Moorebank Intermodal Terminal

Independent Traffic & Transport review of the MIC Staged SSD

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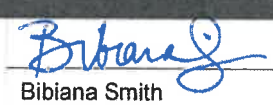
Author signature		Approver signature	
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Executive Summary

The purpose of this report is to provide advice on the adequacy of the assessments and reports for the Moorebank Intermodal Company's (MIC) proposed Moorebank Intermodal Terminal (IMT), including:

a) the scope of the assessment in relation to both local, regional and cumulative impacts;

b) the validity of the underlying assumptions, modelling undertaken, and outcomes of the modelling;

c) the validity of the conclusions reached in relation to impacts;

d) the validity and adequacy of proposed management and mitigation measures at a conceptual level.

The reports reviewed were:

- *Moorebank Intermodal Terminal Environmental Impact Statement, Volume 1a & 3* (Parsons Brinckerhoff, October 2014, for Moorebank Intermodal Company) – **EIS**;
- *Moorebank Intermodal Terminal – Traffic, Transport,and Accessibility Impact Assessment* (Parsons Brinckerhoff, September 2014, for Moorebank Intermodal Company, as part of its Environmental Impact Assessment, October 2014) – **EIS-TTAIA**;
- *Moorebank Intermodal Terminal – Response to Submissions Report* (Parsons Brinckerhoff, May 2015) - **RtS**;
- *Moorebank Intermodal Terminal – Traffic and Transport Impact Assessment* (Parsons Brinckerhoff, 27 April 2015, for Moorebank Intermodal Company, as part of its Response to Submissions Report, May 2015) – **RtS-TTIA**;
- *Moorebank Intermodal Terminal –Supplementary Response to Submissions Report* (Parsons Brinckerhoff, August 2015, for Moorebank Intermodal Company) – **Supplementary RtS**.

In addition, Government agency and key community submissions relating to traffic and accessibility, were reviewed.

It is a **positive development that MIC and SIMTA have agreed to combine and develop their land at Moorebank as an integrated freight precinct.** Planning approvals for the combined precinct are being sought in stages, due to SIMTA having obtained Concept Approval for its land, and MIC in the process of seeking Concept Approval for its land (that is, the subject of this current assessment).

The most contentious ongoing issue is the traffic congestion of the existing road network around the Intermodal Terminal, even with just background traffic growth into the future. **The results of the modelling show that even without the Intermodal Terminal, many intersections will be operating at LoS E or F during peak hours at 'full build', and will continue to do so even after the localised intersection adjustments proposed by MIC.**

One of the key "benefits" of the project – that it is close to key motorways (M5, M7, Hume Highway) which will provide convenient and economic access to large areas of Sydney – **would be significantly compromised**, and may therefore impact on the ongoing and long-term viability of the Intermodal Terminal facility. This extensive future peak hour traffic congestion continues to be a significant concern for the local community (including all its residents and businesses).

Subsequent to the release of the Supplementary Response to Submissions, MIC agreed to work with the State Government transport agencies – the Roads and Maritime Services (RMS) and Transport for New South Wales (TfNSW) – in **developing a mesoscopic and microsimulation transport model for the combined MIC/SIMTA Intermodal Terminal project.** The intended scope of this model should be communicated publicly immediately, but at least on approval of the EIS.

Given that "Traffic, transport and access" is consistently one of the top five issues raised by the community submissions following release of the MIC's 2014 EIS and 2015 RtS, it is considered important that the community be actively informed and engaged in the ongoing assessment of traffic, transport and access impacts of the combined MIC/SIMTA precinct. It is therefore recommended that a **Transport Modelling Project Control Group** (community reference group) be established to provide input during the modelling process, particularly in determining the model extent, confirming key intersections, timeframes, assumptions, reviewing modelling results, developing mitigation measures.

Intersection upgrades are likely to need to be major works to achieve any appreciable improvement in congestion reduction beyond MIC's commitment that it would propose works which "*would operate at no worse than they would without the project*." Given the network in this area is largely at congestion even without the project, and therefore not the just for the Intermodal Terminal to fund all mitigation measures, Aurecon recommends that the following be further investigated as part of the Community Reference Group, or separately with Councils.

- **Comprehensive review of public transport provisions in the region**, and identify opportunities for new or improved bus routes that can fundamentally change the current 90% mode split to private vehicles (cars) to at least 80-70%, such as providing Bus Transitway-style facilities on the M5 and M7.
- **Investigate ITS (Intelligent Transport Systems) opportunities for freight routes** on the M5, M7, Hume Highway, and Moorebank Avenue, such as increase the vehicle occupancy with a combined bus/HOV (high-occupancy vehicle) lane or bus/HOV/freight lane; variable time of day tolling; traffic signal phasing and timings, and peak spreading.

Proposed mitigation measures should not remove any existing public transport or active transport provisions without providing an alternative equivalent or improved provision. A concern about the proposed intersection adjustments (at Heathcote Road/ Moorebank Avenue) is that one includes the removal of a short bus lane. It is recommended that any existing bus lanes be retained or extended, rather than be removed.

The Planning Assessment Commission (PAC)'s findings for SIMTA should be taken into account for the MIC proposal, as they have agreed to consolidate their developments and coordinate their approvals process. In particular, the concerns of the PAC regarding the ability of the existing road network to accommodate the additional traffic generated by the SIMTA proposal still stand for the "full build" cumulative MIC/ SIMTA proposal, pending the next stage of modelling proposed by MIC in partnership with RMS and TfNSW. **It is considered that this modelling must be completed as a matter of urgency and with maximum transparency, so that the Planning approvals process can progress effectively.**

- **Require that the RMS's Transport model to be used at each SSD (State Significant Development) development application** for any increase in operations, and that and ongoing traffic monitoring is undertaken at key locations, to demonstrate that either the network can still cope or that any **mitigation measures proposed and committed to are adequate to maintain traffic impacts to its "no build"/ base case level or Level of Service D or better (or as agreed by TfNSW/ RMS)**.
- **Consider a Voluntary Planning Agreement (VPA) or similar to address contributions by MIC to future upgrades that are likely to be required for all intersections** that are appreciably affected by the proposed Moorebank Intermodal Terminal, but may not be forecast to operate at LoS E or F yet (and therefore not triggered for improvement works as a direct result of the intermodal terminal).

With conditions based on the above and the draft recommendations contained within this assessment report, and based on the information provided in the reports reviewed, Aurecon accepts that the MIC's Moorebank Intermodal Terminal can proceed to the next stage of SSD assessment.

1 Introduction

1.1 Purpose of this report

The purpose of this report is to provide advice on the adequacy of the assessments and reports for the Moorebank Intermodal Company's (MIC) proposed Moorebank Intermodal Terminal, including:

a) the scope of the assessment in relation to both local, regional and cumulative impacts;

b) the validity of the underlying assumptions, modelling undertaken, and outcomes of the modelling;

c) the validity of the conclusions reached in relation to impacts;

d) the validity and adequacy of proposed management and mitigation measures at a conceptual level.

This report builds on Aurecon's reviews of the following documents:

- *Moorebank Intermodal Terminal Traffic, Transport and Accessibility* ***Impact Assessment Report*** **(EIS-TTAIA)**, prepared by Parsons Brinckerhoff, dated September 2014, as contained in Technical Paper 1, Volume 3 of the *Moorebank Intermodal Terminal Project Environmental Impact Statement*, submitted by the Moorebank Intermodal Company.
- *Moorebank Intermodal Terminal – Traffic and Transport Impact Assessment Report* **(RtS-TTIA)**, prepared by Parsons Brinckerhoff, dated 27 April 2015, as contained in Appendix E, Volume 3 of the *Moorebank Intermodal Terminal Project Response to Submissions Report* May 2015, submitted by the Moorebank Intermodal Company.
- *Moorebank Intermodal Terminal –* ***Supplementary Response to Submissions*** *Report* (Supplementary RtS) August 2015, prepared by Parsons Brinckerhoff, submitted by the Moorebank Intermodal Company.

It is a beneficial and positive development that MIC an SIMTA's land at Moorebank will be combined and developed as an integrated freight precinct. The MIC Supplementary Response to Submissions Report outlines a path for concept approval that aims for a combined MIC/SIMTA ultimate (Full build at 2030) project of:

The current MIC proposal maintains a combined MIC/SIMTA ultimate (Full build at 2030) project of:

- 1.05 million TEU capacity (525,000 TEU inbound, 525,000 TEU outbound) IMEX freight terminal.
- 500,000 TEU capacity (125,000 TEU inbound, 125,000 TEU outbound) interstate freight terminal.
- 300,000 sqm GFA warehousing capacity.
- Southern rail connection from the IMT to the SSFL via a bridge crossing of the Georges River.
- Establishment of a conservation area alongside the Georges River.
- Upgrade of Moorebank Avenue between Anzac Road and M5.

The MIC is currently seeking approval for the proposal 'concept' to satisfy a staged State Significant Development (SSD) consent under the NSW EP&A Act, including a Stage 1 development consent for Early works (including rehabilitation works).

SIMTA is now in the process of obtaining development approval (DA) to construct and operate Stage 1 of its development, as approved by the PAC:

- 250,000 TEU capacity IMEX facility
- Southern rail connection to the SSFL

The agreement between MIC and SIMTA intends to adopt the following planning pathway:

- SIMTA obtains Stage 1 DA for its site (250,000 TEU IMEX capacity and southern rail connection to SSFL).
- MIC obtains staged DA (2015) – including Stage 1 Early works for its site
- SIMTA obtains all subsequent staged SSD DAs for each stage of the precinct development (covering both SIMTA and MIC sites towards the full build facility of 1.55 million TEUs (made up of 1.05 million TEU IMEX terminal capacity and 500,000 TEU interstate terminal capacity):
    - Phase A (2016-2017)– construction of the approved 250,000 TEU IMEX facility, 100,000 sqm warehousing, and construction of the southern rail link (2015-2016)
    - Phase B (2018-2020)– operation of Phase A works, construction of the additional 250,000 TEU IMEX (contingent on demonstrating that the road network can cope with the operation of the initial 250,000 TEU and additional doubling, as per PAC condition)
    - Phase C – (2021 2029) – operation of Phase A and B works, construction (which would become operational once completed) of 150,000 sq. m of warehousing and a 250,000 TEU IMEX (mid 2022 to end 2023 approx.), construction of an additional 300,000 TEU IMEX (in 2027); and construction of an additional 250,000 TEU interstate capacity and 50,000 sqm of warehousing (in 2029).
    - Full Build (from 2030) – operation of a 1.05 million TEU IMEX terminal, a 500,000 TEU interstate terminal and 300,000 sq. m of warehousing.

1.2 Overview of Key Project Documents

The following documents were

1.2.1 MIC Environmental Impact Statement – Traffic, Transport, and Access Impact Assessment (EIS TTAIA) – October 2014

The MIC's EIS was placed on public exhibition between 8 October and 8 December 2014. A total of 1793 submissions were received during the EIS exhibition period, of which 14 were from government agencies and Councils, and 1,779 from the community.

1.2.2 MIC Response to Submissions – Traffic and Transport Impact Assessment (RtS TTIA) – April 2015

A revised TTIA was prepared for the RtS to address the significant revised Project resulting from an 'in-principle agreement' between MIC and SIMTA to develop both their sites as a single coordinated intermodal precinct. This resulted in changes to the MIC and SIMTA site layout (shown in Figure 1 below), project phasing and cumulative scenarios, and traffic generation and distribution (operational and construction). These in turn have resulted in changes to proposed intersection changes.

In response to extensive community and local and State Government agencies comments on the EIS-TTAIA, the MIC's RtS-TTIA includes traffic assessment of additional years for all the intersections modelled, rather than just for the Moorebank Avenue intersections. Due to the changed proposed access arrangements (reducing site entry/exit points on Moorebank Avenue from 5 to 1), the number of intersections assessed actually reduced from 20 in the EIS to 16 in the RtS.

Figure 1 Revised Intermodal Terminal Layout Map

Key Project changes in the RtS are:

- Changes to the layout and operation of the Intermodal Terminal, including the location of warehousing, working and storage tracks, Intermodal Terminal freight village precinct, ;
- Confirmation that the southern rail access to the site is preferred.
- Changes to access and circulation of heavy and light vehicles from 4 to one single entry/exit point at Moorebank Avenue, resulting in changes to the upgrades proposed on Moorebank Avenue

The RtS was placed on public exhibition between 28 May and 26 June 2015. A total of 108 submissions were received during the RtS exhibition period, of which 6 were from government agencies, 2 from Councils (Liverpool and Campbelltown), and 100 from the community.

It should be noted that the significant reduction in the number of submissions cannot be taken to mean a lack of interest or acceptance of issues by the community. Rather it may indicate 'submission fatigue' after multiple rounds of exhibition periods for the SIMTA, MIC, and now combined SIMTA/MIC intermodal terminal facilities.

1.2.3 MIC Supplementary Response to Submissions (Supplementary-RtS) – August 2015

The Supplementary-RtS was required of the MIC by the Secretary to respond to the issues raised in the RtS and provide details of additional investigations undertaken since the RtS. The introduction to the Supplementary-RtS summarises the traffic-related changes resulting from the additional investigations done.

As a result of the changes introduced to the Project since the exhibition of the EIS, the Response to Submissions report provides an assessment of the changes to the impact relative to the impacts predicted in the EIS. A qualitative scoping exercise was conducted against the findings and conclusions of the impact assessment presented in the EIS which determined that the proposed amendments to the development only affect a small number of studies. A summary of the revised impact assessments, as presented in section 7.10 of Chapter 7 – Proposed amendments to the development of the Response to Submissions report, are:

Traffic – The changed site layout changes the traffic impacts on the surrounding road network. The changes in Project development phasing have also resulted in amendments to the 'ramp up' of traffic generation associated with the revised conversion factors between site uses/activities and trip generation. Adopting the truck generation rates used by SIMTA in its traffic studies (undertaken for its EIS) has resulted in modifications to some of the underlying assumptions about the rates of traffic generation, generally resulting in lower traffic generation rates. Traffic impacts associated with the amendments include the following:

a) *A requirement to upgrade Moorebank Avenue north of Anzac Road, and the upgrading of the Anzac Road intersection to a major signalised intersection. This location would be the site entry point for all vehicles, with separation of light and heavy vehicles occurring within the site.*

b) *For the key intersections, while the traffic impacts at 2030 are slightly worse relative to the predictions made in the EIS, the analysis continues to show that by 2030, all intersections will have experienced a reduced level of service as a result of background traffic growth. A number of intersections will have deteriorated to an unacceptable level of service (Level D or below) without mitigation, due to background traffic alone.*

c) *Mitigation measures in the form of intersection treatments are proposed to ensure the intersections' performance is returned to 'base level' at any point in time i.e. the performance of an intersection remains no worse than under background (without Moorebank) conditions.*

d) *The Response to Submissions report identifies intersection treatments that would be required, and by what date (as presented in Table 7.36 in section 7.11.2 of Chapter 7 – Proposed amendments to the development of the Response to Submissions report). 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.*

e) *Indicative timing of these upgrades is presented in presented in the Response to Submissions report (Table 7.36 in section 7.11.2 of Chapter 7 – Proposed amendments to the development), based on current projections for background traffic growth and anticipated increases in container throughput (or 'ramp up') over time. However, in recognition of the uncertainties in 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 identified in Table 7.36 in section 7.11.2 of Chapter 7 – Proposed amendments to the development of the Response to Submissions report.*
- *– 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 7.36.*
- *– The impact of traffic from Project site, when fully developed and operating at full capacity, represents less than 3.3% of the total traffic already on the M5 Motorway during peak periods. The Project would therefore not have a substantial impact on the motorway operation.*

f) *The mid-block capacity analysis (examining the flow of traffic along the roads between intersections) shows that ratios for all mid-block road sections would continue to perform at similar levels to the base condition with the addition of Moorebank Intermodal Terminal traffic.*

1.2.4 PAC determination on SIMTA – September 2014

The Planning Assessment Commission (PAC)'s findings for SIMTA should be taken into account for the MIC proposal, as they have agreed to consolidate their developments and coordinate their approvals process.

In June 2014, the SIMTA Intermodal Facility Concept Plan was referred to the Planning Assessment Commission for determination under Ministerial delegation (dated 12 September 2011), as more than 25 objections were received, and both local councils (Liverpool City Council and Campbelltown City Council) objected to the proposal.

The PAC's Assessment report concluded that on balance, the proposal's benefits outweigh its potential impacts and it was therefore in the public interest to proceed. The Concept Plan was recommended for approval subject to the recommended conditions and future assessment requirements.

The Commission's findings for SIMTA should be taken into account for the MIC proposal, as SIMTA and MIC have agreed to consolidate their developments and coordinate their approvals process. The following extract from the PAC determination of 29 September 2014 is relevant for the MIC:

The Commission considers the MIC proposal will have to be assessed taking into account the Commission's determination of the SIMTA proposal.

Having regard to the question of Sydney's need for a Moorebank intermodal for Port Botany freight, the Commission finds that it is a key component of the Government's rail freight strategy. However, as a general principle, the Commission has concluded that any intermodal approved for the precinct must

not exceed the capacity of the transport network. To ensure this, the Commission considers that it is appropriate to impose a TEU throughput annual limit.

The proponent has advised that its Stage 1 development application will seek approval for up to 250,000 TEU per annum. This will more than achieve the government's objectives for Port freight rail capacity by 2020.

Given the uncertainty about assessing traffic impacts and proposed mitigation measures based on assessments to meet capacity needs far into the future (2031), the Commission considers that concept approval should not be granted for 1 million TEU per annum.

If the proponent undertakes monitoring and modelling of the operation of Stage 1 and can demonstrate that an increase in the volume of freight will not exceed the capacity of the transport network (with or without further mitigation measures), then the Commission considers that subsequent development applications for further increases could be considered up to a total upper limit throughput of 500,000 TEU per annum.

This 500,000 TEU limit should enable the precinct to meet the Government's objectives for rail freight from Port Botany well into the future, providing traffic impacts can be managed. Accordingly the Commission has determined to approve the concept plan but with modifications and subject to further assessment requirements. The Commission's findings (for SIMTA) *can be summarised as below*

1. *As a general principle, each development stage of the proposal must not exceed the capacity of the transport network;*
2. *The stage 1 project application should be limited to 250,000 TEU throughput per annum given the uncertainty in assessing traffic impacts and proposed mitigation measures based on assessments far into the future (2031) (1.7 of Schedule 2 of Approval);*
3. *If monitoring and modelling of the operation of Stage 1 can demonstrate that an increase in the volume of freight will not exceed the capacity of the transport network with or without further mitigation measures, then subsequent development applications for further increases could be considered up to a total upper limit throughput of 500,000TEU per annum (1.8 of Schedule 2 of Approval);*
4. *A more detailed impact assessment of Cambridge Avenue is required, not just monitoring of vehicle numbers, and measures should be identified to prevent heavy vehicles accessing residential streets (Schedule 3 of Approval – Traffic and Transport);*
5. *The use of warehousing and distribution facilities on the site must be limited to activities associated with freight using the rail intermodal. This is in response to Campbelltown Council's concern that the site might also be used for general warehousing thereby generating more traffic (1.12 of Schedule 2 of Approval);*
6. *A Construction Environment Management Plan will need to be undertaken in future Development Applications;*
7. *The rail corridor to the south and south-west of the site generally along the boundary of the Glenfield Waste Disposal Centre linking to the SSFL is acceptable and should be the only rail access to the precinct regardless of whether another proposal proceeds;*
8. *Air quality impacts particularly with regard to the increased volume of diesel powered heavy vehicles engaged in the distribution of the containers moving both off-site and back on-site will require detailed assessment at future development application stages;*

9. *More detailed assessment of both construction and operational noise impacts is required to be undertaken at the development application stages together with appropriate mitigation measures necessary in regard to the neighbouring residential areas; and*
10. *Mitigation measures should be considered for heritage impacts, without being limited to, adaptive re-use of buildings or building elements on site.*

The Concept Plan was approved by the PAC with the following caveat:

1) *With modifications limiting the throughput of freight as outlined above; and*
2) *Subject to the recommended conditions as amended by the Commission.*

2 Issues identified and reviewed

This section discusses the key issues identified through the EIS, RtS, and Supplementary RtS documents and government agency and council submissions reviewed by Aurecon with the aim of assessing the appropriateness of the investigations undertaken, and whether the issues raised have been adequately addressed.

2.1 Traffic Modelling - General

Environmental Impact Statement - Traffic, Transport and Access Impact Assessment (EIS-TTAIA)

It should be noted that before the EIS TTAIA, in the 2011 *Moorebank Intermodal Terminal – Preliminary Project Environmental Overview in support of the Application* (prepared by PB for the Commonwealth Department of Finance and Deregulation), Section 6.1, PB had identified that "*in order to assess both the local and regional impacts, three levels of modelling would be employed, including strategic modelling (EMME/2), Paramics micro-simulation modelling, and intersection modelling (using SIDRA software).*"

However, by the time of the EIS in 2014, the TTAIA did not include micro-simulation modelling, and instead relied on SIDRA intersection modelling, with inputs from the STM. The MIC-TTAIA proposal was based on using the SIDRA6 intersection model for local and regional intersections, and the STM (strategic travel model) covering the broader road network. MIC maintain that the use of SIDRA6 was discussed and agreed with by RMS.

Table 1 EIS Traffic Issues and MIC Response

EIS reference	Issue Description	MIC response and action taken (if any)
Chapter 11 and TIA (Appendix J Strategic Modelling Report and Appendix D SIDRA Results)	TfNSW/RMS believe that using SIDRA 6 is not an appropriate approach to identify the range of impacts across the network as nominated in the traffic, transport and access SEAR. Two examples of the limitations of using the SIDRA 6 package are that it does not account for known issues such as the weaving movements between Moorebank Avenue and Hume Highway intersections on the M5 Motorway. In addition it cannot accommodate a range of truck lengths such as might be expected to be entering or leaving the Moorebank Precinct. The preferred approach is to adopt a network model tool that can apportion traffic flows and allow a range of vehicle types to be considered (packages such as Paramics, VISSM or AIMSUM). The model package and input parameters should be agreed with TfNSW and RMS in advance. This level of analysis is consistent with what has been requested of other proposals of similar developments.	The use of SIDRA 6 was discussed at length with TfNSW during 2013 and more recently, when TfNSW was consulted on the proposed assessment approach. SIDRA 6 is used at the request of RMS. It is accepted that SIDRA 6 is not the software to model the M5 weave, but this movement is a challenge for all microsimulation software. Our conclusions on the M5 weave capacity are based on HCM weave calculations and microsimulation modelling results which indicated the ~~St~~ Georges River bridge would be over capacity on completion of the M5 widening schemes. TfNSW raised no objection at that time to the use of SIDRA 6. In regard to the TfNSW comment that 'SIDRA 6 cannot accommodate a range of truck lengths' we note that multiple truck lengths can in fact be factored into the model. TFNSW to discuss internally if the M5 weave HCM analysis should be included in the EIS.
Chapter 11 and TIA	The transport cluster does not support any suggestion by the proponent that the development of a sub-area model as referred to above be delayed until further details about the companies that will operate the terminal are known in order to provide a better estimate of the likely travel movements. The transport cluster view is that a model better suited to identifying the impacts outlined in the SEARS should be developed now using the parameters for a large intermodal terminal operation and adjusted later when travel details unique to the operators of the various sub-components of the operation are known.	We note the views of TfNSW (the 'transport cluster') that it does not agree that detailed (i.e. sub-area) modelling be deferred until further details are known. However, in this case we maintain the view that the staged approval being sought provides ample opportunity for this matter to be deferred and subject to the full rigour of the SSD process at the next stage of approval.
Chapter 11 and TIA	Consultation shall be undertaken with the TfNSW Secretary's delegate to define the geographical area and all other significant inputs to the model.	Noted, subject to resolution of issues outlined above.

MIC's approach resulted in a large number of community and local and state government agencies comments with concerns about the traffic impact of the Intermodal Terminal on local and regional roadways, and the inappropriateness of using SIDRA intersection modelling for the extent of intersections to be assessed and the complexity of the interrelationships between some intersections – namely the M5 weave issues. The initial modelling extent used in the EIS is shown in the figure below. It shows that 20 intersections were modelled, with 5 associated directly with access to/from the Intermodal Terminal.

The RMS *Traffic Modelling Guidelines* identifies different model levels based on the applicability of various models to NSW traffic conditions. The SIDRA model is identified as a single intersection model at isolated intersections or where effects of coordination are not required to be modelled explicitly. Considering the scale and operational reach of the Intermodal Terminal, the importance of the roads, highways and motorways in the vicinity of the MIC site, and their current and expected future congestion levels (in particular the queuing on M5 motorway corridor which can significant influence multiple intersections), SIDRA is considered inadequate to replicate network performance in the vicinity of the Intermodal Terminal. Instead, a comprehensive network model would be more appropriate to assess the traffic impacts of this major development, and will provide more community and stakeholder confidence in the modelling results.

Aurecon's response to the EIS TTAIA stated that the use of SIDRA 6 Intersection modelling software is inappropriate to assess the traffic impact of the MIC proposal on the surrounding road network. The impact assessment should be undertaken with a network modelling package to ensure network effects are adequately considered.

The EIS also identified the section of Moorebank Avenue between the East Hills Railway Line and the M5 Motorway is an traffic accident "blackspot" (>0.13 casualty crashes per kilometre per annum). The crash data as supplied by RMS indicate that 38 casualty crashes have occurred on this approximately 2.8km stretch of road over the last 5 year period between 2008 and 2013, hence converting to 2.71 casualty crashes per kilometre per annum. Aurecon observed that there is a cluster of accidents around the Anzac Road intersection, so recommended that the accidents be investigated in more detail so that the design of the proposed Moorebank Avenue/ Anzac Road/ MIC site access intersection can take into account any improvements necessary.

Response to Submissions Report (May 2015)

Despite EIS submissions from the community and Councils calling for more sophisticated modelling, the RtS TTIA stated that it had consulted with RMS regarding the suitability of its modelling methodology.

With the significant Project revision prior to the preparation of the RtS, a revised TTIA was prepared by PB. This could have been an opportunity to acknowledge that a more network-based modelling approach was appropriate, and to therefore prepare a micro/mesoscopic model for the cumulative MIC and SIMTA intermodal precinct proposal. However, this was not undertaken. Instead, it is only with the release of a Supplementary RtS that MIC acknowledge and accept that a micro/mesoscopic model for the cumulative MIC and SIMTA intermodal precinct proposal is required.

In response to extensive community and local and state government agencies comments on the EIS TTAIA, the MIC's RtS TTIA includes traffic assessment of additional years for all the intersections modelled, rather than just for the Moorebank Avenue intersections. Due to the changed proposed access arrangements (reducing site entry/exit points on Moorebank Avenue from 5 to 1), the number of intersections assessed actually reduced from 20 in the EIS to 16 in the RtS.

The additional years modelled for all the intersections under the different cumulative scenarios allows better comparison of options. However, the modelling results still demonstrate that most intersections will reach LoS D, E or F during the AM or PM peak by 2025 or sooner.

In its review of the RtS, RMS identified that the SIDRA modelling of the M5/ Moorebank Avenue and M5/Hume Highway intersections results in a 'better than actual' result due to the limitation of SIDRA in accounting for the 'weave' on/off the M5 when there is extensive congestion (and therefore queuing) between the two intersections.

Shortfalls such as this across linked intersections in SIDRA can put the results of adjacent linked intersections into question. Given that one of these M5 weave intersections is adjacent to the Moorebank Avenue/Anzac Road/MIC Intermodal Terminal site access road intersection, and therefore a crucial intersection for the Project.

Aurecon reiterated its concern regarding the continued use of SIDRA for such a complex and extensive network as exists around the Moorebank Intermodal Terminal site.

Supplementary Response to Submissions (August 2015)

Subsequent to the release of the Supplementary Response to Submissions, MIC agreed to work with RMS and TfNSW in developing a mesoscopic and microsimulation transport model for the combined MIC/SIMTA Intermodal Terminal project. It is noted that submissions at the EIS stage (October 2014) highlighted the need for a more comprehensive and extensive traffic and transport model of the surrounding road network, and it has taken many rounds of consultation (RtS, Supplementary RtS) for the MIC to finally accept that this is required.

MIC's response to Aurecon's RtS response, included the following references to the anticipated traffic modelling:

- the next round of modelling will involve more extensive modelling to assess the impact of Project traffic on the wider Liverpool area.
- a wide ranging mesoscopic model is planned, with microsimulation of key elements such as the M5 Motorway over the Georges River. These new AM and PM models will be based on a new round of 24 hour traffic data collection.
- 24 hour profile of background and development traffic will be prepared for the next stage of assessment/modelling
- The next modelling application stage will be based upon profiles derived from surveys of major distribution centres around Sydney.

RMS advise that Stage 1 (calibration and validation) of the modelling is almost complete. Stage 2 (Scenario development) is likely to commence by early October 2015, with modelling expected to be completed by December 2015.

Draft Final Recommendations

Given that "Traffic, transport and access" is consistently one of the top five issues raised by the community submissions following release of the MIC's 2014 EIS and 2015 RtS, it is considered important that the community be actively informed and engaged in the ongoing assessment of traffic, transport and access impacts of the combined MIC/SIMTA precinct.

§ It is therefore recommended that a **Transport Modelling Project Control Group** (community reference group) be established (similar to that required for the CBD Light Rail Project, extracted below) to provide input during the modelling process, particularly in determining the model extent, confirming key intersections, timeframes, assumptions, reviewing modelling results, developing mitigation measures.

Community Reference Group
A15. Within three months of the date of this approval, or prior to the commencement of construction (whichever is earlier), the Proponent shall establish a Community Reference Group (CRG) to provide input prior to and during the construction of the SSI. The CRG shall:
(a) Be comprised of: i) representatives from the Proponent, including the person responsible for environmental management;
ii) representatives from the relevant Councils; and

iii) at least three representatives from the local community, whose appointment has been approved by the Proponent in consultation with the Secretary and relevant Councils.

(b) Be chaired by an independent party approved by the Proponent in consultation with the Secretary;
(c) Meet at least four times a year, key milestone points during the course of the model development and modelling process*, or as otherwise agreed by the CRG; and*
(d) Review and provide advice on the construction of the SSI, including any construction or environmental management plans, monitoring results, audit reports, or complaints.

The make-up of the reference group may be amended, in consultation with the Secretary, to suit the precinct specific issues being considered.
Note: The Proponent may, in consultation with the Secretary, combine the function of this CRG with the function of other community consultative mechanisms in the area, however, if it does this it must ensure that the above obligations are fully met in the combined process.

- It is recommended that the Transport Modelling Project Control Group consist of the following stakeholders (as a minimum, with additional invitees at DPE's discretion):
  - NSW DPE
  - TfNSW
  - RMS
  - MIC/SIMTA Traffic & transport consultants undertaking the modelling work
  - Liverpool City Council
  - Campbelltown City Council
  - nominated private individuals (TfNSW have indicated that they would welcome Council inviting or engaging 1-2 private individuals to participate).
- The intended scope and assumptions of the mesoscopic/ micro-simulation modelling should be communicated publicly so that interested parties can provide input or comment.
- It is recommended that the issues raised thus far continue to be monitored in the proponent's modelling of the combined MIC/SIMTA project.
- CCC would like approval of the MIC Intermodal Terminal be subject to a condition to the effect that the total operational capacity of the Intermodal Terminals, when combined, does not exceed the maximum capacity constraint.
- Liaise with RMS to ensure that any future traffic assessment required for subsequent approvals stages is based on the RMS mesoscopic and micro-simulation model, unless otherwise agreed by RMS.

All previous SIDRA traffic modelling indicates that the existing and forecast future level of background traffic is likely to result in LoS D, E, or F on most of the major intersections in the vicinity of the MIC Intermodal Terminal, and that even the mitigation measures proposed (such as intersection expansions, extending traffic turn bay lengths) provide only a very marginal improvement for the likely cost and traffic disruption caused in providing them.

Hence, it is considered that mitigation measures cannot be just about 'supply-side' measures (as it is likely that any infrastructure expansion that may provide significant improvement in LoS will come at considerable cost) but will also need to consider 'demand-side' measures (such as dedicated freight and.bus/HOV lanes, traffic signal phasing and timings, ITS, peak spreading).

- Aurecon recommends that the modelled scenarios include options that could reduce background traffic flows, such as providing Bus Transitway-style facilities on the M5 and M7, and/or increase the vehicle occupancy with a combined bus/HOV lane or bus/HOV/freight lane; traffic signal phasing and timings, ITS, and peak spreading.

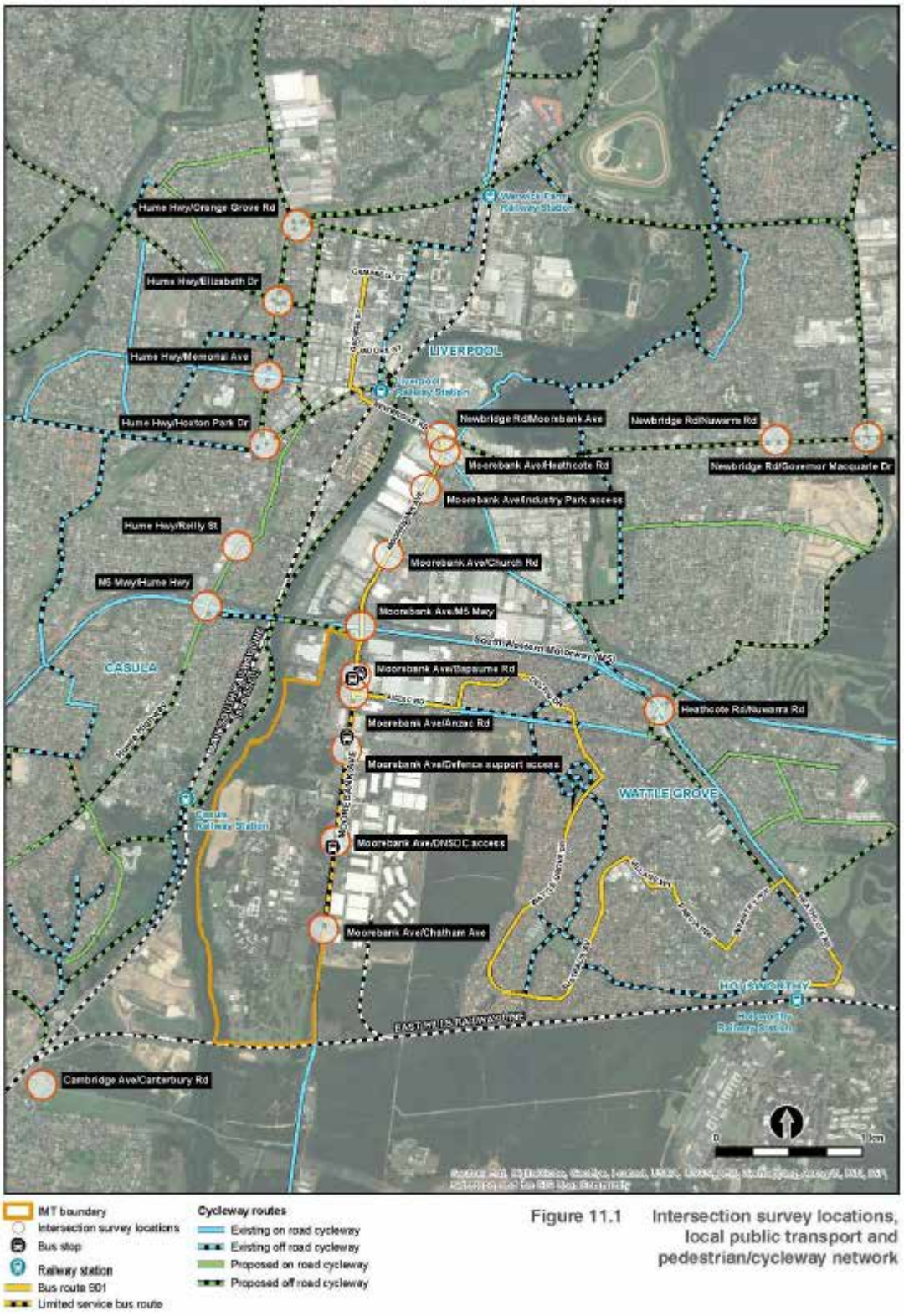

Figure 11.1 Intersection survey locations, local public transport and pedestrian/cycleway network

Figure 2 Extent of SIDRA 6 modelling area

2.2 Traffic Generation and Distribution

EIS-TTAIA

Traffic generation

The traffic generation from the Intermodal Terminal is derived from the forecast train movements and TEU demand, which are sourced from *MIC EIS – Supporting Information*, prepared by Deloitte, dated September 2014.

Table 2 Traffic Generation Peer Review

MIC assumptions and calculation		Aurecon comments
Intermodal Trip Generation		
Truck composition - B-Doubles - Semi-Trailers	 20% 80%	These assumptions are the emerging profile at Port Botany. This seems reasonable.
Average TEUs carried - Semi-Trailers - Rigid	 2.4 1.6	These assumptions are the emerging profile at Port Botany. This seems reasonable.
Back loading (% of trucks with a container on the return trip)	30%	The Deloitte report indicates that the 30% of backloading is a conservative assumption, on the basis of market disaggregation by operator, customer and geography. There is no further evidence to support this figure.
Weekday and weekend operation - Weekday - weekend	 85% 15%	The split ratio is equivalent to 6 working days in a week. This assumption seems reasonable. However it is not advised whether this is a similar business model to other sites.
Daily Trucks trips - IMEX - Interstate	 3,007 1,155	
Daily peak hour proportion - AM peak - PM peak	 4.2% 4.2%	The factor of 1/24 is likely to be too low and result in an underestimation of traffic generation during the AM/PM network peak hours. PB explains that "*there is an expectation that there would be a desire to avoid peak hour congestion so the proportion of truck activity during peak hours would reduce.*" While there may be a desire to minimise peak hour operations, it may be difficult to achieve, as, to a certain extent, deliveries from the IMT may need to occur during standard business hours. Further research and investigation are required to determine proportion of IMT daily traffic that is generated during the AM and PM peak hours. Alternatively, if the most likely traffic generation during the AM and PM peaks is not able to be estimated, sensitivity testing should be undertaken to test the impacts of a higher peak hour IMT traffic

MIC assumptions and calculation		Aurecon comments
		generation.
Peak hour truck trips - AM Peak - PM Peak	 174 174	The truck volumes during both AM and PM peaks are underestimated.
Warehouse Traffic Generation		
Truck fleet for palletised cargo Inbound - Semi-Trailers - Rigid Outbound - Semi-Trailers - Rigid	 34% 66% 0 100%	It does not seem unreasonable. A reference is needed to support this assumption
Weekday and weekend operation - Weekday - weekend	 95% 5%	It does not seem unreasonable. A reference is needed to support this assumption.
Total TEU movements pa	203,600	
Trucks trips from and to Warehouse daily - Semi-Trailers - Rigid - **Total**	 432 3,565 **3,997**	
Daily peak hour proportion - AM peak - PM peak	 4.2% 4.2%	See previous comments on “Daily peak hour proportion” under “Intermodal trip generation” above
Peak hour truck trips - AM peak - PM peak	168 168	The truck volumes during both AM and PM peaks are underestimated.
Staff traffic generation		
Number of shifts	3 -6.00am to 2.00pm -2.00pm to 10.00pm -10.00pm to 6.00am	It has been stated that the facility would operate 24 hours. The three 8-hour shifts seem reasonable.
Vehicle mode split - Terminal - Warehouse	 90% 70%	The BTS 2011 JTW analysis indicates the 88% (83% of driver, 5% of passenger) of staff trips were made by passenger car for Port Botany and surrounding precinct. The assumption of 70% vehicle mode share seems low.

MIC assumptions and calculation		Aurecon comments
Daily car movements	6,468	
Daily peak hour proportion - AM peak - PM peak	 4.2% 4.2%	See previous comments on "Daily peak hour proportion" under "Intermodal trip generation" above
Peak hour car trips - AM peak - PM peak	 84 84	MIC has assumed that the staff movement peak is different to the network peak. Therefore the maximum staff trip generation will occur outside the network peak, that is, at 6.00am, 2.00pm and 10.00pm (each with 625 vehicle trips). The purpose of a traffic assessment is to assess the 'worst case' traffic impacts of the development, and to develop mitigation measures. TfNSW had suggested preparation of a 24-hour combined operational and network ('background') to assist in identifying the combined network and development traffic peak, to then assess it. However, this 'operational' peak hour traffic assessment was not undertaken. The assessment of staff movement peak is required with the significant 625 vehicle trips, between shift changing.

TfNSW had provided comment to the MIC on the draft TTAIA regarding the inappropriateness of using 4.2% of the daily traffic generation as the peak hour generation rate. TfNSW put forward the alternative rates shown below, as typical percentages of daily truck movements for an intermodal terminal shown below, based on research commissioned by TfNSW:

Table 3 Daily truck movement profile for an intermodal terminal - TfNSW

Time Period	% of daily truck volumes per hour
7am-9am	9.1%
9am-3pm	7.3%
3pm-6pm	7.5%
6pm-7am	1.2%

TfNSW argued that if truck movements are reduced in peak period to avoid network congestion, more truck traffic is expected in shoulder peaks, and so recommended the following information should be included in the assessment:

- Hourly profile of heavy vehicle and staff vehicles by vehicle type for a 24hour period
- Details of the origin and destination of heavy vehicle movement including operating hours of origin/destination locations, and anticipated interstate truck movement patterns.

The backloading rate of 30% is similarly considered an 'aspirational' rate, rather than a realistic or conservative one for assessment. While there are examples given of backloading rates of 43% being achieved at Fremantle Ports after many years of operational refinement, it is unrealistic to assume that similar levels will be achieved immediately at the MIC site. At this stage of assessment, where future potential operators and their operations are not known, it is more prudent to estimate and assess on the conservative side. Further consideration is required to identify a more reasonable backloading factor, given TfNSWs suggested rate (11%) is almost 1/3 of the 30% rate used in the TTAIA.

A lower backloading rate means an increase in truck traffic generation, and this would have an impact on the overall traffic impact of the site development.

Traffic distribution

The EIS-TTAIA report adopts separate distributions for employee vehicles and trucks. The distribution of traffic generated by the Moorebank Intermodal Terminal and associated developments is based on the results of strategic modelling. The travel demand sources used in the strategic modelling include:

- Sydney Strategy Travel Model
- Light Commercial Vehicle Model
- Freight Movement Model for rigid and articulated commercial vehicle

The distributions extracted from the strategic modelling results are provided for information within the table below.

Table 4 Traffic distribution assumption review

Directions	AM peak Distribution PM peak)	Aurecon Comments
Heavy Vehicle		
M5 West	45.3% (44.8%)	The traffic survey, included in the EIS traffic report indicates that Moorebank Ave is currently carrying approximately 3% heavy vehicle on the south. The truck volumes are expected to increase when the development is in operation. The RtS-TTIA states that the design of the IMT truck access will force heavy vehicles to exit northbound onto Moorebank Avenue. The RMS Restricted Access Vehicle (RAV) map indicates that Cambridge Ave on the west of Georges River has travel conditions on this route, which allows 19m semi-trailer travel on the route between 10am-3pm, Monday to Friday. There is no travel restriction for rigid trucks on Cambridge Ave. This means the southern side of Moorebank Ave may accommodate development truck traffic.
Hume Highway	19.6% (20.0%)	
Moorebank Ave North	27.9% (13.9%)	
M5 East	7.2% (21.3%)	
Anzac Road East	0 (0%)	
Moorebank Ave South	0 (0%)	
Passenger Car		
M5 West	20%	The distribution assumptions seem reasonable.
Hume Highway	18.5%	
Moorebank Ave North	7.7%	
M5 East	13.3%	
Anzac Road East	10.5%	
Moorebank Ave South	30%	

In general, the traffic distribution assumptions seem reasonable, except that no truck traffic was assigned to Moorebank Ave South and Cambridge Avenue.

It should be noted that the Planning Assessment Committee recommendations for the SIMTA Intermodal Terminal proposal (dated 14 September 2014) supported Campbelltown Council's concern that "*Sole reliance on the Moorebank Avenue route ignores the need for alternative traffic routes in the event of failure of the (primary) Moorebank Avenue access to the north, in which case the only road alternative into and out of the terminal would be via Cambridge Avenue*." This resulted in the inclusion of specific terms in the SIMTA Concept Approval (dated 29 September 2014) stating that "*Any future Development Application shall include a Traffic Impact Assessment that assesses intersection and road network impacts, including impacts on Cambridge Avenue.*" In addition, ongoing monitoring of traffic on Cambridge Avenue is required by the Concept Approval.

As the MIC proposal makes similar assumptions about all traffic generated accessing the site via the north, with no consideration of an alternative access, it would be prudent for the MIC proposal to heed the SIMTA Concept Approval conditions regarding consideration of potential traffic impacts on Cambridge Avenue.

TfNSW's response to the EIS recommended preparation of a 24-hour combined network ('background') traffic profile, as well as a 24-hour development traffic profile to identify the overall traffic peak period and to then assess this. This was done for Moorebank Avenue in the RtS (Section 6.7) and found that even with off-peak staff changeovers operating on the MIC site, the overall combined network traffic profile still reflected the background traffic AM and PM peak hours (7-8am and 5-6pm respectively), albeit with some peak spreading observable. MIC may extend this 24-hour traffic profile to intersections beyond Moorebank Avenue in its ongoing traffic modelling work for its Stage 2 development application.

Response to Submissions Report (May 2015)

Changes in the RtS include:

- Revised truck loading capacities to increase pallet loads for rigid trucks (from 8 to 20 pallets) and semi-trailers (from 20 to 40 pallets), thereby reducing heavy vehicle traffic generation.
- Revised construction traffic generation due to changed project staging.
- SIMTA assumptions adopted for peak hour % of heavy vehicles (7.7% in AM peak, 9.3% in PM peak) and SIMTA assumptions about the traffic distribution for light and heavy vehicles.

MIC's RtS changed access provisions to the MIC site such that there will only be a single entry/exit point for the MIC site at a new Moorebank Avenue/ Anzac Road/ MIC site access four-way signalised intersection, and states that all heavy vehicles exiting the Intermodal Terminal will be 'forced' to turn left northwards on Moorebank Avenue. However, how this is intended to be done is not apparent in the designs shown in the report: due to no physical enforcement treatments provided, heavy vehicles could choose to turn right on exiting onto Moorebank Avenue, and thereby use Cambridge Avenue to 'rat run' to the Hume Highway.

MIC separately provided CCC with additional clarification which states: "*The (Moorebank Avenue/ Anzac Road/ MIC-IMT access road) intersection will be signalised with physical barriers to prevent trucks from turning right onto Moorebank Avenue… Similar measures will prevent trucks from entering the site from south along Moorebank Avenue. Hence trucks associated with the terminal will be unable to access the southern end of Moorebank Avenue and Cambridge Avenue. In the event of an accident on the M5 Motorway/ Moorebank Avenue north of the terminal, the terminal will need to shut down until the traffic is cleared."*

Campbelltown Council's submission to MIC's RtS report references the advice provided above, but requests that "*any approval should be conditional upon prevention of heavy vehicle access to/from*

Cambridge Avenue" but that in the absence of any such condition(s) Council would like either conditions of consent or a voluntary planning agreement that ensures upgrade and maintenance works will be carried out on Cambridge Avenue and associated road routes to accommodate any heavy vehicle use associated with the IMT.

Aurecon raised concerns that changing the previous 5 site entry/exit points outlined in the EIS, to the single entry/exit point only 350m from the M5 on/off ramps, as described in the RtS, presents a significant risk in case of any on-site incidents resulting in delays for entering traffic, and thereby queuing back onto the M5. Similarly, MIC's response to Campbelltown Council that "*In the event of an accident on the M5 Motorway/ Moorebank Avenue north of the terminal, the terminal will need to shut down until the traffic is cleared"* seems to also be a significant operational risk for the Intermodal Terminal. Aurecon recommended that a site operation plan be developed to allow detour of trucks to an alternative access or location in case of major incidents.

MIC responded that a site traffic operational plan would be developed for the next stage of application.

Aurecon would also recommend development of the site traffic operational plan in consultation with the Emergency Services (police, fire, ambulance), RMS/TfNSW (for consideration of impacts on and of M5 traffic, bus servicing, cycling and walking), and Liverpool and Campbelltown City Councils.

Supplementary Response to Submissions (August 2015)

MIC's Supplementary RtS reiterates that heavy vehicles would be 'forced' to turn left northwards onto Moorebank Avenue, but does not provide the additional detail it provided Campbelltown City Council, as quoted above.

With regard to incidents or breakdowns for trucks near the site entry/exit point at Moorebank Avenue/ Anzac Road, MIC's revised layout provides a truck parking and holding area just inside the site entry point which can accommodate up to 25 trucks. This can serve as emergency truck parking in the event of a major delay affecting site entry or exit.

Draft Final Recommendations

- MIC to undertake a risk assessment of the single entry/exit point arrangement for both the Intermodal Terminal and the road network, taking into account the following scenarios (not exhaustive):
  - On-site incident causing vehicles to be unable to enter the MIC Intermodal Terminal site, and traffic banking up to the M5;
  - Incident on Moorebank Avenue between Anzac Road and the M5, or on the M5, causing vehicles from the MIC IMT site being unable to exit the site due to traffic queues on Moorebank Avenue;
  - On-site incident requiring multiple emergency vehicle attendance and/or site evacuation;
  - Investigate current "accident blackspot' issues at the Moorebank/Anzac intersection to ensure that the redesign of the intersection can mitigate any issues.
- MIC/SIMTA to consult with Emergency Services, RMS, and Liverpool and Campbelltown Councils as part of the risk assessment exercise.
- MIC/SIMTA to prepare a site/precinct traffic operational plan that takes into account the outcomes of the risk assessment exercise and consultation with Emergency Services.
- MIC to enter into a Voluntary Planning Agreement with RMS/ TfNSW to address the site traffic impacts associated with the MIC Intermodal Terminal project, and to continue to consult with Councils to identify appropriate actions.
- If heavy vehicle access onto Cambridge Avenue may need to occur as a result of the risk assessment or the site/ precinct traffic operational plan, require that MIC must undertake regular dilapidation studies of Cambridge Avenue and associated local road routes and undertake

maintenance or upgrade works as required (through consultation and agreement with Campbelltown Council).

2.3 Traffic impacts and mitigation measures proposed

EIS-TTAIA

One of the claimed benefits of the Moorebank Intermodal Terminal is the reduction in vehicle kilometres travelled (VKTs) and vehicle hours travelled (VHTs) across the Sydney metropolitan network as a whole, with most of the reductions seen in articulated truck movements. However, it must be recognised that the redistribution of heavy vehicle traffic as a result of the Moorebank Intermodal Terminal results in a significant reduction in traffic around Port Botany, but significant increases in traffic around Moorebank. In addition, at the same time that heavy vehicle VKTs are reduced (due to trips between Port Botany and Moorebank being undertaken by rail), non-heavy vehicle VKTs actually increase: this can be attributed to the effect of induced traffic, where a reduction in congestion or an increase in road capacity, actually attracts more vehicle trips and thereby contributes to the cycle of increased congestion.

Given the concerns about the veracity of the traffic modelling results (as discussed in Section 3.1), coupled with the actual results showing LoS E and F for many intersections beyond 2025 – which is only 10 years from the present – Aurecon has concerns that the traffic modelling results (impacts) and proposed mitigation measures do not have a sound basis on which to be considered.

In addition, TfNSW/RMS does not support the use of short turning traffic lanes, particularly for dual right or left turns.

Response to Submissions Report (May 2015)

Table 9.36 in the RtS-TTIA outlines the various intersection upgrades required at indicative upgrade years and anticipated Intermodal Terminal TEU throughputs. However MIC intend to only apply mitigation measures if the intersection is operating at LoS E or worse as a result of the Project traffic (that is above background traffic and other cumulative impacts) and only to the LoS (delay) the intersection would have performed at without the Project, and if certain throughput levels are reached.

The results of the modelling show that even without the Intermodal Terminal, many intersections will be operating at LoS E or F at ‘full build’, and will continue to do so even after the localised intersection adjustments proposed by MIC/SIMTA. It is concerning that neither MIC nor SIMTA seem to be concerned that that one of the key “benefits” of the project – that it is close to key motorways (M5, M7, Hume Highway) that will provide convenient and economic access to large areas of Sydney – is significantly compromised, and may therefore impact on the ongoing and long-term viability of the Intermodal Terminal facility.

This future pervasive traffic congestion continues to be a significant concern for the local community (including all its residents, businesses) and Liverpool City Council: approval of the project would mean accepting that traffic congestion is the norm for this area. LCC requests that the mesoscopic traffic modelling be completed before any determination is made on the MIC Intermodal Terminal.

Of the 16 intersections assessed in the RtS, and 12 with upgrades identified, TfNSW does not support 5 of the proposed upgrades, supports 4, and has identified 3 requiring further investigation. Again there are some intersection ‘upgrades’ proposed that would provide barely any discernible improvement in delays. Development of mitigation measures should also consider the potential cost and disruption caused to the community (including road users, pedestrians, cyclists, bus passengers, etc.).

The Moorebank Avenue/ Heathcote Road proposal to remove part of a bus lane is rejected by both TfNSW and Aurecon on the basis that any existing bus priority provided should be maintained or extended, rather than removed or reduced.

Supplementary Response to Submissions (August 2015)

The Supplementary RtS includes responses to TfNSW, Councils and the community on traffic and transport issues put forward in the RtS. MIC's response to all concerns thus far regarding traffic modelling, impacts and mitigation is to refer to "*the next stage of modelling which will include development of a microsimulation model*", and "*the development of comprehensive mesoscopic traffic models in the AM, interpeak, and PM peak periods for a number of future year scenarios*", leaving the issues to be "*considered and addressed in future Stage 2 SSD applications*". This goes against Liverpool City Council's preference for the modelling to be completed and mitigation measures agreed to before approvals are granted.

MIC reiterates its commitment to "*contributing to the cost of intersection upgrades so that these intersections would operate at no worse than they would without the project*." In its response to Liverpool Council, MIC states in the Supplementary RtS that *"the combined traffic associated with the two projects [MIC and SIMTA] can be accommodated within the current network capacity, subject to intersection upgrades as presented in Table 7.36."* However, given the revised traffic modelling has not been done and may change the upgrades recommended, it is not known how MIC can make such a statement.

Given that the traffic impacts are a crucial impact to be considered in an environmental assessment process, this leaving over of responses shifts the risk and responsibility of approval onto Government. MIC is effectively asking government to "take it on faith" that the traffic issues will be satisfactorily resolved.

However, given the demonstrated complexity of the traffic impacts and development of acceptable mitigation measures, it is considered unreasonable for MIC to expect approval of the 'full build' options. Even determining a partial option can be problematic given no firm traffic assessment. The PAC assessment already gave primacy to the ability of the traffic network to cope as the basis for allowing any additional intermodal capacity to be provided.

Given that the traffic network in the region around the proposed Moorebank Intermodal Terminal is shown to be very constrained, and that while each individual developments in the region may only contribute a small proportion of overall traffic volumes on any of the local streets, over time, cumulatively, the impacts will accumulate and result in the need for upgrades. At this point, it would not be possible to levy all the other developments that have contributed to the traffic generated – including the Moorebank Intermodal Terminal. Therefore, it may be appropriate for RMS and Councils to use a Voluntary Planning Agreement or similar mechanism to levy for contributions to the upgrades that may be required on the network in the future for all intersections affected (including those that deteriorate but not to the LoS E trigger selected by MIC).

Draft Final Recommendations

The traffic modelling done to date on the 16 intersections that have been assessed in the vicinity of the Intermodal Terminal indicates that most major intersections will operate at a Level of Service (LoS) E or F by 2030 at full build, regardless of which cumulative scenario applies.

- Require that the RMS Transport model to be used at each SSD development application for any increase in operations, and that and ongoing traffic monitoring is undertaken at key locations, to demonstrate that either the network can still cope or that any mitigation measures proposed and committed to are adequate to maintain traffic impacts to its "no build" level or LoS D or better.
- Consider a Voluntary Planning Agreement or similar to address contributions by MIC to future upgrades that are likely to be required for all intersections that are appreciably affected by the proposed Moorebank Intermodal Terminal, but may not be forecast to operate at LoS E or F yet (and therefore not triggered for improvement works as a direct result of the Intermodal Terminal).

Intersection upgrades are likely to need to be major works to achieve any appreciable improvement in congestion reduction beyond MIC's commitment that it would propose works which "*would operate at no worse than they would without the project*." Given the network in this area is largely at congestion even without the project, and therefore not the just for the Intermodal Terminal to fund all mitigation measures. Aurecon recommends that the following be further investigated as part of a Transport Modelling project control group, or separately with Councils.

- Comprehensive review of public transport provisions in the region, and identify opportunities for new or improved bus routes that can fundamentally change the current 90% mode split to private vehicles (cars) to at least 80-70%, such as providing Bus Transitway-style facilities on the M5 and M7.
- Investigate ITS (Intelligent Transport Systems) opportunities for freight routes on the M5, M7, Hume Highway, and Moorebank Avenue, such as increase the vehicle occupancy with a combined bus/HOV lane or bus/HOV/freight lane; variable time of day tolling; traffic signal phasing and timings, and peak spreading.
-

2.4 Public transport and active transport

EIS-TTAIA

The existing public transport system, including train and bus services are documented in the traffic report. The EIS TTAIA assumes that 90% of MIC Intermodal Terminal staff will drive to/from work, and that the remaining 10% would car pool, catch public transport, walk/cycle, or other alternative transport modes. However, the report acknowledges that there are only two bus services during the peak hours and the nearest train station, Liverpool, is 40-50 minutes' walk away (or 11 minutes by bus). This is a relatively poor level of public transport provision. There is also likely to be limited numbers of staff walking to/from work, as the nearest residential areas are over 1 km away, and there are currently limited pedestrian and walking facilities in the vicinity of the site.

The report contains limited discussion on how even a 10% non-car mode split would be achieved or encouraged. Section 8 of the TTAIA describes a range of potential measures to encourage cycling and to negotiate with TfNSW improved bus services (extension of existing route services, increased peak bus service frequencies, upgrade of bus shelter facilities) and potential introduction of an employee shuttle bus service to serve staff shift changeover periods. However, there are no firm commitments to undertake any or all of the measures.

The existing bus route diversion to the DNSDC only occurs in AM and PM peak for a single service. The future service extension and the increasing bus frequency will require additional funding for bus operation. In additional, the route extension will also require bus turn-around at the southern end of Moorebank Ave. It is not reported that Liverpool Council, bus operator and TfNSW were consulted for the feasibility of the mitigation measures and the facility upgrade.

The provision of shuttle bus service will compete with routed bus service operating on Moorebank Avenue. Therefore the bus operator and TfNSW should be consulted to resolve the operational conflict.

Discussion of travel demand management and employee-focussed programs is included in the report, but again, no firm commitments to any actions are proposed.

Hence, the EIS contains adequate discussion of potential public transport and active transport actions, but there are no firm commitments to any of the proposed actions.

Response to Submissions Report (May 2015)

The proposed combined site options for the Moorebank Intermodal Terminal presented in the RtS did not present any provisions for encouraging public transport use, walking or cycling. In fact, now that

Moorebank Avenue is not proposed to be widened and upgraded south of Anzac Road, previously proposed new footpaths/ cyclepaths may not be provided.

The RtS mentions further investigation in the provision of new bus stops and a bus turning circle at the southern end of Moorebank Avenue (but north of the East Hills Line) will be undertaken in later stages of the project.

Aurecon's response to the RtS suggested that the creation of the new internal access road on the western boundary of the MIC site provides an opportunity to provide a pedestrian and cycleway bridge link over Georges River to Casula station, to encourage greater public transport and cycling access for staff, given there are currently no direct or convenient public transport, walking or cycling options proposed to minimise staff traffic generation.

Aurecon also recommended that discussions between MIC, TfNSW and Liverpool Council need to be undertaken to agree on a package of public transport, walking and cycling measures to support the use of alternative modes for staff and visitor access to/from the intermodal terminal site.

Firm commitments to the provision of additional public transport, walking and cycling routes and services need to be detailed in the next stage of work. This should include development of a connected and safe internal pathway network that links to bus stops and surrounding cycleways and footpaths.

TfNSW recommended development of a workplace travel plan for the combined MIC/SIMTA site.

Supplementary Response to Submissions (August 2015)

In the supplementary RtS, MIC confirms that it will investigate all TfNSW's recommendations for bus and pedestrian facilities in the Stage 2 development approval process.

In Table 7.1: Management and Mitigation measures, items 4D to 4G should be made mandatory as it is actions such as these that can start to have an appreciable impact in reducing traffic volumes to/from the Moorebank Intermodal Terminal site.

Draft Final Recommendations

- As part of travel demand management (that is, minimising the use of private cars), MIC should investigation of a pedestrian and cycleway bridge link over Georges River to Casula station, and link to the existing cycleway network, to encourage greater public transport and cycling access for staff.
- MIC/SIMTA to prepare an overarching workplace travel plan as part of the next development application, for the combined MIC/SIMTA Intermodal Terminal precinct, to the satisfaction of TfNSW. This plan should include commitment to providing pedestrian and cycling facilities on-site, continuous walking and cycling paths throughout the site, and conveniently-located shower/locker/ bike parking facilities throughout both the MIC and SIMTA sites. The Workplace travel plan is to be complemented by further detailed plans at future construction and operational stages. It is strongly recommended that the Workplace travel plan have firm mode split targets.
- During preparation of Stage 2 SSD development application, incorporate the accepted the bus infrastructure and services conditions outlined in TfNSW's response to the RtS, and in MIC's supplementary RtS:
  - Provide bus stops and pedestrian paths to/from the bus stops from the Intermodal Terminal site.
  - Demonstrate that walking distances from within the site to the nearest train or bus stop are minimised and no further than 400m to buses and passenger trains.
  - Provision of a paved bus turnaround facility on Moorebank Avenue, and investigate the need for bus layover (in consultation with TfNSW, RMS, and bus operator/s)
- Make items 4D to 4G in *Supplementary RtS Table 7.1: Management and Mitigation measures*, mandatory requirements for Stage 2 DA.

2.5 Construction traffic

EIS-TTAIA

The construction traffic assumptions in the EIS TTAIA seem reasonable, if not conservative: with long construction days (7am-6pm weekdays, 8am-3pm Saturdays), a high proportion of the workforce driving to work singly (90%), and arriving and departing during the peak hour (80%), and making an additional trip off-site (50%).

The EIS TTAIA identified likely haulage routes and access points for construction vehicles but advised that the final location of these construction access points would be determined during detailed design and would need to consider volumes of traffic, sight distances and impacts on other road users. It states that access to the Project site would largely be via the M5 Motorway and Moorebank Avenue, and that Moorebank Avenue south of the East Hills Railway Line would not be used by construction traffic other than light vehicles. This restriction would be detailed as a requirement in the construction environmental management plan (CEMP).

Construction vehicle traffic volumes entering and exiting the Project site would vary over the duration of the Project construction. Indicative maximum daily volumes for the Project phases involving construction (i.e. Early Works, Phase A, Phase B and Phase C) are presented in Table 4.1 of the EIS TTAIA. The construction vehicle traffic volume estimates are based on an indicative construction schedule and on the bulk earthworks and materials estimates. Traffic would comprise vehicles transporting equipment, materials and spoil, and construction workers accessing the work site.

Section 9 of the EIS-TTAIA discusses construction traffic management, and states that haulage routes are to remain on state and national roads where possible, and that light vehicles associated with construction activities would follow the distribution pattern as operational phase traffic distribution. Parking is to be provided on-site, and the project proposes to provide alternative pedestrian, cyclist, and public transport provisions. These commitments are acceptable, albeit unspecific at this stage. There is however some internal inconsistency in the commitments, as Section 9.4 includes a statement that says "*Moorebank Avenue south of the East Hills Railway Line would not be used by construction traffic other than light vehicles",* and some local roads are also identified for haulage: Cambridge Avenue in particular is identified as a haulage route for up to 25 trucks a day for the southern rail access works.

The report contains minimal detail on construction traffic volumes, vehicle types, and approach and departure routes beyond the immediate vicinity of the site.

- Given the unspecific nature of the construction traffic assessment and commitments in the EIS-TTAIA, it is recommended that a more detailed construction traffic management plan (CTMP) be developed in each construction phase of the subsequent stages of the SSD, in consultation with RMS and the relevant local councils. In particular, haulage routes (and volume of heavy and light vehicles) from state roads and highways onto local roads need to be specifically identified, assessed, and monitoring and/or mitigation measures agreed to by the relevant parties. In addition, the CTMP must identify vehicle types to be used, approach and departure routes beyond the immediate vicinity of the site, and include a traffic and transport assessment and all mitigation measures.

Response to Submissions Report (May 2015)

The RtS (Section 14.4) reiterates that Moorebank Avenue south of the East Hills line would not be used by construction traffic other than for light vehicles only. However, the following paragraph states that "*Haulage routes for the southern rail access* [which has been adopted in the RtS] *to and from Cambridge Avenue would be via Moorebank Avenue or Glenfield Road*." And Figure 14.2 shows both Cambridge Avenue and the whole of Moorebank Avenue (including south of the East Hills line) marked as a haulage route. This seems internally inconsistent, and inconsistent with the commitment in the EIS TTAIA that *Moorebank Avenue south of the East Hills Railway Line would not be used by*

construction traffic other than light vehicles. And that: *This restriction would be detailed as a requirement in the construction environmental management plan (CEMP).*

TfNSW's response to the RtS report requests the development of an overarching Construction Management Plan and detailed Construction Traffic Management Plan (CTMP) for the early works to be approved by TfNSW and RMS, and that any subsequent development applications also be accompanied by a detailed CTMP.

Supplementary Response to Submissions (August 2015)

MIC accepts all TfNSW's requests regarding the preparation of a Construction Management Plan and detailed Construction Traffic Management Plans (CTMPs).

Aurecon recommends that the overarching CMP and CTMPs also include resolution of whether Moorebank Avenue south would be used for construction vehicle traffic, to address Campbelltown Council's concerns.

Draft Final Recommendations

- MIC to develop an overarching Construction Management Plan [refer to TfNSW's response to the RtS for details to be addressed, as well as Campbelltown Council's concerns regarding use of Moorebank Avenue south] and detailed Construction Traffic Management Plan (CTMP) for the early works to be approved by TfNSW/ RMS and in consultation with the relevant Councils, and that any subsequent development applications also be accompanied by a detailed CTMP.
- MIC's CTMP to include the following provision (or similar): if heavy vehicle access onto Cambridge Avenue may need to occur during construction, MIC must undertake dilapidation studies of Cambridge Avenue and associated local road routes and undertake maintenance or upgrade works as required (through consultation and agreement with Campbelltown Council).

3 Conclusion

Aurecon's review of the MIC's EIS, RtS and Supplementary RtS, and consideration of government agency and local council submissions, concludes that:

a) the scope of the assessment in relation to both local, regional and cumulative traffic and transport impacts is considered adequate, but is being improved by further mesoscopic and microsimulation modelling being undertaken in partnership with RMS/ TfNSW and other relevant parties;

b) the underlying assumptions for construction and operational traffic generation and distribution are largely considered valid for this concept stage, modelling undertaken is considered fair but the mesoscopic and microsimulation modelling is considered appropriate, and outcomes of the modelling are fair but will be more accepted following the additional modelling proposed;

c) the validity of the conclusions reached in relation to impacts are adequate in that the future background traffic on key intersections and roadways is already highly congested such that the project only contributes a small proportion of additional traffic. However, the project does result in intersections reaching capacity sooner than without the project;

d) the proposed management and mitigation measures at a conceptual level are considered barely adequate as they will still result in many affected intersections operating at a Level of Service E or F. While this is the same level as without the project in some cases, LoS E and F indicate that there is likely to be extensive traffic congestion and delays, and therefore compromise the efficiency of the intermodal terminal, and the overall road network for the surrounding community. It is acknowledged that the responsibility for mitigation measures does not lay with MIC solely, hence the modelling undertaken by RMS/TfNSW may identify more significant measures to achieve better than a LoS E or F.

The recommendations arising from Aurecon's review are listed under "Draft final recommendations" throughout the report, with the main one being:

Require that the RMS Transport model to be used at each SSD development application *for any increase in operations, and that and ongoing traffic monitoring is undertaken at key locations, to demonstrate that either the network can still cope or that any* ***mitigation measures proposed and committed to are adequate to maintain traffic impacts to its "no build"/ base case level or LoS D or better (or as agreed by TfNSW/ RMS)****.*

With conditions based on the "Draft final recommendations", Aurecon accepts that the MIC Intermodal Terminal can be approved to proceed.

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