE

MOVEMENT SUMMARY

Site: I-09 2030 BASE AM

Moorebank Avenue / Church Road
2030 BASE AM PEAK 7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	2101	6.4	0.737	4.3	LOS A	11.1	82.6	0.18	0.11	55.5
3	R2	282	7.8	0.737	25.5	LOS B	11.1	82.6	1.00	0.60	40.4
Approach		2383	6.6	0.921	6.8	NA	11.1	82.6	0.28	0.17	53.1
East: Church Road (E)											
4	L2	200	14.2	0.243	7.1	LOS A	1.0	7.6	0.48	0.70	47.6
6	R2	7	0.0	0.945	845.2	LOS F	2.5	17.2	1.00	1.07	4.0
Approach		207	13.7	0.945	36.9	LOS C	2.5	17.2	0.50	0.71	34.2
North: Moorebank Avenue (N)											
7	L2	37	0.0	0.219	5.6	LOS A	0.0	0.0	0.00	0.06	57.7
8	T1	717	21.1	0.219	0.0	LOS A	0.0	0.0	0.00	0.03	59.6
Approach		754	20.1	0.219	0.3	NA	0.0	0.0	0.00	0.03	59.5
All Vehicles		3344	10.1	0.945	7.2	NA	11.1	82.6	0.23	0.17	52.5

PM BASE

MOVEMENT SUMMARY

Site: I-09 2030 BASE PM

Moorebank Avenue / Church Road
2030 BASE PM PEAK 4:30 pm - 5:30 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1177	11.9	0.598	3.2	LOS A	5.8	44.3	0.08	0.05	56.7
3	R2	108	11.7	0.598	44.4	LOS D	5.8	44.3	1.00	0.68	33.1
Approach		1285	11.9	0.598	6.7	NA	5.8	44.3	0.16	0.11	53.4
East: Church Road (E)											
4	L2	424	4.5	1.291	324.8	LOS F	78.0	566.9	1.00	4.91	9.2
6	R2	1	0.0	0.124	374.1	LOS F	0.3	2.1	0.99	1.00	8.2
Approach		425	4.5	1.291	324.9	LOS F	78.0	566.9	1.00	4.90	9.2
North: Moorebank Avenue (N)											
7	L2	14	7.7	0.899	6.8	LOS A	0.0	0.0	0.00	0.01	55.6
8	T1	1687	4.6	0.899	1.4	LOS A	0.0	0.0	0.00	0.00	57.2
Approach		1701	4.6	0.899	1.5	NA	0.0	0.0	0.00	0.00	57.2
All Vehicles		3412	7.3	1.291	43.7	NA	78.0	566.9	0.18	0.65	33.7

AM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-09 2030 MIMT AM

Moorebank Avenue / Church Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	2143	8.3	0.802	9.6	LOS A	12.7	97.3	0.15	0.11	51.3
3	R2	285	8.9	0.802	32.3	LOS C	12.7	97.3	1.00	0.74	37.4
Approach		2429	8.3	1.002	12.2	NA	12.7	97.3	0.25	0.18	49.1
East: Church Road (E)											
4	L2	205	16.2	0.272	7.7	LOS A	1.1	9.1	0.52	0.75	47.1
6	R2	7	0.0	0.945	768.4	LOS F	2.2	15.7	1.00	1.06	4.3
Approach		212	15.6	0.945	34.2	LOS C	2.2	15.7	0.54	0.76	35.0
North: Moorebank Avenue (N)											
7	L2	37	0.0	0.241	5.6	LOS A	0.0	0.0	0.00	0.05	57.7
8	T1	760	24.8	0.241	0.0	LOS A	0.0	0.0	0.00	0.03	59.6
Approach		797	23.6	0.241	0.3	NA	0.0	0.0	0.00	0.03	59.5
All Vehicles		3438	12.3	1.002	10.8	NA	12.7	97.3	0.21	0.18	49.8

PM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-09 2030 MIMT PM

Moorebank Avenue / Church Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1201	13.1	0.678	0.2	LOS A	0.0	0.0	0.00	0.00	59.6
3	R2	113	15.1	0.808	73.2	LOS F	4.3	35.7	0.98	1.27	25.7
Approach		1314	13.3	0.808	6.5	NA	4.3	35.7	0.08	0.11	53.4
East: Church Road (E)											
4	L2	429	5.5	1.447	458.2	LOS F	98.3	729.4	1.00	5.64	6.9
6	R2	1	0.0	0.212	735.6	LOS F	0.5	3.5	1.00	1.00	4.5
Approach		430	5.5	1.447	458.9	LOS F	98.3	729.4	1.00	5.63	6.9
North: Moorebank Avenue (N)											
7	L2	14	7.7	0.955	8.2	LOS A	0.0	0.0	0.00	0.01	53.0
8	T1	1737	7.3	0.955	3.1	LOS A	0.0	0.0	0.00	0.00	54.3
Approach		1751	7.3	0.955	3.2	NA	0.0	0.0	0.00	0.00	54.2
All Vehicles		3494	9.3	1.447	60.5	NA	98.3	729.4	0.15	0.74	28.9

AM With Moorebank IMT – with upgrade

MOVEMENT SUMMARY

Site: I-09 2030 MIMT AM - Upgrade Option

Moorebank Avenue / Church Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	2143	8.3	0.802	9.5	LOS A	12.7	97.3	0.15	0.11	51.3
3	R2	285	8.9	0.802	32.3	LOS C	12.7	97.3	1.00	0.74	37.3
Approach		2429	8.3	1.002	12.2	NA	12.7	97.3	0.25	0.18	49.0
East: Church Road (E)											
4	L2	205	16.2	0.272	7.7	LOS A	1.1	9.1	0.52	0.75	47.1
Approach		205	16.2	0.272	7.7	LOS A	1.1	9.1	0.52	0.75	47.1
North: Moorebank Avenue (N)											
7	L2	37	0.0	0.241	5.6	LOS A	0.0	0.0	0.00	0.05	57.7
8	T1	760	24.8	0.241	0.0	LOS A	0.0	0.0	0.00	0.03	59.6
Approach		797	23.6	0.241	0.3	NA	0.0	0.0	0.00	0.03	59.5
All Vehicles		3430	12.3	1.002	9.2	NA	12.7	97.3	0.21	0.18	51.0

PM With Moorebank IMT – with upgrade

MOVEMENT SUMMARY

Site: I-09 2030 MIMT PM - Upgrade Option

Moorebank Avenue / Church Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	1201	13.1	0.678	0.2	LOS A	0.0	0.0	0.00	0.00	59.6
3	R2	113	15.1	0.808	73.2	LOS F	4.3	35.7	0.98	1.27	25.6
Approach		1314	13.3	0.808	6.5	NA	4.3	35.7	0.08	0.11	53.4
East: Church Road (E)											
4	L2	429	5.5	1.446	456.9	LOS F	98.1	728.1	1.00	5.63	6.9
Approach		429	5.5	1.446	456.9	LOS F	98.1	728.1	1.00	5.63	6.9
North: Moorebank Avenue (N)											
7	L2	14	7.7	0.955	8.2	LOS A	0.0	0.0	0.00	0.01	53.0
8	T1	1737	7.3	0.955	3.1	LOS A	0.0	0.0	0.00	0.00	54.3
Approach		1751	7.3	0.955	3.1	NA	0.0	0.0	0.00	0.00	54.2
All Vehicles		3493	9.3	1.446	60.1	NA	98.1	728.1	0.15	0.73	28.9

I-10 Intersection of Heathcote Road and Nuwarra Road

AM BASE

MOVEMENT SUMMARY

Site: I-10 2030 BASE AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2030 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Heathcote Road (SE)											
4	L2	249	1.3	0.173	8.2	LOS A	3.3	23.3	0.27	0.63	48.3
5	T1	2074	5.3	1.255	285.8	LOS F	161.5	1181.8	1.00	2.14	10.3
6	R2	647	3.3	1.268	267.3	LOS F	42.9	308.4	1.00	1.54	11.2
Approach		2971	4.5	1.268	258.4	LOS F	161.5	1181.8	0.94	1.88	11.1
NorthEast: Nuwarra Road (NE)											
7	L2	416	4.8	0.485	24.6	LOS B	16.5	120.4	0.71	0.78	42.4
8	T1	246	8.5	0.397	53.0	LOS D	7.1	53.4	0.94	0.75	26.2
9	R2	508	5.8	1.436	477.0	LOS F	49.8	365.8	1.00	1.93	6.6
Approach		1171	6.0	1.436	227.1	LOS F	49.8	365.8	0.88	1.27	11.9
NorthWest: Heathcote Road (NW)											
10	L2	255	12.0	0.336	21.5	LOS B	7.9	60.6	0.70	0.76	42.7
11	T1	1047	11.6	0.963	56.6	LOS E	44.0	338.3	0.91	0.98	30.7
12	R2	236	6.7	0.792	75.7	LOS F	8.1	59.7	1.00	0.89	19.9
Approach		1538	10.9	0.963	53.7	LOS D	44.0	338.3	0.89	0.93	30.5
SouthWest: Wattle Grove Drive (SW)											
1	L2	639	2.1	0.849	51.8	LOS D	31.9	227.1	0.99	1.15	24.8
2	T1	543	4.5	0.817	61.8	LOS E	19.6	142.7	1.00	0.94	23.7
3	R2	263	4.0	1.277	332.6	LOS F	42.3	306.5	1.00	1.80	6.6
Approach		1445	3.4	1.277	106.7	LOS F	42.3	306.5	0.99	1.19	16.1
All Vehicles		7124	5.9	1.436	178.3	LOS F	161.5	1181.8	0.93	1.44	13.9

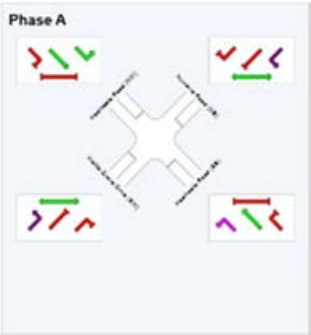
PHASING SUMMARY

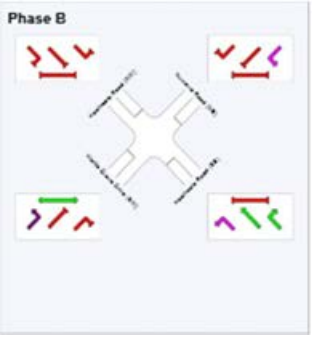
Site: I-10 2030 BASE AM

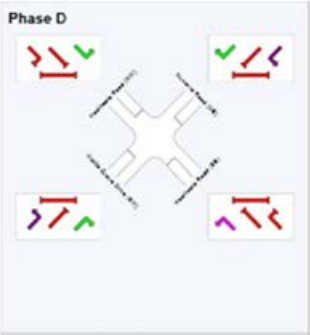
Heathcote Road / Nuwarra Road / Wattle Grove Drive
2030 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

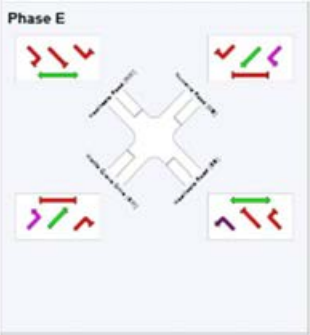
Phase Timing Results

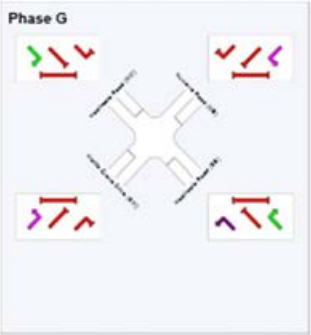
Phase	A	B	D	E	G
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	54	67	86	114
Green Time (sec)	48	7	13	22	11
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	54	13	19	28	17
Phase Split	41 %	10 %	15 %	21 %	13 %











PM BASE

MOVEMENT SUMMARY

Site: I-10 2030 BASE PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2030 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
SouthEast: Heathcote Road (SE)											
4	L2	337	2.5	0.286	15.8	LOS B	9.2	65.8	0.46	0.70	42.1
5	T1	1332	5.5	1.021	105.6	LOS F	67.7	496.4	1.00	1.28	21.6
6	R2	469	3.1	1.123	205.2	LOS F	29.5	212.0	1.00	1.36	13.8
Approach		2138	4.5	1.123	113.3	LOS F	67.7	496.4	0.92	1.21	20.1
NorthEast: Nuwarra Road (NE)											
7	L2	644	2.5	0.910	65.2	LOS E	41.3	295.4	1.00	1.16	29.0
8	T1	620	1.2	0.952	81.2	LOS F	26.6	188.3	1.00	1.09	20.2
9	R2	551	6.1	1.103	168.0	LOS F	34.2	251.7	1.00	1.27	15.5
Approach		1815	3.1	1.103	101.9	LOS F	41.3	295.4	1.00	1.17	20.7
NorthWest: Heathcote Road (NW)											
10	L2	258	6.1	0.238	22.3	LOS B	8.8	64.6	0.55	0.73	42.4
11	T1	1701	2.7	1.208	256.9	LOS F	128.4	919.5	1.00	1.92	11.3
12	R2	467	2.0	1.034	121.7	LOS F	24.0	171.3	1.00	1.13	14.2
Approach		2426	3.0	1.208	206.0	LOS F	128.4	919.5	0.95	1.64	12.7
SouthWest: Wattle Grove Drive (SW)											
1	L2	305	1.7	0.390	37.5	LOS C	13.9	98.6	0.76	0.88	29.2
2	T1	325	1.3	0.443	56.4	LOS D	9.9	70.3	0.94	0.78	25.0
3	R2	357	1.2	1.323	381.7	LOS F	63.0	445.2	1.00	1.84	5.8
Approach		987	1.4	1.323	168.1	LOS F	63.0	445.2	0.91	1.19	11.5
All Vehicles		7366	3.2	1.323	148.4	LOS F	128.4	919.5	0.95	1.34	15.8

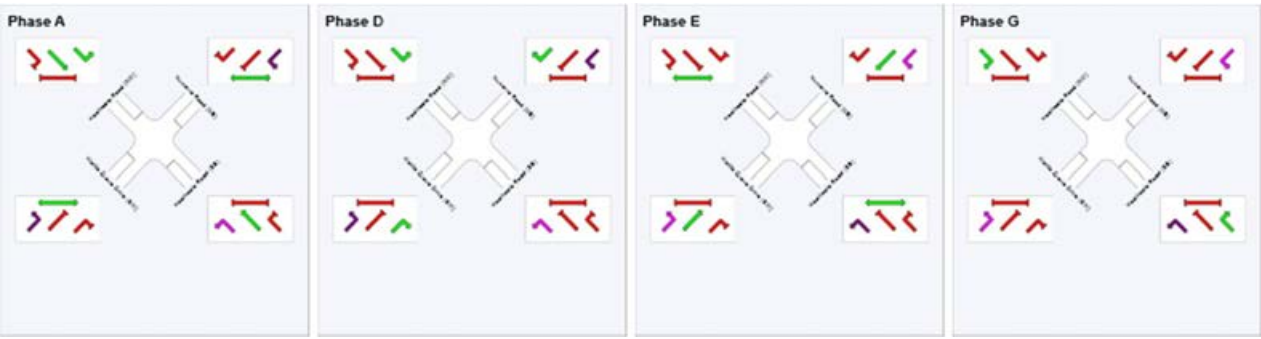
PHASING SUMMARY

Site: I-10 2030 BASE PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2030 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	61	87	117
Green Time (sec)	55	20	24	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	61	26	30	22
Phase Split	44 %	19 %	22 %	16 %



AM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-10 2030 MIMT AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
SouthEast: Heathcote Road (SE)											
4	L2	253	1.2	0.175	8.2	LOS A	3.4	23.8	0.27	0.63	48.2
5	T1	2073	5.3	1.256	286.3	LOS F	161.8	1183.6	1.00	2.15	10.3
6	R2	647	3.3	1.268	267.3	LOS F	42.9	308.4	1.00	1.54	11.2
Approach		2974	4.5	1.268	258.5	LOS F	161.8	1183.6	0.94	1.88	11.1
NorthEast: Nuwarra Road (NE)											
7	L2	416	4.8	0.484	24.5	LOS B	16.5	120.1	0.71	0.78	42.4
8	T1	252	8.4	0.405	53.1	LOS D	7.3	54.6	0.94	0.76	26.2
9	R2	508	5.8	1.436	477.0	LOS F	49.8	365.8	1.00	1.93	6.6
Approach		1176	6.0	1.436	226.3	LOS F	49.8	365.8	0.88	1.27	11.9
NorthWest: Heathcote Road (NW)											
10	L2	254	11.6	0.334	21.5	LOS B	7.8	60.1	0.70	0.76	42.7
11	T1	1044	11.3	0.958	54.9	LOS D	42.9	329.8	0.90	0.97	31.2
12	R2	235	6.3	0.786	75.4	LOS F	8.0	59.1	1.00	0.89	19.9
Approach		1532	10.6	0.958	52.5	LOS D	42.9	329.8	0.88	0.92	30.8
SouthWest: Wattle Grove Drive (SW)											
1	L2	639	2.1	0.849	51.8	LOS D	31.9	227.1	0.99	1.15	24.8
2	T1	543	4.5	0.817	61.8	LOS E	19.6	142.7	1.00	0.94	23.7
3	R2	263	4.0	1.277	332.6	LOS F	42.3	306.5	1.00	1.80	6.6
Approach		1445	3.4	1.277	106.7	LOS F	42.3	306.5	0.99	1.19	16.1
All Vehicles		7127	5.8	1.436	178.1	LOS F	161.8	1183.6	0.93	1.44	13.9

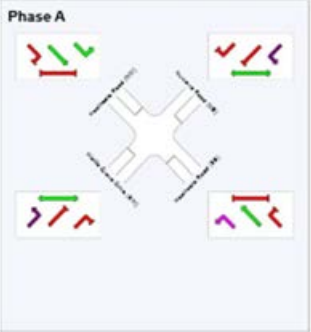
PHASING SUMMARY

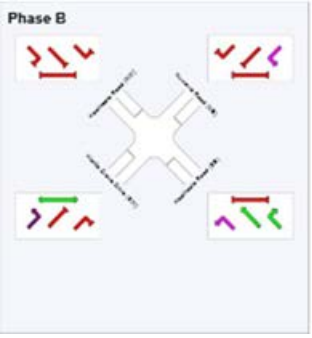
Site: I-10 2030 MIMT AM

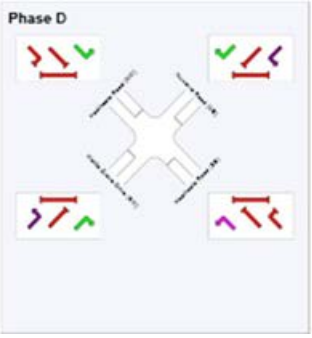
Heathcote Road / Nuwarra Road / Wattle Grove Drive
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

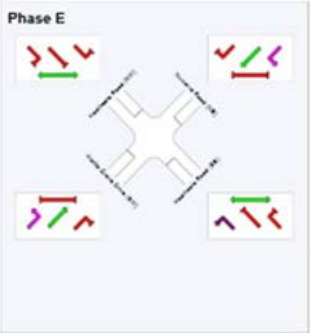
Phase Timing Results

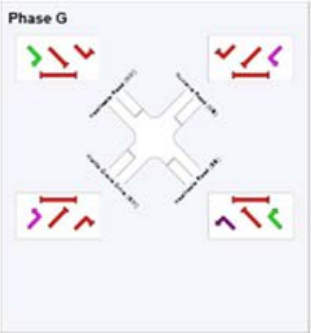
Phase	A	B	D	E	G
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	54	67	86	114
Green Time (sec)	48	7	13	22	11
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	54	13	19	28	17
Phase Split	41 %	10 %	15 %	21 %	13 %











PM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-10 2030 MIMT PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
SouthEast: Heathcote Road (SE)											
4	L2	337	2.5	0.286	15.8	LOS B	9.2	65.9	0.46	0.70	42.1
5	T1	1331	5.4	1.021	105.7	LOS F	67.8	496.7	1.00	1.28	21.6
6	R2	469	3.1	1.123	205.2	LOS F	29.5	212.0	1.00	1.36	13.8
Approach		2138	4.5	1.123	113.4	LOS F	67.8	496.7	0.92	1.21	20.0
NorthEast: Nuwarra Road (NE)											
7	L2	646	2.8	0.915	66.5	LOS E	42.1	301.8	1.00	1.17	28.7
8	T1	621	1.4	0.954	81.9	LOS F	26.8	190.0	1.00	1.09	20.1
9	R2	556	7.0	1.120	181.1	LOS F	35.9	266.2	1.00	1.30	14.7
Approach		1823	3.6	1.120	106.7	LOS F	42.1	301.8	1.00	1.18	20.1
NorthWest: Heathcote Road (NW)											
10	L2	258	6.1	0.238	22.3	LOS B	8.8	64.6	0.55	0.73	42.4
11	T1	1702	2.8	1.209	257.6	LOS F	128.6	921.5	1.00	1.92	11.3
12	R2	467	2.0	1.034	121.7	LOS F	24.0	171.3	1.00	1.13	14.2
Approach		2427	3.0	1.209	206.4	LOS F	128.6	921.5	0.95	1.64	12.7
SouthWest: Wattle Grove Drive (SW)											
1	L2	305	1.7	0.390	37.5	LOS C	13.9	98.6	0.76	0.88	29.2
2	T1	330	1.3	0.450	56.5	LOS D	10.1	71.5	0.95	0.78	25.0
3	R2	361	1.2	1.338	395.0	LOS F	64.8	458.4	1.00	1.87	5.7
Approach		997	1.4	1.338	173.2	LOS F	64.8	458.4	0.91	1.20	11.2
All Vehicles		7384	3.3	1.338	150.4	LOS F	128.6	921.5	0.95	1.34	15.7

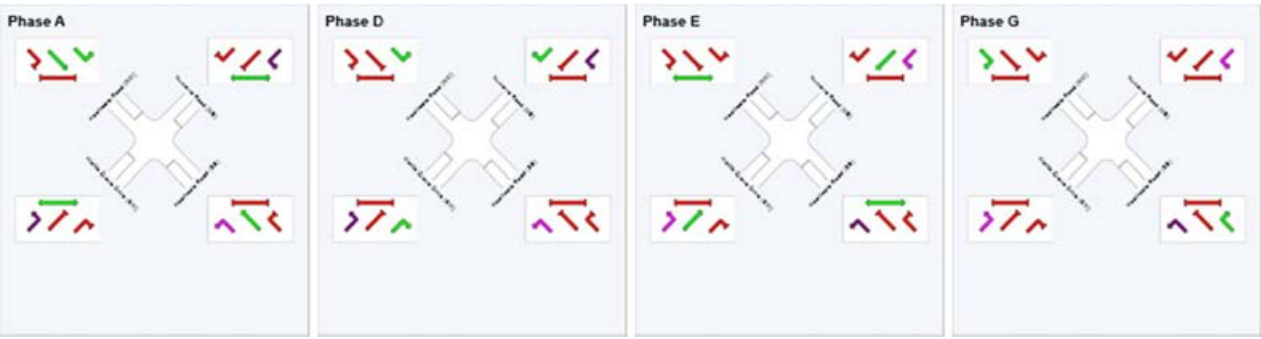
PHASING SUMMARY

Site: I-10 2030 MIMT PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	61	87	117
Green Time (sec)	55	20	24	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	61	26	30	22
Phase Split	44 %	19 %	22 %	16 %



I-11 Intersection of Newbridge Road and Nuwarra Road

AM BASE

MOVEMENT SUMMARY

Site: I-11 2030 BASE AM

Newbridge Road / Nuwarra Road
2030 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Nuwarra Road (S)											
1	L2	37	8.6	0.900	67.1	LOS E	27.7	197.7	0.92	0.99	32.6
2	T1	353	1.8	0.900	64.1	LOS E	27.7	197.7	0.92	0.99	27.5
3	R2	857	6.8	1.245	312.8	LOS F	74.3	549.9	1.00	1.55	10.8
Approach		1246	5.4	1.245	235.2	LOS F	74.3	549.9	0.97	1.38	13.4
East: Newbridge Road (E)											
4	L2	347	17.9	0.636	27.8	LOS B	21.9	173.4	0.73	0.78	45.0
5	T1	1281	11.3	0.636	23.5	LOS B	22.7	174.2	0.68	0.63	51.1
Approach		1628	12.7	0.636	24.4	LOS B	22.7	174.2	0.69	0.66	49.8
North: Nuwarra Road (N)											
7	L2	8	0.0	0.981	108.4	LOS F	11.3	79.5	1.00	1.23	22.4
8	T1	153	0.7	1.227	149.0	LOS F	26.9	195.3	1.00	1.34	17.8
9	R2	141	5.2	1.227	293.8	LOS F	26.9	195.3	1.00	1.76	12.0
Approach		302	2.8	1.227	215.5	LOS F	26.9	195.3	1.00	1.53	14.4
West: Newbridge Road (W)											
10	L2	306	2.4	1.139	197.1	LOS F	113.0	835.4	1.00	1.57	16.4
11	T1	2284	8.9	1.212	222.8	LOS F	137.7	1037.8	1.00	1.82	15.8
Approach		2591	8.2	1.212	219.7	LOS F	137.7	1037.8	1.00	1.79	15.9
All Vehicles		5767	8.6	1.245	167.7	LOS F	137.7	1037.8	0.91	1.37	18.7

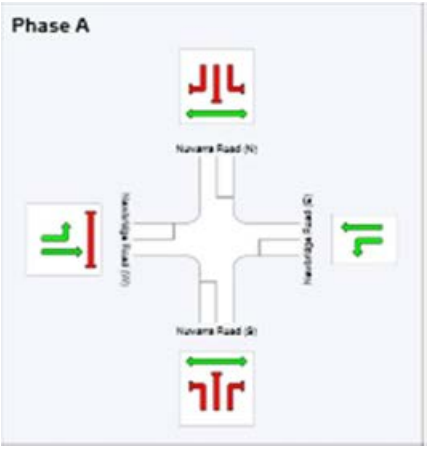
PHASING SUMMARY

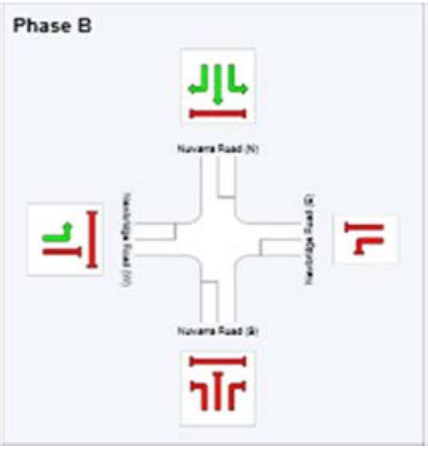
Site: I-11 2030 BASE AM

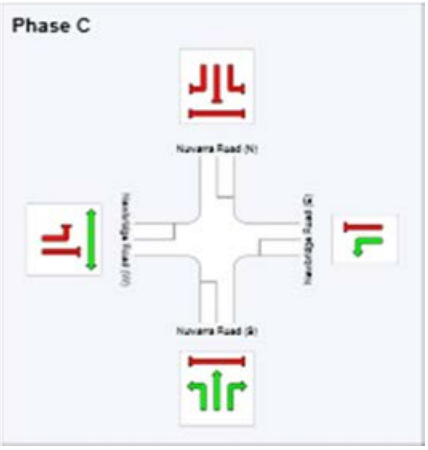
Newbridge Road / Nuwarra Road
2030 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	72	89
Green Time (sec)	66	11	45
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	72	17	51
Phase Split	51 %	12 %	36 %







PM BASE

MOVEMENT SUMMARY

Site: I-11 2030 BASE PM

Newbridge Road / Nuwarra Road
2030 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Nuwarra Road (S)											
1	L2	58	7.3	0.810	74.1	LOS F	15.2	108.7	1.00	0.93	31.1
2	T1	156	0.7	0.810	69.7	LOS E	15.2	108.7	1.00	0.93	28.3
3	R2	564	6.2	1.057	153.7	LOS F	30.8	226.9	1.00	1.20	18.6
Approach		778	5.1	1.057	131.0	LOS F	30.8	226.9	1.00	1.12	20.7
East: Newbridge Road (E)											
4	L2	772	4.5	0.756	15.7	LOS B	27.4	200.0	0.50	0.74	51.7
5	T1	2224	5.8	0.756	13.9	LOS A	36.1	265.1	0.59	0.57	57.3
Approach		2996	5.4	0.756	14.4	LOS A	36.1	265.1	0.56	0.62	55.9
North: Nuwarra Road (N)											
7	L2	18	0.0	0.933	88.6	LOS F	19.2	135.0	1.00	1.12	26.8
8	T1	295	0.7	1.166	125.0	LOS F	39.8	280.7	1.00	1.23	20.7
9	R2	212	1.0	1.166	246.9	LOS F	39.8	280.7	1.00	1.55	14.2
Approach		524	0.8	1.166	173.0	LOS F	39.8	280.7	1.00	1.36	17.4
West: Newbridge Road (W)											
10	L2	102	0.0	0.519	19.4	LOS B	15.6	115.5	0.46	0.47	49.6
11	T1	1674	7.8	0.590	12.4	LOS A	17.8	133.0	0.45	0.42	58.5
Approach		1776	7.4	0.590	12.8	LOS A	17.8	133.0	0.45	0.42	57.9
All Vehicles		6074	5.6	1.166	42.6	LOS D	39.8	280.7	0.62	0.69	40.5

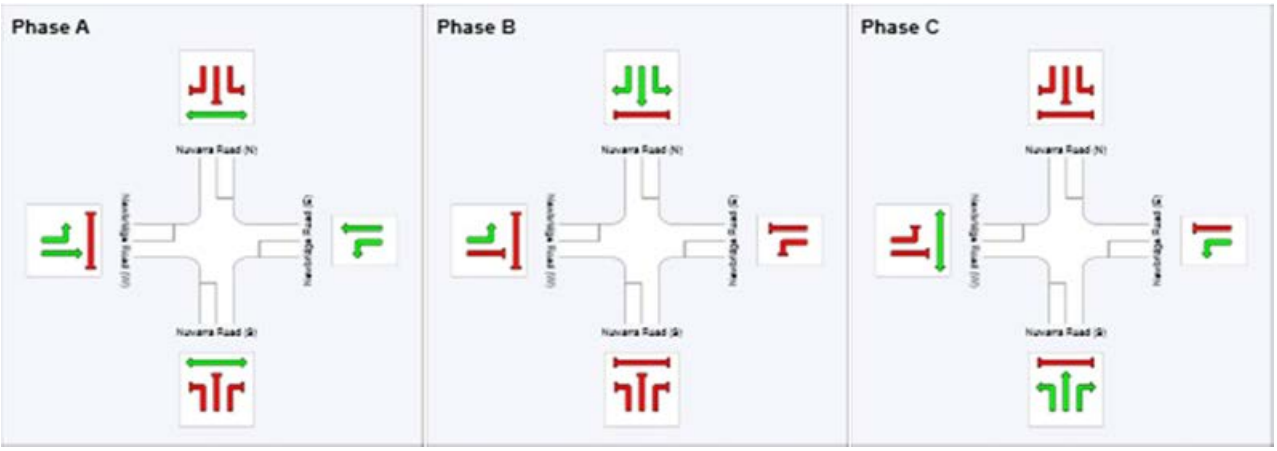
PHASING SUMMARY

Site: I-11 2030 BASE PM

Newbridge Road / Nuwarra Road
2030 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	87	113
Green Time (sec)	81	20	21
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	87	26	27
Phase Split	62 %	19 %	19 %



AM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-11 2030 MIMT AM

Newbridge Road / Nuwarra Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nuwarra Road (S)											
1	L2	37	8.6	0.884	63.6	LOS E	26.7	190.6	0.91	0.97	33.5
2	T1	352	1.5	0.884	60.6	LOS E	26.7	190.6	0.91	0.97	28.2
3	R2	852	6.2	1.232	301.9	LOS F	72.5	534.1	1.00	1.53	11.1
Approach		1240	4.9	1.232	226.4	LOS F	72.5	534.1	0.97	1.36	13.8
East: Newbridge Road (E)											
4	L2	347	17.0	0.648	28.3	LOS B	22.6	180.2	0.74	0.79	44.8
5	T1	1296	12.2	0.648	23.8	LOS B	23.1	181.3	0.69	0.64	51.0
Approach		1643	13.2	0.648	24.7	LOS B	23.1	181.3	0.70	0.67	49.6
North: Nuwarra Road (N)											
7	L2	8	0.0	0.986	110.2	LOS F	11.4	80.5	1.00	1.23	22.2
8	T1	154	0.7	1.232	151.8	LOS F	27.2	197.8	1.00	1.36	17.6
9	R2	141	5.2	1.232	298.3	LOS F	27.2	197.8	1.00	1.77	11.9
Approach		303	2.8	1.232	218.9	LOS F	27.2	197.8	1.00	1.54	14.3
West: Newbridge Road (W)											
10	L2	305	2.1	1.173	225.9	LOS F	122.8	924.6	1.00	1.67	14.9
11	T1	2317	10.2	1.247	253.3	LOS F	147.2	1143.0	1.00	1.93	14.3
Approach		2622	9.3	1.247	250.1	LOS F	147.2	1143.0	1.00	1.90	14.4
All Vehicles		5808	9.1	1.247	179.7	LOS F	147.2	1143.0	0.91	1.41	17.8

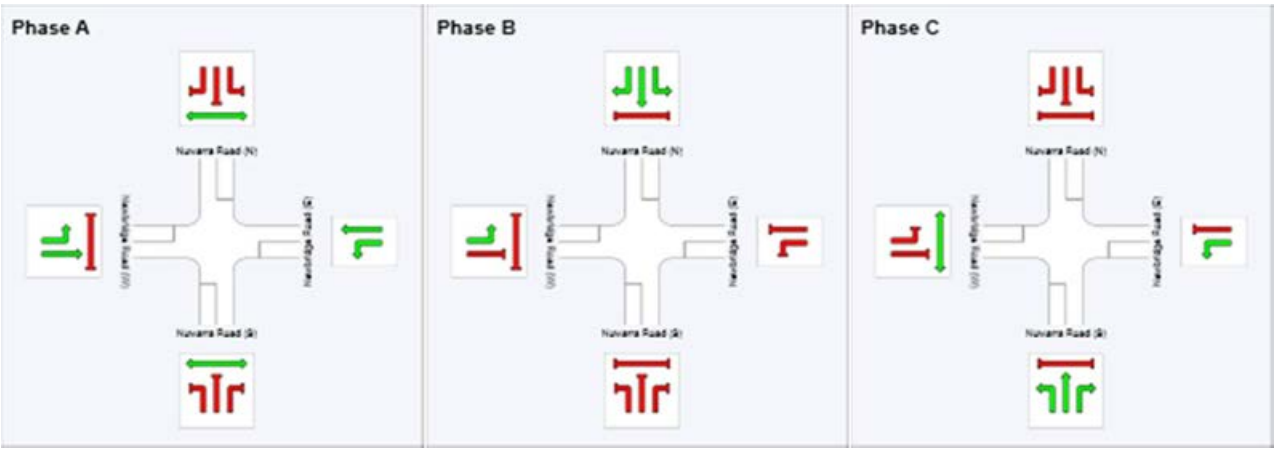
PHASING SUMMARY

Site: I-11 2030 MIMT AM

Newbridge Road / Nuwarra Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	72	89
Green Time (sec)	66	11	45
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	72	17	51
Phase Split	51 %	12 %	36 %



PM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-11 2030 MIMT PM

Newbridge Road / Nuwarra Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Nuwarra Road (S)											
1	L2	58	7.3	0.814	74.3	LOS F	15.3	109.5	1.00	0.93	31.1
2	T1	157	0.7	0.814	69.9	LOS E	15.3	109.5	1.00	0.93	28.3
3	R2	568	6.3	1.065	159.5	LOS F	31.6	233.1	1.00	1.21	18.2
Approach		783	5.2	1.065	135.3	LOS F	31.6	233.1	1.00	1.13	20.3
East: Newbridge Road (E)											
4	L2	766	3.8	0.770	16.2	LOS B	29.3	214.3	0.52	0.75	51.5
5	T1	2248	6.8	0.770	14.1	LOS A	37.2	280.4	0.60	0.59	57.1
Approach		3014	6.0	0.770	14.6	LOS B	37.2	280.4	0.58	0.63	55.7
North: Nuwarra Road (N)											
7	L2	18	0.0	0.943	91.3	LOS F	19.5	137.8	1.00	1.14	26.4
8	T1	296	1.1	1.179	130.2	LOS F	41.0	290.5	1.00	1.25	20.2
9	R2	213	1.5	1.179	257.4	LOS F	41.0	290.5	1.00	1.58	13.7
Approach		526	1.2	1.179	180.3	LOS F	41.0	290.5	1.00	1.38	16.9
West: Newbridge Road (W)											
10	L2	102	0.0	0.534	19.5	LOS B	16.1	121.6	0.46	0.48	49.5
11	T1	1696	8.9	0.607	12.6	LOS A	18.5	141.3	0.46	0.43	58.4
Approach		1798	8.4	0.607	13.0	LOS A	18.5	141.3	0.46	0.43	57.8
All Vehicles		6122	6.2	1.179	43.8	LOS D	41.0	290.5	0.63	0.70	40.0

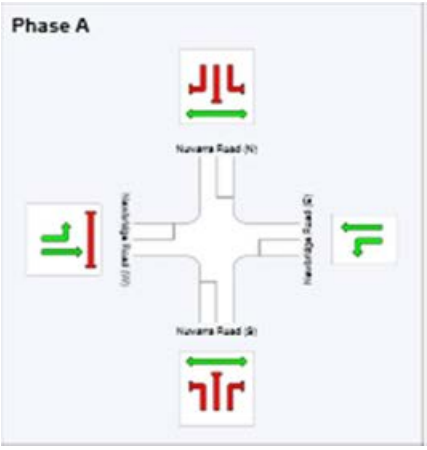
PHASING SUMMARY

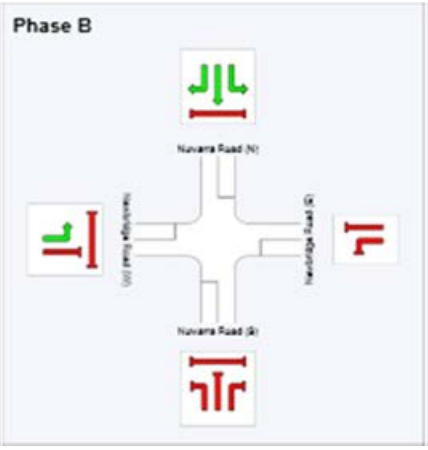
Site: I-11 2030 MIMT PM

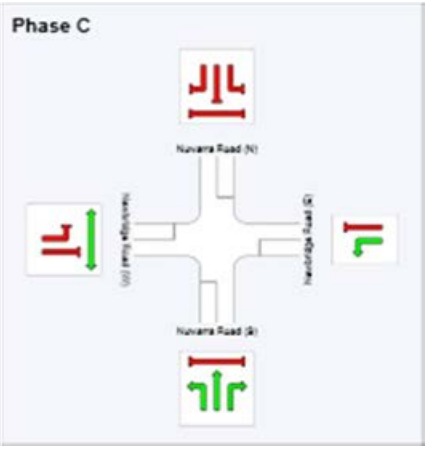
Newbridge Road / Nuwarra Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	87	113
Green Time (sec)	81	20	21
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	87	26	27
Phase Split	62 %	19 %	19 %







AM With Moorebank IMT – with upgrade

MOVEMENT SUMMARY

Site: I-11 2030 MIMT AM - Upgrade Option

Newbridge Road / Nuwarra Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Nuwarra Road (S)											
1	L2	37	8.6	0.961	88.5	LOS F	32.0	228.3	0.93	1.12	28.2
2	T1	352	1.5	0.961	85.5	LOS F	32.0	228.3	0.93	1.12	24.1
3	R2	852	6.2	1.281	344.3	LOS F	76.8	566.4	1.00	1.61	10.0
Approach		1240	4.9	1.281	263.3	LOS F	76.8	566.4	0.98	1.46	12.3
East: Newbridge Road (E)											
4	L2	347	17.0	0.629	26.8	LOS B	21.7	172.3	0.71	0.77	45.5
5	T1	1296	12.2	0.629	22.0	LOS B	21.9	172.0	0.65	0.61	52.0
Approach		1643	13.2	0.629	23.0	LOS B	21.9	172.3	0.66	0.64	50.6
North: Nuwarra Road (N)											
7	L2	8	0.0	0.986	110.2	LOS F	11.4	80.5	1.00	1.23	22.2
8	T1	154	0.7	1.232	151.8	LOS F	27.2	197.8	1.00	1.36	17.6
9	R2	141	5.2	1.232	298.3	LOS F	27.2	197.8	1.00	1.77	11.9
Approach		303	2.8	1.232	218.9	LOS F	27.2	197.8	1.00	1.54	14.3
West: Newbridge Road (W)											
10	L2	305	2.1	1.138	195.1	LOS F	115.0	866.2	1.00	1.57	16.5
11	T1	2317	10.2	1.211	220.6	LOS F	139.0	1079.3	1.00	1.81	16.0
Approach		2622	9.3	1.211	217.7	LOS F	139.0	1079.3	1.00	1.78	16.0
All Vehicles		5808	9.1	1.281	172.4	LOS F	139.0	1079.3	0.90	1.38	18.4

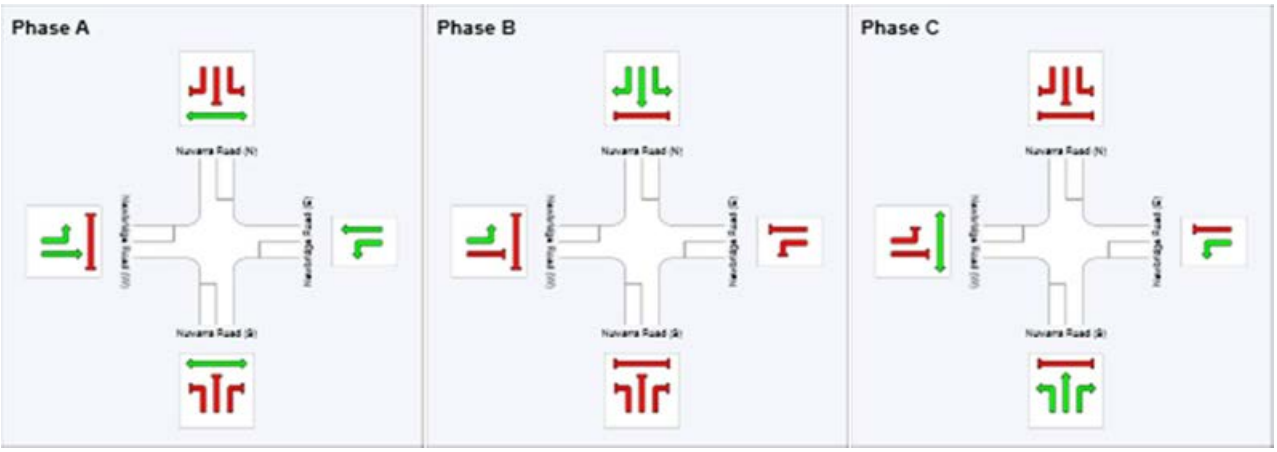
PHASING SUMMARY

Site: I-11 2030 MIMT AM - Upgrade Option

Newbridge Road / Nuwarra Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	74	91
Green Time (sec)	68	11	43
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	74	17	49
Phase Split	53 %	12 %	35 %



I-12 Intersection of Newbridge Road and Governor Macquarie Drive

AM BASE

MOVEMENT SUMMARY

Site: I-12 2030 BASE AM

Newbridge Road / Governor Macquarie Drive
2030 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Brickmakers Drive (S)											
1	L2	14	0.0	0.909	84.6	LOS F	17.3	122.1	1.00	1.07	24.1
2	T1	207	1.0	0.909	80.3	LOS F	17.3	122.1	1.00	1.07	23.8
3	R2	720	1.2	1.239	301.6	LOS F	55.9	395.6	1.00	1.68	12.6
Approach		941	1.1	1.239	249.7	LOS F	55.9	395.6	1.00	1.53	13.8
East: Newbridge Road (E)											
4	L2	242	3.0	0.178	7.9	LOS A	2.2	15.7	0.19	0.64	58.1
5	T1	1459	11.0	0.425	13.9	LOS A	16.5	126.1	0.55	0.49	59.9
6	R2	686	10.3	1.058	160.0	LOS F	37.1	282.3	1.00	1.17	23.3
Approach		2387	10.0	1.058	55.3	LOS D	37.1	282.3	0.64	0.70	40.9
North: Governor Macquarie Drive (N)											
7	L2	775	9.0	0.740	53.4	LOS D	23.9	180.2	0.96	0.86	40.0
8	T1	136	3.1	0.553	64.3	LOS E	8.9	63.9	0.99	0.80	27.0
9	R2	186	35.0	1.097	187.9	LOS F	22.4	204.1	1.00	1.30	16.5
Approach		1097	12.7	1.097	77.6	LOS F	23.9	204.1	0.97	0.93	32.3
West: Newbridge Road (W)											
10	L2	135	31.3	1.206	252.1	LOS F	154.7	1175.7	1.00	1.85	13.6
11	T1	2987	6.8	1.206	244.6	LOS F	159.4	1180.2	1.00	1.89	17.6
12	R2	5	20.0	0.043	32.9	LOS C	0.2	1.8	0.60	0.67	37.8
Approach		3127	7.8	1.206	244.6	LOS F	159.4	1180.2	1.00	1.89	17.5
All Vehicles		7553	8.4	1.239	161.1	LOS F	159.4	1180.2	0.88	1.33	22.5

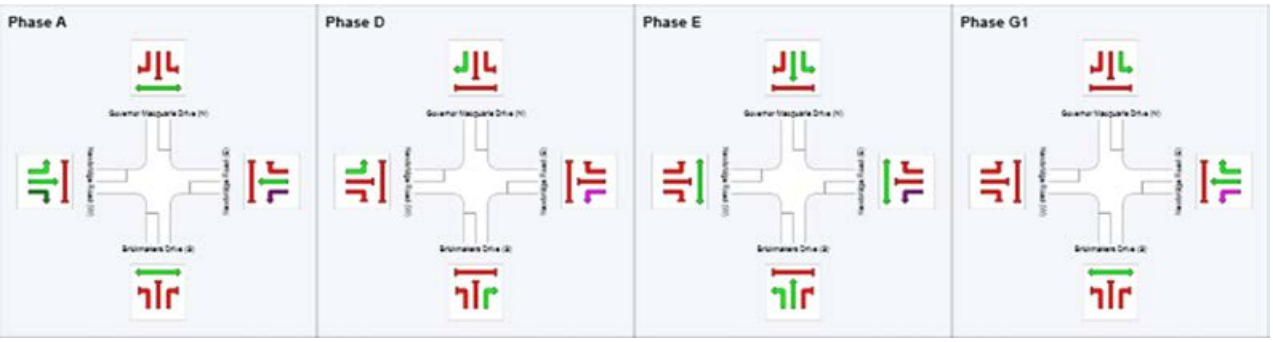
PHASING SUMMARY

Site: I-12 2030 BASE AM

Newbridge Road / Governor Macquarie Drive
2030 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	66	88	112
Green Time (sec)	60	16	18	22
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	66	22	24	28
Phase Split	47 %	16 %	17 %	20 %



PM BASE

MOVEMENT SUMMARY

Site: I-12 2030 BASE PM

Newbridge Road / Governor Macquarie Drive
2030 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Brickmakers Drive (S)											
1	L2	11	0.0	0.554	70.4	LOS E	7.2	52.4	1.00	0.79	26.8
2	T1	97	5.4	0.554	66.3	LOS E	7.2	52.4	1.00	0.79	26.5
3	R2	271	0.8	0.641	70.4	LOS E	9.1	64.3	1.00	0.81	32.5
Approach		378	1.9	0.641	69.3	LOS E	9.1	64.3	1.00	0.81	31.0
East: Newbridge Road (E)											
4	L2	689	1.5	0.487	9.5	LOS A	8.3	59.1	0.29	0.70	57.0
5	T1	2751	4.4	0.923	30.0	LOS C	52.5	381.4	0.75	0.77	51.3
6	R2	752	11.2	1.219	292.3	LOS F	58.2	446.2	1.00	1.45	15.2
Approach		4192	5.2	1.219	73.6	LOS F	58.2	446.2	0.72	0.88	36.0
North: Governor Macquarie Drive (N)											
7	L2	586	3.6	0.461	48.7	LOS D	16.2	117.0	0.87	0.82	41.5
8	T1	311	0.7	1.031	128.1	LOS F	30.2	212.7	1.00	1.27	17.8
9	R2	242	19.1	1.147	226.2	LOS F	32.2	262.1	1.00	1.37	14.5
Approach		1139	6.1	1.147	108.1	LOS F	32.2	262.1	0.93	1.06	25.8
West: Newbridge Road (W)											
10	L2	177	16.7	0.815	39.2	LOS C	40.4	303.4	0.88	0.82	41.7
11	T1	2064	6.1	0.815	31.4	LOS C	41.0	302.2	0.86	0.78	50.5
12	R2	4	0.0	0.070	54.4	LOS D	0.2	1.7	0.80	0.69	30.3
Approach		2245	6.9	0.815	32.1	LOS C	41.0	303.4	0.86	0.79	49.8
All Vehicles		7954	5.6	1.219	66.6	LOS E	58.2	446.2	0.80	0.87	36.9

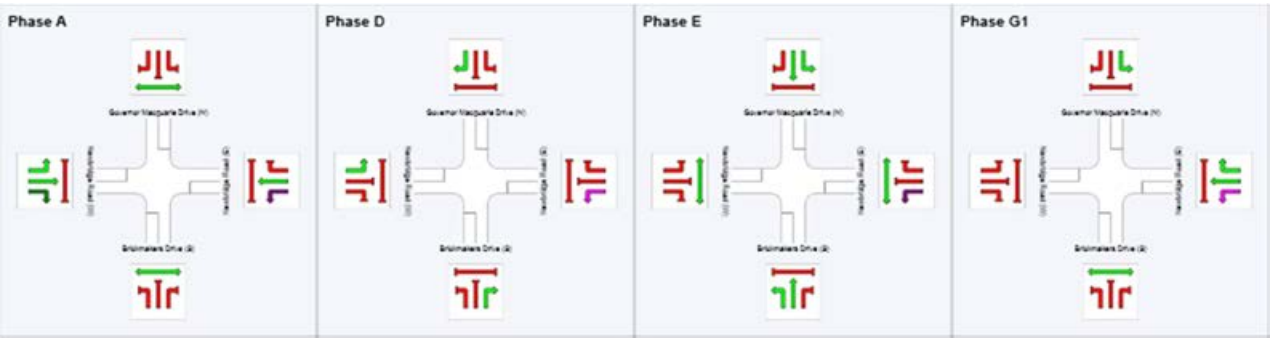
PHASING SUMMARY

Site: I-12 2030 BASE PM

Newbridge Road / Governor Macquarie Drive
2030 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	67	89	110
Green Time (sec)	61	16	15	24
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	67	22	21	30
Phase Split	48 %	16 %	15 %	21 %



AM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-12 2030 MIMT AM

Newbridge Road / Governor Macquarie Drive
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Brickmakers Drive (S)											
1	L2	14	0.0	0.909	84.6	LOS F	17.3	122.1	1.00	1.07	24.1
2	T1	207	1.0	0.909	80.3	LOS F	17.3	122.1	1.00	1.07	23.8
3	R2	720	1.2	1.239	301.6	LOS F	55.9	395.6	1.00	1.68	12.6
Approach		941	1.1	1.239	249.7	LOS F	55.9	395.6	1.00	1.53	13.8
East: Newbridge Road (E)											
4	L2	242	3.0	0.178	7.9	LOS A	2.2	15.7	0.19	0.64	58.1
5	T1	1476	11.7	0.435	14.0	LOS A	16.8	131.2	0.55	0.50	59.8
6	R2	683	9.9	1.050	154.1	LOS F	36.1	274.4	1.00	1.16	23.9
Approach		2402	10.3	1.050	53.2	LOS D	36.1	274.4	0.64	0.70	41.5
North: Governor Macquarie Drive (N)											
7	L2	765	7.8	0.725	52.8	LOS D	23.4	174.6	0.96	0.86	40.2
8	T1	135	2.3	0.546	64.2	LOS E	8.8	62.9	0.99	0.79	27.0
9	R2	178	31.9	1.030	138.6	LOS F	18.2	162.2	1.00	1.18	20.4
Approach		1078	11.1	1.030	68.4	LOS E	23.4	174.6	0.97	0.90	34.3
West: Newbridge Road (W)											
10	L2	132	30.0	1.235	277.5	LOS F	164.3	1271.1	1.00	1.94	12.6
11	T1	3019	7.7	1.235	270.0	LOS F	168.7	1277.9	1.00	1.99	16.4
12	R2	5	20.0	0.046	33.1	LOS C	0.2	1.8	0.60	0.68	37.8
Approach		3156	8.7	1.235	269.9	LOS F	168.7	1277.9	1.00	1.98	16.2
All Vehicles		7577	8.6	1.239	170.1	LOS F	168.7	1277.9	0.88	1.37	21.8

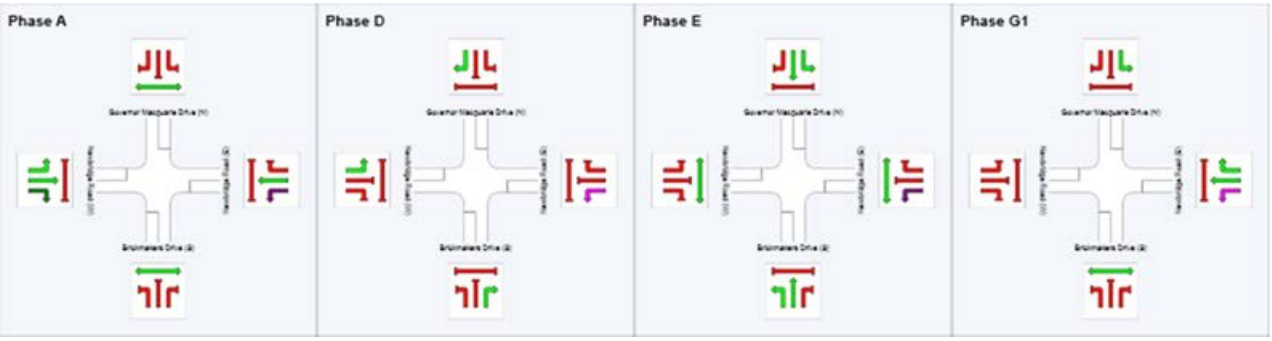
PHASING SUMMARY

Site: I-12 2030 MIMT AM

Newbridge Road / Governor Macquarie Drive
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	66	88	112
Green Time (sec)	60	16	18	22
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	66	22	24	28
Phase Split	47 %	16 %	17 %	20 %



PM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-12 2030 MIMT PM

Newbridge Road / Governor Macquarie Drive
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	11	0.0	0.554	70.4	LOS E	7.2	52.4	1.00	0.79	26.8
2	T1	97	5.4	0.554	66.3	LOS E	7.2	52.4	1.00	0.79	26.5
3	R2	271	0.8	0.641	70.4	LOS E	9.1	64.3	1.00	0.81	32.5
Approach		378	1.9	0.641	69.3	LOS E	9.1	64.3	1.00	0.81	31.0
East: Newbridge Road (E)											
4	L2	688	1.4	0.483	9.5	LOS A	8.2	58.4	0.29	0.70	57.0
5	T1	2779	5.4	0.942	35.1	LOS C	58.2	432.5	0.77	0.81	49.1
6	R2	744	10.3	1.200	275.1	LOS F	55.7	424.3	1.00	1.41	15.9
Approach		4212	5.6	1.200	73.3	LOS F	58.2	432.5	0.73	0.90	36.1
North: Governor Macquarie Drive (N)											
7	L2	614	7.9	0.497	49.3	LOS D	17.2	128.5	0.88	0.82	41.1
8	T1	314	1.7	1.055	145.8	LOS F	32.6	231.4	1.00	1.33	16.2
9	R2	307	36.2	1.617	644.9	LOS F	71.1	658.0	1.00	2.03	6.0
Approach		1234	13.3	1.617	221.9	LOS F	71.1	658.0	0.94	1.25	15.9
West: Newbridge Road (W)											
10	L2	175	15.8	0.822	39.8	LOS C	41.0	311.7	0.89	0.83	41.4
11	T1	2071	6.2	0.822	31.9	LOS C	41.4	308.9	0.86	0.79	50.3
12	R2	4	0.0	0.071	57.1	LOS E	0.2	1.7	0.82	0.69	29.6
Approach		2250	6.9	0.822	32.5	LOS C	41.4	311.7	0.87	0.79	49.6
All Vehicles		8074	7.0	1.617	84.5	LOS F	71.1	658.0	0.81	0.92	32.9

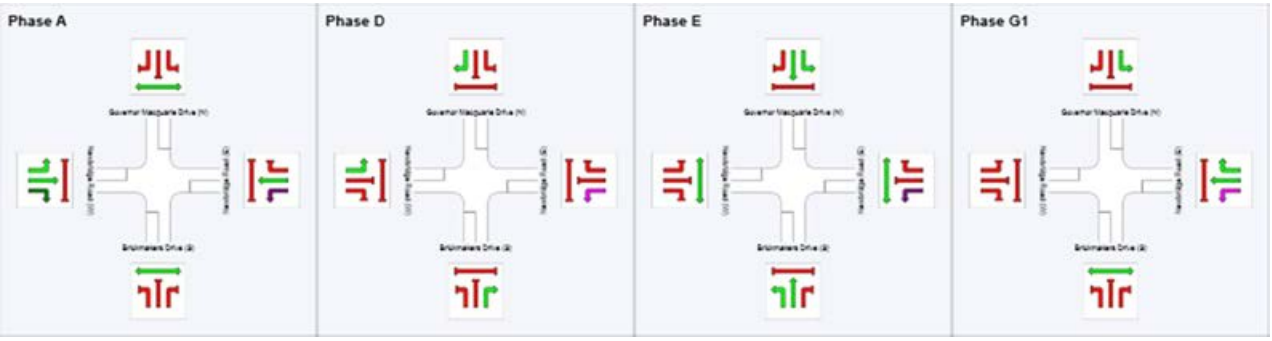
PHASING SUMMARY

Site: I-12 2030 MIMT PM

Newbridge Road / Governor Macquarie Drive
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	67	89	110
Green Time (sec)	61	16	15	24
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	67	22	21	30
Phase Split	48 %	16 %	15 %	21 %



AM With Moorebank IMT – with upgrade

MOVEMENT SUMMARY

Site: I-12 2030 MIMT AM - Upgrade Option

Newbridge Road / Governor Macquarie Drive
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	14	0.0	0.909	84.6	LOS F	17.3	122.1	1.00	1.07	24.1
2	T1	207	1.0	0.909	80.3	LOS F	17.3	122.1	1.00	1.07	23.8
3	R2	720	1.2	1.102	182.8	LOS F	42.6	301.3	1.00	1.37	18.4
Approach		941	1.1	1.102	158.8	LOS F	42.6	301.3	1.00	1.30	19.2
East: Newbridge Road (E)											
4	L2	242	3.0	0.179	7.9	LOS A	2.1	15.3	0.20	0.64	58.1
5	T1	1476	11.7	0.435	14.0	LOS A	16.8	131.2	0.55	0.50	59.8
6	R2	683	9.9	1.077	173.1	LOS F	38.6	293.2	1.00	1.20	22.1
Approach		2402	10.3	1.077	58.6	LOS E	38.6	293.2	0.64	0.71	39.9
North: Governor Macquarie Drive (N)											
7	L2	765	7.8	0.923	70.5	LOS E	22.7	169.3	1.00	1.08	35.8
8	T1	135	2.3	0.822	73.7	LOS F	12.4	93.2	1.00	0.93	24.9
9	R2	178	31.9	0.822	79.4	LOS F	12.4	93.2	1.00	0.92	28.6
Approach		1078	11.1	0.923	72.3	LOS F	22.7	169.3	1.00	1.03	33.5
West: Newbridge Road (W)											
10	L2	132	30.0	1.215	259.0	LOS F	159.1	1230.7	1.00	1.88	13.3
11	T1	3019	7.7	1.215	251.5	LOS F	163.2	1236.8	1.00	1.92	17.3
12	R2	5	20.0	0.045	32.4	LOS C	0.2	1.8	0.60	0.68	38.1
Approach		3156	8.7	1.215	251.4	LOS F	163.2	1236.8	1.00	1.92	17.1
All Vehicles		7577	8.6	1.215	153.3	LOS F	163.2	1236.8	0.89	1.33	23.3

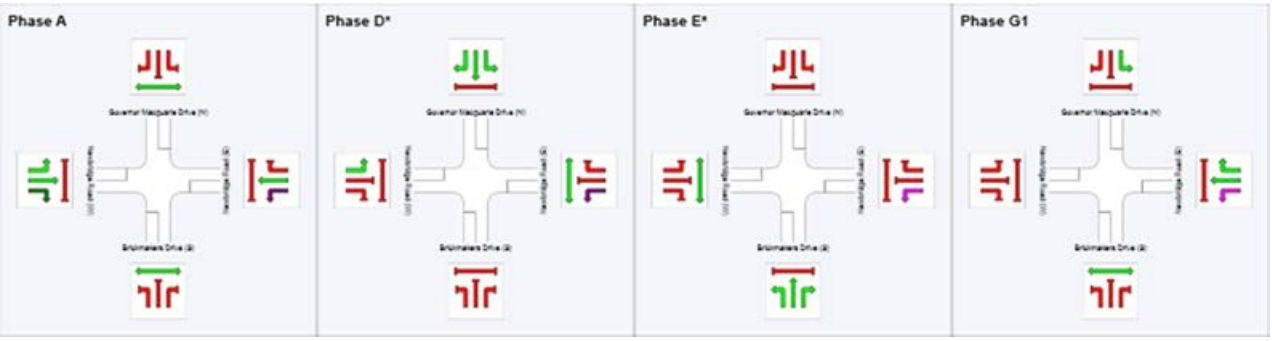
PHASING SUMMARY

Site: I-12 2030 MIMT AM - Upgrade Option

Newbridge Road / Governor Macquarie Drive
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D*	E*	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	67	89	113
Green Time (sec)	61	16	18	21
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	67	22	24	27
Phase Split	48 %	16 %	17 %	19 %



PM With Moorebank IMT – with upgrade

MOVEMENT SUMMARY

Site: I-12 2030 MIMT PM - Upgrade Option 2

Newbridge Road / Governor Macquarie Drive
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	11	0.0	0.689	75.4	LOS F	7.5	54.9	1.00	0.84	25.8
2	T1	97	5.4	0.689	71.3	LOS F	7.5	54.9	1.00	0.84	25.5
3	R2	271	0.8	0.854	82.0	LOS F	10.1	71.4	1.00	0.97	30.1
Approach		378	1.9	0.854	79.1	LOS F	10.1	71.4	1.00	0.93	29.0
East: Newbridge Road (E)											
4	L2	688	1.4	0.487	9.4	LOS A	11.7	82.9	0.35	0.69	57.0
5	T1	2779	5.4	0.981	47.6	LOS D	73.8	547.6	0.77	0.88	44.4
6	R2	744	10.3	1.077	178.7	LOS F	43.4	330.4	1.00	1.21	21.7
Approach		4212	5.6	1.077	64.5	LOS E	73.8	547.6	0.74	0.91	38.2
North: Governor Macquarie Drive (N)											
7	L2	614	7.9	0.485	33.9	LOS C	13.5	100.8	0.87	0.80	46.2
8	T1	314	1.7	1.091	170.3	LOS F	42.0	311.4	1.00	1.46	14.5
9	R2	307	36.2	1.091	298.6	LOS F	42.0	311.4	1.00	1.55	11.6
Approach		1234	13.3	1.091	134.3	LOS F	42.0	381.9	0.93	1.16	22.5
West: Newbridge Road (W)											
10	L2	175	15.8	0.863	46.5	LOS D	45.6	346.4	0.94	0.89	38.9
11	T1	2071	6.2	0.863	38.4	LOS C	46.3	344.9	0.92	0.87	47.6
12	R2	4	0.0	0.072	60.8	LOS E	0.3	1.8	0.84	0.69	28.6
Approach		2250	6.9	0.863	39.1	LOS C	46.3	346.4	0.92	0.87	46.9
All Vehicles		8074	7.0	1.091	68.8	LOS E	73.8	547.6	0.83	0.94	36.3

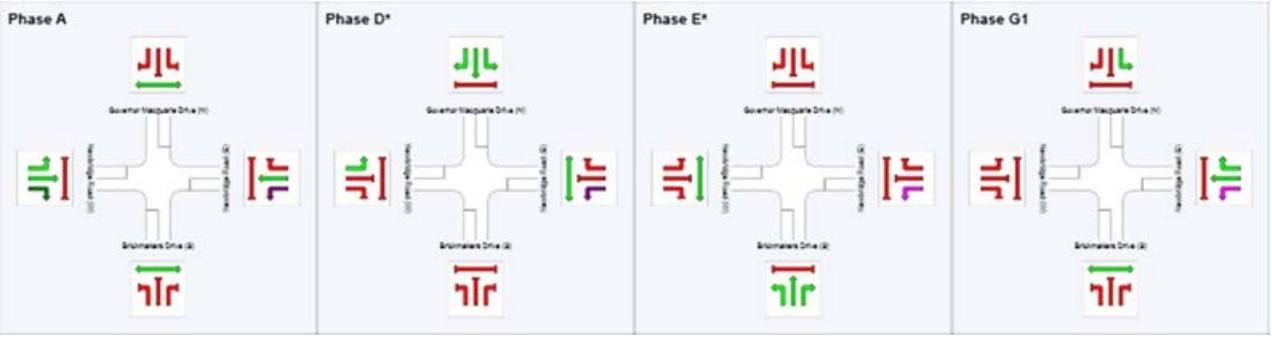
PHASING SUMMARY

Site: I-12 2030 MIMT PM - Upgrade Option 2

Newbridge Road / Governor Macquarie Drive
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D*	E*	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	64	87	105
Green Time (sec)	58	17	12	29
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	64	23	18	35
Phase Split	46 %	16 %	13 %	25 %



I-13 Intersection of Moorebank Avenue and M5 Motorway

AM BASE

MOVEMENT SUMMARY

Site: I-13 2030 BASE AM

Moorebank Avenue / the M5 Motorway
2030 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
1	L2	285	11.1	0.247	9.2	LOS A	3.3	25.1	0.42	0.66	50.3
2	T1	669	4.2	0.768	32.3	LOS C	12.4	89.9	0.99	0.92	37.9
3	R2	307	2.7	0.428	33.2	LOS C	5.4	38.8	0.90	0.79	36.8
Approach		1262	5.4	0.768	27.3	LOS B	12.4	89.9	0.84	0.83	39.8
East: M5 Motorway on&off ramp (E)											
4	L2	231	7.3	0.231	8.1	LOS A	1.8	13.1	0.39	0.66	51.5
6	R2	237	6.2	0.246	28.8	LOS C	3.4	25.1	0.82	0.76	40.4
Approach		467	6.8	0.246	18.6	LOS B	3.4	25.1	0.61	0.71	44.9
North: Moorebank Avenue (N)											
7	L2	52	49.0	0.051	7.7	LOS A	0.3	3.3	0.28	0.60	51.2
8	T1	192	12.6	0.231	25.6	LOS B	2.9	22.4	0.85	0.67	41.0
9	R2	458	26.2	0.782	38.1	LOS C	10.2	87.3	0.98	0.88	36.2
Approach		701	24.2	0.782	32.4	LOS C	10.2	87.3	0.89	0.80	38.2
West: M5 Motorway on&off ramp (W)											
10	L2	1736	8.2	0.989	9.4	LOS A	0.0	0.0	0.00	0.48	49.5
12	R2	384	4.1	0.394	29.9	LOS C	5.8	42.0	0.86	0.79	38.6
Approach		2120	7.4	0.989	13.1	LOS A	5.8	42.0	0.16	0.54	47.3
All Vehicles		4551	9.4	0.989	20.6	LOS B	12.4	89.9	0.51	0.68	43.3

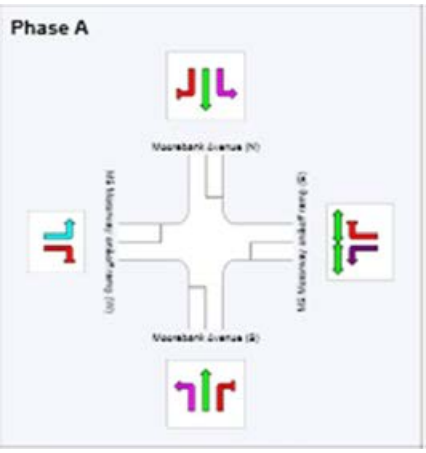
PHASING SUMMARY

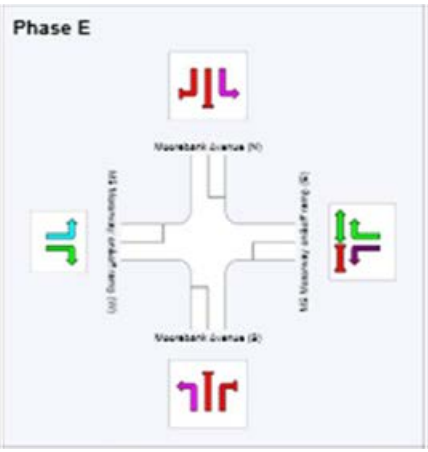
Site: I-13 2030 BASE AM

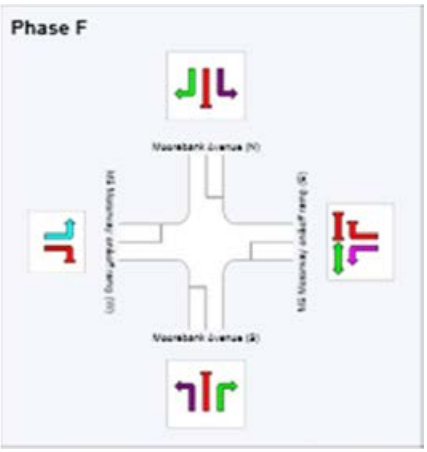
Moorebank Avenue / the M5 Motorway
2030 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	F
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	24	51
Green Time (sec)	17	20	16
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	24	27	23
Phase Split	32 %	36 %	31 %







PM BASE

MOVEMENT SUMMARY

Site: I-13 2030 BASE PM

Moorebank Avenue / the M5 Motorway
2030 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	306	3.1	0.377	20.6	LOS B	8.3	59.4	0.72	0.77	43.2
2	T1	180	7.6	0.455	44.6	LOS D	4.1	30.3	0.98	0.76	33.2
3	R2	298	2.1	0.247	28.0	LOS B	5.2	37.4	0.73	0.75	39.1
Approach		784	3.8	0.455	28.9	LOS C	8.3	59.4	0.78	0.76	38.9
East: M5 Motorway on&off ramp (E)											
4	L2	439	2.9	0.466	12.3	LOS A	7.2	51.3	0.55	0.74	48.4
6	R2	97	21.7	0.177	42.7	LOS D	2.0	16.2	0.89	0.73	34.9
Approach		536	6.3	0.466	17.8	LOS B	7.2	51.3	0.62	0.74	45.0
North: Moorebank Avenue (N)											
7	L2	140	6.8	0.111	6.9	LOS A	0.9	7.0	0.24	0.61	53.0
8	T1	726	3.6	0.779	39.2	LOS C	16.7	120.6	0.99	0.92	35.1
9	R2	1495	7.4	0.996	79.0	LOS F	50.1	372.9	1.00	1.23	25.9
Approach		2361	6.2	0.996	62.5	LOS E	50.1	372.9	0.95	1.10	29.0
West: M5 Motorway on&off ramp (W)											
10	L2	631	15.2	0.376	5.8	LOS A	0.0	0.0	0.00	0.52	54.3
12	R2	255	3.7	0.414	44.2	LOS D	5.4	38.8	0.94	0.78	33.1
Approach		885	11.9	0.414	16.9	LOS B	5.4	38.8	0.27	0.60	46.4
All Vehicles		4566	6.9	0.996	42.6	LOS D	50.1	372.9	0.75	0.90	34.4

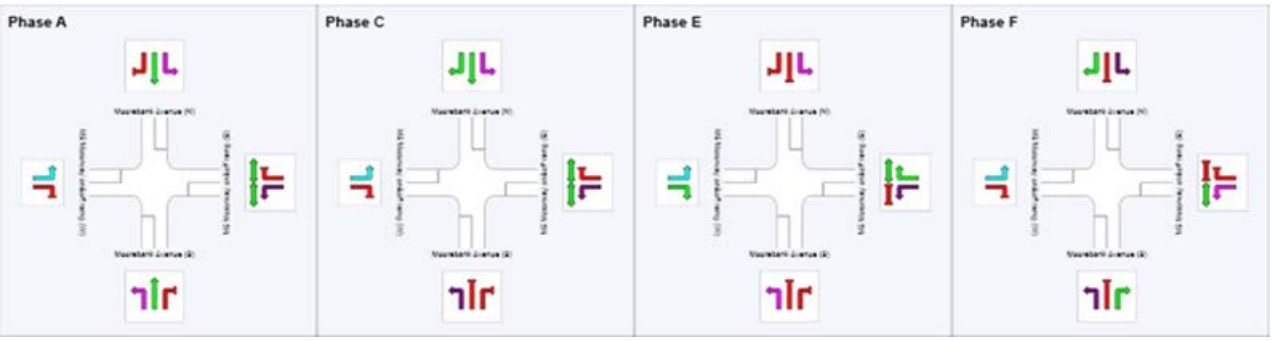
PHASING SUMMARY

Site: I-13 2030 BASE PM

Moorebank Avenue / the M5 Motorway
2030 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	17	30	53
Green Time (sec)	10	6	16	34
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	17	13	23	41
Phase Split	18 %	14 %	24 %	44 %



AM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-13 2030 MIMT AM

Moorebank Avenue / the M5 Motorway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	427	40.6	0.505	11.1	LOS A	5.5	65.0	0.52	0.73	47.9
2	T1	729	12.0	0.918	47.0	LOS D	17.1	142.0	1.00	1.17	32.4
3	R2	322	7.3	0.476	33.7	LOS C	5.8	45.0	0.91	0.79	36.5
Approach		1478	19.2	0.918	33.7	LOS C	17.1	142.0	0.84	0.96	36.8
East: M5 Motorway on&off ramp (E)											
4	L2	281	19.7	0.388	11.3	LOS A	3.8	34.9	0.59	0.73	48.5
6	R2	237	6.2	0.246	28.8	LOS C	3.4	25.1	0.82	0.76	40.4
Approach		517	13.5	0.388	19.3	LOS B	3.8	34.9	0.70	0.74	44.2
North: Moorebank Avenue (N)											
7	L2	51	47.9	0.050	7.9	LOS A	0.4	3.5	0.29	0.60	51.1
8	T1	231	24.7	0.322	26.4	LOS B	3.6	34.2	0.87	0.70	40.6
9	R2	454	25.5	0.772	37.8	LOS C	10.0	85.2	0.97	0.88	36.3
Approach		735	26.8	0.772	32.2	LOS C	10.0	85.2	0.90	0.80	38.3
West: M5 Motorway on&off ramp (W)											
10	L2	1722	7.5	0.977	8.2	LOS A	0.0	0.0	0.00	0.50	51.2
12	R2	567	29.0	0.774	37.9	LOS C	10.7	113.7	0.98	0.93	34.8
Approach		2289	12.8	0.977	15.5	LOS B	10.7	113.7	0.24	0.60	46.2
All Vehicles		5019	16.8	0.977	23.7	LOS B	17.1	142.0	0.56	0.75	41.7

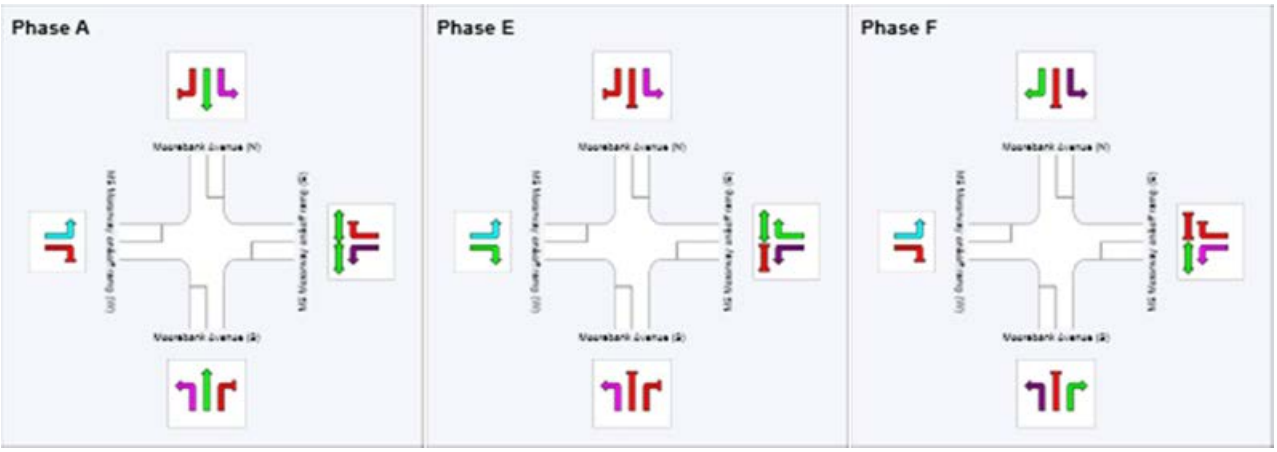
PHASING SUMMARY

Site: I-13 2030 MIMT AM

Moorebank Avenue / the M5 Motorway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	F
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	24	51
Green Time (sec)	17	20	16
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	24	27	23
Phase Split	32 %	36 %	31 %



PM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-13 2030 MIMT PM

Moorebank Avenue / the M5 Motorway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	515	35.9	0.886	41.6	LOS C	24.6	284.2	0.97	1.00	33.4
2	T1	224	22.9	0.675	47.5	LOS D	5.4	51.4	1.00	0.85	32.2
3	R2	367	17.4	0.366	29.5	LOS C	6.9	62.7	0.77	0.77	38.0
Approach		1107	27.1	0.886	38.8	LOS C	24.6	284.2	0.91	0.90	34.5
East: M5 Motorway on&off ramp (E)											
4	L2	473	9.9	1.030	101.0	LOS F	35.2	285.5	1.00	1.29	21.1
6	R2	97	21.7	0.177	42.7	LOS D	2.0	16.2	0.89	0.73	34.9
Approach		570	11.9	1.030	91.1	LOS F	35.2	285.5	0.98	1.20	22.7
North: Moorebank Avenue (N)											
7	L2	139	6.1	0.116	7.7	LOS A	1.3	9.3	0.29	0.63	52.4
8	T1	777	10.0	0.900	51.5	LOS D	21.3	172.2	1.00	1.10	31.0
9	R2	1488	7.0	0.989	75.1	LOS F	48.5	359.6	1.00	1.21	26.7
Approach		2405	7.9	0.989	63.5	LOS E	48.5	359.6	0.96	1.14	28.7
West: M5 Motorway on&off ramp (W)											
10	L2	620	13.8	0.367	5.8	LOS A	0.0	0.0	0.00	0.52	54.4
12	R2	438	44.0	1.090	159.8	LOS F	21.1	266.4	1.00	1.52	15.3
Approach		1058	26.3	1.090	69.5	LOS E	21.1	266.4	0.41	0.93	27.3
All Vehicles		5139	16.3	1.090	62.5	LOS E	48.5	359.6	0.84	1.05	28.6

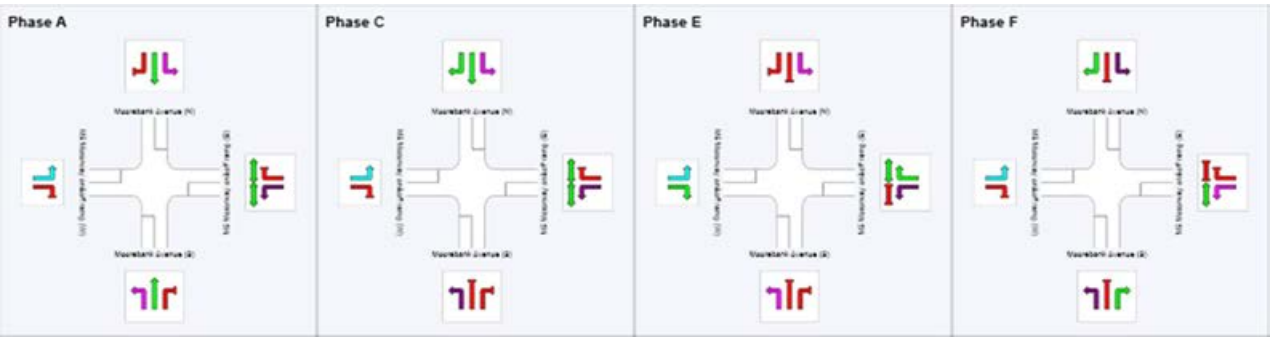
PHASING SUMMARY

Site: I-13 2030 MIMT PM

Moorebank Avenue / the M5 Motorway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	17	30	53
Green Time (sec)	10	6	16	34
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	17	13	23	41
Phase Split	18 %	14 %	24 %	44 %



PM With Moorebank IMT – with upgrade

MOVEMENT SUMMARY

Site: I-13 2030 MIMT PM upgrade

Moorebank Avenue / the M5 Motorway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
1	L2	515	35.9	0.936	56.1	LOS D	29.6	341.9	1.00	1.10	29.1
2	T1	224	22.9	0.965	73.0	LOS F	6.9	66.0	1.00	1.16	25.8
3	R2	367	17.4	0.366	29.5	LOS C	6.9	62.7	0.77	0.77	38.0
Approach		1107	27.1	0.965	50.7	LOS D	29.6	341.9	0.92	1.00	30.7
East: M5 Motorway on&off ramp (E)											
4	L2	473	9.9	1.030	101.0	LOS F	35.2	285.5	1.00	1.29	21.1
6	R2	97	21.7	0.177	42.7	LOS D	2.0	16.2	0.89	0.73	34.9
Approach		570	11.9	1.030	91.1	LOS F	35.2	285.5	0.98	1.20	22.7
North: Moorebank Avenue (N)											
7	L2	139	6.1	0.116	7.7	LOS A	1.3	9.3	0.29	0.63	52.4
8	T1	777	10.0	0.900	51.5	LOS D	21.3	172.2	1.00	1.10	31.0
9	R2	1488	7.0	0.920	43.0	LOS D	34.3	254.6	1.00	1.06	34.8
Approach		2405	7.9	0.920	43.7	LOS D	34.3	254.6	0.96	1.05	34.2
West: M5 Motorway on&off ramp (W)											
10	L2	620	13.8	0.367	5.8	LOS A	0.0	0.0	0.00	0.52	54.4
12	R2	438	44.0	1.090	159.8	LOS F	21.1	266.4	1.00	1.52	15.3
Approach		1058	26.3	1.090	69.5	LOS E	21.1	266.4	0.41	0.93	27.3
All Vehicles		5139	16.3	1.090	55.8	LOS D	35.2	341.9	0.84	1.03	30.2

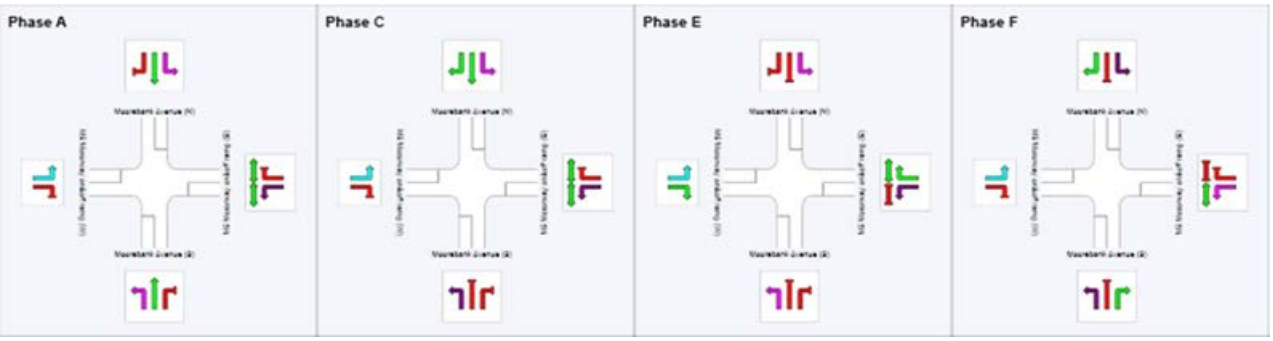
PHASING SUMMARY

Site: I-13 2030 MIMT PM upgrade

Moorebank Avenue / the M5 Motorway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	14	30	53
Green Time (sec)	7	9	16	34
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	14	16	23	41
Phase Split	15 %	17 %	24 %	44 %



I-14 Intersection of M5 Motorway and Hume Highway

AM BASE

MOVEMENT SUMMARY

Site: I-14 2030 BASE AM

M5 Motorway / Hume Highway
2030 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
2	T1	4252	4.5	1.025	58.2	LOS E	151.4	1100.9	1.00	1.20	33.5
3	R2	640	4.1	0.881	42.9	LOS D	17.4	125.8	1.00	0.90	37.8
Approach		4892	4.5	1.025	56.2	LOS D	151.4	1100.9	1.00	1.16	34.1
East: M5 Motorway on&off-ramp (E)											
4	L2	340	6.5	0.135	30.6	LOS C	4.8	35.8	0.60	0.71	41.9
6	R2	1180	3.9	1.214	292.5	LOS F	64.9	469.4	1.00	1.43	8.6
Approach		1520	4.5	1.214	233.9	LOS F	64.9	469.4	0.91	1.27	11.3
North: Hume Highway (N)											
7	L2	699	5.9	0.530	12.1	LOS A	18.8	138.4	0.45	0.71	47.3
8	T1	1213	7.0	0.492	28.5	LOS C	17.9	132.8	0.62	0.55	43.3
Approach		1912	6.6	0.530	22.5	LOS B	18.8	138.4	0.56	0.61	44.3
All Vehicles		8323	5.0	1.214	80.9	LOS F	151.4	1100.9	0.88	1.06	27.4

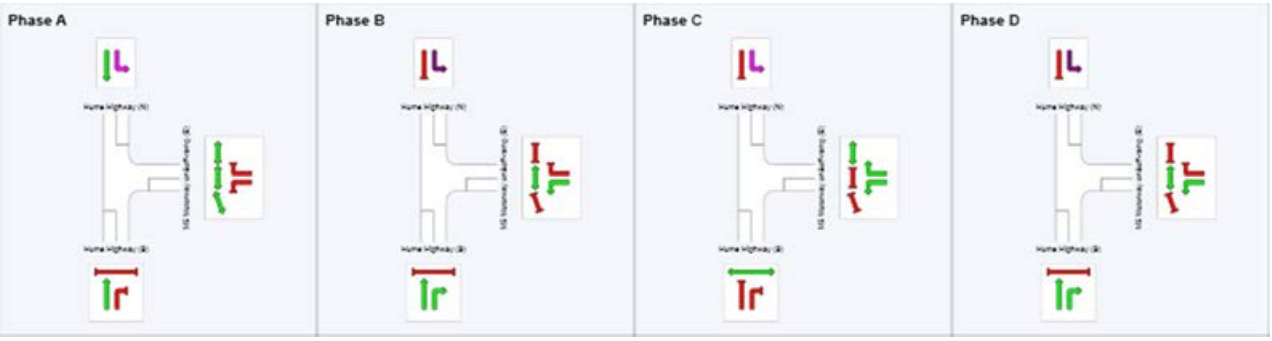
PHASING SUMMARY

Site: I-14 2030 BASE AM

M5 Motorway / Hume Highway
2030 BASE AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	No	No	No	Yes
Phase Change Time (sec)	20	97	123	0
Green Time (sec)	70	19	29	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	77	26	36	20
Phase Split	48 %	16 %	23 %	13 %



PM BASE

MOVEMENT SUMMARY

Site: I-14 2030 BASE PM

M5 Motorway / Hume Highway
2030 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
2	T1	2552	3.8	0.623	2.2	LOS A	7.0	50.8	0.12	0.11	58.3
3	R2	401	1.8	1.023	122.1	LOS F	20.4	145.1	1.00	1.07	22.6
Approach		2953	3.5	1.023	18.5	LOS B	20.4	145.1	0.24	0.24	48.0
East: M5 Motorway on&off-ramp (E)											
4	L2	1465	3.6	1.104	217.9	LOS F	88.9	641.3	1.00	1.28	15.1
6	R2	1175	3.6	1.152	240.1	LOS F	59.4	428.7	1.00	1.33	10.2
Approach		2640	3.6	1.152	227.8	LOS F	88.9	641.3	1.00	1.30	12.9
North: Hume Highway (N)											
7	L2	852	2.1	0.643	13.1	LOS A	26.5	189.0	0.56	0.78	46.8
8	T1	2844	2.7	0.889	23.0	LOS B	56.7	405.9	0.79	0.75	45.7
Approach		3696	2.6	0.889	20.8	LOS B	56.7	405.9	0.74	0.76	45.9
All Vehicles		9288	3.2	1.152	78.9	LOS F	88.9	641.3	0.65	0.75	27.8

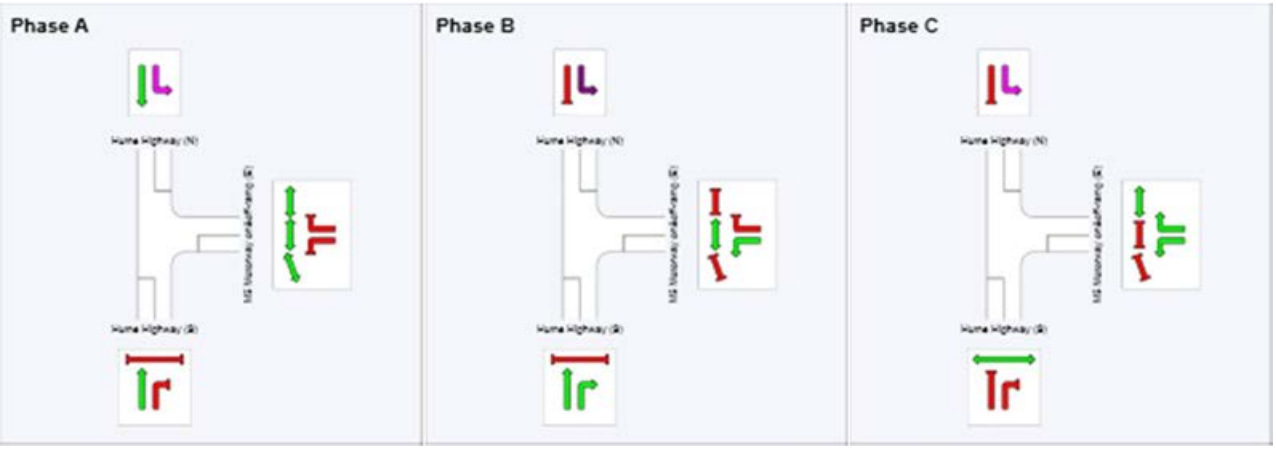
PHASING SUMMARY

Site: I-14 2030 BASE PM

M5 Motorway / Hume Highway
2030 BASE PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	97	121
Green Time (sec)	90	17	31
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	97	24	38
Phase Split	61 %	15 %	24 %



AM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-14 2030 MIMT AM

M5 Motorway / Hume Highway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
2	T1	4256	4.6	1.027	59.4	LOS E	152.3	1108.5	1.00	1.21	33.2
3	R2	648	4.2	0.893	44.1	LOS D	17.9	129.9	1.00	0.91	37.4
Approach		4904	4.6	1.027	57.4	LOS E	152.3	1108.5	1.00	1.17	33.7
East: M5 Motorway on&off-ramp (E)											
4	L2	338	5.9	0.134	30.5	LOS C	4.8	35.4	0.60	0.71	41.9
6	R2	1220	7.0	1.316	383.2	LOS F	77.6	595.6	1.00	1.58	6.8
Approach		1557	6.8	1.316	306.7	LOS F	77.6	595.6	0.91	1.39	9.0
North: Hume Highway (N)											
7	L2	751	11.2	0.609	13.2	LOS A	22.8	184.5	0.51	0.73	46.3
8	T1	1208	6.7	0.490	28.5	LOS B	17.8	131.7	0.62	0.55	43.3
Approach		1959	8.4	0.609	22.6	LOS B	22.8	184.5	0.58	0.62	44.1
All Vehicles		8421	5.9	1.316	95.4	LOS F	152.3	1108.5	0.89	1.08	24.9

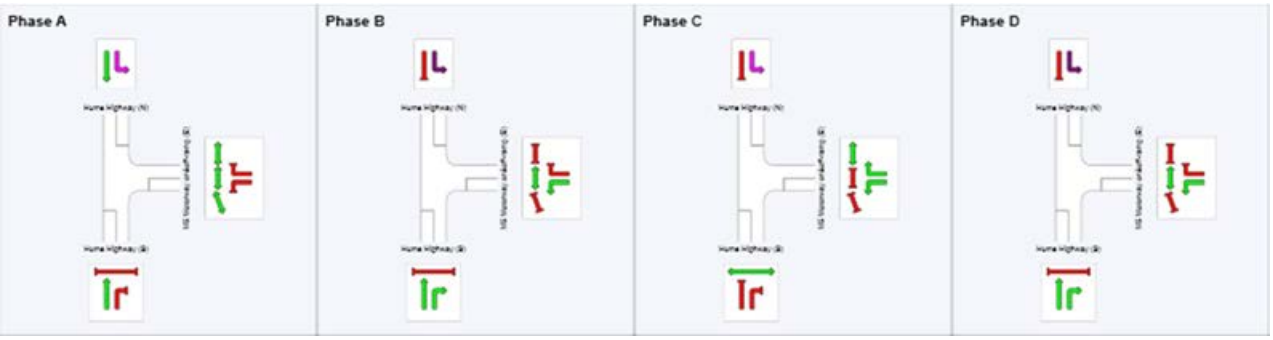
PHASING SUMMARY

Site: I-14 2030 MIMT AM

M5 Motorway / Hume Highway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	No	No	No	Yes
Phase Change Time (sec)	20	97	123	0
Green Time (sec)	70	19	29	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	77	26	36	20
Phase Split	48 %	16 %	23 %	13 %



PM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-14 2030 MIMT PM

M5 Motorway / Hume Highway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
2	T1	2555	3.9	0.624	2.2	LOS A	7.1	51.1	0.12	0.11	58.3
3	R2	401	1.8	1.023	122.1	LOS F	20.4	145.1	1.00	1.07	22.6
Approach		2956	3.6	1.023	18.4	LOS B	20.4	145.1	0.24	0.24	48.0
East: M5 Motorway on&off-ramp (E)											
4	L2	1470	3.4	1.107	220.0	LOS F	89.7	646.2	1.00	1.28	15.0
6	R2	1236	7.6	1.285	357.5	LOS F	77.5	601.9	1.00	1.54	7.2
Approach		2706	5.3	1.285	282.8	LOS F	89.7	646.2	1.00	1.40	10.8
North: Hume Highway (N)											
7	L2	907	8.1	0.742	15.8	LOS B	28.4	225.4	0.65	0.84	44.6
8	T1	2837	2.4	0.870	20.5	LOS B	51.6	368.7	0.78	0.73	47.0
Approach		3744	3.8	0.870	19.4	LOS B	51.6	368.7	0.75	0.76	46.5
All Vehicles		9406	4.2	1.285	94.9	LOS F	89.7	646.2	0.66	0.78	25.0

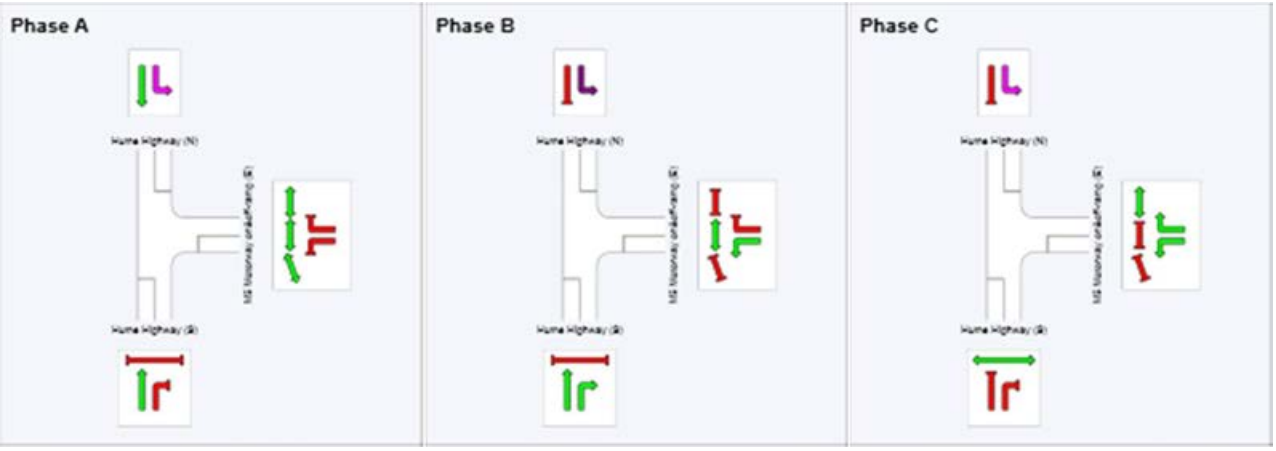
PHASING SUMMARY

Site: I-14 2030 MIMT PM

M5 Motorway / Hume Highway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	97	121
Green Time (sec)	90	17	31
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	97	24	38
Phase Split	61 %	15 %	24 %



AM With Moorebank IMT – with upgrade

MOVEMENT SUMMARY

Site: I-14 2030 MIMT AM - Upgrade

M5 Motorway / Hume Highway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
2	T1	4256	4.6	1.027	59.4	LOS E	152.3	1108.5	1.00	1.21	33.2
3	R2	648	4.2	0.893	44.1	LOS D	17.9	129.9	1.00	0.91	37.4
Approach		4904	4.6	1.027	57.4	LOS E	152.3	1108.5	1.00	1.17	33.7
East: M5 Motorway on&off-ramp (E)											
4	L2	338	5.9	0.134	30.5	LOS C	4.8	35.4	0.60	0.71	41.9
6	R2	1220	7.0	1.287	355.8	LOS F	73.2	562.0	1.00	1.54	7.3
Approach		1557	6.8	1.287	285.2	LOS F	73.2	562.0	0.91	1.36	9.6
North: Hume Highway (N)											
7	L2	751	11.2	0.609	13.2	LOS A	22.8	184.5	0.51	0.73	46.3
8	T1	1208	6.7	0.490	28.5	LOS B	17.8	131.7	0.62	0.55	43.3
Approach		1959	8.4	0.609	22.6	LOS B	22.8	184.5	0.58	0.62	44.1
All Vehicles		8421	5.9	1.287	91.4	LOS F	152.3	1108.5	0.89	1.08	25.5

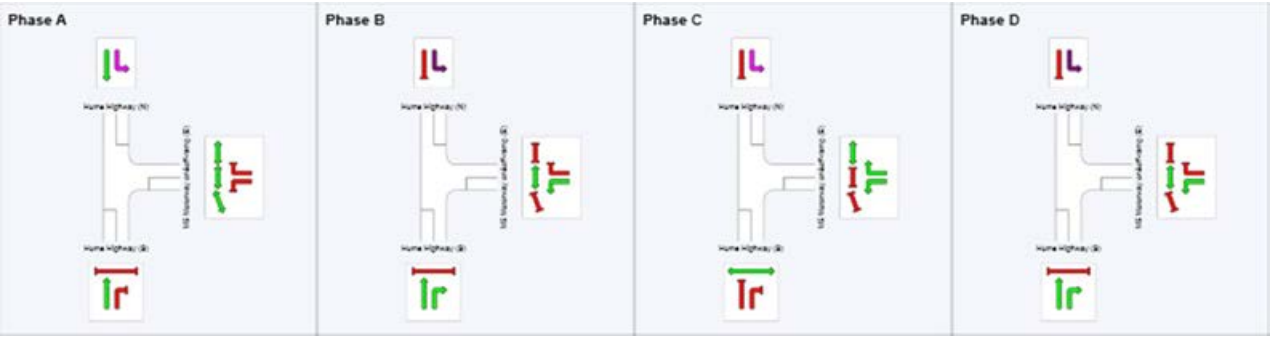
PHASING SUMMARY

Site: I-14 2030 MIMT AM - Upgrade

M5 Motorway / Hume Highway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	No	No	No	Yes
Phase Change Time (sec)	20	97	123	0
Green Time (sec)	70	19	29	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	77	26	36	20
Phase Split	48 %	16 %	23 %	13 %



PM With Moorebank IMT – with upgrade

MOVEMENT SUMMARY

Site: I-14 2030 MIMT PM - Upgrade

M5 Motorway / Hume Highway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
2	T1	2555	3.9	0.636	3.1	LOS A	9.7	70.4	0.16	0.15	57.6
3	R2	401	1.8	1.087	170.8	LOS F	24.1	171.2	1.00	1.18	18.1
Approach		2956	3.6	1.087	25.9	LOS B	24.1	171.2	0.28	0.29	44.4
East: M5 Motorway on&off-ramp (E)											
4	L2	1470	3.4	1.092	207.8	LOS F	86.8	625.7	1.00	1.26	15.6
6	R2	1236	7.6	1.156	240.5	LOS F	60.9	472.9	1.00	1.34	10.2
Approach		2706	5.3	1.156	222.7	LOS F	86.8	625.7	1.00	1.30	13.1
North: Hume Highway (N)											
7	L2	907	8.1	0.741	15.4	LOS B	28.8	228.6	0.65	0.84	44.9
8	T1	2837	2.4	0.951	40.7	LOS C	80.8	577.3	0.86	0.90	38.7
Approach		3744	3.8	0.951	34.6	LOS C	80.8	577.3	0.81	0.89	39.6
All Vehicles		9406	4.2	1.156	86.0	LOS F	86.8	625.7	0.70	0.82	26.4

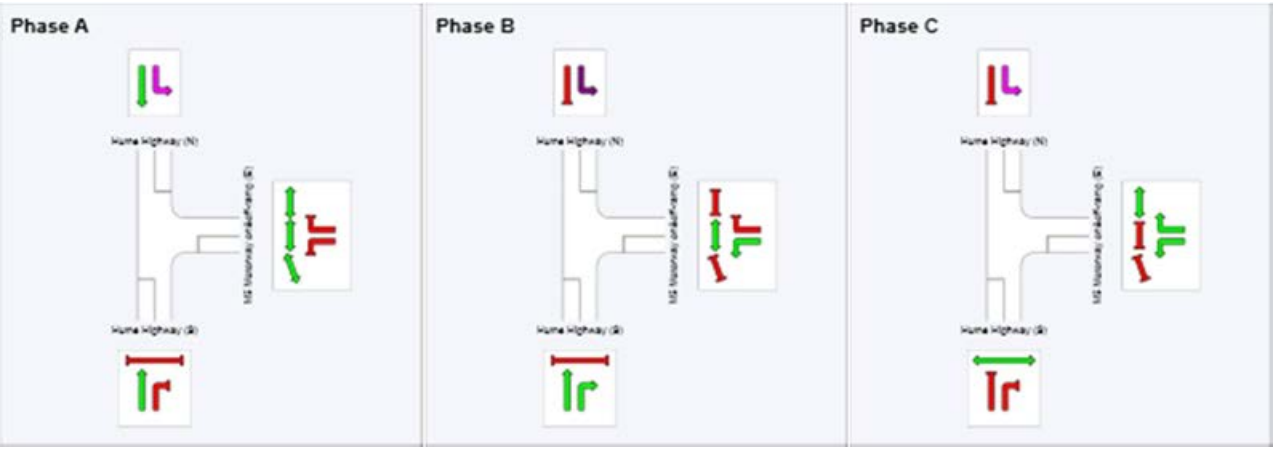
PHASING SUMMARY

Site: I-14 2030 MIMT PM - Upgrade

M5 Motorway / Hume Highway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	96	119
Green Time (sec)	89	16	33
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	96	23	40
Phase Split	60 %	14 %	25 %



I-15 Intersection of Cambridge Avenue and Canterbury Road

AM BASE

MOVEMENT SUMMARY

Site: I-15 2030 BASE AM

Canterbury Road / Cambridge Avenue / Glenfield Road
2030 BASE AM PEAK 7:45 am - 8:45 am
Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	449	3.5	0.498	6.1	LOS A	3.1	22.6	0.61	0.70	52.9
2	T1	8	0.0	0.827	8.7	LOS A	12.0	85.2	0.86	0.89	50.3
3	R2	999	2.1	0.827	14.1	LOS A	12.0	85.2	0.86	0.89	50.4
Approach		1457	2.5	0.827	11.6	LOS A	12.0	85.2	0.78	0.83	51.0
East: Cambridge Avenue (E)											
4	L2	307	3.1	0.163	3.5	LOS A	0.0	0.0	0.00	0.43	56.5
5	T1	81	7.8	0.088	5.5	LOS A	0.5	3.9	0.56	0.59	53.2
6	R2	54	9.8	0.088	10.7	LOS A	0.5	3.9	0.57	0.61	53.5
Approach		442	4.8	0.163	4.7	LOS A	0.5	3.9	0.17	0.48	55.5
North: Railway Parade (N)											
7	L2	319	3.0	0.747	34.1	LOS C	8.6	61.6	1.00	1.32	38.3
8	T1	4	25.0	0.613	29.0	LOS C	4.7	35.7	0.97	1.16	39.6
9	R2	181	8.7	0.613	34.3	LOS C	4.7	35.7	0.97	1.16	37.8
Approach		504	5.2	0.747	34.1	LOS C	8.6	61.6	0.99	1.26	38.1
West: Glenfield Road (W)											
10	L2	395	5.3	1.135	171.6	LOS F	60.0	440.6	1.00	3.16	14.1
11	T1	200	6.8	1.135	172.5	LOS F	60.0	440.6	1.00	3.07	14.3
12	R2	363	5.8	1.135	180.0	LOS F	49.5	364.5	1.00	2.90	14.3
Approach		958	5.8	1.135	175.0	LOS F	60.0	440.6	1.00	3.04	14.2
All Vehicles		3361	4.2	1.135	60.6	LOS E	60.0	440.6	0.80	1.48	29.6

PM BASE

MOVEMENT SUMMARY

Site: I-15 2030 BASE PM

Canterbury Road / Cambridge Avenue / Glenfield Road
2030 BASE PM PEAK 4:30 pm - 5:30 pm
Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	338	2.2	0.467	8.7	LOS A	3.0	21.3	0.78	0.92	51.1
2	T1	6	0.0	0.399	7.1	LOS A	2.4	17.2	0.75	0.90	51.3
3	R2	334	1.3	0.399	12.5	LOS A	2.4	17.2	0.75	0.90	51.4
Approach		678	1.7	0.467	10.6	LOS A	3.0	21.3	0.77	0.91	51.3
East: Cambridge Avenue (E)											
4	L2	1111	2.3	0.586	3.6	LOS A	0.0	0.0	0.00	0.43	56.3
5	T1	291	8.0	0.444	7.2	LOS A	3.5	24.8	0.75	0.75	52.0
6	R2	323	1.0	0.444	12.3	LOS A	3.5	24.8	0.80	0.78	52.3
Approach		1724	3.0	0.586	5.8	LOS A	3.5	24.8	0.28	0.55	54.8
North: Railway Parade (N)											
7	L2	125	1.7	0.191	7.9	LOS A	1.0	6.8	0.69	0.80	52.8
8	T1	0	0.0	0.000	0.0	NA	0.0	0.0	0.00	0.00	0.0
9	R2	240	8.3	0.294	12.7	LOS A	1.7	12.6	0.72	0.86	50.0
Approach		365	6.1	0.294	11.0	LOS A	1.7	12.6	0.71	0.84	51.0
West: Glenfield Road (W)											
10	L2	271	4.7	0.425	8.4	LOS A	2.8	19.9	0.75	0.84	51.3
11	T1	54	0.0	0.425	8.3	LOS A	2.8	19.9	0.75	0.84	53.2
12	R2	451	3.7	0.495	13.6	LOS A	3.8	27.5	0.78	0.90	49.5
Approach		775	3.8	0.495	11.4	LOS A	3.8	27.5	0.77	0.87	50.3
All Vehicles		3542	3.2	0.586	8.5	LOS A	3.8	27.5	0.52	0.72	52.7

AM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-15 2030 MIMT AM

Canterbury Road / Cambridge Avenue / Glenfield Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	449	3.5	0.491	5.9	LOS A	3.0	21.7	0.59	0.68	53.0
2	T1	8	0.0	0.828	8.4	LOS A	12.0	85.1	0.85	0.87	50.4
3	R2	1017	2.1	0.828	13.8	LOS A	12.0	85.1	0.85	0.87	50.6
Approach		1475	2.5	0.828	11.4	LOS A	12.0	85.1	0.77	0.81	51.2
East: Cambridge Avenue (E)											
4	L2	307	3.1	0.163	3.5	LOS A	0.0	0.0	0.00	0.43	56.5
5	T1	81	7.8	0.087	5.4	LOS A	0.5	3.8	0.55	0.58	53.2
6	R2	54	9.8	0.087	10.6	LOS A	0.5	3.8	0.55	0.60	53.5
Approach		442	4.8	0.163	4.7	LOS A	0.5	3.8	0.17	0.48	55.5
North: Railway Parade (N)											
7	L2	316	0.7	0.737	33.6	LOS C	8.4	59.3	1.00	1.31	38.5
8	T1	3	0.0	0.548	25.3	LOS B	4.1	28.8	0.97	1.12	41.3
9	R2	168	1.9	0.548	30.7	LOS C	4.1	28.8	0.97	1.12	39.6
Approach		488	1.1	0.737	32.5	LOS C	8.4	59.3	0.99	1.24	38.9
West: Glenfield Road (W)											
10	L2	399	6.3	1.188	214.8	LOS F	72.6	537.9	1.00	3.57	11.9
11	T1	207	8.1	1.188	215.7	LOS F	72.6	537.9	1.00	3.46	12.0
12	R2	367	6.9	1.188	223.1	LOS F	59.6	442.6	1.00	3.25	12.0
Approach		973	6.9	1.188	218.1	LOS F	72.6	537.9	1.00	3.43	12.0
All Vehicles		3378	3.9	1.188	73.1	LOS F	72.6	537.9	0.79	1.58	26.8

PM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-15 2030 MIMT PM

Canterbury Road / Cambridge Avenue / Glenfield Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	338	2.2	0.471	8.8	LOS A	3.0	21.5	0.78	0.93	51.0
2	T1	6	0.0	0.402	7.2	LOS A	2.5	17.4	0.76	0.91	51.2
3	R2	334	1.3	0.402	12.6	LOS A	2.5	17.4	0.76	0.91	51.4
Approach		678	1.7	0.471	10.6	LOS A	3.0	21.5	0.77	0.92	51.2
East: Cambridge Avenue (E)											
4	L2	1129	2.2	0.596	3.6	LOS A	0.0	0.0	0.00	0.43	56.3
5	T1	294	7.9	0.450	7.2	LOS A	3.5	25.3	0.76	0.75	52.0
6	R2	328	1.0	0.450	12.4	LOS A	3.5	25.3	0.81	0.78	52.3
Approach		1751	2.9	0.596	5.8	LOS A	3.5	25.3	0.28	0.55	54.8
North: Railway Parade (N)											
7	L2	125	1.7	0.191	7.9	LOS A	1.0	6.8	0.69	0.80	52.8
8	T1	1	0.0	0.295	7.2	LOS A	1.7	12.7	0.72	0.86	51.2
9	R2	240	8.3	0.295	12.7	LOS A	1.7	12.7	0.72	0.86	50.0
Approach		366	6.0	0.295	11.0	LOS A	1.7	12.7	0.71	0.84	51.0
West: Glenfield Road (W)											
10	L2	271	4.7	0.428	8.5	LOS A	2.8	20.2	0.75	0.84	51.2
11	T1	54	0.0	0.428	8.3	LOS A	2.8	20.2	0.75	0.84	53.1
12	R2	451	3.7	0.498	13.7	LOS A	3.9	27.8	0.79	0.90	49.4
Approach		775	3.8	0.498	11.5	LOS A	3.9	27.8	0.77	0.88	50.2
All Vehicles		3570	3.2	0.596	8.5	LOS A	3.9	27.8	0.52	0.72	52.7

AM With Moorebank IMT – with upgrade

MOVEMENT SUMMARY

Site: I-15 2030 MIMT AM - Upgrade

Canterbury Road / Cambridge Avenue / Glenfield Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Canterbury Road (S)											
1	L2	449	3.5	0.633	5.9	LOS A	5.3	37.7	0.63	0.72	51.2
2	T1	8	0.0	0.633	5.8	LOS A	5.3	37.7	0.63	0.72	53.9
3	R2	1017	2.1	0.633	11.5	LOS A	5.3	37.5	0.65	0.76	52.4
Approach		1475	2.5	0.633	9.8	LOS A	5.3	37.7	0.64	0.75	52.1
East: Cambridge Avenue (E)											
4	L2	307	3.1	0.163	3.5	LOS A	0.0	0.0	0.00	0.43	56.5
5	T1	81	7.8	0.090	5.7	LOS A	0.5	4.0	0.58	0.60	53.1
6	R2	54	9.8	0.090	10.9	LOS A	0.5	4.0	0.59	0.62	53.4
Approach		442	4.8	0.163	4.8	LOS A	0.5	4.0	0.18	0.49	55.5
North: Railway Parade (N)											
7	L2	316	0.7	0.516	13.4	LOS A	3.7	26.3	0.90	1.04	48.9
8	T1	3	0.0	0.391	13.6	LOS A	2.2	15.4	0.84	0.99	47.2
9	R2	168	1.9	0.391	19.0	LOS B	2.2	15.4	0.84	0.99	45.9
Approach		488	1.1	0.516	15.3	LOS B	3.7	26.3	0.88	1.03	47.9
West: Glenfield Road (W)											
10	L2	399	6.3	0.722	12.1	LOS A	6.5	47.9	0.91	1.10	48.4
11	T1	207	8.1	0.722	12.6	LOS A	6.5	47.9	0.90	1.11	48.6
12	R2	367	6.9	0.722	19.3	LOS B	5.9	43.7	0.89	1.12	46.0
Approach		973	6.9	0.722	14.9	LOS B	6.5	47.9	0.90	1.11	47.5
All Vehicles		3378	3.9	0.722	11.4	LOS A	6.5	47.9	0.69	0.86	50.5

PM With Moorebank IMT – upgrade

MOVEMENT SUMMARY

Site: I-15 2030 MIMT PM - Upgrade

Canterbury Road / Cambridge Avenue / Glenfield Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	338	2.2	0.437	7.7	LOS A	2.8	20.0	0.77	0.89	51.7
2	T1	6	0.0	0.437	7.6	LOS A	2.8	20.0	0.77	0.89	54.3
3	R2	334	1.3	0.437	13.7	LOS A	2.8	20.0	0.77	0.95	50.8
Approach		678	1.7	0.437	10.6	LOS A	2.8	20.0	0.77	0.92	51.2
East: Cambridge Avenue (E)											
4	L2	1129	2.2	0.596	3.6	LOS A	0.0	0.0	0.00	0.43	56.3
5	T1	294	7.9	0.445	7.2	LOS A	3.4	24.7	0.75	0.75	52.0
6	R2	328	1.0	0.445	12.3	LOS A	3.4	24.7	0.80	0.78	52.3
Approach		1751	2.9	0.596	5.8	LOS A	3.4	24.7	0.27	0.55	54.8
North: Railway Parade (N)											
7	L2	125	1.7	0.184	7.7	LOS A	0.9	6.2	0.66	0.78	52.9
8	T1	1	0.0	0.283	7.0	LOS A	1.5	11.5	0.69	0.85	51.3
9	R2	240	8.3	0.283	12.5	LOS A	1.5	11.5	0.69	0.85	50.2
Approach		366	6.0	0.283	10.8	LOS A	1.5	11.5	0.68	0.83	51.1
West: Glenfield Road (W)											
10	L2	271	4.7	0.405	7.5	LOS A	2.3	16.9	0.69	0.80	51.9
11	T1	54	0.0	0.405	7.4	LOS A	2.3	16.9	0.69	0.80	53.9
12	R2	451	3.7	0.471	12.6	LOS A	3.1	22.7	0.72	0.88	50.2
Approach		775	3.8	0.471	10.5	LOS A	3.1	22.7	0.71	0.85	51.0
All Vehicles		3570	3.2	0.596	8.3	LOS A	3.4	24.7	0.50	0.71	52.9

I-0A Intersection of Moorebank Avenue and Anzac Road

AM BASE

MOVEMENT SUMMARY

Site: I-0A 2030 BASE AM

Intersection of Moorebank Avenue and Anzac Road
2030 BASE AM PEAK
Signals - Fixed Time Cycle Time = 103 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1101	3.4	1.044	107.2	LOS F	104.4	752.0	1.00	1.53	15.4
3	R2	473	3.1	0.773	36.9	LOS C	19.6	140.6	0.96	1.00	36.7
Approach		1574	3.3	1.044	86.1	LOS F	104.4	752.0	0.99	1.37	20.3
East: Anzac Road (E)											
4	L2	258	3.3	0.311	24.5	LOS B	8.1	58.6	0.67	0.76	41.9
6	R2	227	13.4	0.864	61.5	LOS E	12.9	100.8	1.00	0.97	19.6
Approach		485	8.0	0.864	41.9	LOS C	12.9	100.8	0.83	0.86	30.0
North: Moorebank Avenue (N)											
7	L2	383	9.9	0.250	6.1	LOS A	1.4	10.9	0.16	0.59	49.8
8	T1	644	3.3	0.595	23.1	LOS B	18.7	134.4	0.78	0.68	36.9
Approach		1027	5.7	0.595	16.8	LOS B	18.7	134.4	0.55	0.65	40.9
All Vehicles		3086	4.9	1.044	56.1	LOS D	104.4	752.0	0.82	1.05	25.5

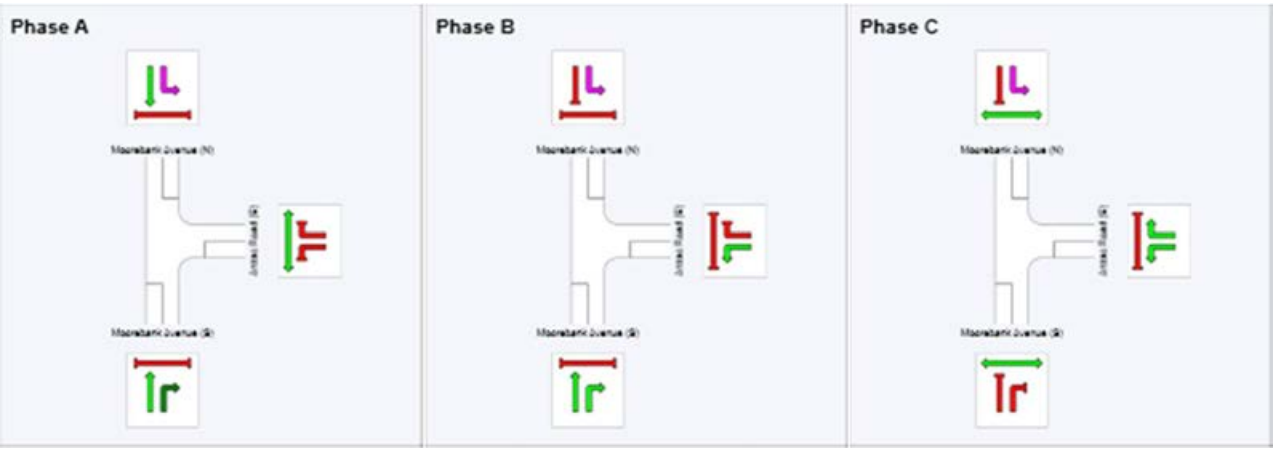
PHASING SUMMARY

Site: I-0A 2030 BASE AM

Intersection of Moorebank Avenue and Anzac Road
2030 BASE AM PEAK
Signals - Fixed Time Cycle Time = 103 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	50	78
Green Time (sec)	44	22	19
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	50	28	25
Phase Split	49 %	27 %	24 %



PM BASE

MOVEMENT SUMMARY

Site: I-0A 2030 BASE PM

Intersection of Moorebank Avenue and Anzac Road
2030 BASE PM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	323	3.9	0.271	9.7	LOS A	7.6	55.3	0.48	0.42	47.5
3	R2	208	1.0	1.210	231.3	LOS F	26.9	189.8	1.00	1.38	12.4
Approach		532	2.8	1.210	96.6	LOS F	26.9	189.8	0.68	0.79	19.4
East: Anzac Road (E)											
4	L2	578	2.2	0.848	46.1	LOS D	31.5	224.9	0.99	0.94	33.6
6	R2	391	5.4	0.924	69.1	LOS E	25.7	188.0	1.00	1.02	18.4
Approach		968	3.5	0.924	55.3	LOS D	31.5	224.9	0.99	0.97	27.1
North: Moorebank Avenue (N)											
7	L2	359	3.8	0.223	6.1	LOS A	1.3	9.5	0.15	0.59	50.2
8	T1	1307	2.4	0.997	61.7	LOS E	80.8	577.3	0.91	1.11	22.5
Approach		1666	2.7	0.997	49.8	LOS D	80.8	577.3	0.74	1.00	25.5
All Vehicles		3166	3.0	1.210	59.3	LOS E	80.8	577.3	0.81	0.96	24.6

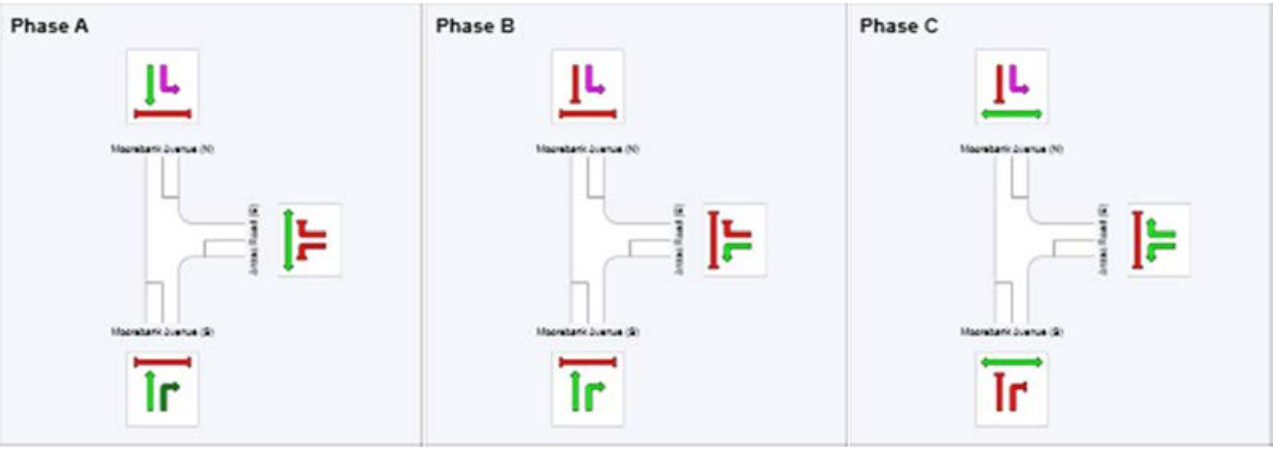
PHASING SUMMARY

Site: I-0A 2030 BASE PM

Intersection of Moorebank Avenue and Anzac Road
2030 BASE PM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	63	75
Green Time (sec)	57	6	29
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	63	12	35
Phase Split	57 %	11 %	32 %



AM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-0A 2030 MINT AM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2030 MINT AM PEAK - Upgrade 1
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
1	L2	44	0.0	0.735	33.0	LOS C	22.8	163.8	0.82	0.77	29.5
2	T1	1083	3.5	0.735	27.2	LOS B	23.0	166.0	0.82	0.75	37.2
3	R2	473	3.1	0.867	54.2	LOS D	27.5	197.6	1.00	0.96	28.3
Approach		1600	3.3	0.867	35.3	LOS C	27.5	197.6	0.88	0.82	33.7
East: Anzac Road (E)											
4	L2	215	3.9	0.231	11.4	LOS A	3.8	27.8	0.42	0.68	47.9
5	T1	13	0.0	0.071	51.8	LOS D	0.6	4.5	0.94	0.66	25.9
6	R2	224	13.6	0.728	63.1	LOS E	6.4	49.8	1.00	0.87	28.0
Approach		452	8.6	0.728	38.2	LOS C	6.4	49.8	0.72	0.77	34.3
North: Moorebank Avenue (N)											
7	L2	383	9.9	0.687	35.2	LOS C	20.7	155.7	0.88	0.83	37.4
8	T1	507	3.1	0.687	33.5	LOS C	20.7	155.7	0.87	0.77	34.0
9	R2	368	60.6	0.884	69.3	LOS E	11.9	176.9	1.00	1.05	19.3
Approach		1259	22.0	0.884	44.5	LOS D	20.7	176.9	0.91	0.87	29.8
West: MIMT Access Road (W)											
10	L2	225	99.1	0.484	27.4	LOS B	3.8	75.7	0.87	0.77	30.7
11	T1	1	0.0	0.007	52.0	LOS D	0.1	0.4	0.94	0.56	26.0
12	R2	1	0.0	0.008	56.3	LOS D	0.1	0.4	0.94	0.59	19.2
Approach		227	98.1	0.484	27.7	LOS B	3.8	75.7	0.87	0.77	30.6
All Vehicles		3538	16.7	0.884	38.5	LOS C	27.5	197.6	0.87	0.83	32.1

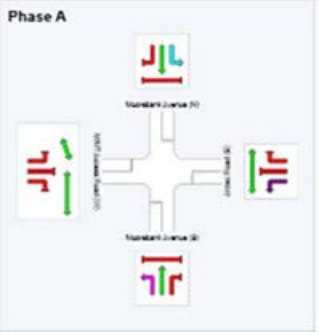
PHASING SUMMARY

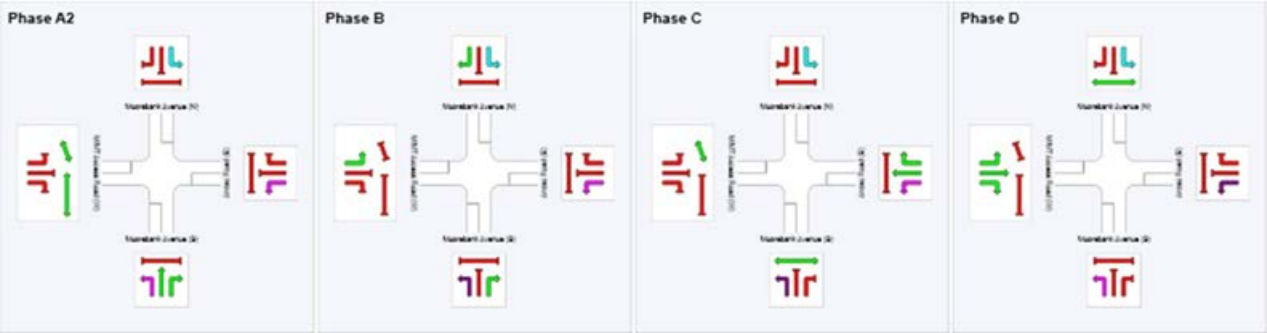
Site: I-0A 2030 MINT AM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2030 MINT AM PEAK - Upgrade 1
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	A2	B	C	D
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	41	50	80	96
Green Time (sec)	35	3	24	10	8
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	41	9	30	16	14
Phase Split	37 %	8 %	27 %	15 %	13 %





PM With Moorebank IMT

MOVEMENT SUMMARY

Site: I-0A 2030 MINT PM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2030 MINT PM PEAK - Upgrade 1
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
1	L2	1	0.0	0.229	30.6	LOS C	4.8	34.9	0.60	0.50	31.1
2	T1	323	3.9	0.229	24.1	LOS B	4.9	35.4	0.60	0.50	39.0
3	R2	208	1.0	0.956	82.8	LOS F	14.4	101.7	1.00	1.10	22.2
Approach		533	2.8	0.956	47.1	LOS D	14.4	101.7	0.76	0.73	29.7
East: Anzac Road (E)											
4	L2	568	2.2	0.878	42.5	LOS C	32.8	233.9	1.00	1.02	32.0
5	T1	1	0.0	0.005	48.2	LOS D	0.1	0.4	0.91	0.56	26.9
6	R2	391	5.4	1.000	101.9	LOS F	15.2	111.2	1.00	1.20	21.3
Approach		960	3.5	1.000	66.6	LOS E	32.8	233.9	1.00	1.09	26.2
North: Moorebank Avenue (N)											
7	L2	353	3.9	0.927	42.6	LOS D	53.6	385.3	0.95	1.01	35.5
8	T1	1264	2.6	0.927	37.2	LOS C	53.6	385.3	0.84	0.92	32.4
9	R2	289	93.5	0.825	62.8	LOS E	8.8	168.3	0.99	1.00	19.9
Approach		1906	16.6	0.927	42.1	LOS C	53.6	385.3	0.88	0.95	30.7
West: MIMT Access Road (W)											
10	L2	423	63.9	0.704	29.3	LOS C	7.7	117.4	0.94	0.86	30.6
11	T1	16	0.0	0.111	53.7	LOS D	0.8	5.8	0.96	0.67	25.5
12	R2	35	0.0	0.257	59.1	LOS E	1.9	13.0	0.98	0.72	18.6
Approach		474	57.1	0.704	32.3	LOS C	7.7	117.4	0.94	0.84	29.3
All Vehicles		3873	16.4	1.000	47.7	LOS D	53.6	385.3	0.90	0.94	29.0

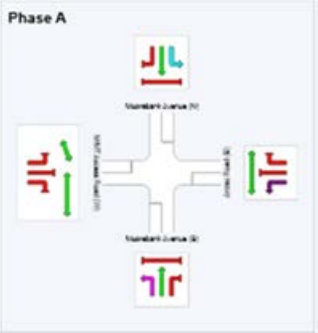
PHASING SUMMARY

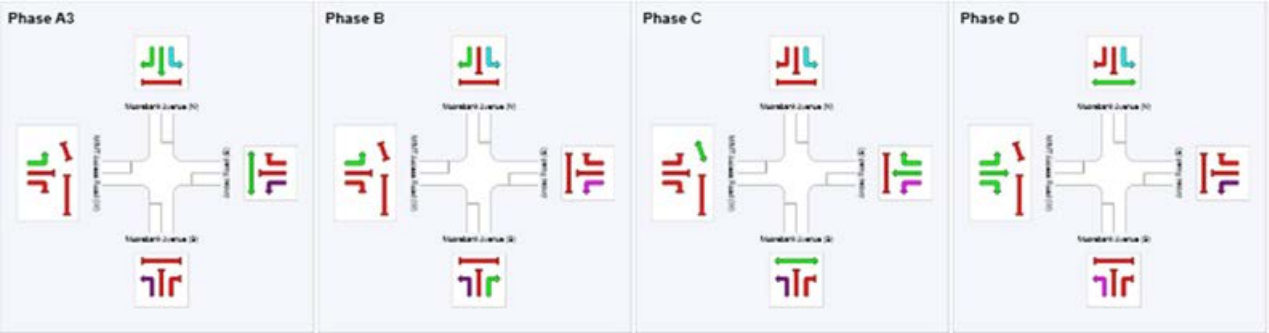
Site: I-0A 2030 MINT PM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2030 MINT PM PEAK - Upgrade 1
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	A3	B	C	D
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	47	59	78	96
Green Time (sec)	41	6	13	12	8
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	47	12	19	18	14
Phase Split	43 %	11 %	17 %	16 %	13 %





Appendix E
Traffic and Transport Impact Assessment

Appendix K

2030 SIDRA results with Moorebank IMT and SIMTA

I-01 Intersection of the Hume Highway and Orange Grove Road

AM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-01 2030 AM CUM A

Hume Highway / Orange Grove Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
NorthEast: Hume Highway (NE)											
25	T1	984	10.9	0.704	24.8	LOS B	20.5	156.7	0.85	0.78	35.5
26	R2	389	10.0	0.907	86.6	LOS F	17.0	128.8	1.00	0.94	23.8
Approach		1374	10.7	0.907	42.3	LOS C	20.5	156.7	0.89	0.82	29.9
NorthWest: Orange Grove Road (NW)											
27	L2	602	6.5	0.712	18.8	LOS B	19.5	144.4	0.54	0.81	44.8
29	R2	1386	9.8	1.047	145.8	LOS F	54.0	419.5	1.00	1.15	14.6
Approach		1988	8.8	1.102	107.3	LOS F	54.0	419.5	0.86	1.05	18.9
SouthWest: Hume Highway (SW)											
30	L2	1301	10.1	0.477	11.8	LOS A	15.0	116.9	0.35	0.70	49.6
31	T1	2186	4.9	0.805	22.9	LOS B	39.5	287.9	0.71	0.65	40.2
Approach		3488	6.8	0.805	18.7	LOS B	39.5	287.9	0.58	0.67	43.8
All Vehicles		6849	8.2	1.102	49.2	LOS D	54.0	419.5	0.72	0.81	28.6

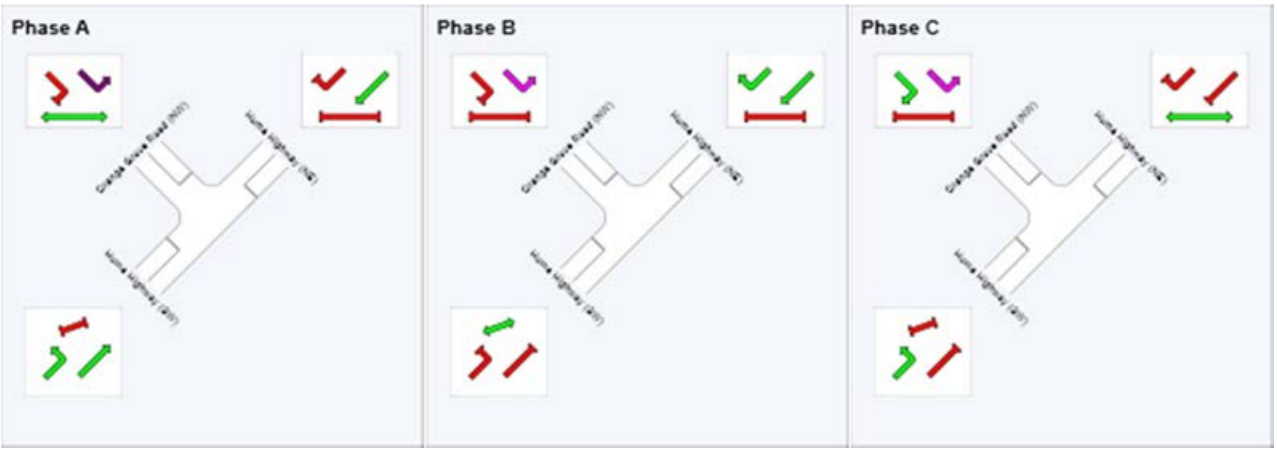
PHASING SUMMARY

Site: I-01 2030 AM CUM A

Hume Highway / Orange Grove Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	84	108
Green Time (sec)	77	17	36
Yellow Time (sec)	5	4	5
All-Red Time (sec)	2	2	2
Phase Time (sec)	84	23	43
Phase Split	56 %	15 %	29 %



PM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-01 2030 PM CUM A

Hume Highway / Orange Grove Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	1767	3.6	0.923	46.0	LOS D	51.1	369.4	0.92	0.99	26.3
26	R2	816	2.8	0.958	68.1	LOS E	24.7	176.9	1.00	1.04	27.6
Approach		2583	3.3	0.958	53.0	LOS D	51.1	369.4	0.94	1.00	26.8
NorthWest: Orange Grove Road (NW)											
27	L2	391	4.3	0.393	14.2	LOS A	8.3	60.0	0.33	0.66	48.0
29	R2	1419	7.2	1.143	195.0	LOS F	69.0	528.0	1.00	1.29	11.7
Approach		1809	6.6	1.143	156.0	LOS F	69.0	528.0	0.85	1.15	14.3
SouthWest: Hume Highway (SW)											
30	L2	1361	7.1	0.830	20.7	LOS B	23.1	176.8	0.84	0.86	43.5
31	T1	1120	5.5	1.009	102.9	LOS F	42.2	310.4	1.00	1.19	16.1
Approach		2481	6.3	1.009	57.8	LOS E	42.2	310.4	0.91	1.01	26.4
All Vehicles		6873	5.3	1.143	81.8	LOS F	69.0	528.0	0.91	1.04	21.2

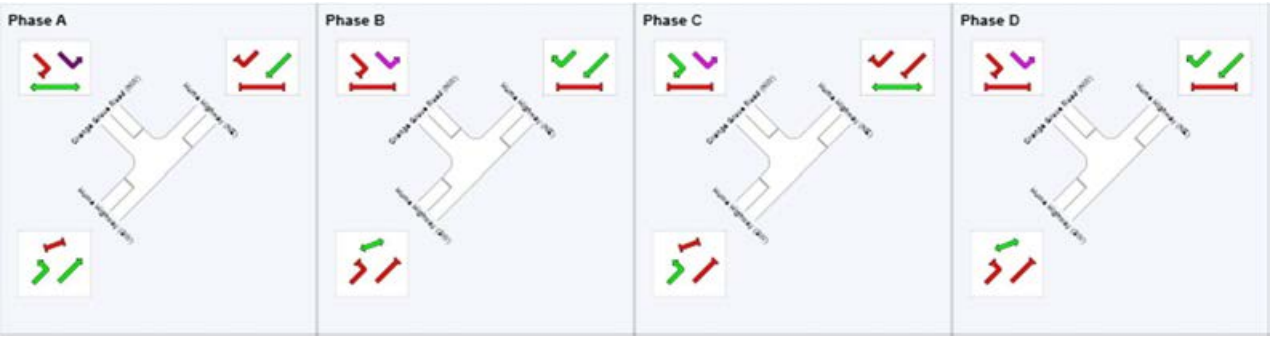
PHASING SUMMARY

Site: I-01 2030 PM CUM A

Hume Highway / Orange Grove Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	80	124
Green Time (sec)	47	20	38	19
Yellow Time (sec)	5	4	5	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	54	26	45	25
Phase Split	36 %	17 %	30 %	17 %



AM Peak – Cumulative Scenario A with Upgrade

MOVEMENT SUMMARY

Site: I-01 2030 AM CUM A - upgrade

Hume Highway / Orange Grove Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	984	10.9	0.704	24.8	LOS B	20.5	156.7	0.85	0.78	35.5
26	R2	389	10.0	0.907	86.6	LOS F	17.0	128.8	1.00	0.94	23.8
Approach		1374	10.7	0.907	42.3	LOS C	20.5	156.7	0.89	0.82	29.9
NorthWest: Orange Grove Road (NW)											
27	L2	602	6.5	0.712	18.8	LOS B	19.5	144.4	0.54	0.81	44.8
29	R2	1386	9.8	1.047	145.8	LOS F	54.0	419.5	1.00	1.15	14.6
Approach		1988	8.8	1.102	107.3	LOS F	54.0	419.5	0.86	1.05	18.9
SouthWest: Hume Highway (SW)											
30	L2	1301	10.1	0.477	11.8	LOS A	15.0	116.9	0.35	0.70	49.6
31	T1	2186	4.9	0.805	22.9	LOS B	39.5	287.9	0.71	0.65	40.2
Approach		3488	6.8	0.805	18.7	LOS B	39.5	287.9	0.58	0.67	43.8
All Vehicles		6849	8.2	1.102	49.2	LOS D	54.0	419.5	0.72	0.81	28.6

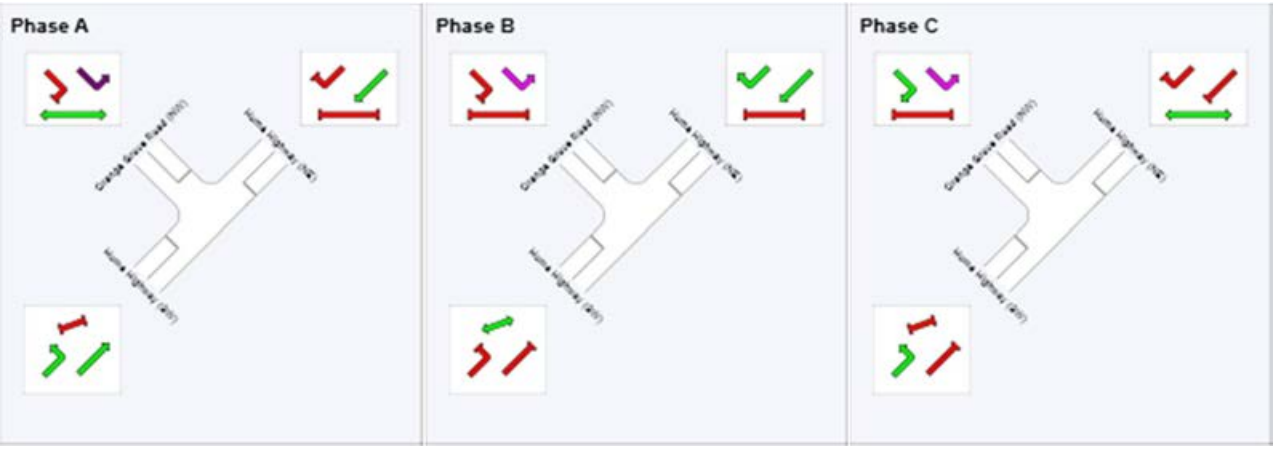
PHASING SUMMARY

Site: I-01 2030 AM CUM A - upgrade

Hume Highway / Orange Grove Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	84	108
Green Time (sec)	77	17	36
Yellow Time (sec)	5	4	5
All-Red Time (sec)	2	2	2
Phase Time (sec)	84	23	43
Phase Split	56 %	15 %	29 %



PM Peak – Cumulative Scenario A with Upgrade

MOVEMENT SUMMARY

Site: I-01 2030 PM CUM A - upgrade

Hume Highway / Orange Grove Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 148 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	1767	3.6	0.988	77.8	LOS F	66.2	478.5	0.98	1.19	18.9
26	R2	816	2.8	0.945	62.6	LOS E	22.4	160.4	1.00	1.02	29.0
Approach		2583	3.3	0.988	73.0	LOS F	66.2	478.5	0.99	1.14	22.1
NorthWest: Orange Grove Road (NW)											
27	L2	391	4.3	0.342	9.2	LOS A	4.1	29.7	0.17	0.60	51.7
29	R2	1419	7.2	1.032	114.6	LOS F	53.8	411.5	1.00	1.10	17.5
Approach		1809	6.6	1.032	91.8	LOS F	53.8	411.5	0.82	0.99	20.9
SouthWest: Hume Highway (SW)											
30	L2	1361	7.1	0.839	21.6	LOS B	23.9	182.3	0.85	0.86	43.0
31	T1	1120	5.5	0.929	74.9	LOS F	28.1	206.4	0.99	1.03	20.4
Approach		2481	6.3	0.929	45.7	LOS D	28.1	206.4	0.91	0.94	30.2
All Vehicles		6873	5.3	1.032	68.1	LOS E	66.2	478.5	0.92	1.03	23.9

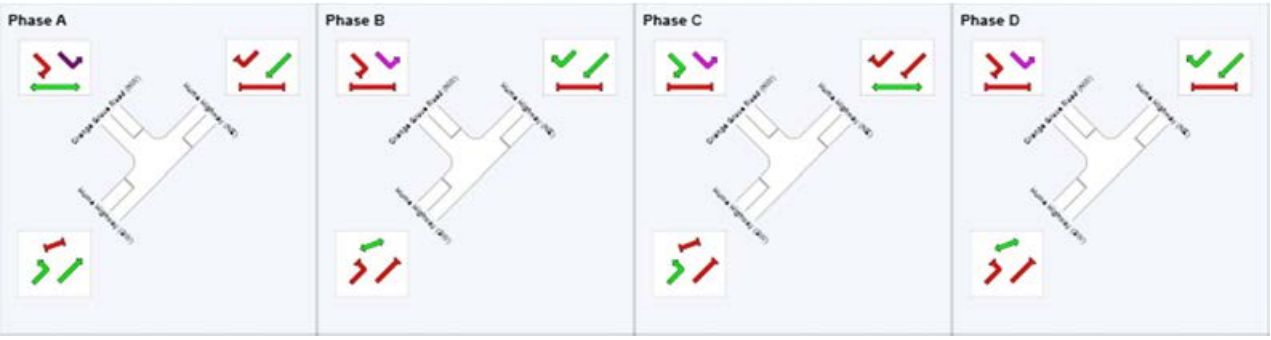
PHASING SUMMARY

Site: I-01 2030 PM CUM A - upgrade

Hume Highway / Orange Grove Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 148 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	47	74	122
Green Time (sec)	41	20	42	19
Yellow Time (sec)	5	4	5	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	48	26	49	25
Phase Split	32 %	18 %	33 %	17 %



AM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-01 2030 AM CUM B

Hume Highway / Orange Grove Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
NorthEast: Hume Highway (NE)											
25	T1	1015	10.6	0.724	25.4	LOS B	21.4	163.3	0.86	0.79	35.1
26	R2	389	10.0	0.907	86.6	LOS F	17.0	128.8	1.00	0.94	23.8
Approach		1404	10.4	0.907	42.4	LOS C	21.4	163.3	0.90	0.83	29.8
NorthWest: Orange Grove Road (NW)											
27	L2	602	6.5	0.712	18.8	LOS B	19.5	144.4	0.54	0.81	44.8
29	R2	1402	9.2	1.052	148.9	LOS F	55.2	425.2	1.00	1.16	14.4
Approach		2004	8.3	1.107	109.8	LOS F	55.2	425.2	0.86	1.06	18.6
SouthWest: Hume Highway (SW)											
30	L2	1294	9.6	0.472	11.7	LOS A	14.8	114.6	0.35	0.70	49.8
31	T1	2186	4.9	0.805	22.9	LOS B	39.5	287.9	0.71	0.65	40.2
Approach		3481	6.6	0.805	18.7	LOS B	39.5	287.9	0.57	0.67	43.9
All Vehicles		6889	7.9	1.107	50.0	LOS D	55.2	425.2	0.72	0.81	28.4

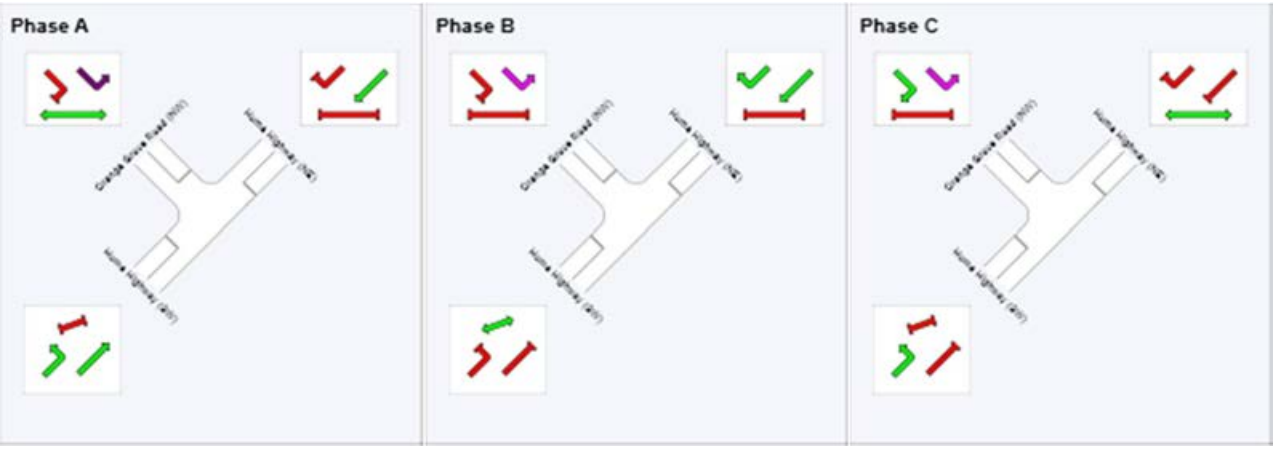
PHASING SUMMARY

Site: I-01 2030 AM CUM B

Hume Highway / Orange Grove Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	84	108
Green Time (sec)	77	17	36
Yellow Time (sec)	5	4	5
All-Red Time (sec)	2	2	2
Phase Time (sec)	84	23	43
Phase Split	56 %	15 %	29 %



PM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-01 2030 PM CUM B

Hume Highway / Orange Grove Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	1765	3.5	0.921	45.1	LOS D	50.5	364.5	0.91	0.98	26.6
26	R2	816	2.8	0.958	68.1	LOS E	24.7	176.9	1.00	1.04	27.6
Approach		2581	3.3	0.958	52.4	LOS D	50.5	364.5	0.94	1.00	27.0
NorthWest: Orange Grove Road (NW)											
27	L2	391	4.3	0.393	14.3	LOS A	8.3	60.2	0.33	0.66	48.0
29	R2	1400	6.0	1.112	170.5	LOS F	63.7	478.6	1.00	1.23	13.0
Approach		1790	5.6	1.112	136.4	LOS F	63.7	478.6	0.85	1.10	15.9
SouthWest: Hume Highway (SW)											
30	L2	1364	5.7	0.820	20.2	LOS B	22.5	168.5	0.83	0.85	44.2
31	T1	1145	5.2	1.028	112.9	LOS F	45.1	330.0	1.00	1.23	15.0
Approach		2508	5.5	1.028	62.5	LOS E	45.1	330.0	0.91	1.03	25.2
All Vehicles		6880	4.7	1.112	77.9	LOS F	63.7	478.6	0.91	1.04	22.0

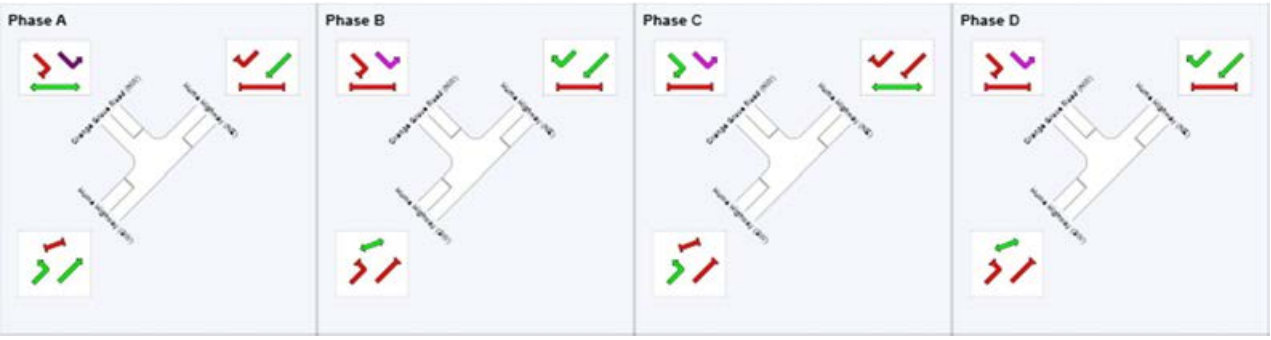
PHASING SUMMARY

Site: I-01 2030 PM CUM B

Hume Highway / Orange Grove Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	80	124
Green Time (sec)	47	20	38	19
Yellow Time (sec)	5	4	5	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	54	26	45	25
Phase Split	36 %	17 %	30 %	17 %



AM Peak – Cumulative Scenario B with Upgrade

MOVEMENT SUMMARY

Site: I-01 2030 AM CUM B - upgrade

Hume Highway / Orange Grove Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	1015	10.6	0.724	25.4	LOS B	21.4	163.3	0.86	0.79	35.1
26	R2	389	10.0	0.907	86.6	LOS F	17.0	128.8	1.00	0.94	23.9
Approach		1404	10.4	0.907	42.4	LOS C	21.4	163.3	0.90	0.83	29.9
NorthWest: Orange Grove Road (NW)											
27	L2	602	6.5	0.694	7.3	LOS A	3.8	28.4	0.11	0.63	53.0
29	R2	1402	9.2	1.055	150.9	LOS F	55.7	429.3	1.00	1.18	14.3
Approach		2004	8.3	1.110	107.8	LOS F	55.7	429.3	0.73	1.01	18.9
SouthWest: Hume Highway (SW)											
30	L2	1294	9.6	0.472	11.7	LOS A	14.8	114.6	0.35	0.70	49.7
31	T1	2186	4.9	0.722	20.3	LOS B	31.4	229.3	0.58	0.53	42.2
Approach		3481	6.6	0.722	17.1	LOS B	31.4	229.3	0.50	0.59	45.2
All Vehicles		6889	7.9	1.110	48.6	LOS D	55.7	429.3	0.65	0.76	28.9

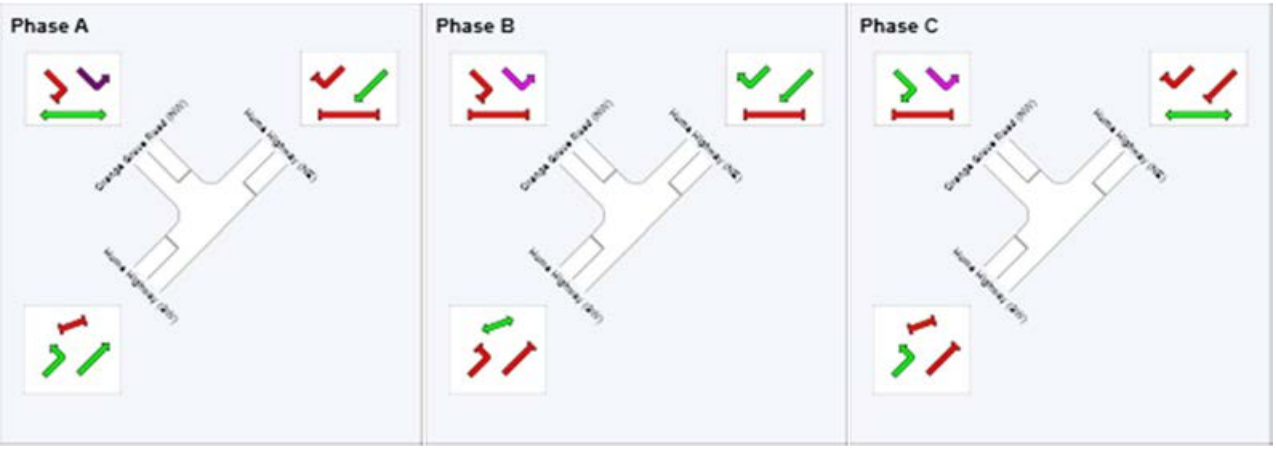
PHASING SUMMARY

Site: I-01 2030 AM CUM B - upgrade

Hume Highway / Orange Grove Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	84	108
Green Time (sec)	77	17	36
Yellow Time (sec)	5	4	5
All-Red Time (sec)	2	2	2
Phase Time (sec)	84	23	43
Phase Split	56 %	15 %	29 %



PM Peak – Cumulative Scenario B with Upgrade

MOVEMENT SUMMARY

Site: I-01 2030 PM CUM B - upgrade

Hume Highway / Orange Grove Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 148 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	1765	3.5	0.998	83.2	LOS F	69.2	499.2	0.97	1.21	18.1
26	R2	816	2.8	0.945	62.6	LOS E	22.4	160.4	1.00	1.02	29.0
Approach		2581	3.3	0.998	76.7	LOS F	69.2	499.2	0.98	1.15	21.5
NorthWest: Orange Grove Road (NW)											
27	L2	391	4.3	0.344	9.6	LOS A	4.4	32.2	0.19	0.61	51.4
29	R2	1400	6.0	1.004	96.4	LOS F	49.4	370.8	0.99	1.05	19.8
Approach		1790	5.6	1.004	77.4	LOS F	49.4	370.8	0.82	0.96	23.3
SouthWest: Hume Highway (SW)											
30	L2	1364	5.7	0.829	20.7	LOS B	22.8	171.3	0.84	0.86	43.8
31	T1	1145	5.2	0.952	80.9	LOS F	30.3	221.8	0.99	1.07	19.3
Approach		2508	5.5	0.952	48.2	LOS D	30.3	221.8	0.91	0.95	29.3
All Vehicles		6880	4.7	1.004	66.5	LOS E	69.2	499.2	0.91	1.03	24.3

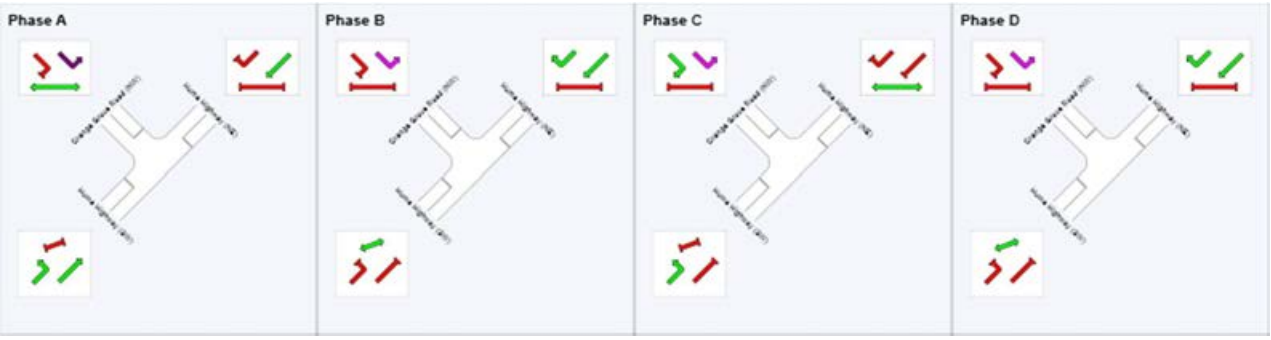
PHASING SUMMARY

Site: I-01 2030 PM CUM B - upgrade

Hume Highway / Orange Grove Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 148 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	47	74	122
Green Time (sec)	41	20	42	19
Yellow Time (sec)	5	4	5	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	48	26	49	25
Phase Split	32 %	18 %	33 %	17 %



AM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-01 2020 MIMT CUM1 AM

Hume Highway / Orange Grove Road
2020 MIMT CUM1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
NorthEast: Hume Highway (NE)											
25	T1	923	11.1	0.661	23.6	LOS B	18.7	143.0	0.83	0.75	36.2
26	R2	360	9.9	0.838	81.1	LOS F	14.7	111.8	1.00	0.89	24.8
Approach		1283	10.7	0.838	39.7	LOS C	18.7	143.0	0.88	0.79	30.9
NorthWest: Orange Grove Road (NW)											
27	L2	548	6.5	0.631	11.7	LOS A	11.5	84.8	0.33	0.68	49.5
29	R2	1271	9.4	0.936	75.1	LOS F	36.9	282.8	1.00	0.94	22.9
Approach		1820	8.5	0.936	56.0	LOS D	36.9	282.8	0.80	0.86	28.0
SouthWest: Hume Highway (SW)											
30	L2	1180	9.5	0.428	11.5	LOS A	12.8	98.1	0.33	0.69	50.0
31	T1	1984	4.9	0.730	21.6	LOS B	32.1	234.5	0.64	0.59	41.1
Approach		3164	6.6	0.730	17.8	LOS B	32.1	234.5	0.53	0.63	44.6
All Vehicles		6267	8.0	0.936	33.4	LOS C	36.9	282.8	0.68	0.73	34.7

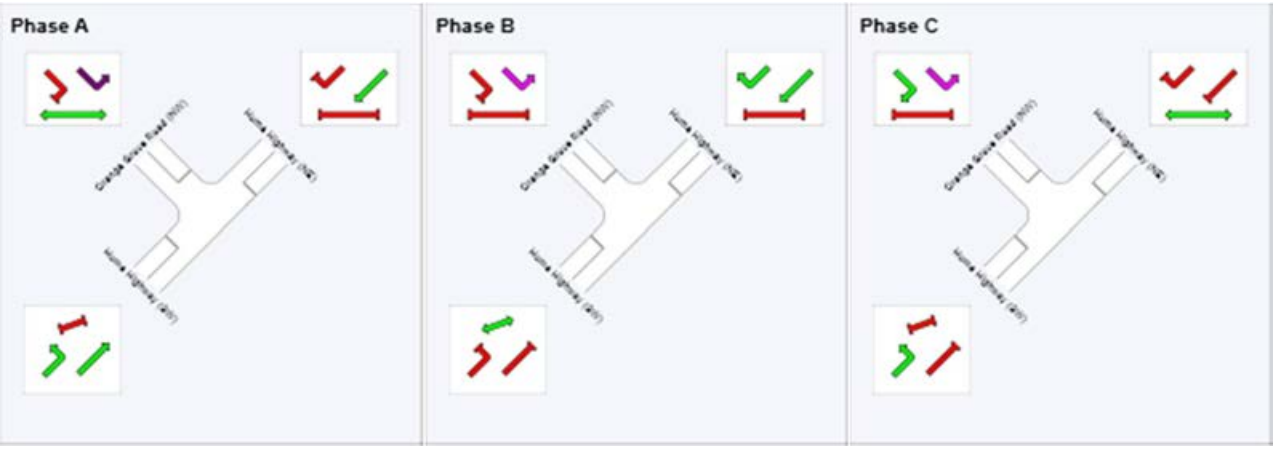
PHASING SUMMARY

Site: I-01 2020 MIMT CUM1 AM

Hume Highway / Orange Grove Road
2020 MIMT CUM1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	84	108
Green Time (sec)	77	17	36
Yellow Time (sec)	5	4	5
All-Red Time (sec)	2	2	2
Phase Time (sec)	84	23	43
Phase Split	56 %	15 %	29 %



PM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-01 2020 MIMT CUM1 PM

Hume Highway / Orange Grove Road
2020 MIMT CUM1 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	1673	3.4	0.872	31.5	LOS C	39.9	287.4	0.85	0.85	31.9
26	R2	774	2.7	0.907	52.6	LOS D	20.0	143.2	1.00	0.97	31.6
Approach		2447	3.2	0.907	38.2	LOS C	39.9	287.4	0.89	0.89	31.8
NorthWest: Orange Grove Road (NW)											
27	L2	369	4.3	0.347	12.7	LOS A	6.5	47.0	0.28	0.64	49.0
29	R2	1318	6.1	1.040	120.3	LOS F	50.3	375.9	1.00	1.10	16.9
Approach		1688	5.7	1.040	96.8	LOS F	50.3	375.9	0.84	1.00	20.1
SouthWest: Hume Highway (SW)											
30	L2	1312	5.8	0.786	19.7	LOS B	20.9	155.2	0.80	0.84	44.5
31	T1	1108	5.2	0.995	96.3	LOS F	40.4	295.8	1.00	1.16	16.9
Approach		2420	5.5	0.995	54.8	LOS D	40.4	295.8	0.89	0.99	27.3
All Vehicles		6554	4.7	1.040	59.4	LOS E	50.3	375.9	0.88	0.95	25.9

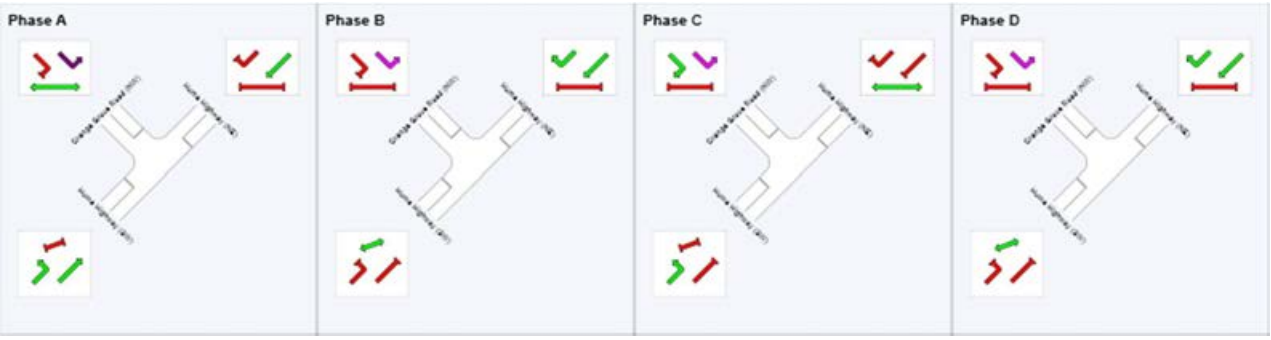
PHASING SUMMARY

Site: I-01 2020 MIMT CUM1 PM

Hume Highway / Orange Grove Road
2020 MIMT CUM1 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	80	124
Green Time (sec)	47	20	38	19
Yellow Time (sec)	5	4	5	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	54	26	45	25
Phase Split	36 %	17 %	30 %	17 %



PM Peak – Cumulative Scenario C1 with Upgrade

MOVEMENT SUMMARY

Site: I-01 2020 MIMT CUM1 PM - Upgrade

Hume Highway / Orange Grove Road
2023 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	1673	3.4	0.900	40.4	LOS C	44.7	322.4	0.89	0.93	28.2
26	R2	774	2.7	0.983	81.0	LOS F	25.0	178.9	1.00	1.08	24.9
Approach		2447	3.2	0.983	53.2	LOS D	44.7	322.4	0.93	0.98	26.8
NorthWest: Orange Grove Road (NW)											
27	L2	369	4.3	0.346	12.8	LOS A	6.5	47.0	0.28	0.64	49.0
29	R2	1318	6.1	0.936	75.9	LOS F	37.6	280.9	1.00	0.96	22.9
Approach		1688	5.7	0.936	62.1	LOS E	37.6	280.9	0.84	0.89	26.3
SouthWest: Hume Highway (SW)											
30	L2	1312	5.8	0.759	18.5	LOS B	19.5	145.4	0.76	0.83	45.3
31	T1	1108	5.2	0.995	96.3	LOS F	40.4	295.8	1.00	1.16	16.9
Approach		2420	5.5	0.995	54.1	LOS D	40.4	295.8	0.87	0.98	27.5
All Vehicles		6554	4.7	0.995	55.8	LOS D	44.7	322.4	0.89	0.96	26.9

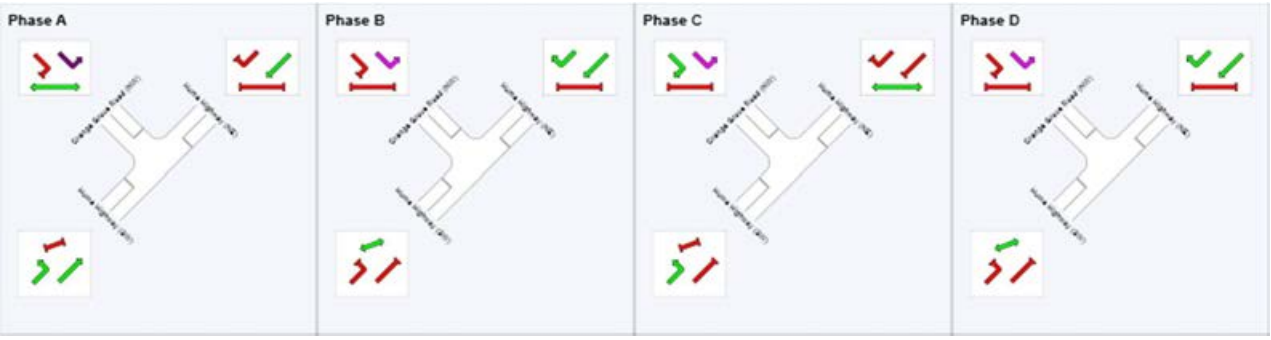
PHASING SUMMARY

Site: I-01 2020 MIMT CUM1 PM - Upgrade

Hume Highway / Orange Grove Road
2023 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	78	125
Green Time (sec)	47	18	41	18
Yellow Time (sec)	5	4	5	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	54	24	48	24
Phase Split	36 %	16 %	32 %	16 %



AM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-01 2030 MIMT CUM2 AM

Hume Highway / Orange Grove Road
2030 MIMT CUM2 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	990	10.8	0.708	24.9	LOS B	20.6	158.0	0.85	0.78	35.4
26	R2	389	10.0	0.907	86.6	LOS F	17.0	128.8	1.00	0.94	23.8
Approach		1380	10.6	0.907	42.3	LOS C	20.6	158.0	0.90	0.82	29.9
NorthWest: Orange Grove Road (NW)											
27	L2	602	6.5	0.712	18.8	LOS B	19.5	144.4	0.54	0.81	44.8
29	R2	1386	9.5	1.046	144.8	LOS F	53.8	417.3	1.00	1.15	14.7
Approach		1988	8.6	1.101	106.6	LOS F	53.8	417.3	0.86	1.05	19.0
SouthWest: Hume Highway (SW)											
30	L2	1297	9.8	0.475	11.8	LOS A	14.9	116.1	0.35	0.70	49.7
31	T1	2186	4.9	0.805	22.9	LOS B	39.5	287.9	0.71	0.65	40.2
Approach		3484	6.7	0.805	18.7	LOS B	39.5	287.9	0.57	0.67	43.8
All Vehicles		6852	8.0	1.101	49.0	LOS D	53.8	417.3	0.72	0.81	28.7

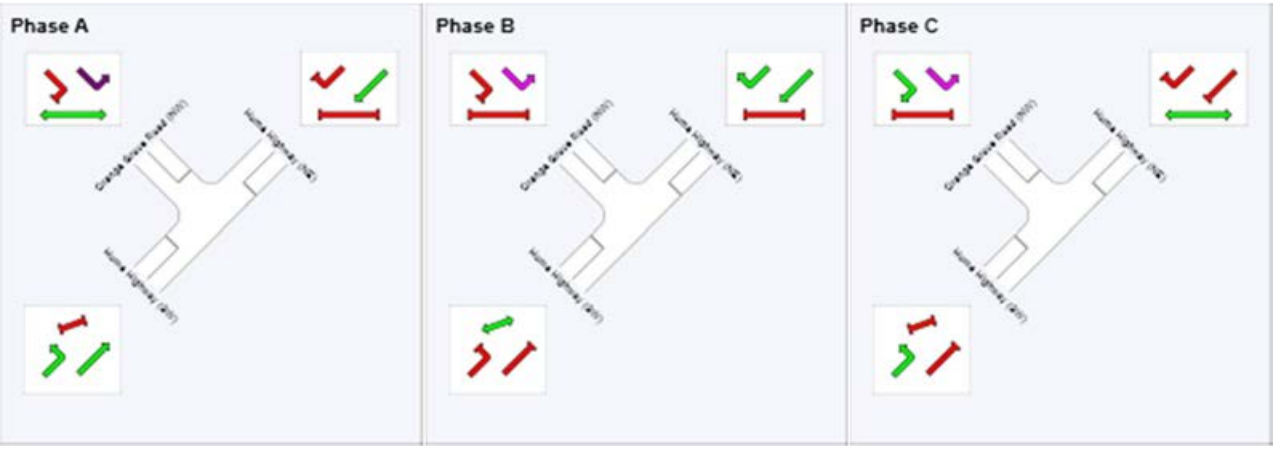
PHASING SUMMARY

Site: I-01 2030 MIMT CUM2 AM

Hume Highway / Orange Grove Road
2030 MIMT CUM2 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	84	108
Green Time (sec)	77	17	36
Yellow Time (sec)	5	4	5
All-Red Time (sec)	2	2	2
Phase Time (sec)	84	23	43
Phase Split	56 %	15 %	29 %



PM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-01 2030 MIMT CUM2 PM

Hume Highway / Orange Grove Road
2030 MIMT CUM2 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
NorthEast: Hume Highway (NE)											
25	T1	1766	3.5	0.922	45.5	LOS D	50.8	366.7	0.91	0.98	26.5
26	R2	816	2.8	0.958	68.1	LOS E	24.7	176.9	1.00	1.04	27.6
Approach		2582	3.3	0.958	52.6	LOS D	50.8	366.7	0.94	1.00	26.9
NorthWest: Orange Grove Road (NW)											
27	L2	391	4.3	0.393	14.3	LOS A	8.3	60.2	0.33	0.66	48.0
29	R2	1408	6.5	1.127	181.7	LOS F	66.1	501.5	1.00	1.26	12.4
Approach		1798	6.1	1.127	145.3	LOS F	66.1	501.5	0.85	1.13	15.1
SouthWest: Hume Highway (SW)											
30	L2	1364	6.3	0.826	20.4	LOS B	22.7	172.1	0.83	0.85	43.9
31	T1	1136	5.3	1.021	109.3	LOS F	44.1	323.2	1.00	1.22	15.4
Approach		2500	5.9	1.021	60.8	LOS E	44.1	323.2	0.91	1.02	25.6
All Vehicles		6880	4.9	1.127	79.8	LOS F	66.1	501.5	0.91	1.04	21.6

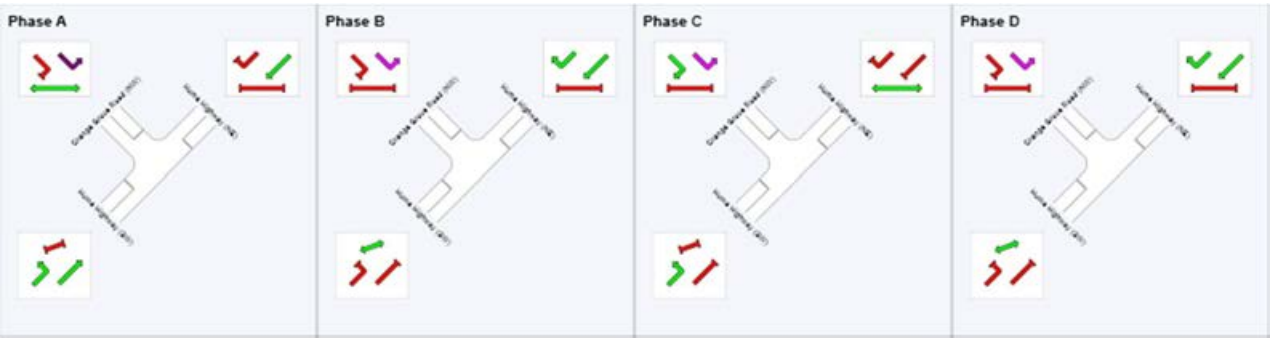
PHASING SUMMARY

Site: I-01 2030 MIMT CUM2 PM

Hume Highway / Orange Grove Road
2030 MIMT CUM2 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	80	124
Green Time (sec)	47	20	38	19
Yellow Time (sec)	5	4	5	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	54	26	45	25
Phase Split	36 %	17 %	30 %	17 %



AM Peak – Cumulative Scenario C2 with Upgrade

MOVEMENT SUMMARY

Site: I-01 2030 MIMT CUM2 AM - Upgrade

Hume Highway / Orange Grove Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	990	10.8	0.708	24.9	LOS B	20.6	158.0	0.85	0.78	35.4
26	R2	389	10.0	0.907	86.6	LOS F	17.0	128.8	1.00	0.94	23.9
Approach		1380	10.6	0.907	42.3	LOS C	20.6	158.0	0.90	0.82	29.9
NorthWest: Orange Grove Road (NW)											
27	L2	602	6.5	0.694	7.3	LOS A	3.8	28.4	0.11	0.63	53.0
29	R2	1386	9.5	1.049	146.8	LOS F	54.3	421.4	1.00	1.17	14.6
Approach		1988	8.6	1.104	104.5	LOS F	54.3	421.4	0.73	1.00	19.3
SouthWest: Hume Highway (SW)											
30	L2	1297	9.8	0.475	11.8	LOS A	14.9	116.1	0.35	0.70	49.7
31	T1	2186	4.9	0.722	20.3	LOS B	31.4	229.3	0.58	0.53	42.2
Approach		3484	6.7	0.722	17.1	LOS B	31.4	229.3	0.50	0.59	45.2
All Vehicles		6852	8.0	1.104	47.6	LOS D	54.3	421.4	0.64	0.76	29.2

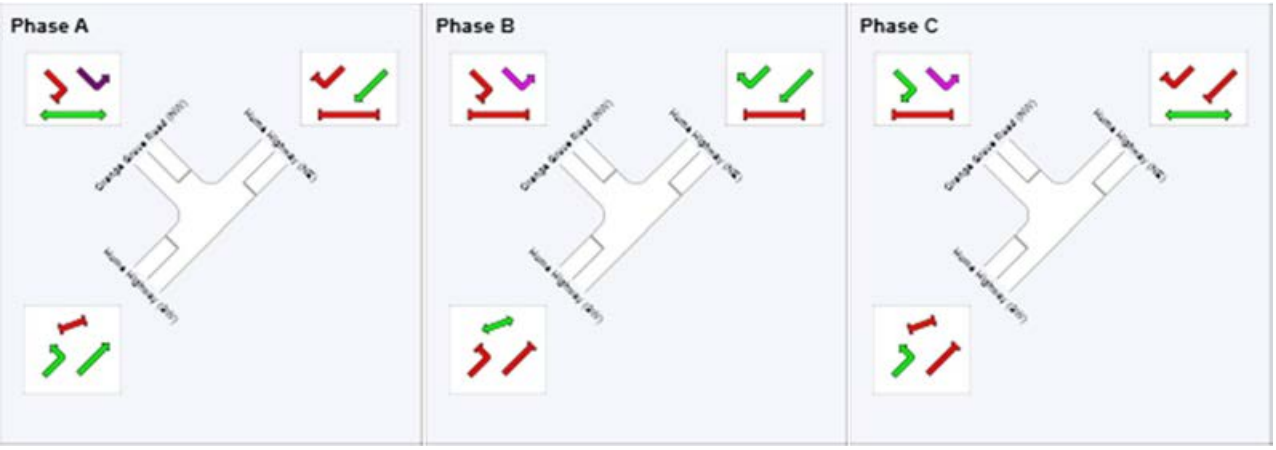
PHASING SUMMARY

Site: I-01 2030 MIMT CUM2 AM - Upgrade

Hume Highway / Orange Grove Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	84	108
Green Time (sec)	77	17	36
Yellow Time (sec)	5	4	5
All-Red Time (sec)	2	2	2
Phase Time (sec)	84	23	43
Phase Split	56 %	15 %	29 %



PM Peak – Cumulative Scenario C2 with Upgrade

MOVEMENT SUMMARY

Site: I-01 2030 MIMT CUM2 PM - Upgrade

Hume Highway / Orange Grove Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
NorthEast: Hume Highway (NE)											
25	T1	1766	3.5	0.971	69.4	LOS E	61.6	445.0	0.99	1.15	20.4
26	R2	816	2.8	0.958	67.9	LOS E	23.6	169.3	1.00	1.04	27.7
Approach		2582	3.3	0.971	68.9	LOS E	61.6	445.0	0.99	1.12	23.0
NorthWest: Orange Grove Road (NW)											
27	L2	391	4.3	0.343	9.4	LOS A	4.3	31.1	0.18	0.61	51.6
29	R2	1408	6.5	1.011	100.0	LOS F	51.2	388.2	0.99	1.06	19.3
Approach		1798	6.1	1.011	80.3	LOS F	51.2	388.2	0.82	0.96	22.8
SouthWest: Hume Highway (SW)											
30	L2	1364	6.3	0.826	20.4	LOS B	22.6	171.2	0.83	0.85	43.9
31	T1	1136	5.3	0.937	77.2	LOS F	29.4	215.7	0.99	1.04	19.9
Approach		2500	5.9	0.937	46.2	LOS D	29.4	215.7	0.90	0.94	30.0
All Vehicles		6880	4.9	1.011	63.6	LOS E	61.6	445.0	0.91	1.01	24.9

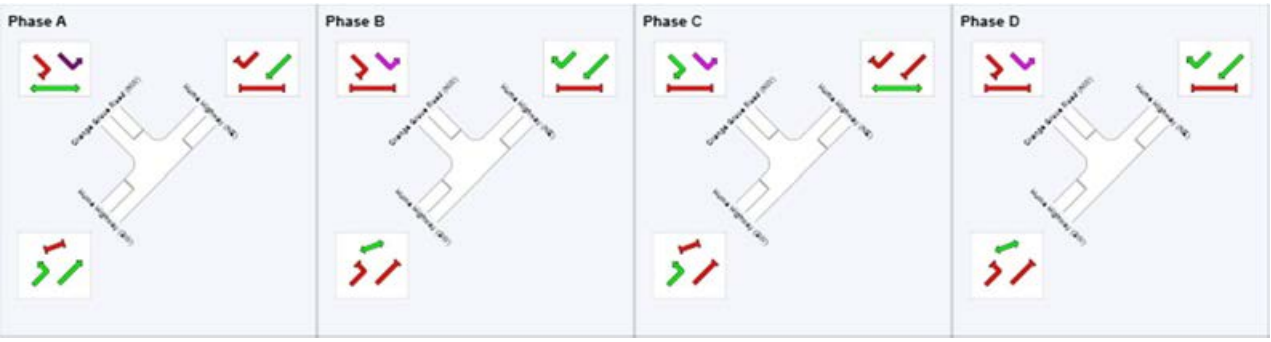
PHASING SUMMARY

Site: I-01 2030 MIMT CUM2 PM - Upgrade

Hume Highway / Orange Grove Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	48	75	124
Green Time (sec)	42	20	43	19
Yellow Time (sec)	5	4	5	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	49	26	50	25
Phase Split	33 %	17 %	33 %	17 %



I-02 Intersection of the Hume Highway and Elizabeth Drive

AM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-02 2030 MIMT AM CUM A

Hume Highway / Elizabeth Drive
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	137	5.4	0.151	21.3	LOS B	3.5	25.9	0.38	0.67	37.3
2	T1	2406	8.4	0.954	59.6	LOS E	68.1	518.3	0.98	1.03	20.1
Approach		2543	8.2	0.973	57.6	LOS E	68.1	518.3	0.95	1.02	20.7
East: Elizabeth Drive (E)											
4	L2	39	5.4	0.439	60.6	LOS E	10.6	77.9	0.92	0.82	18.4
5	T1	502	5.7	0.439	56.8	LOS E	12.0	88.1	0.91	0.82	23.5
6	R2	156	2.7	0.754	78.2	LOS F	11.7	83.5	1.00	0.87	14.8
Approach		697	5.0	0.754	61.8	LOS E	12.0	88.1	0.93	0.83	20.9
North: Hume Highway (N)											
7	L2	82	2.6	0.667	25.4	LOS B	25.0	193.2	0.61	0.58	31.9
8	T1	1820	10.9	0.667	19.3	LOS B	25.3	197.3	0.60	0.55	36.3
9	R2	353	9.6	1.268	334.6	LOS F	29.5	223.7	1.00	1.54	5.9
Approach		2255	10.4	1.268	68.8	LOS E	29.5	223.7	0.66	0.71	18.5
West: Elizabeth Drive (W)											
10	L2	627	5.2	1.057	141.9	LOS F	70.4	514.7	1.00	1.14	11.9
11	T1	1089	3.0	1.080	158.9	LOS F	64.0	459.7	1.00	1.44	10.5
12	R2	521	7.1	1.133	394.5	LOS F	63.3	473.7	1.00	1.62	5.1
Approach		2238	4.6	1.133	209.0	LOS F	70.4	514.7	1.00	1.40	8.6
All Vehicles		7733	7.5	1.268	105.1	LOS F	70.4	518.3	0.88	1.02	14.0

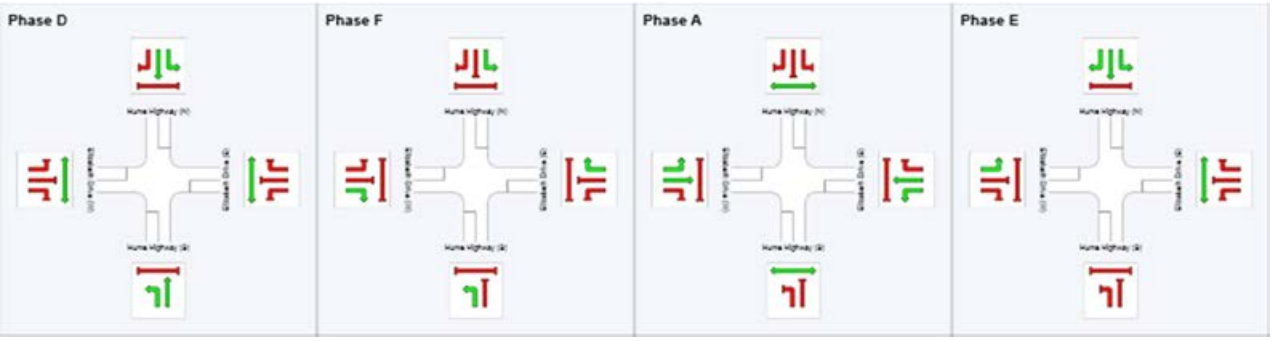
PHASING SUMMARY

Site: I-02 2030 MIMT AM CUM A

Hume Highway / Elizabeth Drive
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	68	91	132
Green Time (sec)	62	17	35	12
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	68	23	41	18
Phase Split	45 %	15 %	27 %	12 %



PM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-02 2030 MIMT PM CUM A

Hume Highway / Elizabeth Drive
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	327	5.8	0.488	40.1	LOS C	15.5	115.9	0.70	0.78	28.2
2	T1	1615	8.4	0.998	97.0	LOS F	55.7	429.0	0.99	1.19	14.2
Approach		1942	7.9	0.998	87.4	LOS F	55.7	429.0	0.94	1.12	15.7
East: Elizabeth Drive (E)											
4	L2	128	0.8	0.984	107.9	LOS F	33.6	239.2	1.00	1.16	12.0
5	T1	1082	2.3	0.984	104.0	LOS F	42.8	305.9	1.00	1.19	15.2
6	R2	172	0.0	1.066	165.1	LOS F	19.6	137.4	1.00	1.29	8.2
Approach		1382	1.9	1.066	112.0	LOS F	42.8	305.9	1.00	1.20	13.7
North: Hume Highway (N)											
7	L2	66	4.8	0.899	30.2	LOS C	49.8	370.5	0.79	0.79	29.3
8	T1	2510	5.4	0.899	24.3	LOS B	50.5	376.7	0.79	0.78	33.1
9	R2	961	3.0	0.917	76.9	LOS F	37.9	271.9	1.00	0.96	19.4
Approach		3537	4.7	0.917	38.7	LOS C	50.5	376.7	0.85	0.83	27.1
West: Elizabeth Drive (W)											
10	L2	325	5.8	0.434	34.2	LOS C	13.6	100.2	0.62	0.76	29.6
11	T1	529	4.4	0.698	61.8	LOS E	17.6	127.6	0.96	0.82	20.9
12	R2	309	2.4	0.978	112.9	LOS F	14.4	102.8	1.00	1.08	14.6
Approach		1164	4.2	0.978	67.6	LOS E	17.6	127.6	0.88	0.87	20.2
All Vehicles		8026	5.0	1.066	67.3	LOS E	55.7	429.0	0.90	0.97	19.4

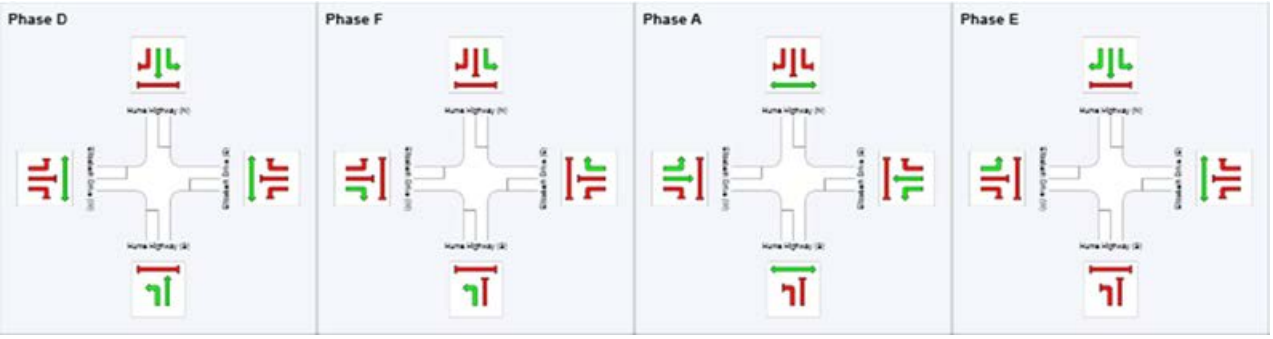
PHASING SUMMARY

Site: I-02 2030 MIMT PM CUM A

Hume Highway / Elizabeth Drive
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	72	108
Green Time (sec)	47	13	30	36
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	53	19	36	42
Phase Split	35 %	13 %	24 %	28 %



AM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-02 2030 MIMT AM CUM B

Hume Highway / Elizabeth Drive
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	137	5.4	0.151	21.3	LOS B	3.5	25.9	0.38	0.67	37.3
2	T1	2398	8.1	0.947	57.3	LOS E	66.5	503.3	0.98	1.02	20.6
Approach		2535	7.9	0.967	55.4	LOS D	66.5	503.3	0.94	1.00	21.2
East: Elizabeth Drive (E)											
4	L2	39	5.4	0.439	60.6	LOS E	10.6	77.9	0.92	0.82	18.4
5	T1	502	5.7	0.439	56.8	LOS E	12.0	88.1	0.91	0.82	23.5
6	R2	156	2.7	0.754	78.2	LOS F	11.7	83.5	1.00	0.87	14.8
Approach		697	5.0	0.754	61.8	LOS E	12.0	88.1	0.93	0.83	20.9
North: Hume Highway (N)											
7	L2	82	2.6	0.679	25.6	LOS B	26.1	199.6	0.62	0.59	31.8
8	T1	1867	10.3	0.679	19.5	LOS B	26.4	203.8	0.61	0.56	36.2
9	R2	353	9.6	1.268	334.6	LOS F	29.5	223.7	1.00	1.54	5.9
Approach		2302	9.9	1.268	68.0	LOS E	29.5	223.7	0.67	0.71	18.7
West: Elizabeth Drive (W)											
10	L2	627	5.2	1.057	141.9	LOS F	70.4	514.7	1.00	1.14	11.9
11	T1	1089	3.0	1.080	158.9	LOS F	64.0	459.7	1.00	1.44	10.5
12	R2	525	6.6	1.134	395.7	LOS F	63.9	473.8	1.00	1.62	5.1
Approach		2242	4.5	1.134	209.6	LOS F	70.4	514.7	1.00	1.40	8.6
All Vehicles		7776	7.2	1.268	104.1	LOS F	70.4	514.7	0.88	1.01	14.1

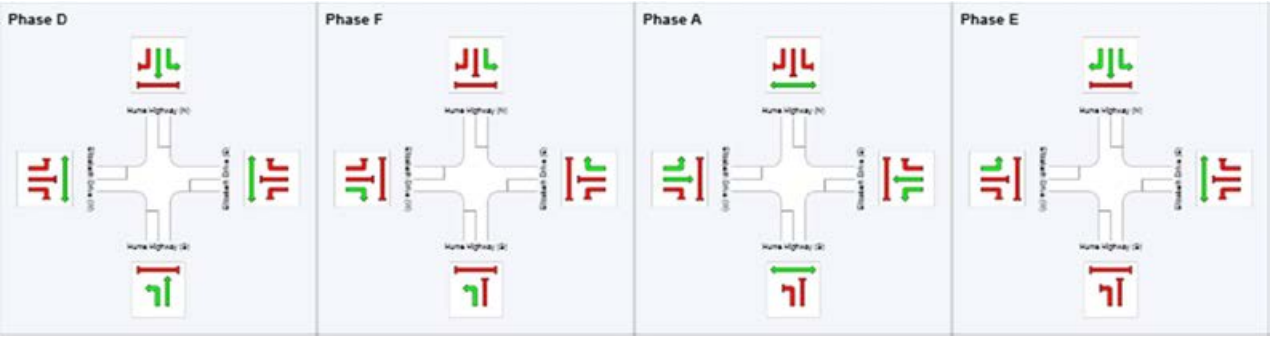
PHASING SUMMARY

Site: I-02 2030 MIMT AM CUM B

Hume Highway / Elizabeth Drive
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	68	91	132
Green Time (sec)	62	17	35	12
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	68	23	41	18
Phase Split	45 %	15 %	27 %	12 %



PM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-02 2030 MIMT PM CUM B

Hume Highway / Elizabeth Drive
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	330	5.0	0.485	40.0	LOS C	15.6	114.5	0.70	0.78	28.3
2	T1	1642	7.1	1.001	102.4	LOS F	57.0	430.3	1.00	1.21	13.6
Approach		1972	6.7	1.001	92.0	LOS F	57.0	430.3	0.95	1.13	15.1
East: Elizabeth Drive (E)											
4	L2	128	0.8	0.984	107.9	LOS F	33.6	239.2	1.00	1.16	12.0
5	T1	1082	2.3	0.984	104.0	LOS F	42.8	305.9	1.00	1.19	15.2
6	R2	172	0.0	1.066	165.1	LOS F	19.6	137.4	1.00	1.29	8.2
Approach		1382	1.9	1.066	112.0	LOS F	42.8	305.9	1.00	1.20	13.7
North: Hume Highway (N)											
7	L2	66	4.8	0.885	27.3	LOS B	46.0	338.7	0.76	0.75	30.9
8	T1	2489	4.7	0.885	21.5	LOS B	46.7	344.4	0.76	0.74	34.9
9	R2	961	3.0	0.917	76.9	LOS F	37.9	271.9	1.00	0.96	19.4
Approach		3517	4.2	0.917	36.7	LOS C	46.7	344.4	0.82	0.80	27.9
West: Elizabeth Drive (W)											
10	L2	325	5.8	0.434	34.2	LOS C	13.6	100.2	0.62	0.76	29.6
11	T1	529	4.4	0.698	61.8	LOS E	17.6	127.6	0.96	0.82	20.9
12	R2	309	2.4	0.978	112.9	LOS F	14.4	102.8	1.00	1.08	14.6
Approach		1164	4.2	0.978	67.6	LOS E	17.6	127.6	0.88	0.87	20.2
All Vehicles		8035	4.4	1.066	67.7	LOS E	57.0	430.3	0.89	0.96	19.4

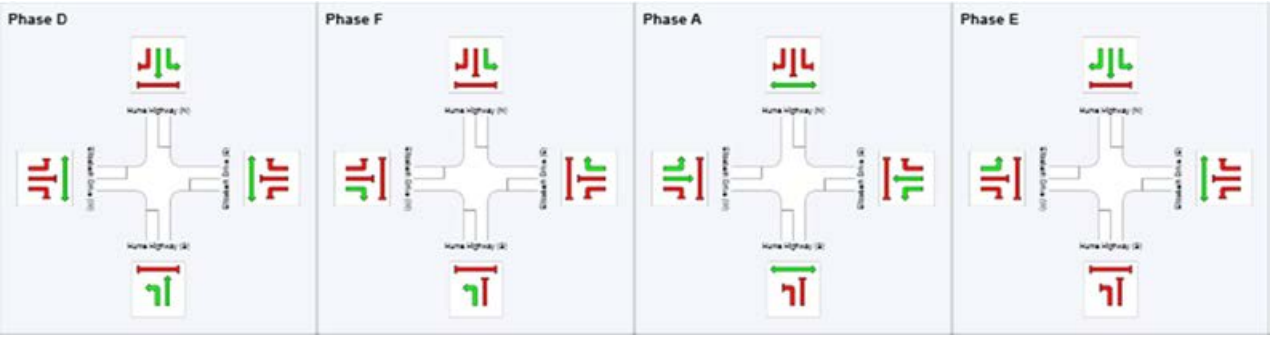
PHASING SUMMARY

Site: I-02 2030 MIMT PM CUM B

Hume Highway / Elizabeth Drive
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	72	108
Green Time (sec)	47	13	30	36
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	53	19	36	42
Phase Split	35 %	13 %	24 %	28 %



AM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-02 2020 MIMT CUM1 AM

Hume Highway / Elizabeth Drive
2020 MIMT CUM1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	121	5.2	0.133	21.2	LOS B	3.1	22.5	0.38	0.67	37.5
2	T1	2158	8.0	0.843	38.0	LOS C	45.5	343.0	0.89	0.82	26.5
Approach		2279	7.8	0.860	37.1	LOS C	45.5	343.0	0.86	0.81	27.0
East: Elizabeth Drive (E)											
4	L2	35	6.1	0.389	60.0	LOS E	9.3	68.3	0.91	0.81	18.5
5	T1	445	5.7	0.389	56.1	LOS D	10.5	77.2	0.90	0.82	23.7
6	R2	139	2.3	0.671	75.6	LOS F	10.1	72.1	1.00	0.83	15.1
Approach		619	4.9	0.671	60.7	LOS E	10.5	77.2	0.92	0.82	21.1
North: Hume Highway (N)											
7	L2	77	2.7	0.623	24.7	LOS B	22.2	169.7	0.57	0.55	32.3
8	T1	1712	10.5	0.623	18.6	LOS B	22.4	173.1	0.56	0.52	36.8
9	R2	322	9.5	1.157	237.8	LOS F	22.3	168.9	1.00	1.36	7.9
Approach		2111	10.1	1.157	52.3	LOS D	22.4	173.1	0.63	0.65	22.2
West: Elizabeth Drive (W)											
10	L2	560	5.3	0.944	79.0	LOS F	46.5	340.4	1.00	0.97	18.3
11	T1	961	3.1	0.953	82.5	LOS F	40.9	293.6	1.00	1.08	17.2
12	R2	460	7.1	1.151	235.4	LOS F	32.1	239.0	1.00	1.36	8.1
Approach		1981	4.6	1.151	117.0	LOS F	46.5	340.4	1.00	1.12	13.7
All Vehicles		6990	7.3	1.157	66.4	LOS E	46.5	343.0	0.84	0.85	19.4

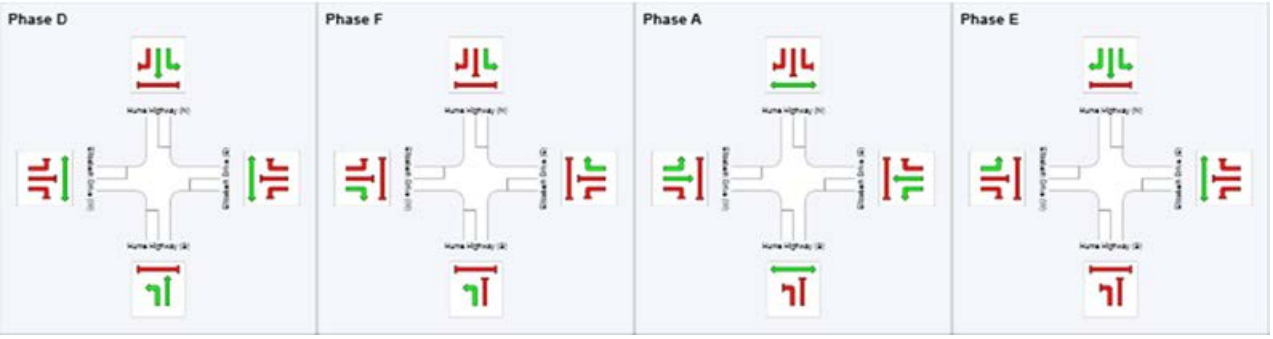
PHASING SUMMARY

Site: I-02 2020 MIMT CUM1 AM

Hume Highway / Elizabeth Drive
2020 MIMT CUM1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	68	91	132
Green Time (sec)	62	17	35	12
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	68	23	41	18
Phase Split	45 %	15 %	27 %	12 %



PM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-02 2020 MIMT CUM1 PM

Hume Highway / Elizabeth Drive
2020 MIMT CUM1 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	303	5.3	0.456	40.4	LOS C	14.3	104.9	0.69	0.78	28.1
2	T1	1582	7.0	0.954	75.8	LOS F	47.7	357.8	0.98	1.08	17.0
Approach		1885	6.7	0.954	70.1	LOS E	47.7	357.8	0.94	1.03	18.4
East: Elizabeth Drive (E)											
4	L2	115	0.9	0.822	73.9	LOS F	23.0	164.0	1.00	0.92	16.0
5	T1	938	2.5	0.822	68.2	LOS E	28.5	203.8	1.00	0.92	20.7
6	R2	153	0.0	1.027	138.0	LOS F	15.8	110.8	1.00	1.22	9.5
Approach		1205	2.0	1.027	77.6	LOS F	28.5	203.8	1.00	0.96	18.1
North: Hume Highway (N)											
7	L2	62	5.1	0.843	21.7	LOS B	36.6	268.7	0.68	0.65	34.6
8	T1	2378	4.6	0.843	15.9	LOS B	37.2	273.1	0.68	0.64	39.1
9	R2	872	2.9	0.832	66.7	LOS E	30.6	219.4	0.99	0.89	21.4
Approach		3311	4.2	0.843	29.4	LOS C	37.2	273.1	0.76	0.71	31.2
West: Elizabeth Drive (W)											
10	L2	314	6.4	0.414	33.1	LOS C	12.8	94.1	0.60	0.75	30.1
11	T1	497	4.7	0.635	60.1	LOS E	16.0	116.7	0.93	0.80	21.3
12	R2	288	2.6	0.988	117.7	LOS F	13.7	97.9	1.00	1.10	14.2
Approach		1099	4.6	0.988	67.5	LOS E	16.0	116.7	0.86	0.86	20.2
All Vehicles		7501	4.5	1.027	53.0	LOS D	47.7	357.8	0.86	0.85	22.7

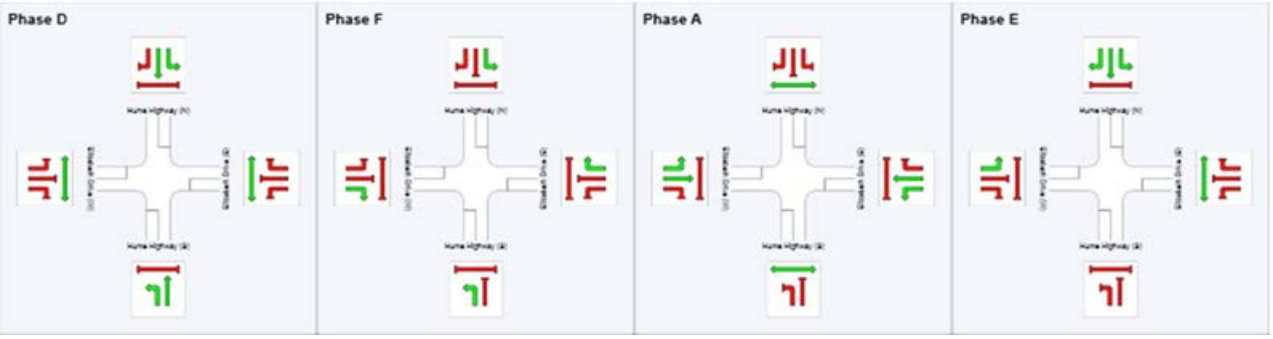
PHASING SUMMARY

Site: I-02 2020 MIMT CUM1 PM

Hume Highway / Elizabeth Drive
2020 MIMT CUM1 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	71	108
Green Time (sec)	47	12	31	36
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	53	18	37	42
Phase Split	35 %	12 %	25 %	28 %



AM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-02 2030 MIMT CUM2 AM

Hume Highway / Elizabeth Drive
2030 MIMT CUM1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	137	5.4	0.151	21.3	LOS B	3.5	25.9	0.38	0.67	37.3
2	T1	2402	8.2	0.951	58.8	LOS E	67.5	512.9	0.98	1.03	20.3
Approach		2538	8.1	0.971	56.7	LOS E	67.5	512.9	0.95	1.01	20.9
East: Elizabeth Drive (E)											
4	L2	39	5.4	0.439	60.6	LOS E	10.6	77.9	0.92	0.82	18.4
5	T1	502	5.7	0.439	56.8	LOS E	12.0	88.1	0.91	0.82	23.5
6	R2	156	2.7	0.754	78.2	LOS F	11.7	83.5	1.00	0.87	14.8
Approach		697	5.0	0.754	61.8	LOS E	12.0	88.1	0.93	0.83	20.9
North: Hume Highway (N)											
7	L2	82	2.6	0.668	25.4	LOS B	25.2	193.8	0.61	0.58	31.9
8	T1	1827	10.7	0.668	19.3	LOS B	25.4	198.0	0.60	0.55	36.3
9	R2	353	9.6	1.268	334.6	LOS F	29.5	223.7	1.00	1.54	5.9
Approach		2262	10.2	1.268	68.7	LOS E	29.5	223.7	0.66	0.71	18.6
West: Elizabeth Drive (W)											
10	L2	627	5.2	1.057	141.9	LOS F	70.4	514.7	1.00	1.14	11.9
11	T1	1089	3.0	1.080	158.9	LOS F	64.0	459.7	1.00	1.44	10.5
12	R2	521	6.9	1.132	390.1	LOS F	62.8	468.0	1.00	1.62	5.2
Approach		2238	4.5	1.132	207.9	LOS F	70.4	514.7	1.00	1.39	8.6
All Vehicles		7735	7.4	1.268	104.4	LOS F	70.4	514.7	0.88	1.02	14.0

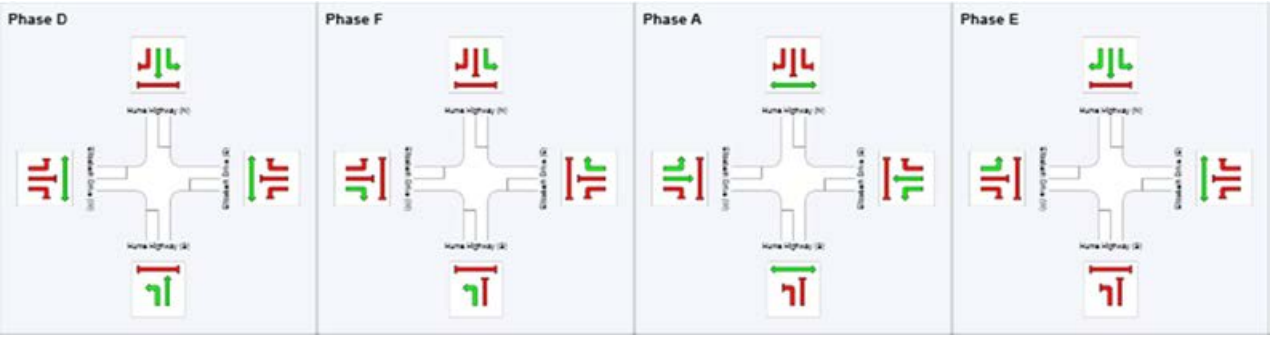
PHASING SUMMARY

Site: I-02 2030 MIMT CUM2 AM

Hume Highway / Elizabeth Drive
2030 MIMT CUM1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	68	91	132
Green Time (sec)	62	17	35	12
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	68	23	41	18
Phase Split	45 %	15 %	27 %	12 %



PM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-02 2030 MIMT CUM2 PM

Hume Highway / Elizabeth Drive
2030 MIMT CUM2 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	329	5.4	0.496	41.1	LOS C	15.9	117.6	0.71	0.79	27.9
2	T1	1633	7.6	1.003	103.4	LOS F	57.0	434.1	1.00	1.21	13.5
Approach		1963	7.2	1.003	93.0	LOS F	57.0	434.1	0.95	1.14	15.0
East: Elizabeth Drive (E)											
4	L2	128	0.8	0.952	94.8	LOS F	31.7	225.4	1.00	1.10	13.3
5	T1	1082	2.3	0.952	90.4	LOS F	39.8	284.2	1.00	1.12	16.9
6	R2	172	0.0	1.155	237.7	LOS F	23.9	167.3	1.00	1.46	6.0
Approach		1382	1.9	1.155	109.1	LOS F	39.8	284.2	1.00	1.16	14.0
North: Hume Highway (N)											
7	L2	66	4.8	0.891	28.6	LOS C	47.7	352.9	0.77	0.77	30.2
8	T1	2498	5.0	0.891	22.7	LOS B	48.4	358.8	0.77	0.76	34.1
9	R2	961	3.0	0.917	76.9	LOS F	37.9	271.9	1.00	0.96	19.4
Approach		3526	4.4	0.917	37.6	LOS C	48.4	358.8	0.83	0.81	27.5
West: Elizabeth Drive (W)											
10	L2	325	5.8	0.428	33.3	LOS C	13.4	98.2	0.61	0.76	30.0
11	T1	529	4.4	0.676	60.6	LOS E	17.3	125.8	0.95	0.81	21.1
12	R2	309	2.4	1.059	161.4	LOS F	17.4	124.2	1.00	1.21	11.1
Approach		1164	4.2	1.059	79.8	LOS F	17.4	125.8	0.87	0.90	18.1
All Vehicles		8035	4.7	1.155	69.5	LOS E	57.0	434.1	0.90	0.97	19.0

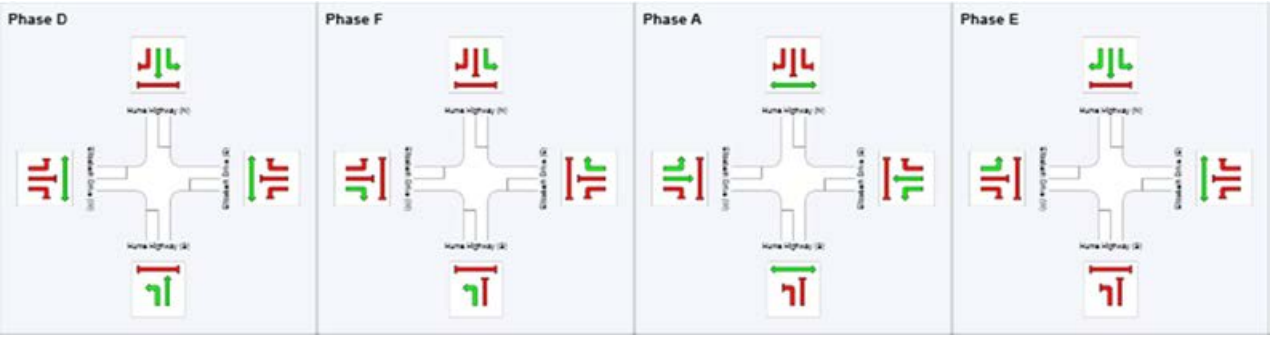
PHASING SUMMARY

Site: I-02 2030 MIMT CUM2 PM

Hume Highway / Elizabeth Drive
2030 MIMT CUM2 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	53	71	108
Green Time (sec)	47	12	31	36
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	53	18	37	42
Phase Split	35 %	12 %	25 %	28 %



AM Peak – Cumulative Scenario C2 with Upgrade

MOVEMENT SUMMARY

Site: I-02 2030 MIMT CUM2 AM - Upgraded

Hume Highway / Elizabeth Drive
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	137	5.4	0.151	21.3	LOS B	3.5	25.9	0.38	0.67	37.3
2	T1	2402	8.2	0.951	58.8	LOS E	67.5	512.9	0.98	1.03	20.3
Approach		2538	8.1	0.971	56.7	LOS E	67.5	512.9	0.95	1.01	20.9
East: Elizabeth Drive (E)											
4	L2	39	5.4	0.439	60.6	LOS E	10.6	77.9	0.92	0.82	18.4
5	T1	502	5.7	0.439	56.8	LOS E	12.0	88.1	0.91	0.82	23.5
6	R2	156	2.7	0.377	72.2	LOS F	5.4	38.6	0.97	0.77	15.6
Approach		697	5.0	0.439	60.5	LOS E	12.0	88.1	0.92	0.81	21.2
North: Hume Highway (N)											
7	L2	82	2.6	0.668	25.4	LOS B	25.2	193.8	0.61	0.58	31.9
8	T1	1827	10.7	0.668	19.3	LOS B	25.4	198.0	0.60	0.55	36.3
9	R2	353	9.6	1.268	334.6	LOS F	29.5	223.7	1.00	1.54	5.9
Approach		2262	10.2	1.268	68.7	LOS E	29.5	223.7	0.66	0.71	18.6
West: Elizabeth Drive (W)											
10	L2	627	5.2	1.057	141.9	LOS F	70.4	514.7	1.00	1.14	11.9
11	T1	1089	3.0	1.080	158.9	LOS F	64.0	459.7	1.00	1.44	10.5
12	R2	521	6.9	1.132	390.1	LOS F	62.8	468.0	1.00	1.62	5.2
Approach		2238	4.5	1.132	207.9	LOS F	70.4	514.7	1.00	1.39	8.6
All Vehicles		7735	7.4	1.268	104.3	LOS F	70.4	514.7	0.88	1.02	14.0

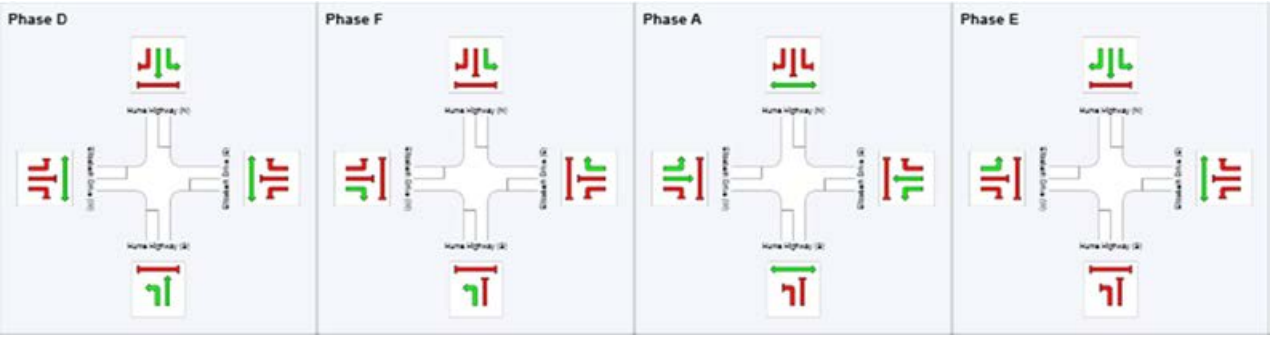
PHASING SUMMARY

Site: I-02 2030 MIMT CUM2 AM - Upgraded

Hume Highway / Elizabeth Drive
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	68	91	132
Green Time (sec)	62	17	35	12
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	68	23	41	18
Phase Split	45 %	15 %	27 %	12 %



PM Peak – Cumulative Scenario C2 with Upgrade

MOVEMENT SUMMARY

Site: I-02 2030 MIMT CUM2 PM - Upgraded

Hume Highway / Elizabeth Drive
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	329	5.4	0.488	40.1	LOS C	15.6	115.5	0.70	0.78	28.3
2	T1	1633	7.6	0.962	77.0	LOS F	50.5	385.2	0.98	1.09	16.8
Approach		1963	7.2	0.962	70.8	LOS F	50.5	385.2	0.93	1.04	18.3
East: Elizabeth Drive (E)											
4	L2	128	0.8	0.967	100.6	LOS F	31.7	225.4	1.00	1.13	12.7
5	T1	1082	2.3	0.967	96.4	LOS F	40.4	288.6	1.00	1.15	16.1
6	R2	172	0.0	0.630	80.8	LOS F	6.4	44.8	1.00	0.80	14.5
Approach		1382	1.9	0.967	94.8	LOS F	40.4	288.6	1.00	1.11	15.6
North: Hume Highway (N)											
7	L2	66	4.8	0.872	23.5	LOS B	41.9	309.8	0.71	0.69	33.3
8	T1	2498	5.0	0.872	17.7	LOS B	42.5	314.8	0.71	0.68	37.6
9	R2	961	3.0	0.917	76.9	LOS F	37.9	271.9	1.00	0.96	19.4
Approach		3526	4.4	0.917	33.9	LOS C	42.5	314.8	0.79	0.76	29.0
West: Elizabeth Drive (W)											
10	L2	325	5.8	0.434	34.2	LOS C	13.6	100.2	0.62	0.76	29.6
11	T1	529	4.4	0.698	61.8	LOS E	17.6	127.6	0.96	0.82	20.9
12	R2	309	2.4	1.155	239.7	LOS F	21.6	154.1	1.00	1.37	8.0
Approach		1164	4.2	1.155	101.4	LOS F	21.6	154.1	0.88	0.95	15.3
All Vehicles		8035	4.7	1.155	63.2	LOS E	50.5	385.2	0.87	0.91	20.3

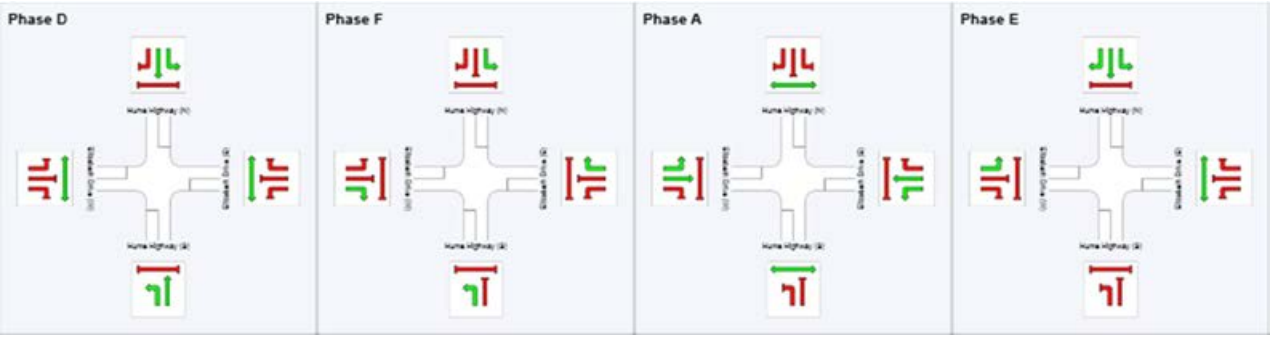
PHASING SUMMARY

Site: I-02 2030 MIMT CUM2 PM - Upgraded

Hume Highway / Elizabeth Drive
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	D	F	A	E
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	55	72	108
Green Time (sec)	49	11	30	36
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	55	17	36	42
Phase Split	37 %	11 %	24 %	28 %



I-03 Intersection of the Hume Highway and Memorial Avenue

AM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-03 2030 MIMT AM CUM A

Hume Highway / Memorial Avenue
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	157	1.3	0.992	84.6	LOS F	78.1	590.1	1.00	1.15	23.8
2	T1	2150	9.2	0.992	76.3	LOS F	79.5	609.7	0.94	1.11	21.7
3	R2	267	0.0	1.137	222.0	LOS F	36.2	253.5	1.00	1.30	9.4
Approach		2574	7.8	1.137	92.0	LOS F	79.5	609.7	0.95	1.13	19.4
East: Memorial Avenue (E)											
4	L2	29	28.6	1.264	333.5	LOS F	29.0	222.7	1.00	1.72	6.7
5	T1	164	7.7	1.264	328.8	LOS F	29.0	222.7	1.00	1.71	6.6
6	R2	134	18.1	1.264	333.8	LOS F	26.0	208.4	1.00	1.69	4.7
Approach		327	13.8	1.264	331.2	LOS F	29.0	222.7	1.00	1.71	5.8
North: Hume Highway (N)											
7	L2	121	6.1	0.103	12.4	LOS A	2.6	19.4	0.36	0.64	39.4
8	T1	1833	13.5	0.797	29.4	LOS C	35.5	282.6	0.78	0.70	35.8
9	R2	101	3.1	0.439	72.0	LOS F	7.0	50.1	0.97	0.79	21.4
Approach		2055	12.5	0.797	30.5	LOS C	35.5	282.6	0.76	0.70	34.8
West: Memorial Avenue (W)											
10	L2	128	3.3	1.185	245.4	LOS F	48.3	344.2	1.00	1.58	8.9
11	T1	460	1.6	1.185	248.2	LOS F	60.1	428.5	1.00	1.64	8.3
12	R2	168	3.1	1.185	260.0	LOS F	60.1	428.5	1.00	1.69	10.7
Approach		756	2.2	1.185	250.4	LOS F	60.1	428.5	1.00	1.64	9.0
All Vehicles		5713	9.1	1.264	104.5	LOS F	79.5	609.7	0.89	1.08	17.4

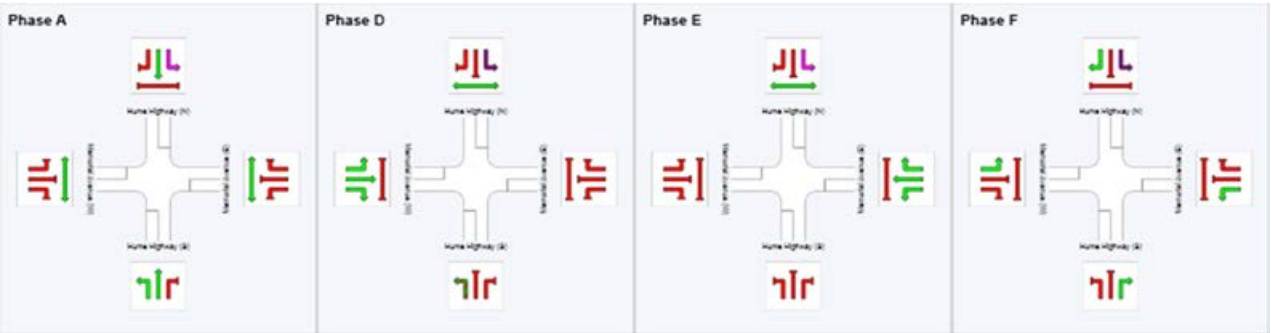
PHASING SUMMARY

Site: I-03 2030 MIMT AM CUM A

Hume Highway / Memorial Avenue
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	75	108	125
Green Time (sec)	69	27	11	19
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	75	33	17	25
Phase Split	50 %	22 %	11 %	17 %



PM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-03 2030 MIMT PM CUM A

Hume Highway / Memorial Avenue
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	124	0.9	0.837	45.9	LOS D	39.3	298.3	0.91	0.87	32.6
2	T1	1728	8.8	0.837	37.8	LOS C	39.7	307.3	0.87	0.81	32.0
3	R2	116	0.0	0.779	84.5	LOS F	8.9	62.5	1.00	0.87	19.4
Approach		1968	7.8	0.837	41.1	LOS C	39.7	307.3	0.88	0.82	30.9
East: Memorial Avenue (E)											
4	L2	55	0.0	1.379	433.9	LOS F	56.0	398.0	1.00	2.09	5.3
5	T1	289	2.2	1.379	429.4	LOS F	56.0	398.0	1.00	2.07	5.2
6	R2	211	6.0	1.379	434.3	LOS F	51.6	377.5	1.00	1.96	3.7
Approach		555	3.4	1.379	431.7	LOS F	56.0	398.0	1.00	2.03	4.7
North: Hume Highway (N)											
7	L2	152	2.8	0.090	8.4	LOS A	2.1	14.7	0.24	0.62	43.5
8	T1	2991	4.9	0.947	22.0	LOS B	68.0	503.3	0.69	0.70	39.9
9	R2	214	2.0	0.810	56.5	LOS D	9.9	70.4	1.00	0.92	24.5
Approach		3356	4.6	0.947	23.6	LOS B	68.0	503.3	0.69	0.71	38.4
West: Memorial Avenue (W)											
10	L2	82	1.3	0.901	82.5	LOS F	16.6	117.4	1.00	1.06	19.9
11	T1	209	1.0	0.901	79.5	LOS F	20.5	143.6	1.00	1.04	19.0
12	R2	171	0.0	0.901	86.5	LOS F	20.5	143.6	1.00	1.01	23.0
Approach		462	0.7	0.901	82.6	LOS F	20.5	143.6	1.00	1.04	20.7
All Vehicles		6341	5.2	1.379	69.0	LOS E	68.0	503.3	0.80	0.89	22.8

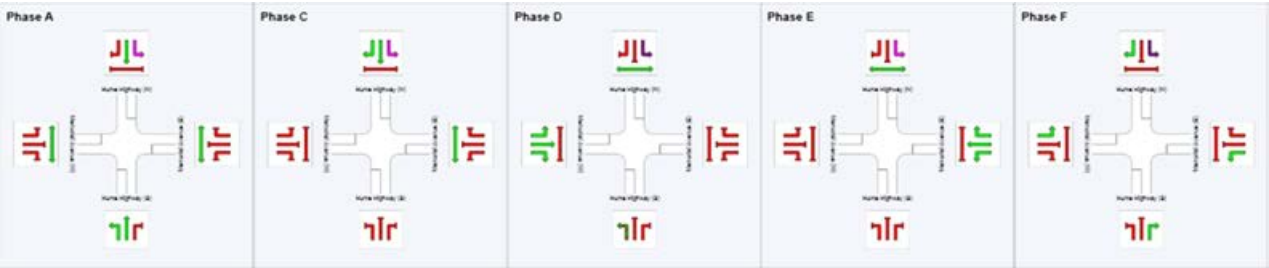
PHASING SUMMARY

Site: I-03 2030 MIMT PM CUM A

Hume Highway / Memorial Avenue
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D	E	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	70	82	110	132
Green Time (sec)	64	6	22	16	12
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	70	12	28	22	18
Phase Split	47 %	8 %	19 %	15 %	12 %



AM Peak – Cumulative Scenario A with Upgrade

MOVEMENT SUMMARY

Site: I-03 2030 MIMT AM CUM A upgrade

Hume Highway / Memorial Avenue
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	157	1.3	0.961	68.8	LOS E	67.7	511.2	1.00	1.07	26.7
2	T1	2150	9.2	0.961	60.4	LOS E	68.5	525.8	0.96	1.05	25.1
3	R2	267	0.0	0.568	73.3	LOS F	9.4	65.8	0.99	0.80	21.3
Approach		2574	7.8	0.961	62.3	LOS E	68.5	525.8	0.97	1.02	24.7
East: Memorial Avenue (E)											
4	L2	29	28.6	1.264	333.5	LOS F	29.0	222.7	1.00	1.72	6.7
5	T1	164	7.7	1.264	328.8	LOS F	29.0	222.7	1.00	1.71	6.6
6	R2	134	18.1	1.264	333.8	LOS F	26.0	208.4	1.00	1.69	4.7
Approach		327	13.8	1.264	331.2	LOS F	29.0	222.7	1.00	1.71	5.8
North: Hume Highway (N)											
7	L2	121	6.1	0.097	9.8	LOS A	2.0	15.1	0.29	0.63	41.9
8	T1	1833	13.5	0.797	29.4	LOS C	35.5	282.4	0.78	0.70	35.8
9	R2	101	3.1	0.439	72.0	LOS F	7.0	50.1	0.97	0.79	21.4
Approach		2055	12.5	0.797	30.3	LOS C	35.5	282.4	0.76	0.70	34.9
West: Memorial Avenue (W)											
10	L2	128	3.3	1.185	245.4	LOS F	48.3	344.2	1.00	1.58	8.9
11	T1	460	1.6	1.185	248.2	LOS F	60.1	428.5	1.00	1.64	8.4
12	R2	168	3.1	1.185	260.0	LOS F	60.1	428.5	1.00	1.70	10.7
Approach		756	2.2	1.185	250.4	LOS F	60.1	428.5	1.00	1.64	9.0
All Vehicles		5713	9.1	1.264	91.1	LOS F	68.5	525.8	0.90	1.03	19.1

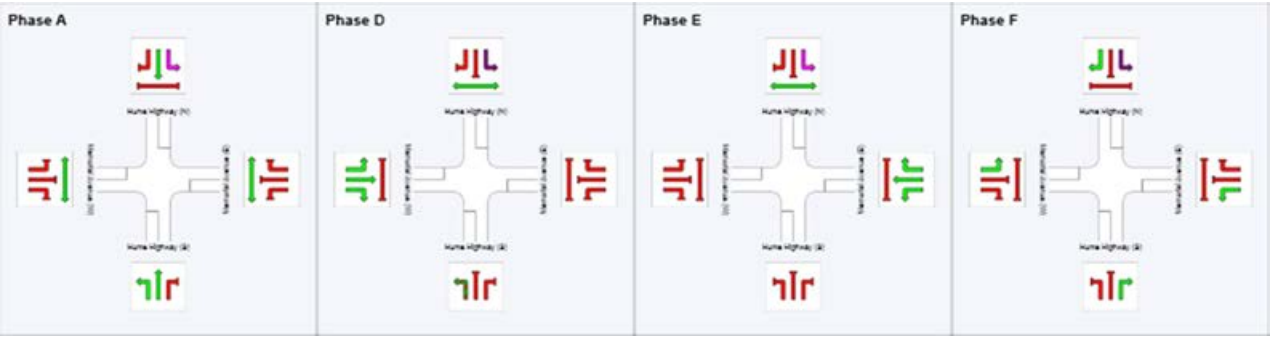
PHASING SUMMARY

Site: I-03 2030 MIMT AM CUM A upgrade

Hume Highway / Memorial Avenue
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	75	108	125
Green Time (sec)	69	27	11	19
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	75	33	17	25
Phase Split	50 %	22 %	11 %	17 %



PM Peak – Cumulative Scenario A with Upgrade

MOVEMENT SUMMARY

Site: I-03 2030 MIMT PM CUM A upgrade

Hume Highway / Memorial Avenue
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	124	0.9	0.822	44.5	LOS D	37.4	284.4	0.90	0.85	33.0
2	T1	1728	8.8	0.822	36.6	LOS C	37.9	292.8	0.87	0.80	32.5
3	R2	116	0.0	0.468	81.4	LOS F	4.3	29.9	1.00	0.76	19.9
Approach		1968	7.8	0.822	39.8	LOS C	37.9	292.8	0.88	0.80	31.4
East: Memorial Avenue (E)											
4	L2	55	0.0	1.299	362.3	LOS F	50.9	362.0	1.00	1.96	6.3
5	T1	289	2.2	1.299	357.8	LOS F	50.9	362.0	1.00	1.93	6.1
6	R2	211	6.0	1.299	362.7	LOS F	47.0	343.9	1.00	1.82	4.3
Approach		555	3.4	1.299	360.1	LOS F	50.9	362.0	1.00	1.89	5.5
North: Hume Highway (N)											
7	L2	152	2.8	0.088	8.0	LOS A	1.9	13.5	0.23	0.61	43.9
8	T1	2991	4.9	0.933	18.0	LOS B	61.1	452.4	0.64	0.64	42.5
9	R2	214	2.0	0.858	55.5	LOS D	10.3	73.4	1.00	0.93	24.7
Approach		3356	4.6	0.933	19.9	LOS B	61.1	452.4	0.64	0.66	40.7
West: Memorial Avenue (W)											
10	L2	82	1.3	0.901	82.9	LOS F	16.6	117.5	1.00	1.06	19.9
11	T1	209	1.0	0.901	79.7	LOS F	20.5	143.7	1.00	1.05	19.0
12	R2	171	0.0	0.901	86.5	LOS F	20.5	143.7	1.00	1.02	23.1
Approach		462	0.7	0.901	82.8	LOS F	20.5	143.7	1.00	1.04	20.8
All Vehicles		6341	5.2	1.299	60.4	LOS E	61.1	452.4	0.77	0.84	24.6

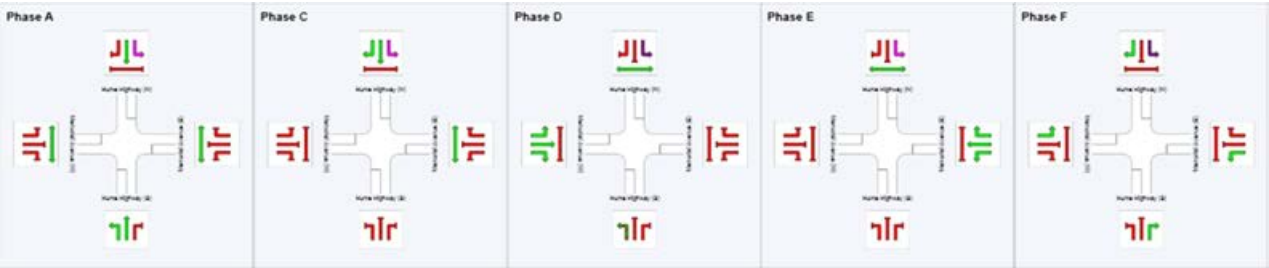
PHASING SUMMARY

Site: I-03 2030 MIMT PM CUM A upgrade

Hume Highway / Memorial Avenue
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D	E	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	70	83	111	134
Green Time (sec)	64	7	22	17	10
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	70	13	28	23	16
Phase Split	47 %	9 %	19 %	15 %	11 %



AM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-03 2030 MIMT AM CUM B

Hume Highway / Memorial Avenue
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	157	1.3	0.986	81.0	LOS F	76.1	572.3	1.00	1.13	24.4
2	T1	2142	8.9	0.986	72.7	LOS F	77.4	590.5	0.94	1.09	22.4
3	R2	267	0.0	1.137	222.0	LOS F	36.2	253.5	1.00	1.30	9.4
Approach		2566	7.5	1.137	88.8	LOS F	77.4	590.5	0.95	1.11	19.8
East: Memorial Avenue (E)											
4	L2	29	28.6	1.264	333.5	LOS F	29.0	222.7	1.00	1.72	6.7
5	T1	164	7.7	1.264	328.8	LOS F	29.0	222.7	1.00	1.71	6.6
6	R2	134	18.1	1.264	333.8	LOS F	26.0	208.4	1.00	1.69	4.7
Approach		327	13.8	1.264	331.2	LOS F	29.0	222.7	1.00	1.71	5.8
North: Hume Highway (N)											
7	L2	121	6.1	0.103	12.4	LOS A	2.6	19.4	0.36	0.64	39.4
8	T1	1884	12.6	0.812	30.1	LOS C	37.2	292.8	0.79	0.72	35.5
9	R2	101	3.1	0.439	72.0	LOS F	7.0	50.1	0.97	0.79	21.4
Approach		2106	11.7	0.812	31.1	LOS C	37.2	292.8	0.77	0.72	34.5
West: Memorial Avenue (W)											
10	L2	128	3.3	1.192	251.8	LOS F	49.3	351.4	1.00	1.60	8.7
11	T1	460	1.6	1.192	254.6	LOS F	61.2	436.6	1.00	1.65	8.2
12	R2	173	3.0	1.192	266.4	LOS F	61.2	436.6	1.00	1.71	10.5
Approach		761	2.2	1.192	256.8	LOS F	61.2	436.6	1.00	1.65	8.8
All Vehicles		5761	8.7	1.264	103.7	LOS F	77.4	590.5	0.90	1.07	17.5

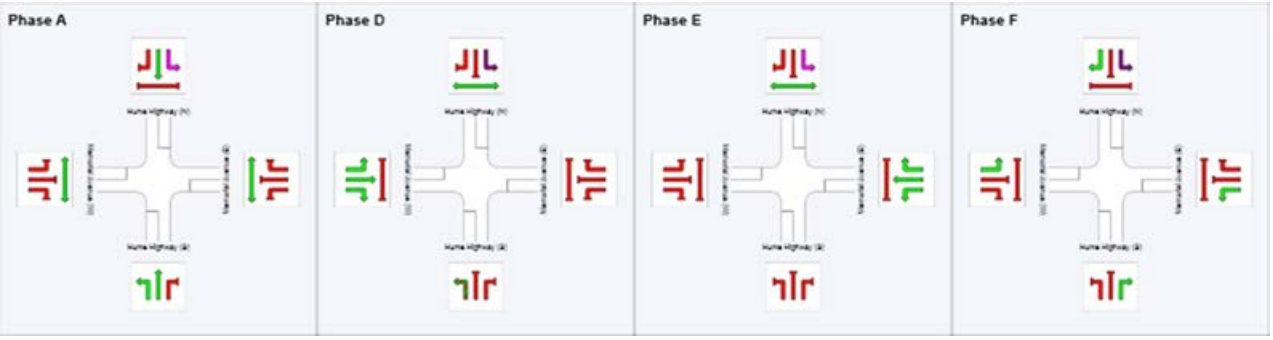
PHASING SUMMARY

Site: I-03 2030 MIMT AM CUM B

Hume Highway / Memorial Avenue
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	75	108	125
Green Time (sec)	69	27	11	19
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	75	33	17	25
Phase Split	50 %	22 %	11 %	17 %



PM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-03 2030 MIMT PM CUM B

Hume Highway / Memorial Avenue
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	127	0.8	0.841	46.1	LOS D	40.1	299.7	0.91	0.88	32.5
2	T1	1759	7.4	0.841	38.1	LOS C	40.7	308.4	0.87	0.82	31.9
3	R2	116	0.0	0.779	84.5	LOS F	8.9	62.5	1.00	0.87	19.4
Approach		2002	6.6	0.841	41.3	LOS C	40.7	308.4	0.88	0.83	30.9
East: Memorial Avenue (E)											
4	L2	55	0.0	1.379	433.9	LOS F	56.0	398.0	1.00	2.09	5.3
5	T1	289	2.2	1.379	429.4	LOS F	56.0	398.0	1.00	2.07	5.2
6	R2	211	6.0	1.379	434.3	LOS F	51.6	377.5	1.00	1.96	3.7
Approach		555	3.4	1.379	431.7	LOS F	56.0	398.0	1.00	2.03	4.7
North: Hume Highway (N)											
7	L2	152	2.8	0.090	8.4	LOS A	2.1	14.7	0.24	0.62	43.5
8	T1	2971	4.3	0.934	18.8	LOS B	62.2	455.6	0.66	0.66	41.9
9	R2	214	2.0	0.810	56.5	LOS D	9.9	70.4	1.00	0.92	24.5
Approach		3336	4.0	0.934	20.8	LOS B	62.2	455.6	0.66	0.67	40.1
West: Memorial Avenue (W)											
10	L2	82	1.3	0.901	82.5	LOS F	16.6	117.4	1.00	1.06	19.9
11	T1	209	1.0	0.901	79.5	LOS F	20.5	143.6	1.00	1.04	19.0
12	R2	171	0.0	0.901	86.5	LOS F	20.5	143.6	1.00	1.01	23.0
Approach		462	0.7	0.901	82.6	LOS F	20.5	143.6	1.00	1.04	20.7
All Vehicles		6355	4.5	1.379	67.6	LOS E	62.2	455.6	0.78	0.87	23.1

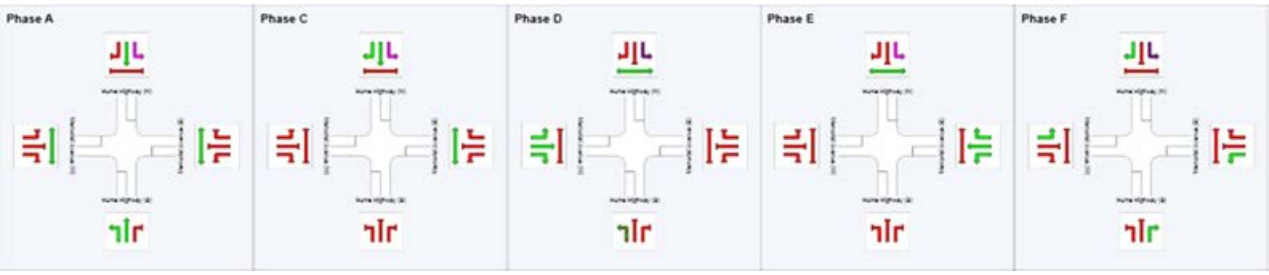
PHASING SUMMARY

Site: I-03 2030 MIMT PM CUM B

Hume Highway / Memorial Avenue
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D	E	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	70	82	110	132
Green Time (sec)	64	6	22	16	12
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	70	12	28	22	18
Phase Split	47 %	8 %	19 %	15 %	12 %



AM Peak – Cumulative Scenario B with Upgrade

MOVEMENT SUMMARY

Site: I-03 2030 MIMT AM CUM B upgrade

Hume Highway / Memorial Avenue
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	157	1.3	0.955	66.1	LOS E	66.0	496.2	1.00	1.06	27.3
2	T1	2142	8.9	0.955	57.8	LOS E	66.8	509.7	0.96	1.03	25.7
3	R2	267	0.0	0.568	73.3	LOS F	9.4	65.8	0.99	0.80	21.3
Approach		2566	7.5	0.955	59.9	LOS E	66.8	509.7	0.96	1.01	25.3
East: Memorial Avenue (E)											
4	L2	29	28.6	1.264	333.5	LOS F	29.0	222.7	1.00	1.72	6.7
5	T1	164	7.7	1.264	328.8	LOS F	29.0	222.7	1.00	1.71	6.6
6	R2	134	18.1	1.264	333.8	LOS F	26.0	208.4	1.00	1.69	4.7
Approach		327	13.8	1.264	331.2	LOS F	29.0	222.7	1.00	1.71	5.8
North: Hume Highway (N)											
7	L2	121	6.1	0.097	9.8	LOS A	2.1	15.1	0.29	0.63	41.9
8	T1	1884	12.6	0.812	30.1	LOS C	37.2	292.6	0.79	0.72	35.5
9	R2	101	3.1	0.439	72.0	LOS F	7.0	50.1	0.97	0.79	21.4
Approach		2106	11.7	0.812	31.0	LOS C	37.2	292.6	0.77	0.72	34.6
West: Memorial Avenue (W)											
10	L2	128	3.3	1.192	251.8	LOS F	49.3	351.4	1.00	1.60	8.7
11	T1	460	1.6	1.192	254.6	LOS F	61.2	436.6	1.00	1.66	8.2
12	R2	173	3.0	1.192	266.4	LOS F	61.2	436.6	1.00	1.72	10.5
Approach		761	2.2	1.192	256.8	LOS F	61.2	436.6	1.00	1.66	8.8
All Vehicles		5761	8.7	1.264	90.7	LOS F	66.8	509.7	0.90	1.03	19.1

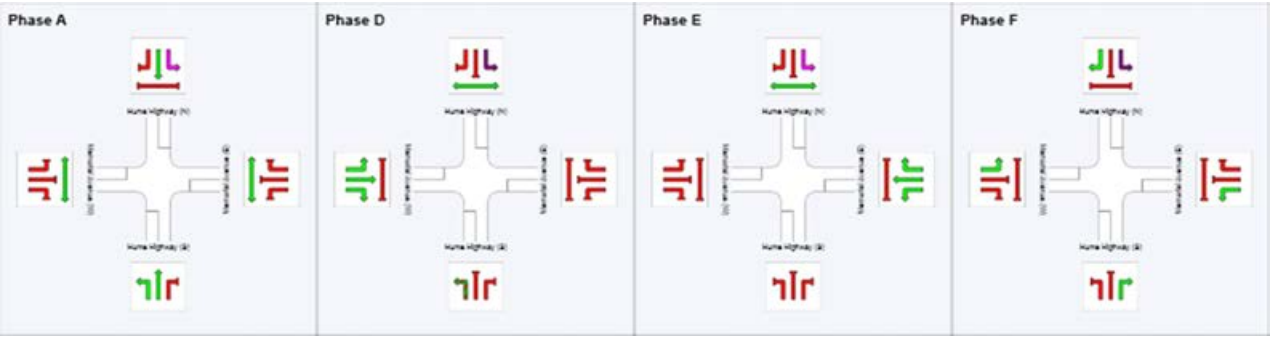
PHASING SUMMARY

Site: I-03 2030 MIMT AM CUM B upgrade

Hume Highway / Memorial Avenue
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	75	108	125
Green Time (sec)	69	27	11	19
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	75	33	17	25
Phase Split	50 %	22 %	11 %	17 %



PM Peak – Cumulative Scenario B with Upgrade

MOVEMENT SUMMARY

Site: I-03 2030 MIMT PM CUM B upgrade

Hume Highway / Memorial Avenue
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	127	0.8	0.826	44.8	LOS D	38.3	285.6	0.90	0.86	32.9
2	T1	1759	7.4	0.826	36.8	LOS C	38.8	293.9	0.87	0.81	32.4
3	R2	116	0.0	0.468	81.4	LOS F	4.3	29.9	1.00	0.76	19.9
Approach		2002	6.6	0.826	39.9	LOS C	38.8	293.9	0.88	0.81	31.4
East: Memorial Avenue (E)											
4	L2	55	0.0	1.299	362.3	LOS F	50.9	362.0	1.00	1.96	6.3
5	T1	289	2.2	1.299	357.8	LOS F	50.9	362.0	1.00	1.93	6.1
6	R2	211	6.0	1.299	362.7	LOS F	47.0	343.9	1.00	1.82	4.3
Approach		555	3.4	1.299	360.1	LOS F	50.9	362.0	1.00	1.89	5.5
North: Hume Highway (N)											
7	L2	152	2.8	0.088	8.0	LOS A	1.9	13.5	0.23	0.61	43.9
8	T1	2971	4.3	0.920	15.5	LOS B	56.0	410.2	0.61	0.60	44.3
9	R2	214	2.0	0.858	55.5	LOS D	10.3	73.4	1.00	0.93	24.7
Approach		3336	4.0	0.920	17.7	LOS B	56.0	410.2	0.62	0.62	42.1
West: Memorial Avenue (W)											
10	L2	82	1.3	0.901	82.9	LOS F	16.6	117.5	1.00	1.06	19.9
11	T1	209	1.0	0.901	79.7	LOS F	20.5	143.7	1.00	1.05	19.0
12	R2	171	0.0	0.901	86.5	LOS F	20.5	143.7	1.00	1.02	23.1
Approach		462	0.7	0.901	82.8	LOS F	20.5	143.7	1.00	1.04	20.8
All Vehicles		6355	4.5	1.299	59.3	LOS E	56.0	410.2	0.76	0.82	24.9

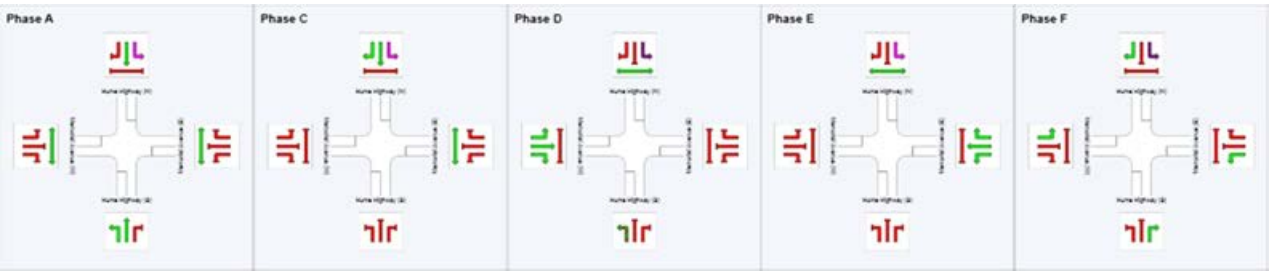
PHASING SUMMARY

Site: I-03 2030 MIMT PM CUM B upgrade

Hume Highway / Memorial Avenue
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D	E	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	70	83	111	134
Green Time (sec)	64	7	22	17	10
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	70	13	28	23	16
Phase Split	47 %	9 %	19 %	15 %	11 %



AM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-03 2020 MIMT CUM1 AM

Hume Highway / Memorial Avenue
2020 MIMT CUM1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	142	1.5	0.889	47.4	LOS D	49.9	374.6	0.94	0.92	32.1
2	T1	1934	9.1	0.889	39.6	LOS C	50.1	381.2	0.87	0.85	31.3
3	R2	240	0.0	1.020	133.8	LOS F	24.9	174.1	1.00	1.12	14.1
Approach		2316	7.7	1.020	49.8	LOS D	50.1	381.2	0.89	0.89	28.0
East: Memorial Avenue (E)											
4	L2	23	18.2	1.045	151.1	LOS F	15.9	118.2	1.00	1.28	13.1
5	T1	143	5.1	1.045	146.4	LOS F	15.9	118.2	1.00	1.28	12.7
6	R2	113	12.1	1.045	151.0	LOS F	14.4	110.7	1.00	1.27	9.3
Approach		279	9.1	1.045	148.6	LOS F	15.9	118.2	1.00	1.28	11.4
North: Hume Highway (N)											
7	L2	108	5.8	0.092	12.3	LOS A	2.3	17.1	0.35	0.64	39.5
8	T1	1692	13.0	0.724	28.0	LOS B	29.8	234.6	0.72	0.65	36.5
9	R2	88	3.6	0.385	71.5	LOS F	6.0	43.6	0.96	0.78	21.4
Approach		1889	12.1	0.724	29.1	LOS C	29.8	234.6	0.71	0.66	35.5
West: Memorial Avenue (W)											
10	L2	115	2.8	1.059	142.6	LOS F	32.2	229.5	1.00	1.30	13.7
11	T1	413	1.5	1.059	145.4	LOS F	41.4	294.7	1.00	1.33	12.7
12	R2	149	2.8	1.059	157.1	LOS F	41.4	294.7	1.00	1.37	15.7
Approach		677	2.0	1.059	147.5	LOS F	41.4	294.7	1.00	1.34	13.6
All Vehicles		5161	8.6	1.059	60.4	LOS E	50.1	381.2	0.84	0.88	24.6

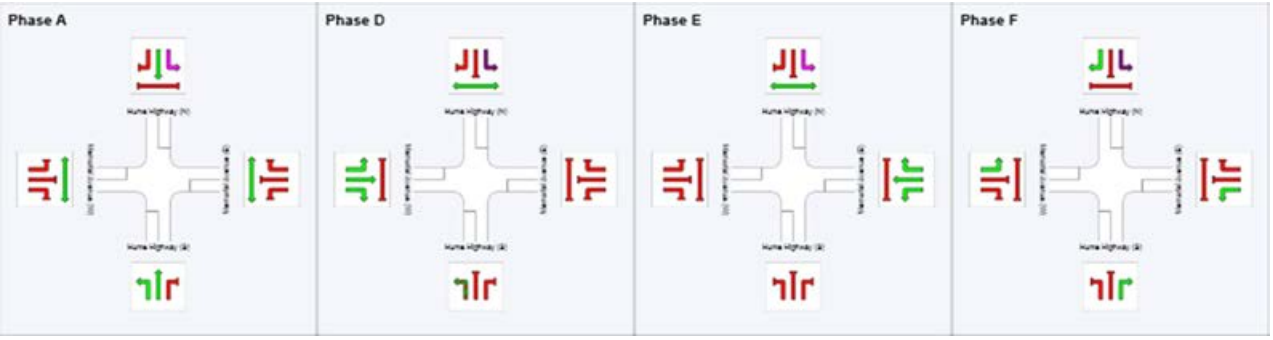
PHASING SUMMARY

Site: I-03 2020 MIMT CUM1 AM

Hume Highway / Memorial Avenue
2020 MIMT CUM1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	75	108	125
Green Time (sec)	69	27	11	19
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	75	33	17	25
Phase Split	50 %	22 %	11 %	17 %



PM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-03 2020 MIMT CUM1 PM

Hume Highway / Memorial Avenue
2020 MIMT CUM1 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	129	0.8	0.817	43.9	LOS D	37.2	277.4	0.89	0.85	33.2
2	T1	1702	7.9	0.817	35.9	LOS C	37.8	285.5	0.85	0.79	32.7
3	R2	114	0.0	0.765	84.0	LOS F	8.7	61.1	1.00	0.86	19.5
Approach		1945	7.0	0.817	39.3	LOS C	37.8	285.5	0.86	0.79	31.6
East: Memorial Avenue (E)											
4	L2	47	0.0	1.235	305.9	LOS F	41.5	295.8	1.00	1.79	7.3
5	T1	259	2.4	1.235	301.4	LOS F	41.5	295.8	1.00	1.77	7.1
6	R2	189	6.1	1.235	306.3	LOS F	38.3	280.5	1.00	1.69	5.1
Approach		496	3.6	1.235	303.7	LOS F	41.5	295.8	1.00	1.74	6.4
North: Hume Highway (N)											
7	L2	145	2.9	0.086	8.2	LOS A	1.9	13.5	0.24	0.61	43.7
8	T1	2833	4.5	0.887	12.5	LOS A	46.2	338.4	0.58	0.55	46.7
9	R2	203	2.1	0.771	53.3	LOS D	9.2	65.4	1.00	0.89	25.3
Approach		3181	4.3	0.887	14.9	LOS B	46.2	338.4	0.59	0.57	44.2
West: Memorial Avenue (W)											
10	L2	75	1.4	0.809	71.8	LOS F	13.5	95.7	1.00	0.95	21.7
11	T1	188	1.1	0.809	69.1	LOS E	16.9	118.4	1.00	0.94	20.6
12	R2	152	0.0	0.809	76.7	LOS F	16.9	118.4	1.00	0.92	24.6
Approach		415	0.8	0.809	72.3	LOS F	16.9	118.4	1.00	0.93	22.4
All Vehicles		6036	4.9	1.235	50.4	LOS D	46.2	338.4	0.74	0.76	27.2

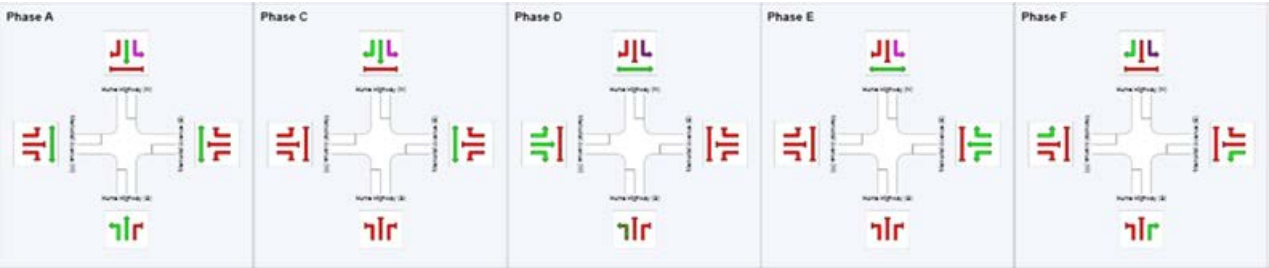
PHASING SUMMARY

Site: I-03 2020 MIMT CUM1 PM

Hume Highway / Memorial Avenue
2020 MIMT CUM1 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D	E	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	70	82	110	132
Green Time (sec)	64	6	22	16	12
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	70	12	28	22	18
Phase Split	47 %	8 %	19 %	15 %	12 %



AM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-03 2030 MIMT CUM2 AM

Hume Highway / Memorial Avenue
2030 MIMT CUM2 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	157	1.3	0.990	83.3	LOS F	77.3	583.7	1.00	1.14	24.0
2	T1	2146	9.1	0.990	75.0	LOS F	78.7	602.9	0.94	1.10	22.0
3	R2	267	0.0	1.137	222.0	LOS F	36.2	253.5	1.00	1.30	9.4
Approach		2570	7.6	1.137	90.8	LOS F	78.7	602.9	0.95	1.12	19.5
East: Memorial Avenue (E)											
4	L2	29	28.6	1.264	333.5	LOS F	29.0	222.7	1.00	1.72	6.7
5	T1	164	7.7	1.264	328.8	LOS F	29.0	222.7	1.00	1.71	6.6
6	R2	134	18.1	1.264	333.8	LOS F	26.0	208.4	1.00	1.69	4.7
Approach		327	13.8	1.264	331.2	LOS F	29.0	222.7	1.00	1.71	5.8
North: Hume Highway (N)											
7	L2	121	6.1	0.103	12.4	LOS A	2.6	19.4	0.36	0.64	39.4
8	T1	1840	13.1	0.798	29.4	LOS C	35.6	283.0	0.78	0.71	35.8
9	R2	101	3.1	0.439	72.0	LOS F	7.0	50.1	0.97	0.79	21.4
Approach		2062	12.2	0.798	30.5	LOS C	35.6	283.0	0.76	0.71	34.8
West: Memorial Avenue (W)											
10	L2	128	3.3	1.186	246.6	LOS F	48.4	345.5	1.00	1.58	8.8
11	T1	460	1.6	1.186	249.4	LOS F	60.3	430.0	1.00	1.64	8.3
12	R2	169	3.1	1.186	261.2	LOS F	60.3	430.0	1.00	1.69	10.7
Approach		757	2.2	1.186	251.6	LOS F	60.3	430.0	1.00	1.64	9.0
All Vehicles		5716	8.9	1.264	104.1	LOS F	78.7	602.9	0.89	1.07	17.4

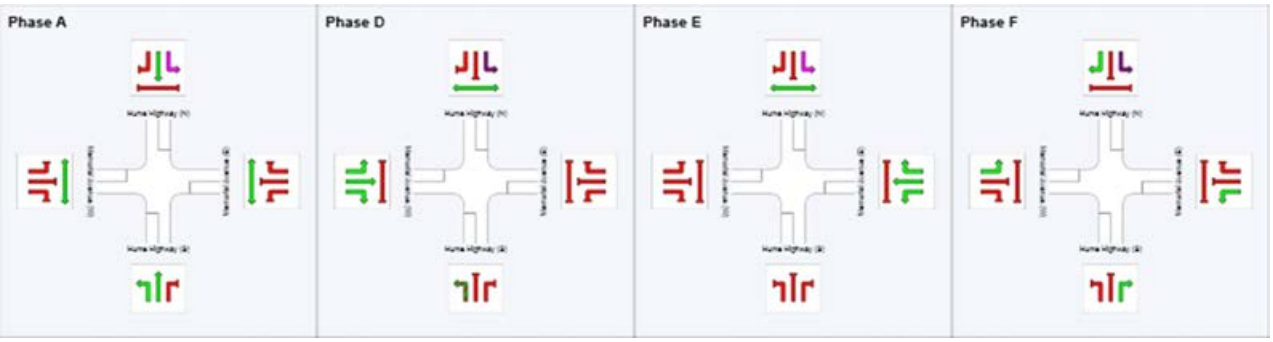
PHASING SUMMARY

Site: I-03 2030 MIMT CUM2 AM

Hume Highway / Memorial Avenue
2030 MIMT CUM2 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	75	108	125
Green Time (sec)	69	27	11	19
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	75	33	17	25
Phase Split	50 %	22 %	11 %	17 %



PM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-03 2030 MIMT CUM2 PM

Hume Highway / Memorial Avenue
2030 MIMT CUM2 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	126	0.8	0.841	46.2	LOS D	40.0	301.3	0.91	0.88	32.5
2	T1	1749	8.0	0.841	38.2	LOS C	40.6	310.3	0.87	0.82	31.8
3	R2	116	0.0	0.779	84.5	LOS F	8.9	62.5	1.00	0.87	19.4
Approach		1991	7.1	0.841	41.4	LOS C	40.6	310.3	0.88	0.83	30.8
East: Memorial Avenue (E)											
4	L2	55	0.0	1.379	433.9	LOS F	56.0	398.0	1.00	2.09	5.3
5	T1	289	2.2	1.379	429.4	LOS F	56.0	398.0	1.00	2.07	5.2
6	R2	211	6.0	1.379	434.3	LOS F	51.6	377.5	1.00	1.96	3.7
Approach		555	3.4	1.379	431.7	LOS F	56.0	398.0	1.00	2.03	4.7
North: Hume Highway (N)											
7	L2	152	2.8	0.090	8.4	LOS A	2.1	14.7	0.24	0.62	43.5
8	T1	2979	4.5	0.940	20.2	LOS B	64.7	476.5	0.67	0.68	41.0
9	R2	214	2.0	0.810	56.5	LOS D	9.9	70.4	1.00	0.92	24.5
Approach		3344	4.3	0.940	22.0	LOS B	64.7	476.5	0.67	0.69	39.4
West: Memorial Avenue (W)											
10	L2	82	1.3	0.901	82.5	LOS F	16.6	117.4	1.00	1.06	19.9
11	T1	209	1.0	0.901	79.5	LOS F	20.5	143.6	1.00	1.04	19.0
12	R2	171	0.0	0.901	86.5	LOS F	20.5	143.6	1.00	1.01	23.0
Approach		462	0.7	0.901	82.6	LOS F	20.5	143.6	1.00	1.04	20.7
All Vehicles		6352	4.8	1.379	68.2	LOS E	64.7	476.5	0.79	0.88	22.9

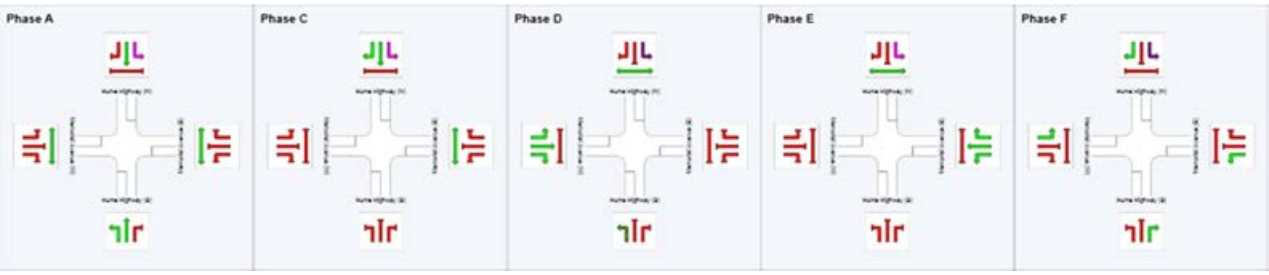
PHASING SUMMARY

Site: I-03 2030 MIMT CUM2 PM

Hume Highway / Memorial Avenue
2030 MIMT CUM2 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D	E	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	70	82	110	132
Green Time (sec)	64	6	22	16	12
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	70	12	28	22	18
Phase Split	47 %	8 %	19 %	15 %	12 %



AM Peak – Cumulative Scenario C2 with Upgrade

MOVEMENT SUMMARY

Site: I-03 2030 MIMT CUM2 AM - Upgraded

Hume Highway / Memorial Avenue
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	157	1.3	0.959	67.8	LOS E	67.0	505.8	1.00	1.07	26.9
2	T1	2146	9.1	0.959	59.4	LOS E	67.9	520.0	0.96	1.04	25.3
3	R2	267	0.0	0.568	73.3	LOS F	9.4	65.8	0.99	0.80	21.3
Approach		2570	7.6	0.959	61.4	LOS E	67.9	520.0	0.97	1.02	25.0
East: Memorial Avenue (E)											
4	L2	29	28.6	1.264	333.5	LOS F	29.0	222.7	1.00	1.72	6.7
5	T1	164	7.7	1.264	328.8	LOS F	29.0	222.7	1.00	1.71	6.6
6	R2	134	18.1	1.264	333.8	LOS F	26.0	208.4	1.00	1.69	4.7
Approach		327	13.8	1.264	331.2	LOS F	29.0	222.7	1.00	1.71	5.8
North: Hume Highway (N)											
7	L2	121	6.1	0.097	9.8	LOS A	2.0	15.1	0.29	0.63	41.9
8	T1	1840	13.1	0.798	29.4	LOS C	35.6	282.8	0.78	0.71	35.8
9	R2	101	3.1	0.439	72.0	LOS F	7.0	50.1	0.97	0.79	21.4
Approach		2062	12.2	0.798	30.3	LOS C	35.6	282.8	0.76	0.70	34.9
West: Memorial Avenue (W)											
10	L2	128	3.3	1.186	246.6	LOS F	48.4	345.5	1.00	1.58	8.8
11	T1	460	1.6	1.186	249.4	LOS F	60.3	430.0	1.00	1.64	8.3
12	R2	169	3.1	1.186	261.2	LOS F	60.3	430.0	1.00	1.70	10.7
Approach		757	2.2	1.186	251.6	LOS F	60.3	430.0	1.00	1.65	9.0
All Vehicles		5716	8.9	1.264	90.8	LOS F	67.9	520.0	0.90	1.03	19.1

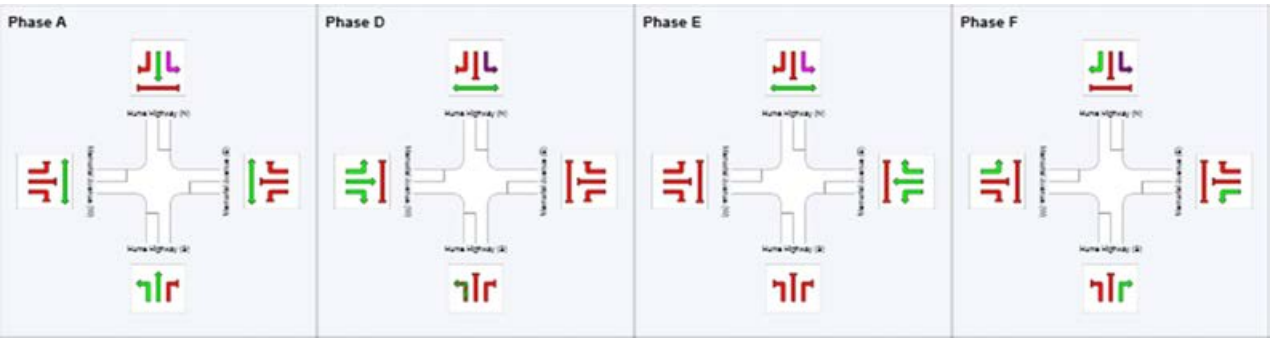
PHASING SUMMARY

Site: I-03 2030 MIMT CUM2 AM - Upgraded

Hume Highway / Memorial Avenue
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	75	108	125
Green Time (sec)	69	27	11	19
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	75	33	17	25
Phase Split	50 %	22 %	11 %	17 %



PM Peak – Cumulative Scenario C2 with Upgrade

MOVEMENT SUMMARY

Site: I-03 2030 MIMT CUM2 PM - Upgraded

Hume Highway / Memorial Avenue
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	126	0.8	0.826	44.9	LOS D	38.1	287.1	0.90	0.86	32.9
2	T1	1749	8.0	0.826	36.9	LOS C	38.7	295.6	0.87	0.81	32.3
3	R2	116	0.0	0.468	81.4	LOS F	4.3	29.9	1.00	0.76	19.9
Approach		1991	7.1	0.826	40.0	LOS C	38.7	295.6	0.88	0.81	31.3
East: Memorial Avenue (E)											
4	L2	55	0.0	1.299	362.3	LOS F	50.9	362.0	1.00	1.96	6.3
5	T1	289	2.2	1.299	357.8	LOS F	50.9	362.0	1.00	1.93	6.1
6	R2	211	6.0	1.299	362.7	LOS F	47.0	343.9	1.00	1.82	4.3
Approach		555	3.4	1.299	360.1	LOS F	50.9	362.0	1.00	1.89	5.5
North: Hume Highway (N)											
7	L2	152	2.8	0.088	8.0	LOS A	1.9	13.5	0.23	0.61	43.9
8	T1	2979	4.5	0.926	16.5	LOS B	58.2	428.7	0.62	0.62	43.5
9	R2	214	2.0	0.858	55.5	LOS D	10.3	73.4	1.00	0.93	24.7
Approach		3344	4.3	0.926	18.6	LOS B	58.2	428.7	0.63	0.64	41.5
West: Memorial Avenue (W)											
10	L2	82	1.3	0.901	82.9	LOS F	16.6	117.5	1.00	1.06	19.9
11	T1	209	1.0	0.901	79.7	LOS F	20.5	143.7	1.00	1.05	19.0
12	R2	171	0.0	0.901	86.5	LOS F	20.5	143.7	1.00	1.02	23.1
Approach		462	0.7	0.901	82.8	LOS F	20.5	143.7	1.00	1.04	20.8
All Vehicles		6352	4.8	1.299	59.8	LOS E	58.2	428.7	0.77	0.83	24.8

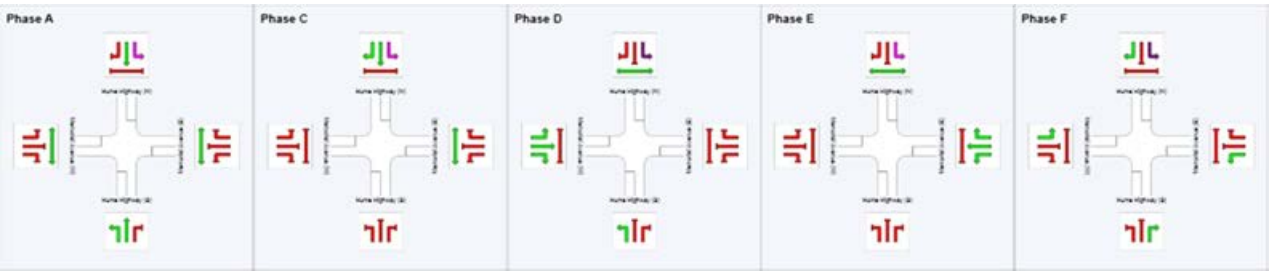
PHASING SUMMARY

Site: I-03 2030 MIMT CUM2 PM - Upgraded

Hume Highway / Memorial Avenue
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D	E	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	70	83	111	134
Green Time (sec)	64	7	22	17	10
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	70	13	28	23	16
Phase Split	47 %	9 %	19 %	15 %	11 %



I-04 Intersection of the Hume Highway and Hoxton Park Drive

AM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-04 2030 MIMT AM CUM A

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	113	16.4	0.103	8.6	LOS A	0.9	7.3	0.12	0.57	50.6
2	T1	2174	7.2	0.842	28.8	LOS C	43.0	324.2	0.81	0.75	39.1
3	R2	1213	1.9	1.079	138.1	LOS F	53.1	377.9	1.00	1.22	13.8
Approach		3500	5.7	1.079	66.0	LOS E	53.1	377.9	0.85	0.91	25.7
East: Macquarie Street (E)											
4	L2	361	5.8	0.234	22.0	LOS B	5.7	41.8	0.67	0.73	38.6
5	T1	545	4.6	1.137	216.5	LOS F	36.9	268.7	1.00	1.50	10.9
Approach		906	5.1	1.137	139.0	LOS F	36.9	268.7	0.87	1.20	14.7
North: Hume Highway (N)											
7	L2	236	15.6	1.018	69.6	LOS E	51.4	405.2	1.00	1.06	24.0
8	T1	1550	11.0	1.018	102.1	LOS F	64.0	501.8	1.00	1.20	20.7
9	R2	246	19.2	1.257	327.7	LOS F	41.2	336.2	1.00	1.59	9.2
Approach		2032	12.5	1.257	125.6	LOS F	64.0	501.8	1.00	1.23	17.9
West: Hoxton Park Road (W)											
10	L2	345	18.0	0.605	49.1	LOS D	20.8	167.8	0.88	0.84	32.0
11	T1	1372	4.8	1.175	265.1	LOS F	74.0	539.6	1.00	1.76	9.2
12	R2	398	5.5	1.223	235.2	LOS F	34.2	253.4	1.00	1.37	11.4
Approach		2115	7.1	1.223	224.2	LOS F	74.0	539.6	0.98	1.53	11.1
All Vehicles		8553	7.6	1.257	127.0	LOS F	74.0	539.6	0.92	1.17	17.0

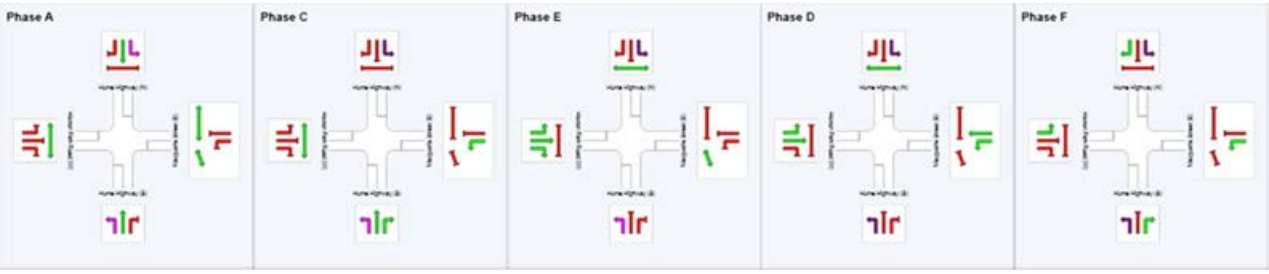
PHASING SUMMARY

Site: I-04 2030 MIMT AM CUM A

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	D	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	51	79	101	126
Green Time (sec)	45	22	16	19	18
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	51	28	22	25	24
Phase Split	34 %	19 %	15 %	17 %	16 %



PM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-04 2030 MIMT PM CUM A

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	208	9.0	0.179	9.3	LOS A	2.0	15.4	0.15	0.58	50.4
2	T1	1686	8.8	0.684	24.0	LOS B	27.4	212.2	0.65	0.59	41.5
3	R2	448	1.2	0.992	116.8	LOS F	21.4	151.3	1.00	1.09	15.7
Approach		2342	7.4	0.992	40.5	LOS C	27.4	212.2	0.68	0.68	33.5
East: Macquarie Street (E)											
4	L2	785	1.5	1.043	176.8	LOS F	41.7	295.6	0.99	1.14	11.4
5	T1	706	3.3	1.087	167.6	LOS F	41.8	300.7	1.00	1.39	13.3
Approach		1492	2.3	1.087	172.5	LOS F	41.8	300.7	0.99	1.26	12.3
North: Hume Highway (N)											
7	L2	101	5.2	0.975	39.4	LOS C	82.1	607.1	0.97	1.05	33.7
8	T1	2874	4.7	0.975	34.6	LOS C	83.2	615.7	0.85	0.92	36.5
9	R2	283	6.3	1.494	538.4	LOS F	61.2	451.8	1.00	1.93	6.0
Approach		3258	4.9	1.494	78.5	LOS F	83.2	615.7	0.87	1.01	24.5
West: Hoxton Park Road (W)											
10	L2	252	4.2	0.402	45.2	LOS D	13.8	100.2	0.81	0.80	33.3
11	T1	717	4.3	0.439	46.6	LOS D	14.2	102.8	0.87	0.73	30.4
12	R2	395	5.4	1.316	302.5	LOS F	38.6	289.2	1.00	1.51	9.3
Approach		1363	4.6	1.316	120.5	LOS F	38.6	289.2	0.90	0.97	18.0
All Vehicles		8456	5.1	1.494	91.3	LOS F	83.2	615.7	0.84	0.96	21.6

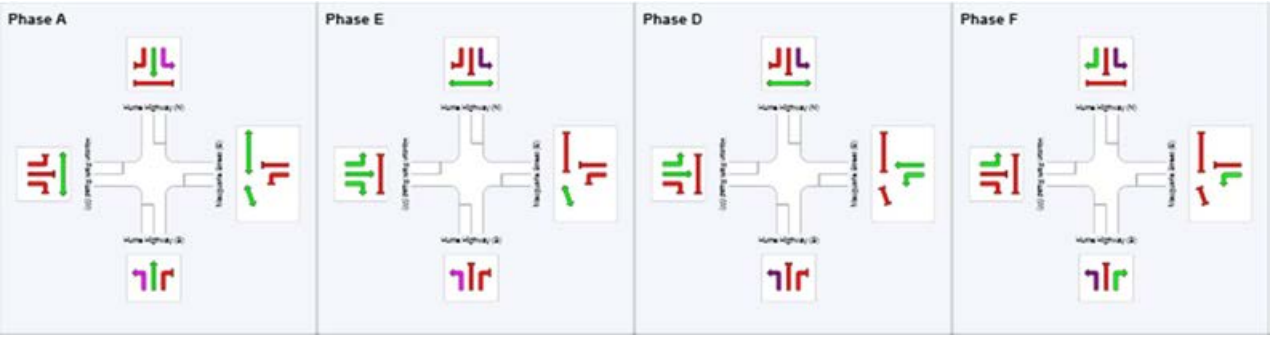
PHASING SUMMARY

Site: I-04 2030 MIMT PM CUM A

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	D	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	79	99	128
Green Time (sec)	73	14	23	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	79	20	29	22
Phase Split	53 %	13 %	19 %	15 %



AM Peak – Cumulative Scenario A with Upgrade

MOVEMENT SUMMARY

Site: I-04 2030 MIMT AM CUM A upgrade

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	113	16.4	0.100	7.2	LOS A	0.5	4.1	0.07	0.56	51.8
2	T1	2174	7.2	0.866	33.4	LOS C	46.7	352.7	0.85	0.80	37.1
3	R2	1213	1.9	1.136	184.6	LOS F	62.0	440.8	1.00	1.33	11.0
Approach		3500	5.7	1.136	84.9	LOS F	62.0	440.8	0.87	0.98	22.1
East: Macquarie Street (E)											
4	L2	361	5.8	0.230	21.3	LOS B	5.5	40.4	0.66	0.73	39.0
5	T1	545	4.6	0.982	106.3	LOS F	25.9	188.8	1.00	1.17	18.6
Approach		906	5.1	0.982	72.4	LOS F	25.9	188.8	0.86	1.00	23.0
North: Hume Highway (N)											
7	L2	236	15.6	1.032	78.6	LOS F	52.7	415.4	1.00	1.08	22.2
8	T1	1550	11.0	1.032	109.9	LOS F	64.0	502.0	1.00	1.23	19.7
9	R2	246	19.2	0.707	79.4	LOS F	9.2	74.8	1.00	0.84	25.6
Approach		2032	12.5	1.032	102.6	LOS F	64.0	502.0	1.00	1.17	20.6
West: Hoxton Park Road (W)											
10	L2	345	18.0	0.583	47.3	LOS D	20.3	164.2	0.87	0.83	32.5
11	T1	1372	4.8	1.095	199.1	LOS F	64.3	468.5	1.00	1.54	11.6
12	R2	398	5.5	1.182	209.1	LOS F	32.1	237.7	1.00	1.31	12.5
Approach		2115	7.1	1.182	176.2	LOS F	64.3	468.5	0.98	1.38	13.5
All Vehicles		8553	7.6	1.182	110.4	LOS F	64.3	502.0	0.93	1.13	18.8

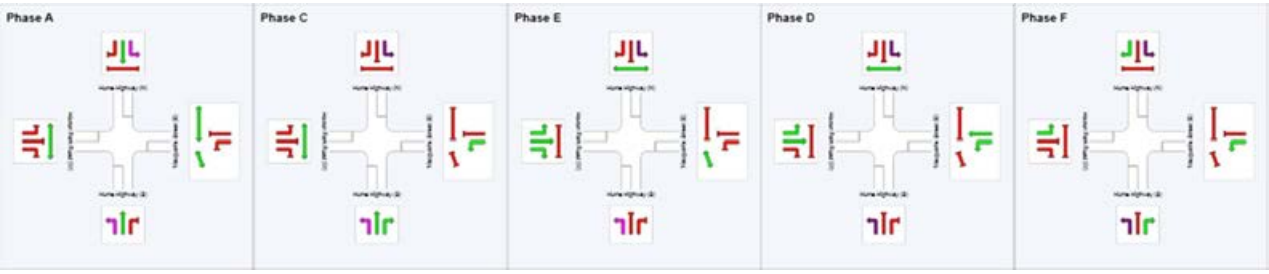
PHASING SUMMARY

Site: I-04 2030 MIMT AM CUM A upgrade

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	D	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	49	77	100	128
Green Time (sec)	43	22	17	22	16
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	49	28	23	28	22
Phase Split	33 %	19 %	15 %	19 %	15 %



PM Peak – Cumulative Scenario A with Upgrade

MOVEMENT SUMMARY

Site: I-04 2030 MIMT PM CUM A upgrade

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	208	9.0	0.176	7.8	LOS A	1.3	9.9	0.10	0.57	51.6
2	T1	1686	8.8	0.693	25.0	LOS B	28.2	217.9	0.67	0.60	41.0
3	R2	448	1.2	0.934	95.5	LOS F	19.1	135.2	1.00	1.00	18.1
Approach		2342	7.4	0.934	36.9	LOS C	28.2	217.9	0.68	0.68	34.9
East: Macquarie Street (E)											
4	L2	785	1.5	1.024	163.1	LOS F	39.7	281.3	0.98	1.11	12.1
5	T1	706	3.3	1.087	167.6	LOS F	41.8	300.7	1.00	1.39	13.3
Approach		1492	2.3	1.087	165.2	LOS F	41.8	300.7	0.99	1.24	12.7
North: Hume Highway (N)											
7	L2	101	5.2	0.956	33.2	LOS C	70.9	524.0	0.90	0.95	36.5
8	T1	2874	4.7	0.956	27.9	LOS B	72.4	535.5	0.84	0.87	39.4
9	R2	283	6.3	0.703	77.8	LOS F	10.4	76.9	1.00	0.84	26.0
Approach		3258	4.9	0.956	32.4	LOS C	72.4	535.5	0.85	0.87	37.5
West: Hoxton Park Road (W)											
10	L2	252	4.2	0.395	44.4	LOS D	13.7	99.2	0.80	0.80	33.6
11	T1	717	4.3	0.439	46.6	LOS D	14.2	102.8	0.87	0.73	30.4
12	R2	395	5.4	1.316	302.5	LOS F	38.6	289.2	1.00	1.51	9.3
Approach		1363	4.6	1.316	120.3	LOS F	38.6	289.2	0.89	0.97	18.1
All Vehicles		8456	5.1	1.316	71.3	LOS F	72.4	535.5	0.84	0.90	25.1

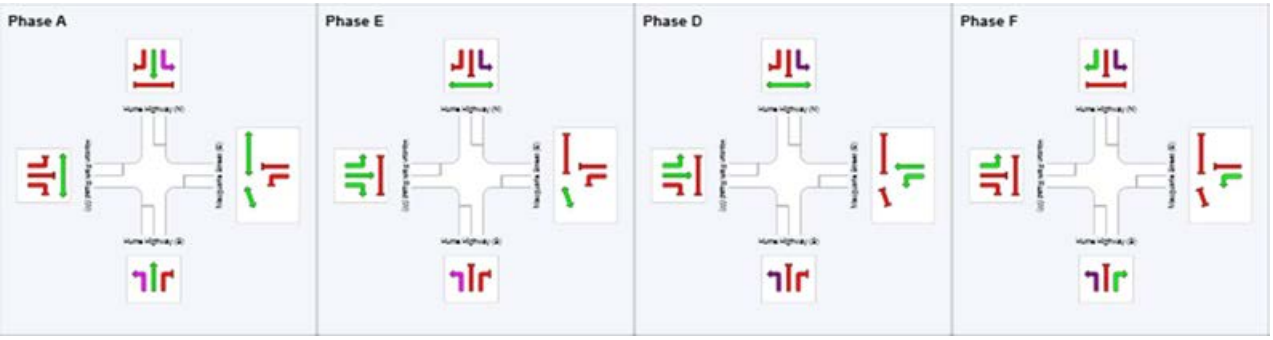
PHASING SUMMARY

Site: I-04 2030 MIMT PM CUM A upgrade

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	D	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	78	98	127
Green Time (sec)	72	14	23	17
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	78	20	29	23
Phase Split	52 %	13 %	19 %	15 %



AM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-04 2030 MIMT AM CUM B

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	113	16.2	0.102	8.6	LOS A	0.9	7.3	0.12	0.57	50.7
2	T1	2166	6.9	0.836	28.2	LOS B	42.1	316.3	0.80	0.74	39.4
3	R2	1213	1.9	1.079	138.1	LOS F	53.1	377.9	1.00	1.22	13.8
Approach		3492	5.4	1.079	65.7	LOS E	53.1	377.9	0.85	0.90	25.7
East: Macquarie Street (E)											
4	L2	361	5.8	0.234	22.0	LOS B	5.7	41.8	0.67	0.73	38.6
5	T1	545	4.6	1.137	216.5	LOS F	36.9	268.7	1.00	1.50	10.9
Approach		906	5.1	1.137	139.0	LOS F	36.9	268.7	0.87	1.20	14.7
North: Hume Highway (N)											
7	L2	236	15.6	1.040	84.2	LOS F	56.8	443.4	1.00	1.10	21.3
8	T1	1604	10.0	1.040	116.4	LOS F	69.7	539.4	1.00	1.26	18.9
9	R2	246	19.2	1.257	327.7	LOS F	41.2	336.2	1.00	1.59	9.2
Approach		2086	11.7	1.257	137.7	LOS F	69.7	539.4	1.00	1.28	16.8
West: Hoxton Park Road (W)											
10	L2	345	18.0	0.605	49.1	LOS D	20.8	167.8	0.88	0.84	32.0
11	T1	1372	4.8	1.176	266.0	LOS F	74.0	539.7	1.00	1.76	9.2
12	R2	402	5.5	1.240	248.4	LOS F	35.6	264.5	1.00	1.40	10.9
Approach		2119	7.1	1.240	227.3	LOS F	74.0	539.7	0.98	1.54	11.0
All Vehicles		8604	7.3	1.257	130.7	LOS F	74.0	539.7	0.92	1.18	16.7

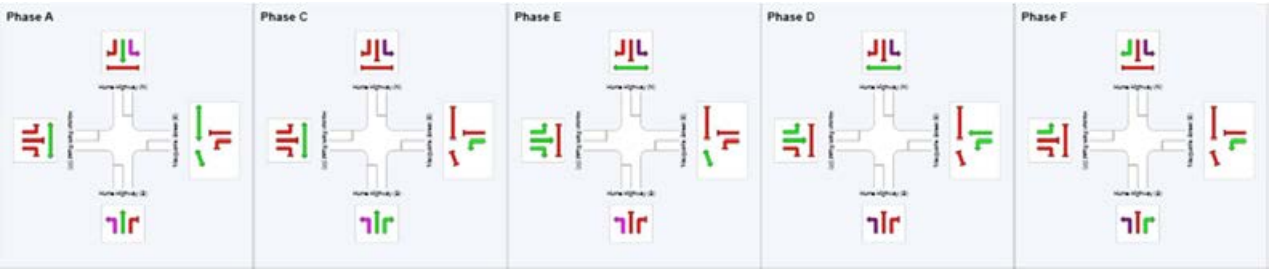
PHASING SUMMARY

Site: I-04 2030 MIMT AM CUM B

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	D	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	51	79	101	126
Green Time (sec)	45	22	16	19	18
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	51	28	22	25	24
Phase Split	34 %	19 %	15 %	17 %	16 %



PM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-04 2030 MIMT PM CUM B

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	209	8.0	0.179	9.3	LOS A	2.0	15.4	0.15	0.58	50.4
2	T1	1719	7.3	0.686	24.0	LOS B	28.0	211.9	0.66	0.59	41.5
3	R2	448	1.2	0.992	116.8	LOS F	21.4	151.3	1.00	1.09	15.7
Approach		2377	6.2	0.992	40.2	LOS C	28.0	211.9	0.68	0.68	33.6
East: Macquarie Street (E)											
4	L2	785	1.5	1.043	176.8	LOS F	41.7	295.6	0.99	1.14	11.4
5	T1	706	3.3	1.087	167.6	LOS F	41.8	300.7	1.00	1.39	13.3
Approach		1492	2.3	1.087	172.5	LOS F	41.8	300.7	0.99	1.26	12.3
North: Hume Highway (N)											
7	L2	101	5.2	0.962	34.2	LOS C	74.9	548.6	0.92	0.97	36.0
8	T1	2854	4.1	0.962	29.4	LOS C	76.5	559.7	0.81	0.86	38.8
9	R2	283	6.3	1.494	538.4	LOS F	61.2	451.8	1.00	1.93	6.0
Approach		3238	4.3	1.494	74.1	LOS F	76.5	559.7	0.83	0.95	25.3
West: Hoxton Park Road (W)											
10	L2	252	4.2	0.402	45.2	LOS D	13.8	100.2	0.81	0.80	33.3
11	T1	717	4.3	0.439	46.6	LOS D	14.2	102.8	0.87	0.73	30.4
12	R2	391	4.3	1.285	277.5	LOS F	36.6	270.5	1.00	1.47	10.0
Approach		1359	4.3	1.285	112.7	LOS F	36.6	270.5	0.89	0.96	18.9
All Vehicles		8465	4.5	1.494	88.1	LOS F	76.5	559.7	0.83	0.93	22.1

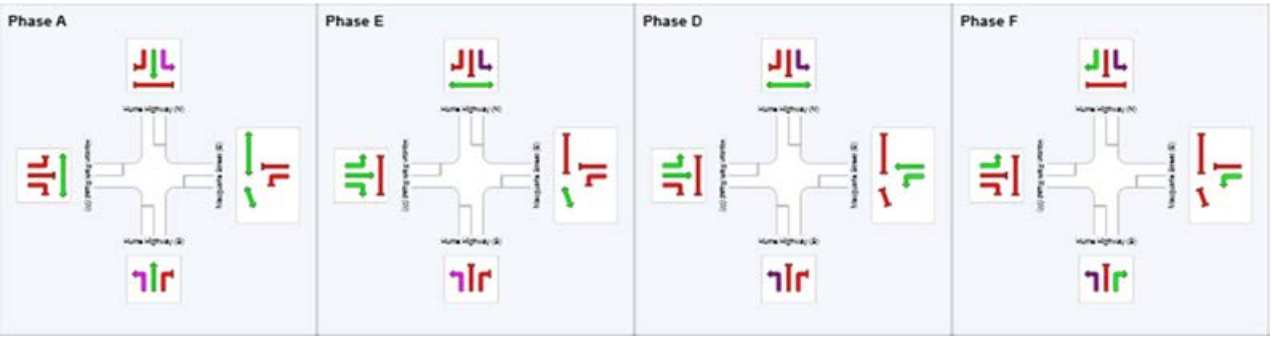
PHASING SUMMARY

Site: I-04 2030 MIMT PM CUM B

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	D	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	79	99	128
Green Time (sec)	73	14	23	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	79	20	29	22
Phase Split	53 %	13 %	19 %	15 %



AM Peak – Cumulative Scenario B with Upgrade

MOVEMENT SUMMARY

Site: I-04 2030 MIMT AM CUM B upgrade

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	113	16.2	0.099	7.2	LOS A	0.5	4.1	0.07	0.56	51.8
2	T1	2166	6.9	0.860	32.5	LOS C	45.8	343.6	0.84	0.79	37.4
3	R2	1213	1.9	1.136	184.6	LOS F	62.0	440.8	1.00	1.33	11.0
Approach		3492	5.4	1.136	84.5	LOS F	62.0	440.8	0.87	0.97	22.2
East: Macquarie Street (E)											
4	L2	361	5.8	0.230	21.3	LOS B	5.5	40.4	0.66	0.73	39.0
5	T1	545	4.6	0.982	106.3	LOS F	25.9	188.8	1.00	1.17	18.6
Approach		906	5.1	0.982	72.4	LOS F	25.9	188.8	0.86	1.00	23.0
North: Hume Highway (N)											
7	L2	236	15.6	1.054	94.7	LOS F	58.3	455.0	1.00	1.12	19.7
8	T1	1604	10.0	1.054	125.8	LOS F	69.9	541.0	1.00	1.30	18.0
9	R2	246	19.2	0.707	79.4	LOS F	9.2	74.8	1.00	0.84	25.6
Approach		2086	11.7	1.054	116.8	LOS F	69.9	541.0	1.00	1.22	18.9
West: Hoxton Park Road (W)											
10	L2	345	18.0	0.583	47.3	LOS D	20.3	164.2	0.87	0.83	32.5
11	T1	1372	4.8	1.096	200.0	LOS F	64.3	468.8	1.00	1.54	11.6
12	R2	402	5.5	1.199	221.0	LOS F	33.4	248.6	1.00	1.34	12.0
Approach		2119	7.1	1.199	179.1	LOS F	64.3	468.8	0.98	1.39	13.3
All Vehicles		8604	7.3	1.199	114.4	LOS F	69.9	541.0	0.93	1.14	18.3

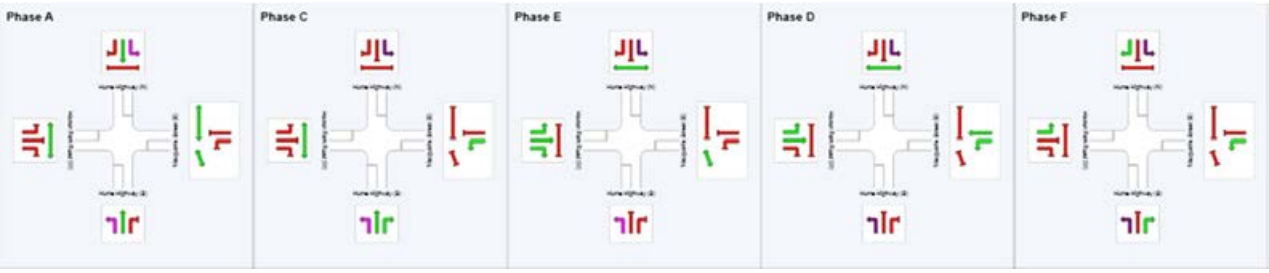
PHASING SUMMARY

Site: I-04 2030 MIMT AM CUM B upgrade

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	D	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	49	77	100	128
Green Time (sec)	43	22	17	22	16
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	49	28	23	28	22
Phase Split	33 %	19 %	15 %	19 %	15 %



PM Peak – Cumulative Scenario B with Upgrade

MOVEMENT SUMMARY

Site: I-04 2030 MIMT PM CUM B upgrade

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	209	8.0	0.176	7.7	LOS A	1.3	9.9	0.10	0.57	51.6
2	T1	1719	7.3	0.696	25.0	LOS B	28.8	217.6	0.67	0.61	41.0
3	R2	448	1.2	0.934	95.5	LOS F	19.1	135.2	1.00	1.00	18.1
Approach		2377	6.2	0.934	36.8	LOS C	28.8	217.6	0.68	0.68	35.0
East: Macquarie Street (E)											
4	L2	785	1.5	1.024	163.1	LOS F	39.7	281.3	0.98	1.11	12.1
5	T1	706	3.3	1.087	167.6	LOS F	41.8	300.7	1.00	1.39	13.3
Approach		1492	2.3	1.087	165.2	LOS F	41.8	300.7	0.99	1.24	12.7
North: Hume Highway (N)											
7	L2	101	5.2	0.943	29.6	LOS C	65.3	477.7	0.86	0.90	38.3
8	T1	2854	4.1	0.943	24.3	LOS B	67.0	490.7	0.80	0.82	41.3
9	R2	283	6.3	0.703	77.8	LOS F	10.4	76.9	1.00	0.84	26.0
Approach		3238	4.3	0.943	29.1	LOS C	67.0	490.7	0.82	0.82	39.0
West: Hoxton Park Road (W)											
10	L2	252	4.2	0.395	44.4	LOS D	13.7	99.2	0.80	0.80	33.6
11	T1	717	4.3	0.439	46.6	LOS D	14.2	102.8	0.87	0.73	30.4
12	R2	391	4.3	1.285	277.5	LOS F	36.6	270.5	1.00	1.47	10.0
Approach		1359	4.3	1.285	112.6	LOS F	36.6	270.5	0.89	0.96	18.9
All Vehicles		8465	4.5	1.285	68.7	LOS E	67.0	490.7	0.82	0.88	25.7

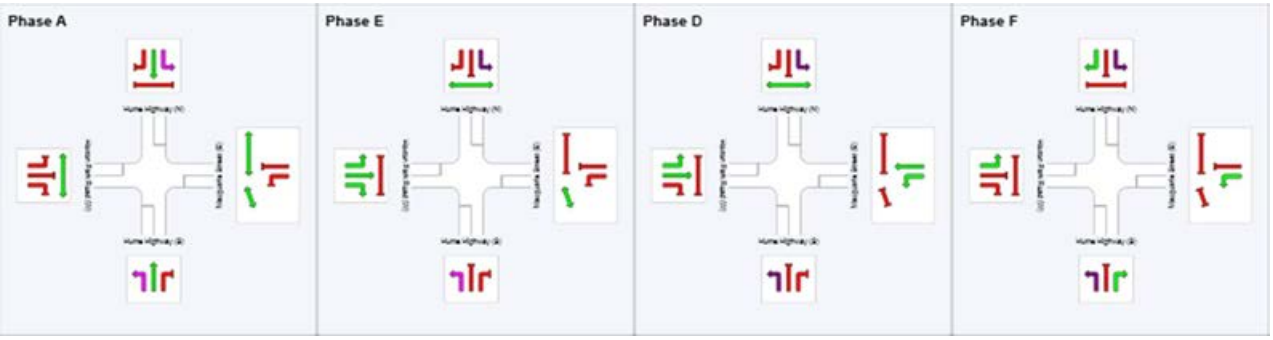
PHASING SUMMARY

Site: I-04 2030 MIMT PM CUM B upgrade

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	D	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	78	98	127
Green Time (sec)	72	14	23	17
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	78	20	29	23
Phase Split	52 %	13 %	19 %	15 %



AM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-04 2020 MIMT CUM1 AM

Hume Highway / Hoxton Park Road / Macquarie Street
2020 MIMT CUM1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	89	15.6	0.077	7.4	LOS A	0.4	3.5	0.08	0.56	51.6
2	T1	1982	6.9	0.756	25.6	LOS B	33.9	253.7	0.73	0.66	40.7
3	R2	1083	1.8	0.963	65.6	LOS E	31.3	222.4	1.00	1.02	23.1
Approach		3154	5.4	0.963	38.8	LOS C	33.9	253.7	0.80	0.78	33.5
East: Macquarie Street (E)											
4	L2	297	5.7	0.192	21.6	LOS B	4.6	33.6	0.65	0.72	38.8
5	T1	414	4.6	0.862	78.6	LOS F	16.4	119.1	1.00	0.97	22.7
Approach		711	5.0	0.862	54.8	LOS D	16.4	119.1	0.85	0.87	27.0
North: Hume Highway (N)											
7	L2	199	15.9	0.931	75.4	LOS F	45.6	355.6	1.00	1.13	22.9
8	T1	1455	10.5	0.931	68.4	LOS E	46.6	359.8	0.98	1.04	26.3
9	R2	196	18.8	0.996	122.7	LOS F	19.4	157.5	1.00	1.14	19.5
Approach		1850	11.9	0.996	74.9	LOS F	46.6	359.8	0.98	1.06	25.0
West: Hoxton Park Road (W)											
10	L2	288	16.4	0.500	47.1	LOS D	16.6	132.3	0.84	0.82	32.6
11	T1	1122	4.2	0.946	82.8	LOS F	33.9	245.7	0.97	1.10	22.0
12	R2	355	4.6	1.051	128.1	LOS F	20.9	152.9	1.00	1.11	18.1
Approach		1765	6.3	1.051	86.1	LOS F	33.9	245.7	0.95	1.06	22.3
All Vehicles		7480	7.2	1.051	60.4	LOS E	46.6	359.8	0.89	0.92	27.2

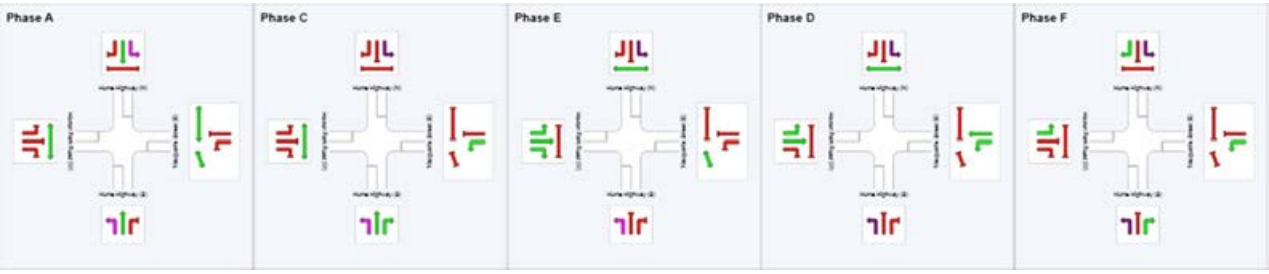
PHASING SUMMARY

Site: I-04 2020 MIMT CUM1 AM

Hume Highway / Hoxton Park Road / Macquarie Street
2020 MIMT CUM1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	D	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	51	79	101	126
Green Time (sec)	45	22	16	19	18
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	51	28	22	25	24
Phase Split	34 %	19 %	15 %	17 %	16 %



PM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-04 2020 MIMT CUM1 PM

Hume Highway / Hoxton Park Road / Macquarie Street
2020 MIMT CUM1 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	185	8.1	0.156	8.6	LOS A	1.5	11.3	0.12	0.58	51.0
2	T1	1663	7.4	0.656	23.6	LOS B	25.9	195.4	0.64	0.57	41.7
3	R2	420	1.3	0.930	95.1	LOS F	17.8	125.9	1.00	1.00	18.1
Approach		2268	6.3	0.930	35.6	LOS C	25.9	195.4	0.66	0.65	35.4
East: Macquarie Street (E)											
4	L2	705	1.5	0.915	69.6	LOS E	24.1	170.6	0.82	0.91	22.3
5	T1	612	3.3	0.941	84.6	LOS F	25.6	183.9	1.00	1.05	21.7
Approach		1317	2.3	0.941	76.6	LOS F	25.6	183.9	0.91	0.97	22.0
North: Hume Highway (N)											
7	L2	94	5.6	0.910	22.6	LOS B	52.7	385.0	0.75	0.76	42.4
8	T1	2715	4.1	0.910	17.6	LOS B	55.1	402.1	0.69	0.68	45.1
9	R2	252	6.3	1.327	389.1	LOS F	46.0	339.5	1.00	1.70	8.0
Approach		3060	4.4	1.327	48.3	LOS D	55.1	402.1	0.72	0.77	31.7
West: Hoxton Park Road (W)											
10	L2	248	3.8	0.396	45.1	LOS D	13.6	98.4	0.81	0.80	33.4
11	T1	623	3.9	0.381	45.7	LOS D	12.1	87.3	0.85	0.71	30.7
12	R2	352	4.1	1.145	176.1	LOS F	26.0	190.9	1.00	1.25	14.3
Approach		1224	3.9	1.145	83.1	LOS F	26.0	190.9	0.88	0.88	23.1
All Vehicles		7868	4.5	1.327	54.8	LOS D	55.1	402.1	0.76	0.79	29.0

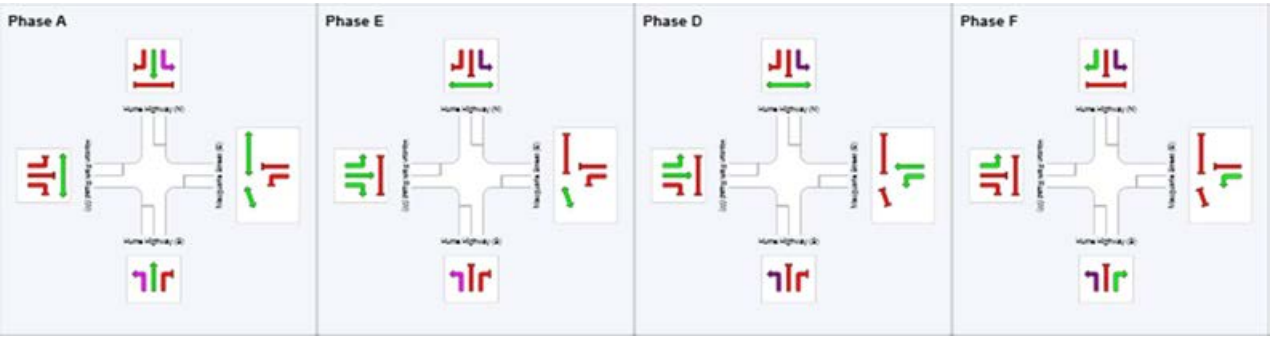
PHASING SUMMARY

Site: I-04 2020 MIMT CUM1 PM

Hume Highway / Hoxton Park Road / Macquarie Street
2020 MIMT CUM1 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	D	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	79	99	128
Green Time (sec)	73	14	23	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	79	20	29	22
Phase Split	53 %	13 %	19 %	15 %



AM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-04 2030 MIMT CUM2 AM

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT CUM2 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	112	15.7	0.102	8.5	LOS A	0.9	7.2	0.12	0.57	50.7
2	T1	2170	7.0	0.840	28.5	LOS C	42.6	321.0	0.80	0.74	39.3
3	R2	1213	1.9	1.079	138.1	LOS F	53.1	377.9	1.00	1.22	13.8
Approach		3495	5.5	1.079	65.9	LOS E	53.1	377.9	0.85	0.90	25.7
East: Macquarie Street (E)											
4	L2	361	5.8	0.234	22.0	LOS B	5.7	41.8	0.67	0.73	38.6
5	T1	545	4.6	1.137	216.5	LOS F	36.9	268.7	1.00	1.50	10.9
Approach		906	5.1	1.137	139.0	LOS F	36.9	268.7	0.87	1.20	14.7
North: Hume Highway (N)											
7	L2	236	15.6	1.020	70.6	LOS F	51.9	407.8	1.00	1.07	23.8
8	T1	1557	10.6	1.020	103.1	LOS F	64.5	504.2	1.00	1.20	20.5
9	R2	246	19.2	1.257	327.7	LOS F	41.2	336.2	1.00	1.59	9.2
Approach		2039	12.2	1.257	126.5	LOS F	64.5	504.2	1.00	1.23	17.8
West: Hoxton Park Road (W)											
10	L2	345	18.0	0.605	49.1	LOS D	20.8	167.8	0.88	0.84	32.0
11	T1	1372	4.8	1.175	265.4	LOS F	74.0	539.6	1.00	1.76	9.2
12	R2	399	5.5	1.230	240.6	LOS F	34.7	258.1	1.00	1.38	11.2
Approach		2116	7.1	1.230	225.4	LOS F	74.0	539.6	0.98	1.54	11.1
All Vehicles		8556	7.5	1.257	127.5	LOS F	74.0	539.6	0.92	1.17	17.0

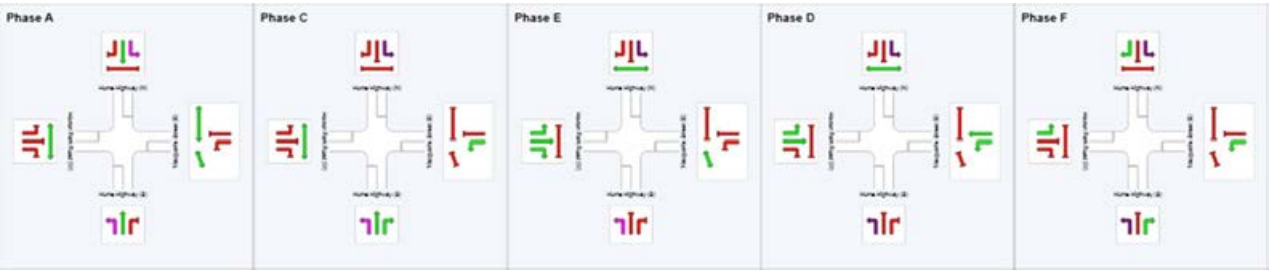
PHASING SUMMARY

Site: I-04 2030 MIMT CUM2 AM

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT CUM2 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	D	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	51	79	101	126
Green Time (sec)	45	22	16	19	18
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	51	28	22	25	24
Phase Split	34 %	19 %	15 %	17 %	16 %



PM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-04 2030 MIMT CUM2 PM

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT CUM2 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
1	L2	210	8.4	0.180	9.3	LOS A	2.0	15.5	0.15	0.58	50.4
2	T1	1709	8.0	0.688	24.1	LOS B	27.9	213.8	0.66	0.59	41.5
3	R2	448	1.2	0.992	116.8	LOS F	21.4	151.3	1.00	1.09	15.7
Approach		2367	6.7	0.992	40.3	LOS C	27.9	213.8	0.68	0.69	33.6
East: Macquarie Street (E)											
4	L2	785	1.5	1.043	176.8	LOS F	41.7	295.6	0.99	1.14	11.4
5	T1	706	3.3	1.087	167.6	LOS F	41.8	300.7	1.00	1.39	13.3
Approach		1492	2.3	1.087	172.5	LOS F	41.8	300.7	0.99	1.26	12.3
North: Hume Highway (N)											
7	L2	101	5.2	0.968	36.4	LOS C	78.1	574.3	0.94	1.00	35.0
8	T1	2862	4.3	0.968	31.6	LOS C	79.4	584.4	0.83	0.88	37.8
9	R2	283	6.3	1.494	538.4	LOS F	61.2	451.8	1.00	1.93	6.0
Approach		3247	4.5	1.494	76.0	LOS F	79.4	584.4	0.85	0.98	25.0
West: Hoxton Park Road (W)											
10	L2	252	4.2	0.402	45.2	LOS D	13.8	100.2	0.81	0.80	33.3
11	T1	717	4.3	0.439	46.6	LOS D	14.2	102.8	0.87	0.73	30.4
12	R2	392	4.8	1.299	288.5	LOS F	37.5	278.8	1.00	1.49	9.6
Approach		1361	4.4	1.299	116.1	LOS F	37.5	278.8	0.89	0.96	18.5
All Vehicles		8466	4.7	1.494	89.5	LOS F	79.4	584.4	0.83	0.94	21.9

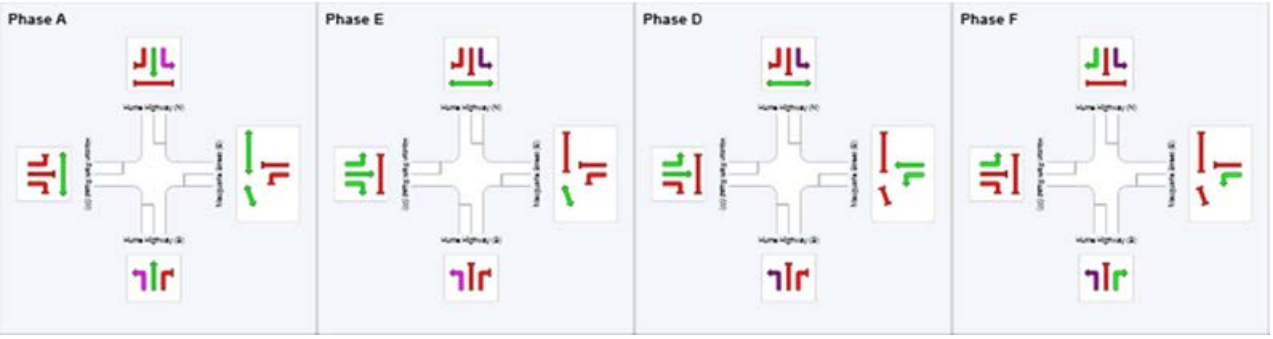
PHASING SUMMARY

Site: I-04 2030 MIMT CUM2 PM

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT CUM2 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	D	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	79	99	128
Green Time (sec)	73	14	23	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	79	20	29	22
Phase Split	53 %	13 %	19 %	15 %



AM Peak – Cumulative Scenario C2 with Upgrade

MOVEMENT SUMMARY

Site: I-04 2030 MIMT CUM2 AM - Upgrade

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	112	15.7	0.099	7.2	LOS A	0.5	4.0	0.07	0.56	51.8
2	T1	2170	7.0	0.864	33.0	LOS C	46.3	349.0	0.84	0.80	37.2
3	R2	1213	1.9	1.136	184.6	LOS F	62.0	440.8	1.00	1.33	11.0
Approach		3495	5.5	1.136	84.8	LOS F	62.0	440.8	0.87	0.98	22.1
East: Macquarie Street (E)											
4	L2	361	5.8	0.230	21.3	LOS B	5.5	40.4	0.66	0.73	39.0
5	T1	545	4.6	0.982	106.3	LOS F	25.9	188.8	1.00	1.17	18.6
Approach		906	5.1	0.982	72.4	LOS F	25.9	188.8	0.86	1.00	23.0
North: Hume Highway (N)											
7	L2	236	15.6	1.033	79.8	LOS F	53.2	418.2	1.00	1.09	22.0
8	T1	1557	10.6	1.033	111.0	LOS F	64.6	504.6	1.00	1.24	19.6
9	R2	246	19.2	0.707	79.4	LOS F	9.2	74.8	1.00	0.84	25.6
Approach		2039	12.2	1.033	103.6	LOS F	64.6	504.6	1.00	1.17	20.4
West: Hoxton Park Road (W)											
10	L2	345	18.0	0.583	47.3	LOS D	20.3	164.2	0.87	0.83	32.5
11	T1	1372	4.8	1.095	199.5	LOS F	64.3	468.6	1.00	1.54	11.6
12	R2	399	5.5	1.189	213.9	LOS F	32.6	242.2	1.00	1.32	12.3
Approach		2116	7.1	1.189	177.3	LOS F	64.3	468.6	0.98	1.39	13.4
All Vehicles		8556	7.5	1.189	110.8	LOS F	64.6	504.6	0.93	1.13	18.7

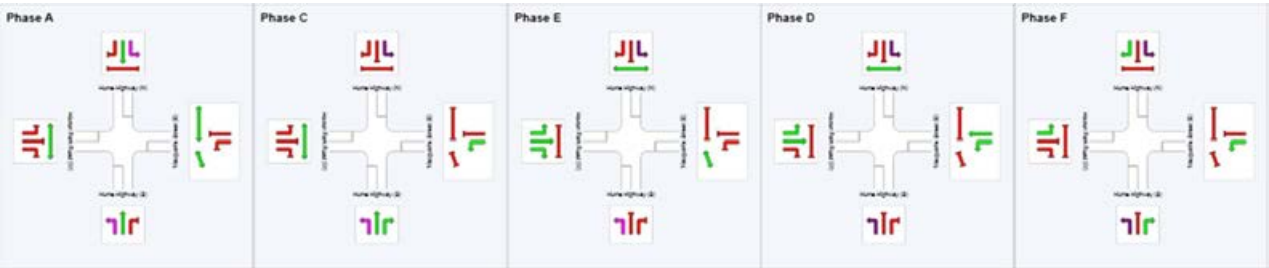
PHASING SUMMARY

Site: I-04 2030 MIMT CUM2 AM - Upgrade

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	D	F
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	49	77	100	128
Green Time (sec)	43	22	17	22	16
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	49	28	23	28	22
Phase Split	33 %	19 %	15 %	19 %	15 %



PM Peak – Cumulative Scenario C2 with Upgrade

MOVEMENT SUMMARY

Site: I-04 2030 MIMT CUM2 AM - Upgrade

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
1	L2	210	8.4	0.177	7.7	LOS A	1.3	10.0	0.10	0.57	51.6
2	T1	1709	8.0	0.698	25.0	LOS B	28.7	219.5	0.67	0.61	41.0
3	R2	448	1.2	0.934	95.5	LOS F	19.1	135.2	1.00	1.00	18.1
Approach		2367	6.7	0.934	36.9	LOS C	28.7	219.5	0.68	0.68	34.9
East: Macquarie Street (E)											
4	L2	785	1.5	1.024	163.1	LOS F	39.7	281.3	0.98	1.11	12.1
5	T1	706	3.3	1.087	167.6	LOS F	41.8	300.7	1.00	1.39	13.3
Approach		1492	2.3	1.087	165.2	LOS F	41.8	300.7	0.99	1.24	12.7
North: Hume Highway (N)											
7	L2	101	5.2	0.949	31.1	LOS C	67.7	498.1	0.88	0.92	37.5
8	T1	2862	4.3	0.949	25.8	LOS B	69.3	510.4	0.82	0.84	40.5
9	R2	283	6.3	0.703	77.8	LOS F	10.4	76.9	1.00	0.84	26.0
Approach		3247	4.5	0.949	30.5	LOS C	69.3	510.4	0.83	0.84	38.3
West: Hoxton Park Road (W)											
10	L2	252	4.2	0.395	44.4	LOS D	13.7	99.2	0.80	0.80	33.6
11	T1	717	4.3	0.439	46.6	LOS D	14.2	102.8	0.87	0.73	30.4
12	R2	392	4.8	1.299	288.5	LOS F	37.5	278.8	1.00	1.49	9.6
Approach		1361	4.4	1.299	116.0	LOS F	37.5	278.8	0.89	0.96	18.5
All Vehicles		8466	4.7	1.299	69.8	LOS E	69.3	510.4	0.83	0.89	25.4

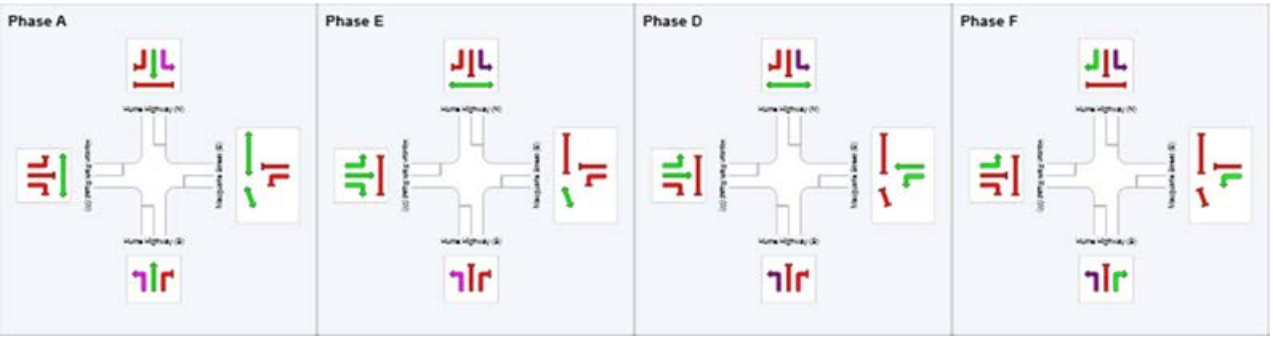
PHASING SUMMARY

Site: I-04 2030 MIMT CUM2 AM - Upgrade

Hume Highway / Hoxton Park Road / Macquarie Street
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	D	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	78	98	127
Green Time (sec)	72	14	23	17
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	78	20	29	23
Phase Split	52 %	13 %	19 %	15 %



I-05 Intersection of the Hume Highway and Reilly Street

AM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-05 2030 MIMT AM CUM A

Hume Highway / Reilly Street
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Hignway (S)											
1	L2	80	2.6	0.959	40.9	LOS C	83.2	615.5	0.91	0.97	32.6
2	T1	3200	5.3	0.959	34.7	LOS C	83.2	615.5	0.84	0.90	31.6
3	R2	14	7.7	0.120	23.9	LOS B	0.5	3.8	0.50	0.68	36.4
Approach		3294	5.2	0.959	34.8	LOS C	83.2	615.5	0.84	0.90	31.6
East: Congressional Drive (E)											
4	L2	49	2.1	0.272	60.1	LOS E	6.0	43.0	0.89	0.74	24.3
5	T1	46	4.5	0.272	55.5	LOS D	6.0	43.0	0.89	0.74	23.8
6	R2	91	4.7	0.444	68.3	LOS E	6.2	45.0	0.95	0.79	18.5
Approach		186	4.0	0.444	63.0	LOS E	6.2	45.0	0.92	0.76	21.4
North: Hume Hignway (N)											
7	L2	32	3.3	0.574	16.5	LOS B	25.6	197.8	0.53	0.50	40.6
8	T1	1945	10.0	0.574	10.4	LOS A	25.6	198.9	0.50	0.46	47.1
9	R2	99	1.1	0.708	57.4	LOS E	5.8	40.8	1.00	0.89	23.2
Approach		2076	9.5	0.708	12.8	LOS A	25.6	198.9	0.53	0.49	44.8
West: Reilly Street (W)											
10	L2	120	3.5	0.277	51.1	LOS D	7.7	55.7	0.84	0.76	24.3
11	T1	14	7.7	0.277	46.6	LOS D	7.7	55.7	0.84	0.76	25.4
12	R2	238	1.3	1.073	178.5	LOS F	28.9	204.7	1.00	1.29	12.7
Approach		372	2.3	1.073	132.6	LOS F	28.9	204.7	0.94	1.10	14.9
All Vehicles		5928	6.5	1.073	34.1	LOS C	83.2	615.5	0.74	0.76	31.7

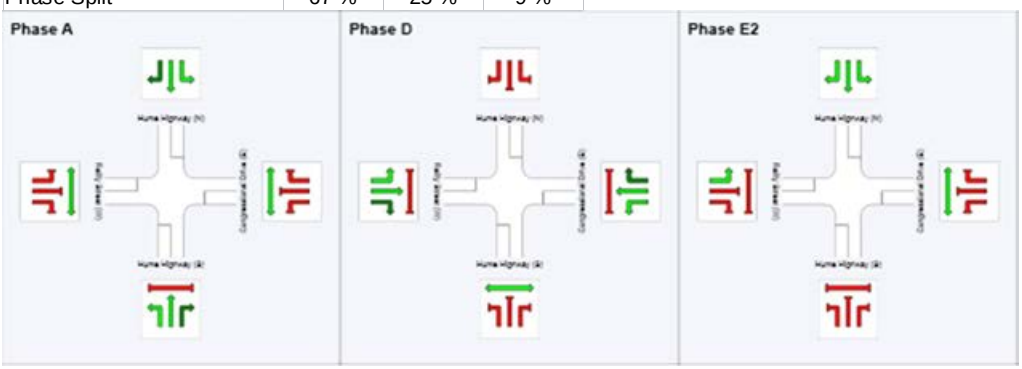
PHASING SUMMARY

Site: I-05 2030 MIMT AM CUM A

Hume Highway / Reilly Street
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	100	137
Green Time (sec)	94	31	7
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	100	37	13
Phase Split	67 %	25 %	9 %



PM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-05 2030 MIMT PM CUM A

Hume Highway / Reilly Street
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Hignway (S)											
1	L2	228	0.5	0.754	20.9	LOS B	33.1	247.6	0.60	0.62	41.2
2	T1	2156	7.8	0.754	12.4	LOS A	33.1	247.6	0.50	0.48	45.0
3	R2	21	5.0	0.398	47.9	LOS D	1.3	9.4	0.77	0.76	27.2
Approach		2405	7.1	0.754	13.5	LOS A	33.1	247.6	0.52	0.50	44.3
East: Congressional Drive (E)											
4	L2	42	2.5	0.190	59.9	LOS E	4.1	29.0	0.88	0.73	24.2
5	T1	24	0.0	0.190	55.3	LOS D	4.1	29.0	0.88	0.73	23.7
6	R2	52	0.0	0.218	63.5	LOS E	3.3	23.2	0.90	0.75	19.5
Approach		118	0.9	0.218	60.5	LOS E	4.1	29.0	0.89	0.74	22.1
North: Hume Hignway (N)											
7	L2	67	0.0	1.036	76.4	LOS F	148.3	1089.1	1.00	1.26	18.1
8	T1	3740	4.2	1.036	73.0	LOS F	148.5	1092.8	0.81	1.09	20.7
9	R2	178	1.2	0.946	108.6	LOS F	15.8	111.7	1.00	1.17	15.4
Approach		3985	4.0	1.036	74.7	LOS F	148.5	1092.8	0.82	1.09	20.4
West: Reilly Street (W)											
10	L2	65	0.0	0.222	54.3	LOS D	5.7	39.9	0.85	0.73	23.9
11	T1	32	0.0	0.222	49.7	LOS D	5.7	39.9	0.85	0.73	24.9
12	R2	261	1.6	1.057	165.8	LOS F	30.6	217.2	1.00	1.26	13.5
Approach		358	1.2	1.057	135.2	LOS F	30.6	217.2	0.96	1.11	15.0
All Vehicles		6866	4.9	1.057	56.2	LOS D	148.5	1092.8	0.72	0.88	24.5

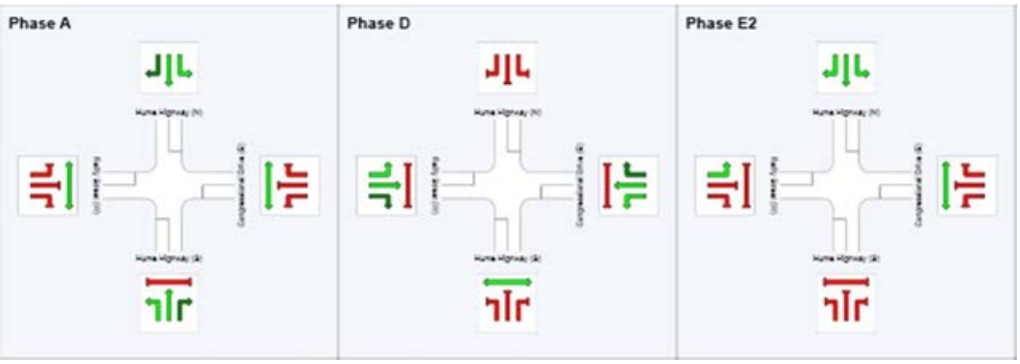
PHASING SUMMARY

Site: I-05 2030 MIMT PM CUM A

Hume Highway / Reilly Street
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	98	135
Green Time (sec)	92	31	9
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	98	37	15
Phase Split	65 %	25 %	10 %



AM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-05 2030 MIMT AM CUM B

Hume Highway / Reilly Street
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Hignway (S)											
1	L2	80	2.6	0.955	39.1	LOS C	80.9	596.1	0.90	0.95	33.3
2	T1	3192	5.0	0.955	32.9	LOS C	80.9	596.1	0.82	0.88	32.3
3	R2	14	7.7	0.126	24.6	LOS B	0.5	3.9	0.51	0.68	36.0
Approach		3285	5.0	0.955	33.0	LOS C	80.9	596.1	0.83	0.88	32.4
East: Congressional Drive (E)											
4	L2	49	2.1	0.272	60.1	LOS E	6.0	43.0	0.89	0.74	24.3
5	T1	46	4.5	0.272	55.5	LOS D	6.0	43.0	0.89	0.74	23.8
6	R2	91	4.7	0.444	68.3	LOS E	6.2	45.0	0.95	0.79	18.5
Approach		186	4.0	0.444	63.0	LOS E	6.2	45.0	0.92	0.76	21.4
North: Hume Hignway (N)											
7	L2	32	3.3	0.590	16.8	LOS B	27.0	206.9	0.54	0.51	40.4
8	T1	2004	9.2	0.590	10.6	LOS A	27.1	208.0	0.51	0.47	47.0
9	R2	99	1.1	0.707	56.9	LOS E	5.8	41.0	1.00	0.90	23.3
Approach		2135	8.8	0.707	12.8	LOS A	27.1	208.0	0.53	0.49	44.7
West: Reilly Street (W)											
10	L2	120	3.5	0.277	51.1	LOS D	7.7	55.7	0.84	0.76	24.3
11	T1	14	7.7	0.277	46.6	LOS D	7.7	55.7	0.84	0.76	25.4
12	R2	243	1.3	1.094	194.5	LOS F	30.9	218.7	1.00	1.33	11.9
Approach		377	2.2	1.094	143.5	LOS F	30.9	218.7	0.94	1.13	14.1
All Vehicles		5983	6.1	1.094	33.7	LOS C	80.9	596.1	0.73	0.75	31.9

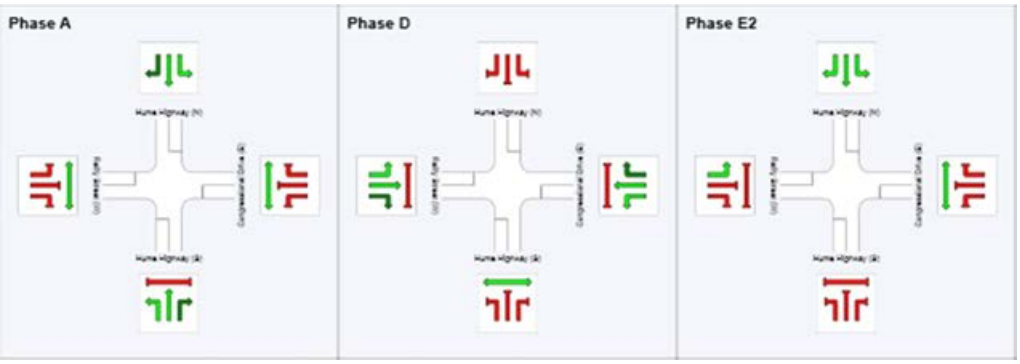
PHASING SUMMARY

Site: I-05 2030 MIMT AM CUM B

Hume Highway / Reilly Street
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	100	137
Green Time (sec)	94	31	7
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	100	37	13
Phase Split	67 %	25 %	9 %



PM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-05 2030 MIMT PM CUM B

Hume Highway / Reilly Street
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Hignway (S)											
1	L2	232	0.5	0.763	21.0	LOS B	34.3	253.4	0.61	0.63	41.1
2	T1	2192	6.6	0.763	12.5	LOS A	34.3	253.4	0.51	0.49	45.0
3	R2	21	5.0	0.396	44.1	LOS D	1.2	9.0	0.74	0.75	28.3
Approach		2444	6.0	0.763	13.5	LOS A	34.3	253.4	0.52	0.51	44.2
East: Congressional Drive (E)											
4	L2	42	2.5	0.190	59.9	LOS E	4.1	29.0	0.88	0.73	24.2
5	T1	24	0.0	0.190	55.3	LOS D	4.1	29.0	0.88	0.73	23.7
6	R2	52	0.0	0.218	63.5	LOS E	3.3	23.2	0.90	0.75	19.5
Approach		118	0.9	0.218	60.5	LOS E	4.1	29.0	0.89	0.74	22.1
North: Hume Hignway (N)											
7	L2	67	0.0	1.025	67.9	LOS E	142.7	1038.0	1.00	1.22	19.7
8	T1	3715	3.5	1.025	64.6	LOS E	142.9	1041.3	0.81	1.05	22.4
9	R2	178	1.2	0.950	111.0	LOS F	15.9	112.5	1.00	1.17	15.2
Approach		3960	3.4	1.025	66.8	LOS E	142.9	1041.3	0.82	1.06	21.9
West: Reilly Street (W)											
10	L2	65	0.0	0.222	54.3	LOS D	5.7	39.9	0.85	0.73	23.9
11	T1	32	0.0	0.222	49.7	LOS D	5.7	39.9	0.85	0.73	24.9
12	R2	261	1.6	1.057	165.8	LOS F	30.6	217.2	1.00	1.26	13.5
Approach		358	1.2	1.057	135.2	LOS F	30.6	217.2	0.96	1.11	15.0
All Vehicles		6880	4.1	1.057	51.3	LOS D	142.9	1041.3	0.72	0.86	25.8

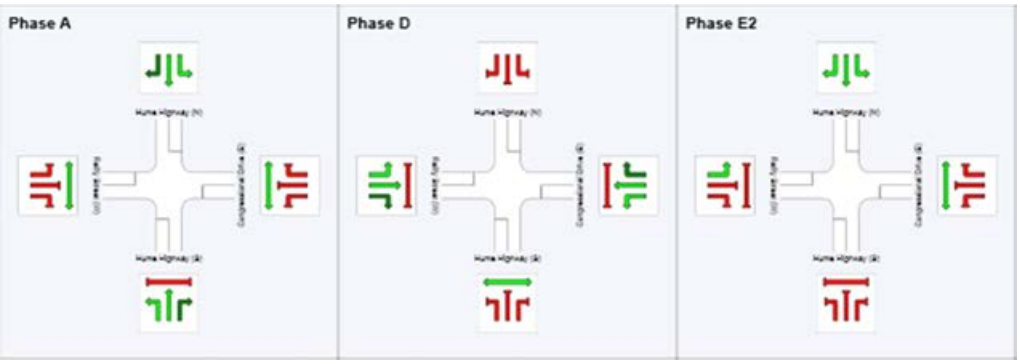
PHASING SUMMARY

Site: I-05 2030 MIMT PM CUM B

Hume Highway / Reilly Street
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	98	135
Green Time (sec)	92	31	9
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	98	37	15
Phase Split	65 %	25 %	10 %



AM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-05 2020 MIMT CUM1 AM

Hume Highway / Reilly Street
2020 MIMT CUM1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Hignway (S)											
1	L2	73	2.9	0.867	18.7	LOS B	44.6	327.7	0.67	0.64	43.2
2	T1	2937	5.2	0.867	12.4	LOS A	44.6	327.7	0.63	0.60	45.3
3	R2	13	8.3	0.091	21.8	LOS B	0.4	3.3	0.47	0.67	37.5
Approach		3022	5.1	0.867	12.6	LOS A	44.6	327.7	0.63	0.60	45.2
East: Congressional Drive (E)											
4	L2	43	2.4	0.239	59.7	LOS E	5.2	37.7	0.89	0.73	24.4
5	T1	41	5.1	0.239	55.1	LOS D	5.2	37.7	0.89	0.73	23.9
6	R2	81	3.9	0.374	66.5	LOS E	5.4	39.2	0.94	0.78	18.8
Approach		165	3.8	0.374	61.9	LOS E	5.4	39.2	0.91	0.75	21.6
North: Hume Hignway (N)											
7	L2	28	3.7	0.549	16.2	LOS B	24.0	183.1	0.51	0.48	40.8
8	T1	1776	9.4	0.549	10.1	LOS A	24.0	184.0	0.49	0.45	47.5
9	R2	88	1.2	0.613	38.2	LOS C	5.0	35.7	1.00	0.85	28.6
Approach		1892	9.0	0.613	11.5	LOS A	24.0	184.0	0.51	0.47	45.9
West: Reilly Street (W)											
10	L2	105	4.0	0.243	50.6	LOS D	6.7	48.4	0.83	0.75	24.4
11	T1	12	9.1	0.243	46.1	LOS D	6.7	48.4	0.83	0.75	25.5
12	R2	221	1.9	0.965	107.0	LOS F	20.8	148.0	1.00	1.10	18.3
Approach		338	2.8	0.965	87.4	LOS F	20.8	148.0	0.94	0.98	19.8
All Vehicles		5418	6.3	0.965	18.4	LOS B	44.6	327.7	0.62	0.58	40.3

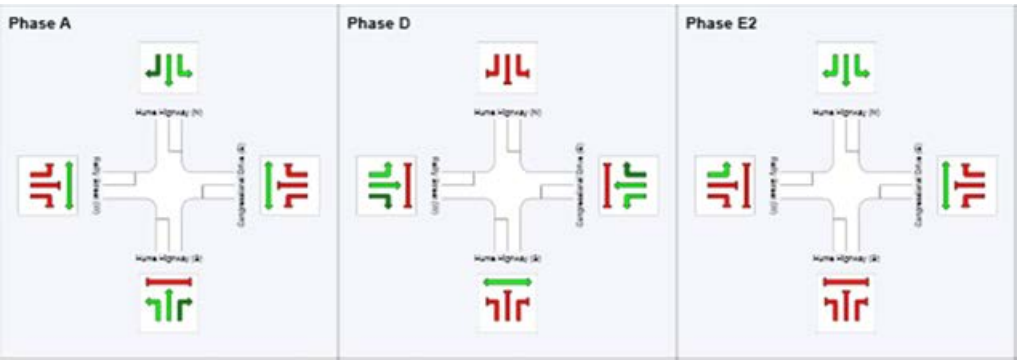
PHASING SUMMARY

Site: I-05 2020 MIMT CUM1 AM

Hume Highway / Reilly Street
2020 MIMT CUM1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	100	137
Green Time (sec)	94	31	7
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	100	37	13
Phase Split	67 %	25 %	9 %



PM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-05 2020 MIMT CUM1 PM

Hume Highway / Reilly Street
2020 MIMT CUM1 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Hignway (S)											
1	L2	225	0.5	0.703	20.2	LOS B	28.9	212.0	0.56	0.59	41.6
2	T1	2148	6.5	0.703	12.1	LOS A	28.9	212.0	0.49	0.47	45.3
3	R2	21	5.0	0.382	32.0	LOS C	1.0	7.7	0.63	0.73	32.7
Approach		2394	6.0	0.703	13.0	LOS A	28.9	212.0	0.49	0.48	44.7
East: Congressional Drive (E)											
4	L2	37	2.9	0.169	59.6	LOS E	3.6	25.7	0.88	0.72	24.3
5	T1	22	0.0	0.169	55.0	LOS D	3.6	25.7	0.88	0.72	23.8
6	R2	45	0.0	0.187	62.2	LOS E	2.9	20.0	0.89	0.74	19.7
Approach		104	1.0	0.187	59.8	LOS E	3.6	25.7	0.88	0.73	22.3
North: Hume Hignway (N)											
7	L2	63	0.0	0.969	32.0	LOS C	79.6	577.8	0.70	0.78	30.7
8	T1	3469	3.7	0.969	28.6	LOS C	79.6	577.8	0.55	0.64	34.4
9	R2	164	1.3	0.861	72.6	LOS F	12.1	85.4	1.00	1.06	20.2
Approach		3696	3.5	0.969	30.6	LOS C	79.6	577.8	0.57	0.67	33.3
West: Reilly Street (W)											
10	L2	60	0.0	0.202	54.0	LOS D	5.2	36.2	0.85	0.73	24.0
11	T1	28	0.0	0.202	49.5	LOS D	5.2	36.2	0.85	0.73	25.0
12	R2	238	1.8	0.972	109.5	LOS F	22.8	161.8	1.00	1.11	18.0
Approach		326	1.3	0.972	94.1	LOS F	22.8	161.8	0.96	1.01	19.2
All Vehicles		6521	4.3	0.972	27.8	LOS B	79.6	577.8	0.57	0.62	34.8

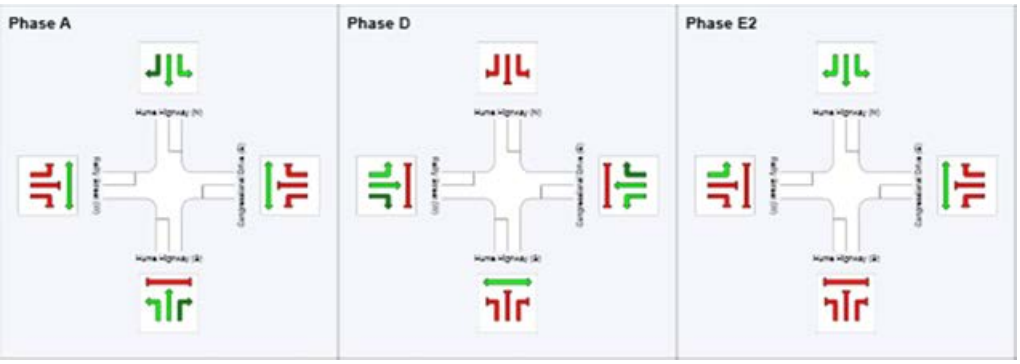
PHASING SUMMARY

Site: I-05 2020 MIMT CUM1 PM

Hume Highway / Reilly Street
2020 MIMT CUM1 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	98	135
Green Time (sec)	92	31	9
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	98	37	15
Phase Split	65 %	25 %	10 %



AM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-05 2030 MIMT CUM2 AM

Hume Highway / Reilly Street
2030 MIMT CUM2 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Hignway (S)											
1	L2	80	2.6	0.957	40.1	LOS C	82.1	606.7	0.91	0.96	32.9
2	T1	3195	5.1	0.957	33.8	LOS C	82.1	606.7	0.83	0.89	31.9
3	R2	14	7.7	0.121	23.9	LOS B	0.5	3.8	0.50	0.68	36.4
Approach		3289	5.1	0.957	33.9	LOS C	82.1	606.7	0.83	0.89	32.0
East: Congressional Drive (E)											
4	L2	49	2.1	0.272	60.1	LOS E	6.0	43.0	0.89	0.74	24.3
5	T1	46	4.5	0.272	55.5	LOS D	6.0	43.0	0.89	0.74	23.8
6	R2	91	4.7	0.444	68.3	LOS E	6.2	45.0	0.95	0.79	18.5
Approach		186	4.0	0.444	63.0	LOS E	6.2	45.0	0.92	0.76	21.4
North: Hume Hignway (N)											
7	L2	32	3.3	0.577	16.6	LOS B	25.9	199.8	0.53	0.50	40.5
8	T1	1954	9.7	0.577	10.5	LOS A	25.9	200.9	0.50	0.47	47.1
9	R2	99	1.1	0.707	57.2	LOS E	5.8	40.9	1.00	0.90	23.2
Approach		2084	9.2	0.707	12.8	LOS A	25.9	200.9	0.53	0.49	44.8
West: Reilly Street (W)											
10	L2	120	3.5	0.277	51.1	LOS D	7.7	55.7	0.84	0.76	24.3
11	T1	14	7.7	0.277	46.6	LOS D	7.7	55.7	0.84	0.76	25.4
12	R2	239	1.3	1.077	181.3	LOS F	29.3	207.2	1.00	1.30	12.6
Approach		373	2.3	1.077	134.4	LOS F	29.3	207.2	0.94	1.10	14.8
All Vehicles		5932	6.3	1.077	33.7	LOS C	82.1	606.7	0.74	0.76	31.9

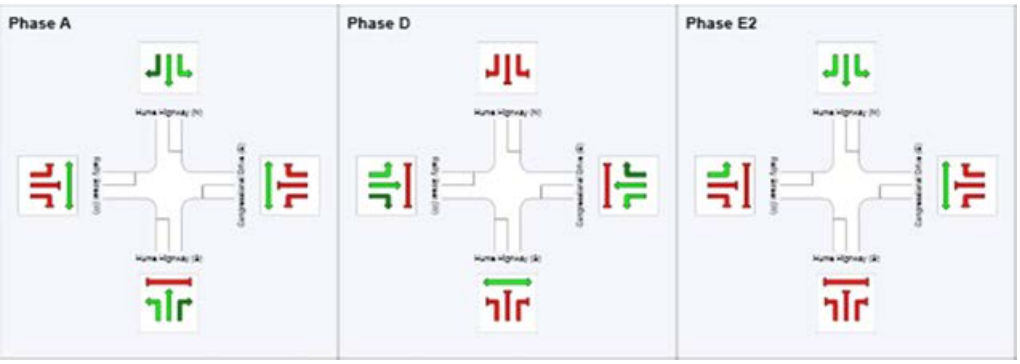
PHASING SUMMARY

Site: I-05 2030 MIMT CUM2 AM

Hume Highway / Reilly Street
2030 MIMT CUM2 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	100	137
Green Time (sec)	94	31	7
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	100	37	13
Phase Split	67 %	25 %	9 %



PM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-05 2030 MIMT CUM2 PM

Hume Highway / Reilly Street
2030 MIMT CUM2 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Hignway (S)											
1	L2	230	0.5	0.762	21.0	LOS B	34.1	253.4	0.61	0.63	41.1
2	T1	2181	7.1	0.762	12.5	LOS A	34.1	253.4	0.51	0.49	45.0
3	R2	21	5.0	0.397	45.6	LOS D	1.3	9.2	0.76	0.76	27.9
Approach		2432	6.4	0.762	13.6	LOS A	34.1	253.4	0.52	0.51	44.2
East: Congressional Drive (E)											
4	L2	42	2.5	0.190	59.9	LOS E	4.1	29.0	0.88	0.73	24.2
5	T1	24	0.0	0.190	55.3	LOS D	4.1	29.0	0.88	0.73	23.7
6	R2	52	0.0	0.218	63.5	LOS E	3.3	23.2	0.90	0.75	19.5
Approach		118	0.9	0.218	60.5	LOS E	4.1	29.0	0.89	0.74	22.1
North: Hume Hignway (N)											
7	L2	67	0.0	1.030	71.7	LOS F	145.2	1061.2	1.00	1.24	18.9
8	T1	3725	3.8	1.030	68.4	LOS E	145.4	1064.7	0.81	1.07	21.6
9	R2	178	1.2	0.950	110.9	LOS F	15.9	112.5	1.00	1.17	15.2
Approach		3971	3.6	1.030	70.4	LOS E	145.4	1064.7	0.82	1.07	21.2
West: Reilly Street (W)											
10	L2	65	0.0	0.222	54.3	LOS D	5.7	39.9	0.85	0.73	23.9
11	T1	32	0.0	0.222	49.7	LOS D	5.7	39.9	0.85	0.73	24.9
12	R2	261	1.6	1.057	165.8	LOS F	30.6	217.2	1.00	1.26	13.5
Approach		358	1.2	1.057	135.2	LOS F	30.6	217.2	0.96	1.11	15.0
All Vehicles		6878	4.4	1.057	53.5	LOS D	145.4	1064.7	0.72	0.87	25.2

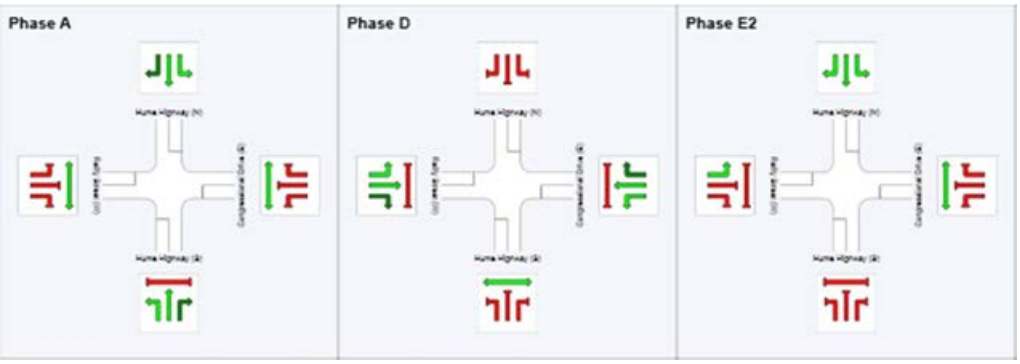
PHASING SUMMARY

Site: I-05 2030 MIMT CUM2 PM

Hume Highway / Reilly Street
2030 MIMT CUM2 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 150 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E2
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	98	135
Green Time (sec)	92	31	9
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	98	37	15
Phase Split	65 %	25 %	10 %



I-06 Intersection of Newbridge Road and Moorebank Avenue

AM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-06 2030 CUM A AM

Network: 2030 CUM A AM

Newbridge Road / Moorebank Avenue
2030 CUM A AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	1535	3.2	1198	3.3	0.619	18.7	LOS B	12.7	91.8	0.55	0.81	42.5
3	R2	1425	12.8	1115	13.1	0.687	15.2	LOS B	14.3	115.4	0.43	0.69	52.2
Approach		2960	7.8	2313 N1	8.0	0.687	17.0	LOS B	14.3	115.4	0.49	0.75	47.9
East: Newbridge Road (E)													
4	L2	752	22.7	752	22.7	0.766	22.4	LOS B	12.8	110.3	0.83	0.85	49.2
5	T1	965	5.1	965	5.1	1.260	311.5	LOS F	77.3	564.9	1.00	1.91	14.7
Approach		1718	12.8	1718	12.8	1.260	184.9	LOS F	77.3	564.9	0.93	1.44	19.1
West: Newbridge Road (W)													
11	T1	1581	6.5	1581	6.5	0.852	12.4	LOS A	30.8	227.8	0.63	0.60	60.9
12	R2	906	7.5	906	7.5	1.854	826.2	LOS F	119.6	892.4	1.00	2.11	2.5
Approach		2487	6.9	2487	6.9	1.854	308.9	LOS F	119.6	892.4	0.77	1.15	12.0
All Vehicles		7165	8.7	6518 N1	9.5	1.854	172.6	LOS F	119.6	892.4	0.71	1.09	17.7

PHASING SUMMARY

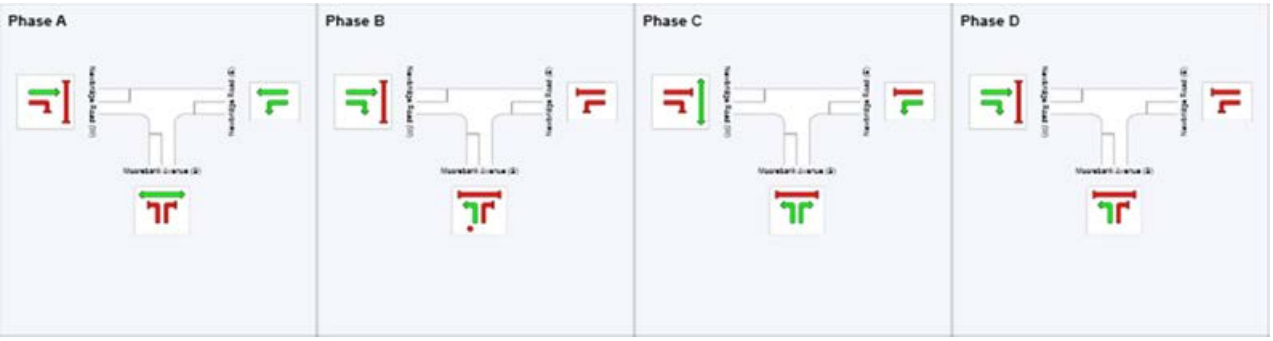
Site: I-06 2030 CUM A AM

Network: 2030 CUM A AM

Newbridge Road / Moorebank Avenue
2030 CUM A AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	33	55	116
Green Time (sec)	27	16	55	11
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	22	61	17
Phase Split	25 %	17 %	46 %	13 %



PM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-06 2030 CUM A PM

Network: 2030 CUM A PM

Newbridge Road / Moorebank Avenue
2030 CUM A PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	1034	2.9	912	3.0	0.520	22.6	LOS B	13.7	98.3	0.58	0.75	39.8
3	R2	1018	13.4	904	14.1	1.217	251.7	LOS F	16.2	130.6	1.00	1.59	12.7
Approach		2051	8.1	1816 N1	8.6	1.217	136.7	LOS F	16.2	130.6	0.79	1.17	17.2
East: Newbridge Road (E)													
4	L2	1304	9.5	1304	9.5	1.182	253.9	LOS F	94.7	739.2	1.00	1.45	12.0
5	T1	1373	4.8	1373	4.8	0.923	51.1	LOS D	42.7	311.4	1.00	1.04	43.3
Approach		2677	7.1	2677	7.1	1.182	149.9	LOS F	94.7	739.2	1.00	1.24	21.8
West: Newbridge Road (W)													
11	T1	1129	4.0	1129	4.0	0.442	9.3	LOS A	14.6	105.8	0.50	0.45	62.9
12	R2	1121	2.9	1121	2.9	1.213	244.3	LOS F	77.2	553.4	1.00	1.49	7.9
Approach		2250	3.4	2250	3.4	1.213	126.3	LOS F	77.2	553.4	0.75	0.97	21.7
All Vehicles		6978	6.2	6743 N1	6.5	1.217	138.5	LOS F	94.7	739.2	0.86	1.13	20.6

PHASING SUMMARY

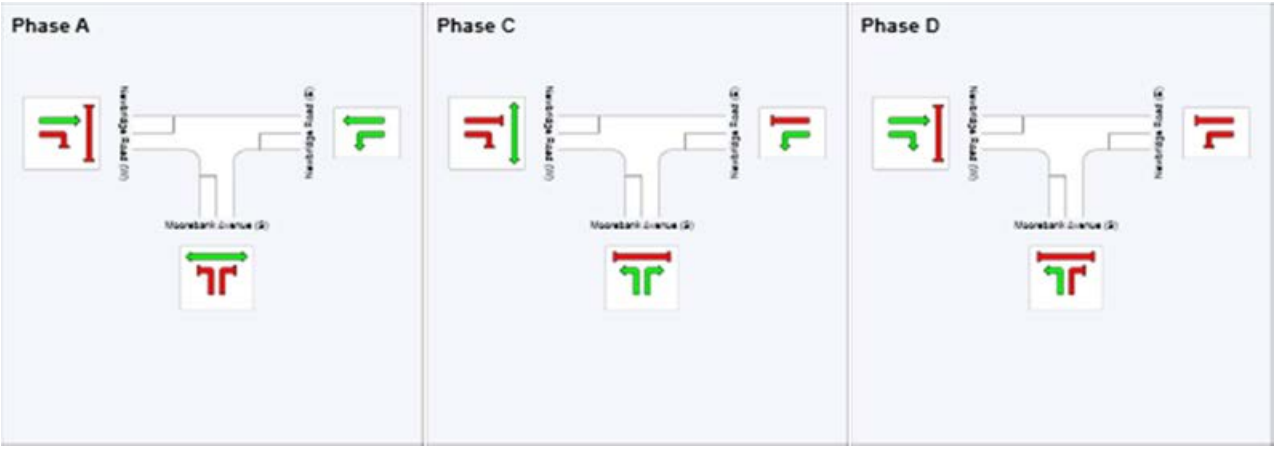
Site: I-06 2030 CUM A PM

Network: 2030 CUM A PM

Newbridge Road / Moorebank Avenue
2030 CUM A PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	44	76
Green Time (sec)	38	26	34
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	44	32	40
Phase Split	38 %	28 %	34 %



AM Peak – Cumulative Scenario A with Upgrade

MOVEMENT SUMMARY

Site: I-06 2030 CUM A AM - Upgrade Option

Network: 2030 CUM A AM - Upgrade Option

Newbridge Road / Moorebank Avenue
2030 CUM A AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	1535	3.2	1166	3.2	0.602	18.4	LOS B	12.3	88.5	0.54	0.81	42.7
3	R2	1425	12.8	1082	12.9	0.851	30.2	LOS C	16.3	130.6	0.84	0.84	43.6
Approach		2960	7.8	2248 N1	7.9	0.851	24.1	LOS B	16.3	130.6	0.69	0.82	43.3
East: Newbridge Road (E)													
4	L2	752	22.7	752	22.7	0.925	55.9	LOS D	27.5	236.5	0.98	1.01	33.9
5	T1	965	5.1	965	5.1	1.260	311.5	LOS F	77.3	564.9	1.00	1.91	14.7
Approach		1718	12.8	1718	12.8	1.260	199.5	LOS F	77.3	564.9	0.99	1.52	18.1
West: Newbridge Road (W)													
11	T1	1581	6.5	1581	6.5	0.721	1.1	LOS A	3.8	28.2	0.08	0.08	69.1
12	R2	906	7.5	906	7.5	1.655	653.7	LOS F	96.5	720.2	1.00	2.01	3.2
Approach		2487	6.9	2487	6.9	1.655	238.9	LOS F	96.5	720.2	0.42	0.78	14.8
All Vehicles		7165	8.7	6453 N1	9.6	1.655	153.6	LOS F	96.5	720.2	0.66	0.99	19.3

PHASING SUMMARY

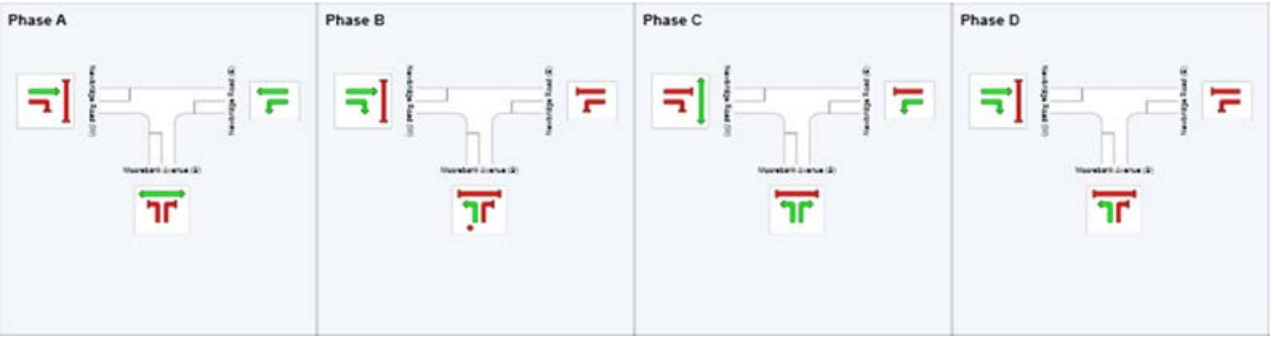
Site: I-06 2030 CUM A AM - Upgrade Option

Network: 2030 CUM A AM - Upgrade Option

Newbridge Road / Moorebank Avenue
2030 CUM A AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	33	55	104
Green Time (sec)	27	16	43	23
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	22	49	29
Phase Split	25 %	17 %	37 %	22 %



PM Peak – Cumulative Scenario A with Upgrade

MOVEMENT SUMMARY

Site: I-06 2030 CUM A PM - Upgrade Option

Network: 2030 CUM A PM - Upgrade Option

Newbridge Road / Moorebank Avenue
2030 CUM A PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	1034	2.9	967	3.0	0.541	22.1	LOS B	14.5	103.8	0.57	0.75	40.1
3	R2	1018	13.4	955	13.8	1.149	190.3	LOS F	16.2	130.6	1.00	1.44	15.8
Approach		2051	8.1	1921 N1	8.4	1.149	105.7	LOS F	16.2	130.6	0.79	1.09	20.6
East: Newbridge Road (E)													
4	L2	1304	9.5	1304	9.5	0.840	37.9	LOS C	38.4	299.6	0.92	0.92	40.6
5	T1	1373	4.8	1373	4.8	0.975	68.8	LOS E	49.8	363.0	1.00	1.16	38.2
Approach		2677	7.1	2677	7.1	0.975	53.8	LOS D	49.8	363.0	0.96	1.04	39.1
West: Newbridge Road (W)													
11	T1	1129	4.0	1129	4.0	0.460	10.9	LOS A	15.8	114.2	0.54	0.49	61.8
12	R2	1121	2.9	1121	2.9	1.425	434.2	LOS F	103.6	742.9	1.00	1.86	4.7
Approach		2250	3.4	2250	3.4	1.425	221.7	LOS F	103.6	742.9	0.77	1.17	14.3
All Vehicles		6978	6.2	6849 N1	6.4	1.425	123.5	LOS F	103.6	742.9	0.85	1.10	22.2

PHASING SUMMARY

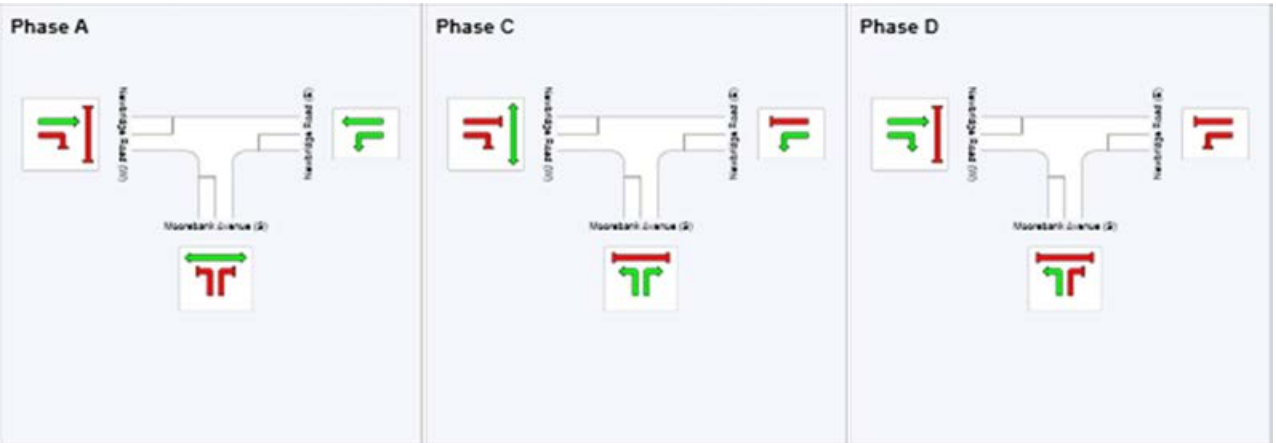
Site: I-06 2030 CUM A PM - Upgrade Option

Network: 2030 CUM A PM - Upgrade Option

Newbridge Road / Moorebank Avenue
2030 CUM A PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	42	77
Green Time (sec)	36	29	33
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	42	35	39
Phase Split	36 %	30 %	34 %



AM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-06 2030 CUM B AM

Network: 2030 CUM B AM

Newbridge Road / Moorebank Avenue
2030 CUM B AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	1535	3.2	1234	3.2	0.637	19.0	LOS B	13.7	98.7	0.57	0.82	42.2
3	R2	1403	11.5	1130	11.7	0.683	15.2	LOS B	14.4	112.9	0.43	0.69	52.4
Approach		2938	7.1	2364 N1	7.3	0.683	17.2	LOS B	14.4	112.9	0.50	0.76	47.8
East: Newbridge Road (E)													
4	L2	773	21.0	773	21.0	0.788	23.9	LOS B	14.6	122.6	0.85	0.86	48.2
5	T1	965	5.1	965	5.1	1.260	311.5	LOS F	77.3	564.9	1.00	1.91	14.7
Approach		1738	12.2	1738	12.2	1.260	183.6	LOS F	77.3	564.9	0.93	1.44	19.2
West: Newbridge Road (W)													
11	T1	1581	6.5	1581	6.5	0.852	12.4	LOS A	30.8	227.8	0.63	0.60	60.9
12	R2	939	7.2	939	7.2	1.931	895.8	LOS F	129.9	966.8	1.00	2.16	2.3
Approach		2520	6.8	2520	6.8	1.931	341.5	LOS F	129.9	966.8	0.77	1.18	11.0
All Vehicles		7196	8.2	6622 N1	8.9	1.931	184.3	LOS F	129.9	966.8	0.72	1.10	16.8

PHASING SUMMARY

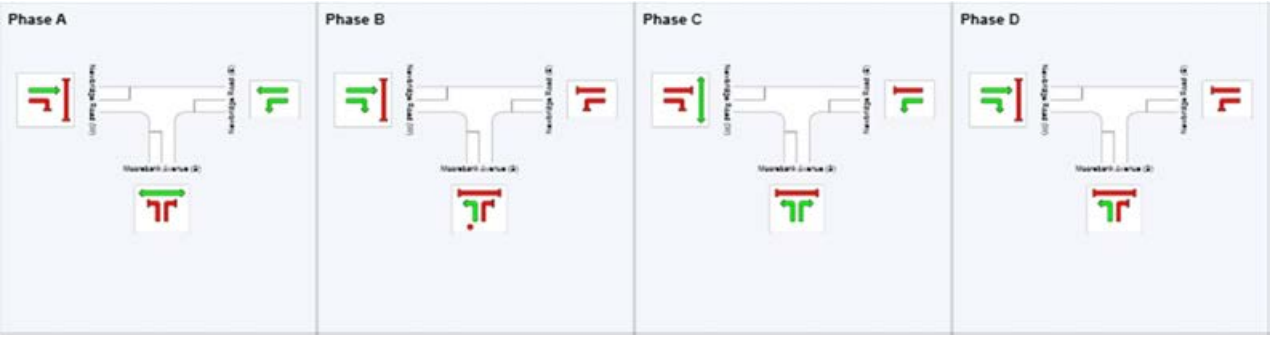
Site: I-06 2030 CUM B AM

Network: 2030 CUM B AM

Newbridge Road / Moorebank Avenue
2030 CUM B AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	33	55	116
Green Time (sec)	27	16	55	11
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	22	61	17
Phase Split	25 %	17 %	46 %	13 %



PM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-06 2030 CUM B PM

Network: 2030 CUM B PM

Newbridge Road / Moorebank Avenue
2030 CUM B PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	1061	2.8	932	2.9	0.531	22.8	LOS B	14.1	101.4	0.58	0.75	39.7
3	R2	1025	11.7	905	12.2	1.195	232.5	LOS F	16.6	130.6	1.00	1.54	13.5
Approach		2086	7.2	1837 N1	7.5	1.195	126.1	LOS F	16.6	130.6	0.79	1.14	18.2
East: Newbridge Road (E)													
4	L2	1281	7.9	1281	7.9	1.127	206.9	LOS F	83.0	630.7	1.00	1.34	14.1
5	T1	1373	4.8	1373	4.8	0.923	51.1	LOS D	42.7	311.4	1.00	1.04	43.3
Approach		2654	6.3	2654	6.3	1.127	126.3	LOS F	83.0	630.7	1.00	1.19	24.5
West: Newbridge Road (W)													
11	T1	1129	4.0	1129	4.0	0.442	9.3	LOS A	14.6	105.8	0.50	0.45	62.9
12	R2	1120	2.8	1120	2.8	1.203	235.7	LOS F	75.3	540.1	1.00	1.47	8.1
Approach		2249	3.4	2249	3.4	1.203	122.0	LOS F	75.3	540.1	0.75	0.96	22.3
All Vehicles		6989	5.6	6740 N1	5.8	1.203	124.8	LOS F	83.0	630.7	0.86	1.10	22.1

PHASING SUMMARY

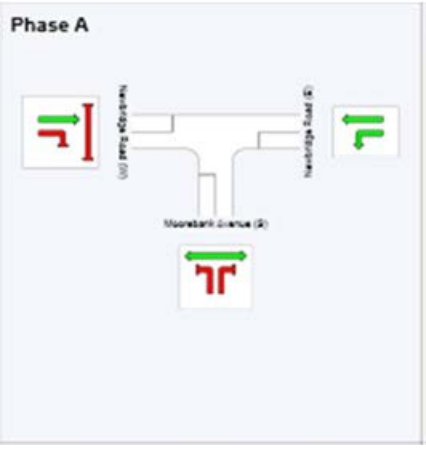
Site: I-06 2030 CUM B PM

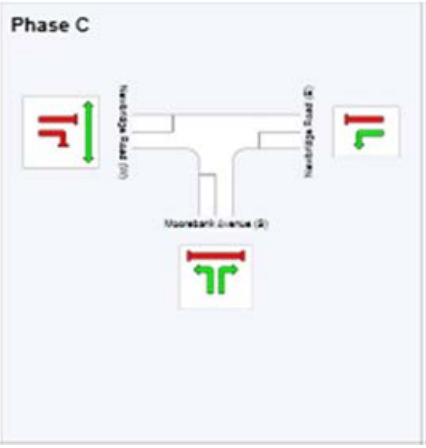
Network: 2030 CUM B PM

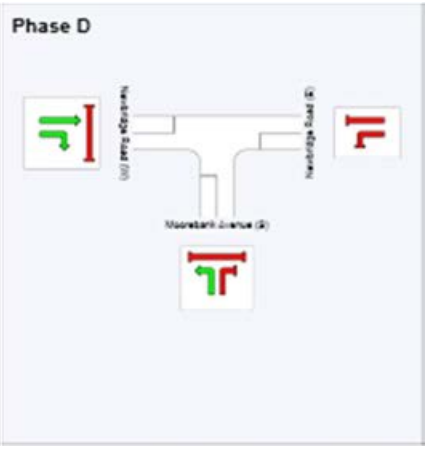
Newbridge Road / Moorebank Avenue
2030 CUM B PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	44	76
Green Time (sec)	38	26	34
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	44	32	40
Phase Split	38 %	28 %	34 %







AM Peak – Cumulative Scenario B with Upgrade

MOVEMENT SUMMARY

Site: I-06 2030 CUM B AM - Upgrade Option

Network: 2030 CUM B AM - Upgrade Option

Newbridge Road / Moorebank Avenue
2030 CUM B AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	1535	3.2	1176	3.2	0.607	18.5	LOS B	12.4	89.5	0.55	0.81	42.7
3	R2	1403	11.5	1076	11.6	1.021	75.1	LOS F	16.7	130.6	1.00	1.04	29.3
Approach		2938	7.1	2252 N1	7.2	1.021	45.5	LOS D	16.7	130.6	0.76	0.92	33.5
East: Newbridge Road (E)													
4	L2	773	21.0	773	21.0	1.136	159.8	LOS F	51.0	429.5	1.00	1.24	17.3
5	T1	965	5.1	965	5.1	1.260	311.5	LOS F	77.3	564.9	1.00	1.91	14.7
Approach		1738	12.2	1738	12.2	1.260	244.1	LOS F	77.3	564.9	1.00	1.61	15.5
West: Newbridge Road (W)													
11	T1	1581	6.5	1581	6.5	0.654	0.9	LOS A	2.8	20.7	0.06	0.06	69.3
12	R2	939	7.2	939	7.2	1.505	519.8	LOS F	89.6	666.6	1.00	1.86	3.9
Approach		2520	6.8	2520	6.8	1.505	194.2	LOS F	89.6	666.6	0.41	0.73	17.2
All Vehicles		7196	8.2	6510 N1	9.1	1.505	156.1	LOS F	89.6	666.6	0.69	1.03	19.0

PHASING SUMMARY

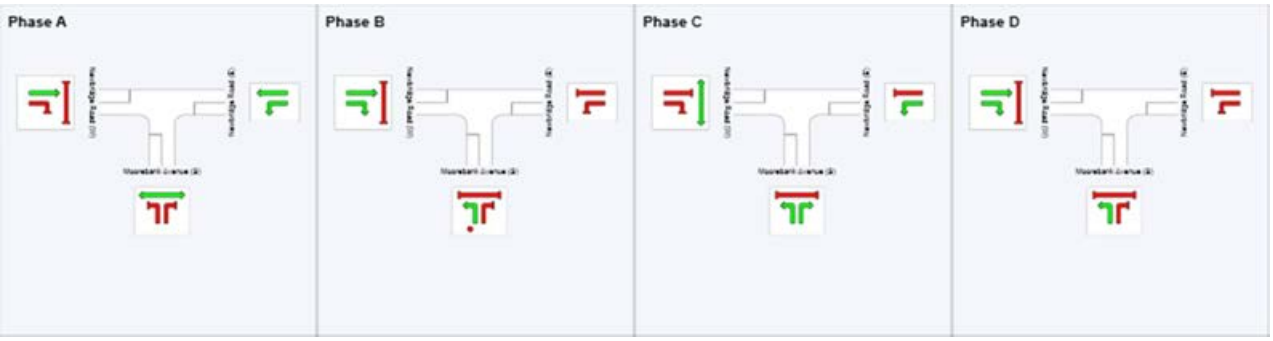
Site: I-06 2030 CUM B AM - Upgrade Option

Network: 2030 CUM B AM - Upgrade Option

Newbridge Road / Moorebank Avenue
2030 CUM B AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	33	55	96
Green Time (sec)	27	16	35	31
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	22	41	37
Phase Split	25 %	17 %	31 %	28 %



PM Peak – Cumulative Scenario B with Upgrade

MOVEMENT SUMMARY

Site: I-06 2030 CUM B PM - Upgrade Option

Network: 2030 CUM B PM - Upgrade Option

Newbridge Road / Moorebank Avenue
2030 CUM B PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	1061	2.8	993	2.8	0.546	21.4	LOS B	14.6	104.5	0.56	0.75	40.6
3	R2	1025	11.7	962	12.0	1.136	179.3	LOS F	16.6	130.6	1.00	1.40	16.5
Approach		2086	7.2	1956 N1	7.3	1.136	99.1	LOS F	16.6	130.6	0.78	1.07	21.5
East: Newbridge Road (E)													
4	L2	1281	7.9	1281	7.9	0.808	34.5	LOS C	34.5	262.0	0.90	0.89	42.2
5	T1	1373	4.8	1373	4.8	1.003	83.6	LOS F	54.7	398.4	1.00	1.24	34.8
Approach		2654	6.3	2654	6.3	1.003	59.9	LOS E	54.7	398.4	0.95	1.07	37.2
West: Newbridge Road (W)													
11	T1	1129	4.0	1129	4.0	0.460	10.9	LOS A	15.8	114.2	0.54	0.49	61.8
12	R2	1120	2.8	1120	2.8	1.325	343.9	LOS F	91.8	657.8	1.00	1.70	5.8
Approach		2249	3.4	2249	3.4	1.325	176.7	LOS F	91.8	657.8	0.77	1.09	17.0
All Vehicles		6989	5.6	6859 N1	5.7	1.325	109.4	LOS F	91.8	657.8	0.84	1.08	24.1

PHASING SUMMARY

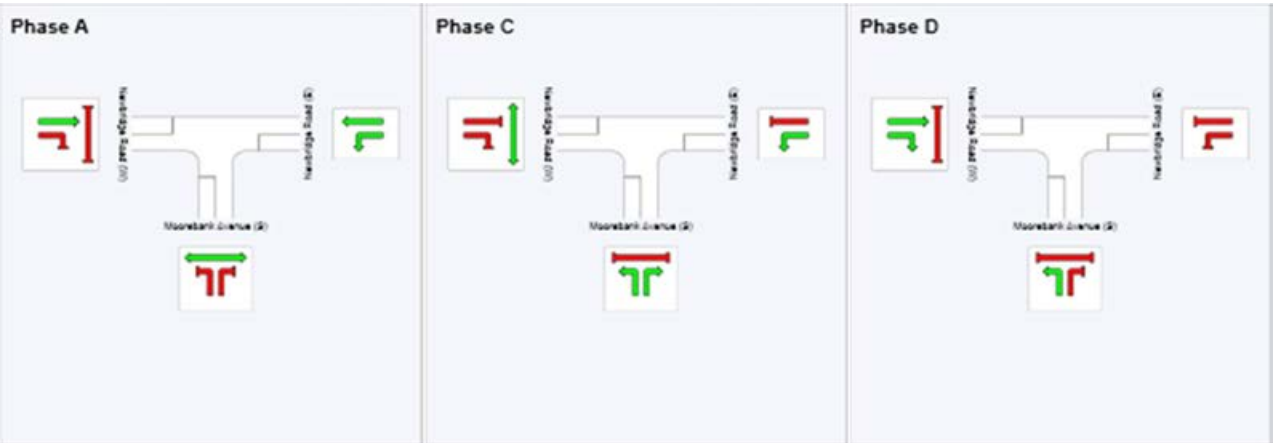
Site: I-06 2030 CUM B PM - Upgrade Option

Network: 2030 CUM B PM - Upgrade Option

Newbridge Road / Moorebank Avenue
2030 CUM B PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	41	76
Green Time (sec)	35	29	34
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	41	35	40
Phase Split	35 %	30 %	34 %



AM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-06 2020 CUM C1 AM

Network: 2020 CUM C1 AM

Newbridge Road / Moorebank Avenue
2020 CUM C1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	1310	3.4	1205	3.4	0.623	18.8	LOS B	12.9	93.0	0.56	0.82	42.4
3	R2	1222	12.6	1125	12.6	0.683	15.2	LOS B	14.3	112.9	0.43	0.69	52.3
Approach		2532	7.8	2330 N1	7.8	0.683	17.0	LOS B	14.3	112.9	0.49	0.76	47.9
East: Newbridge Road (E)													
4	L2	587	22.5	587	22.5	0.500	18.1	LOS B	7.0	59.7	0.68	0.78	52.3
5	T1	789	5.2	789	5.2	1.031	123.5	LOS F	39.2	286.8	1.00	1.30	28.1
Approach		1377	12.6	1377	12.6	1.031	78.5	LOS F	39.2	286.8	0.86	1.08	32.9
West: Newbridge Road (W)													
11	T1	1272	6.5	1272	6.5	0.685	9.3	LOS A	16.2	119.7	0.43	0.39	62.9
12	R2	690	7.3	690	7.3	1.200	239.7	LOS F	45.8	341.2	1.00	1.42	8.0
Approach		1961	6.7	1961	6.7	1.200	90.3	LOS F	45.8	341.2	0.63	0.75	29.2
All Vehicles		5870	8.6	5668 N1	8.9	1.200	57.3	LOS E	45.8	341.2	0.63	0.83	34.7

PHASING SUMMARY

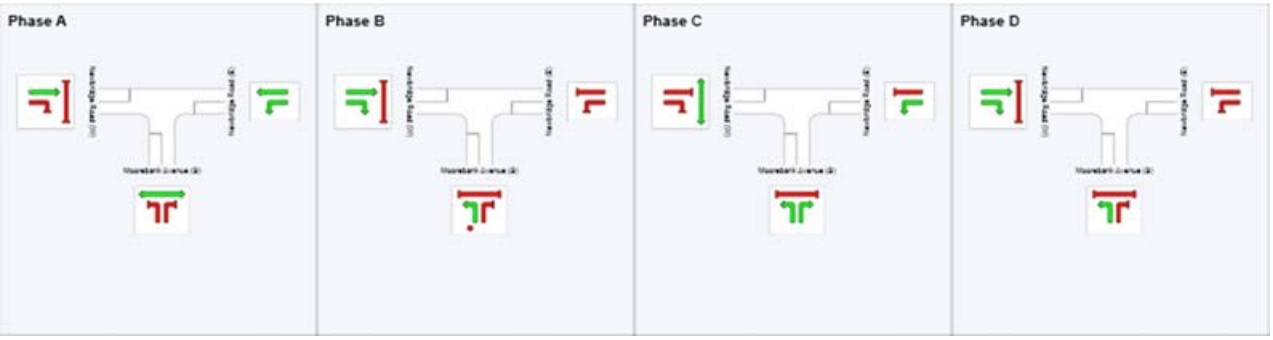
Site: I-06 2020 CUM C1 AM

Network: 2020 CUM C1 AM

Newbridge Road / Moorebank Avenue
2020 CUM C1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	33	55	116
Green Time (sec)	27	16	55	11
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	22	61	17
Phase Split	25 %	17 %	46 %	13 %



PM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-06 2020 CUM C1 PM

Network: 2020 CUM C1 PM

Newbridge Road / Moorebank Avenue
2020 CUM C1 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	842	3.3	829	3.3	0.473	22.1	LOS B	11.9	85.6	0.55	0.74	40.1
3	R2	851	13.3	839	13.3	1.112	160.8	LOS F	16.5	130.6	1.00	1.34	17.9
Approach		1693	8.3	1667 N1	8.4	1.112	91.8	LOS F	16.5	130.6	0.78	1.04	22.6
East: Newbridge Road (E)													
4	L2	1112	8.3	1112	8.3	0.958	70.0	LOS E	37.9	288.4	0.79	0.99	29.9
5	T1	1195	4.8	1195	4.8	0.803	38.1	LOS C	30.0	218.3	0.93	0.85	47.9
Approach		2306	6.5	2306	6.5	0.958	53.5	LOS D	37.9	288.4	0.86	0.92	39.2
West: Newbridge Road (W)													
11	T1	956	3.7	956	3.7	0.373	8.8	LOS A	11.6	83.7	0.47	0.42	63.3
12	R2	964	2.7	964	2.7	1.036	98.2	LOS F	41.8	299.5	1.00	1.12	16.8
Approach		1919	3.2	1919	3.2	1.036	53.7	LOS D	41.8	299.5	0.74	0.77	36.0
All Vehicles		5918	5.9	5893 N1	6.0	1.112	64.4	LOS E	41.8	299.5	0.80	0.91	32.9

PHASING SUMMARY

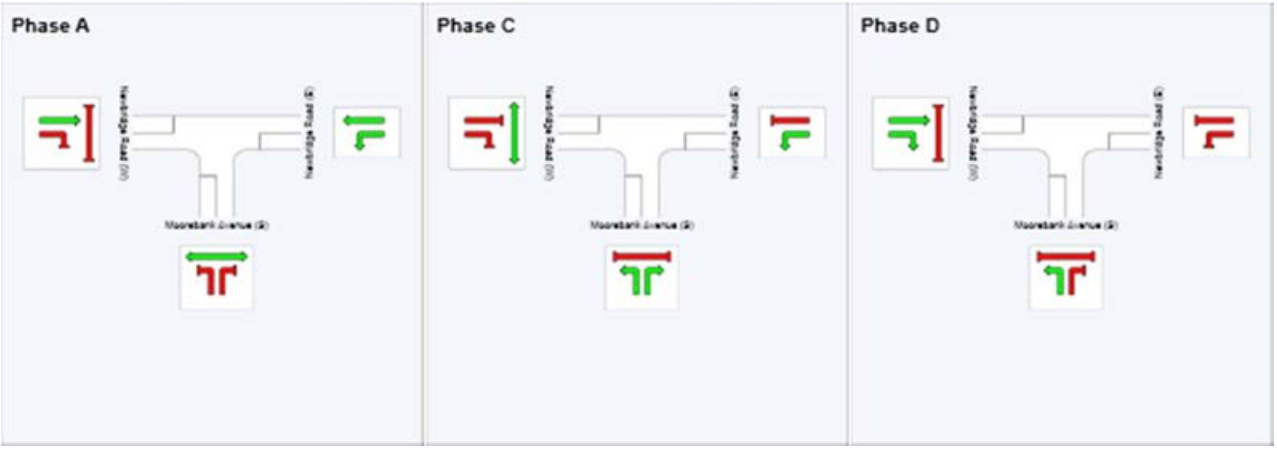
Site: I-06 2020 CUM C1 PM

Network: 2020 CUM C1 PM

Newbridge Road / Moorebank Avenue
2020 CUM C1 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	44	76
Green Time (sec)	38	26	34
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	44	32	40
Phase Split	38 %	28 %	34 %



AM Peak – Cumulative Scenario C1 with Upgrade

MOVEMENT SUMMARY

Site: I-06 2020 CUM C1 AM

Network: 2020 CUM C1 AM - Upgrade Option

Newbridge Road / Moorebank Avenue
2020 CUM C1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	1310	3.4	1223	3.4	0.632	18.9	LOS B	13.4	96.5	0.56	0.82	42.3
3	R2	1222	12.6	1140	12.5	0.692	15.2	LOS B	14.8	116.3	0.44	0.69	52.3
Approach		2532	7.8	2363 N1	7.8	0.692	17.1	LOS B	14.8	116.3	0.50	0.76	47.8
East: Newbridge Road (E)													
4	L2	587	22.5	587	22.5	0.482	17.9	LOS B	6.9	58.5	0.67	0.78	52.4
5	T1	789	5.2	789	5.2	1.031	123.5	LOS F	39.2	286.8	1.00	1.30	28.1
Approach		1377	12.6	1377	12.6	1.031	78.5	LOS F	39.2	286.8	0.86	1.08	32.9
West: Newbridge Road (W)													
11	T1	1272	6.5	1272	6.5	0.685	9.3	LOS A	16.2	119.7	0.43	0.39	62.9
12	R2	690	7.3	690	7.3	1.172	215.4	LOS F	42.3	315.1	1.00	1.38	8.8
Approach		1961	6.7	1961	6.7	1.172	81.8	LOS F	42.3	315.1	0.63	0.74	30.9
All Vehicles		5870	8.6	5701 N1	8.8	1.172	54.2	LOS D	42.3	315.1	0.63	0.83	35.6

PHASING SUMMARY

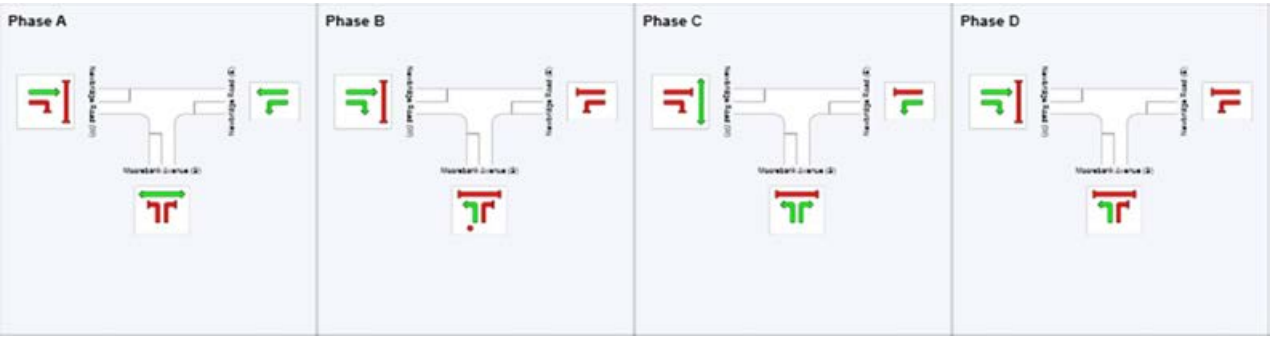
Site: I-06 2020 CUM C1 AM

Network: 2020 CUM C1 AM - Upgrade Option

Newbridge Road / Moorebank Avenue
2020 CUM C1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	33	55	116
Green Time (sec)	27	16	55	11
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	22	61	17
Phase Split	25 %	17 %	46 %	13 %



PM Peak – Cumulative Scenario C1 with Upgrade

MOVEMENT SUMMARY

Site: I-06 2020 CUM C1 PM - Upgrade Option

Network: 2020 CUM C1 PM - Upgrade Option

Newbridge Road / Moorebank Avenue
2020 CUM C1 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	842	3.3	842	3.3	0.489	23.1	LOS B	12.6	90.4	0.57	0.75	39.5
3	R2	851	13.3	851	13.3	0.916	48.2	LOS D	16.5	130.6	1.00	0.96	36.4
Approach		1693	8.3	1693	8.3	0.916	35.7	LOS C	16.5	130.6	0.79	0.85	37.5
East: Newbridge Road (E)													
4	L2	1112	8.3	1112	8.3	0.702	23.0	LOS B	20.1	152.9	0.68	0.81	48.7
5	T1	1195	4.8	1195	4.8	0.803	38.1	LOS C	30.0	218.3	0.93	0.85	47.9
Approach		2306	6.5	2306	6.5	0.803	30.8	LOS C	30.0	218.3	0.81	0.83	48.2
West: Newbridge Road (W)													
11	T1	956	3.7	956	3.7	0.404	11.8	LOS A	13.4	97.1	0.55	0.49	61.3
12	R2	964	2.7	964	2.7	1.142	185.6	LOS F	56.5	404.8	1.00	1.34	10.0
Approach		1919	3.2	1919	3.2	1.142	99.0	LOS F	56.5	404.8	0.77	0.91	25.5
All Vehicles		5918	5.9	5918	5.9	1.142	54.3	LOS D	56.5	404.8	0.79	0.86	35.8

PHASING SUMMARY

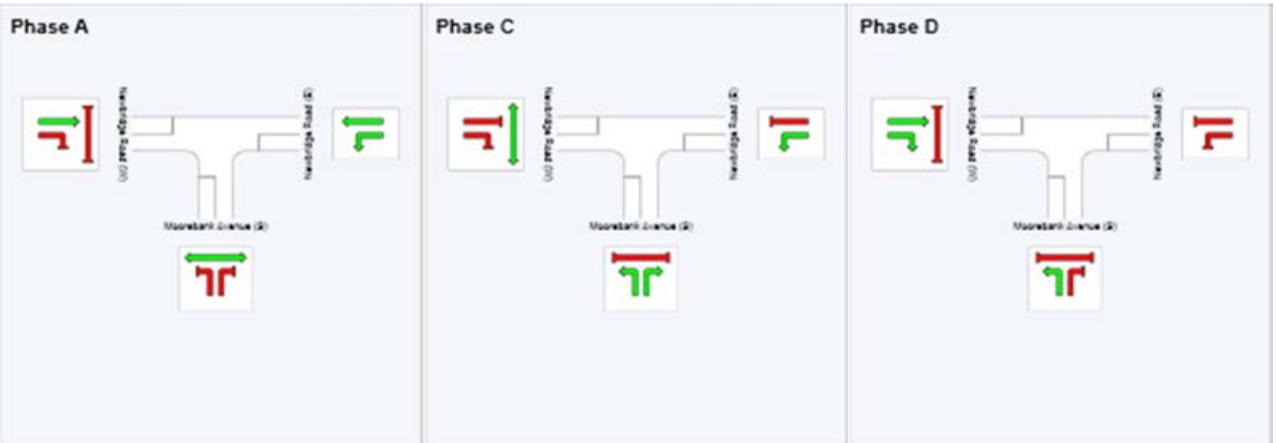
Site: I-06 2020 CUM C1 PM - Upgrade Option

Network: 2020 CUM C1 PM - Upgrade Option

Newbridge Road / Moorebank Avenue
2020 CUM C1 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	44	82
Green Time (sec)	38	32	28
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	44	38	34
Phase Split	38 %	33 %	29 %



AM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-06 2030 CUM C2 AM

Network: 2030 CUM C2 AM

Newbridge Road / Moorebank Avenue
2030 CUM C2 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	1535	3.1	1217	3.2	0.628	18.9	LOS B	13.2	95.2	0.56	0.82	42.4
3	R2	1412	12.0	1122	12.3	0.685	15.2	LOS B	14.4	114.1	0.43	0.69	52.3
Approach		2946	7.4	2339 N1	7.6	0.685	17.1	LOS B	14.4	114.1	0.50	0.76	47.8
East: Newbridge Road (E)													
4	L2	753	21.9	753	21.9	0.756	21.8	LOS B	12.2	104.5	0.83	0.84	49.6
5	T1	965	5.1	965	5.1	1.260	311.5	LOS F	77.3	564.9	1.00	1.91	14.7
Approach		1718	12.5	1718	12.5	1.260	184.5	LOS F	77.3	564.9	0.92	1.44	19.1
West: Newbridge Road (W)													
11	T1	1581	6.5	1581	6.5	0.852	12.4	LOS A	30.8	227.8	0.63	0.60	60.9
12	R2	912	7.4	912	7.4	1.855	827.2	LOS F	120.2	896.3	1.00	2.11	2.5
Approach		2494	6.8	2494	6.8	1.855	310.5	LOS F	120.2	896.3	0.77	1.15	11.9
All Vehicles		7158	8.4	6551 N1	9.2	1.855	172.7	LOS F	120.2	896.3	0.71	1.09	17.6

PHASING SUMMARY

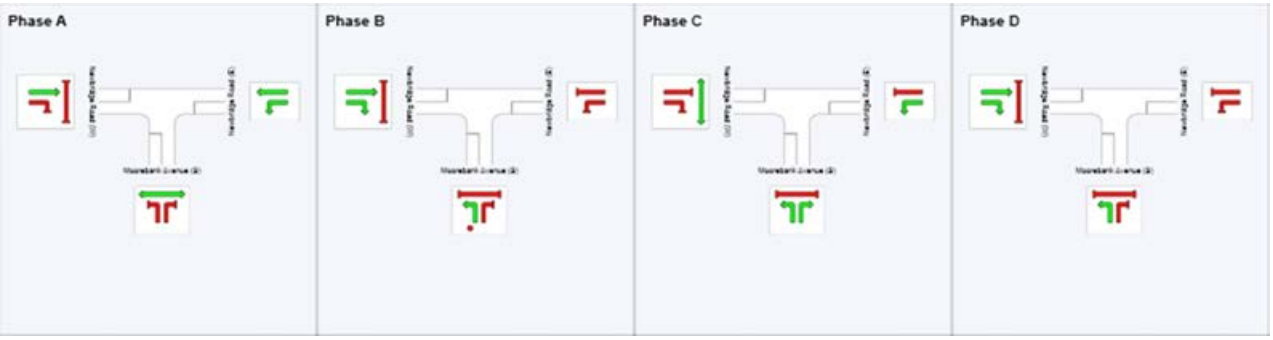
Site: I-06 2030 CUM C2 AM

Network: 2030 CUM C2 AM

Newbridge Road / Moorebank Avenue
2030 CUM C2 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	33	55	116
Green Time (sec)	27	16	55	11
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	22	61	17
Phase Split	25 %	17 %	46 %	13 %



PM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-06 2030 CUM C2 PM

Network: 2030 CUM C2 PM

Newbridge Road / Moorebank Avenue
2030 CUM C2 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	1053	2.8	926	3.0	0.527	22.7	LOS B	14.0	100.5	0.58	0.75	39.7
3	R2	1024	12.4	906	13.0	1.206	242.3	LOS F	16.4	130.6	1.00	1.57	13.1
Approach		2077	7.5	1831 N1	7.9	1.206	131.3	LOS F	16.4	130.6	0.79	1.16	17.7
East: Newbridge Road (E)													
4	L2	1291	8.6	1291	8.6	1.152	227.4	LOS F	88.1	678.2	1.00	1.39	13.1
5	T1	1373	4.8	1373	4.8	0.923	51.1	LOS D	42.7	311.4	1.00	1.04	43.3
Approach		2663	6.6	2663	6.6	1.152	136.5	LOS F	88.1	678.2	1.00	1.21	23.3
West: Newbridge Road (W)													
11	T1	1129	4.0	1129	4.0	0.442	9.3	LOS A	14.6	105.8	0.50	0.45	62.9
12	R2	1121	2.9	1121	2.9	1.207	239.7	LOS F	76.2	546.4	1.00	1.48	8.0
Approach		2250	3.4	2250	3.4	1.207	124.1	LOS F	76.2	546.4	0.75	0.97	22.0
All Vehicles		6990	5.9	6745 N1	6.1	1.207	131.0	LOS F	88.1	678.2	0.86	1.11	21.4

PHASING SUMMARY

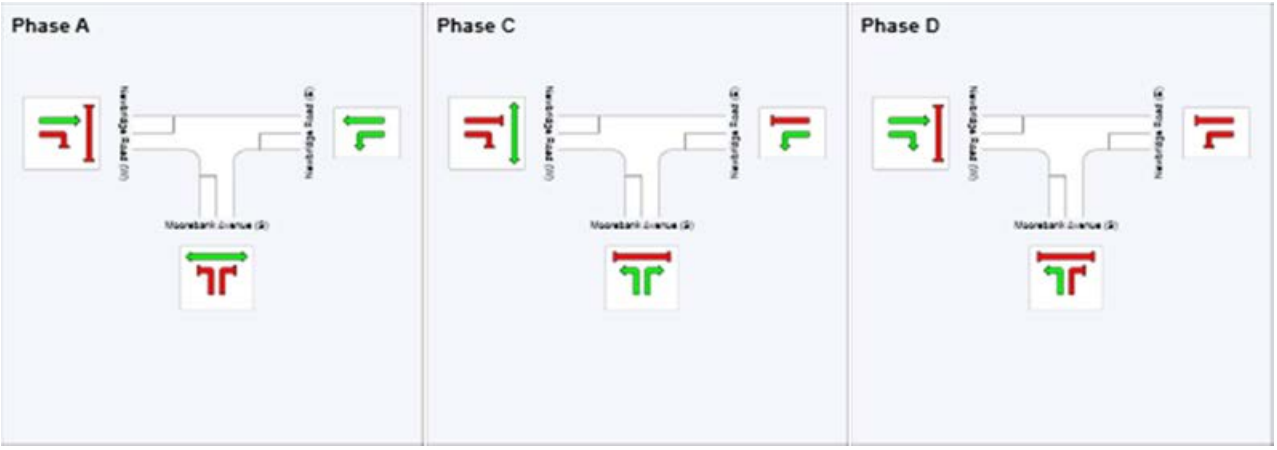
Site: I-06 2030 CUM C2 PM

Network: 2030 CUM C2 PM

Newbridge Road / Moorebank Avenue
2030 CUM C2 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	44	76
Green Time (sec)	38	26	34
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	44	32	40
Phase Split	38 %	28 %	34 %



AM Peak – Cumulative Scenario C2 with Upgrade

MOVEMENT SUMMARY

Site: I-06 2030 CUM C2 AM - Upgrade Option

Network: 2030 CUM C2 AM - Upgrade Option

Newbridge Road / Moorebank Avenue
2030 CUM C2 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	1535	3.1	1171	3.2	0.605	18.4	LOS B	12.4	89.0	0.54	0.81	42.7
3	R2	1412	12.0	1078	12.2	1.032	83.1	LOS F	16.5	130.6	1.00	1.06	27.6
Approach		2946	7.4	2250 N1	7.5	1.032	49.4	LOS D	16.5	130.6	0.76	0.93	32.2
East: Newbridge Road (E)													
4	L2	753	21.9	753	21.9	1.123	149.8	LOS F	47.2	402.7	1.00	1.22	18.1
5	T1	965	5.1	965	5.1	1.260	311.5	LOS F	77.3	564.9	1.00	1.91	14.7
Approach		1718	12.5	1718	12.5	1.260	240.7	LOS F	77.3	564.9	1.00	1.61	15.7
West: Newbridge Road (W)													
11	T1	1581	6.5	1581	6.5	0.654	0.9	LOS A	2.8	20.7	0.06	0.06	69.3
12	R2	912	7.4	912	7.4	1.423	445.2	LOS F	80.2	597.7	1.00	1.77	4.5
Approach		2494	6.8	2494	6.8	1.423	163.5	LOS F	80.2	597.7	0.40	0.68	19.6
All Vehicles		7158	8.4	6461 N1	9.3	1.423	144.3	LOS F	80.2	597.7	0.69	1.01	20.1

PHASING SUMMARY

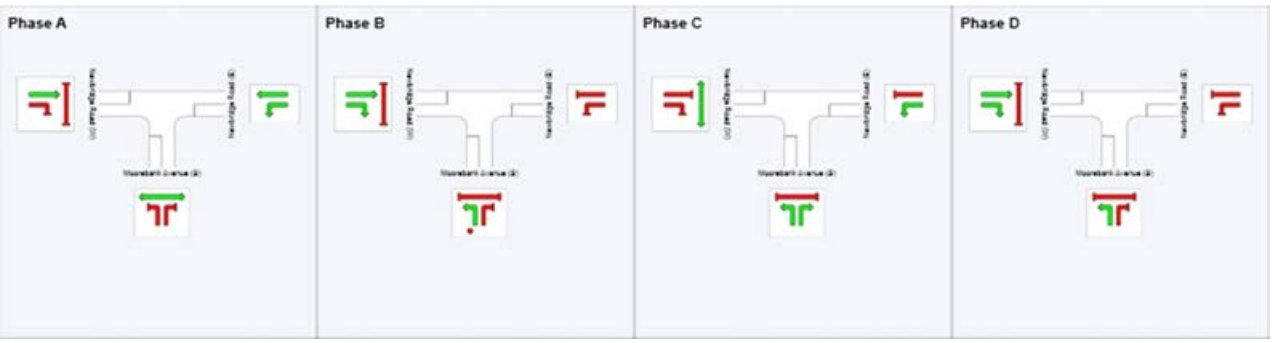
Site: I-06 2030 CUM C2 AM - Upgrade Option

Network: 2030 CUM C2 AM - Upgrade Option

Newbridge Road / Moorebank Avenue
2030 CUM C2 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	33	55	96
Green Time (sec)	27	16	35	31
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	22	41	37
Phase Split	25 %	17 %	31 %	28 %



PM Peak – Cumulative Scenario C2 with Upgrade

MOVEMENT SUMMARY

Site: I-06 2030 CUM C2 PM - Upgrade Option

Network: 2030 CUM C2 PM - Upgrade Option

Newbridge Road / Moorebank Avenue
2030 CUM C2 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	1053	2.8	986	2.9	0.542	21.4	LOS B	14.4	103.4	0.56	0.75	40.6
3	R2	1024	12.4	962	12.7	1.145	186.7	LOS F	16.5	130.6	1.00	1.43	16.0
Approach		2077	7.5	1947 N1	7.7	1.145	103.0	LOS F	16.5	130.6	0.78	1.08	20.9
East: Newbridge Road (E)													
4	L2	1291	8.6	1291	8.6	0.830	37.2	LOS C	37.0	284.7	0.92	0.91	41.0
5	T1	1373	4.8	1373	4.8	1.003	83.6	LOS F	54.7	398.4	1.00	1.24	34.8
Approach		2663	6.6	2663	6.6	1.003	61.1	LOS E	54.7	398.4	0.96	1.08	36.9
West: Newbridge Road (W)													
11	T1	1129	4.0	1129	4.0	0.460	10.9	LOS A	15.8	114.2	0.54	0.49	61.8
12	R2	1121	2.9	1121	2.9	1.360	375.0	LOS F	96.1	689.3	1.00	1.76	5.3
Approach		2250	3.4	2250	3.4	1.360	192.2	LOS F	96.1	689.3	0.77	1.12	16.0
All Vehicles		6990	5.9	6861 N1	6.0	1.360	116.0	LOS F	96.1	689.3	0.85	1.10	23.2

PHASING SUMMARY

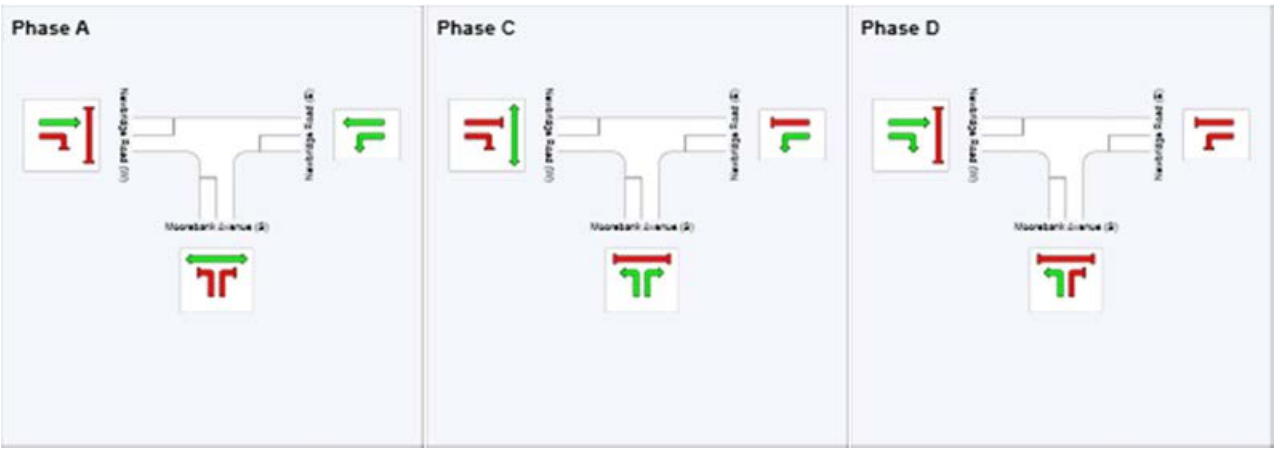
Site: I-06 2030 CUM C2 PM - Upgrade Option

Network: 2030 CUM C2 PM - Upgrade Option

Newbridge Road / Moorebank Avenue
2030 CUM C2 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	41	76
Green Time (sec)	35	29	34
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	41	35	40
Phase Split	35 %	30 %	34 %



I-07 Intersection of Moorebank Avenue and Heathcote Road

AM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-07 2030 CUM A AM

Network: 2030 CUM A AM

Moorebank Avenue / Heathcote Road
2030 CUM A AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
2	T1	1973	8.2	1734	8.3	1.141	175.0	LOS F	57.3	440.6	1.00	1.76	5.4
3	R2	23	18.2	20	18.5	0.184	71.7	LOS F	1.3	10.6	0.98	0.71	30.6
Approach		1997	8.3	1754 N1	8.4	1.141	173.8	LOS F	57.3	440.6	1.00	1.75	5.7
East: Heathcote Road (E)													
4	L2	29	57.1	29	57.1	1.456	495.0	LOS F	105.5	794.5	1.00	1.97	6.6
6	R2	952	5.9	952	5.9	1.456	495.0	LOS F	105.5	794.5	1.00	1.97	6.6
Approach		981	7.4	981	7.4	1.456	495.0	LOS F	105.5	794.5	1.00	1.97	6.6
North: Moorebank Avenue (N)													
7	L2	795	7.9	594	9.2	0.366	10.6	LOS A	11.7	88.0	0.53	0.71	51.4
8	T1	891	19.6	681	22.5	0.405	21.8	LOS B	13.6	116.9	0.67	0.59	12.9
Approach		1686	14.1	1274 N1	16.3	0.405	16.6	LOS B	13.6	116.9	0.61	0.64	40.2
All Vehicles		4663	10.2	4010 N1	11.9	1.456	202.5	LOS F	105.5	794.5	0.87	1.45	8.6

PHASING SUMMARY

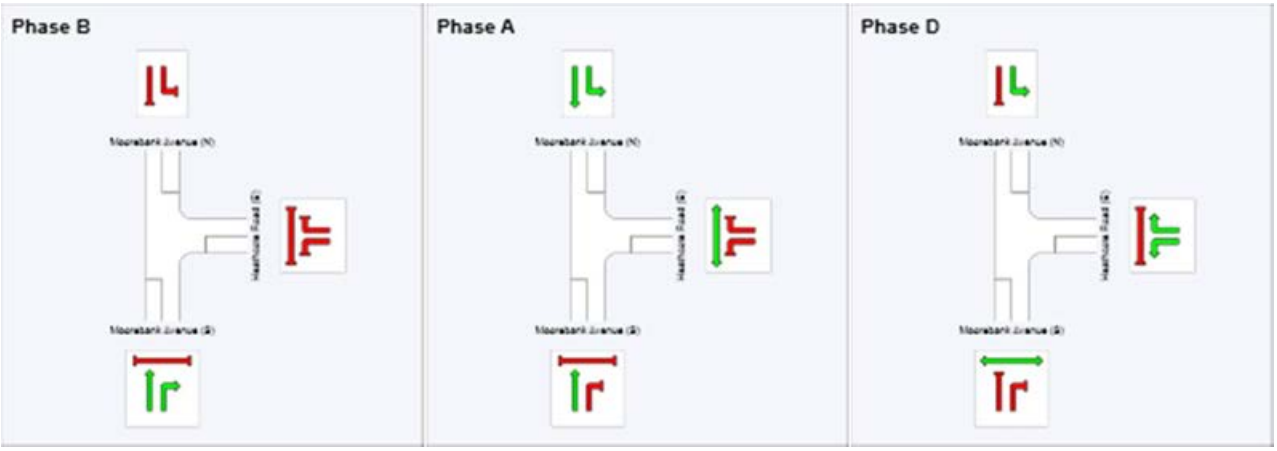
Site: I-07 2030 CUM A AM

Network: 2030 CUM A AM

Moorebank Avenue / Heathcote Road
2030 CUM A AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	15	88
Green Time (sec)	9	67	39
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	73	45
Phase Split	11 %	55 %	34 %



PM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-07 2030 CUM A PM

Network: 2030 CUM A PM

Moorebank Avenue / Heathcote Road
2030 CUM A PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
2	T1	1269	10.8	1269	10.8	1.030	111.2	LOS F	56.4	440.6	1.00	1.51	8.1
3	R2	48	8.7	48	8.7	0.401	64.7	LOS E	2.8	20.9	1.00	0.74	32.2
Approach		1318	10.7	1318	10.7	1.030	109.5	LOS F	56.4	440.6	1.00	1.48	9.1
East: Heathcote Road (E)													
4	L2	76	19.4	76	19.4	1.459	470.0	LOS F	96.3	716.6	1.00	2.06	6.9
6	R2	812	5.2	812	5.2	1.459	469.2	LOS F	96.3	716.6	1.00	2.07	6.9
Approach		887	6.4	887	6.4	1.459	469.2	LOS F	96.3	716.6	1.00	2.07	6.9
North: Moorebank Avenue (N)													
7	L2	884	3.7	739	3.7	0.338	7.4	LOS A	4.8	35.0	0.23	0.61	53.8
8	T1	1516	8.0	1268	8.1	0.672	6.3	LOS A	11.6	89.5	0.35	0.32	29.2
Approach		2400	6.4	2007 N1	6.5	0.672	6.7	LOS A	11.6	89.5	0.31	0.43	48.4
All Vehicles		4605	7.7	4212 N1	8.4	1.459	136.3	LOS F	96.3	716.6	0.67	1.10	11.6

PHASING SUMMARY

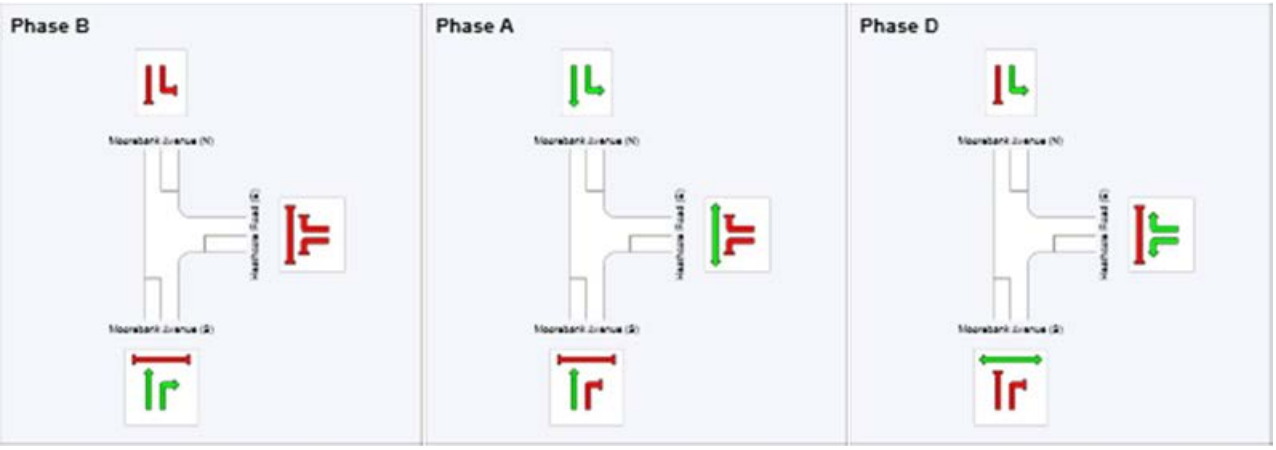
Site: I-07 2030 CUM A PM

Network: 2030 CUM A PM

Moorebank Avenue / Heathcote Road
2030 CUM A PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	14	80
Green Time (sec)	8	60	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	66	36
Phase Split	12 %	57 %	31 %



AM Peak – Cumulative Scenario A with Upgrade

MOVEMENT SUMMARY

Site: I-07 2030 CUM A AM - Upgrade Option

Network: 2030 CUM A AM - Upgrade Option

Moorebank Avenue / Heathcote Road
2030 CUM A AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
2	T1	1973	8.2	1810	8.3	1.225	248.0	LOS F	57.3	440.6	1.00	2.06	4.0
3	R2	23	18.2	21	18.4	0.192	71.8	LOS F	1.4	11.1	0.98	0.71	30.7
Approach		1997	8.3	1832 N1	8.4	1.225	246.0	LOS F	57.3	440.6	1.00	2.04	4.2
East: Heathcote Road (E)													
4	L2	29	57.1	29	57.1	1.298	383.6	LOS F	62.1	472.3	1.00	1.71	8.3
6	R2	952	5.9	952	5.9	1.298	370.2	LOS F	62.1	472.3	1.00	1.73	8.5
Approach		981	7.4	981	7.4	1.298	370.6	LOS F	62.1	472.3	1.00	1.73	8.5
North: Moorebank Avenue (N)													
7	L2	795	7.9	640	8.8	0.397	10.7	LOS A	13.0	98.0	0.54	0.71	51.4
8	T1	891	19.6	729	21.7	0.431	22.2	LOS B	14.8	126.4	0.68	0.60	13.1
Approach		1686	14.1	1369 N1	15.7	0.431	16.8	LOS B	14.8	126.4	0.62	0.65	40.1
All Vehicles		4663	10.2	4181 N1	11.4	1.298	200.2	LOS F	62.1	472.3	0.87	1.52	8.6

PHASING SUMMARY

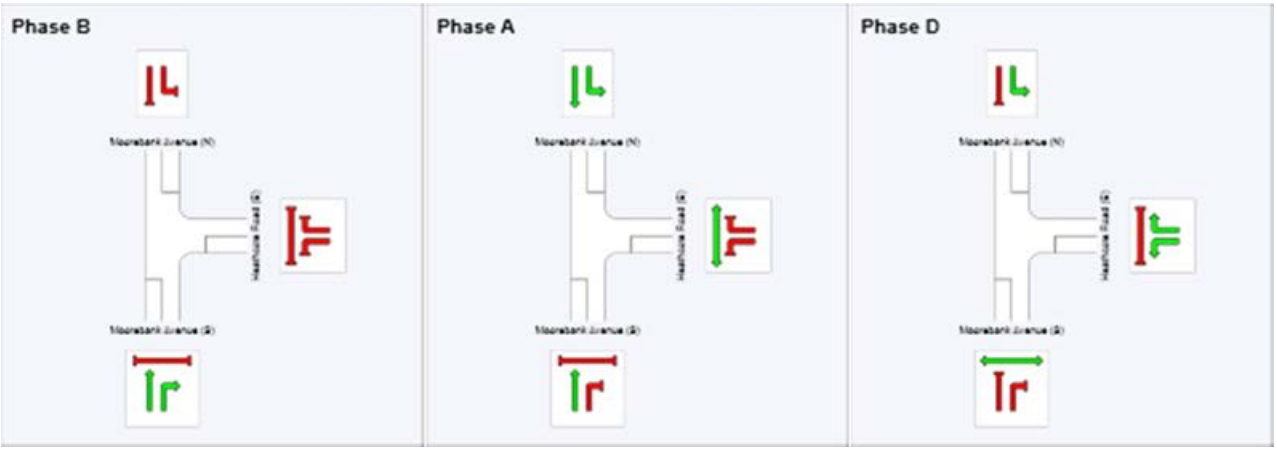
Site: I-07 2030 CUM A AM - Upgrade Option

Network: 2030 CUM A AM - Upgrade Option

Moorebank Avenue / Heathcote Road
2030 CUM A AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	15	88
Green Time (sec)	9	67	39
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	73	45
Phase Split	11 %	55 %	34 %



PM Peak – Cumulative Scenario A with Upgrade

MOVEMENT SUMMARY

Site: I-07 2030 CUM A PM - Upgrade Option

Network: 2030 CUM A PM - Upgrade Option

Moorebank Avenue / Heathcote Road
2030 CUM A PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
2	T1	1269	10.8	1269	10.8	0.956	63.0	LOS E	56.4	440.6	0.98	1.22	13.1
3	R2	48	8.7	48	8.7	0.401	64.7	LOS E	2.8	20.9	1.00	0.74	32.3
Approach		1318	10.7	1318	10.7	0.956	63.0	LOS E	56.4	440.6	0.98	1.20	14.3
East: Heathcote Road (E)													
4	L2	76	19.4	76	19.4	1.280	326.4	LOS F	48.4	363.6	1.00	1.73	9.5
6	R2	812	5.2	812	5.2	1.280	316.0	LOS F	48.4	363.6	1.00	1.74	9.8
Approach		887	6.4	887	6.4	1.280	316.9	LOS F	48.4	363.6	1.00	1.74	9.7
North: Moorebank Avenue (N)													
7	L2	884	3.7	760	4.0	0.357	7.5	LOS A	5.0	36.3	0.24	0.61	53.8
8	T1	1516	8.0	1309	8.8	0.699	6.4	LOS A	12.7	98.7	0.37	0.34	29.4
Approach		2400	6.4	2068 N1	7.0	0.699	6.8	LOS A	12.7	98.7	0.32	0.44	48.3
All Vehicles		4605	7.7	4273 N1	8.3	1.280	88.5	LOS F	56.4	440.6	0.67	0.94	16.1

PHASING SUMMARY

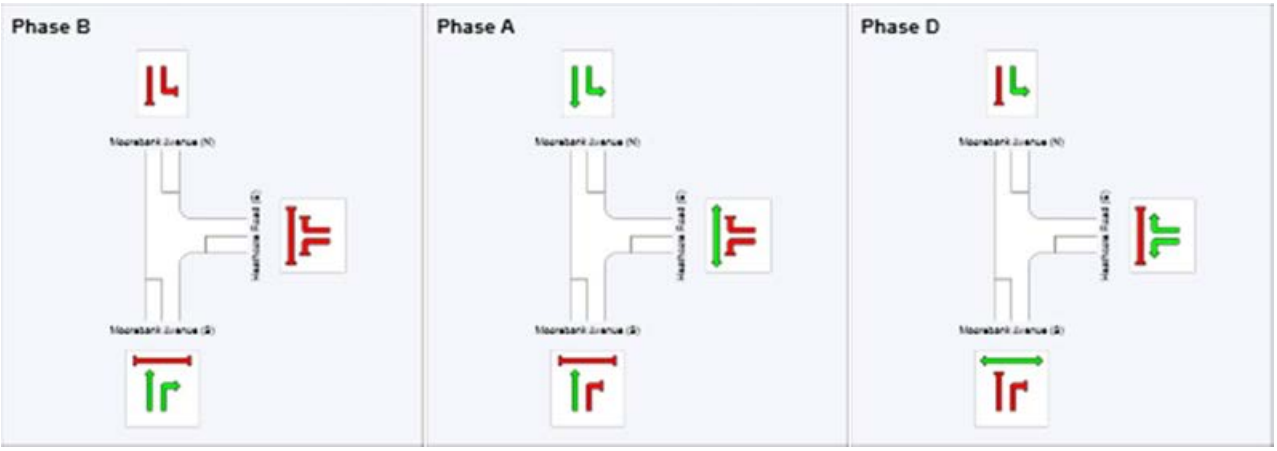
Site: I-07 2030 CUM A PM - Upgrade Option

Network: 2030 CUM A PM - Upgrade Option

Moorebank Avenue / Heathcote Road
2030 CUM A PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	14	80
Green Time (sec)	8	60	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	66	36
Phase Split	12 %	57 %	31 %



AM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-07 2030 CUM B AM

Network: 2030 CUM B AM

Moorebank Avenue / Heathcote Road
2030 CUM B AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
2	T1	1952	7.2	1769	7.3	1.167	197.8	LOS F	58.5	440.6	1.00	1.86	4.8
3	R2	23	18.2	21	18.4	0.189	71.8	LOS F	1.4	10.9	0.98	0.71	30.6
Approach		1975	7.3	1790 N1	7.4	1.167	196.3	LOS F	58.5	440.6	1.00	1.85	5.1
East: Heathcote Road (E)													
4	L2	29	57.1	29	57.1	1.441	481.3	LOS F	102.0	768.2	1.00	1.95	6.8
6	R2	952	5.9	952	5.9	1.441	481.1	LOS F	102.0	768.2	1.00	1.95	6.8
Approach		981	7.4	981	7.4	1.441	481.1	LOS F	102.0	768.2	1.00	1.95	6.8
North: Moorebank Avenue (N)													
7	L2	795	7.9	585	9.2	0.359	10.6	LOS A	11.4	86.2	0.53	0.71	51.4
8	T1	943	17.5	707	20.2	0.412	21.9	LOS B	14.2	118.6	0.67	0.59	12.9
Approach		1738	13.1	1291 N1	15.2	0.412	16.8	LOS B	14.2	118.6	0.61	0.64	39.8
All Vehicles		4694	9.5	4062 N1	11.0	1.441	208.0	LOS F	102.0	768.2	0.88	1.49	8.3

PHASING SUMMARY

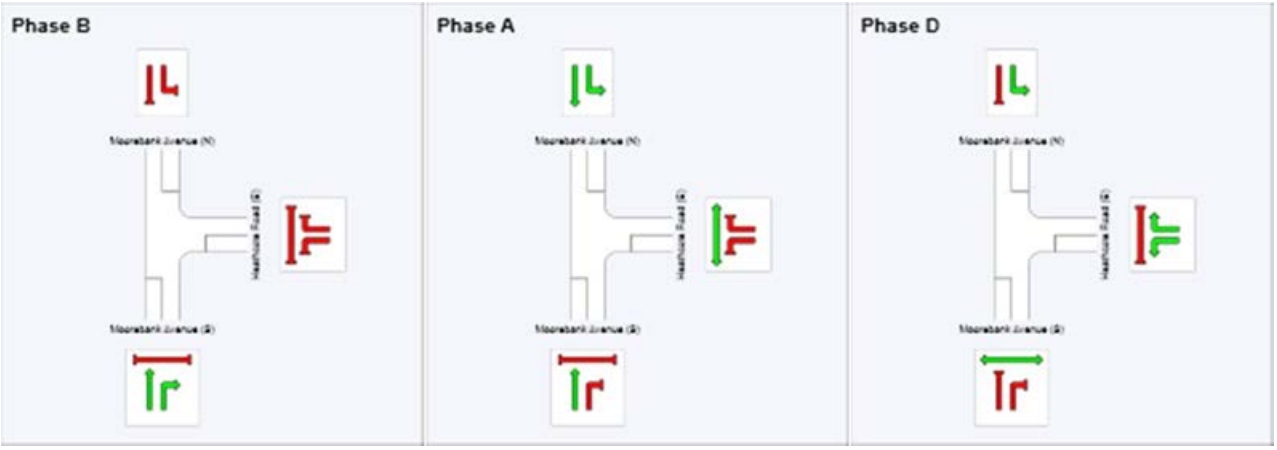
Site: I-07 2030 CUM B AM

Network: 2030 CUM B AM

Moorebank Avenue / Heathcote Road
2030 CUM B AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	15	88
Green Time (sec)	9	67	39
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	73	45
Phase Split	11 %	55 %	34 %



PM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-07 2030 CUM B PM

Network: 2030 CUM B PM

Moorebank Avenue / Heathcote Road
2030 CUM B PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
2	T1	1304	9.2	1304	9.2	1.052	126.6	LOS F	57.6	440.6	1.00	1.59	7.2
3	R2	48	8.7	48	8.7	0.401	64.7	LOS E	2.8	20.9	1.00	0.74	32.2
Approach		1353	9.2	1353	9.2	1.052	124.3	LOS F	57.6	440.6	1.00	1.56	8.1
East: Heathcote Road (E)													
4	L2	76	19.4	76	19.4	1.497	504.4	LOS F	98.9	735.7	1.00	2.12	6.5
6	R2	812	5.2	812	5.2	1.497	503.4	LOS F	98.9	735.7	1.00	2.13	6.5
Approach		887	6.4	887	6.4	1.497	503.5	LOS F	98.9	735.7	1.00	2.13	6.5
North: Moorebank Avenue (N)													
7	L2	884	3.7	761	3.7	0.357	7.5	LOS A	5.0	36.4	0.24	0.61	53.8
8	T1	1492	6.6	1285	6.7	0.670	6.3	LOS A	11.7	88.2	0.35	0.32	29.3
Approach		2376	5.5	2046 N1	5.6	0.670	6.7	LOS A	11.7	88.2	0.31	0.43	48.4
All Vehicles		4616	6.8	4286 N1	7.3	1.497	146.7	LOS F	98.9	735.7	0.67	1.14	10.9

PHASING SUMMARY

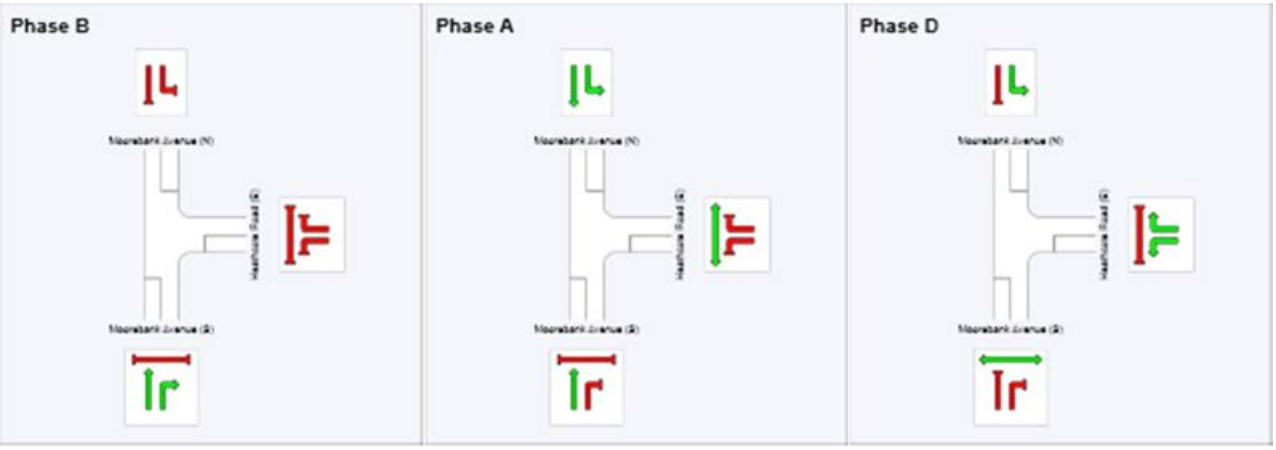
Site: I-07 2030 CUM B PM

Network: 2030 CUM B PM

Moorebank Avenue / Heathcote Road
2030 CUM B PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	14	80
Green Time (sec)	8	60	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	66	36
Phase Split	12 %	57 %	31 %



AM Peak – Cumulative Scenario B with Upgrade

MOVEMENT SUMMARY

Site: I-07 2030 CUM A AM - Upgrade Option

Network: 2030 CUM A AM - Upgrade Option

Moorebank Avenue / Heathcote Road
2030 CUM A AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
2	T1	1973	8.2	1810	8.3	1.225	248.0	LOS F	57.3	440.6	1.00	2.06	4.0
3	R2	23	18.2	21	18.4	0.192	71.8	LOS F	1.4	11.1	0.98	0.71	30.7
Approach		1997	8.3	1832 N1	8.4	1.225	246.0	LOS F	57.3	440.6	1.00	2.04	4.2
East: Heathcote Road (E)													
4	L2	29	57.1	29	57.1	1.298	383.6	LOS F	62.1	472.3	1.00	1.71	8.3
6	R2	952	5.9	952	5.9	1.298	370.2	LOS F	62.1	472.3	1.00	1.73	8.5
Approach		981	7.4	981	7.4	1.298	370.6	LOS F	62.1	472.3	1.00	1.73	8.5
North: Moorebank Avenue (N)													
7	L2	795	7.9	640	8.8	0.397	10.7	LOS A	13.0	98.0	0.54	0.71	51.4
8	T1	891	19.6	729	21.7	0.431	22.2	LOS B	14.8	126.4	0.68	0.60	13.1
Approach		1686	14.1	1369 N1	15.7	0.431	16.8	LOS B	14.8	126.4	0.62	0.65	40.1
All Vehicles		4663	10.2	4181 N1	11.4	1.298	200.2	LOS F	62.1	472.3	0.87	1.52	8.6

PHASING SUMMARY

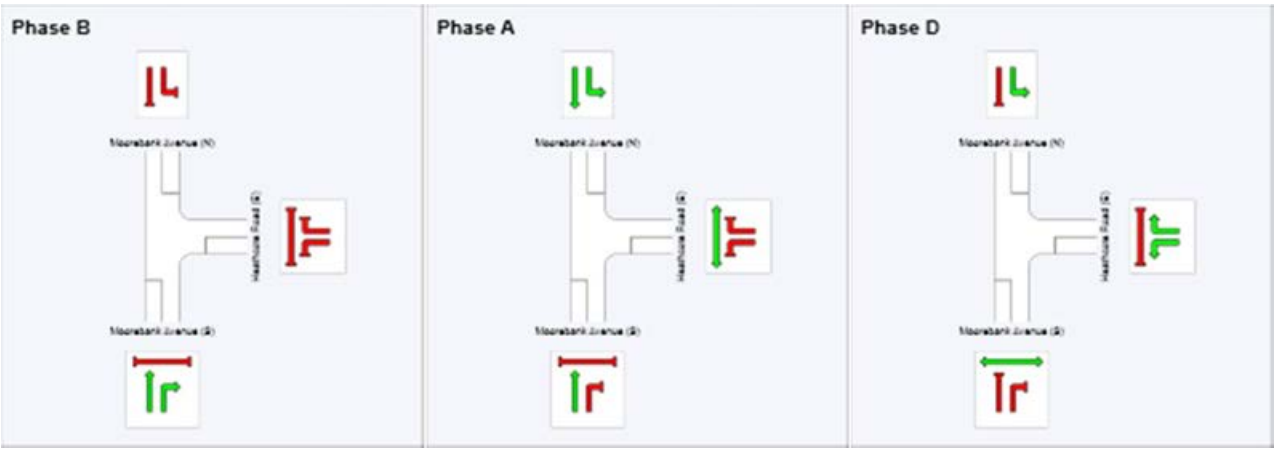
Site: I-07 2030 CUM A AM - Upgrade Option

Network: 2030 CUM A AM - Upgrade Option

Moorebank Avenue / Heathcote Road
2030 CUM A AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	15	88
Green Time (sec)	9	67	39
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	73	45
Phase Split	11 %	55 %	34 %



PM Peak – Cumulative Scenario B with Upgrade

MOVEMENT SUMMARY

Site: I-07 2030 CUM A PM - Upgrade Option

Network: 2030 CUM A PM - Upgrade Option

Moorebank Avenue / Heathcote Road
2030 CUM A PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
2	T1	1269	10.8	1269	10.8	0.956	63.0	LOS E	56.4	440.6	0.98	1.22	13.1
3	R2	48	8.7	48	8.7	0.401	64.7	LOS E	2.8	20.9	1.00	0.74	32.3
Approach		1318	10.7	1318	10.7	0.956	63.0	LOS E	56.4	440.6	0.98	1.20	14.3
East: Heathcote Road (E)													
4	L2	76	19.4	76	19.4	1.280	326.4	LOS F	48.4	363.6	1.00	1.73	9.5
6	R2	812	5.2	812	5.2	1.280	316.0	LOS F	48.4	363.6	1.00	1.74	9.8
Approach		887	6.4	887	6.4	1.280	316.9	LOS F	48.4	363.6	1.00	1.74	9.7
North: Moorebank Avenue (N)													
7	L2	884	3.7	760	4.0	0.357	7.5	LOS A	5.0	36.3	0.24	0.61	53.8
8	T1	1516	8.0	1309	8.8	0.699	6.4	LOS A	12.7	98.7	0.37	0.34	29.4
Approach		2400	6.4	2068 N1	7.0	0.699	6.8	LOS A	12.7	98.7	0.32	0.44	48.3
All Vehicles		4605	7.7	4273 N1	8.3	1.280	88.5	LOS F	56.4	440.6	0.67	0.94	16.1

PHASING SUMMARY

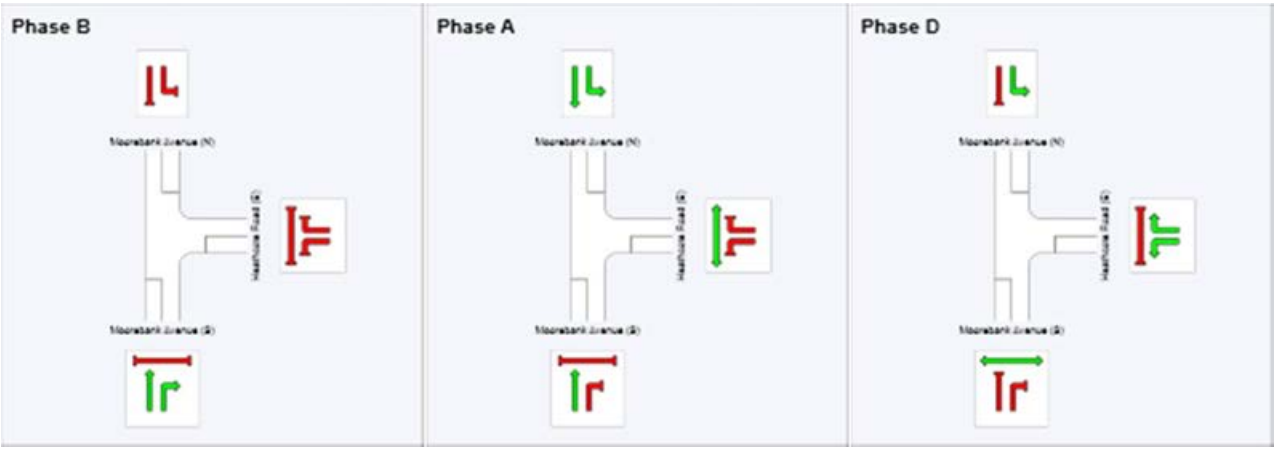
Site: I-07 2030 CUM A PM - Upgrade Option

Network: 2030 CUM A PM - Upgrade Option

Moorebank Avenue / Heathcote Road
2030 CUM A PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	14	80
Green Time (sec)	8	60	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	66	36
Phase Split	12 %	57 %	31 %



AM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-07 2020 CUM C1 AM

Network: 2020 CUM C1 AM

Moorebank Avenue / Heathcote Road
2020 CUM C1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	1723	8.4	1723	8.4	1.137	150.9	LOS F	58.1	440.6	1.00	1.65	6.2
3	R2	21	20.0	21	20.0	0.191	71.9	LOS F	1.4	11.1	0.98	0.71	30.5
Approach		1744	8.5	1744	8.5	1.137	150.0	LOS F	58.1	440.6	1.00	1.64	6.5
East: Heathcote Road (E)													
4	L2	23	59.1	23	59.1	1.262	322.2	LOS F	74.5	560.4	1.00	1.66	9.6
6	R2	804	6.0	804	6.0	1.262	271.6	LOS F	74.5	560.4	1.00	1.56	11.1
Approach		827	7.5	827	7.5	1.262	273.1	LOS F	74.5	560.4	1.00	1.56	11.0
North: Moorebank Avenue (N)													
7	L2	599	7.7	545	8.1	0.325	10.5	LOS A	10.3	77.4	0.53	0.70	51.5
8	T1	694	19.0	635	19.8	0.369	21.3	LOS B	12.4	103.0	0.65	0.57	13.2
Approach		1293	13.8	1180 N1	14.4	0.369	16.3	LOS B	12.4	103.0	0.59	0.63	40.4
All Vehicles		3864	10.1	3751 N1	10.4	1.262	135.1	LOS F	74.5	560.4	0.87	1.31	11.7

PHASING SUMMARY

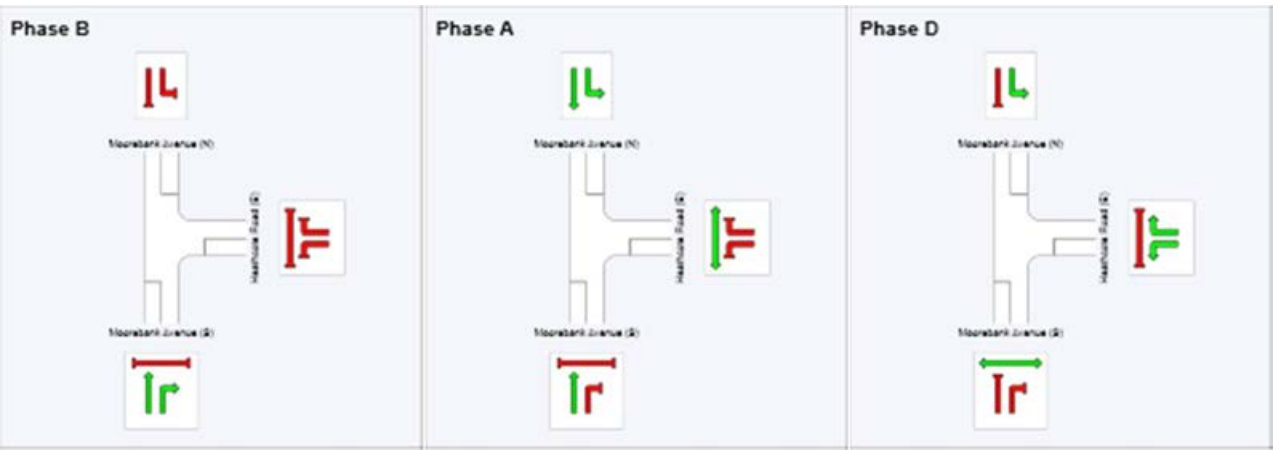
Site: I-07 2020 CUM C1 AM

Network: 2020 CUM C1 AM

Moorebank Avenue / Heathcote Road
2020 CUM C1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	15	88
Green Time (sec)	9	67	39
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	73	45
Phase Split	11 %	55 %	34 %



PM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-07 2020 CUM C1 PM

Network: 2020 CUM C1 PM

Moorebank Avenue / Heathcote Road
2023 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	1077	10.2	1077	10.2	0.836	26.6	LOS B	30.8	237.0	0.83	0.85	23.7
3	R2	42	7.5	42	7.5	0.346	64.3	LOS E	2.4	17.9	0.99	0.74	32.3
Approach		1119	10.1	1119	10.1	0.836	28.0	LOS B	30.8	237.0	0.83	0.84	24.7
East: Heathcote Road (E)													
4	L2	65	19.4	65	19.4	1.117	166.9	LOS F	48.8	362.9	1.00	1.36	16.1
6	R2	624	5.1	624	5.1	1.117	120.8	LOS F	48.8	362.9	0.99	1.20	20.2
Approach		689	6.4	689	6.4	1.117	125.2	LOS F	48.8	362.9	0.99	1.22	19.7
North: Moorebank Avenue (N)													
7	L2	771	3.6	759	3.6	0.355	7.5	LOS A	5.0	36.1	0.24	0.61	53.8
8	T1	1307	6.9	1288	6.9	0.672	6.3	LOS A	11.8	88.7	0.35	0.32	29.2
Approach		2077	5.6	2047 N1	5.7	0.672	6.7	LOS A	11.8	88.7	0.31	0.43	48.4
All Vehicles		3886	7.1	3856 N1	7.1	1.117	34.1	LOS C	48.8	362.9	0.58	0.69	28.9

PHASING SUMMARY

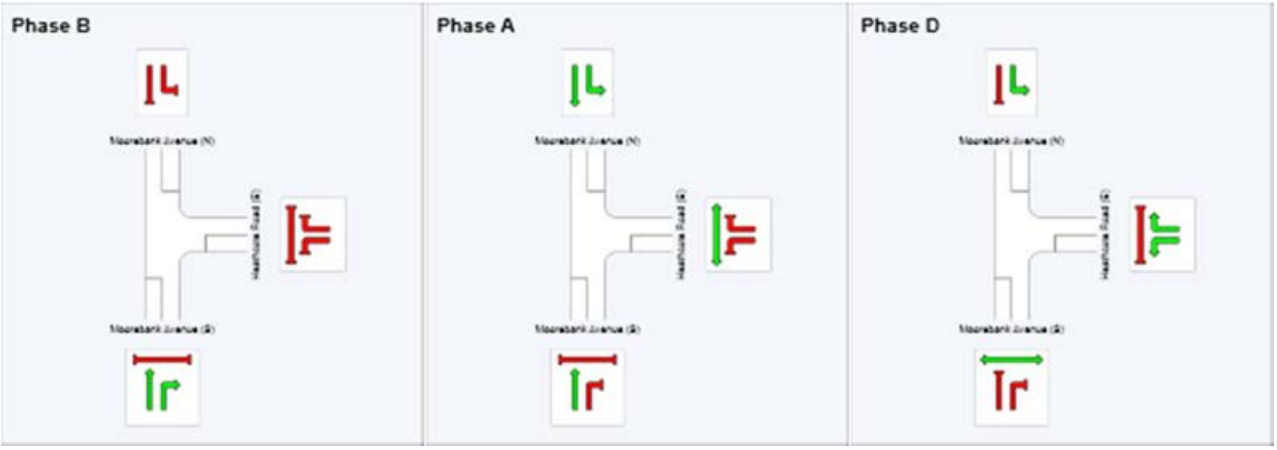
Site: I-07 2020 CUM C1 PM

Network: 2020 CUM C1 PM

Moorebank Avenue / Heathcote Road
2023 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	14	80
Green Time (sec)	8	60	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	66	36
Phase Split	12 %	57 %	31 %



AM Peak – Cumulative Scenario C1 with Upgrade

MOVEMENT SUMMARY

Site: I-07 2020 CUM C1 AM - Upgrade Option

Network: 2020 CUM C1 AM - Upgrade Option

Moorebank Avenue / Heathcote Road
2020 CUM C1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
2	T1	1723	8.4	1723	8.4	1.119	135.4	LOS F	58.1	440.6	1.00	1.59	6.9
3	R2	21	20.0	21	20.0	0.191	71.9	LOS F	1.4	11.1	0.98	0.71	30.6
Approach		1744	8.5	1744	8.5	1.119	134.7	LOS F	58.1	440.6	1.00	1.58	7.2
East: Heathcote Road (E)													
4	L2	23	59.1	23	59.1	1.106	216.3	LOS F	35.2	268.3	1.00	1.37	13.3
6	R2	804	6.0	804	6.0	1.106	177.7	LOS F	35.2	268.3	1.00	1.30	15.4
Approach		827	7.5	827	7.5	1.106	178.8	LOS F	35.2	268.3	1.00	1.30	15.3
North: Moorebank Avenue (N)													
7	L2	599	7.7	552	8.1	0.330	10.5	LOS A	10.5	78.6	0.53	0.70	51.5
8	T1	694	19.0	642	19.7	0.357	19.4	LOS B	12.0	99.4	0.62	0.55	14.5
Approach		1293	13.8	1194 N1	14.3	0.357	15.3	LOS B	12.0	99.4	0.58	0.62	41.2
All Vehicles		3864	10.1	3765 N1	10.3	1.119	106.5	LOS F	58.1	440.6	0.87	1.21	14.1

PHASING SUMMARY

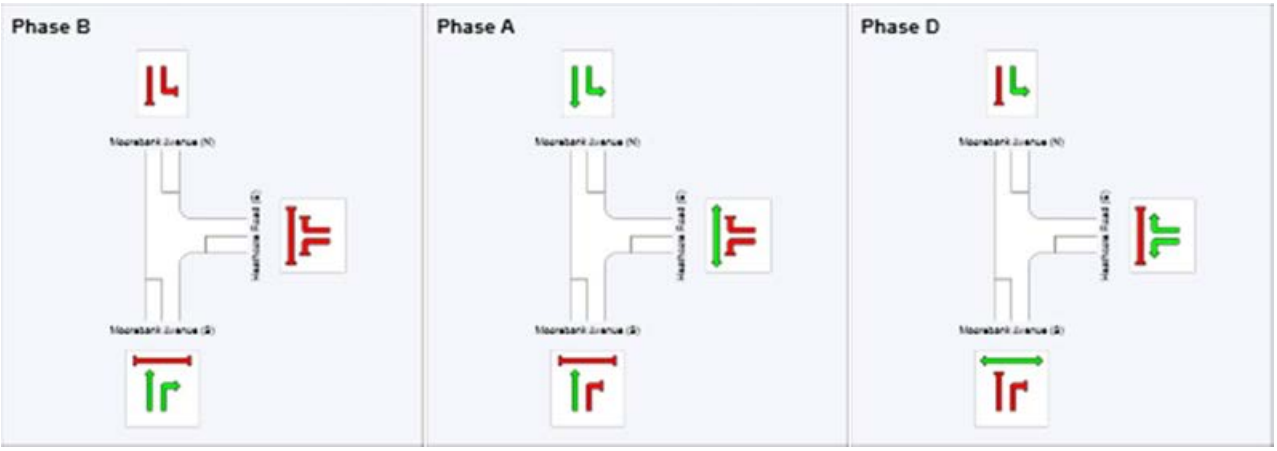
Site: I-07 2020 CUM C1 AM - Upgrade Option

Network: 2020 CUM C1 AM - Upgrade Option

Moorebank Avenue / Heathcote Road
2020 CUM C1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	15	91
Green Time (sec)	9	70	36
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	76	42
Phase Split	11 %	57 %	32 %



PM Peak – Cumulative Scenario C1 with Upgrade

MOVEMENT SUMMARY

Site: I-07 2020 CUM C1 PM - Upgrade Option

Network: 2020 CUM C1 PM - Upgrade Option

Moorebank Avenue / Heathcote Road
2020 CUM C1 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	1077	10.2	1077	10.2	0.725	15.2	LOS B	25.6	196.7	0.72	0.66	32.1
3	R2	42	7.5	42	7.5	0.346	64.3	LOS E	2.4	17.9	0.99	0.74	32.4
Approach		1119	10.1	1119	10.1	0.725	17.1	LOS B	25.6	196.7	0.73	0.66	32.2
East: Heathcote Road (E)													
4	L2	65	19.4	65	19.4	1.034	125.5	LOS F	23.8	178.3	0.99	1.18	19.7
6	R2	624	5.1	624	5.1	1.034	95.4	LOS F	23.8	178.3	0.98	1.10	23.5
Approach		689	6.4	689	6.4	1.034	98.2	LOS F	23.8	178.3	0.98	1.11	23.1
North: Moorebank Avenue (N)													
7	L2	771	3.6	726	3.7	0.326	7.4	LOS A	4.7	34.0	0.23	0.61	53.8
8	T1	1307	6.9	1232	7.1	0.644	6.2	LOS A	10.7	80.3	0.33	0.30	30.1
Approach		2077	5.6	1958 N1	5.8	0.644	6.6	LOS A	10.7	80.3	0.30	0.41	48.6
All Vehicles		3886	7.1	3767 N1	7.3	1.034	26.5	LOS B	25.6	196.7	0.55	0.62	32.8

PHASING SUMMARY

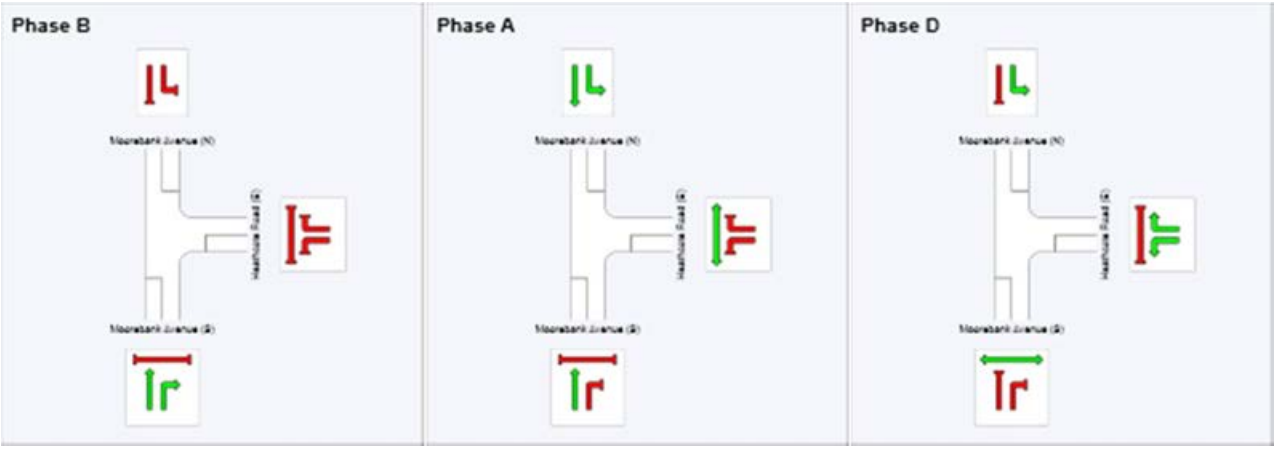
Site: I-07 2020 CUM C1 PM - Upgrade Option

Network: 2020 CUM C1 PM - Upgrade Option

Moorebank Avenue / Heathcote Road
2020 CUM C1 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	14	80
Green Time (sec)	8	60	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	66	36
Phase Split	12 %	57 %	31 %



AM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-07 2030 CUM C2 AM

Network: 2030 CUM C2 AM

Moorebank Avenue / Heathcote Road
2030 CUM C2 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
2	T1	1960	7.6	1752	7.7	1.154	186.2	LOS F	57.9	440.6	1.00	1.81	5.1
3	R2	23	18.2	21	18.5	0.187	71.8	LOS F	1.3	10.8	0.98	0.71	30.6
Approach		1983	7.7	1773 N1	7.8	1.154	184.9	LOS F	57.9	440.6	1.00	1.80	5.3
East: Heathcote Road (E)													
4	L2	29	57.1	29	57.1	1.447	487.1	LOS F	103.7	780.5	1.00	1.96	6.7
6	R2	952	5.9	952	5.9	1.447	487.0	LOS F	103.7	780.5	1.00	1.96	6.7
Approach		981	7.4	981	7.4	1.447	487.0	LOS F	103.7	780.5	1.00	1.96	6.7
North: Moorebank Avenue (N)													
7	L2	795	7.9	593	9.2	0.365	10.6	LOS A	11.6	87.9	0.53	0.71	51.4
8	T1	898	18.8	684	21.5	0.404	21.8	LOS B	13.6	116.3	0.67	0.59	12.9
Approach		1692	13.7	1277 N1	15.8	0.404	16.6	LOS B	13.6	116.3	0.61	0.64	40.2
All Vehicles		4656	9.8	4031 N1	11.3	1.447	205.1	LOS F	103.7	780.5	0.88	1.47	8.5

PHASING SUMMARY

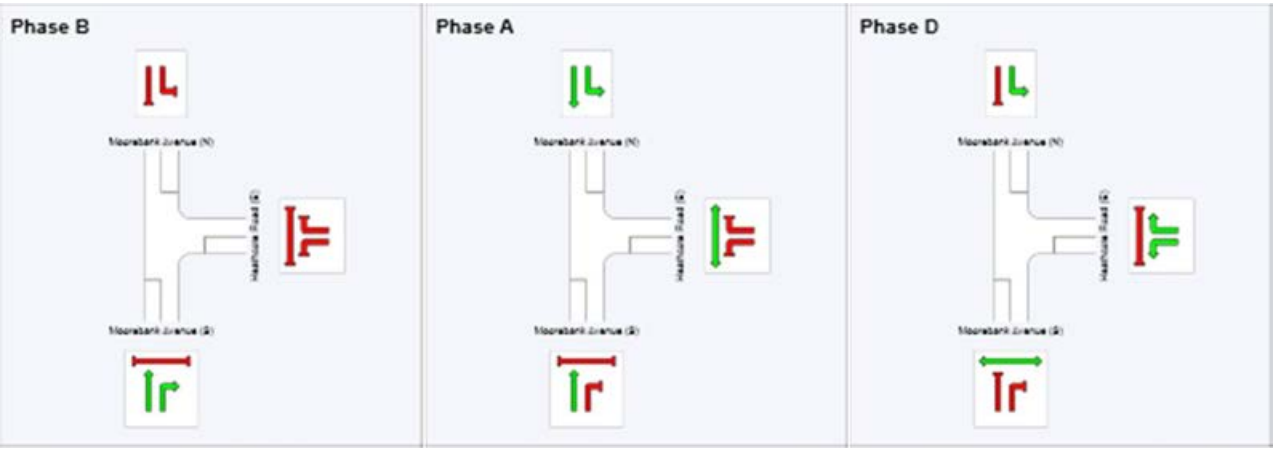
Site: I-07 2030 CUM C2 AM

Network: 2030 CUM C2 AM

Moorebank Avenue / Heathcote Road
2030 CUM C2 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	15	88
Green Time (sec)	9	67	39
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	73	45
Phase Split	11 %	55 %	34 %



PM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-07 2030 CUM C2 PM

Network: 2030 CUM C2 PM

Moorebank Avenue / Heathcote Road
2030 CUM C2 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
2	T1	1295	9.8	1295	9.8	1.048	124.0	LOS F	57.1	440.6	1.00	1.58	7.4
3	R2	48	8.7	48	8.7	0.401	64.7	LOS E	2.8	20.9	1.00	0.74	32.2
Approach		1343	9.8	1343	9.8	1.048	121.8	LOS F	57.1	440.6	1.00	1.55	8.3
East: Heathcote Road (E)													
4	L2	76	19.4	76	19.4	1.486	494.3	LOS F	98.1	730.2	1.00	2.10	6.6
6	R2	812	5.2	812	5.2	1.486	493.3	LOS F	98.1	730.2	1.00	2.11	6.6
Approach		887	6.4	887	6.4	1.486	493.4	LOS F	98.1	730.2	1.00	2.11	6.6
North: Moorebank Avenue (N)													
7	L2	884	3.7	751	3.7	0.348	7.4	LOS A	4.9	35.6	0.23	0.61	53.8
8	T1	1502	7.2	1276	7.3	0.671	6.3	LOS A	11.7	88.8	0.35	0.32	29.3
Approach		2386	5.9	2028 N1	6.0	0.671	6.7	LOS A	11.7	88.8	0.31	0.43	48.4
All Vehicles		4616	7.1	4258 N1	7.7	1.486	144.4	LOS F	98.1	730.2	0.67	1.13	11.0

PHASING SUMMARY

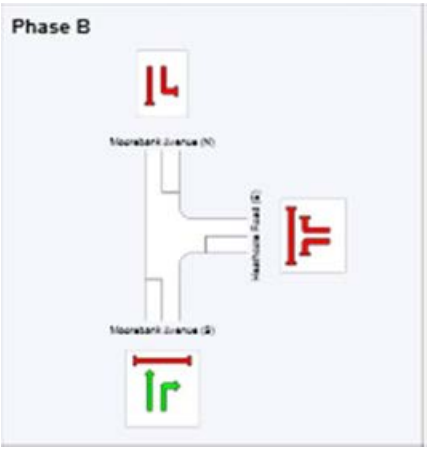
Site: I-07 2030 CUM C2 PM

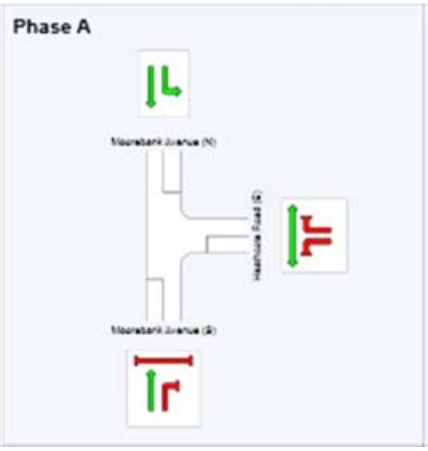
Network: 2030 CUM C2 PM

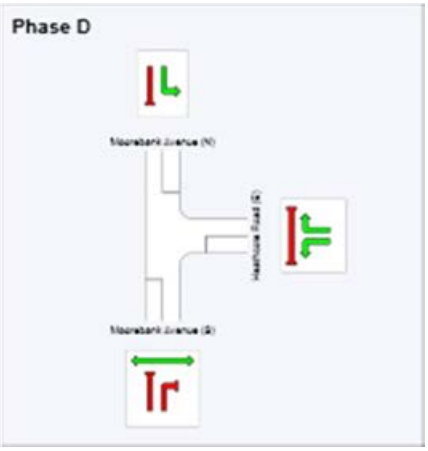
Moorebank Avenue / Heathcote Road
2030 CUM C2 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	14	80
Green Time (sec)	8	60	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	66	36
Phase Split	12 %	57 %	31 %







AM Peak – Cumulative Scenario C2 with Upgrade

MOVEMENT SUMMARY

Site: I-07 2030 CUM C2 AM - Upgrade Option

Network: 2030 CUM C2 AM - Upgrade Option

Moorebank Avenue / Heathcote Road
2030 CUM C2 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
2	T1	1960	7.6	1829	7.6	1.234	255.6	LOS F	57.9	440.6	1.00	2.09	3.9
3	R2	23	18.2	22	18.3	0.195	71.9	LOS F	1.4	11.3	0.98	0.71	30.6
Approach		1983	7.7	1851 N1	7.8	1.234	253.5	LOS F	57.9	440.6	1.00	2.07	4.0
East: Heathcote Road (E)													
4	L2	29	57.1	29	57.1	1.300	385.0	LOS F	62.1	472.5	1.00	1.71	8.3
6	R2	952	5.9	952	5.9	1.300	371.6	LOS F	62.1	472.5	1.00	1.74	8.5
Approach		981	7.4	981	7.4	1.300	372.0	LOS F	62.1	472.5	1.00	1.73	8.5
North: Moorebank Avenue (N)													
7	L2	795	7.9	664	8.2	0.412	10.8	LOS A	13.7	102.3	0.55	0.71	51.4
8	T1	898	18.8	753	19.4	0.439	22.3	LOS B	15.4	128.5	0.68	0.60	13.0
Approach		1692	13.7	1417 N1	14.2	0.439	16.9	LOS B	15.4	128.5	0.62	0.65	40.1
All Vehicles		4656	9.8	4249 N1	10.8	1.300	201.9	LOS F	62.1	472.5	0.87	1.52	8.6

PHASING SUMMARY

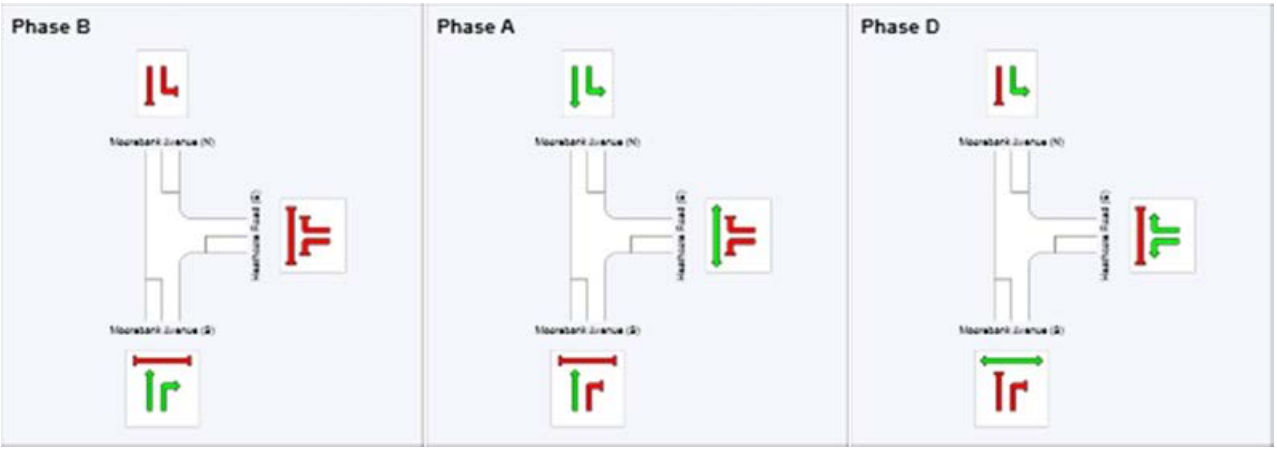
Site: I-07 2030 CUM C2 AM - Upgrade Option

Network: 2030 CUM C2 AM - Upgrade Option

Moorebank Avenue / Heathcote Road
2030 CUM C2 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	15	88
Green Time (sec)	9	67	39
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	73	45
Phase Split	11 %	55 %	34 %



PM Peak – Cumulative Scenario C2 with Upgrade

MOVEMENT SUMMARY

Site: I-07 2030 CUM C2 PM - Upgrade Option

Network: 2030 CUM C2 PM - Upgrade Option

Moorebank Avenue / Heathcote Road
2030 CUM C2 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
2	T1	1295	9.8	1295	9.8	0.963	66.5	LOS E	57.1	440.6	0.98	1.24	12.6
3	R2	48	8.7	48	8.7	0.401	64.7	LOS E	2.8	20.9	1.00	0.74	32.3
Approach		1343	9.8	1343	9.8	0.963	66.4	LOS E	57.1	440.6	0.98	1.22	13.7
East: Heathcote Road (E)													
4	L2	76	19.4	76	19.4	1.279	325.4	LOS F	48.4	363.4	1.00	1.72	9.5
6	R2	812	5.2	812	5.2	1.279	315.0	LOS F	48.4	363.4	1.00	1.74	9.8
Approach		887	6.4	887	6.4	1.279	315.9	LOS F	48.4	363.4	1.00	1.74	9.8
North: Moorebank Avenue (N)													
7	L2	884	3.7	773	3.9	0.370	7.5	LOS A	5.2	37.5	0.24	0.61	53.8
8	T1	1502	7.2	1318	7.7	0.696	6.4	LOS A	12.7	97.3	0.37	0.34	29.4
Approach		2386	5.9	2092 N1	6.3	0.696	6.8	LOS A	12.7	97.3	0.32	0.44	48.3
All Vehicles		4616	7.1	4322 N1	7.6	1.279	88.8	LOS F	57.1	440.6	0.67	0.95	16.1

PHASING SUMMARY

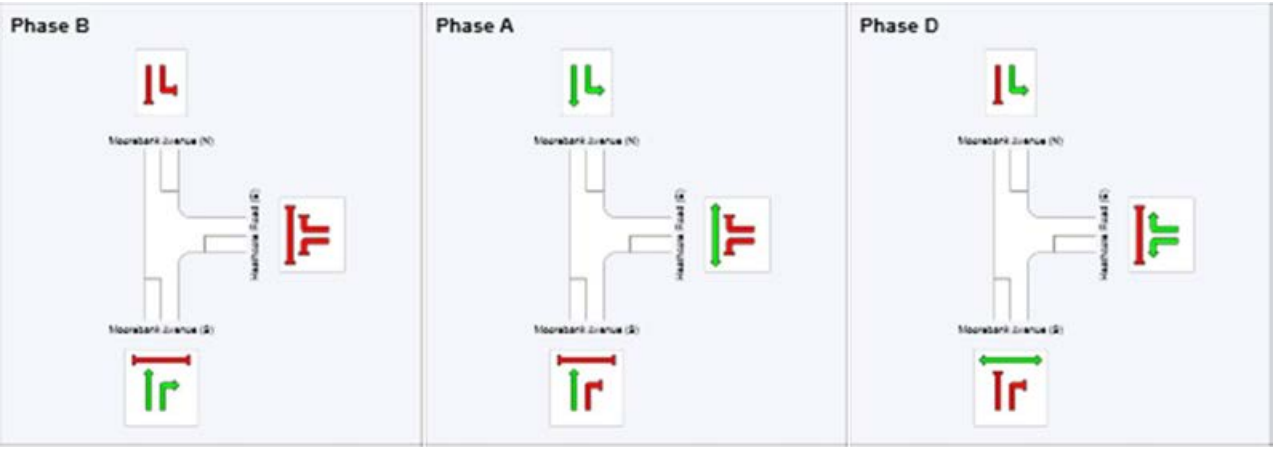
Site: I-07 2030 CUM C2 PM - Upgrade Option

Network: 2030 CUM C2 PM - Upgrade Option

Moorebank Avenue / Heathcote Road
2030 CUM C2 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	B	A	D
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	14	80
Green Time (sec)	8	60	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	66	36
Phase Split	12 %	57 %	31 %



I-08 Intersection of Moorebank Avenue and Industry Park Access

AM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-08 2030 CUM A AM

Network: 2030 CUM A AM

Moorebank Avenue / Industry Park Access
2030 CUM A AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	91	4.2	91	4.2	0.057	6.1	LOS A	0.4	2.7	0.12	0.58	43.1
2	T1	1954	7.6	1954	7.6	1.292	325.5	LOS F	179.6	1374.8	1.00	2.33	5.0
Approach		2046	7.5	2046	7.5	1.292	311.3	LOS F	179.6	1374.8	0.96	2.26	5.3
North: Moorebank Avenue (N)													
8	T1	803	19.3	612	21.9	0.222	2.6	LOS A	4.1	35.2	0.23	0.20	56.8
9	R2	65	38.7	51	42.1	0.971	98.9	LOS F	4.1	38.7	1.00	1.00	13.2
Approach		868	20.8	663 N1	23.4	0.971	10.0	LOS A	4.1	38.7	0.29	0.26	48.3
West: Industry Park Access (W)													
10	L2	34	62.5	34	62.5	0.415	64.9	LOS E	2.3	24.3	0.95	0.73	9.6
12	R2	59	73.1	59	73.1	0.423	68.1	LOS E	2.8	32.3	0.98	0.74	19.8
Approach		92	69.3	92	69.3	0.423	67.0	LOS E	2.8	32.3	0.97	0.73	16.8
All Vehicles		3006	13.2	2801 N1	14.2	1.292	231.9	LOS F	179.6	1374.8	0.80	1.73	7.6

PHASING SUMMARY

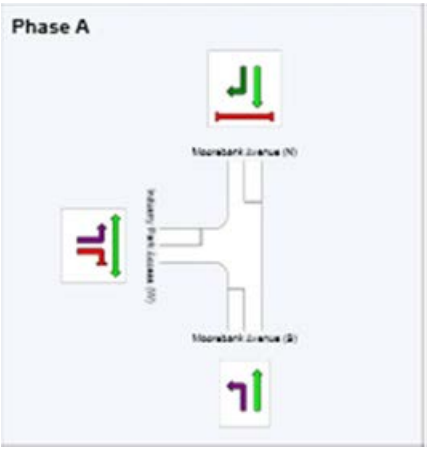
Site: I-08 2030 CUM A AM

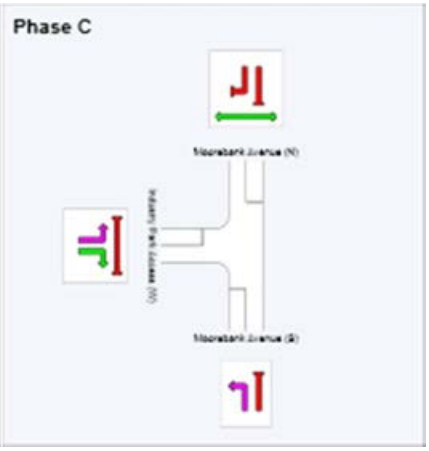
Network: 2030 CUM A AM

Moorebank Avenue / Industry Park Access
2030 CUM A AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	116
Green Time (sec)	110	11
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	116	17
Phase Split	87 %	13 %





PM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-08 2030 CUM A PM

Network: 2030 CUM A PM

Moorebank Avenue / Industry Park Access
2030 CUM A PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	12	37.5	12	37.5	0.011	6.9	LOS A	0.1	0.7	0.16	0.56	42.8
2	T1	1239	10.2	1239	10.2	0.704	6.4	LOS A	18.8	146.5	0.52	0.49	49.3
Approach		1250	10.5	1250	10.5	0.704	6.4	LOS A	18.8	146.5	0.52	0.49	49.2
North: Moorebank Avenue (N)													
8	T1	1589	7.6	1323	7.6	0.461	4.4	LOS A	12.4	94.6	0.37	0.33	54.7
9	R2	25	62.5	21	62.2	0.196	23.3	LOS B	0.7	7.3	0.56	0.69	28.4
Approach		1615	8.5	1344 N1	8.4	0.461	4.7	LOS A	12.4	94.6	0.37	0.34	54.2
West: Industry Park Access (W)													
10	L2	34	15.6	34	15.6	0.159	9.5	LOS A	0.8	6.1	0.45	0.49	22.8
12	R2	191	10.7	191	10.7	0.498	56.2	LOS D	5.3	41.0	0.98	0.78	22.4
Approach		225	11.5	225	11.5	0.498	49.2	LOS D	5.3	41.0	0.90	0.74	22.4
All Vehicles		3090	9.5	2819 N1	10.4	0.704	9.0	LOS A	18.8	146.5	0.48	0.44	47.1

PHASING SUMMARY

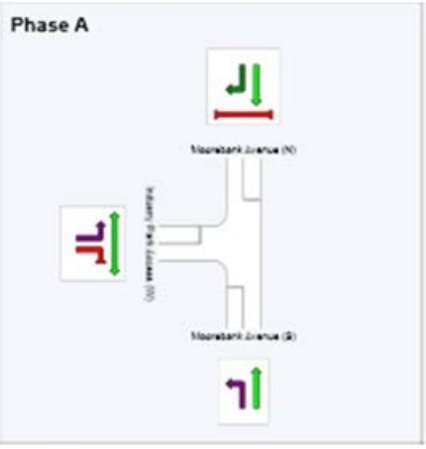
Site: I-08 2030 CUM A PM

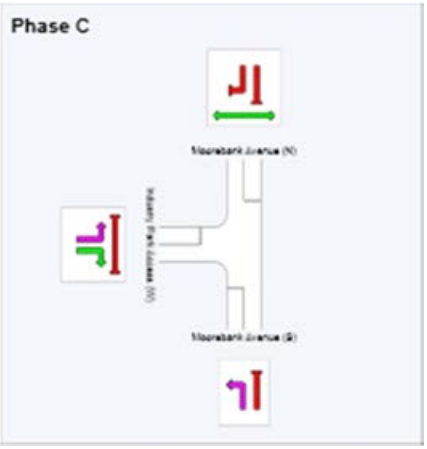
Network: 2030 CUM A PM

Moorebank Avenue / Industry Park Access
2030 CUM A PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	97
Green Time (sec)	91	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	97	19
Phase Split	84 %	16 %





AM Peak – Cumulative Scenario A with Upgrade

MOVEMENT SUMMARY

Site: I-08 2030 CUM A AM - Upgrade Option

Network: 2030 CUM A AM - Upgrade Option

Moorebank Avenue / Industry Park Access
2030 CUM A AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	91	4.2	91	4.2	0.057	6.2	LOS A	0.4	3.0	0.12	0.58	43.1
2	T1	1954	7.6	1954	7.6	1.236	273.7	LOS F	167.3	1280.3	1.00	2.16	5.9
Approach		2046	7.5	2046	7.5	1.236	261.8	LOS F	167.3	1280.3	0.96	2.09	6.2
North: Moorebank Avenue (N)													
8	T1	803	19.3	664	21.0	0.228	1.6	LOS A	3.5	30.1	0.18	0.16	58.0
9	R2	65	38.7	55	41.0	1.041	135.6	LOS F	5.2	49.4	1.00	1.09	10.5
Approach		868	20.8	719 N1	22.6	1.041	11.8	LOS A	5.2	49.4	0.24	0.23	46.8
West: Industry Park Access (W)													
10	L2	34	62.5	34	62.5	0.591	71.7	LOS F	2.4	25.5	1.00	0.82	8.9
12	R2	59	73.1	59	73.1	0.776	79.0	LOS F	3.1	36.1	1.00	0.91	18.3
Approach		92	69.3	92	69.3	0.776	76.4	LOS F	3.1	36.1	1.00	0.88	15.6
All Vehicles		3006	13.2	2857 N1	13.9	1.236	192.9	LOS F	167.3	1280.3	0.78	1.58	9.0

PHASING SUMMARY

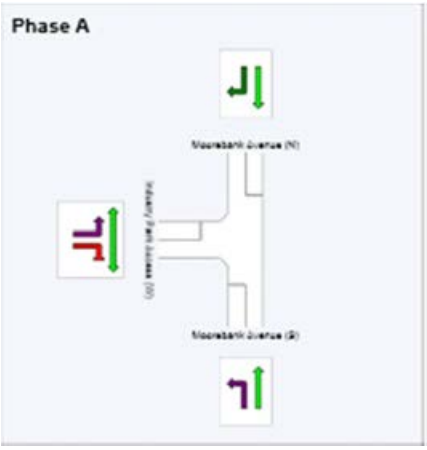
Site: I-08 2030 CUM A AM - Upgrade Option

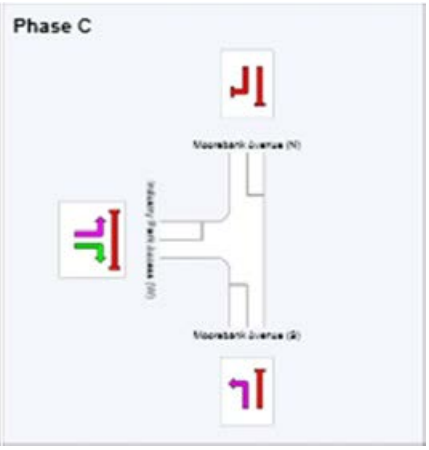
Network: 2030 CUM A AM - Upgrade Option

Moorebank Avenue / Industry Park Access
2030 CUM A AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	121
Green Time (sec)	115	6
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	121	12
Phase Split	91 %	9 %





PM Peak – Cumulative Scenario A with Upgrade

MOVEMENT SUMMARY

Site: I-08 2030 CUM A PM

Network: 2030 CUM A PM - Upgrade Option

Moorebank Avenue / Industry Park Access
2030 CUM A PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	12	37.5	12	37.5	0.011	6.9	LOS A	0.1	0.7	0.16	0.57	42.8
2	T1	1239	10.2	1239	10.2	0.574	5.2	LOS A	15.3	119.3	0.43	0.39	51.1
Approach		1250	10.5	1250	10.5	0.574	5.2	LOS A	15.3	119.3	0.42	0.39	50.9
North: Moorebank Avenue (N)													
8	T1	1589	7.6	1373	8.2	0.481	4.6	LOS A	13.2	101.6	0.38	0.34	54.6
9	R2	25	62.5	23	63.9	0.198	17.9	LOS B	0.6	6.6	0.46	0.67	30.9
Approach		1615	8.5	1395 N1	9.1	0.481	4.8	LOS A	13.2	101.6	0.38	0.35	54.1
West: Industry Park Access (W)													
10	L2	34	15.6	34	15.6	0.123	5.5	LOS A	0.5	4.2	0.33	0.42	25.3
12	R2	191	10.7	191	10.7	0.498	56.2	LOS D	5.3	41.0	0.98	0.78	22.4
Approach		225	11.5	225	11.5	0.498	48.6	LOS D	5.3	41.0	0.89	0.72	22.5
All Vehicles		3090	9.5	2870 N1	10.2	0.574	8.4	LOS A	15.3	119.3	0.44	0.40	47.7

PHASING SUMMARY

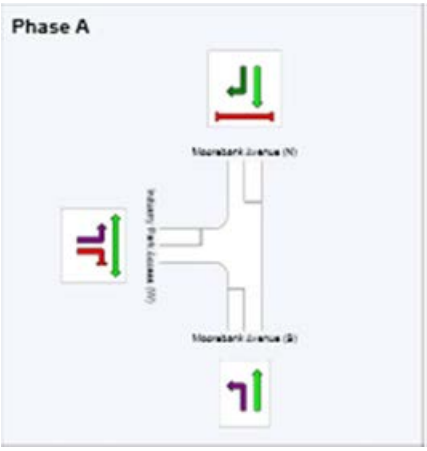
Site: I-08 2030 CUM A PM

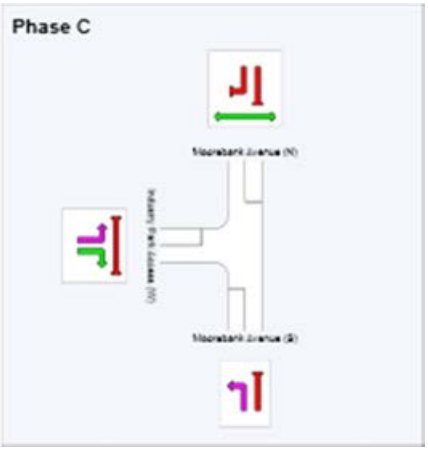
Network: 2030 CUM A PM - Upgrade Option

Moorebank Avenue / Industry Park Access
2030 CUM A PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	97
Green Time (sec)	91	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	97	19
Phase Split	84 %	16 %





AM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-08 2030 CUM B AM

Network: 2030 CUM B AM

Moorebank Avenue / Industry Park Access
2030 CUM B AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	91	3.5	91	3.5	0.056	6.1	LOS A	0.4	2.6	0.12	0.58	43.1
2	T1	1933	6.6	1933	6.6	1.260	296.2	LOS F	170.2	1275.5	1.00	2.23	5.5
Approach		2023	6.5	2023	6.5	1.260	283.2	LOS F	170.2	1275.5	0.96	2.16	5.8
North: Moorebank Avenue (N)													
8	T1	855	17.0	640	19.4	0.227	2.6	LOS A	4.3	35.9	0.23	0.20	56.8
9	R2	65	38.7	50	42.3	0.960	96.1	LOS F	4.0	37.7	1.00	0.99	13.5
Approach		920	18.5	691 N1	21.1	0.960	9.4	LOS A	4.3	37.7	0.28	0.26	48.9
West: Industry Park Access (W)													
10	L2	34	62.5	34	62.5	0.415	64.9	LOS E	2.3	24.3	0.95	0.73	9.6
12	R2	58	72.7	58	72.7	0.413	68.0	LOS E	2.7	31.4	0.98	0.73	19.8
Approach		92	69.0	92	69.0	0.415	66.9	LOS E	2.7	31.4	0.97	0.73	16.8
All Vehicles		3035	12.0	2805 N1	13.0	1.260	208.7	LOS F	170.2	1275.5	0.79	1.64	8.4

PHASING SUMMARY

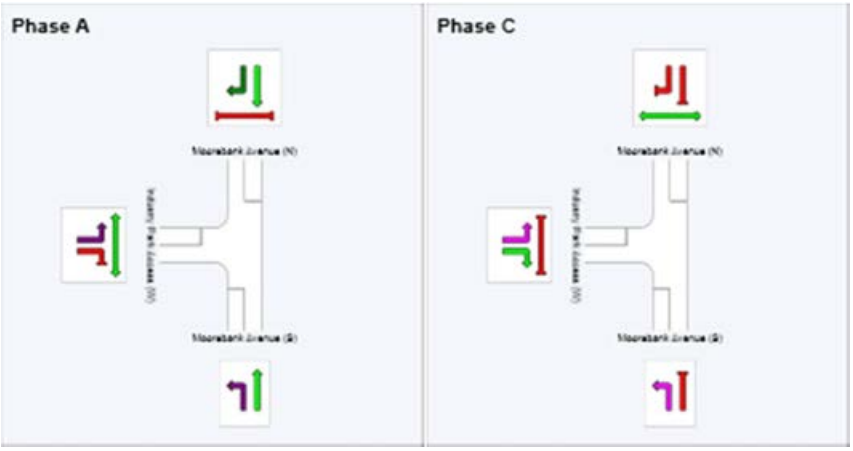
Site: I-08 2030 CUM B AM

Network: 2030 CUM B AM

Moorebank Avenue / Industry Park Access
2030 CUM B AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	116
Green Time (sec)	110	11
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	116	17
Phase Split	87 %	13 %



PM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-08 2030 CUM B PM

Network: 2030 CUM B PM

Moorebank Avenue / Industry Park Access
2030 CUM B PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	11	30.0	11	30.0	0.009	6.8	LOS A	0.1	0.6	0.16	0.57	42.8
2	T1	1274	8.6	1274	8.6	0.793	9.9	LOS A	23.3	177.2	0.62	0.60	45.1
Approach		1284	8.8	1284	8.8	0.793	9.8	LOS A	23.3	177.2	0.62	0.60	45.1
North: Moorebank Avenue (N)													
8	T1	1565	6.2	1339	6.2	0.459	4.4	LOS A	12.5	93.3	0.37	0.33	54.7
9	R2	25	62.5	21	62.2	0.222	30.8	LOS C	0.8	9.0	0.66	0.72	25.5
Approach		1591	7.1	1360 N1	7.0	0.459	4.8	LOS A	12.5	93.3	0.37	0.34	54.1
West: Industry Park Access (W)													
10	L2	34	15.6	34	15.6	0.185	15.3	LOS B	1.0	8.2	0.57	0.56	19.9
12	R2	189	10.0	189	10.0	0.490	56.1	LOS D	5.2	40.1	0.98	0.78	22.4
Approach		223	10.8	223	10.8	0.490	50.0	LOS D	5.2	40.1	0.92	0.74	22.3
All Vehicles		3098	8.1	2868 N1	8.7	0.793	10.6	LOS A	23.3	177.2	0.52	0.49	45.6

PHASING SUMMARY

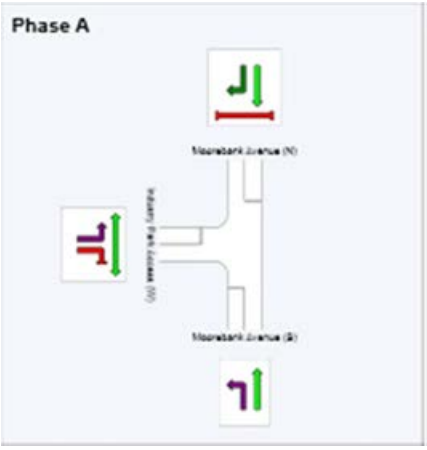
Site: I-08 2030 CUM B PM

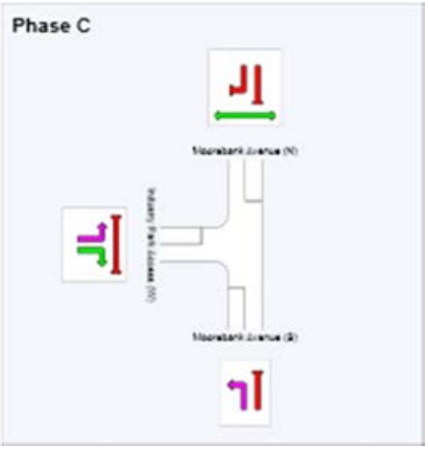
Network: 2030 CUM B PM

Moorebank Avenue / Industry Park Access
2030 CUM B PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	97
Green Time (sec)	91	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	97	19
Phase Split	84 %	16 %





AM Peak – Cumulative Scenario B with Upgrade

MOVEMENT SUMMARY

Site: I-08 2030 CUM B AM - Upgrade Option

Network: 2030 CUM B AM - Upgrade Option

Moorebank Avenue / Industry Park Access
2030 CUM B AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	91	3.5	91	3.5	0.056	6.1	LOS A	0.4	3.0	0.12	0.58	43.1
2	T1	1933	6.6	1933	6.6	1.205	245.9	LOS F	157.8	1182.4	1.00	2.05	6.5
Approach		2023	6.5	2023	6.5	1.205	235.2	LOS F	157.8	1182.4	0.96	1.99	6.9
North: Moorebank Avenue (N)													
8	T1	855	17.0	717	17.5	0.240	1.6	LOS A	3.9	31.7	0.18	0.16	58.0
9	R2	65	38.7	55	39.4	1.040	134.9	LOS F	5.2	48.9	1.00	1.08	10.5
Approach		920	18.5	772 N1	19.0	1.040	11.1	LOS A	5.2	48.9	0.24	0.23	47.4
West: Industry Park Access (W)													
10	L2	34	62.5	34	62.5	0.591	71.7	LOS F	2.4	25.5	1.00	0.82	8.9
12	R2	58	72.7	58	72.7	0.757	78.6	LOS F	3.0	35.0	1.00	0.89	18.4
Approach		92	69.0	92	69.0	0.757	76.1	LOS F	3.0	35.0	1.00	0.87	15.6
All Vehicles		3035	12.0	2887 N1	12.6	1.205	170.2	LOS F	157.8	1182.4	0.77	1.48	10.0

PHASING SUMMARY

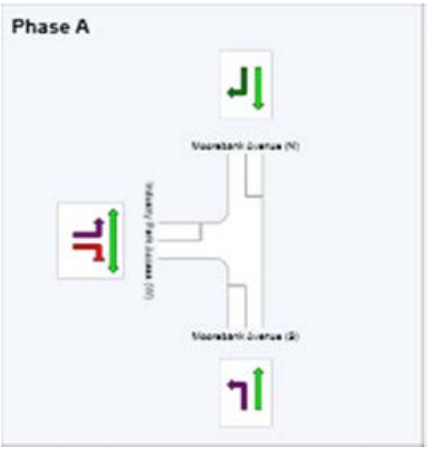
Site: I-08 2030 CUM B AM - Upgrade Option

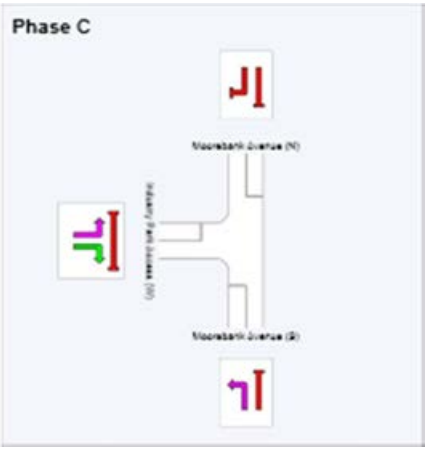
Network: 2030 CUM B AM - Upgrade Option

Moorebank Avenue / Industry Park Access
2030 CUM B AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	121
Green Time (sec)	115	6
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	121	12
Phase Split	91 %	9 %





PM Peak – Cumulative Scenario B with Upgrade

MOVEMENT SUMMARY

Site: I-08 2030 CUM B PM

Network: 2030 CUM B PM - Upgrade Option

Moorebank Avenue / Industry Park Access
2030 CUM B PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	11	30.0	11	30.0	0.009	6.8	LOS A	0.1	0.6	0.16	0.57	42.8
2	T1	1274	8.6	1274	8.6	0.629	5.7	LOS A	17.3	131.5	0.46	0.43	50.4
Approach		1284	8.8	1284	8.8	0.629	5.7	LOS A	17.3	131.5	0.46	0.43	50.3
North: Moorebank Avenue (N)													
8	T1	1565	6.2	1385	6.5	0.476	4.5	LOS A	13.2	99.0	0.37	0.34	54.6
9	R2	25	62.5	23	63.5	0.212	20.1	LOS B	0.7	7.3	0.51	0.68	29.8
Approach		1591	7.1	1408 N1	7.4	0.476	4.8	LOS A	13.2	99.0	0.38	0.35	54.1
West: Industry Park Access (W)													
10	L2	34	15.6	34	15.6	0.139	7.0	LOS A	0.6	5.0	0.38	0.45	24.4
12	R2	189	10.0	189	10.0	0.490	56.1	LOS D	5.2	40.1	0.98	0.78	22.4
Approach		223	10.8	223	10.8	0.490	48.7	LOS D	5.2	40.1	0.89	0.73	22.5
All Vehicles		3098	8.1	2915 N1	8.6	0.629	8.5	LOS A	17.3	131.5	0.45	0.41	47.6

PHASING SUMMARY

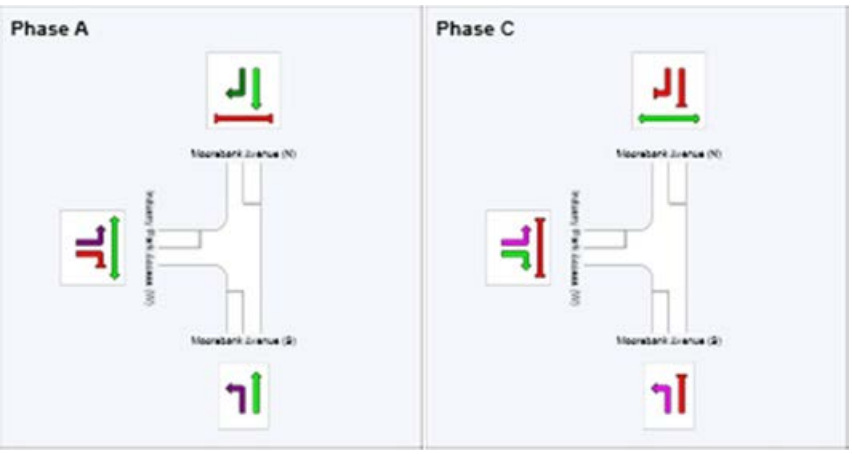
Site: I-08 2030 CUM B PM

Network: 2030 CUM B PM - Upgrade Option

Moorebank Avenue / Industry Park Access
2030 CUM B PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	97
Green Time (sec)	91	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	97	19
Phase Split	84 %	16 %



AM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-08 2020 CUM C1 AM

Network: 2020 CUM C1 AM

Moorebank Avenue / Industry Park Access
2020 CUM C1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	82	3.7	82	3.7	0.050	6.1	LOS A	0.3	2.4	0.12	0.58	43.1
2	T1	1748	7.6	1748	7.6	1.163	212.2	LOS F	135.0	1017.5	1.00	1.91	7.4
Approach		1830	7.4	1830	7.4	1.163	203.0	LOS F	135.0	1017.5	0.96	1.85	7.8
North: Moorebank Avenue (N)													
8	T1	656	18.4	599	19.0	0.211	2.5	LOS A	4.0	32.8	0.22	0.20	56.9
9	R2	54	39.2	49	40.1	0.935	92.0	LOS F	3.8	35.5	1.00	0.96	13.9
Approach		709	19.9	648 N1	20.6	0.935	9.3	LOS A	4.0	35.5	0.28	0.26	48.9
West: Industry Park Access (W)													
10	L2	20	63.2	20	63.2	0.247	63.2	LOS E	1.3	14.2	0.94	0.67	9.8
12	R2	51	72.9	51	72.9	0.360	67.7	LOS E	2.4	27.2	0.98	0.73	19.9
Approach		71	70.2	71	70.2	0.360	66.4	LOS E	2.4	27.2	0.97	0.71	17.7
All Vehicles		2610	12.5	2549 N1	12.8	1.163	149.9	LOS F	135.0	1017.5	0.79	1.41	11.1

PHASING SUMMARY

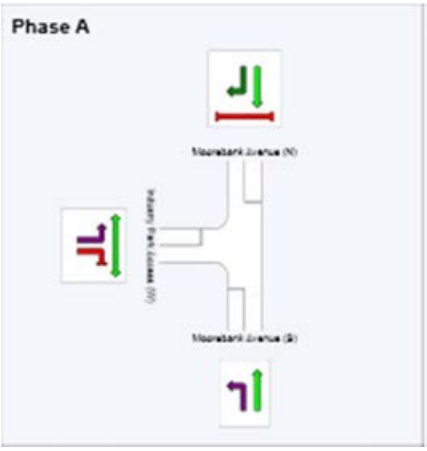
Site: I-08 2020 CUM C1 AM

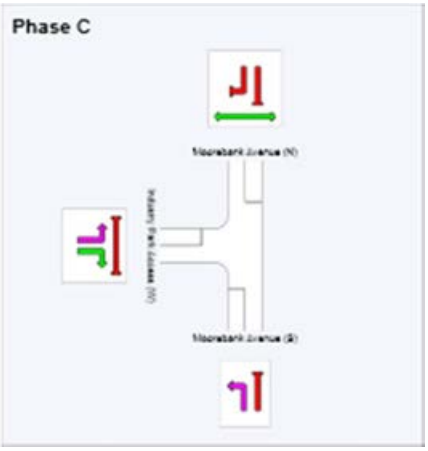
Network: 2020 CUM C1 AM

Moorebank Avenue / Industry Park Access
2020 CUM C1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	116
Green Time (sec)	110	11
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	116	17
Phase Split	87 %	13 %





PM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-08 2020 CUM C1 PM

Network: 2020 CUM C1 PM

Moorebank Avenue / Industry Park Access
2020 CUM C1 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	10	33.8	10	33.8	0.009	6.5	LOS A	0.0	0.4	0.13	0.56	43.0
2	T1	1084	9.5	1084	9.5	0.379	4.0	LOS A	9.2	70.3	0.33	0.30	52.8
Approach		1094	9.7	1094	9.7	0.379	4.1	LOS A	9.2	70.3	0.33	0.30	52.7
North: Moorebank Avenue (N)													
8	T1	1356	6.5	1334	6.6	0.458	4.4	LOS A	12.4	92.9	0.36	0.33	54.7
9	R2	22	61.9	22	61.9	0.130	12.9	LOS A	0.4	4.6	0.35	0.64	33.8
Approach		1378	7.4	1356 N1	7.5	0.458	4.6	LOS A	12.4	92.9	0.36	0.34	54.4
West: Industry Park Access (W)													
10	L2	29	14.3	29	14.3	0.057	2.9	LOS A	0.2	2.0	0.21	0.35	27.3
12	R2	169	10.1	169	10.1	0.436	55.7	LOS D	4.6	35.4	0.98	0.77	22.5
Approach		198	10.7	198	10.7	0.436	47.9	LOS D	4.6	35.4	0.86	0.71	22.7
All Vehicles		2670	8.6	2648 N1	8.7	0.458	7.6	LOS A	12.4	92.9	0.39	0.35	48.7

PHASING SUMMARY

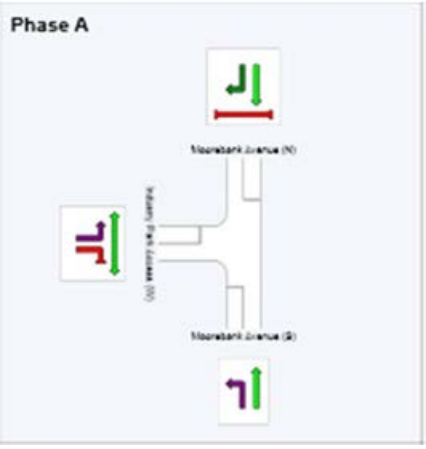
Site: I-08 2020 CUM C1 PM

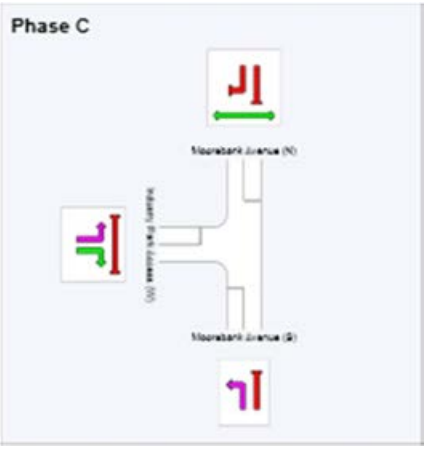
Network: 2020 CUM C1 PM

Moorebank Avenue / Industry Park Access
2020 CUM C1 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	97
Green Time (sec)	91	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	97	19
Phase Split	84 %	16 %





AM Peak – Cumulative Scenario C1 with Upgrade

MOVEMENT SUMMARY

Site: I-08 2020 CUM C1 AM

Network: 2020 CUM C1 AM - Upgrade Option

Moorebank Avenue / Industry Park Access
2020 CUM C1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	82	3.7	82	3.7	0.050	6.1	LOS A	0.3	2.4	0.12	0.58	43.1
2	T1	1748	7.6	1748	7.6	1.163	212.2	LOS F	135.0	1017.5	1.00	1.91	7.4
Approach		1830	7.4	1830	7.4	1.163	203.0	LOS F	135.0	1017.5	0.96	1.85	7.8
North: Moorebank Avenue (N)													
8	T1	656	18.4	607	19.0	0.214	2.5	LOS A	4.0	33.3	0.23	0.20	56.9
9	R2	54	39.2	50	40.2	0.948	93.9	LOS F	3.9	36.5	1.00	0.97	13.7
Approach		709	19.9	657 N1	20.6	0.948	9.5	LOS A	4.0	36.5	0.28	0.26	48.7
West: Industry Park Access (W)													
10	L2	20	63.2	20	63.2	0.247	63.2	LOS E	1.3	14.2	0.94	0.67	9.8
12	R2	51	72.9	51	72.9	0.360	67.7	LOS E	2.4	27.2	0.98	0.73	19.9
Approach		71	70.2	71	70.2	0.360	66.4	LOS E	2.4	27.2	0.97	0.71	17.7
All Vehicles		2610	12.5	2558 N1	12.7	1.163	149.5	LOS F	135.0	1017.5	0.79	1.41	11.1

PHASING SUMMARY

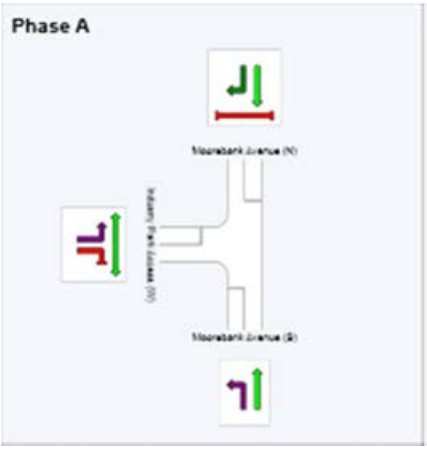
Site: I-08 2020 CUM C1 AM

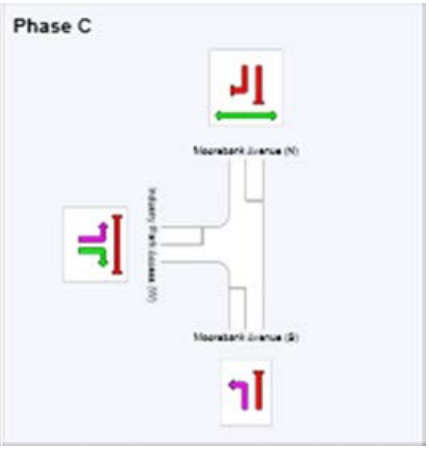
Network: 2020 CUM C1 AM - Upgrade Option

Moorebank Avenue / Industry Park Access
2020 CUM C1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	116
Green Time (sec)	110	11
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	116	17
Phase Split	87 %	13 %





PM Peak – Cumulative Scenario C1 with Upgrade

MOVEMENT SUMMARY

Site: I-08 2020 CUM C1 PM

Network: 2020 CUM C1 PM - Upgrade Option

Moorebank Avenue / Industry Park Access
2020 CUM C1 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	10	33.8	10	33.8	0.009	6.5	LOS A	0.0	0.4	0.13	0.56	43.0
2	T1	1084	9.5	1084	9.5	0.379	4.0	LOS A	9.2	70.3	0.33	0.30	52.8
Approach		1094	9.7	1094	9.7	0.379	4.1	LOS A	9.2	70.3	0.33	0.30	52.7
North: Moorebank Avenue (N)													
8	T1	1356	6.5	1283	6.8	0.441	4.3	LOS A	11.7	87.7	0.36	0.33	54.8
9	R2	22	61.9	21	62.7	0.128	12.9	LOS A	0.4	4.5	0.35	0.64	33.8
Approach		1378	7.4	1304 N1	7.7	0.441	4.5	LOS A	11.7	87.7	0.36	0.33	54.5
West: Industry Park Access (W)													
10	L2	29	14.3	29	14.3	0.057	2.9	LOS A	0.2	2.0	0.21	0.35	27.3
12	R2	169	10.1	169	10.1	0.436	55.7	LOS D	4.6	35.4	0.98	0.77	22.5
Approach		198	10.7	198	10.7	0.436	47.9	LOS D	4.6	35.4	0.86	0.71	22.7
All Vehicles		2670	8.6	2596 N1	8.8	0.441	7.6	LOS A	11.7	87.7	0.38	0.35	48.6

PHASING SUMMARY

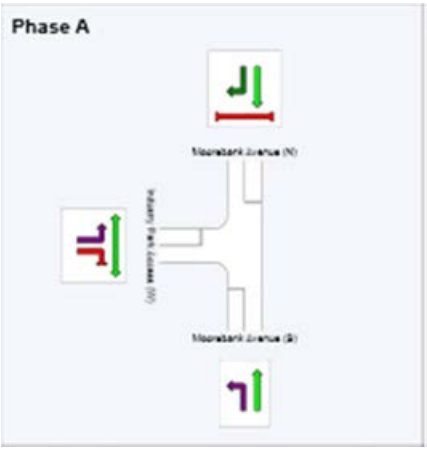
Site: I-08 2020 CUM C1 PM

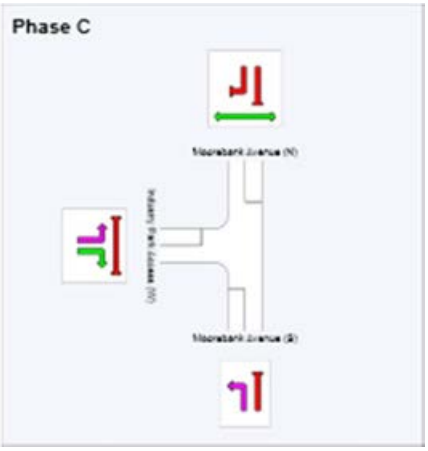
Network: 2020 CUM C1 PM - Upgrade Option

Moorebank Avenue / Industry Park Access
2020 CUM C1 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	97
Green Time (sec)	91	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	97	19
Phase Split	84 %	16 %





AM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-08 2030 CUM C2 AM

Network: 2030 CUM C2 AM

Moorebank Avenue / Industry Park Access
2030 CUM C2 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	91	3.6	91	3.6	0.056	6.1	LOS A	0.4	2.6	0.12	0.58	43.1
2	T1	1941	7.0	1941	7.0	1.274	309.0	LOS F	174.2	1319.4	1.00	2.28	5.3
Approach		2032	6.8	2032	6.8	1.274	295.4	LOS F	174.2	1319.4	0.96	2.20	5.6
North: Moorebank Avenue (N)													
8	T1	809	18.4	616	20.8	0.221	2.5	LOS A	4.1	35.1	0.23	0.20	56.8
9	R2	65	38.7	51	42.1	0.969	98.5	LOS F	4.1	38.6	1.00	1.00	13.2
Approach		874	19.9	667 N1	22.5	0.969	9.9	LOS A	4.1	38.6	0.29	0.26	48.4
West: Industry Park Access (W)													
10	L2	34	62.5	34	62.5	0.415	64.9	LOS E	2.3	24.3	0.95	0.73	9.6
12	R2	58	72.9	58	72.9	0.416	68.1	LOS E	2.7	31.7	0.98	0.73	19.8
Approach		92	69.1	92	69.1	0.416	66.9	LOS E	2.7	31.7	0.97	0.73	16.8
All Vehicles		2998	12.6	2790 N1	13.5	1.274	219.7	LOS F	174.2	1319.4	0.80	1.69	8.0

PHASING SUMMARY

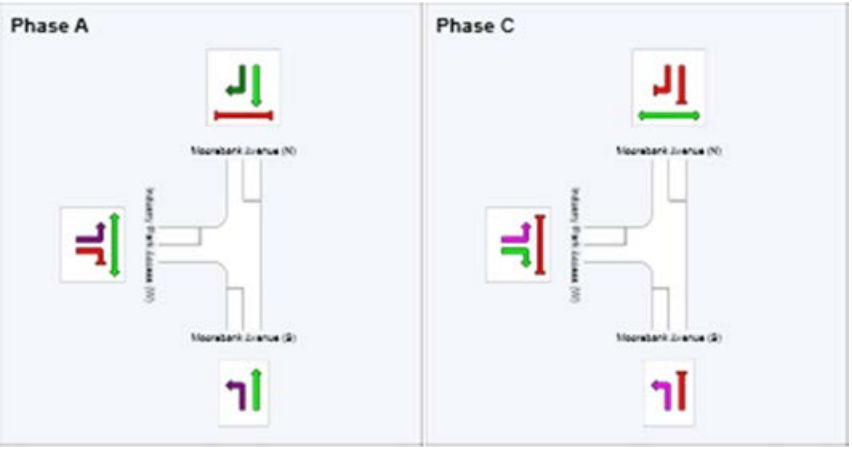
Site: I-08 2030 CUM C2 AM

Network: 2030 CUM C2 AM

Moorebank Avenue / Industry Park Access
2030 CUM C2 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	116
Green Time (sec)	110	11
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	116	17
Phase Split	87 %	13 %



PM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-08 2030 CUM C2 PM

Network: 2030 CUM C2 PM

Moorebank Avenue / Industry Park Access
2030 CUM C2 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	11	32.9	11	32.9	0.010	6.8	LOS A	0.1	0.6	0.16	0.57	42.8
2	T1	1264	9.2	1264	9.2	0.785	8.9	LOS A	22.3	171.3	0.61	0.58	46.2
Approach		1275	9.4	1275	9.4	0.785	8.8	LOS A	22.3	171.3	0.61	0.58	46.2
North: Moorebank Avenue (N)													
8	T1	1575	6.8	1331	6.8	0.460	4.4	LOS A	12.4	93.9	0.37	0.33	54.7
9	R2	25	62.5	21	62.2	0.218	30.0	LOS C	0.8	8.7	0.65	0.71	25.8
Approach		1601	7.7	1352 N1	7.6	0.460	4.8	LOS A	12.4	93.9	0.37	0.34	54.1
West: Industry Park Access (W)													
10	L2	34	15.6	34	15.6	0.183	14.7	LOS B	1.0	8.0	0.56	0.56	20.2
12	R2	190	10.3	190	10.3	0.494	56.2	LOS D	5.3	40.5	0.98	0.78	22.4
Approach		224	11.1	224	11.1	0.494	49.9	LOS D	5.3	40.5	0.92	0.74	22.3
All Vehicles		3100	8.6	2851 N1	9.4	0.785	10.2	LOS A	22.3	171.3	0.52	0.48	46.0

PHASING SUMMARY

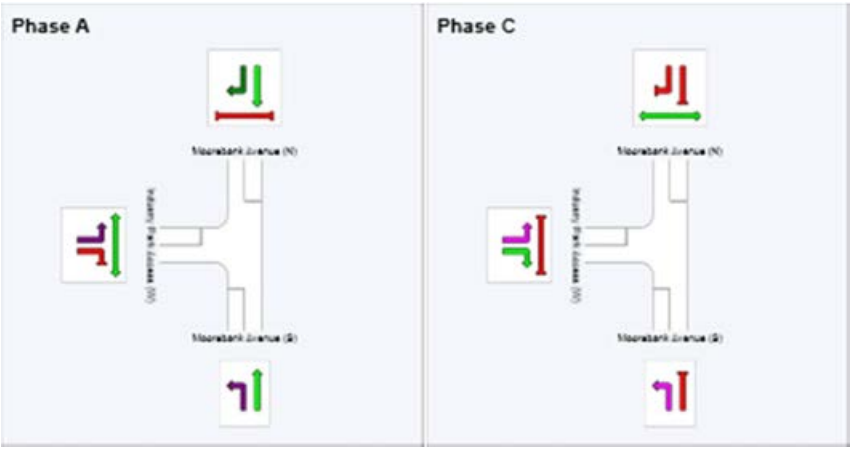
Site: I-08 2030 CUM C2 PM

Network: 2030 CUM C2 PM

Moorebank Avenue / Industry Park Access
2030 CUM C2 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	97
Green Time (sec)	91	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	97	19
Phase Split	84 %	16 %



AM Peak – Cumulative Scenario C2 with Upgrade

MOVEMENT SUMMARY

Site: I-08 2030 CUM C2 AM - Upgrade Option

Network: 2030 CUM C2 AM - Upgrade Option

Moorebank Avenue / Industry Park Access
2030 CUM C2 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)													
1	L2	91	3.6	91	3.6	0.056	6.2	LOS A	0.4	3.0	0.12	0.58	43.1
2	T1	1941	7.0	1941	7.0	1.218	258.0	LOS F	161.8	1225.6	1.00	2.10	6.2
Approach		2032	6.8	2032	6.8	1.218	246.8	LOS F	161.8	1225.6	0.96	2.03	6.6
North: Moorebank Avenue (N)													
8	T1	809	18.4	690	18.8	0.234	1.6	LOS A	3.7	30.9	0.18	0.16	58.0
9	R2	65	38.7	56	39.3	1.056	146.9	LOS F	5.6	52.2	1.00	1.10	9.8
Approach		874	19.9	746 N1	20.4	1.056	12.5	LOS A	5.6	52.2	0.24	0.23	46.2
West: Industry Park Access (W)													
10	L2	34	62.5	34	62.5	0.591	71.7	LOS F	2.4	25.5	1.00	0.82	8.9
12	R2	58	72.9	58	72.9	0.764	78.7	LOS F	3.1	35.4	1.00	0.90	18.3
Approach		92	69.1	92	69.1	0.764	76.2	LOS F	3.1	35.4	1.00	0.87	15.6
All Vehicles		2998	12.6	2870 N1	13.1	1.218	180.4	LOS F	161.8	1225.6	0.78	1.53	9.5

PHASING SUMMARY

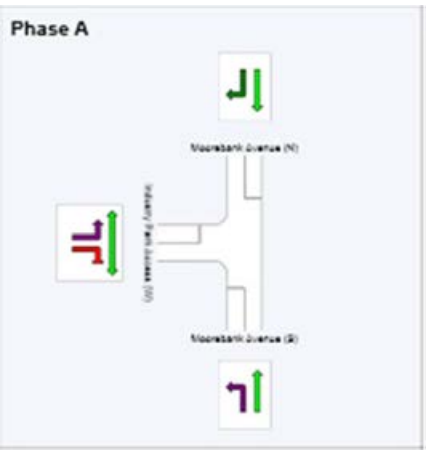
Site: I-08 2030 CUM C2 AM - Upgrade Option

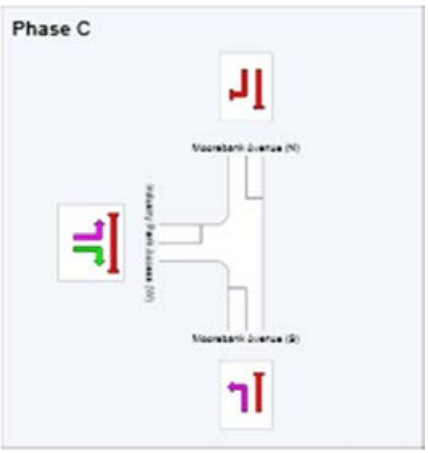
Network: 2030 CUM C2 AM - Upgrade Option

Moorebank Avenue / Industry Park Access
2030 CUM C2 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 133 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	121
Green Time (sec)	115	6
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	121	12
Phase Split	91 %	9 %





PM Peak – Cumulative Scenario C2 with Upgrade

MOVEMENT SUMMARY

Site: I-08 2030 CUM C2 PM

Network: 2030 CUM C2 PM - Upgrade Option

Moorebank Avenue / Industry Park Access
2030 CUM C2 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)													
1	L2	11	32.9	11	32.9	0.010	6.8	LOS A	0.1	0.6	0.16	0.57	42.8
2	T1	1264	9.2	1264	9.2	0.606	5.5	LOS A	16.5	127.1	0.45	0.41	50.7
Approach		1275	9.4	1275	9.4	0.606	5.5	LOS A	16.5	127.1	0.44	0.41	50.6
North: Moorebank Avenue (N)													
8	T1	1575	6.8	1382	7.2	0.479	4.5	LOS A	13.2	100.5	0.37	0.34	54.6
9	R2	25	62.5	23	63.6	0.207	19.0	LOS B	0.6	7.0	0.49	0.68	30.4
Approach		1601	7.7	1405 N1	8.1	0.479	4.8	LOS A	13.2	100.5	0.38	0.35	54.1
West: Industry Park Access (W)													
10	L2	34	15.6	34	15.6	0.133	6.3	LOS A	0.6	4.6	0.35	0.44	24.9
12	R2	190	10.3	190	10.3	0.494	56.2	LOS D	5.3	40.5	0.98	0.78	22.4
Approach		224	11.1	224	11.1	0.494	48.7	LOS D	5.3	40.5	0.89	0.73	22.5
All Vehicles		3100	8.6	2904 N1	9.2	0.606	8.5	LOS A	16.5	127.1	0.45	0.41	47.7

PHASING SUMMARY

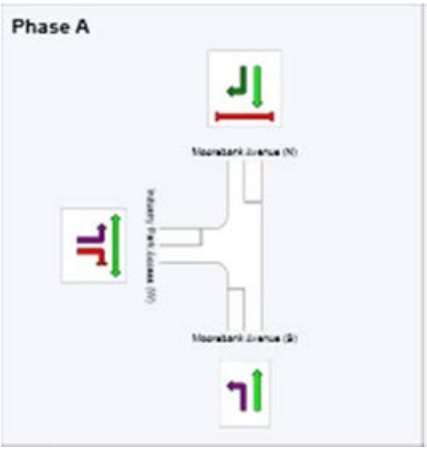
Site: I-08 2030 CUM C2 PM

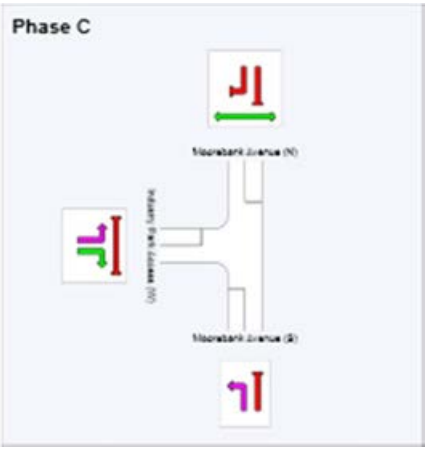
Network: 2030 CUM C2 PM - Upgrade Option

Moorebank Avenue / Industry Park Access
2030 CUM C2 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 116 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C
Reference Phase	Yes	No
Phase Change Time (sec)	0	97
Green Time (sec)	91	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	97	19
Phase Split	84 %	16 %





I-09 Intersection of Moorebank Avenue and Church Road

AM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-09 2030 CUM A AM

Moorebank Avenue / Church Road
2030 CUM A AM PEAK 7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	2157	8.8	0.847	28.1	LOS B	13.2	101.3	0.11	0.10	40.4
3	R2	287	9.3	0.847	37.0	LOS C	13.2	101.3	1.00	0.93	35.5
Approach		2444	8.9	1.059	29.2	NA	13.2	101.3	0.21	0.20	39.7
East: Church Road (E)											
4	L2	206	16.7	0.290	8.3	LOS A	1.2	10.1	0.55	0.79	46.7
6	R2	7	0.0	0.945	653.6	LOS F	1.9	13.4	1.00	1.06	5.0
Approach		213	16.1	0.945	30.6	LOS C	1.9	13.4	0.56	0.80	36.3
North: Moorebank Avenue (N)											
7	L2	37	0.0	0.262	5.6	LOS A	0.0	0.0	0.00	0.05	57.7
8	T1	833	24.3	0.262	0.0	LOS A	0.0	0.0	0.00	0.02	59.6
Approach		870	23.2	0.262	0.3	NA	0.0	0.0	0.00	0.03	59.6
All Vehicles		3527	12.9	1.059	22.1	NA	13.2	101.3	0.18	0.19	43.0

PM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-09 2030 CUM A PM

Moorebank Avenue / Church Road
2030 CUM A PM PEAK 4:30 pm - 5:30 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1277	13.7	0.723	0.2	LOS A	0.0	0.0	0.00	0.00	59.5
3	R2	114	16.2	0.872	91.1	LOS F	5.2	43.6	0.99	1.37	22.8
Approach		1391	13.9	0.872	7.7	NA	5.2	43.6	0.08	0.11	52.4
East: Church Road (E)											
4	L2	430	5.8	1.485	491.2	LOS F	102.9	765.9	1.00	5.78	6.5
6	R2	1	0.0	0.324	1257.0	LOS F	0.8	5.3	1.00	1.00	2.7
Approach		431	5.8	1.485	493.1	LOS F	102.9	765.9	1.00	5.77	6.4
North: Moorebank Avenue (N)											
7	L2	14	7.7	0.969	9.1	LOS A	0.0	0.0	0.00	0.01	51.6
8	T1	1754	8.2	0.969	4.1	LOS A	0.0	0.0	0.00	0.00	52.6
Approach		1768	8.2	0.969	4.2	NA	0.0	0.0	0.00	0.00	52.6
All Vehicles		3590	10.1	1.485	64.3	NA	102.9	765.9	0.15	0.74	27.9

AM Peak – Cumulative Scenario A with Upgrade

MOVEMENT SUMMARY

Site: I-09 2030 CUM A AM - Upgrade Option

Moorebank Avenue / Church Road
2030 CUM A AM PEAK 7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	2157	8.8	0.847	27.9	LOS B	13.2	101.3	0.11	0.10	40.4
3	R2	287	9.3	0.847	37.0	LOS C	13.2	101.3	1.00	0.93	35.4
Approach		2444	8.9	1.059	29.0	NA	13.2	101.3	0.21	0.20	39.7
East: Church Road (E)											
4	L2	206	16.7	0.290	8.3	LOS A	1.2	10.1	0.55	0.79	46.7
Approach		206	16.7	0.290	8.3	LOS A	1.2	10.1	0.55	0.79	46.7
North: Moorebank Avenue (N)											
7	L2	37	0.0	0.262	5.6	LOS A	0.0	0.0	0.00	0.05	57.7
8	T1	833	24.3	0.262	0.0	LOS A	0.0	0.0	0.00	0.02	59.6
Approach		870	23.2	0.262	0.3	NA	0.0	0.0	0.00	0.03	59.6
All Vehicles		3520	12.9	1.059	20.7	NA	13.2	101.3	0.18	0.19	43.7

PM Peak – Cumulative Scenario A with Upgrade

MOVEMENT SUMMARY

Site: I-09 2030 CUM A PM - Upgrade Option

Moorebank Avenue / Church Road
2030 CUM A PM PEAK 4:30 pm - 5:30 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1277	13.7	0.723	0.2	LOS A	0.0	0.0	0.00	0.00	59.5
3	R2	114	16.2	0.872	91.0	LOS F	5.2	43.6	0.99	1.37	22.8
Approach		1391	13.9	0.872	7.7	NA	5.2	43.6	0.08	0.11	52.4
East: Church Road (E)											
4	L2	430	5.8	1.483	489.9	LOS F	102.7	764.7	1.00	5.77	6.5
Approach		430	5.8	1.483	489.9	LOS F	102.7	764.7	1.00	5.77	6.5
North: Moorebank Avenue (N)											
7	L2	14	7.7	0.969	9.0	LOS A	0.0	0.0	0.00	0.01	51.6
8	T1	1754	8.2	0.969	4.1	LOS A	0.0	0.0	0.00	0.00	52.6
Approach		1768	8.2	0.969	4.1	NA	0.0	0.0	0.00	0.00	52.6
All Vehicles		3589	10.1	1.483	63.8	NA	102.7	764.7	0.15	0.74	28.0

AM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-09 2030 CUM B AM

Moorebank Avenue / Church Road
2030 CUM B AM PEAK 7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	2135	7.9	0.841	25.1	LOS B	12.0	90.8	0.09	0.09	41.8
3	R2	284	8.5	0.841	36.1	LOS C	12.0	90.8	1.00	0.97	35.8
Approach		2419	8.0	1.052	26.4	NA	12.0	90.8	0.20	0.19	41.0
East: Church Road (E)											
4	L2	204	16.0	0.292	8.5	LOS A	1.3	10.1	0.55	0.81	46.7
6	R2	7	0.0	0.945	653.9	LOS F	1.9	13.4	1.00	1.06	5.0
Approach		212	15.4	0.945	31.0	LOS C	1.9	13.4	0.57	0.82	36.2
North: Moorebank Avenue (N)											
7	L2	37	0.0	0.272	5.6	LOS A	0.0	0.0	0.00	0.05	57.8
8	T1	884	21.7	0.272	0.0	LOS A	0.0	0.0	0.00	0.02	59.7
Approach		921	20.8	0.272	0.3	NA	0.0	0.0	0.00	0.02	59.6
All Vehicles		3552	11.7	1.052	19.9	NA	12.0	90.8	0.17	0.19	44.2

PM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-09 2030 CUM B PM

Moorebank Avenue / Church Road
2030 CUM B PM PEAK 4:30 pm - 5:30 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1311	11.9	0.715	1.2	LOS A	5.0	40.1	0.02	0.02	58.7
3	R2	112	14.2	0.715	54.6	LOS D	5.0	40.1	1.00	1.05	29.9
Approach		1422	12.1	0.715	5.4	NA	5.0	40.1	0.10	0.10	54.4
East: Church Road (E)											
4	L2	427	5.2	1.397	414.5	LOS F	92.0	676.8	1.00	5.43	7.5
6	R2	1	0.0	0.300	1144.0	LOS F	0.7	4.9	1.00	1.00	3.0
Approach		428	5.2	1.397	416.3	LOS F	92.0	676.8	1.00	5.41	7.5
North: Moorebank Avenue (N)											
7	L2	14	7.7	0.941	7.6	LOS A	0.0	0.0	0.00	0.01	54.0
8	T1	1728	6.8	0.941	2.4	LOS A	0.0	0.0	0.00	0.00	55.4
Approach		1742	6.8	0.941	2.5	NA	0.0	0.0	0.00	0.00	55.4
All Vehicles		3593	8.7	1.397	53.0	NA	92.0	676.8	0.16	0.69	30.9

AM Peak – Cumulative Scenario B with Upgrade

MOVEMENT SUMMARY

Site: I-09 2030 CUM B AM - Upgrade Option

Moorebank Avenue / Church Road
2030 CUM B AM PEAK 7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	2135	7.9	0.841	24.9	LOS B	12.0	90.8	0.09	0.09	41.9
3	R2	284	8.5	0.841	36.1	LOS C	12.0	90.8	1.00	0.97	35.6
Approach		2419	8.0	1.052	26.2	NA	12.0	90.8	0.20	0.19	41.0
East: Church Road (E)											
4	L2	204	16.0	0.292	8.5	LOS A	1.3	10.1	0.55	0.81	46.7
Approach		204	16.0	0.292	8.5	LOS A	1.3	10.1	0.55	0.81	46.7
North: Moorebank Avenue (N)											
7	L2	37	0.0	0.272	5.6	LOS A	0.0	0.0	0.00	0.05	57.8
8	T1	884	21.7	0.272	0.0	LOS A	0.0	0.0	0.00	0.02	59.7
Approach		921	20.8	0.272	0.3	NA	0.0	0.0	0.00	0.02	59.6
All Vehicles		3544	11.8	1.052	18.5	NA	12.0	90.8	0.17	0.19	45.0

PM Peak – Cumulative Scenario B with Upgrade

MOVEMENT SUMMARY

Site: I-09 2030 CUM B PM - Upgrade Option

Moorebank Avenue / Church Road
2030 CUM B PM PEAK 4:30 pm - 5:30 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1311	11.9	0.705	1.9	LOS A	5.7	45.5	0.03	0.03	58.0
3	R2	112	14.2	0.705	55.5	LOS D	5.7	45.5	1.00	0.95	29.7
Approach		1422	12.1	0.705	6.1	NA	5.7	45.5	0.11	0.10	53.8
East: Church Road (E)											
4	L2	427	5.2	1.395	413.2	LOS F	91.8	675.5	1.00	5.42	7.5
Approach		427	5.2	1.395	413.2	LOS F	91.8	675.5	1.00	5.42	7.5
North: Moorebank Avenue (N)											
7	L2	14	7.7	0.941	7.6	LOS A	0.0	0.0	0.00	0.01	54.0
8	T1	1728	6.8	0.941	2.4	LOS A	0.0	0.0	0.00	0.00	55.4
Approach		1742	6.8	0.941	2.5	NA	0.0	0.0	0.00	0.00	55.4
All Vehicles		3592	8.7	1.395	52.8	NA	91.8	675.5	0.16	0.69	30.9

AM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-09 2020 CUM C1 AM

Moorebank Avenue / Church Road
2020 CUM C1 AM PEAK 7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1924	8.9	0.672	3.6	LOS A	9.6	72.5	0.20	0.11	56.1
3	R2	254	8.9	0.672	21.8	LOS B	9.6	72.5	1.00	0.53	42.2
Approach		2178	8.9	0.841	5.7	NA	9.6	72.5	0.29	0.15	54.0
East: Church Road (E)											
4	L2	182	16.2	0.222	7.0	LOS A	0.9	7.0	0.47	0.68	47.5
6	R2	6	0.0	0.603	501.1	LOS F	1.4	10.1	1.00	1.02	6.3
Approach		189	15.7	0.603	23.6	LOS B	1.4	10.1	0.49	0.70	39.1
North: Moorebank Avenue (N)											
7	L2	28	0.0	0.207	5.6	LOS A	0.0	0.0	0.00	0.05	57.8
8	T1	670	23.0	0.207	0.0	LOS A	0.0	0.0	0.00	0.02	59.7
Approach		699	22.0	0.207	0.2	NA	0.0	0.0	0.00	0.02	59.6
All Vehicles		3065	12.3	0.841	5.6	NA	9.6	72.5	0.24	0.16	53.8

PM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-09 2020 CUM C1 PM

Moorebank Avenue / Church Road
2020 CUM C1 PM PEAK 4:30 pm - 5:30 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1124	13.4	0.527	5.7	LOS A	6.9	55.3	0.17	0.07	54.4
3	R2	96	15.6	0.527	40.0	LOS C	6.9	55.3	1.00	0.42	34.9
Approach		1221	13.6	0.527	8.4	NA	6.9	55.3	0.23	0.10	52.0
East: Church Road (E)											
4	L2	383	5.4	1.066	156.4	LOS F	42.3	311.6	1.00	3.40	16.1
6	R2	1	0.0	0.075	234.6	LOS F	0.2	1.3	0.99	1.00	11.9
Approach		384	5.3	1.066	156.7	LOS F	42.3	311.6	1.00	3.39	16.1
North: Moorebank Avenue (N)											
7	L2	12	9.1	0.822	6.3	LOS A	0.0	0.0	0.00	0.01	56.5
8	T1	1510	7.0	0.822	0.8	LOS A	0.0	0.0	0.00	0.00	58.4
Approach		1522	7.0	0.822	0.8	NA	0.0	0.0	0.00	0.00	58.4
All Vehicles		3126	9.4	1.066	22.9	NA	42.3	311.6	0.21	0.46	42.3

AM Peak – Cumulative Scenario C1 with Upgrade

MOVEMENT SUMMARY

Site: I-09 2020 CUM C1 AM - Upgrade Option

Moorebank Avenue / Church Road
2020 CUM C1 AM PEAK 7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1924	8.9	0.671	3.6	LOS A	9.6	72.7	0.20	0.11	56.1
3	R2	254	8.9	0.671	21.8	LOS B	9.6	72.7	1.00	0.52	42.0
Approach		2178	8.9	0.839	5.7	NA	9.6	72.7	0.29	0.15	53.9
East: Church Road (E)											
4	L2	182	16.2	0.222	7.0	LOS A	0.9	7.0	0.47	0.68	47.5
Approach		182	16.2	0.222	7.0	LOS A	0.9	7.0	0.47	0.68	47.5
North: Moorebank Avenue (N)											
7	L2	28	0.0	0.207	5.6	LOS A	0.0	0.0	0.00	0.05	57.8
8	T1	670	23.0	0.207	0.0	LOS A	0.0	0.0	0.00	0.02	59.7
Approach		699	22.0	0.207	0.2	NA	0.0	0.0	0.00	0.02	59.6
All Vehicles		3059	12.3	0.839	4.6	NA	9.6	72.7	0.24	0.16	54.7

PM Peak – Cumulative Scenario C1 with Upgrade

MOVEMENT SUMMARY

Site: I-09 2020 CUM C1 PM - Upgrade Option

Moorebank Avenue / Church Road
2020 CUM C1 PM PEAK 4:30 pm - 5:30 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1124	13.4	0.525	5.9	LOS A	7.0	55.9	0.17	0.07	54.3
3	R2	96	15.6	0.525	40.0	LOS C	7.0	55.9	1.00	0.41	34.7
Approach		1221	13.6	0.525	8.5	NA	7.0	55.9	0.23	0.10	51.9
East: Church Road (E)											
4	L2	383	5.4	1.065	155.4	LOS F	42.1	310.2	1.00	3.39	16.2
Approach		383	5.4	1.065	155.4	LOS F	42.1	310.2	1.00	3.39	16.2
North: Moorebank Avenue (N)											
7	L2	12	9.1	0.822	6.3	LOS A	0.0	0.0	0.00	0.01	56.5
8	T1	1510	7.0	0.822	0.8	LOS A	0.0	0.0	0.00	0.00	58.4
Approach		1522	7.0	0.822	0.8	NA	0.0	0.0	0.00	0.00	58.4
All Vehicles		3125	9.4	1.065	22.8	NA	42.1	310.2	0.21	0.45	42.4

AM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-09 2030 CUM C2 AM

Moorebank Avenue / Church Road
2030 CUM C2 AM PEAK 7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	2143	8.3	0.825	18.0	LOS B	12.5	94.3	0.12	0.10	45.7
3	R2	283	8.1	0.825	34.8	LOS C	12.5	94.3	1.00	0.86	36.4
Approach		2426	8.2	1.032	20.0	NA	12.5	94.3	0.22	0.19	44.3
East: Church Road (E)											
4	L2	205	16.2	0.286	8.3	LOS A	1.2	9.9	0.54	0.79	46.8
6	R2	7	0.0	0.945	652.3	LOS F	1.9	13.3	1.00	1.06	5.0
Approach		212	15.7	0.945	30.6	LOS C	1.9	13.3	0.56	0.80	36.3
North: Moorebank Avenue (N)											
7	L2	37	0.0	0.262	5.6	LOS A	0.0	0.0	0.00	0.05	57.7
8	T1	839	23.3	0.262	0.0	LOS A	0.0	0.0	0.00	0.02	59.6
Approach		876	22.3	0.262	0.3	NA	0.0	0.0	0.00	0.03	59.6
All Vehicles		3514	12.2	1.032	15.7	NA	12.5	94.3	0.19	0.19	46.6

PM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-09 2030 CUM C2 PM

Moorebank Avenue / Church Road
2030 CUM C2 PM PEAK 4:30 pm - 5:30 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1301	12.6	0.730	0.2	LOS A	0.0	0.0	0.00	0.00	59.5
3	R2	113	15.0	0.780	66.8	LOS E	4.0	32.8	0.97	1.24	27.0
Approach		1414	12.8	0.780	5.5	NA	4.0	32.8	0.08	0.10	54.2
East: Church Road (E)											
4	L2	429	5.5	1.435	447.7	LOS F	96.8	716.1	1.00	5.59	7.0
6	R2	1	0.0	0.326	1268.8	LOS F	0.8	5.3	1.00	1.00	2.7
Approach		430	5.5	1.435	449.7	LOS F	96.8	716.1	1.00	5.58	7.0
North: Moorebank Avenue (N)											
7	L2	14	7.7	0.953	8.1	LOS A	0.0	0.0	0.00	0.01	53.2
8	T1	1739	7.4	0.953	3.0	LOS A	0.0	0.0	0.00	0.00	54.4
Approach		1753	7.4	0.953	3.1	NA	0.0	0.0	0.00	0.00	54.4
All Vehicles		3597	9.3	1.435	57.4	NA	96.8	716.1	0.15	0.71	29.6

AM Peak – Cumulative Scenario C2 with Upgrade

MOVEMENT SUMMARY

Site: I-09 2030 CUM C2 AM - Upgrade Option

Moorebank Avenue / Church Road
2030 CUM C2 AM PEAK 7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	2143	8.3	0.825	17.9	LOS B	12.5	94.3	0.12	0.10	45.7
3	R2	283	8.1	0.825	34.7	LOS C	12.5	94.3	1.00	0.86	36.2
Approach		2426	8.2	1.032	19.9	NA	12.5	94.3	0.22	0.19	44.3
East: Church Road (E)											
4	L2	205	16.2	0.286	8.3	LOS A	1.2	9.9	0.54	0.79	46.8
Approach		205	16.2	0.286	8.3	LOS A	1.2	9.9	0.54	0.79	46.8
North: Moorebank Avenue (N)											
7	L2	37	0.0	0.262	5.6	LOS A	0.0	0.0	0.00	0.05	57.7
8	T1	839	23.3	0.262	0.0	LOS A	0.0	0.0	0.00	0.02	59.6
Approach		876	22.3	0.262	0.3	NA	0.0	0.0	0.00	0.03	59.6
All Vehicles		3507	12.2	1.032	14.3	NA	12.5	94.3	0.19	0.18	47.5

PM Peak – Cumulative Scenario C2 with Upgrade

MOVEMENT SUMMARY

Site: I-09 2030 CUM C2 PM - Upgrade Option

Moorebank Avenue / Church Road
2030 CUM C2 PM PEAK 4:30 pm - 5:30 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1301	12.6	0.724	0.6	LOS A	4.5	36.8	0.01	0.01	59.3
3	R2	113	15.0	0.724	57.7	LOS E	4.5	36.8	1.00	1.16	28.9
Approach		1414	12.8	0.724	5.2	NA	4.5	36.8	0.09	0.10	54.6
East: Church Road (E)											
4	L2	429	5.5	1.434	446.4	LOS F	96.6	714.8	1.00	5.58	7.0
Approach		429	5.5	1.434	446.4	LOS F	96.6	714.8	1.00	5.58	7.0
North: Moorebank Avenue (N)											
7	L2	14	7.7	0.953	8.1	LOS A	0.0	0.0	0.00	0.01	53.2
8	T1	1739	7.4	0.953	3.0	LOS A	0.0	0.0	0.00	0.00	54.4
Approach		1753	7.4	0.953	3.0	NA	0.0	0.0	0.00	0.00	54.4
All Vehicles		3596	9.3	1.434	56.7	NA	96.6	714.8	0.15	0.71	29.8

I-10 Intersection of Heathcote Road and Nuwarra Road

AM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-10 2030 CUM A AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2030 CUM A AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
SouthEast: Heathcote Road (SE)											
4	L2	262	1.2	0.182	8.3	LOS A	3.5	24.9	0.27	0.63	48.2
5	T1	2073	5.3	1.258	288.4	LOS F	162.6	1190.0	1.00	2.15	10.3
6	R2	647	3.3	1.268	267.3	LOS F	42.9	308.4	1.00	1.54	11.2
Approach		2983	4.5	1.268	259.2	LOS F	162.6	1190.0	0.94	1.89	11.0
NorthEast: Nuwarra Road (NE)											
7	L2	416	4.8	0.484	24.5	LOS B	16.5	120.1	0.71	0.78	42.4
8	T1	264	8.0	0.423	53.3	LOS D	7.6	57.2	0.94	0.76	26.2
9	R2	508	5.8	1.436	477.0	LOS F	49.8	365.8	1.00	1.93	6.6
Approach		1188	5.9	1.436	224.6	LOS F	49.8	365.8	0.89	1.27	11.9
NorthWest: Heathcote Road (NW)											
10	L2	254	11.6	0.334	21.5	LOS B	7.8	60.1	0.70	0.76	42.7
11	T1	1044	11.3	0.958	54.9	LOS D	42.9	329.8	0.90	0.97	31.2
12	R2	235	6.3	0.786	75.4	LOS F	8.0	59.1	1.00	0.89	19.9
Approach		1532	10.6	0.958	52.5	LOS D	42.9	329.8	0.88	0.92	30.8
SouthWest: Wattle Grove Drive (SW)											
1	L2	639	2.1	0.849	51.8	LOS D	31.9	227.1	0.99	1.15	24.8
2	T1	543	4.5	0.817	61.8	LOS E	19.6	142.7	1.00	0.94	23.7
3	R2	263	4.0	1.277	332.6	LOS F	42.3	306.5	1.00	1.80	6.6
Approach		1445	3.4	1.277	106.7	LOS F	42.3	306.5	0.99	1.19	16.1
All Vehicles		7148	5.8	1.436	178.3	LOS F	162.6	1190.0	0.93	1.44	13.9

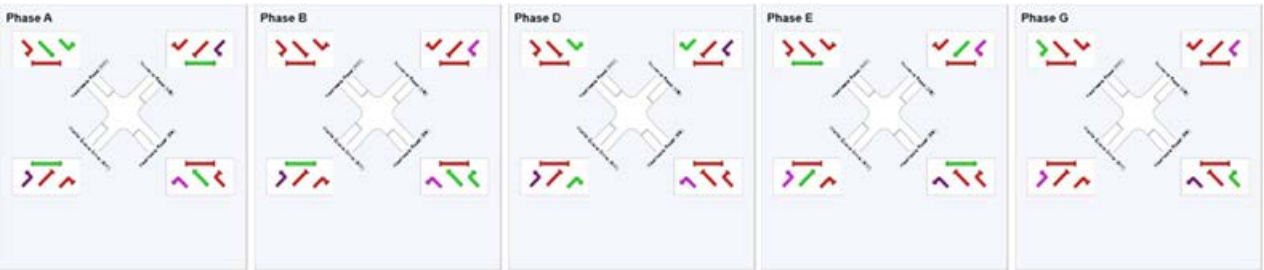
PHASING SUMMARY

Site: I-10 2028 MIMT AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2028 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	D	E	G
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	54	67	86	114
Green Time (sec)	48	7	13	22	11
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	54	13	19	28	17
Phase Split	41 %	10 %	15 %	21 %	13 %



PM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-10 2030 CUM A PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2030 CUM A PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
SouthEast: Heathcote Road (SE)											
4	L2	337	2.5	0.286	15.8	LOS B	9.2	65.9	0.46	0.70	42.1
5	T1	1331	5.4	1.021	105.7	LOS F	67.8	496.7	1.00	1.28	21.6
6	R2	469	3.1	1.123	205.2	LOS F	29.5	212.0	1.00	1.36	13.8
Approach		2138	4.5	1.123	113.4	LOS F	67.8	496.7	0.92	1.21	20.0
NorthEast: Nuwarra Road (NE)											
7	L2	646	2.8	0.915	66.5	LOS E	42.1	301.8	1.00	1.17	28.7
8	T1	621	1.4	0.954	81.9	LOS F	26.8	190.0	1.00	1.09	20.1
9	R2	556	7.0	1.120	181.1	LOS F	35.9	266.2	1.00	1.30	14.7
Approach		1823	3.6	1.120	106.7	LOS F	42.1	301.8	1.00	1.18	20.1
NorthWest: Heathcote Road (NW)											
10	L2	258	6.1	0.238	22.3	LOS B	8.8	64.6	0.55	0.73	42.4
11	T1	1702	2.8	1.209	257.6	LOS F	128.6	921.5	1.00	1.92	11.3
12	R2	467	2.0	1.034	121.7	LOS F	24.0	171.3	1.00	1.13	14.2
Approach		2427	3.0	1.209	206.4	LOS F	128.6	921.5	0.95	1.64	12.7
SouthWest: Wattle Grove Drive (SW)											
1	L2	305	1.7	0.390	37.5	LOS C	13.9	98.6	0.76	0.88	29.2
2	T1	342	1.2	0.466	56.7	LOS E	10.5	74.3	0.95	0.78	24.9
3	R2	370	1.1	1.372	425.4	LOS F	69.1	488.8	1.00	1.93	5.3
Approach		1018	1.3	1.372	184.9	LOS F	69.1	488.8	0.91	1.23	10.7
All Vehicles		7405	3.3	1.372	152.1	LOS F	128.6	921.5	0.95	1.35	15.5

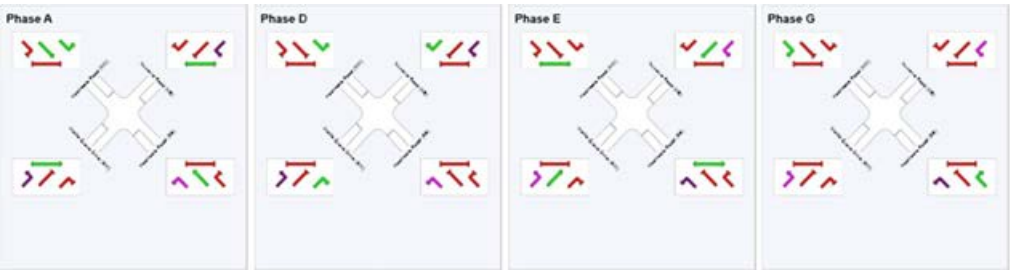
PHASING SUMMARY

Site: I-10 2030 CUM A PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2030 CUM A PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	61	87	117
Green Time (sec)	55	20	24	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	61	26	30	22
Phase Split	44 %	19 %	22 %	16 %



AM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-10 2030 CUM B AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2030 CUM B AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
SouthEast: Heathcote Road (SE)											
4	L2	280	1.1	0.195	8.5	LOS A	4.0	28.2	0.29	0.63	48.0
5	T1	2073	5.2	1.262	292.2	LOS F	164.3	1201.9	1.00	2.17	10.1
6	R2	647	3.3	1.268	267.3	LOS F	42.9	308.4	1.00	1.54	11.2
Approach		3000	4.4	1.268	260.3	LOS F	164.3	1201.9	0.93	1.89	11.0
NorthEast: Nuwarra Road (NE)											
7	L2	416	4.8	0.484	24.5	LOS B	16.5	120.1	0.71	0.78	42.4
8	T1	286	7.4	0.458	53.6	LOS D	8.4	62.3	0.95	0.77	26.1
9	R2	508	5.8	1.436	477.0	LOS F	49.8	365.8	1.00	1.93	6.6
Approach		1211	5.8	1.436	221.5	LOS F	49.8	365.8	0.89	1.26	12.0
NorthWest: Heathcote Road (NW)											
10	L2	254	11.6	0.334	21.5	LOS B	7.8	60.1	0.70	0.76	42.7
11	T1	1044	11.2	0.957	54.8	LOS D	42.9	329.3	0.90	0.97	31.2
12	R2	235	6.3	0.786	75.4	LOS F	8.0	59.1	1.00	0.89	19.9
Approach		1532	10.5	0.957	52.5	LOS D	42.9	329.3	0.88	0.92	30.8
SouthWest: Wattle Grove Drive (SW)											
1	L2	639	2.1	0.849	51.8	LOS D	31.9	227.1	0.99	1.15	24.8
2	T1	543	4.5	0.817	61.8	LOS E	19.6	142.7	1.00	0.94	23.7
3	R2	263	4.0	1.277	332.6	LOS F	42.3	306.5	1.00	1.80	6.6
Approach		1445	3.4	1.277	106.7	LOS F	42.3	306.5	0.99	1.19	16.1
All Vehicles		7188	5.8	1.436	178.6	LOS F	164.3	1201.9	0.93	1.44	13.8

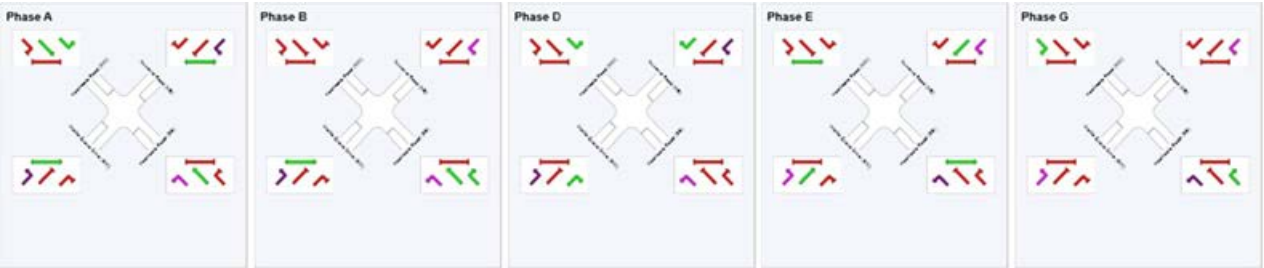
PHASING SUMMARY

Site: I-10 2030 CUM B AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2030 CUM B AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	D	E	G
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	54	67	86	114
Green Time (sec)	48	7	13	22	11
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	54	13	19	28	17
Phase Split	41 %	10 %	15 %	21 %	13 %



PM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-10 2030 CUM B PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2030 CUM B PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Heathcote Road (SE)											
4	L2	337	2.5	0.286	15.8	LOS B	9.2	65.9	0.46	0.70	42.1
5	T1	1331	5.4	1.021	105.3	LOS F	67.6	495.5	1.00	1.28	21.7
6	R2	469	3.1	1.123	205.2	LOS F	29.5	212.0	1.00	1.36	13.8
Approach		2137	4.5	1.123	113.2	LOS F	67.6	495.5	0.92	1.21	20.1
NorthEast: Nuwarra Road (NE)											
7	L2	646	2.8	0.915	66.5	LOS E	42.1	301.8	1.00	1.17	28.7
8	T1	621	1.4	0.954	81.9	LOS F	26.8	190.0	1.00	1.09	20.1
9	R2	556	7.0	1.120	181.1	LOS F	35.9	266.2	1.00	1.30	14.7
Approach		1823	3.6	1.120	106.7	LOS F	42.1	301.8	1.00	1.18	20.1
NorthWest: Heathcote Road (NW)											
10	L2	258	6.1	0.238	22.3	LOS B	8.8	64.6	0.55	0.73	42.4
11	T1	1701	2.7	1.208	257.3	LOS F	128.5	920.6	1.00	1.92	11.3
12	R2	467	2.0	1.034	121.7	LOS F	24.0	171.3	1.00	1.13	14.2
Approach		2427	3.0	1.208	206.2	LOS F	128.5	920.6	0.95	1.64	12.7
SouthWest: Wattle Grove Drive (SW)											
1	L2	305	1.7	0.390	37.5	LOS C	13.9	98.6	0.76	0.88	29.2
2	T1	363	1.2	0.494	57.0	LOS E	11.2	79.2	0.95	0.79	24.8
3	R2	386	1.1	1.433	480.8	LOS F	77.0	544.2	1.00	2.03	4.7
Approach		1055	1.3	1.433	206.6	LOS F	77.0	544.2	0.92	1.27	9.7
All Vehicles		7442	3.3	1.433	155.2	LOS F	128.5	920.6	0.95	1.35	15.3

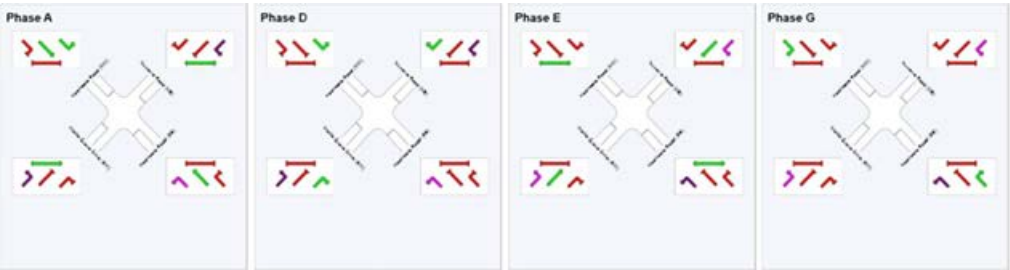
PHASING SUMMARY

Site: I-10 2030 CUM B PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2030 CUM B PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	61	87	117
Green Time (sec)	55	20	24	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	61	26	30	22
Phase Split	44 %	19 %	22 %	16 %



AM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-10 2020 MIMT CUM1 AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2020 MIMT CUM1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
SouthEast: Heathcote Road (SE)											
4	L2	216	1.0	0.147	7.7	LOS A	2.5	17.7	0.24	0.62	48.7
5	T1	1525	5.3	0.924	40.9	LOS C	45.8	335.3	0.84	0.89	35.5
6	R2	525	3.2	1.028	88.3	LOS F	17.6	126.3	1.00	1.14	24.6
Approach		2266	4.4	1.028	48.8	LOS D	45.8	335.3	0.82	0.92	32.6
NorthEast: Nuwarra Road (NE)											
7	L2	344	4.6	0.378	17.7	LOS B	10.8	78.6	0.58	0.74	46.0
8	T1	223	7.5	0.357	52.6	LOS D	6.4	47.6	0.93	0.74	26.4
9	R2	401	5.8	1.133	209.9	LOS F	24.9	182.7	1.00	1.40	13.1
Approach		968	5.8	1.133	105.4	LOS F	24.9	182.7	0.83	1.01	20.7
NorthWest: Heathcote Road (NW)											
10	L2	221	11.9	0.292	21.1	LOS B	6.7	51.3	0.68	0.76	42.9
11	T1	879	11.7	0.783	35.3	LOS C	24.1	185.5	0.81	0.73	37.6
12	R2	204	6.2	0.684	72.5	LOS F	6.7	49.7	1.00	0.83	20.4
Approach		1305	10.8	0.783	38.7	LOS C	24.1	185.5	0.82	0.75	35.2
SouthWest: Wattle Grove Drive (SW)											
1	L2	484	2.0	0.597	34.9	LOS C	21.6	154.0	0.86	0.98	30.2
2	T1	489	4.3	0.673	56.5	LOS D	14.9	108.4	0.99	0.83	25.0
3	R2	221	3.8	1.071	157.2	LOS F	23.3	168.7	1.00	1.34	12.3
Approach		1195	3.3	1.071	66.4	LOS E	23.3	168.7	0.94	0.99	22.2
All Vehicles		5734	5.9	1.133	59.7	LOS E	45.8	335.3	0.85	0.91	28.2

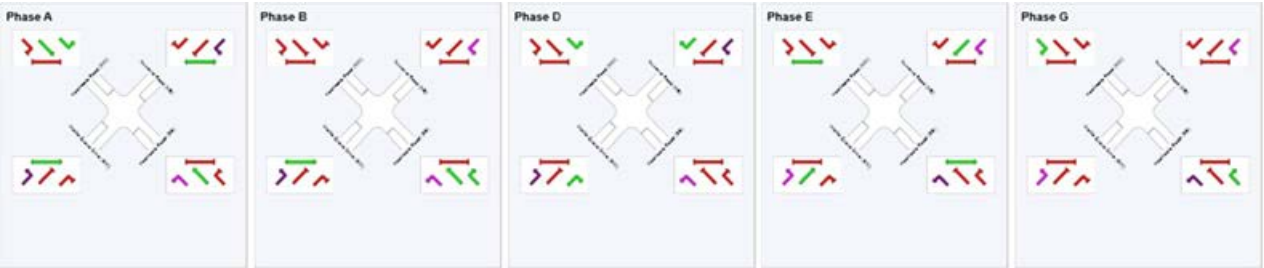
PHASING SUMMARY

Site: I-10 2020 MIMT CUM1 AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2020 MIMT CUM1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	D	E	G
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	54	67	86	114
Green Time (sec)	48	7	13	22	11
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	54	13	19	28	17
Phase Split	41 %	10 %	15 %	21 %	13 %



PM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-10 2020 MIMT CUM1 PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2020 MIMT CUM1 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
SouthEast: Heathcote Road (SE)											
4	L2	294	2.5	0.242	13.4	LOS A	7.2	51.8	0.42	0.67	43.8
5	T1	1126	5.5	0.787	35.1	LOS C	31.9	233.7	0.85	0.76	37.7
6	R2	412	3.1	0.984	109.0	LOS F	18.4	132.1	1.00	1.11	21.6
Approach		1831	4.5	0.984	48.2	LOS D	31.9	233.7	0.81	0.83	32.4
NorthEast: Nuwarra Road (NE)											
7	L2	545	2.3	0.727	41.7	LOS C	24.9	177.9	0.90	1.03	35.5
8	T1	577	1.1	0.885	69.4	LOS E	22.1	156.5	1.00	0.99	22.3
9	R2	491	6.0	0.982	99.0	LOS F	22.6	166.4	1.00	1.07	22.3
Approach		1613	3.0	0.982	69.0	LOS E	24.9	177.9	0.97	1.02	26.1
NorthWest: Heathcote Road (NW)											
10	L2	221	5.7	0.203	22.0	LOS B	7.3	54.0	0.54	0.72	42.6
11	T1	1394	2.7	0.996	78.8	LOS F	59.5	425.9	0.91	1.11	25.8
12	R2	400	1.8	0.884	80.0	LOS F	15.4	109.6	1.00	0.94	19.2
Approach		2015	2.8	0.996	72.8	LOS F	59.5	425.9	0.89	1.03	25.8
SouthWest: Wattle Grove Drive (SW)											
1	L2	261	1.6	0.307	25.0	LOS B	11.2	79.3	0.69	0.75	34.7
2	T1	319	1.0	0.434	56.3	LOS D	9.7	68.7	0.94	0.77	25.0
3	R2	297	1.1	1.111	199.2	LOS F	36.5	257.6	1.00	1.41	10.2
Approach		877	1.2	1.111	95.4	LOS F	36.5	257.6	0.89	0.98	17.6
All Vehicles		6336	3.1	1.111	67.9	LOS E	59.5	425.9	0.89	0.96	26.2

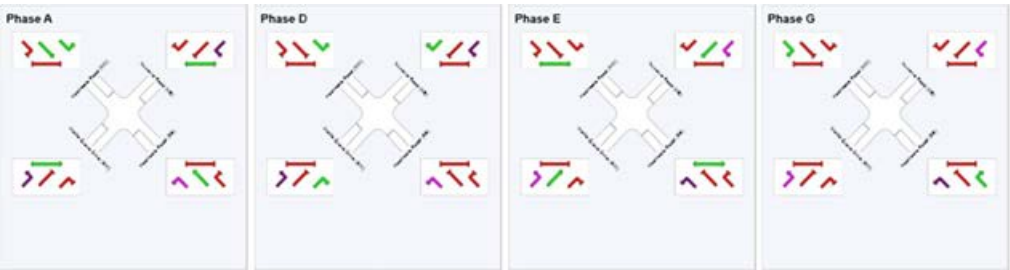
PHASING SUMMARY

Site: I-10 2020 MIMT CUM1 PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2020 MIMT CUM1 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	61	87	117
Green Time (sec)	55	20	24	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	61	26	30	22
Phase Split	44 %	19 %	22 %	16 %



AM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-10 2030 MIMT CUM2 AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2030 MIMT CUM2 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
SouthEast: Heathcote Road (SE)											
4	L2	264	1.2	0.183	8.3	LOS A	3.6	25.1	0.27	0.63	48.2
5	T1	2073	5.2	1.258	288.6	LOS F	162.7	1190.5	1.00	2.15	10.3
6	R2	647	3.3	1.268	267.3	LOS F	42.9	308.4	1.00	1.54	11.2
Approach		2984	4.5	1.268	259.2	LOS F	162.7	1190.5	0.94	1.89	11.0
NorthEast: Nuwarra Road (NE)											
7	L2	416	4.8	0.484	24.5	LOS B	16.5	120.1	0.71	0.78	42.4
8	T1	265	7.9	0.426	53.3	LOS D	7.7	57.6	0.94	0.76	26.2
9	R2	508	5.8	1.436	477.0	LOS F	49.8	365.8	1.00	1.93	6.6
Approach		1190	5.9	1.436	224.3	LOS F	49.8	365.8	0.89	1.27	12.0
NorthWest: Heathcote Road (NW)											
10	L2	254	11.6	0.334	21.5	LOS B	7.8	60.1	0.70	0.76	42.7
11	T1	1044	11.2	0.957	54.8	LOS D	42.9	329.2	0.90	0.97	31.2
12	R2	235	6.3	0.786	75.4	LOS F	8.0	59.1	1.00	0.89	19.9
Approach		1532	10.5	0.957	52.5	LOS D	42.9	329.2	0.88	0.92	30.8
SouthWest: Wattle Grove Drive (SW)											
1	L2	639	2.1	0.849	51.8	LOS D	31.9	227.1	0.99	1.15	24.8
2	T1	543	4.5	0.817	61.8	LOS E	19.6	142.7	1.00	0.94	23.7
3	R2	263	4.0	1.277	332.6	LOS F	42.3	306.5	1.00	1.80	6.6
Approach		1445	3.4	1.277	106.7	LOS F	42.3	306.5	0.99	1.19	16.1
All Vehicles		7151	5.8	1.436	178.3	LOS F	162.7	1190.5	0.93	1.44	13.9

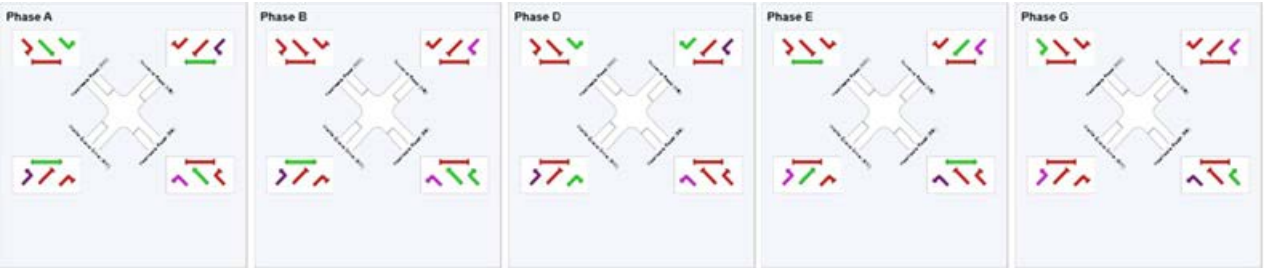
PHASING SUMMARY

Site: I-10 2030 MIMT CUM2 AM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2030 MIMT CUM2 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 131 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	D	E	G
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	54	67	86	114
Green Time (sec)	48	7	13	22	11
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	54	13	19	28	17
Phase Split	41 %	10 %	15 %	21 %	13 %



PM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-10 2030 MIMT CUM2 PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2030 MIMT CUM2 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
SouthEast: Heathcote Road (SE)											
4	L2	337	2.5	0.286	15.8	LOS B	9.2	65.9	0.46	0.70	42.1
5	T1	1331	5.4	1.021	105.5	LOS F	67.7	495.9	1.00	1.28	21.6
6	R2	469	3.1	1.123	205.2	LOS F	29.5	212.0	1.00	1.36	13.8
Approach		2137	4.5	1.123	113.2	LOS F	67.7	495.9	0.92	1.21	20.1
NorthEast: Nuwarra Road (NE)											
7	L2	646	2.8	0.915	66.5	LOS E	42.1	301.8	1.00	1.17	28.7
8	T1	621	1.4	0.954	81.9	LOS F	26.8	190.0	1.00	1.09	20.1
9	R2	556	7.0	1.120	181.1	LOS F	35.9	266.2	1.00	1.30	14.7
Approach		1823	3.6	1.120	106.7	LOS F	42.1	301.8	1.00	1.18	20.1
NorthWest: Heathcote Road (NW)											
10	L2	258	6.1	0.238	22.3	LOS B	8.8	64.6	0.55	0.73	42.4
11	T1	1701	2.7	1.208	257.4	LOS F	128.5	920.9	1.00	1.92	11.3
12	R2	467	2.0	1.034	121.7	LOS F	24.0	171.3	1.00	1.13	14.2
Approach		2427	3.0	1.208	206.3	LOS F	128.5	920.9	0.95	1.64	12.7
SouthWest: Wattle Grove Drive (SW)											
1	L2	305	1.7	0.390	37.5	LOS C	13.9	98.6	0.76	0.88	29.2
2	T1	349	1.2	0.475	56.8	LOS E	10.7	75.9	0.95	0.78	24.9
3	R2	375	1.1	1.390	441.9	LOS F	71.5	505.3	1.00	1.96	5.1
Approach		1029	1.3	1.390	191.3	LOS F	71.5	505.3	0.91	1.24	10.4
All Vehicles		7416	3.3	1.390	152.9	LOS F	128.5	920.9	0.95	1.35	15.5

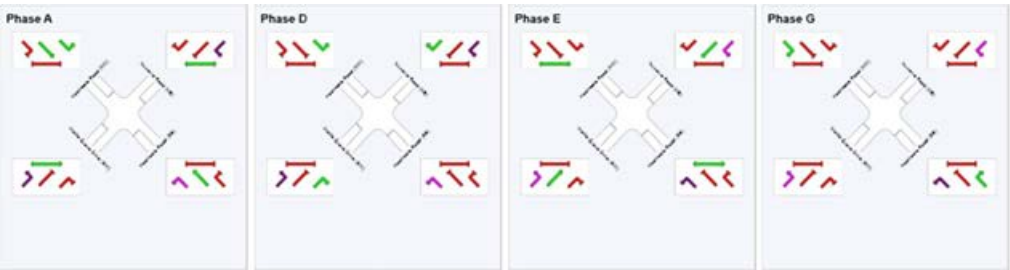
PHASING SUMMARY

Site: I-10 2030 MIMT CUM2 PM

Heathcote Road / Nuwarra Road / Wattle Grove Drive
2030 MIMT CUM2 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 139 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	61	87	117
Green Time (sec)	55	20	24	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	61	26	30	22
Phase Split	44 %	19 %	22 %	16 %



I-11 Intersection of Newbridge Road and Nuwarra Road

AM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-11 2030 CUM A AM

Newbridge Road / Nuwarra Road
2030 CUM A AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Nuwarra Road (S)											
1	L2	37	8.6	0.884	63.6	LOS E	26.7	190.6	0.91	0.97	33.5
2	T1	352	1.5	0.884	60.6	LOS E	26.7	190.6	0.91	0.97	28.2
3	R2	852	6.2	1.232	301.9	LOS F	72.5	534.1	1.00	1.53	11.1
Approach		1240	4.9	1.232	226.4	LOS F	72.5	534.1	0.97	1.36	13.8
East: Newbridge Road (E)											
4	L2	353	16.7	0.663	28.8	LOS C	23.6	188.0	0.75	0.79	44.6
5	T1	1325	12.9	0.663	24.1	LOS B	24.0	188.9	0.70	0.65	50.8
Approach		1678	13.7	0.663	25.1	LOS B	24.0	188.9	0.71	0.68	49.5
North: Nuwarra Road (N)											
7	L2	8	0.0	1.000	117.0	LOS F	12.0	84.4	1.00	1.26	21.5
8	T1	156	0.7	1.249	160.7	LOS F	28.4	206.3	1.00	1.39	16.9
9	R2	143	5.1	1.249	313.7	LOS F	28.4	206.3	1.00	1.81	11.4
Approach		308	2.7	1.249	230.7	LOS F	28.4	206.3	1.00	1.58	13.8
West: Newbridge Road (W)											
10	L2	305	2.1	1.181	233.1	LOS F	125.3	945.9	1.00	1.69	14.6
11	T1	2329	10.7	1.256	260.8	LOS F	149.8	1167.2	1.00	1.95	14.0
Approach		2634	9.7	1.256	257.6	LOS F	149.8	1167.2	1.00	1.92	14.1
All Vehicles		5860	9.5	1.256	183.0	LOS F	149.8	1167.2	0.91	1.43	17.6

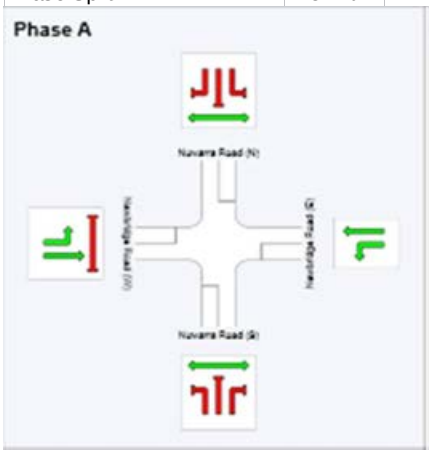
PHASING SUMMARY

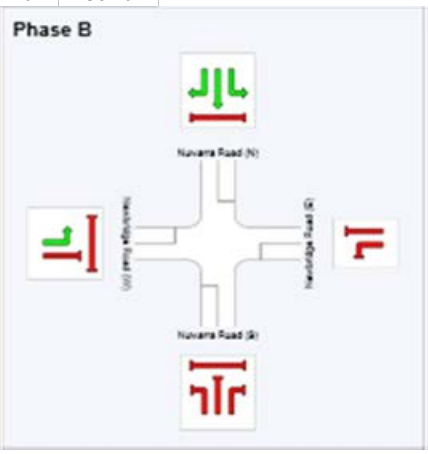
Site: I-11 2030 CUM A AM

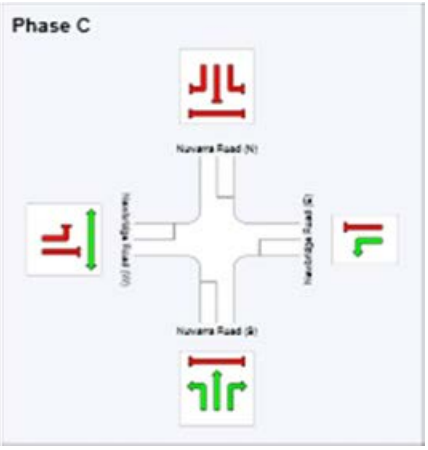
Newbridge Road / Nuwarra Road
2030 CUM A AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	72	89
Green Time (sec)	66	11	45
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	72	17	51
Phase Split	51 %	12 %	36 %







PM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-11 2030 CUM A PM

Newbridge Road / Nuwarra Road
2030 CUM A PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Nuwarra Road (S)											
1	L2	58	7.3	0.823	74.9	LOS F	15.6	111.5	1.00	0.94	31.0
2	T1	159	0.7	0.823	70.5	LOS E	15.6	111.5	1.00	0.94	28.2
3	R2	574	6.2	1.075	167.5	LOS F	32.7	241.5	1.00	1.23	17.5
Approach		791	5.2	1.075	141.2	LOS F	32.7	241.5	1.00	1.15	19.7
East: Newbridge Road (E)											
4	L2	766	3.8	0.776	16.3	LOS B	30.0	220.0	0.53	0.75	51.4
5	T1	2262	7.4	0.776	14.2	LOS A	37.8	286.2	0.61	0.60	57.1
Approach		3029	6.5	0.776	14.7	LOS B	37.8	286.2	0.59	0.64	55.6
North: Nuwarra Road (N)											
7	L2	18	0.0	0.943	91.3	LOS F	19.5	137.8	1.00	1.14	26.4
8	T1	296	1.1	1.179	130.2	LOS F	41.0	290.5	1.00	1.25	20.2
9	R2	213	1.5	1.179	257.4	LOS F	41.0	290.5	1.00	1.58	13.7
Approach		526	1.2	1.179	180.3	LOS F	41.0	290.5	1.00	1.38	16.9
West: Newbridge Road (W)											
10	L2	104	0.3	0.546	19.7	LOS B	16.7	126.3	0.47	0.49	49.4
11	T1	1728	9.6	0.620	12.8	LOS A	19.2	147.6	0.46	0.44	58.3
Approach		1832	9.0	0.620	13.1	LOS A	19.2	147.6	0.46	0.44	57.7
All Vehicles		6178	6.6	1.179	44.6	LOS D	41.0	290.5	0.64	0.71	39.8

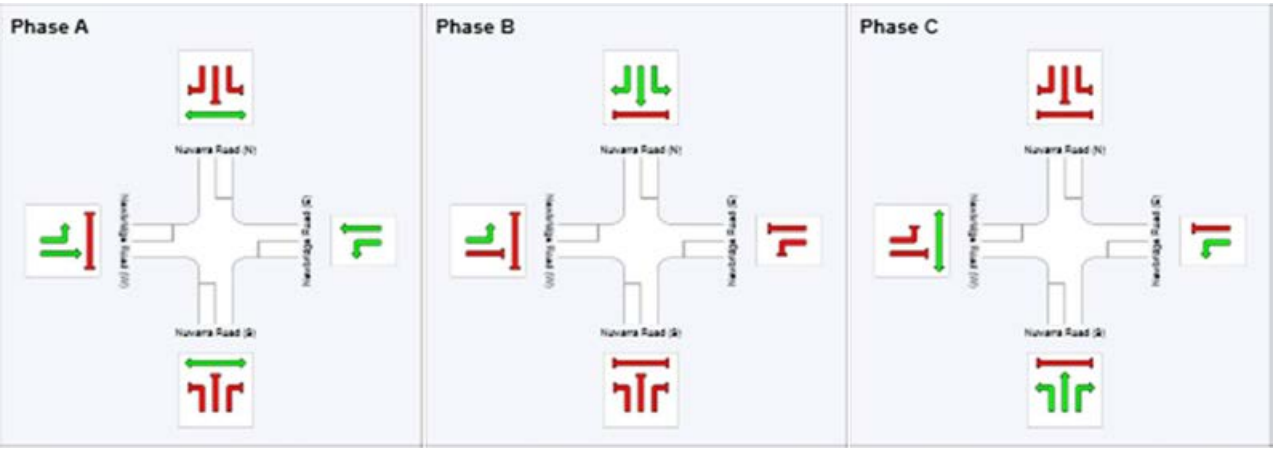
PHASING SUMMARY

Site: I-11 2030 CUM A PM

Newbridge Road / Nuwarra Road
2030 CUM A PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	87	113
Green Time (sec)	81	20	21
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	87	26	27
Phase Split	62 %	19 %	19 %



AM Peak – Cumulative Scenario A with Upgrade

MOVEMENT SUMMARY

Site: I-11 2030 CUM A AM - Upgrade Option

Newbridge Road / Nuwarra Road
2030 CUM A AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nuwarra Road (S)											
1	L2	37	8.6	1.014	147.6	LOS F	40.1	285.7	1.00	1.29	20.5
2	T1	352	1.5	1.014	144.6	LOS F	40.1	285.7	1.00	1.29	18.0
3	R2	852	6.2	1.333	390.7	LOS F	81.2	598.7	1.00	1.68	9.0
Approach		1240	4.9	1.333	313.7	LOS F	81.2	598.7	1.00	1.56	10.7
East: Newbridge Road (E)											
4	L2	353	16.7	0.626	25.8	LOS B	21.6	171.7	0.69	0.76	46.1
5	T1	1325	12.9	0.626	20.5	LOS B	21.6	171.7	0.63	0.59	52.9
Approach		1678	13.7	0.626	21.6	LOS B	21.6	171.7	0.64	0.63	51.4
North: Nuwarra Road (N)											
7	L2	8	0.0	1.000	117.0	LOS F	12.0	84.4	1.00	1.26	21.5
8	T1	156	0.7	1.249	160.7	LOS F	28.4	206.3	1.00	1.39	16.9
9	R2	143	5.1	1.249	313.7	LOS F	28.4	206.3	1.00	1.81	11.4
Approach		308	2.7	1.249	230.7	LOS F	28.4	206.3	1.00	1.58	13.8
West: Newbridge Road (W)											
10	L2	305	2.1	1.113	173.1	LOS F	109.9	829.9	1.00	1.50	18.0
11	T1	2329	10.7	1.184	197.1	LOS F	133.5	1040.2	1.00	1.73	17.4
Approach		2634	9.7	1.184	194.3	LOS F	133.5	1040.2	1.00	1.70	17.4
All Vehicles		5860	9.5	1.333	172.0	LOS F	133.5	1040.2	0.90	1.36	18.4

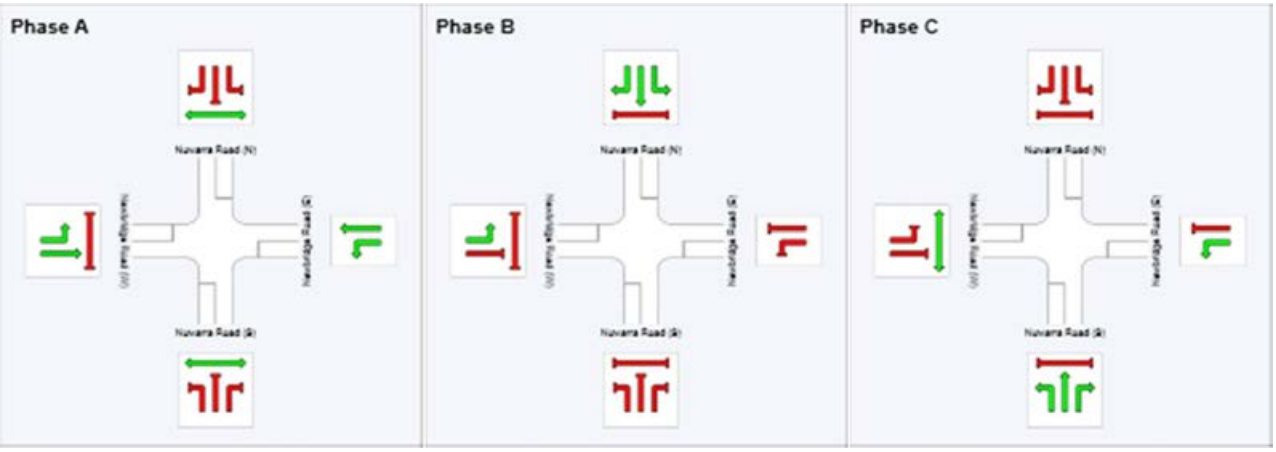
PHASING SUMMARY

Site: I-11 2030 CUM A AM - Upgrade Option

Newbridge Road / Nuwarra Road
2030 CUM A AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	76	93
Green Time (sec)	70	11	41
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	76	17	47
Phase Split	54 %	12 %	34 %



AM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-11 2030 CUM B AM

Newbridge Road / Nuwarra Road
2030 CUM B AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Nuwarra Road (S)											
1	L2	37	8.6	0.884	63.6	LOS E	26.7	190.6	0.91	0.97	33.5
2	T1	352	1.5	0.884	60.6	LOS E	26.7	190.6	0.91	0.97	28.2
3	R2	852	6.2	1.232	301.9	LOS F	72.5	534.1	1.00	1.53	11.1
Approach		1240	4.9	1.232	226.4	LOS F	72.5	534.1	0.97	1.36	13.8
East: Newbridge Road (E)											
4	L2	364	16.2	0.668	28.7	LOS C	24.0	189.6	0.75	0.80	44.6
5	T1	1336	12.2	0.668	24.1	LOS B	24.4	190.7	0.70	0.65	50.8
Approach		1700	13.1	0.668	25.1	LOS B	24.4	190.7	0.71	0.68	49.4
North: Nuwarra Road (N)											
7	L2	8	0.0	1.021	129.3	LOS F	12.9	90.9	1.00	1.31	20.2
8	T1	161	0.7	1.277	176.8	LOS F	30.3	219.6	1.00	1.44	15.9
9	R2	145	5.1	1.277	337.8	LOS F	30.3	219.6	1.00	1.87	10.8
Approach		315	2.7	1.277	249.8	LOS F	30.3	219.6	1.00	1.63	13.0
West: Newbridge Road (W)											
10	L2	305	2.1	1.161	215.6	LOS F	119.4	892.0	1.00	1.63	15.4
11	T1	2308	9.9	1.235	242.4	LOS F	144.0	1104.3	1.00	1.89	14.8
Approach		2614	9.0	1.235	239.3	LOS F	144.0	1104.3	1.00	1.86	14.9
All Vehicles		5868	9.0	1.277	175.1	LOS F	144.0	1104.3	0.91	1.40	18.2

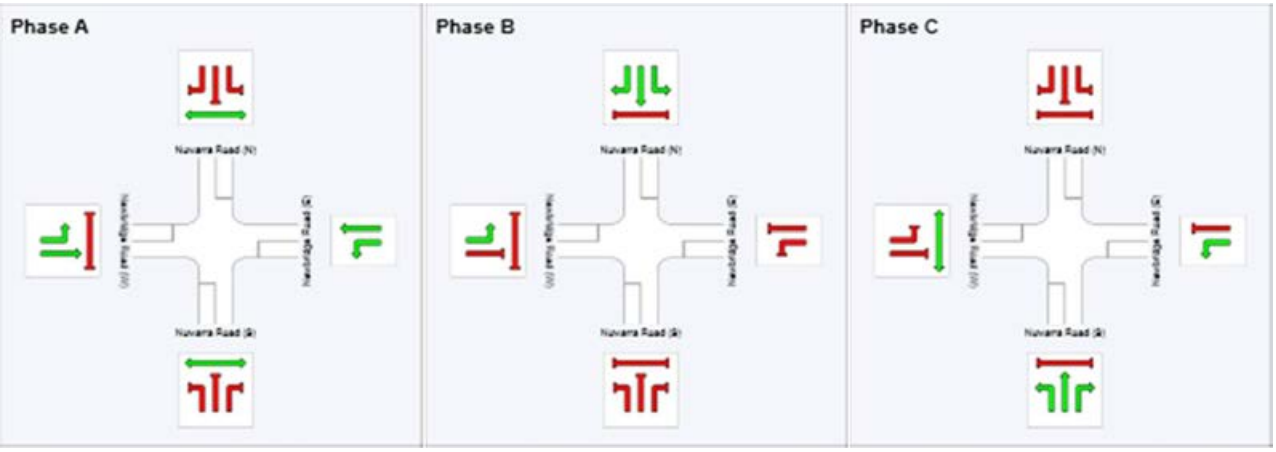
PHASING SUMMARY

Site: I-11 2030 CUM B AM

Newbridge Road / Nuwarra Road
2030 CUM B AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	72	89
Green Time (sec)	66	11	45
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	72	17	51
Phase Split	51 %	12 %	36 %



PM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-11 2030 CUM B PM

Newbridge Road / Nuwarra Road
2030 CUM B PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nuwarra Road (S)											
1	L2	58	7.3	0.839	76.1	LOS F	16.1	115.3	1.00	0.95	30.7
2	T1	164	0.6	0.839	71.7	LOS F	16.1	115.3	1.00	0.95	27.9
3	R2	584	6.1	1.094	182.2	LOS F	34.9	257.0	1.00	1.26	16.5
Approach		806	5.1	1.094	152.1	LOS F	34.9	257.0	1.00	1.18	18.7
East: Newbridge Road (E)											
4	L2	766	3.8	0.763	16.0	LOS B	28.5	207.6	0.51	0.75	51.6
5	T1	2239	6.4	0.763	14.0	LOS A	36.6	272.9	0.59	0.58	57.2
Approach		3005	5.7	0.763	14.5	LOS B	36.6	272.9	0.57	0.62	55.8
North: Nuwarra Road (N)											
7	L2	18	0.0	0.943	91.3	LOS F	19.5	137.8	1.00	1.14	26.4
8	T1	296	1.1	1.179	130.2	LOS F	41.0	290.5	1.00	1.25	20.2
9	R2	213	1.5	1.179	257.4	LOS F	41.0	290.5	1.00	1.58	13.7
Approach		526	1.2	1.179	180.3	LOS F	41.0	290.5	1.00	1.38	16.9
West: Newbridge Road (W)											
10	L2	106	0.0	0.541	19.6	LOS B	16.6	124.3	0.47	0.49	49.4
11	T1	1727	8.7	0.615	12.7	LOS A	19.1	144.7	0.46	0.44	58.3
Approach		1834	8.2	0.615	13.1	LOS A	19.1	144.7	0.46	0.44	57.7
All Vehicles		6172	6.0	1.179	46.2	LOS D	41.0	290.5	0.63	0.71	39.2

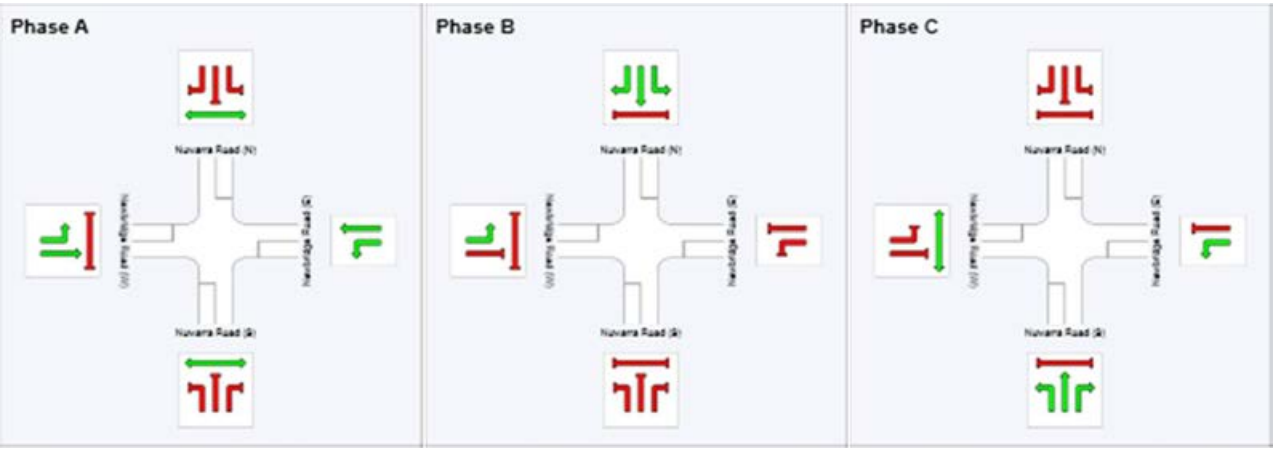
PHASING SUMMARY

Site: I-11 2030 CUM B PM

Newbridge Road / Nuwarra Road
2030 CUM B PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	87	113
Green Time (sec)	81	20	21
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	87	26	27
Phase Split	62 %	19 %	19 %



AM Peak – Cumulative Scenario B with Upgrade

MOVEMENT SUMMARY

Site: I-11 2030 CUM B AM - Upgrade Option

Newbridge Road / Nuwarra Road
2030 CUM B AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Nuwarra Road (S)											
1	L2	37	8.6	0.961	88.5	LOS F	32.0	228.3	0.93	1.12	28.2
2	T1	352	1.5	0.961	85.5	LOS F	32.0	228.3	0.93	1.12	24.1
3	R2	852	6.2	1.281	344.3	LOS F	76.8	566.4	1.00	1.61	10.0
Approach		1240	4.9	1.281	263.3	LOS F	76.8	566.4	0.98	1.46	12.3
East: Newbridge Road (E)											
4	L2	364	16.2	0.649	27.2	LOS B	22.9	181.4	0.72	0.78	45.3
5	T1	1336	12.2	0.649	22.3	LOS B	23.2	180.9	0.67	0.62	51.8
Approach		1700	13.1	0.649	23.3	LOS B	23.2	181.4	0.68	0.65	50.4
North: Nuwarra Road (N)											
7	L2	8	0.0	1.021	129.3	LOS F	12.9	90.9	1.00	1.31	20.2
8	T1	161	0.7	1.277	176.8	LOS F	30.3	219.6	1.00	1.44	15.9
9	R2	145	5.1	1.277	337.8	LOS F	30.3	219.6	1.00	1.87	10.8
Approach		315	2.7	1.277	249.8	LOS F	30.3	219.6	1.00	1.63	13.0
West: Newbridge Road (W)											
10	L2	305	2.1	1.126	185.3	LOS F	111.7	834.3	1.00	1.54	17.1
11	T1	2308	9.9	1.198	210.2	LOS F	135.8	1041.2	1.00	1.77	16.6
Approach		2614	9.0	1.198	207.3	LOS F	135.8	1041.2	1.00	1.75	16.6
All Vehicles		5868	9.0	1.281	168.1	LOS F	135.8	1041.2	0.90	1.36	18.7

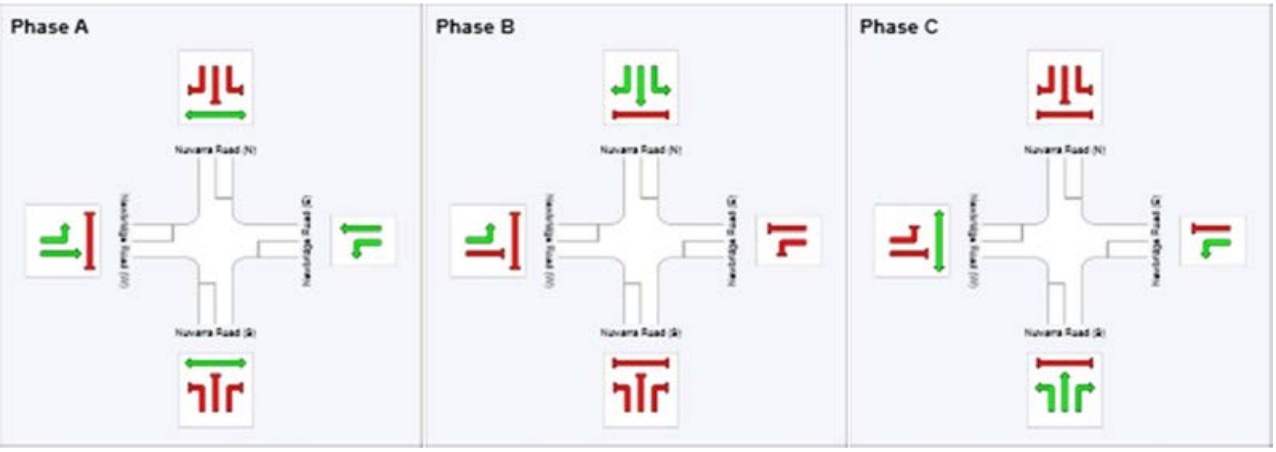
PHASING SUMMARY

Site: I-11 2030 CUM B AM - Upgrade Option

Newbridge Road / Nuwarra Road
2030 CUM B AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	74	91
Green Time (sec)	68	11	43
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	74	17	49
Phase Split	53 %	12 %	35 %



AM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-11 2020 MIMT CUM1 AM

Newbridge Road / Nuwarra Road
2020 MIMT CUM1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nuwarra Road (S)											
1	L2	32	6.7	0.595	47.9	LOS D	19.8	141.2	0.89	0.81	38.0
2	T1	319	1.7	0.595	44.9	LOS D	19.8	141.2	0.89	0.81	31.5
3	R2	760	6.8	1.105	195.1	LOS F	51.7	382.9	1.00	1.32	15.7
Approach		1111	5.3	1.105	147.8	LOS F	51.7	382.9	0.97	1.16	18.8
East: Newbridge Road (E)											
4	L2	292	17.3	0.540	25.4	LOS B	16.5	131.6	0.67	0.74	46.2
5	T1	1075	13.0	0.540	21.9	LOS B	17.2	135.1	0.62	0.57	52.0
Approach		1367	14.0	0.540	22.7	LOS B	17.2	135.1	0.63	0.61	50.8
North: Nuwarra Road (N)											
7	L2	6	0.0	0.831	81.0	LOS F	8.0	56.6	1.00	0.98	26.1
8	T1	131	0.8	1.039	93.3	LOS F	15.2	109.5	1.00	1.06	23.3
9	R2	120	4.4	1.039	139.5	LOS F	15.2	109.5	1.00	1.33	20.0
Approach		257	2.5	1.039	114.5	LOS F	15.2	109.5	1.00	1.18	21.6
West: Newbridge Road (W)											
10	L2	256	2.1	0.983	82.2	LOS F	65.2	489.5	1.00	1.14	27.7
11	T1	1945	11.0	1.046	94.4	LOS F	82.2	635.3	1.00	1.28	28.5
Approach		2201	10.0	1.046	93.0	LOS F	82.2	635.3	1.00	1.26	28.4
All Vehicles		4935	9.6	1.105	87.0	LOS F	82.2	635.3	0.89	1.05	28.4

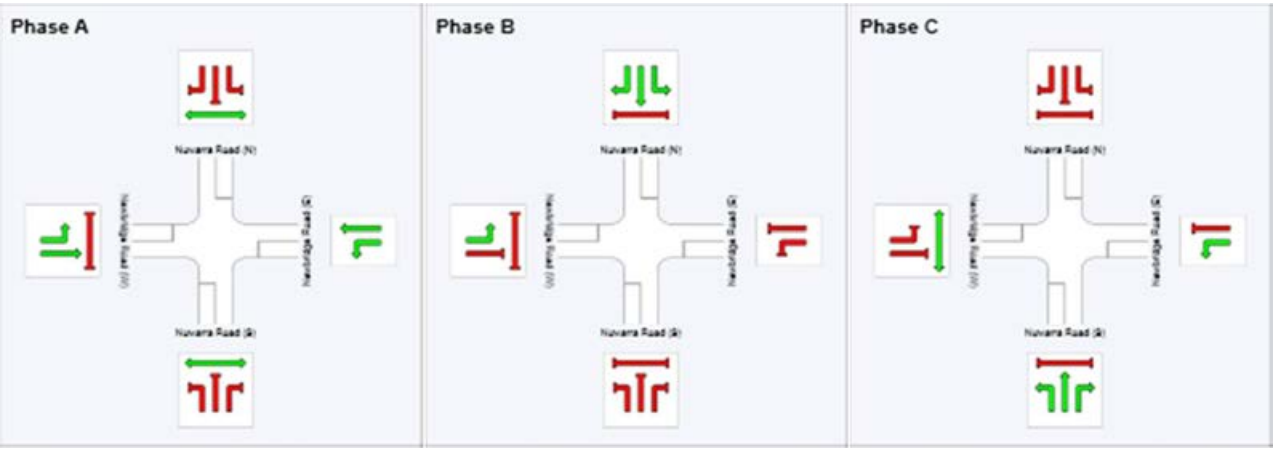
PHASING SUMMARY

Site: I-11 2020 MIMT CUM1 AM

Newbridge Road / Nuwarra Road
2020 MIMT CUM1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	72	89
Green Time (sec)	66	11	45
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	72	17	51
Phase Split	51 %	12 %	36 %



PM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-11 2020 MIMT CUM1 PM

Newbridge Road / Nuwarra Road
2020 MIMT CUM1 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nuwarra Road (S)											
1	L2	49	6.4	0.744	70.8	LOS F	13.6	96.7	1.00	0.87	31.9
2	T1	149	0.7	0.744	66.4	LOS E	13.6	96.7	1.00	0.87	29.0
3	R2	507	5.8	0.948	94.6	LOS F	21.3	156.8	1.00	1.03	25.5
Approach		705	4.8	0.948	87.0	LOS F	21.3	156.8	1.00	0.99	26.6
East: Newbridge Road (E)											
4	L2	694	4.4	0.681	14.7	LOS B	20.5	150.0	0.43	0.70	52.3
5	T1	1976	7.5	0.681	12.9	LOS A	28.1	211.1	0.51	0.51	58.1
Approach		2669	6.7	0.681	13.4	LOS A	28.1	211.1	0.49	0.56	56.6
North: Nuwarra Road (N)											
7	L2	16	0.0	0.824	73.5	LOS F	16.2	114.1	1.00	0.95	29.6
8	T1	275	0.8	1.030	85.4	LOS F	25.5	180.4	1.00	1.02	25.7
9	R2	187	1.1	1.030	140.1	LOS F	25.5	180.4	1.00	1.25	21.0
Approach		478	0.9	1.030	106.4	LOS F	25.5	180.4	1.00	1.11	23.6
West: Newbridge Road (W)											
10	L2	91	0.0	0.458	18.8	LOS B	12.8	95.7	0.43	0.45	49.9
11	T1	1455	9.4	0.520	11.8	LOS A	14.1	107.4	0.41	0.39	59.0
Approach		1546	8.8	0.520	12.2	LOS A	14.1	107.4	0.41	0.39	58.4
All Vehicles		5399	6.5	1.030	30.9	LOS C	28.1	211.1	0.58	0.61	45.3

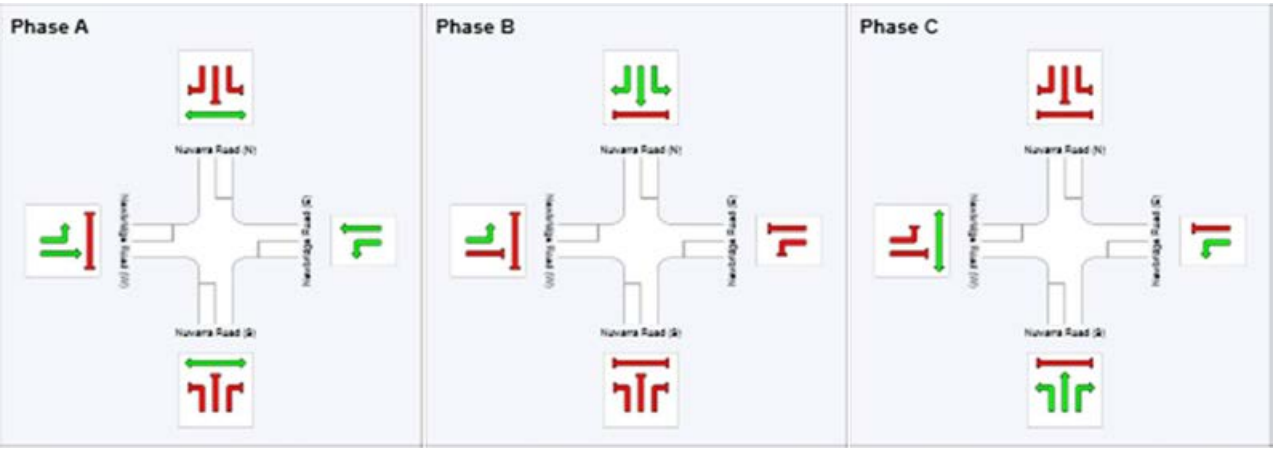
PHASING SUMMARY

Site: I-11 2020 MIMT CUM1 PM

Newbridge Road / Nuwarra Road
2020 MIMT CUM1 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	87	113
Green Time (sec)	81	20	21
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	87	26	27
Phase Split	62 %	19 %	19 %



AM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-11 2030 MIMT CUM2 AM

Newbridge Road / Nuwarra Road
2030 MIMT Cum2 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nuwarra Road (S)											
1	L2	37	8.6	0.884	63.6	LOS E	26.7	190.6	0.91	0.97	33.5
2	T1	352	1.5	0.884	60.6	LOS E	26.7	190.6	0.91	0.97	28.2
3	R2	852	6.2	1.232	301.9	LOS F	72.5	534.1	1.00	1.53	11.1
Approach		1240	4.9	1.232	226.4	LOS F	72.5	534.1	0.97	1.36	13.8
East: Newbridge Road (E)											
4	L2	354	16.7	0.662	28.7	LOS C	23.6	187.3	0.75	0.79	44.6
5	T1	1325	12.5	0.662	24.1	LOS B	24.0	188.2	0.70	0.65	50.8
Approach		1678	13.4	0.662	25.0	LOS B	24.0	188.2	0.71	0.68	49.5
North: Nuwarra Road (N)											
7	L2	8	0.0	1.002	118.3	LOS F	12.1	85.1	1.00	1.27	21.3
8	T1	157	0.7	1.253	162.4	LOS F	28.7	207.9	1.00	1.39	16.8
9	R2	144	5.1	1.253	316.6	LOS F	28.7	207.9	1.00	1.81	11.3
Approach		309	2.7	1.253	232.9	LOS F	28.7	207.9	1.00	1.59	13.7
West: Newbridge Road (W)											
10	L2	305	2.1	1.170	223.5	LOS F	122.0	916.5	1.00	1.66	15.0
11	T1	2317	10.2	1.244	250.7	LOS F	146.6	1133.1	1.00	1.92	14.4
Approach		2622	9.3	1.244	247.5	LOS F	146.6	1133.1	1.00	1.89	14.5
All Vehicles		5849	9.2	1.253	178.5	LOS F	146.6	1133.1	0.91	1.41	17.9

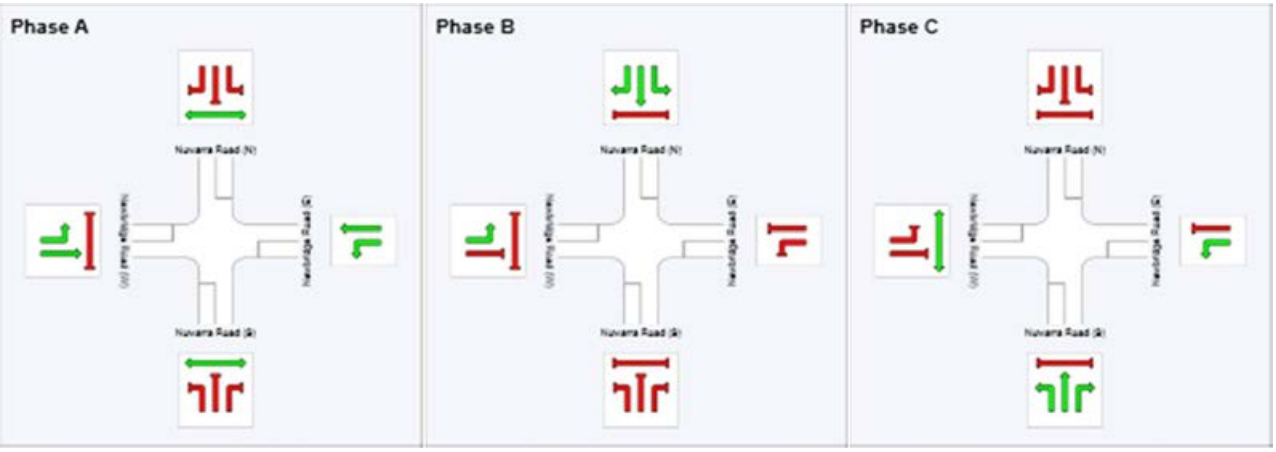
PHASING SUMMARY

Site: I-11 2030 MIMT CUM2 AM

Newbridge Road / Nuwarra Road
2030 MIMT Cum2 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	72	89
Green Time (sec)	66	11	45
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	72	17	51
Phase Split	51 %	12 %	36 %



PM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-11 2030 MIMT CUM2 PM

Newbridge Road / Nuwarra Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Nuwarra Road (S)											
1	L2	58	7.3	0.827	75.2	LOS F	15.8	112.5	1.00	0.94	30.9
2	T1	161	0.7	0.827	70.8	LOS F	15.8	112.5	1.00	0.94	28.1
3	R2	577	6.2	1.081	171.9	LOS F	33.4	246.2	1.00	1.24	17.2
Approach		796	5.2	1.081	144.4	LOS F	33.4	246.2	1.00	1.16	19.4
East: Newbridge Road (E)											
4	L2	766	3.8	0.769	16.1	LOS B	29.2	213.2	0.52	0.75	51.5
5	T1	2249	6.8	0.769	14.1	LOS A	37.1	279.0	0.60	0.59	57.1
Approach		3016	6.1	0.769	14.6	LOS B	37.1	279.0	0.58	0.63	55.7
North: Nuwarra Road (N)											
7	L2	18	0.0	0.943	91.3	LOS F	19.5	137.8	1.00	1.14	26.4
8	T1	296	1.1	1.179	130.2	LOS F	41.0	290.5	1.00	1.25	20.2
9	R2	213	1.5	1.179	257.4	LOS F	41.0	290.5	1.00	1.58	13.7
Approach		526	1.2	1.179	180.3	LOS F	41.0	290.5	1.00	1.38	16.9
West: Newbridge Road (W)											
10	L2	105	0.0	0.544	19.6	LOS B	16.7	125.4	0.47	0.49	49.4
11	T1	1729	9.0	0.618	12.7	LOS A	19.2	146.2	0.46	0.44	58.3
Approach		1834	8.5	0.618	13.1	LOS A	19.2	146.2	0.46	0.44	57.7
All Vehicles		6172	6.3	1.179	45.0	LOS D	41.0	290.5	0.63	0.71	39.6

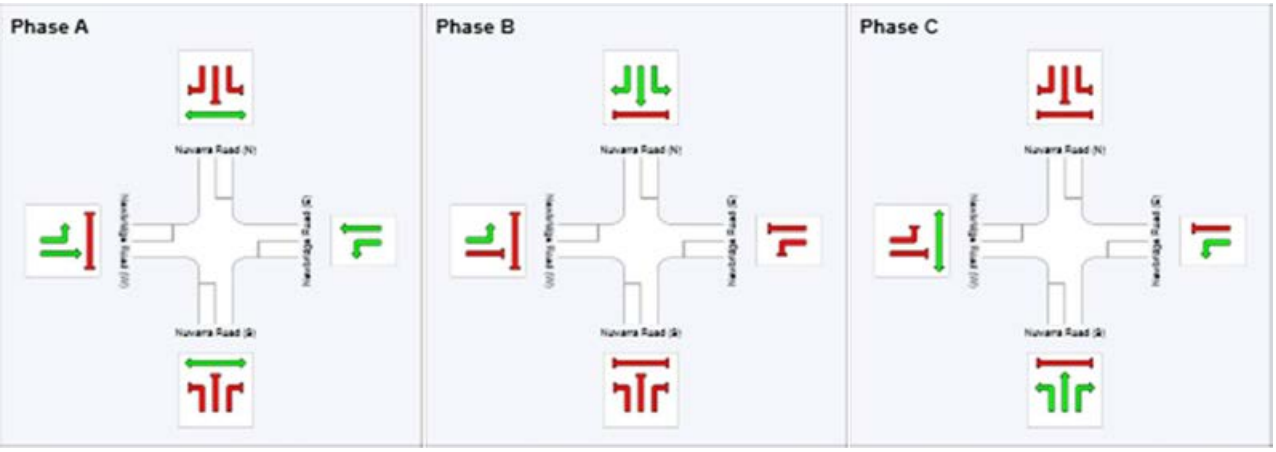
PHASING SUMMARY

Site: I-11 2030 MIMT CUM2 PM

Newbridge Road / Nuwarra Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	87	113
Green Time (sec)	81	20	21
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	87	26	27
Phase Split	62 %	19 %	19 %



AM Peak – Cumulative Scenario C2 with Upgrade

MOVEMENT SUMMARY

Site: I-11 2030 MIMT CUM2 AM - Upgrade Option

Newbridge Road / Nuwarra Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nuwarra Road (S)											
1	L2	37	8.6	0.961	88.5	LOS F	32.0	228.3	0.93	1.12	28.2
2	T1	352	1.5	0.961	85.5	LOS F	32.0	228.3	0.93	1.12	24.1
3	R2	852	6.2	1.281	344.3	LOS F	76.8	566.4	1.00	1.61	10.0
Approach		1240	4.9	1.281	263.3	LOS F	76.8	566.4	0.98	1.46	12.3
East: Newbridge Road (E)											
4	L2	354	16.7	0.643	27.2	LOS B	22.5	179.2	0.72	0.78	45.3
5	T1	1325	12.5	0.643	22.2	LOS B	22.7	178.6	0.66	0.62	51.9
Approach		1678	13.4	0.643	23.3	LOS B	22.7	179.2	0.67	0.65	50.5
North: Nuwarra Road (N)											
7	L2	8	0.0	1.002	118.3	LOS F	12.1	85.1	1.00	1.27	21.3
8	T1	157	0.7	1.253	162.4	LOS F	28.7	207.9	1.00	1.39	16.8
9	R2	144	5.1	1.253	316.6	LOS F	28.7	207.9	1.00	1.81	11.3
Approach		309	2.7	1.253	232.9	LOS F	28.7	207.9	1.00	1.59	13.7
West: Newbridge Road (W)											
10	L2	305	2.1	1.135	192.8	LOS F	114.3	858.3	1.00	1.56	16.7
11	T1	2317	10.2	1.208	218.2	LOS F	138.4	1069.6	1.00	1.80	16.1
Approach		2622	9.3	1.208	215.2	LOS F	138.4	1069.6	1.00	1.78	16.2
All Vehicles		5849	9.2	1.281	171.3	LOS F	138.4	1069.6	0.90	1.38	18.5

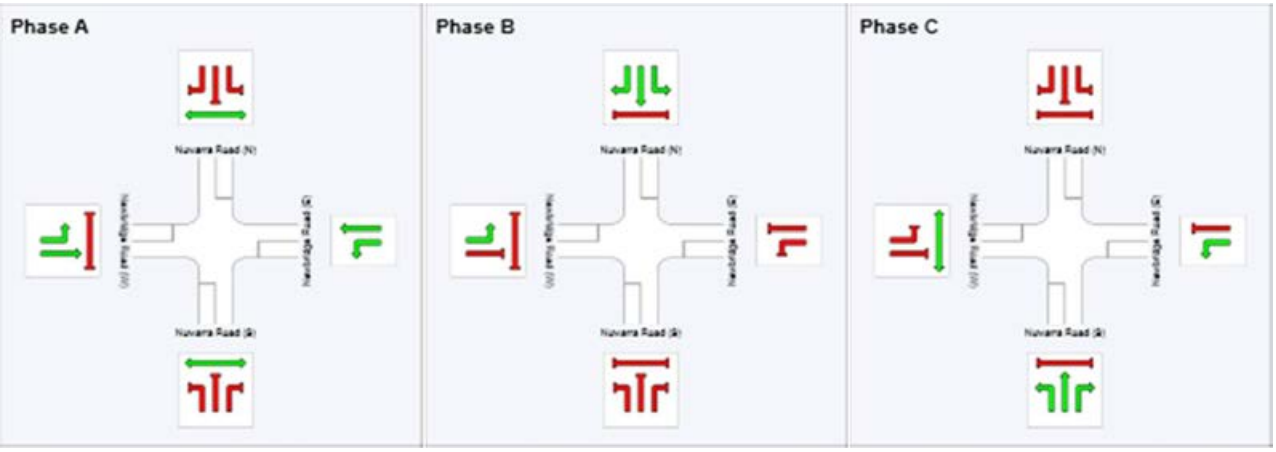
PHASING SUMMARY

Site: I-11 2030 MIMT CUM2 AM - Upgrade Option

Newbridge Road / Nuwarra Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	74	91
Green Time (sec)	68	11	43
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	74	17	49
Phase Split	53 %	12 %	35 %



I-12 Intersection of Newbridge Road and Governor Macquarie Drive

AM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-12 2030 CUM A AM

Newbridge Road / Governor Macquarie Drive
2030 CUM A AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Brickmakers Drive (S)											
1	L2	14	0.0	0.909	84.6	LOS F	17.3	122.1	1.00	1.07	24.1
2	T1	207	1.0	0.909	80.3	LOS F	17.3	122.1	1.00	1.07	23.8
3	R2	720	1.2	1.239	301.6	LOS F	55.9	395.6	1.00	1.68	12.6
Approach		941	1.1	1.239	249.7	LOS F	55.9	395.6	1.00	1.53	13.8
East: Newbridge Road (E)											
4	L2	242	3.0	0.178	7.9	LOS A	2.2	15.7	0.19	0.64	58.1
5	T1	1510	12.3	0.447	14.1	LOS A	17.4	136.1	0.56	0.50	59.7
6	R2	683	9.9	1.050	154.1	LOS F	36.1	274.4	1.00	1.16	23.9
Approach		2436	10.7	1.050	52.8	LOS D	36.1	274.4	0.65	0.70	41.7
North: Governor Macquarie Drive (N)											
7	L2	765	7.8	0.725	52.8	LOS D	23.4	174.6	0.96	0.86	40.2
8	T1	135	2.3	0.546	64.2	LOS E	8.8	62.9	0.99	0.79	27.0
9	R2	179	31.7	1.036	142.1	LOS F	18.6	165.2	1.00	1.19	20.1
Approach		1079	11.1	1.036	69.0	LOS E	23.4	174.6	0.97	0.91	34.2
West: Newbridge Road (W)											
10	L2	132	30.0	1.243	284.3	LOS F	167.0	1295.4	1.00	1.97	12.3
11	T1	3031	8.1	1.243	276.9	LOS F	171.4	1302.6	1.00	2.01	16.1
12	R2	5	20.0	0.048	33.2	LOS C	0.2	1.8	0.61	0.68	37.7
Approach		3169	9.0	1.243	276.8	LOS F	171.4	1302.6	1.00	2.01	15.9
All Vehicles		7625	8.9	1.243	172.5	LOS F	171.4	1302.6	0.88	1.37	21.6

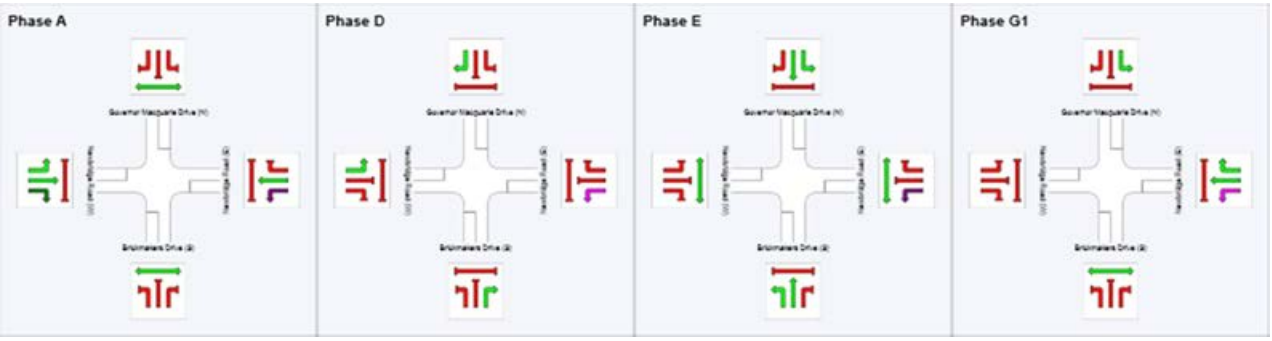
PHASING SUMMARY

Site: I-12 2030 CUM A AM

Newbridge Road / Governor Macquarie Drive
2030 CUM A AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	66	88	112
Green Time (sec)	60	16	18	22
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	66	22	24	28
Phase Split	47 %	16 %	17 %	20 %



PM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-12 2030 CUM A PM

Newbridge Road / Governor Macquarie Drive
2030 CUM A PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	11	0.0	0.554	70.4	LOS E	7.2	52.4	1.00	0.79	26.8
2	T1	97	5.4	0.554	66.3	LOS E	7.2	52.4	1.00	0.79	26.5
3	R2	271	0.8	0.641	70.4	LOS E	9.1	64.3	1.00	0.81	32.5
Approach		378	1.9	0.641	69.3	LOS E	9.1	64.3	1.00	0.81	31.0
East: Newbridge Road (E)											
4	L2	688	1.4	0.482	9.5	LOS A	8.2	58.3	0.29	0.69	57.0
5	T1	2794	5.9	0.949	37.1	LOS C	60.4	450.5	0.77	0.83	48.3
6	R2	744	10.3	1.200	275.1	LOS F	55.7	424.3	1.00	1.41	15.9
Approach		4227	6.0	1.200	74.5	LOS F	60.4	450.5	0.74	0.91	35.8
North: Governor Macquarie Drive (N)											
7	L2	614	7.9	0.497	49.3	LOS D	17.2	128.5	0.88	0.82	41.1
8	T1	314	1.7	1.055	145.8	LOS F	32.6	231.4	1.00	1.33	16.2
9	R2	307	36.2	1.617	644.9	LOS F	71.1	658.0	1.00	2.03	6.0
Approach		1234	13.3	1.617	221.9	LOS F	71.1	658.0	0.94	1.25	15.9
West: Newbridge Road (W)											
10	L2	176	15.7	0.838	41.1	LOS C	43.0	328.2	0.90	0.85	40.9
11	T1	2107	6.7	0.838	33.1	LOS C	43.5	325.6	0.88	0.81	49.8
12	R2	4	0.0	0.071	58.0	LOS E	0.3	1.8	0.82	0.69	29.3
Approach		2288	7.4	0.838	33.8	LOS C	43.5	328.2	0.88	0.82	49.1
All Vehicles		8126	7.3	1.617	85.2	LOS F	71.1	658.0	0.82	0.93	32.8

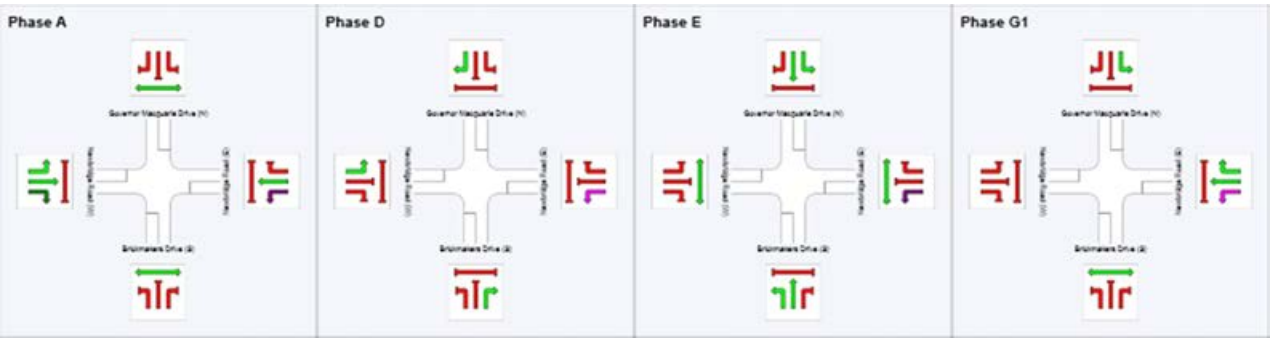
PHASING SUMMARY

Site: I-12 2030 CUM A PM

Newbridge Road / Governor Macquarie Drive
2030 CUM A PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	67	89	110
Green Time (sec)	61	16	15	24
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	67	22	21	30
Phase Split	48 %	16 %	15 %	21 %



AM Peak – Cumulative Scenario A with Upgrade

MOVEMENT SUMMARY

Site: I-12 2030 CUM A AM - Upgrade Option

Newbridge Road / Governor Macquarie Drive
2030 CUM A AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	14	0.0	0.909	84.6	LOS F	17.3	122.1	1.00	1.07	24.1
2	T1	207	1.0	0.909	80.3	LOS F	17.3	122.1	1.00	1.07	23.8
3	R2	720	1.2	1.102	182.8	LOS F	42.6	301.3	1.00	1.37	18.4
Approach		941	1.1	1.102	158.8	LOS F	42.6	301.3	1.00	1.30	19.2
East: Newbridge Road (E)											
4	L2	242	3.0	0.179	7.9	LOS A	2.1	15.3	0.20	0.64	58.1
5	T1	1510	12.3	0.447	14.1	LOS A	17.4	136.1	0.56	0.50	59.7
6	R2	683	9.9	1.077	173.1	LOS F	38.6	293.2	1.00	1.20	22.1
Approach		2436	10.7	1.077	58.1	LOS E	38.6	293.2	0.65	0.71	40.1
North: Governor Macquarie Drive (N)											
7	L2	765	7.8	0.923	70.5	LOS E	22.7	169.3	1.00	1.08	35.8
8	T1	135	2.3	0.825	73.9	LOS F	12.5	93.7	1.00	0.94	24.9
9	R2	179	31.7	0.825	79.6	LOS F	12.5	93.7	1.00	0.92	28.6
Approach		1079	11.1	0.923	72.4	LOS F	22.7	169.3	1.00	1.03	33.5
West: Newbridge Road (W)											
10	L2	132	30.0	1.222	265.7	LOS F	161.8	1255.1	1.00	1.91	13.0
11	T1	3031	8.1	1.222	258.3	LOS F	166.0	1261.5	1.00	1.95	16.9
12	R2	5	20.0	0.047	32.5	LOS C	0.2	1.8	0.60	0.68	38.0
Approach		3169	9.0	1.222	258.2	LOS F	166.0	1261.5	1.00	1.94	16.8
All Vehicles		7625	8.9	1.222	155.7	LOS F	166.0	1261.5	0.89	1.34	23.1

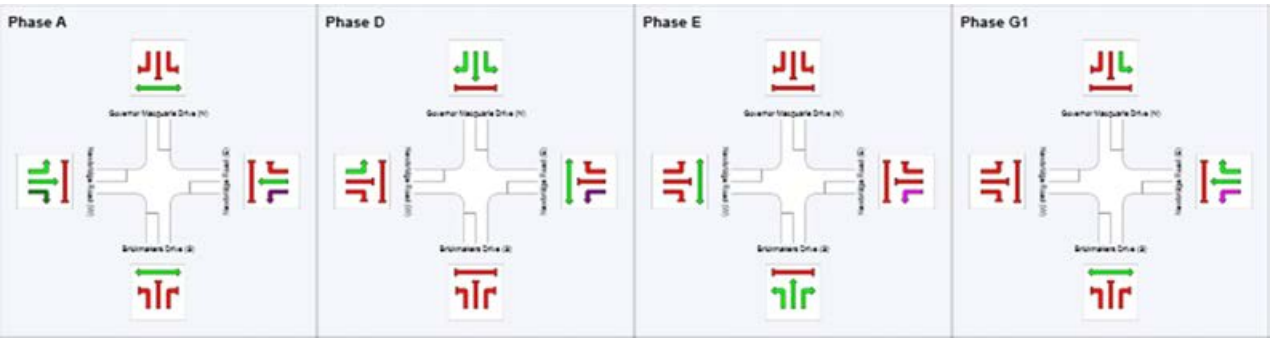
PHASING SUMMARY

Site: I-12 2030 CUM A AM - Upgrade Option

Newbridge Road / Governor Macquarie Drive
2030 CUM A AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	67	89	113
Green Time (sec)	61	16	18	21
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	67	22	24	27
Phase Split	48 %	16 %	17 %	19 %



PM Peak – Cumulative Scenario A with Upgrade

MOVEMENT SUMMARY

Site: I-12 2030 CUM A PM - Upgrade Option

Newbridge Road / Governor Macquarie Drive
2030 CUM A PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	11	0.0	0.689	75.4	LOS F	7.5	54.9	1.00	0.84	25.8
2	T1	97	5.4	0.689	71.3	LOS F	7.5	54.9	1.00	0.84	25.5
3	R2	271	0.8	0.854	82.0	LOS F	10.1	71.4	1.00	0.97	30.1
Approach		378	1.9	0.854	79.1	LOS F	10.1	71.4	1.00	0.93	29.0
East: Newbridge Road (E)											
4	L2	688	1.4	0.486	9.4	LOS A	11.7	82.9	0.35	0.69	57.0
5	T1	2794	5.9	0.987	50.7	LOS D	76.5	570.3	0.78	0.90	43.4
6	R2	744	10.3	1.078	178.9	LOS F	43.4	330.7	1.00	1.22	21.7
Approach		4227	6.0	1.078	66.5	LOS E	76.5	570.3	0.75	0.92	37.7
North: Governor Macquarie Drive (N)											
7	L2	614	7.9	0.485	33.9	LOS C	13.5	100.8	0.87	0.80	46.2
8	T1	314	1.7	1.091	170.3	LOS F	42.0	311.4	1.00	1.46	14.5
9	R2	307	36.2	1.091	298.6	LOS F	42.0	311.4	1.00	1.55	11.6
Approach		1234	13.3	1.091	134.3	LOS F	42.0	381.9	0.93	1.16	22.5
West: Newbridge Road (W)											
10	L2	176	15.7	0.880	48.7	LOS D	48.1	367.0	0.95	0.92	38.1
11	T1	2107	6.7	0.880	40.5	LOS C	48.8	365.7	0.94	0.90	46.8
12	R2	4	0.0	0.072	61.7	LOS E	0.3	1.8	0.85	0.69	28.4
Approach		2288	7.4	0.880	41.2	LOS C	48.8	367.0	0.94	0.90	46.1
All Vehicles		8126	7.3	1.091	70.3	LOS E	76.5	570.3	0.84	0.95	36.0

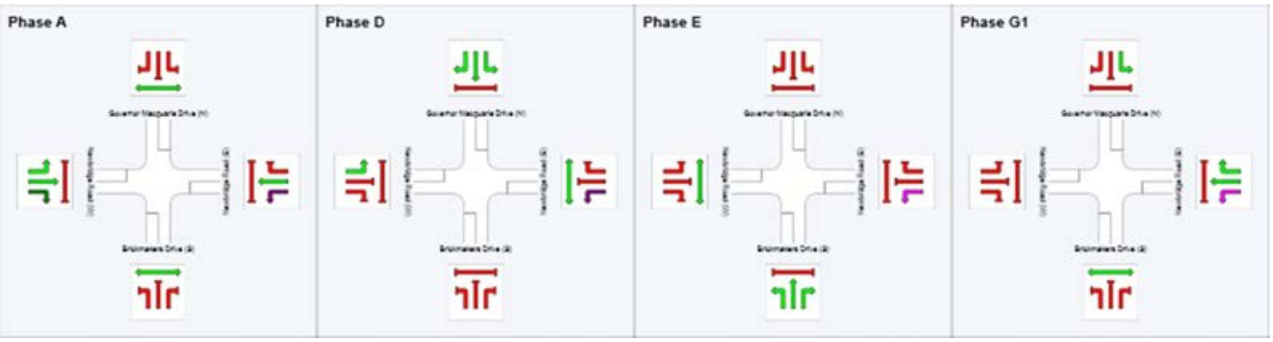
PHASING SUMMARY

Site: I-12 2030 CUM A PM - Upgrade Option

Newbridge Road / Governor Macquarie Drive
2030 CUM A PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	64	87	105
Green Time (sec)	58	17	12	29
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	64	23	18	35
Phase Split	46 %	16 %	13 %	25 %



AM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-12 2030 CUM B AM

Newbridge Road / Governor Macquarie Drive
2030 CUM B AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	14	0.0	0.909	84.6	LOS F	17.3	122.1	1.00	1.07	24.1
2	T1	207	1.0	0.909	80.3	LOS F	17.3	122.1	1.00	1.07	23.8
3	R2	720	1.2	1.239	301.6	LOS F	55.9	395.6	1.00	1.68	12.6
Approach		941	1.1	1.239	249.7	LOS F	55.9	395.6	1.00	1.53	13.8
East: Newbridge Road (E)											
4	L2	242	3.0	0.178	7.9	LOS A	2.2	15.7	0.19	0.64	58.1
5	T1	1531	11.6	0.450	14.2	LOS A	17.7	137.2	0.56	0.50	59.7
6	R2	683	9.9	1.050	154.1	LOS F	36.1	274.4	1.00	1.16	23.9
Approach		2456	10.3	1.050	52.5	LOS D	36.1	274.4	0.65	0.70	41.8
North: Governor Macquarie Drive (N)											
7	L2	765	7.8	0.725	52.8	LOS D	23.4	174.6	0.96	0.86	40.2
8	T1	135	2.3	0.546	64.2	LOS E	8.8	62.9	0.99	0.79	27.0
9	R2	181	31.4	1.044	147.8	LOS F	19.1	170.0	1.00	1.21	19.6
Approach		1081	11.1	1.044	70.1	LOS E	23.4	174.6	0.97	0.91	33.9
West: Newbridge Road (W)											
10	L2	132	29.9	1.226	269.1	LOS F	161.4	1238.7	1.00	1.92	12.9
11	T1	3012	7.5	1.226	261.7	LOS F	165.8	1244.8	1.00	1.96	16.8
12	R2	5	20.0	0.048	33.2	LOS C	0.2	1.8	0.61	0.68	37.7
Approach		3149	8.5	1.226	261.7	LOS F	165.8	1244.8	1.00	1.95	16.6
All Vehicles		7627	8.5	1.239	165.7	LOS F	165.8	1244.8	0.88	1.35	22.1

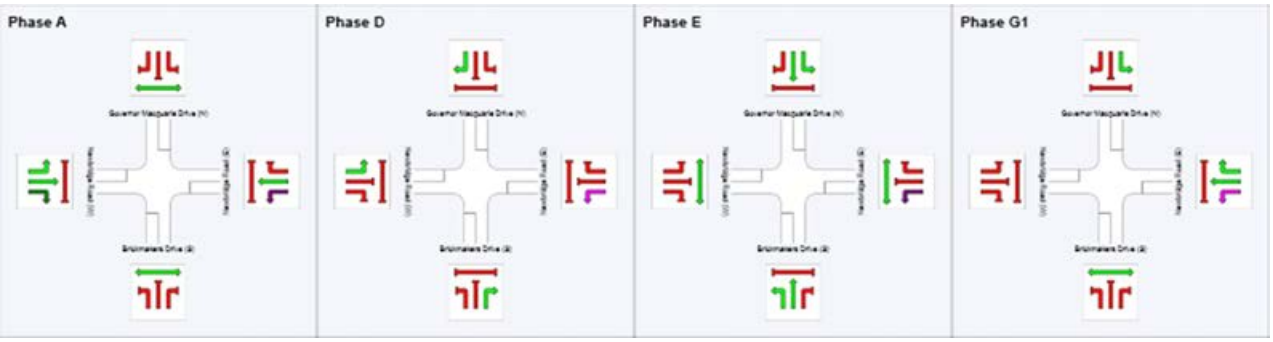
PHASING SUMMARY

Site: I-12 2030 CUM B AM

Newbridge Road / Governor Macquarie Drive
2030 CUM B AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	66	88	112
Green Time (sec)	60	16	18	22
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	66	22	24	28
Phase Split	47 %	16 %	17 %	20 %



PM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-12 2030 CUM B PM

Newbridge Road / Governor Macquarie Drive
2030 CUM B PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	11	0.0	0.567	70.6	LOS F	7.3	54.1	1.00	0.79	26.8
2	T1	98	6.5	0.567	66.6	LOS E	7.3	54.1	1.00	0.79	26.5
3	R2	271	0.8	0.641	70.4	LOS E	9.1	64.3	1.00	0.81	32.5
Approach		379	2.2	0.641	69.4	LOS E	9.1	64.3	1.00	0.81	31.0
East: Newbridge Road (E)											
4	L2	688	1.4	0.484	9.5	LOS A	8.3	58.5	0.29	0.70	57.0
5	T1	2772	5.2	0.935	33.1	LOS C	56.2	413.5	0.76	0.79	50.0
6	R2	744	10.3	1.200	275.1	LOS F	55.7	424.3	1.00	1.41	15.9
Approach		4204	5.5	1.200	72.1	LOS F	56.2	424.3	0.73	0.89	36.4
North: Governor Macquarie Drive (N)											
7	L2	614	7.9	0.497	49.3	LOS D	17.2	128.5	0.88	0.82	41.1
8	T1	314	1.7	1.055	145.6	LOS F	32.6	231.3	1.00	1.33	16.2
9	R2	305	35.9	1.602	630.7	LOS F	70.1	643.4	1.00	2.02	6.1
Approach		1233	13.2	1.602	217.8	LOS F	70.1	643.4	0.94	1.25	16.2
West: Newbridge Road (W)											
10	L2	177	14.9	0.836	40.8	LOS C	43.0	324.3	0.90	0.84	41.0
11	T1	2117	6.0	0.836	32.9	LOS C	43.5	322.0	0.88	0.81	49.9
12	R2	4	0.0	0.071	56.2	LOS D	0.2	1.7	0.81	0.69	29.8
Approach		2298	6.7	0.836	33.5	LOS C	43.5	324.3	0.88	0.81	49.2
All Vehicles		8114	6.8	1.602	83.2	LOS F	70.1	643.4	0.82	0.92	33.2

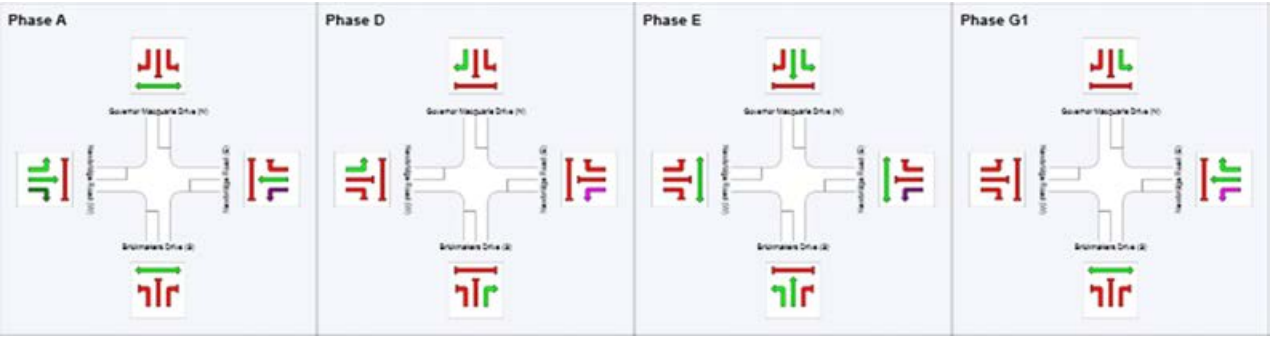
PHASING SUMMARY

Site: I-12 2030 CUM B PM

Newbridge Road / Governor Macquarie Drive
2030 CUM B PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	67	89	110
Green Time (sec)	61	16	15	24
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	67	22	21	30
Phase Split	48 %	16 %	15 %	21 %



AM Peak – Cumulative Scenario B with Upgrade

MOVEMENT SUMMARY

Site: I-12 2030 CUM B AM - Upgrade Option

Newbridge Road / Governor Macquarie Drive
2030 CUM B AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	14	0.0	0.909	84.6	LOS F	17.3	122.1	1.00	1.07	24.1
2	T1	207	1.0	0.909	80.3	LOS F	17.3	122.1	1.00	1.07	23.8
3	R2	720	1.2	1.102	182.8	LOS F	42.6	301.3	1.00	1.37	18.4
Approach		941	1.1	1.102	158.8	LOS F	42.6	301.3	1.00	1.30	19.2
East: Newbridge Road (E)											
4	L2	242	3.0	0.179	7.9	LOS A	2.1	15.3	0.20	0.64	58.1
5	T1	1531	11.6	0.450	14.2	LOS A	17.7	137.2	0.56	0.50	59.7
6	R2	683	9.9	1.077	173.1	LOS F	38.6	293.2	1.00	1.20	22.1
Approach		2456	10.3	1.077	57.8	LOS E	38.6	293.2	0.65	0.71	40.2
North: Governor Macquarie Drive (N)											
7	L2	765	7.8	0.923	70.5	LOS E	22.7	169.3	1.00	1.08	35.8
8	T1	135	2.3	0.829	74.2	LOS F	12.6	94.4	1.00	0.94	24.8
9	R2	181	31.4	0.829	79.9	LOS F	12.6	94.4	1.00	0.93	28.5
Approach		1081	11.1	0.923	72.5	LOS F	22.7	169.3	1.00	1.03	33.4
West: Newbridge Road (W)											
10	L2	132	29.9	1.206	250.9	LOS F	156.2	1198.8	1.00	1.85	13.6
11	T1	3012	7.5	1.206	243.4	LOS F	160.4	1204.1	1.00	1.89	17.7
12	R2	5	20.0	0.048	32.5	LOS C	0.2	1.8	0.60	0.68	38.0
Approach		3149	8.5	1.206	243.4	LOS F	160.4	1204.1	1.00	1.89	17.5
All Vehicles		7627	8.5	1.206	149.0	LOS F	160.4	1204.1	0.89	1.32	23.7

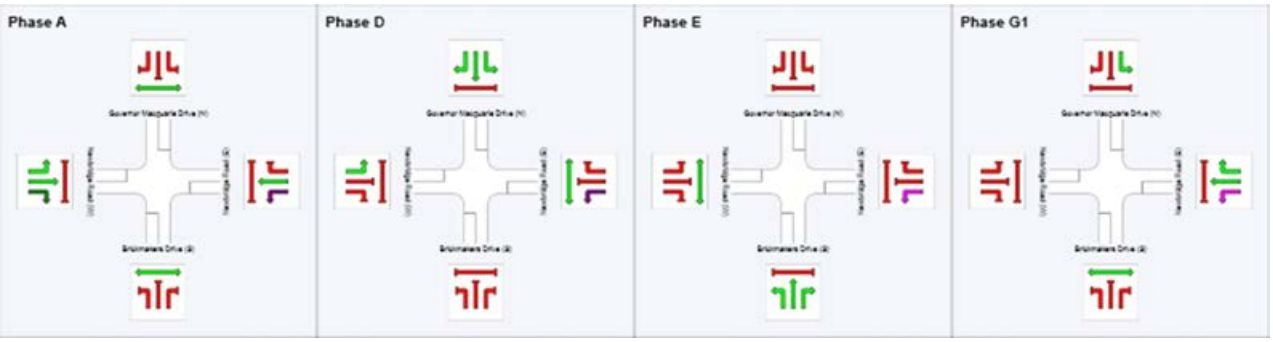
PHASING SUMMARY

Site: I-12 2030 CUM B AM - Upgrade Option

Newbridge Road / Governor Macquarie Drive
2030 CUM B AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	67	89	113
Green Time (sec)	61	16	18	21
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	67	22	24	27
Phase Split	48 %	16 %	17 %	19 %



PM Peak – Cumulative Scenario B with Upgrade

MOVEMENT SUMMARY

Site: I-12 2030 CUM B PM - Upgrade Option

Newbridge Road / Governor Macquarie Drive
2030 CUM B PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	11	0.0	0.705	75.9	LOS F	7.6	56.9	1.00	0.85	25.7
2	T1	98	6.5	0.705	71.9	LOS F	7.6	56.9	1.00	0.85	25.4
3	R2	271	0.8	0.854	82.0	LOS F	10.1	71.4	1.00	0.97	30.1
Approach		379	2.2	0.854	79.2	LOS F	10.1	71.4	1.00	0.93	29.0
East: Newbridge Road (E)											
4	L2	688	1.4	0.488	9.4	LOS A	11.7	83.0	0.35	0.69	57.0
5	T1	2772	5.2	0.974	44.5	LOS D	71.2	523.8	0.76	0.86	45.5
6	R2	744	10.3	1.077	178.4	LOS F	43.3	330.1	1.00	1.21	21.7
Approach		4204	5.5	1.077	62.5	LOS E	71.2	523.8	0.74	0.90	38.8
North: Governor Macquarie Drive (N)											
7	L2	614	7.9	0.485	33.9	LOS C	13.5	100.8	0.87	0.80	46.2
8	T1	314	1.7	1.088	167.5	LOS F	41.6	307.6	1.00	1.45	14.6
9	R2	305	35.9	1.088	290.8	LOS F	41.6	307.6	1.00	1.53	11.9
Approach		1233	13.2	1.088	131.5	LOS F	41.6	372.1	0.93	1.15	22.8
West: Newbridge Road (W)											
10	L2	177	14.9	0.878	48.2	LOS D	48.1	362.4	0.95	0.92	38.3
11	T1	2117	6.0	0.878	40.1	LOS C	48.8	361.3	0.93	0.89	46.9
12	R2	4	0.0	0.072	59.8	LOS E	0.3	1.8	0.84	0.69	28.8
Approach		2298	6.7	0.878	40.8	LOS C	48.8	362.4	0.94	0.89	46.3
All Vehicles		8114	6.8	1.088	67.6	LOS E	71.2	523.8	0.84	0.94	36.6

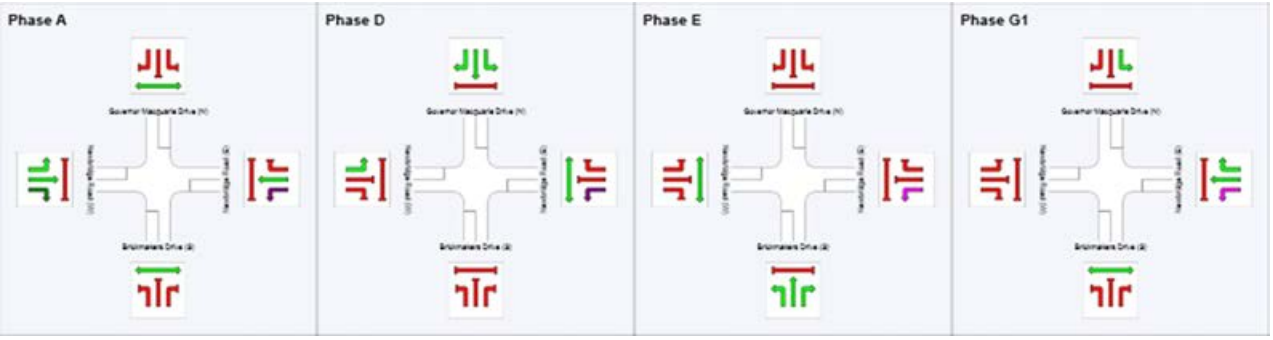
PHASING SUMMARY

Site: I-12 2030 CUM B PM - Upgrade Option

Newbridge Road / Governor Macquarie Drive
2030 CUM B PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	64	87	105
Green Time (sec)	58	17	12	29
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	64	23	18	35
Phase Split	46 %	16 %	13 %	25 %



AM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-12 2020 MIMT CUM1 AM

Newbridge Road / Governor Macquarie Drive
2020 MIMT CUM1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	11	0.0	0.807	74.2	LOS F	14.0	99.2	1.00	0.93	26.1
2	T1	186	1.1	0.807	69.8	LOS E	14.0	99.2	1.00	0.93	25.8
3	R2	624	1.0	1.073	160.6	LOS F	34.3	242.1	1.00	1.31	20.1
Approach		821	1.0	1.073	138.9	LOS F	34.3	242.1	1.00	1.22	21.0
East: Newbridge Road (E)											
4	L2	204	2.6	0.148	7.7	LOS A	1.7	12.0	0.18	0.63	58.2
5	T1	1226	12.4	0.362	13.2	LOS A	13.1	102.4	0.52	0.46	60.4
6	R2	616	10.4	0.883	78.2	LOS F	22.7	173.4	1.00	0.93	34.7
Approach		2046	10.9	0.883	32.2	LOS C	22.7	173.4	0.63	0.62	49.0
North: Governor Macquarie Drive (N)											
7	L2	673	8.9	0.642	51.3	LOS D	19.9	149.9	0.93	0.84	40.5
8	T1	121	2.6	0.491	63.7	LOS E	7.8	56.2	0.98	0.78	27.1
9	R2	158	34.7	0.930	94.5	LOS F	13.1	118.7	1.00	1.03	25.8
Approach		952	12.4	0.930	60.1	LOS E	19.9	149.9	0.94	0.87	36.3
West: Newbridge Road (W)											
10	L2	121	31.1	1.055	125.6	LOS F	96.3	745.3	1.00	1.36	22.7
11	T1	2577	8.5	1.055	117.7	LOS F	98.6	745.3	1.00	1.37	28.8
12	R2	4	25.0	0.029	32.5	LOS C	0.2	1.5	0.60	0.66	38.0
Approach		2702	9.5	1.055	117.9	LOS F	98.6	745.3	1.00	1.37	28.5
All Vehicles		6521	9.3	1.073	85.2	LOS F	98.6	745.3	0.88	1.04	32.8

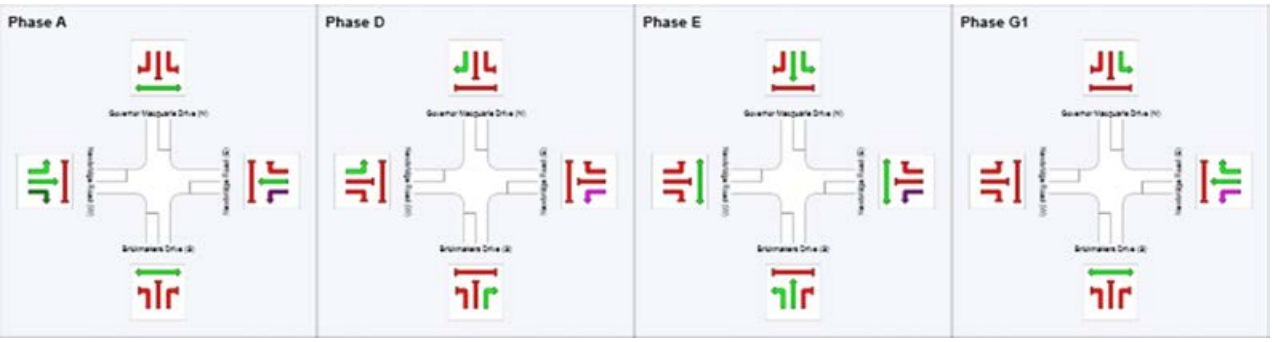
PHASING SUMMARY

Site: I-12 2020 MIMT CUM1 AM

Newbridge Road / Governor Macquarie Drive
2020 MIMT CUM1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	66	88	112
Green Time (sec)	60	16	18	22
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	66	22	24	28
Phase Split	47 %	16 %	17 %	20 %



PM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-12 2020 MIMT CUM1 PM

Newbridge Road / Governor Macquarie Drive
2020 MIMT CUM1 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	8	0.0	0.485	69.8	LOS E	6.3	45.6	0.99	0.78	27.0
2	T1	86	4.9	0.485	65.7	LOS E	6.3	45.6	0.99	0.78	26.6
3	R2	236	0.9	0.559	69.4	LOS E	7.8	55.2	0.99	0.79	32.7
Approach		331	1.9	0.559	68.4	LOS E	7.8	55.2	0.99	0.79	31.2
East: Newbridge Road (E)											
4	L2	608	1.4	0.437	9.2	LOS A	7.0	49.9	0.27	0.68	57.2
5	T1	2430	5.8	0.742	16.4	LOS B	40.9	302.1	0.68	0.63	58.4
6	R2	674	11.3	1.093	186.1	LOS F	40.6	311.6	1.00	1.24	21.1
Approach		3712	6.1	1.093	46.0	LOS D	40.9	311.6	0.67	0.75	43.7
North: Governor Macquarie Drive (N)											
7	L2	508	3.5	0.399	47.8	LOS D	13.8	99.2	0.85	0.80	41.7
8	T1	280	0.8	0.898	77.2	LOS F	20.8	146.8	1.00	1.00	24.4
9	R2	216	19.7	1.031	135.7	LOS F	21.8	178.8	1.00	1.17	20.8
Approach		1005	6.2	1.031	74.9	LOS F	21.8	178.8	0.92	0.94	31.3
West: Newbridge Road (W)											
10	L2	162	17.7	0.722	37.3	LOS C	32.3	246.9	0.81	0.76	42.4
11	T1	1803	7.3	0.722	29.6	LOS C	32.6	243.3	0.78	0.71	51.3
12	R2	3	0.0	0.047	43.8	LOS D	0.2	1.1	0.70	0.68	33.6
Approach		1968	8.1	0.722	30.3	LOS C	32.6	246.9	0.78	0.72	50.6
All Vehicles		7016	6.5	1.093	46.8	LOS D	40.9	311.6	0.75	0.77	42.7

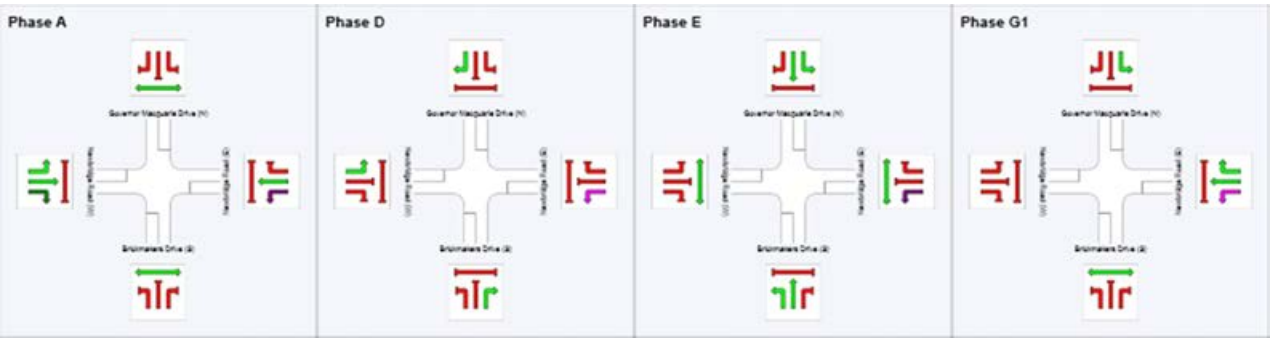
PHASING SUMMARY

Site: I-12 2020 MIMT CUM1 PM

Newbridge Road / Governor Macquarie Drive
2020 MIMT CUM1 PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	67	89	110
Green Time (sec)	61	16	15	24
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	67	22	21	30
Phase Split	48 %	16 %	15 %	21 %



AM Peak – Cumulative Scenario C1 with Upgrade

MOVEMENT SUMMARY

Site: I-12 2020 MIMT CUM1 AM - Upgrade Option

Newbridge Road / Governor Macquarie Drive
2019 MIMT CUM1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	11	0.0	0.807	74.2	LOS F	14.0	99.2	1.00	0.93	26.1
2	T1	186	1.1	0.807	69.8	LOS E	14.0	99.2	1.00	0.93	25.8
3	R2	624	1.0	1.073	160.6	LOS F	34.3	242.1	1.00	1.31	20.1
Approach		821	1.0	1.073	138.9	LOS F	34.3	242.1	1.00	1.22	21.0
East: Newbridge Road (E)											
4	L2	204	2.6	0.148	7.7	LOS A	1.7	12.0	0.17	0.63	58.3
5	T1	1226	12.4	0.362	13.2	LOS A	13.1	102.4	0.52	0.46	60.4
6	R2	616	10.4	0.931	87.3	LOS F	24.4	185.7	1.00	0.98	32.9
Approach		2046	10.9	0.931	34.9	LOS C	24.4	185.7	0.63	0.63	47.9
North: Governor Macquarie Drive (N)											
7	L2	673	8.9	0.658	52.3	LOS D	20.1	151.6	0.94	0.85	40.3
8	T1	121	2.6	0.491	63.7	LOS E	7.8	56.2	0.98	0.78	27.1
9	R2	158	34.7	0.930	94.5	LOS F	13.1	118.7	1.00	1.03	25.8
Approach		952	12.4	0.930	60.8	LOS E	20.1	151.6	0.95	0.87	36.1
West: Newbridge Road (W)											
10	L2	121	31.1	1.038	112.1	LOS F	91.9	711.7	1.00	1.30	24.4
11	T1	2577	8.5	1.038	104.1	LOS F	94.1	711.1	1.00	1.31	30.9
12	R2	4	25.0	0.028	31.8	LOS C	0.2	1.4	0.59	0.66	38.3
Approach		2702	9.5	1.038	104.3	LOS F	94.1	711.7	1.00	1.31	30.6
All Vehicles		6521	9.3	1.073	80.5	LOS F	94.1	711.7	0.88	1.02	33.7

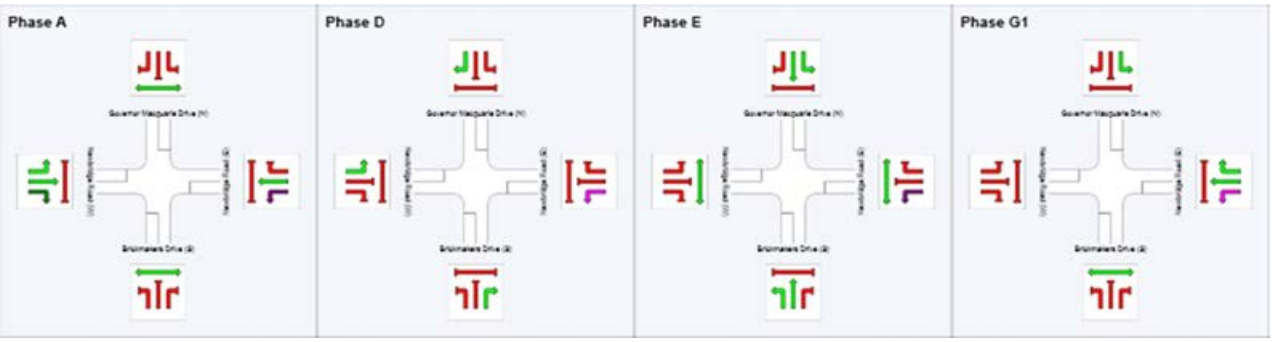
PHASING SUMMARY

Site: I-12 2020 MIMT CUM1 AM - Upgrade Option

Newbridge Road / Governor Macquarie Drive
2019 MIMT CUM1 AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	67	89	113
Green Time (sec)	61	16	18	21
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	67	22	24	27
Phase Split	48 %	16 %	17 %	19 %



AM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-12 2030 MIMT CUM2 AM

Newbridge Road / Governor Macquarie Drive
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	14	0.0	0.909	84.6	LOS F	17.3	122.1	1.00	1.07	24.1
2	T1	207	1.0	0.909	80.3	LOS F	17.3	122.1	1.00	1.07	23.8
3	R2	720	1.2	1.239	301.6	LOS F	55.9	395.6	1.00	1.68	12.6
Approach		941	1.1	1.239	249.7	LOS F	55.9	395.6	1.00	1.53	13.8
East: Newbridge Road (E)											
4	L2	242	3.0	0.178	7.9	LOS A	2.2	15.7	0.19	0.64	58.1
5	T1	1510	11.9	0.446	14.1	LOS A	17.4	135.5	0.56	0.50	59.8
6	R2	683	9.9	1.050	154.1	LOS F	36.1	274.4	1.00	1.16	23.9
Approach		2435	10.5	1.050	52.8	LOS D	36.1	274.4	0.65	0.70	41.7
North: Governor Macquarie Drive (N)											
7	L2	765	7.8	0.725	52.8	LOS D	23.4	174.6	0.96	0.86	40.2
8	T1	135	2.3	0.546	64.2	LOS E	8.8	62.9	0.99	0.79	27.0
9	R2	180	31.8	1.039	144.3	LOS F	18.8	167.2	1.00	1.20	19.9
Approach		1080	11.1	1.039	69.5	LOS E	23.4	174.6	0.97	0.91	34.1
West: Newbridge Road (W)											
10	L2	132	30.0	1.233	275.7	LOS F	163.8	1263.4	1.00	1.94	12.7
11	T1	3019	7.7	1.233	268.2	LOS F	168.2	1270.0	1.00	1.98	16.4
12	R2	5	20.0	0.047	33.2	LOS C	0.2	1.8	0.60	0.68	37.7
Approach		3157	8.7	1.233	268.2	LOS F	168.2	1270.0	1.00	1.98	16.3
All Vehicles		7612	8.7	1.239	168.8	LOS F	168.2	1270.0	0.88	1.36	21.9

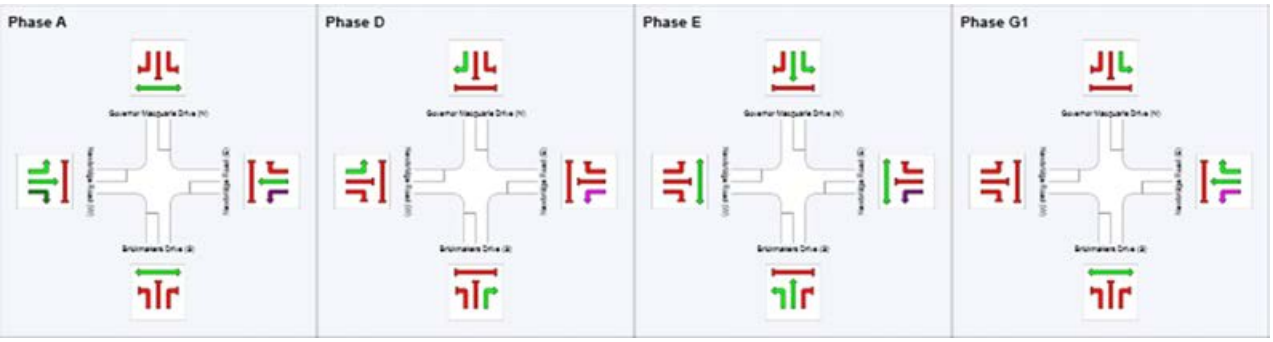
PHASING SUMMARY

Site: I-12 2030 MIMT CUM2 AM

Newbridge Road / Governor Macquarie Drive
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	66	88	112
Green Time (sec)	60	16	18	22
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	66	22	24	28
Phase Split	47 %	16 %	17 %	20 %



PM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-12 2030 MIMT CUM2 PM

Newbridge Road / Governor Macquarie Drive
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	11	0.0	0.554	70.4	LOS E	7.2	52.4	1.00	0.79	26.8
2	T1	97	5.4	0.554	66.3	LOS E	7.2	52.4	1.00	0.79	26.5
3	R2	271	0.8	0.641	70.4	LOS E	9.1	64.3	1.00	0.81	32.5
Approach		378	1.9	0.641	69.3	LOS E	9.1	64.3	1.00	0.81	31.0
East: Newbridge Road (E)											
4	L2	688	1.4	0.483	9.5	LOS A	8.2	58.4	0.29	0.70	57.0
5	T1	2781	5.5	0.941	34.8	LOS C	58.1	430.1	0.77	0.81	49.2
6	R2	744	10.3	1.200	275.1	LOS F	55.7	424.3	1.00	1.41	15.9
Approach		4214	5.7	1.200	73.1	LOS F	58.1	430.1	0.73	0.90	36.1
North: Governor Macquarie Drive (N)											
7	L2	614	7.9	0.497	49.3	LOS D	17.2	128.5	0.88	0.82	41.1
8	T1	314	1.7	1.055	145.7	LOS F	32.6	231.3	1.00	1.33	16.2
9	R2	306	36.0	1.609	637.7	LOS F	70.6	650.5	1.00	2.03	6.0
Approach		1233	13.3	1.609	219.8	LOS F	70.6	650.5	0.94	1.25	16.1
West: Newbridge Road (W)											
10	L2	176	15.3	0.836	40.9	LOS C	43.0	325.7	0.90	0.84	41.0
11	T1	2111	6.3	0.836	33.0	LOS C	43.4	323.3	0.88	0.81	49.8
12	R2	4	0.0	0.071	57.1	LOS E	0.2	1.7	0.82	0.69	29.6
Approach		2292	7.0	0.836	33.6	LOS C	43.4	325.7	0.88	0.81	49.2
All Vehicles		8117	7.0	1.609	84.1	LOS F	70.6	650.5	0.82	0.92	33.0

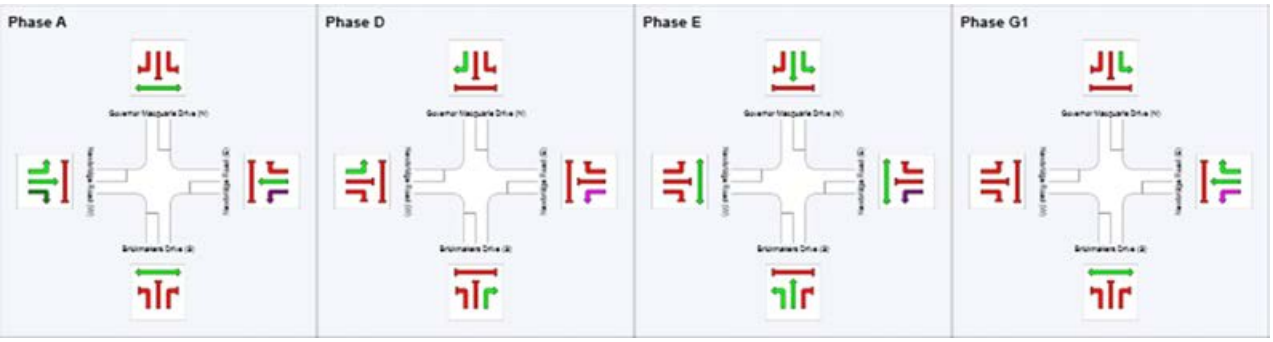
PHASING SUMMARY

Site: I-12 2030 MIMT CUM2 PM

Newbridge Road / Governor Macquarie Drive
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D	E	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	67	89	110
Green Time (sec)	61	16	15	24
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	67	22	21	30
Phase Split	48 %	16 %	15 %	21 %



AM Peak – Cumulative Scenario C2 with Upgrade

MOVEMENT SUMMARY

Site: I-12 2030 MIMT CUM2 AM - Upgrade Option

Newbridge Road / Governor Macquarie Drive
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	14	0.0	0.909	84.6	LOS F	17.3	122.1	1.00	1.07	24.1
2	T1	207	1.0	0.909	80.3	LOS F	17.3	122.1	1.00	1.07	23.8
3	R2	720	1.2	1.102	182.8	LOS F	42.6	301.3	1.00	1.37	18.4
Approach		941	1.1	1.102	158.8	LOS F	42.6	301.3	1.00	1.30	19.2
East: Newbridge Road (E)											
4	L2	242	3.0	0.179	7.9	LOS A	2.1	15.3	0.20	0.64	58.1
5	T1	1510	11.9	0.446	14.1	LOS A	17.4	135.5	0.56	0.50	59.8
6	R2	683	9.9	1.077	173.1	LOS F	38.6	293.2	1.00	1.20	22.1
Approach		2435	10.5	1.077	58.1	LOS E	38.6	293.2	0.65	0.71	40.1
North: Governor Macquarie Drive (N)											
7	L2	765	7.8	0.923	70.5	LOS E	22.7	169.3	1.00	1.08	35.8
8	T1	135	2.3	0.826	74.0	LOS F	12.5	94.0	1.00	0.94	24.8
9	R2	180	31.8	0.826	79.7	LOS F	12.5	94.0	1.00	0.93	28.6
Approach		1080	11.1	0.923	72.4	LOS F	22.7	169.3	1.00	1.03	33.4
West: Newbridge Road (W)											
10	L2	132	30.0	1.213	257.3	LOS F	158.6	1223.3	1.00	1.88	13.4
11	T1	3019	7.7	1.213	249.8	LOS F	162.8	1229.1	1.00	1.92	17.4
12	R2	5	20.0	0.047	32.5	LOS C	0.2	1.8	0.60	0.68	38.0
Approach		3157	8.7	1.213	249.8	LOS F	162.8	1229.1	1.00	1.91	17.2
All Vehicles		7612	8.7	1.213	152.1	LOS F	162.8	1229.1	0.89	1.33	23.4

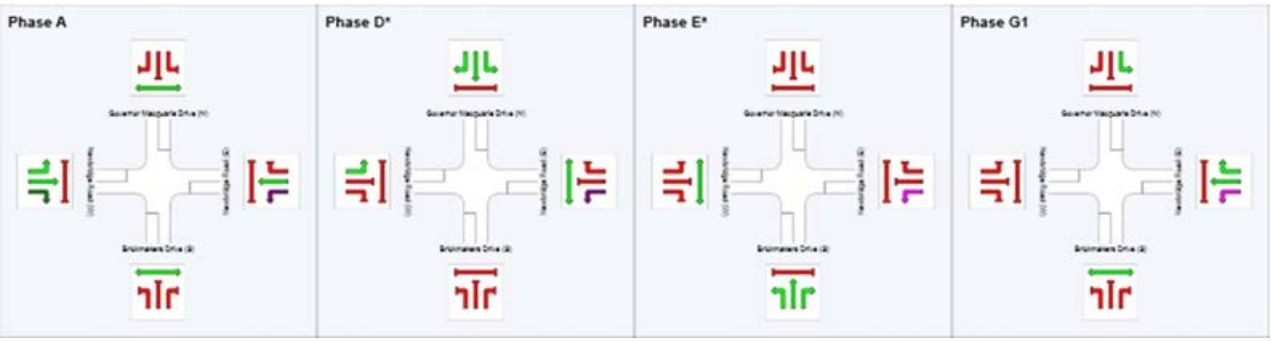
PHASING SUMMARY

Site: I-12 2030 MIMT CUM2 AM - Upgrade Option

Newbridge Road / Governor Macquarie Drive
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D*	E*	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	67	89	113
Green Time (sec)	61	16	18	21
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	67	22	24	27
Phase Split	48 %	16 %	17 %	19 %



PM Peak – Cumulative Scenario C2 with Upgrade

MOVEMENT SUMMARY

Site: I-12 2030 MIMT CUM2 PM - Upgrade Option 2

Newbridge Road / Governor Macquarie Drive
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brickmakers Drive (S)											
1	L2	11	0.0	0.689	75.4	LOS F	7.5	54.9	1.00	0.84	25.8
2	T1	97	5.4	0.689	71.3	LOS F	7.5	54.9	1.00	0.84	25.5
3	R2	271	0.8	0.854	82.0	LOS F	10.1	71.4	1.00	0.97	30.1
Approach		378	1.9	0.854	79.1	LOS F	10.1	71.4	1.00	0.93	29.0
East: Newbridge Road (E)											
4	L2	688	1.4	0.487	9.4	LOS A	11.7	83.0	0.35	0.69	57.0
5	T1	2781	5.5	0.980	47.2	LOS D	73.6	544.7	0.77	0.88	44.5
6	R2	744	10.3	1.077	178.6	LOS F	43.4	330.4	1.00	1.21	21.7
Approach		4214	5.7	1.077	64.3	LOS E	73.6	544.7	0.74	0.91	38.3
North: Governor Macquarie Drive (N)											
7	L2	614	7.9	0.485	33.9	LOS C	13.5	100.8	0.87	0.80	46.2
8	T1	314	1.7	1.089	168.9	LOS F	41.8	309.5	1.00	1.46	14.5
9	R2	306	36.0	1.089	294.6	LOS F	41.8	309.5	1.00	1.54	11.7
Approach		1233	13.3	1.089	132.9	LOS F	41.8	376.9	0.93	1.15	22.7
West: Newbridge Road (W)											
10	L2	176	15.3	0.879	48.4	LOS D	48.0	363.9	0.95	0.92	38.3
11	T1	2111	6.3	0.879	40.3	LOS C	48.7	362.8	0.94	0.89	46.9
12	R2	4	0.0	0.072	60.8	LOS E	0.3	1.8	0.84	0.69	28.6
Approach		2292	7.0	0.879	40.9	LOS C	48.7	363.9	0.94	0.90	46.2
All Vehicles		8117	7.0	1.089	68.8	LOS E	73.6	544.7	0.84	0.94	36.3

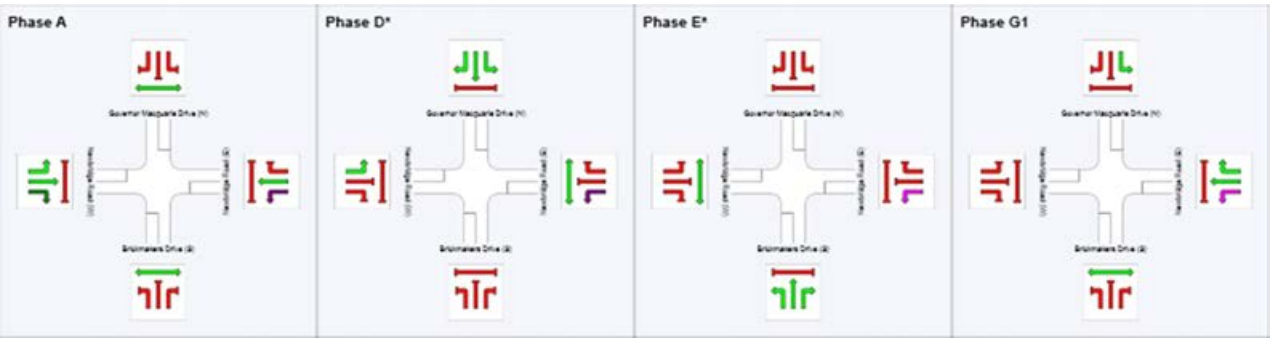
PHASING SUMMARY

Site: I-12 2030 MIMT CUM2 PM - Upgrade Option 2

Newbridge Road / Governor Macquarie Drive
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	D*	E*	G1
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	64	87	105
Green Time (sec)	58	17	12	29
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	64	23	18	35
Phase Split	46 %	16 %	13 %	25 %



I-13 Intersection of Moorebank Avenue and M5 Motorway

AM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-13 2030 MIMT AM CUM A

Moorebank Avenue / the M5 Motorway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
1	L2	476	46.7	0.571	11.8	LOS A	6.1	73.3	0.56	0.76	47.3
2	T1	744	13.8	0.946	54.0	LOS D	18.8	158.6	1.00	1.25	30.3
3	R2	324	7.9	0.481	33.7	LOS C	5.8	45.5	0.91	0.79	36.5
Approach		1544	22.7	0.946	36.7	LOS C	18.8	158.6	0.84	1.00	35.5
East: M5 Motorway on&off ramp (E)											
4	L2	404	14.2	0.941	57.4	LOS E	19.1	163.3	1.00	1.25	29.1
6	R2	237	6.2	0.246	28.8	LOS C	3.4	25.1	0.82	0.76	40.4
Approach		641	11.2	0.941	46.8	LOS D	19.1	163.3	0.93	1.07	32.7
North: Moorebank Avenue (N)											
7	L2	51	47.9	0.051	7.9	LOS A	0.4	3.5	0.29	0.60	51.1
8	T1	305	23.7	0.416	27.1	LOS B	4.9	44.8	0.90	0.73	40.3
9	R2	454	25.5	0.772	37.8	LOS C	10.0	85.2	0.97	0.88	36.3
Approach		809	26.2	0.772	31.9	LOS C	10.0	85.2	0.90	0.80	38.4
West: M5 Motorway on&off ramp (W)											
10	L2	1722	7.5	0.977	8.2	LOS A	0.0	0.0	0.00	0.50	51.2
12	R2	813	26.2	1.053	118.2	LOS F	31.1	306.8	1.00	1.51	18.9
Approach		2535	13.5	1.053	43.4	LOS D	31.1	306.8	0.32	0.82	34.0
All Vehicles		5529	17.7	1.053	40.3	LOS C	31.1	306.8	0.62	0.90	34.8

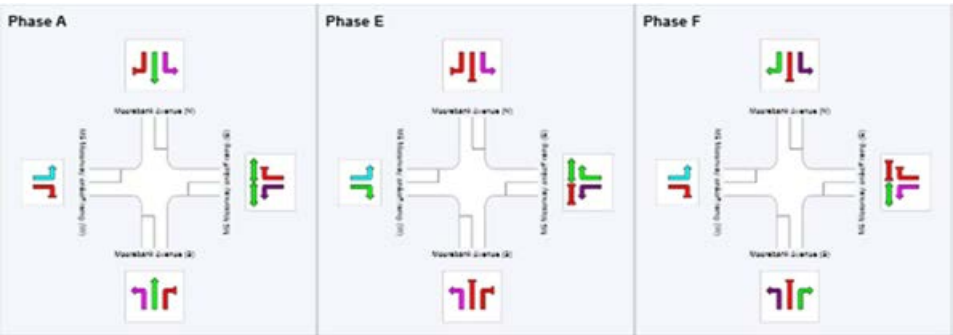
PHASING SUMMARY

Site: I-13 2030 MIMT AM CUM A

Moorebank Avenue / the M5 Motorway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	F
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	24	51
Green Time (sec)	17	20	16
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	24	27	23
Phase Split	32 %	36 %	31 %



PM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-13 2030 MIMT PM CUM A

Moorebank Avenue / the M5 Motorway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	772	31.6	1.239	269.8	LOS F	101.8	1068.0	1.00	1.89	10.1
2	T1	302	23.1	0.891	57.6	LOS E	8.2	76.2	1.00	1.06	29.4
3	R2	491	13.5	0.469	30.4	LOS C	9.6	82.8	0.80	0.79	37.7
Approach		1565	24.3	1.239	153.7	LOS F	101.8	1068.0	0.94	1.39	15.7
East: M5 Motorway on&off ramp (E)											
4	L2	476	10.4	1.122	170.8	LOS F	47.2	384.0	1.00	1.53	14.6
6	R2	97	21.7	0.177	42.7	LOS D	2.0	16.2	0.89	0.73	34.9
Approach		573	12.3	1.122	149.1	LOS F	47.2	384.0	0.98	1.40	16.4
North: Moorebank Avenue (N)											
7	L2	139	6.1	0.122	8.4	LOS A	1.5	11.2	0.33	0.64	51.9
8	T1	796	12.1	0.932	58.7	LOS E	23.5	192.6	1.00	1.18	29.1
9	R2	1488	7.0	0.989	75.1	LOS F	48.5	359.6	1.00	1.21	26.7
Approach		2423	8.6	0.989	65.9	LOS E	48.5	359.6	0.96	1.17	28.2
West: M5 Motorway on&off ramp (W)											
10	L2	620	13.8	0.367	5.8	LOS A	0.0	0.0	0.00	0.52	54.4
12	R2	497	50.6	1.250	294.4	LOS F	34.5	436.1	1.00	1.94	9.4
Approach		1117	30.1	1.250	134.1	LOS F	34.5	436.1	0.44	1.15	18.2
All Vehicles		5677	17.5	1.250	111.9	LOS F	101.8	1068.0	0.86	1.25	20.3

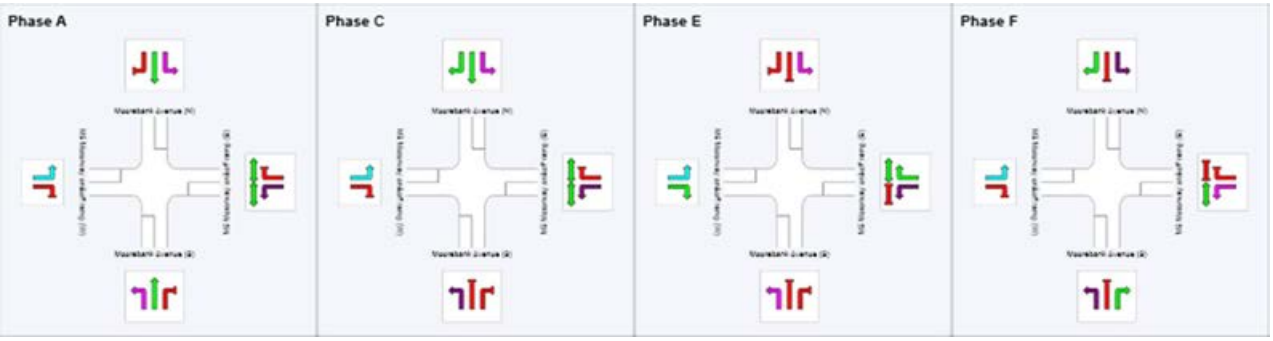
PHASING SUMMARY

Site: I-13 2030 MIMT PM CUM A

Moorebank Avenue / the M5 Motorway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	17	30	53
Green Time (sec)	10	6	16	34
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	17	13	23	41
Phase Split	18 %	14 %	24 %	44 %



AM Peak – Cumulative Scenario A with Upgrade

MOVEMENT SUMMARY

Site: I-13 2030 MIMT AM CUM A upgrade

Moorebank Avenue / the M5 Motorway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	476	46.7	0.375	14.5	LOS A	5.2	62.0	0.54	0.71	45.5
2	T1	744	13.8	0.946	54.0	LOS D	18.8	158.6	1.00	1.25	30.3
3	R2	324	7.9	0.481	33.7	LOS C	5.8	45.5	0.91	0.79	36.5
Approach		1544	22.7	0.946	37.6	LOS C	18.8	158.6	0.84	0.99	35.2
East: M5 Motorway on&off ramp (E)											
4	L2	404	14.2	0.941	57.4	LOS E	19.1	163.3	1.00	1.25	29.1
6	R2	237	6.2	0.246	28.8	LOS C	3.4	25.1	0.82	0.76	40.4
Approach		641	11.2	0.941	46.8	LOS D	19.1	163.3	0.93	1.07	32.7
North: Moorebank Avenue (N)											
7	L2	51	47.9	0.051	7.9	LOS A	0.4	3.5	0.29	0.60	51.1
8	T1	305	23.7	0.416	27.1	LOS B	4.9	44.8	0.90	0.73	40.3
9	R2	454	25.5	0.772	37.8	LOS C	10.0	85.2	0.97	0.88	36.3
Approach		809	26.2	0.772	31.9	LOS C	10.0	85.2	0.90	0.80	38.4
West: M5 Motorway on&off ramp (W)											
10	L2	1722	7.5	0.977	8.2	LOS A	0.0	0.0	0.00	0.50	51.2
12	R2	813	26.2	1.053	118.2	LOS F	31.1	306.8	1.00	1.53	19.0
Approach		2535	13.5	1.053	43.4	LOS D	31.1	306.8	0.32	0.83	34.0
All Vehicles		5529	17.7	1.053	40.5	LOS C	31.1	306.8	0.62	0.90	34.8

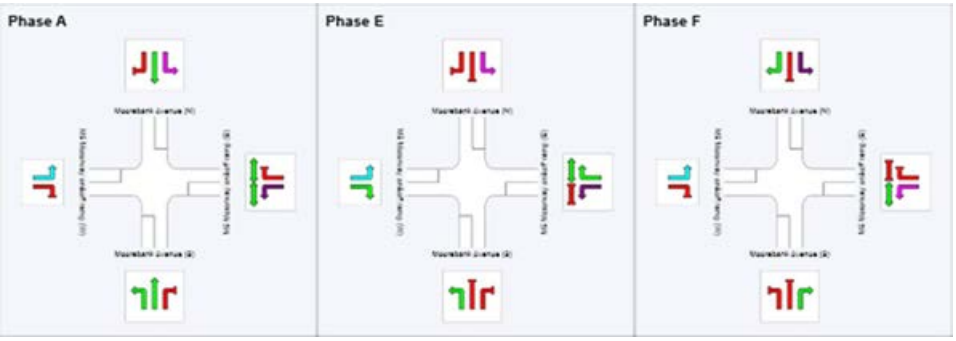
PHASING SUMMARY

Site: I-13 2030 MIMT AM CUM A upgrade

Moorebank Avenue / the M5 Motorway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	F
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	24	51
Green Time (sec)	17	20	16
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	24	27	23
Phase Split	32 %	36 %	31 %



PM Peak – Cumulative Scenario A with Upgrade

MOVEMENT SUMMARY

Site: I-13 2030 MIMT PM CUM A upgrade

Moorebank Avenue / the M5 Motorway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 120 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	772	31.6	0.976	58.0	LOS E	28.8	302.3	0.97	1.04	28.7
2	T1	302	23.1	0.875	68.8	LOS E	10.1	93.2	1.00	1.02	26.7
3	R2	491	13.5	0.702	50.8	LOS D	14.8	127.9	0.95	0.84	30.6
Approach		1565	24.3	0.976	57.8	LOS E	28.8	302.3	0.97	0.98	28.8
East: M5 Motorway on&off ramp (E)											
4	L2	476	10.4	0.793	31.1	LOS C	17.5	142.5	0.93	0.95	37.9
6	R2	97	21.7	0.134	46.0	LOS D	2.3	18.9	0.83	0.73	33.8
Approach		573	12.3	0.793	33.6	LOS C	17.5	142.5	0.92	0.91	37.0
North: Moorebank Avenue (N)											
7	L2	139	6.1	0.109	9.2	LOS A	2.0	14.8	0.31	0.63	51.3
8	T1	796	12.1	0.637	34.4	LOS C	19.4	158.5	0.89	0.78	37.0
9	R2	1488	7.0	0.986	69.5	LOS E	45.8	339.5	1.00	1.10	27.8
Approach		2423	8.6	0.986	54.5	LOS D	45.8	339.5	0.92	0.97	31.0
West: M5 Motorway on&off ramp (W)											
10	L2	620	13.8	0.367	5.8	LOS A	0.0	0.0	0.00	0.52	54.4
12	R2	497	50.6	0.945	87.6	LOS F	19.4	245.1	1.00	1.12	22.9
Approach		1117	30.1	0.945	42.2	LOS C	19.4	245.1	0.44	0.79	34.5
All Vehicles		5677	17.5	0.986	50.9	LOS D	45.8	339.5	0.84	0.93	31.5

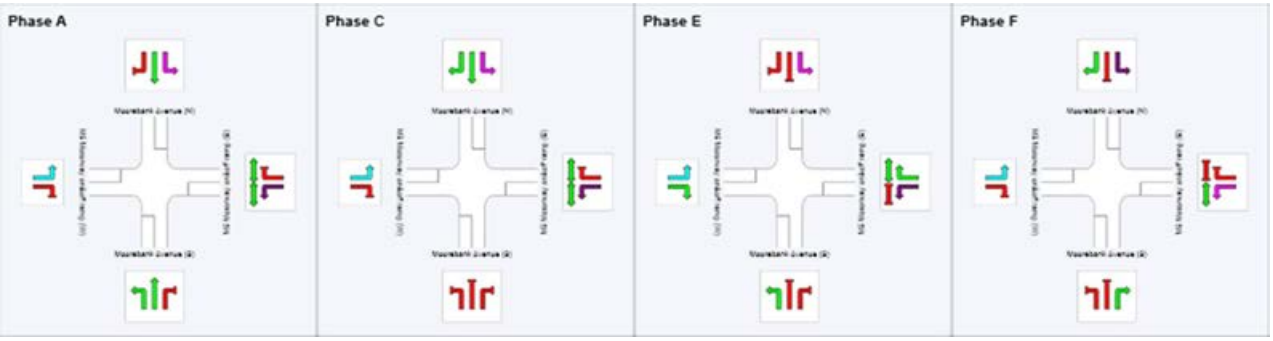
PHASING SUMMARY

Site: I-13 2030 MIMT PM CUM A upgrade

Moorebank Avenue / the M5 Motorway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 120 seconds (Optimum Cycle Time - Minimum Delay)

Phase Timing Results

Phase	A	C	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	20	50	84
Green Time (sec)	13	23	27	29
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	20	30	34	36
Phase Split	17 %	25 %	28 %	30 %



AM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-13 2030 MIMT AM CUM B

Moorebank Avenue / the M5 Motorway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	444	42.9	0.515	11.2	LOS A	5.7	65.1	0.52	0.73	47.8
2	T1	720	11.0	0.883	41.0	LOS C	15.6	124.2	1.00	1.09	34.4
3	R2	318	6.0	0.459	33.5	LOS C	5.7	42.6	0.91	0.79	36.6
Approach		1482	19.5	0.883	30.5	LOS C	15.6	124.2	0.84	0.92	38.1
East: M5 Motorway on&off ramp (E)											
4	L2	509	8.1	1.187	218.1	LOS F	54.6	419.9	1.00	1.96	12.1
6	R2	237	6.2	0.246	28.8	LOS C	3.4	25.1	0.82	0.76	40.4
Approach		746	7.5	1.187	158.1	LOS F	54.6	419.9	0.94	1.58	15.9
North: Moorebank Avenue (N)											
7	L2	51	47.9	0.050	7.9	LOS A	0.4	3.5	0.29	0.60	51.1
8	T1	355	16.9	0.454	27.3	LOS B	5.7	48.2	0.91	0.74	40.2
9	R2	454	25.5	0.772	37.8	LOS C	10.0	85.2	0.97	0.88	36.3
Approach		859	23.3	0.772	31.7	LOS C	10.0	85.2	0.91	0.80	38.4
West: M5 Motorway on&off ramp (W)											
10	L2	1722	7.5	0.977	8.2	LOS A	0.0	0.0	0.00	0.50	51.2
12	R2	1015	17.6	1.210	245.0	LOS F	60.1	532.5	1.00	2.06	11.0
Approach		2737	11.2	1.210	96.0	LOS F	60.1	532.5	0.37	1.08	22.6
All Vehicles		5824	14.6	1.210	77.8	LOS F	60.1	532.5	0.64	1.06	25.3

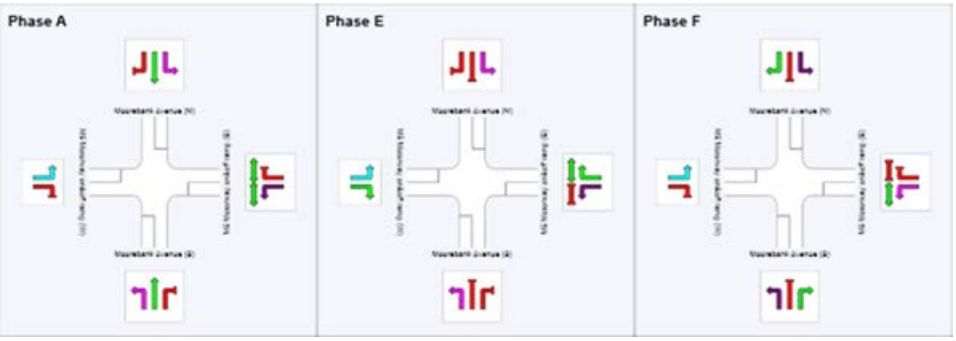
PHASING SUMMARY

Site: I-13 2030 MIMT AM CUM B

Moorebank Avenue / the M5 Motorway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	F
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	24	51
Green Time (sec)	17	20	16
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	24	27	23
Phase Split	32 %	36 %	31 %



PM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-13 2030 MIMT PM CUM B

Moorebank Avenue / the M5 Motorway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	902	18.7	1.292	314.8	LOS F	129.7	1168.0	1.00	2.03	8.9
2	T1	333	14.6	0.910	59.5	LOS E	9.2	77.1	1.00	1.08	28.9
3	R2	567	7.1	0.496	30.5	LOS C	11.2	85.6	0.81	0.80	37.8
Approach		1802	14.3	1.292	178.2	LOS F	129.7	1168.0	0.94	1.46	14.1
East: M5 Motorway on&off ramp (E)											
4	L2	449	5.2	0.578	18.4	LOS B	9.8	73.5	0.74	0.82	44.4
6	R2	97	21.7	0.177	42.7	LOS D	2.0	16.2	0.89	0.73	34.9
Approach		546	8.1	0.578	22.7	LOS B	9.8	73.5	0.77	0.80	42.1
North: Moorebank Avenue (N)											
7	L2	139	6.1	0.123	8.7	LOS A	1.6	11.9	0.34	0.64	51.7
8	T1	767	8.8	0.866	46.3	LOS D	19.7	153.1	1.00	1.04	32.6
9	R2	1488	7.0	0.989	75.1	LOS F	48.5	359.6	1.00	1.21	26.7
Approach		2395	7.5	0.989	62.0	LOS E	48.5	359.6	0.96	1.12	29.1
West: M5 Motorway on&off ramp (W)											
10	L2	620	13.8	0.367	5.8	LOS A	0.0	0.0	0.00	0.52	54.4
12	R2	418	41.3	0.970	83.9	LOS F	14.0	159.7	1.00	1.21	23.4
Approach		1038	24.8	0.970	37.2	LOS C	14.0	159.7	0.40	0.80	36.3
All Vehicles		5781	12.8	1.292	90.1	LOS F	129.7	1168.0	0.84	1.14	23.3

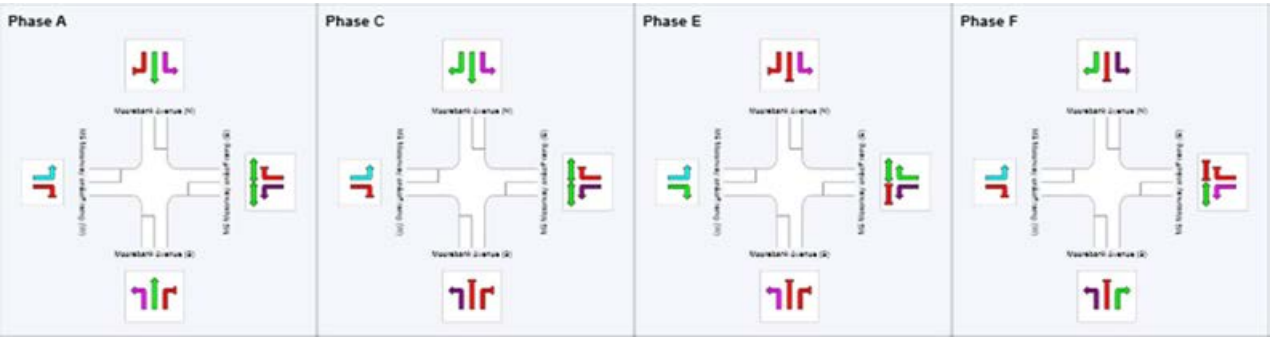
PHASING SUMMARY

Site: I-13 2030 MIMT PM CUM B

Moorebank Avenue / the M5 Motorway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	17	30	53
Green Time (sec)	10	6	16	34
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	17	13	23	41
Phase Split	18 %	14 %	24 %	44 %



AM Peak – Cumulative Scenario B with Upgrade

MOVEMENT SUMMARY

Site: I-13 2030 MIMT AM CUM B upgrade

Moorebank Avenue / the M5 Motorway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	444	42.9	0.300	13.2	LOS A	5.1	58.1	0.43	0.68	46.4
2	T1	720	11.0	0.882	51.8	LOS D	20.1	160.7	1.00	1.06	31.0
3	R2	318	6.0	0.522	45.5	LOS D	7.8	59.0	0.94	0.80	32.3
Approach		1482	19.5	0.882	38.9	LOS C	20.1	160.7	0.82	0.89	34.8
East: M5 Motorway on&off ramp (E)											
4	L2	509	8.1	0.802	24.7	LOS B	17.3	132.8	0.91	0.90	40.9
6	R2	237	6.2	0.180	28.5	LOS B	3.9	28.6	0.71	0.73	40.6
Approach		746	7.5	0.802	25.9	LOS B	17.3	132.8	0.84	0.85	40.8
North: Moorebank Avenue (N)											
7	L2	51	47.9	0.047	7.7	LOS A	0.4	4.1	0.24	0.59	51.2
8	T1	355	16.9	0.454	36.3	LOS C	7.6	64.1	0.91	0.75	36.2
9	R2	454	25.5	0.878	55.2	LOS D	14.8	126.7	0.99	0.93	31.0
Approach		859	23.3	0.878	44.6	LOS D	14.8	126.7	0.91	0.83	33.7
West: M5 Motorway on&off ramp (W)											
10	L2	1722	7.5	0.977	8.2	LOS A	0.0	0.0	0.00	0.50	51.2
12	R2	1015	17.6	0.884	50.9	LOS D	28.3	251.2	1.00	1.01	31.0
Approach		2737	11.2	0.977	24.0	LOS B	28.3	251.2	0.37	0.69	41.7
All Vehicles		5824	14.6	0.977	31.1	LOS C	28.3	251.2	0.62	0.78	38.4

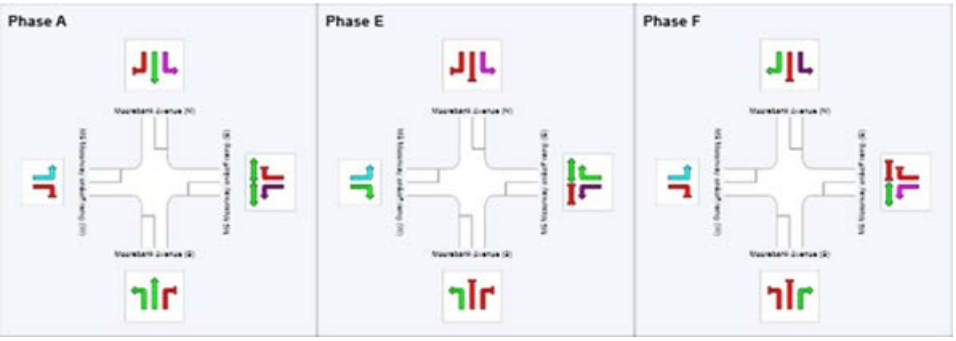
PHASING SUMMARY

Site: I-13 2030 MIMT AM CUM B upgrade

Moorebank Avenue / the M5 Motorway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	F
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	30	74
Green Time (sec)	23	37	19
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	30	44	26
Phase Split	30 %	44 %	26 %



PM Peak – Cumulative Scenario B with Upgrade

MOVEMENT SUMMARY

Site: I-13 2030 MIMT PM CUM B upgrade

Moorebank Avenue / the M5 Motorway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	902	18.7	1.011	62.9	LOS E	33.5	301.5	0.98	1.05	27.7
2	T1	333	14.6	0.894	70.4	LOS E	11.2	93.8	1.00	1.03	26.4
3	R2	567	7.1	0.742	51.5	LOS D	17.5	133.9	0.97	0.85	30.5
Approach		1802	14.3	1.011	60.7	LOS E	33.5	301.5	0.98	0.98	28.2
East: M5 Motorway on&off ramp (E)											
4	L2	449	5.2	0.639	17.9	LOS B	11.8	88.2	0.79	0.83	44.7
6	R2	97	21.7	0.134	46.0	LOS D	2.3	18.9	0.83	0.73	33.8
Approach		546	8.1	0.639	22.9	LOS B	11.8	88.2	0.80	0.81	42.1
North: Moorebank Avenue (N)											
7	L2	139	6.1	0.110	9.5	LOS A	2.1	15.5	0.32	0.63	51.1
8	T1	767	8.8	0.591	33.7	LOS C	18.2	141.6	0.87	0.76	37.3
9	R2	1488	7.0	0.986	69.5	LOS E	45.8	339.5	1.00	1.10	27.8
Approach		2395	7.5	0.986	54.6	LOS D	45.8	339.5	0.92	0.96	31.0
West: M5 Motorway on&off ramp (W)											
10	L2	620	13.8	0.367	5.8	LOS A	0.0	0.0	0.00	0.52	54.4
12	R2	418	41.3	0.734	56.4	LOS D	12.1	138.9	0.99	0.88	29.2
Approach		1038	24.8	0.734	26.2	LOS B	12.1	138.9	0.40	0.67	41.0
All Vehicles		5781	12.8	1.011	48.4	LOS D	45.8	339.5	0.83	0.90	32.3

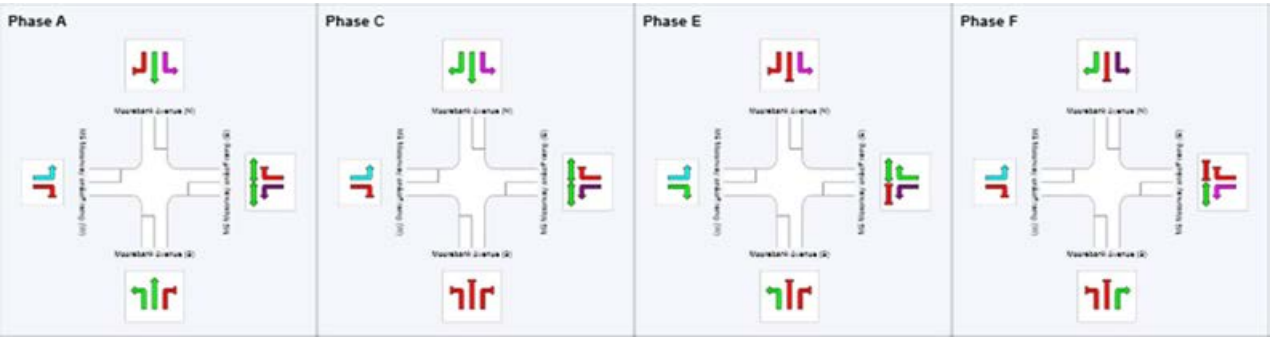
PHASING SUMMARY

Site: I-13 2030 MIMT PM CUM B upgrade

Moorebank Avenue / the M5 Motorway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	20	50	84
Green Time (sec)	13	23	27	29
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	20	30	34	36
Phase Split	17 %	25 %	28 %	30 %



AM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-13 2020 CUM C1 AM

Moorebank Avenue / the M5 Motorway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	407	43.2	0.454	10.4	LOS A	5.2	56.2	0.49	0.70	48.4
2	T1	683	12.0	0.838	36.5	LOS C	13.8	109.6	1.00	1.01	36.1
3	R2	271	7.8	0.395	33.1	LOS C	4.7	36.1	0.89	0.78	36.7
Approach		1361	20.5	0.838	28.0	LOS B	13.8	109.6	0.83	0.87	39.2
East: M5 Motorway on&off ramp (E)											
4	L2	384	12.3	0.510	12.9	LOS A	6.3	50.4	0.69	0.77	47.7
6	R2	228	6.0	0.237	28.8	LOS C	3.3	24.1	0.82	0.75	40.4
Approach		613	10.0	0.510	18.8	LOS B	6.3	50.4	0.74	0.76	44.5
North: Moorebank Avenue (N)											
7	L2	47	48.9	0.047	7.7	LOS A	0.3	3.0	0.28	0.60	51.2
8	T1	262	21.3	0.343	26.5	LOS B	4.1	35.4	0.88	0.71	40.6
9	R2	433	26.5	0.740	37.0	LOS C	9.3	79.8	0.97	0.86	36.6
Approach		742	26.1	0.740	31.4	LOS C	9.3	79.8	0.89	0.79	38.5
West: M5 Motorway on&off ramp (W)											
10	L2	1598	8.2	0.911	6.4	LOS A	0.0	0.0	0.00	0.52	53.5
12	R2	747	22.3	0.908	50.9	LOS D	17.4	157.3	1.00	1.09	30.8
Approach		2345	12.7	0.911	20.6	LOS B	17.4	157.3	0.32	0.70	44.0
All Vehicles		5061	16.4	0.911	24.0	LOS B	17.4	157.3	0.59	0.77	41.9

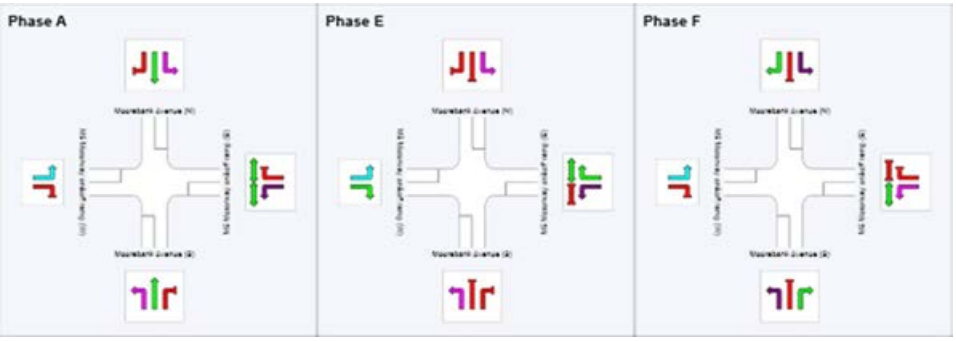
PHASING SUMMARY

Site: I-13 2020 CUM C1 AM

Moorebank Avenue / the M5 Motorway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	F
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	24	51
Green Time (sec)	17	20	16
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	24	27	23
Phase Split	32 %	36 %	31 %



PM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-13 2020 CUM C1 PM

Moorebank Avenue / the M5 Motorway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
1	L2	745	22.0	1.053	115.3	LOS F	62.3	561.6	1.00	1.36	19.3
2	T1	281	16.9	0.773	49.6	LOS D	7.0	58.4	1.00	0.91	31.6
3	R2	466	9.7	0.417	29.8	LOS C	8.9	69.8	0.79	0.79	38.1
Approach		1493	17.2	1.053	76.2	LOS F	62.3	561.6	0.93	1.10	24.9
East: M5 Motorway on&off ramp (E)											
4	L2	396	8.8	0.496	14.1	LOS A	6.5	50.0	0.66	0.77	47.0
6	R2	80	21.1	0.146	42.4	LOS C	1.6	13.2	0.89	0.73	35.0
Approach		476	10.8	0.496	18.9	LOS B	6.5	50.0	0.70	0.76	44.2
North: Moorebank Avenue (N)											
7	L2	120	6.1	0.103	7.9	LOS A	1.1	8.5	0.30	0.63	52.3
8	T1	679	10.1	0.770	39.0	LOS C	15.6	121.6	0.99	0.92	35.1
9	R2	1375	7.4	0.916	46.1	LOS D	33.4	249.0	1.00	1.07	33.8
Approach		2174	8.2	0.916	41.8	LOS C	33.4	249.0	0.96	1.00	34.9
West: M5 Motorway on&off ramp (W)											
10	L2	572	15.3	0.341	5.8	LOS A	0.0	0.0	0.00	0.52	54.3
12	R2	394	43.3	0.890	62.6	LOS E	11.0	120.4	1.00	1.06	27.6
Approach		965	26.7	0.890	29.0	LOS C	11.0	120.4	0.41	0.74	39.6
All Vehicles		5107	14.6	1.053	47.3	LOS D	62.3	561.6	0.82	0.96	32.6

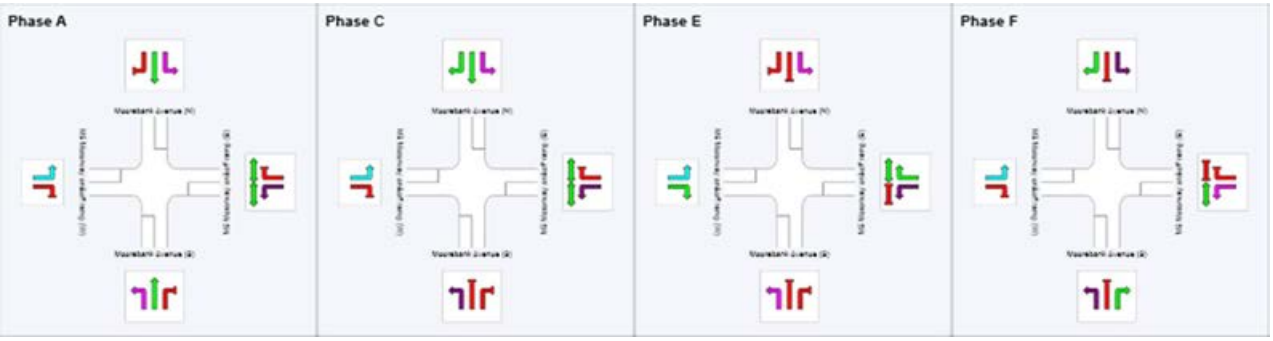
PHASING SUMMARY

Site: I-13 2020 CUM C1 PM

Moorebank Avenue / the M5 Motorway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	17	30	53
Green Time (sec)	10	6	16	34
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	17	13	23	41
Phase Split	18 %	14 %	24 %	44 %



AM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-13 2030 MIMT AM CUM C2

Moorebank Avenue / the M5 Motorway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	458	44.6	0.546	11.5	LOS A	5.9	70.2	0.54	0.75	47.5
2	T1	728	12.0	0.908	45.0	LOS D	16.6	136.2	1.00	1.14	33.0
3	R2	321	6.9	0.470	33.6	LOS C	5.7	44.1	0.91	0.79	36.6
Approach		1507	20.8	0.908	32.4	LOS C	16.6	136.2	0.84	0.95	37.3
East: M5 Motorway on&off ramp (E)											
4	L2	421	11.3	0.941	57.2	LOS E	20.0	162.4	1.00	1.25	29.2
6	R2	237	6.2	0.246	28.8	LOS C	3.4	25.1	0.82	0.76	40.4
Approach		658	9.4	0.941	47.0	LOS D	20.0	162.4	0.94	1.07	32.6
North: Moorebank Avenue (N)											
7	L2	51	47.9	0.050	7.9	LOS A	0.4	3.5	0.29	0.60	51.1
8	T1	309	20.7	0.412	27.0	LOS B	4.9	43.9	0.90	0.73	40.3
9	R2	454	25.5	0.772	37.8	LOS C	10.0	85.2	0.97	0.88	36.3
Approach		814	25.1	0.772	31.8	LOS C	10.0	85.2	0.90	0.80	38.4
West: M5 Motorway on&off ramp (W)											
10	L2	1722	7.5	0.977	8.2	LOS A	0.0	0.0	0.00	0.50	51.2
12	R2	834	23.2	1.059	121.8	LOS F	32.4	312.4	1.00	1.52	18.6
Approach		2556	12.6	1.059	45.2	LOS D	32.4	312.4	0.33	0.83	33.4
All Vehicles		5535	16.3	1.059	40.0	LOS C	32.4	312.4	0.62	0.89	34.9

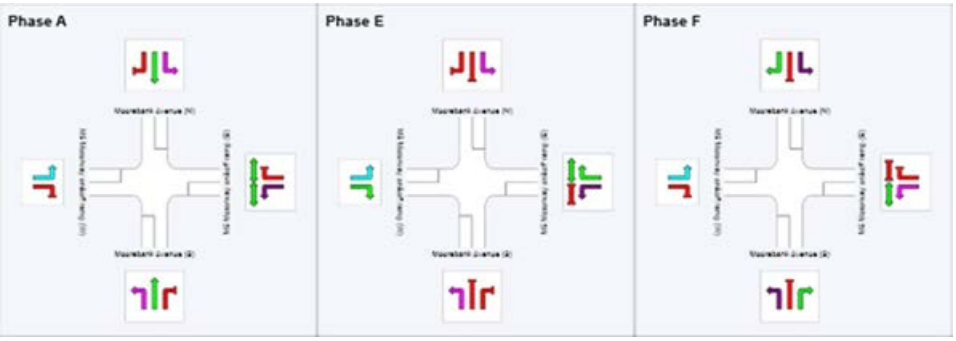
PHASING SUMMARY

Site: I-13 2030 MIMT AM CUM C2

Moorebank Avenue / the M5 Motorway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 74 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	F
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	24	51
Green Time (sec)	17	20	16
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	24	27	23
Phase Split	32 %	36 %	31 %



PM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-13 2030 MIMT PM CUM C2

Moorebank Avenue / the M5 Motorway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	846	23.8	1.275	300.4	LOS F	118.6	1144.8	1.00	1.98	9.3
2	T1	324	17.5	0.914	60.3	LOS E	9.1	79.0	1.00	1.09	28.7
3	R2	551	9.4	0.498	30.6	LOS C	10.9	87.3	0.81	0.80	37.7
Approach		1721	18.0	1.275	168.9	LOS F	118.6	1144.8	0.94	1.44	14.7
East: M5 Motorway on&off ramp (E)											
4	L2	467	8.8	0.991	83.8	LOS F	32.9	259.3	1.00	1.26	23.7
6	R2	97	21.7	0.177	42.7	LOS D	2.0	16.2	0.89	0.73	34.9
Approach		564	11.0	0.991	76.8	LOS F	32.9	259.3	0.98	1.17	25.2
North: Moorebank Avenue (N)											
7	L2	139	6.1	0.123	8.7	LOS A	1.6	11.9	0.34	0.64	51.7
8	T1	779	10.1	0.894	50.4	LOS D	21.1	168.0	1.00	1.09	31.4
9	R2	1488	7.0	0.989	75.1	LOS F	48.5	359.6	1.00	1.21	26.7
Approach		2406	8.0	0.989	63.2	LOS E	48.5	359.6	0.96	1.14	28.8
West: M5 Motorway on&off ramp (W)											
10	L2	620	13.8	0.367	5.8	LOS A	0.0	0.0	0.00	0.52	54.4
12	R2	452	45.7	1.098	166.0	LOS F	22.3	270.8	1.00	1.54	14.8
Approach		1072	27.2	1.098	73.3	LOS F	22.3	270.8	0.42	0.95	26.5
All Vehicles		5763	14.8	1.275	98.0	LOS F	118.6	1144.8	0.86	1.20	22.1

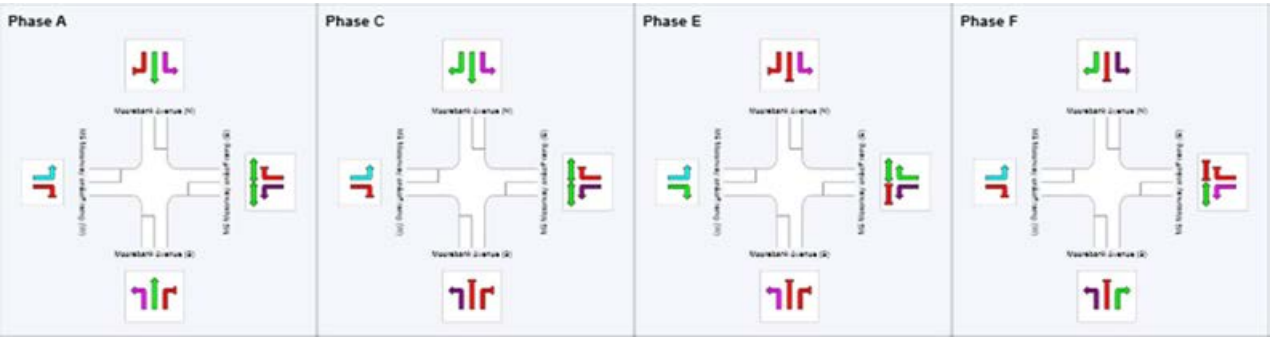
PHASING SUMMARY

Site: I-13 2030 MIMT PM CUM C2

Moorebank Avenue / the M5 Motorway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 94 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	17	30	53
Green Time (sec)	10	6	16	34
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	17	13	23	41
Phase Split	18 %	14 %	24 %	44 %



AM Peak – Cumulative Scenario C2 with Upgrade

MOVEMENT SUMMARY

Site: I-13 2030 MIMT AM CUM C2 upgrade

Moorebank Avenue / the M5 Motorway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	458	44.6	0.319	13.4	LOS A	5.3	63.6	0.44	0.68	46.3
2	T1	728	12.0	0.907	56.2	LOS D	21.4	175.1	1.00	1.11	29.7
3	R2	321	6.9	0.535	45.6	LOS D	7.9	61.0	0.94	0.80	32.3
Approach		1507	20.8	0.907	40.9	LOS C	21.4	175.1	0.82	0.91	34.0
East: M5 Motorway on&off ramp (E)											
4	L2	421	11.3	0.642	16.3	LOS B	10.4	84.2	0.76	0.80	45.5
6	R2	237	6.2	0.180	28.5	LOS B	3.9	28.6	0.71	0.73	40.6
Approach		658	9.4	0.642	20.7	LOS B	10.4	84.2	0.74	0.78	43.5
North: Moorebank Avenue (N)											
7	L2	51	47.9	0.047	7.9	LOS A	0.4	4.3	0.25	0.59	51.1
8	T1	309	20.7	0.411	35.9	LOS C	6.5	58.5	0.90	0.73	36.3
9	R2	454	25.5	0.878	55.2	LOS D	14.8	126.7	0.99	0.93	31.0
Approach		814	25.1	0.878	44.9	LOS D	14.8	126.7	0.91	0.83	33.6
West: M5 Motorway on&off ramp (W)											
10	L2	1722	7.5	0.977	8.2	LOS A	0.0	0.0	0.00	0.50	51.2
12	R2	834	23.2	0.773	39.2	LOS C	19.3	185.8	0.95	0.90	34.7
Approach		2556	12.6	0.977	18.3	LOS B	19.3	185.8	0.31	0.63	44.7
All Vehicles		5535	16.3	0.977	28.7	LOS C	21.4	185.8	0.59	0.75	39.4

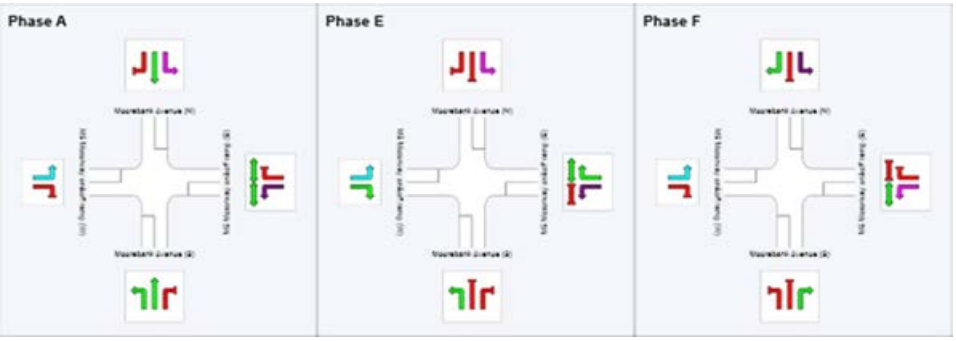
PHASING SUMMARY

Site: I-13 2030 MIMT AM CUM C2 upgrade

Moorebank Avenue / the M5 Motorway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	E	F
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	30	74
Green Time (sec)	23	37	19
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	30	44	26
Phase Split	30 %	44 %	26 %



PM Peak – Cumulative Scenario C2 with Upgrade

MOVEMENT SUMMARY

Site: I-13 2030 MIMT PM CUM C2 upgrade

Moorebank Avenue / the M5 Motorway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	846	23.8	1.001	60.0	LOS E	30.4	294.0	0.98	1.04	28.3
2	T1	324	17.5	0.897	71.2	LOS F	11.0	96.0	1.00	1.04	26.2
3	R2	551	9.4	0.746	51.8	LOS D	17.0	137.1	0.97	0.85	30.4
Approach		1721	18.0	1.001	59.5	LOS E	30.4	294.0	0.98	0.98	28.5
East: M5 Motorway on&off ramp (E)											
4	L2	467	8.8	0.721	22.6	LOS B	12.9	101.8	0.87	0.88	42.0
6	R2	97	21.7	0.134	46.0	LOS D	2.3	18.9	0.83	0.73	33.8
Approach		564	11.0	0.721	26.6	LOS B	12.9	101.8	0.86	0.86	40.2
North: Moorebank Avenue (N)											
7	L2	139	6.1	0.110	9.5	LOS A	2.1	15.6	0.32	0.63	51.1
8	T1	779	10.1	0.611	34.0	LOS C	18.7	148.8	0.88	0.77	37.1
9	R2	1488	7.0	0.986	69.5	LOS E	45.8	339.5	1.00	1.10	27.8
Approach		2406	8.0	0.986	54.6	LOS D	45.8	339.5	0.92	0.96	31.0
West: M5 Motorway on&off ramp (W)											
10	L2	620	13.8	0.367	5.8	LOS A	0.0	0.0	0.00	0.52	54.4
12	R2	452	45.7	0.831	63.8	LOS E	14.4	175.2	1.00	0.96	27.4
Approach		1072	27.2	0.831	30.3	LOS C	14.4	175.2	0.42	0.71	39.1
All Vehicles		5763	14.8	1.001	48.8	LOS D	45.8	339.5	0.84	0.91	32.2

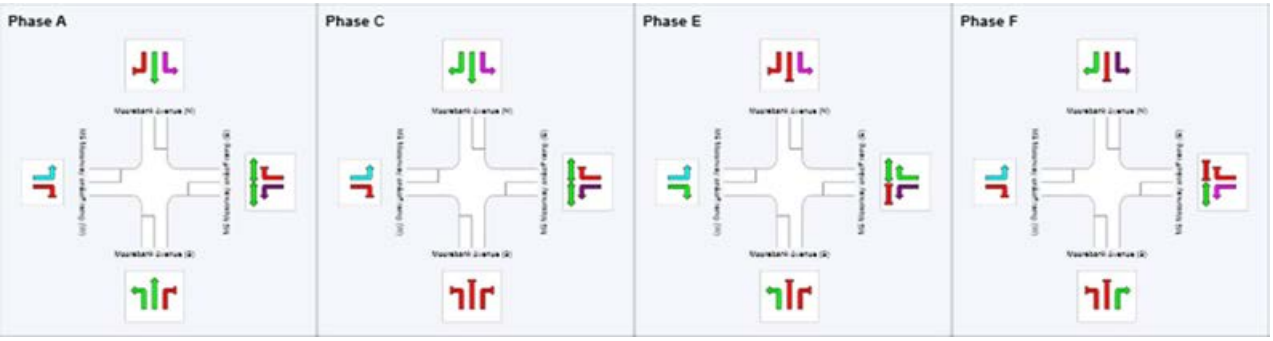
PHASING SUMMARY

Site: I-13 2030 MIMT PM CUM C2 upgrade

Moorebank Avenue / the M5 Motorway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	C	E	F
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	20	50	84
Green Time (sec)	13	23	27	29
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	20	30	34	36
Phase Split	17 %	25 %	28 %	30 %



I-14 Intersection of M5 Motorway and Hume Highway

AM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-14 2030 MIMT AM CUM A

M5 Motorway / Hume Highway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
2	T1	4256	4.6	1.027	59.4	LOS E	152.3	1108.5	1.00	1.21	33.2
3	R2	710	4.8	0.982	66.7	LOS E	23.9	174.1	1.00	1.02	31.4
Approach		4966	4.6	1.027	60.5	LOS E	152.3	1108.5	1.00	1.18	33.0
East: M5 Motorway on&off-ramp (E)											
4	L2	345	7.8	0.139	30.6	LOS C	4.9	36.7	0.60	0.71	41.9
6	R2	1237	8.3	1.346	410.4	LOS F	81.6	632.2	1.00	1.62	6.4
Approach		1582	8.2	1.346	327.6	LOS F	81.6	632.2	0.91	1.42	8.5
North: Hume Highway (N)											
7	L2	835	12.1	0.723	15.6	LOS B	30.1	244.1	0.60	0.76	44.6
8	T1	1208	6.7	0.490	28.5	LOS B	17.8	131.7	0.62	0.55	43.3
Approach		2044	8.9	0.723	23.2	LOS B	30.1	244.1	0.61	0.64	43.7
All Vehicles		8591	6.3	1.346	100.8	LOS F	152.3	1108.5	0.89	1.10	24.1

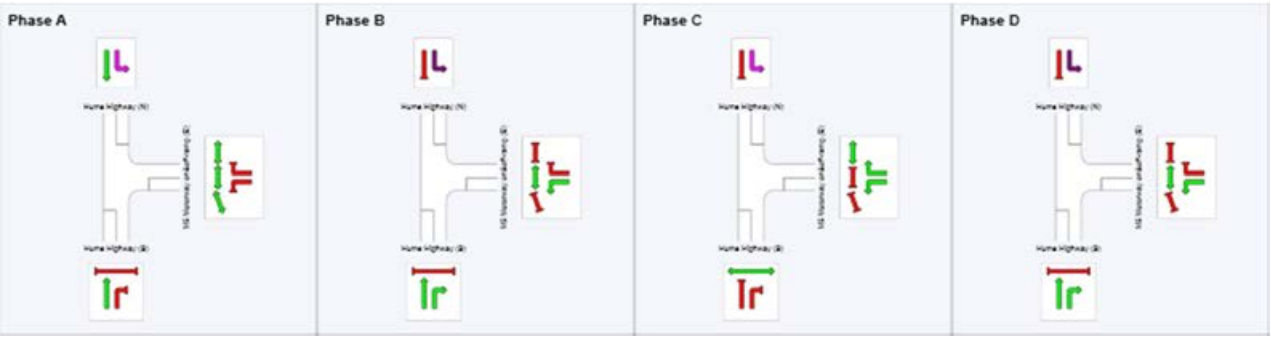
PHASING SUMMARY

Site: I-14 2030 MIMT AM CUM A

M5 Motorway / Hume Highway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	No	No	No	Yes
Phase Change Time (sec)	20	97	123	0
Green Time (sec)	70	19	29	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	77	26	36	20
Phase Split	48 %	16 %	23 %	13 %



PM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-14 2030 MIMT PM CUM A

M5 Motorway / Hume Highway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
2	T1	2555	3.9	0.624	2.2	LOS A	7.1	51.1	0.12	0.11	58.3
3	R2	409	3.9	1.059	148.2	LOS F	22.9	165.8	1.00	1.13	19.9
Approach		2964	3.9	1.059	22.3	LOS B	22.9	165.8	0.24	0.25	46.0
East: M5 Motorway on&off-ramp (E)											
4	L2	1534	3.8	1.158	262.2	LOS F	103.1	745.3	1.00	1.37	13.1
6	R2	1324	8.7	1.385	446.0	LOS F	93.0	726.6	1.00	1.67	6.0
Approach		2857	6.1	1.385	347.4	LOS F	103.1	745.3	1.00	1.51	9.1
North: Hume Highway (N)											
7	L2	928	10.2	0.770	16.8	LOS B	29.1	234.4	0.68	0.86	43.9
8	T1	2837	2.4	0.870	20.5	LOS B	51.6	368.7	0.78	0.73	47.0
Approach		3765	4.4	0.870	19.6	LOS B	51.6	368.7	0.76	0.76	46.4
All Vehicles		9587	4.7	1.385	118.1	LOS F	103.1	745.3	0.67	0.83	21.9

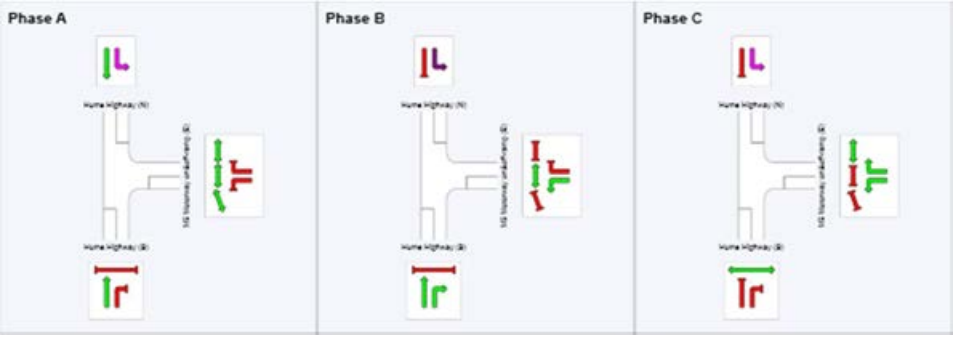
PHASING SUMMARY

Site: I-14 2030 MIMT PM CUM A

M5 Motorway / Hume Highway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	97	121
Green Time (sec)	90	17	31
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	97	24	38
Phase Split	61 %	15 %	24 %



AM Peak – Cumulative Scenario A with Upgrade

MOVEMENT SUMMARY

Site: I-14 2030 MIMT AM CUM A upgrade

M5 Motorway / Hume Highway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
2	T1	4256	4.6	1.027	59.4	LOS E	152.3	1108.5	1.00	1.21	33.2
3	R2	710	4.8	0.982	66.7	LOS E	23.9	174.1	1.00	1.02	31.4
Approach		4966	4.6	1.027	60.5	LOS E	152.3	1108.5	1.00	1.18	33.0
East: M5 Motorway on&off-ramp (E)											
4	L2	345	7.8	0.139	30.6	LOS C	4.9	36.7	0.60	0.71	41.9
6	R2	1237	8.3	1.316	381.8	LOS F	77.0	597.0	1.00	1.58	6.8
Approach		1582	8.2	1.316	305.2	LOS F	77.0	597.0	0.91	1.39	9.1
North: Hume Highway (N)											
7	L2	835	12.1	0.723	15.6	LOS B	30.1	244.1	0.60	0.76	44.6
8	T1	1208	6.7	0.490	28.5	LOS B	17.8	131.7	0.62	0.55	43.3
Approach		2044	8.9	0.723	23.2	LOS B	30.1	244.1	0.61	0.64	43.7
All Vehicles		8591	6.3	1.316	96.7	LOS F	152.3	1108.5	0.89	1.09	24.7

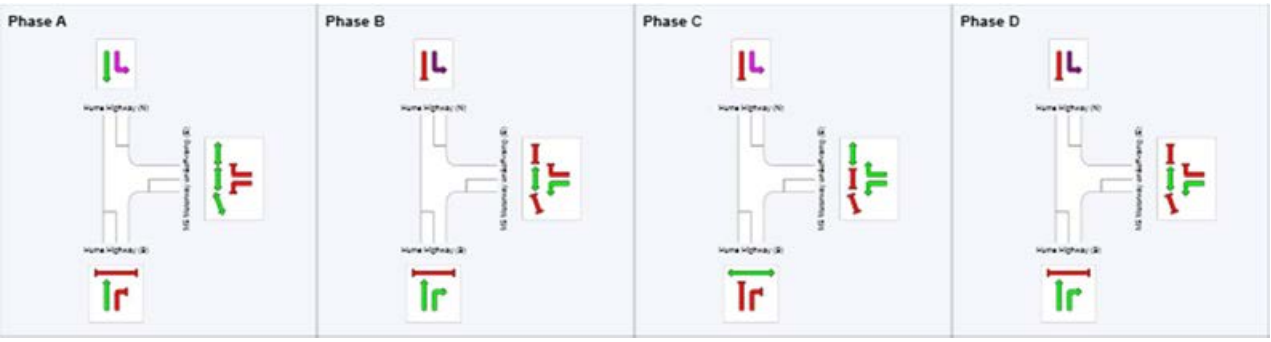
PHASING SUMMARY

Site: I-14 2030 MIMT AM CUM A upgrade

M5 Motorway / Hume Highway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	No	No	No	Yes
Phase Change Time (sec)	20	97	123	0
Green Time (sec)	70	19	29	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	77	26	36	20
Phase Split	48 %	16 %	23 %	13 %



PM Peak – Cumulative Scenario A with Upgrade

MOVEMENT SUMMARY

Site: I-14 2030 MIMT PM CUM A upgrade

M5 Motorway / Hume Highway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
2	T1	2555	3.9	0.636	3.1	LOS A	9.7	70.4	0.16	0.15	57.6
3	R2	409	3.9	1.126	203.4	LOS F	26.9	194.9	1.00	1.25	15.9
Approach		2964	3.9	1.126	30.8	LOS C	26.9	194.9	0.28	0.31	42.3
East: M5 Motorway on&off-ramp (E)											
4	L2	1534	3.8	1.142	248.8	LOS F	100.1	723.4	1.00	1.34	13.6
6	R2	1324	8.7	1.245	317.7	LOS F	75.4	588.6	1.00	1.48	8.0
Approach		2857	6.1	1.245	280.7	LOS F	100.1	723.4	1.00	1.41	10.8
North: Hume Highway (N)											
7	L2	928	10.2	0.769	16.4	LOS B	29.5	237.6	0.68	0.86	44.2
8	T1	2837	2.4	0.953	41.2	LOS C	81.3	581.2	0.86	0.91	38.5
Approach		3765	4.4	0.953	35.1	LOS C	81.3	581.2	0.82	0.90	39.4
All Vehicles		9587	4.7	1.245	107.0	LOS F	100.1	723.4	0.71	0.87	23.2

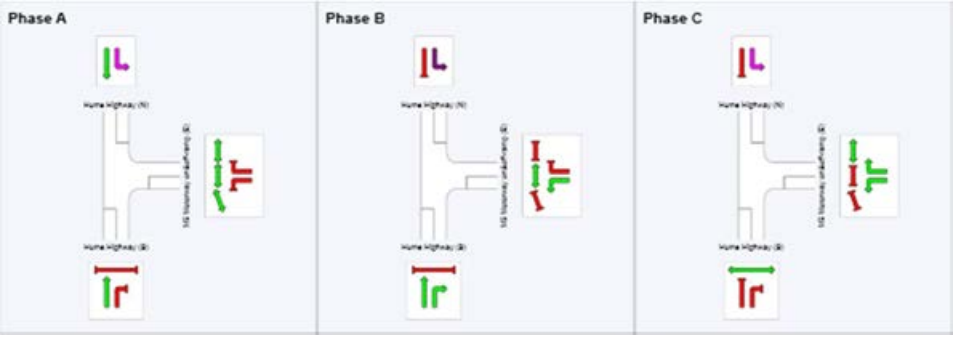
PHASING SUMMARY

Site: I-14 2030 MIMT PM CUM A upgrade

M5 Motorway / Hume Highway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	96	119
Green Time (sec)	89	16	33
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	96	23	40
Phase Split	60 %	14 %	25 %



AM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-14 2030 MIMT AM CUM B

M5 Motorway / Hume Highway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
2	T1	4256	4.6	1.027	59.4	LOS E	152.3	1108.5	1.00	1.21	33.2
3	R2	776	5.2	1.086	131.8	LOS F	36.6	271.4	1.00	1.19	21.5
Approach		5032	4.7	1.086	70.6	LOS F	152.3	1108.5	1.00	1.21	30.6
East: M5 Motorway on&off-ramp (E)											
4	L2	351	9.3	0.145	30.8	LOS C	5.0	39.2	0.60	0.71	41.8
6	R2	1228	7.7	1.327	392.9	LOS F	79.2	607.8	1.00	1.59	6.7
Approach		1579	8.1	1.327	312.5	LOS F	79.2	607.8	0.91	1.40	8.9
North: Hume Highway (N)											
7	L2	899	10.2	0.764	16.5	LOS B	34.6	273.5	0.64	0.78	44.0
8	T1	1208	6.7	0.490	28.5	LOS B	17.8	131.7	0.62	0.55	43.3
Approach		2107	8.2	0.764	23.4	LOS B	34.6	273.5	0.63	0.65	43.5
All Vehicles		8718	6.1	1.327	103.0	LOS F	152.3	1108.5	0.89	1.10	23.8

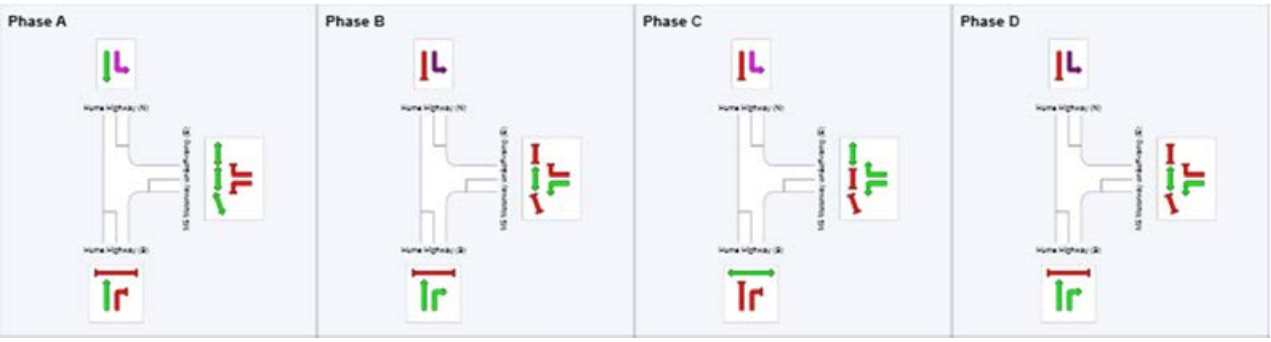
PHASING SUMMARY

Site: I-14 2030 MIMT AM CUM B

M5 Motorway / Hume Highway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	No	No	No	Yes
Phase Change Time (sec)	20	97	123	0
Green Time (sec)	70	19	29	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	77	26	36	20
Phase Split	48 %	16 %	23 %	13 %



PM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-14 2030 MIMT PM CUM B

M5 Motorway / Hume Highway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
2	T1	2555	3.9	0.624	2.2	LOS A	7.1	51.1	0.12	0.11	58.3
3	R2	412	4.3	1.085	168.7	LOS F	24.6	183.2	1.00	1.18	18.2
Approach		2966	3.9	1.085	25.3	LOS B	24.6	183.2	0.24	0.26	44.7
East: M5 Motorway on&off-ramp (E)											
4	L2	1587	3.8	1.204	301.8	LOS F	115.3	838.7	1.00	1.45	11.7
6	R2	1363	6.7	1.394	453.4	LOS F	96.4	732.1	1.00	1.68	5.9
Approach		2951	5.2	1.394	371.9	LOS F	115.3	838.7	1.00	1.55	8.6
North: Hume Highway (N)											
7	L2	903	7.7	0.730	15.7	LOS B	28.3	219.7	0.64	0.84	44.7
8	T1	2837	2.4	0.870	20.5	LOS B	51.6	368.7	0.78	0.73	47.0
Approach		3740	3.7	0.870	19.3	LOS B	51.6	368.7	0.75	0.75	46.5
All Vehicles		9657	4.2	1.394	128.9	LOS F	115.3	838.7	0.67	0.85	20.7

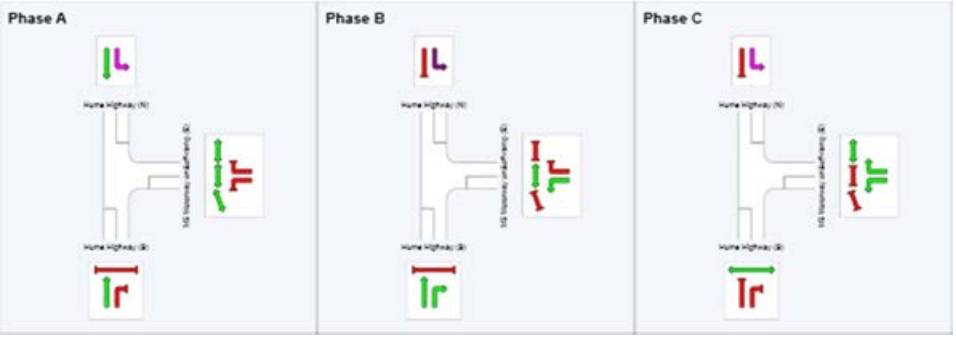
PHASING SUMMARY

Site: I-14 2030 MIMT PM CUM B

M5 Motorway / Hume Highway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	97	121
Green Time (sec)	90	17	31
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	97	24	38
Phase Split	61 %	15 %	24 %



AM Peak – Cumulative Scenario B with Upgrade

MOVEMENT SUMMARY

Site: I-14 2030 MIMT AM CUM B upgrade

M5 Motorway / Hume Highway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
2	T1	4256	4.6	1.027	59.4	LOS E	152.3	1108.5	1.00	1.21	33.2
3	R2	776	5.2	1.086	131.8	LOS F	36.6	271.4	1.00	1.19	21.5
Approach		5032	4.7	1.086	70.6	LOS F	152.3	1108.5	1.00	1.21	30.6
East: M5 Motorway on&off-ramp (E)											
4	L2	351	9.3	0.145	30.8	LOS C	5.0	39.2	0.60	0.71	41.8
6	R2	1228	7.7	1.298	365.6	LOS F	74.8	574.4	1.00	1.55	7.1
Approach		1579	8.1	1.298	291.3	LOS F	74.8	574.4	0.91	1.37	9.4
North: Hume Highway (N)											
7	L2	899	10.2	0.764	16.5	LOS B	34.6	273.5	0.64	0.78	44.0
8	T1	1208	6.7	0.490	28.5	LOS B	17.8	131.7	0.62	0.55	43.3
Approach		2107	8.2	0.764	23.4	LOS B	34.6	273.5	0.63	0.65	43.5
All Vehicles		8718	6.1	1.298	99.2	LOS F	152.3	1108.5	0.89	1.10	24.3

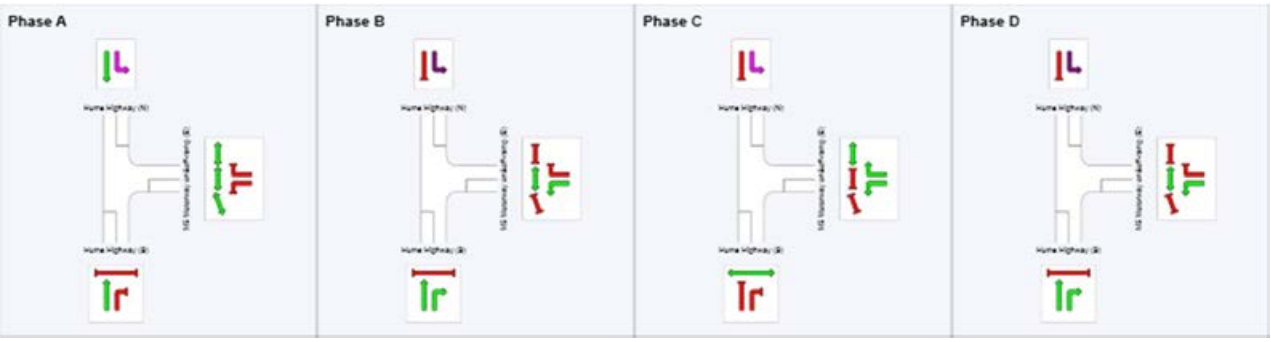
PHASING SUMMARY

Site: I-14 2030 MIMT AM CUM B upgrade

M5 Motorway / Hume Highway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	No	No	No	Yes
Phase Change Time (sec)	20	97	123	0
Green Time (sec)	70	19	29	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	77	26	36	20
Phase Split	48 %	16 %	23 %	13 %



PM Peak – Cumulative Scenario B with Upgrade

MOVEMENT SUMMARY

Site: I-14 2030 MIMT PM CUM B upgrade

M5 Motorway / Hume Highway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
2	T1	2555	3.9	0.636	3.1	LOS A	9.7	70.4	0.16	0.15	57.6
3	R2	412	4.3	1.153	226.9	LOS F	28.7	213.7	1.00	1.30	14.7
Approach		2966	3.9	1.153	34.2	LOS C	28.7	213.7	0.28	0.31	41.0
East: M5 Motorway on&off-ramp (E)											
4	L2	1587	3.8	1.188	287.6	LOS F	112.1	816.0	1.00	1.42	12.2
6	R2	1363	6.7	1.255	326.6	LOS F	78.7	597.7	1.00	1.50	7.8
Approach		2951	5.2	1.255	305.6	LOS F	112.1	816.0	1.00	1.45	10.1
North: Hume Highway (N)											
7	L2	903	7.7	0.729	15.3	LOS B	28.7	222.7	0.64	0.84	45.0
8	T1	2837	2.4	0.951	40.5	LOS C	80.5	575.3	0.86	0.90	38.7
Approach		3740	3.7	0.951	34.4	LOS C	80.5	575.3	0.81	0.89	39.7
All Vehicles		9657	4.2	1.255	117.2	LOS F	112.1	816.0	0.70	0.88	22.0

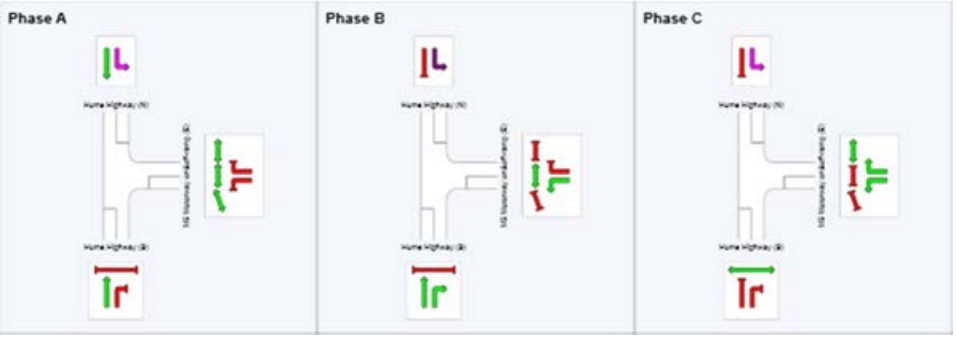
PHASING SUMMARY

Site: I-14 2030 MIMT PM CUM B upgrade

M5 Motorway / Hume Highway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	96	119
Green Time (sec)	89	16	33
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	96	23	40
Phase Split	60 %	14 %	25 %



AM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-14 2020 CUM C1 AM

M5 Motorway / Hume Highway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
2	T1	3727	4.5	0.899	2.1	LOS A	20.5	149.0	0.24	0.23	58.4
3	R2	623	5.4	0.872	42.3	LOS C	16.7	123.8	1.00	0.89	38.0
Approach		4351	4.6	0.899	7.8	LOS A	20.5	149.0	0.35	0.32	54.2
East: M5 Motorway on&off-ramp (E)											
4	L2	303	9.7	0.125	30.5	LOS C	4.3	33.3	0.59	0.71	41.9
6	R2	1071	8.8	1.162	248.5	LOS F	54.3	418.7	1.00	1.35	9.9
Approach		1374	9.0	1.162	200.4	LOS F	54.3	418.7	0.91	1.21	12.8
North: Hume Highway (N)											
7	L2	734	12.6	0.592	12.7	LOS A	21.4	172.0	0.49	0.72	46.6
8	T1	1151	7.0	0.467	28.1	LOS B	16.6	123.3	0.61	0.54	43.4
Approach		1884	9.2	0.592	22.1	LOS B	21.4	172.0	0.56	0.61	44.3
All Vehicles		7608	6.5	1.162	46.1	LOS D	54.3	418.7	0.50	0.55	35.6

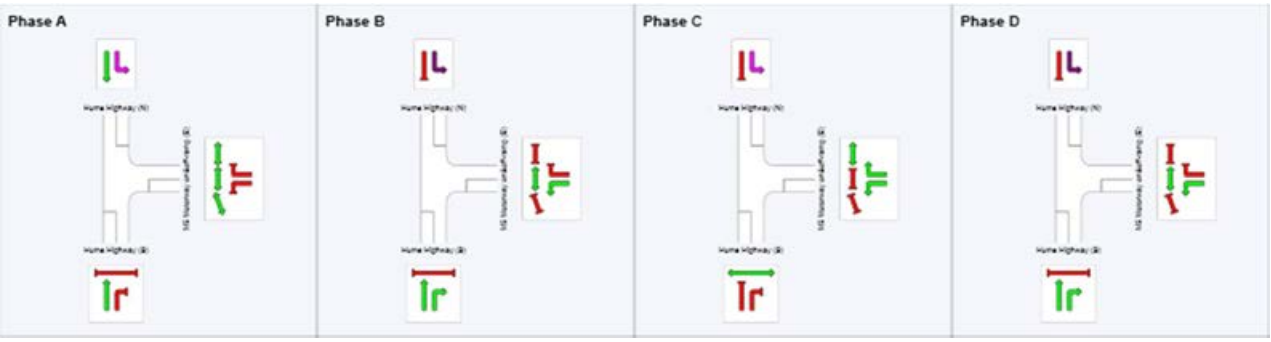
PHASING SUMMARY

Site: I-14 2020 CUM C1 AM

M5 Motorway / Hume Highway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	No	No	No	Yes
Phase Change Time (sec)	20	97	123	0
Green Time (sec)	70	19	29	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	77	26	36	20
Phase Split	48 %	16 %	23 %	13 %



PM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-14 2020 CUM C1 PM

M5 Motorway / Hume Highway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	Demand Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
2	T1	2376	3.7	0.580	2.1	LOS A	5.9	42.9	0.11	0.10	58.4
3	R2	376	4.2	0.984	101.7	LOS F	17.5	128.6	1.00	1.01	25.2
Approach		2752	3.8	0.984	15.7	LOS B	17.5	128.6	0.23	0.22	49.5
East: M5 Motorway on&off-ramp (E)											
4	L2	1380	4.1	1.047	174.4	LOS F	73.9	537.8	1.00	1.18	17.7
6	R2	1174	8.0	1.208	289.3	LOS F	65.8	503.2	1.00	1.42	8.7
Approach		2554	5.9	1.208	227.2	LOS F	73.9	537.8	1.00	1.29	12.9
North: Hume Highway (N)											
7	L2	840	9.0	0.630	10.2	LOS A	22.0	171.6	0.45	0.71	48.6
8	T1	2652	2.7	0.815	19.0	LOS B	42.8	306.3	0.69	0.64	47.7
Approach		3492	4.2	0.815	16.9	LOS B	42.8	306.3	0.64	0.66	47.8
All Vehicles		8797	4.6	1.208	77.6	LOS F	73.9	537.8	0.61	0.71	28.0

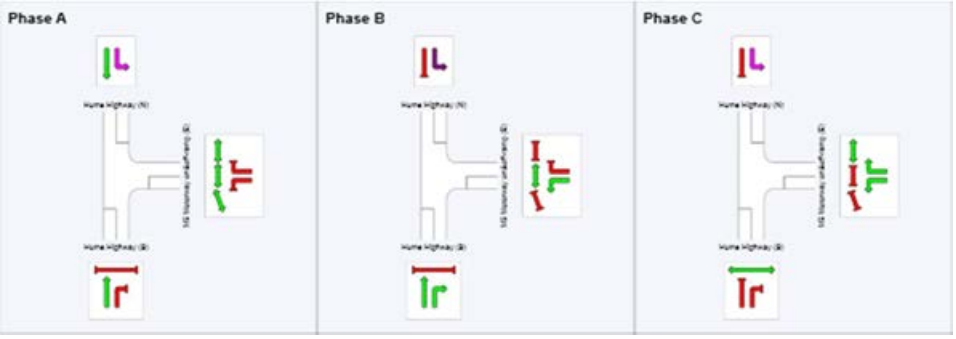
PHASING SUMMARY

Site: I-14 2020 CUM C1 PM

M5 Motorway / Hume Highway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	97	121
Green Time (sec)	90	17	31
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	97	24	38
Phase Split	61 %	15 %	24 %



AM Peak – Cumulative Scenario C1 with Upgrade

MOVEMENT SUMMARY

Site: I-14 2020 CUM C1 AM - Upgrade

M5 Motorway / Hume Highway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
2	T1	3727	4.5	0.906	2.8	LOS A	26.8	194.4	0.31	0.30	57.8
3	R2	623	5.4	0.872	42.0	LOS C	16.5	122.4	1.00	0.89	38.1
Approach		4351	4.6	0.906	8.4	LOS A	26.8	194.4	0.41	0.38	53.8
East: M5 Motorway on&off-ramp (E)											
4	L2	303	9.7	0.123	29.9	LOS C	4.2	32.9	0.59	0.70	42.1
6	R2	1071	8.8	1.099	194.3	LOS F	47.0	362.8	1.00	1.25	12.1
Approach		1374	9.0	1.099	158.0	LOS F	47.0	362.8	0.91	1.13	15.3
North: Hume Highway (N)											
7	L2	734	12.6	0.592	12.7	LOS A	21.4	171.8	0.49	0.72	46.6
8	T1	1151	7.0	0.474	29.0	LOS C	17.0	125.8	0.62	0.55	43.1
Approach		1884	9.2	0.592	22.7	LOS B	21.4	171.8	0.57	0.62	44.1
All Vehicles		7608	6.5	1.099	38.9	LOS C	47.0	362.8	0.54	0.58	38.0

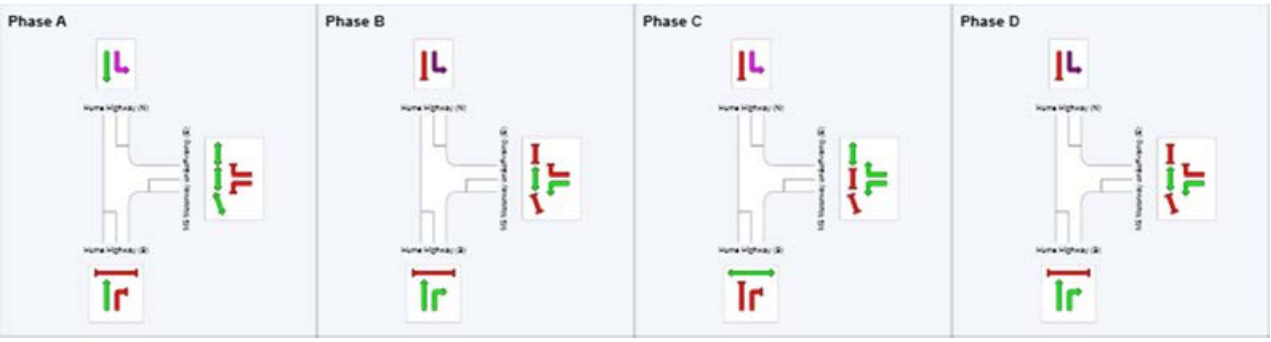
PHASING SUMMARY

Site: I-14 2020 CUM C1 AM - Upgrade

M5 Motorway / Hume Highway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	No	No	No	Yes
Phase Change Time (sec)	20	96	122	0
Green Time (sec)	69	19	30	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	76	26	37	20
Phase Split	48 %	16 %	23 %	13 %



PM Peak – Cumulative Scenario C1 with Upgrade

MOVEMENT SUMMARY

Site: I-14 2020 CUM C1 PM - Upgrade

M5 Motorway / Hume Highway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
2	T1	2376	3.7	0.601	3.9	LOS A	10.4	75.5	0.19	0.18	57.0
3	R2	376	4.2	0.984	101.7	LOS F	17.5	128.6	1.00	1.01	25.2
Approach		2752	3.8	0.984	17.3	LOS B	17.5	128.6	0.30	0.29	48.6
East: M5 Motorway on&off-ramp (E)											
4	L2	1380	4.1	0.988	104.8	LOS F	61.8	449.9	0.92	1.06	24.6
6	R2	1174	8.0	1.026	138.9	LOS F	44.1	337.4	1.00	1.13	15.6
Approach		2554	5.9	1.026	120.5	LOS F	61.8	449.9	0.96	1.09	20.3
North: Hume Highway (N)											
7	L2	840	9.0	0.634	10.2	LOS A	22.1	172.2	0.46	0.71	48.6
8	T1	2652	2.7	0.853	22.9	LOS B	48.7	348.6	0.79	0.73	45.8
Approach		3492	4.2	0.853	19.9	LOS B	48.7	348.6	0.71	0.73	46.2
All Vehicles		8797	4.6	1.026	48.3	LOS D	61.8	449.9	0.65	0.70	35.0

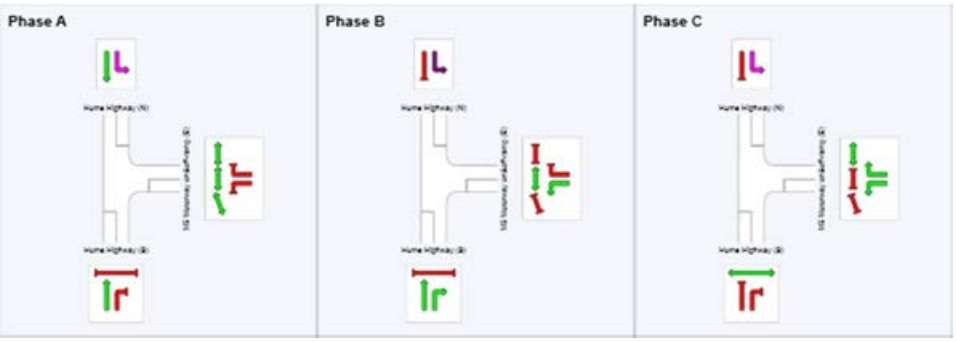
PHASING SUMMARY

Site: I-14 2020 CUM C1 PM - Upgrade

M5 Motorway / Hume Highway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	93	117
Green Time (sec)	86	17	35
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	93	24	42
Phase Split	58 %	15 %	26 %



AM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-14 2030 MIMT AM CUM C2

M5 Motorway / Hume Highway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
2	T1	4256	4.6	1.027	59.4	LOS E	152.3	1108.5	1.00	1.21	33.2
3	R2	724	5.1	1.010	77.2	LOS F	26.6	196.1	1.00	1.05	29.2
Approach		4980	4.7	1.027	62.0	LOS E	152.3	1108.5	1.00	1.19	32.6
East: M5 Motorway on&off-ramp (E)											
4	L2	347	8.5	0.142	30.7	LOS C	5.0	38.0	0.60	0.71	41.8
6	R2	1232	7.9	1.338	402.9	LOS F	80.5	622.2	1.00	1.61	6.5
Approach		1579	8.1	1.338	321.0	LOS F	80.5	622.2	0.91	1.41	8.7
North: Hume Highway (N)											
7	L2	844	11.3	0.729	16.0	LOS B	31.0	249.8	0.61	0.77	44.3
8	T1	1208	6.7	0.490	28.5	LOS B	17.8	131.7	0.62	0.55	43.3
Approach		2053	8.6	0.729	23.4	LOS B	31.0	249.8	0.62	0.64	43.6
All Vehicles		8612	6.2	1.338	100.3	LOS F	152.3	1108.5	0.89	1.10	24.2

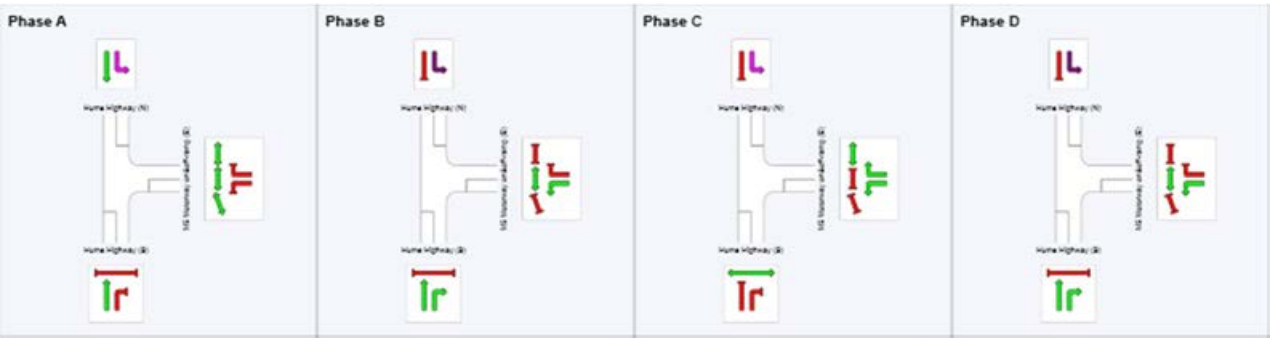
PHASING SUMMARY

Site: I-14 2030 MIMT AM CUM C2

M5 Motorway / Hume Highway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	No	No	No	Yes
Phase Change Time (sec)	20	97	123	0
Green Time (sec)	70	19	29	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	77	26	36	20
Phase Split	48 %	16 %	23 %	13 %



PM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-14 2030 MIMT PM CUM C2

M5 Motorway / Hume Highway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hume Highway (S)											
2	T1	2555	3.9	0.624	2.2	LOS A	7.1	51.1	0.12	0.11	58.3
3	R2	411	4.1	1.073	159.2	LOS F	23.8	175.2	1.00	1.16	19.0
Approach		2965	3.9	1.073	23.9	LOS B	23.8	175.2	0.24	0.26	45.3
East: M5 Motorway on&off-ramp (E)											
4	L2	1567	3.8	1.186	286.6	LOS F	110.6	802.8	1.00	1.42	12.2
6	R2	1351	7.5	1.395	454.6	LOS F	95.7	736.1	1.00	1.68	5.9
Approach		2918	5.5	1.395	364.3	LOS F	110.6	802.8	1.00	1.54	8.7
North: Hume Highway (N)											
7	L2	914	8.8	0.748	16.2	LOS B	28.6	226.5	0.66	0.85	44.3
8	T1	2837	2.4	0.870	20.5	LOS B	51.6	368.7	0.78	0.73	47.0
Approach		3751	4.0	0.870	19.4	LOS B	51.6	368.7	0.75	0.76	46.5
All Vehicles		9634	4.4	1.395	125.3	LOS F	110.6	802.8	0.67	0.84	21.0

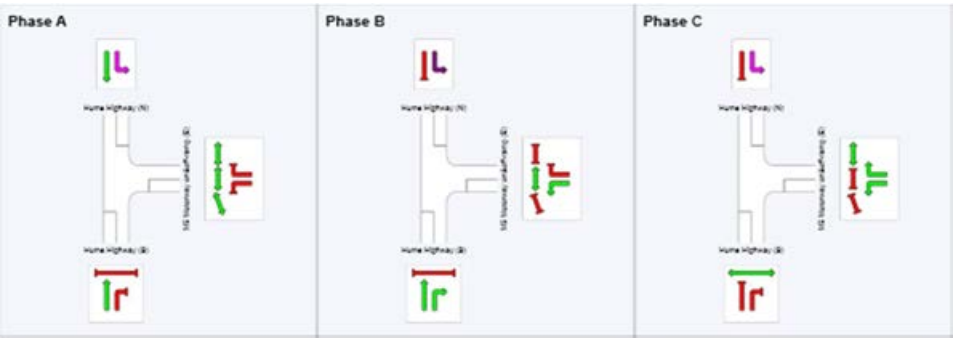
PHASING SUMMARY

Site: I-14 2030 MIMT PM CUM C2

M5 Motorway / Hume Highway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	97	121
Green Time (sec)	90	17	31
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	97	24	38
Phase Split	61 %	15 %	24 %



AM Peak – Cumulative Scenario C2 with Upgrade

MOVEMENT SUMMARY

Site: I-14 2030 MIMT AM CUM C2 - Upgrade

M5 Motorway / Hume Highway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
2	T1	4256	4.6	1.027	59.4	LOS E	152.3	1108.5	1.00	1.21	33.2
3	R2	724	5.1	1.010	77.2	LOS F	26.6	196.1	1.00	1.05	29.2
Approach		4980	4.7	1.027	62.0	LOS E	152.3	1108.5	1.00	1.19	32.6
East: M5 Motorway on&off-ramp (E)											
4	L2	347	8.5	0.142	30.7	LOS C	5.0	38.0	0.60	0.71	41.8
6	R2	1232	7.9	1.308	374.5	LOS F	75.9	587.3	1.00	1.57	7.0
Approach		1579	8.1	1.308	298.8	LOS F	75.9	587.3	0.91	1.38	9.2
North: Hume Highway (N)											
7	L2	844	11.3	0.729	16.0	LOS B	31.0	249.8	0.61	0.77	44.3
8	T1	1208	6.7	0.490	28.5	LOS B	17.8	131.7	0.62	0.55	43.3
Approach		2053	8.6	0.729	23.4	LOS B	31.0	249.8	0.62	0.64	43.6
All Vehicles		8612	6.2	1.308	96.2	LOS F	152.3	1108.5	0.89	1.09	24.7

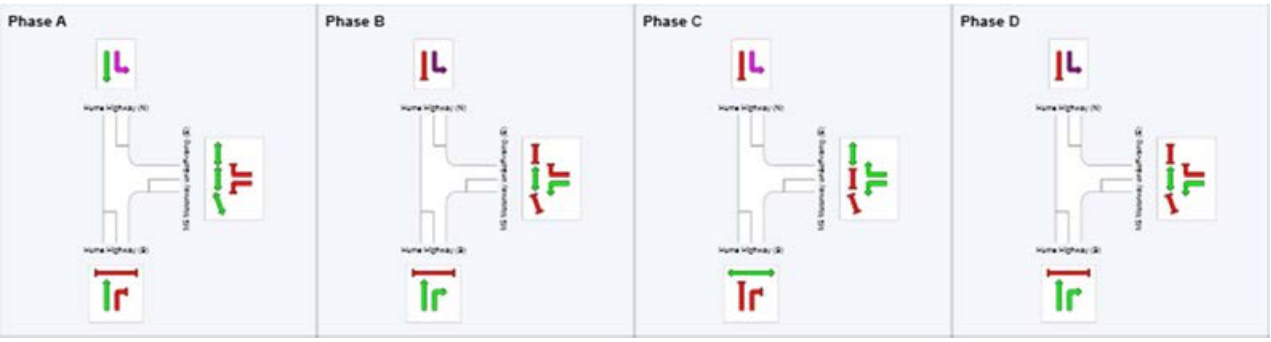
PHASING SUMMARY

Site: I-14 2030 MIMT AM CUM C2 - Upgrade

M5 Motorway / Hume Highway
2030 MIMT AM PEAK 7:45 am - 8:45 am
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	No	No	No	Yes
Phase Change Time (sec)	20	97	123	0
Green Time (sec)	70	19	29	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	3	3	3	3
Phase Time (sec)	77	26	36	20
Phase Split	48 %	16 %	23 %	13 %



PM Peak – Cumulative Scenario C2 with Upgrade

MOVEMENT SUMMARY

Site: I-14 2030 MIMT PM CUM C2 - Upgrade

M5 Motorway / Hume Highway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hume Highway (S)											
2	T1	2555	3.9	0.636	3.1	LOS A	9.7	70.4	0.16	0.15	57.6
3	R2	411	4.1	1.140	216.2	LOS F	27.9	205.1	1.00	1.28	15.2
Approach		2965	3.9	1.140	32.6	LOS C	27.9	205.1	0.28	0.31	41.6
East: M5 Motorway on&off-ramp (E)											
4	L2	1567	3.8	1.170	272.6	LOS F	107.5	780.4	1.00	1.39	12.7
6	R2	1351	7.5	1.255	326.5	LOS F	78.0	599.5	1.00	1.50	7.8
Approach		2918	5.5	1.255	297.6	LOS F	107.5	780.4	1.00	1.44	10.3
North: Hume Highway (N)											
7	L2	914	8.8	0.747	15.8	LOS B	29.0	229.6	0.66	0.85	44.6
8	T1	2837	2.4	0.952	40.8	LOS C	80.9	578.0	0.86	0.90	38.6
Approach		3751	4.0	0.952	34.7	LOS C	80.9	578.0	0.81	0.89	39.6
All Vehicles		9634	4.4	1.255	113.7	LOS F	107.5	780.4	0.70	0.88	22.4

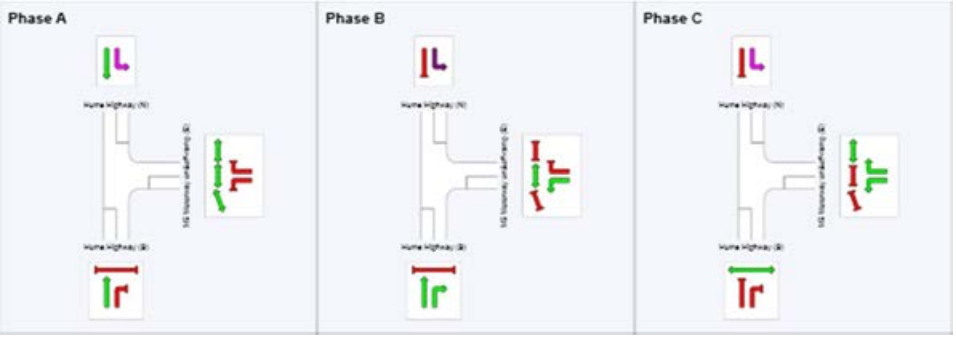
PHASING SUMMARY

Site: I-14 2030 MIMT PM CUM C2 - Upgrade

M5 Motorway / Hume Highway
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Signals - Fixed Time Cycle Time = 159 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	96	119
Green Time (sec)	89	16	33
Yellow Time (sec)	4	4	4
All-Red Time (sec)	3	3	3
Phase Time (sec)	96	23	40
Phase Split	60 %	14 %	25 %



I-15 Intersection of Cambridge Avenue and Canterbury Road

AM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-15 2030 MIMT AM CUM A

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	449	3.5	0.494	6.0	LOS A	3.1	22.0	0.59	0.68	52.9
2	T1	8	0.0	0.842	8.8	LOS A	12.8	91.5	0.87	0.89	50.2
3	R2	1033	2.3	0.842	14.2	LOS A	12.8	91.5	0.87	0.89	50.3
Approach		1491	2.6	0.842	11.7	LOS A	12.8	91.5	0.79	0.83	51.0
East: Cambridge Avenue (E)											
4	L2	310	3.8	0.165	3.5	LOS A	0.0	0.0	0.00	0.43	56.4
5	T1	82	8.3	0.087	5.3	LOS A	0.5	3.8	0.53	0.58	53.3
6	R2	54	10.9	0.087	10.6	LOS A	0.5	3.8	0.54	0.60	53.6
Approach		446	5.5	0.165	4.7	LOS A	0.5	3.8	0.16	0.48	55.5
North: Railway Parade (N)											
7	L2	321	0.9	0.764	36.5	LOS C	9.1	64.4	1.00	1.34	37.4
8	T1	3	0.0	0.560	26.0	LOS B	4.2	29.8	0.97	1.12	41.0
9	R2	168	1.9	0.560	31.4	LOS C	4.2	29.8	0.97	1.12	39.2
Approach		492	1.2	0.764	34.7	LOS C	9.1	64.4	0.99	1.27	38.0
West: Glenfield Road (W)											
10	L2	399	6.3	1.247	265.3	LOS F	85.5	633.6	1.00	3.93	10.0
11	T1	210	8.2	1.247	266.1	LOS F	85.5	633.6	1.00	3.81	10.1
12	R2	367	6.9	1.247	273.4	LOS F	69.9	519.0	1.00	3.56	10.2
Approach		976	6.9	1.247	268.5	LOS F	85.5	633.6	1.00	3.76	10.1
All Vehicles		3406	4.0	1.247	87.7	LOS F	85.5	633.6	0.80	1.69	24.1

PM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-15 2030 MIMT PM CUM A

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	338	2.2	0.475	8.9	LOS A	3.1	21.9	0.79	0.93	50.9
2	T1	6	0.0	0.410	7.4	LOS A	2.6	18.2	0.76	0.92	51.2
3	R2	337	2.1	0.410	12.8	LOS A	2.6	18.2	0.76	0.92	51.3
Approach		681	2.1	0.475	10.8	LOS A	3.1	21.9	0.78	0.92	51.1
East: Cambridge Avenue (E)											
4	L2	1146	2.5	0.606	3.6	LOS A	0.0	0.0	0.00	0.43	56.3
5	T1	297	8.0	0.457	7.2	LOS A	3.6	26.1	0.76	0.76	52.0
6	R2	333	1.2	0.457	12.4	LOS A	3.6	26.1	0.81	0.79	52.2
Approach		1776	3.1	0.606	5.8	LOS A	3.6	26.1	0.28	0.55	54.8
North: Railway Parade (N)											
7	L2	126	2.3	0.194	7.9	LOS A	1.0	7.0	0.69	0.80	52.7
8	T1	1	0.0	0.297	7.3	LOS A	1.7	12.8	0.73	0.86	51.2
9	R2	240	8.3	0.297	12.7	LOS A	1.7	12.8	0.73	0.86	50.0
Approach		367	6.2	0.297	11.1	LOS A	1.7	12.8	0.71	0.84	51.0
West: Glenfield Road (W)											
10	L2	271	4.7	0.433	8.6	LOS A	2.9	20.7	0.76	0.85	51.1
11	T1	54	1.0	0.433	8.5	LOS A	2.9	20.7	0.76	0.85	53.0
12	R2	451	3.7	0.502	13.9	LOS A	3.9	28.4	0.79	0.91	49.3
Approach		775	3.9	0.502	11.7	LOS A	3.9	28.4	0.78	0.89	50.1
All Vehicles		3599	3.4	0.606	8.6	LOS A	3.9	28.4	0.53	0.72	52.7

AM Peak – Cumulative Scenario A with Upgrade

MOVEMENT SUMMARY

Site: I-15 2030 MIMT AM CUM A - Upgrade

Canterbury Road / Cambridge Avenue / Glenfield Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	449	3.5	0.641	6.0	LOS A	5.4	39.0	0.64	0.72	51.2
2	T1	8	0.0	0.641	5.9	LOS A	5.4	39.0	0.64	0.72	53.9
3	R2	1033	2.3	0.641	11.6	LOS A	5.4	39.0	0.65	0.77	52.3
Approach		1491	2.6	0.641	9.9	LOS A	5.4	39.0	0.65	0.75	52.0
East: Cambridge Avenue (E)											
4	L2	310	3.8	0.165	3.5	LOS A	0.0	0.0	0.00	0.43	56.4
5	T1	82	8.3	0.091	5.7	LOS A	0.5	4.1	0.58	0.60	53.1
6	R2	54	10.9	0.091	10.9	LOS A	0.5	4.1	0.59	0.62	53.4
Approach		446	5.5	0.165	4.8	LOS A	0.5	4.1	0.18	0.49	55.4
North: Railway Parade (N)											
7	L2	321	0.9	0.532	13.9	LOS A	3.9	27.6	0.91	1.06	48.6
8	T1	3	0.0	0.398	13.9	LOS A	2.2	15.8	0.85	1.00	47.1
9	R2	168	1.9	0.398	19.3	LOS B	2.2	15.8	0.85	1.00	45.7
Approach		492	1.2	0.532	15.8	LOS B	3.9	27.6	0.89	1.04	47.6
West: Glenfield Road (W)											
10	L2	399	6.3	0.735	12.6	LOS A	6.7	49.8	0.91	1.12	48.1
11	T1	210	8.2	0.735	13.1	LOS A	6.7	49.8	0.91	1.12	48.3
12	R2	367	6.9	0.735	19.8	LOS B	6.1	45.2	0.90	1.13	45.7
Approach		976	6.9	0.735	15.4	LOS B	6.7	49.8	0.91	1.12	47.2
All Vehicles		3406	4.0	0.735	11.6	LOS A	6.7	49.8	0.70	0.87	50.4

PM Peak – Cumulative Scenario A with Upgrade

MOVEMENT SUMMARY

Site: I-15 2030 MIMT PM CUM A - Upgrade

Canterbury Road / Cambridge Avenue / Glenfield Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	338	2.2	0.444	7.8	LOS A	2.9	20.6	0.78	0.90	51.5
2	T1	6	0.0	0.444	7.7	LOS A	2.9	20.6	0.78	0.90	54.2
3	R2	337	2.1	0.444	13.9	LOS A	2.9	20.6	0.77	0.95	50.7
Approach		681	2.1	0.444	10.8	LOS A	2.9	20.6	0.77	0.93	51.1
East: Cambridge Avenue (E)											
4	L2	1146	2.5	0.606	3.6	LOS A	0.0	0.0	0.00	0.43	56.3
5	T1	297	8.0	0.452	7.2	LOS A	3.5	25.2	0.75	0.75	52.0
6	R2	333	1.2	0.452	12.4	LOS A	3.5	25.2	0.80	0.79	52.3
Approach		1776	3.1	0.606	5.8	LOS A	3.5	25.2	0.28	0.55	54.8
North: Railway Parade (N)											
7	L2	126	2.3	0.186	7.7	LOS A	0.9	6.3	0.66	0.78	52.9
8	T1	1	0.0	0.284	7.0	LOS A	1.5	11.5	0.69	0.85	51.3
9	R2	240	8.3	0.284	12.5	LOS A	1.5	11.5	0.69	0.85	50.2
Approach		367	6.2	0.284	10.9	LOS A	1.5	11.5	0.68	0.83	51.1
West: Glenfield Road (W)											
10	L2	271	4.7	0.409	7.6	LOS A	2.4	17.2	0.70	0.81	51.9
11	T1	54	1.0	0.409	7.5	LOS A	2.4	17.2	0.70	0.81	53.8
12	R2	451	3.7	0.473	12.7	LOS A	3.2	23.0	0.72	0.88	50.2
Approach		775	3.9	0.473	10.5	LOS A	3.2	23.0	0.71	0.85	51.0
All Vehicles		3599	3.4	0.606	8.3	LOS A	3.5	25.2	0.51	0.72	52.9

AM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-15 2030 MIMT AM CUM B

Canterbury Road / Cambridge Avenue / Glenfield Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	449	3.5	0.503	6.1	LOS A	3.2	22.8	0.60	0.69	52.9
2	T1	8	0.0	0.886	10.4	LOS A	16.3	115.7	0.95	0.95	49.2
3	R2	1092	2.0	0.886	15.8	LOS B	16.3	115.7	0.95	0.95	49.3
Approach		1549	2.4	0.886	12.9	LOS A	16.3	115.7	0.85	0.87	50.2
East: Cambridge Avenue (E)											
4	L2	308	3.4	0.164	3.5	LOS A	0.0	0.0	0.00	0.43	56.5
5	T1	81	7.8	0.082	5.1	LOS A	0.5	3.4	0.50	0.56	53.5
6	R2	54	9.8	0.082	10.4	LOS A	0.5	3.4	0.50	0.59	53.7
Approach		443	5.0	0.164	4.6	LOS A	0.5	3.4	0.15	0.47	55.6
North: Railway Parade (N)											
7	L2	336	0.6	0.863	53.4	LOS D	12.9	90.4	1.00	1.52	31.9
8	T1	3	0.0	0.608	29.2	LOS C	4.7	33.7	0.99	1.15	39.6
9	R2	168	1.9	0.608	34.6	LOS C	4.7	33.7	0.99	1.15	37.8
Approach		507	1.0	0.863	47.0	LOS D	12.9	90.4	1.00	1.39	33.5
West: Glenfield Road (W)											
10	L2	399	6.3	1.468	459.3	LOS F	127.1	941.0	1.00	4.82	6.2
11	T1	221	7.6	1.468	460.0	LOS F	127.1	941.0	1.00	4.65	6.3
12	R2	367	6.9	1.468	467.0	LOS F	102.8	762.5	1.00	4.31	6.4
Approach		987	6.8	1.468	462.3	LOS F	127.1	941.0	1.00	4.59	6.3
All Vehicles		3487	3.8	1.468	144.1	LOS F	127.1	941.0	0.82	1.95	17.4

PM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-15 2030 MIMT PM CUM B

Canterbury Road / Cambridge Avenue / Glenfield Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	338	2.2	0.486	9.2	LOS A	3.2	22.7	0.80	0.94	50.7
2	T1	6	0.0	0.414	7.5	LOS A	2.6	18.5	0.78	0.93	51.1
3	R2	335	1.6	0.414	12.9	LOS A	2.6	18.5	0.78	0.93	51.2
Approach		679	1.9	0.486	11.0	LOS A	3.2	22.7	0.79	0.94	51.0
East: Cambridge Avenue (E)											
4	L2	1201	2.2	0.634	3.6	LOS A	0.0	0.0	0.00	0.43	56.3
5	T1	308	7.5	0.475	7.3	LOS A	3.9	28.2	0.77	0.77	51.9
6	R2	347	0.9	0.475	12.6	LOS A	3.9	28.2	0.82	0.81	52.1
Approach		1857	2.8	0.634	5.9	LOS A	3.9	28.2	0.28	0.56	54.7
North: Railway Parade (N)											
7	L2	125	1.7	0.192	7.9	LOS A	1.0	6.9	0.69	0.80	52.7
8	T1	1	0.0	0.297	7.2	LOS A	1.7	12.8	0.73	0.86	51.2
9	R2	240	8.3	0.297	12.7	LOS A	1.7	12.8	0.73	0.86	50.0
Approach		366	6.0	0.297	11.0	LOS A	1.7	12.8	0.71	0.84	51.0
West: Glenfield Road (W)											
10	L2	271	4.7	0.438	8.8	LOS A	2.9	21.3	0.77	0.86	50.9
11	T1	54	0.0	0.438	8.7	LOS A	2.9	21.3	0.77	0.86	52.8
12	R2	451	3.7	0.509	14.1	LOS A	4.1	29.3	0.80	0.92	49.1
Approach		775	3.8	0.509	11.9	LOS A	4.1	29.3	0.79	0.90	50.0
All Vehicles		3677	3.2	0.634	8.6	LOS A	4.1	29.3	0.53	0.73	52.7

AM Peak – Cumulative Scenario B with Upgrade

MOVEMENT SUMMARY

Site: I-15 2030 MIMT AM CUM B - Upgrade

Canterbury Road / Cambridge Avenue / Glenfield Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	449	3.5	0.664	6.2	LOS A	6.0	42.8	0.66	0.74	51.0
2	T1	8	0.0	0.664	6.1	LOS A	6.0	42.8	0.66	0.74	53.7
3	R2	1092	2.0	0.664	11.8	LOS A	6.0	42.8	0.67	0.78	52.3
Approach		1549	2.4	0.664	10.1	LOS A	6.0	42.8	0.67	0.76	52.0
East: Cambridge Avenue (E)											
4	L2	308	3.4	0.164	3.5	LOS A	0.0	0.0	0.00	0.43	56.5
5	T1	81	7.8	0.090	5.7	LOS A	0.5	4.1	0.59	0.60	53.1
6	R2	54	9.8	0.090	10.9	LOS A	0.5	4.1	0.59	0.62	53.4
Approach		443	5.0	0.164	4.8	LOS A	0.5	4.1	0.18	0.49	55.5
North: Railway Parade (N)											
7	L2	336	0.6	0.581	15.8	LOS B	4.5	32.0	0.93	1.10	47.4
8	T1	3	0.0	0.421	15.1	LOS B	2.4	17.0	0.86	1.01	46.4
9	R2	168	1.9	0.421	20.5	LOS B	2.4	17.0	0.86	1.01	45.0
Approach		507	1.0	0.581	17.3	LOS B	4.5	32.0	0.91	1.07	46.6
West: Glenfield Road (W)											
10	L2	399	6.3	0.775	14.2	LOS A	7.6	56.1	0.94	1.17	46.9
11	T1	221	7.6	0.775	14.8	LOS B	7.6	56.1	0.93	1.17	47.1
12	R2	367	6.9	0.775	21.7	LOS B	6.8	50.4	0.92	1.17	44.5
Approach		987	6.8	0.775	17.1	LOS B	7.6	56.1	0.93	1.17	46.0
All Vehicles		3487	3.8	0.775	12.5	LOS A	7.6	56.1	0.72	0.89	49.8

PM Peak – Cumulative Scenario B with Upgrade

MOVEMENT SUMMARY

Site: I-15 2030 MIMT PM CUM B - Upgrade

Canterbury Road / Cambridge Avenue / Glenfield Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	338	2.2	0.451	8.0	LOS A	3.0	21.2	0.79	0.92	51.4
2	T1	6	0.0	0.451	7.9	LOS A	3.0	21.2	0.79	0.92	54.1
3	R2	335	1.6	0.451	14.1	LOS A	3.0	21.2	0.79	0.96	50.6
Approach		679	1.9	0.451	11.0	LOS A	3.0	21.2	0.79	0.94	51.0
East: Cambridge Avenue (E)											
4	L2	1201	2.2	0.634	3.6	LOS A	0.0	0.0	0.00	0.43	56.3
5	T1	308	7.5	0.470	7.3	LOS A	3.8	27.2	0.76	0.76	51.9
6	R2	347	0.9	0.470	12.6	LOS A	3.8	27.2	0.81	0.80	52.1
Approach		1857	2.8	0.634	5.9	LOS A	3.8	27.2	0.28	0.56	54.8
North: Railway Parade (N)											
7	L2	125	1.7	0.184	7.7	LOS A	0.9	6.3	0.66	0.78	52.9
8	T1	1	0.0	0.284	7.0	LOS A	1.5	11.6	0.69	0.85	51.3
9	R2	240	8.3	0.284	12.5	LOS A	1.5	11.6	0.69	0.85	50.2
Approach		366	6.0	0.284	10.8	LOS A	1.5	11.6	0.68	0.83	51.1
West: Glenfield Road (W)											
10	L2	271	4.7	0.413	7.7	LOS A	2.4	17.6	0.71	0.82	51.8
11	T1	54	0.0	0.413	7.6	LOS A	2.4	17.6	0.71	0.82	53.7
12	R2	451	3.7	0.479	12.8	LOS A	3.3	23.6	0.73	0.89	50.1
Approach		775	3.8	0.479	10.7	LOS A	3.3	23.6	0.72	0.86	50.9
All Vehicles		3677	3.2	0.634	8.3	LOS A	3.8	27.2	0.50	0.72	52.9

AM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-15 2020 CUM C1 AM

Canterbury Road / Cambridge Avenue / Glenfield Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	363	3.5	0.394	5.5	LOS A	2.2	15.7	0.51	0.62	53.3
2	T1	6	0.0	0.701	5.9	LOS A	6.9	48.9	0.67	0.74	51.5
3	R2	888	2.1	0.701	11.3	LOS A	6.9	48.9	0.67	0.74	51.6
Approach		1258	2.5	0.701	9.6	LOS A	6.9	48.9	0.62	0.71	52.0
East: Cambridge Avenue (E)											
4	L2	257	3.3	0.137	3.5	LOS A	0.0	0.0	0.00	0.43	56.5
5	T1	67	7.8	0.068	5.1	LOS A	0.4	2.9	0.50	0.56	53.4
6	R2	43	9.8	0.068	10.4	LOS A	0.4	2.9	0.50	0.58	53.7
Approach		367	4.9	0.137	4.6	LOS A	0.4	2.9	0.15	0.47	55.6
North: Railway Parade (N)											
7	L2	279	2.6	0.497	14.9	LOS B	4.0	28.3	0.94	1.06	47.9
8	T1	3	33.3	0.372	15.0	LOS B	2.2	16.7	0.88	0.99	46.1
9	R2	145	8.0	0.372	20.3	LOS B	2.2	16.7	0.88	0.99	45.0
Approach		427	4.7	0.497	16.7	LOS B	4.0	28.3	0.92	1.04	46.9
West: Glenfield Road (W)											
10	L2	300	5.3	0.659	16.9	LOS B	7.2	53.0	1.00	1.17	45.1
11	T1	164	6.4	0.659	17.4	LOS B	7.2	53.0	1.00	1.17	45.3
12	R2	277	5.7	0.659	23.9	LOS B	6.5	47.8	0.99	1.16	43.3
Approach		741	5.7	0.659	19.7	LOS B	7.2	53.0	1.00	1.17	44.4
All Vehicles		2794	4.0	0.701	12.7	LOS A	7.2	53.0	0.70	0.85	49.6

PM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-15 2020 CUM C1 PM

Canterbury Road / Cambridge Avenue / Glenfield Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	247	2.1	0.293	6.6	LOS A	1.5	10.6	0.64	0.76	52.8
2	T1	5	0.0	0.270	6.0	LOS A	1.4	10.0	0.62	0.80	51.7
3	R2	257	1.6	0.270	11.4	LOS A	1.4	10.0	0.62	0.80	51.8
Approach		509	1.9	0.293	9.0	LOS A	1.5	10.6	0.63	0.78	52.3
East: Cambridge Avenue (E)											
4	L2	998	2.2	0.527	3.5	LOS A	0.0	0.0	0.00	0.43	56.4
5	T1	227	7.4	0.323	6.0	LOS A	2.1	15.4	0.61	0.66	52.7
6	R2	283	0.7	0.323	11.1	LOS A	2.1	15.4	0.64	0.70	52.9
Approach		1508	2.7	0.527	5.3	LOS A	2.1	15.4	0.21	0.52	55.1
North: Railway Parade (N)											
7	L2	93	1.1	0.121	6.7	LOS A	0.6	3.9	0.59	0.70	53.7
8	T1	1	0.0	0.184	6.1	LOS A	0.9	7.0	0.60	0.77	51.7
9	R2	171	8.0	0.184	11.6	LOS A	0.9	7.0	0.60	0.77	50.6
Approach		264	5.6	0.184	9.9	LOS A	0.9	7.0	0.60	0.75	51.7
West: Glenfield Road (W)											
10	L2	218	4.3	0.303	6.8	LOS A	1.7	12.1	0.63	0.71	52.5
11	T1	41	0.0	0.303	6.7	LOS A	1.7	12.1	0.63	0.71	54.5
12	R2	371	3.7	0.367	11.8	LOS A	2.2	16.2	0.65	0.78	50.5
Approach		629	3.7	0.367	9.7	LOS A	2.2	16.2	0.64	0.75	51.4
All Vehicles		2912	3.0	0.527	7.3	LOS A	2.2	16.2	0.41	0.64	53.5

AM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-15 2030 MIMT AM CUM C2

Canterbury Road / Cambridge Avenue / Glenfield Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	449	3.5	0.494	6.0	LOS A	3.0	21.9	0.59	0.68	52.9
2	T1	8	0.0	0.839	8.7	LOS A	12.6	89.9	0.87	0.88	50.2
3	R2	1032	2.0	0.839	14.1	LOS A	12.6	89.9	0.87	0.88	50.4
Approach		1489	2.5	0.839	11.6	LOS A	12.6	89.9	0.78	0.82	51.0
East: Cambridge Avenue (E)											
4	L2	307	3.1	0.163	3.5	LOS A	0.0	0.0	0.00	0.43	56.5
5	T1	81	7.8	0.086	5.3	LOS A	0.5	3.7	0.54	0.58	53.3
6	R2	54	9.8	0.086	10.6	LOS A	0.5	3.7	0.54	0.60	53.6
Approach		442	4.8	0.163	4.7	LOS A	0.5	3.7	0.16	0.48	55.5
North: Railway Parade (N)											
7	L2	320	0.7	0.758	35.9	LOS C	9.0	63.2	1.00	1.33	37.6
8	T1	3	0.0	0.558	25.9	LOS B	4.2	29.6	0.97	1.12	41.1
9	R2	168	1.9	0.558	31.3	LOS C	4.2	29.6	0.97	1.12	39.3
Approach		492	1.1	0.758	34.2	LOS C	9.0	63.2	0.99	1.26	38.2
West: Glenfield Road (W)											
10	L2	399	6.3	1.234	253.7	LOS F	82.6	612.1	1.00	3.85	10.4
11	T1	209	8.0	1.234	254.5	LOS F	82.6	612.1	1.00	3.73	10.5
12	R2	367	6.9	1.234	261.8	LOS F	67.6	501.9	1.00	3.49	10.6
Approach		976	6.9	1.234	256.9	LOS F	82.6	612.1	1.00	3.69	10.5
All Vehicles		3399	3.8	1.234	84.4	LOS F	82.6	612.1	0.80	1.66	24.7

PM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-15 2030 MIMT PM CUM C2

Canterbury Road / Cambridge Avenue / Glenfield Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	338	2.2	0.475	8.9	LOS A	3.1	21.9	0.79	0.93	50.9
2	T1	6	0.0	0.405	7.3	LOS A	2.5	17.7	0.76	0.91	51.2
3	R2	334	1.3	0.405	12.7	LOS A	2.5	17.7	0.76	0.91	51.4
Approach		678	1.7	0.475	10.7	LOS A	3.1	21.9	0.77	0.92	51.2
East: Cambridge Avenue (E)											
4	L2	1148	2.2	0.606	3.6	LOS A	0.0	0.0	0.00	0.43	56.3
5	T1	298	7.8	0.457	7.2	LOS A	3.6	26.1	0.76	0.76	52.0
6	R2	334	0.9	0.457	12.4	LOS A	3.6	26.1	0.81	0.79	52.2
Approach		1780	2.9	0.606	5.8	LOS A	3.6	26.1	0.28	0.55	54.8
North: Railway Parade (N)											
7	L2	125	1.7	0.191	7.9	LOS A	1.0	6.8	0.69	0.80	52.8
8	T1	1	0.0	0.296	7.2	LOS A	1.7	12.7	0.72	0.86	51.2
9	R2	240	8.3	0.296	12.7	LOS A	1.7	12.7	0.72	0.86	50.0
Approach		366	6.0	0.296	11.0	LOS A	1.7	12.7	0.71	0.84	51.0
West: Glenfield Road (W)											
10	L2	271	4.7	0.430	8.6	LOS A	2.8	20.5	0.76	0.85	51.1
11	T1	54	0.0	0.430	8.4	LOS A	2.8	20.5	0.76	0.85	53.1
12	R2	451	3.7	0.501	13.8	LOS A	3.9	28.2	0.79	0.91	49.3
Approach		775	3.8	0.501	11.6	LOS A	3.9	28.2	0.78	0.88	50.2
All Vehicles		3599	3.2	0.606	8.5	LOS A	3.9	28.2	0.52	0.72	52.7

AM Peak – Cumulative Scenario C2 with Upgrade

MOVEMENT SUMMARY

Site: I-15 2030 MIMT AM CUM C2 - Upgrade

Canterbury Road / Cambridge Avenue / Glenfield Road
2030 MIMT AM PEAK 7:45 am - 8:45 am
Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	449	3.5	0.639	6.0	LOS A	5.4	38.7	0.64	0.72	51.2
2	T1	8	0.0	0.639	5.8	LOS A	5.4	38.7	0.64	0.72	53.9
3	R2	1032	2.0	0.639	11.5	LOS A	5.4	38.4	0.65	0.76	52.3
Approach		1489	2.5	0.639	9.8	LOS A	5.4	38.7	0.65	0.75	52.0
East: Cambridge Avenue (E)											
4	L2	307	3.1	0.163	3.5	LOS A	0.0	0.0	0.00	0.43	56.5
5	T1	81	7.8	0.090	5.7	LOS A	0.5	4.1	0.58	0.60	53.1
6	R2	54	9.8	0.090	10.9	LOS A	0.5	4.1	0.59	0.62	53.4
Approach		442	4.8	0.163	4.8	LOS A	0.5	4.1	0.18	0.49	55.5
North: Railway Parade (N)											
7	L2	320	0.7	0.528	13.8	LOS A	3.9	27.2	0.91	1.05	48.6
8	T1	3	0.0	0.397	13.9	LOS A	2.2	15.7	0.85	1.00	47.1
9	R2	168	1.9	0.397	19.3	LOS B	2.2	15.7	0.85	1.00	45.7
Approach		492	1.1	0.528	15.7	LOS B	3.9	27.2	0.88	1.03	47.7
West: Glenfield Road (W)											
10	L2	399	6.3	0.732	12.5	LOS A	6.7	49.3	0.91	1.11	48.1
11	T1	209	8.0	0.732	13.0	LOS A	6.7	49.3	0.91	1.12	48.3
12	R2	367	6.9	0.732	19.7	LOS B	6.0	44.8	0.90	1.13	45.8
Approach		976	6.9	0.732	15.3	LOS B	6.7	49.3	0.91	1.12	47.2
All Vehicles		3399	3.8	0.732	11.6	LOS A	6.7	49.3	0.70	0.86	50.4

PM Peak – Cumulative Scenario C2 with Upgrade

MOVEMENT SUMMARY

Site: I-15 2030 MIMT PM CUM C2 - Upgrade

Canterbury Road / Cambridge Avenue / Glenfield Road
2030 MIMT PM PEAK 4:30 pm - 5:30 pm
Roundabout

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Canterbury Road (S)											
1	L2	338	2.2	0.441	7.7	LOS A	2.9	20.3	0.77	0.90	51.6
2	T1	6	0.0	0.441	7.6	LOS A	2.9	20.3	0.77	0.90	54.3
3	R2	334	1.3	0.441	13.8	LOS A	2.9	20.3	0.77	0.95	50.8
Approach		678	1.7	0.441	10.7	LOS A	2.9	20.3	0.77	0.92	51.2
East: Cambridge Avenue (E)											
4	L2	1148	2.2	0.606	3.6	LOS A	0.0	0.0	0.00	0.43	56.3
5	T1	298	7.8	0.452	7.2	LOS A	3.5	25.3	0.75	0.75	52.0
6	R2	334	0.9	0.452	12.4	LOS A	3.5	25.3	0.80	0.79	52.3
Approach		1780	2.9	0.606	5.8	LOS A	3.5	25.3	0.28	0.55	54.8
North: Railway Parade (N)											
7	L2	125	1.7	0.184	7.7	LOS A	0.9	6.2	0.66	0.78	52.9
8	T1	1	0.0	0.284	7.0	LOS A	1.5	11.5	0.69	0.85	51.3
9	R2	240	8.3	0.284	12.5	LOS A	1.5	11.5	0.69	0.85	50.2
Approach		366	6.0	0.284	10.8	LOS A	1.5	11.5	0.68	0.83	51.1
West: Glenfield Road (W)											
10	L2	271	4.7	0.407	7.6	LOS A	2.4	17.1	0.70	0.81	51.9
11	T1	54	0.0	0.407	7.4	LOS A	2.4	17.1	0.70	0.81	53.9
12	R2	451	3.7	0.473	12.7	LOS A	3.2	23.0	0.72	0.88	50.2
Approach		775	3.8	0.473	10.5	LOS A	3.2	23.0	0.71	0.85	51.0
All Vehicles		3599	3.2	0.606	8.3	LOS A	3.5	25.3	0.50	0.71	52.9

I-0A Intersection of Moorebank Avenue and Anzac Road

AM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-0A 2030 CUM A AM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2030 CUM A AM PEAK - Upgrade 1
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
1	L2	44	0.0	0.805	36.4	LOS C	26.9	202.1	0.88	0.85	27.9
2	T1	1149	9.1	0.805	30.4	LOS C	27.0	204.0	0.88	0.83	35.6
3	R2	473	3.1	0.867	54.2	LOS D	27.5	197.6	1.00	0.96	28.3
Approach		1666	7.1	0.867	37.3	LOS C	27.5	204.0	0.91	0.87	32.8
East: Anzac Road (E)											
4	L2	236	3.6	0.439	21.1	LOS B	7.6	54.9	0.69	0.77	41.4
5	T1	13	0.0	0.071	51.8	LOS D	0.6	4.5	0.94	0.66	25.9
6	R2	224	13.6	0.728	63.1	LOS E	6.4	49.8	1.00	0.87	28.0
Approach		473	8.2	0.728	41.8	LOS C	7.6	54.9	0.84	0.81	33.0
North: Moorebank Avenue (N)											
7	L2	383	9.9	1.131	186.0	LOS F	87.4	660.6	1.00	1.71	14.2
8	T1	952	8.6	1.131	183.6	LOS F	87.4	660.6	1.00	1.77	11.7
9	R2	369	60.7	0.890	70.4	LOS E	12.0	178.9	1.00	1.06	19.1
Approach		1704	20.2	1.131	159.6	LOS F	87.4	660.6	1.00	1.60	13.2
West: MIMT Access Road (W)											
10	L2	226	99.1	0.485	27.4	LOS B	3.8	75.9	0.87	0.77	30.7
11	T1	1	0.0	0.007	52.0	LOS D	0.1	0.4	0.94	0.56	26.0
12	R2	1	0.0	0.008	56.3	LOS D	0.1	0.4	0.94	0.59	19.2
Approach		228	98.2	0.485	27.7	LOS B	3.8	75.9	0.87	0.77	30.6
All Vehicles		4072	17.8	1.131	88.5	LOS F	87.4	660.6	0.94	1.16	20.3

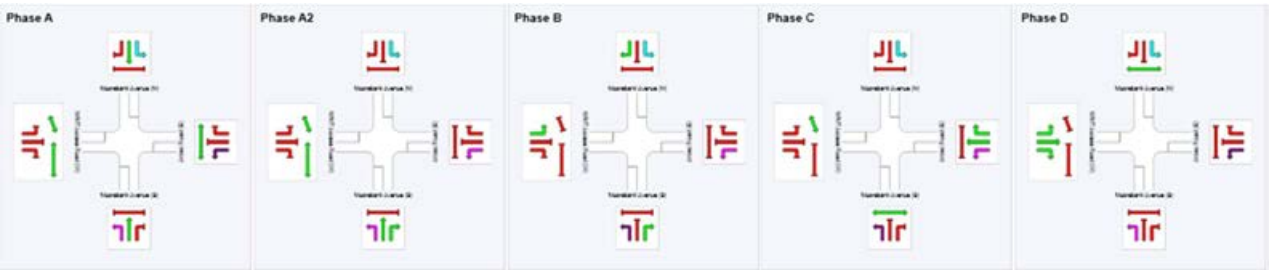
PHASING SUMMARY

Site: I-0A 2030 CUM A AM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2030 CUM A AM PEAK - Upgrade 1
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	A2	B	C	D
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	41	50	80	96
Green Time (sec)	35	3	24	10	8
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	41	9	30	16	14
Phase Split	37 %	8 %	27 %	15 %	13 %



PM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-0A 2030 CUM A PM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2030 CUM A PM PEAK - Upgrade 1
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	1	0.0	0.579	34.8	LOS C	14.7	113.4	0.75	0.66	28.9
2	T1	781	11.9	0.579	28.3	LOS B	14.8	114.2	0.75	0.66	36.8
3	R2	229	0.9	1.052	134.0	LOS F	20.8	146.6	1.00	1.29	16.0
Approach		1012	9.4	1.052	52.3	LOS D	20.8	146.6	0.81	0.80	27.9
East: Anzac Road (E)											
4	L2	568	2.2	0.879	43.8	LOS D	32.6	232.2	1.00	1.02	31.5
5	T1	1	0.0	0.005	48.2	LOS D	0.1	0.4	0.91	0.56	26.9
6	R2	391	5.4	1.000	101.9	LOS F	15.2	111.2	1.00	1.20	21.3
Approach		960	3.5	1.000	67.4	LOS E	32.6	232.2	1.00	1.09	26.0
North: Moorebank Avenue (N)											
7	L2	353	3.9	0.999	75.2	LOS F	77.3	572.0	1.00	1.24	26.5
8	T1	1344	8.4	0.999	68.9	LOS E	77.3	572.0	0.90	1.18	23.5
9	R2	292	93.5	0.835	64.0	LOS E	8.9	171.2	0.99	1.01	19.7
Approach		1988	20.1	0.999	69.3	LOS E	77.3	572.0	0.93	1.16	23.5
West: MIMT Access Road (W)											
10	L2	426	64.2	0.709	29.5	LOS C	7.8	118.8	0.94	0.86	30.5
11	T1	16	0.0	0.111	53.7	LOS D	0.8	5.8	0.96	0.67	25.5
12	R2	35	0.0	0.257	59.1	LOS E	1.9	13.0	0.98	0.72	18.6
Approach		477	57.4	0.709	32.5	LOS C	7.8	118.8	0.95	0.85	29.2
All Vehicles		4437	18.1	1.052	61.1	LOS E	77.3	572.0	0.92	1.03	25.5

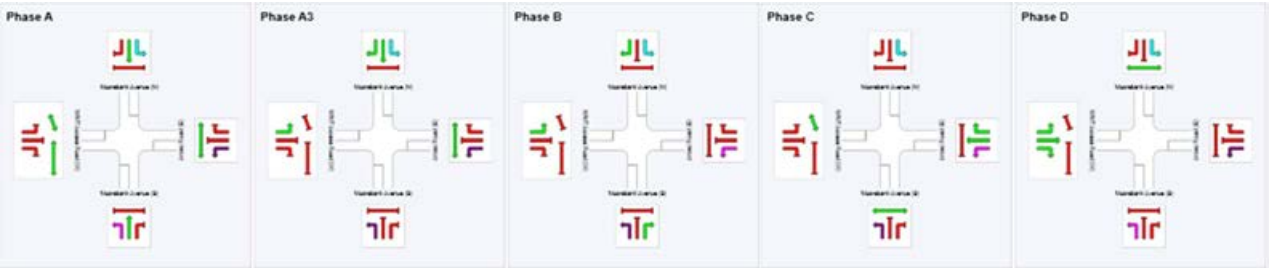
PHASING SUMMARY

Site: I-0A 2030 CUM A PM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2030 CUM A PM PEAK - Upgrade 1
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	A3	B	C	D
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	47	59	78	96
Green Time (sec)	41	6	13	12	8
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	47	12	19	18	14
Phase Split	43 %	11 %	17 %	16 %	13 %



AM Peak – Cumulative Scenario A with Upgrade

MOVEMENT SUMMARY

Site: I-0A 2030 CUM A AM - UP3

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2030 CUM A AM PEAK - Upgrade 2
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	44	0.0	0.738	30.0	LOS C	23.1	173.1	0.79	0.75	31.2
2	T1	1149	9.1	0.738	24.0	LOS B	23.2	175.3	0.79	0.73	39.0
3	R2	473	3.1	0.923	66.0	LOS E	30.9	222.3	1.00	1.03	25.4
Approach		1666	7.1	0.923	36.0	LOS C	30.9	222.3	0.85	0.81	33.4
East: Anzac Road (E)											
4	L2	236	3.6	0.279	12.4	LOS A	4.7	33.7	0.46	0.69	47.1
5	T1	13	0.0	0.089	54.5	LOS D	0.7	4.6	0.96	0.67	25.3
6	R2	224	13.6	0.911	75.4	LOS F	7.2	55.9	1.00	1.03	25.6
Approach		473	8.2	0.911	43.4	LOS D	7.2	55.9	0.73	0.85	32.5
North: Moorebank Avenue (N)											
7	L2	383	9.9	0.221	5.7	LOS A	0.0	0.0	0.00	0.52	54.2
8	T1	952	8.6	0.942	54.3	LOS D	32.7	245.7	0.87	1.01	27.1
9	R2	369	60.7	0.938	83.4	LOS F	13.3	197.5	1.00	1.14	17.1
Approach		1704	20.2	0.942	49.7	LOS D	32.7	245.7	0.70	0.93	28.3
West: MIMT Access Road (W)											
10	L2	226	99.1	0.518	29.8	LOS C	4.1	81.8	0.89	0.78	29.7
11	T1	1	0.0	0.007	51.7	LOS D	0.1	0.4	0.94	0.56	26.0
12	R2	1	0.0	0.008	56.3	LOS D	0.1	0.4	0.94	0.59	19.2
Approach		228	98.2	0.518	30.0	LOS C	4.1	81.8	0.89	0.78	29.6
All Vehicles		4072	17.8	0.942	42.3	LOS C	32.7	245.7	0.78	0.86	30.8

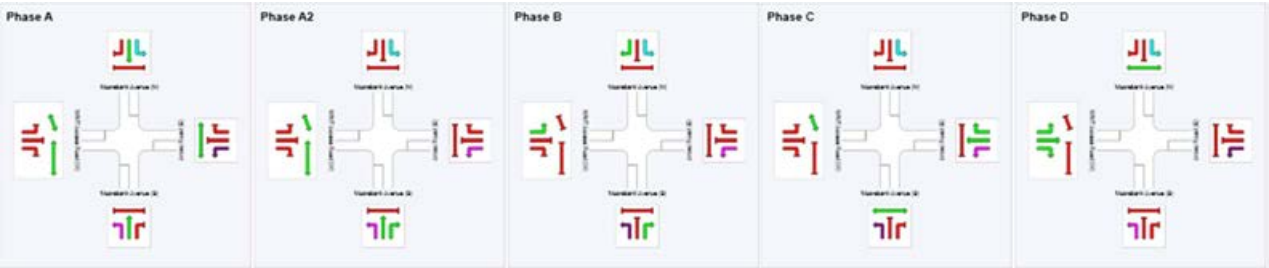
PHASING SUMMARY

Site: I-0A 2030 CUM A AM - UP3

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2030 CUM A AM PEAK - Upgrade 2
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	A2	B	C	D
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	45	54	82	96
Green Time (sec)	39	3	22	8	8
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	45	9	28	14	14
Phase Split	41 %	8 %	25 %	13 %	13 %



PM Peak – Cumulative Scenario A with Upgrade

MOVEMENT SUMMARY

Site: I-0A 2030 CUM A PM - UP3

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2030 CUM A PM PEAK - Upgrade 2
Signals - Fixed Time Cycle Time = 130 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	1	0.0	0.638	44.4	LOS D	19.0	146.2	0.82	0.72	24.8
2	T1	781	11.9	0.638	38.0	LOS C	19.1	146.9	0.82	0.72	32.5
3	R2	229	0.9	1.011	117.6	LOS F	20.8	146.9	1.00	1.15	17.6
Approach		1012	9.4	1.011	56.1	LOS D	20.8	146.9	0.86	0.82	26.9
East: Anzac Road (E)											
4	L2	568	2.2	0.825	30.1	LOS C	33.5	238.7	0.98	0.94	36.9
5	T1	1	0.0	0.005	55.6	LOS D	0.1	0.4	0.90	0.56	25.0
6	R2	391	5.4	0.946	90.8	LOS F	15.3	111.8	1.00	1.07	23.0
Approach		960	3.5	0.946	54.8	LOS D	33.5	238.7	0.99	0.99	29.1
North: Moorebank Avenue (N)											
7	L2	353	3.9	0.195	5.7	LOS A	0.0	0.0	0.00	0.53	54.4
8	T1	1344	8.4	0.936	40.7	LOS C	39.3	294.8	0.66	0.76	31.4
9	R2	292	93.5	0.622	50.0	LOS D	8.1	155.9	0.90	0.82	22.6
Approach		1988	20.1	0.936	35.9	LOS C	39.3	294.8	0.58	0.73	33.0
West: MIMT Access Road (W)											
10	L2	426	64.2	0.588	26.3	LOS B	7.6	116.2	0.86	0.79	32.0
11	T1	16	0.0	0.132	64.7	LOS E	1.0	6.9	0.98	0.68	22.9
12	R2	35	0.0	0.304	70.6	LOS F	2.2	15.5	0.99	0.73	16.5
Approach		477	57.4	0.588	30.8	LOS C	7.6	116.2	0.87	0.78	29.9
All Vehicles		4437	18.1	1.011	44.0	LOS D	39.3	294.8	0.76	0.81	30.2

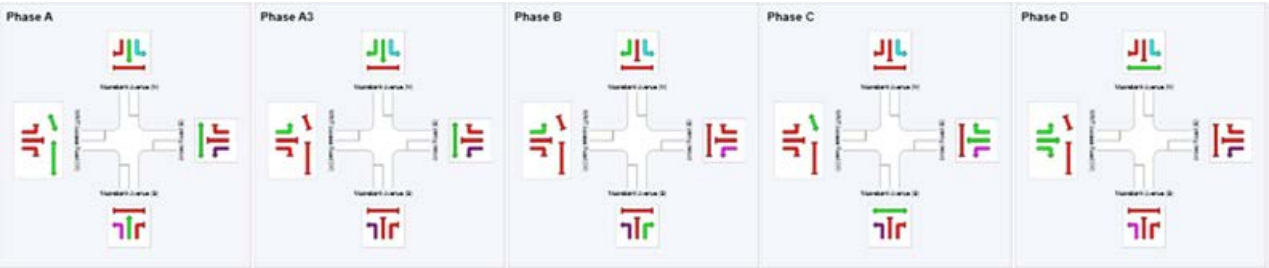
PHASING SUMMARY

Site: I-0A 2030 CUM A PM - UP3

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2030 CUM A PM PEAK - Upgrade 2
Signals - Fixed Time Cycle Time = 130 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	A3	B	C	D
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	50	73	95	116
Green Time (sec)	44	17	16	15	8
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	50	23	22	21	14
Phase Split	38 %	18 %	17 %	16 %	11 %



AM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-0A 2030 CUM B AM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2030 CUM B AM PEAK - Upgrade 1
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
1	L2	116	0.0	0.916	48.9	LOS D	38.5	309.1	0.98	1.07	23.0
2	T1	1188	12.0	0.916	43.7	LOS D	38.5	309.1	0.98	1.06	30.2
3	R2	473	3.1	0.867	54.2	LOS D	27.5	197.6	1.00	0.96	28.3
Approach		1777	8.9	0.916	46.8	LOS D	38.5	311.0	0.99	1.03	29.2
East: Anzac Road (E)											
4	L2	252	3.3	0.543	22.9	LOS B	9.3	66.9	0.78	0.81	40.4
5	T1	37	0.0	0.208	53.0	LOS D	1.9	13.3	0.96	0.71	25.6
6	R2	224	13.6	0.728	63.1	LOS E	6.4	49.8	1.00	0.87	28.0
Approach		513	7.6	0.728	42.6	LOS D	9.3	66.9	0.89	0.83	32.5
North: Moorebank Avenue (N)											
7	L2	383	9.9	1.441	459.4	LOS F	172.2	1353.9	1.00	2.72	6.6
8	T1	1268	9.5	1.441	456.1	LOS F	172.2	1353.9	1.00	2.85	5.4
9	R2	409	29.8	0.663	50.0	LOS D	10.4	103.6	0.97	0.84	24.0
Approach		2061	13.6	1.441	376.0	LOS F	172.2	1353.9	0.99	2.43	6.4
West: MIMT Access Road (W)											
10	L2	124	98.3	0.233	25.3	LOS B	1.9	31.6	0.80	0.71	31.8
11	T1	1	0.0	0.007	52.0	LOS D	0.1	0.4	0.94	0.56	26.0
12	R2	1	0.0	0.008	56.3	LOS D	0.1	0.4	0.94	0.59	19.2
Approach		126	96.7	0.233	25.7	LOS B	1.9	31.6	0.80	0.71	31.6
All Vehicles		4477	13.4	1.441	197.3	LOS F	172.2	1353.9	0.97	1.64	11.2

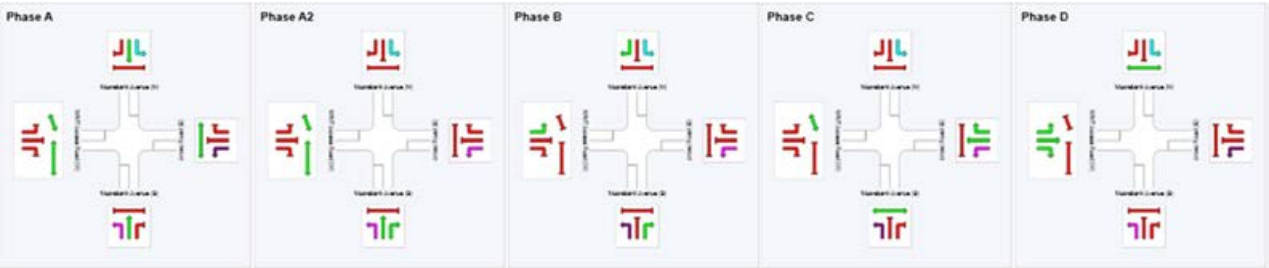
PHASING SUMMARY

Site: I-0A 2030 CUM B AM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2030 CUM B AM PEAK - Upgrade 1
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	A2	B	C	D
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	41	50	80	96
Green Time (sec)	35	3	24	10	8
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	41	9	30	16	14
Phase Split	37 %	8 %	27 %	15 %	13 %



PM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-0A 2030 CUM B PM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2030 CUM B PM PEAK - Upgrade 1
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	1	0.0	0.762	37.0	LOS C	22.1	178.8	0.87	0.79	27.9
2	T1	1001	9.4	0.762	31.1	LOS C	22.2	179.6	0.87	0.79	35.4
3	R2	242	0.9	1.110	178.8	LOS F	25.8	182.2	1.00	1.42	12.9
Approach		1244	7.7	1.110	59.9	LOS E	25.8	182.2	0.89	0.91	25.9
East: Anzac Road (E)											
4	L2	568	2.2	0.947	67.9	LOS E	37.9	270.4	1.00	1.14	25.1
5	T1	1	0.0	0.005	48.2	LOS D	0.1	0.4	0.91	0.56	26.9
6	R2	391	5.4	1.000	101.9	LOS F	15.2	111.2	1.00	1.20	21.3
Approach		960	3.5	1.000	81.7	LOS F	37.9	270.4	1.00	1.16	23.3
North: Moorebank Avenue (N)											
7	L2	353	3.9	0.984	67.1	LOS E	70.3	537.7	1.00	1.19	28.3
8	T1	1345	8.5	0.984	60.8	LOS E	70.3	537.7	0.94	1.16	25.2
9	R2	168	88.8	0.385	47.1	LOS D	4.0	62.6	0.89	0.78	23.5
Approach		1866	14.8	0.984	60.7	LOS E	70.3	537.7	0.95	1.13	25.8
West: MIMT Access Road (W)											
10	L2	445	33.8	0.541	25.3	LOS B	7.1	72.9	0.88	0.79	33.2
11	T1	40	0.0	0.282	54.9	LOS D	2.1	14.9	0.98	0.72	25.2
12	R2	106	0.0	0.787	65.0	LOS E	6.2	43.4	1.00	0.91	17.5
Approach		592	25.4	0.787	34.4	LOS C	7.1	72.9	0.91	0.81	28.8
All Vehicles		4662	11.9	1.110	61.5	LOS E	70.3	537.7	0.94	1.04	25.4

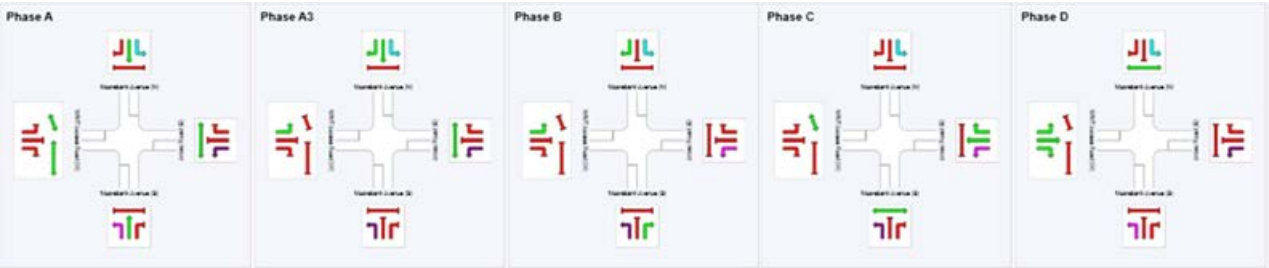
PHASING SUMMARY

Site: I-0A 2030 CUM B PM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2030 CUM B PM PEAK - Upgrade 1
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	A3	B	C	D
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	47	59	78	96
Green Time (sec)	41	6	13	12	8
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	47	12	19	18	14
Phase Split	43 %	11 %	17 %	16 %	13 %



AM Peak – Cumulative Scenario B with Upgrade

MOVEMENT SUMMARY

Site: I-0A 2030 CUM B AM - UP4

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2030 CUM B AM PEAK - Upgrade 2
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	116	0.0	0.763	24.8	LOS B	23.8	191.1	0.76	0.75	34.0
2	T1	1188	12.0	0.763	19.5	LOS B	23.9	197.2	0.76	0.72	41.4
3	R2	473	3.1	0.842	62.2	LOS E	13.8	99.3	1.00	0.94	26.3
Approach		1777	8.9	0.842	31.2	LOS C	23.9	197.2	0.82	0.78	35.2
East: Anzac Road (E)											
4	L2	252	3.3	0.384	15.4	LOS B	6.3	45.4	0.56	0.73	45.0
5	T1	37	0.0	0.260	55.8	LOS D	2.0	13.7	0.98	0.72	24.9
6	R2	224	13.6	0.911	75.4	LOS F	7.2	55.9	1.00	1.03	25.6
Approach		513	7.6	0.911	44.5	LOS D	7.2	55.9	0.78	0.86	32.0
North: Moorebank Avenue (N)											
7	L2	383	9.9	0.221	5.7	LOS A	0.0	0.0	0.00	0.52	54.2
8	T1	1268	9.5	0.969	54.1	LOS D	42.6	342.9	0.75	0.98	27.2
9	R2	409	29.8	0.936	79.5	LOS F	14.1	139.5	1.00	1.10	18.0
Approach		2061	13.6	0.969	50.2	LOS D	42.6	342.9	0.66	0.92	28.2
West: MIMT Access Road (W)											
10	L2	124	98.3	0.299	31.2	LOS C	2.3	37.4	0.87	0.74	29.3
11	T1	1	0.0	0.007	51.7	LOS D	0.1	0.4	0.94	0.56	26.0
12	R2	1	0.0	0.008	56.3	LOS D	0.1	0.4	0.94	0.59	19.4
Approach		126	96.7	0.299	31.6	LOS C	2.3	37.4	0.87	0.73	29.1
All Vehicles		4477	13.4	0.969	41.5	LOS C	42.6	342.9	0.75	0.85	31.1

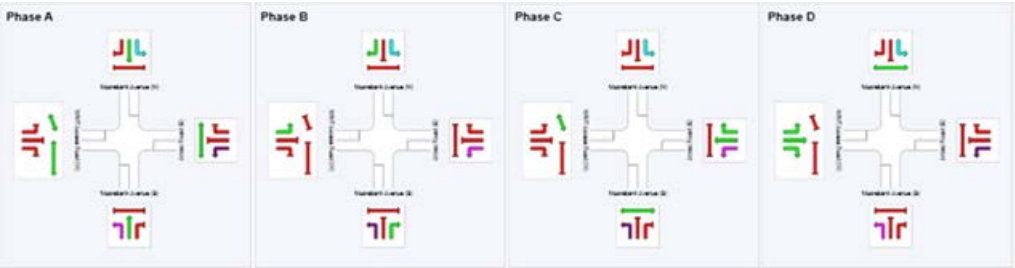
PHASING SUMMARY

Site: I-0A 2030 CUM B AM - UP4

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2030 CUM B AM PEAK - Upgrade 2
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	59	82	96
Green Time (sec)	53	17	8	8
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	59	23	14	14
Phase Split	54 %	21 %	13 %	13 %



PM Peak – Cumulative Scenario B with Upgrade

MOVEMENT SUMMARY

Site: I-0A 2030 CUM B PM - UP4

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2030 CUM B PM PEAK - Upgrade 2
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	1	0.0	0.579	22.6	LOS B	14.6	118.4	0.59	0.53	36.3
2	T1	1001	9.4	0.579	16.8	LOS B	14.8	120.1	0.59	0.53	43.6
3	R2	242	0.9	0.721	62.4	LOS E	6.8	48.1	1.00	0.85	26.2
Approach		1244	7.7	0.721	25.7	LOS B	14.8	120.1	0.67	0.59	38.3
East: Anzac Road (E)											
4	L2	568	2.2	0.938	65.0	LOS E	38.1	271.6	1.00	1.14	25.7
5	T1	1	0.0	0.005	47.2	LOS D	0.0	0.3	0.90	0.56	27.3
6	R2	391	5.4	0.924	75.0	LOS F	12.7	93.0	1.00	1.06	25.7
Approach		960	3.5	0.938	69.1	LOS E	38.1	271.6	1.00	1.11	25.7
North: Moorebank Avenue (N)											
7	L2	353	3.9	0.195	5.7	LOS A	0.0	0.0	0.00	0.53	54.4
8	T1	1345	8.5	0.945	43.6	LOS D	42.7	337.0	0.77	0.91	30.4
9	R2	168	88.8	0.963	94.7	LOS F	6.2	98.0	1.00	1.21	15.4
Approach		1866	14.8	0.963	41.0	LOS C	42.7	337.0	0.64	0.87	31.5
West: MIMT Access Road (W)											
10	L2	445	33.8	0.939	64.7	LOS E	12.2	125.4	1.00	1.20	20.7
11	T1	40	0.0	0.251	53.3	LOS D	2.1	14.7	0.97	0.72	25.6
12	R2	106	0.0	0.700	61.8	LOS E	6.0	41.9	1.00	0.85	18.2
Approach		592	25.4	0.939	63.4	LOS E	12.2	125.4	1.00	1.11	20.6
All Vehicles		4662	11.9	0.963	45.5	LOS D	42.7	337.0	0.77	0.87	29.8

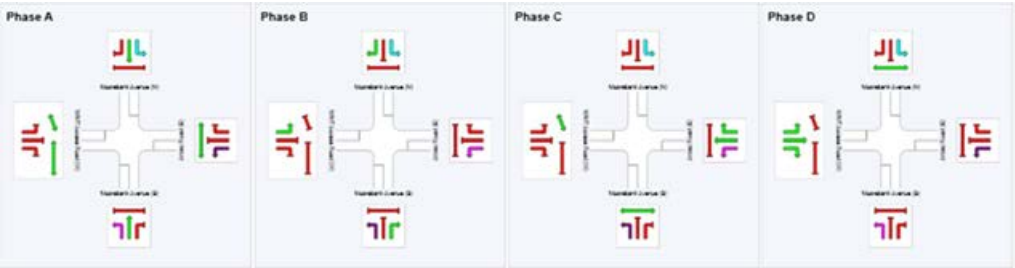
PHASING SUMMARY

Site: I-0A 2030 CUM B PM - UP4

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2030 CUM B PM PEAK - Upgrade 2
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C	D
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	60	76	95
Green Time (sec)	54	10	13	9
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	60	16	19	15
Phase Split	55 %	15 %	17 %	14 %



AM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-0A 2020 CUM C1 AM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2020 CUM C1 AM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	73	0.0	0.739	31.4	LOS C	21.8	166.6	0.83	0.78	30.2
2	T1	1014	8.8	0.739	26.5	LOS B	22.1	171.3	0.83	0.76	37.5
3	R2	388	3.3	0.713	43.1	LOS D	18.8	135.2	0.95	0.86	31.6
Approach		1475	6.9	0.739	31.1	LOS C	22.1	171.3	0.86	0.78	35.4
East: Anzac Road (E)											
4	L2	203	3.6	0.241	14.6	LOS B	4.5	32.7	0.51	0.70	45.6
5	T1	23	0.0	0.131	52.4	LOS D	1.2	8.3	0.95	0.69	25.8
6	R2	196	14.0	0.638	61.3	LOS E	5.4	42.5	1.00	0.82	28.5
Approach		422	8.2	0.638	38.3	LOS C	5.4	42.5	0.76	0.75	34.1
North: Moorebank Avenue (N)											
7	L2	318	9.9	0.975	75.9	LOS F	47.4	364.6	1.00	1.18	26.2
8	T1	816	8.8	0.975	69.9	LOS E	47.4	364.6	0.98	1.19	23.2
9	R2	358	45.3	0.638	49.9	LOS D	9.1	100.7	0.96	0.83	23.7
Approach		1492	17.8	0.975	66.4	LOS E	47.4	364.6	0.98	1.10	24.0
West: MIMT Access Road (W)											
10	L2	164	98.7	0.299	25.7	LOS B	2.6	40.9	0.82	0.73	31.7
11	T1	1	0.0	0.007	52.0	LOS D	0.1	0.4	0.94	0.56	26.0
12	R2	1	0.0	0.008	56.3	LOS D	0.1	0.4	0.94	0.59	19.2
Approach		166	97.5	0.299	26.0	LOS B	2.6	40.9	0.82	0.73	31.5
All Vehicles		3555	15.9	0.975	46.5	LOS D	47.4	364.6	0.90	0.91	29.3

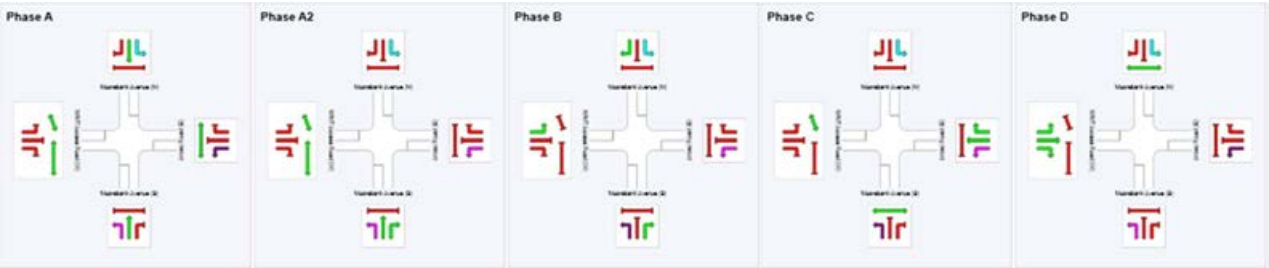
PHASING SUMMARY

Site: I-0A 2020 CUM C1 AM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2020 CUM C1 AM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	A2	B	C	D
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	41	50	80	96
Green Time (sec)	35	3	24	10	8
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	41	9	30	16	14
Phase Split	37 %	8 %	27 %	15 %	13 %



PM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-0A 2020 CUM C1 PM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2020 CUM C1 PM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
1	L2	1	0.0	0.590	33.7	LOS C	15.2	116.7	0.76	0.67	29.4
2	T1	801	8.0	0.590	27.8	LOS B	15.3	117.5	0.76	0.67	37.0
3	R2	203	1.0	0.932	76.4	LOS F	13.4	94.4	1.00	1.06	23.3
Approach		1005	6.6	0.932	37.6	LOS C	15.3	117.5	0.81	0.74	32.8
East: Anzac Road (E)											
4	L2	462	2.3	0.703	22.2	LOS B	17.9	127.5	0.84	0.84	40.8
5	T1	1	0.0	0.005	48.2	LOS D	0.1	0.4	0.91	0.56	26.9
6	R2	316	5.7	0.811	64.0	LOS E	9.2	67.3	1.00	0.92	27.9
Approach		779	3.6	0.811	39.1	LOS C	17.9	127.5	0.90	0.88	33.9
North: Moorebank Avenue (N)											
7	L2	299	4.2	0.858	30.3	LOS C	38.1	283.0	0.86	0.86	40.7
8	T1	1193	6.8	0.858	25.2	LOS B	38.1	283.0	0.80	0.79	37.9
9	R2	199	91.0	0.451	47.8	LOS D	4.8	74.2	0.91	0.79	23.3
Approach		1691	16.3	0.858	28.8	LOS C	38.1	283.0	0.82	0.80	36.4
West: MIMT Access Road (W)											
10	L2	384	47.4	0.509	25.2	LOS B	6.1	69.1	0.87	0.78	33.0
11	T1	25	0.0	0.178	54.2	LOS D	1.3	9.3	0.97	0.70	25.4
12	R2	64	0.0	0.475	60.4	LOS E	3.5	24.6	1.00	0.76	18.3
Approach		474	38.4	0.509	31.5	LOS C	6.1	69.1	0.90	0.78	29.8
All Vehicles		3948	14.0	0.932	33.4	LOS C	38.1	283.0	0.84	0.80	34.2

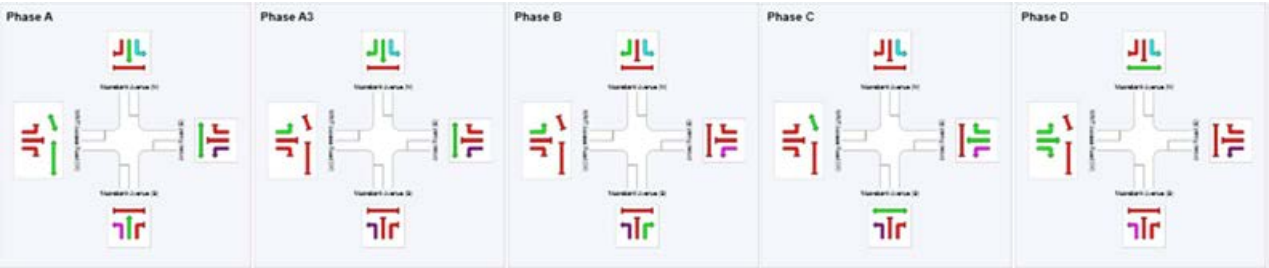
PHASING SUMMARY

Site: I-0A 2020 CUM C1 PM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2020 CUM C1 PM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	A3	B	C	D
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	47	59	78	96
Green Time (sec)	41	6	13	12	8
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	47	12	19	18	14
Phase Split	43 %	11 %	17 %	16 %	13 %



AM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-0A 2030 CUM C2 AM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2030 CUM C2 AM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	39	0.0	0.848	39.8	LOS C	30.0	238.3	0.92	0.91	26.5
2	T1	1171	10.7	0.848	34.0	LOS C	30.0	238.3	0.92	0.90	34.0
3	R2	473	3.1	0.867	54.2	LOS D	27.5	197.6	1.00	0.96	28.3
Approach		1682	8.3	0.867	39.8	LOS C	30.0	240.0	0.94	0.92	31.9
East: Anzac Road (E)											
4	L2	241	3.5	0.480	21.9	LOS B	8.2	59.2	0.72	0.78	41.0
5	T1	11	0.0	0.059	51.7	LOS D	0.5	3.7	0.94	0.65	26.0
6	R2	224	13.6	0.728	63.1	LOS E	6.4	49.8	1.00	0.87	28.0
Approach		476	8.2	0.728	42.0	LOS C	8.2	59.2	0.86	0.82	32.9
North: Moorebank Avenue (N)											
7	L2	383	9.9	1.251	289.2	LOS F	119.3	931.2	1.00	2.13	9.9
8	T1	1063	9.7	1.251	286.2	LOS F	119.3	931.2	1.00	2.24	8.1
9	R2	302	55.1	0.627	50.4	LOS D	7.7	104.6	0.96	0.83	23.3
Approach		1748	17.6	1.251	246.1	LOS F	119.3	931.2	0.99	1.97	9.4
West: MIMT Access Road (W)											
10	L2	168	98.8	0.346	26.3	LOS B	2.7	50.7	0.83	0.74	31.2
11	T1	1	0.0	0.007	52.0	LOS D	0.1	0.4	0.94	0.56	26.0
12	R2	1	0.0	0.008	56.3	LOS D	0.1	0.4	0.94	0.59	19.2
Approach		171	97.5	0.346	26.6	LOS B	2.7	50.7	0.83	0.74	31.1
All Vehicles		4077	16.0	1.251	128.0	LOS F	119.3	931.2	0.95	1.35	15.8

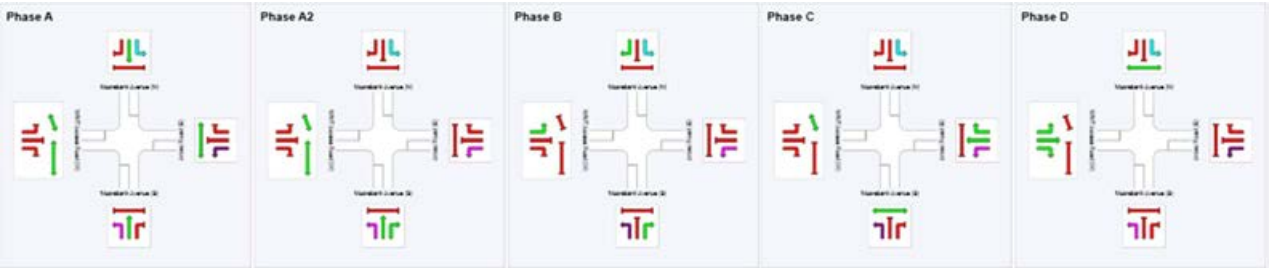
PHASING SUMMARY

Site: I-0A 2030 CUM C2 AM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2030 CUM C2 AM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	A2	B	C	D
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	41	50	80	96
Green Time (sec)	35	3	24	10	8
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	41	9	30	16	14
Phase Split	37 %	8 %	27 %	15 %	13 %



PM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-0A 2030 CUM C2 PM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2030 CUM C2 PM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	1	0.0	0.761	37.3	LOS C	22.4	176.0	0.86	0.78	27.7
2	T1	1018	9.1	0.761	31.2	LOS C	22.5	176.7	0.87	0.78	35.3
3	R2	242	0.9	1.110	178.8	LOS F	25.8	182.2	1.00	1.42	12.9
Approach		1261	7.5	1.110	59.6	LOS E	25.8	182.2	0.89	0.91	26.0
East: Anzac Road (E)											
4	L2	568	2.2	0.897	49.3	LOS D	33.7	240.6	1.00	1.05	29.8
5	T1	1	0.0	0.005	48.2	LOS D	0.1	0.4	0.91	0.56	26.9
6	R2	391	5.4	1.000	101.9	LOS F	15.2	111.2	1.00	1.20	21.3
Approach		960	3.5	1.000	70.7	LOS F	33.7	240.6	1.00	1.11	25.3
North: Moorebank Avenue (N)											
7	L2	353	3.9	0.993	71.8	LOS F	74.1	559.2	1.00	1.22	27.2
8	T1	1344	8.4	0.993	65.4	LOS E	74.1	559.2	0.92	1.17	24.2
9	R2	222	91.5	0.561	49.4	LOS D	5.6	99.6	0.93	0.80	22.8
Approach		1919	17.2	0.993	64.7	LOS E	74.1	559.2	0.94	1.14	24.7
West: MIMT Access Road (W)											
10	L2	347	58.8	0.538	25.8	LOS B	5.6	78.2	0.88	0.79	32.3
11	T1	14	0.0	0.096	53.5	LOS D	0.7	5.0	0.96	0.66	25.5
12	R2	29	0.0	0.218	58.9	LOS E	1.6	11.0	0.98	0.72	18.7
Approach		391	52.3	0.538	29.3	LOS C	5.6	78.2	0.89	0.78	30.7
All Vehicles		4531	14.6	1.110	61.5	LOS E	74.1	559.2	0.94	1.04	25.5

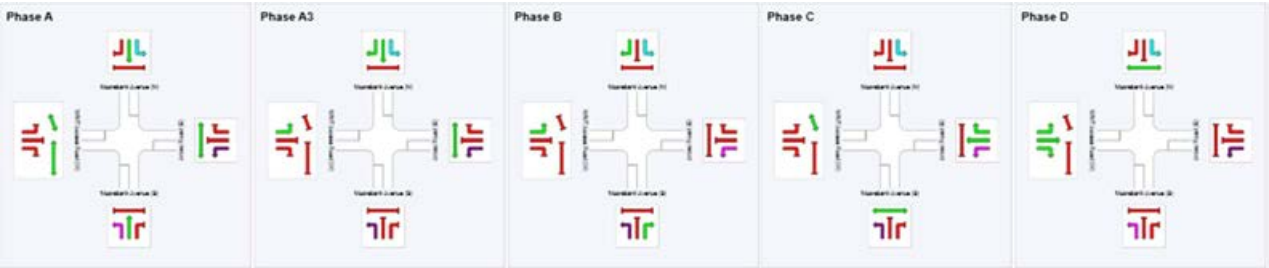
PHASING SUMMARY

Site: I-0A 2030 CUM C2 PM

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2030 CUM C2 PM PEAK
Signals - Fixed Time Cycle Time = 110 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	A3	B	C	D
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	47	59	78	96
Green Time (sec)	41	6	13	12	8
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	47	12	19	18	14
Phase Split	43 %	11 %	17 %	16 %	13 %



AM Peak – Cumulative Scenario C2 with Upgrade

MOVEMENT SUMMARY

Site: I-0A 2030 CUM C2 AM - UP3

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2030 CUM C2 AM PEAK - Upgrade 2
Signals - Fixed Time Cycle Time = 115 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	39	0.0	0.723	27.4	LOS B	22.8	181.3	0.74	0.70	32.8
2	T1	1171	10.7	0.723	21.5	LOS B	22.9	183.7	0.74	0.68	40.4
3	R2	473	3.1	0.997	98.8	LOS F	39.2	282.0	1.00	1.15	19.8
Approach		1682	8.3	0.997	43.4	LOS D	39.2	282.0	0.81	0.81	30.6
East: Anzac Road (E)											
4	L2	241	3.5	0.373	21.2	LOS B	7.6	54.5	0.66	0.75	41.4
5	T1	11	0.0	0.078	57.1	LOS E	0.6	4.0	0.96	0.66	24.6
6	R2	224	13.6	0.952	86.2	LOS F	7.9	61.8	1.00	1.08	23.6
Approach		476	8.2	0.952	52.6	LOS D	7.9	61.8	0.82	0.91	29.7
North: Moorebank Avenue (N)											
7	L2	383	9.9	0.221	5.7	LOS A	0.0	0.0	0.00	0.52	54.2
8	T1	1063	9.7	1.001	93.9	LOS F	47.6	380.5	0.98	1.28	19.4
9	R2	302	55.1	0.749	60.2	LOS E	8.9	120.2	1.00	0.91	21.1
Approach		1748	17.6	1.001	68.8	LOS E	47.6	380.5	0.77	1.05	23.8
West: MIMT Access Road (W)											
10	L2	168	98.8	0.400	31.7	LOS C	3.2	60.3	0.87	0.76	28.9
11	T1	1	0.0	0.008	54.4	LOS D	0.1	0.4	0.95	0.56	25.3
12	R2	1	0.0	0.008	59.0	LOS E	0.1	0.4	0.95	0.59	18.6
Approach		171	97.5	0.400	32.1	LOS C	3.2	60.3	0.87	0.75	28.8
All Vehicles		4077	16.0	1.001	54.9	LOS D	47.6	380.5	0.80	0.92	27.1

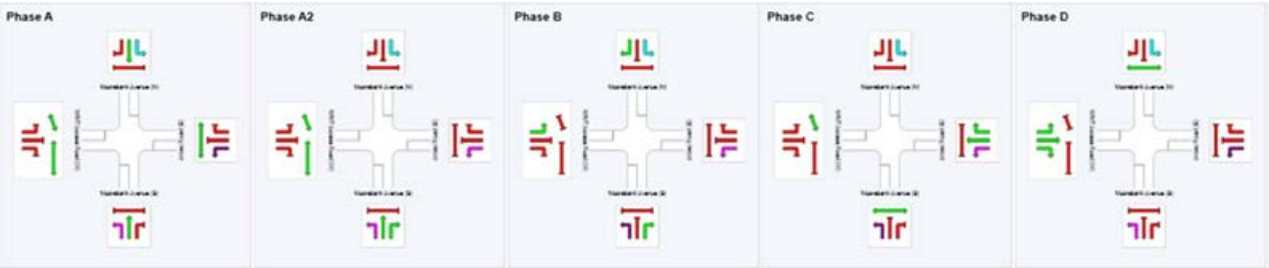
PHASING SUMMARY

Site: I-0A 2030 CUM C2 AM - UP3

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2030 CUM C2 AM PEAK - Upgrade 2
Signals - Fixed Time Cycle Time = 115 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	A2	B	C	D
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	51	60	87	101
Green Time (sec)	45	3	21	8	8
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	51	9	27	14	14
Phase Split	44 %	8 %	23 %	12 %	12 %



PM Peak – Cumulative Scenario C2 with Upgrade

MOVEMENT SUMMARY

Site: I-0A 2030 CUM C1 PM - UP3

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2030 CUM C1 PM PEAK - Upgrade 2
Signals - Fixed Time Cycle Time = 130 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
1	L2	1	0.0	0.857	54.2	LOS D	31.4	246.5	0.96	0.93	21.8
2	T1	1018	9.1	0.857	48.1	LOS D	31.4	246.5	0.96	0.93	28.9
3	R2	242	0.9	1.003	113.3	LOS F	21.6	152.4	1.00	1.14	18.1
Approach		1261	7.5	1.003	60.7	LOS E	31.4	246.5	0.97	0.97	25.7
East: Anzac Road (E)											
4	L2	568	2.2	0.852	38.0	LOS C	35.5	253.6	1.00	0.98	33.6
5	T1	1	0.0	0.005	55.6	LOS D	0.1	0.4	0.90	0.56	25.0
6	R2	391	5.4	0.946	90.8	LOS F	15.3	111.8	1.00	1.07	23.0
Approach		960	3.5	0.946	59.5	LOS E	35.5	253.6	1.00	1.02	27.9
North: Moorebank Avenue (N)											
7	L2	353	3.9	0.195	5.7	LOS A	0.0	0.0	0.00	0.53	54.4
8	T1	1344	8.4	0.939	43.0	LOS D	43.3	334.7	0.70	0.81	30.6
9	R2	222	91.5	0.415	46.2	LOS D	5.7	102.9	0.84	0.78	23.6
Approach		1919	17.2	0.939	36.5	LOS C	43.3	334.7	0.59	0.75	33.0
West: MIMT Access Road (W)											
10	L2	347	58.8	0.437	24.2	LOS B	5.7	79.3	0.80	0.76	33.1
11	T1	14	0.0	0.114	64.5	LOS E	0.9	6.0	0.97	0.67	22.9
12	R2	29	0.0	0.258	70.3	LOS E	1.9	13.1	0.99	0.72	16.6
Approach		391	52.3	0.437	29.1	LOS C	5.7	79.3	0.82	0.75	30.8
All Vehicles		4531	14.6	1.003	47.4	LOS D	43.3	334.7	0.80	0.87	29.3

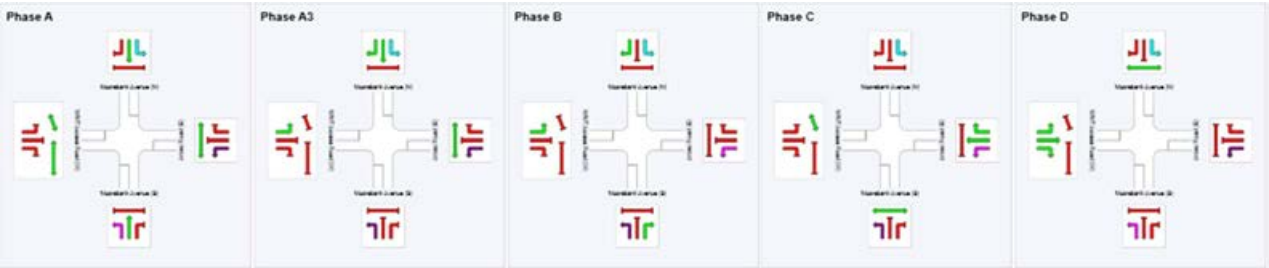
PHASING SUMMARY

Site: I-0A 2030 CUM C1 PM - UP3

Intersection of Moorebank Avenue, Anzac Road and MIMT Access Road
2030 CUM C1 PM PEAK - Upgrade 2
Signals - Fixed Time Cycle Time = 130 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	A3	B	C	D
Reference Phase	Yes	No	No	No	No
Phase Change Time (sec)	0	49	72	95	116
Green Time (sec)	43	17	17	15	8
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	49	23	23	21	14
Phase Split	38 %	18 %	18 %	16 %	11 %



I-0B Intersection of Moorebank Avenue and New DNSDC Access

AM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-0B 2030 CUM A AM

Intersection of Moorebank Avenue and DNSDC Access
2030 CUM A AM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1639	6.0	0.582	0.5	LOS A	1.8	13.5	0.05	0.05	59.4
3	R2	38	5.6	0.133	13.1	LOS A	0.7	5.4	0.40	0.67	46.3
Approach		1677	6.0	0.582	0.8	LOS A	1.8	13.5	0.06	0.06	59.0
East: DNSDC Access (E)											
4	L2	6	33.3	0.042	50.1	LOS D	0.3	2.6	0.93	0.66	31.8
6	R2	27	76.9	0.228	52.9	LOS D	1.3	15.3	0.96	0.73	26.1
Approach		34	68.8	0.228	52.4	LOS D	1.3	15.3	0.95	0.71	27.3
North: Moorebank Avenue (N)											
7	L2	351	11.4	0.439	9.4	LOS A	7.2	54.3	0.28	0.51	46.8
8	T1	837	5.9	0.439	1.3	LOS A	7.2	54.3	0.10	0.16	57.7
Approach		1187	7.5	0.439	3.7	LOS A	7.2	54.3	0.16	0.26	54.3
All Vehicles		2898	7.3	0.582	2.6	LOS A	7.2	54.3	0.11	0.15	56.3

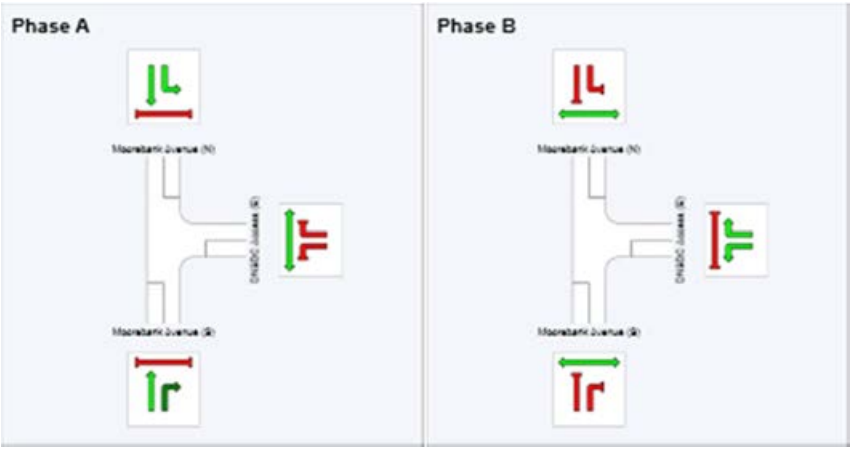
PHASING SUMMARY

Site: I-0B 2030 CUM A AM

Intersection of Moorebank Avenue and DNSDC Access
2030 CUM A AM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	81
Green Time (sec)	75	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	81	19
Phase Split	81 %	19 %



PM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-0B 2030 CUM A PM

Intersection of Moorebank Avenue and DNSDC Access
2030 CUM A PM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	763	9.0	0.309	2.7	LOS A	2.7	20.4	0.16	0.14	57.2
3	R2	3	66.7	0.041	22.7	LOS B	0.1	1.0	0.55	0.65	41.3
Approach		766	9.2	0.309	2.8	LOS A	2.7	20.4	0.16	0.14	57.1
East: DNSDC Access (E)											
4	L2	16	6.7	0.049	41.4	LOS C	0.6	4.7	0.86	0.68	34.5
6	R2	248	10.6	0.799	52.5	LOS D	12.8	97.7	1.00	0.92	27.0
Approach		264	10.4	0.799	51.8	LOS D	12.8	97.7	0.99	0.90	27.5
North: Moorebank Avenue (N)											
7	L2	46	88.6	0.779	11.4	LOS A	17.0	127.7	0.40	0.39	47.0
8	T1	1901	4.4	0.779	4.7	LOS A	17.0	127.7	0.39	0.37	55.3
Approach		1947	6.4	0.779	4.9	LOS A	17.0	127.7	0.39	0.37	55.1
All Vehicles		2978	7.5	0.799	8.5	LOS A	17.0	127.7	0.39	0.36	51.4

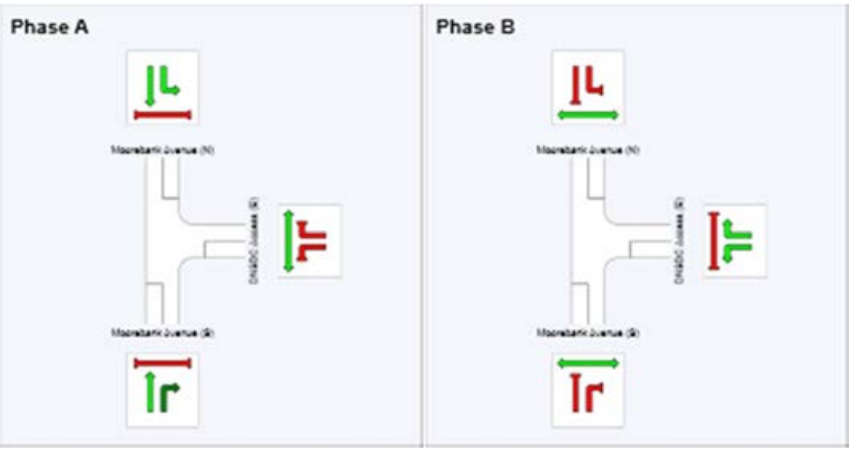
PHASING SUMMARY

Site: I-0B 2030 CUM A PM

Intersection of Moorebank Avenue and DNSDC Access
2030 CUM A PM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	73
Green Time (sec)	67	21
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	73	27
Phase Split	73 %	27 %



AM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-0B 2030 CUM B AM

Intersection of Moorebank Avenue and DNSDC Access
2030 CUM B AM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	1738	7.2	0.635	0.6	LOS A	2.2	17.0	0.06	0.05	59.4
3	R2	44	2.4	0.255	17.5	LOS B	1.1	8.1	0.52	0.71	44.0
Approach		1782	7.1	0.635	1.0	LOS A	2.2	17.0	0.07	0.07	58.8
East: DNSDC Access (E)											
4	L2	6	33.3	0.042	50.1	LOS D	0.3	2.6	0.93	0.66	31.8
6	R2	39	83.8	0.420	55.5	LOS D	2.0	32.6	0.98	0.75	23.0
Approach		45	76.7	0.420	54.7	LOS D	2.0	32.6	0.97	0.74	24.1
North: Moorebank Avenue (N)											
7	L2	517	11.6	0.587	10.8	LOS A	12.4	100.6	0.39	0.61	45.4
8	T1	1003	6.9	0.587	1.5	LOS A	12.4	100.6	0.12	0.16	57.7
Approach		1520	8.5	0.587	4.6	LOS A	12.4	100.6	0.21	0.31	53.1
All Vehicles		3347	8.7	0.635	3.4	LOS A	12.4	100.6	0.15	0.19	55.2

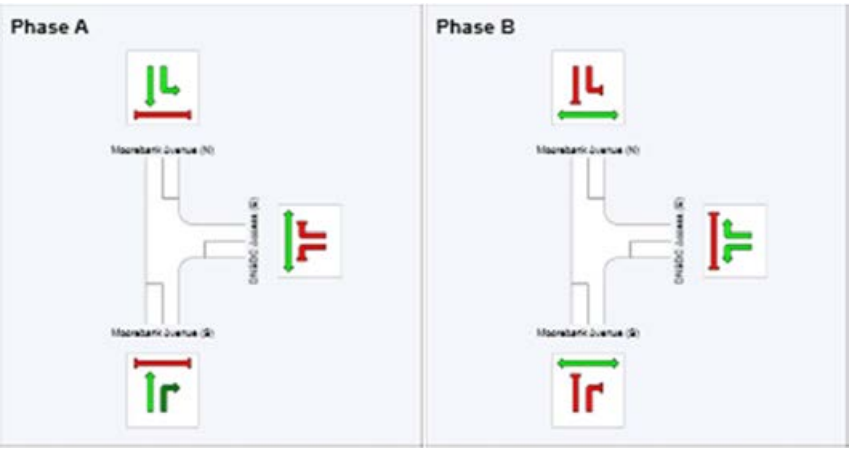
PHASING SUMMARY

Site: I-0B 2030 CUM B AM

Intersection of Moorebank Avenue and DNSDC Access
2030 CUM B AM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	81
Green Time (sec)	75	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	81	19
Phase Split	81 %	19 %



PM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-0B 2030 CUM B PM

Intersection of Moorebank Avenue and DNSDC Access
2030 CUM B PM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	879	7.9	0.402	5.9	LOS A	5.9	46.4	0.30	0.26	54.3
3	R2	2	50.0	0.029	41.9	LOS C	0.1	0.9	0.81	0.65	34.5
Approach		881	8.0	0.402	6.0	LOS A	5.9	46.4	0.30	0.26	54.2
East: DNSDC Access (E)											
4	L2	21	0.0	0.047	35.9	LOS C	0.8	5.5	0.80	0.68	36.3
6	R2	363	7.2	0.899	59.0	LOS E	21.0	165.3	1.00	1.01	25.3
Approach		384	6.8	0.899	57.7	LOS E	21.0	165.3	0.99	1.00	25.9
North: Moorebank Avenue (N)											
7	L2	46	88.6	0.905	27.8	LOS B	42.3	333.8	0.78	0.83	37.1
8	T1	1973	4.3	0.905	20.3	LOS B	43.5	321.3	0.77	0.82	44.0
Approach		2019	6.2	0.905	20.5	LOS B	43.5	333.8	0.77	0.82	43.8
All Vehicles		3284	6.8	0.905	21.0	LOS B	43.5	333.8	0.67	0.69	42.9

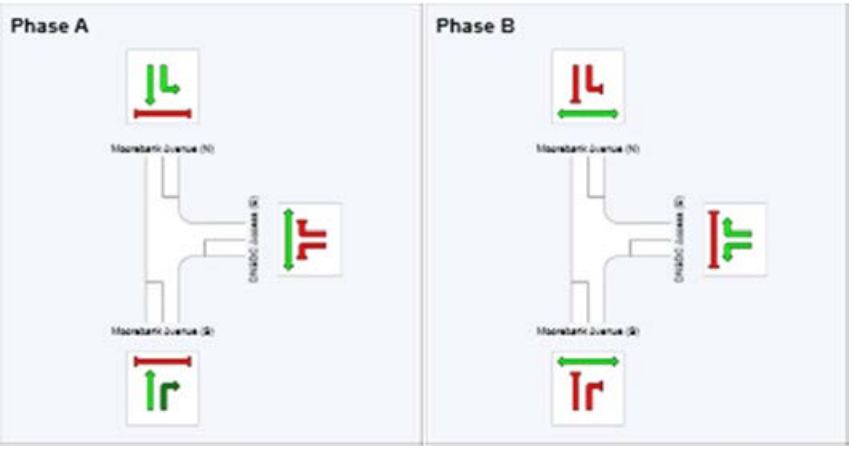
PHASING SUMMARY

Site: I-0B 2030 CUM B PM

Intersection of Moorebank Avenue and DNSDC Access
2030 CUM B PM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	67
Green Time (sec)	61	27
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	67	33
Phase Split	67 %	33 %



AM Peak – Cumulative Scenario B with Upgrade

MOVEMENT SUMMARY

Site: I-0B 2030 CUM B AM - UP

Intersection of Moorebank Avenue and DNSDC Access
2030 CUM B AM PEAK - UP
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	1738	7.2	0.635	0.6	LOS A	2.2	17.0	0.06	0.05	59.4
3	R2	44	2.4	0.255	17.5	LOS B	1.1	8.1	0.52	0.71	44.0
Approach		1782	7.1	0.635	1.0	LOS A	2.2	17.0	0.07	0.07	58.8
East: DNSDC Access (E)											
4	L2	6	33.3	0.417	59.8	LOS E	1.4	20.2	1.00	0.73	29.4
6	R2	39	83.8	0.417	61.5	LOS E	1.4	20.2	1.00	0.72	22.0
Approach		45	76.7	0.417	61.2	LOS E	1.4	20.2	1.00	0.72	23.0
North: Moorebank Avenue (N)											
7	L2	517	11.6	0.587	10.8	LOS A	12.4	100.6	0.39	0.61	45.4
8	T1	1003	6.9	0.587	1.5	LOS A	12.4	100.6	0.12	0.16	57.7
Approach		1520	8.5	0.587	4.6	LOS A	12.4	100.6	0.21	0.31	53.1
All Vehicles		3347	8.7	0.635	3.5	LOS A	12.4	100.6	0.15	0.19	55.1

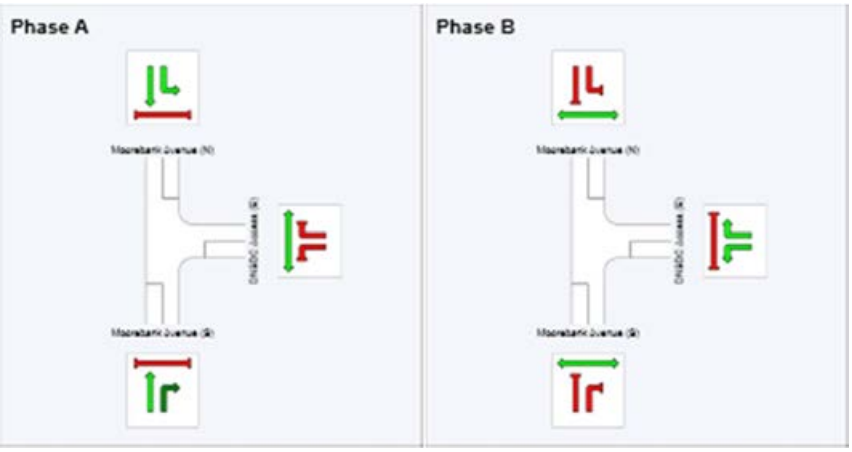
PHASING SUMMARY

Site: I-0B 2030 CUM B AM - UP

Intersection of Moorebank Avenue and DNSDC Access
2030 CUM B AM PEAK - UP
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	81
Green Time (sec)	75	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	81	19
Phase Split	81 %	19 %



PM Peak – Cumulative Scenario B with Upgrade

MOVEMENT SUMMARY

Site: I-0B 2030 CUM B PM - UP

Intersection of Moorebank Avenue and DNSDC Access
2030 CUM B PM PEAK - UP
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	879	7.9	0.366	2.8	LOS A	3.4	26.5	0.17	0.15	57.1
3	R2	2	50.0	0.027	24.8	LOS B	0.1	0.6	0.58	0.65	40.5
Approach		881	8.0	0.366	2.9	LOS A	3.4	26.5	0.17	0.15	57.0
East: DNSDC Access (E)											
4	L2	21	0.0	0.855	59.5	LOS E	10.7	83.5	1.00	0.98	29.9
6	R2	363	7.2	0.855	59.7	LOS E	10.7	83.5	1.00	0.97	25.1
Approach		384	6.8	0.855	59.7	LOS E	10.7	83.5	1.00	0.97	25.4
North: Moorebank Avenue (N)											
7	L2	46	88.6	0.824	13.0	LOS A	20.9	164.9	0.46	0.45	45.4
8	T1	1973	4.3	0.824	5.8	LOS A	20.9	164.9	0.45	0.43	54.4
Approach		2019	6.2	0.824	5.9	LOS A	20.9	164.9	0.45	0.43	54.2
All Vehicles		3284	6.8	0.855	11.4	LOS A	20.9	164.9	0.44	0.42	48.9

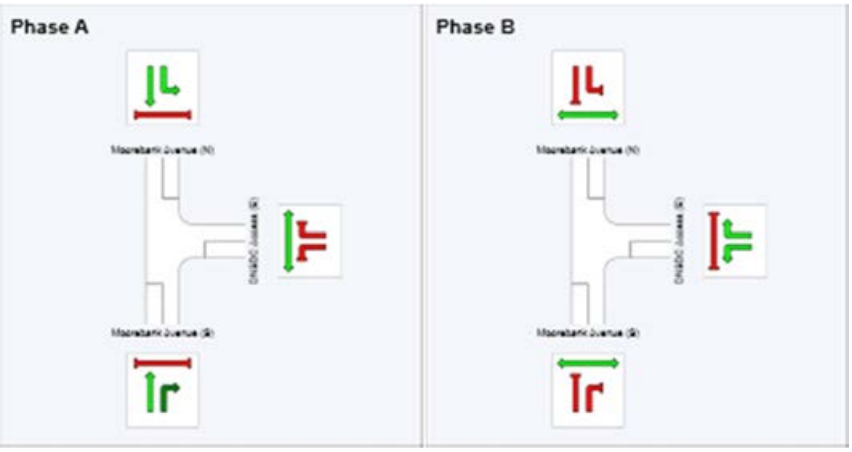
PHASING SUMMARY

Site: I-0B 2030 CUM B PM - UP

Intersection of Moorebank Avenue and DNSDC Access
2030 CUM B PM PEAK - UP
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	73
Green Time (sec)	67	21
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	73	27
Phase Split	73 %	27 %



AM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-0B 2020 CUM C1 AM

Intersection of Moorebank Avenue and DNSDC Access
2020 CUM C1 AM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1467	6.9	0.531	0.5	LOS A	1.5	11.1	0.05	0.04	59.5
3	R2	31	0.0	0.082	11.1	LOS A	0.5	3.5	0.34	0.65	47.4
Approach		1498	6.7	0.531	0.7	LOS A	1.5	11.1	0.05	0.05	59.1
East: DNSDC Access (E)											
4	L2	5	20.0	0.032	49.7	LOS D	0.2	2.0	0.93	0.65	32.0
6	R2	7	14.3	0.044	49.7	LOS D	0.3	2.6	0.93	0.66	27.6
Approach		13	16.7	0.044	49.7	LOS D	0.3	2.6	0.93	0.66	29.6
North: Moorebank Avenue (N)											
7	L2	249	3.0	0.381	8.3	LOS A	4.7	35.5	0.21	0.42	48.2
8	T1	769	9.3	0.381	1.2	LOS A	4.7	35.5	0.09	0.16	57.8
Approach		1019	7.7	0.381	2.9	LOS A	4.7	35.5	0.12	0.22	55.3
All Vehicles		2529	7.2	0.531	1.8	LOS A	4.7	35.5	0.08	0.13	57.3

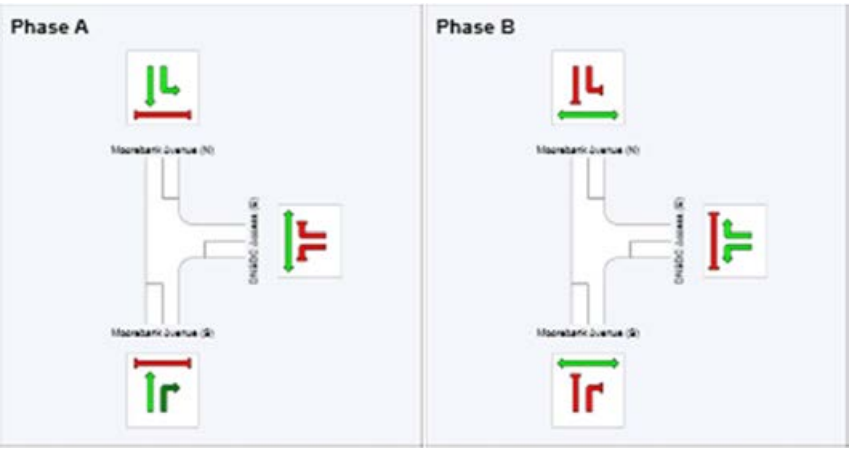
PHASING SUMMARY

Site: I-0B 2020 CUM C1 AM

Intersection of Moorebank Avenue and DNSDC Access
2020 CUM C1 AM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	81
Green Time (sec)	75	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	81	19
Phase Split	81 %	19 %



PM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-0B 2020 CUM C1 PM

Intersection of Moorebank Avenue and DNSDC Access
2020 CUM C1 PM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	741	8.7	0.314	3.6	LOS A	3.3	25.3	0.20	0.17	56.4
3	R2	1	0.0	0.007	19.5	LOS B	0.0	0.2	0.51	0.62	43.1
Approach		742	8.7	0.314	3.6	LOS A	3.3	25.3	0.20	0.17	56.4
East: DNSDC Access (E)											
4	L2	17	0.0	0.045	39.4	LOS C	0.7	4.7	0.84	0.68	35.2
6	R2	262	0.8	0.710	46.8	LOS D	12.5	87.9	0.99	0.86	28.6
Approach		279	0.8	0.710	46.3	LOS D	12.5	87.9	0.98	0.85	29.0
North: Moorebank Avenue (N)											
7	L2	6	16.7	0.707	11.1	LOS A	14.4	106.4	0.38	0.35	47.9
8	T1	1712	5.3	0.707	5.3	LOS A	14.4	106.4	0.38	0.35	54.8
Approach		1718	5.3	0.707	5.3	LOS A	14.4	106.4	0.38	0.35	54.8
All Vehicles		2739	5.8	0.710	9.0	LOS A	14.4	106.4	0.39	0.35	50.9

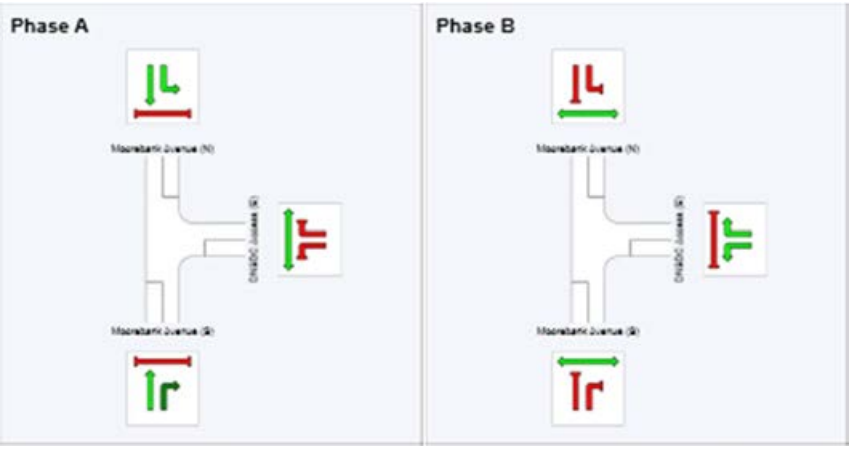
PHASING SUMMARY

Site: I-0B 2020 CUM C1 PM

Intersection of Moorebank Avenue and DNSDC Access
2020 CUM C1 PM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	71
Green Time (sec)	65	23
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	71	29
Phase Split	71 %	29 %



AM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-0B 2030 CUM C2 AM

Intersection of Moorebank Avenue and DNSDC Access
2030 CUM C2 AM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	1675	8.3	0.616	0.6	LOS A	2.0	15.8	0.05	0.05	59.4
3	R2	38	0.0	0.151	13.1	LOS A	0.7	5.2	0.41	0.67	46.3
Approach		1713	8.1	0.616	0.8	LOS A	2.0	15.8	0.06	0.06	59.0
East: DNSDC Access (E)											
4	L2	5	20.0	0.032	49.7	LOS D	0.2	2.0	0.93	0.65	32.0
6	R2	7	14.3	0.044	49.7	LOS D	0.3	2.6	0.93	0.66	27.6
Approach		13	16.7	0.044	49.7	LOS D	0.3	2.6	0.93	0.66	29.6
North: Moorebank Avenue (N)											
7	L2	365	2.0	0.496	9.0	LOS A	7.7	58.6	0.27	0.49	47.3
8	T1	939	11.1	0.496	1.4	LOS A	7.7	58.6	0.11	0.17	57.6
Approach		1304	8.6	0.496	3.5	LOS A	7.7	58.6	0.15	0.26	54.5
All Vehicles		3029	8.3	0.616	2.2	LOS A	7.7	58.6	0.11	0.15	56.8

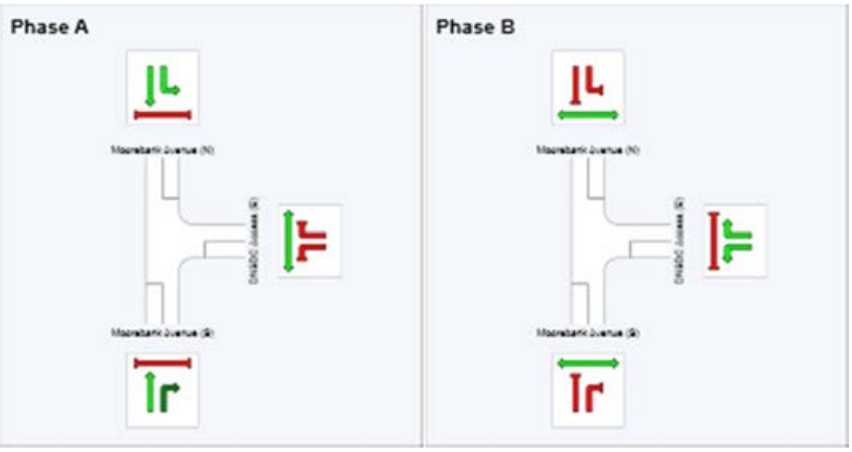
PHASING SUMMARY

Site: I-0B 2030 CUM C2 AM

Intersection of Moorebank Avenue and DNSDC Access
2030 CUM C2 AM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	81
Green Time (sec)	75	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	81	19
Phase Split	81 %	19 %



PM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-0B 2030 CUM C2 PM

Intersection of Moorebank Avenue and DNSDC Access
2030 CUM C2 PM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	912	10.2	0.413	5.4	LOS A	5.8	46.0	0.28	0.25	54.7
3	R2	1	0.0	0.010	31.8	LOS C	0.0	0.3	0.70	0.63	38.1
Approach		913	10.1	0.413	5.4	LOS A	5.8	46.0	0.28	0.25	54.7
East: DNSDC Access (E)											
4	L2	21	0.0	0.049	36.8	LOS C	0.8	5.6	0.81	0.69	36.0
6	R2	348	0.6	0.823	49.9	LOS D	17.9	125.8	1.00	0.93	27.8
Approach		369	0.6	0.823	49.1	LOS D	17.9	125.8	0.99	0.92	28.2
North: Moorebank Avenue (N)											
7	L2	6	16.7	0.848	17.3	LOS B	29.8	225.2	0.63	0.62	43.6
8	T1	1936	6.4	0.848	11.5	LOS A	29.8	225.2	0.63	0.62	49.8
Approach		1942	6.4	0.848	11.5	LOS A	29.8	225.2	0.63	0.62	49.8
All Vehicles		3224	6.8	0.848	14.1	LOS A	29.8	225.2	0.57	0.55	47.2

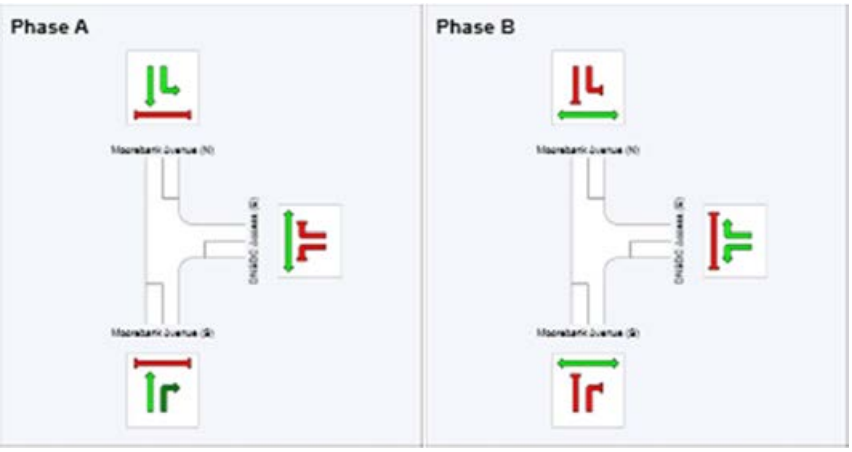
PHASING SUMMARY

Site: I-0B 2030 CUM C2 PM

Intersection of Moorebank Avenue and DNSDC Access
2030 CUM C2 PM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	68
Green Time (sec)	62	26
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	68	32
Phase Split	68 %	32 %



I-0C Intersection of Moorebank Avenue and SIMTA Central Access

AM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-0C 2030 CUM A AM

Intersection of Moorebank Avenue and SIMTA Central Access
2030 CUM A AM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1657	4.8	0.584	0.5	LOS A	1.9	13.6	0.05	0.05	59.5
3	R2	13	16.7	0.034	10.7	LOS A	0.2	1.5	0.32	0.63	43.4
Approach		1669	4.9	0.584	0.6	LOS A	1.9	13.6	0.05	0.05	59.4
East: SIMTA Central Access (E)											
4	L2	2	50.0	0.015	49.9	LOS D	0.1	1.0	0.92	0.62	23.7
6	R2	21	95.0	0.190	53.1	LOS D	1.0	12.8	0.95	0.72	26.4
Approach		23	90.9	0.190	52.8	LOS D	1.0	12.8	0.95	0.71	26.2
North: Moorebank Avenue (N)											
7	L2	233	14.0	0.309	8.6	LOS A	4.0	30.2	0.22	0.46	50.3
8	T1	611	3.1	0.309	1.1	LOS A	4.0	30.2	0.08	0.15	58.2
Approach		843	6.1	0.309	3.1	LOS A	4.0	30.2	0.12	0.23	56.1
All Vehicles		2536	6.1	0.584	1.9	LOS A	4.0	30.2	0.08	0.12	57.8

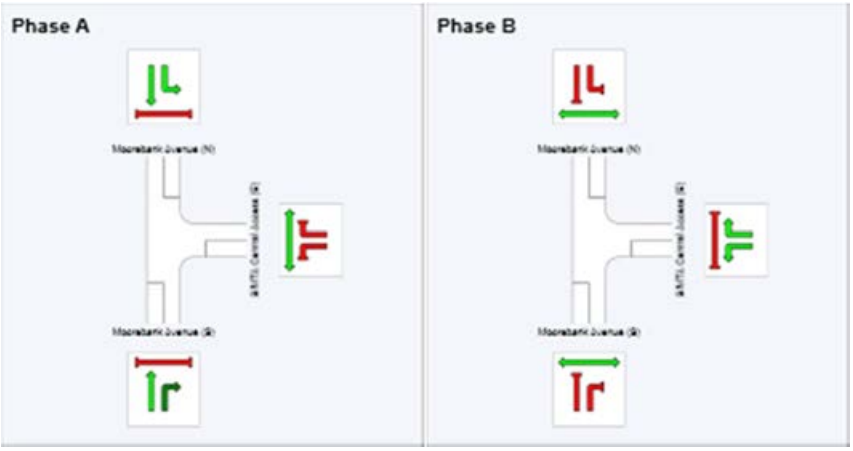
PHASING SUMMARY

Site: I-0C 2030 CUM A AM

Intersection of Moorebank Avenue and SIMTA Central Access
2030 CUM A AM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	81
Green Time (sec)	75	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	81	19
Phase Split	81 %	19 %



PM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-0C 2030 CUM A PM

Intersection of Moorebank Avenue and SIMTA Central Access
2030 CUM A PM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	541	8.6	0.215	2.1	LOS A	1.5	11.3	0.12	0.11	58.0
3	R2	3	66.7	0.043	19.8	LOS B	0.1	0.9	0.50	0.65	36.5
Approach		544	8.9	0.215	2.2	LOS A	1.5	11.3	0.13	0.11	57.8
East: SIMTA Central Access (E)											
4	L2	12	9.1	0.039	42.2	LOS C	0.5	3.6	0.86	0.67	26.4
6	R2	224	10.8	0.765	51.6	LOS D	11.3	86.5	1.00	0.89	27.8
Approach		236	10.7	0.765	51.1	LOS D	11.3	86.5	0.99	0.88	27.7
North: Moorebank Avenue (N)											
7	L2	41	97.4	0.747	10.7	LOS A	13.9	102.6	0.33	0.32	50.2
8	T1	1877	2.4	0.747	3.9	LOS A	13.9	102.6	0.32	0.31	56.4
Approach		1918	4.4	0.747	4.0	LOS A	13.9	102.6	0.32	0.31	56.3
All Vehicles		2698	5.9	0.765	7.8	LOS A	13.9	102.6	0.34	0.32	52.7

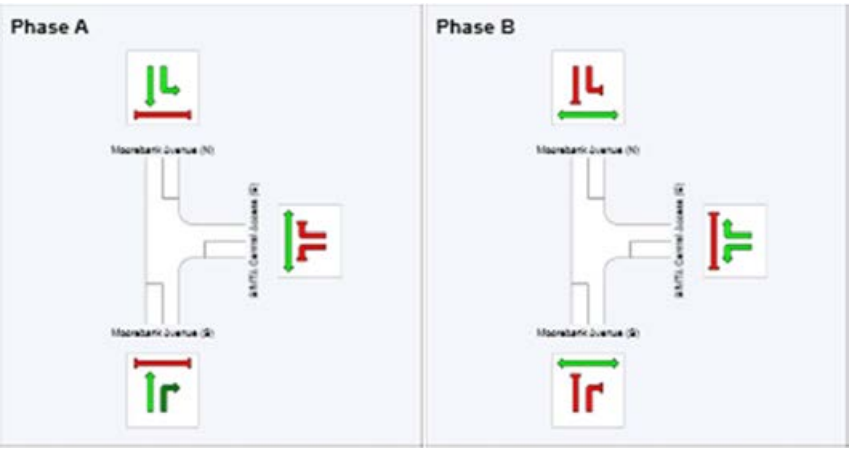
PHASING SUMMARY

Site: I-0C 2030 CUM A PM

Intersection of Moorebank Avenue and SIMTA Central Access
2030 CUM A PM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	74
Green Time (sec)	68	20
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	74	26
Phase Split	74 %	26 %



AM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-0C 2030 CUM B AM

Intersection of Moorebank Avenue and SIMTA Central Access
2030 CUM B AM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	1751	5.4	0.627	0.6	LOS A	2.2	16.3	0.06	0.05	59.4
3	R2	19	5.6	0.065	13.1	LOS A	0.4	2.6	0.39	0.65	41.7
Approach		1769	5.4	0.627	0.7	LOS A	2.2	16.3	0.06	0.06	59.3
East: SIMTA Central Access (E)											
4	L2	2	50.0	0.015	49.9	LOS D	0.1	1.0	0.92	0.62	23.7
6	R2	33	96.8	0.382	55.7	LOS D	1.6	30.1	0.97	0.75	25.4
Approach		35	93.9	0.382	55.3	LOS D	1.6	30.1	0.97	0.74	25.4
North: Moorebank Avenue (N)											
7	L2	399	13.2	0.386	10.5	LOS A	7.3	61.5	0.36	0.65	47.3
8	T1	611	3.1	0.386	0.8	LOS A	7.3	61.5	0.07	0.09	58.8
Approach		1009	7.1	0.386	4.7	LOS A	7.3	61.5	0.18	0.31	54.2
All Vehicles		2814	7.1	0.627	2.8	LOS A	7.3	61.5	0.11	0.16	56.7

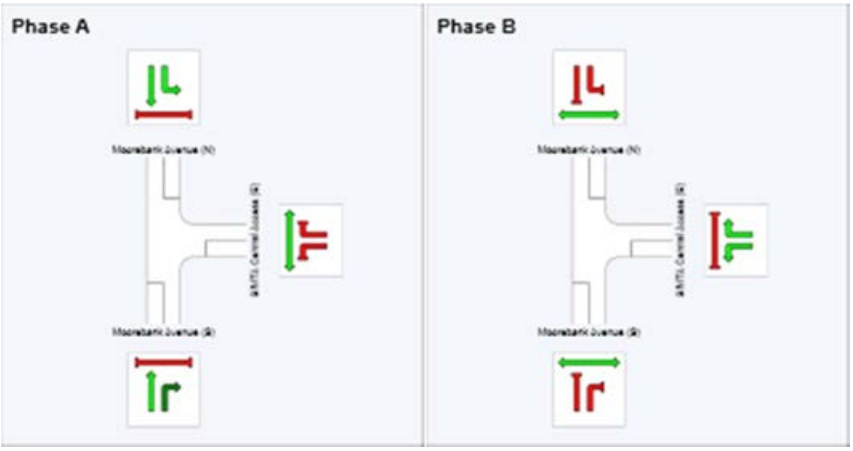
PHASING SUMMARY

Site: I-0C 2030 CUM B AM

Intersection of Moorebank Avenue and SIMTA Central Access
2030 CUM B AM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	81
Green Time (sec)	75	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	81	19
Phase Split	81 %	19 %



PM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-0C 2030 CUM B PM

Intersection of Moorebank Avenue and SIMTA Central Access
2030 CUM B PM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	540	8.4	0.243	4.7	LOS A	2.8	22.2	0.23	0.20	55.7
3	R2	2	50.0	0.029	35.2	LOS C	0.1	0.8	0.73	0.65	29.2
Approach		542	8.5	0.243	4.8	LOS A	2.8	22.2	0.23	0.20	55.5
East: SIMTA Central Access (E)											
4	L2	18	5.9	0.044	36.8	LOS C	0.7	5.0	0.81	0.68	28.3
6	R2	339	7.1	0.874	55.7	LOS D	18.8	148.3	1.00	0.99	26.7
Approach		357	7.1	0.874	54.8	LOS D	18.8	148.3	0.99	0.97	26.8
North: Moorebank Avenue (N)											
7	L2	41	97.4	0.860	20.0	LOS B	32.1	245.3	0.66	0.66	42.8
8	T1	1954	2.3	0.860	12.6	LOS A	32.8	234.4	0.66	0.65	49.7
Approach		1995	4.2	0.860	12.8	LOS A	32.8	245.3	0.66	0.65	49.5
All Vehicles		2894	5.4	0.874	16.5	LOS B	32.8	245.3	0.62	0.61	46.5

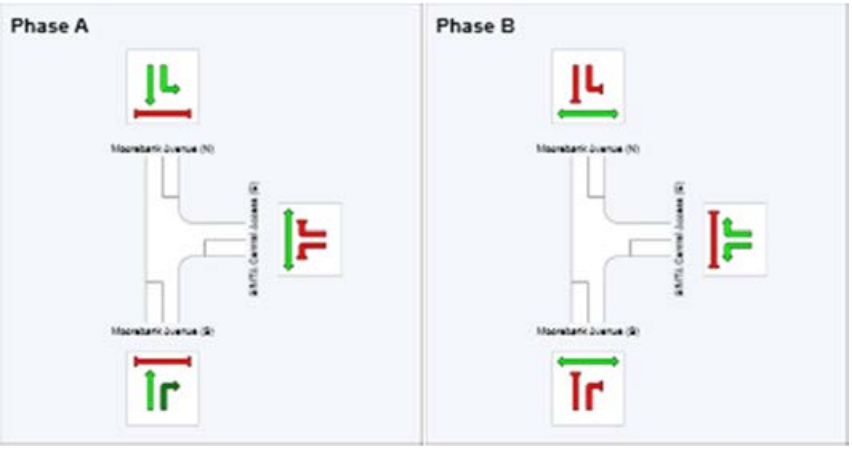
PHASING SUMMARY

Site: I-0C 2030 CUM B PM

Intersection of Moorebank Avenue and SIMTA Central Access
2030 CUM B PM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	68
Green Time (sec)	62	26
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	68	32
Phase Split	68 %	32 %



AM Peak – Cumulative Scenario B with Upgrade

MOVEMENT SUMMARY

Site: I-0C 2030 CUM B AM - UP

Intersection of Moorebank Avenue and SIMTA Central Access
2030 CUM B AM PEAK - UP
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	1751	5.4	0.627	0.6	LOS A	2.2	16.3	0.06	0.05	59.4
3	R2	19	5.6	0.065	13.1	LOS A	0.4	2.6	0.39	0.65	41.7
Approach		1769	5.4	0.627	0.7	LOS A	2.2	16.3	0.06	0.06	59.3
East: SIMTA Central Access (E)											
4	L2	2	50.0	0.378	60.9	LOS E	1.0	17.4	0.99	0.72	21.1
6	R2	33	96.8	0.378	62.2	LOS E	1.0	17.4	1.00	0.72	24.1
Approach		35	93.9	0.378	62.1	LOS E	1.0	17.4	1.00	0.72	23.9
North: Moorebank Avenue (N)											
7	L2	399	13.2	0.386	10.5	LOS A	7.3	61.5	0.36	0.65	47.3
8	T1	611	3.1	0.386	0.8	LOS A	7.3	61.5	0.07	0.09	58.8
Approach		1009	7.1	0.386	4.7	LOS A	7.3	61.5	0.18	0.31	54.2
All Vehicles		2814	7.1	0.627	2.9	LOS A	7.3	61.5	0.12	0.16	56.6

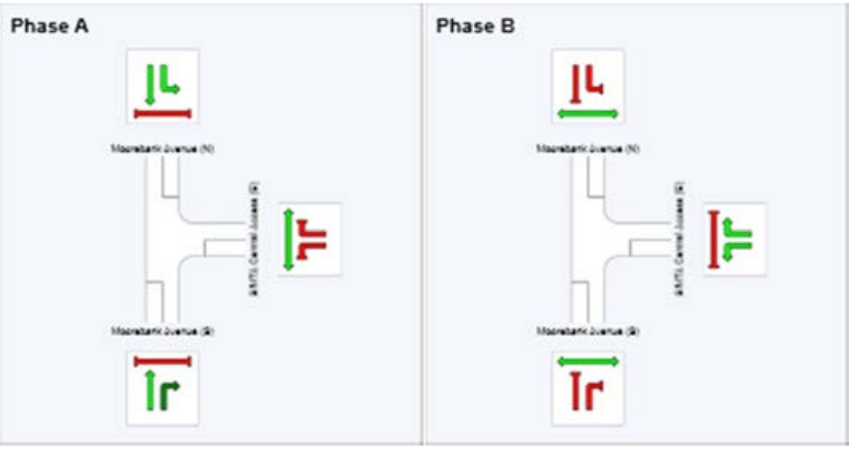
PHASING SUMMARY

Site: I-0C 2030 CUM B AM - UP

Intersection of Moorebank Avenue and SIMTA Central Access
2030 CUM B AM PEAK - UP
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	81
Green Time (sec)	75	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	81	19
Phase Split	81 %	19 %



PM Peak – Cumulative Scenario B with Upgrade

MOVEMENT SUMMARY

Site: I-0C 2030 CUM B PM - UP

Intersection of Moorebank Avenue and SIMTA Central Access
2030 CUM B PM PEAK - UP
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	540	8.4	0.225	2.5	LOS A	1.7	13.7	0.14	0.12	57.6
3	R2	2	50.0	0.028	22.9	LOS B	0.1	0.6	0.55	0.64	34.8
Approach		542	8.5	0.225	2.6	LOS A	1.7	13.7	0.14	0.13	57.5
East: SIMTA Central Access (E)											
4	L2	18	5.9	0.798	55.7	LOS D	9.5	74.4	1.00	0.92	22.7
6	R2	339	7.1	0.798	56.0	LOS D	9.5	74.4	1.00	0.92	26.7
Approach		357	7.1	0.798	56.0	LOS D	9.5	74.4	1.00	0.92	26.5
North: Moorebank Avenue (N)											
7	L2	41	97.4	0.796	11.8	LOS A	18.0	137.5	0.42	0.40	48.7
8	T1	1954	2.3	0.796	4.8	LOS A	18.3	130.3	0.41	0.39	55.6
Approach		1995	4.2	0.796	4.9	LOS A	18.3	137.5	0.41	0.39	55.5
All Vehicles		2894	5.4	0.798	10.8	LOS A	18.3	137.5	0.43	0.40	50.3

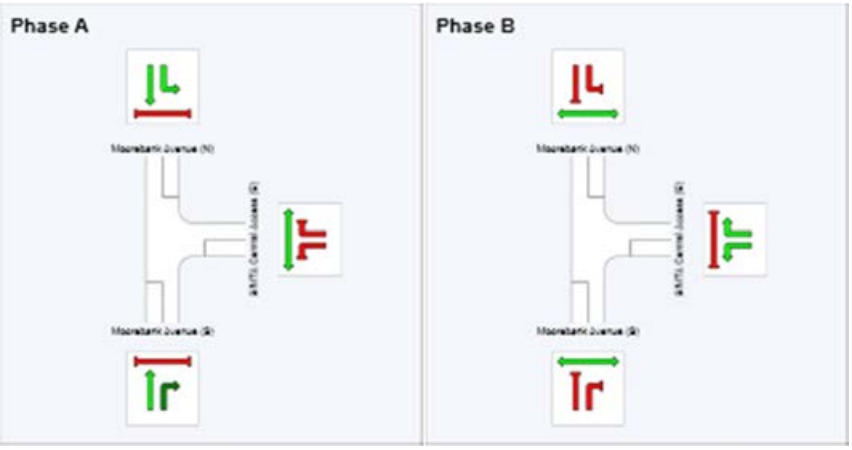
PHASING SUMMARY

Site: I-0C 2030 CUM B PM - UP

Intersection of Moorebank Avenue and SIMTA Central Access
2030 CUM B PM PEAK - UP
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	73
Green Time (sec)	67	21
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	73	27
Phase Split	73 %	27 %



AM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-0C 2020 CUM C1 AM

Intersection of Moorebank Avenue and SIMTA Central Access
2020 CUM C1 AM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	1444	3.2	0.504	0.5	LOS A	1.4	9.8	0.04	0.04	59.5
3	R2	9	22.2	0.026	10.8	LOS A	0.1	1.2	0.32	0.63	43.3
Approach		1454	3.3	0.504	0.6	LOS A	1.4	9.8	0.04	0.04	59.4
East: SIMTA Central Access (E)											
4	L2	3	66.7	0.025	50.5	LOS D	0.1	1.6	0.92	0.63	23.4
6	R2	56	98.1	0.616	57.9	LOS E	2.9	49.4	1.00	0.83	25.0
Approach		59	96.4	0.616	57.5	LOS E	2.9	49.4	1.00	0.82	24.9
North: Moorebank Avenue (N)											
7	L2	201	27.2	0.297	8.7	LOS A	3.4	29.6	0.22	0.45	50.1
8	T1	574	3.1	0.297	1.0	LOS A	3.4	29.6	0.08	0.14	58.3
Approach		775	9.4	0.297	3.0	LOS A	3.4	29.6	0.12	0.22	56.3
All Vehicles		2287	7.8	0.616	2.9	LOS A	3.4	49.4	0.09	0.12	56.8

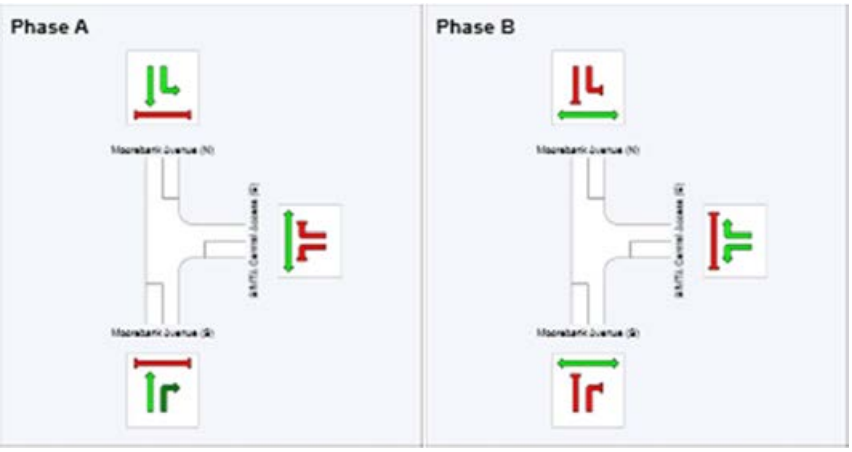
PHASING SUMMARY

Site: I-0C 2020 CUM C1 AM

Intersection of Moorebank Avenue and SIMTA Central Access
2020 CUM C1 AM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	81
Green Time (sec)	75	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	81	19
Phase Split	81 %	19 %



PM Peak – Cumulative Scenario C1

MOVEMENT SUMMARY

Site: I-0C 2020 CUM C1 PM

Intersection of Moorebank Avenue and SIMTA Central Access
2020 CUM C1 PM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	449	2.6	0.192	5.0	LOS A	2.4	17.1	0.24	0.20	55.4
3	R2	3	66.7	0.042	29.4	LOS C	0.1	1.2	0.65	0.66	31.5
Approach		453	3.0	0.192	5.2	LOS A	2.4	17.1	0.24	0.20	55.2
East: SIMTA Central Access (E)											
4	L2	15	14.3	0.036	36.0	LOS C	0.6	4.3	0.79	0.67	28.5
6	R2	292	18.1	0.773	47.1	LOS D	14.4	124.2	0.99	0.90	28.8
Approach		306	17.9	0.773	46.6	LOS D	14.4	124.2	0.98	0.89	28.8
North: Moorebank Avenue (N)											
7	L2	54	98.0	0.762	15.6	LOS B	20.5	157.6	0.55	0.52	46.0
8	T1	1676	2.3	0.762	8.5	LOS A	21.2	150.9	0.54	0.51	52.6
Approach		1729	5.2	0.762	8.8	LOS A	21.2	157.6	0.54	0.51	52.4
All Vehicles		2488	6.4	0.773	12.8	LOS A	21.2	157.6	0.54	0.50	48.9

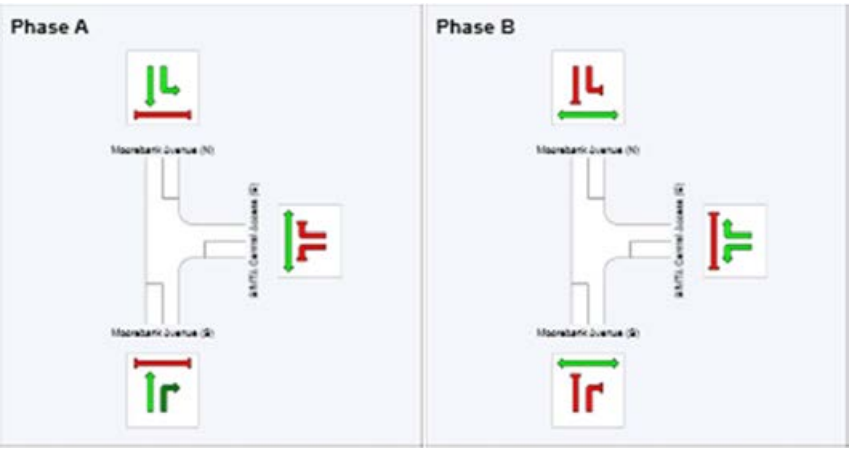
PHASING SUMMARY

Site: I-0C 2020 CUM C1 PM

Intersection of Moorebank Avenue and SIMTA Central Access
2020 CUM C1 PM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	67
Green Time (sec)	61	27
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	67	33
Phase Split	67 %	33 %



AM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-0C 2030 CUM C2 AM

Intersection of Moorebank Avenue and SIMTA Central Access
2030 CUM C2 AM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1626	3.2	0.575	0.6	LOS A	1.8	12.9	0.05	0.05	59.5
3	R2	15	14.3	0.053	13.5	LOS A	0.3	2.2	0.40	0.65	41.2
Approach		1641	3.3	0.575	0.7	LOS A	1.8	12.9	0.05	0.05	59.3
East: SIMTA Central Access (E)											
4	L2	3	66.7	0.023	49.3	LOS D	0.1	1.6	0.91	0.63	23.7
6	R2	88	98.8	0.929	79.1	LOS F	5.8	103.2	1.00	1.16	21.1
Approach		92	97.7	0.929	78.1	LOS F	5.8	103.2	1.00	1.14	21.2
North: Moorebank Avenue (N)											
7	L2	335	26.1	0.380	10.8	LOS A	6.4	60.7	0.35	0.62	47.2
8	T1	609	2.9	0.380	1.0	LOS A	6.4	60.7	0.07	0.10	58.6
Approach		944	11.1	0.380	4.5	LOS A	6.4	60.7	0.17	0.29	54.6
All Vehicles		2677	9.3	0.929	4.7	LOS A	6.4	103.2	0.13	0.17	54.9

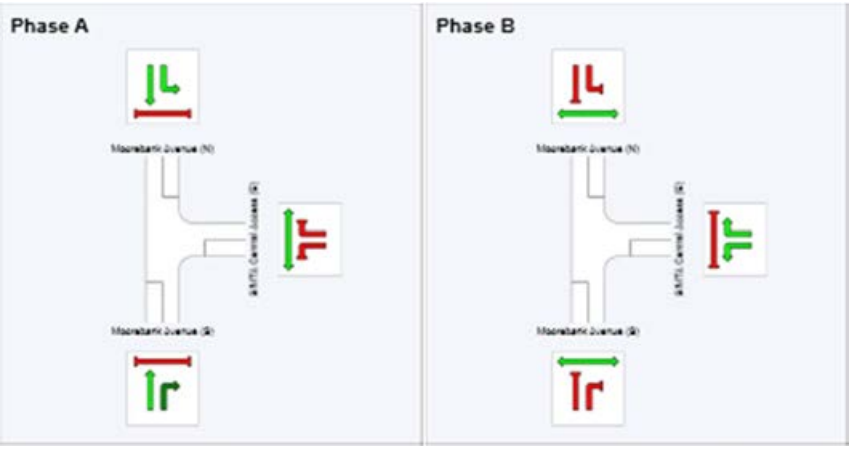
PHASING SUMMARY

Site: I-0C 2030 CUM C2 AM

Intersection of Moorebank Avenue and SIMTA Central Access
2030 CUM C2 AM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	80
Green Time (sec)	74	14
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	80	20
Phase Split	80 %	20 %



PM Peak – Cumulative Scenario C2

MOVEMENT SUMMARY

Site: I-0C 2030 CUM C2 PM

Intersection of Moorebank Avenue and SIMTA Central Access
2030 CUM C2 PM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	507	2.5	0.224	6.1	LOS A	3.2	22.6	0.28	0.24	54.5
3	R2	3	66.7	0.047	45.4	LOS D	0.1	1.5	0.84	0.67	25.7
Approach		511	2.9	0.224	6.4	LOS A	3.2	22.6	0.28	0.24	54.3
East: SIMTA Central Access (E)											
4	L2	19	11.1	0.042	34.3	LOS C	0.7	5.3	0.78	0.68	29.1
6	R2	404	19.8	1.029	114.1	LOS F	34.1	305.9	1.00	1.27	17.4
Approach		423	19.4	1.029	110.5	LOS F	34.1	305.9	0.99	1.25	17.6
North: Moorebank Avenue (N)											
7	L2	81	98.7	0.904	30.1	LOS C	42.1	335.9	0.82	0.87	37.4
8	T1	1877	2.4	0.904	22.0	LOS B	44.3	316.5	0.81	0.85	44.1
Approach		1958	6.3	0.904	22.3	LOS B	44.3	335.9	0.81	0.85	43.8
All Vehicles		2892	7.6	1.029	32.4	LOS C	44.3	335.9	0.74	0.80	38.3

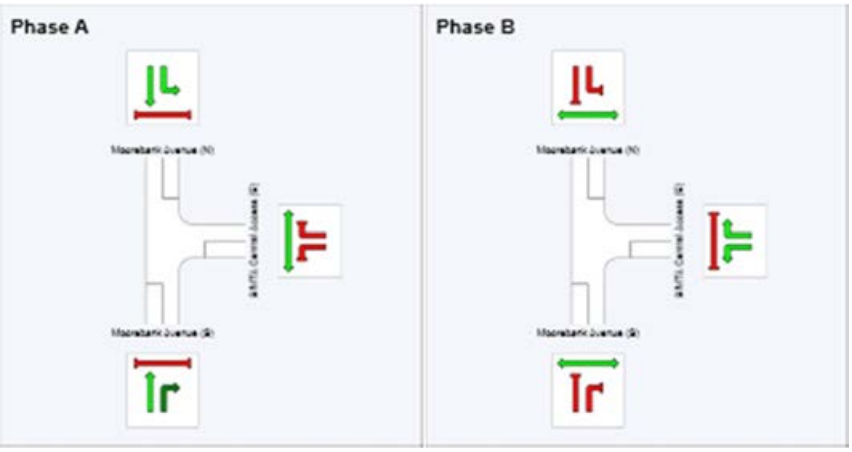
PHASING SUMMARY

Site: I-0C 2030 CUM C2 PM

Intersection of Moorebank Avenue and SIMTA Central Access
2030 CUM C2 PM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	65
Green Time (sec)	59	29
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	65	35
Phase Split	65 %	35 %



AM Peak – Cumulative Scenario C2 with Upgrade

MOVEMENT SUMMARY

Site: I-0C 2030 CUM C2 AM - UP

Intersection of Moorebank Avenue and SIMTA Central Access
2030 CUM C2 AM PEAK - UP
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1626	3.2	0.575	0.6	LOS A	1.8	12.9	0.05	0.05	59.5
3	R2	15	14.3	0.053	13.5	LOS A	0.3	2.2	0.40	0.65	41.2
Approach		1641	3.3	0.575	0.7	LOS A	1.8	12.9	0.05	0.05	59.3
East: SIMTA Central Access (E)											
4	L2	3	66.7	0.852	70.2	LOS E	2.8	49.7	1.00	1.06	19.2
6	R2	88	98.8	0.852	70.6	LOS F	2.8	49.7	1.00	1.06	22.5
Approach		92	97.7	0.852	70.6	LOS F	2.8	49.7	1.00	1.06	22.4
North: Moorebank Avenue (N)											
7	L2	335	26.1	0.380	10.8	LOS A	6.4	60.7	0.35	0.62	47.2
8	T1	609	2.9	0.380	1.0	LOS A	6.4	60.7	0.07	0.10	58.6
Approach		944	11.1	0.380	4.5	LOS A	6.4	60.7	0.17	0.29	54.6
All Vehicles		2677	9.3	0.852	4.4	LOS A	6.4	60.7	0.13	0.17	55.1

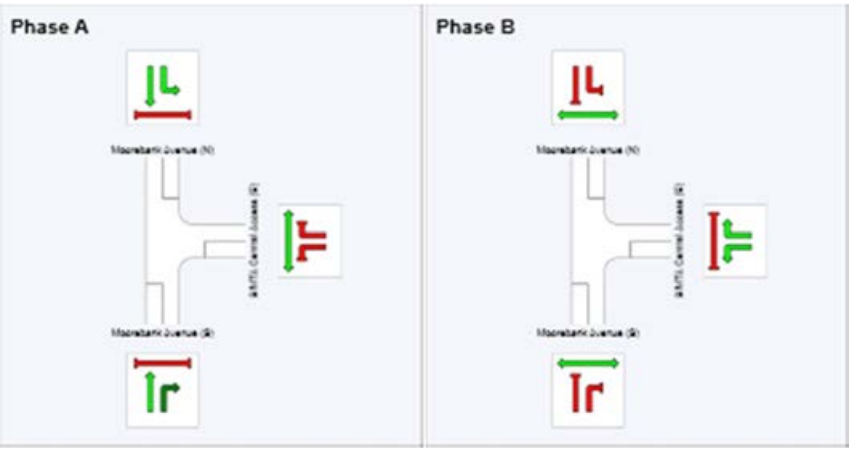
PHASING SUMMARY

Site: I-0C 2030 CUM C2 AM - UP

Intersection of Moorebank Avenue and SIMTA Central Access
2030 CUM C2 AM PEAK - UP
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	80
Green Time (sec)	74	14
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	80	20
Phase Split	80 %	20 %



PM Peak – Cumulative Scenario C2 with Upgrade

MOVEMENT SUMMARY

Site: I-0C 2030 CUM C2 PM - UP

Intersection of Moorebank Avenue and SIMTA Central Access
2030 CUM C2 PM PEAK - UP
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	507	2.5	0.207	3.7	LOS A	2.2	15.5	0.19	0.16	56.6
3	R2	3	66.7	0.046	31.1	LOS C	0.1	1.2	0.67	0.66	30.7
Approach		511	2.9	0.207	3.9	LOS A	2.2	15.5	0.19	0.17	56.4
East: SIMTA Central Access (E)											
4	L2	19	11.1	0.851	58.1	LOS E	11.8	104.6	1.00	0.98	22.1
6	R2	404	19.8	0.851	58.4	LOS E	11.8	104.6	1.00	0.98	25.9
Approach		423	19.4	0.851	58.4	LOS E	11.8	104.6	1.00	0.98	25.8
North: Moorebank Avenue (N)											
7	L2	81	98.7	0.834	16.6	LOS B	25.8	206.2	0.58	0.58	45.1
8	T1	1877	2.4	0.834	8.9	LOS A	26.3	188.1	0.56	0.55	52.3
Approach		1958	6.3	0.834	9.3	LOS A	26.3	206.2	0.57	0.55	52.0
All Vehicles		2892	7.6	0.851	15.5	LOS B	26.3	206.2	0.56	0.55	46.9

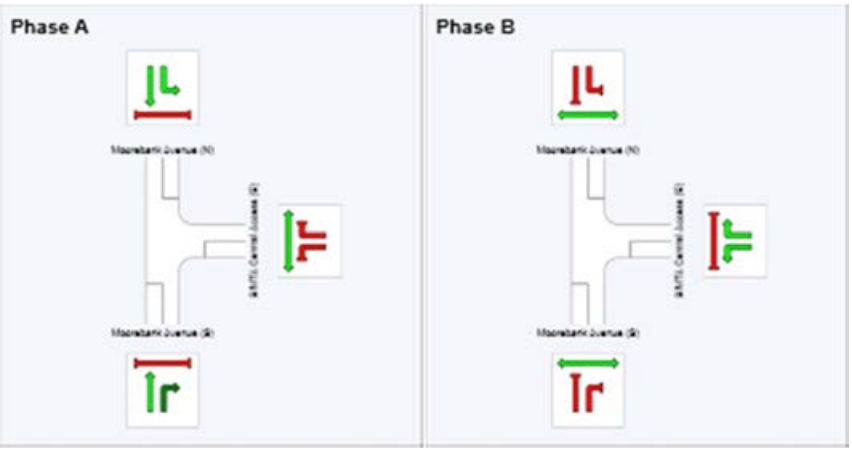
PHASING SUMMARY

Site: I-0C 2030 CUM C2 PM - UP

Intersection of Moorebank Avenue and SIMTA Central Access
2030 CUM C2 PM PEAK - UP
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	70
Green Time (sec)	64	24
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	70	30
Phase Split	70 %	30 %



I-0D Intersection of Moorebank Avenue and SIMTA Southern Access

AM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-0D 2030 CUM A AM

Intersection of Moorebank Avenue and SIMTA Southern Access
2030 CUM A AM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Moorebank Avenue (S)											
2	T1	1642	3.3	0.574	5.8	LOS A	17.3	124.4	0.48	0.44	53.6
Approach		1642	3.3	0.574	5.8	LOS A	17.3	124.4	0.48	0.44	53.6
East: SIMTA Central Access (E)											
4	L2	1	100.0	0.252	53.2	LOS D	1.3	17.3	0.96	0.73	25.0
6	R2	26	100.0	0.252	53.2	LOS D	1.3	17.3	0.96	0.73	20.3
Approach		27	100.0	0.252	53.2	LOS D	1.3	17.3	0.96	0.73	20.5
North: Moorebank Avenue (N)											
8	T1	612	3.3	0.240	0.4	LOS A	0.4	3.1	0.03	0.02	59.6
Approach		612	3.3	0.240	0.4	LOS A	0.4	3.1	0.03	0.02	59.6
All Vehicles		2281	4.5	0.574	4.9	LOS A	17.3	124.4	0.36	0.33	54.4

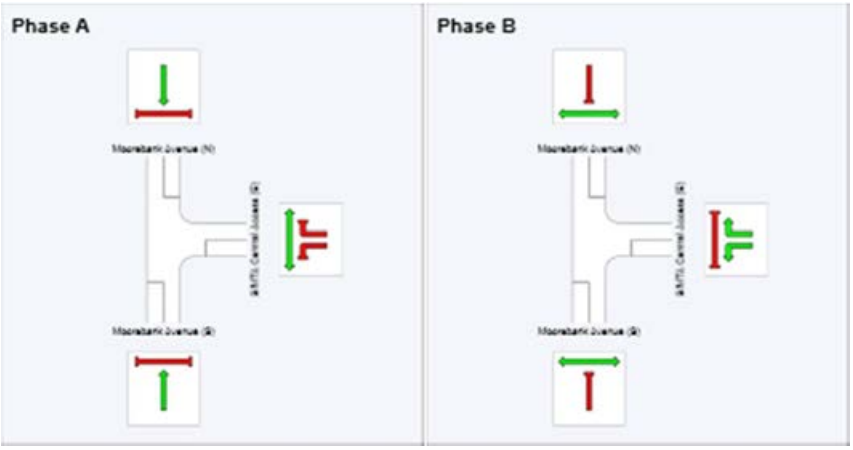
PHASING SUMMARY

Site: I-0D 2030 CUM A AM

Intersection of Moorebank Avenue and SIMTA Southern Access
2030 CUM A AM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	81
Green Time (sec)	75	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	81	19
Phase Split	81 %	19 %



PM Peak – Cumulative Scenario A

MOVEMENT SUMMARY

Site: I-0D 2030 CUM A PM

Intersection of Moorebank Avenue and SIMTA Southern Access
2030 CUM A PM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	512	3.3	0.179	3.8	LOS A	3.5	25.3	0.31	0.26	55.7
Approach		512	3.3	0.179	3.8	LOS A	3.5	25.3	0.31	0.26	55.7
East: SIMTA Central Access (E)											
4	L2	2	100.0	0.311	53.6	LOS D	1.6	21.4	0.97	0.74	24.9
6	R2	32	100.0	0.311	53.6	LOS D	1.6	21.4	0.97	0.74	20.2
Approach		34	100.0	0.311	53.6	LOS D	1.6	21.4	0.97	0.74	20.6
North: Moorebank Avenue (N)											
8	T1	1888	2.5	0.737	0.6	LOS A	3.7	26.2	0.07	0.06	59.2
Approach		1888	2.5	0.737	0.6	LOS A	3.7	26.2	0.07	0.06	59.2
All Vehicles		2434	4.0	0.737	2.0	LOS A	3.7	26.2	0.13	0.11	57.5

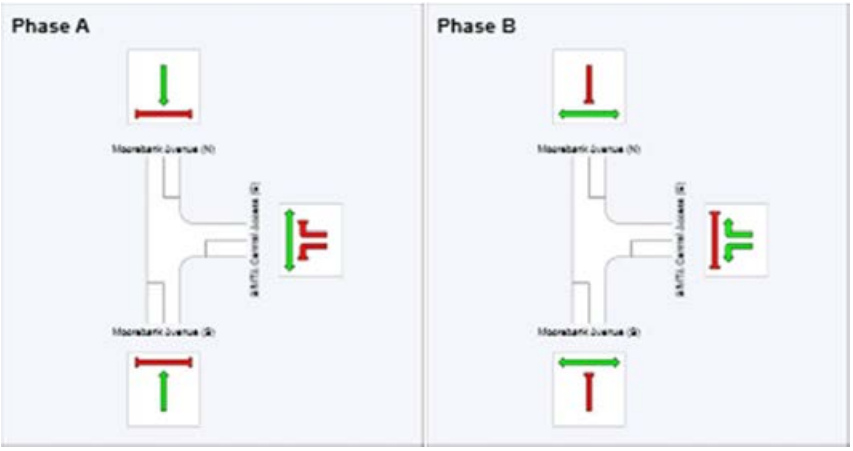
PHASING SUMMARY

Site: I-0D 2030 CUM A PM

Intersection of Moorebank Avenue and SIMTA Southern Access
2030 CUM A PM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	81
Green Time (sec)	75	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	81	19
Phase Split	81 %	19 %



AM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-0D 2030 CUM B AM

Intersection of Moorebank Avenue and SIMTA Southern Access
2030 CUM B AM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	1727	3.1	0.602	6.0	LOS A	18.9	135.8	0.50	0.46	53.4
Approach		1727	3.1	0.602	6.0	LOS A	18.9	135.8	0.50	0.46	53.4
East: SIMTA Central Access (E)											
4	L2	1	100.0	0.513	56.3	LOS D	2.2	41.4	0.99	0.78	24.1
6	R2	42	100.0	0.513	56.3	LOS D	2.2	41.4	0.99	0.78	18.3
Approach		43	100.0	0.513	56.3	LOS D	2.2	41.4	0.99	0.78	18.4
North: Moorebank Avenue (N)											
8	T1	611	3.1	0.239	0.4	LOS A	0.4	3.1	0.03	0.02	59.6
Approach		611	3.1	0.239	0.4	LOS A	0.4	3.1	0.03	0.02	59.6
All Vehicles		2381	4.9	0.602	5.5	LOS A	18.9	135.8	0.38	0.35	53.6

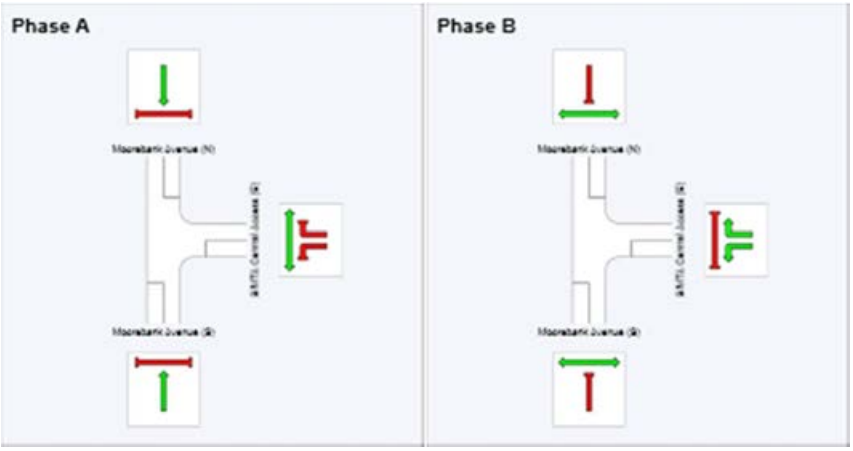
PHASING SUMMARY

Site: I-0D 2030 CUM B AM

Intersection of Moorebank Avenue and SIMTA Southern Access
2030 CUM B AM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	81
Green Time (sec)	75	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	81	19
Phase Split	81 %	19 %



PM Peak – Cumulative Scenario B

MOVEMENT SUMMARY

Site: I-0D 2030 CUM B PM

Intersection of Moorebank Avenue and SIMTA Southern Access
2030 CUM B PM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moorebank Avenue (S)											
2	T1	508	2.7	0.177	3.8	LOS A	3.5	25.0	0.31	0.26	55.7
Approach		508	2.7	0.177	3.8	LOS A	3.5	25.0	0.31	0.26	55.7
East: SIMTA Central Access (E)											
4	L2	1	100.0	0.411	55.5	LOS D	1.7	32.9	0.98	0.75	24.3
6	R2	33	100.0	0.411	55.5	LOS D	1.7	32.9	0.98	0.75	18.4
Approach		34	100.0	0.411	55.5	LOS D	1.7	32.9	0.98	0.75	18.6
North: Moorebank Avenue (N)											
8	T1	1971	2.3	0.768	0.6	LOS A	4.3	30.7	0.07	0.07	59.2
Approach		1971	2.3	0.768	0.6	LOS A	4.3	30.7	0.07	0.07	59.2
All Vehicles		2513	3.7	0.768	2.0	LOS A	4.3	32.9	0.13	0.12	57.4

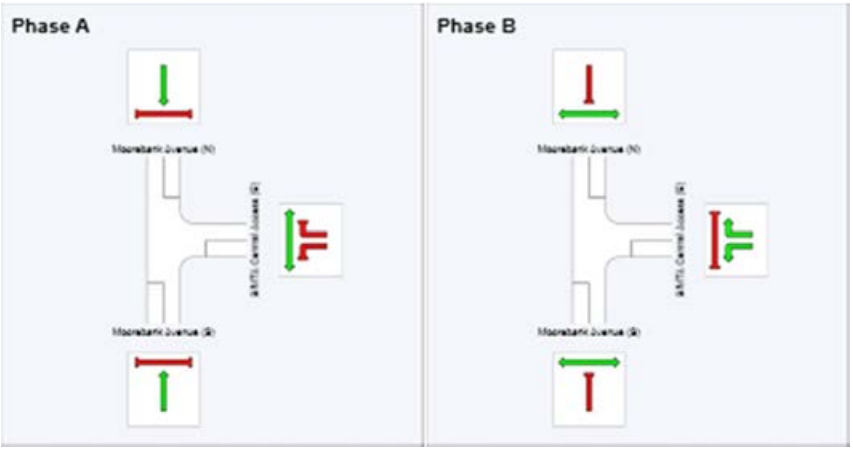
PHASING SUMMARY

Site: I-0D 2030 CUM B PM

Intersection of Moorebank Avenue and SIMTA Southern Access
2030 CUM B PM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	81
Green Time (sec)	75	13
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	81	19
Phase Split	81 %	19 %



Appendix E
Traffic and Transport Impact Assessment

Appendix L

Strategic traffic modelling report (August 2014)

Moorebank Intermodal Company

Strategic Traffic Modelling for Moorebank Intermodal Terminal

26 September 2014

PARSONS BRINCKERHOFF
A BALFOUR BEATTY COMPANY

Document information

Client: Moorebank Intermodal Company
Title: Strategic Traffic Modelling for Moorebank Intermodal Terminal
Document No: 2189293E-ITP-REP-001 RevA
Date: 26 September 2014

Rev	Date	Details
A	15/08/2014	Report

Author, Reviewer and Approver details

Prepared by:	Mihiri Elangasinghe	Date: 25/09/2014	Signature:
Reviewed by:	Brian Betts	Date: 25/09/2014	Signature:
Approved by:	John Webster	Date: 26/09/2014	Signature:

Distribution

Moorebank Intermodal Company, Parsons Brinckerhoff file, Parsons Brinckerhoff Library

©Parsons Brinckerhoff Australia Pty Limited 2014

Copyright in the drawings, information and data recorded in this document (the information) is the property of Parsons Brinckerhoff. This document and the information are solely for the use of the authorised recipient and this document may not be used, copied or reproduced in whole or part for any purpose other than that for which it was supplied by Parsons Brinckerhoff. Parsons Brinckerhoff makes no representation, undertakes no duty and accepts no responsibility to any third party who may use or rely upon this document or the information.

Document owner

Parsons Brinckerhoff Australia Pty Limited

ABN 80 078 004 798

Level 27 Ernst & Young Centre
680 George Street
Sydney NSW 2000
GPO Box 5394
Sydney NSW 2001
Australia
Tel: +61 2 9272 5100
Fax: +61 2 9272 5101
www.pbworld.com

Certified to ISO 9001, ISO 14001, OHSAS 18001

Contents

		Page number
1.	Introduction	1
1.1	Project location and study area	1
1.2	Strategic modelling scope	3
2.	Existing strategic models	4
2.1	Introduction	4
2.2	Sydney Strategic Travel Model	4
2.3	Sydney Light Commercial Vehicle Model	6
2.4	Sydney Freight Movement Model	7
2.5	Summary of strategic models	13
3.	Articulated truck demand	17
3.1	Introduction	17
3.2	Import and export demand	17
3.3	Interstate demand	18
3.4	Background traffic	19
3.5	Time profile	19
3.6	Truck distributions for Port Botany and Moorebank	19
4.	Strategic network performance	24
4.1	Introduction	24
4.2	Network performance	24

List of tables

		Page number
Table 2.1	Strategic model components	4
Table 2.2:	Official network changes	6
Table 2.3	Time period factors in LCVM	7
Table 2.4	Vehicle characteristics – Port Botany	8
Table 2.5	Operational characteristics – Port Botany	8
Table 2.6:	2031 FMM articulated truck totals to/from intermodal terminals	10
Table 2.7	STM Car/LCV trips in 2031	13
Table 2.8	LCV trips in 2031	13
Table 2.9	FMM Rigid truck trips in 2031	13

Table 2.10	FMM Articulated truck trips in 2031	14
Table 2.11:	FMM Distribution of articulated truck trips to/from Port Botany and Moorebank	15
Table 3.1	Import and export demand road based TEUS/year	17
Table 3.2	Daily Truck Movements – Round Trips	18
Table 3.3	FMM distribution of articulated trips to/from Port Botany across time periods	19
Table 3.4:	'Base Case' articulated truck distributions to/from Port Botany	21
Table 3.5:	'Project Case' articulated truck distributions to/from Port Botany	22
Table 3.6:	'Project Case' articulated truck distributions to/from Moorebank	23
Table 4.1	Comparison of vehicle kilometres travelled in 2031	26
Table 4.2	Comparison of vehicle hours travelled in 2031	27

List of figures

Page number

Figure 1.1	Project site and context	2
Figure 2.1:	Intermodal terminals	9
Figure 2.2:	Distribution of articulated truck trips from the IMT's in 2031 AM peak	11
Figure 2.3:	Distribution of articulated truck trips from the IMT's in 2031 PM peak	12
Figure 4.1	Strategic assessment corridors	25
Figure 4.2:	Comparison of articulated truck volumes ('Project Case' versus 'Base Case')	29
Figure 4.3:	Comparison of articulated truck volumes to/from Port Botany and Moorebank only ('Project Case' versus 'Base Case')	30
Figure 4.4	Percentage of articulated truck traffic to/from Moorebank (of all articulated truck flows on links – 'Project Case')	31

List of appendices

Appendix A	Strategic modelling assumptions
Appendix B	STM Network comparisons
Appendix C	Deloitte Distribution Data (by LGA)
Appendix D	Deloitte Distribution Data (by Postcode)
Appendix E	Change in articulated truck volumes on key corridors
Appendix F	Change in speed

1. Introduction

The Moorebank Intermodal Terminal (IMT) Project (the Project) involves the construction and operation of an IMT and associated commercial facilities and warehousing on a site of approximately 220 hectares. The development includes a rail connecting spur to the planned Southern Sydney Freight Line (SSFL) and road entry and exit points from Moorebank Avenue.

The primary function of the IMT is to be a transfer point in the logistics chain for shipping containers in the handling of both international IMEX cargo, and domestic interstate and intrastate (regional) cargo. The key aims of the Project are to increase Sydney's rail freight mode share including: promoting the movement of container freight by rail between Port Botany and western and south-western Sydney; and reducing road freight on Sydney's congested road network.

The Project proponent is Moorebank Intermodal Company (MIC), a Government Business Enterprise set up to facilitate the development of the Project.

The Project site is currently largely occupied by the Department of Defence's (Defence) School of Military Engineering (SME). Under the approved Moorebank Units Relocation (MUR) Project, the SME is planned to be relocated to Holsworthy Barracks by mid-2015, which would enable the construction of the Project to commence.

The key features/components of the Project comprise:

- *an IMEX freight terminal* – designed to handle up to 1.05 million TEU per annum (525,000 TEU inbound and 525,000 TEU outbound) of IMEX containerised freight to service 'port shuttle' train services between Port Botany and the Project;
- *an Interstate freight terminal* – designed to handle up to 500,000 TEU per annum (250,000 TEU inbound and 250,000 TEU outbound) of interstate containerised freight to service freight trains travelling to and from regional and interstate destinations; and
- *warehousing facilities* – with capacity for up to 300,000 square metres (m^2) of warehousing to provide an interface between the IMT and commercial users of the facilities such as freight forwarders, logistics facilities and retail distribution centres.

The proposal concept described in the main EIS (refer Chapters 7 and 8) provides an indicative layout and operational concept for the Project, while retaining flexibility for future developers and operators of the Project. The proposal concept is indicative only and subject to further refinement during detailed design. The EIS considers three rail access options for the site.

1.1 Project location and study area

The Project is situated in the Sydney suburb of Moorebank; NSW located approximately 35 km south west from the centre of Sydney and approximately 2 km south of Liverpool CBD. It is located in the Liverpool City Council (LCC) Local Government Area (LGA). The site is bounded by Moorebank Avenue to the east, the East Hills Railway Line to the south, the Georges River to the west and the ABB (a power and automation technology manufacturer) and the M5 South Western Motorway to the north. The M5 provides access to other Sydney motorways, with the M7 interchange approximately 5 km by road west of the proposed site.

The Southern Sydney Freight Line has been constructed on the western side of the Georges River along the South Line/Bankstown Line and would be used to service the terminal by rail.

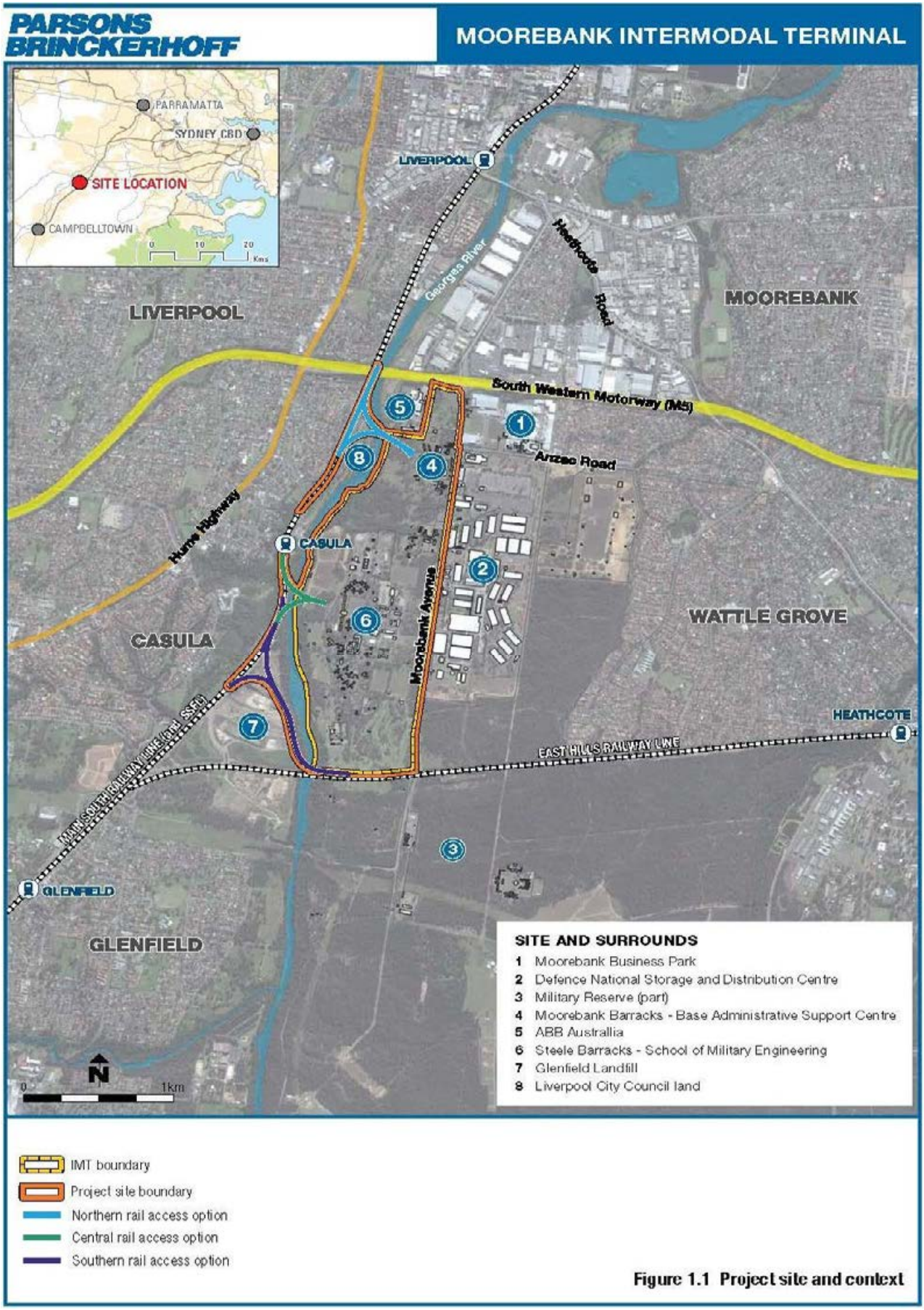


Figure 1.1 Project site and context

1.2 Strategic modelling scope

This report describes the strategic modelling which has been undertaken to provide forecasts input for the transport and accessibility impact assessment. The key output from the strategic model is the changes in the level of articulated truck movements on the local and the wider strategic road network as a consequence of the Project. The strategic level changes are to be based on the differences between the 'Project Case' compared to 'Base Case' scenarios which represents the operation of the road network with and without the Project.

Since the reduction of trucks vehicle kilometres on the roads is one of the projects main goals, the extent to which this goal could be achieved is investigated and reported. This is based around the premise that the Moorebank IMT is an effective means for managing future growth in congestion.

The wider operation of the network can be assessed by considering the metrics of vehicle kilometres travelled (VKT) and vehicle hours travelled (VHT) that together represent the change in usage of the road network. The strategic modelling considers the operation of the Moorebank IMT for the following:

- Planning years (2018 and 2030)
- Time periods (Two hours AM peak , and total daily)
- Class of vehicles (Articulated trucks, and background traffic)
- Traffic on impacted corridors including the M5,M7,and F3 motorways as well as Hume Highway/Cumberland Highway, Foreshore Road, General Holmes Drive and Pennant Hills Road

2. Existing strategic models

2.1 Introduction

Strategic modelling has been undertaken to investigate the traffic related changes associated with the Moorebank IMT Project. This analysis has been based on utilising the Transport for New South Wales (TfNSW) strategic models to examine the projected changes on truck volumes resulting from the operations of the 'Project Case' as compared to the 'Base Case' without the Project.

The travel demand sources available to the study include:

- Sydney Strategic Travel Model (STM)
- Light Commercial Vehicle Model (LCVM)
- Freight Movement Model (FMM) for rigid and articulated commercial vehicles

These three components provide the travel demand across the highway network. The supply of highway network has been based on:

- Roads and Maritime Services (RMS) highway network as used in the STM.

These four data sources are outlined in Table 2.1.

Table 2.1 Strategic model components

Demand / Supply	Data	Class of vehicles	Sources
Demand	Background traffic	Car	STM
		Light commercial vehicle	LCVM
		Rigid trucks	FMM
		Articulated trucks (non Port Botany and Moorebank IMT)	FMM
	Port Botany and Moorebank IMT	Articulated trucks	FMM
Supply	Highway Network	All	RMS networks as used in the STM highway assignment

These data sources have all been developed with the same geographic coverage and modelling zoning system (2006 travel zones) to provide a compatible set of travel demand trip tables. An overview of each of these models is provided in the following sections.

2.2 Sydney Strategic Travel Model

The Sydney Strategic Travel Model (STM) is a State Government model that is owned and operated by BTS an independent entity with TfNSW. The STM has been developed over the last 15 to 20 years to represent the movement of people in Sydney Greater Metropolitan Area (GMA), Newcastle and Illawarra. The study area encompasses nearly 5.5 million people (2010) and represents some 20 million trips on a typical weekday (2010).

The STM is the States Government strategic forecasting tool used to support the evaluation of:

- Major infrastructure changes;
- Different population/employment growth and distribution scenarios;
- Service change;
- Pricing change; and
- Policy change.

The STM currently contains a series of demographic and behavioural models which collectively produce estimates of home based travel by travel purpose. The key attributes of the STM are as follows:

- Travel demand is modelled as person tours
- Tour-based models reflect the relationships and constraints between individual trips in terms of mode and destination choices.
- A tour in the STM is any travel from home to a primary destination and back to home. For example, while most employed people will only have one work tour on a working day, those who return home for lunch will have two tours. The Household Travel Surveys (HTS) indicates that in 92% of cases, the outward and return leg of a work tour are symmetrical in terms of mode, so for modelling purposes, symmetry is assumed.
- The tours modelled in the STM do not include any side trips made along the way, and any non-home-based tours. For example, someone on the way to work may drop off children at the school, then, during work may go to a meeting at another location then back to the primary work place, and after work may go shopping before returning to home. These side trips are currently modelled in the STM for car driver mode by factoring the tours by purpose using factors based on the HTS.

The model is implemented in two stages as follows:

- Population Model – the population is segmented into groups based on socio-demographics that influence travel choices, as well as on the basis of car ownership and licence holding. These segments are grown into the future based on population, employment and other projections and trends. This segmentation occurs at the model wide level and the travel zone level.
- Travel Model – a series of travel models in EMME have been developed that represent travel by purpose, of travel frequency, mode and destination choice, calibration based on the Journey-to-Work and HTS data, addition of freight movements, and assignment of travel to the road and public transport networks.

The process is further documented in the ‘Sydney Strategic Travel Model (STM) – Modelling future travel patterns – February 2011 Release – Bureau of Transport Statistics.

The net result of the process is that the STM together with the LCVM and FMM provide traffic forecasts for vehicles on the road network. This demand is estimated at a 24 hour level and then is allocated to four model time periods as follows:

- AM peak (0700-0900)
- Inter peak (0900-1500)
- PM peak (1500-1800)
- Evening/night time period (1800-0700)

The STM has been supplied to the study from BTS and the assumptions relating to this model are detailed in Appendix A.

The STM was supplied with a 2011 base year and future networks for 2016 to 2041 in five year increments. Table 2.2 lists the changes that the STM road network should contain as per the documentation supplied with the model. It is noted that the form/alignment of some of the projects identified in Table 2.2 may differ from the latest planning documentation and this is because the detailed investigations around these projects are still underway.

Table 2.2: Official network changes

Year	Road	Detail
2016	Hunter Motorway	Four-lane expressway from F3 to Branxton
	M2 widening	Widening from Windsor Road to Delhi Road
	M5 widening	Widening Camden Valley Way to King Georges Road
	Western Sydney Employment Hub	Link Roads to the M7 Motorway
	Great Western Highway widening	Widening the highway to four/three lanes between Emu Plains and Mount Victoria.
	South West Rail Link via East Hills	There are some changes to the road network around Edmondson Park that are likely to be related to this project (i.e. links to rail stations, etc.).
2021	WestConnex Stage 1: M5 East Duplication	Duplication from M5 East to King Georges Road It is noted that the changes included in the 2021 network extend to parts of the WestConnex project beyond the M5 East duplication such as the Sydney Airport Access Link, etc (as per the WestConnex – Sydney's next motorway priority, October 2012, RMS document).
	North West Rail Link to Rouse Hill	There are changes to the 2021 model road network around Kellyville which is likely to be associated with this project.
2026	WestConnex Stage 2: M4 Extension and M4 Widening	M4 widening and extension from Parramatta to Haberfield
	NW Growth Centre	The 2026 model road network includes changes to links in the area to the north west of the M7 which are likely to be related to this project.
2031	M2 to F3 Tunnel	Connection between M2 and F3 at Wahroonga
	SW Growth Centre	This is seen in the model as various network changes (i.e. new links, upgraded links, etc) to the west of the Hume Highway and the M7.

The changes between each of the forecast years are shown in Appendix B. However there are changes to the road network which are not covered in Table 2.2 (i.e. not discussed in the documentation provided with the model). The most notable of these changes is the extension of Cambridge Avenue to Campbell Town Road which first appears in 2026 and is also present in the 2031 network. This is the only change that is likely to have a significant bearing on the results of the investigations relating to the Moorebank Intermodal Terminal Development. Discussions with Roads and Maritime Services Indicate that this extension is not currently part of the future 2031 network. Therefore the modelling undertaken for this study has removed this extension from the model network.

2.3 Sydney Light Commercial Vehicle Model

Similar to the STM the Sydney Light Commercial Vehicle Model (LCVM) is owned and operated by BTS an independent entity within TfNSW. The model has been developed ton the same premise as the STM as a strategic forecasting tool used to support the evaluation of transport interventions.

The LCVM produces light commercial vehicle demand based on the Austroads vehicle classes 1 and 2 that relate to light commercial vehicle movements such as delivery vans. The model coverage is the same as the STM and includes the Sydney Greater Metropolitan Area (GMA), Newcastle and Illawarra. The model is calibrated to a 2011 base year, and produces forecasts at five yearly intervals to 2046. To maintain consistency, the LCVM is based around the 2006 travel zone system and utilises the same population and employment data as the STM.

The LCVM is based on a trip attraction / production modelling combined with a trip distribution model. The trip attraction model is based on the zonal level details for

- household forecasts based on August 2012 Release: BTS Population Forecasts
- employment forecasts based on August 2012 Release: BTS Employment Forecasts
- trip attraction rates for households, office, industrial, retail and hospitality based on Service Vehicle Attraction Rate study, 1999 (SVAR)and the LCV Trip Attraction Rates study, 2009 (LTAR)

The trip production is based on assuming the over a 24 hour period that each zones produces the same numbers as it attracts. The trip distribution model is based on a gravity model that uses the trips attracted and produced by each zone in conjunction with a friction factor that combines travel times with calibrated parameters that align with the trip distribution observed in the base year. The 24 hour trip matrices are converted to the four model periods based factors derived from the LCV Trip Attraction Rates study, 2009 (LTAR).

Table 2.3 Time period factors in LCVM

	AM peak (0700-0900)	Inter peak (0900-1500)	PM peak (1500-1800)	Evening / Night Time (1800-0700)
Proportion of 24 hour demand	0.16	0.61	0.13	0.10

Due to the nature and to some extent ambiguities of LCVs, there is a risk of double-counting, since the STM car demand actually includes ‘some’ LCV trips in its estimates of total travel movements, through the data provided from the Household Travel Survey (HTS). While this HTS data for LCVs provides a wealth of detailed information for use in the STM, it does not necessarily provide the most accurate estimate of total LCV movements. Fundamentally, the HTS sample is household (not business) based and the survey expansion variables used are designed to optimize the accuracy of trips for personal (not business) travel. With the February 2014 release of LCVM forecasts, BTS compared the 2011 base year LCVM estimates with HTS estimates. The key finding from this analysis was that, for 2011, the HTS captured 35% of total LCV movements. As a result, the LCVM estimates should be factored by 0.65 (65%) to take into account the overlap in travel demand in the LCVM matrices with the STM car demand. Further details of the LCVM as provided by BTS are provided in Appendix A.

2.4 Sydney Freight Movement Model

Similar to the STM the Sydney Freight Movement Model (FMM) is owned and operated by BTS an independent entity within TfNSW. The model has been developed ton the same premise as the STM as a strategic forecasting tool used to support the evaluation of transport interventions.

The FMM produces heavy commercial vehicle demand based on the splitting demand between rigid and articulated vehicles. The model coverage is the same as the STM and includes the Sydney Greater Metropolitan Area (GMA), Newcastle and Illawarra. The model is calibrated to a 2011 base year, and produces forecasts at five yearly intervals to 2036. To maintain consistency, the FMMs based around the 2006 travel zone system and utilise the same employment data as the STM.

The FMM consists of a number of sub-models as follows:

- Production (and consumption) models which estimate freight produced (and consumed) based on employment and other data.
- A two stage distribution model which estimates freight movements based upon distribution patterns between industry classes, and then between freight areas based on accessibility (employment and travel time).
- Freight vehicle trip models which estimate the number of trips of different mode types given this freight distribution.
- Vehicle assignment model based on assigned the vehicle demand onto the STM network, which estimate the volume of freight vehicles on road sections, given the freight vehicle trip distribution.

The assignment to the road network is based on allocating loads to either rigid or articulated heavy vehicles, which are then assigned to the road network. This method is used for the estimating of heavy goods movements across the strategic model area except for special generators.

The method is revised for special generators such as Port Botany. The movement of freight to and from Port Botany is driven by the growth of import and export activities which is projected to rise at rates above those for general freight movements. This has been recognised in the FMM together with the role of intermodal terminals have in servicing the movement of freight to and from Port Botany. The operation of Ports are typically measured in twenty-foot equivalent unit (TEUs) containers, with Port Botany set to expand from its current 2 million TEUs in financial year 2011/12 to over 7 million TEUs by 2031.

The assumed Port Botany of freight vehicle split between rigid and articulated, the level of back-loading and TEU's per truck are shown in Table 2.4.

Table 2.4 Vehicle characteristics – Port Botany

Vehicle characteristics	2011	2021	2031	2041
Rigid vehicle (% of Total HV)	9%	9%	9%	9%
Articulated vehicle (% of Total HV)	91%	91%	91%	91%
Back-loading	11.3%	13.8%	16.3%	18.8%
TEUs/Truck (laden movements)	2.04	2.14	2.16	2.18
TEUs/Rigid	1.00	1.00	1.00	1.00
TEUs/Articulated	2.14	2.25	2.27	2.30

The assumed level of daily operation and split of movements over the day for Port Botany in the FMM are shown in Table 2.5.

Table 2.5 Operational characteristics – Port Botany

Operational characteristics	2011	2021	2031	2041
Annual Operational Days	303	313	323	333
AM peak (0700-0900)	13.3%	13.3%	11.9%	9.2%
Inter peak (0900-1500)	41.1%	41.1%	37.3%	27.6%
PM peak (1500-1800)	15.0%	17.1%	16.8%	13.8%
Night time (1800-0700)	30.6%	28.6%	34.0%	49.4%

Port Botany is assumed to be serviced by rail using the following inter modal terminals, and the FMM also includes the other IMT (in addition to Moorebank):

- Minto (TZ2006 = 1261)
- Yennora (TZ2006 = 1826)
- Enfield (TZ2006 = 1598)
- Moorebank (TZ2006 = 1120)
- Eastern Creek (TZ2006 = 2185)

The locations of these zones in the model is shown in Figure 2.1.

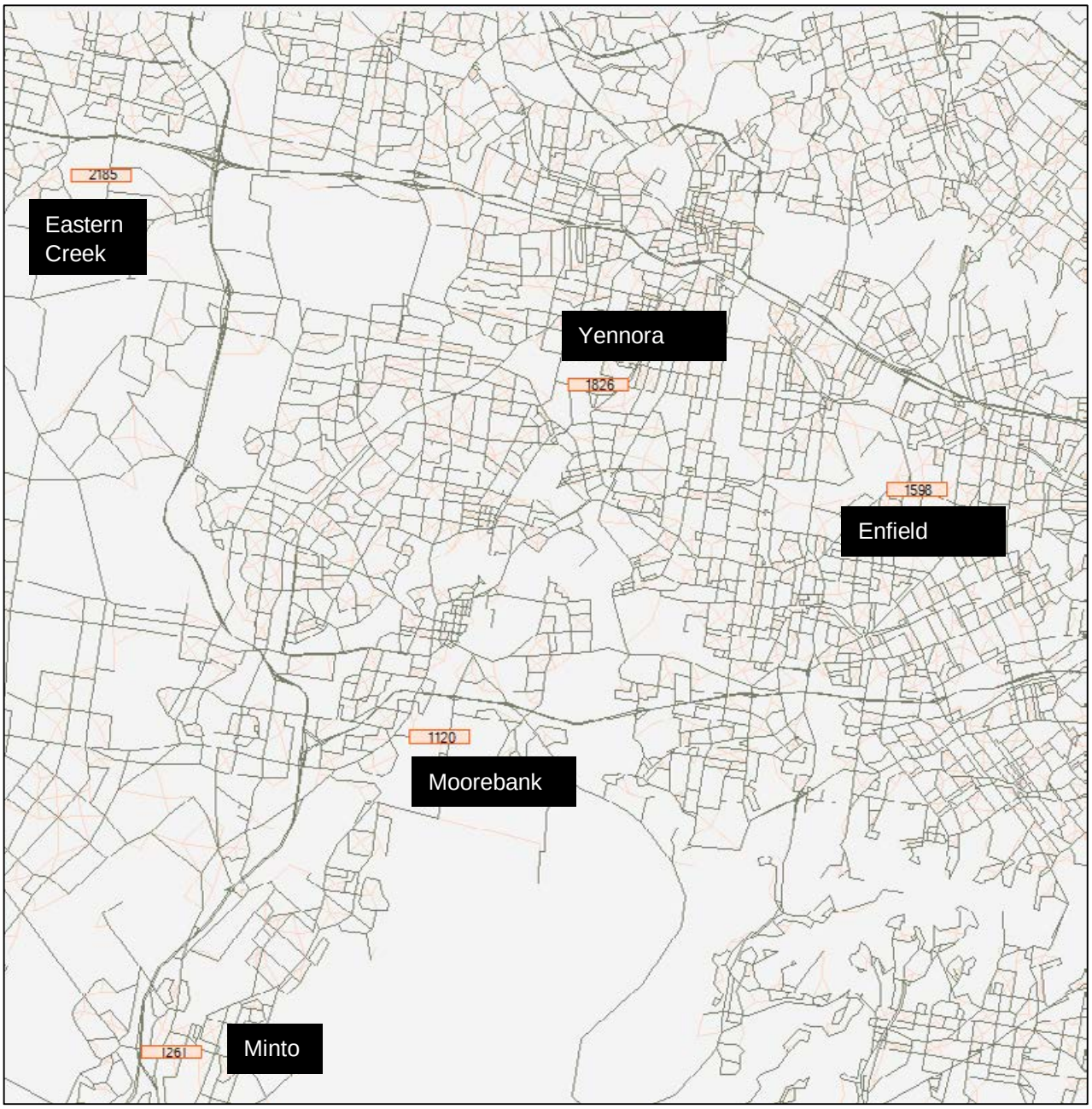


Figure 2.1: Intermodal terminals

The articulated truck demand to and from the intermodal terminals in the FMM is shown in Table 2.6. The Moorebank IMT has significantly more truck movements than any of the other IMT's with Eastern Creek having the second highest volume of freight movements.

Table 2.6: 2031 FMM articulated truck totals to/from intermodal terminals

Site	Movement	AM peak (0700-0900)	Inter peak (0900-1500)	PM peak (1500-1800)	Evening / Night Time (1800-0700)	Daily Total
Minto	From	28	94	40	76	238
	To	29	97	39	79	244
Yennora	From	28	96	36	77	237
	To	25	88	39	70	222
Enfield	From	10	33	13	26	82
	To	9	33	14	27	82
Eastern Creek	From	44	151	60	121	376
	To	43	144	61	122	371
Moorebank	From	136	466	194	372	1,168
	To	139	476	190	379	1,184

Figures 2.2 and 2.3 show the distribution of articulated trucks from each of the intermodal terminals (IMT's) in the AM and PM peaks respectively in the FMM. These figures show that there is some overlap between the IMT catchments; Moorebank and Minto are the first and second most popular origins/destinations for freight in the model respectively. Freight movements to/from other intermodal terminals are significantly lower.

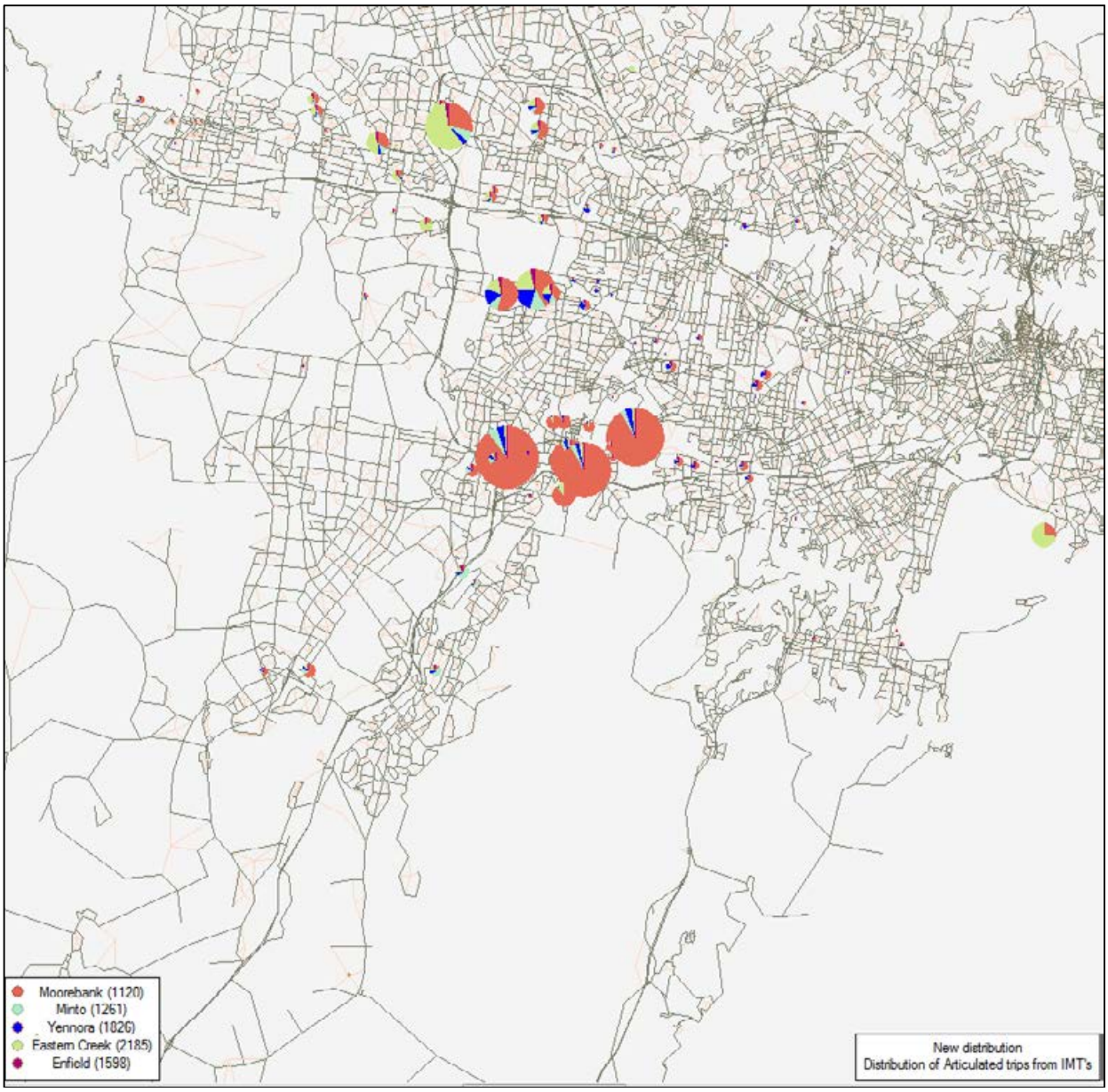


Figure 2.2: Distribution of articulated truck trips from the IMT's in 2031 AM peak

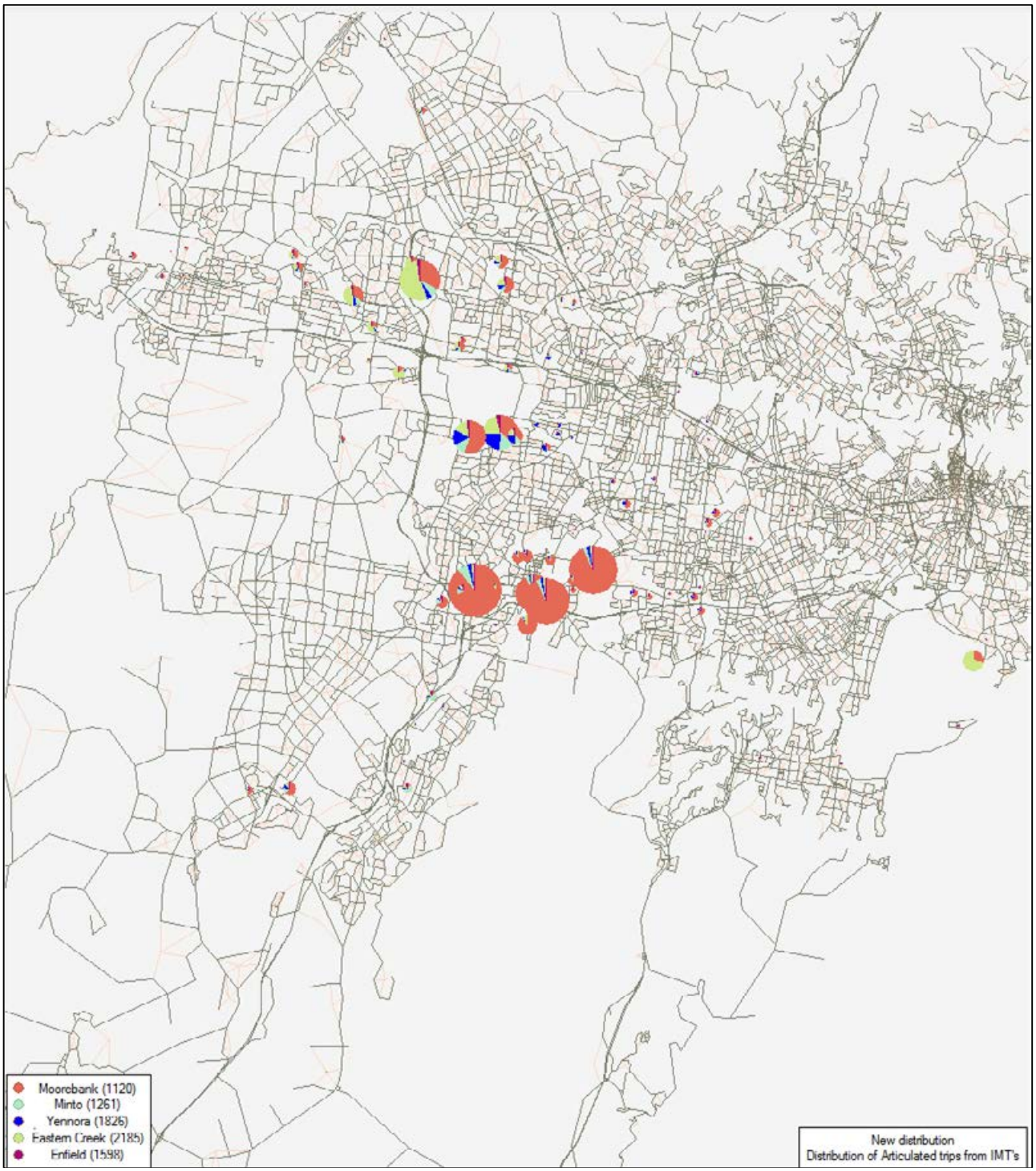


Figure 2.3: Distribution of articulated truck trips from the IMT's in 2031 PM peak

2.5 Summary of strategic models

The strategic models provided by BTS have been reviewed to identify the scale of trip making related to the model has a whole and specifically related to the movements to/from the zones representing the Moorebank IMT and Port Botany zones (i.e. Zone 1120 represents the Moorebank IMT and zones 426 and 556 represent Port Botany).

The scale of the trips for car, LCV, rigid and articulated trucks for the whole of the model and for movements to and from Moorebank and Port Botany are shown in Tables 2.6 to 2.9.

Table 2.7 STM Car/LCV trips in 2031

Movement	AM peak (0700-0900)	Inter peak (0900-1500)	PM peak (1500-1800)	Evening / Night Time (1800-0700)	Daily Total
Total Trips	2,419,566	4,591,602	3,738,389	3,473,856	14,223,413
From Moorebank	153	756	1,433	870	3,212
To Moorebank	1,246	861	335	774	3,216
From Port Botany	120	792	1,757	1,035	3,704
To Port Botany	1,584	948	302	858	3,692

Table 2.8 LCV trips in 2031

Movement	AM peak (0700-0900)	Inter peak (0900-1500)	PM peak (1500-1800)	Evening / Night Time (1800-0700)	Daily Total
Total Trips	171,851	655,183	139,629	105,658	1,072,320
From Moorebank	84	320	68	53	524
To Moorebank	83	320	69	50	522
From Port Botany	99	378	80	63	619
To Port Botany	97	380	81	63	620

Table 2.9 FMM Rigid truck trips in 2031

Movement	AM peak (0700-0900)	Inter peak (0900-1500)	PM peak(1500-1800)	Evening / Night Time (1800-0700)	Daily Total
Total Trips	45,391	147,390	57,329	81,411	331,521
From Moorebank	60	323	125	177	684
To Moorebank	101	329	126	183	738
From Port Botany	95	263	132	402	891
To Port Botany	119	389	149	212	868

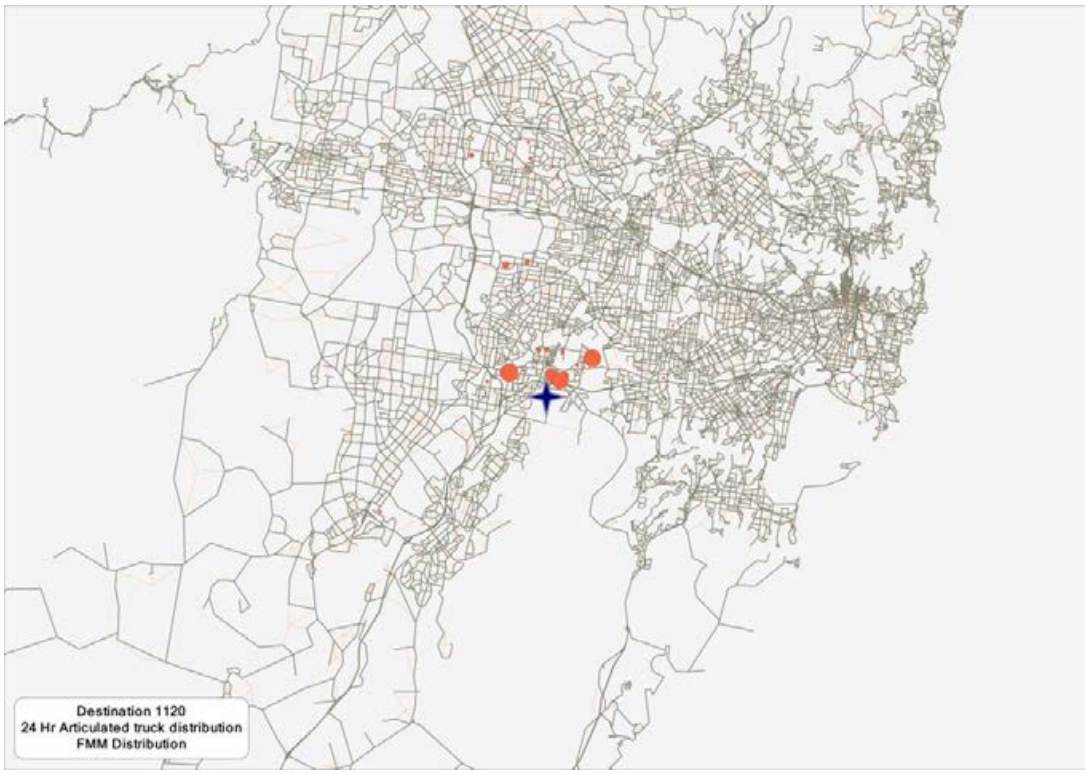
Table 2.10 FMM Articulated truck trips in 2031

Movement	AM peak (0700-0900)	Inter peak (0900-1500)	PM peak (1500-1800)	Evening / Night Time (1800-0700)	Daily Total
Total Trips	17,463	59,203	24,377	48,956	149,998
From Moorebank	136	466	194	373	1,168
To Moorebank	139	476	190	379	1,184
From Port Botany	786	2,187	1,097	3,344	7,414
To Port Botany	836	2,860	1,209	2,287	7,192

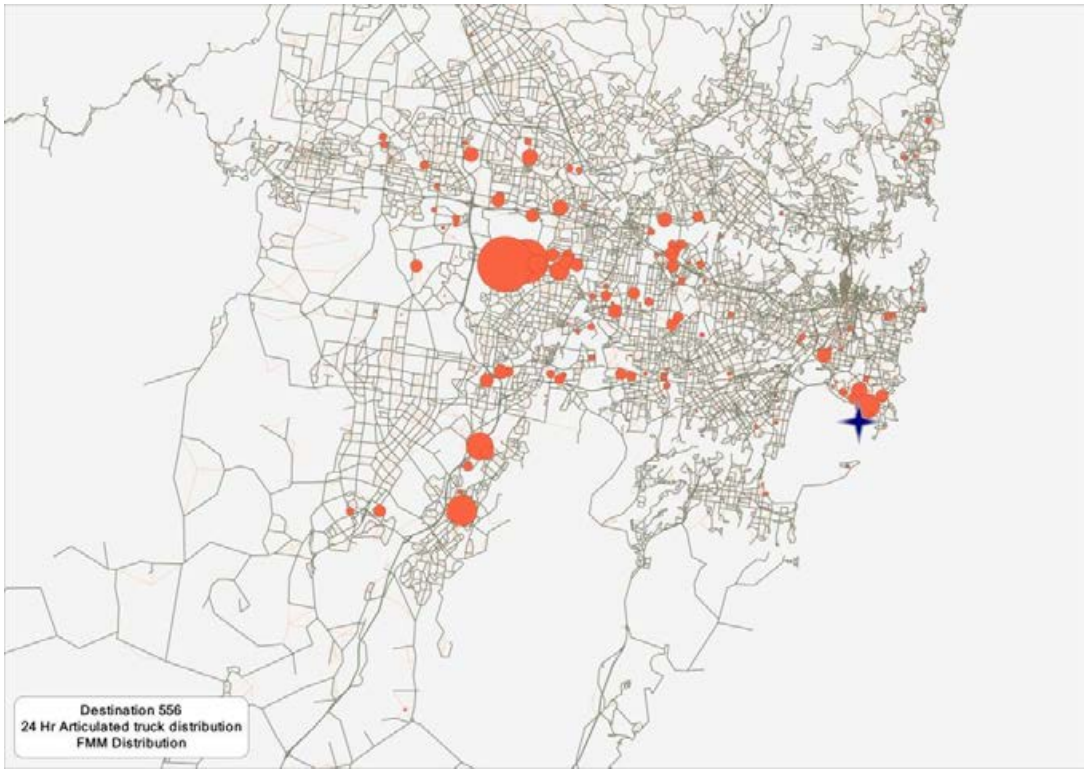
The daily distribution of origins and destinations for articulated trucks to and from Moorebank and Port Botany as represented in the 2031 FMM matrices are shown in Table 2.10. The distribution of articulated trucks to and from the Moorebank zone in the FMM is localised and generally relates to locations within 2 to 3 kilometres of the intermodal terminal. The distributions of articulated trucks to and from the Port Botany zone in the FMM has a wider distribution (than for Moorebank) across the greater Sydney area, and many of the articulated truck trips travel between the industrial precinct at Wetherill Park (just north of Moorebank IMT) and Port Botany.

Table 2.11: FMM Distribution of articulated truck trips to/from Port Botany and Moorebank

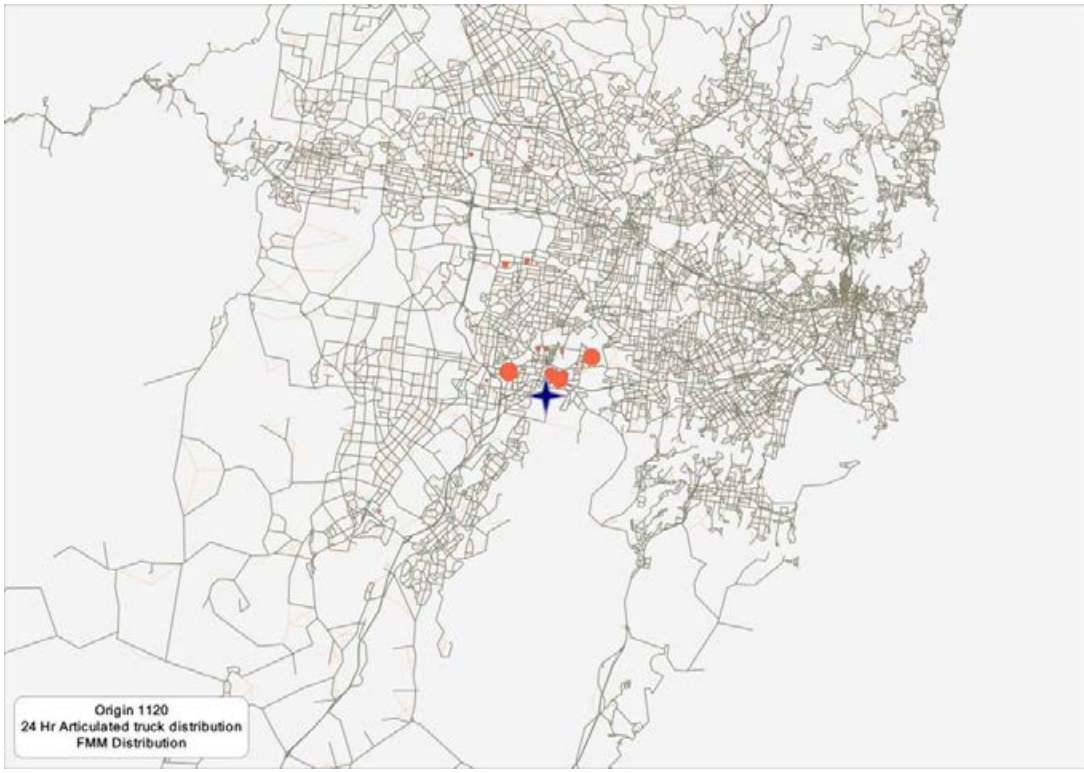
To Moorebank



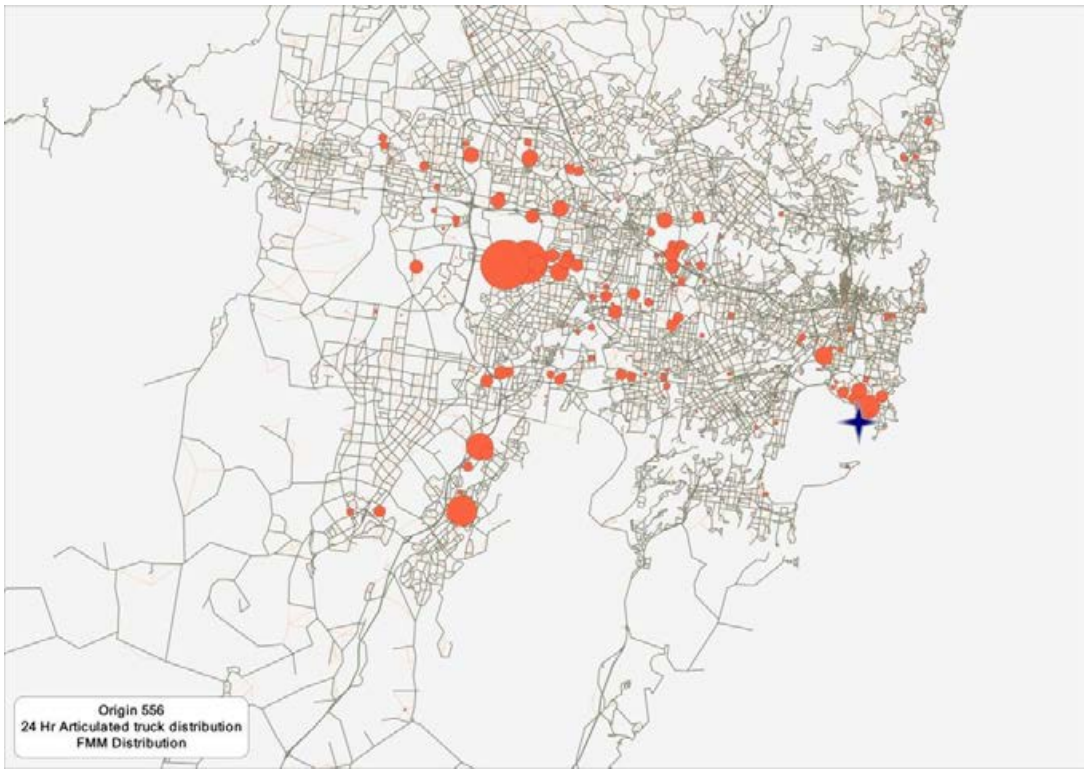
To Port Botany



From Moorebank



From Port Botany



3. Articulated truck demand

3.1 Introduction

The strategic models provide the framework for the analysis of the strategic traffic changes relating to the provision of the Moorebank Intermodal Terminal Project.

Deloitte were commissioned to undertake the task of determining the impact of the opening of Moorebank Intermodal terminal and assess the resulting articulated truck movements to and from Port Botany and Moorebank. To carry out this task Deloitte employed economic modelling to project future import and export demand and distribution across the Sydney metropolitan area. The information supplied related to the following scenarios:

- 'Base Case' : Port Botany operating without Moorebank Intermodal Terminal
- 'Project Case' : Port Botany operating without Moorebank Intermodal Terminal

The level of import and export activity is outlined below together with the related truck movements.

3.2 Import and export demand

The assumed level of import and export activity on the road network related to the port and Moorebank Intermodal Terminal is summarised in Table 3.1.

Table 3.1 Import and export demand road based TEUS/year

Scenario	2018	2020	2025	2030	2035	2040
'Base Case'						
Port Botany	1,574,677	1,787,546	2,414,936	3,206,501	4,205,204	5,465,247
'Project Case'						
Port Botany	1,468,186	1,368,107	1,366,106	2,157,671	3,156,374	4,416,417
Moorebank	106,491	419,439	1,048,830	1,048,830	1,048,830	1,048,830
Total	1,574,677	1,787,546	2,414,936	3,206,501	4,205,204	5,465,247
Supplied by Deloitte – Appendix C provides the distribution of TEU locations by Local Government Area						

This demand is assumed to be distributed on to the road network with both Port Botany and Moorebank operating 7 days per week and for 50 weeks a year resulting in yearly TEUs being divided by 350 to give daily operations.

The level of TEUs shown in Table 3.1 were then converted to truck movements based on allocating loads to articulated and B-Double trucks. This was undertaken by Deloitte's and supplied to Parsons Brinckerhoff in the form of truck movements specific to Port Botany and Moorebank for the 'Base Case' and 'Project Case' scenarios as shown in Table 3.2.

Table 3.2 Daily Truck Movements – Round Trips

Scenario	Vehicle Type	2018	2020	2025	2030	2035	2040
'Base Case'							
Port Botany	Semi-trailer	1,566	1,892	2,402	3,190	4,183	5,436
	B-Double	696	790	1,068	1,418	1,859	2,416
	Total	2,262	2,682	3,470	4,608	6,042	7,852
'Project Case'							
Port Botany	Semi-trailer	1,460	1,361	1,359	2,146	3,140	4,393
	B-Double	649	605	604	954	1,395	1,953
	Total	2,109	1,966	1,963	3,100	4,535	6,346
Reduction to Port Botany		153	716	1,507	1,508	1,507	1,506
Moorebank	Semi-trailer	127	499	1,248	1,248	1,248	1,248
	B-Double	21	83	208	208	208	208
	Total	148	582	1456	1456	1456	1456
Total	Semi-trailer	1,587	1,860	2,607	3,394	4,388	5,641
	B-Double	670	688	812	1,162	1,603	2,161
	Total	2,257	2,548	3,419	4,556	5,991	7,802

Supplied by Deloitte, Appendix C provides the distribution of daily truck movements by Local Government Area

Note: 1 round trip results in the trip matrices of 1 trip to the site and 1 trip from the site.

The forecast truck movements supplied by Deloitte does not align with the strategic model years and therefore the demand in Table 3.2 for 2030 and 2035 has been interpolated to estimate truck movements in 2031. Since the Moorebank Intermodal Terminal import and export movements remain unchanged from 2025 the interpolation only applies to movements relating to Port Botany. The daily truck movements in Table 3.2 have been incorporated as articulated trips within the FMM trip matrices for the assignment process by replacing the original trips with the quantum and distribution defined by Deloitte. The remaining articulated trip movements remain unchanged.

3.3 Interstate demand

The Moorebank Intermodal Terminal is assumed to capture the interstate movements from Chullora once it closes from 2030 onwards. In the 'Base Case' it is assumed that Chullora continues to operate with a capacity of 350,000 TEUs per annum. In the 'Project Case' case it is assumed that Chullora closes from 2030 and that the freight activities transfer to Moorebank. The level of truck trips related to the transfer of the interstate traffic to Moorebank is as follows:

- 410 daily truck movements in 2030
- 430 daily truck movements in 2035
- 460 daily truck movements in 2040

The road based freight trips that service Chullora are assumed to move to Moorebank with the distribution remaining the same as those used in the FMM when Chullora was operational.

3.4 Background traffic

Other vehicles utilise and impact on the operation of the road network. This is known as the background traffic since it does not change with respect to the 'Base Case' and 'Project Case' scenarios. This traffic is comprises cars, LCVs, rigid and articulated goods vehicles. This traffic has been sourced from the STM, LVC and FMM trip matrices and is assigned to the road networks provided.

3.5 Time profile

The strategic modelling for the project has utilised the time periods that are compatible with the STM structure which is based on modelling the travel demand for the following four time periods:

- AM peak (0700-0900)
- Inter peak (0900-1500)
- PM peak (1500-1800)
- Evening/night time period (1800-0700)

The Moorebank Intermodal Terminal is expected to operate 24 hours per day from 2030 onwards.

To distribute the total daily volume of IMEX traffic to/from Port Botany and Moorebank specified by Deloitte across the four model time periods, it was assumed that these distributions would follow the same pattern as IMEX traffic to/from Port Botany across the time periods in the FMM model (see Table 3.3).

Table 3.3 FMM distribution of articulated trips to/from Port Botany across time periods

	AM Peak	Inter-peak	PM Peak	Evening period
From Port Botany	11%	29%	15%	45%
To Port Botany	11%	40%	17%	32%

Interstate traffic was assumed to have a uniform hourly arrival/departure profile. This was due to the longer distances that interstate trucks are required to travel and the greater likelihood that the arrival/departure of these trucks would be more random (and therefore equally likely to occur at any time of the day) than traffic travelling from within the Sydney area.

Background traffic is assumed to have the time profiles as defined in the strategic models.

3.6 Truck distributions for Port Botany and Moorebank

The truck distribution for the movement of freight to Port Botany and Moorebank as presented in Tables 3.1 and 3.2 is based on the following assumptions.

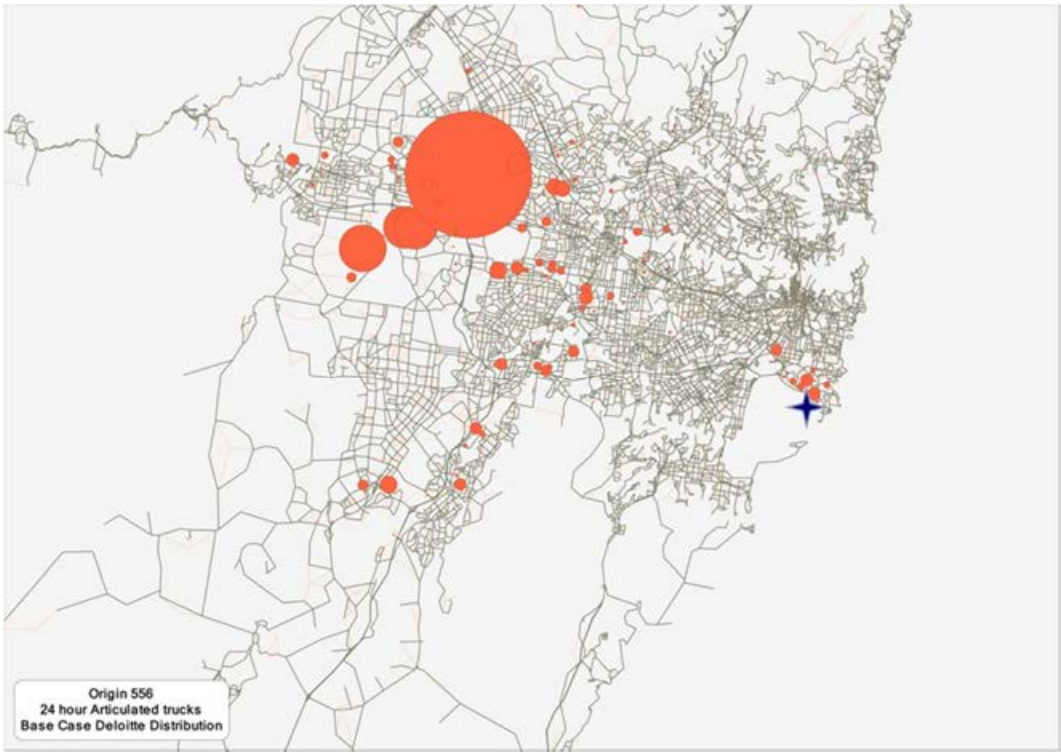
- Import and export movements are to be based on the demand split defined by Deloitte for each of the Local Government Areas (LGA) within the Sydney Greater Metropolitan Area (GMA).
- For the six of the LGA's with the highest proportion of trips to/from Moorebank (i.e. Penrith, Blacktown, Liverpool, Fairfield, Campbelltown and Camden) a further breakdown by postcode was provided by Deloitte. Details of this breakdown by postcode are provided in Appendix D.
- Within each LGA (or postcode where provided) it is assumed that the trips are spread across each of the Travel Area Zones (TAZ) in line with the FMM distribution.

- Interstate trucks are assumed to have the ultimate trip end (origin/destination) that reflect the FMM forecast share for the Chullora facility.

The daily distribution of truck movements to and from Port Botany in the 'Base Case' scenario is shown in Table 3.4, while for the 'Project Case' scenario is shown in Table 3.5 and 3.6 for Port Botany and Moorebank. These distributions relate to the movement of truck trips to the strategic model zone.

Table 3.4: 'Base Case' articulated truck distributions to/from Port Botany

From Port Botany



To Port Botany

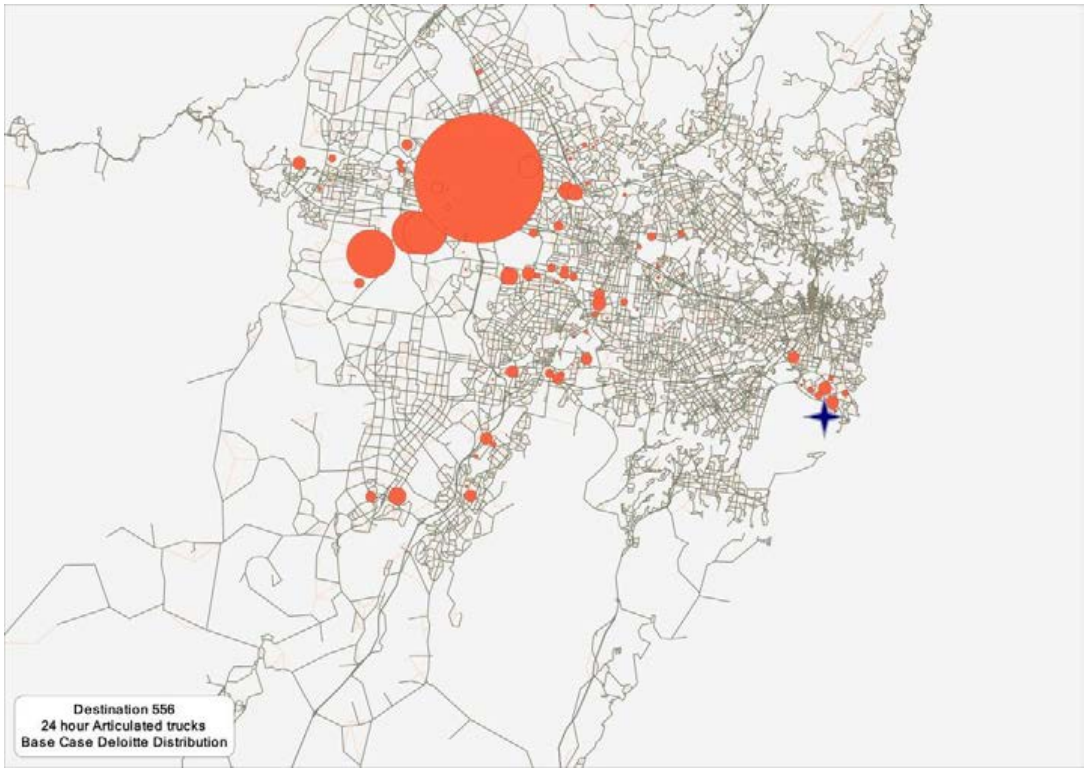
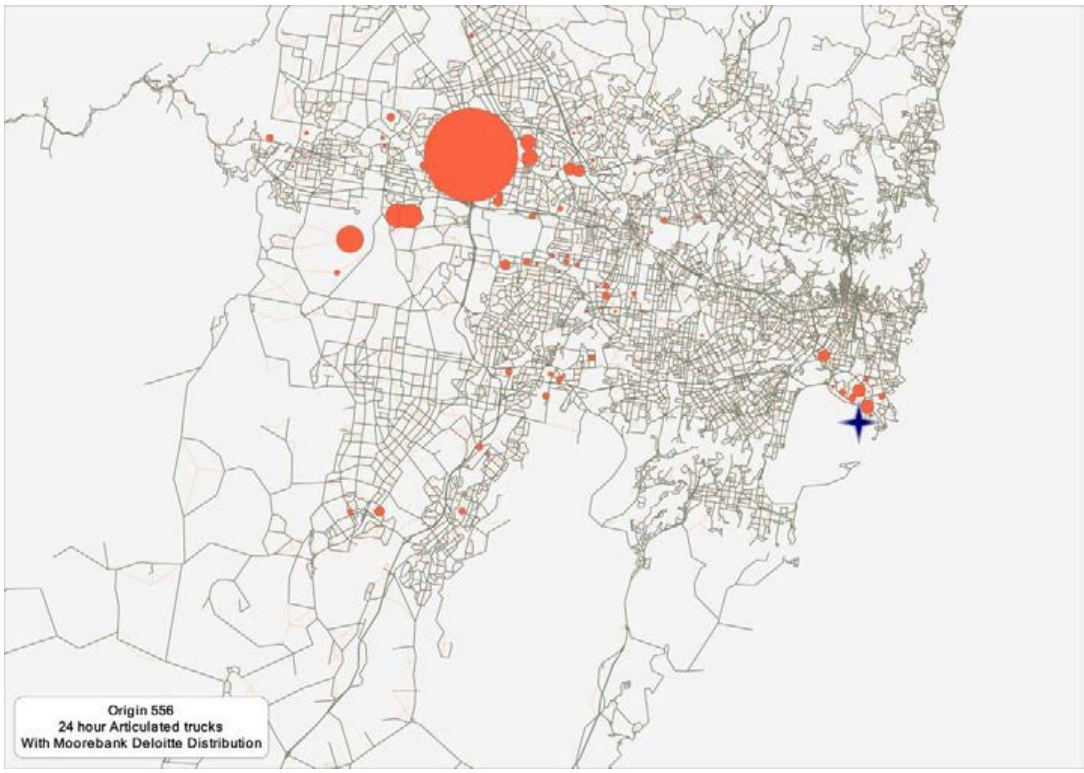


Table 3.5: 'Project Case' articulated truck distributions to/from Port Botany

From Port Botany



To Port Botany

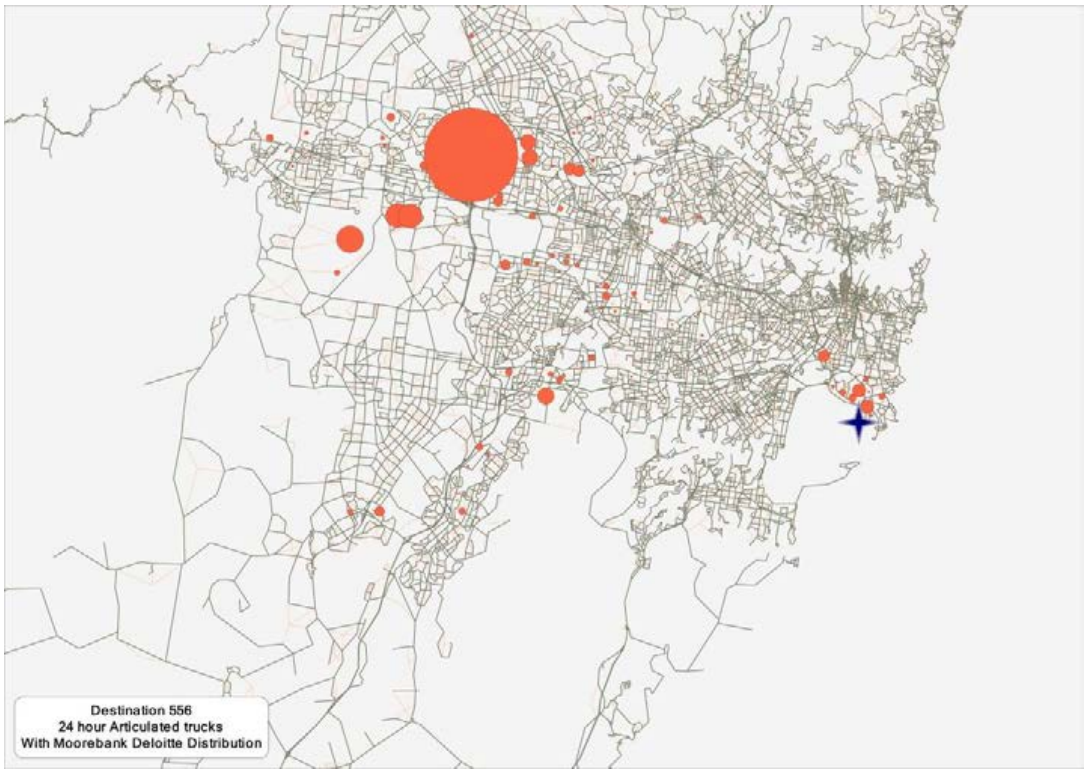
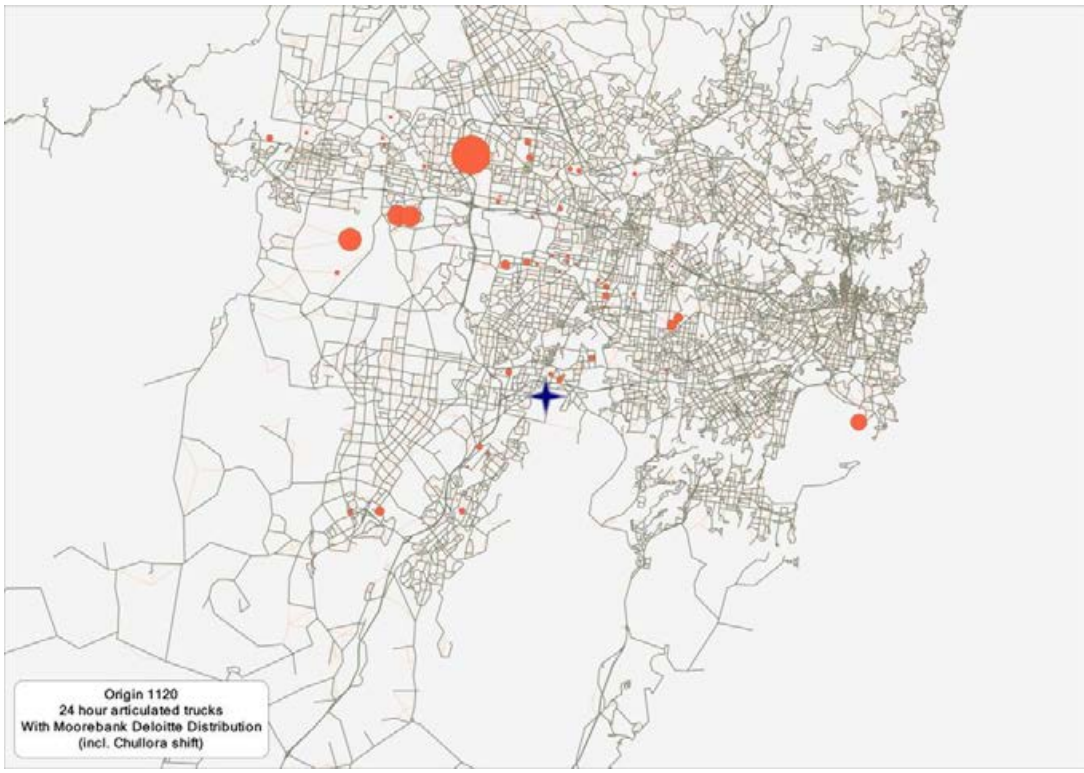
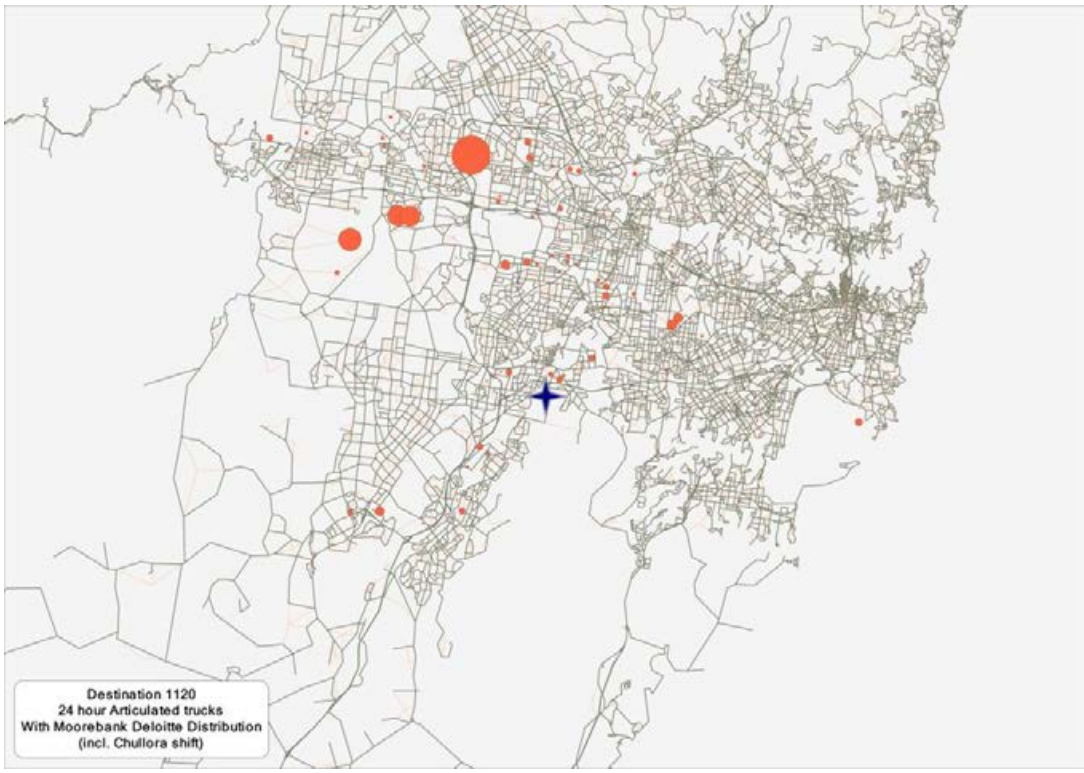


Table 3.6: 'Project Case' articulated truck distributions to/from Moorebank

From Moorebank



To Moorebank



4. Strategic network performance

4.1 Introduction

Performance of the strategic network in the 'Base Case' and 'Project Case' scenarios has compared using the following metrics:

- Network wide performance based vehicle kilometres and hours travelled
- Key corridor flows on the following roads:
  - M5 Motorway
  - M7 Motorway
  - Foreshore Road / Botany Road
  - General Holmes Drive
  - M2 Motorway
  - Pennant Hills Road
  - M1 Motorway (to Newcastle)
  - Hume and Cumberland Highway

The key corridors are shown in Figure 4.1.

4.2 Network performance

The performance of the whole network can be assessed by considering the vehicle kilometres and hours travelled in each of the assignments by the users of the road network. Table 4.1 and 4.2 compares the vehicle kilometres travelled (VKT) and vehicle hours travelled (VHT) across the modelled network by class of vehicle and time period for the 'Base Case' and 'Project Case'.

The results in indicate that:

- the 'Project Case' results in a decrease in both VKT and VHT across the network as a whole compared to the 'Base Case', with most of the reductions seen in articulated truck movements. Although articulated truck trips to and from Port Botany see the greatest reduction in VKT and VHT, other (i.e. background) articulated truck traffic are also expected to see decreases in VKT and VHT under the 'Project Case'.
- on an average weekday the implementation of the 'Project Case' results in a reduction of 45,460 vehicle kilometres travelled and 3,800 vehicle hours travelled by all vehicles across the network
- on an average weekday the implementation of the 'Project Case' results a reduction of articulated truck vehicle kilometres travelled of 36,185 and 670 fewer vehicle hours travelled.
- assuming that Port Botany and Moorebank operate for 350 days per year this is an annual reduction of 12,665,365 vehicle kilometres and 234,160 vehicle hours travelled by articulated trucks to and from Port Botany and Moorebank. (This annual savings calculation is an approximation based on applying the calculation of savings on an average weekday to 350 days, but it is noted that only a maximum of 260 will be working days. However it is not possible to determine the impact of the project on non-working days as the strategic models are setup to model an average weekday.)

It is noted that while there appears to be a slight increase in VKT for rigid trucks and cars/LCV under the 'Project Case', these modes see reductions in VHT under the 'Project Case'. This is likely to be the result of rerouting of car/LCV and rigid truck movements in the 'Project Case' scenario model to use routes that are longer but require less time.

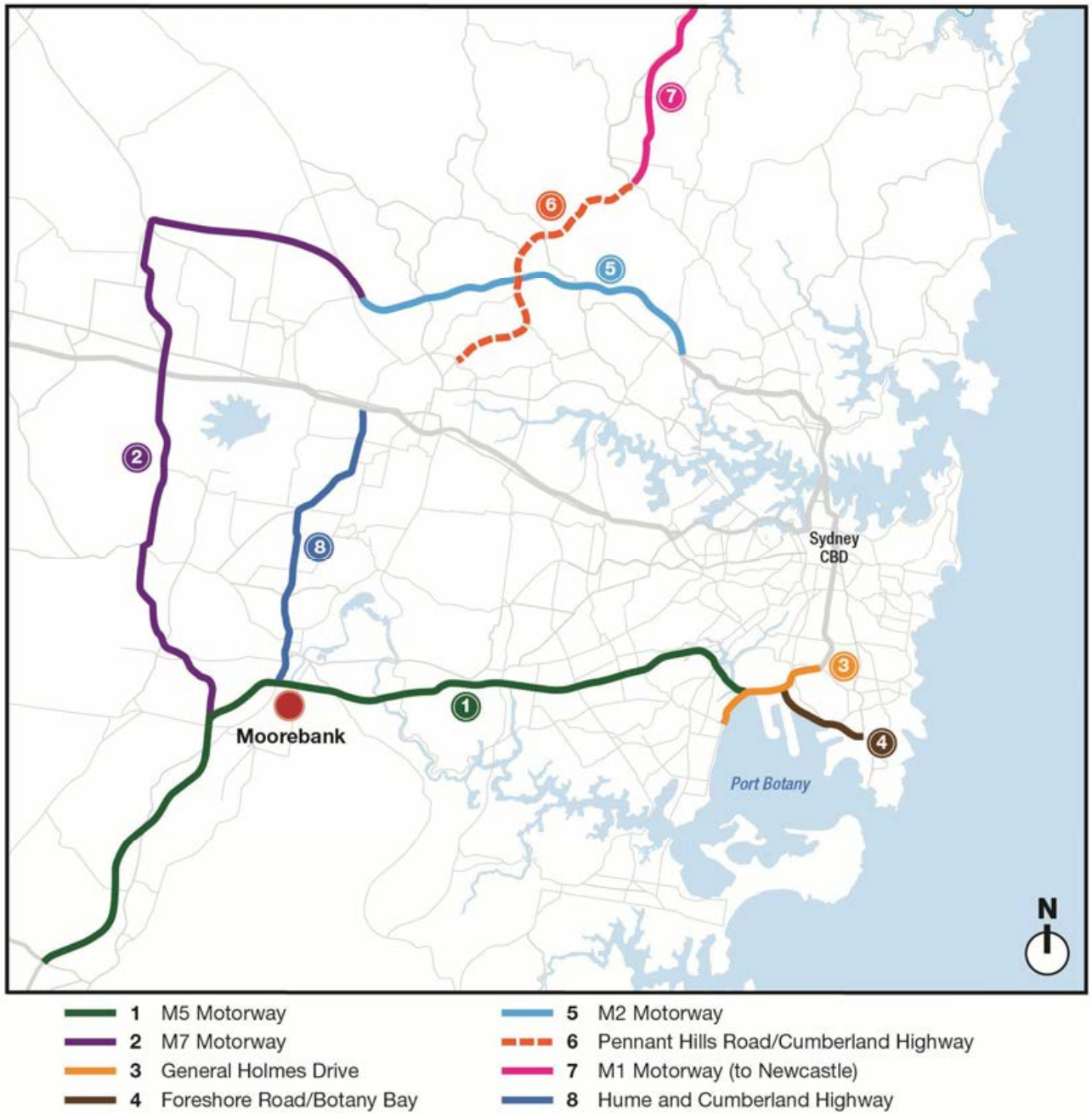


Figure 4.1 Strategic assessment corridors

Table 4.1 Comparison of vehicle kilometres travelled in 2031

Scenario		AM peak (0700-0900)	Inter peak (0900-1500)	PM peak (1500-1800)	Evening / Night Time (1800-0700)	Daily Total
'Base Case'						
Back'd	Cars/LCV	26,372,160	44,427,270	35,339,960	32,255,885	138,395,280
	Rigid	1,081,310	3,498,060	1,365,460	1,948,635	7,893,460
	Articulated	707,500	2,412,920	984,585	1,936,065	6,041,070
Port Botany	Articulated	42,840	134,645	61,155	149,670	388,310
'Project Case'						
Back'd	Cars/LCV	26,373,920	44,430,700	35,342,360	32,258,965	138,405,950
	Rigid	1,081,410	3,498,000	1,365,575	1,948,265	7,893,250
	Articulated	705,055	2,406,070	981,100	1,929,115	6,021,335
Port Botany	Articulated	28,335	89,135	40,480	98,745	256,690
Moorebank	Articulated	28,335	89,135	40,480	98,745	256,690
Difference relative to 'Base Case'						
Back'd	Cars/LCV	1,760	3,430	2,400	3,080	10,670
	Rigid	100	-60	115	-365	-205
	Articulated	-2,450	-6,845	-3,485	-6,955	-19,735
Port Botany	Articulated	-14,510	-45,510	-20,675	-50,925	-131,620
Moorebank	Articulated	10,785	33,425	15,610	35,615	95,430
Total	Cars/LCV	1,760	3,430	2,400	3,080	10,670
	Rigid	100	-60	115	-365	-205
	Articulated	-6,170	-18,930	-8,550	-22,265	-55,920

Table 4.2 Comparison of vehicle hours travelled in 2031

Scenario		AM peak (0700-0900)	Inter peak (0900-1500)	PM peak (1500-1800)	Evening / Night Time (1800-0700)	Daily Total
'Base Case'						
Back'd	Cars/LCV	958,400	1,131,115	1,115,095	715,835	3,920,445
	Rigid	32,640	77,245	36,215	37,615	183,710
	Articulated	15,945	43,075	20,095	31,240	110,355
Port Botany	Articulated	1,440	2,950	1,695	2,830	8,910
'Project Case'						
Back'd	Cars/LCV	957,520	1,130,495	1,114,420	715,480	3,917,915
	Rigid	32,610	77,185	36,180	37,585	183,565
	Articulated	17,205	45,670	21,590	33,685	118,145
Port Botany	Articulated	940	1,920	1,105	1,835	5,800
Moorebank	Articulated	390	820	485	740	2,440
Difference relative to 'Base Case'						
Back'd	Cars/LCV	-880	-620	-675	-355	-2,530
	Rigid	-30	-60	-30	-25	-145
	Articulated	-75	-150	-95	-130	-450
Port Botany	Articulated	-495	-1,030	-590	-995	-3,110
Moorebank	Articulated	390	820	485	740	2,440
Total	Cars/LCV	-880	-620	-675	-355	-2,530
	Rigid	-30	-60	-30	-25	-145
	Articulated	-180	-355	-200	-385	-1,120

Figure 4.2 shows the change in articulated truck volumes on the network between the 'Project Case' and the 'Base Case'. This plot shows that the introduction of the Moorebank Intermodal Terminal:

- would result in reductions in articulated truck volumes through the Sydney CBD and inner city suburbs, on the M4 and the M5 east of the Moorebank Avenue interchange.
- would result in an increase in articulated truck flows, particularly on the M7, Hume Highway and Mamre Road south of the M4 as well as the M5 between Moorebank avenue interchange and the M7.

Figure 4.3 shows the net difference of articulated truck volumes relating to Port Botany and Moorebank only on the network. Comparing this to Figure 4.2 confirms that the changes in articulated truck volumes on the network are generally the result of changes at Port Botany and Moorebank; the changes to background articulated truck traffic is not significant.

Appendix E shows the change in articulated truck movements to/from Port Botany and Moorebank between the ‘Base Case and the ‘Project Case ’scenarios on corridors of interest. In general:

- The reductions in truck movements are generally experienced closer to the Sydney CBD (i.e. the M5 east of Moorebank Avenue, General Holmes Drive, Foreshore Road as well as the M2)
- The increases in truck movements are mostly seen in the corridors immediately around the Moorebank development (i.e. M7 south of the M4, and the Hume Highway).
- Some of the increases in truck movements (such as the increase on the M1 to Newcastle) are due to the shift of some articulated truck movements from Chullora to Moorebank in the Project Case (to account for the shift of interstate traffic to Moorebank from Chullora in 2031).

Figure 4.4 shows the contribution of Moorebank-traffic to total articulated truck flows on the network. As expected Moorebank traffic makes up a large portion of all articulated truck movements on parts of the network closer to Moorebank and in some cases closer to the other origin/destination zone. Moorebank traffic accounts for up to 20% of the articulated truck volumes on the M7 and up to 34% of the articulated truck traffic on the Hume highway

The Figures in Appendix F show the change in speed between the ‘Base Case and ‘Project Case’ scenarios for each of the model time periods. In general the road links with reduced volumes (as per Figure 4.2) experience improved travel speeds in the ‘Project Case’ than the base case and conversely roads that see increased articulated truck movements in the “Project Case’ experience degraded travel speeds in the ‘Project Case’ than the ‘Base Case’. It is noted that the change in speed is small, with a maximum change of about 4 km/hr on the wider network (the road links closer to Moorebank experience greater changes; up to 8 km/hr). This is to be expected as the changes attributed to the project would only have a small impact on a network as large as the Sydney road network.

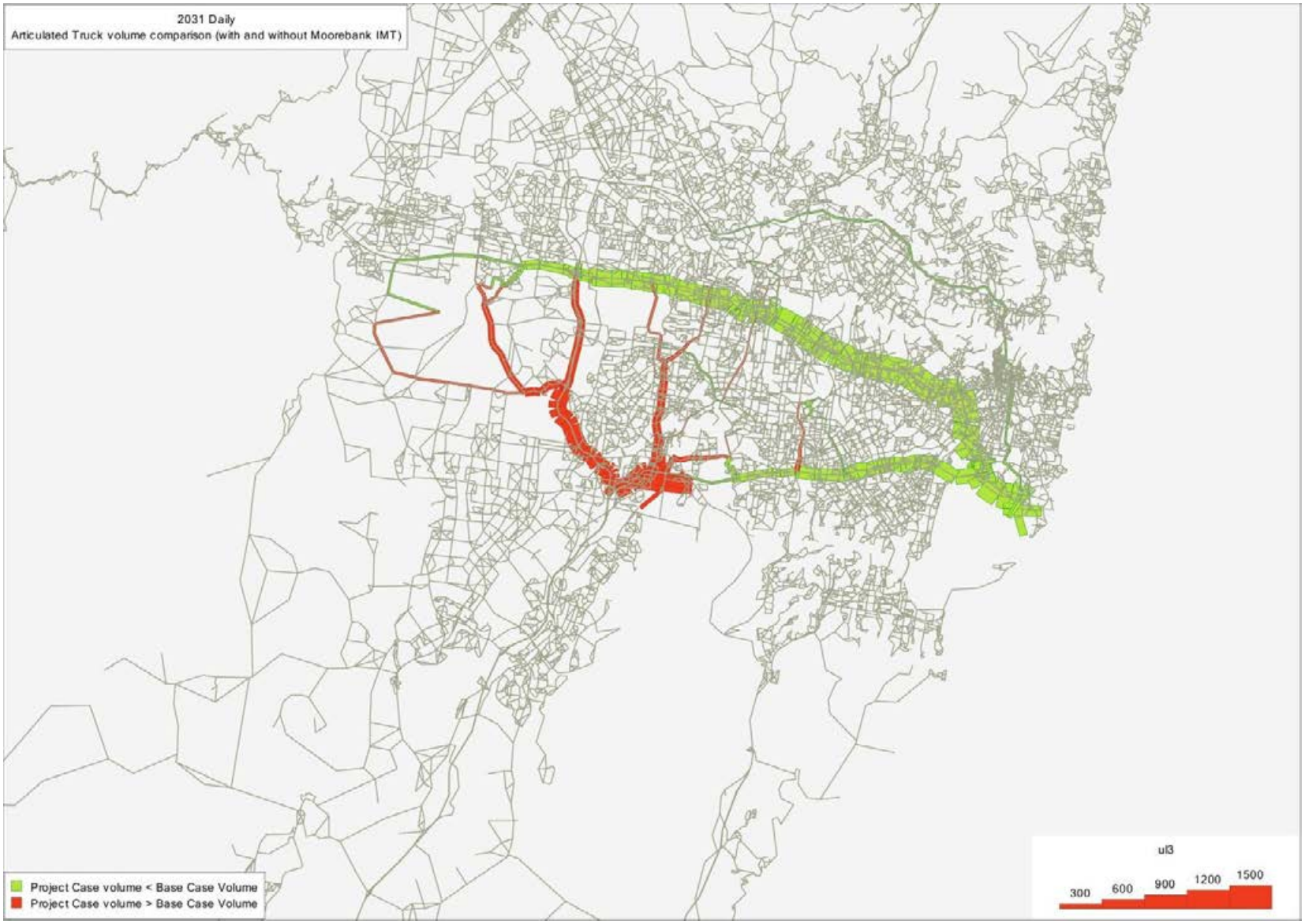


Figure 4.2: Comparison of articulated truck volumes ('Project Case' versus 'Base Case')

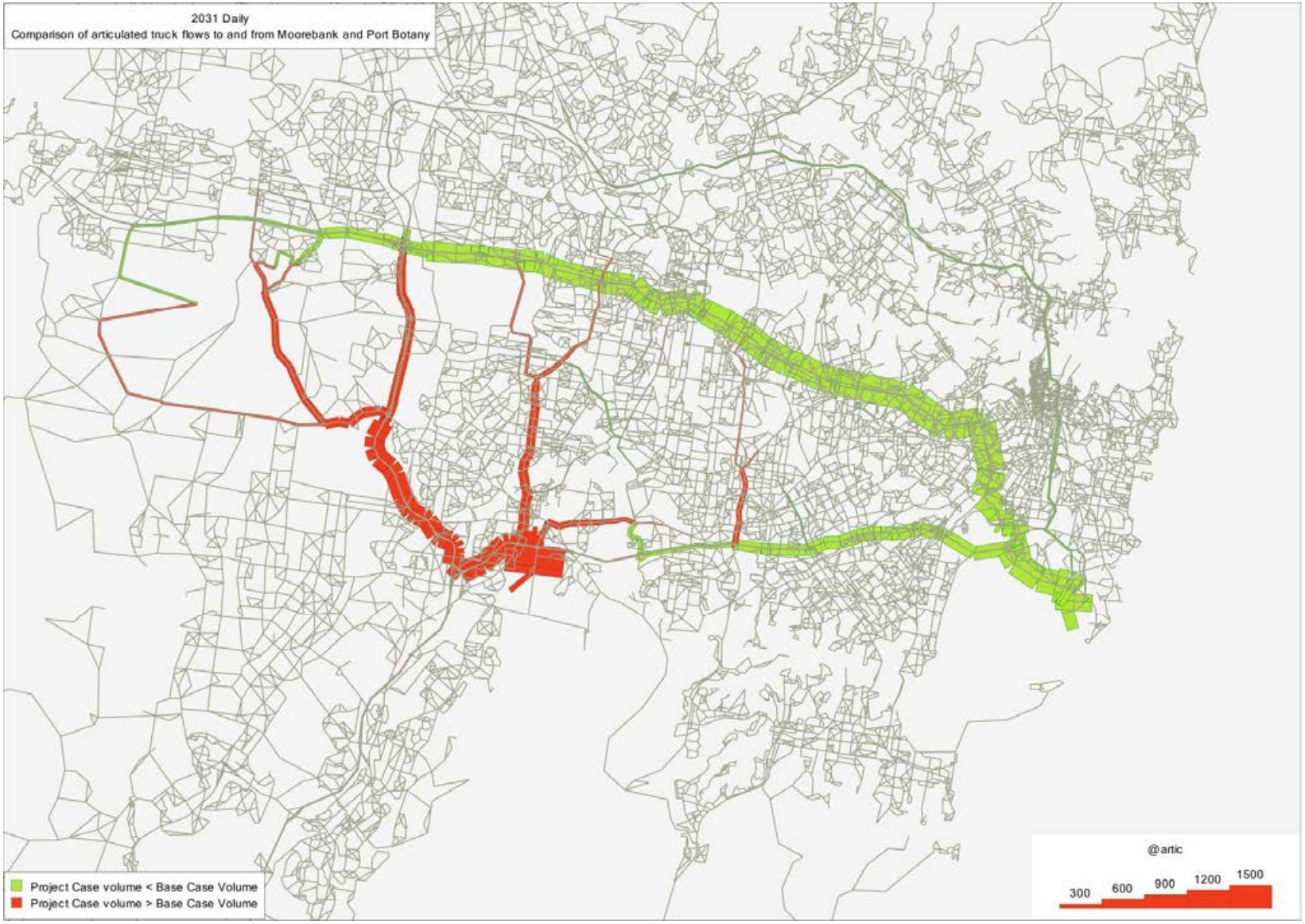


Figure 4.3: Comparison of articulated truck volumes to/from Port Botany and Moorebank only ('Project Case' versus 'Base Case')

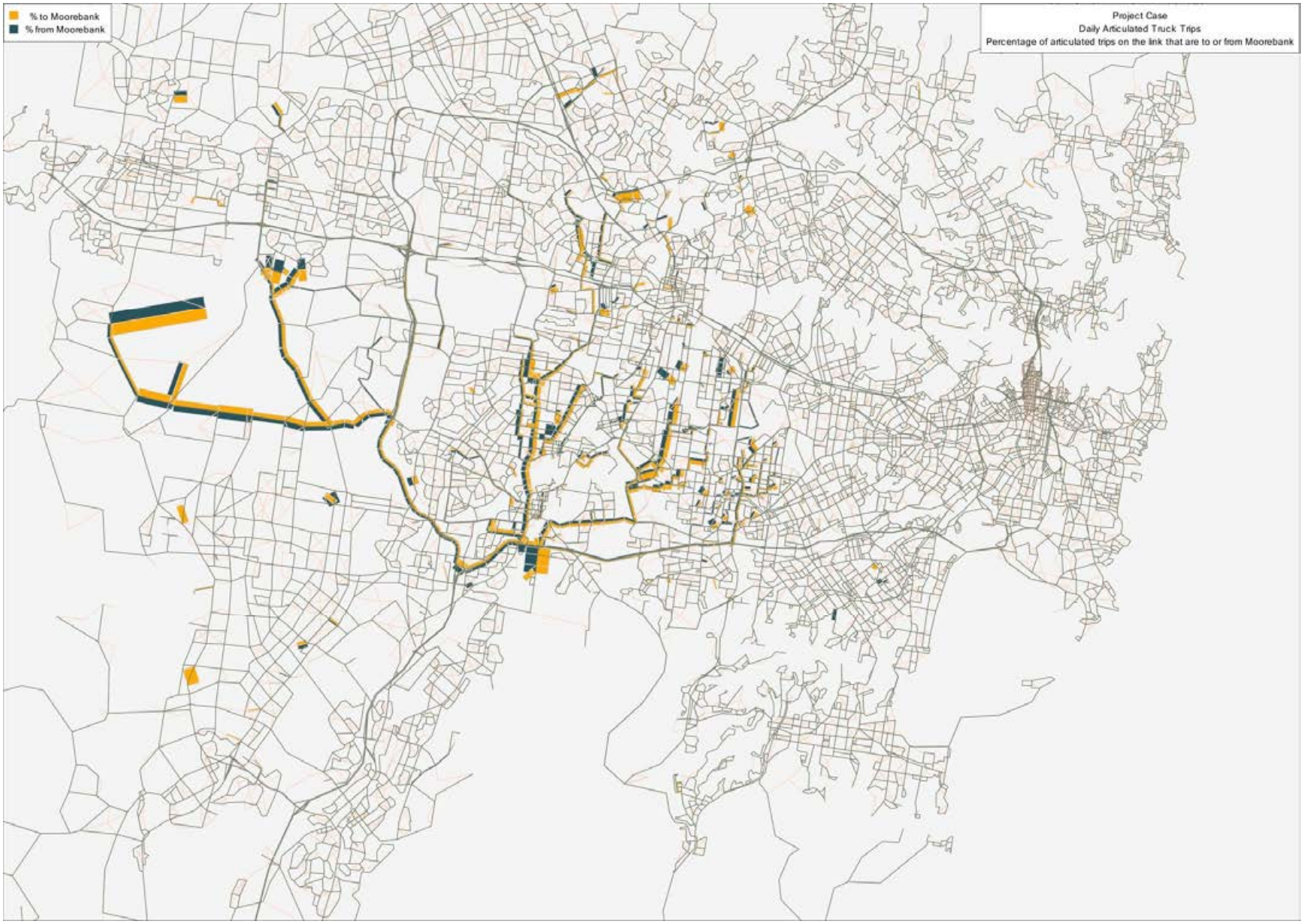


Figure 4.4 Percentage of articulated truck traffic to/from Moorebank (of all articulated truck flows on links – 'Project Case')

Appendix A

Strategic modelling assumptions

A1. Sydney Strategic Travel Model

The Sydney Strategic Travel Model (STM) was supplied to the project with the following documentation of the key assumptions. These assumptions have been reproduced from information supplied by BTS.

A1.1 Model version

STM 2.5 based on the calculation of travel demand using 7 travel purposes, 7 travel modes, 2690 travel zones, 4 times of day) The purposes and modes are as follows:

Travel purposes:

- Work (commute from home to work and back)
- Business
- Primary education
- Secondary education
- Tertiary education
- Shopping
- Other

Travel mode

- Car driver
- Car passenger
- Train / Light rail / Ferry
- Bus
- Cycle
- Walk
- Taxi

The four time periods modelled are as follows:

- AM peak period (0700-0900)
- Inter peak period (0900-1500)
- PM peak (1500-1800)
- Evening/night time period (1800-0700)

A1.2 Network assumptions

The STM network is based on the Long Term Transport Master Plan and includes the following changes in the supply network. Assumptions are for scenario modelling purposes and do not necessarily reflect Government policy).

Table A1.1 Network assumptions

Year	Road	Rail / Light Rail	Bus / Ferry
2006	▪ Network version July 2009	▪ Network version ITIS March 2007	▪ Network version ITIS March 2007
2011	▪ Lane Cove Tunnel ▪ Inner West Busway (Iron Cove Bridge duplication) ▪ F3 widening ▪ Hume Highway widening	▪ Enhanced 2009 timetable network ▪ Cronulla duplication ▪ ECRL	▪ 131500 bus network and 2011 ferry network
2016	▪ Hunter Motorway (F3-Branxton) ▪ M2 widening ▪ M5 widening ▪ W-Sydney Employment Hub ▪ Gt.Western Highway widening	▪ SWRL via East Hills ▪ LRT Dulwich Hill extension	▪ Bus route adjustments in SWRL sector, revised ferry network for 2016
2021	▪ WestConnex Stage 1: M5 East Duplication	▪ North West Rail Link to Rouse Hill ▪ CBD and South East Light Rail	▪ CBD Bus plan, Regional level 1 and level 2 bus network, bus route adjustments in NWRL and SWRL sectors, bus priority, ▪ revised ferry network
2026	▪ WestConnex Stage 2: M4 Extension and M4 Widening ▪ NW Growth Centre	▪ 2021 heavy rail base (20 trains/h over SHB and City Circle)	
2031	▪ M2 to F3 Tunnel ▪ SW Growth Centre	▪ 2021 heavy rail base (20 trains/h over SHB and City Circle)	
2036	▪ F6 ▪ NW Growth Centre	▪ 2036 heavy rail base (20 trains/h over SHB and City Circle)	
2041	▪ M2 extension via Gladesville Bridge to M4 East ▪ Spit bridge upgrade	▪ 2036 heavy rail base (20 trains/h over SHB and City Circle)	
All years Travel Costs	▪ Fuel and toll costs rise with CPI	▪ MyZone fare system ▪ Fares rise with CPI, light rail treated as heavy rail for fare calculation purpose	▪ MyZone fare system ▪ Fares rise with CPI

A1.3 Land use assumptions

Table A1.2 Land use assumptions

Year	GMA Population – Aug 2012 BTS Forecasts	GMA Employment – Aug 2012 BTS Forecasts
2006	5,133,000	2,467,000
2011	5,578,000	2,685,000
2016	5,961,000	2,904,000
2021	6,331,000	3,095,000
2026	6,705,000	3,271,000
2031	7,077,000	3,432,000
2036	7,443,000	3,595,000
2041	7,805,000	3,752,000
2046	8,165,000	3,901,00

A1.4 Heavy vehicle demand assumptions

BTS Freight Movement Model (FMM) – Freight Forecast December 2013 release.

A1.5 Behavioural assumptions

- Behavioural models estimated using Household Travel Survey data up to and including 2008 and Journey to Work data up to and including 2006 Census.
- Assumed 1% growth in real income per annum
- Travel behaviour responses to times, costs and modes within synthetic household classes (128 different types) assumed not to vary over time, although the number of people within each household class will vary along with demographic change and socio-economic change.

A1.6 Cautions

- Aside from acknowledging that these forecasts are the product of the set of assumptions listed above, none of which may occur in reality, and which may not reflect government policy, users should also be aware of some other limitations inherent in Strategic Travel Models such as the STM:
- The STM is a simplification of reality. It breaks the GMR into 2,690 travel zones, and further by 128 population segments within each travel zone. These 350,000 segments by travel zone represent over 5 million people in the GMR, and thus involve using averages and simplifying assumptions to predict behaviour and access to the transport system.
- The STM does not currently apply a capacity constraint on public transport use. What this means is that in effect, each public transport vehicle is infinitely large. It is possible to identify where services are over capacity by dividing predicted demand by known supply. The BTS believes that the most likely response to congestion on public transport is a shift of travel time, not of mode, thus it stands by the STM's 2 or 3.5 hour peak estimates of travel demand by mode.

- Whilst the STM has been validated to ensure that it reproduces reasonable estimates of current travel behaviour, it has not been calibrated to match base year travel in this implementation.

A1.7 Fitness for purpose

The STM is a strategic multi-modal modelling tool incorporating the latest population and employment forecasts. The STM has been successfully used to inform evidence-based policy development and decision-making in strategic, metropolitan scale land use and transport scenario modelling projects.

For specific projects, the STM results should be used as a starting point to produce estimates of overall demand in response to alternative land use and/or transport supply scenarios. However, the STM, due to its limitations as a strategic modelling tool, may need to be supplemented with more detailed analyses for project evaluation purposes.

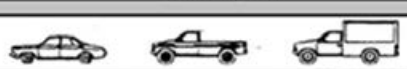
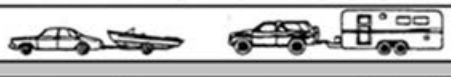
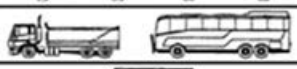
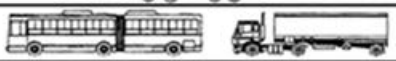
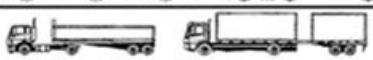
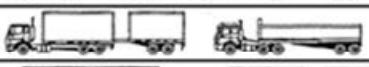
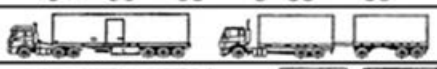
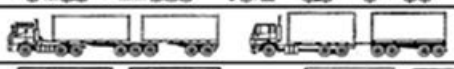
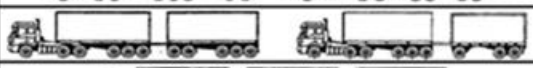
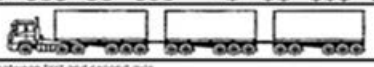
A2. BTS Light Commercial Vehicle forecasts - February 2014 release

A2.1 Introduction

This report documents the methodology and output of the February 2014 Release Bureau of Transport Statistics (BTS) Light Commercial Vehicle Forecasts. The methodology and output of the February 2014 Release BTS Heavy Vehicle Forecasts are documented in a separate report.

For the purposes of these forecasts, Light Commercial Vehicles (LCVs) refer to Class 1 or 2 vehicles under the Austroads vehicle classification system, but excluding bicycles and motorcycles (see Figure A2.1). The base and forecast year trip estimates relate solely to usage of LCVs for load-bearing commercial activities and services. This includes direct movements of goods for commercial purposes ('Light Goods Vehicles'), and movements of goods which are used for commercial operations but are not themselves for sale e.g. tools of trade ('Service Vehicles'). Movements of an LCV for personal reasons are excluded, irrespective of whether goods or tools of trade are carried.

AUSTROADS Vehicle Classification System

Level 1 Length (indicative)	Level 2 Axles and Axle Groups		Level 3 Vehicle Type	AUSTROADS Classification		
Type	Axles	Groups	Typical Description	Class	Parameters	Typical Configuration
	LIGHT VEHICLES					
Short up to 5.5m		1 or 2	**Short** Sedan, Wagon, 4WD, Utility, Light Van, Bicycle, Motorcycle, etc	1	d(1) ≤ 3.2m and axles = 2	
Medium 5.5m to 14.5m	3, 4 or 5	3	**Short - Towing** Trailer, Caravan, Boat, etc	2	groups = 3 d(1) ≥ 2.1m, d(1) ≤ 3.2m, d(2) ≥ 2.1m and axles = 3, 4 or 5	
	HEAVY VEHICLES					
	2	2	**Two Axle Truck or Bus**	3	d(1) > 3.2m and axles = 2	
	3	2	**Three Axle Truck or Bus**	4	axles = 3 and groups = 2	
	> 3	2	**Four Axle Truck**	5	axles > 3 and groups = 2	
Long 11.5m to 19.0m	3	3	**Three Axle Articulated** Three axle articulated vehicle, or Rigid vehicle and trailer	6	d(1) > 3.2m, axles = 3 and groups = 3	
	4	> 2	**Four Axle Articulated** Four axle articulated vehicle, or Rigid vehicle and trailer	7	d(2) < 2.1m or d(1) < 2.1m or d(1) > 3.2m axles = 4 and groups > 2	
	5	> 2	**Five Axle Articulated** Five axle articulated vehicle, or Rigid vehicle and trailer	8	d(2) < 2.1m or d(1) < 2.1m or d(1) > 3.2m axles = 5 and groups > 2	
	≥ 6	> 2	**Six Axle Articulated** Six axle articulated vehicle, or Rigid vehicle and trailer	9	axles = 6 and groups > 2 or axles > 6 and groups = 3	
Medium Combination 17.5m to 36.5m	> 6	4	**B Double** B Double, or Heavy truck and trailer	10	groups = 4 and axles > 6	
	> 6	5 or 6	**Double Road Train** Double road train, or Medium articulated vehicle and one dog trailer (M.A.D.)	11	groups = 5 or 6 and axles > 6	
Large Combination Over 33.0m	> 6	> 6	**Triple Road Train** Triple road train, or Heavy truck and three trailers	12	groups > 6 and axles > 6	

Definitions:
Group: Axle group, where adjacent axles are less than 2.1m apart
Groups: Number of axle groups
Axles: Number of axles (maximum axle spacing of 10.0m)
d(1): Distance between first and second axle
d(2): Distance between second and third axle

Figure A2.1 Austroads Vehicle Classification System

A2.2 Methodology

The BTS light commercial vehicle forecasts are produced from the Light Commercial Vehicle Model (LCVM). The LCVM produces base year and forecast estimates of LCV travel movements for the Sydney Greater Metropolitan Area (GMA) at travel zone level. For the February 2014 Release, the base year is changed from 2006 to 2011 and the forecasts are at five yearly intervals to 2046 (including 2006). The zonal system used is BTS's 2006 Travel Zones.

A2.2.1 Trip Attraction

The methodology for estimating LCV movements is based on LCV attraction rates i.e. the rate of attraction of LCVs to (1) households and (2) businesses, measured by the number of employees. These attraction rates are applied to the number of households and amount of employment in each travel zone to obtain the total number of LCVs attracted to the zone i.e.

LCV trips attracted to zone = Trips attracted to households in zone + Trips attracted to businesses in zone , where

Trips attracted to households in zone = the number of households in zone LCV attraction rate for households, and

Trips attracted to businesses in zone = the amount of employment in zone LCV attraction rate for businesses

To estimate trip attractions for the February 2014 Release Light Commercial Vehicle Forecasts, the following household and employment forecasts were used:

- Household forecasts – the August 2012 Release BTS Population Forecasts (which includes household forecasts).
- Employment forecasts – the August 2012 Release BTS Employment Forecasts.

The attraction rates used were based on two BTS studies of LCV attraction rates: the Service Vehicle Attraction Rate study (SVAR, 1999) and the LCV Trip Attraction Rates study (LTAR, 2009). For households, a single household attraction rate was used. For businesses, there were separate attraction rates used for the categories 'Office', 'Industrial', 'Retail' and 'Hospitality', as the SVAR study had established that there were significantly different attraction rates for these broad categories. The linkage between ANZSIC industry classes and these categories is shown in Table A2.1 below.

Table A2.1 LCV Business Attraction Rate Categories

ANZSIC Code	ANZSIC Description	LCV Attraction Rate Category
A	Agriculture, Forestry and Fishing	Industry
B	Mining	Industry
C	Manufacturing	Industry
D	Electricity, Gas, Water and Waste Services	Industry
E	Construction	Industry
F	Wholesale Trade	Industry
G	Retail Trade	Retail
H	Accommodation and Food Services	Hospitality
I	Transport, Postal and Warehousing	Industry

J	Information Media and Telecommunications	Office
K	Financial and Insurance Services	Office
L	Rental, Hiring and Real Estate Services	Office
M	Professional, Scientific and Technical Services	Office
N	Administrative and Support Services	Office
O	Public Administration and Safety	Office
P	Education and Training	Office
Q	Health Care and Social Assistance	Office
R	Arts and Recreation Services	Office
S	Other Services	Office

The attraction rates used for the February 2014 Release forecasts are shown in Table A2.2 below.

Table A2.2: LCV Attraction Rates

Rate	Value	Unit
Household Attraction Rate	0.188	Per household per weekday
Business Attraction Rate (Office)	0.115	Per employee per weekday
Business Attraction Rate (Industrial)	0.237	Per employee per weekday
Business Attraction Rate (Retail)	0.319	Per employee per weekday
Business Attraction Rate (Hospitality)	0.177	Per employee per weekday

Source: SVAR&LTAR

Once trip attractions are established, we apply a factor to allow for 'dead running'. A dead running trip is the 'away' trip from an initial trip made for commercial purposes. It most commonly refers to cases where freight is delivered to a location, and the freight carrying vehicle then returns empty to its original loading location. However, for consistency, BTS also applies the concept to light goods and service vehicle movements. If a plumber, say, travels to a household to do work, the subsequent trip away from the household is regarded as having been generated by the initial trip to the household.

It is important to understand that the dead running factor is not simply double the number of trips attracted to a household or business i.e. that it is not the case that for every trip attraction there is a concomitant away trip. The following example shows why this is so.

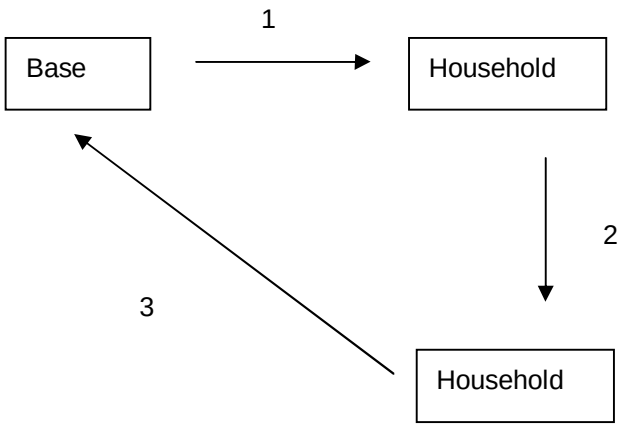


Figure A2.2 An example of LCV Vehicle tour

In this example, there are three trips. Our same plumber, say, travels from his base to do work at a household. He then travels to another household to do work, then travels back to base. There are thus two trips attracted to households for commercial purposes. If we were to apply the simple assumption that every trip attraction generated a concomitant away trip, we would estimate that four trips resulted from these two attractions, which is obviously wrong. This is because the 'away' trip from the first household (Trip 2) is actually an attraction to the second household, and to count it solely as an away trip can lead to double-counting. Thus, for this example, the dead running factor is actually 0.5 i.e. the total number of trips = total trip attractions (2) * (1 + 0.5) = 3.

The actual dead running factor for LCVs used in the February 2014 Release was 0.5. This was calculated by examining data from BTS's Household Travel Survey (HTS). The HTS provides detailed information on all trips made by a respondent in a day, and includes data from respondents driving LCVs for commercial purposes. As a result, it was possible to analyze the tour patterns for LCV drivers and quantify the average amount of dead running.

A2.2.2 Trip production

To produce a zonal origin-destination matrix, it is necessary to estimate the number of trips produced (i.e. generated) from a zone in addition to estimating the number of trips attracted to the zone. Currently, BTS has no production rate data to complement its attraction rate data for LCVs. As a result, it used the assumption that within a 24 hour period the number of LCV trips produced from a zone is identical to the number attracted.

A2.2.3 Trip distribution

Once LCV trip productions and attractions have been estimated for each travel zone, the movements between zones (i.e. the origin-destination matrix) are estimated using a gravity model. Unlike the BTS heavy vehicle origin-destination matrices, the LCV matrix is not adjusted by a matrix estimation process. Matrix estimation uses counts of vehicles on the road network to produce a 'maximum likelihood' estimation of vehicle movements based on observed data. For heavy vehicles, BTS has undertaken a number of classified count studies to obtain such counts for rigid and articulated trucks, and consequently is able to use matrix estimation to estimate its heavy vehicle origin-destination matrices. However, equivalent counts for LCVs are not available, and as a result the matrix estimation process cannot be applied to the LCV origin-destination matrices.

The LCV gravity model takes the form:

$$T_{ij} = T_i \times \frac{A_j \times FF_{ij}}{\sum A_j \times FF_{ij}}$$

Where:

$$T_{ij} = T_i \times \frac{A_j \times FF_{ij}}{\sum A_j \times FF_{ij}}$$

Friction factors are used to represent travel time or impedance in the gravity model, as follows:

$$FF_{ij} = TT_{ij}^{\alpha} \times \exp(\beta \times TT_{ij})$$

Where is the travel time between zone and , and and are calibrated parameters.

The trip distribution process was implemented in CUBE using travel times skimmed from standard Sydney Strategic Travel Model runs. A trip length distribution was used to perform friction factor calibration. In the absence of observed trip length data for LCVs, the average trip length and trip length distribution from HTS LCV analysis was used. The resulting parameters for the friction factor equation were:

α = -0.02
β = -0.148

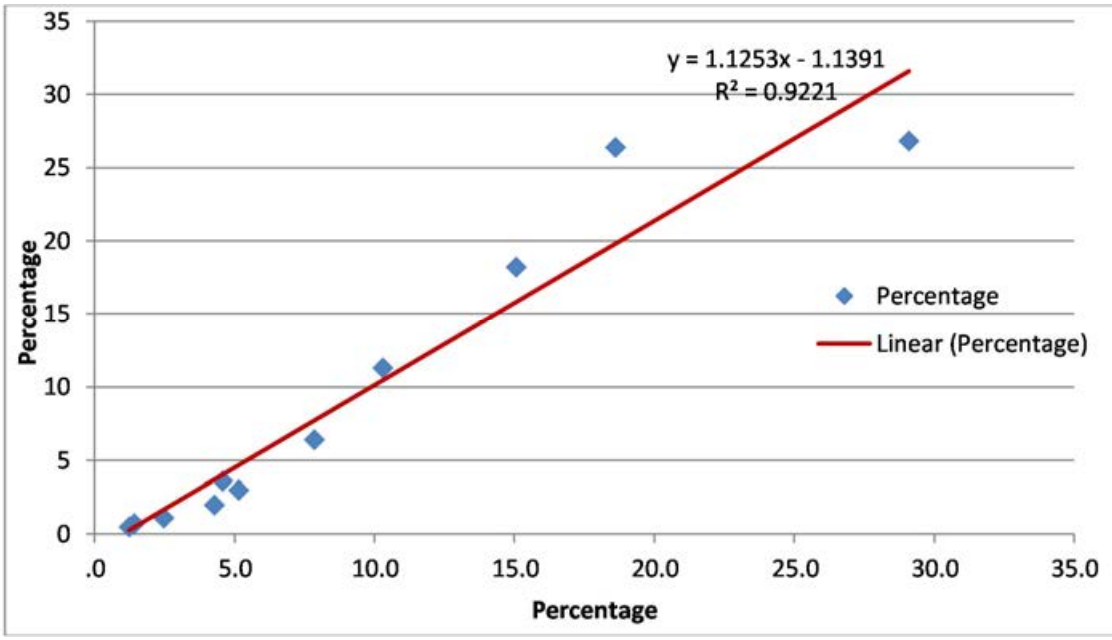


Figure A2.3 LCV Trip Distribution Comparisons in 5 Minutes Bin

Estimated versus observed plots are useful in determining if the parameters are set up properly. A high R2 indicates a good degree of fit. Figure 2.2 shows the trip length distribution from HTS versus LCVM in 5 minutes bin.

A2.2.4 Time Period Estimation

The direct output from the LCV gravity model is LCV trips by origin zone and destination zone on an average weekday. Time period factors are then used to disaggregate average weekday trips to trips in individual time periods. These factors were derived from the LTAR (2009) study, where the time of each LCV trip attracted to a household or business was collected. The factors used are shown in Table 2.3 below.

Table A2.2 Time period factors used for the February 2010 Release LCV estimates

Am Peak 7.00am – 9.00am	Inter Peak 9.00am – 3.00pm	Pm Peak 3.00pm – 6.00pm	Evening 6.00pm – 7.00am
0.16	**0.61**	**0.13**	**0.10**

Source: LTAR, 2009

A2.2.5 Sydney Airport

Sydney Airport is the largest LCV trip generator within Sydney GMA. BTS conducted a video camera study around the Sydney Airport Precinct over two consecutive weekdays in 2013. The study provides detailed classified traffic counts on Domestic and International Terminal access roads. There are more than 10,000 LCV trips to/from International and Domestic terminals daily in the study period. The projected future growth of airport LCV traffic is based on the reported airport passenger forecasts.

A2.3 LCV Model Results

Table 3.1 compares 2011 LCV trip estimates from the BTS February 2014 Release with the earlier BTS release ('the BTS February 2010 Forecasts'). The comparisons show that a slightly higher number of trips in the current model relative to the old model. This can be largely attributed to more service employment in the 2010 land use forecast.

Table A2.3 Total LCV trips and Average Trip Length on Average Weekday, 2011

2011	BTS February 2010 Release estimates	BTS February 2014 Release estimates	Difference
Total trips (Weekday)	1,259,621	1,301,791	+ 3.3%
Average Trip Length (km)	**11**	**14**	**+ 27.3%**

The average trip length from the revised model estimates is calibrated against the trip length from HTS LCV analysis.

A2.3.1 Comparison with external data

The VKT (Vehicle Kilometres Travelled) estimates associated with the February 2014 Release trip estimates for 2011 can be compared with the ABS Survey of Motor Vehicle Use (SMVU) VKT estimates released in 2012, as shown in Table A2.4 below.

Table A2.4 Total Business Kilometres Travelled by LCVs (Sydney SD)

	SMVU	BTS February 2010 Release estimates	Difference
Annual VKT (million)	**4,344**	**3,677**	**-15%**

It is important to note that the figure of 4,344 million annual business VKT for the SMVU shown in Table 3.2 is a BTS estimate of what the SMVU data would be if it used the same definition of LCV trips as applied by BTS[1] . However, this SMVU estimate only provides an indicative comparison with the BTS estimates, as it is not possible to directly compare SMVU and BTS estimates of VKT for LCVs, due to the factor that some trips are treated differently in the two data sets.

It should also be noted that ABS reports an increase of more than 40% LCV annual business VKT from 2006 to 2011; whereas Road and Maritime Service's (RMS) vehicle registration data show that the registered LCVs for Sydney GMA increased around 8% in the same time period. It should be noted that the SMVU estimates are subject to a Relative Standard Error (RSE) of 12.9%. The vehicle registration data from RMS is considered to be more reliable.

A2.3.2 Comparison with the Household Travel Survey (HTS)

The BTS Strategic Travel Model (STM) includes LCV trips in its estimate of total travel movements, where the LCV trip data is obtained from BTS's Household Travel Survey (HTS). While this HTS data for LCVs provides a wealth of detailed information for use in the STM, it does not necessarily reflect the true number of total LCV movements. This is because the HTS sample is household, not business, based, and the survey expansion variables that are applied are designed to optimize the accuracy of trips for personal, not business, reasons.

The number of business trips included in the STM is estimated by analysing 3-years (2009, 2010 and 2011) of pooled HTS data. Vehicles with the following body type are considered to be LCV:

- 4 Van / Pvan / Ute
- 41 Goods Van
- 42 Panel Van
- 43 Utility

A business trip is defined as a trip with the purpose of:

- Go to work
- Return to work
- Work related business

For the February 2014 Release LCV forecasts, BTS compared the 2011 base year LCV estimates with HTS estimates for the same year. This analysis showed that for 2011 the HTS captured 35% of total LCV movements. As a result, the LCV data from LCVM should be factored by 65% to take into account the overlapping when assign STM car demand and LCV demand together.

A2.4 LCV Forecasts

The key inputs to BTS's forecasts of LCV movements are:

- Forecasts of households by travel zone.
- Forecasts of employment by industry group by travel zone.

[1] The figure is calculated as the SMVU total VKT for 'Capital City' multiplied by the SMVU ratio of work-related VKT to total VKT for NSW (where 'Work-related' is defined as 'All business use' plus 'To and from work', and the 'Personal and other' category is excluded)

The household and employment forecasts used for the February 2014 Release LCV Forecasts were the BTS August 2009 Release Population and Employment Forecasts, respectively.

The forecasts of LCV movements are produced by:

- •Calculating future zonal trip ends based on household and employment forecasts. Note: Both household and business LCV attraction rates are assumed to be constant in future years.
- Using the Fratar method to forecast (back-cast) future (2006) trip tables based on zonal growth factors and the base 2011 trip table.

Figure A2.4 shows the future growth of land use and the total number of LCVs. It can be seen that the growth is LCV is consistent with the land use growth.

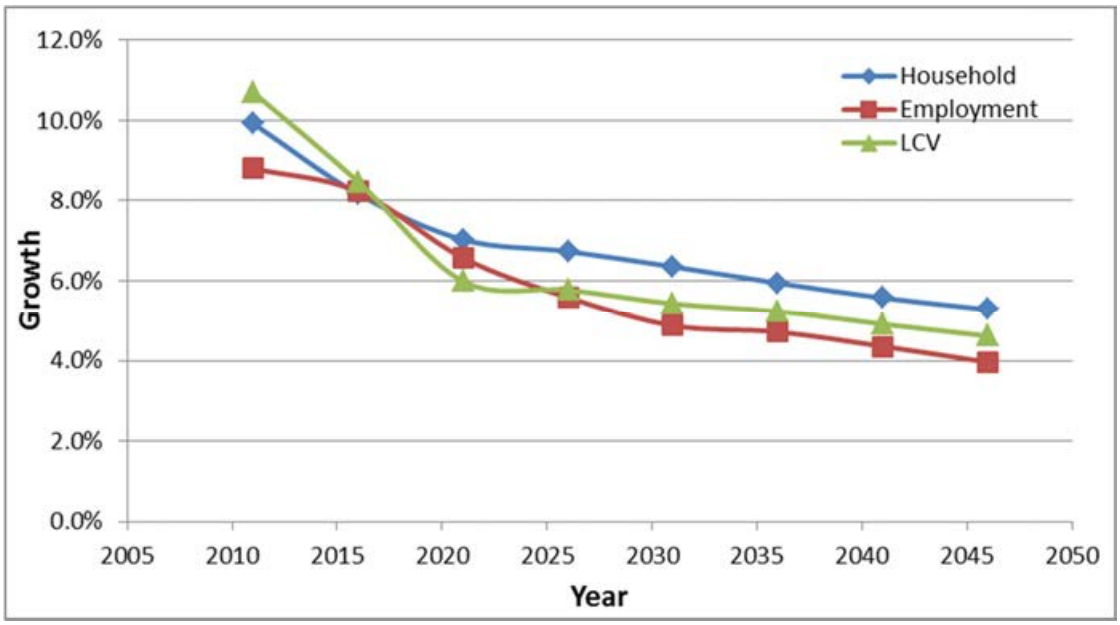


Figure A2.4 LCV and Land Use Growth

A2.5 Trip tables

Field names and descriptions for BTS's LCV trip tables for the February 2014 Release LCV forecasts are shown in Appendix 1.

A2.6 References

Service Vehicle Attraction Rates (SVAR), consultancy report to the Transport Data Centre, 1999.

Final report for the light commercial vehicle trip attraction rates study for the Transport Data Centre (LTAR), consultancy report to the Transport Data Centre, 2009.

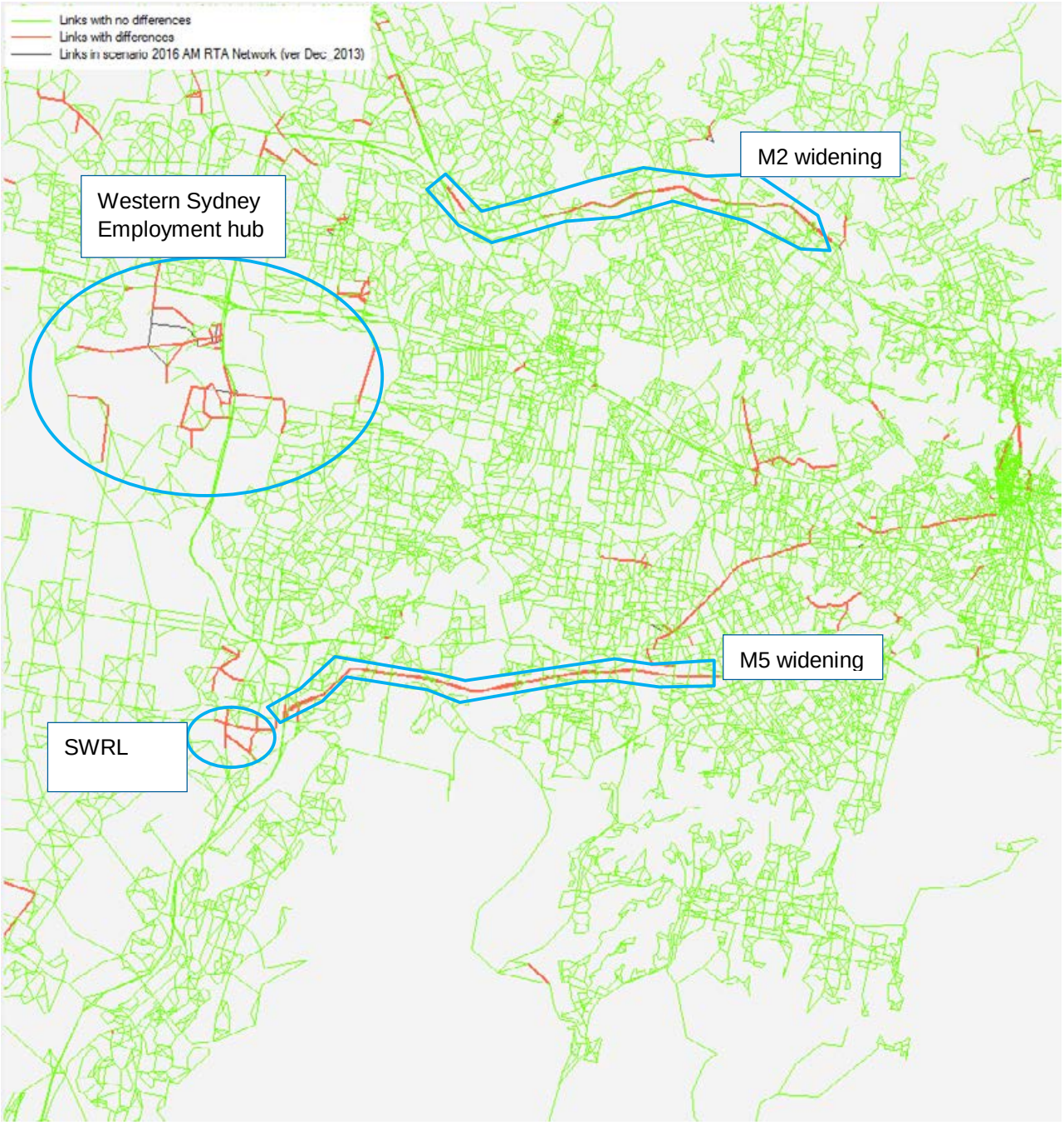
A2.7 Appendix 1 BTS LCV trip table

Field Name	Description
O_TZ06	Origin 2006 Travel Zone
O_SLA06	Origin 2006 SLA
O_LGA06	Origin 2006 LGA
O_SSD06	Origin 2006 SSD
O_SD06	Origin 2006 SD
O_SUBREGION_METRO	Origin Metropolitan Strategy Subregion
D_TZ06	Destination 2006 Travel zone
D_SLA06	Destination 2006 SLA
D_LGA06	Destination 2006 LGA
D_SSD06	Destination 2006 SSD
D_SD06	Destination 2006 SD
D_SUBREGION_METRO	Destination Metropolitan Strategy Subregion
ROAD_DISTANCE_KM	Road distance in km between O_TZ06 and D_TZ06
TRIPS_2006_AMPEAK	The number of trips in 2006 AM Peak 2h
TRIPS_2006_INTERPEAK	The number of trips in 2006 Inter-Peak 2h
TRIPS_2006_PMPEAK	The number of trips in 2006 PM Peak 2h
TRIPS_2006_EVENING	The number of trips in 2006 Night Time Period 2h
.....	……
TRIPS_2046_AMPEAK	The number of trips in 2046 AM Peak
TRIPS_2046_INTERPEAK	The number of trips in 2046 Inter-Peak
TRIPS_2046_PMPEAK	The number of trips in 2046 PM Peak
TRIPS_2046_EVENING	The number of trips in 2046 Night Time Period
O_TZ06_NAME	Origin 2006 Travel Zone name
O_SLA06_NAME	Origin 2006 SLA name
O_LGA06_NAME	Origin 2006 LGA name
O_SSD06_NAME	Origin 2006 SSD name
O_SD06_NAME	Origin 2006 SD name
O_SUBREGION_METRO_NAME	Origin Metropolitan Strategy Subregion name
D_TZ06_NAME	Destination 2006 Travel zone name
D_SLA06_NAME	Destination 2006 SLA name
D_LGA06_NAME	Destination 2006 LGA name
D_SSD06_NAME	Destination 2006 SSD name
D_SD06_NAME	Destination 2006 SD name
D_SUBREGION_METRO_NAME	**Destination Metropolitan Strategy Subregion name**

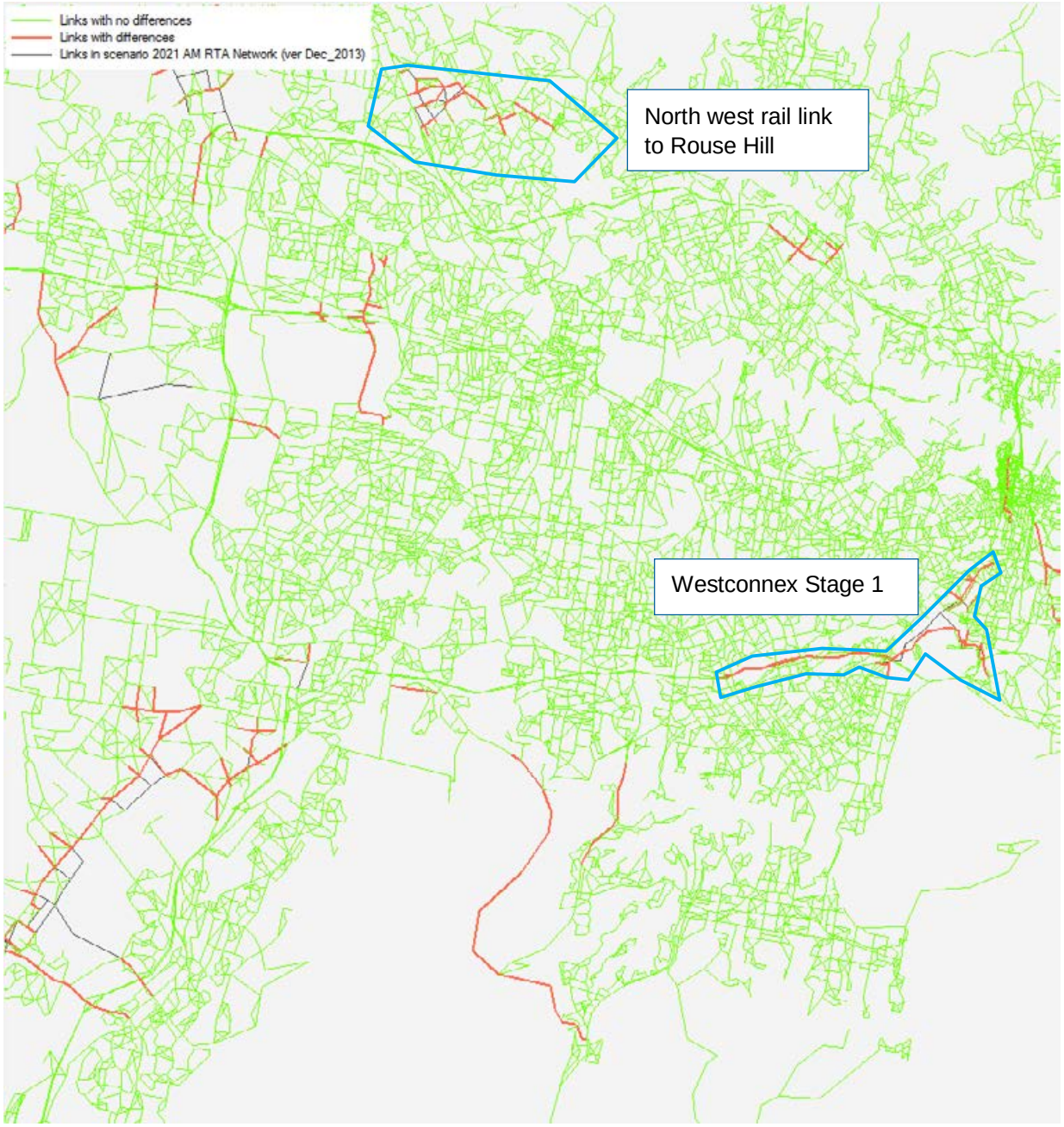
Appendix B

STM Network comparisons

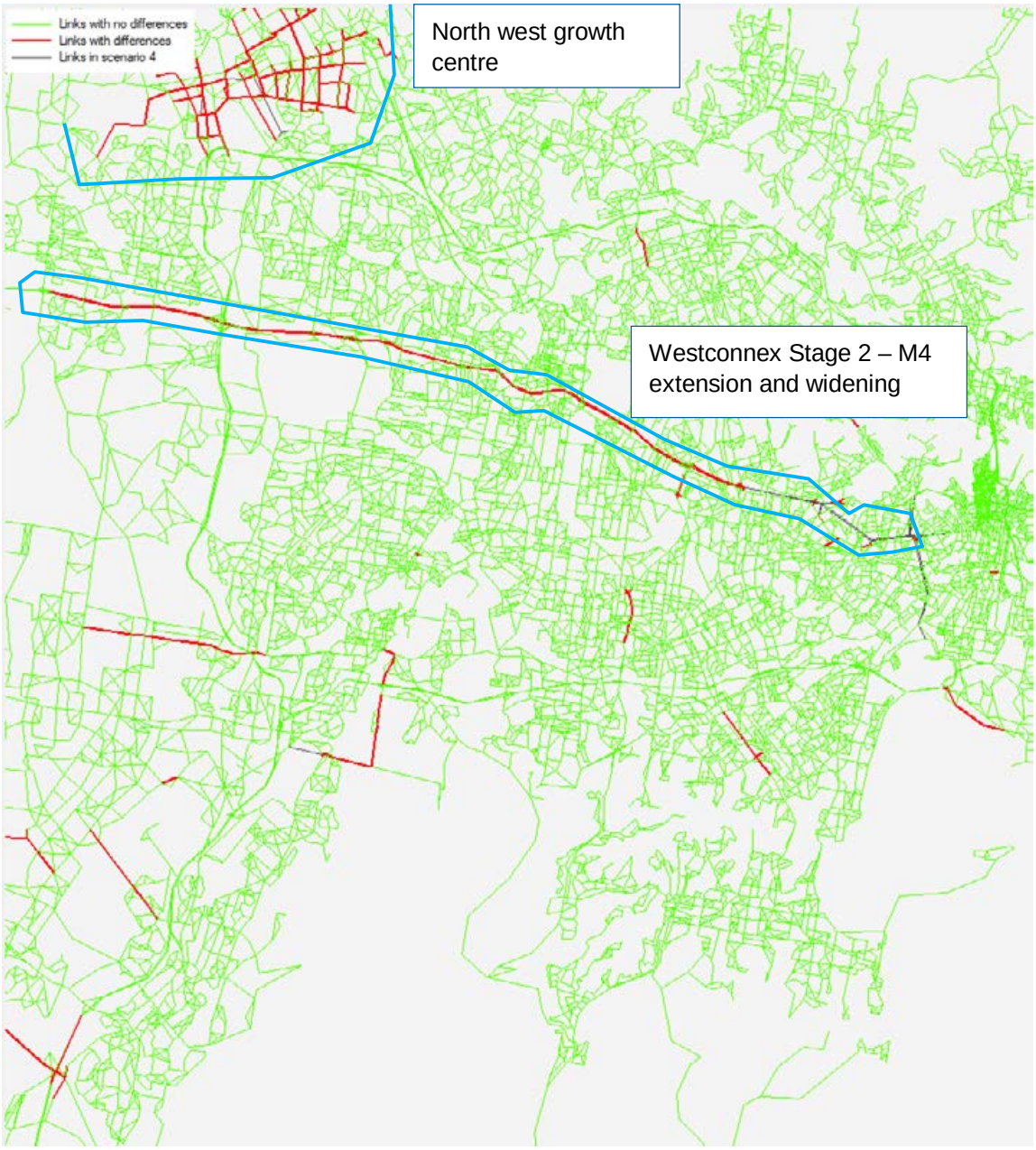
B1. Changes in the 2016 Network (from the 2011 network)



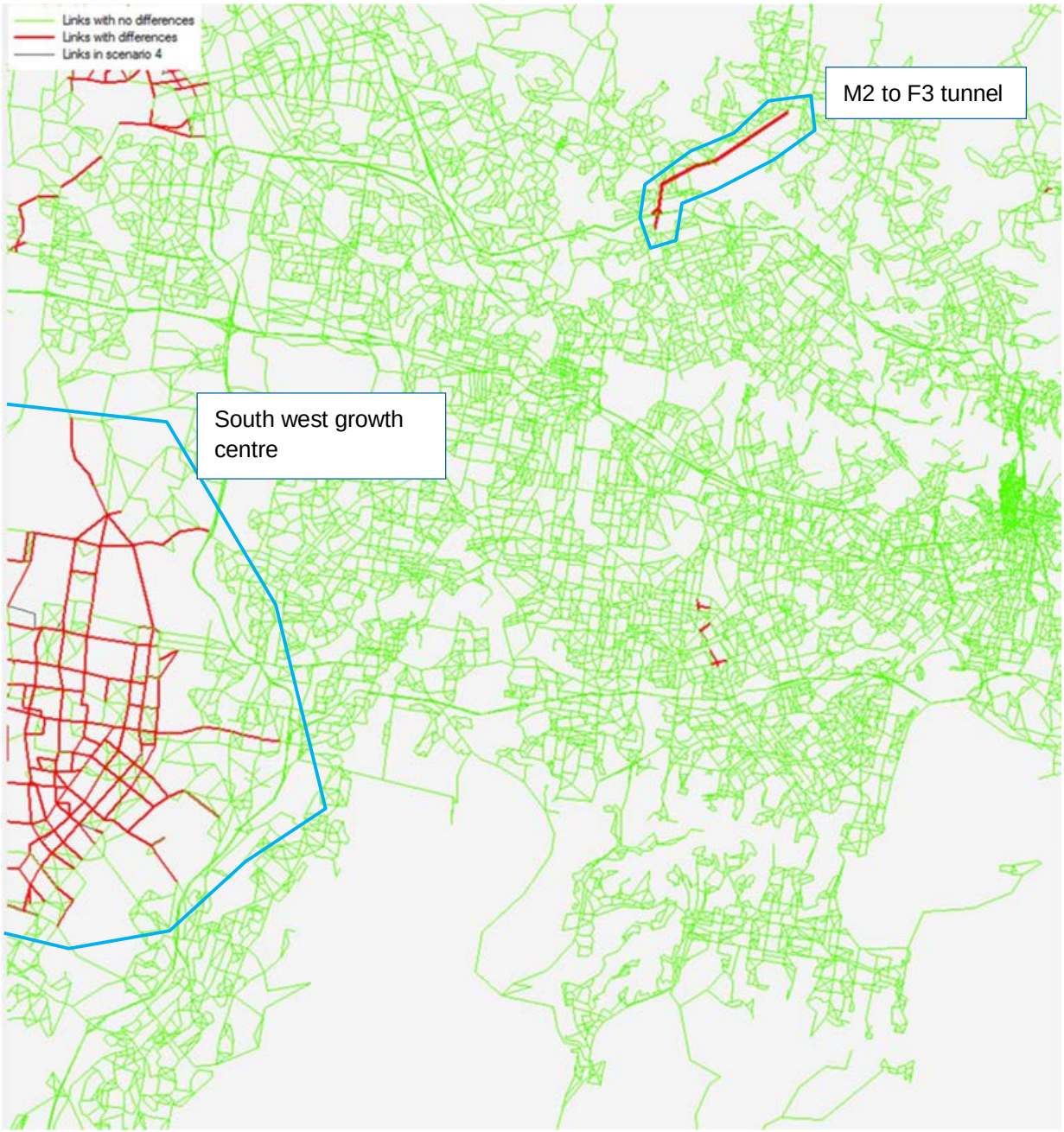
B2. Changes in the 2021 network (from the 2016 network)



B3. Changes to the 2026 network (from the 2021 network)



B4. Changes to the 2031 network (from the2026 network)



Appendix C

Deloitte Distribution Data (by LGA)

C1. Deloitte distribution data

The distribution assumptions used in this assessment are based on information supplied by Deloitte to Parsons Brinckerhoff. The distribution data was supplied at the level of Local Government Areas (LGA) for the Sydney Greater Metropolitan Area. The data was supplied broken down into TEUS and truck level based on the Deloitte's analysis of loading factors and splits of loads to articulated and B-Double trucks as outlined in section 3.

This appendix details the supplied data as shown in Table C.1 to C.9.

Table C1.1 Road distribution for 'Base Case' scenario for Port Botany - Volume (TEUs)

LGA	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Ashfield	374	391	432	443	439	445	448	448	507	569	633	701	771	1,179	1,705
Auburn	26,675	28,887	33,179	35,484	36,716	39,058	41,416	43,782	49,522	55,534	61,833	68,431	75,344	115,164	166,561
Bankstown	22,893	24,499	27,796	29,351	29,972	31,449	32,876	34,243	38,732	43,434	48,361	53,521	58,928	90,072	130,271
Baulkham Hills	67,523	71,832	76,392	81,215	86,317	91,714	97,422	103,459	108,508	113,795	119,334	125,136	131,213	166,214	210,362
Blacktown	445,030	479,002	515,176	553,685	594,667	638,271	684,654	733,979	769,792	807,305	846,599	887,758	930,871	1,179,182	1,492,389
Botany Bay	103,423	107,010	110,705	114,509	118,424	122,453	126,597	130,858	137,085	143,608	150,442	157,601	165,101	208,304	262,813
Burwood	5,352	5,645	6,307	6,552	6,573	6,769	6,934	7,066	7,992	8,962	9,979	11,044	12,159	18,586	26,881
Camden	21,929	25,971	30,290	34,902	39,826	45,083	50,695	56,682	61,831	67,180	72,740	78,525	84,549	118,742	161,193
Campbelltown	33,840	39,315	44,954	50,760	56,735	62,880	69,199	75,692	83,980	92,708	101,894	111,557	121,717	180,751	255,924
Canada Bay	1,420	1,497	1,672	1,737	1,742	1,793	1,837	1,871	2,117	2,374	2,643	2,925	3,220	4,922	7,119
Canterbury	3,811	4,013	4,475	4,639	4,645	4,771	4,875	4,954	5,603	6,284	6,996	7,743	8,525	13,031	18,846
Fairfield	110,466	120,008	130,081	140,712	151,932	163,770	176,260	189,436	201,355	213,845	226,934	240,651	255,024	337,881	442,504
Holroyd	68,825	72,872	77,014	81,249	85,576	89,995	94,504	99,102	106,612	114,486	122,739	131,390	140,457	192,753	258,827
Hornsby	16,955	17,781	19,741	20,366	20,282	20,713	21,026	21,211	23,991	26,904	29,955	33,152	36,501	55,792	80,692
Hunters Hill	340	352	384	390	380	380	376	369	417	468	521	576	634	970	1,403
Hurstville	2,442	2,577	2,879	2,992	3,002	3,093	3,169	3,231	3,654	4,098	4,563	5,050	5,560	8,498	12,290
Kogarah	1,431	1,454	1,506	1,519	1,510	1,513	1,509	1,499	1,617	1,742	1,872	2,008	2,151	2,973	4,025
Ku-ring-gai	471	505	573	605	619	650	680	709	802	899	1,001	1,108	1,220	1,865	2,697
Lane Cove	1,601	1,677	1,860	1,916	1,905	1,943	1,968	1,981	2,241	2,513	2,798	3,097	3,410	5,212	7,538
Leichhardt	1,095	1,173	1,334	1,411	1,443	1,518	1,590	1,660	1,877	2,105	2,344	2,594	2,856	4,365	6,314
Liverpool	155,660	161,727	167,986	174,441	181,098	187,963	195,042	202,341	212,214	222,556	233,388	244,735	256,620	325,074	411,418
Manly	220	212	202	191	178	164	148	129	136	142	149	156	163	206	260
Marrickville	9,813	10,100	5,977	6,250	10,975	11,191	11,385	11,553	12,467	13,424	14,426	15,476	16,576	22,914	26,509
Mosman	782	758	731	699	662	621	574	521	545	571	599	627	657	829	1,046
North Sydney	5,406	5,064	4,677	4,243	3,756	3,213	2,611	1,943	2,036	2,133	2,234	2,341	2,452	3,094	3,903
Parramatta	74,474	76,440	78,404	80,362	82,310	84,243	86,156	88,044	92,340	96,840	101,553	106,491	111,662	141,448	179,019
Penrith	278,077	299,354	322,012	346,134	371,808	399,125	428,185	459,091	481,492	504,955	529,532	555,277	582,244	737,557	933,463
Pittwater	1,095	1,144	1,264	1,298	1,286	1,305	1,316	1,318	1,490	1,671	1,861	2,059	2,267	3,466	5,012
Randwick	47,432	49,296	51,229	53,235	55,316	57,474	59,713	62,034	64,986	68,078	71,318	74,712	78,267	98,748	124,588
Rockdale	6,230	6,537	7,003	7,324	7,570	7,902	8,239	8,581	9,260	9,970	10,715	11,495	12,312	17,019	23,044
Ryde	2,928	2,944	3,114	3,037	2,832	2,675	2,469	2,211	2,501	2,805	3,123	3,456	3,806	5,817	8,413
Strathfield	8,895	9,580	10,943	11,637	11,970	12,657	13,338	14,010	15,846	17,770	19,785	21,897	24,109	36,851	53,297
Sutherland Shire	8,699	8,916	5,252	5,466	5,496	5,671	5,824	5,951	6,731	7,549	8,405	9,302	10,241	15,654	22,640
Sydney	26,461	27,279	28,687	29,429	29,806	30,459	31,058	31,595	34,093	36,710	39,451	42,323	45,332	62,663	84,844
Warringah	4,250	4,507	5,064	5,292	5,345	5,543	5,723	5,882	6,653	7,461	8,307	9,194	10,122	15,472	22,378
Waverley	502	487	469	447	423	396	365	330	346	362	379	397	416	525	663
Willoughby	5,934	5,974	6,005	6,026	6,034	6,030	6,012	5,978	6,263	6,561	6,873	7,200	7,543	9,517	12,007
Woollahra	1,925	1,857	1,778	1,688	1,585	1,469	1,337	1,190	1,247	1,306	1,368	1,433	1,502	1,895	2,390
TOTAL	1,574,677	1,678,638	1,787,546	1,901,636	2,021,156	2,146,363	2,277,528	2,414,936	2,558,881	2,709,677	2,867,648	3,033,137	3,206,501	4,205,204	5,465,247

Table C1.2 Road distribution for 'Project Case' scenario for Port Botany - Volume (TEUs)

LGA	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Ashfield	340	375	405	417	427	433	437	438	497	558	623	690	761	1,169	1,683
Auburn	21,464	21,404	20,461	18,141	15,312	11,962	13,887	16,451	20,299	24,541	29,180	34,222	39,672	73,387	119,073
Bankstown	20,797	23,532	26,084	27,642	29,165	30,646	32,077	33,448	37,937	42,639	47,566	52,727	58,133	89,277	128,571
Baulkham Hills	62,350	61,258	59,745	57,767	55,277	52,225	57,275	63,487	68,881	74,493	80,336	86,424	92,769	128,895	173,886
Blacktown	410,932	408,490	402,915	393,830	380,825	363,456	402,513	450,401	488,670	528,483	569,936	613,122	658,141	914,430	1,233,611
Botany Bay	103,423	107,010	110,705	114,509	118,424	122,453	126,597	130,858	137,085	143,608	150,442	157,601	165,101	208,304	262,813
Burwood	4,862	5,423	5,919	6,170	6,396	6,596	6,765	6,902	7,828	8,798	9,815	10,880	11,995	18,422	26,530
Camden	19,423	20,035	19,905	18,947	17,068	14,169	17,421	21,805	25,876	30,240	34,901	39,862	45,128	76,340	116,758
Campbelltown	29,973	30,329	29,542	27,556	24,315	19,762	23,780	29,118	35,145	41,732	48,889	56,629	64,967	116,206	185,375
Canada Bay	1,290	1,438	1,569	1,636	1,695	1,748	1,792	1,828	2,073	2,330	2,599	2,881	3,177	4,879	7,026
Canterbury	3,462	3,854	4,199	4,369	4,520	4,649	4,757	4,839	5,488	6,169	6,881	7,628	8,410	12,916	18,600
Fairfield	97,295	92,108	85,087	76,066	64,865	51,291	60,379	72,662	84,034	96,010	108,614	121,874	135,816	216,852	320,093
Holroyd	63,551	55,930	50,375	43,921	36,535	28,186	32,373	38,012	44,494	51,400	58,745	66,540	74,802	123,709	187,227
Hornsby	15,403	17,079	18,526	19,180	19,736	20,184	20,514	20,718	23,499	26,412	29,463	32,660	36,008	55,300	79,639
Hunters Hill	646	338	361	367	370	370	367	360	408	459	512	568	626	961	1,384
Hurstville	4,643	4,832	2,702	2,817	2,922	3,014	3,092	3,156	3,579	4,023	4,488	4,975	5,485	8,423	12,130
Kogarah	1,389	1,435	1,473	1,487	1,496	1,499	1,496	1,486	1,604	1,729	1,859	1,995	2,138	2,960	3,997
Ku-ring-gai	428	485	538	570	602	633	663	692	785	883	985	1,092	1,203	1,848	2,662
Lane Cove	3,044	3,145	1,746	1,805	1,854	1,893	1,920	1,935	2,195	2,467	2,752	3,051	3,364	5,166	7,440
Leichhardt	2,081	1,127	1,252	1,329	1,405	1,479	1,551	1,621	1,839	2,067	2,305	2,555	2,817	4,327	6,231
Liverpool	143,040	129,143	114,024	97,619	79,861	60,680	68,738	79,706	90,837	102,356	114,292	126,674	139,531	212,046	301,420
Manly	220	212	202	191	178	164	148	129	136	142	149	156	163	206	260
Marrickville	9,527	9,969	10,373	10,630	10,868	11,087	11,282	11,452	12,366	13,323	14,325	15,375	16,475	22,813	30,809
Mosman	782	758	731	699	662	621	574	521	545	571	599	627	657	829	1,046
North Sydney	5,406	5,064	4,677	4,243	3,756	3,213	2,611	1,943	2,036	2,133	2,234	2,341	2,452	3,094	3,903
Parramatta	68,768	65,188	61,319	57,160	52,711	47,971	50,652	54,028	58,618	63,394	68,366	73,547	78,947	109,690	147,977
Penrith	256,771	229,759	210,632	187,113	158,737	125,002	146,678	176,093	200,947	226,709	253,442	281,211	310,081	473,364	675,236
Pittwater	2,081	2,144	1,186	1,222	1,251	1,272	1,284	1,287	1,460	1,641	1,830	2,029	2,237	3,435	4,947
Randwick	47,432	49,296	51,229	53,235	55,316	57,474	59,713	62,034	64,986	68,078	71,318	74,712	78,267	98,748	124,588
Rockdale	6,048	6,452	6,851	7,171	7,497	7,828	8,165	8,506	9,185	9,895	10,640	11,420	12,237	16,944	22,883
Ryde	2,660	2,827	2,922	2,860	2,756	2,607	2,409	2,160	2,450	2,754	3,072	3,405	3,754	5,766	8,303
Strathfield	8,081	9,202	10,269	10,959	11,648	12,334	13,014	13,684	15,521	17,445	19,460	21,572	23,784	36,525	52,602
Sutherland Shire	8,445	8,800	9,115	9,296	9,455	9,590	9,700	9,781	10,561	11,378	12,234	13,131	14,071	19,484	26,313
Sydney	25,688	26,924	28,064	28,812	29,518	30,175	30,777	31,319	33,817	36,434	39,175	42,047	45,055	62,387	84,253
Warringah	8,080	4,329	4,752	4,984	5,201	5,402	5,584	5,746	6,517	7,325	8,171	9,057	9,986	15,336	22,086
Waverley	502	487	469	447	423	396	365	330	346	362	379	397	416	525	663
Willoughby	5,934	5,974	6,005	6,026	6,034	6,030	6,012	5,978	6,263	6,561	6,873	7,200	7,543	9,517	12,007
Woollahra	1,925	1,857	1,778	1,688	1,585	1,469	1,337	1,190	1,247	1,306	1,368	1,433	1,502	1,895	2,390
TOTAL	**1,468,186**	**1,418,012**	**1,368,107**	**1,302,880**	**1,220,668**	**1,119,963**	**1,228,699**	**1,366,106**	**1,510,051**	**1,660,847**	**1,818,819**	**1,984,307**	**2,157,671**	**3,156,374**	**4,416,417**

Table C1.3 Road distribution for 'Project Case' scenario for Moorebank - Volume (TEUs)

LGA	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Ashfield	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Auburn	2,770	6,342	10,675	15,277	20,416	26,098	26,522	26,315	28,206	29,977	31,637	33,193	34,655	40,761	45,316
Bankstown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Baulkham Hills	4,796	10,210	16,294	23,107	30,710	39,169	39,837	39,672	39,328	39,005	38,702	38,418	38,151	37,032	36,194
Blacktown	31,610	68,082	109,886	157,532	211,570	272,592	279,965	281,448	279,005	276,716	274,568	272,551	270,656	262,719	256,777
Botany Bay	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Burwood	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Camden	2,506	5,936	10,385	15,955	22,758	30,914	33,273	34,877	35,955	36,939	37,839	38,664	39,421	42,402	44,435
Campbelltown	3,867	8,986	15,413	23,205	32,420	43,118	45,419	46,574	48,835	50,976	53,005	54,928	56,750	64,545	70,548
Canada Bay	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Canterbury	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fairfield	12,554	27,291	44,393	64,056	86,486	111,908	115,321	116,225	116,767	117,278	117,759	118,212	118,639	120,447	121,818
Holroyd	4,889	16,572	26,283	36,986	48,714	61,496	61,831	60,802	61,825	62,787	63,690	64,541	65,342	68,712	71,253
Hornsby	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hunters Hill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hurstville	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogarah	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ku-ring-gai	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lane Cove	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Leichhardt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Liverpool	18,457	38,265	59,491	82,206	106,482	132,393	131,285	127,491	126,220	125,030	123,914	122,867	121,885	117,777	114,711
Manly	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marrickville	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mosman	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Sydney	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parramatta	5,290	10,865	16,723	22,864	29,284	35,978	35,231	33,761	33,468	33,193	32,936	32,694	32,466	31,514	30,802
Penrith	19,752	68,077	109,895	157,569	211,650	272,732	280,146	281,665	279,220	276,929	274,780	272,762	270,865	262,921	256,975
Pittwater	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Randwick	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rockdale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ryde	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Strathfield	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sutherland Shire	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sydney	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Warringah	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Waverley	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Willoughby	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Woollahra	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**106,491**	**260,625**	**419,439**	**598,756**	**800,488**	**1,026,400**	**1,048,830**	**1,048,830**	**1,048,830**	**1,048,830**	**1,048,830**	**1,048,830**	**1,048,830**	**1,048,830**	**1,048,830**

Table C1.4 Road distribution for 'Base Case' scenario for Port Botany – Semi truck movements per day – round trips

LGA	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Ashfield	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.6	0.7	0.8	1.2	1.7
Auburn	26.5	28.7	33.0	35.3	36.5	38.9	41.2	43.6	49.3	55.2	61.5	68.1	74.9	114.6	165.7
Bankstown	22.8	24.4	27.6	29.2	29.8	31.3	32.7	34.1	38.5	43.2	48.1	53.2	58.6	89.6	129.6
Baulkham Hills	67.2	71.5	76.0	80.8	85.9	91.2	96.9	102.9	107.9	113.2	118.7	124.5	130.5	165.3	209.3
Blacktown	442.7	476.5	512.5	550.8	591.5	634.9	681.0	730.1	765.7	803.1	842.1	883.1	926.0	1,173.0	1,484.5
Botany Bay	102.9	106.4	110.1	113.9	117.8	121.8	125.9	130.2	136.4	142.9	149.6	156.8	164.2	207.2	261.4
Burwood	5.3	5.6	6.3	6.5	6.5	6.7	6.9	7.0	8.0	8.9	9.9	11.0	12.1	18.5	26.7
Camden	21.8	25.8	30.1	34.7	39.6	44.8	50.4	56.4	61.5	66.8	72.4	78.1	84.1	118.1	160.3
Campbelltown	33.7	39.1	44.7	50.5	56.4	62.5	68.8	75.3	83.5	92.2	101.4	111.0	121.1	179.8	254.6
Canada Bay	1.4	1.5	1.7	1.7	1.7	1.8	1.8	1.9	2.1	2.4	2.6	2.9	3.2	4.9	7.1
Canterbury	3.8	4.0	4.5	4.6	4.6	4.7	4.8	4.9	5.6	6.3	7.0	7.7	8.5	13.0	18.7
Fairfield	109.9	119.4	129.4	140.0	151.1	162.9	175.3	188.4	200.3	212.7	225.7	239.4	253.7	336.1	440.2
Holroyd	68.5	72.5	76.6	80.8	85.1	89.5	94.0	98.6	106.1	113.9	122.1	130.7	139.7	191.7	257.5
Hornsby	16.9	17.7	19.6	20.3	20.2	20.6	20.9	21.1	23.9	26.8	29.8	33.0	36.3	55.5	80.3
Hunters Hill	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.6	1.0	1.4
Hurstville	2.4	2.6	2.9	3.0	3.0	3.1	3.2	3.2	3.6	4.1	4.5	5.0	5.5	8.5	12.2
Kogarah	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.7	1.9	2.0	2.1	3.0	4.0
Ku-ring-gai	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.8	0.9	1.0	1.1	1.2	1.9	2.7
Lane Cove	1.6	1.7	1.9	1.9	1.9	1.9	2.0	2.0	2.2	2.5	2.8	3.1	3.4	5.2	7.5
Leichhardt	1.1	1.2	1.3	1.4	1.4	1.5	1.6	1.7	1.9	2.1	2.3	2.6	2.8	4.3	6.3
Liverpool	154.8	160.9	167.1	173.5	180.1	187.0	194.0	201.3	211.1	221.4	232.2	243.4	255.3	323.4	409.3
Manly	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3
Marrickville	9.8	10.0	5.9	6.2	10.9	11.1	11.3	11.5	12.4	13.4	14.4	15.4	16.5	22.8	26.4
Mosman	0.8	0.8	0.7	0.7	0.7	0.6	0.6	0.5	0.5	0.6	0.6	0.6	0.7	0.8	1.0
North Sydney	5.4	5.0	4.7	4.2	3.7	3.2	2.6	1.9	2.0	2.1	2.2	2.3	2.4	3.1	3.9
Parramatta	74.1	76.0	78.0	79.9	81.9	83.8	85.7	87.6	91.9	96.3	101.0	105.9	111.1	140.7	178.1
Penrith	276.6	297.8	320.3	344.3	369.8	397.0	425.9	456.7	479.0	502.3	526.7	552.4	579.2	733.7	928.5
Pittwater	1.1	1.1	1.3	1.3	1.3	1.3	1.3	1.3	1.5	1.7	1.9	2.0	2.3	3.4	5.0
Randwick	47.2	49.0	51.0	53.0	55.0	57.2	59.4	61.7	64.6	67.7	70.9	74.3	77.9	98.2	123.9
Rockdale	6.2	6.5	7.0	7.3	7.5	7.9	8.2	8.5	9.2	9.9	10.7	11.4	12.2	16.9	22.9
Ryde	2.9	2.9	3.1	3.0	2.8	2.7	2.5	2.2	2.5	2.8	3.1	3.4	3.8	5.8	8.4
Strathfield	8.8	9.5	10.9	11.6	11.9	12.6	13.3	13.9	15.8	17.7	19.7	21.8	24.0	36.7	53.0
Sutherland Shire	8.7	8.9	5.2	5.4	5.5	5.6	5.8	5.9	6.7	7.5	8.4	9.3	10.2	15.6	22.5
Sydney	26.3	27.1	28.5	29.3	29.6	30.3	30.9	31.4	33.9	36.5	39.2	42.1	45.1	62.3	84.4
Warringah	4.2	4.5	5.0	5.3	5.3	5.5	5.7	5.9	6.6	7.4	8.3	9.1	10.1	15.4	22.3
Waverley	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.7
Willoughby	5.9	5.9	6.0	6.0	6.0	6.0	6.0	5.9	6.2	6.5	6.8	7.2	7.5	9.5	11.9
Woollahra	1.9	1.8	1.8	1.7	1.6	1.5	1.3	1.2	1.2	1.3	1.4	1.4	1.5	1.9	2.4
TOTAL	**1,566**	**1,670**	**1,778**	**1,892**	**2,011**	**2,135**	**2,266**	**2,402**	**2,545**	**2,695**	**2,853**	**3,017**	**3,190**	**4,183**	**5,436**

Table C1.5 Road distribution for 'Base Case' scenario for Port Botany – B-Double truck movements per day – round trips

LGA	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Ashfield	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.5	0.8
Auburn	11.8	12.8	14.7	15.7	16.2	17.3	18.3	19.4	21.9	24.6	27.3	30.3	33.3	50.9	73.6
Bankstown	10.1	10.8	12.3	13.0	13.3	13.9	14.5	15.1	17.1	19.2	21.4	23.7	26.1	39.8	57.6
Baulkham Hills	29.9	31.8	33.8	35.9	38.2	40.5	43.1	45.7	48.0	50.3	52.8	55.3	58.0	73.5	93.0
Blacktown	196.7	211.8	227.8	244.8	262.9	282.2	302.7	324.5	340.3	356.9	374.3	392.5	411.5	521.3	659.8
Botany Bay	45.7	47.3	48.9	50.6	52.4	54.1	56.0	57.9	60.6	63.5	66.5	69.7	73.0	92.1	116.2
Burwood	2.4	2.5	2.8	2.9	2.9	3.0	3.1	3.1	3.5	4.0	4.4	4.9	5.4	8.2	11.9
Camden	9.7	11.5	13.4	15.4	17.6	19.9	22.4	25.1	27.3	29.7	32.2	34.7	37.4	52.5	71.3
Campbelltown	15.0	17.4	19.9	22.4	25.1	27.8	30.6	33.5	37.1	41.0	45.0	49.3	53.8	79.9	113.1
Canada Bay	0.6	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.9	1.0	1.2	1.3	1.4	2.2	3.1
Canterbury	1.7	1.8	2.0	2.1	2.1	2.1	2.2	2.2	2.5	2.8	3.1	3.4	3.8	5.8	8.3
Fairfield	48.8	53.1	57.5	62.2	67.2	72.4	77.9	83.8	89.0	94.5	100.3	106.4	112.7	149.4	195.6
Holroyd	30.4	32.2	34.0	35.9	37.8	39.8	41.8	43.8	47.1	50.6	54.3	58.1	62.1	85.2	114.4
Hornsby	7.5	7.9	8.7	9.0	9.0	9.2	9.3	9.4	10.6	11.9	13.2	14.7	16.1	24.7	35.7
Hunters Hill	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.6
Hurstville	1.1	1.1	1.3	1.3	1.3	1.4	1.4	1.4	1.6	1.8	2.0	2.2	2.5	3.8	5.4
Kogarah	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.9	1.0	1.3	1.8
Ku-ring-gai	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.8	1.2
Lane Cove	0.7	0.7	0.8	0.8	0.8	0.9	0.9	0.9	1.0	1.1	1.2	1.4	1.5	2.3	3.3
Leichhardt	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.9	1.0	1.1	1.3	1.9	2.8
Liverpool	68.8	71.5	74.3	77.1	80.1	83.1	86.2	89.5	93.8	98.4	103.2	108.2	113.5	143.7	181.9
Manly	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Marrickville	4.3	4.5	2.6	2.8	4.9	4.9	5.0	5.1	5.5	5.9	6.4	6.8	7.3	10.1	11.7
Mosman	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.5
North Sydney	2.4	2.2	2.1	1.9	1.7	1.4	1.2	0.9	0.9	0.9	1.0	1.0	1.1	1.4	1.7
Parramatta	32.9	33.8	34.7	35.5	36.4	37.2	38.1	38.9	40.8	42.8	44.9	47.1	49.4	62.5	79.1
Penrith	122.9	132.3	142.4	153.0	164.4	176.5	189.3	203.0	212.9	223.2	234.1	245.5	257.4	326.1	412.7
Pittwater	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.8	0.9	1.0	1.5	2.2
Randwick	21.0	21.8	22.6	23.5	24.5	25.4	26.4	27.4	28.7	30.1	31.5	33.0	34.6	43.7	55.1
Rockdale	2.8	2.9	3.1	3.2	3.3	3.5	3.6	3.8	4.1	4.4	4.7	5.1	5.4	7.5	10.2
Ryde	1.3	1.3	1.4	1.3	1.3	1.2	1.1	1.0	1.1	1.2	1.4	1.5	1.7	2.6	3.7
Strathfield	3.9	4.2	4.8	5.1	5.3	5.6	5.9	6.2	7.0	7.9	8.7	9.7	10.7	16.3	23.6
Sutherland Shire	3.8	3.9	2.3	2.4	2.4	2.5	2.6	2.6	3.0	3.3	3.7	4.1	4.5	6.9	10.0
Sydney	11.7	12.1	12.7	13.0	13.2	13.5	13.7	14.0	15.1	16.2	17.4	18.7	20.0	27.7	37.5
Warringah	1.9	2.0	2.2	2.3	2.4	2.5	2.5	2.6	2.9	3.3	3.7	4.1	4.5	6.8	9.9
Waverley	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3
Willoughby	2.6	2.6	2.7	2.7	2.7	2.7	2.7	2.6	2.8	2.9	3.0	3.2	3.3	4.2	5.3
Woollahra	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.5	0.6	0.6	0.6	0.6	0.7	0.8	1.1
TOTAL	**696**	**742**	**790**	**841**	**894**	**949**	**1,007**	**1,068**	**1,131**	**1,198**	**1,268**	**1,341**	**1,418**	**1,859**	**2,416**

Table C1.6 Road distribution for 'Project Case' scenario for Port Botany – Semi Truck movements per day – round trips

LGA	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Ashfield	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.6	0.7	0.8	1.2	1.7
Auburn	21.4	21.3	20.4	18.0	15.2	11.9	13.8	16.4	20.2	24.4	29.0	34.0	39.5	73.0	118.4
Bankstown	20.7	23.4	25.9	27.5	29.0	30.5	31.9	33.3	37.7	42.4	47.3	52.4	57.8	88.8	127.9
Baulkham Hills	62.0	60.9	59.4	57.5	55.0	52.0	57.0	63.2	68.5	74.1	79.9	86.0	92.3	128.2	173.0
Blacktown	408.8	406.3	400.8	391.8	378.8	361.5	400.4	448.0	486.1	525.7	566.9	609.9	654.7	909.6	1,227.1
Botany Bay	102.9	106.4	110.1	113.9	117.8	121.8	125.9	130.2	136.4	142.9	149.6	156.8	164.2	207.2	261.4
Burwood	4.8	5.4	5.9	6.1	6.4	6.6	6.7	6.9	7.8	8.8	9.8	10.8	11.9	18.3	26.4
Camden	19.3	19.9	19.8	18.8	17.0	14.1	17.3	21.7	25.7	30.1	34.7	39.7	44.9	75.9	116.1
Campbelltown	29.8	30.2	29.4	27.4	24.2	19.7	23.7	29.0	35.0	41.5	48.6	56.3	64.6	115.6	184.4
Canada Bay	1.3	1.4	1.6	1.6	1.7	1.7	1.8	1.8	2.1	2.3	2.6	2.9	3.2	4.9	7.0
Canterbury	3.4	3.8	4.2	4.3	4.5	4.6	4.7	4.8	5.5	6.1	6.8	7.6	8.4	12.8	18.5
Fairfield	96.8	91.6	84.6	75.7	64.5	51.0	60.1	72.3	83.6	95.5	108.0	121.2	135.1	215.7	318.4
Holroyd	63.2	55.6	50.1	43.7	36.3	28.0	32.2	37.8	44.3	51.1	58.4	66.2	74.4	123.1	186.2
Hornsby	15.3	17.0	18.4	19.1	19.6	20.1	20.4	20.6	23.4	26.3	29.3	32.5	35.8	55.0	79.2
Hunters Hill	0.6	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.6	1.0	1.4
Hurstville	4.6	4.8	2.7	2.8	2.9	3.0	3.1	3.1	3.6	4.0	4.5	4.9	5.5	8.4	12.1
Kogarah	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.7	1.8	2.0	2.1	2.9	4.0
Ku-ring-gai	0.4	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.9	1.0	1.1	1.2	1.8	2.6
Lane Cove	3.0	3.1	1.7	1.8	1.8	1.9	1.9	1.9	2.2	2.5	2.7	3.0	3.3	5.1	7.4
Leichhardt	2.1	1.1	1.2	1.3	1.4	1.5	1.5	1.6	1.8	2.1	2.3	2.5	2.8	4.3	6.2
Liverpool	142.3	128.5	113.4	97.1	79.4	60.4	68.4	79.3	90.4	101.8	113.7	126.0	138.8	210.9	299.8
Manly	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3
Marrickville	9.5	9.9	10.3	10.6	10.8	11.0	11.2	11.4	12.3	13.3	14.2	15.3	16.4	22.7	30.6
Mosman	0.8	0.8	0.7	0.7	0.7	0.6	0.6	0.5	0.5	0.6	0.6	0.6	0.7	0.8	1.0
North Sydney	5.4	5.0	4.7	4.2	3.7	3.2	2.6	1.9	2.0	2.1	2.2	2.3	2.4	3.1	3.9
Parramatta	68.4	64.8	61.0	56.9	52.4	47.7	50.4	53.7	58.3	63.1	68.0	73.2	78.5	109.1	147.2
Penrith	255.4	228.5	209.5	186.1	157.9	124.3	145.9	175.2	199.9	225.5	252.1	279.7	308.4	470.9	671.7
Pittwater	2.1	2.1	1.2	1.2	1.2	1.3	1.3	1.3	1.5	1.6	1.8	2.0	2.2	3.4	4.9
Randwick	47.2	49.0	51.0	53.0	55.0	57.2	59.4	61.7	64.6	67.7	70.9	74.3	77.9	98.2	123.9
Rockdale	6.0	6.4	6.8	7.1	7.5	7.8	8.1	8.5	9.1	9.8	10.6	11.4	12.2	16.9	22.8
Ryde	2.6	2.8	2.9	2.8	2.7	2.6	2.4	2.1	2.4	2.7	3.1	3.4	3.7	5.7	8.3
Strathfield	8.0	9.2	10.2	10.9	11.6	12.3	12.9	13.6	15.4	17.4	19.4	21.5	23.7	36.3	52.3
Sutherland Shire	8.4	8.8	9.1	9.2	9.4	9.5	9.6	9.7	10.5	11.3	12.2	13.1	14.0	19.4	26.2
Sydney	25.6	26.8	27.9	28.7	29.4	30.0	30.6	31.2	33.6	36.2	39.0	41.8	44.8	62.1	83.8
Warringah	8.0	4.3	4.7	5.0	5.2	5.4	5.6	5.7	6.5	7.3	8.1	9.0	9.9	15.3	22.0
Waverley	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.7
Willoughby	5.9	5.9	6.0	6.0	6.0	6.0	6.0	5.9	6.2	6.5	6.8	7.2	7.5	9.5	11.9
Woollahra	1.9	1.8	1.8	1.7	1.6	1.5	1.3	1.2	1.2	1.3	1.4	1.4	1.5	1.9	2.4
TOTAL	**1,460**	**1,411**	**1,361**	**1,296**	**1,214**	**1,114**	**1,222**	**1,359**	**1,502**	**1,652**	**1,809**	**1,974**	**2,146**	**3,140**	**4,393**

Table C1.7 Road distribution for 'Project Case' scenario for Port Botany – B-Double truck movements per day – round trips

LGA	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Ashfield	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.5	0.7
Auburn	9.5	9.5	9.0	8.0	6.8	5.3	6.1	7.3	9.0	10.8	12.9	15.1	17.5	32.4	52.6
Bankstown	9.2	10.4	11.5	12.2	12.9	13.5	14.2	14.8	16.8	18.9	21.0	23.3	25.7	39.5	56.8
Baulkham Hills	27.6	27.1	26.4	25.5	24.4	23.1	25.3	28.1	30.5	32.9	35.5	38.2	41.0	57.0	76.9
Blacktown	181.7	180.6	178.1	174.1	168.4	160.7	178.0	199.1	216.0	233.6	252.0	271.1	291.0	404.3	545.4
Botany Bay	45.7	47.3	48.9	50.6	52.4	54.1	56.0	57.9	60.6	63.5	66.5	69.7	73.0	92.1	116.2
Burwood	2.1	2.4	2.6	2.7	2.8	2.9	3.0	3.1	3.5	3.9	4.3	4.8	5.3	8.1	11.7
Camden	8.6	8.9	8.8	8.4	7.5	6.3	7.7	9.6	11.4	13.4	15.4	17.6	20.0	33.8	51.6
Campbelltown	13.3	13.4	13.1	12.2	10.7	8.7	10.5	12.9	15.5	18.4	21.6	25.0	28.7	51.4	82.0
Canada Bay	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.8	0.9	1.0	1.1	1.3	1.4	2.2	3.1
Canterbury	1.5	1.7	1.9	1.9	2.0	2.1	2.1	2.1	2.4	2.7	3.0	3.4	3.7	5.7	8.2
Fairfield	43.0	40.7	37.6	33.6	28.7	22.7	26.7	32.1	37.2	42.4	48.0	53.9	60.0	95.9	141.5
Holroyd	28.1	24.7	22.3	19.4	16.2	12.5	14.3	16.8	19.7	22.7	26.0	29.4	33.1	54.7	82.8
Hornsby	6.8	7.6	8.2	8.5	8.7	8.9	9.1	9.2	10.4	11.7	13.0	14.4	15.9	24.4	35.2
Hunters Hill	0.3	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.6
Hurstville	2.1	2.1	1.2	1.2	1.3	1.3	1.4	1.4	1.6	1.8	2.0	2.2	2.4	3.7	5.4
Kogarah	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.9	0.9	1.3	1.8
Ku-ring-gai	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.8	1.2
Lane Cove	1.3	1.4	0.8	0.8	0.8	0.8	0.8	0.9	1.0	1.1	1.2	1.3	1.5	2.3	3.3
Leichhardt	0.9	0.5	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.9	1.0	1.1	1.2	1.9	2.8
Liverpool	63.2	57.1	50.4	43.2	35.3	26.8	30.4	35.2	40.2	45.3	50.5	56.0	61.7	93.7	133.3
Manly	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Marrickville	4.2	4.4	4.6	4.7	4.8	4.9	5.0	5.1	5.5	5.9	6.3	6.8	7.3	10.1	13.6
Mosman	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.5
North Sydney	2.4	2.2	2.1	1.9	1.7	1.4	1.2	0.9	0.9	0.9	1.0	1.0	1.1	1.4	1.7
Parramatta	30.4	28.8	27.1	25.3	23.3	21.2	22.4	23.9	25.9	28.0	30.2	32.5	34.9	48.5	65.4
Penrith	113.5	101.6	93.1	82.7	70.2	55.3	64.8	77.9	88.8	100.2	112.0	124.3	137.1	209.3	298.5
Pittwater	0.9	0.9	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.7	0.8	0.9	1.0	1.5	2.2
Randwick	21.0	21.8	22.6	23.5	24.5	25.4	26.4	27.4	28.7	30.1	31.5	33.0	34.6	43.7	55.1
Rockdale	2.7	2.9	3.0	3.2	3.3	3.5	3.6	3.8	4.1	4.4	4.7	5.0	5.4	7.5	10.1
Ryde	1.2	1.2	1.3	1.3	1.2	1.2	1.1	1.0	1.1	1.2	1.4	1.5	1.7	2.5	3.7
Strathfield	3.6	4.1	4.5	4.8	5.1	5.5	5.8	6.0	6.9	7.7	8.6	9.5	10.5	16.1	23.3
Sutherland Shire	3.7	3.9	4.0	4.1	4.2	4.2	4.3	4.3	4.7	5.0	5.4	5.8	6.2	8.6	11.6
Sydney	11.4	11.9	12.4	12.7	13.0	13.3	13.6	13.8	15.0	16.1	17.3	18.6	19.9	27.6	37.2
Warringah	3.6	1.9	2.1	2.2	2.3	2.4	2.5	2.5	2.9	3.2	3.6	4.0	4.4	6.8	9.8
Waverley	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3
Willoughby	2.6	2.6	2.7	2.7	2.7	2.7	2.7	2.6	2.8	2.9	3.0	3.2	3.3	4.2	5.3
Woollahra	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.5	0.6	0.6	0.6	0.6	0.7	0.8	1.1
TOTAL	**649**	**627**	**605**	**576**	**540**	**495**	**543**	**604**	**668**	**734**	**804**	**877**	**954**	**1,395**	**1,953**

Table C1.8 Road distribution for 'Project Case' scenario for Moorebank – Semi Truck movements per day – round trips

LGA	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Ashfield	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Auburn	3.3	7.5	12.7	18.2	24.3	31.0	31.6	31.3	33.6	35.7	37.6	39.5	41.2	48.5	53.9
Bankstown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Baulkham Hills	5.7	12.1	19.4	27.5	36.5	46.6	47.4	47.2	46.8	46.4	46.0	45.7	45.4	44.1	43.1
Blacktown	37.6	81.0	130.7	187.4	251.7	324.3	333.0	334.8	331.9	329.2	326.6	324.2	322.0	312.5	305.5
Botany Bay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Burwood	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Camden	3.0	7.1	12.4	19.0	27.1	36.8	39.6	41.5	42.8	43.9	45.0	46.0	46.9	50.4	52.9
Campbelltown	4.6	10.7	18.3	27.6	38.6	51.3	54.0	55.4	58.1	60.6	63.1	65.3	67.5	76.8	83.9
Canada Bay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canterbury	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fairfield	14.9	32.5	52.8	76.2	102.9	133.1	137.2	138.3	138.9	139.5	140.1	140.6	141.1	143.3	144.9
Holroyd	5.8	19.7	31.3	44.0	57.9	73.2	73.6	72.3	73.5	74.7	75.8	76.8	77.7	81.7	84.8
Hornsby	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hunters Hill	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hurstville	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kogarah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ku-ring-gai	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Cove	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Leichhardt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Liverpool	22.0	45.5	70.8	97.8	126.7	157.5	156.2	151.7	150.1	148.7	147.4	146.2	145.0	140.1	136.5
Manly	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Marrickville	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mosman	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
North Sydney	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Parramatta	6.3	12.9	19.9	27.2	34.8	42.8	41.9	40.2	39.8	39.5	39.2	38.9	38.6	37.5	36.6
Penrith	23.5	81.0	130.7	187.4	251.8	324.4	333.3	335.1	332.2	329.4	326.9	324.5	322.2	312.8	305.7
Pittwater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Randwick	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rockdale	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ryde	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Strathfield	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sutherland Shire	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sydney	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Warringah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Waverley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Willoughby	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Woollahra	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	**127**	**310**	**499**	**712**	**952**	**1,221**	**1,248**	**1,248**	**1,248**	**1,248**	**1,248**	**1,248**	**1,248**	**1,248**	**1,248**

Table C1.9 Road distribution for 'Project Case' scenario for Moorebank – B-Double truck movements per day – round trips

LGA	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Ashfield	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Auburn	0.5	1.3	2.1	3.0	4.0	5.2	5.3	5.2	5.6	5.9	6.3	6.6	6.9	8.1	9.0
Bankstown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Baulkham Hills	1.0	2.0	3.2	4.6	6.1	7.8	7.9	7.9	7.8	7.7	7.7	7.6	7.6	7.3	7.2
Blacktown	6.3	13.5	21.8	31.2	41.9	54.0	55.5	55.8	55.3	54.9	54.4	54.0	53.7	52.1	50.9
Botany Bay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Burwood	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Camden	0.5	1.2	2.1	3.2	4.5	6.1	6.6	6.9	7.1	7.3	7.5	7.7	7.8	8.4	8.8
Campbelltown	0.8	1.8	3.1	4.6	6.4	8.5	9.0	9.2	9.7	10.1	10.5	10.9	11.3	12.8	14.0
Canada Bay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canterbury	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fairfield	2.5	5.4	8.8	12.7	17.1	22.2	22.9	23.0	23.2	23.3	23.3	23.4	23.5	23.9	24.2
Holroyd	1.0	3.3	5.2	7.3	9.7	12.2	12.3	12.1	12.3	12.4	12.6	12.8	13.0	13.6	14.1
Hornsby	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hunters Hill	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hurstville	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kogarah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ku-ring-gai	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Cove	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Leichhardt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Liverpool	3.7	7.6	11.8	16.3	21.1	26.2	26.0	25.3	25.0	24.8	24.6	24.4	24.2	23.4	22.7
Manly	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Marrickville	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mosman	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
North Sydney	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Parramatta	1.0	2.2	3.3	4.5	5.8	7.1	7.0	6.7	6.6	6.6	6.5	6.5	6.4	6.2	6.1
Penrith	3.9	13.5	21.8	31.2	42.0	54.1	55.5	55.8	55.4	54.9	54.5	54.1	53.7	52.1	50.9
Pittwater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Randwick	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rockdale	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ryde	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Strathfield	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sutherland Shire	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sydney	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Warringah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Waverley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Willoughby	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Woollahra	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	**21**	**52**	**83**	**119**	**159**	**203**	**208**	**208**	**208**	**208**	**208**	**208**	**208**	**208**	**208**

Appendix D

Deloitte Distribution Data (by Postcode)

D1. Allocation by postcode

Table D1.1 Percentage allocation by postcode (for 6 of the LGA's with the greatest volume of traffic to/from Moorebank)

LGA	Postcode	Percentage of LGA volume	LGA	Postcode	Percentage of LGA volume
Penrith	2759	76.2%	Fairfield	2169	48.1%
	2750	13.7%		2165	16.3%
	2760	9.3%		2161	13.6%
	2178	0.3%		2166	8.7%
	2747	0.2%		2163	7.3%
	2749	0.1%		2175	5.5%
Blacktown	2766	42.8%		2177	0.2%
	2148	24.7%	Campbelltown	2566	52.5%
	2147	11.0%		2565	44.5%
	2770	9.2%		2560	3.3%
	2761	6.4%	Camden	2567	99.2%
	2760	3.6%		2570	0.4%
	2765	2.0%		2179	0.3%
Liverpool	2170	75.6%		2557	0.1%
	2173	20.2%			
	2171	3.6%			
	2178	0.2%			
	2556	0.1%			
	2179	0.1%			

Appendix E

Change in articulated truck volumes on key corridors

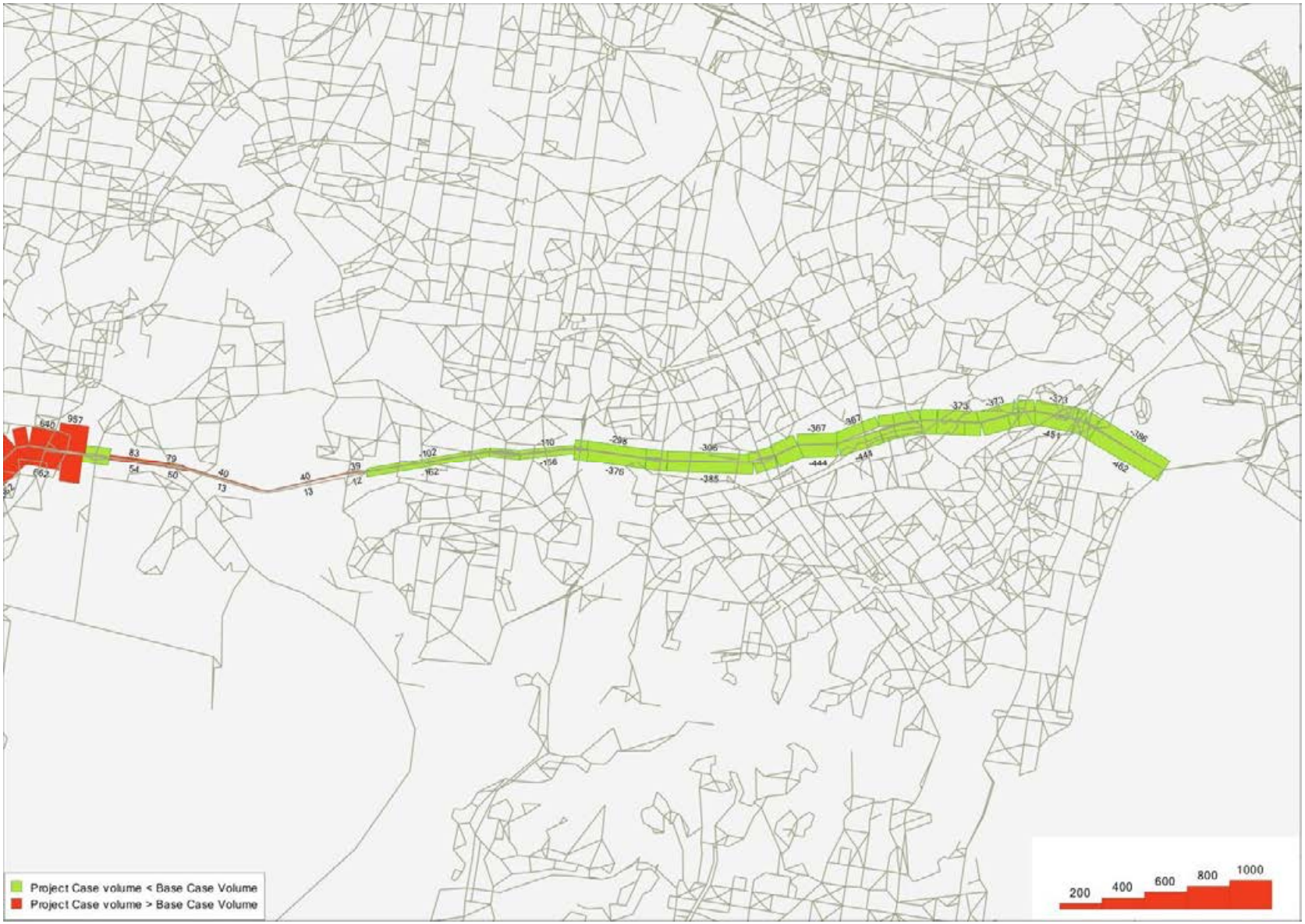


Figure D1.1 Change in articulated vehicle flows to/from Port Botany and Moorebank on the M5 between Sydney Airport and Hume Highway

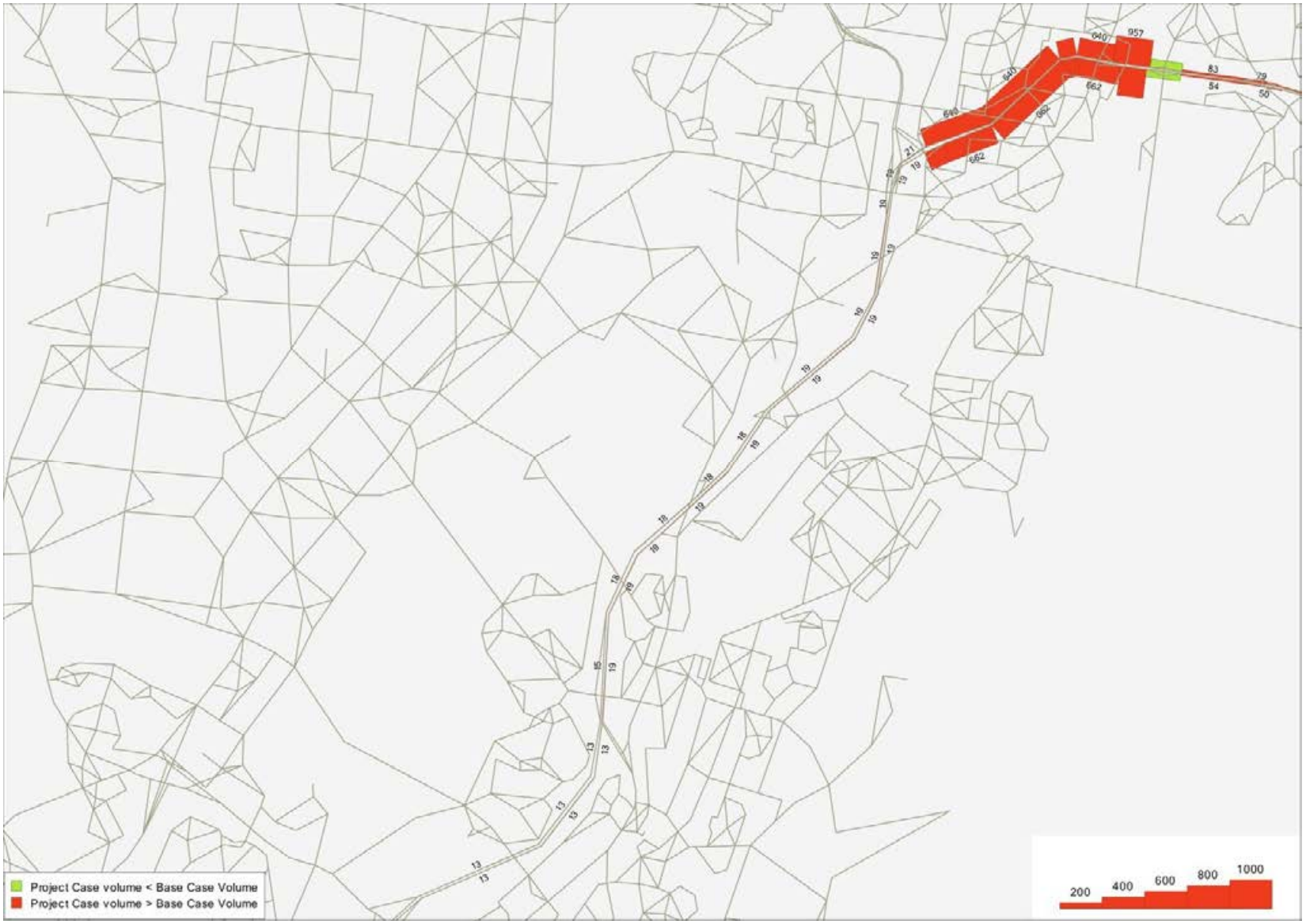


Figure D1.2 Change in articulated vehicle flows to/from Port Botany and Moorebank on the M5 between Hume Highway and Narellan Road

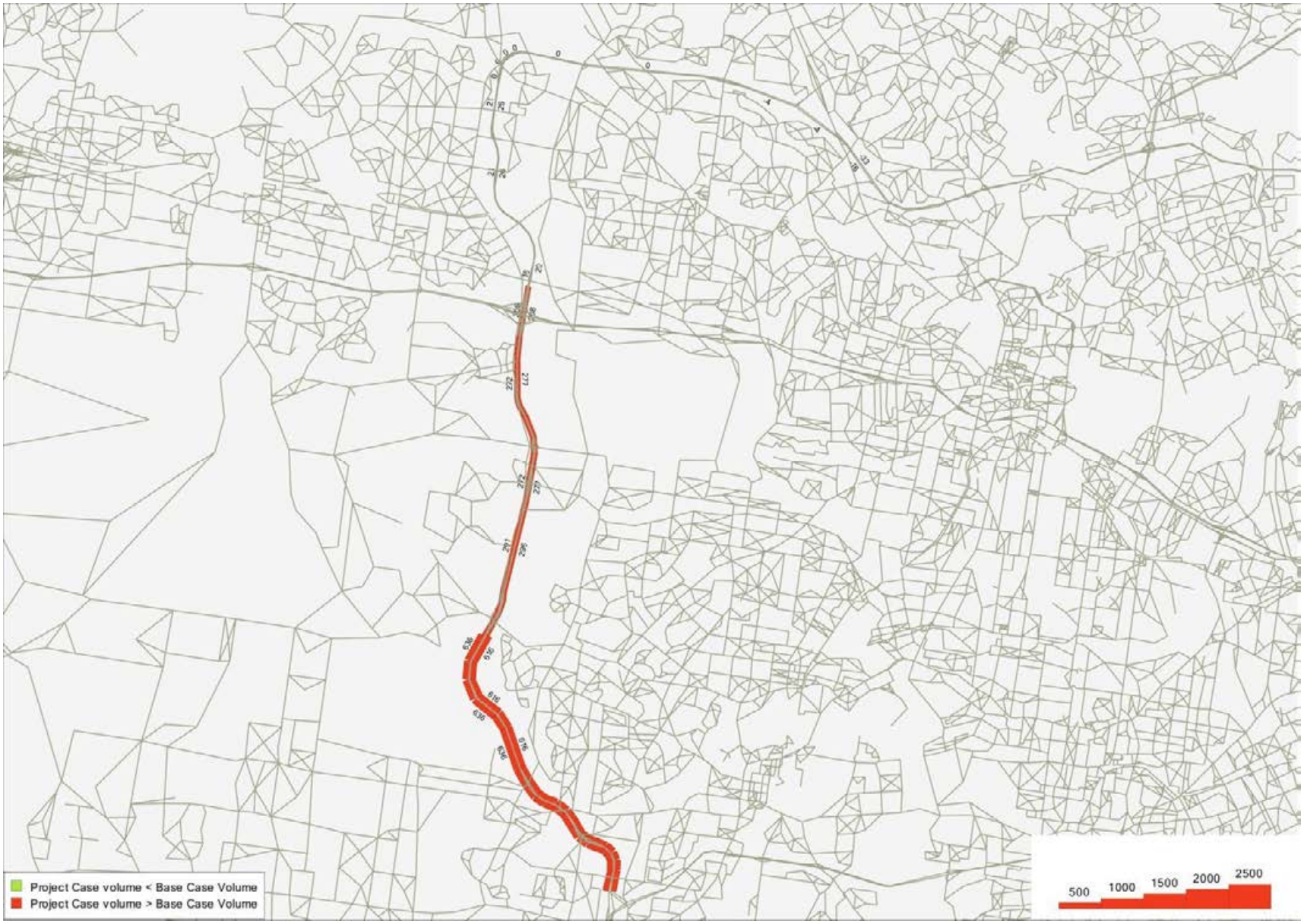


Figure D1.3 Change in articulated vehicle flows to/from Port Botany and Moorebank on the M7 between the M5 and M4

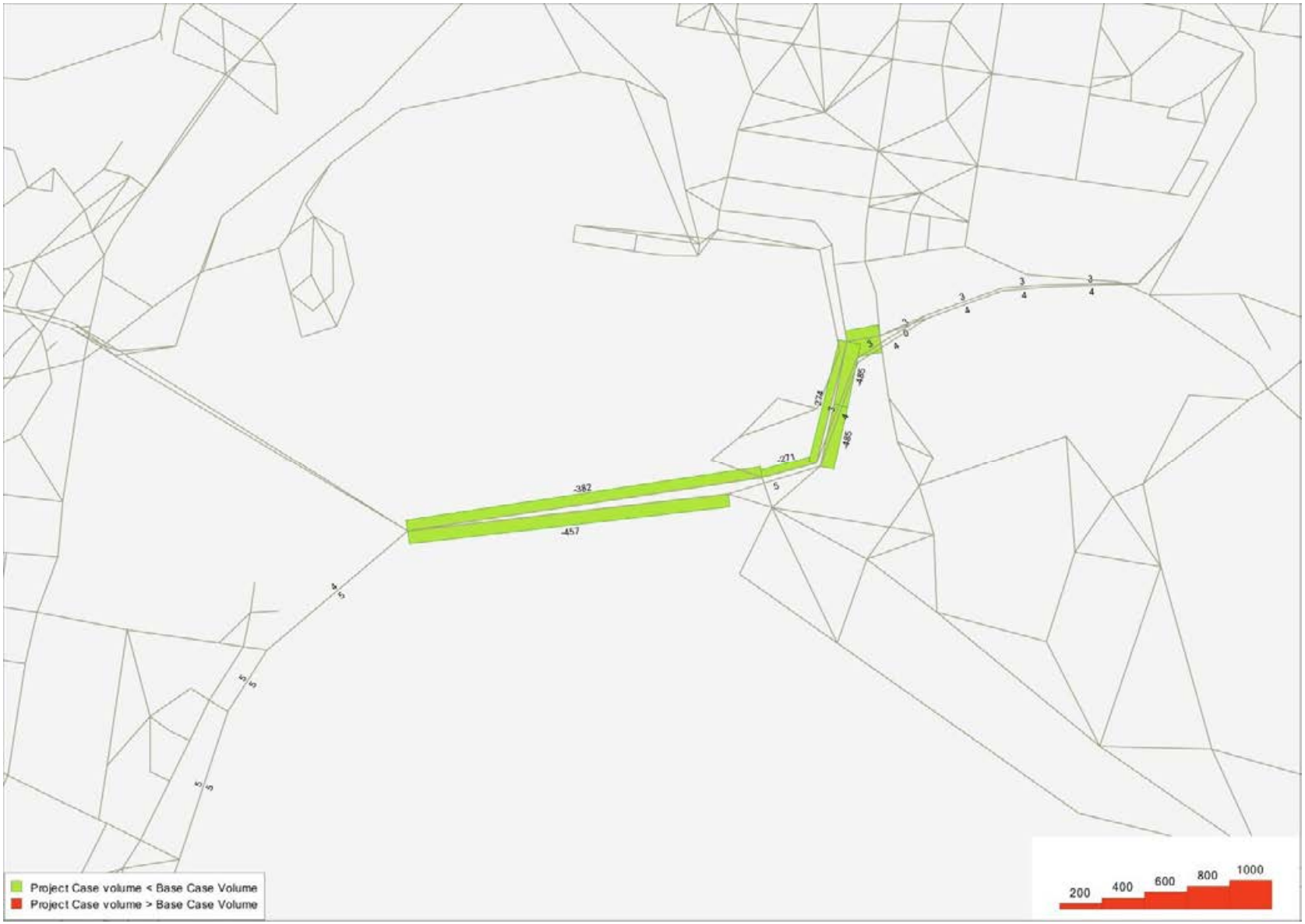


Figure D1.4 Change in articulated vehicle flows to/from Port Botany and Moorebank on General Holmes Drive between Botany Road and The Grand Parade

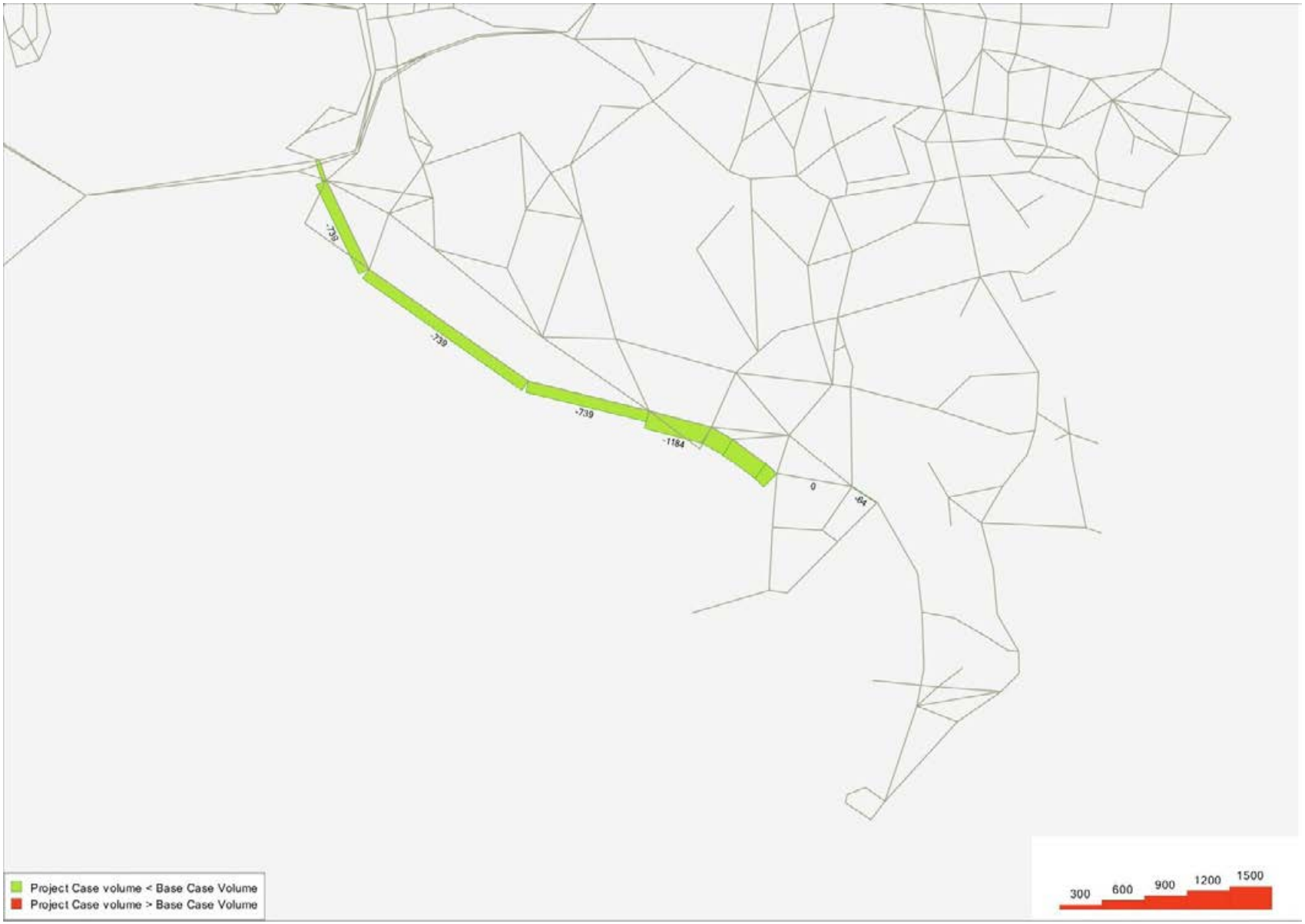


Figure D1.5 Change in articulated vehicle flows to/from Port Botany and Moorebank on Foreshore Road/Botany Road between Southern Cross Road and Bumborah Point Road

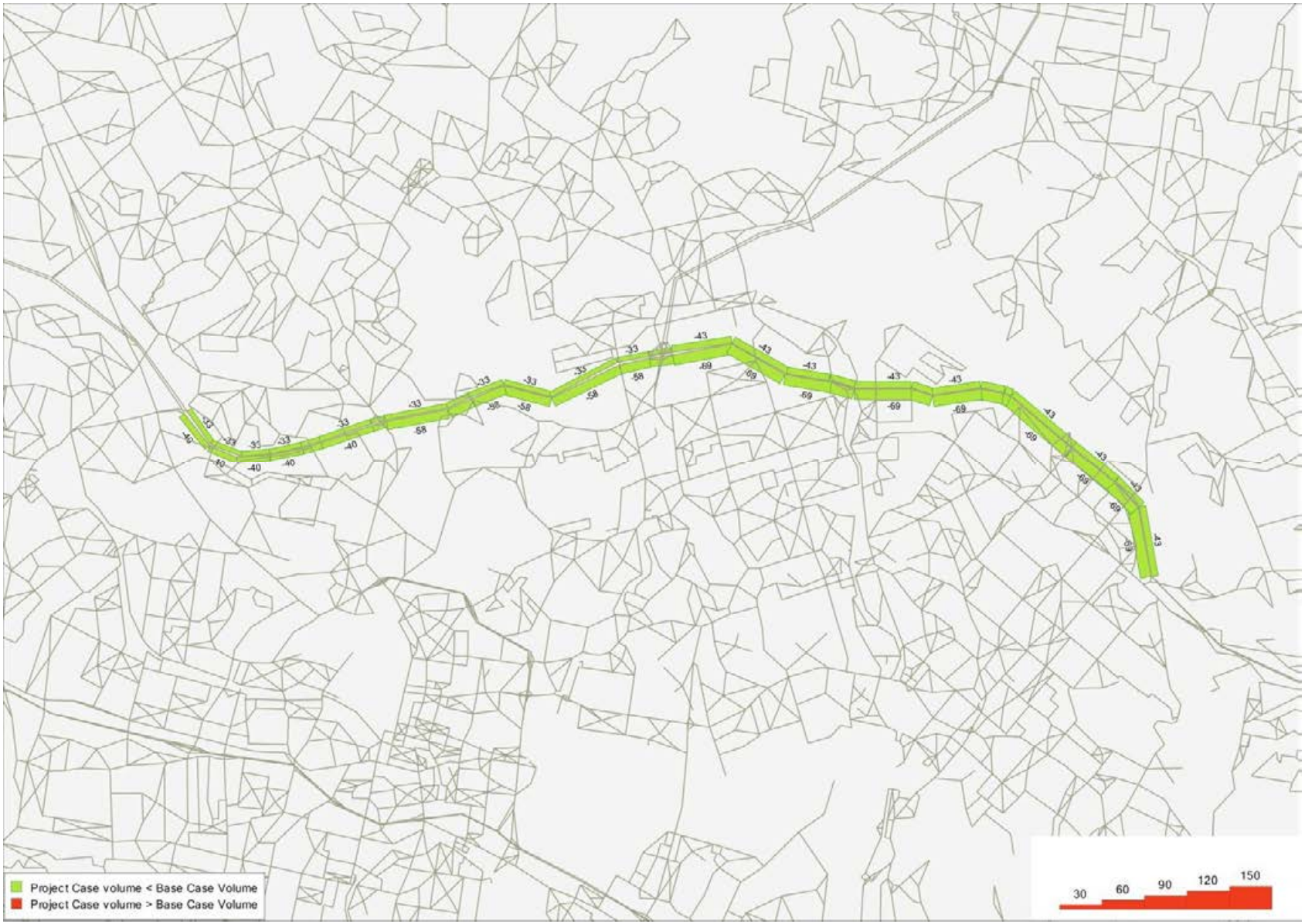


Figure D1.6 Change in articulated vehicle flows to/from Port Botany and Moorebank on the M2 between Delhi Road and Abbott Road

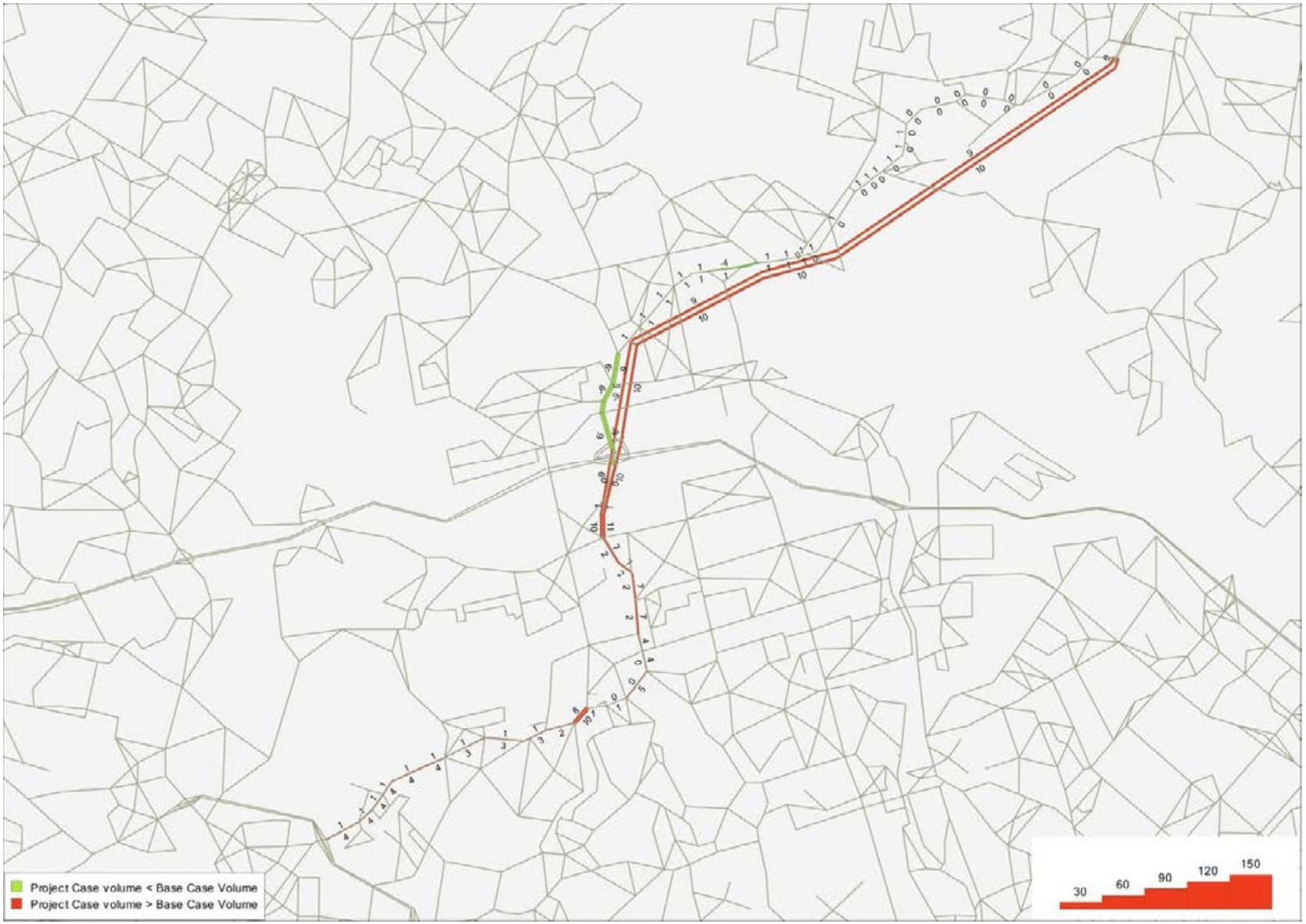


Figure D1.7 Change in articulated vehicle flows to/from Port Botany and Moorebank on Pennant Hills Road/Cumberland Highway between James Ruse Drive and the M1

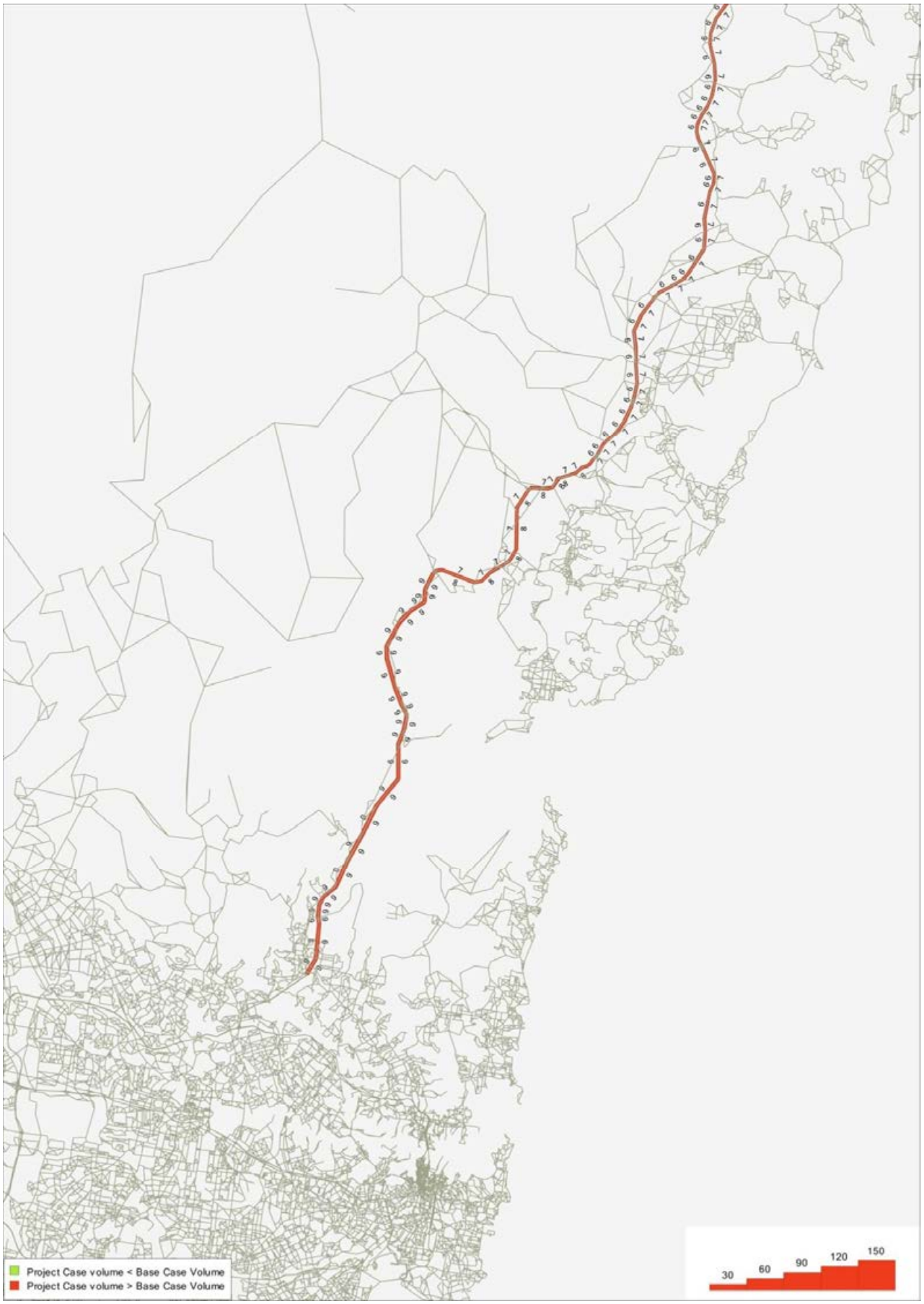


Figure D1.8 Change in articulated vehicle flows to/from Port Botany and Moorebank on the M1 north of Cumberland Highway

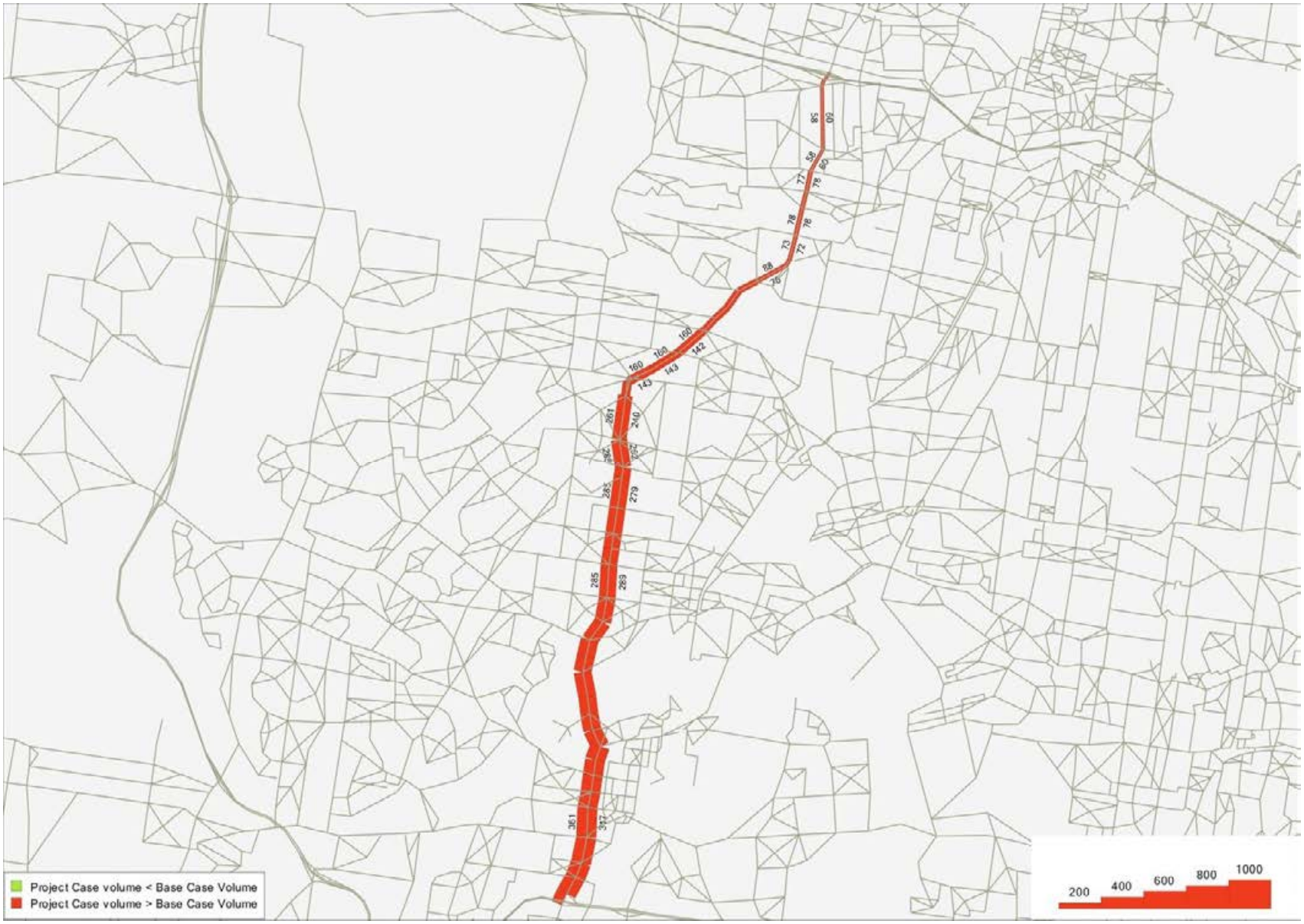


Figure D1.9 Change in articulated vehicle flows to/from Port Botany and Moorebank on the Hume Highway/Cumberland between the M5 and the M4

Appendix F

Change in speed

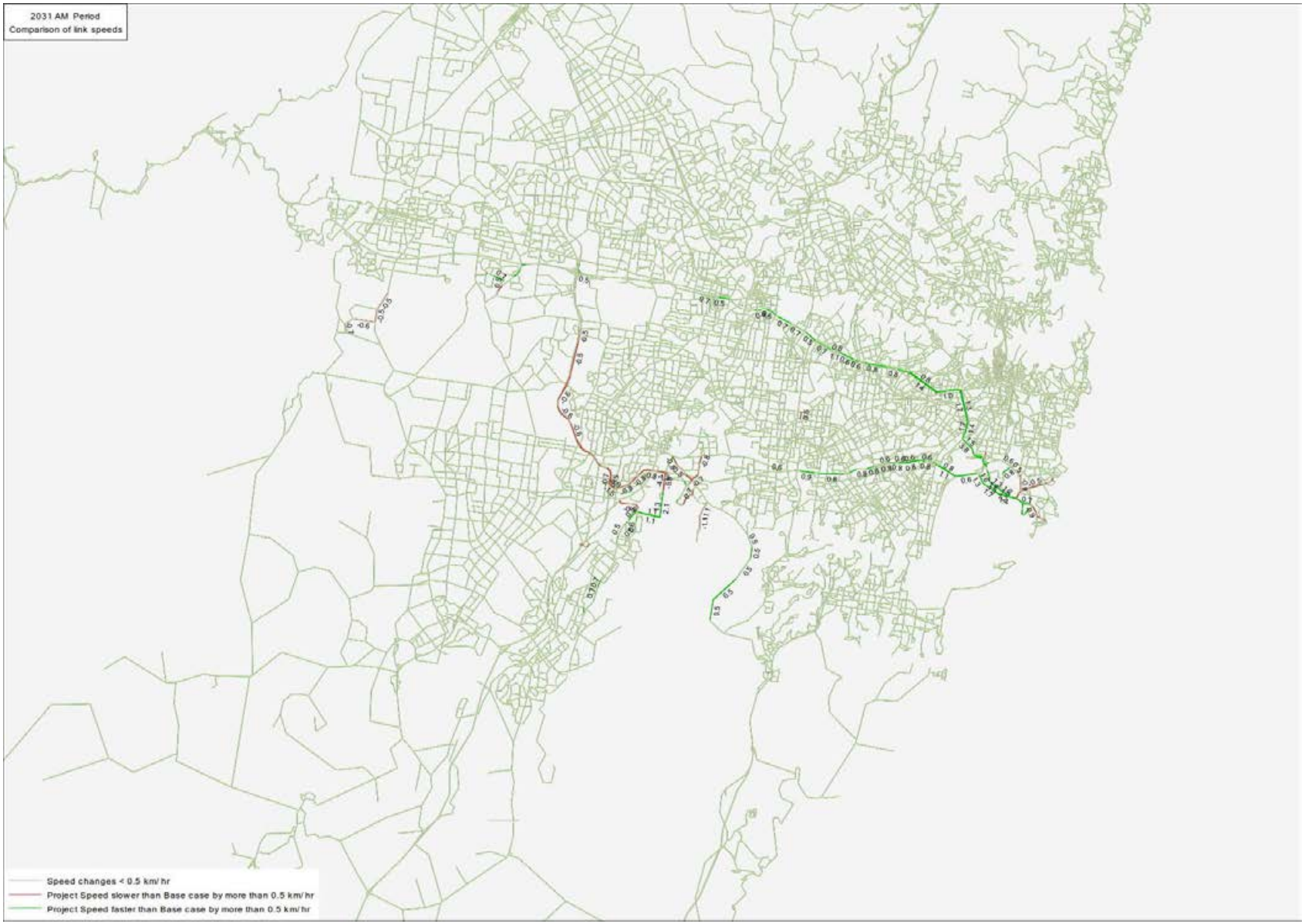


Figure D1.1 Change in speed, 2031 AM Peak ('Project Case' versus 'Base Case')

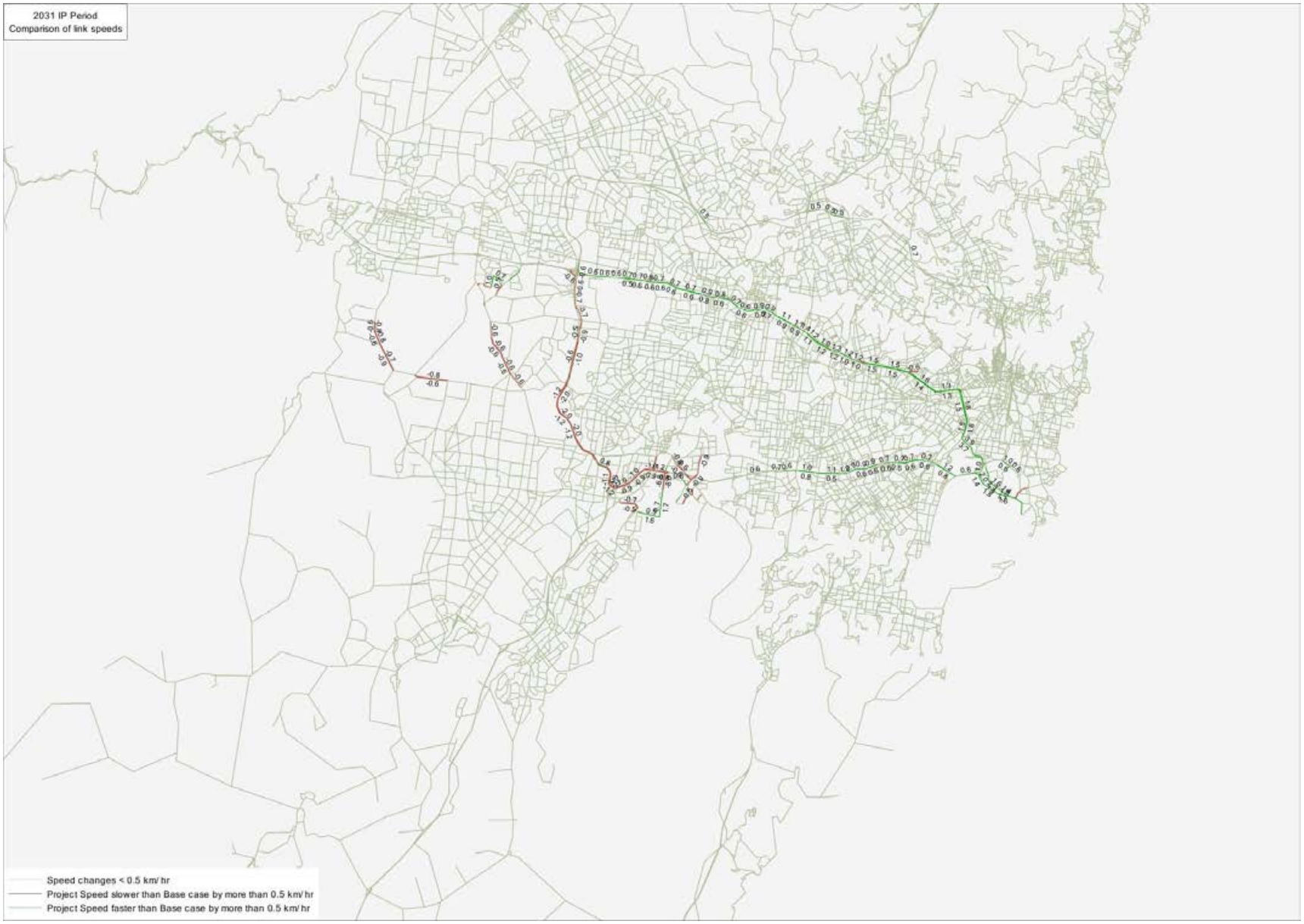


Figure D1.2 Change in speed, 2031 inter-peak period ('Project Case' versus 'Base Case')

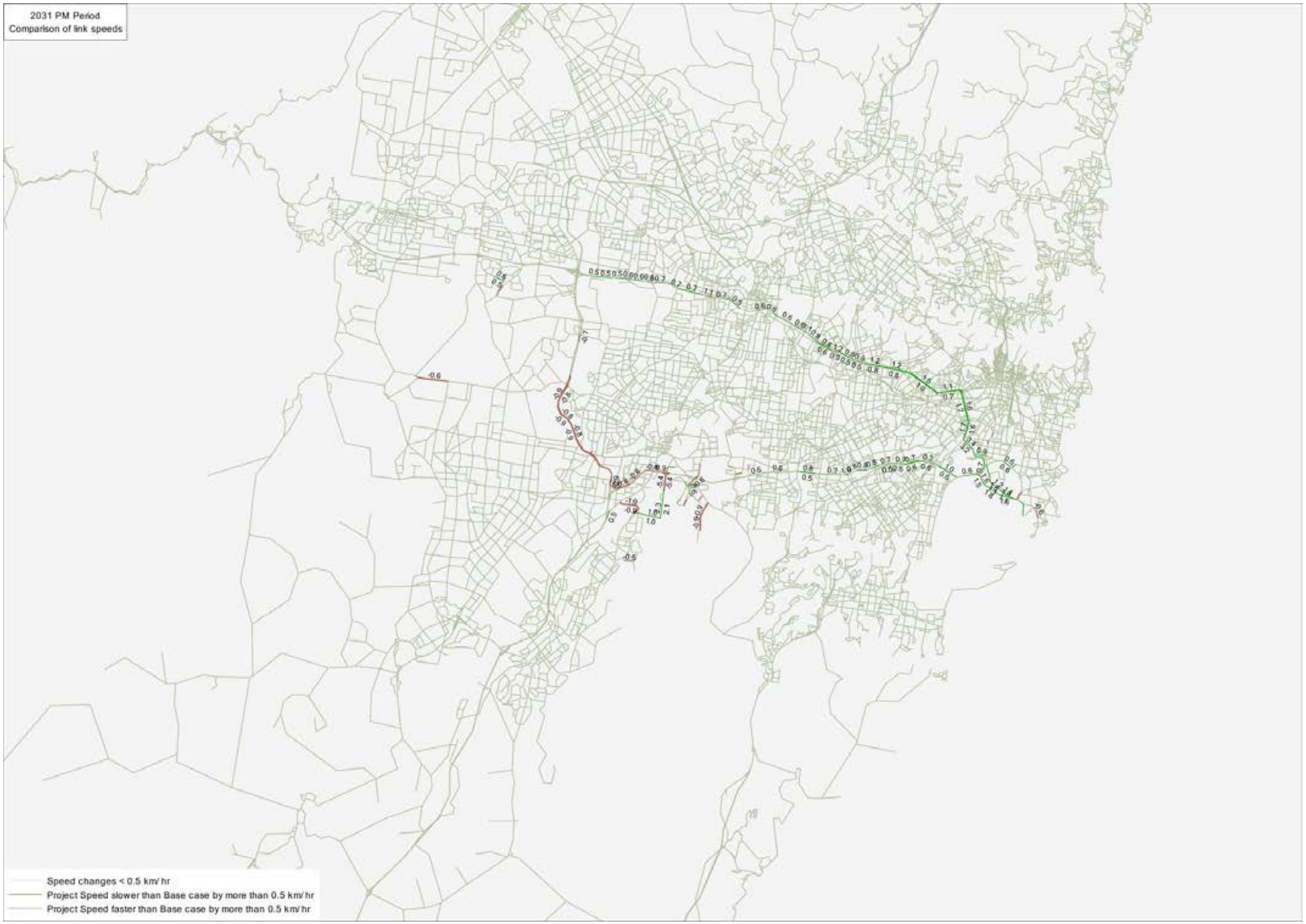


Figure D1.3 Change in speed, 2031 PM peak ('Project Case versus 'Base Case')

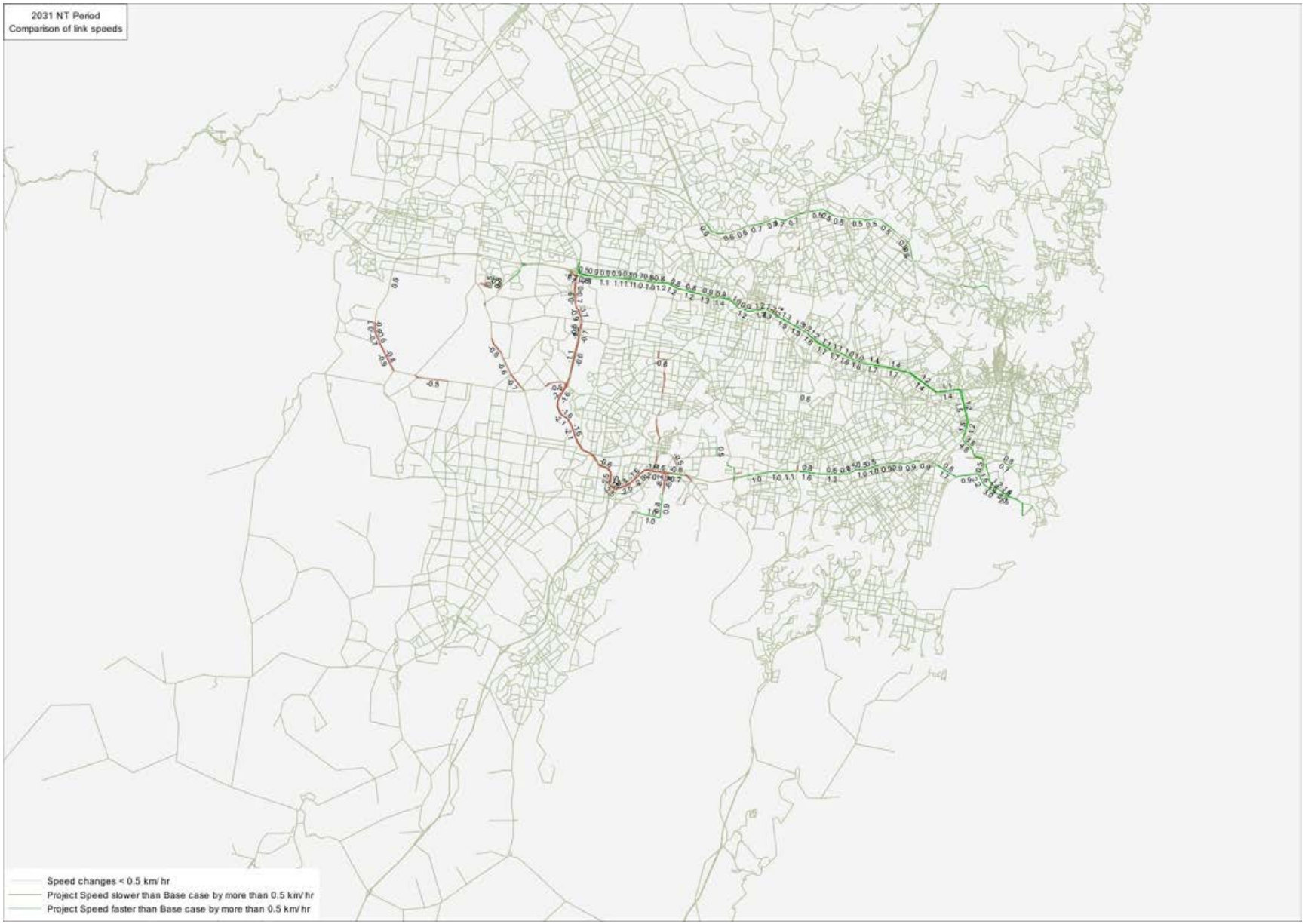


Figure D1.4 Change in speed, 2031 night time period ('Project Case versus 'Base Case')

Appendix M

Deloitte EIS – Supporting Information

Deloitte.

Moorebank Intermodal Company

EIS - Supporting Information

2 March 2015

REVISED

Liability limited by a scheme approved under Professional Standards Legislation.

Member of Deloitte Touche Tohmatsu Limited

Contents

1 Introduction 6

2 Port Botany forecasts 6

3 Spatial Distribution 7

3.1 Updated Data Sets 7

3.2 Addition of Industrial Lands data 8

3.3 Updated Distribution 9

4 Truck Trip Generation 11

4.1 Assumptions 12

4.2 Approach to Estimating Truck Trips 13

4.2.1 IMEX and Interstate throughput 14

4.3 Movements requiring transport off site 14

4.3.1 IMEX market - 2030 15

4.3.2 IMEX market - 2050 16

4.3.3 Interstate Market - 2030 18

4.3.4 Interstate Market - 2050 19

4.3.5 Combined IMEX and Interstate at 2030 20

4.3.6 Combined IMEX and Interstate at 2050 22

4.3.7 Summary 24

4.4 Direct FCL and empty container movements 27

4.4.1 IMEX Market - 2030 27

4.4.2 IMEX Market - 2050 30

4.4.3 Interstate Market - 2030 34

4.4.4 Interstate Market - 2050 37

4.4.5 Combined IMEX and Interstate movements at 2030 41

4.4.6 Combined IMEX and Interstate movements at 2050 44

4.5 Movements to and from the Warehouses 49

4.5.1 IMEX Market - 2030 49

4.5.2 IMEX Market - 2050 52

4.5.3 Interstate Containers 2030 56

4.5.4 Interstate Containers 2050 60

4.5.5 Combined IMEX and Interstate Containers 2030 63

4.5.6 Combined IMEX and Interstate Containers 2050 68

5 Limitation of our work 73

General use restriction 73

Appendix A 74

© 2015 Deloitte Touche Tohmatsu

List of Tables and Figures

Table 1 : Comparison of Moorebank IMT Demand by LGA at 2030 9
Table 2 : Terminal Truck Assumptions 12
Table 3 : Warehousing related truck assumptions 13
Table 4 : Onsite empty container imbalance 14
Table 5 : Summary of terminal throughput at 2030 24
Table 6 : Summary of Terminal throughput at 2050 24
Table 7 : Total inbound and outbound IMEX moves per week and per weekday (2030) 29
Table 8 : Average weekday inbound and outbound IMEX Articulated truck movements 30
Table 9 : Total inbound and outbound IMEX moves per week and per weekday (2050) 33
Table 10 : Average weekday inbound and outbound IMEX Articulated truck movements 34
Table 11 : Total inbound and outbound interstate moves per week and per weekday (2030) 36
Table 12 : Average weekday interstate inbound and outbound articulated truck movements 37
Table 13 : Total inbound and outbound interstate related moves per week and per weekday (2050) 40
Table 14 : Average weekday interstate inbound and outbound articulated truck movements 40
Table 15 : Total combined inbound and outbound moves per week and per weekday (2030) 43
Table 16 : Combined average weekday inbound and outbound articulated truck movements 44
Table 17 : Total combined inbound and outbound moves per week and per weekday (2050) 48
Table 18 : Average combined weekday inbound and outbound Articulated truck movements 2050 48
Table 19: Average weekly inbound and outbound IMEX warehouse related road movements 51
Table 20 : Average IMEX warehouse related weekday inbound and outbound truck movements 2030 52
Table 21: Average weekly inbound and outbound IMEX warehouse related road movements 55
Table 22: Average IMEX warehouse related weekday inbound and outbound truck movements 2030 56
Table 23 : Average weekly interstate inbound and outbound warehouse related road movements 2030 59
Table 24 : Total average weekday interstate related warehouse truck movements 60
Table 25: Average weekly inbound and outbound warehouse related road movements 62
Table 26 : Average total weekday truck movements for interstate related warehouse activity at 2050 63
Table 27 : Average weekly inbound and outbound warehouse related road movements 2030 for IMEX and Interstate combined 66
Table 28 : Total combined average weekday truck movements for warehousing activity at 2030 67
Table 29 : Average weekly inbound and outbound warehouse related road movements 2050 for IMEX and Interstate combined 70
Table 30 : Total combined average weekday truck movements for warehousing activity at 2050 71

Figure 1 : NSW container volume forecasts 2020-2040 (Transport for NSW) 7
Figure 2 : Original demand update 2013 distribution 10
Figure 3 : Modified demand update 2013 based on selected DoP distribution 11
Figure 4 : Moorebank IMEX flows for 2030 25
Figure 5 : Moorebank IMEX flows for 2050 25
Figure 6 : Moorebank Interstate flows for 2030 26
Figure 7 : Moorebank Terminal interstate container flows at 2050 26
Figure 8 : Total average weekday truck movements at 2030 67
Figure 9 : Total average weekday truck movements at 2050 72
Figure 10 : IMEX Flows through the terminal – 2030 75
Figure 11 : IMEX Flows through the terminal – 2050 76
Figure 12 : Interstate flows through the terminal – 2030 77
Figure 13 : Interstate flows through the terminal – 2050 78
Figure 14 : IMEX and Interstate generated truck movements onto and off the terminal: 2030 79
Figure 15 : IMEX and Interstate generated truck movements onto and off the terminal: 2050 80

© 2015 Deloitte Touche Tohmatsu

Glossary

Acronym	Description
$	Australian dollars unless stated otherwise
“ ‘ or ft	Foot, a unit of length
ACBPS	Australian Customs and Border Protection Services
ACFS	Australian Container Freight Services
ARTC	Australian Rail Track Corporation Ltd
BITRE	Bureau of Infrastructure, Transport and Regional Economics
BTS	NSW Bureau of Transport Statistics
BWSGA	Broader Western Sydney Growth Area
DAE	Deloitte Access Economics, a team within Deloitte Touche Tohmatsu
DC	Distribution centre
ECP	Empty container park
FAK	Freight of all kinds
FCL	Full container load
FEU	Forty-foot equivalent unit, a measure used for capacity in container transportation
GDP	Gross domestic product
GSP	Gross state product
Ha	Hectare, a metric unit of area
IMEX	Import-export
IMT	Intermodal terminal
LCL	Less than container load
LGA	Local government areas
m	Metres, a metric unit of length
MIC	Moorebank Intermodal Company Ltd
NSW	New South Wales

© 2015 Deloitte Touche Tohmatsu

Acronym	Description
PBLIS	Port Botany Landside Improvement Strategy
Pick and Pack	Part of a complete supply chain management process commonly used in the distribution of retail goods. It involves processing quantities of product delivered by truck or train by picking relevant products for each final destination (e.g. retail outlet) and re-packaging them for delivery.
PUD	Pickup and delivery
SPC	Sydney Ports Corporation
sq. m	Square metre, a metric unit of area
SSFL	Southern Sydney Freight Line
Stack run	Stack runs are where the transport operator runs containers to its depot at night and progressively distributes containers to customers over the following one to three days. This generally improves delivery reliability and has been adopted as standard practice by a number of large transport operators servicing the port
SWGC	South West Growth Centre
TEU	Twenty-foot equivalent unit, a measure used for capacity in container transportation

© 2015 Deloitte Touche Tohmatsu

1 Introduction

The purpose of this document is to consolidate the various technical notes that have been developed and / or provided to supplement existing reports and data prepared by Deloitte. The technical notes were prepared, in order to inform, in the first instance, the preparation of the Moorebank Intermodal Terminal (Moorebank IMT) Environmental Impact Statement (EIS).

The contents of this document arise from direct requests for additional information or clarification from MIC. The focus of the technical notes has generally been to set out the approach or detailed methodology behind the assumptions and data that have used from reports that Deloitte has prepared and submitted to Moorebank Intermodal Company (MIC).

The document is therefore not a standalone document, nor is it a complete set of detailed explanations behind all of the assumptions and data provided throughout the project.

2 Port Botany forecasts

Market growth expectations for container volumes through Port Botany in the original Detailed Business Case (DBC) were based on forecasts developed by Sydney Ports Corporation (SPC). These forecasts were developed according to number of growth scenarios for containerised freight movements, ranging from a low growth scenario of 4.8%, to a high growth scenario of 7.2%. A "likely" (or medium) growth rate SPC developed of 6.7%, which resulted in a forecasted Port volume of approximately 7 million TEU by 2030-31, was adopted in the analysis.

The extent to which these high growth rates could be maintained has been a much discussed subject within the freight industry. On the one hand, there was a view that structural changes within the economy that led to high levels of imports would reach an equilibrium state and growth rates would decline to levels more closely aligned with economic growth. Other views suggested that the high reliance on imports would continue into the foreseeable future as shipping rates remained low and supply chain efficiency improved, thereby allowing an ever-increasing range of products to be transported to Australia from overseas' markets.

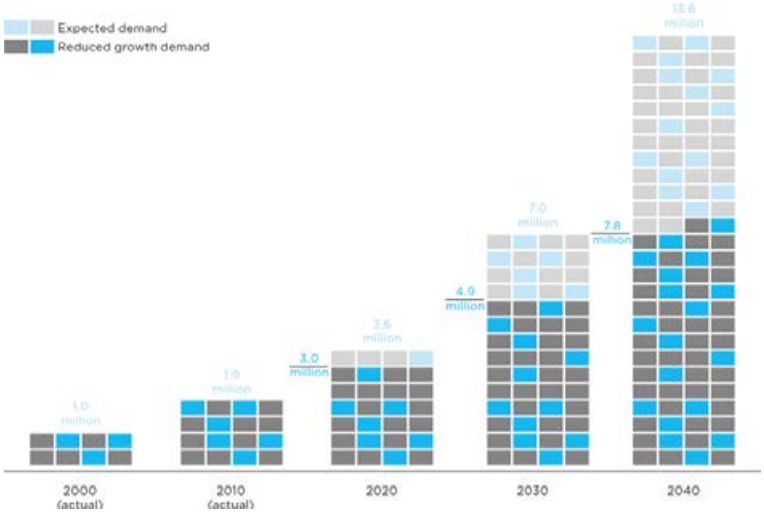
With these issues in mind, the Port Botany throughput revised forecast from the 2013 *NSW Draft Freight Strategy* was used, with the Port's volumes growing to 4.9 million TEU by 2030, implying an annual growth rate of around 4.8%. As part of an update to Moorebank demand in December 2013, a high level analysis of the relationship between Gross State Product (GSP) and Port throughput indicated that the scenario outlined above be considered adequate given future GSP growth.

It is noted that since this analysis, Transport for NSW released the final *NSW Freight and Ports Strategy*. In their assessment of the future freight task, they maintained a reduced growth demand forecast at 4.9 million TEU by 2030 and provided an updated expected forecast of 7.0 million TEU by 2030 as outlined in the figure overleaf. The demand forecasts in the 2013 *Moorebank Demand Update* have been based on 4.9 million TEU throughput which is consistent with the more conservative reduced growth forecast.

© 2015 Deloitte Touche Tohmatsu

Finally, the scope of demand analysis covered the Sydney Greater Metropolitan Area (GMA) which accounts for around 93% of all container import movements[1] and 75% of all container export movements[2] bringing the container landside freight task to just less than 4 million TEU by 2030-31 for the Sydney GMA.

Figure 1 : NSW container volume forecasts 2020-2040 (Transport for NSW)[3]



Source: NSW Freight and Ports Strategy 2013

3 Spatial Distribution

3.1 Updated Data Sets

Demand estimates for Moorebank IMT in the EIS are underpinned by postcode level import data provided by the Australian Customs and Border Protection Service (ACBPS).

The initial demand data sets developed for the Moorebank IMT development were derived utilising data sourced from ACBPS in 2011. Following this work, MIC engaged Deloitte to obtain new container data from ACBPS and subsequently update the demand analysis. ACBPS was able to provide more comprehensive data for movements since 2010. The new data set provided in September 2013 includes the following additional information:

- Export data with cargo owner and freight forwarder post code.
- Cargo type (for exports).
- Full data sets for import and export containers for financial years 2009 to 2013.

[1] Based on the analysis of data provided by the Australian Customs and Border Protection Service (ACBPS)
[2] NSW Container Freight Improvement Strategy
[3] http://freight.transport.nsw.gov.au/strategy/task/volume.html

© 2015 Deloitte Touche Tohmatsu

With the new data provided, Deloitte was able to derive a more precise picture of container origins and destinations for the Sydney metropolitan area - in particular, the change of actual container distribution between 2010 and 2013. While ACBPS data provided a current picture of container distribution in Sydney, analysis of the NSW Bureau of Transport Statistics' (BTS) employment forecasts was also conducted to provide for a long-term picture of where growth was likely to occur up to 2046 for the transport and warehousing sector in Sydney.

The 2013 ACBPS distributions were forecasted for future periods using BTS' 2012 employment forecast dataset with the transport and warehousing employment growth estimates used as a proxy for future growth in container distribution at the LGA level.

It should be noted that the ACBPS data was provided at a postcode level and BTS employment forecasts were available at the Travel zone (Tz) level in its most disaggregated form. To ensure that datasets are of a similar level of detail, Local Government Areas (LGAs) as defined by the Australian Bureau of Statistics (ABS), were used to develop current and future freight distributions. This process resulted in 38 LGAs that form the possible catchment areas within the Sydney metropolitan area.

3.2 Addition of Industrial Lands data

As part of a separate project (Demand Refresh 2014), where Deloitte had been engaged by MIC to conduct a more comprehensive refresh to Moorebank demand as part of the MIC's ongoing procurement process, additional catchment analysis was carried out looking at other possible datasets to determine drivers and indicators for container distribution.

The project team identified analysis conducted by the NSW Department of Planning and Environment (DoP) on employment lands (*Employment Lands Task Force Report 2011*) which provided, amongst other things, a stocktake of developed and undeveloped industrial land across Sydney. The report also included discussion on the average lead time involved with the development of industrial land (10 to 15 years).

An area for improvement identified in the original forecast approach for container distributions using BTS data were the relatively low growth rates associated with LGAs in western Sydney that were regarded as growth hotspots for future freight activity – in particular for Blacktown, Camden, Campbelltown, Liverpool and Penrith. Conversely, Fairfield is already regarded as relatively developed with little future growth potential outside of significant industrial re-development. This view was supported by DoP allocation of future industrial land with respect to the Broader Western Sydney Employment Area (WSEA) and South West Growth Centre (SWGC).

As such, the share of future developed industrial land for these LGAs were used as a proxy for future container freight distribution, as part of an alternative scenario showing a higher distribution skew towards Sydney's outer west. The remaining LGA container distribution shares were adjusted and re-distributed based on remaining forecast container volumes.

© 2015 Deloitte Touche Tohmatsu

The revised distribution follows a linear interpolation between known container distributions in 2013 and the share of developed industrial land for the aforementioned LGAs in 2026 (based on a 15-year development lead time from 2011) before remaining constant for the remainder of the forecast period.

3.3 Updated Distribution

The following table compares the original estimated spatial distribution for Moorebank containers by LGA for 2030 with the modified spatial distribution by LGA based on the analysis using the updated data outlined above.

The key changes in the results are the reduction in the original estimates for 2030 for catchments closer to the east including Auburn, Holroyd, Parramatta and Fairfield and the increase in the estimated demand for LGA's with considerable industrial land development including Penrith, Blacktown, Campbelltown and Liverpool. The comparative results for each LGA are outlined in **Table 1** below.

Table 1 : Comparison of Moorebank IMT Demand by LGA at 2030

LGA	Original Demand Update 2013 (2030)		Modified Demand Update 2013 based on selected DoP distribution (2030)	
	TEU	*%*	*TEU*	*%*
Ashfield	0	0.0%	0	0.0%
Auburn	96,855	9.3%	34,655	3.3%
Bankstown	0	0.0%	0	0.0%
Baulkham Hills	17,659	1.7%	38,151	3.6%
Blacktown	233,150	22.3%	270,656	25.8%
Botany Bay	0	0.0%	0	0.0%
Burwood	0	0.0%	0	0.0%
Camden	12,017	1.1%	39,421	3.8%
Campbelltown	40,111	3.8%	56,750	5.4%
Canada Bay	0	0.0%	0	0.0%
Canterbury	0	0.0%	0	0.0%
Fairfield	200,352	19.2%	118,639	11.3%
Holroyd	142,169	13.6%	65,342	6.2%
Hornsby	0	0.0%	0	0.0%
Hunters Hill	0	0.0%	0	0.0%
Hurstville	0	0.0%	0	0.0%
Kogarah	0	0.0%	0	0.0%
Ku-ring-gai	0	0.0%	0	0.0%
Lane Cove	0	0.0%	0	0.0%
Leichhardt	0	0.0%	0	0.0%
Liverpool	109,415	10.5%	121,885	11.6%
Manly	0	0.0%	0	0.0%
Marrickville	0	0.0%	0	0.0%
Mosman	0	0.0%	0	0.0%
North Sydney	0	0.0%	0	0.0%
Parramatta	70,012	6.7%	32,466	3.1%
Penrith	124,200	11.9%	270,865	25.8%
Pittwater	0	0.0%	0	0.0%
Randwick	0	0.0%	0	0.0%
Rockdale	0	0.0%	0	0.0%
Ryde	0	0.0%	0	0.0%
Strathfield	0	0.0%	0	0.0%
Sutherland Shire	0	0.0%	0	0.0%

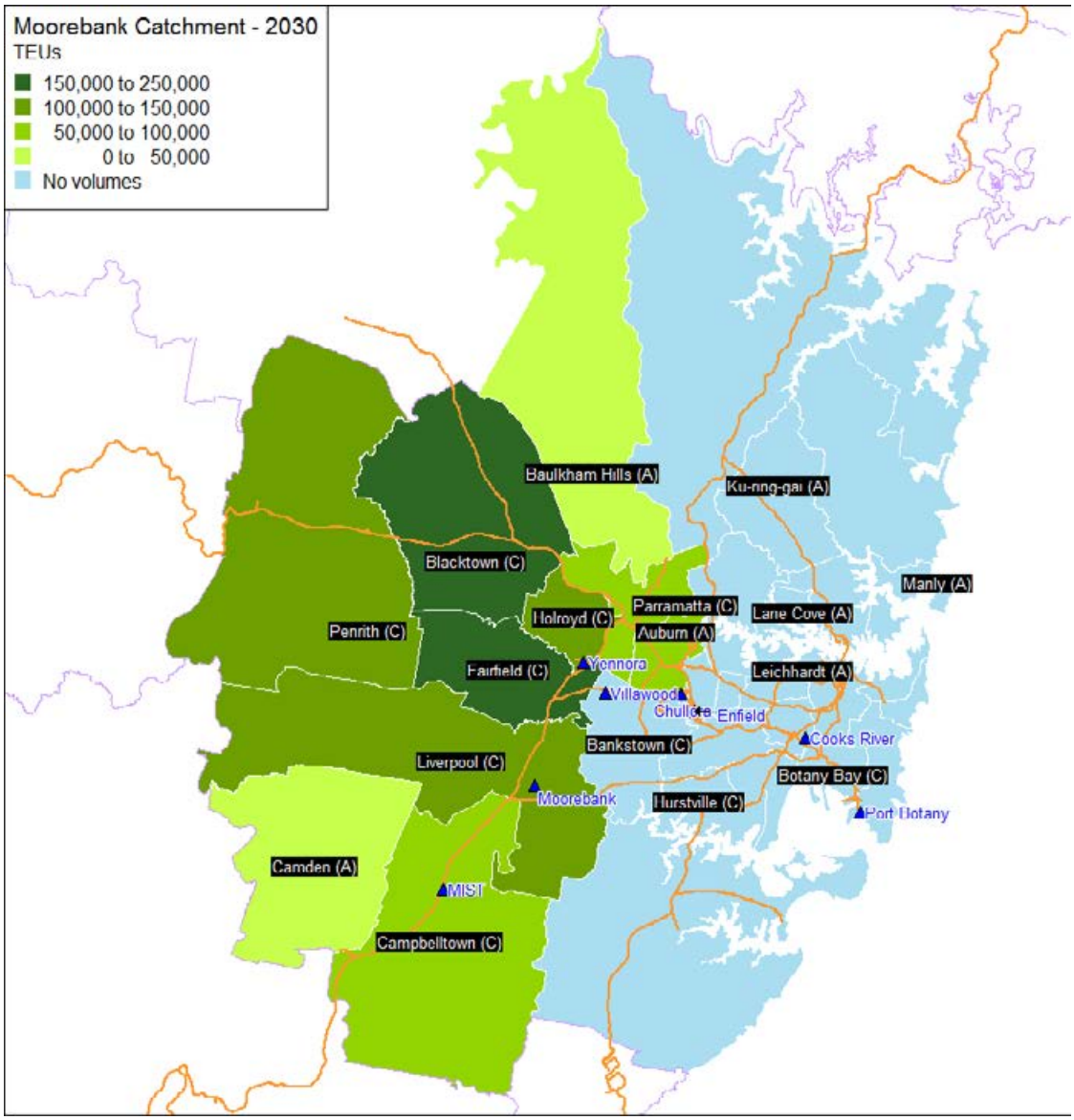
Liability limited by a scheme approved under Professional Standards Legislation.

© 2015 Deloitte Touche Tohmatsu

LGA	Original Demand Update 2013 (2030)		Modified Demand Update 2013 based on selected DoP distribution (2030)	
	TEU	*%*	*TEU*	*%*
Sydney	0	0.0%	0	0.0%
Warringah	0	0.0%	0	0.0%
Waverley	0	0.0%	0	0.0%
Willoughby	0	0.0%	0	0.0%
Woollahra	0	0.0%	0	0.0%
Total	**1,045,940**	**100.0%**	**1,048,830**	**100.0%**

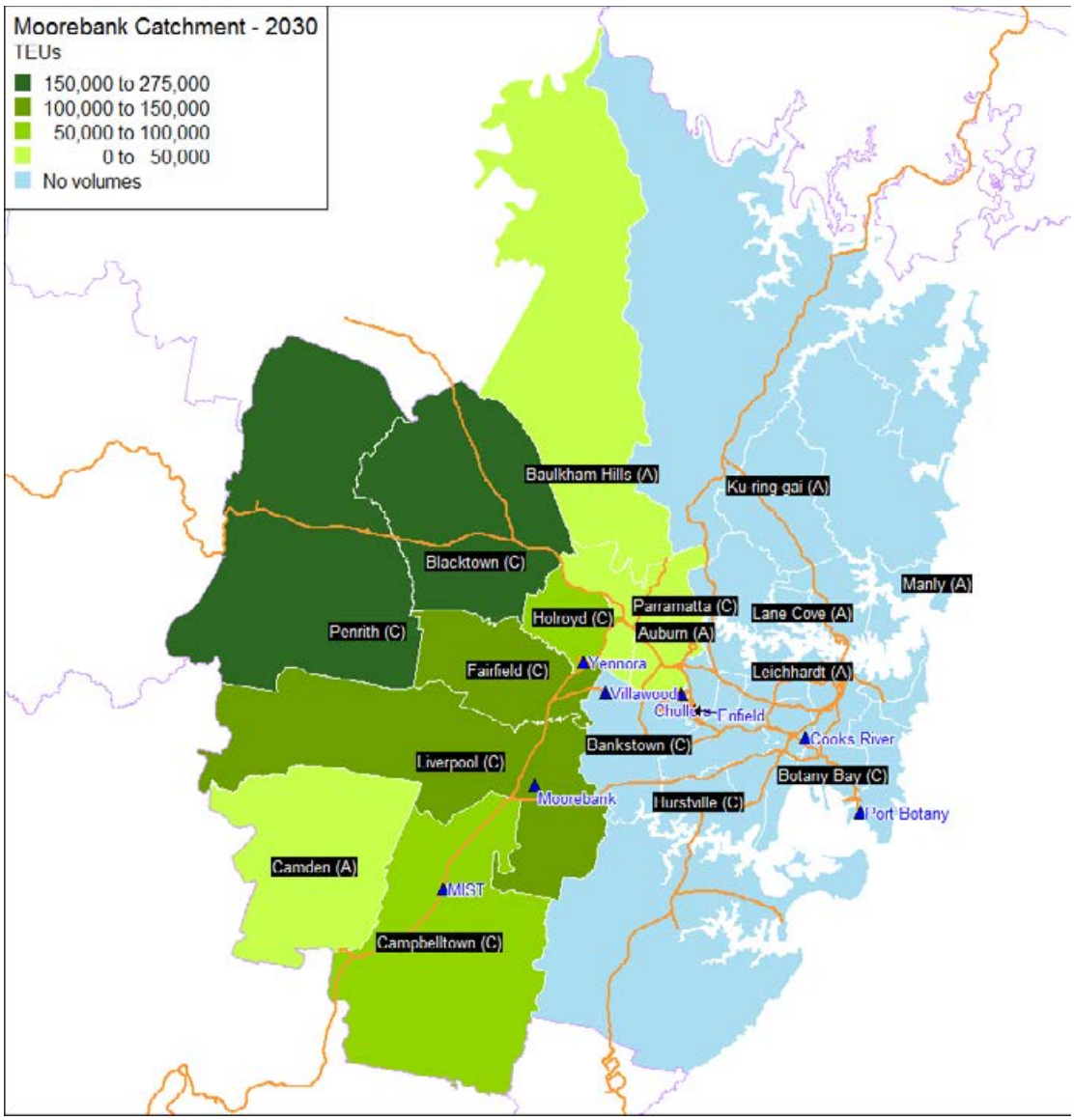
The following maps illustrate the changes in local government areas representing the primary demand catchment areas for IMEX cargo for Moorebank for 2030 between the original analysis and the updated analysis using the new data sets. **Figure 2**, the original demand analysis by LGA can be compared to **Figure 3** with the modified analysis in the maps below.

Figure 2 : Original demand update 2013 distribution



© 2015 Deloitte Touche Tohmatsu

Figure 3 : Modified demand update 2013 based on selected DoP distribution



4 Truck Trip Generation

The following section steps through the underlying assumptions and the approach taken to derive the possible number of trucks generated daily from the Moorebank Intermodal terminal as a result of the rail terminal operations and the warehousing operations onsite.

© 2015 Deloitte Touche Tohmatsu

4.1 Assumptions

The assumptions used in the Calculation of Daily Truck Generation at Moorebank IMT are split into two areas:

1. Truck operations for container movements on and off site.
2. Truck operations for warehousing related activities – palletised cargo.

Table 2 : Terminal Truck Assumptions

Assumption		Basis of assumption
Container movement off-site	74.0% (2030) 75.4% (2050)	The amount of available warehousing on-site can handle approximately 20% of cargo.
Full container movement to warehousing on-site – Freight All Kinds (FAK)	13.0% (2030) 12.3% (2050)	Assumption on possible lessors of warehousing operating within the market.
Container movement to warehousing on-site – Inventory (Inv)	13.0% (2030) 12.3% (2050)	Assumption on possible lessors of warehousing operating within the market.
Terminal operations	52 weeks per year	Reflecting current operations at Port and other IMT's.
Split between Semi-Trailer and B-Double	80% / 20%	Emerging profile at Port Botany.
Semi-Trailer: **· TEU Carrying Capacity** **· Utilisation** **· Average TEUs carried**	 · 2 · 80% · 1.6	Emerging profile at Port Botany – known capacity of vehicle and growth in FEU.
B-Double: **· TEU Carrying Capacity** **· Utilisation** **· Average TEU carried**	 · 3 · 80% · 2.4	Emerging profile at Port Botany – known capacity of vehicle and growth in FEU.
Truck load matching for Semi-Trailer	30%	Market disaggregation by operator, customer and geography will limit backloading opportunities. A maximum of 30% backloading has been assumed. This has been applied only to Semi trailers moving containers off site. The effective backloading rate across all Moorebank volume is therefore significantly lower.
Truck distribution	85% - Weekday 15% - Weekend	Majority of warehouse and distribution facilities operate 5 or 6 day week operations. Truck movements into and out of Port Botany reflect this profile.
Estimated peak hour multiplier of daily traffic	7.7% (AM Peak) 9.3% (PM Peak)	SIMTA Traffic and Accessibility Impact Assessment - Part 3A Concept Plan Application (August 2013).

© 2015 Deloitte Touche Tohmatsu

Table 3 : Warehousing related truck assumptions

Assumption		Basis of assumption
Equivalent pallets loads per TEU for domestic distribution	25	Container mass limit and cubic capacity will generate average general freight volume of 10-12 tonne per TEU – average food and beverage or retail pallet load is approximately 300 – 500 kg.
Truck fleet for palletised cargo - outbound	34% - Semi-trailer 66% - Rigid	Estimate only based on market knowledge.
Truck fleet for palletised cargo – inbound	100% - Rigid	Estimate only based on market knowledge.
Pallets per Semi-Trailer	40	Derived using SIMTA's Traffic and Accessibility Impact Assessment (August 2013) (which formed part of SIMTA's Part 3A concept approval application), where average net load of vehicle referenced in approval is stated to be 20t.
Pallets per Rigid	20	Derived using SIMTA's Traffic and Accessibility Impact Assessment (August 2013) (which formed part of SIMTA's Part 3A concept approval application), where average net load of vehicle referenced in approval is stated to be 10t.
Truck load matching for Semi-Trailer	None	It has been assumed that market disaggregation by operator, customer and geography will limit backloading opportunities.
Truck distribution	95% - Weekday 5% - Weekend	Majority of the market receiving palletised goods does not operate weekend loading/unloaded operations.
Estimated peak hour multiplier of daily traffic	7.7% (AM Peak) 9.3% (PM Peak)	SIMTA Traffic and Accessibility Impact Assessment - Part 3A Concept Plan Application (August 2013).

4.2 Approach to Estimating Truck Trips

In order to estimate the daily heavy vehicles generated from the Moorebank IMT the forecast volumes for the terminal at 2030 were derived. These estimates were broken down into three categories for containers both arriving and departing the site by rail:

- Full container load (FCL) movements arriving or departing the terminal by rail and moving directly offsite or onsite by road.
- FCL's moving within the site between the rail terminal and associated warehousing with all cargo arriving or leaving the warehouses by truck as deconsolidated or palletised cargo.
- Empty (MT) containers. Warehouse related FCL's were further broken down equally into two segments: Freight all kinds (FAK) to be deconsolidated and delivered; and inventory (INV), which was assumed to be held in the warehouse for a period prior to delivery. It has been assumed that FCL's and MT's would leave and return to the site on a combination of semi-trailers and b-doubles

© 2015 Deloitte Touche Tohmatsu

whilst FAK and Inventory would leave and return to the site on a mix of semi-trailers and rigid trucks.

Consultation with Roads and Maritime Services (RMS)

Two consultation sessions were undertaken, in February and April 2014, with representatives from RMS (Network Optimisation and Road Network Analysis team) to review both the approach and results. They undertook their own analysis based on the underlying demand volumes and assumptions as documented and during a meeting with RMS personnel, they indicated that they reached similar outcomes.

4.2.1 IMEX and Interstate throughput

The terminal is anticipated to handle 500,000 TEU (250,000 TEU inbound and 250,000 TEU outbound) of interstate and close to 1.1 million TEU (547,000 TEU inbound and 499,000 outbound) of IMEX throughput when it reaches full capacity. It is not expected that this would occur before 2040, particularly for interstate traffic. The demand modelling estimated that, by 2030, the Moorebank IMT would be handling approximately 1.046 million TEU of IMEX cargo per annum (two-way total) and handling approximately 328,000 TEU of interstate cargo per annum (two-way total) and by 2050 the Terminal would be handling approximately 1.046 million TEU of IMEX cargo per annum (two-way total) and handling approximately 406,000 TEU of interstate cargo per annum (two-way total). It is assumed that 94,000 TEU would be transhipped between rail services utilising the terminal. These containers would therefore not be transported between the rail terminal and the warehousing operations on or off site.

4.3 Movements requiring transport off site

Utilising the demand estimates for the respective IMEX and interstate markets, the following steps were taken to identify the nature of the movements into and out of Moorebank IMT and whether the movements were as containers (direct movements to and from the site) or as deconsolidated palletised cargo (via the warehouses). The second consideration was whether or not the internal movements relating to the warehousing on site generated a surplus or a shortfall of empty containers as this would determine whether there would be a requirement to move additional empty containers to and from the site by road.

Table 4 : Onsite empty container imbalance

	Loaded TEU ex rail into Warehouse	Loaded TEU for rail out of Warehouse	Empty TEU surplus (shortfall) generated
IMEX 2030	142,448	45,052	97,396
IMEX 2050	134,332	42,485	91,847
Interstate 2030	31,250	31,250	0
Interstate 2050	36,591	36,591	0

© 2015 Deloitte Touche Tohmatsu

Once these flows were determined then the calculation of the associated truck movements could be estimated.

4.3.1 IMEX market - 2030

1. Of the 1.374 million TEU expected to be handled through the terminal in 2030, the breakdown between IMEX and interstate are as follows:
   1,374,000 TEU = 1,046,000 IMEX TEU + 328,000 interstate TEU

2. Of the 1.046 million IMEX TEUs handled, the breakdown between full imports, full exports and empty containers are as follows:
   1,046,000 TEU = 547,000 full import TEU + 173,000 full export TEU + (326,000 empty TEU)

3. Of the 1.046 million total TEU in 2030 (and 2050), the breakdown between containers inbound and containers outbound are as follows:
   1,046,000 TEU = 547,000 inbound TEU + 499,000 outbound TEU

4. Of the 547,000 TEU containers arriving by rail at the site, the breakdown between loaded and empty containers is as follows:
   547,000 TEU = 547,000 loaded TEU + 0 empty TEU

5. Of the 499,000 TEU containers leaving the site by rail, the breakdown between loaded and empty containers is as follows:
   499,000 TEU = 173,000 loaded TEU + 326,000 empty TEU

6. It was assumed that 74% of the loaded total TEU would move to and from the site as containers and 26% of the loaded total TEU would move through the onsite warehousing. The surplus or shortfall of empty containers were all assumed to move directly to and from the site:
   547,000 loaded TEU from site = (547,000 x 74% direct to site) + (547,000 x 26% to onsite warehousing)

   = 404,552 loaded TEUs direct + 142,448 TEUs via warehouses from site by road

   173,000 loaded TEU to site = (173,000 x 74% direct from site) + (173,000 x 26% from onsite warehousing)

   = 127,948 loaded TEU direct + 45,052 TEUs via warehouses to site by road

   228,604 empty TEU to and from site = 326,000 empty containers from MB by rail + 0 empties into MB by rail – 97,396 surplus empty containers generated on site

7. As outlined above it was assumed that all of the empty containers less the onsite surplus and 74% of the loaded total TEU would move off the site as containers.

   761,104 Direct TEU = 228,604 empty TEU + 127,948 loaded direct into terminal + 404,552 loaded TEU direct out of terminal

© 2015 Deloitte Touche Tohmatsu

8. The 26% going via warehouses was split equally, resulting in 13% going to warehousing onsite for destuffing (FAK) and direct delivery and 13% going to warehousing for destuffing and placement into inventory (Inv) for later delivery.

   187,500 TEU via warehouses =
   = 142,448 TEUs out of warehouses + 45,052 TEU into warehouses

   = (142,448 x 50% FAK) leaving + (142,448 x 50% Inventory) leaving + 45,052 x 50% FAK) arriving + (45,052 x 50% Inventory) arriving

   = (71,224 FAK and 71,224 Inv) leaving site from warehouses + (22,526 FAK and 22,526 Inv) arriving at site warehouses

   Or

   = (71,224 FAK and 22,526 FAK) TEU into/out of warehouses + (71,224 Inv and 22,526 Inv) TEU into/out of warehouses

   = 93,750 FAK TEU and 93,750 Inv TEU arriving and leaving via the warehouses

9. This can be further summarised into the total number of IMEX (1.046 million) split into total FCL Direct (761,104) plus total TEUs via the warehousing onsite (187,500) plus empty containers generated onsite (97,396):

   1,046,000 TEU =761,104 containers direct to/from customers via road + 93,750 FAK TEU + 93,750 Inventory TEU + 97,396 surplus onsite empty containers

4.3.2 IMEX market - 2050

1. Of the 1.452 million TEU expected to be handled through the terminal in 2050, the breakdown between IMEX and interstate are as follows:
   1,452,000 TEU = 1,046,000 IMEX TEU + 406,000 interstate TEU

2. Of the 1.046 million IMEX TEU handled, the breakdown between full imports, full exports and empty containers are as follows:
   1,046,000 TEU = 547,000 full import TEU + 173,000 full export TEU + (326,000 empty TEs)

3. Of the 1.046 million total TEU in 2050, the breakdown between containers inbound and containers outbound are as follows:
   1,046,000 TEUs = 547,000 inbound TEU + 499,000 outbound TEU

4. Of the 547,000 TEU containers arriving by rail at the site, the breakdown between loaded and empty containers is as follows:
   547,000 TEU = 547,000 loaded TEU + 0 empty TEU

5. Of the 499,000 TEU containers leaving the site by rail, the breakdown between loaded and empty containers is as follows:

Liability limited by a scheme approved under Professional Standards Legislation.

© 2015 Deloitte Touche Tohmatsu

499,000 TEUs = 173,000 loaded TEU + 326,000 empty TEU

6. It was assumed that 75.4% of the loaded total TEU would move to and from the site as containers and 24.6% of the loaded total TEU would move through the onsite warehousing. The surplus or shortfall of empty containers were all assumed to move directly to and from the site:

547,000 loaded TEU from site = (547,000 x 75.4% direct to site) + (547,000 x 24.6% to onsite warehousing)

= 412,668 loaded TEUs direct + 134,332 TEUs via warehouses from site by road

173,000 loaded TEU to site = (173,000 x 75.4% direct from site) + (173,000 x 24.6% from onsite warehousing)

= 130,515 loaded TEUs direct + 42,485 TEUs via warehouses to site by road

234,153 empty TEU to and from site = 326,000 empty containers from MB by rail + 0 empties into MB by rail – 91,847 surplus empty containers generated on site

7. As outlined above it was assumed that all of the empty containers less the onsite surplus and 75.4% of the loaded total TEU would move off the site as containers.

777,336 Direct TEU = 234,153 empty TEU + 130,515 loaded direct into terminal + 412,668 loaded TEU direct out of terminal

8. The 24.6% going via warehouses was split equally, resulting in 12.3% going to warehousing onsite for destuffing (FAK) and direct delivery and 12.3% going to warehousing for destuffing and placement into inventory (Inv) for later delivery.

176,817 TEU via warehouses =
= 134,332 TEU out of warehouses + 42,485 TEU into warehouses

= (134,332 x 50% FAK) leaving + (134,332 x 50% Inventory) leaving + 42,485 x 50% FAK) arriving + (42,485 x 50% Inventory) arriving

= (67,166 FAK and 67,166 Inv) leaving site from warehouses + (21,243 FAK and 21,243 Inv) arriving at site warehouses

Or

= (67,166 FAK and 21,243 FAK) TEU into/out of warehouses + (67,166 Inv and 21,243 Inv) TEU into/out of warehouses

= 88,409 FAK TEUs and 88,409 Inv TEU arriving and leaving via the warehouses

9. This can be further summarised into the total number of IMEX (1.046 million) split into total FCL Direct (777,336) plus total TEUs via the warehousing onsite (176,817) plus empty containers generated onsite (91,847):

© 2015 Deloitte Touche Tohmatsu

1,046,000 TEU = 777,336 containers direct to/from customers via road + 88,409 FAK TEU + 88,409 Inventory TEU + 91,847 surplus onsite empty containers

4.3.3 Interstate Market - 2030

1. Of the 1.374 million TEU expected to be handled through the terminal in 2030, the breakdown between IMEX and interstate are as follows:
   1,374,000 TEU = 1,046,000 IMEX TEU + 328,000 interstate TEU

2. Of the 328,000 interstate TEUs handled, the breakdown between full inbound, full outbound and empty containers are as follows:
   328,000 TEU = 120,000 full inbound TEU + 120,000 full outbound TEU + 88,000 empty

3. It was assumed that 74% of the loaded total TEU would move to and from the site as containers and 26% of the loaded total TEU would move through the onsite warehousing. The empty containers were all assumed to move directly to and from the site as there is no surplus or shortfall onsite:
   120,000 loaded TEU to site = (120,000 x 74% direct to site) + (120,000 x 26% to onsite warehousing)

   = 88,750 loaded TEU direct + 31,250 TEUs via warehouses

   120,000 loaded TEU from site = (120,000 x 74% direct from site) + (120,000 x 26% from onsite warehousing)

   = 88,7509 loaded TEU direct + 31,250 TEUs via warehouses

   88,000 empty TEU to and from site = 44,000 empties into MB + 44,000 empties out of MB

4. As outlined above it was assumed that all of the empty containers and 74% of the loaded total TEU would move off-site as containers.

   265,500 Direct TEU = 88,000 empty TEU + 88,750 loaded direct into terminal+ 88,750 loaded TEU direct out of terminal

5. The 26% going via warehouses was split equally, resulting in 13% going to warehousing onsite for destuffing (FAK) and impending delivery and 13% going to warehousing for destuffing and placement into inventory for later delivery.

   62,500 TEU via warehouses =
   = 31,250 TEU out of warehouses + 31,250 TEU into warehouses

© 2015 Deloitte Touche Tohmatsu

= (31,250 x 50% FAK) leaving + (31,250 x 50% Inventory) arriving + (31,250 x 50% FAK) leaving + (31,250 x 50% Inventory) arriving

= (15,625 FAK and 15,625 Inv) leaving site from warehouses + (15,625 FAK and 15,625 Inv) arriving at site warehouses

= 31,250 TEU leaving and 31,2500 TEU arriving via the warehouses

Or

= (15,625 FAK and 15,625 FAK) TEU into/out of warehouses + (15,625 Inv and 15,625 Inv) TEU into/out of warehouses

= 31,250 FAK TEU and 31,250 Inv TEU arriving and leaving via the warehouses

6. Therefore the total number of Interstate TEU (328,000) can be split into total FCL Direct (265,500) and total TEUs via the warehousing onsite (62,500):

   328,000 TEU = 265,500 containers direct to/from customers + 31,250 FAK TEU + 31,250 Inventory TEU

4.3.4 Interstate Market - 2050

1. Of the 1.452 million TEU expected to be handled through the terminal in 2050, the breakdown between IMEX and interstate are as follows:
   1,452,000 TEU = 1,046,000 IMEX TEU + 406,000 interstate TEU

2. Of the 406,000 interstate TEU handled, the breakdown between full inbound, full outbound and empty containers are as follows:
   406,000 TEU = 149,000 full inbound TEU + 149,000 full outbound TEU + 108,000 empty

3. It was assumed that 75.4% of the loaded total TEU would move to and from the site as containers and 24.6% of the loaded total TEU would move through the onsite warehousing. The empty containers were all assumed to move directly to and from the site:
   149,000 loaded TEU to site = (149,000 x 75.4% direct to site) + (149,000 x 24.6% to onsite warehousing)

   = 112,409 loaded TEU direct + 36,591 TEUs via warehouses

   149,000 loaded TEU from site = (149,000 x 75.4% direct from site) + (149,000 x 24.6% from onsite warehousing)

   = 112,409 loaded TEU direct + 36,591 TEU via warehouses

   108,000 empty TEU to and from site = 54,000 empties into MB + 54,000 empties out of MB

4. As outlined above it was assumed that all of the empty containers and 75.4% of the loaded total TEU would move off the site as containers.

Liability limited by a scheme approved under Professional Standards Legislation.

© 2015 Deloitte Touche Tohmatsu

332,817 Direct TEU = 108,000 empty TEU + 112,409 loaded direct into terminal + 112,409 loaded TEUs direct out of terminal

5. The 24.6% going via warehouses was split equally, resulting in 12.3% going to warehousing onsite for destuffing (FAK) and impending delivery and 12.3% going to warehousing for destuffing and placement into inventory for later delivery.

   73,183 TEU via warehouses =
   = 36,591 TEUs out of warehouses + 36,591 TEU into warehouses

   = (36,591 x 50% FAK) leaving + (36,591 x 50% Inventory) leaving + (36,591 x 50% FAK) arriving + (36,591 x 50% Inventory) arriving

   = (18,296 FAK and 18,296 Inv) leaving site from warehouses + (18,296 FAK and 18,296 Inv) arriving at site warehouses

   = 36,591 TEU leaving and 36,591 TEU arriving via the warehouses

   Or

   = (18,296 FAK and 18,296 FAK) TEU into/out of warehouses + (18,296 Inv and 18,296 Inv) TEU into/out of warehouses

   = 36,591 FAK TEU and 36,591 Inv TEU arriving and leaving via the warehouses

6. Therefore the total number of Interstate TEU handled at the terminal at 2050 (406,000) can be split into total FCL Direct (332,817) and total TEU via the warehousing onsite (73,183):

   406,000 TEUs = 332,817 containers direct to/from customers + 36,591 FAK TEU + 36,591 Inventory TEU

4.3.5 Combined IMEX and Interstate at 2030

1. Of the 1.374 million TEU expected to be handled through the terminal in 2030, the breakdown between IMEX and interstate are as follows:
   1,374,000 TEU = 1,046,000 IMEX TEU + 328,000 interstate TEU

2. Of the 1.374 million total TEU in 2030, the breakdown between containers arriving at the site by rail and containers leaving the site by rail are as follows:
   1,374,000 TEU = 711,000 inbound TEU + 663,000 outbound TEUs

3. Of the 711,000 TEU containers leaving the site by road the breakdown between loaded and empty containers is as follows:
   711,000 TEU = 667,000 loaded TEU + 44,000 empty TEUs

4. Of the 663,000 TEU leaving the site by rail, 565,604 TEU arrive at the site by road - the breakdown between loaded and empty containers is as follows:
   565,604 TEU = 293,000 loaded TEU + 272,604 empty TEU

© 2015 Deloitte Touche Tohmatsu

5. It was assumed that 74% of the loaded total TEU would move to and from the site as containers and 26% of the loaded total TEU would move through the onsite warehousing. The empty containers (less surplus onsite) were all assumed to move directly to and from the site:

   293,000 loaded TEU to site = (293,000 x 74% direct to site) + (293,000 x 26% to onsite warehousing)

   = 216,698 loaded TEU direct + 76,302 TEU via warehouses

   667,000 loaded TEU from site = (667,000 x 74% direct from site) + (667,000 x 26% from onsite warehousing)

   = 493,302 loaded TEU direct + 173,698 TEU via warehouses

   316,604 empty TEU to and from site = 272,604 empties into MB + 44,000 empties out of MB

6. As outlined above it was assumed that all of the empty containers, less any surplus generated through the matching of loads into and out of the warehouse and 74% of the loaded total TEU would move off the site as containers.

   1,026,604 Direct TEU = 414,000 empty TEU – 97,396 surplus empties ex warehouse + 216,698 loaded direct into terminal + 493,302 loaded TEU direct out of terminal

7. The 26% going via warehouses was split equally, resulting in 13% going to warehousing onsite for destuffing (FAK) and direct delivery and 13% going to warehousing for destuffing and placement into inventory for later delivery.

   250,000 TEU via warehouses =
   = 173,698 TEU out of warehouses + 76,302 TEU into warehouses

   = (173,698 x 50% FAK) leaving + (173,698 x 50% Inventory) leaving + (76,302 x 50% FAK) arriving + (76,302 x 50% Inventory) arriving

   = (86,849 FAK and 86,849 Inv) leaving site from warehouses + (38,151 FAK and 38,151 Inv) arriving at site warehouses

   = 125,000 TEU leaving and 125,000 TEU arriving via the warehouses

   Or

   = (86,849 FAK and 38,151 FAK) TEU into/out of warehouses + (86,849 Inv and 38,151 Inv) TEU into/out of warehouses

   = 125,000 FAK TEU and 125,000 Inv TEU arriving and leaving via the warehouses

8. This can be further summarised into the total number of IMEX and Interstate TEU (1.374 million) split into total FCL Direct (1.027m) and total TEUs via the warehousing onsite (250,000) plus empties from onsite (97,396):

© 2015 Deloitte Touche Tohmatsu

1,374,000 TEUs = 1,026,604 containers direct to/from customers + 125,000 FAK TEUs + 125,000 Inventory TEU + 97,396 surplus empties from warehouses

4.3.6 Combined IMEX and Interstate at 2050

1. Of the 1.452 million TEU expected to be handled through the terminal in 2050, the breakdown between IMEX and interstate are as follows:
   1,452,000 TEU = 1,046,000 IMEX TEU + 406,000 interstate TEU

2. Of the 1.452 million total TEU in 2050, the breakdown between containers arriving at the site by rail and containers leaving the site by rail are as follows:
   1,452,000 TEUs = 750,000 inbound TEU + 702,000 outbound TEU
3. Of the 750,000 TEUs containers leaving the site by road the breakdown between loaded and empty containers is as follows:
   750,000 TEU = 696,000 loaded TEU + 54,000 empty TEU

4. Of the 702,000 TEUs leaving the site by rail, 610,153 TEU arrive at the site by road - the breakdown between loaded and empty containers is as follows:
   610,153 TEU = 322,000 loaded TEU + 288,153 empty TEU

5. It was assumed that 75.4% of the loaded total TEU would move to and from the site as containers and 24.6% of the loaded total TEU would move through the onsite warehousing. The empty containers (less surplus onsite) were all assumed to move directly to and from the site:
   322,000 loaded TEU to site = (322,000 x 75.4% direct to site) + (322,000 x 24.6% to onsite warehousing)

   = 242,923 loaded TEU direct + 79,077 TEUs via warehouses

   696,000 loaded TEU from site = (696,000 x 75.4% direct from site) + (696,000 x 24.6% from onsite warehousing)

   = 525,076 loaded TEU direct + 170,924 TEU via warehouses

   342,153 empty TEU to and from site = 288,153 empties into MB + 54,000 empties out of MB

6. As outlined above it was assumed that all of the empty containers, less any surplus generated through the matching of loads into and out of the warehouse and 75.4% of the loaded total TEU would move off the site as containers.

   1,110,153 Direct TEU = 434,000 empty TEU – 91,847 surplus empties ex warehouse + 242,923 loaded direct into terminal + 525,076 loaded TEU direct out of terminal

© 2015 Deloitte Touche Tohmatsu

7. The 24.6% going via warehouses was split equally, resulting in 12.3% going to warehousing onsite for destuffing (FAK) and direct delivery and 12.3% going to warehousing for destuffing and placement into inventory for later delivery.

250,000 TEU via warehouses =
= 170,924 TEUs out of warehouses + 79,077 TEU into warehouses

= (170,924 x 50% FAK) leaving + (170,924 x 50% Inventory) leaving + (79,077 x 50% FAK) arriving + (79,077 x 50% Inventory) arriving

= (85,462 FAK and 85,462 Inv) leaving site from warehouses + (39,538 FAK and 39,538 Inv) arriving at site warehouses

Or

= (85,462 FAK and 39,538 FAK) TEU into/out of warehouses + (85,462 Inv and 39,538 Inv) TEU into/out of warehouses

= 125,000 FAK TEU and 125,000 Inv TEU arriving and leaving via the warehouses

8. This can be further summarised into the total number of IMEX and Interstate TEU (1.452 million) split into total FCL Direct (1.110 million) and total TEUs via the warehousing onsite (250,000) plus empties from onsite (91,847):

1,452,000 TEU = 1,110,153 containers direct to/from customers + 125,000 FAK TEUs + 125,000 Inventory TEUs + 91,847 surplus empties from warehouses

© 2015 Deloitte Touche Tohmatsu

4.3.7 Summary

A summary of the various components is outlined in **Table 5** below for volumes at 2030 and in **Table 6** for volumes at 2050.

Table 5 : Summary of terminal throughput at 2030

		IMEX '000 TEU	Interstate '000 TEU	Total '000 TEU	FCL direct '000 TEU	FAK (pack/ unpack) '000 TEU	Warehouse Inventory '000TEU
Pathway split/share					74%	13%	13%
Inbound to site by rail from port	*Full*	547.000	120.000	667.000	493.302	86.849	86.849
	Empty	-	44.000	44.000	44.000		
	Total	547.000	164.000	711.000	537.302		
Outbound from site by rail to port	*Full*	173.000	120.000	293.000	216.698	38.151	38.151
	Empty	326.000	44.000	370.000	370.000		
	Total	499.000	164.000	663.000	586.698		
	Totals	**1,046.000**	**328.000**	**1,374.000**	**1124.000**	**125.000**	**125.000**

Table 6 : Summary of Terminal throughput at 2050

		IMEX '000 TEU	Interstate '000 TEU	Total '000 TEU	FCL direct '000 TEU	FAK (pack/ unpack) '000 TEU	Warehouse Inventory '000TEU
Pathway split/share					75.4%	12.3%	12.3%
Inbound to site by rail from port	*Full*	547.000	149.000	696.000	525.076	85.462	85.462
	Empty	-	54.000	54.000	54.000		
	Total	547.000	203.000	750.000	579.076		
Outbound from site by rail to port	*Full*	173.000	149.000	322.000	242.923	39.538	39.538
	Empty	326.000	54.000	380.000	380.000		
	Total	499.000	203.000	702.000	622.923		
	Totals	**1,046.000**	**406.000**	**1,452.000**	**1,202.000**	**125.000**	**125.000**

The following diagrams illustrate the flows of TEU for each of the IMEX and Interstate markets at 2030 and when the terminal is close to capacity at 2050. Each diagram depicts both the empty and full containers arriving and leaving the terminal by rail and whether the containers stay within the site for handling through the warehouse, or leave the site for unpacking or packing at a customer site.

Full size diagrams are included in **Appendix A**.

© 2015 Deloitte Touche Tohmatsu

Figure 4 : Moorebank IMEX flows for 2030

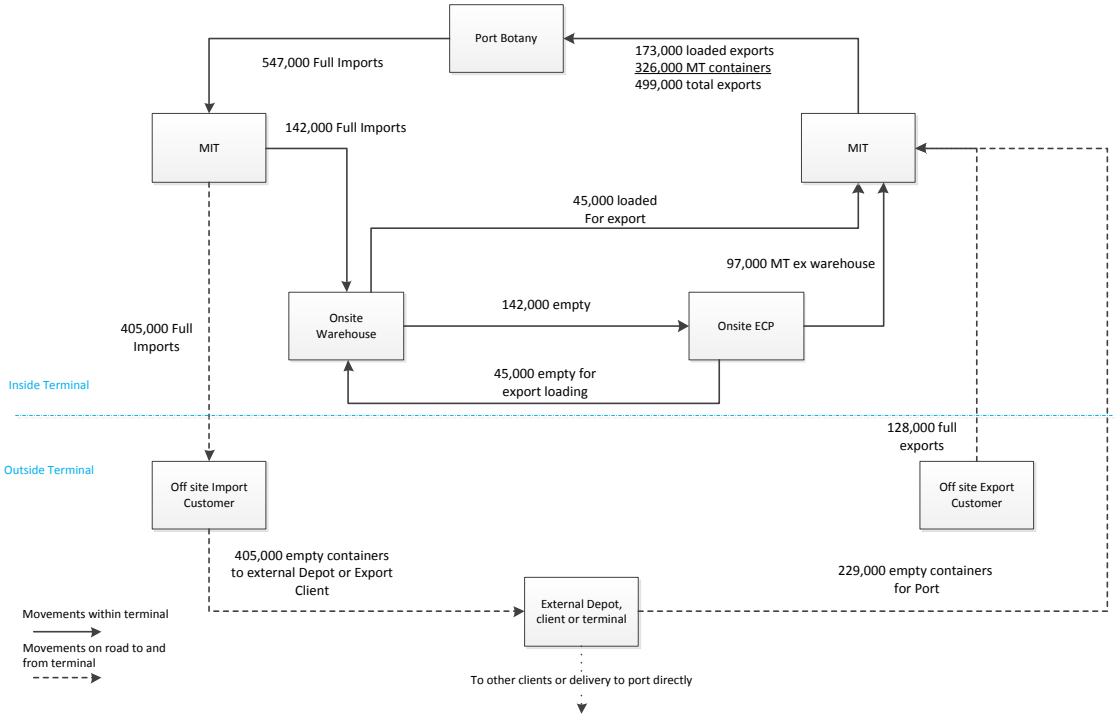
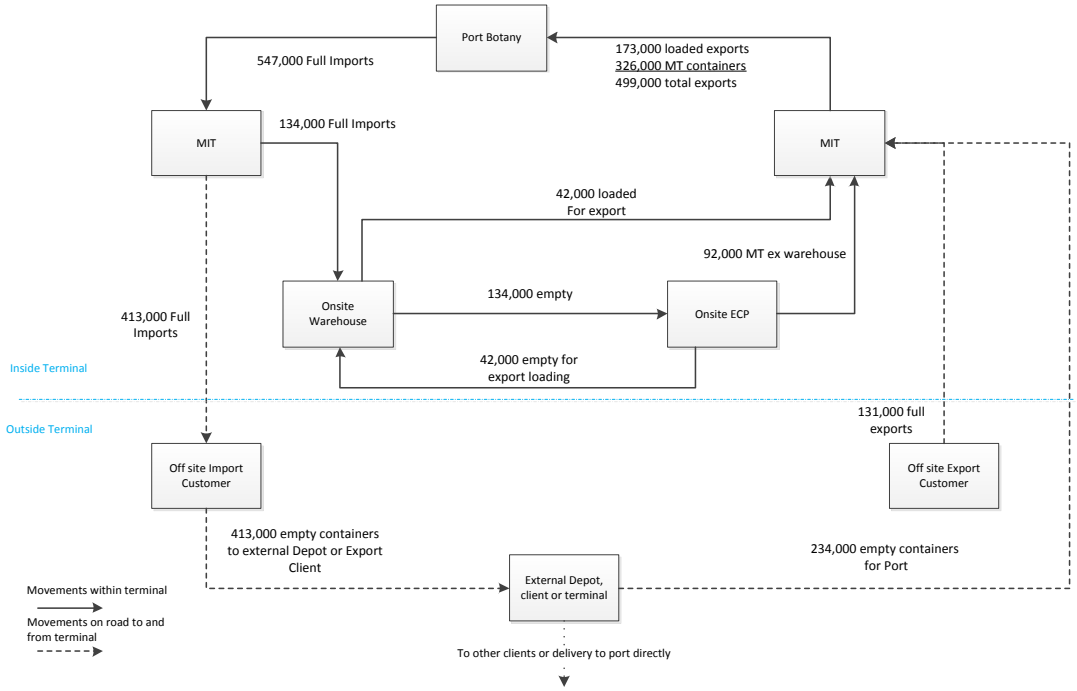


Figure 5 : Moorebank IMEX flows for 2050



© 2015 Deloitte Touche Tohmatsu

Figure 6: Moorebank Interstate flows for 2030

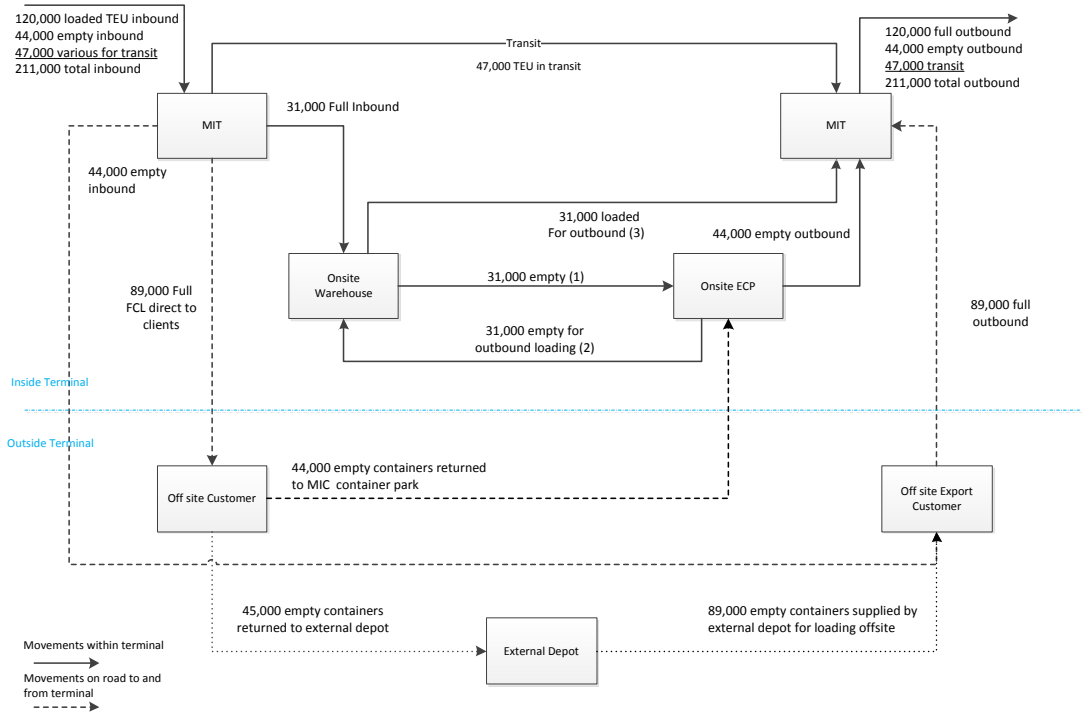
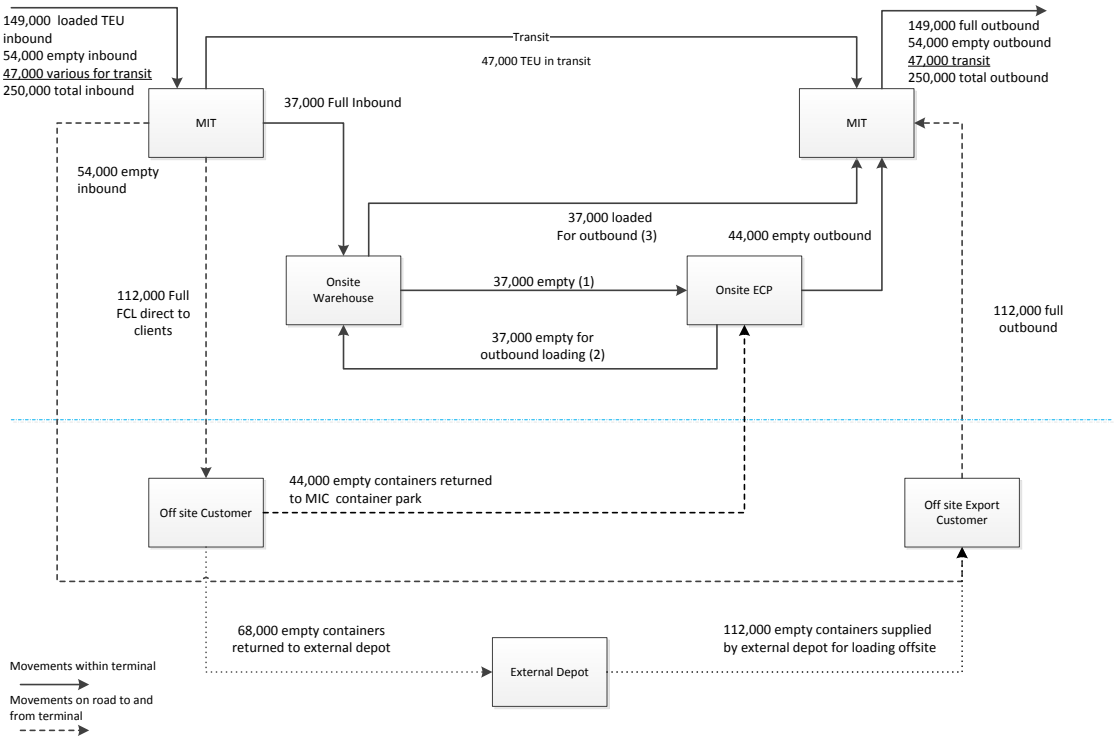


Figure 7 : Moorebank Terminal interstate container flows at 2050



Full size diagrams are included at **Appendix A**.

© 2015 Deloitte Touche Tohmatsu

4.4 Direct FCL and empty container movements

4.4.1 IMEX Market - 2030

The demand analysis has determined likely future demand for IMEX traffics through the terminal. This total demand has then been allocated to cargo moving in the container between the terminal and the customer directly or via the onsite warehouse for consolidation/deconsolidation. In addition, empty containers move between the terminal and offsite locations. A different transport profile has been assumed for containers (whether loaded or empty) moving directly from the terminal to an offsite location.

404,552 TEU leaving the site by road (imports) = (547,000 full import TEU x 74%)

356,552 TEU arriving at the site by road (exports) = (173,000 full export TEU x 74%) + 228,604 empty export TEU

1. It is assumed that the terminal would be operational 52 weeks per year.
   404,552 import TEU ÷ 52 = 7,780 TEU leaving the IMT by road per week

   356,552 export TEU ÷ 52 = 6,857 TEU arriving at the IMT by road per week

2. It was assumed that trucks moving containers in and out of Moorebank IMT will comprise 80% semi-trailers and 20% B-Doubles:

   Semi-Trailer TEUs (80% of TEU arriving at or leaving the terminal):

   7,780 TEU x 80% = 6,224 TEU out on a Semi

   6,857 TEU x 80% = 5,485 TEU in on a Semi

   B-Double TEUs (20% of TEU arriving at or leaving the terminal):

   7,780 TEU x 20% = 1,556 TEU out on a B-Double

   6,857 TEU x 20% = 1,371TEU in on a B-Double

3. Each Semi-Trailer truck is assumed to have the capacity to carry 2 TEUs with an utilisation of 80% on average resulting in an average 1.6 TEUs per Semi-Trailer truck. B-double trucks will have the capacity to carry 3 TEUs, and with an average utilisation of 80% the resulting average TEUs per B-Double truck is 2.4. Using these factors, the weekly total loaded truck movements can be derived.

Liability limited by a scheme approved under Professional Standards Legislation.

© 2015 Deloitte Touche Tohmatsu

6,224 TEU out on a Semi ÷ 1.6 TEU per Semi = 3,890 Semis out of terminal/per week

5,485 TEU in on a Semi ÷ 1.6 TEU per Semi = 3,428 Semis into terminal per week

1,556 TEU out on B-Double ÷ 2.4 TEU per B-Double = 648 B-Doubles out of terminal per week

1,371 TEU in on B-Double ÷ 2.4 TEU per B-Double = 571 B-Doubles into terminal per week

4. In addition, each outbound movements outlined above will also generate an inbound movement. It is assumed that some load matching would occur, i.e. rather than every truck having to do an empty return journey to its origin, a portion of the journeys could be loaded both ways. For example, some outbound full import movements could be matched with full export or empty containers inbound, the remainder of the trucks would arrive empty. It was assumed that this load matching would be limited to only 30% of loaded Semi Trailer truck movements (generated off the direction with the more significant volume). All other movements would generate an empty running leg into or out of the terminal.

   To generate the empty running trips for each truck type:

   Empty running trips in = loaded trips out X (1 – % load matching factor)

   Empty running trips out = loaded trips in – (loaded trips out – empty running trips in)

   Therefore:

   3,890 loaded semis outbound X (1 - 30% matched loads) = 2,723 semis running empty into terminal per week

   3,428 loaded semis inbound - (3,890 loaded semis outbound – 2,723 empty semis inbound) = 2,261 semis running empty out of terminal

   648 loaded B-Doubles outbound X (1 - 0% matched loads) = 648 B-Doubles running empty into terminal per week

   571 loaded B-Doubles inbound X (1 - 0% matched loads) = 571 B-Doubles empty out of terminal per week

   By adding the total inbound and outbound movements the total truck movements can be estimated. To generate total number of trips for each truck type:

   Total trips per week = loaded trips out + empty trips in + loaded trips in + empty trips out

© 2015 Deloitte Touche Tohmatsu

Total B-Double movements ***= 648 loads out + 648 empty in + 571 loads in + 571 empty out***

=1,220 trips out + 1,220 trips in

= 2,439 trips

Total semi movements ***= 3,890 loads out + 2,723 empty in + 3,428 loads in + 2,261 empty out***

= 6,151 trips out + 6,151 trips in

= 12,303 trips

5. It was then assumed that 85% of container truck movements would occur on weekdays and 15% would occur on weekends based on current profiles at Port Botany. The proportion on weekdays was then divided by 5 to reach an average number of truck moves per weekday.

   (2,439 B-Double trips per week X 85%) ÷ 5 = 415 B-Double movements per weekday

   (12,303 semi trips per week X 85%) ÷ 5 = 2,091 Semi movements per weekday

   Total inbound and outbound moves per week and per weekday can be summarised in **Table 7** below.

Table 7 : Total inbound and outbound IMEX moves per week and per weekday (2030)

Truck Status	Direction on road	Truck Type	Trucks per week (a)	Average trucks per Weekday (b)
Loaded	Outbound	B-Double	648	110
		Semi	3,890	661
Empty	Inbound	B-Double	648	110
		Semi	2,723	463
Loaded	Inbound	B-Double	571	97
		Semi	3,428	583
Empty	Outbound	B-Double	571	97
		Semi	2,261	384
Total Truck movements	Outbound	B-Double	1,220	207
		Semi	6,151	1,046
	Inbound	B-Double	1,220	207
		Semi	6,151	1,046

6. Daily truck volumes were multiplied by 7.7% and 9.3% to generate indicative AM and PM peak hourly truck volumes for each vehicle class both inbound and outbound.

© 2015 Deloitte Touche Tohmatsu

Average trucks per weekday ÷ 2 (for each direction) x 7.7% = trucks on and off site per hour in AM peak

415 B-Double movements per weekday ÷ 2 x 7.7% = 16 B-Double truck movements in AM peak hour in each direction

2,091 Semi movements per weekday ÷ 2 x 7.7% = 81 Semi truck movements in AM peak hour in each direction

Average trucks per weekday ÷ 2 (for each direction) x 9.3% = trucks on and off site per hour in PM peak

415 B-Double movements per weekday ÷ 2 x 9.3% = 19 B-Double truck movements in PM peak hour in each direction

2,091 Semi movements per weekday ÷ 2 x 9.3% = 97 Semi truck movements in PM peak hour in each direction

Table 8 : Average weekday inbound and outbound IMEX Articulated truck movements

Truck Status	Direction on road	Truck Type	Average trucks per Weekday	Trucks per hour AM Peak	Trucks per hour PM Peak
Total Truck movements	Outbound	B-Double	207	16	19
		Semi	1,046	81	97
	Inbound	B-Double	207	16	19
		Semi	1,046	81	97

4.4.2 IMEX Market - 2050

The demand analysis has determined likely future demand for IMEX traffics through the terminal. This total demand has then been allocated to cargo moving in the container between the terminal and the customer directly or via the onsite warehouse for consolidation/deconsolidation. In addition, empty containers move between the terminal and offsite locations. A different transport profile has been assumed for containers (whether loaded or empty) moving directly from the terminal to an offsite location.

412,668 TEU leaving the site by road (imports) = (547,000 full import TEU x 75.4%)

364,668 TEU arriving at the site by road (exports) = (173,000 full export TEU x 75.4%) + 234,153 empty export TEU

7. It is assumed that the terminal would be operational 52 weeks per year.
   412,668 import TEU ÷ 52 = 7,936 TEU leaving the IMT by road per week

   364,668 export TEU ÷ 52 = 7,013 TEU arriving at the IMT by road per week

© 2015 Deloitte Touche Tohmatsu

8. It was assumed that trucks moving containers in and out of Moorebank IMT will comprise 80% semi-trailers and 20% B-Doubles:

   Semi-Trailer TEUs (80% of TEU arriving at or leaving the terminal):

   7,936 TEU x 80% = 6,349 TEU out on a Semi

   7,013 TEU x 80% = 5,610 TEU in on a Semi

   B-Double TEUs (20% of TEU arriving at or leaving the terminal):

   7,936 TEU x 20% = 1,587 TEU out on a B-Double

   7,013 TEU x 20% = 1,403 TEU in on a B-Double

9. Each Semi-Trailer truck is assumed to have the capacity to carry 2 TEUs with an utilisation of 80% on average resulting in an average 1.6 TEUs per Semi-Trailer truck. B-double trucks will have the capacity to carry 3 TEUs, and with an average utilisation of 80% the resulting average TEUs per B-Double truck is 2.4. Using these factors, the weekly total loaded truck movements can be derived.

   6,349 TEU <u>out</u> on a Semi ÷ 1.6 TEU per Semi = 3.968 Semis out of terminal/per week

   5,610 TEU <u>in</u> on a Semi ÷ 1.6 TEU per Semi = 3,506 Semis into terminal per week

   1,587 TEU <u>out</u> on B-Double ÷ 2.4 TEU per B-Double = 661 B-Doubles out of terminal per week

   1,403 TEU <u>in</u> on B-Double ÷ 2.4 TEU per B-Double = 584 B-Doubles into terminal per week

10. In addition, each outbound movements outlined above will also generate an inbound movement. It is assumed that some load matching would occur, i.e. rather than every truck having to do an empty return journey to its origin, a portion of the journeys could be loaded both ways. For example, some outbound full import movements could be matched with full export or empty containers inbound, the remainder of the trucks would arrive empty. It was assumed that this load matching would be limited to only 30% of loaded Semi Trailer truck movements (generated off the direction with the more significant volume). All other movements would generate an empty running leg into or out of the terminal.

Liability limited by a scheme approved under Professional Standards Legislation.

© 2015 Deloitte Touche Tohmatsu

To generate the empty running trips for each truck type:

Empty running trips in = loaded trips out X (1 – % load matching factor)

Empty running trips out = loaded trips in – (loaded trips out – empty running trips in)

Therefore:

3,968 loaded semis outbound X (1 - 30% matched loads) = 2,778 semis running empty into terminal per week

3,506 loaded semis inbound - (3,968 loaded semis outbound – 2,778 empty semis inbound) = 2,316 semis running empty out of terminal

661 loaded B-Doubles outbound X (1 - 0% matched loads) = 661 B-Doubles running empty into terminal per week

584 loaded B-Doubles inbound X (1 - 0% matched loads) = 584 B-Doubles empty out of terminal per week

By adding the total inbound and outbound movements the total truck movements can be estimated. To generate total number of trips for each truck type:

Total trips per week = loaded trips out + empty trips in + loaded trips in + empty trips out

Total B-Double movements	***= 661 loads out + 661 empty in + 584 loads in + 584 empty out***
	= 1,246 trips out + 1,246 trips in
	= 2,491 trips
Total semi movements	***= 3,968 loads out + 2,778 empty in + 3,506 loads in + 2,316 empty out***
	= 6,284 trips out + 6,284 trips in
	= 12,568 trips

11. It was then assumed that 85% of container truck movements would occur on weekdays and 15% would occur on weekends based on current profiles at Port Botany. The proportion on weekdays was then divided by 5 to reach an average number of truck moves per weekday.

(2,491 B-Double trips per week X 85%) ÷ 5 = 424 B-Double movements per weekday

© 2015 Deloitte Touche Tohmatsu

(12,568 semi trips per week X 85%) ÷ 5 = 2,137 Semi movements per weekday

Total inbound and outbound moves per week and per weekday can be summarised in Table 9.

Table 9: Total inbound and outbound IMEX moves per week and per weekday (2050)

Truck Status	Direction on road	Truck Type	Trucks per week (a)	Average trucks per Weekday (b)
Loaded	Outbound	B-Double	661	112
		Semi	3,968	675
Empty	Inbound	B-Double	661	112
		Semi	2,778	472
Loaded	Inbound	B-Double	584	99
		Semi	3,506	596
Empty	Outbound	B-Double	584	99
		Semi	2,316	394
Total Truck movements	Outbound	B-Double	1,246	212
		Semi	6,284	1,068
	Inbound	B-Double	1,246	212
		Semi	6,284	1,068

12. Daily truck volumes were multiplied by 7.7% and 9.3% to generate indicative AM and PM peak hourly truck volumes for each vehicle class both inbound and outbound.

Average trucks per weekday ÷ 2 (for each direction) x 7.7% = trucks on and off site per hour in AM peak

424 B-Double movements per weekday ÷ 2 x 7.7% = 16 B-Double truck movements in AM peak hour in each direction

2,137 Semi movements per weekday ÷ 2 x 7.7% = 82 Semi truck movements in AM peak hour in each direction

Average trucks per weekday ÷ 2 (for each direction) x 9.3% = trucks on and off site per hour in PM peak

424 B-Double movements per weekday ÷ 2 x 9.3% = 20 B-Double truck movements in PM peak hour in each direction

2,137 Semi movements per weekday ÷ 2 x 9.3% = 99 Semi truck movements in PM peak hour in each direction

Liability limited by a scheme approved under Professional Standards Legislation.

© 2015 Deloitte Touche Tohmatsu

Table 10: Average weekday inbound and outbound IMEX Articulated truck movements

Truck Status	Direction on road	Truck Type	Average trucks per Weekday	Trucks per hour AM Peak	Trucks per hour PM Peak
Total Truck movements	Outbound	B-Double	212	16	20
		Semi	1,068	82	99
	Inbound	B-Double	212	16	20
		Semi	1,068	82	99

4.4.3 Interstate Market - 2030

The demand analysis also determined likely future demand for interstate traffic through the terminal. This total demand has then been allocated to cargo moving in the container between the terminal and the customer directly or via the onsite warehouse for consolidation/deconsolidation. In addition, empty containers move between the terminal and offsite locations. A different transport profile has been assumed for containers (whether loaded or empty) moving directly from the terminal to an offsite location. To align the terms used between the IMEX and Interstate traffics, inbound movements into Sydney have been referred to as imports to the terminal, movements out of the terminal by rail have been referred to as exports. The calculations for estimating the number of direct movements and associated truck trips is set out below.

132,750 TEU leaving the site by road (imports) = (120,000 full import TEU x 74%) + 44,000 empty import TEU

132,750 arriving at the site by road (exports) = (120,000 full export TEU x 74%) + 44,000 empty export TEU

1. It is assumed that the terminal would be operational 52 weeks per year.
   132,750 import TEU ÷ 52 = 2,553 TEU leaving the IMT by road per week

   132,750 export TEU ÷ 52 = 2,553 TEU arriving at the IMT by road per week

2. It was assumed that trucks moving containers in and out of Moorebank IMT will comprise 80% semi-trailers and 20% B-Doubles:

   Semi-Trailer TEUs (80% of TEU arriving at or leaving the terminal):

   2,553 TEUx 80% = 2,042 TEU out on a Semi
   2,553 TEU x 80% = 2,042 TEU in on a Semi

   B-Double TEU (20% of TEU arriving at or leaving the terminal):

   2,553 TEU x 20% = 511 TEUs out on a B-Double
   2,553 TEU x 20% = 511 TEUs in on a B-Double

© 2015 Deloitte Touche Tohmatsu

3. Each Semi-Trailer truck is assumed to have the capacity to carry 2 TEU with an utilisation of 80% on average resulting in an average 1.6 TEUs per Semi-Trailer truck. B-double trucks will have the capacity to carry 3 TEU, and with an average utilisation of 80% the resulting average TEUs per B-Double truck is 2.4. Using these factors, the weekly total loaded truck movements can be derived.

   2,042 TEU out on a Semi ÷ 1.6 TEU per Semi = 1,276 Semis out of terminal/per week

   2,042 TEU in on a Semi ÷ 1.6 TEU per Semi = 1,276 Semis into terminal per week

   511 TEU out on B-Double ÷ 2.4 TEU per B-Double = 213 B-Doubles out of terminal per week

   511 TEU in on B-Double ÷ 2.4 TEUs per B-Double = 213 B-Doubles into terminal per week

4. In addition, each outbound movements outlined above will also generate an inbound movement. It is assumed that some load matching would occur, i.e. rather than every truck having to do an empty return journey to its origin, a portion of the journeys could be loaded both ways. For example, some outbound full import movements could be matched with full export or empty containers inbound, the remainder of the trucks would arrive empty. It was assumed that this load matching would be limited to only 30% of loaded Semi Trailer truck movements (generated off the direction with the more significant volume). All other movements would generate an empty running leg into or out of the terminal.

   To generate the empty running trips for each truck type:

   Empty running trips in = loaded trips out X (1 – % load matching factor)

   Empty running trips out = loaded trips in – (loaded trips out – empty running trips in)

   Therefore:

   1,276 loaded semis outbound X (1 - 30% matched loads) = 894 semis running empty into terminal per week

   1,276 loaded semis inbound - (1,276 loaded semis outbound – 894 empty semis inbound) = 894 semis running empty out of terminal

   213 loaded B-Doubles outbound X (1 - 0% matched loads) = 213 B-Doubles running empty into terminal per week

   213 loaded B-Doubles inbound X (1 - 0% matched loads) = 213 B-Doubles empty out of terminal per week

© 2015 Deloitte Touche Tohmatsu

By adding the total inbound and outbound movements the total truck movements can be estimated. To generate total number of trips for each truck type:

Total trips per week = loaded trips out + empty trips in + loaded trips in + empty trips out

Total B-Double movements ***= 213 loads out + 213 empty in + 213 loads in + 213 empty out***

=425 trips out + 425 trips in

= 851 trips

Total semi movements ***= 1,276 loads out + 894 empty in + 1,276 loads in + 894 empty out***

= 2,170 trips out + 2,170 trips in

= 4,340 trips

5. It was then assumed that 85% of container truck movements would occur on weekdays and 15% would occur on weekends based on current profiles at Port Botany. The proportion on weekdays was then divided by 5 to reach an average number of truck moves per weekday.

(851 B-Double trips per week X 85%) ÷ 5 = 145 B-Double movements per weekday

(4,340 semi trips per week X 85%) ÷ 5 = 738 Semi movements per weekday

Total inbound and outbound moves per week and per weekday can be summarised in **Table 11**.

Table 11 : Total inbound and outbound interstate moves per week and per weekday (2030)

Truck Status	Direction on road	Truck Type	Trucks per week (a)	Average trucks per Weekday (b)
Loaded	Outbound	B-Double	213	36
		Semi	1,276	217
Empty	Inbound	B-Double	213	36
		Semi	894	152
Loaded	Inbound	B-Double	213	36
		Semi	1,276	217
Empty	Outbound	B-Double	213	36
		Semi	894	152
Total Truck movements	Outbound	B-Double	425	72
		Semi	2,170	369
	Inbound	B-Double	425	72
		Semi	2,170	369

© 2015 Deloitte Touche Tohmatsu

6. Daily truck volumes were multiplied by 7.7% and 9.3% to generate indicative AM and PM peak hourly truck volumes for each vehicle class both inbound and outbound.

   Average trucks per weekday ÷ 2 (for each direction) x 7.7% = trucks on and off site per hour in AM peak

   145 B-Double movements per weekday ÷ 2 x 7.7% = 6 B-Double truck movements in AM peak hour in each direction

   738 Semi movements per weekday ÷ 2 x 7.7% = 28 Semi truck movements in AM peak hour in each direction
   Average trucks per weekday ÷ 2 (for each direction) x 9.3% = trucks on and off site per hour in PM peak

   145 B-Double movements per weekday ÷ 2 x 9.3% = 7 B-Double truck movements in PM peak hour in each direction

   738 Semi movements per weekday ÷ 2 x 9.3% = 34 Semi truck movements in PM peak hour in each direction

Table 12 : Average weekday interstate inbound and outbound articulated truck movements

Truck Status	Direction on road	Truck Type	Average trucks per Weekday	Trucks per hour AM Peak	Trucks per hour PM Peak
Total Truck movements	Outbound	B-Double	72	6	7
		Semi	369	28	34
	Inbound	B-Double	72	6	7
		Semi	369	28	34

4.4.4 Interstate Market - 2050

1. The calculations for estimating the number of direct movements and associated truck trips for the interstate market at 2050 is set out below.

   166,409 TEUs leaving the site by road (imports) = (149,000 full import TEU x 75.4%) + 54,000 empty import TEU

   166,409 arriving at the site by road (exports) = (149,000 full export TEU x 75.4%) + 54,000 empty export TEU

2. It is assumed that the terminal would be operational 52 weeks per year.
   166,409 import TEU ÷ 52 = 3,200 TEU leaving the IMT by road per week

   166,409 export TEU ÷ 52 = 3,200 TEU arriving at the IMT by road per week

3. It was assumed that trucks moving containers in and out of Moorebank IMT will comprise 80% semi-trailers and 20% B-Doubles:

© 2015 Deloitte Touche Tohmatsu

Semi-Trailer TEUs (80% of TEU arriving at or leaving the terminal):

3,200 TEU x 80% = 2,560 TEU out on a Semi

3,200 TEU x 80% = 2,560 TEU in on a Semi

B-Double TEUs (20% of TEU arriving at or leaving the terminal):

3,200 TEU x 20% = 640 TEU out on a B-Double

3,200 TEU x 20% = 640 TEU in on a B-Double

4. Each Semi-Trailer truck is assumed to have the capacity to carry 2 TEUs with an utilisation of 80% on average resulting in an average 1.6 TEUs per Semi-Trailer truck. B-double trucks will have the capacity to carry 3 TEUs, and with an average utilisation of 80% the resulting average TEUs per B-Double truck is 2.4. Using these factors, the weekly total loaded truck movements can be derived.

   2,560 TEU out on a Semi ÷ 1.6 TEU per Semi = 1,600 Semis out of terminal/per week

   2,560 TEU in on a Semi ÷ 1.6 TEU per Semi = 1,600 Semis into terminal per week

   640 TEU out on B-Double ÷ 2.4 TEU per B-Double = 267 B-Doubles out of terminal per week

   640 TEU in on B-Double ÷ 2.4 TEU per B-Double = 267 B-Doubles into terminal per week

5. In addition, each outbound movements outlined above will also generate an inbound movement. It is assumed that some load matching would occur, i.e. rather than every truck having to do an empty return journey to its origin, a portion of the journeys could be loaded both ways. For example, some outbound full import movements could be matched with full export or empty containers inbound, the remainder of the trucks would arrive empty. It was assumed that this load matching would be limited to only 30% of loaded Semi Trailer truck movements (generated off the direction with the more significant volume). All other movements would generate an empty running leg into or out of the terminal.

   To generate the empty running trips for each truck type:

   Empty running trips in = loaded trips out X (1 – % load matching factor)

© 2015 Deloitte Touche Tohmatsu

Empty running trips out = loaded trips in – (loaded trips out – empty running trips in)

Therefore:

1,600 loaded semis outbound X (1 - 30% matched loads) = 1,120 semis running empty into terminal per week

1,600 loaded semis inbound - (1,600 loaded semis outbound – 1,120 empty semis inbound) = 1,120 semis running empty out of terminal

267 loaded B-Doubles outbound X (1 - 0% matched loads) = 267 B-Doubles running empty into terminal per week

267 loaded B-Doubles inbound X (1 - 0% matched loads) = 267 B-Doubles empty out of terminal per week

By adding the total inbound and outbound movements the total truck movements can be estimated. To generate total number of trips for each truck type:

Total trips per week = loaded trips out + empty trips in + loaded trips in + empty trips out

Total B-Double movements	***= 267 loads out + 267 empty in + 267 loads in + 267 empty out***
	= 533 trips out + 533 trips in
	= 1,067 trips
Total semi movements	***= 1,600 loads out + 1,120 empty in + 1,600 loads in + 1,120 empty out***
	= 2,720 trips out + 2,720 trips in
	= 5,440 trips

6. It was then assumed that 85% of container truck movements would occur on weekdays and 15% would occur on weekends based on current profiles at Port Botany. The proportion on weekdays was then divided by 5 to reach an average number of truck moves per weekday.

(1,067 B-Double trips per week X 85%) ÷ 5 = 181 B-Double movements per weekday

(5,440 semi trips per week X 85%) ÷ 5 = 925 Semi movements per weekday

Total inbound and outbound moves per week and per weekday can be summarised in **Table 13**.

© 2015 Deloitte Touche Tohmatsu

Table 13 : Total inbound and outbound interstate related moves per week and per weekday (2050)

Truck Status	Direction on road	Truck Type	Trucks per week (a)	Average trucks per Weekday (b)
Loaded	Outbound	B-Double	267	45
		Semi	1,600	272
Empty	Inbound	B-Double	267	45
		Semi	1,120	190
Loaded	Inbound	B-Double	267	45
		Semi	1,600	272
Empty	Outbound	B-Double	267	45
		Semi	1,120	190
Total Truck movements	Outbound	B-Double	533	91
		Semi	2,720	462
	Inbound	B-Double	533	91
		Semi	2,720	462

7. Daily truck volumes were multiplied by 7.7% and 9.3% to generate indicative AM and PM peak hourly truck volumes for each vehicle class both inbound and outbound. ***Average trucks per weekday ÷ 2 (for each direction) x 7.7% = trucks on and off site per hour in AM peak***

   181 B-Double movements per weekday ÷ 2 x 7.7% = 7 B-Double truck movements in AM peak hour in each direction

   925 Semi movements per weekday ÷ 2 x 7.7% = 36 Semi truck movements in AM peak hour in each direction

   Average trucks per weekday ÷ 2 (for each direction) x 9.3% = trucks on and off site per hour in PM peak

   181 B-Double movements per weekday ÷ 2 x 9.3% = 8 B-Double truck movements in PM peak hour in each direction

   925 Semi movements per weekday ÷ 2 x 9.3% = 43 Semi truck movements in PM peak hour in each direction

Table 14 : Average weekday interstate inbound and outbound articulated truck movements

Truck Status	Direction on road	Truck Type	Average trucks per Weekday	Trucks per hour AM Peak	Trucks per hour PM Peak
Total Truck movements	Outbound	B-Double	91	7	8
		Semi	462	36	43
	Inbound	B-Double	91	7	8
		Semi	462	36	43

© 2015 Deloitte Touche Tohmatsu

4.4.5 Combined IMEX and Interstate movements at 2030

1. As outlined above, the demand analysis has determined likely future demand for both IMEX and interstate markets where Sydney is either an origin or a destination. For the purposes of simplification all international and interstate cargo destined for the Sydney market is referred to in the following as imports – all international and interstate cargo leaving the Sydney market is referred to as exports.

   537,302 TEU leaving the site by road (imports) = 493,302 full import TEU + 44,000 empty import TEU

   489,302 TEU arriving at the site by road (exports) = 216,698 full export TEU + 272,604 empty export TEU

2. It is assumed that the terminal would be operational 52 weeks per year.
   537,302 import TEU ÷ 52 = 10,333 TEU leaving the IMT by road per week

   489,302 export TEU ÷ 52 = 9,410 TEU arriving at the IMT by road per week

3. It was assumed that trucks moving containers in and out of Moorebank IMT will comprise 80% semi-trailers and 20% B-Doubles:

   Semi-Trailer TEUs (80% of TEU arriving at or leaving the terminal):

   10,333 TEUs x 80% = 8,266 TEU out on a Semi

   9,410 TEUs x 80% = 7,528 TEU in on a Semi

   B-Double TEUs (20% of TEU arriving at or leaving the terminal):

   10,333 TEUs x 20% = 2,067 TEUs out on a B-Double

   9,410 TEUs x 20% = 1,882 TEUs in on a B-Double

4. Each Semi-Trailer truck is assumed to have the capacity to carry 2 TEU with an utilisation of 80% on average resulting in an average 1.6 TEU per Semi-Trailer truck. B-double trucks will have the capacity to carry 3 TEU, and with an average utilisation of 80% the resulting average TEU per B-Double truck is 2.4. Using these factors, the weekly total loaded truck movements can be derived.

   8,266 TEU <u>out</u> on a Semi ÷ 1.6 TEU per Semi = 5,166 Semis out of terminal/per week

   7,528 TEU <u>in</u> on a Semi ÷ 1.6 TEU per Semi = 4,705 Semis into terminal per week

© 2015 Deloitte Touche Tohmatsu

2,067 TEU <u>out</u> on B-Double ÷ 2.4 TEU per B-Double = 861 B-Doubles out of terminal per week

1,882 TEU <u>in</u> on B-Double ÷ 2.4 TEU per B-Double = 784 B-Doubles into terminal per week

5. In addition, each outbound movements outlined above will also generate an inbound movement. It is assumed that some load matching would occur, i.e. rather than every truck having to do an empty return journey to its origin, a portion of the journeys could be loaded both ways. For example, some outbound full import movements could be matched with full export or empty containers inbound, the remainder of the trucks would arrive empty. It was assumed that this load matching would be limited to only 30% of loaded Semi Trailer truck movements (generated off the direction with the more significant volume). All other movements would generate an empty running leg into or out of the terminal.

   To generate the empty running trips for each truck type:

   Empty running trips in = loaded trips out X (1 – % load matching factor)

   Empty running trips out = loaded trips in – (loaded trips out – empty running trips in)

   Therefore:

   5,166 loaded semis outbound X (1 - 30% matched loads) = 3,616 semis running empty into terminal per week

   4,705 loaded semis inbound - (5,166 loaded semis outbound – 3,616 empty semis inbound) = 3,155 semis running empty out of terminal

   861 loaded B-Doubles outbound X (1 - 0% matched loads) = 861 B-Doubles running empty into terminal per week

   784 loaded B-Doubles inbound X (1 - 0% matched loads) = 784 B-Doubles empty out of terminal per week

   By adding the total inbound and outbound movements the total truck movements can be estimated. To generate total number of trips for each truck type:

   Total trips per week = loaded trips out + empty trips out + loaded trips in + empty trips in

   Total B-Double movements = 861 loads out + 784 empty out + 784 loads in + 861 empty in

   = 1,645 trips out + 1,645 trips in

   = 3,290 trips

© 2015 Deloitte Touche Tohmatsu

Total semi movements ***= 5,166 loads out + 3,155 empty out + 4,705 loads in + 3,616 empty in***

= 8,321 trips out + 8,321 trips in

= 16,643 trips

6. It was then assumed that 85% of container truck movements would occur on weekdays and 15% would occur on weekends based on current profiles at Port Botany. The proportion on weekdays was then divided by 5 to reach an average number of truck moves per weekday.

   (3,290 B-Double trips per week X 85%) ÷ 5 = 559 B-Double movements per weekday

   (16,643 semi trips per week X 85%) ÷ 5 = 2,829 Semi movements per weekday

   Total inbound and outbound moves per week and per weekday can be summarised in **Table 15** below.

Table 15 : Total combined inbound and outbound moves per week and per weekday (2030)

Truck Status	Direction on road	Truck Type	Trucks per week (a)	Average trucks per Weekday (b)
Loaded	Outbound	B-Double	861	146
		Semi	5,166	878
Empty	Inbound	B-Double	861	146
		Semi	3,616	615
Loaded	Inbound	B-Double	784	133
		Semi	4,705	800
Empty	Outbound	B-Double	784	133
		Semi	3,155	536
Total Truck movements	Outbound	B-Double	1,645	280
		Semi	8,321	1,415
	Inbound	B-Double	1,645	280
		Semi	8,321	1,415

7. Daily truck volumes were multiplied by 7.7% and 9.3% to generate indicative AM and PM peak hourly truck volumes for each vehicle class both inbound and outbound.

   Average trucks per weekday ÷ 2 in each direction x 7.7% = trucks on and off site per hour in AM peak

   559 B-Double movements per weekday ÷ 2 x 7.7% = 22 B-Double truck movements in AM peak hour in each direction

   2,829 Semi movements per weekday ÷ 2 x 7.7% = 109 Semi truck movements in AM peak hour in each direction

Liability limited by a scheme approved under Professional Standards Legislation.

© 2015 Deloitte Touche Tohmatsu

Average trucks per weekday ÷ 2 in each direction x 9.3% = trucks on and off site per hour in PM peak

559 B-Double movements per weekday ÷ 2 x 9.3% = 26 B-Double truck movements in PM peak hour in each direction

2,829 Semi movements per weekday ÷ 2 x 9.3% = 132 Semi truck movements in PM peak hour in each direction

Table 16 : Combined average weekday inbound and outbound articulated truck movements

Truck Status	Direction on road	Truck Type	Average trucks per Weekday	Trucks per hour AM Peak	Trucks per hour PM Peak
Total Truck movements	Outbound	B-Double	280	22	26
		Semi	1,415	109	132
	Inbound	B-Double	280	22	26
		Semi	1,415	109	132

4.4.6 Combined IMEX and Interstate movements at 2050

1. As outlined above, the demand analysis has determined likely future demand for both IMEX and interstate markets where Sydney is either an origin or a destination. For the purposes of simplification all international and interstate cargo destined for the Sydney market is referred to in the following as imports – all international and interstate cargo leaving the Sydney market is referred to as exports.

   579,076 TEU leaving the site by road (imports) = 525,076 full import TEU + 54,000 empty import TEUs

   531,076 TEU arriving at the site by road (exports) = 242,923 full export TEU + 288,153 empty export TEU

2. It is assumed that the terminal would be operational 52 weeks per year.
   579,076 import TEU ÷ 52 = 11,136 TEUs leaving the IMT by road per week

   531,076 export TEU ÷ 52 = 10,213 TEUs arriving at the IMT by road per week

3. It was assumed that trucks moving containers in and out of Moorebank IMT will comprise 80% semi-trailers and 20% B-Doubles:

   Semi-Trailer TEUs (80% of TEU arriving at or leaving the terminal):
   11,136 TEUs x 80% = 8,909 TEU out on a Semi

   10,213 TEUs x 80% = 8,170 TEU in on a Semi

© 2015 Deloitte Touche Tohmatsu

B-Double TEUs (20% of TEU arriving at or leaving the terminal):

11,136 TEU x 20% = 2,227 TEU out on a B-Double

10,213 TEU x 20% = 2,043 TEU in on a B-Double

4. Each Semi-Trailer truck is assumed to have the capacity to carry 2 TEUs with an utilisation of 80% on average resulting in an average 1.6 TEUs per Semi-Trailer truck. B-double trucks will have the capacity to carry 3 TEUs, and with an average utilisation of 80% the resulting average TEUs per B-Double truck is 2.4. Using these factors, the weekly total loaded truck movements can be derived.

   8,909 TEU <u>out</u> on a Semi ÷ 1.6 TEU per Semi = 5,568 Semis out of terminal/per week

   8,170 TEU <u>in</u> on a Semi ÷ 1.6 TEU per Semi = 5,107 Semis into terminal per week

   2,227 TEU <u>out</u> on B-Double ÷ 2.4 TEU per B-Double = 928 B-Doubles out of terminal per week

   2,043 TEUs <u>in</u> on B-Double ÷ 2.4 TEU per B-Double = 851 B-Doubles into terminal per week

5. In addition, each outbound movements outlined above will also generate an inbound movement. It is assumed that some load matching would occur, i.e. rather than every truck having to do an empty return journey to its origin, a portion of the journeys could be loaded both ways. For example, some outbound full import movements could be matched with full export or empty containers inbound, the remainder of the trucks would arrive empty. It was assumed that this load matching would be limited to only 30% of loaded Semi Trailer truck movements (generated off the direction with the more significant volume). All other movements would generate an empty running leg into or out of the terminal.

   To generate the empty running trips for each truck type:

   Empty running trips in = loaded trips out X (1 – % load matching factor)

   Empty running trips out = loaded trips in – (loaded trips out – empty running trips in)

   Therefore:

   5,568 loaded semis outbound X (1 - 30% matched loads) = 3,898 semis running empty into terminal per week

© 2015 Deloitte Touche Tohmatsu

5,107 loaded semis inbound - (5,568 loaded semis outbound – 3,898 empty semis inbound) = 3,436 semis running empty out of terminal

928 loaded B-Doubles outbound X (1 - 0% matched loads) = 928 B-Doubles running empty into terminal per week

851 loaded B-Doubles inbound X (1 - 0% matched loads) = 851 B-Doubles empty out of terminal per week

By adding the total inbound and outbound movements the total truck movements can be estimated. To generate total number of trips for each truck type:

Total trips per week = loaded trips out + empty trips out + loaded trips in + empty trips in

Total B-Double movements	***= 928 loads out + 851 empty out + 851 loads in + 928 empty in***
	= 1,779 trips out + 1,779 trips in
	= 3,558 trips
Total semi movements	***= 5,568 loads out + 3,436 empty out + 5,107 loads in + 3,898 empty in***
	= 9,004 trips out + 9,004 trips in
	= 18,008 trips

6. It was then assumed that 85% of container truck movements would occur on weekdays and 15% would occur on weekends based on current profiles at Port Botany. The proportion on weekdays was then divided by 5 to reach an average number of truck moves per weekday.

(3,762 B-Double trips per week X 85%) ÷ 5 = 639 B-Double movements per weekday

(19,045 semi trips per week X 85%) ÷ 5 = 3,238 Semi movements per weekday

Total inbound and outbound moves per week and per weekday can be summarised in

© 2015 Deloitte Touche Tohmatsu

Table 17 below.

© 2015 Deloitte Touche Tohmatsu

Table 17 : Total combined inbound and outbound moves per week and per weekday (2050)

Truck Status	Direction on road	Truck Type	Trucks per week (a)	Average trucks per Weekday (b)
Loaded	Outbound	B-Double	928	158
		Semi	5,568	947
Empty	Inbound	B-Double	928	158
		Semi	3,898	663
Loaded	Inbound	B-Double	851	145
		Semi	5,107	868
Empty	Outbound	B-Double	851	145
		Semi	3,436	584
Total Truck movements	Outbound	B-Double	1,779	302
		Semi	9,004	1,531
	Inbound	B-Double	1,779	302
		Semi	9,004	1,531

Daily truck volumes were multiplied by 7.7% and 9.3% to generate indicative AM and PM peak hourly truck volumes for each vehicle class both inbound and outbound.

Average trucks per weekday ÷ 2 in each direction x 7.7% = trucks on and off site per hour in AM peak

605 B-Double movements per weekday ÷ 2 x 7.7% = 23 B-Double truck movements in AM peak hour in each direction

3,061 Semi movements per weekday ÷ 2 x 7.7% = 118 Semi truck movements in AM peak hour in each direction

Average trucks per weekday ÷ 2 in each direction x 9.3% = trucks on and off site per hour in PM peak

605 B-Double movements per weekday ÷ 2 x 9.3% = 28 B-Double truck movements in PM peak hour in each direction

3,061 Semi movements per weekday ÷ 2 x 9.3% = 142 Semi truck movements in PM peak hour in each direction

Table 18 : Average combined weekday inbound and outbound Articulated truck movements 2050

Truck Status	Direction on road	Truck Type	Average trucks per Weekday	Trucks per hour AM Peak	Trucks per hour PM Peak
Total Truck movements	Outbound	B-Double	302	23	28
		Semi	1,531	118	142
	Inbound	B-Double	302	23	28
		Semi	1,531	118	142

© 2015 Deloitte Touche Tohmatsu

4.5 Movements to and from the Warehouses

4.5.1 IMEX Market - 2030

Warehouse generated truck traffic movements were estimated using a similar methodology to the derivation of container truck movements, with some variation to the underlying assumptions. The most significant changes to the assumptions were:

- the makeup of the fleet;
- the proportion of movements occurring during the week; and
- the level of load matching.

The following steps were taken to derive the daily truck movements in and out of Moorebank IMT for cargo handled through the warehouses:

1. The Moorebank IMT will have enough on-site warehousing capacity to handle approximately 26% of all full TEUs. It is assumed that half of these will be held in inventory in onsite warehousing for a period of weeks with the rest being general cargo (FAK) which would be deconsolidated and distributed offsite within a few days or arrive onsite for consolidation and export.

   547,000 full inbound TEUs x 13% FAK = 71,224 TEU FAK for distribution from site

   547,000 full inbound TEUs x 13% Inventory = 71,224 TEU Inventory for distribution from site

   173,000 full outbound TEU x 13% FAK = 22,526 TEU FAK arriving at site for consolidation

   173,000 full outbound TEU x 13% Inventory = 22,526 TEU Inventory arriving at site for consolidation

2. It is assumed that the terminal would be operational 52 weeks per year.

   71,224 FAK + 71,224 Inventory TEU ÷ 52 = 2,739 TEU into warehouse and distributed off site each week

   22,526 FAK + 22,526 Inventory TEU ÷ 52 = 866 TEU arrive on-site and into warehouse each week

3. It is assumed that each TEU, when deconsolidated will generate approximately 25 pallet loads for domestic distribution:

   2,739 TEU x 25 equivalent pallet loads per TEU = 68,485 equivalent pallet loads into warehouse and distributed off site by road each week

   866TEU x 25 equivalent pallet loads per TEU = 21,660 equivalent pallet loads into warehouse by road and railed offsite each week

Liability limited by a scheme approved under Professional Standards Legislation.

© 2015 Deloitte Touche Tohmatsu

4. The truck fleet profile for palletised cargo will be different to that for direct FCL and MT container movements to and from the Moorebank terminal. It is assumed that trucks moving pallets out of Moorebank IMT warehousing will comprise of 34% semi-trailers and 66% rigid trucks whilst 100% of the palletised cargo arriving at the site will be carried by rigid trucks:

   Deliveries from Moorebank warehouses:
   68,485 pallets per week x 34% = 23,285 pallets out on semi-trailer trucks

   68,485 pallets per week x 66% = 45,200 pallets out on rigid trucks

   Deliveries to Moorebank warehouses:
   21,660 pallets per week x 100% = 21,660 pallets in on rigid trucks

5. Semi-trailer trucks are likely to carry, on average 40 pallets per truck whilst rigid trucks have been assumed to carry, on average 20 pallets per load. Dividing the number of pallets by each average load determines the average number of loaded truck movements per week into and out of the warehouses.

   Deliveries from Moorebank warehouses:
   23,285 pallets in semis per week ÷ 40 pallets per truck = 582 loaded semi-trailer truck movements out per week

   45,200 pallets in rigids per week ÷ 20 pallets per truck = 2,260 loaded rigid truck movements out per week

   Deliveries to Moorebank warehouses:
   21,660 pallets in rigids per week ÷ 20 pallets per truck = 1,083 loaded rigid truck movements in per week

6. It is assumed that there will be no truck load matching for palletised cargo movement to and from the Moorebank IMT warehouses. Therefore all movements would generate an empty running leg into or out of the terminal. By adding the total inbound and outbound movements the total truck movements can be estimated.

   Empty running trips in = loaded trips out X (1 – % load matching factor)

   582 semis empty into terminal per week = 582 loaded semis outbound X (1 - 0% matched loads)

   2,260 empty rigids into terminal per week = 2,260 loaded rigids outbound X (1 - 0% matched loads)

   1,083 empty rigids out of terminal per week = 1,083 loaded rigids inbound X (1 - 0% matched loads)

   By adding the total inbound and outbound movements, the total truck movements can be estimated. To generate total number of trips for each truck type:

© 2015 Deloitte Touche Tohmatsu

Total trips per week = loaded trips out + empty trips out + loaded trips in + empty trips in

Total semi movements ***= 582 loads out + 0 empty out + 0 loads in + 582 empty in***

= 582 trips out + 582 trips in

= 1,164 trips per week

Total rigid movements ***= 2,260 loads out + 1,083 empty out + 1,083 loads in + 2,260 empty in***

= 3,343 trips out + 3,343 trips in

= 6,686 trips per week

7. It was then assumed that 95% of container truck movements would occur on weekdays and 5% would occur on weekends. The proportion on weekdays was then divided by 5 to reach an average number of truck moves per weekday

(1,164semi-truck movements per week X 95%) ÷ 5 = 221 semi-trailer movements per weekday

(6,686 rigid truck movements per week X 95%) ÷ 5 = 1,270 rigid truck movements per weekday

Total inbound and outbound moves per week and per weekday can be summarised in **Table 19** below.

Table 19: Average weekly inbound and outbound IMEX warehouse related road movements

Truck Status	Direction on road	Truck Type	Trucks per week (a)	Average trucks per Weekday (b)
Loaded	Outbound	Semi	582	111
		Rigid	2,260	429
Empty	Inbound	Semi	582	111
		Rigid	2,260	429
Loaded	Inbound	Semi	0	0
		Rigid	1,083	206
Empty	Outbound	Semi	0	0
		Rigid	1,083	206
Total Truck movements	Outbound	Semi	582	111
		Rigid	3,343	635
	Inbound	Semi	582	111
		Rigid	3,343	635

© 2015 Deloitte Touche Tohmatsu

8. Daily truck volumes were multiplied by 7.7% and 9.3% to generate indicative AM and PM peak hourly truck volumes for each vehicle class both inbound and outbound.

   Average trucks per weekday ÷ 2 (in each direction) x 7.7% = trucks on and off-site per hour in AM peak in each direction

   221 semi movements per weekday ÷ 2 x 7.7% = 9 semi-truck movements in AM peak hour in each direction

   1,270 rigid movements per weekday ÷ 2 x 7.7% = 49 rigid truck movements in AM peak hour in each direction

   Average trucks per weekday ÷ 2 (in each direction) x 9.3% = trucks on and off -site per hour in PM peak in each direction

   221 semi movements per weekday ÷ 2 x 9.3% = 10 semi-truck movements in PM peak hour in each direction

   1,270 rigid movements per weekday ÷ 2 x 9.3% = 59 rigid truck movements in PM peak hour in each direction

Table 20 : Average IMEX warehouse related weekday inbound and outbound truck movements 2030

Truck Status	Direction on road	Truck Type	Average trucks per Weekday	Trucks per hour AM Peak	Trucks per hour PM Peak
Total Truck movements	Outbound	Semi	111	9	10
		Rigid	635	49	59
	Inbound	Semi	111	9	10
		Rigid	635	49	59

Note: Some truck numbers have been rounded to the nearest whole number

4.5.2 IMEX Market - 2050

Warehouse generated truck traffic movements were estimated using a similar methodology to the derivation of container truck movements, with some variation to the underlying assumptions. The most significant changes to the assumptions were:

- the makeup of the fleet;
- the proportion of movements occurring during the week; and
- the level of load matching.

The following steps were taken to derive the daily truck movements in and out of Moorebank IMT for cargo handled through the warehouses:

1. The Moorebank IMT will have enough on-site warehousing capacity to handle approximately 24.6% of all full TEU. It is assumed that half of these will be held in inventory in onsite warehousing for a period of weeks with the rest

© 2015 Deloitte Touche Tohmatsu

being general cargo (FAK) which would be deconsolidated and distributed offsite within a few days or arrive onsite for consolidation and export.

547,000 full inbound TEU x 12.3% FAK = 67,166 TEU FAK for distribution from site

547,000 full inbound TEU x 12.3% Inventory = 67,166 TEU Inventory for distribution from site

173,000 full outbound TEU x 12.3% FAK = 21,243 TEU's FAK arriving at site for consolidation

173,000 full outbound TEU x 12.3% Inventory = 21,243 TEU Inventory arriving at site for consolidation

2. It is assumed that the terminal would be operational 52 weeks per year.

   67,166 FAK + 67,166 Inventory TEU ÷ 52 = 2,583 TEU into warehouse and distributed off site each week

   21,243 FAK + 21,243 Inventory TEU ÷ 52 = 817 TEU arrive onto site and into warehouse each week

3. It is assumed that each TEU, when deconsolidated will generate approximately 25 pallet loads for domestic distribution:

   2,583 TEU x 25 equivalent pallet loads per TEU = 64,583 equivalent pallet loads into warehouse and distributed off site by road each week

   817 x 25 equivalent pallet loads per TEU = 20,426 equivalent pallet loads into warehouse by road and railed offsite each week

4. The truck fleet profile for palletised cargo will be different to that for direct FCL and MT container movements to and from the Moorebank terminal. It is assumed that trucks moving pallets out of Moorebank IMT warehousing will comprise of 34% semi-trailers and 66% rigid trucks whilst 100% of the palletised cargo arriving at the site will be carried by rigid trucks:

   Deliveries from Moorebank warehouses:
   64,583 pallets per week x 34% = 21,958 pallets out on semi-trailer trucks

   64,583 pallets per week x 66% = 42,625 pallets out on rigid trucks

   Deliveries to Moorebank warehouses:
   20,426 pallets per week x 100% = 20,426 pallets in on rigid trucks

5. Semi-trailer trucks are likely to carry, on average 40 pallets per truck whilst rigid trucks have been assumed to carry, on average 20 pallets per load.

© 2015 Deloitte Touche Tohmatsu

Dividing the number of pallets by each average load determines the average number of loaded truck movements per week into and out of the warehouses.

Deliveries from Moorebank warehouses:
21,958 pallets in semis per week ÷ 40 pallets per truck = 549 loaded semi-trailer truck movements out per week

42,625 pallets in rigids per week ÷ 20 pallets per truck = 2,131 loaded rigid truck movements out per week

Deliveries to Moorebank warehouses:
20,426 pallets in rigids per week ÷ 20 pallets per truck = 1,021 loaded rigid truck movements in per week

6. It is assumed that there will be no truck load matching for palletised cargo movement to and from the Moorebank IMT warehouses. Therefore all movements would generate an empty running leg into or out of the terminal. By adding the total inbound and outbound movements the total truck movements can be estimated.

Empty running trips in = loaded trips out X (1 – % load matching factor)

549 semis empty into terminal per week = 549 loaded semis outbound X (1 - 0% matched loads)

2,131 empty rigids into terminal per week = 2,131 loaded rigids outbound X (1 - 0% matched loads)

1,021 empty rigids out of terminal per week = 1,021 loaded rigids inbound X (1 - 0% matched loads)

By adding the total inbound and outbound movements the total truck movements can be estimated. To generate total number of trips for each truck type:

Total trips per week = loaded trips out + empty trips out + loaded trips in + empty trips in

Total semi movements	***= 549 loads out + 0 empty out + 0 loads in + 549 empty in***
	= 549 trips out + 549 trips in
	= 1,098 trips per week
Total rigid movements	***= 2,131 loads out + 1,021 empty out + 1,021 loads in + 2,131 empty in***
	= 3,153 trips out + 3,153 trips in
	= 6,305 trips per week

© 2015 Deloitte Touche Tohmatsu

7. It was then assumed that 95% of container truck movements would occur on weekdays and 5% would occur on weekends. The proportion on weekdays was then divided by 5 to reach an average number of truck moves per weekday

   (1,098 semi-truck movements per week X 95%) ÷ 5 = 209 semi-trailer movements per weekday

   (6,305 rigid truck movements per week X 95%) ÷ 5 = 1,198 rigid truck movements per weekday

   Total inbound and outbound moves per week and per weekday can be summarised in **Table 19** below.

Table 21: Average weekly inbound and outbound IMEX warehouse related road movements

Truck Status	Direction on road	Truck Type	Trucks per week (a)	Average trucks per Weekday (b)
Loaded	Outbound	Semi	549	104
		Rigid	2,131	405
Empty	Inbound	Semi	549	104
		Rigid	2,131	405
Loaded	Inbound	Semi	0	0
		Rigid	1,021	194
Empty	Outbound	Semi	0	0
		Rigid	1,021	194
Total Truck movements	Outbound	Semi	549	104
		Rigid	3,153	599
	Inbound	Semi	549	104
		Rigid	3,153	599

8. Daily truck volumes were multiplied by 7.7% and 9.3% to generate indicative AM and PM peak hourly truck volumes for each vehicle class both inbound and outbound.

   Average trucks per weekday ÷ 2 (in each direction) x 7.7% = trucks on and off-site per hour in AM peak in each direction

   209 semi movements per weekday ÷ 2 x 7.7% = 8 semi-truck movements in AM peak hour in each direction

   1,198 rigid movements per weekday ÷ 2 x 7.7% = 46 rigid truck movements in AM peak hour in each direction

   Average trucks per weekday ÷ 2 (in each direction) x 9.3% = trucks on and off- site per hour in PM peak in each direction

© 2015 Deloitte Touche Tohmatsu

209 semi movements per weekday ÷ 2 x 9.3% = 10 semi-truck movements in PM peak hour in each direction

1,198 rigid movements per weekday ÷ 2 x 9.3% = 56 rigid truck movements in PM peak hour in each direction

Table 22: Average IMEX warehouse related weekday inbound and outbound truck movements 2030

Truck Status	Direction on road	Truck Type	Average trucks per Weekday	Trucks per hour AM Peak	Trucks per hour PM Peak
Total Truck movements	Outbound	Semi	104	8	10
		Rigid	599	46	56
	Inbound	Semi	104	8	10
		Rigid	599	46	56

Note: Some truck numbers have been rounded to the nearest whole number

4.5.3 Interstate Containers 2030

The following steps were taken to derive the daily truck movements in and out of Moorebank IMT for interstate cargo handled through the warehouses:

1. As for the IMEX, the Moorebank IMT will have enough on-site warehousing capacity to handle approximately 26% of all full TEU. It is assumed that half of these will be held in inventory in onsite warehousing for a period of weeks with the rest being general cargo (FAK) which would be deconsolidated and distributed offsite within a few days or arrive onsite for consolidation and export.

   120,000 full inbound TEU x 13% FAK = 15,625 TEU FAK for distribution from site

   120,000 full inbound TEU x 13% Inventory = 15,625 TEU Inventory for distribution from site

   120,000 full outbound TEU x 13% FAK = 15,625 TEU FAK arriving at site for consolidation

   120,000 full outbound TEU x 13% Inventory = 15,625 TEU Inventory arriving at site for consolidation

2. It is assumed that the terminal would be operational 52 weeks per year.

   15,625 FAK + 15,625 Inventory TEU ÷ 52 = 601 TEU into warehouse and distributed off site each week

© 2015 Deloitte Touche Tohmatsu

15,625 FAK + 15,625 Inventory TEU ÷ 52 = 601 TEU arrive onto site and into warehouse each week

3. It is assumed that each TEU, when deconsolidated will generate approximately 25 pallet loads for domestic distribution:

   601 TEU x 25 equivalent pallet loads per TEU = 15,024 equivalent pallet loads into warehouse and distributed off site by road each week

   601 TEU x 25 equivalent pallet loads per TEU = 15,024 equivalent pallet loads into warehouse by road and railed offsite each week

4. The truck fleet profile for palletised cargo will be different to that for direct FCL and MT container movements to and from the Moorebank terminal. It is assumed that trucks moving pallets out of Moorebank IMT warehousing will comprise of 34% semi-trailers and 66% rigid trucks whilst 100% of the palletised cargo arriving at the site will be carried by rigid trucks:

   Deliveries from Moorebank warehouses:
   15,024 pallets per week x 34% = 5,108 pallets out on semi-trailer trucks

   15,024 pallets per week x 66% = 9,916 pallets out on rigid trucks

   Deliveries to Moorebank warehouses:
   15,024 pallets per week x 100% = 15,024 pallets in on rigid trucks

5. Semi-trailer trucks are likely to carry, on average 40 pallets per truck whilst rigid trucks have been assumed to carry, on average 20 pallets per load. Dividing the number of pallets by each average load determines the average number of loaded truck movements per week into and out of the warehouses.

   Deliveries from Moorebank warehouses:
   5,108 pallets in semis per week ÷ 40 pallets per truck = 128 loaded semi-trailer truck movements out per week

   9,916 pallets in rigids per week ÷ 20 pallets per truck = 496 loaded rigid truck movements out per week

   Deliveries to Moorebank warehouses:
   15,024 pallets in rigids per week ÷ 20 pallets per truck = 751 loaded rigid truck movements in per week

6. It is assumed that there will be no truck load matching for palletised cargo movement to and from the Moorebank IMT warehouses. Therefore all movements would generate an empty running leg into or out of the terminal. By adding the total inbound and outbound movements the total truck movements can be estimated.

Liability limited by a scheme approved under Professional Standards Legislation.

© 2015 Deloitte Touche Tohmatsu

Empty running trips in = loaded trips out X (1 – % load matching factor)

128 semis empty into terminal per week = 128 loaded semis outbound X (1 - 0% matched loads)

496 empty rigids into terminal per week = 496 loaded rigids outbound X (1 - 0% matched loads)

751 empty rigids out of terminal per week = 751 loaded rigids inbound X (1 - 0% matched loads)

By adding the total inbound and outbound movements the total truck movements can be estimated. To generate total number of trips for each truck type:

Total trips per week = loaded trips out + empty trips out + loaded trips in + empty trips in

Total semi movements	***= 128 loads out + 0 empty out + 0 loads in + 128 empty in***
	= 128 trips out + 128 trips in
	= 255 trips per week
Total rigid movements	***= 496 loads out + 751 empty out + 751 loads in + 496 empty in***
	= 1,247 trips out + 1,247 trips in
	= 2,494 trips per week

7. It was then assumed that 95% of container truck movements would occur on weekdays and 5% would occur on weekends. The proportion on weekdays was then divided by 5 to reach an average number of truck moves per weekday

   (255 semi-truck movements per week X 95%) ÷ 5 = 49 semi-trailer movements per weekday

   (2,494 rigid truck movements per week X 95%) ÷ 5 = 474 rigid truck movements per weekday

Total inbound and outbound moves per week and per weekday can be summarised in **Table 23** below.

© 2015 Deloitte Touche Tohmatsu

Table 23 : Average weekly interstate inbound and outbound warehouse related road movements 2030

Truck Status	Direction on road	Truck Type	Trucks per week (a)	Average trucks per Weekday (b)
Loaded	Outbound	Semi	128	24
		Rigid	496	94
Empty	Inbound	Semi	128	24
		Rigid	496	94
Loaded	Inbound	Semi	0	0
		Rigid	751	143
Empty	Outbound	Semi	0	0
		Rigid	751	143
Total Truck movements	Outbound	Semi	128	24
		Rigid	1,247	237
	Inbound	Semi	128	24
		Rigid	1,247	237

8. Daily truck volumes were multiplied by 7.7% and 9.3% to generate indicative AM and PM peak hourly truck volumes for each vehicle class both inbound and outbound.

   Average trucks per weekday ÷ 2 (in each direction) x 7.7% = trucks on and off- site per hour in AM peak in each direction

   49 semi movements per weekday ÷ 2 x 7.7% = 2 semi-truck movements in AM peak hour in each direction

   474 rigid movements per weekday ÷ 2 x 7.7% = 18 rigid truck movements in AM peak hour in each direction

   Average trucks per weekday ÷ 2 (in each direction) x 9.3% = trucks on and off -site per hour in PM peak in each direction

   49 semi movements per weekday ÷ 2 x 9.3% = 2 semi-truck movements in PM peak hour in each direction

   474 rigid movements per weekday ÷ 2 x 9.3% = 22 rigid truck movements in PM peak hour in each direction

© 2015 Deloitte Touche Tohmatsu

Table 24 : Total average weekday interstate related warehouse truck movements

Truck Status	Direction on road	Truck Type	Average trucks per Weekday	Trucks per hour AM Peak	Trucks per hour PM Peak
Total Truck movements	Outbound	Semi	24	2	2
		Rigid	237	18	22
	Inbound	Semi	24	2	2
		Rigid	237	18	22

4.5.4 Interstate Containers 2050

The following steps were taken to derive the daily truck movements in and out of Moorebank IMT for interstate cargo handled through the warehouses:

1. As for the IMEX, the Moorebank IMT will have enough on-site warehousing capacity to handle approximately 24.6% of all full TEU. It is assumed that half of these will be held in inventory in onsite warehousing for a period of weeks with the rest being general cargo (FAK) which would be deconsolidated and distributed offsite within a few days or arrive onsite for consolidation and export.

   149,000 full inbound TEU x 12.3% FAK = 18,296 TEU FAK for distribution from site

   149,000 full inbound TEU x 12.3% Inventory = 18,296 TEU Inventory for distribution from site

   149,000 full outbound TEU x 12.3% FAK = 18,296 TEs FAK arriving at site for consolidation

   149,000 full outbound TEU x 12.3% Inventory = 18,296 TEU Inventory arriving at site for consolidation

2. It is assumed that the terminal would be operational 52 weeks per year.

   18,296 FAK + 18,296 Inventory TEU ÷ 52 = 704 TEU into warehouse and distributed off site each week

   18,296 FAK + 18,296 Inventory TEU ÷ 52 = 704 TEU arrive onto site and into warehouse each week

3. It is assumed that each TEU, when deconsolidated will generate approximately 25 pallet loads for domestic distribution:

   704 TEU x 25 equivalent pallet loads per TEU = 17,592 equivalent pallet loads into warehouse and distributed off site by road each week

© 2015 Deloitte Touche Tohmatsu

704 TEU x 25 equivalent pallet loads per TEU = 17,592 equivalent pallet loads into warehouse by road and railed offsite each week

4. The truck fleet profile for palletised cargo will be different to that for direct FCL and MT container movements to and from the Moorebank terminal. It is assumed that trucks moving pallets out of Moorebank IMT warehousing will comprise of 34% semi-trailers and 66% rigid trucks whilst 100% of the palletised cargo arriving at the site will be carried by rigid trucks:

   Deliveries from Moorebank warehouses:
   17,592 pallets per week x 34% = 5,981 pallets out on semi-trailer trucks

   17,592 pallets per week x 66% = 11,611 pallets out on rigid trucks

   Deliveries to Moorebank warehouses:
   17,592 pallets per week x 100% = 17,592 pallets in on rigid trucks

5. Semi-trailer trucks are likely to carry, on average 40 pallets per truck whilst rigid trucks have been assumed to carry, on average 20 pallets per load. Dividing the number of pallets by each average load determines the average number of loaded truck movements per week into and out of the warehouses.

   Deliveries from Moorebank warehouses:
   5,981 pallets in semis per week ÷ 40 pallets per truck = 150 loaded semi-trailer truck movements out per week

   11,611 pallets in rigids per week ÷ 20 pallets per truck = 581 loaded rigid truck movements out per week

   Deliveries to Moorebank warehouses:
   17,592 pallets in rigids per week ÷ 20 pallets per truck = 880 loaded rigid truck movements in per week

6. It is assumed that there will be no truck load matching for palletised cargo movement to and from the Moorebank IMT warehouses. Therefore all movements would generate an empty running leg into or out of the terminal. By adding the total inbound and outbound movements the total truck movements can be estimated.

   Empty running trips in = loaded trips out X (1 – % load matching factor)

   150 semis empty into terminal per week = 150 loaded semis outbound X (1 - 0% matched loads)

   581 empty rigids into terminal per week = 581 loaded rigids outbound X (1 - 0% matched loads)

   880 empty rigids out of terminal per week = 880 loaded rigids inbound X (1 - 0% matched loads)

© 2015 Deloitte Touche Tohmatsu

By adding the total inbound and outbound movements the total truck movements can be estimated. To generate total number of trips for each truck type:

Total trips per week = loaded trips out + empty trips out + loaded trips in + empty trips in

Total semi movements ***= 150 loads out + 0 empty out + 0 loads in + 150 empty in***
= 150 trips out + 150 trips in
= 299 trips per week

Total rigid movements ***= 581 loads out + 880 empty out + 880 loads in + 581 empty in***
= 1,460 trips out + 1,460 trips in
= 2,920 trips per week

7. It was then assumed that 95% of container truck movements would occur on weekdays and 5% would occur on weekends. The proportion on weekdays was then divided by 5 to reach an average number of truck moves per weekday

(299 semi-truck movements per week X 95%) ÷ 5 = 57 semi-trailer movements per weekday

(2,920 rigid truck movements per week X 95%) ÷ 5 = 555 rigid truck movements per weekday

Total inbound and outbound moves per week and per weekday can be summarised in **Table 25** below.

Table 25: Average weekly inbound and outbound warehouse related road movements

Truck Status	Direction on road	Truck Type	Trucks per week (a)	Average trucks per Weekday (b)
Loaded	Outbound	Semi	150	28
		Rigid	581	110
Empty	Inbound	Semi	150	28
		Rigid	581	110
Loaded	Inbound	Semi	0	0
		Rigid	880	167
Empty	Outbound	Semi	0	0
		Rigid	880	167
Total Truck movements	Outbound	Semi	150	28
		Rigid	1,460	277
	Inbound	Semi	150	28
		Rigid	1,460	277

© 2015 Deloitte Touche Tohmatsu

8. Daily truck volumes were multiplied by 7.7% and 9.3% to generate indicative AM and PM peak hourly truck volumes for each vehicle class both inbound and outbound.

Average trucks per weekday ÷ 2 (in each direction) x 7.7% = trucks on and off site per hour in AM peak in each direction

57 semi movements per weekday ÷ 2 x 7.7% = 2 semi-truck movements in AM peak hour in each direction

555 rigid movements per weekday ÷ 2 x 7.7% = 21 rigid truck movements in AM peak hour in each direction

Average trucks per weekday ÷ 2 (in each direction) x 9.3% = trucks on and off-
site per hour in PM peak in each direction

57 semi movements per weekday ÷ 2 x 9.3% = 3 semi-truck movements in PM peak hour in each direction

555 rigid movements per weekday ÷ 2 x 9.3% = 26 rigid truck movements in PM peak hour in each direction

Table 26 : Average total weekday truck movements for interstate related warehouse activity at 2050

Truck Status	Direction on road	Truck Type	Average trucks per Weekday	Trucks per hour AM Peak	Trucks per hour PM Peak
Total Truck movements	Outbound	Semi	46	2	3
		Rigid	565	21	26
	Inbound	Semi	46	2	3
		Rigid	565	21	26

4.5.5 Combined IMEX and Interstate Containers 2030

Warehouse generated truck traffic movements were estimated using a similar methodology to the derivation of container truck movements, with some variation to the underlying assumptions. The most significant changes to the assumptions were:

- the makeup of the fleet;
- the proportion of movements occurring during the week; and
- the level of load matching.

The following steps were taken to derive the daily truck movements in and out of Moorebank IMT for cargo handled through the warehouses:

1. The Moorebank IMT will have enough on-site warehousing capacity to handle approximately 26% of all full TEU. It is assumed that half of these will be held in inventory in onsite warehousing for a period of weeks with the rest being general cargo (FAK) which would be deconsolidated and distributed offsite within a few days or arrive onsite for consolidation and export.

© 2015 Deloitte Touche Tohmatsu

667,000 full inbound TEU x 13% FAK = 86,849 TEU FAK for distribution from site

667,000 full inbound TEU x 13% Inventory = 86,849 TEU Inventory for distribution from site

293,000 full outbound TEU x 13% FAK = 38,151 TEU FAK arriving at site for consolidation

293,000 full outbound TEU x 13% Inventory = 38,151 TEU's Inventory arriving at site for consolidation

2. It is assumed that the terminal would be operational 52 weeks per year.

   86,849 FAK + 86,849 Inventory TEU ÷ 52 = 3,340 TEU into warehouse and distributed off site each week

   38,151 FAK + 38,151 Inventory TEU ÷ 52 = 1,467 TEU arrive onto site and into warehouse each week

3. It is assumed that each TEU, when deconsolidated will generate approximately 25 pallet loads for domestic distribution:

   3,340 TEU x 25 equivalent pallet loads per TEU = 83,509 equivalent pallet loads into warehouse and distributed off site by road each week

   1.467 x 25 equivalent pallet loads per TEU = 36,684 equivalent pallet loads into warehouse by road and railed offsite each week

4. The truck fleet profile for palletised cargo will be different to that for direct FCL and MT container movements to and from the Moorebank terminal. It is assumed that trucks moving pallets out of Moorebank IMT warehousing will comprise of 34% semi-trailers and 66% rigid trucks whilst 100% of the palletised cargo arriving at the site will be carried by rigid trucks:

   Deliveries from Moorebank warehouses:
   83,509 pallets per week x 34% = 28,393 pallets out on semi-trailer trucks

   83,509 pallets per week x 66% = 55,116 pallets out on rigid trucks

   Deliveries to Moorebank warehouses:
   36.684 pallets per week x 100% = 36,684 pallets in on rigid trucks

5. Semi-trailer trucks are likely to carry, on average 40 pallets per truck whilst rigid trucks have been assumed to carry, on average 20 pallets per load. Dividing the number of pallets by each average load determines the average number of loaded truck movements per week into and out of the warehouses.

© 2015 Deloitte Touche Tohmatsu

Deliveries from Moorebank warehouses:
28,393 pallets in semis per week ÷ 40 pallets per truck = 710 loaded semi-trailer truck movements out per week

55,116 pallets in rigids per week ÷ 20 pallets per truck = 2,756 loaded rigid truck movements out per week

Deliveries to Moorebank warehouses:
36,684 pallets in rigids per week ÷ 20 pallets per truck = 1,834 loaded rigid truck movements in per week

6. It is assumed that there will be no truck load matching for palletised cargo movement to and from the Moorebank IMT warehouses. Therefore all movements would generate an empty running leg into or out of the terminal. By adding the total inbound and outbound movements the total truck movements can be estimated.

Empty running trips in = loaded trips out X (1 – % load matching factor)

710 semis empty into terminal per week = 710 loaded semis outbound X (1 - 0% matched loads)

2,756 empty rigids into terminal per week = 2,756 loaded rigids outbound X (1 - 0% matched loads)

1,834 empty rigids out of terminal per week = 1,834 loaded rigids inbound X (1 - 0% matched loads)

By adding the total inbound and outbound movements the total truck movements can be estimated. To generate total number of trips for each truck type:

Total trips per week = loaded trips out + empty trips out + loaded trips in + empty trips in

Total semi movements	***= 710 loads out + 0 empty out + 0 loads in + 710 empty in***
	= 710 trips out + 710 trips in
	= 1,420 trips per week
Total rigid movements	***= 2,756 loads out + 1,834 empty out + 1,834 loads in + 2,756 empty in***
	= 4,590 trips out + 4,590 trips in
	= 9,180 trips per week

© 2015 Deloitte Touche Tohmatsu

7. It was then assumed that 95% of container truck movements would occur on weekdays and 5% would occur on weekends. The proportion on weekdays was then divided by 5 to reach an average number of truck moves per weekday

   (1,420 semi-truck movements per week X 95%) ÷ 5 = 270 semi-trailer movements per weekday

   (9,180 rigid truck movements per week X 95%) ÷ 5 = 1,744 rigid truck movements per weekday

   Total inbound and outbound moves per week and per weekday can be summarised in **Table 27** below.

Table 27 : Average weekly inbound and outbound warehouse related road movements 2030 for IMEX and Interstate combined

Truck Status	Direction on road	Truck Type	Trucks per week (a)	Average trucks per Weekday (b)
Loaded	Outbound	Semi	710	135
		Rigid	2,756	524
Empty	Inbound	Semi	710	135
		Rigid	2,756	524
Loaded	Inbound	Semi	0	0
		Rigid	1,834	348
Empty	Outbound	Semi	0	0
		Rigid	1,834	348
Total Truck movements	Outbound	Semi	710	135
		Rigid	4,590	872
	Inbound	Semi	710	135
		Rigid	4,590	872

8. Daily truck volumes were multiplied by 7.7% and 9.3% to generate indicative AM and PM peak hourly truck volumes for each vehicle class both inbound and outbound.

   Average trucks per weekday in each direction x 7.7% = trucks on and off-site per hour in AM peak in each direction

   270 semi movements in each direction per weekday x 7.7% = 10 semi-truck movements in AM peak hour in each direction

   1,744 rigid movements in each direction per weekday x 7.7% = 67 rigid truck movements in AM peak hour in each direction

   Average trucks per weekday in each direction x 9.3% = trucks on and off-site per hour in PM peak in each direction

© 2015 Deloitte Touche Tohmatsu

270 semi movements in each direction per weekday x 9.3% = 13 semi-truck movements in PM peak hour in each direction

1,744 rigid movements in each direction per weekday x 9.3% = 81 rigid truck movements in PM peak hour in each direction

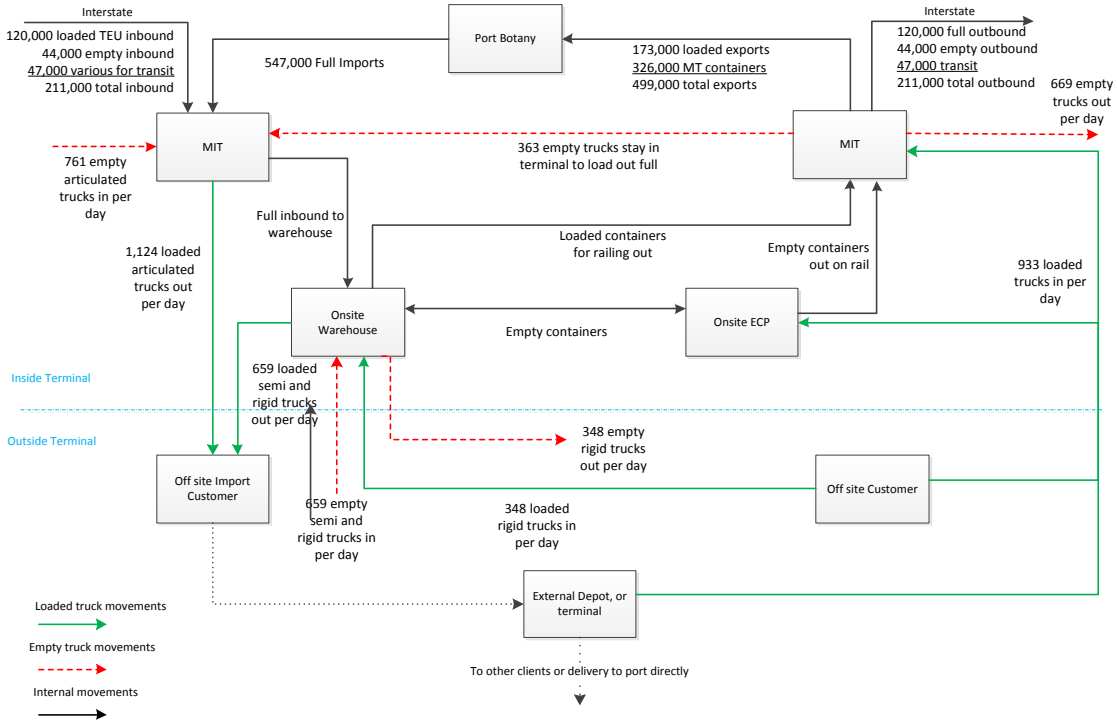
Table 28 : Total combined average weekday truck movements for warehousing activity at 2030

Truck Status	Direction on road	Truck Type	Average trucks per Weekday	Trucks per hour AM Peak	Trucks per hour PM Peak
Total Truck movements	Outbound	Semi	135	10	13
		Rigid	872	67	81
	Inbound	Semi	135	10	13
		Rigid	872	670	81

Note: Some truck numbers have been rounded to the nearest whole number

A consolidated flow diagram for movements of full container loads out of the terminal, warehouse generated loads out of the terminal and associated empty running truck trips are illustrated in the following flow diagram.

Figure 8 : Total average weekday truck movements at 2030



© 2015 Deloitte Touche Tohmatsu

Note that there may be some minor differences in truck numbers between the flow diagram and the tables due to consolidation of figures and rounding. A full size diagram is included at **Appendix A.**

4.5.6 Combined IMEX and Interstate Containers 2050

As stated previously, warehouse generated truck traffic movements were estimated using a similar methodology to the derivation of container truck movements, with some variation to the underlying assumptions. The most significant changes to the assumptions were:

- the makeup of the fleet;
- the proportion of movements occurring during the week; and
- the level of load matching.

The following steps were taken to derive the daily truck movements in and out of Moorebank IMT for cargo handled through the warehouses:

1. The Moorebank IMT will have enough on-site warehousing capacity to handle approximately 24.6% of all full TEU. It is assumed that half of these will be held in inventory in onsite warehousing for a period of weeks with the rest being general cargo (FAK) which would be deconsolidated and distributed offsite within a few days or arrive onsite for consolidation and export.

   696,000 full inbound TEU x 12.3% FAK = 85,462 TEU FAK for distribution from site

   696,000 full inbound TEU x 12.3% Inventory = 85,462 TEU Inventory for distribution from site

   322,000 full outbound TEU x 12.3% FAK = 39,538 TEU FAK arriving at site for consolidation

   322,000 full outbound TEU x 12.3% Inventory = 39,538 TEU Inventory arriving at site for consolidation

2. It is assumed that the terminal would be operational 52 weeks per year.

   85,462 FAK + 85,462 Inventory TEU ÷ 52 = 3,287 TEUs into warehouse and distributed off site each week

   39,538 FAK + 39,538 Inventory TEU ÷ 52 = 1,521 TEUs arrive onto site and into warehouse each week

3. It is assumed that each TEU, when deconsolidated will generate approximately 25 pallet loads for domestic distribution:

   3,287 TEU x 25 equivalent pallet loads per TEU = 82,175 equivalent pallet loads into warehouse and distributed off site by road each week

© 2015 Deloitte Touche Tohmatsu

1,521 x 25 equivalent pallet loads per TEU = 38,018 equivalent pallet loads into warehouse by road and railed offsite each week

4. The truck fleet profile for palletised cargo will be different to that for direct FCL and MT container movements to and from the Moorebank terminal. It is assumed that trucks moving pallets out of Moorebank IMT warehousing will comprise of 34% semi-trailers and 66% rigid trucks whilst 100% of the palletised cargo arriving at the site will be carried by rigid trucks:

   Deliveries from Moorebank warehouses:
   82,175 pallets per week x 34% = 27,939 pallets out on semi-trailer trucks

   82,175 pallets per week x 66% = 54,235 pallets out on rigid trucks

   Deliveries to Moorebank warehouses:
   38,018 pallets per week x 100% = 38,018 pallets in on rigid trucks

5. Semi-trailer trucks are likely to carry, on average 40 pallets per truck whilst rigid trucks have been assumed to carry, on average 20 pallets per load. Dividing the number of pallets by each average load determines the average number of loaded truck movements per week into and out of the warehouses.

   Deliveries from Moorebank warehouses:
   27,939 pallets in semis per week ÷ 40 pallets per truck = 698 loaded semi-trailer truck movements out per week

   54,235 pallets in rigids per week ÷ 20 pallets per truck = 2,712 loaded rigid truck movements out per week

   Deliveries to Moorebank warehouses:
   38,018 pallets in rigids per week ÷ 20 pallets per truck = 1,901 loaded rigid truck movements in per week

6. It is assumed that there will be no truck load matching for palletised cargo movement to and from the Moorebank IMT warehouses. Therefore all movements would generate an empty running leg into or out of the terminal. By adding the total inbound and outbound movements the total truck movements can be estimated.

   Empty running trips in = loaded trips out X (1 – % load matching factor)

   698 semis empty into terminal per week = 698 loaded semis outbound X (1 - 0% matched loads)

   2,712 empty rigids into terminal per week = 2,712 loaded rigids outbound X (1 - 0% matched loads)

   1,901 empty rigids out of terminal per week = 1,901 loaded rigids inbound X (1 - 0% matched loads)

© 2015 Deloitte Touche Tohmatsu

By adding the total inbound and outbound movements the total truck movements can be estimated. To generate total number of trips for each truck type:

Total trips per week = loaded trips out + empty trips out + loaded trips in + empty trips in

Total semi movements ***= 698 loads out + 0 empty out + 0 loads in + 698 empty in***

= 698 trips out + 698 trips in
= 1,397 trips per week

Total rigid movements ***= 2,712 loads out + 1,901 empty out + 1,901 loads in + 2,712 empty in***

= 4,613 trips out + 4,613 trips in
= 9,225 trips per week

7. It was then assumed that 95% of container truck movements would occur on weekdays and 5% would occur on weekends. The proportion on weekdays was then divided by 5 to reach an average number of truck moves per weekday

(1,397 semi-truck movements per week X 95%) ÷ 5 = 265 semi-trailer movements per weekday
(9,225 rigid truck movements per week X 95%) ÷ 5 = 1,753 rigid truck movements per weekday

Total inbound and outbound moves per week and per weekday can be summarised in **Table 29** below.

Table 29 : Average weekly inbound and outbound warehouse related road movements 2050 for IMEX and Interstate combined

Truck Status	Direction on road	Truck Type	Trucks per week (a)	Average trucks per Weekday (b)
Loaded	Outbound	Semi	698	133
		Rigid	2,712	515
Empty	Inbound	Semi	698	133
		Rigid	2,712	515
Loaded	Inbound	Semi	0	0
		Rigid	1,901	361
Empty	Outbound	Semi	0	0
		Rigid	1,901	361
Total Truck movements	Outbound	Semi	698	133
		Rigid	4,613	876
	Inbound	Semi	698	133
		Rigid	4,613	876

© 2015 Deloitte Touche Tohmatsu

8. Daily truck volumes were multiplied by 7.7% and 9.3% to generate indicative AM and PM peak hourly truck volumes for each vehicle class both inbound and outbound.

   Average trucks per weekday ÷ 2 (in each direction) x 7.7% = trucks on and off site per hour in AM peak in each direction

   265 semi movements ÷ 2 in each direction per weekday x 7.7% = 10 semi-truck movements in AM peak hour in each direction

   1,753 rigid movements ÷ 2 in each direction per weekday x 7.7% = 67 rigid truck movements in AM peak hour in each direction

   Average trucks per weekday ÷ 2 (in each direction) x 9.3% = trucks on and off site per hour in PM peak in each direction

   265 semi movements ÷ 2 in each direction per weekday x 9.3% = 12 semi-truck movements in PM peak hour in each direction

   1,753 rigid movements ÷ 2 in each direction per weekday x 9.3% = 82 rigid truck movements in PM peak hour in each direction

Table 30 : Total combined average weekday truck movements for warehousing activity at 2050

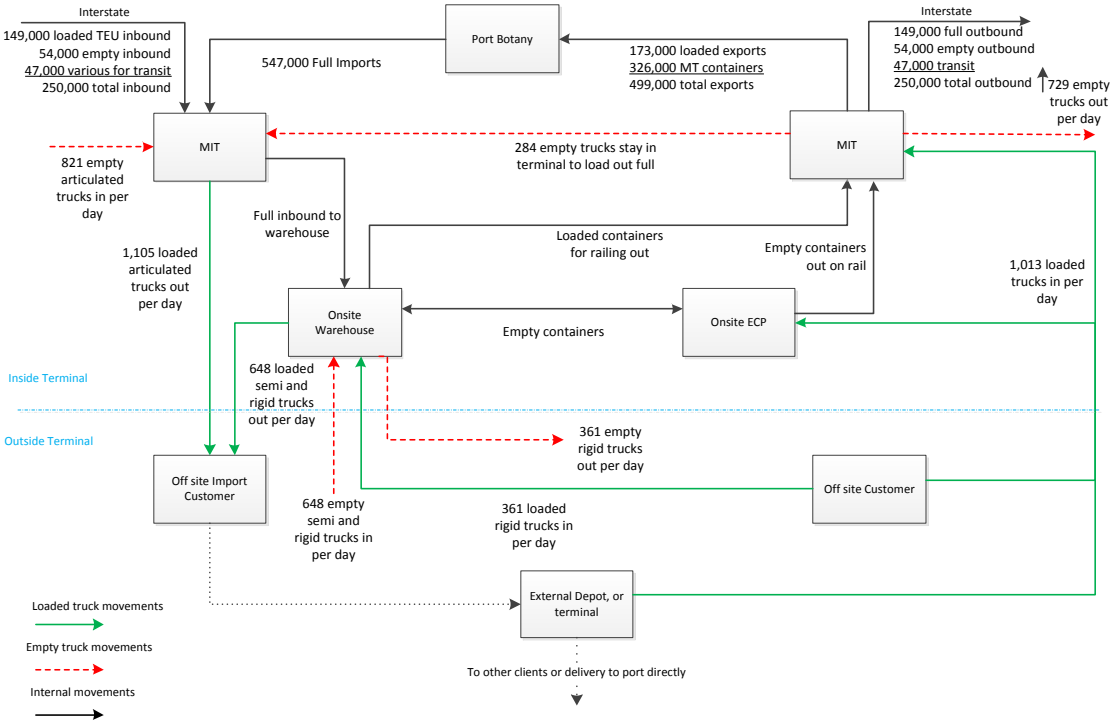
Truck Status	Direction on road	Truck Type	Average trucks per Weekday	Trucks per hour AM Peak	Trucks per hour PM Peak
Total Truck movements	Outbound	Semi	133	10	12
		Rigid	876	67	82
	Inbound	Semi	133	10	12
		Rigid	876	67	82

Note: Some truck numbers have been rounded to the nearest whole number

A consolidated flow diagram for movements of full container loads out of the terminal, warehouse generated loads out of the terminal and associated empty running truck trips are illustrated in the following flow diagram.

© 2015 Deloitte Touche Tohmatsu

Figure 9 : Total average weekday truck movements at 2050



Note that there may be some minor differences between the flow diagram and the tables due to consolidation of figures and rounding. A full size diagram is included at **Appendix A.**

© 2015 Deloitte Touche Tohmatsu

5 Limitation of our work

General use restriction

This report is prepared solely for the use of Moorebank Intermodal Company. This report is not intended to and should not be used or relied upon by anyone else and we accept no duty of care to any other person or entity. The report has been prepared for the purpose set out in Section 1 of this document. You should not refer to or use our name or the advice for any other purpose.

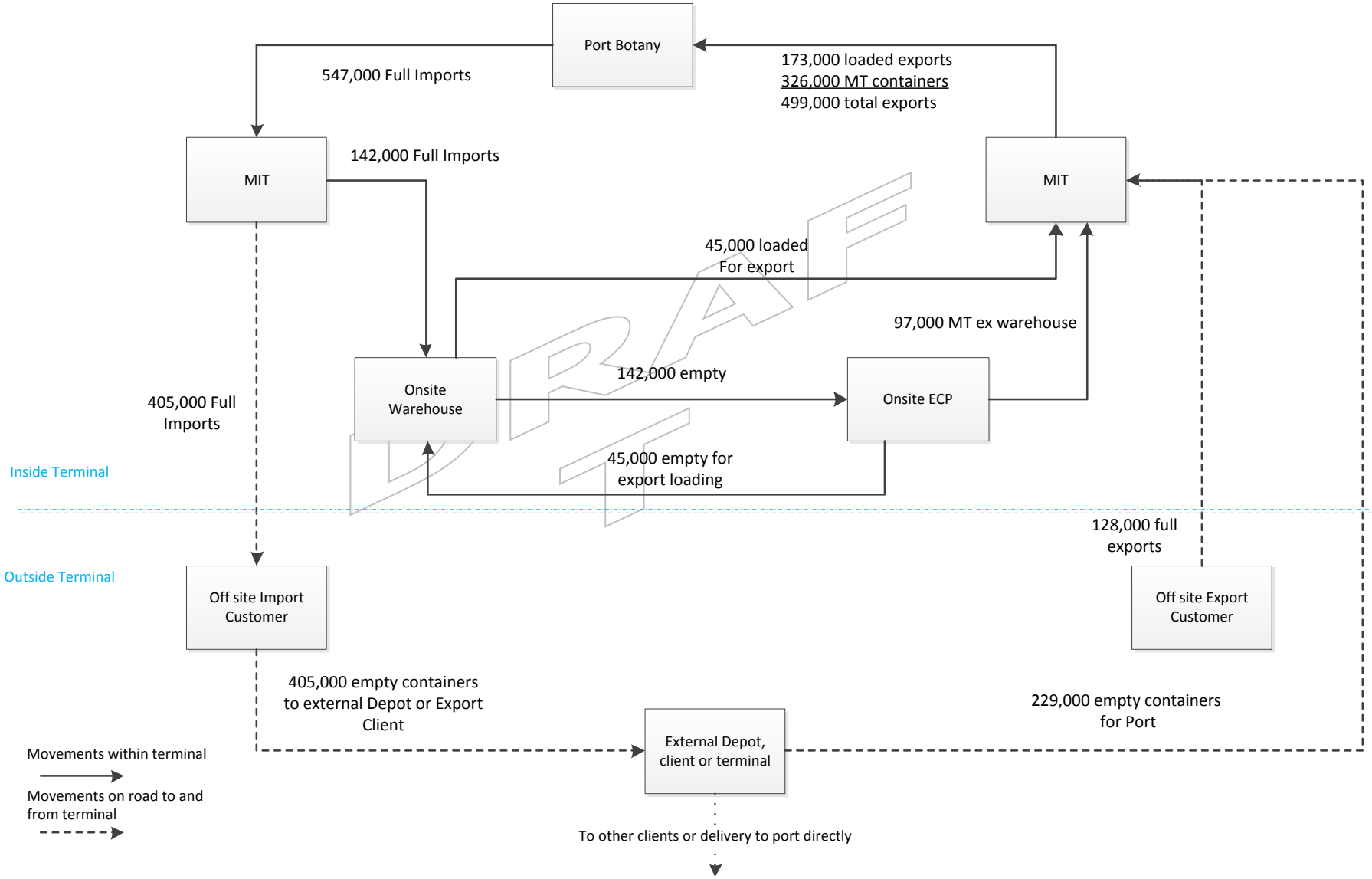
© 2015 Deloitte Touche Tohmatsu

Appendix A

DRAFT

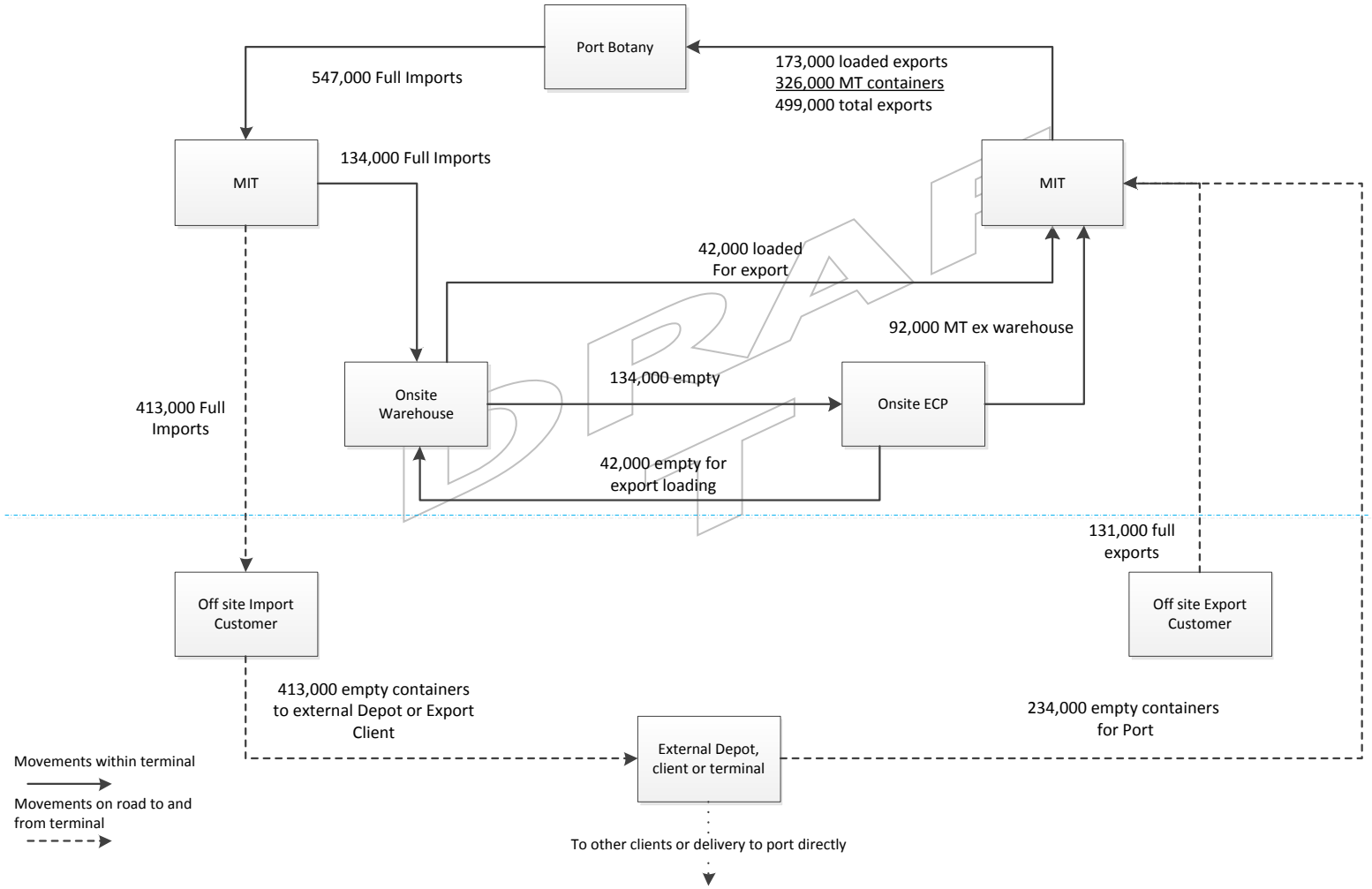
© 2015 Deloitte Touche Tohmatsu

Figure 10 : IMEX Flows through the terminal – 2030



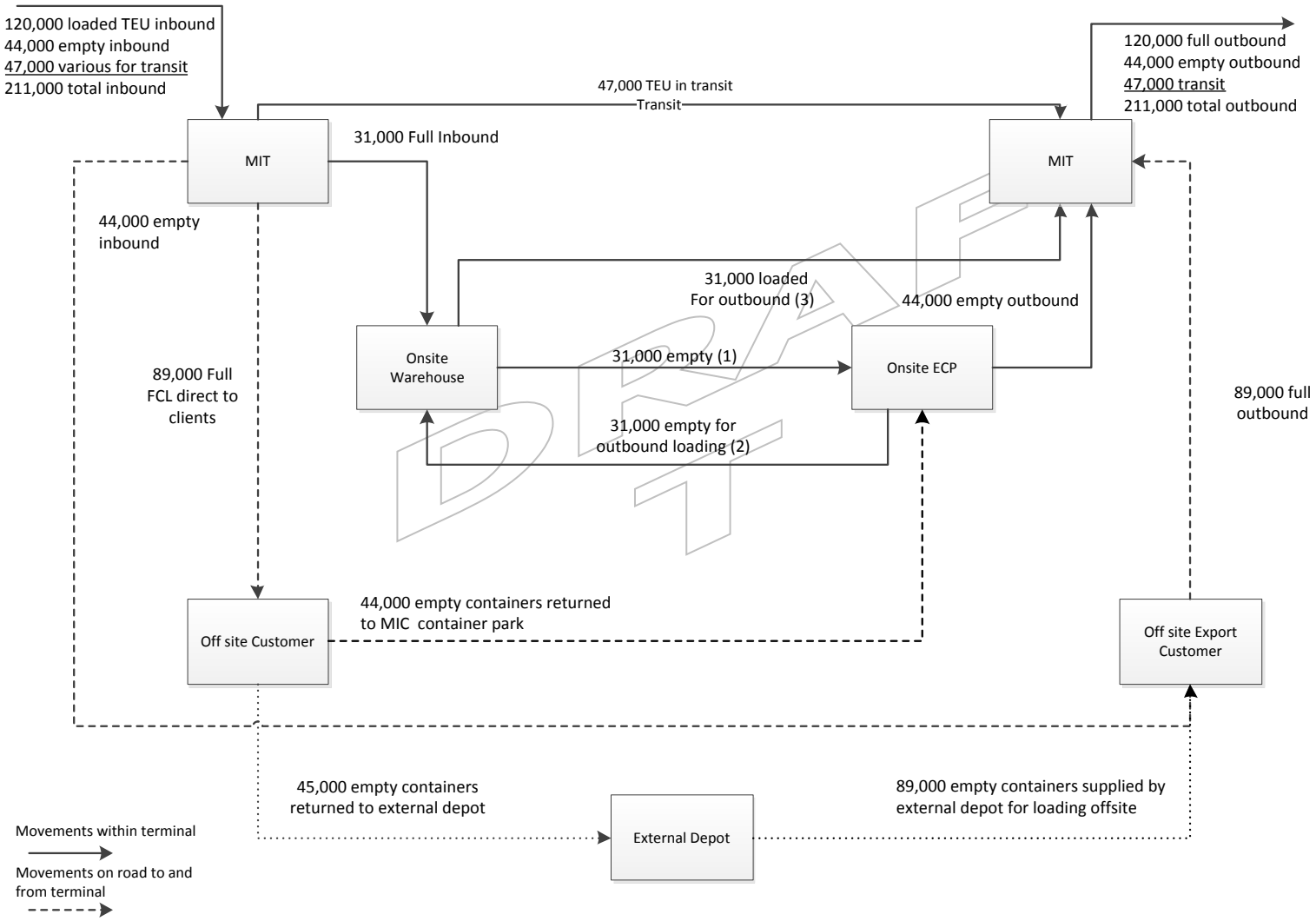
© 2015 Deloitte Touche Tohmatsu

Figure 11 : IMEX Flows through the terminal – 2050



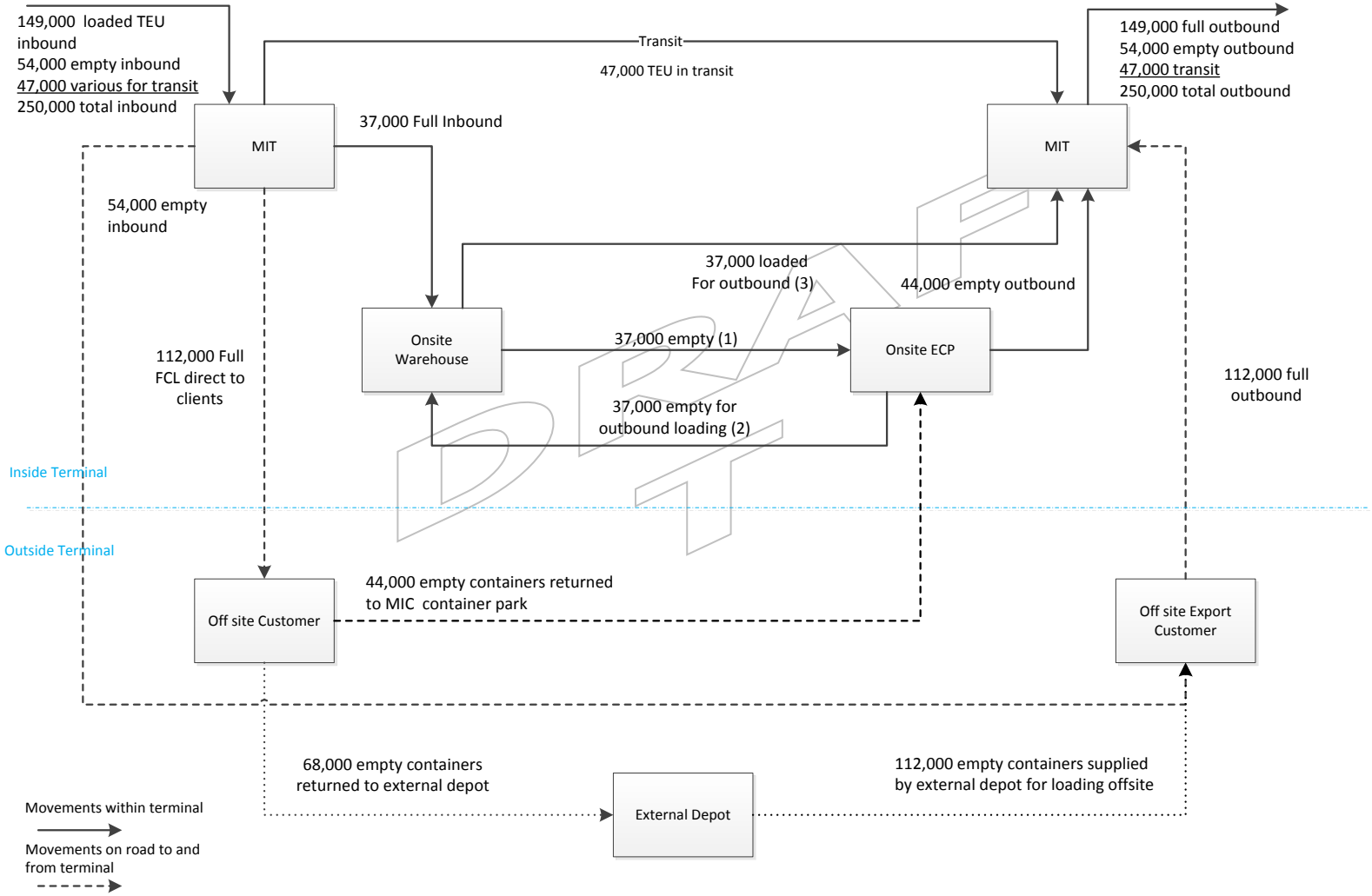
© 2015 Deloitte Touche Tohmatsu

Figure 12 : Interstate flows through the terminal – 2030



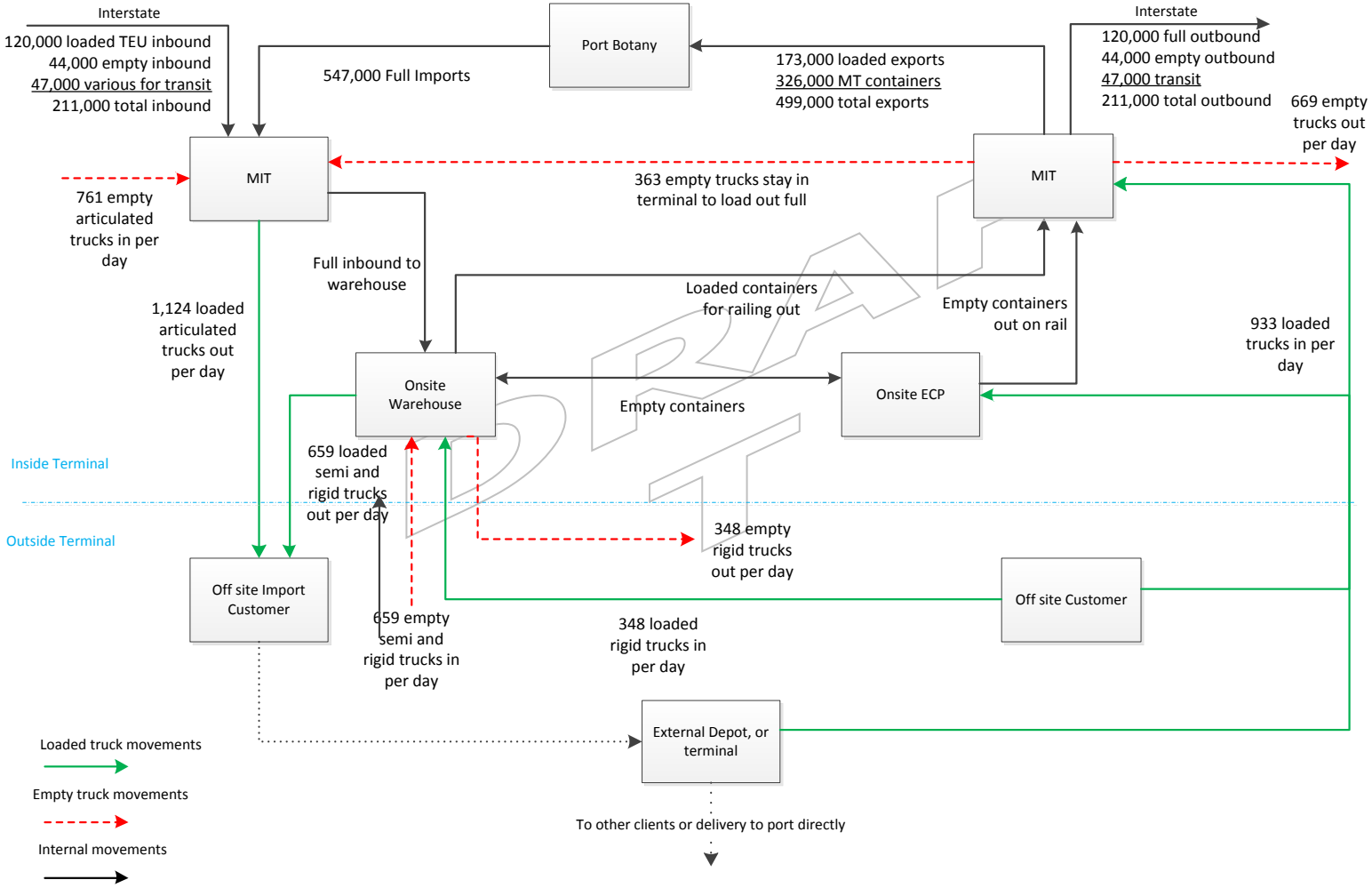
© 2015 Deloitte Touche Tohmatsu

Figure 13 : Interstate flows through the terminal – 2050



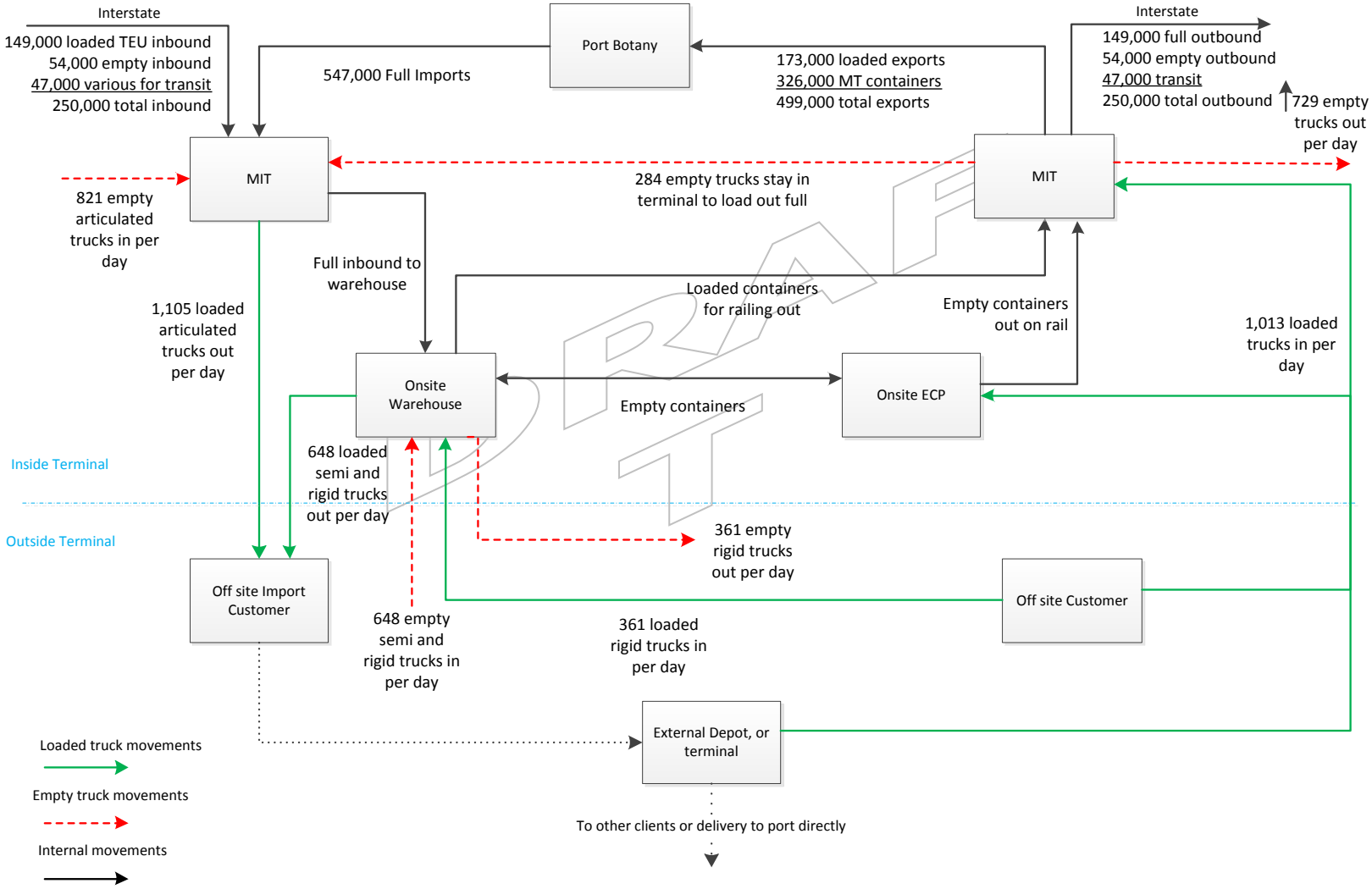
© 2015 Deloitte Touche Tohmatsu

Figure 14 : IMEX and Interstate generated truck movements onto and off the terminal: 2030



© 2015 Deloitte Touche Tohmatsu

Figure 15 : IMEX and Interstate generated truck movements onto and off the terminal: 2050



© 2015 Deloitte Touche Tohmatsu