

OPERATIONAL NOISE AND VIBRATION MANAGEMENT PLAN

Moorebank Logistics Park – East Precinct

27 MARCH 2020

MOOREBANK INTERMODAL TERMINAL ALLIANCE

Moorebank Logistics Park – East Precinct

Operation Noise and Vibration Management Plan

Author

████████████████████

Reviewer

████████████████

Approver

██████████████

Report No

PREC-QPMS-EN-PLN-0008

Date

27/03/2020

Revision Text

012

Author/Reviewer Details	Qualifications and Experience
██████████ Arcadis Level 16/580 George Street Sydney NSW 2000	MSc BSC (hons) ██████████ has 14 years of environmental management experience in post approval roles including the development of construction and operational environmental management plans, auditing, compliance and on-site environmental management. ██████████ has completed the Certificate of Competence in Environmental Noise Measurement issued by the Institute of Acoustics (UK).
██████████ Renzo Tonin & Associates Level 1, 418a Elizabeth Street Surry Hills NSW 2010	FIEAust, CPEng, BEng, MAAS ██████████ has more than 20 years of NSW experience as a noise and vibration consultant and assessing the potential impacts and mitigation required for large infrastructure projects.

REVISIONS

Revision	Date	Description	Prepared by	Approved by
001	15/04/2019	Draft – for client review	KP/CW	HT
002	30/04/2019	Draft – addressing client comments	KP/CW	HT
003	04/06/2019	Draft – addressing ER comments	MWR	HT/KP
004	05/06/2019	Addressing additional ER comments	MWR	HT/KP

Revision	Date	Description	Prepared by	Approved by
005	10/07/2019	Addressing stakeholder and DPIE comments	HT	KP
006	05/08/2019	Updated to address TfNSW comments	KP	HT
007	09/08/2019	Updated to address additional DPIE comments	AL	JC
008	20/08/2019	Updated to address DotEE comments	AK	AL
009	28/08/2019	Updated to address DotEE comments	AK	AL
010	24/09/2019	Update to include 'equivalent locations' for Night Time Rail Noise Monitoring	AL	JC
011	05/02/2020	Updated to include Area 2 as an operational area	ZQ	JC
012	27/03/2020	Updated to address Mod 2	RM	JC

ACRONYMS AND DEFINITIONS

Acronym / Term	Meaning
CARs	Corrective actions request
CCS	Community Communication Strategy
CEC	Community Engagement Consultant
CNMBP	Construction Noise Barrier Management Plan
CoA	Conditions of Approval
CoC	Conditions of Consent
Commonwealth CoA	Commonwealth Conditions of Approval
CNBMP	Container Noise Barrier Management Plan
DAWE	Department of Agriculture, Water and the Environment
DIPNR	Department of Infrastructure Planning and Natural Resources
DJLU	Defence Joint Logistics Unit
DotEE	Commonwealth Department of the Environment and Energy
DPIE	Department of Planning, Industry and Environment
EIS	Environmental Impact Statement
EMS	Environmental Management System
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPA	NSW Environment Protection Authority
EPL	Environment Protection Licence
ER	Environmental Representative
Facility	The MPE Concept (MP10_0193), MPE Stage 1 (SSD 6766) and MPE Stage 2 (SSD 7628) Project, including the operation of the IMEX terminal, warehousing and distribution facilities. A rail link is included as part MPE Stage 1 (SSD 6766) and connects the Facility to the SSFL.
FCMMs	Final Compilation of Mitigation Measures
GFA	Gross floor area
IMEX	Import Export Terminal. Includes the following key components: <ul style="list-style-type: none"> Truck processing, holding and loading areas with entrance and exit from Moorebank Avenue Rail loading and adjacent container storage areas serviced by container handling equipment Administration facility and associated car parking with light vehicle access from Moorebank Avenue
INP	NSW Industrial Noise Policy
ISO	International Organisation for Standardization
Material harm	Material harm is harm that: <ul style="list-style-type: none"> Involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or

Acronym / Term	Meaning
	<ul style="list-style-type: none"> Results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000, (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment).
MLP (Moorebank Logistics Park)	Refers to the whole Moorebank intermodal precinct, i.e. Moorebank Precinct East (MPE) and the Moorebank Precinct West (MPW)
MLP Approvals	<ul style="list-style-type: none"> MPE Concept Approval received 29 September 2014 (MP10_0193). MPE Stage 1 approved 12 December 2016 (SSD 6766) MPE Stage 2 approved 31 January 2018 (SSD 7628) MPW Concept and Stage 1 approved 3 June 2016 (SSD 5066) MPW Stage 2 still under review by DPIE
MLP East Precinct, or the Facility	<p>The Moorebank Logistics Park containing only Moorebank Precinct East i.e.</p> <ul style="list-style-type: none"> MPE Concept Approval received 29 September 2014 (MP10_0193). MPE Stage 1 approved 12 December 2016 (SSD 6766) MPE Stage 2 approved 31 January 2018 (SSD 7628)
MLP Owner	Qube Holdings (Qube)
NPI	Noise Policy for Industry
NVIA	Noise and Vibration Impact Assessment Version C
OEH	Office of Environment and Heritage
OEMP	Operational Environmental Management Plan
ONVMP	Operational Noise and Vibration Management Plan
OTAMP	Operational Traffic and Access Management Plan
Operational area / Operational footprint	Extent of operational activities for the operation of the MLP – East Precinct
POEO Act	<i>Protection of the Environment Operations Act 1997 (NWS)</i>
PUD	Pick-up and delivery vehicles
Operational personnel	All persons listed in Section 3.3 including sub-contractors and tenants working on the MLP East Precinct site.
Rail link	Part of MPE Stage 1 (SSD 6766), connecting the MPE site to the SSFL. The Rail link is to be utilised for the operation of the Facility.
RING	Rail Infrastructure Noise Guideline
RMS	Roads and Maritime Services
RNMP	Rail Noise Management Plan
RtS	Response to Submissions
SHEMS	Safety Health and Environmental Management System
SHEQ	Safety, Health, Environment and Quality
SSD	State significant development
SSFL	Southern Sydney Freight Line
WOEMP	Warehouse Operational Environmental Management Plan

The following technical terms, abbreviations and definitions are used in this plan. A glossary of relevant acoustical concepts and terminology is provided in below:

Terms	Explanation
L _{Aeq}	Equivalent Continuous Sound Level. The 'equivalent noise level' is the summation of noise events and integrated over a selected period of time.
L _{Aeq,15min}	Equivalent Continuous Sound Level, over a period of 15 minutes
L ₁	The sound pressure level that is exceeded for 1% of the time for which the sound is measured.
L ₁₀	The sound pressure level that is exceeded for 10% of the time for which the sound is measured.
L _{A90}	Background Noise Level. The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L90 noise level expressed in units of dB(A).
L _{max}	The maximum sound pressure level measured over a given period.
L _{min}	The minimum sound pressure level measured over a given period.
RBL	Rating Background Level
L _W or SWL	Sound Power Level
L _p or SPL	Sound Pressure Level
PPV	Peak Particle Velocity (in mm/s)
VDV	Vibration Dose Value (in m/s ^{1.75})
mm/s	Millimetres per second
m/s	Metres per second
ABL	Assessment Background Level is the single figure background level representing each assessment period – day, evening and night – over each 24-hour period of monitoring. The ABL is determined by the tenth percentile method as prescribed in EPA policies.
Adverse weather	Weather effects that enhance noise (wind and temperature inversions) that occur at a site for a significant period of time (wind occurring more than 30% of the time in any assessment period in any season and/or temperature inversions occurring more than 30% of nights in winter).
Ambient noise	The all-encompassing noise associated within a given environment at a given time, usually composed of sound from all sources near and far.
ANZECC	Australian and New Zealand Environment Conservation Council
Assessment period	The period in a day over which assessments are made.
Assessment point	A point at which noise measurements are taken or estimated.
Background noise	Background noise is the term used to describe the underlying noise level present in the ambient noise, measured in the absence of the noise under investigation, when extraneous noise is removed. It is described as the average of the minimum noise levels measured on a sound level metre and is measured statistically as the A-weighted noise level exceeded for 90% of a sample period. This is represented as the L90 noise level (see below).
DECC	Department of Environment and Climate Change (now EPA (see below))
Decibel [dB]	The unit that sound is measured in. The following are examples of the decibel readings of everyday sounds: 0dB Faintest sound we can hear 30dB Quiet library or location in the country 45dB Typical office space. Ambience in the city at night 60dB CBD mall at lunchtime

Terms	Explanation
	70dB Sound of a car passing on the street 80dB Loud music played at home 90dB Sound of a truck passing on the street 100dB Sound of a rock band 115dB Limit of sound permitted in industry 120dB Deafening
DIN 4150-3	German Standard DIN 4150 – 2016 – Structural vibration: Part 3: Effects of vibration on structures
dBA	A-weighted decibels. The ear is not as effective in hearing low frequency sounds as it is hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the 'A' filter. A sound level measured with this filter switched on is denoted as dBA. Practically all noise is measured using the A filter.
RBL	Rating Background Level is the overall single figure background noise level representing each assessment period – day, evening and night – over the whole monitoring period. The RBL is determined by taking the median of the assessment background levels (ABLs) for each day, evening and night period (see ABL for definition), as set out in EPA policies.
RNP	NSW Road Noise Policy (DECCW 2011)
SEL	Sound Exposure level is the total sound energy of a noise event with a reference value of 1 second. Sound exposure level is denoted L_E and measured in dB.
EPL	Environment Protection Licence
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	Environmental Planning and Assessment Regulation 2000
Frequency	Frequency is synonymous to pitch. Sounds have a pitch which is peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz (Hz).
Impulsive noise	Having a high peak of short duration or a sequence of such peaks. A sequence of impulses in rapid succession is termed repetitive impulsive noise.
Intermittent noise	The level suddenly drops to that of the background noise several times during the period of observation. The time during which the noise remains at levels different from that of the ambient is one second or more.
NMLs	Noise Management Levels
VDV	Vibration Dose Values

CONTENTS

REVISIONS	I
ACRONYMS AND DEFINITIONS	III
1 INTRODUCTION	1
1.1 Background.....	1
1.2 Purpose and Application.....	2
1.3 Proposed staged/progressive application of the OEMP.....	2
1.3.1 Relationship of Stages.....	3
1.3.2 Triggers.....	3
1.4 Structure of this NVMP	6
1.5 Objectives and Targets.....	6
1.6 Consultation.....	6
2 STATUTORY REQUIREMENTS.....	8
2.1 Legal and Other Obligations	8
2.2 Development Consent	8
2.2.1 EPBC Act Approval.....	9
2.2.2 EP&A Act Approval.....	10
2.3 Roles and Responsibilities	22
2.4 Training.....	23
2.4.1 Freight Operators Training	24
3 IMPLEMENTATION	25
3.1 Existing Environment.....	25
3.1.1 Sensitive Receivers	25
3.1.2 Background Noise Levels	28
3.1.3 Meteorological Environment.....	28
3.2 Noise Management Criteria	29
3.2.1 Sleep Disturbance Trigger Levels	29
3.2.2 Operational Noise Limits	29
3.3 Vibration Criteria	30
3.3.1 Disturbance to Buildings Occupants.....	30
3.3.2 Structural Damage to Buildings	31
3.3.3 Structural Buried Pipework and Infrastructure.....	32
3.4 Environmental Impacts	32
3.4.1 Operational Hours.....	32
3.4.2 IMEX Terminal Noise Sources	32
3.4.3 Warehousing Noise Sources	33
3.4.4 Rail Link Noise Sources	33
3.4.5 Rail Noise Management Plan	33
3.5 Predicted Operational Noise Impacts	34

3.5.1 Road Noise Impact	34
3.5.2 Rail Noise Impact.....	36
3.5.3 Vibration.....	37
3.5.4 Amenity	37
3.5.5 Intrusiveness.....	38
3.5.6 Sleep Disturbance Assessment.....	39
3.5.7 Cumulative Operational Noise Assessment	39
3.5.8 Management Measures.....	40
4 MONITORING AND REVIEW	46
4.1 Monitoring	46
4.1.1 Summary of Monitoring Requirements	46
4.1.2 Continuous Unattended Noise Monitoring.....	52
4.1.3 Attended Monitoring.....	52
4.1.4 Vibration Monitoring.....	53
4.2 Reporting	53
4.3 Exceedances of Noise and Vibration Management Levels	59
4.3.1 Contingency Measures	59
4.4 Review and Improvement.....	59
4.5 Incidents	59
4.6 Complaints.....	60
4.7 Non-Compliance, Non-Conformances and Corrective Actions	60

APPENDICES

Appendix A Evidence of Consultation

Appendix B Container Noise Barrier Management Plan

LIST OF TABLES

Table 1-1: Progression of the MLP East Precinct operation	2
Table 1-2: Objectives and Targets	6
Table 1-3: Consultation Summary	6
Table 2-1: EPBC Act CoA.....	9
Table 2-2: CoCs of SSD 6766 (MPE Stage 1)	11
Table 2-3: CoCs of SSD 7628 (MPE Stage 2)	16
Table 2-4: FCMM (MPE Stage 1)	20
Table 2-5: FCMM (MPE Stage 2)	21
Table 2-6: Roles and Responsibilities	22
Table 3-1: Sensitive Receivers	25
Table 3-2: Rating Background (Noise) Levels.....	28
Table 3-3: Weather Categories and conditions	29
Table 3-4: Sleep Disturbance Screening Levels	29
Table 3-5: Noise Limits for Residential Receivers.....	30
Table 3-6: Noise Limits for Industrial and Educational Receivers	30
Table 3-7: Vibration Dose Value ranges which might result in various probabilities of adverse comment within buildings	31
Table 3-8: Vibration Guide Values - minimal risk of cosmetic damage (DIN 4150-3) - peak particle velocity	31
Table 3-9: Vibration Guide Values - minimal risk of cosmetic damage (DIN 4150-3) - peak component particle velocity – pipes and infrastructure	32
Table 3-10: Time Periods	32
Table 3-11: Sound Power Levels for IMEX Terminal	32
Table 3-12: Sound Power Levels for Warehousing	33
Table 3-13: Predicted increase in Road Noise Levels Due to Operation of the Warehouses	34
Table 3-14: Predicted Increase in Road Noise Levels Due to Operation of the IMEX Terminal.....	35
Table 3-15: RNP Noise Assessment Criteria	35
Table 3-16: Longer Term Road Noise Strategies.....	35
Table 3-17: Predicted $L_{Aeq, night}$ Rail Noise Levels.....	36
Table 3-18: Predicted L_{Amax} Rail Noise Levels	37
Table 3-19: Predicted $L_{Aeq, period}$ Noise Levels - MLP East Precinct.....	38
Table 3-20: Predicted $L_{Aeq, 15min}$ Noise Levels - MLP East Precinct.....	38
Table 3-21: Predicted L_{Amax} Noise Levels at Sensitive Receivers.....	39
Table 3-22: Predicted Cumulative Operational Noise Levels.....	39
Table 3-23: Noise Mitigation Measures	41
Table 4-1: Monitoring Requirements	46
Table 4-2: Environmental Reporting Requirements	54

LIST OF FIGURES

Figure 1-1 MLP East Precinct Site Location.....	4
Figure 1-2 Proposed staged/progressive staging of the MLP East Precinct.....	5
Figure 3-1: Sensitive Receivers.....	27

1 INTRODUCTION

The Sydney Intermodal Terminal Alliance (SIMTA) received approval for the construction and operation of Stages 1 and 2 of the Moorebank Precinct East (MPE) Project (SSD 6766, SSD 7628 and SSD 7628 MOD 2 respectively), which together comprise the two stages of development under the MPE Concept Approval (MP10_0193) and Department of the Environment and Energy (DotEE) *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Approval and Mitigation Measures (EPBC 2011/6229). This Operational Noise and Vibration Management Plan (ONVMP) has been developed to manage noise impacts during operations of the east precinct, hereafter referred to as the “Moorebank Logistics Park (MLP) East Precinct.”

This ONVMP addresses the relevant requirements of the Project Approvals, including the Environmental Impact Statement (EIS), Response to Submissions (RtS) and Minister’s Conditions of Consent (CoCs), and all applicable guidelines and standards specific to the management of noise and vibration during operations of the MLP East Precinct.

1.1 Background

The MLP is an integral component of the Freight, Ports and Transport strategies of both the NSW and Commonwealth governments to help manage the challenges of an expected tripling of freight volumes at Port Botany by 2031.

The MLP aims to streamline the freight logistics supply chain from port to store, deliver savings to businesses and consumers, and help service the rapidly growing demand for imported goods in south-west Sydney. It is located approximately 27 kilometres (km) south-west of the Sydney Central Business District and approximately 26 km west of Port Botany within the Liverpool Local Government Area. The MLP is divided into an East Precinct and a West Precinct, located east and west of Moorebank Avenue respectively, (Figure 1-1). The MLP East Precinct is operational and is managed under an Operation Environmental Management Plan (OEMP), while the MLP West Precinct is still currently under construction.

The main features of the MLP East Precinct include:

- An Import Export (IMEX) Terminal. The IMEX Terminal comprises:
 - Truck processing, holding and loading areas with an entrance and exit from Moorebank Avenue
 - Rail loading and container storage areas serviced by container handling equipment
 - An Administration facility and associated car parking with light vehicle access from Moorebank Avenue
- A Rail Link connecting the IMEX terminal and the Southern Sydney Freight Line (SSFL) traversing Moorebank Avenue, Anzac Creek, Georges River and Glenfield Waste Facility
- Associated ancillary infrastructure including signage, lighting, landscaping, water management
- Warehouse and distribution facilities including warehousing up to 21 m in height, typically ranging in size from 20,000 m² to 62,000 m².
 - Office and administration facilities
 - Amenities
 - Car parking
 - Truck loading/unloading docks
 - Internal parking for pick-up and delivery vehicles (PUD)
 - Specialised sortation and conveyor equipment
 - Hardstand areas that provide trailer parking spaces, external PUD parking spaces, vehicle manoeuvring areas and access to the main internal site road
 - Signage for business identification purposes, including backlit illuminated signage on each warehouse
 - Internal fitout, comprising racking and storage.

- A freight village including a mix of retail, commercial and light industrial spaces typically up to 15 metres in height and varying in size and design
- An internal road network to enable efficient movement of vehicles, dispatch of freight from the warehouses and transport of containers between the IMEX Terminal and warehouse and distribution facilities

The location of the MLP East Precinct is shown in Figure 1-1 as the 'MLP East Precinct operational area.'

1.2 Purpose and Application

This ONVMP is a sub-plan to the Operational Environmental management Plan (OEMP) and has been developed to address the requirements of the EPBC Act Approval and Mitigation Measures (EPBC 2011/6229), which requires the identification and quantification of all potential impacts associated with noise and vibration, as well as MPE Stage 1 CoC (SSD 6766) and MPE Stage 2 CoC (SSD 7628) development consents which require the preparation of an operational noise management plan, to the satisfaction of the Secretary of Department of Planning, Industry and Environment (DPIE) prior to the commencement of operation.

The ONVMP identifies the operational noise and vibration management measures that will be applied to activities undertaken across the MLP East Precinct to manage identified noise and vibration risks. The specific CoC and Final Compilation Mitigation Measures (FCMMs) relevant to the development of this plan are identified in Section 2.2.

The most recent, approved version of this plan will be implemented to manage noise and vibration risks during Facility operations and/or activities.

1.3 Proposed staged/progressive application of the OEMP

The OEMP and sub-plans are applicable to the entire MLP East Precinct. However, as operational areas will come online incrementally as warehouses are constructed and tenanted, the OEMP and sub-plans will be progressively applied to those operational areas. The proposed staged/progressive application of the OEMP and sub-plans is described in the Program for Operational Phase Documentation (POPD), which was approved by the Secretary on 21 May 2019.

As detailed in the POPD, CoC B83 requires that an ONVMP be prepared for the entire MLP, including both the East Precinct and the West Precinct, unless this has been prepared and approved under an approval for the MLP West Precinct site. The NVMP will be progressively applied to MLP East Precinct, however, staged to exclude MLP West Precinct as MPW Stage 2 is not yet approved.

The proposed staged/progressive application of the OEMP, as described in the POPD, is shown on Figure 1-2, with dates of operation detailed in Table 1-1. The first area to be operational, includes the IMEX, Rail Link and Warehouse 1 (Area 1). The second area to be operational (Area 2), includes Warehouse 3, 4 and 5. All other areas are not yet operational.

Table 1-1: Progression of the MLP East Precinct operation

Area	Approximate Dates	Component
Area 1	Q3 2019	IMEX, Rail Link and Warehouse 1
Area 2	Q4 2019	Warehouse 3, 4 and 5
Area 3	Q2 2020	Warehouse 6, 7 and 8
Area 4	Q4 2020	Freight village
Area 5	Q4 2021	Warehouse 2
Area 6	Q2 2020	Moorebank upgrade

In accordance with CoC C6 (SSD 7628) each warehouse tenant will also prepare a Warehouse OEMP (WOEMP) prior to occupation of the warehouse based on the requirements of the OEMP and sub-plans. The Secretary will be notified one month prior to commencement of operation of each new warehouse in accordance with CoC A18 (SSD 7628). The WOEMP will be submitted to the Secretary for approval prior to commencement of operation of the warehouse.

1.3.1 Relationship of Stages

The OEMP and sub-plans are applicable to the entire MLP East Precinct. However, as areas become operational incrementally, construction areas will be rescinded and will continue to be managed in accordance with CEMP and sub-plans; conversely, operational areas will be managed in accordance with the OEMP and sub-plans. Operation of the site will only commence once the OEMP and sub-plans have been approved by the Secretary

The Environmental Representative (ER), under CoC C24(d) (SSD 7628), is required to review the CEMP and OEMP to ensure they are “*consistent with requirements of the consent.*” The ER will continue to review and endorse any proposed changes to the CEMP and subplans until such time construction is complete and the MLP East Precinct site is fully operational. The ER will also review and endorse the updated figures for all operational documentation to ensure parity between construction and operational documentation. The operational figures will then be submitted to DPIE for approval as described in Section 1.3.2.

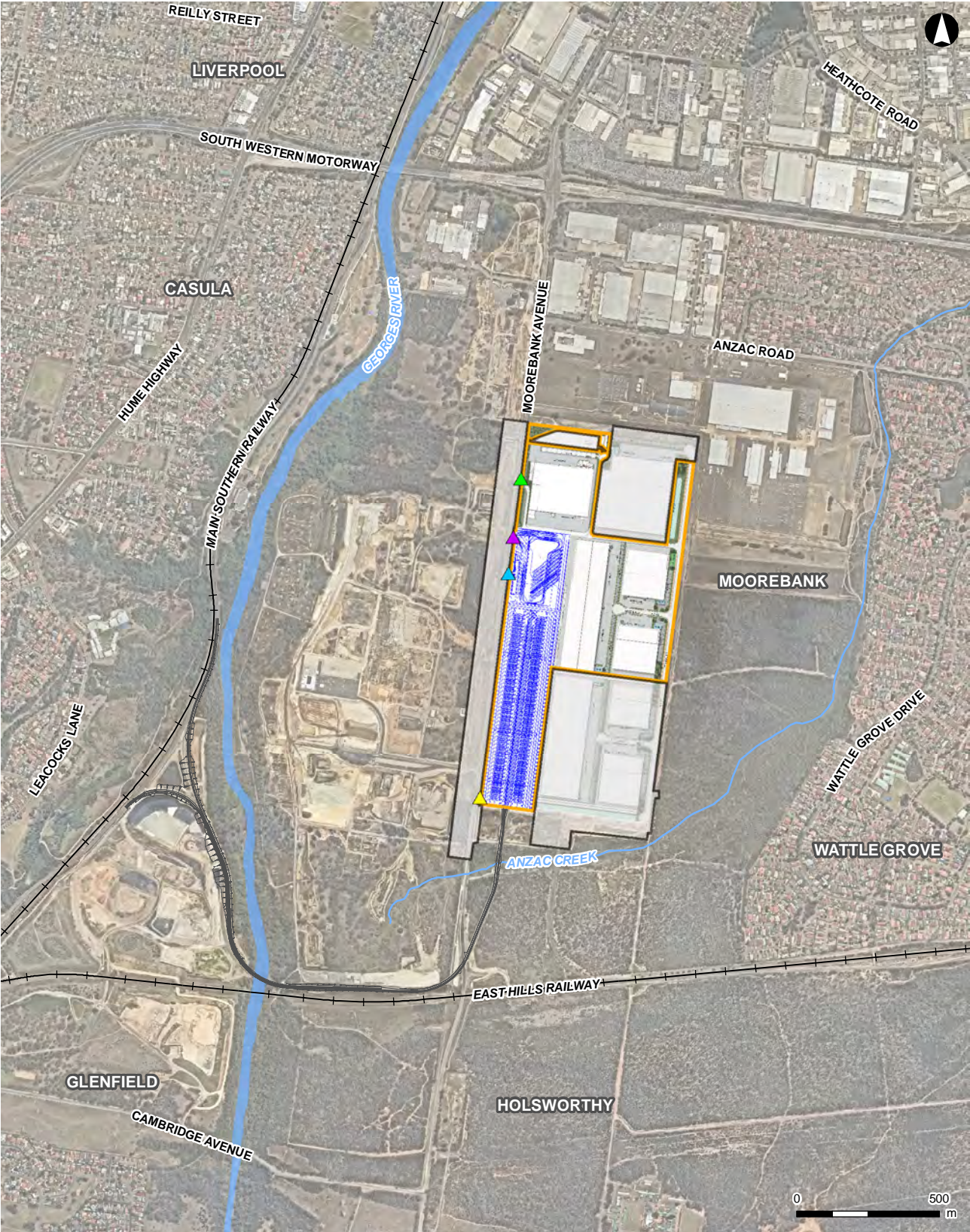
Until the entire MLP East Precinct is operational, all construction zones will be fenced off to provide clear distinction between construction zones and the operational facility.

1.3.2 Triggers

As required by CoC A18 (SSD 7628) the Secretary will be notified one month prior to commencement of operation of each new area shown in Table 1-1 and Figure 1-2. The notification will include updated figures detailing the new areas of operation which will fall under the remit of the OEMP as well as the reduced construction areas. As described in Section 1.3.1 the updated areas will have been endorsed by the ER prior to submission to the Secretary for approval.

Following notification, the OEMP and each sub-plan will be updated and approved with the new operational site layout, while the CEMP and applicable sub-plans will be revised to show the reduced area of construction.

Operational Noise and Vibration Management Plan



LEGEND

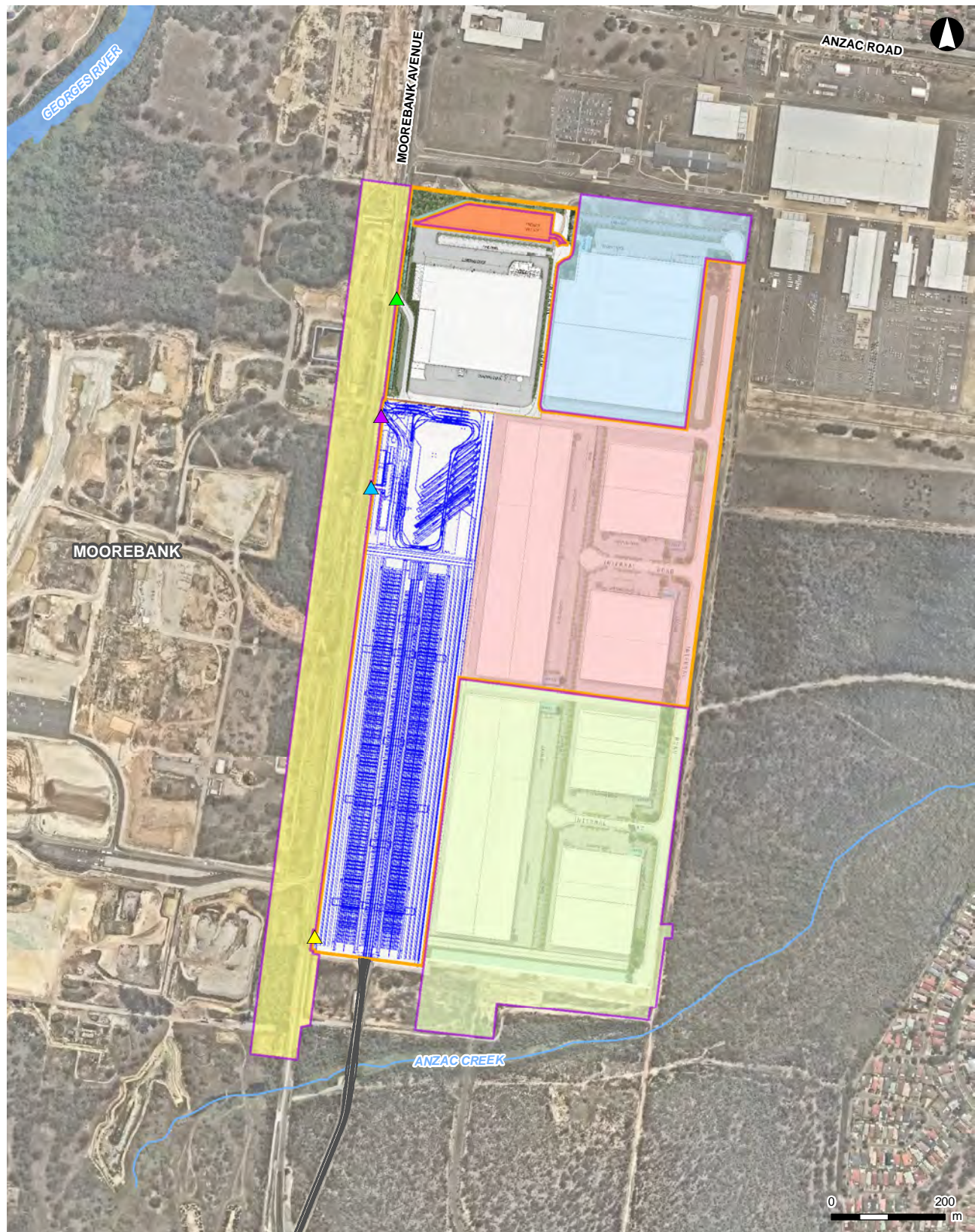
- MLP East Precinct construction area
- MLP East Precinct operational area
- ▲ Warehouse access
- ▲ IMEX truck access
- ▲ IMEX office access
- ▲ Emergency access
- +— Existing railway
- Watercourse
- Operational rail link

ARCADIS AUSTRALIA PACIFIC PTY LTD
 ABN 76 104 485 289
 Level 16, 500 George St | Sydney NSW 2000
 P: +61 (0) 2 8907 9000 | F: +61 (0) 2 8907 9001
 Coordinate System: GDA 1994 MGA Zone 56
 Date issued: March 12, 2020
 Aerial imagery supplied by Neamap (Sep, 2019)



Figure 1-1: Site Location

Operational Noise and Vibration Management Plan



LEGEND

- | | | |
|-------------------------------------|-----------------------------|-------------------------|
| MLP East Precinct construction area | IMEX truck access | Area 2 |
| MLP East Precinct operational area | IMEX office access | Area 3 |
| Watercourse | Emergency access | Area 4: Freight Village |
| Operational rail link | Operational staging: Area 1 | Area 5 |
| Warehouse access | | Area 6 |

ARCADIS AUSTRALIA PACIFIC PTY LTD
 ABN 76 104 485 289
 Level 16, 500 George St | Sydney NSW 2000
 P: +61 (0) 2 8907 9000 | F: +61 (0) 2 8907 9001
 Coordinate System: GDA 1994 MGA Zone 56
 Date issued: March 13, 2020
 Aerial imagery supplied by Nearmap (Sep, 2019)



Figure 1-2: Proposed staged/progressive staging of the MLP East Precinct

1.4 Structure of this NVMP

Combining strategies, plans and programs is permitted by CoC A16 and CoC A17, subject to the approval of the Secretary. Qube has elected to combine the requirements of both SSD 6766 and SSD 7628 which relate to the management of noise and vibration into one plan.

Approval to combine the requirements of both SSD 6766 and SSD 7628 was granted by the Secretary on 21 May 2019. The NVMP addresses the relevant conditions and FCMMs from both consents (See Table 2-2 to Table 2-5).

1.5 Objectives and Targets

Table 1-2 below outlines the objectives and targets set out for the MLP East Precinct for the management of noise and vibration during operation. These objectives and targets were developed by the Principal's Representative based on collective industry experience and best practice and have been endorsed by the project's Environmental Representative (ER).

Table 1-2: Objectives and Targets

Objective	Target	Timeframe	Accountability
Ensure operational noise and vibration impacts on community and commercial stakeholders are minimised	No exceedances of noise or vibration criteria	Operations	Site Safety, Health, Environment and Quality (SHEQ) Manager / Advisor
Ensure compliance with relevant conditions, applicable legislative and other requirements	100% compliance with CoC	Operations	Site SHEQ Manager/Advisor
Ensure that reasonable and feasible mitigation measures are implemented to manage impacts on surrounding residents and commercial stakeholders	100% compliance with CoC Minimise noise to community and commercial stakeholders	Operations	Site SHEQ Manager/Advisor
Ensure that affected residents and other stakeholders are kept informed of operational changes	Ensure effective community engagement throughout the life of the project	Operations	Site SHEQ Manager/Advisor

1.6 Consultation

As requested by DPIE, this ONVMP will be prepared in consultation with the NSW Environment Protection Authority (EPA). Table 1-3 will be updated as consultation with the applicable agencies progresses. Evidence of consultation is included in Appendix A.

Table 1-3: Consultation Summary

Agency	Date	Person contacted	Comment	Status
EPA	29/04/2019	Craig Flemming (Unit Head, Sydney Industry Section)	Declined to comment on management plans and post approval documentation	Closed

Agency	Date	Person contacted	Comment	Status
Liverpool City Council (LCC)	13/5/2019	LCC representative	Draft plan emailed for review and comment	Open
	6/6/2019	LCC representative	Email to follow up on progress of review	Open
	12/6/2019	LCC representative	Email to follow up on progress of review	Open
	13/6/2019	MLP representative	Email to confirm progress of review	Open
	17/6/2019	MLP representative	Email to confirm date of comments submission	Open
	17/6/2019	LCC representative	Confirmation of receipt of email	Open
	20/6/2019	MLP representative	Email to confirm progress of review	Open
	20/6/2019	MLP representative	Email to confirm date of comments submission	Open
	20/6/2019	LCC representative	Confirmation of receipt of email	Open
	21/6/2019	MLP representative	Comments on ONVMP received	Open
Transport for NSW (TfNSW)	28/06/2019	LCC representative	Email to provide response to comments	Open
	02/07/2019	MLP representative	Email stating consultation is closed subject to DPIE approval	Closed
	05/06/2019	TfNSW representative	Draft plan emailed for review and comment	Open
	11/07/2019	MLP representative	Comments on ONVMP received	Open
	06/08/2019	TfNSW representative	Email to provide response to comments	Open
	12/08/2019	MLP representative	Email stating comments are closed / accepted	Closed

2 STATUTORY REQUIREMENTS

2.1 Legal and Other Obligations

Details about the legislation, planning instruments and guidelines considered during development of this plan are listed below. Further detail concerning the legislation, planning instruments and guidelines identified below are provided in the Legislation Register within Appendix B of the OEMP.

- Environmental Planning and Assessment Act 1979
- Environmental Planning and Assessment Regulation 2000
- Protection of the Environment Operations (POEO) Act 1997
- Protection of the Environment Operations (Noise Control) Regulation 2017
- Additional standards and guidelines relating to the management of noise and vibration include:
- NSW EPA Industrial Noise Policy 2000
- NSW EPA Noise Policy for Industry 2017
- NSW EPA Rail Infrastructure Noise Guideline 2013
- Australian Standard 1055:2018 Acoustics – Description and measurement of environmental noise
- Assessing Vibration: A Technical Guideline (DEC, 2006)
- International Organisation for Standardization (ISO) 3095:2013 Acoustics - Railway applications - Measurement of noise emitted by railbound vehicles (3095:2013)
- German Standard DIN 4150:2016 – Part 3 Structural vibration in buildings – Effects on structures
- British Standard BS 6472-1992 and 2008 ‘Guide to evaluation of human exposure to vibration in buildings (1-80Hz)’
- NSW Road Noise Policy (DECCW 2011).

2.2 Development Consent

The operation of the MLP East Precinct was approved under both the *Environmental Planning and Assessment Act 1979* (EP&A) Act) and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Both these approvals have operational noise management conditions relevant to the operational works for the MLP East Precinct, which are discussed below.

The operational noise management requirements for the Facility, including consultation, impact mitigation and management, are documented in the following suite of documents:

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Approval (No. 2011/6229), March 2014
- MPE Concept Approval (MP 10_0193), 29 September 2014
- Moorebank Precinct East – Concept Plan – Response to Submissions (Urbis, December 2013)
- State Significant Development (SSD) Consent SSD 6766, 13 March 2018 (superseding initial approval 12 December 2016)
- Moorebank Precinct East – Stage 1 – Environmental Impact Statement (Arcadis Australia Pacific Pty Limited, May 2015)
- Moorebank Precinct East – Stage 1 – Response to Submissions (Arcadis Australia Pacific Pty Limited, September 2015)
- State Significant Development (SSD) Consent SSD 7628, 31 January 2018
- State Significant Development (SSD) Consent SSD 7628 Modification 2, 31 January 2020
- Moorebank Precinct East – Stage 2 – Environmental Impact Statement (Arcadis Australia Pacific Pty Limited, December 2016)

- Moorebank Precinct East – Stage 2 – Response to Submissions (Arcadis Australia Pacific Pty Limited, July 2017).

2.2.1 EPBC Act Approval

The EPBC Act approval for the MPE Concept was granted by the Federal Minister for the Environment in March 2014 (EPBC. 2011/6229). Approval was required due to impacts on listed threatened species and communities (Sections 18 and 18A of the EPBC Act) and Commonwealth land (Sections 26 and 27A of the EPBC Act).

The operation of the MLP East Precinct has been designed to meet the EPBC Act Approval conditions. EPBC Act Conditions of Approval CoA) include specific operational noise management conditions and commitments that are required to be addressed in an Operational Environmental Management Plan (OEMP), of which this plan is component. These conditions are identified within Table 2-11. The table also specifically identifies where each of the CoA and commitments are satisfied.

Table 2-1: EPBC Act CoA

Condition	Requirement	Sections or documents where requirements addressed
8	For the better protection of Commonwealth land, the person taking the action must engage a suitably qualified expert(s) to prepare an Operation Environment Management Plan (OEMP) for the approval of the Minister. The OEMP must include in relation to operation of the proposed facility:	Refer to OEMP
	a) identification and quantification of all potential impacts associated with noise, vibration, air quality, traffic and light spill (including cumulative impacts associated with the separately approved but related and adjacent intermodal terminal facility project, EPBC approval 2011/6086) upon Commonwealth land. Consideration must be given to people and communities at SME, DNSDC, Defence housing, and the environment more generally in neighbouring bushland areas. Of note, the air quality assessment must quantify all emissions of carbon monoxide, nitrogen dioxide, PM25 and PM10 arising from project related sources identified in the EIS	Section 3.1.1 Section 3.2 Section 3.3 Section 3.5
	b) refined details (including implementation timeframes) for the mitigation measures outlined in the EIS (sections 7.4.2, 7.4.6, 7.4.7, 7.4.8 and 7.4.9) and summarised at Annexure A	Section 3.5.8; Table 3-23
	e) identification of the trigger values and criteria for all matters mentioned in condition 8(b) (excluding light spill) that will be adopted for monitoring and managing potential impacts to those Commonwealth land	Section 4.1.1; Table 4-1
	f) details of a comprehensive monitoring program (including locations, frequency and duration) for:	Section 4.1.1; Table 4-1
	i. validating the anticipated impacts associated with condition 8(b)	Section 3.5
	ii. determining the effectiveness of mitigation/ management measures (including the success of public transport incentives)	Section 4.2

Condition	Requirement	Sections or documents where requirements addressed
	g) provisions to revise the approved OEMP in response to monitoring associated with condition 8(f) including, details of response / contingency mechanisms to address any exceedances of the relevant trigger values	Section 4.1.1; Table 4-1 Section 4.3 Section 4.4 OEMP Section 6.2.1
Annexure A – Summary of Mitigation Measures		
Noise	<p>Operation</p> <p>To reduce noise and vibration impacts of the SIMTA proposal during operation, the following recommendations as presented within Wilkinson Murray (2013) would be implemented:</p>	
	SIMTA would make provisions for a potential noise barrier along the western boundary of the SIMTA site. The requirement for the barrier will be confirmed during detailed assessments at each development application stage for approval under the NSW State planning approval process	The noise barrier relates to the MPW project, which has not yet been approved. This noise wall was been included in the operational noise model, however, will not be installed until MPW Stage 2 is under construction. Notwithstanding, a container noise barrier will be maintained along the western boundary of the IMEX Terminal, as detailed within the Container Noise Barrier Management Plan (CNBMP)
	Facilities such as administration buildings and employee carparks would be placed in locations to provide an increased buffer distance between the SIMTA site operations and sensitive receptors, i.e. the north-eastern corner and eastern portions of the site	As per Figure 1-1, the administration buildings, warehouses and carparks have been located to the northern and eastern portions of the Facility to provide an increased buffer distance to sensitive receivers
	Buildings or structures with acoustic shielding potential will be placed near the north-east and south-east boundaries of the site to assist in noise attenuation of the SIMTA proposal	The administration buildings, warehouses and carparks have been located to the northern and eastern portions of the Facility to assist in noise attenuation. See Figure 1-1.

2.2.2 EP&A Act Approval

The MLP East Precinct was approved under Part 4, Division 4.7 (previously Division 4.1 prior to 1 March 2018) of the EP&A Act. Approval for MPE Stage 1 was originally received on 12 December 2016 (SSD 6766) and subject to appeal, with revised CoC issued from the Land and Environment Court on 13 March 2018; approval for MPE Stage 2 was received on 31 January 2018 (SSD 7628).

The CoCs include requirements to be addressed in this plan and delivered during operation of the Facility. These requirements, and where they are addressed in this document are provided within Table 2-2 for CoC relating to SSD 6766 and Table 2-3 for CoC relating to SSD 7628.

In the compliance tables, Primary Conditions are specific to the development of the management plan, while Secondary Conditions are conditions which are related to the environmental aspects associated with the plan.

Table 2-2: CoCs of SSD 6766 (MPE Stage 1)

CoC	Requirement	Sections or documents where requirements addressed																									
Primary																											
F4(f)(i)	<p>...</p> <p>(i) noise emissions including measures for regular performance monitoring of noise generated by the project and measures to proactively respond to and deal with noise complaints</p> <p>...</p>	Section 3.5.8; Table 3-23; NV-11																									
F5B	<p>Industrial noise (excluding activities covered by the NSW Rail Infrastructure Noise Guideline) generated by the development is to be measured and evaluated for compliance generally in accordance with the relevant requirements of the NSW Industrial Noise Policy (as may be updated from time to time).</p> <table><tr><th>Sensitive receiver</th><th>Day ($L_{Aeq}(15\text{ min})$)</th><th>Evening ($L_{Aeq}(15\text{ min})$)</th><th>Night ($L_{Aeq}(15\text{ min})$)</th><th>Night ($L_{A1}(1\text{ min})$)</th></tr><tr><td>Wattle Grove (NCA 1)</td><td>43</td><td>42</td><td>42</td><td>52</td></tr><tr><td>Wattle Grove (NCA 2)</td><td>41</td><td>41</td><td>41</td><td>51</td></tr><tr><td>Casula (NCA 3)</td><td>45</td><td>42</td><td>38</td><td>47</td></tr><tr><td>Glenfield (NCA 4)</td><td>46</td><td>46</td><td>40</td><td>50</td></tr></table> <p>Note: References to sensitive receivers should be read in conjunction with the description of sensitive receivers in the EIS noting that Casula includes Glenfield Farm.</p>	Sensitive receiver	Day ($L_{Aeq}(15\text{ min})$)	Evening ($L_{Aeq}(15\text{ min})$)	Night ($L_{Aeq}(15\text{ min})$)	Night ($L_{A1}(1\text{ min})$)	Wattle Grove (NCA 1)	43	42	42	52	Wattle Grove (NCA 2)	41	41	41	51	Casula (NCA 3)	45	42	38	47	Glenfield (NCA 4)	46	46	40	50	<p>Section 3.2.2, Table 3-5</p> <p>Note that the more stringent ($L_{Aeq}(15\text{ min})$ / LA_{max} Noise Management Levels identified in CoC B80 for SSD 7628 have been adopted for the day, evening and night time period (Table 2-3).</p> <p>The more stringent $LA_1(1\text{ min})$ / LA_{max} identified here have been adopted for IMEX and Rail for the night-time period.</p>
Sensitive receiver	Day ($L_{Aeq}(15\text{ min})$)	Evening ($L_{Aeq}(15\text{ min})$)	Night ($L_{Aeq}(15\text{ min})$)	Night ($L_{A1}(1\text{ min})$)																							
Wattle Grove (NCA 1)	43	42	42	52																							
Wattle Grove (NCA 2)	41	41	41	51																							
Casula (NCA 3)	45	42	38	47																							
Glenfield (NCA 4)	46	46	40	50																							
F5C	<p>The noise criteria in Table A of condition F5B are to apply under all meteorological conditions except the following:</p> <p>a) wind speeds greater than 3 m/s at 10 metres above ground level; or</p> <p>b) stability category F temperature inversion conditions and wind speeds greater than 2 m/s at 10 m above ground level; or</p> <p>c) stability category G temperature inversion conditions.</p>	Section 3.2.2																									
G7B	<p>The Applicant shall:</p> <p>(a) not less than three months and not more than twelve months from commencement of operation, engage an appropriately qualified and experienced acoustic engineer to undertake a night-time noise survey at Glenfield Farm (or an equivalent location if access is denied)</p> <p>(b) the noise survey shall be conducted in accordance with the EPA's Rail Infrastructure Noise Guideline 2013 to determine:</p> <p>(i) the contribution of any new rail traffic travelling to and from the development</p> <p>(ii) the increase in the total rail traffic noise level caused by any new rail traffic to and from the development</p> <p>(c) the noise survey shall be conducted for not less than 12 contiguous days in the winter months (July, August or September)</p> <p>(d) if as a result of the noise survey there is a sustained increase in the total rail traffic noise level due to the noise level from rail traffic travelling to and from the development of more than 2dB(A) for more than 30% of nights surveyed, the Applicant shall:</p> <p>within twelve months, construct a noise barrier along the relevant sections of rail link in accordance with the specifications provided by an appropriately qualified and experienced acoustic engineer so as to limit the increase in the total rail traffic noise level at</p>	<p>Section 3.1.1; Figure 3-1</p> <p>Section 4.1.1; Table 4-1</p> <p>Section 4.1.1; Table 4-1</p> <p>Section 4.1.1; Table 4-1</p> <p>Section 4.1.1; Table 4-1</p>																									

CoC	Requirement	Sections or documents where requirements addressed
	Glenfield Farm caused by any new rail traffic to and from the development to not exceed 2dB(A)	
	(e) the report of the noise survey including the results and recommendations shall be provided to the Secretary	Section 4.2; Table 4-2
	Within 12 months of the commencement of operation of the project, or as otherwise agreed by the Secretary, the Applicant shall undertake operational noise monitoring to compare actual noise performance of the project against noise performance predicted in the review of noise mitigation measures predicted in documents specified under condition A1 of this approval, and prepare an Operational Noise Report to document this monitoring. The Report shall include, but not necessarily be limited to:	Section 4.2; Table 4-2
	(a) noise monitoring to assess compliance with the operational noise levels predicted in documents specified under condition A1 of this approval	Section 4.2; Table 4-2
	(b) a review of the operational noise levels in terms of criteria and noise goals established in the NSW Road Noise Policy (EPA, 2011)	Section 4.2; Table 4-2
	(c) sleep disturbance impacts compared to those determined in Condition E25	Section 4.2; Table 4-2
	(d) methodology, location and frequency of noise monitoring undertaken, including monitoring sites at which project noise levels are ascertained, with specific reference to locations indicative of impacts on sensitive receivers	Section 4.2; Table 4-2
G15	(e) details of any complaints and enquiries received in relation to operational noise generated by the project between the date of commencement of operation and the date the report was prepared	Section 4.2; Table 4-2
	(f) any required recalibrations of the noise model taking into consideration factors such as actual traffic numbers and proportions	Section 4.2; Table 4-2
	(g) an assessment of the performance and effectiveness of applied noise mitigation measures together with a review and if necessary, reassessment of all feasible and reasonable mitigation measures	Section 4.2; Table 4-2
	(h) identification of additional feasible and reasonable measures to those predicted in the documents specified under condition A1 of this approval, that would be implemented with the objective of meeting the criteria outlined in the NSW Road Noise Policy (EPA, 2011), when these measures would be implemented and how their effectiveness would be measured and reported to the Secretary and the EPA	Section 4.2; Table 4-2
	The Applicant shall provide the Secretary and the EPA with a copy of the Operational Noise Report within 60 days of completing the operational noise monitoring referred to in (a) above or as otherwise agreed by the Secretary	Section 4.2; Table 4-2

CoC	Requirement	Sections or documents where requirements addressed
Secondary		
E25	<p>The Applicant shall prepare a review of sleep disturbance impacts based on detailed design, including:</p> <ul style="list-style-type: none"> a) An assessment of how often noise events occur, the time of day they occur and whether there are any times of day when there is a clear change in the noise environment; b) Confirm the operational sleep disturbance predictions identified in the documents listed under Condition A1; and c) Consider appropriate noise mitigation measures required. The report shall be prepared in consultation with the EPA and be submitted to the satisfaction of the Secretary within 6 months of commencement of construction, unless otherwise agreed by the Secretary. 	Refer to Review of Sleep Disturbance Impacts (Wilkinson Murray, May 2018)
F5	<p>Prior to the commencement of operation, the Applicant shall prepare a Brake Squeal Report on brake squeal identifying the following:</p>	Refer to Brake Squeal Report
	<p>(a) The extent of brake squeal across the fleet of rail vehicles that will frequently use the terminals. This should identify the number of occurrences of brake squeal, the typical noise levels associated with brake squeal (including the frequency content), and the operational conditions under which brake squeal occurs (e.g. under light braking, hard braking, low / medium / high speed, effects of temperature and weather, etc.)</p>	Refer to Brake Squeal Report Section 4.2; Table 4-2
	<p>(b) The root cause of brake squeal, including the influence of the design, set-up and maintenance of both brake shoes and brake rigging</p>	Refer to Brake Squeal Report
	<p>(c) Possible solutions to mitigate or eliminate brake squeal, including modifications to brake rigging and alternative brake shoe designs and compounds</p>	Refer to Brake Squeal Report
F5A	<p>(d) Any monitoring system proposed to capture brake squeal</p>	Refer to Brake Squeal Report Section 4.1.1; Table 4-1
	<p>The Applicant shall prepare and implement (following approval) a Container Noise Barrier Management Plan (CNBMP). The plan shall be prepared by a suitably experienced and qualified acoustics consultant and shall outline the management practices and procedures that are to be followed during night-time operation of the site for the stacking of containers to be used as noise barriers. The plan shall include, but not necessarily be limited to:</p> <p>.....</p>	Refer to the Container Noise Barrier Management Plan (CNBMP) Section 4.1.1; Table 4-1
G6	<p>Port shuttle operations must use:</p> <ul style="list-style-type: none"> (a) Locomotives that incorporate available best practice noise and emission technologies. Prior to the construction of the rail link connecting to the site, the Applicant must submit a report to the Secretary for consideration and approval that has been prepared in consultation with TfNSW and the EPA that justifies the technology proposed and how it meets the objective of best practice noise and emission technologies 	Refer to the MPE Stage 1 Best Practice Review (Arcadis, 2017) Section 3.5.8; Table 3-23; NV-18; NV-25

CoC	Requirement	Sections or documents where requirements addressed
	(b) Wagons that incorporate available best practice noise technologies, such as “one-piece” freight bogies or three-piece freight bogies fitted with cross-bracing or steering arms; and permanently coupled ‘multi-pack’ steering wagons using Electronically Controlled Pneumatic (ECP) braking with a wire based distributed power system (or better practice technology). Prior to the commencement of operation, the Applicant must submit a report to the Secretary for consideration and approval that has been prepared in consultation with TfNSW and the EPA that justifies the technology proposed and how it meets the objective of best practice noise technologies	Refer to the MPE Stage 1 Best Practice Review (Renzo Tonin, 2019)
G7	The Applicant shall install and maintain a rail noise monitoring system on the rail link at the commencement of operation to continuously monitor the noise from rail operations on the rail link. The system shall capture the noise from each individual train passby noise generation event, and include information to identify:	Refer to Rail Noise Monitoring system documentation Section 4.1.1; Table 4-1
	(a) Time and date of freight train passbys	Refer to Rail Noise Monitoring system documentation Section 4.1.1; Table 4-1
	(b) Imagery or video to enable identification of the rolling stock during day and night	Refer to Rail Noise Monitoring system documentation Section 4.1.1; Table 4-1
	(c) LAeq(15hour) and LAeq(9hour) from rail operations	Refer to Rail Noise Monitoring system documentation Section 4.1.1; Table 4-1
	(d) LAF(max) and SEL of individual train passbys, measured in accordance with ISO3095	Refer to Rail Noise Monitoring system documentation Section 4.1.1; Table 4-1
	(e) Other alternative information as agreed with, or required by, the Secretary	Refer to Rail Noise Monitoring system documentation Section 4.1.1; Table 4-1
	The results from the noise monitoring system, shall be publicly accessible from a website maintained by the Applicant. The noise results from each train shall be available on the website within 24 hours of it passing the monitor, unless unforeseen circumstances (i.e a system malfunction) have occurred. The LAeq(15hour) and LAeq(9hr) results from each day shall be available on the website within 24 hours of the period ending.	Refer to Rail Noise Monitoring system documentation Section 4.2; Table 4-2
	Prior to the commencement of operation, the Applicant shall submit for the approval of the Secretary, justification supporting the appropriateness of the location for rail noise monitoring, including details of any alternative options considered and reasons for these being dismissed. The rail noise monitoring system shall not operate until the Secretary has approved the proposed monitoring location.	Refer to Rail Noise Monitoring system documentation

CoC	Requirement	Sections or documents where requirements addressed
	The Applicant shall provide an annual report to the Secretary with the results of monitoring for a period of 5 years, or as otherwise agreed with the Secretary, from the commencement of operation of the IMEX terminal. The Secretary shall consider the need for further reporting following a review of the results for year 5	Refer to Rail Noise Monitoring system documentation Section 4.2; Table 4-2
	The applicant shall install and maintain a wayside angle of attack monitoring system on the rail link at the commencement of operation to continuously monitor the angle of attack to the rail of rolling stock wheels. The system shall capture the angle of attack from a wheel on each axle of every train, and include information to identify:	Refer to Wayside Angle of Attack Monitoring System documentation Section 4.1.1; Table 4-1
	(a) Time and date of each axle passby	Refer to Wayside Angle of Attack Monitoring System documentation Section 4.1.1; Table 4-1
	(b) The identification number of each item of rolling stock	Refer to Wayside Angle of Attack Monitoring System documentation Section 4.1.1; Table 4-1
G7A	The results from the angle of attack monitoring system shall be: accessible by train operators from a website maintained by the Applicant. Angle of attack results from each train shall be available on the website within 24 hours of it passing the monitor, unless unforeseen circumstances have occurred.	Refer to Wayside Angle of Attack Monitoring System documentation Section 4.1.1; Table 4-1
	included in a six-monthly report to the Secretary. The report should at least identify the number of wagons with wheels that exceed the ASA standard angle of attack and the action taken by operators to improve steering performance.	Refer to Wayside Angle of Attack Monitoring System documentation Section 4.1.1; Table 4-1
	Prior to the commencement of operation, the Applicant shall submit for the approval of the Secretary, justification supporting the appropriateness of the location for angle of attack monitoring, the format of the information to be accessible to operators and the format of the public report. The angle of attack monitoring system shall not operate until the Secretary has approved the proposed monitoring location and reporting arrangements	Refer to Wayside Angle of Attack monitoring system documentation
G8	The following measures must be implemented during operation: (a) The use of automatic rail lubrication equipment in accordance with ASA Standard T HR TR 00111 ST Rail Lubrication and top of rail friction modifiers, where required	Section 3.5.8; Table 3-23; NV-14; NV-15
	(b) Measures to ensure the rail cross sectional profile is maintained in accordance with ETN-01-02 Rail Grinding Manual for Plain Track to ensure the correct wheel / rail contact position and hence to encourage proper rolling stock steering	Section 3.5.8; Table 3-23; NV-14; NV-15

Table 2-3: CoCs of SSD 7628 (MPE Stage 2)

CoC	Requirement	Sections or documents where requirements addressed																				
Primary																						
B64	Continuous noise monitoring at sensitive receivers must be undertaken during early works, fill importation, construction and for at least 12 months following occupation of the entire site.	Section 4.1.1; Table 4-1 Section 4.1.2 Section 3.5.8; Table 3-23; NV-9																				
B79	The permitted hours of warehouse and distribution operation are detailed in Table 4	Section 3.4.1																				
	<table><tr><td>Activity</td><td>Day</td><td>Time</td></tr><tr><td>Operation</td><td>Monday to Sunday</td><td>24 hours</td></tr></table>	Activity	Day	Time	Operation	Monday to Sunday	24 hours															
Activity	Day	Time																				
Operation	Monday to Sunday	24 hours																				
B80	Noise generated by operation of the development inclusive of MPE Stage 1 operations must not exceed the noise limits in Table 5.																					
	Table 5: Noise Limits dB(A)	Section 3.1.2																				
	<table><tr><td>Location (residential receivers)</td><td>Day (LAeq(15 min))</td><td>Evening (LAeq(15 min))</td><td>Night (LAeq(15 min))</td><td>Night (LA1 (1 min))</td></tr><tr><td>Casula</td><td>35</td><td>35</td><td>35</td><td>52</td></tr><tr><td>Glenfield</td><td>35</td><td>35</td><td>35</td><td>52</td></tr><tr><td>Wattle Grove</td><td>35</td><td>35</td><td>35</td><td>52</td></tr></table>	Location (residential receivers)	Day (LAeq(15 min))	Evening (LAeq(15 min))	Night (LAeq(15 min))	Night (LA1 (1 min))	Casula	35	35	35	52	Glenfield	35	35	35	52	Wattle Grove	35	35	35	52	Section 3.2.2, Table 3-5
	Location (residential receivers)	Day (LAeq(15 min))	Evening (LAeq(15 min))	Night (LAeq(15 min))	Night (LA1 (1 min))																	
	Casula	35	35	35	52																	
Glenfield	35	35	35	52																		
Wattle Grove	35	35	35	52																		
Notes:																						
To determine compliance with the LAeq,15 minute noise limits, noise from the development is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the project is impractical, the EPA may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy must also be applied to the measured noise levels where applicable.		Note that the more stringent (LAeq(15 min) / LAmax Noise Management Levels identified here have been adopted for the day, evening and night time period																				
To determine compliance with the LA1,1 minute noise limits, noise from the project is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the project is impractical, the EPA may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).		The more stringent LA1 (1 min) / LAmax from SSD 6766 CoC F5B has been adopted for IMEX and Rail for the night-time period (Table 2-2).																				
The noise emission limits identified above apply under meteorological conditions of:																						
(i) wind speeds of up to 3 m/s at 10 metres above ground level; or																						
(ii) 'F' atmospheric stability class.																						
B83	An Operational Noise Management Plan must be submitted to the Secretary for approval and form part of the OEMP required under condition C3. The report must be prepared by a suitably qualified and experienced person(s) and include:	This ONVMP																				
	a) an outline of management actions to be taken to address any potential non-compliances with the limits specified in Table 5	Section 4.3																				
	b) a description of contingency measures to be implemented in the event management actions do not reduce noise levels to a compliant level	Section 4.3.1																				
	c) identification of additional feasible and reasonable measures to those proposed in the documents specified under condition A2, that would be implemented with the objective of meeting the criteria outlined in the NSW RNP (EPA, 2011), and how their effectiveness would be measured	Section 3.5.1 Section 3.5.1.3, Table 3-15 and Table 3-16 Also refer to Workplace Travel Plan																				
	When these measures would be implemented	Table 3-23																				

CoC	Requirement	Sections or documents where requirements addressed
	How their effectiveness would be measured	Section 1.5 Section 4.1.2
	How they will be reported to the Secretary and the EPA	Section 4.2 Table 4-2
C3	<p>Before the commencement of operations, a Precinct Operational Environmental Management Plan must be prepared to the satisfaction of the Secretary. The OEMP Must:</p> <p>(g) Include the management plans required under this approval, including:</p> <p>vi) Operational Noise and Vibration Management Plan</p> <p>.....</p>	This OVNMP
C7	The Applicant must ensure that the environmental management plans required under this consent are prepared in accordance with any relevant guidelines, and include:	
	a) detailed baseline data;	Section 3.1
	b) a description of:	Section 2; Table 2-1, Table 2-2, Table 2-3, Table 2-4 and Table 2-5
	i. the relevant statutory requirements (including any relevant approval, licence or lease conditions);	
	ii. any relevant limits or performance measures/criteria; and	Section 4.1.1; Table 4-1
	iii. the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;	Section 4.1.1; Table 4-1
	c) a description of the management measures to be implemented to comply with the relevant statutory requirements, limits or performance measures/criteria;	Section 3.5.8; Table 3-23
	d) a program to monitor and report on the:	
	i. impacts and environmental performance of the development; and	Section 4
	ii. effectiveness of any management measures (see (c) above);	Section 4
	e) contingency plan to manage any unpredicted impacts and their consequences;	Section 4.3 and Section 4.7
	f) a program to investigate and implement ways to improve the environmental performance of the development over time;	Section 4.3
	g) a protocol for managing and reporting any:	
	i. incidents and non-compliances;	Section 4.5 and Section 4.7
	ii. complaints;	Section 4.6
	iii. non-compliances with statutory requirements; and	Section 4.7
	h) a protocol for periodic review of the plan.	Section 4.3

CoC	Requirement	Sections or documents where requirements addressed
Secondary		
A19	Where conditions of this consent require a document to be prepared in consultation with an identified party, the Applicant must:	Section 1.6, Table 1-3
	(a) Consult with the relevant party prior to submitting the subject document to the Secretary for approval;	Appendix A
	(b) Provide evidence that at least two weeks was provided for the relevant party to comment on the document; and	Section 1.6, Table 1-3 Appendix A
	(c) Include in the document:	Section 1.6, Table 1-3 Appendix A
	(i) Details of the consultation undertaken;	Appendix A
B81	(ii) A description of how matters raised by those consulted have been resolved to the satisfaction of both the Applicant and the party consulted; and	Section 1.6, Table 1-3 Appendix A
	(iii) Details of any disagreement remaining between the party consulted and the Applicant and how the Applicant has addressed the matters not resolved	Section 1.6, Table 1-3 Appendix A
	The Applicant must prepare a Review of Sleep Disturbance Impacts based on detailed design, including:	Refer to Review of Sleep Disturbance Impacts
	(a) an assessment of how often noise events occur, the time of day they occur and whether there are any times of day when there is a clear change in the noise environment	Refer to Review of Sleep Disturbance Impacts
B84	(b) confirm the operational L_{Amax} predictions of the final design	Refer to Review of Sleep Disturbance Impacts
	(c) consider appropriate noise mitigation measures where required	Refer to Review of Sleep Disturbance Impacts
B85	Prior to construction of the freight village and each warehouse, the Applicant must submit to the Secretary a Noise Assessment for Mechanical Plant and other noisy equipment to demonstrate that plant has been selected to meet the overall operational noise limits specified in Table 5	A separate Noise Assessment for Mechanical Plant has been prepared for Warehouses 1, 3, 4 and 5 and will be prepared for future warehouses as a standalone document and submitted to the Secretary for approval.
B86	The Applicant must carry out noise monitoring of mechanical plant and other noisy equipment for a minimum period of one week where valid data is collected following occupation of each warehouse. The monitoring program must be carried out by a suitably qualified and experienced person(s) and a Monitoring Report for Mechanical Plant must be submitted to the Secretary within two months of occupation or each tenancy to verify predicted mechanical plant and equipment noise levels.	Section 4.1.1; Table 4-1 Section 4.2; Table 4-2
B87	Within 12 months of occupation of the first warehouse, 50% occupation of the site and 100% occupation of the site, or as otherwise agreed by the Secretary, the Applicant must undertake operational noise monitoring to compare actual noise performance of the project against predicted noise performance, and	Section 4.1.1; Table 4-1

CoC	Requirement	Sections or documents where requirements addressed
	Prepare an Operational Noise Report to document this monitoring. The Report must include, but not necessarily be limited to:	Section 4.2; Table 4-2
	(a) noise monitoring to assess compliance with the predicted operational noise levels and the noise limits specified in Table 5	Section 4.2; Table 4-2
	(b) a validation by predictive modelling of the operational noise levels in terms of criteria and noise goals established in the NSW RNP (EPA, 2011)	Section 4.2; Table 4-2
	(c) sleep disturbance impacts compared to those determined in documents specified under condition A2	Section 4.2; Table 4-2
	(d) impacts associated with annoying characteristics such as prominent tonal components, impulsiveness, intermittency, irregularity and dominant low-frequency content	Section 4.2; Table 4-2
	(e) methodology, location and frequency of noise monitoring undertaken, including monitoring sites at which project noise levels are ascertained, with specific reference to locations indicative of impacts on sensitive receivers	Section 4.2; Table 4-2
	(f) details of any complaints and enquiries received in relation to operational noise generated by the project between the date of commencement of operation and the date the report was prepared	Section 4.2; Table 4-2
	(g) any required recalibrations of the noise model taking into consideration factors such as actual traffic numbers and heavy vehicle proportions	Section 4.2; Table 4-2
	(h) an assessment of the performance and effectiveness of applied noise mitigation measures together with a review and if necessary, reassessment of all feasible and reasonable mitigation measures	Section 4.2; Table 4-2
B87	The Applicant must provide the Secretary and the EPA with a copy of the Operational Noise Report within 60 days of completing the operational noise monitoring referred to in (a) above or as otherwise agreed by the Secretary	Section 4.2; Table 4-2
B88	To ensure the operational noise impacts are appropriately managed, the following measures apply:	Section 3.5.8; Table 3-23; NV-17; NV 18; NV-19; NV-20
	(a) use of best practice plant	Refer to Tenant WOEMP Refer to the MPE Stage 1 Best Practice Review (Arcadis, 2017)
	(b) preparation of a risk assessment to determine if non-tonal reversing alarms can be fitted as a condition of site entry. Alternatively, site design may include traffic flow that does not require or precludes reversing of vehicles	Refer to Aspects and Impacts Register in the OEMP Refer to Driver's Code of Conduct in the Operational Traffic and Access Management Plan (OTAMP)

CoC	Requirement	Sections or documents where requirements addressed
B90	For the duration of operation, the Applicant must:	Section 3.5.1
	(a) continue to implement all reasonable and feasible best practice noise mitigation measures	Section 3.5.1.3 Table 3-15 and Table 3-16 Section 3.5.8; Table 3-23; NV-18, NV-19, NV-25, NV-26
	(b) continue to investigate ways to reduce the noise generated by the development, including maximum noise levels which may result in sleep disturbance	Section 3.5.1 Section 3.5.1.3 Table 3-15 and Table 3-16 Section 3.5.8; Table 3-23; NV-24, NV-26
	(c) report on these investigations and the implementation and effectiveness of these measures in the Annual Review to the satisfaction of the Secretary	Section 4.2; Table 4-2

The Final Compilation of Mitigation Measures (FCMM) are presented within the MPE Stage 1 RtS (Arcadis September 2015), and the MPE Stage 2 RtS (Arcadis, July 2017) documents. A list of the FCMMs on operational noise, as relevant to the Facility, and how they have been complied within this plan are provided in Table 2-4 and Table 2-5.

Table 2-4: FCMM (MPE Stage 1)

FCMM	Requirement	Sections or documents where requirements addressed
0B	An Operational Environmental Management Plan (OEMP) will be prepared to provide the overarching framework for the management of all potential environmental impacts resulting from the operation of the Proposal.	Refer to OEMP
0B	A number of operational related management plans have been prepared for the Proposal, including: ... • Rail Noise Management Plan	Section 3.4.5
0C	An Environmental Protection Licence (under the POEO Act) will be obtained for the construction and operation of the Rail link (only) for the Proposal.	It is currently not anticipated that an EPL will be required for operation of the MLP East Precinct, however, this will be determined in consultation with the Secretary and the EPA. If an EPL is required for operational activities, the OEMP will be updated to include the requirement of the EPL.

FCMM	Requirement	Sections or documents where requirements addressed
3B	Friction modifiers will be installed to sections of the Rail link where rail curve squeal is likely to occur. The effectiveness of their application will be confirmed with short-term noise monitoring during the first 3 months of operation.	Section 3.5.8; Table 3-23; NV-21 Section 4.1.1; Table 4-1 Refer to Brake Squeal Report
3C	A Rail Noise Management Plan (RNMP) (or equivalent) will be prepared prior to operation of the Proposal. The RNMP will include procedures for the application of friction modifiers to the Rail link and measurement and reporting of subsequent rail noise levels should be documented in a Rail Noise Management Plan (RNMP) (or equivalent) to be prepared prior to the operation of the Proposal. During preparation of the RNMP, background rail noise monitoring will be undertaken to establish existing levels of rail noise levels in accordance with the RING. The RNMP will prescribe mitigation measures where modelling predicts and /or operational monitoring shows an exceedance attributable to the Proposal that RING prescribes as a trigger level.	Section 3.4.5
3D	Rail grinding will be undertaken in accordance with TfNSW's requirements on the Rail link, or where otherwise identified within the RNMP or other operational management plan for the Proposal	Section 3.4.5 Section 3.5.8; Table 3-23; NV-15
4.1B	The following policies and procedures will be developed and included within the OEMP for the Proposal: <ul style="list-style-type: none"> An anti-idle policy will be developed and communicated to locomotive and truck operators to minimise unnecessary idling. Signs will be installed within the IMT to remind drivers of this policy and their obligations 	Section 3.5.8; Table 3-23; NV-4; NV-8; NV-10; NV13 and NV-16
4.2A	The following policies and procedures will be developed and included within the OEMP for the Proposal: <ul style="list-style-type: none"> Container handling equipment will be fitted with broadband 'quacker' reversing alarms. 	Section 3.5.8; Table 3-23; NV-7

Table 2-5: FCMM (MPE Stage 2)

FCMM	Requirement	Sections or documents where requirements addressed
0C	The Operational Environmental Management Plan (OEMP), or equivalent, for the Amended Proposal would be based on the following preliminary management plans: <p>...</p> <ul style="list-style-type: none"> Operational Noise and Vibration Management Plan (ONVMP) ... 	This Plan

FCMM	Requirement	Sections or documents where requirements addressed
0D	The construction and/or operation of the Amended Proposal may be delivered in a number of stages. If construction and/or operation is to be delivered in stages a Staging Report would be provided to the Secretary prior to commencement of the initial stage of construction and updated prior to the commencement of each stage as that stage is identified.	Section 1.3 Refer to the POPD (approved by the Secretary on 21 May 2019)
2D	In the event of any noise or vibration related complaint or adverse comment from the community, noise and ground vibration levels (as relevant) would be investigated. Remedial action would be implemented where feasible and reasonable. The procedures for managing complaints would be provided within the Community Information and Awareness Strategy	Section 4.6 Refer to Community Communication Strategy (CCS)
2E	An Operational Noise Management Plan (ONVMP) would be prepared which includes a framework for regular monitoring of operational noise. Monitoring would begin at the commencement of the operation of the Amended Proposal and would be conducted on an annual basis for up to 2 years (after commencement of operations of the Amended Proposal).	This ONVMP Section 4.1.1; Table 4-1

2.3 Roles and Responsibilities

Key roles and responsibilities applicable to this ONVMP are presented in Table 2-6.

Table 2-6: Roles and Responsibilities

Roles	Responsibilities
Operations Manager	<ul style="list-style-type: none"> Accountable for the environmental performance, including noise and vibration, of the MLP East Precinct. Provides sufficient resources to implement, develop and maintain the ONVMP throughout the operating life of the MLP East Precinct. Implement stop work procedures where they believe a work activity to be an actual or potential cause of pollution to the environment anywhere within the MLP East Precinct Reviews and approves changes to the ONVMP
Area Managers: IMEX Rail Link Estate Manager	<ul style="list-style-type: none"> Communicates the requirements of the ONVMP and environmental obligations to operational team Has the authority to stop work processes within the area of responsibility to prevent noise and vibration non-conformances from occurring or continuing Monitors operations against the requirements of the ONVMP and CoC and takes action to resolve issues where required Where required, implements changes to activities to manage ongoing compliance Reports incidents to Operations Manager in accordance with the OEMP
Site Safety, Health, Environment and Quality (SHEQ) Manager/Advisor	<ul style="list-style-type: none"> Reviews and implements this ONVMP Monitors operations against this ONVMP through regular site inspections to evaluate compliance with the CoC, Has the authority to implement reasonable steps to avoid or minimise unintended or adverse noise and vibration impacts, including to direct that relevant actions be ceased immediately should an adverse impacts be likely to occur

Roles	Responsibilities
	<ul style="list-style-type: none"> • Reports noise and vibration incidents to Area Manager and Operations Manager where required, in accordance with the Incident reporting system outlined in the OEMP • Acts as the 24-hour EPA contact • Facilitates the inductions and training program for relevant persons involved with IMEX, Rail Link and Estate operations • Maintain the register of noise and vibration incidents, potential; incidents and complaints and implements subsequent remedial action
Individual Tenants	<ul style="list-style-type: none"> • Responsible for their own environmental performance for operational activities on leased areas • Reports noise and vibration incidents to Area Manager and / or the Site SHEQ Manager/Advisor • Track their compliance with the relevant noise and vibration requirements in the CoC and provides Environmental Compliance Reports to Qube which detail their compliance status with the CoC relevant to the respective WOEMP for inclusion in Qube Annual Compliance Reports as required.
Train Operators / Site Personnel	<ul style="list-style-type: none"> • Understand roles and responsibilities and maintain mitigation measures as required in the ONVMP and any additional required measures identified during the course of operations • Participate (or conduct if authorised) relevant training to implement and maintain the requirements of this ONVMP
Noise and Vibration Monitoring Personnel (contractors)	<ul style="list-style-type: none"> • Undertake relevant training to implement the requirements of this ONVMP • Undertake all monitoring activities in accordance with this ONVMP • Ensure regular maintenance and accuracy of monitoring equipment • Ensure all relevant monitoring quality control / assurance procedures are effectively implemented

2.4 Training

All staff, contractors and sub-contractors shall undergo site specific induction training, which will include noise and vibration management training developed with an emphasis on understanding and managing noise impacts from the work activities being undertaken.

This site-specific induction training will include:

- The location of potentially sensitive receptors
- Main sources and nature of noise and vibration
- Relevant noise and vibration mitigation measures, where feasible
- A summary of relevant licence and approval conditions
- Any limitations on high noise generating activities
- Designated loading/unloading areas and procedures
- Details of the noise complaints handling procedure
- Details of the noise and vibration incident procedures
- Limiting the clustering of noisy plant / processes
- Communication, including a notification process to inform residents of respite times
- Non-conformance, preventative and corrective action procedures
- Outline the consequences of not complying with these measures

- Ensuring plant and equipment is well maintained and not making excessive noise
- Operation of vehicles to minimise noise and vibration impacts, i.e. use of designated haulage routes, use of non-tonal reversing beepers, turning off plant, equipment and vehicles when not in use.

Training on noise and vibration management requirements and measures will be completed by the Area Managers (or nominated authority).

2.4.1 Freight Operators Training

Freight operators will be provided with training relating to mitigation measures associated with the rail link, including the use of best practice locomotives and wagons and good train driving practices in accordance with the Best Practice Reports.

3 IMPLEMENTATION

This section addresses the key noise risks associated with operation of the MLP East Precinct and the environmental controls established to manage key risks.

3.1 Existing Environment

The existing environment in the vicinity of the MLP East Precinct is best described as 'urban', being an area with an acoustical environment that:

- Is dominated by 'urban hum' or industrial source noise
- Has through traffic with characteristically heavy and continuous traffic flows during peak periods
- Is near commercial districts or industrial districts
- Has any combination of the above, where 'urban hum' means the aggregate sound of many unidentifiable, mostly traffic-related sound sources.

3.1.1 Sensitive Receivers

The potentially most affected residential receivers in the vicinity of the MLP East Precinct, including the Rail Link, are located in the suburbs of Casula, Glenfield and Wattle Grove. In addition to residential receivers, a number of potentially affected non-residential receivers have been identified near the facility, including All Saints Senior College and the Casula Powerhouse, located to the west of the facility, across the Georges River. The nearest industrial receivers consist of Moorebank Precinct West (MPW), ABB and the Defence Joint Logistics Unit (DJLU) Figure 3-1 shows the sensitive receivers and monitoring locations near the Facility and will be updated, as required, if further monitoring locations are identified. Table 3-1 presents a summary of the potentially most affected receivers and the approximate distance from the facility.

Table 3-1: Sensitive Receivers

Receiver/Suburb	Category	Distance (m) from MLP East Precinct	Distance (m) from Rail Link
Wattle Grove	Residential	390	790
Wattle Grove North		375	1,900
Casula		800	220
Glenfield		1,550	760
Kitchener House	Heritage	100	-
All Saints Senior College (S1)	Educational	1,220	260
Casula Powerhouse (S2)		850	690
MPW (I1)	Industrial	Boundary	-
DJLU (I2)		Boundary	690
ABB (I3)		475	-

It is noted that the School of Military Engineering (SME) and Defence Housing were re-located from the MPW site to enable the development of the Project and these are no longer considered sensitive receivers for the operation of the MLP. The Defence National Storage Distribution Centre (DNSDC) formerly occupied



the MPE site but relocated this operation to the DJLU, immediately north of the MPE site as shown in Figure 3-1.

Operational Noise and Vibration Management Plan

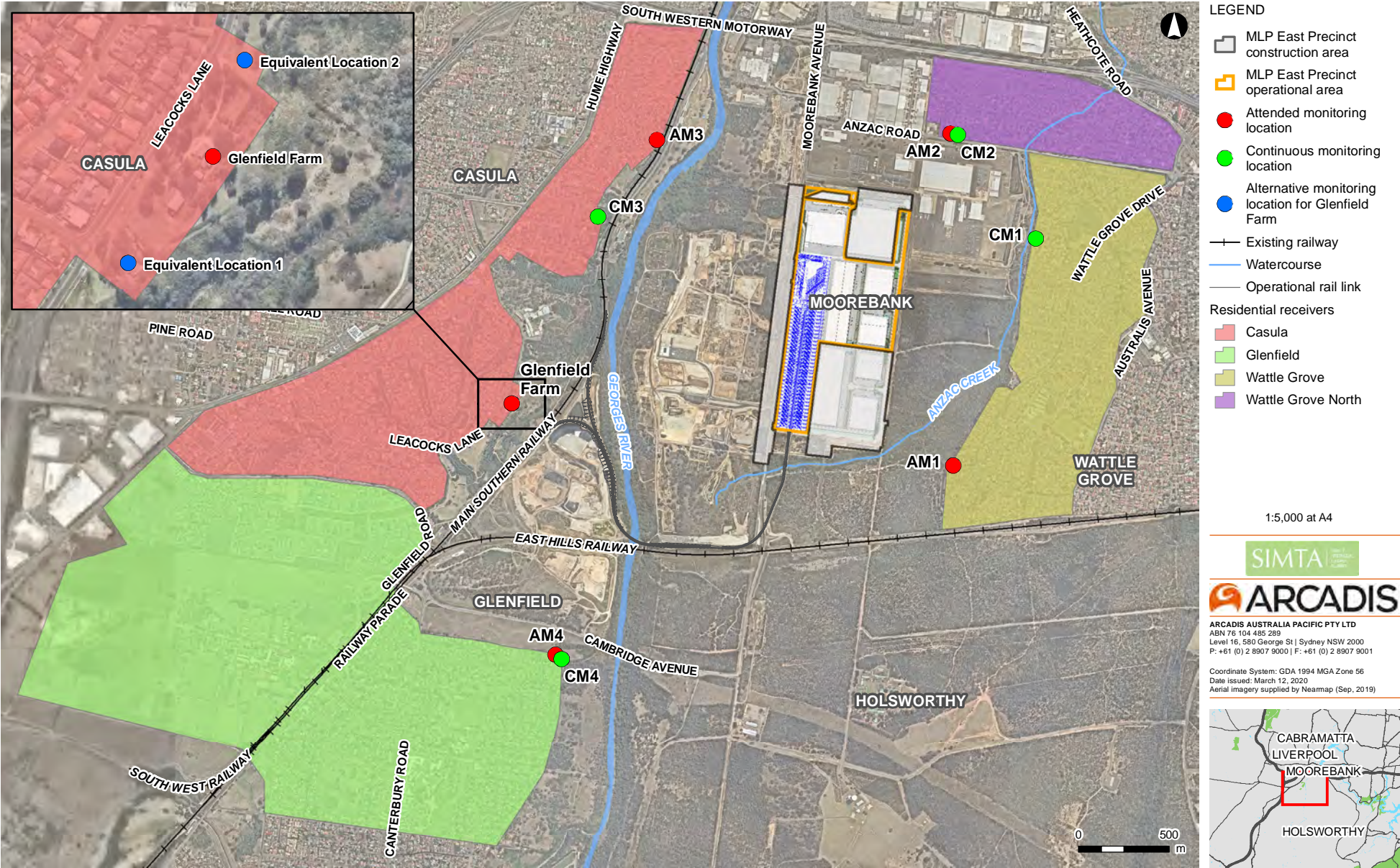


Figure 3-1: Sensitive Receivers and Monitoring Locations

3.1.2 Background Noise Levels

Background noise monitoring to satisfy CoC B62 and B63 of the MPE Stage 2 Development Consent (SSD 7628) was conducted in December 2017 and presented in the Wilkinson Murray 12186-M2 Report Ver C, dated January 2018.

The noise monitoring required to satisfy conditions B62 and B63 concluded that Rating Background Levels (RBLs) from December 2017 monitoring data are generally consistent with those identified in the MPE Concept Plan which were used to inform the noise management levels for the MPE Stage 2 EIS. Therefore, no change to the Noise Management Levels (NMLs) identified in the MPE Concept Plan was required.

The RBLs at sensitive receiver locations considered representative of each of the four areas are presented in Table 3-2.

Table 3-2: Rating Background (Noise) Levels

NCA	Rating Background Levels (RBL) in dB(A)		
	Daytime	Evening	Night-time
Wattle Grove	42	37	37
Wattle Grove North	36	36	36
Casula	41	37	34
Glenfield	44	44	37

3.1.3 Meteorological Environment

Meteorological conditions at the MLP East Precinct are subject to temperature inversions as a result of the predominance of stable meteorological conditions during the night-time period.

In accordance with the INP, default parameters were used in the Noise and Vibration Impact Assessment Version C (NVIA) (Wilkinson Murray, 2016), prepared for the MPE Stage 2 EIS, to include the effects of meteorological conditions that enhance noise levels. These parameters comprise an F-class temperature inversion during the night-time period. As the potentially most affected receivers are located at heights similar to, or greater than the MLP East Precinct, drainage winds are unlikely to occur with temperature inversions and as such have not been modelled.

There is potential for gradient winds to enhance noise levels at sensitive receivers, and such conditions have the potential to arise in any of the daytime, evening or night-time periods. The default parameters for the assessment of gradient winds in accordance with the INP is a 3 m/s wind from source to receiver.

The CONCAWE noise propagation model divides the range of possible meteorological conditions into six separate “weather categories”, from Category 1 to Category 6. Weather Category 1 provides “best-case” (i.e. lowest noise level) weather conditions for the propagation of noise, whilst weather Category 6 provides “worst-case - Adverse Meteorological Conditions” (i.e. highest noise level), when source to receiver gradient winds exist and/or there are temperature inversions. For noise modelling purposes, consistent with the INP, typical daytime “calm meteorological conditions” were modelled using Category 4 and “adverse meteorological conditions” were modelled using worst-case Category 6. The categories are described in Table 3-3.

Table 3-3: Weather Categories and conditions

Weather Category	Conditions
1, 2 and 3	Weather conditions are generally characterised by wind blowing from the receptor to the noise source during the daytime with a temperature lapse (Pasquill stability class A, B and C)
4	Provides “neutral” weather conditions for noise propagation. Category 4 conditions can be characterised by no wind and a mild temperature lapse (Pasquill stability class D). Typically, this weather condition occurs during the day
5 and 6	Categories 5 and 6 are “worst-case – Adverse Meteorological Conditions” when winds up to 3m/s source to receiver exist and/or and temperature inversion (Pasquill stability class E, F and G)

3.2 Noise Management Criteria

3.2.1 Sleep Disturbance Trigger Levels

Table 3-4 presents screening levels for maximum noise levels during the night-time period for potential sleep disturbance impacts, which have been established in accordance with CoC F5A(a) of SSD 6766.

Table 3-4: Sleep Disturbance Screening Levels

Catchment	Sleep Disturbance Screening Level ($L_{A,1min}$ / L_{Amax})
Wattle Grove	52
Wattle Grove North	51
Casula	47
Glenfield	50

Note: The sleep disturbance screening levels in this table are based on the values adopted in CoC F5A(a) of SSD 6766 and differ from the sleep disturbance screening levels in CoC B80 of SSD 7628 (Ref to Review of Sleep Disturbance Impacts, Wilkinson Murray, May 2018).

3.2.2 Operational Noise Limits

CoC F5B (SSD 6766) and CoC B80 (SSD 7628) specify the Operational Noise Limits for MPE Stage 1 and MPE Stage 2, respectively. While, CoC B80 (SSD 7628) establishes the more stringent criteria for the day, evening and night-time periods, CoC F5B (SSD 6766) establishes the more stringent $LA_{1(1min)}$ / LA_{max} criteria.

As CoC B80 (SSD 7628) states that “noise generated by operation of the development inclusive of MPE Stage 1 operations must not exceed the noise limits in Table 5 [of the consent]”, this ONVMP incorporated the operations of both MPE Stage 1 and 2.

The operation of the MLP East Precinct (Warehouses 1, 3, 4, 5, IMEX and Rail) will be required to comply with the more stringent $LA_{eq(15min)}$ noise limits specified in SSD 7628 CoC B80 during the day, evening and night time periods, while operation of the IMEX Terminal will be required to comply with the more stringent $LA_{1(1min)}$ / LA_{max} specified in SSD 6766 CoC F5B. The Operational Noise Limits for the MLP East Precinct are presented in Table 3-5.

A programme of noise monitoring, which includes continuous on-track monitoring, continuous noise monitoring and attended noise monitoring has been devised to ensure compliance with day, evening and night-time criteria. The monitoring programme is summarised in Table 4-1 and also outlines remedial measures in the event an exceedance in the noise criteria is identified.

Table 3-5: Noise Limits for Residential Receivers

Sensitive receiver	Day ($L_{Aeq}(15 \text{ min})$)	Evening ($L_{Aeq}(15 \text{ min})$)	Night ($L_{Aeq}(15 \text{ min})$)	Night ($LA_1 (1 \text{ min}) / LA_{max}$)	
Activity	Warehousing, IMEX and Rail (SSD 7628 B80)			Warehousing (SSD 7628 B80)	IMEX Terminal (SSD 6766 F5B)
Wattle Grove (NCA 1)	35	35	35	52	52
Wattle Grove (NCA 2)	35	35	35	52	51
Casula (NCA 3)	35	35	35	52	47
Glenfield (NCA 4)	35	35	35	52	50

Note: Noise limits outlined in Table 3-5 apply under all meteorological conditions except for the following:

- Wind speeds greater than 3m/s at 10 meters above ground level; or
- Atmospheric stability category F temperature inversion conditions and wind speeds 2m/s at 10m above ground level; or
- Atmospheric stability category G temperature inversion conditions

For compliance against the LA_1 criteria during the night-time period, the criteria adopted are based on the operational activity being undertaken at the time of the noise complaint or noise exceedance i.e. whether the operational activities being undertaken are associated with warehousing activities or IMEX Terminal activities.

Table 3-6 identifies the Noise Limits for Educational and Industrial receivers during operation of the MLP East Precinct. As no Noise Limits are established for Educational or Industrial Receivers, the NSW Industrial Noise Policy (INP) amenity criterion have been applied to the Educational and Industrial receivers.

Table 3-6: Noise Limits for Industrial and Educational Receivers

Sensitive receiver	Indicative Noise Amenity Area	Timer Period*	Amenity Criteria ($L_{Aeq, \text{period}}$)
S1, S2	School/Classroom	Noisiest 1-hour period (when in use)	35 (internal) 45 (external)
I1, I2, I3	Industrial	When in use	70

3.3 Vibration Criteria

3.3.1 Disturbance to Buildings Occupants

Assessment of potential disturbance from operational vibration on human occupants of buildings is made in accordance with the guideline *Assessing Vibration: A Technical Guideline* (DECC, 2006). The guideline provides criteria which are based on the British Standard BS 6472-1992 'Guide to Evaluation of Human Exposure to Vibration in Buildings (1-80Hz)'.

BS6472-1992 nominates guideline values for various categories of disturbance, the most stringent of which are the levels of building vibration associated with a "low probability of adverse comment" from occupants.

BS 6472-1992 was amended in 2008 to extend the use of the Vibration Dose Values (VDV) to all types of vibration (i.e. continuous, impulsive and intermittent). The vibration dose value is dependent upon the level and duration of the short-term vibration event, as well as the number of events occurring during the daytime or night-time period.

The vibration dose values recommended in BS 6472-1992 for which various levels of adverse comment from occupants may be expected are presented in Table 3-7. These values are consistent with the requirements in *Assessing Vibration; a technical guideline* (DECC, 2006).

Table 3-7: Vibration Dose Value ranges which might result in various probabilities of adverse comment within buildings

Place and Time	Low probability of adverse comment (m/s ^{1.75})	Adverse comment possible (m/s ^{1.75})	Adverse comment probable (m/s ^{1.75})
Critical areas (day or night)	0.1 to 0.2	0.2 to 0.4	0.4 to 0.8
Residential buildings 16 hr day	0.2 to 0.4	0.4 to 0.8	0.8 to 1.6
Residential buildings 8 hr night	0.1 to 0.2	0.2 to 0.4	0.4 to 0.8
Offices, schools, educational institutions and places of worship (day or night)	0.4 to 0.8	0.8 to 1.6	1.6 to 2.4
Workshops (day or night)	0.8 to 1.6	1.6 to 3.2	3.2 to 6.4

3.3.2 Structural Damage to Buildings

Potential structural damage to buildings caused by vibration is typically managed by ensuring vibration induced into the structure does not exceed certain limits and standards.

For the MLP East Precinct, German Standard DIN 4150 – 2016 – *Structural vibration: Part 3: Effects of vibration on structures*, (DIN 4150-3) is used. DIN4150-3 suggests levels at which damage might occur. Damage is defined as any permanent effects of vibration that reduces the serviceability of a structure or one of its components.

Table 3-8 sets out the recommended limits from DIN4150 for short-term vibration to ensure minimal risk of damage.

Table 3-8: Vibration Guide Values - minimal risk of cosmetic damage (DIN 4150-3) - peak particle velocity

Guideline Values for Velocity – mm/s (peak component particle velocity)				
Type of Structure	At Foundation at a Frequency of:			Top Storey (Horizontal)
	1 to 10 Hz	10 to 50Hz	50 to 100 Hz ¹	All Frequencies
Buildings used for commercial purposes, industrial buildings, and buildings of similar design	20	20 to 40	40 to 50	40
Dwellings and buildings of similar design and/or occupancy ²	5	5 to 15	15 to 20	15
Structures that, because of their particular sensitivity to vibration, cannot be classified under lines 1 and 2 and are of great intrinsic value (eg. Listed buildings under preservation order)	3	3 to 8	8 to 10	8

Note 1: At frequencies above 100Hz, the values given in this column may be used as minimum values.

Note 2: Type of structure considered to be representative of a residential building.

For this MLP East Precinct, the guideline values taken at the foundation have been used because the buildings are typically low level. Furthermore, DIN 4150-3 states that exceeding these values does not necessarily result in structural damage. If the criteria are exceeded, investigation into the vibration levels will be undertaken, as required, by the Site SHEQ Manager/Advisor.

3.3.3 Structural Buried Pipework and Infrastructure

Table 3-9 provides guideline values for evaluating the effects of vibration on buried pipework and infrastructure. It is assumed that the pipes have been manufactured and laid using current technology; if this is not the case, special considerations will have to be made.

Table 3-9: Vibration Guide Values - minimal risk of cosmetic damage (DIN 4150-3) - peak component particle velocity – pipes and infrastructure

Pipe Material	Guideline Values for Velocity – mm/s (peak component particle velocity)
Pipes (including welded pipes)	100
Clay, concrete, reinforced concrete, pre-stressed concrete, metal (with and without flange).	80
Masonry, plastic	50

3.4 Environmental Impacts

3.4.1 Operational Hours

The MLP East Precinct will operate 24 hours a day, 7 days per week. Table 3-10 identifies the time periods associated with operational activities, in accordance with CoC B79 (SSD 7628). It is noted that these hours vary slightly from the original time periods identified in the noise reports prepared by Wilkinson Murray.

Table 3-10: Time Periods

Period	Hours
Day	The period from 7:00am to 6:00pm on Monday to Saturday, and 8:00am to 6:00pm on Sundays and Public Holidays
Evening	The period from 6:00pm to 10:00pm
Night	The period from 10:00pm to 7:00am on Monday to Saturday, and 10:00pm to 8:00am on Sundays and Public Holidays

3.4.2 IMEX Terminal Noise Sources

Table 3-11 provides a summary of the Sound Power Levels (SWL) of key noise sources identified for IMEX Terminal operations.

Table 3-11: Sound Power Levels for IMEX Terminal

Source	Sound Power Level at Octave Band Centre Frequency									Overall SWL (dBA)
	31.5	63	125	250	500	1k	2k	4k	8k	
Reach Stacker (diesel)	110	111	107	103	105	101	97	96	87	106
Truck – Idling	98	97	94	91	90	91	88	80	72	95
Truck – 10km/h	100	103	101	99	98	99	96	90	79	103
Locomotive – Idling	103	107	104	101	98	93	89	88	90	100
Locomotive – 10km/h	142	126	113	99	91	86	83	80	80	106
Locomotive Shifter	75	80	82	85	89	89	89	85	83	95

3.4.3 Warehousing Noise Sources

Additional noise sources associated with the warehouses comprise cars and trucks accessing the warehouses from outside the Facility, via the access roads, and a captive fleet of internal transfer trucks, used to transfer containers between the IMEX Terminal and the warehouses. The indicative SWL of the cars, warehouse trucks and the internal transfer trucks are presented in Table 3-12.

Table 3-12: Sound Power Levels for Warehousing

Source	Sound Power Level at Octave Band Centre Frequency									Overall SWL (dBA)
	31.5	63	125	250	500	1k	2k	4k	8k	
Reach Stackers (diesel)	110	11	107	203	205	101	97	96	87	106
Car – 40km/h	98	102	93	87	88	87	83	74	64	91
Truck – Idling	98	97	94	91	90	91	88	80	72	95
Truck – 10km/h	100	103	101	99	98	99	96	90	79	103
Truck – 40km/h	91	101	103	104	103	101	98	94	86	106

3.4.4 Rail Link Noise Sources

Freight trains associated with the Facility will typically be comprised of an 81 Class locomotive and a 600m long wagon rake. For a throughput of 250,000 TEU per annum, there will be 5 trains servicing the site per day, equalling 10 train movements per day. Train movements to and from the IMEX Terminal will be subject to a number of factors including availability of network rail lines and activities at both Port Botany and the IMEX Terminal.

81 Class locomotives are understood by Wilkinson Murray¹ to comply with the EPA Noise Limits for Locomotives contained within the NSW operational rail licences for operation of new or substantially modified locomotives operating on the NSW network.

Key noise impacts from trains include ‘squealing’ and ‘flanging’ noises from wagons negotiating tight curves which increase both L_{Aeq} and L_{Amax} noise levels at sensitive receivers. Conventional ‘curve gains’ have been included in the modelling of both L_{Aeq} and L_{Amax} noise levels. The curve gains are a function of curve radius as follows:

- +3 dBA where $300m \leq \text{curve radius} < 500m$
- +8 dBA where $\text{curve radius} < 300m$

The above curve gains were applied in the noise model for relevant sections of the Rail link in accordance with the curve radius specified in the track design. Rail noise predictions are made with and without the inclusion of curve gains.

The NORDIC rail prediction method was used to predict the L_{Aeq} and L_{Amax} noise levels from train movements, with appropriate source level corrections to represent intermodal locomotives and wagons. These corrections were based on analysis of measurement data in the Rail Noise Databases.

The predicted operational rail squeal noise impacts are discussed in Section 3.5.2.

3.4.5 Rail Noise Management Plan

Operational rail noise and mitigation measures will be covered under the following suite of documents:

- Draft Brake Squeal Report (SSD 6766 CoC F5)
- Functional Spec for Noise Monitoring System and Appendices identifying preferred monitoring locations (SSD 6766 CoC G7 and G7A)

¹ SIMTA Intermodal Terminal Facility - Stage 1 - Noise and Vibration Impact Assessment, Wilkinson Murray, May 2015

- Best Practice Wagon Report (SSD 6766 CoC G6b)
- Background Rail Noise Monitoring Report (SSD 6766 FCMM Condition 3C), as required, upon completion of the rail noise study.

To date, the above reports do not identify rail noise as being a significant impact during operations and as such, does not justify the preparation of a Rail Noise Management Plan (RNMP). A background rail noise study will be undertaken to establish the existing rail noise levels, in accordance with the NSW EPA Rail Infrastructure Noise Guideline 2013 (RING), to determine whether 'rail noise' may be a significant impact during operations. Should the results of the study identify rail noise as being a potentially significant impact, a RNMP will be developed for the operation stage.

3.5 Predicted Operational Noise Impacts

This section identifies the predicted operational noise impacts associated with the MLP East Precinct.

3.5.1 Road Noise Impact

As described above, light and heavy vehicles would enter and exit the MLP East Precinct on a 24/7 basis. It is estimated that there will be 4073 car movements per day and 1234 truck movements per day.

The most affected residential receivers to potential increases in road noise resulting from the development are those residents located immediately adjacent to the M5 Motorway and also on Moorebank Avenue, north of the M5 Interchange. No sensitive receivers are identified along Moorebank Avenue between the MLP East Precinct and the M5 Interchange.

It was confirmed through attended traffic noise measurements, conducted by Wilkinson Murray on 16 May 2016, that the existing levels of traffic noise along Moorebank Avenue, in the vicinity of the MLP East Precinct site are above the NSW Road Noise Policy (RNP) assessment levels. Therefore, the RNP recommends that any increase in traffic noise levels, at residential receivers, due to the Facility should not exceed 2 dBA.

Section 3.5.1.1 and Section 3.5.1.2 identify the predicted increases in road noise levels that were calculated by Wilkinson Murray in the MPE Stage 1 Noise and Vibration Impact Assessment, Report No. 12186-S1 Version D (2015) and MPE Stage 2 Noise and Vibration Impact Assessment, Report No. 12186-S2 Version C (2016).

3.5.1.1 Warehousing Traffic Noise Assessment

The predicted increases in road noise levels, due to the operation of the Warehouses, are shown in Table 3-13.

Table 3-13: Predicted increase in Road Noise Levels Due to Operation of the Warehouses

Location	Predicted Increase (dBA)	
	Day	Night
M5 Motorway – East of Moorebank Avenue	0.0	0.0
M5 Motorway – West of Moorebank Avenue	0.2	0.3
Moorebank Avenue – North of M5 Motorway	0.3	0.5
Anzac Road – East of Moorebank Avenue	0.1	0.1

Table 3-13 shows that increases in road noise levels along the M5 Motorway, Moorebank Avenue, and Anzac Road are considerably less than 2 dB. In accordance with the RNP, no mitigation of traffic noise levels, due to the operation of the Warehouses, was warranted.

3.5.1.2 IMEX Terminal Noise Assessment

The predicted increases in road noise levels, due to the operation of the IMEX Terminal, are shown in Table 3-14.

Table 3-14: Predicted Increase in Road Noise Levels Due to Operation of the IMEX Terminal

Location	Predicted Increase (dBA)	
	Day	Night
M5 Motorway – East of Moorebank Avenue	0.0	0.0
M5 Motorway – West of Moorebank Avenue	0.2	0.1
Moorebank Avenue – North of M5 Motorway	0.2	0.0
Moorebank Avenue – South of M5 Motorway	0.9	0.9

Table 3-14 shows that increases in road traffic noise levels along the M5 Motorway and along Moorebank Avenue north of the M5 interchange are considerably less than 2 dBA. In accordance with the RNP, no mitigation of traffic noise levels is warranted.

3.5.1.3 NSW Road Noise Policy

Section 2.3 of the NSW Road Noise Policy, 2011 (RNP), establishes the assessment criteria for residences to be applied to particular projects, road categories and land uses. Table 3-15 identifies the road category and assessment criteria for Moorebank Avenue.

Table 3-15: RNP Noise Assessment Criteria

Road Category	Type of Project / Land Use	Assessment Criteria (dBA) ¹	
		Day	Night
Freeway/ Arterial/ Sub-Arterial Roads	<ul style="list-style-type: none"> Existing residences affected by noise from redevelopment of existing freeway/arterial/sub-arterial roads Existing residences affected by additional traffic on existing freeways/arterial/sub-arterial roads generated by land use developments 	L _{Aeq} , (15 hour) 60 (external)	L _{Aeq} , (9 hour) 55 (external)

Section 5.8 of the RNP identifies a number of longer-term strategies to address road traffic noise, and these strategies and how they have been addressed are identified in Table 3-16.

Table 3-16: Longer Term Road Noise Strategies

Strategy	How Addressed
Developing hybrid and electric light and heavy vehicles with lower noise emissions	Refer to OTAMP Section 3.2.19
Improving the quality of public transport services and expanding public transport networks	Refer to Workplace Travel Plan (WTP) Section 5.4 Appendix A
Developing travel demand management measures	Refer to WTP Section 6.3 and Table 6-1 WT-6 to WT-13

Strategy	How Addressed
Expanding cycle and pedestrian facilities and increasing their attractiveness	Refer to WTP Section 5.2, Section 5.2 and Figure 5-1 Section 6.3 and Table 6-1 WT-2 to WT-5, WT-13
Reviewing parking policies to reduce the provision of parking	Refer to WTP Section 5.1 Section 6.3 and Table 6-1 WT-7

3.5.2 Rail Noise Impact

3.5.2.1 Rail Link

Table 3-17 and Table 3-18 present the predicted L_{Aeq} , night time and L_{Amax} noise levels respectively at the nearest sensitive receivers due to the operation of the Rail link, with and without curve gain corrections for rail squeal as noise emissions may sometimes increase at locations with small curve radii. The noise predictions include freight movements on the northern and southern connections to the SSFL.

Predictions of operational rail noise associated with train movements on the rail link between the SSFL and the IMEX have been undertaken within MPE Stage 2 Response to Submissions report².

Table 3-17: Predicted L_{Aeq} , night Rail Noise Levels

Receiver	Predicted Level (L_{Aeq} , night dBA)		Existing Rail Noise Levels (L_{Aeq} , night dBA)	Criteria (L_{Aeq} , night dBA) ³	Complies?
	Excluding Curve Gain	Including Curve Gain			
NCA 1	37	41	58 (30 Wallcliffe Ct) 49 (19 Wallcliffe Ct) 43 (14 Somercotes Ct)	If existing rail noise levels are 40 dBA or more, noise from rail link shall not increase existing noise levels by more than 2 dBA. A 40 dBA criterion applies if existing rail noise levels are less than 40 dBA.	Yes
NCA 2	29	32	No existing train noise		Yes
NCA 3	44	46	52 (88 Leacocks Ln) 52 (15 Slessor Rd)		Yes
NCA 4	39	44	Existing rail noise below ambient noise level of 50 dBA (11 Goodenough St)		Yes

² SIMTA Intermodal Terminal Facility - Stage 1 Response to Submissions -Noise and Vibration Addendum, Wilkinson Murray September 2015

³ The existing rail noise levels have been established through Renzo Tonin & Associates Report TJ741-04F03 Existing Levels of Rail Noise (r1) (Measurement of Existing Levels of Rail Noise (2018))

Table 3-18: Predicted L_{Amax} Rail Noise Levels

Receiver	Predicted Level (L_{Amax} dBA)		Existing Rail Noise Levels (L_{Amax} dBA)	Criteria (L_{Amax} dBA)	Complies?
	Excluding Curve Gain	Including Curve Gain			
NCA 1	57	64	85 (30 Wallcliffe Ct) 77 (19 Wallcliffe Ct) 69 (14 Somercotes Ct)	80	N/A
NCA 2	50	56	No existing train noise		N/A
NCA 3	66	70	85 (88 Leacocks Ln) 80 (15 Slessor Rd)		N/A
NCA 4	59	67	52 (11 Goodenough St)		N/A

Note: In the absence of numerical criteria in the Planning Approvals for train operations, 80 is nominated here based on the $L_{Amax,95\%}$ noise trigger for "new rail line" in RING.

Table 3-17 indicates that L_{Aeq} , night noise levels (including and excluding curve gain corrections), are predicted to comply with relevant criteria at all sensitive receivers.

Receivers within NCA3 in proximity to the Rail link are already subject to significant levels of rail noise from the existing network rail lines (SSFL and Main Southern Line). Consistent with the requirements of CoC G7B, noise level from rail traffic travelling to and from the development shall not increase existing rail traffic noise levels in NCA3 by more than 2 dBA. Based on the existing $L_{Aeq, night}$ noise level of 52 dBA at the nearest receivers in NCA3, the increase in existing rail traffic noise will be no more than 2 dBA if noise levels from rail traffic travelling to and from the development is less than 50 dBA. The predicted $L_{Aeq, night}$ noise level of up to 47 dBA (including curve gain corrections) complies with this requirement.

The predicted L_{Amax} noise levels due to the operation of the Rail link, as presented in Table 3-18, are predicted to comply with the established criteria. Train movements on the new rail link will not increase existing rail noise by more than 2 dB. In accordance with CoC G7B (SSD 6766) attended noise measurements will be undertaken at Glenfield Farm to evaluate if the noise increase is more than 2 dB (refer to Figure 3-1 and Section 4.1.3 for equivalent locations for monitoring if access is denied to Glenfield Farm). The existing rail noise levels at NCA 3 were 52 dBA during the night-time period, therefore the noise criterion for the new rail link is required to be no more than 50 dBA in NCA 3 so that increase in existing rail noise is not more than 2 dB. Notwithstanding, management measures and monitoring will be undertaken to minimise the impacts on residential receivers from rail noise. See Sections 3.5.8 and 4.1.

In accordance with SSD 6766 CoC G8, the application of friction modifying agents to rail tracks, use of bogies with low angle of attack and monitoring systems to measure noise and angle of attack for all trains accessing the IMEX Terminal can substantively reduce curve gains. The application of such treatments and appropriate mitigation measures will be discussed in the RNMP, should the rail noise study identify rail noise as having a potentially significant impact on sensitive receivers. Notwithstanding, management measures and monitoring will be undertaken to minimise the impacts on residential receivers from rail noise and these are outlined in Section 3.5.8 and Table 4-1.

3.5.3 Vibration

There are no anticipated vibration impacts associated with operation of the MLP East Precinct, however, in the event of any vibration related complaint or adverse comment from the community, vibration levels (as relevant) will be investigated and monitoring will be undertaken as described in Section 4.1.4. Exceedance of vibration management levels will be managed in accordance with Section 4.3.

3.5.4 Amenity

The predicted L_{Aeq} , period operational noise levels at nearby receivers due to operation of the MLP East Precinct are presented in Table 3-19. As the MPE Stage 1 (SSD 6766) and MPE Stage 2 (SSD 7628)

approvals do not stipulate noise criteria for educational and industrial receivers, the values from the INP are used herein.

It is noted that the predicted operational noise levels for amenity, intrusiveness and sleep disturbance include the proposed MPW Stage 2 noise wall, therefore the noise levels in Glenfield could be higher than the values presented in Table 3-19, Table 3-20 and Table 3-21. However, it is noted that a barrier formed of containers will be in use along the western boundary of the IMEX facility as detailed within the CNBMP (Appendix B).

Table 3-19: Predicted $L_{Aeq, period}$ Noise Levels - MLP East Precinct

Receiver	Predicted $L_{Aeq, period}$ Noise Level (dBA)				Criteria (dBA)			Complies?
	Day	Evening	Night ⁴		Day	Evening	Night	
			Calm	Adverse				
Wattle Grove	27	27	23	27	35	35	35	Yes
Wattle Grove North	<20	<20	<20	<20	35	35	35	Yes
Casula	27	27	27	32	35	35	35	Yes
Glenfield	22	22	22	27	35	35	35	Yes
S1	29	29	29	33	35 (internal, when in use) 45 (external, when in use)			Yes
S2	<20	<20	<20	<20	35 (internal, when in use) 45 (external, when in use)			Yes
I1	55	55	55	55	70 (external, when in use)			Yes
I2	44	44	37	38	70 (external, when in use)			Yes

3.5.5 Intrusiveness

The predicted L_{Aeq} , 15min operational noise levels at nearby receivers due to the MLP East Precinct are presented in Table 3-20.

Table 3-20: Predicted $L_{Aeq, 15min}$ Noise Levels - MLP East Precinct

Receiver	Predicted L _{Aeq, period} Noise Level (dBA)				Criteria (dBA)			Complies?
	Day	Evening	Night		Day	Evening	Night	
			Calm	Adverse				
Wattle Grove	29	29	28	32	35	35	35	Yes
Wattle Grove North	20	20	<20	23	35	35	35	Yes
Casula	31	31	31	35	35	35	35	Yes
Glenfield	20	20	20	25	35	35	35	Yes

⁴ The calm and adverse meteorological conditions are identified in Section 3.1.3

3.5.6 Sleep Disturbance Assessment

Transient noise events associated with the operation of the MLP East Precinct, with the potential to cause sleep disturbance include horns, tonal reversing alarms, pneumatic trailer brakes, and 'banging' noises associated with moving containers.

While the use of horns and tonal reversing alarms within the MLP East Precinct has been minimised through the design of the Facility, which directs vehicles to travel around the Facility in a forward direction, the occasional use of horns by trucks and other mobile equipment may be required under emergency situations. Due to the open access arrangement of the Facility, there is potential for tonal reversing alarms to occasionally be used. The L_{Amax} SWL of a tonal reversing alarm is up to 110 dBA.

Notwithstanding the above, the loudest L_{Amax} noise source, with potential to cause sleep disturbance impacts, is pneumatic trailer brakes on trucks. The L_{Amax} SWL of a truck trailer brake is up to 122 dBA.

The predicted L_{Amax} noise levels at nearby sensitive receivers are shown in Table 3-21, these are based on the Review of Operational Sleep Disturbance Impacts, Report No. 12186-SD, prepared by Wilkinson Murray May 2018.

Table 3-21: Predicted L_{Amax} Noise Levels at Sensitive Receivers

Receiver	Predicted L_{Amax} Noise Level (dBA)		Sleep Disturbance Screening level (dBA)	Complies?
	Calm	Adverse		
Wattle Grove	40	44	52	Yes
Wattle Grove North	24	28	51	Yes
Casula	36	41	47	Yes
Glenfield	29	34	50	Yes

Note: The sleep disturbance screening levels in this table are based on the values adopted in CoC F5A(a) of SSD 6766 and differ from the sleep disturbance screening levels in CoC B80 of SSD 7628.

For further information refer to the Review of Sleep Disturbance Impacts (Section 3.2.1).

3.5.7 Cumulative Operational Noise Assessment

This section presents the predicted cumulative noise levels from the operational MLP East Precinct and MPW Stage 2, and assesses them against the relevant amenity criteria.

The L_{Aeq} period noise levels at sensitive receivers due to the concurrent operation of the MLP East Precinct and the MPW Stage 2 site were predicted by combining the computer noise models developed for each operational Facility⁵. The predicted cumulative operational noise levels due to the operation of the cumulative scenario facilities are presented in Table 3-22.

Table 3-22: Predicted Cumulative Operational Noise Levels

Receiver	Predicted $L_{Aeq, period}$ Noise Level (dBA)				Criteria ⁶ (dBA)			Complies?
	Day	Evening	Night		Day	Evening	Night	
			Calm	Adverse				
Wattle Grove	27	27	25	29	35	35	35	Yes

⁵ Further information can be obtained from the MPE Stage 2 Noise and Vibration Impact Assessment, Wilkinson Murray, December 2016

⁶ As this section relates to cumulative impacts against MLP East Precinct and MPW Stage 2, it is not appropriate to use criteria relevant only in relation MPE Stage1 (i.e. from CoC F5B). For criteria to be applied during operations of MLP East Precinct, refer to Section 3.2.2

Receiver	Predicted L _{Aeq, period} Noise Level (dBA)				Criteria ⁶ (dBA)			Complies?
	Day	Evening	Night		Day	Evening	Night	
			Calm	Adverse				
Wattle Grove North	30	30	29	33	35	35	35	Yes
Casula	33	33	32	36	35	35	35	No, 1 dB exceedance ⁵
Glenfield	22	22	22	27	35	35	35	Yes
S1	29	29	29	34	45 (external, when in use)			Yes
S2	26	26	25	29	45 (external, when in use)			Yes
I1	56	56	56	57	70 (external, when in use)			Yes
I2	52	52	48	50	70 (external, when in use)			Yes

Predicted cumulative operational noise levels presented in Table 3-22 indicate that cumulative operational noise levels at sensitive receivers, due to the concurrent operation of the MLP East Precinct and MPW Stage 2 comply with the relevant amenity criteria, at all time of the day, except for Casula during adverse meteorological conditions.

3.5.8 Management Measures

This section describes the overall approach to managing and mitigating risks to noise impacts during Operation of the Facility. Management measures are summarised in Table 3-23. These measures are based on best practice and compliance matrices detailed in Section 2.2, as well as Qube's (Facility Delivery Company) requirements and standards, which include, but are not limited to the following:

- SHEMS-QH-02-PR-0013 Legislative and Regulatory Obligations Procedure
- SHEMS-QH-09-PR-0058 Consultation and Communication Procedure
- SHEMS-QH-PR-0022 Corrective and Preventive Action Procedure
- SHEMS-QH-13-PR-0126 Incident Reporting
- SHEMS-QH-05-PR-0025 Records Management Procedure
- SHEMS-QH-06-PR-0046 Environmental Aspects and Impacts Identification Procedure
- SHEMS-QH-01-PO-0000 Safety Health and Environment Policy.

Table 3-23: Noise Mitigation Measures

ID	Management Measure	Timing	Responsibility	Reference
MLP East Precinct				
NV-1	<p>A specific induction and relevant training will be provided to all staff, contractors, sub-contractors and rail operators with an emphasis on understanding and managing noise impacts from the operational activities being undertaken.</p> <p>This will include the location of noise sensitive receptors, specific mitigation measures, noise complaints procedure, as well as the consequences of not complying with these mitigation measures.</p>	Operations	<p>Site SHEQ Manager/ Advisor</p> <p>Area Managers:</p> <ul style="list-style-type: none"> • IMEX • Rail Link • Estate Manager <p>Rail operators All staff</p>	Best Practice
NV-2	Heavy Vehicles will use designated haulage routes, as identified in the OTAMP and Driver's Code of Conduct	Operations	Site SHEQ Manager/ Advisor	CoC B86 (SSD 7628)
NV-2B	A container noise barrier will be maintained along the western boundary of the IMEX Terminal, in accordance with the Container Noise Barrier Management Plan (CNBMP). In addition, if required under the NSW State planning approval process, a noise barrier will be constructed along the western boundary of the Project site.	Operations	Site SHEQ Manager/ Advisor	CoC F5 (SSD 6766)
NV-3	Heavy vehicles will minimise the use of compression braking, except as required in an emergency or by legislation	Operations	Site SHEQ Manager/ Advisor	CoC B86 (SSD 7628)
NV-4	Signage will be installed within the IMT to remind drivers of the anti-idling policy and their obligations	Operations	Site SHEQ Manager/ Advisor	FCMM 4.1B (MPE Stage 1)
NV-5	All vehicles and equipment will be well maintained in accordance with the manufacturer's specifications	Operations	Site SHEQ Manager/ Advisor	Best Practice
NV-6	The use of tonal alarms by heavy vehicles will be minimised except as required in an emergency or by legislation. Where possible, tonal alarms are to be replaced with more silent options, such as reversing cameras, non-tonal alarms etc.	Operations	Site SHEQ Manager/ Advisor	CoC B88 (SSD 7628)

ID	Management Measure	Timing	Responsibility	Reference
NV-6a	The drivers code of conduct will be adhered to and the use of tonal-reversing alarms (beepers) will be minimised as far as possible, except as required in an emergency situation or by legislation.	Operations	Site SHEQ Manager/ Advisor	CoC B88(b) (SSD 7628)
NV-6b	Training and awareness programs will be provided on implementation of the ONVMP and the CNBMP to minimise noise emissions including limiting the use of tonal reversing alarms	Operations	Site SHEQ Manager/ Advisor	CoC B88(b) (SSD 7628)
NV-7	Container handling equipment will be fitted with broadband 'quacker' reversing alarms	Operations	Site SHEQ Manager/ Advisor	FCMM 4.2A (MPE Stage 1)
NV-8	Unnecessary idling for vehicles will be avoided with engines turned off during periods of inactivity.	Operations	Site SHEQ Manager/ Advisor	FCMM 4.1B (MPE Stage 1)
NV-9	Continuous noise monitoring will be undertaken to confirm compliance with noise management levels at sensitive receivers. In the event of an exceedance, works will cease or reduce immediately at the direction of the Site HSEQ Manager/Advisor and an investigation will be undertaken to determine the sources and/or causes in accordance with Section 4.3 and Section 4.3.1 of this ONVMP.	Operations	Site SHEQ Manager/ Advisor	CoC B64 (SSD 7628)
NV-10	A vehicle booking system, truck marshalling lanes and rejection of trucks that arrive early will be implemented / provided to minimise truck idling and queuing.	Operations	Site SHEQ Manager/ Advisor	FCMM 4.1B (MPE Stage 1)
NV-11	In the event of any noise or vibration related complaint or adverse comment from the community, noise and vibration levels (as relevant) will be investigated. Remedial action will be implemented where the investigation finds that noise or vibration management levels are being exceeded. The procedures for managing complaints will be provided within the Construction Community Communication Strategy.	Operations	Site SHEQ Manager/ Advisor	CoC F4(f)(i) (SSD 6766)

ID	Management Measure	Timing	Responsibility	Reference
NV-11a	<p>Additional mitigation measures to reduce the impact of road noise on the receivers from the facility include:</p> <ul style="list-style-type: none"> Annual staff survey to identify the travel mode share, use and demand of facilities to assist with developing travel demand management measures Annual review of on-site parking policies to reduce the provision of parking <p>The effectiveness of these measures will be reported within the Annual Review required under CoC C10 of SSD 7628.</p>	Operation	Site SHEQ Manager/ Advisor	CoC B83(c) (SSD 7628) CoC B29 (SSD 7628) Workplace Travel Plan
IMEX Terminal and Rail Link				
NV-12	All vehicles, equipment and locomotives will be maintained in accordance with the manufacturer's specifications.	Operations	Site SHEQ Manager/ Advisor	Best Practice
NV-13	Unnecessary idling for locomotives will be avoided with engines turned off during periods of planned inactivity of 30 minutes or greater.	Operation	Site SHEQ Manager/ Advisor	FCMM 4.1B (MPE Stage 1)
NV-14	Automatic rail lubrication equipment will be installed in accordance with ASA Standard T HR TR 00111 ST Rail Lubrication and top of rail friction modifiers.	Operations	Site SHEQ Manager/ Advisor	CoC G8(a) (SSD 6766)
NV-15	The rail cross sectional profile will be maintained in accordance with ETN-01-02 Rail Grinding Manual for Plain Track and TfNSW Requirements to ensure the correct wheel /rail contact position and to encourage proper rolling stock steering.	Operations	Area Manager IMEX	CoC G8(b) (SSD 6766) FCMM 3D (MPE Stage 1)
NV-16	An electrified locomotive shifter will be installed and operated to reduce the need for excessive locomotive idling. Once a train has pulled in to the stop point, electrified locomotive shifter will be used to transfer locomotive to the required railroad so that it can connect to opposite end of wagon set. Electrified locomotive shifter will be used to enable idling down of locomotives and minimise noise production.	Commencement of operations	Site SHEQ Manager/ Advisor	FCMM 4.1B (MPE Stage 1)

ID	Management Measure	Timing	Responsibility	Reference
NV-17	Electric gantry cranes will be used to in place diesel-powered equipment.	Within seven years of commencement of operation or on the Facility achieving an annual throughput of 250,000 TEU (whichever is the latter)	Operations Manager Site SHEQ Manager/ Advisor	CoC B88(a) (SSD 7628)
NV-18a	All rolling stock servicing the Facility will be upgraded to comply with the Best Practice Review within 7 years of operation of the IMEX terminal.	Within seven years of commencement of operation	Site SHEQ Manager/ Advisor	CoC B88(a) (SSD 7628) CoC G6(a) (SSD 6766) Best Practice Review
NV-18b	The Best Practice Review for Wagons will be implemented.	Operations	Operations Manager Site SHEQ Manager/ Advisor	CoC G6(b) (SSD 6766) Best Practice Review - Wagons
NV-19	Noise efficiency of the operational plant/equipment will be assessed prior to selection, and where reasonable and feasible, equipment with the highest noise efficiency will be used during operation. An example of when it may not be reasonable of feasible is: <ul style="list-style-type: none"> Where the plant/equipment with highest noise efficiency is prohibitively more expensive than other equipment with disproportionately minimal improvement in noise efficiency 	Operations	Site SHEQ Manager/ Advisor	CoC B88(a) (SSD 7628) Best Practice Review
NV-20	Where feasible, electricity powered container handling equipment will be used instead of diesel equipment. An example of when it may not be reasonable of feasible is: <ul style="list-style-type: none"> Where the plant/equipment with highest noise efficiency is prohibitively more expensive than other equipment with disproportionately minimal improvement in noise efficiency 	Operations	Site SHEQ Manager/ Advisor	CoC B88(a) (SSD 7628)
NV-21	Friction modifiers will be installed to sections of the Rail link where rail curve squeal is likely to occur.	Operations	Site SHEQ Manager/ Advisor	FCMM 3B (MPE Stage 1)
NV-22	The noise management measures detailed in the Brake Squeal Report (see Section 4.2, Table 4-2) will be implemented.	Operations	Site SHEQ Manager/ Advisor	CoC F5(d) (SSD 6766) FCMM 3B (MPE Stage 1)

ID	Management Measure	Timing	Responsibility	Reference
NV-23	The noise management measures detailed in the Container Noise Barrier Management Plan (CNMBP, Appendix B) will be implemented.	Operations	Site SHEQ Manager/ Advisor	CoC F5A (SSD 6766)
NV-24	The noise management measures detailed in the Review of Sleep Disturbance Impacts will be implemented.	Operations	Site SHEQ Manager/ Advisor	CoC B81 (SSD 6766)
NV-25	The noise management measures detailed in the MPE Stage 1 Best Practice Review (Arcadis, 2017) will be implemented.	Operations	Site SHEQ Manager/ Advisor	CoC G6(a-b) (SSD 6766) Best Practice Review
NV-26	The noise management measures as detailed within the latest Best Practice Noise Mitigation Review (Section 4.2, Table 4-2) will be implemented.	Operations	Site SHEQ Manager/ Advisor	CoC B90 (SSD 7628) Best Practice Review
Community Notification				
NV-27	Facility updates will be posted on the website and newsletters will be distributed as required in accordance with the Operation Community Communication Strategy. Any newsletters distributed will also include Facility contact numbers, details of the Facility website and an email address to refer any complaints and enquiries.	Operations	Site SHEQ Manager/ Advisor	CoC B155 (SSD 7628) Operation Community Communication Strategy
NV-28	Prior to commencement of operation of the Facility, potentially affected neighbouring property owners and businesses will receive written notification regarding the commencement of operations at the Facility. The written notification will include the Facility contact numbers, details of the Facility website and an email address to refer any complaints and enquiries.	Operations	Site SHEQ Manager/ Advisor	CoC B155 (SSD 7628) Operation Community Communication Strategy

4 MONITORING AND REVIEW

4.1 Monitoring

Noise and vibration monitoring will be conducted as per the requirements of this ONVMP. Noise measurements will be undertaken consistent with the procedures documented in AS1055.1-1997 *Acoustics - Description and Measurement of Environmental Noise – General Procedures*. Vibration measurements will be undertaken in accordance with the procedures documented in the EPA's *Assessing Vibration - a technical guideline* (2006), DIN4150 *Structural Vibration – Part 3 Effects of Vibration on Structures* and BS7385 Part 2 *Evaluation and measurement for vibration in buildings*.

4.1.1 Summary of Monitoring Requirements

Noise and vibration monitoring will be conducted as per the requirement of this ONVMP and as prescribed by the CoCs. Continuous noise monitors will be installed prior to the commencement of operations to monitor noise levels to confirm compliance against the requirements of the CoCs. Monitoring requirements relevant to the ONVMP are summarised in Table 4-1.

Table 4-1: Monitoring Requirements

Monitoring Focus	Area/ Location	Frequency / Duration	Exceedance / Trigger	Response / Remedial Measures	Responsibility	Monitors to be used / Validation of impacts	CoC
IMEX Terminal and Rail Link							
Rail Noise Monitoring	Within 10m of Rail Line	<p>Continuous rail noise monitoring will be undertaken from the commencement of operations of the IMEX terminal. The monitoring system will capture the following information:</p> <ul style="list-style-type: none"> Noise from each train passby Time and date of each train passby Imagery or video recording to identify rolling stock $L_{AF(max)}$ and Sound Exposure Level (SEL) of individual train passbys, measured in accordance with ISO 3095:2013 	<p>Exceedance of noise management levels</p> <p>Noise trigger thresholds (alarm levels) will be established at the measurement location to identify outliers for further detailed investigation once operations commence and typical noise levels are established.</p>	<p>Notification to Site HSEQ Manager/Advisor</p> <p>An investigation will be undertaken to determine sources and/or causes of exceedance in accordance with Section 4.3 and Section 4.3.1 of this ONVMP. If a noise trigger threshold is exceeded the actions detailed in Section 4.3 and Section 4.3.1 will be implemented</p>	Site HSEQ Manager/ Advisor	<p>On-track monitors</p> <p>Validation:</p> <p>Predicted noise impacts identified in Table 3-17 and 3-18.</p>	CoC G7 (SSD 6766)

Monitoring Focus	Area/ Location	Frequency / Duration	Exceedance / Trigger	Response / Remedial Measures	Responsibility	Monitors to be used / Validation of impacts	CoC
		<ul style="list-style-type: none"> L_{Aeq}(15hour) and L_{Aeq}(9hour) noise levels for each 24-hour period, which will be calculated based on the number of train passbys during the day and night periods and the corresponding SEL noise levels, consistent with the procedure in Clause 3.4.1.1 of the <i>Rail Infrastructure Noise Guideline</i> (EPA, 2013). Other information as required by the Secretary 					
Wayside Angle of Attack Monitoring	Rail Link	<p>Continuous wayside angle of attack monitoring will be undertaken from the commencement of operations of the IMEX terminal. The monitoring system will capture the following information:</p> <ul style="list-style-type: none"> Angle of attack from a wheel on each axle of every train Time and date of each axle passby Identification number of each item of rolling stock 	Wagons wheels exceed the ASA standard angle of attack	<p>Refer to Wayside Angle of Attack Report for detail:</p> <p>Bogies in breach of the angle of attack requirements are required to be rectified by the train operator, or</p> <p>The operator must submit a plan to rectify the performance of the wagon to the satisfaction of the Lead Rolling Stock Engineer, Asset Standards Authority.</p>	Site HSEQ Manager/ Advisor	<p>On-track monitors</p> <p>Validation</p> <p>Predicted noise impacts identified in Table 3-17 and 3-18.</p>	CoC G7A (SSD 6766)
Night Time Rail Noise Monitoring	Glenfield Farm (or an equivalent location if access is denied) ⁷	Between 3 and 12 months, following the commencement of operations of the IMEX terminal, noise surveys will be conducted for a	A sustained increase in the total rail traffic noise level of more than 2dB(A) for more than 30% of	Within 12 months of Noise Survey Report, construct a noise barrier along the sections of rail link in	Site HSEQ Manager/ Advisor	Attended noise monitoring at Glenfield Farm	CoC G7B(a-d) (SSD 6766)

⁷ The *Functional and Performance Specification for Permanent Noise Monitor and Proposed Noise and Angle of Attack (AoA) Monitoring Locations* (Renzo Tonin, April 2019) provides a review of potential noise and AoA monitoring locations adjacent the rail link, and provides justification supporting the appropriateness of the preferred location. This has been prepared in accordance with the requirements of Condition G7 and G7A.

Note: An "equivalent location", as required by Condition G7B(a) will be selected at a representative location selected in accordance with the principles described in Australian Standard AS1055:2018 Acoustics - Description and Measurement of Environmental Noise and the Noise Policy for Industry (EPA, 2000).

Monitoring Focus	Area/ Location	Frequency / Duration	Exceedance / Trigger	Response / Remedial Measures	Responsibility	Monitors to be used / Validation of impacts	CoC
	<p>The following equivalent locations have been identified:</p> <ol style="list-style-type: none"> 90 Leacocks Lane, Casula Public Park to the north of Glenfield Farm 	<p>minimum of 12 contiguous days during the winter months of July, August or September.</p> <p>The noise survey will be conducted by a qualified and experienced acoustic engineer in accordance with the EPA's Rail Infrastructure Noise Guideline 2013 to determine:</p> <ul style="list-style-type: none"> The contribution of any new rail traffic travelling to and from the MLP East Precinct The increase in the total rail traffic noise level caused by any new rail traffic to and from the MLP East Precinct 	<p>nights surveyed against established baseline noise levels</p>	<p>accordance with the specifications provided by a qualified and experienced acoustic engineer, to ensure the increase in the total rail traffic noise level at Glenfield Farm caused by rail traffic to and from the development does not exceed 2dB(A). If a noise trigger threshold is exceeded the actions detailed in Section 4.3 and Section 4.3.1 will be implemented.</p>		<p>Validation</p> <p>Predicted noise impacts identified in Table 3-17 and 3-18.</p>	
Brake Squeal Noise	Rail Link/ Western Receivers	Continuous (unattended monitoring system) from the commencement of operations of the IMEX terminal	Exceedance of noise management levels	<p>Notification to Site HSEQ Manager/Advisor</p> <p>Rail traffic will reduce or cease and an investigation will be undertaken to determine sources and/or causes of exceedance in accordance with Section 4.3 and Section 4.3.1 of this ONVMP. If a noise trigger threshold is exceeded the actions detailed in Section 4.3 and Section 4.3.1 will be implemented.</p>	Site HSEQ Manager/ Advisor	<p>On-track monitors</p> <p>Validation</p> <p>Predicted noise impacts identified in Table 3-17 and 3-18.</p>	<p>CoC F5(d) (SSD 6766)</p> <p>FCMM 3B (MPE Stage 1)</p>
Container Noise Barrier Effectiveness	Container Stack/Western Receivers	Between 3 and 6 months after the commencement of operation of the IMEX terminal (3 separate nights for a period of not less than 2 hours whilst train wagons are being loaded with container)	Exceedance of noise management levels identified in the CNBMP	<p>Refer to CNBMP for detail: Works will cease or reduce, and an investigation will be undertaken to determine the</p>	Site HSEQ Manager/ Advisor	<p>Continuous and attended monitoring located at residential receivers</p>	CoC F5A (SSD 6766)

Monitoring Focus	Area/ Location	Frequency / Duration	Exceedance / Trigger	Response / Remedial Measures	Responsibility	Monitors to be used / Validation of impacts	CoC
		Monthly for 6 months after third measurement event (1 night per month for a period of not less than 2 hours whilst train wagons are being loaded containers)		sources and/or causes of exceedance. If a noise trigger threshold is exceeded the actions detailed in Section 4.3 and Section 4.3.1 will be implemented.		Validation Predicted noise impacts identified in Table 3-19.	
Effectiveness of Friction Modifiers	Rail Link	First 3 months of operation of the IMEX terminal	Exceedance of noise management levels during short-term noise monitoring or at the rail noise monitoring system location identified in the Wayside Angle of Attack Report (see Section 4.2, Table 4-2)	Investigate whether friction modifiers are operating effectively. Review Angle of Attack results. Refer to Wayside Angle of Attack Report (Section 4.2, Table 4-2). If curve squeal noise is still found to be excessive after other measures have been investigated, and noise monitoring results at Glenfield Farm show that noise from the rail link have increased existing noise levels by more than 2 dB for more than 30% of nights surveyed, then CoC G7B(a-d) (SSD 6766) will be triggered and a noise barrier adjacent the rail link will be designed and constructed to prevent noise levels exceeding 2 dB on background.	Site HSEQ Manager/ Advisor	Attended noise monitoring at Glenfield Farm and Angle of Attack monitoring system Validation Predicted noise impacts identified in Table 3-17 and 3-18.	FCMM 3B (SSD 6766)

Monitoring Focus	Area/ Location	Frequency / Duration	Exceedance / Trigger	Response / Remedial Measures	Responsibility	Monitors to be used / Validation of impacts	CoC
MLP East Precinct							
Operational Noise Monitoring	All nominated receivers (reference)	<p>Noise monitoring to compare actual noise performance of the MLP East Precinct against the noise management levels will be undertaken as follows:</p> <ul style="list-style-type: none"> Regular performance monitoring Within 12 months of the commencement of operation of the IMEX terminal and Warehouse 1 Precinct. Within 12 months of occupation of the first warehouse, 50% occupation of the site and 100% occupation of the site, or as otherwise agreed by the Secretary For a minimum of 12 months following occupation of the entire site 	Exceedance of noise management levels identified in Table 3-4, Table 3-5 and Table 3-6	<p>Notification to Site HSEQ Manager/ Advisor</p> <p>Works will reduce or cease, and an investigation will be undertaken to determine sources and/or causes in accordance with Section 4.3 and Section 4.3.1 of this ONVMP. If a noise trigger threshold is exceeded the actions detailed in Section 4.3 and Section 4.3.1 will be implemented.</p>	Site HSEQ Manager/ Advisor	<p>Continuous and attended monitoring located at residential receivers</p> <p>Validation</p> <p>Predicted impacts identified in Table 3-19, Table 3-20, Table 3-21, Table 3-22.</p>	<p>CoC F4(f)(i) (SSD 6766)</p> <p>CoC G15 (SSD 6766)</p> <p>CoC B64 (SSD 7628)</p> <p>CoC B86 (SSD 7628)</p> <p>FCMM 2E (MPE Stage 2)</p> <p>CoC B80 (SSD 7628)</p> <p>CoC F5B (SSD 6766)</p>
Operational Noise Monitoring	All nominated receivers (reference) and complainant address	Attended noise monitoring will be undertaken to determine compliance against the noise management levels upon receipt of a noise complaint	Exceedance of noise management levels identified in Table 3-4, Table 3-5 and Table 3-6	<p>Notification to Site HSEQ Manager/ Advisor</p> <p>Works will reduce or cease, and an investigation will be undertaken to determine sources and/or causes in accordance with Section 4.3 and Section 4.3.1 of this ONVMP. If a noise trigger threshold is exceeded the actions detailed in Section 4.3 and Section 4.3.1 will be implemented.</p>	<p>Site HSEQ Manager/ Advisor</p> <p>Noise consultant (if required)</p>	<p>Attended monitoring</p> <p>Validation</p> <p>Predicted impacts identified in Table 3-19, Table 3-20, Table 3-21, Table 3-22.</p>	<p>CoC F4(f)(i) (SSD 6766)</p> <p>CoC B80 (SSD 7628)</p> <p>CoC F5B (SSD 6766)</p>

Monitoring Focus	Area/ Location	Frequency / Duration	Exceedance / Trigger	Response / Remedial Measures	Responsibility	Monitors to be used / Validation of impacts	CoC
Noise Assessment of Mechanical Plant	Each warehouse	Conducted for the freight village and each warehouse for a period of 1 week after construction and submitted to secretary within 2 weeks of occupation Compliance against the noise management levels	Exceedance of noise management levels identified in Table 3-4, Table 3-5 and Table 3-6	Notification to Warehouse Manager and Site HSEQ Manager/ Advisor Works will reduce or cease, and an investigation will be undertaken to determine sources and/or causes in accordance with Section 4.3 and Section 4.3.1 of this ONVMP. If a noise trigger threshold is exceeded the actions detailed in Section 4.3 and Section 4.3.1 will be implemented.	Site HSEQ Manager/ Advisor Warehouse Manager	Attended noise monitoring within each warehouse Validation Predicted impacts identified in Table 3-19, Table 3-20, Table 3-21, Table 3-22.	CoC B85 (SSD 7628) CoC B80 (SSD 7628) CoC F5B (SSD 6766)

It should be noted that further monitoring outside this schedule may be required in response to complaints. Such monitoring will be coordinated by the Site HSEQ Manager/Advisor, who is also responsible for implementing any remedial actions.

4.1.2 Continuous Unattended Noise Monitoring

Continuous noise monitoring will be undertaken at the monitoring locations identified in Figure 3-1. Exceedances during operations will be reviewed as soon as feasible by the Site SHEQ Manager/Advisor, to determine their source and whether they are attributable to operational activities. Where required, the applicable mitigation measures, as identified in the suite of noise management plans, will be implemented. Meteorological conditions (average and maximum wind speeds, temperature, precipitation and cloud cover etc.) will also be noted during a review of any exceedances. It is noted that the noise monitors associated with the Angle of Attack capture weather conditions during each train pass-by.

Continuous noise monitoring will be conducted at the following locations⁸:

- CM1: 26 Woodlake Court, Wattle Grove
- CM2: 22 Glenelg Court, Wattle Grove North
- CM3: 14 Dunmore Crescent, Casula
- CM4: 26 Goodenough Street, Glenfield

Continuous noise monitoring will be undertaken for twelve months following the occupation of the entire site in accordance with CoC B64 (SSD 7628).

4.1.3 Attended Monitoring

The attended measurements will typically be conducted at the potentially most affected receivers in each NCA, as follows upon receipt of a complaint, and at the address of the complainant:

- AM1: 16 Corryton Court, Wattle Grove
- AM2: 22 Glenelg Court, Wattle grove
- AM3: 11 Buckland Road, Casula
- AM4: 26 Goodenough Street, Glenfield
- Glenfield Farm: 88 Leacocks Lane, Casula (Equivalent locations have been identified as: 1. 90 Leacocks Lane, Casula; or 2. Public Park to the north of Glenfield Farm – refer to Figure 3-1)

In addition to the locations above, attended noise measurements will be conducted at an additional location in NCA3, at the corner of Blackwood Avenue and Canberra Avenue, Casula. This location has been added to account for the potential for complex topography to influence operational noise impacts in NCA3.

In the event that access is impeded to the above locations, an equivalent location will be sought nearby, to conduct the attended noise monitoring.

4.1.3.1 Attended Noise Monitoring Methodology

Noise monitoring will ensure the $L_{Aeq, 15min}$ and $L_{A90, 15min}$ and L_{Amax} parameters are recorded as a minimum. Where possible, the Facility noise level contribution ($L_{Aeq, 15min}$) will be determined in the absence of any influential source not associated with operations of the Facility for direct comparison to the relevant criteria. The L_{Amax} , L_{A90} , L_{A1} and L_{A10} parameters will be recorded for each measurement with the $L_{A1, 1minute}$ parameter measured directly or calculated where possible and if applicable.

The noise measurement sample height will be 1.5 m above ground level. The duration of each community noise measurement sample will be 15 minutes. All measurements will be completed with the sound level meter mounted to a tripod and with a windscreen fitted. The microphone will be oriented in the direction of

⁸ It is noted that installation of the continuous noise monitors at the locations used for baseline monitoring was not possible as permission was not received by residents to install monitors within their premises. However, locations as close as possible to these receivers have been utilised. Notwithstanding, the baseline locations will be monitored during attended monitoring as detailed in Section 4.1.3.

the noise source being tested. No noise monitoring will be completed during periods where wind speeds exceed 5 m/s or when raining.

Measurements of industrial noise will be made at the monitoring locations identified in Section 4.1.3. Measurements of rail noise will be facade-reflected levels (if free-field noise measurements are undertaken, 2.5 dB will be added to the free-field noise results).

If noise monitoring identifies that predicted noise levels are being exceeded, the acoustic consultant will revisit management measures/practices/sequencing etc. to reduce noise levels, minimise impacts and to enable provision of information on noise levels to surrounding and potentially affected residents should this be required (i.e. on request or following a complaint).

Noise monitors will be manually calibrated prior to the commencement of each round of attended monitoring. Laboratory calibration will be undertaken as per the manufacturer's specifications.

4.1.4 Vibration Monitoring

Vibration monitoring will be conducted in response to vibration related complaints. Such monitoring will be undertaken as soon as feasible following the complaint and will be coordinated by the Site HSEQ Manager/Advisor, who is also responsible for implementing any remedial actions. Vibration monitoring will be conducted by a suitably qualified vibration expert.

4.2 Reporting

Reporting requirements for monitoring, auditing and as required in the CoCs will be undertaken in accordance with the overarching OEMP [PREC-QPMS-EN-APP-00001]. Reporting requirements applicable to this ONVMP are summarised in Table 4-2.

In addition to the reports listed in Table 4-2, an Annual Review, required under CoC C10 SSD 7628, will be prepared, which will outline the environmental performance of the Facility, including the effectiveness of mitigation measures, and will be submitted to the Secretary and EPA annually for the duration of operation.

Table 4-2: Environmental Reporting Requirements

Requirement	Area/Location	Timeframe	Reporting Requirements	Responsibility	CoC
IMEX Terminal and Rail Link					
Rail Noise Monitoring System Reporting	Rail Link	<ul style="list-style-type: none"> Published within 24 hours on SIMTA Website Annually, from the commencement of operations of the IMEX terminal to and including 2031 	<ul style="list-style-type: none"> The noise results will be publicly accessible from the SIMTA Website within 24 hours of a train passing the noise monitors, unless unforeseen circumstances (i.e a system malfunction) have occurred. The $L_{Aeq}(15hr)$ and $L_{Aeq}(9hr)$ results from each day will be available on the website within 24 hours of the period ending. An annual report will be submitted to the Secretary from the commencement of operations of the IMEX terminal to and including 2031 The Secretary shall consider the need for further reporting following a review of the year 10 results. 	Site SHEQ Manager/ Advisor	CoC G7 (SSD 6766)
Wayside Angle of Attack Reporting	Rail Link	<ul style="list-style-type: none"> Accessible by train operators on the website within 24 hours on SIMTA Website Six-monthly report 	<ul style="list-style-type: none"> The results from the wayside angle of attack monitoring system will be accessible by train operators from the SIMTA Website within 24 hours of the train passing the monitor, unless unforeseen circumstances (i.e. a monitoring system malfunction) have occurred. A six-monthly report will be submitted to the Secretary. The report will identify the number of wagons with wheels that exceed the ASA standard angle of attack, and the action taken by operators to improve steering performance. The report will also include a full copy in an electronic format of all captured data for the previous six months. 	Site SHEQ Manager/ Advisor	CoC G7A (SSD 6766)

Requirement	Area/Location	Timeframe	Reporting Requirements	Responsibility	CoC
Night Time Rail Noise Monitoring Report	<p>Glenfield Farm (or an equivalent location if access is denied)</p> <p>The following equivalent locations have been identified:</p> <ol style="list-style-type: none"> 90 Leacocks Lane, Casula Public Park to the north of Glenfield Farm 	Following completion of noise survey	A report of the noise survey including the results and recommendations will be provided to the Secretary.	Site SHEQ Manager/ Advisor	CoC G7B(e) (SSD 6766)
Container Noise Barrier Report	IMEX Terminal	For 12 months following the commencement of operations of the IMEX terminal	<ul style="list-style-type: none"> Between 3 and 6 months after commencement of operations Monthly for 6 months after first measurement event. 	Site SHEQ Manager/ Advisor	CoC F5A (SSD 6766)
Best Practice Progress Review for Noise and Emission Technologies for Locomotives	Rail link	Annually for up to 7 years from commencement of operation	An annual report for the Best Practice Progress review will be prepared and submitted to the Secretary, where required in consultation with TfNSW and the EPA.	Site SHEQ Manager/ Advisor	CoC G6(a) (SSD 6766)
Best Practice Review for noise technologies for wagons	Rail link	Annually for up to 7 years from commencement of operation	An annual report for the Best Practice Progress review will be prepared and submitted to the Secretary, where required in consultation with TfNSW and the EPA.	Site SHEQ Manager/ Advisor	CoC G6(b) (SSD 6766)
Effectiveness of Friction Modifiers	Rail Link	First 3 months of operations	<p>A friction modifier report will, at a minimum, include the following information:</p> <ul style="list-style-type: none"> The extent of use of friction modifiers 	Site SHEQ Manager/ Advisor	FCMM 3B

Requirement	Area/Location	Timeframe	Reporting Requirements	Responsibility	CoC
			<ul style="list-style-type: none"> Short-term monitoring results undertaken during the first 3 months of operation. 		
Brake Squeal Noise Report	Rail Link	Prior to the commencement of operations	<p>Brake Squeal Reports will, at a minimum, include the following information:</p> <ul style="list-style-type: none"> The extent of brake squeal across the fleet of rail vehicles that frequently use the terminals This will identify the number of occurrences of brake squeal, the typical noise levels associated with brake squeal (including the frequency content) The operational conditions under which brake squeal occurs (e.g. under light braking, hard braking, low / medium / high speed, effects of temperature and weather, etc.) The root cause of brake squeal, including the influence of the design, set-up and maintenance of both brake shoes and brake rigging Possible solutions to mitigate or eliminate brake squeal, including modifications to brake rigging and alternative brake shoe designs and compounds. 	Site SHEQ Manager/ Advisor	CoC F5 (SSD 6766)
MLP East Precinct					
Operational Noise Monitoring Report	MLP East Precinct	<ul style="list-style-type: none"> An annual report will be prepared within 12 months of the commencement of operations until 2031. Within 12 months of occupation of the first warehouse, 50% occupation of the site and 100% occupation of the 	<p>Operational Noise Monitoring Reports will, at a minimum, include the following information:</p> <ul style="list-style-type: none"> Methodology, location and frequency of noise monitoring undertaken, including monitoring locations at which the noise levels are ascertained, with specific reference to locations indicative of impacts on sensitive receivers 	Site SHEQ Manager/ Advisor Qualified Acoustic Consultant	<p>CoC G15 (SSD 6766)</p> <p>CoC B86 (SSD 7628)</p> <p>FCMM 2E (MPE Stage 2)</p>

Requirement	Area/Location	Timeframe	Reporting Requirements	Responsibility	CoC
		<p>site, or as otherwise agreed by the Secretary.</p> <ul style="list-style-type: none"> The Operational Noise Monitoring Reports will be submitted to the Secretary and the EPA within 60 days of completing the noise monitoring 	<ul style="list-style-type: none"> Any required recalibrations of the noise model taking into consideration factors such as actual traffic numbers and heavy vehicle proportions An assessment of compliance against the predicted operational NMLs An assessment of sleep disturbance impacts against the predicted sleep disturbance limits Identification of any additional feasible and reasonable measures to those predicted in the SSD 6766 and SSD 7628 EIS documents, that would be implemented with the objective of meeting the criteria outlined in the NSW Road Noise Policy (EPA, 2011), when these measures would be implemented and how their effectiveness would be measured and reported to the Secretary and the EPA. Validation by predictive modelling of the operational noise levels in terms of criteria and noise goals established in the NSW RNP (EPA, 2011) Impacts associated with annoying characteristics such as prominent tonal components, impulsiveness, intermittency, irregularity and dominant low-frequency content Assessment of the performance and effectiveness of applied noise mitigation measures together with a review and, if trigger thresholds have been exceeded during the reporting period, assessment of alternative/additional mitigation measures Details of any complaints and enquiries received in relation to operational noise generated by the MLP East Precinct between the date of commencement of operation and the date the report was prepared. 		

Requirement	Area/Location	Timeframe	Reporting Requirements	Responsibility	CoC
Best Practice Noise Mitigation Review	MLP East Precinct	Annually	<ul style="list-style-type: none"> A Best Practice Noise Mitigation Review will be prepared to report on additional measures and methods that have been investigated and/or implemented to reduce operational noise generated by the facility, including maximum noise levels that may result in sleep disturbance and road noise abatement measures as outlined in Table 3-16 and the Workplace Travel Plan. 	Site SHEQ Manager/ Advisor	CoC B90(c) (SSD 7628)
Monitoring Report for Mechanical Plant	Each Warehouse and Freight Village	Within two months of occupation of each warehouse	<ul style="list-style-type: none"> A Monitoring Report for Mechanical Plant will be submitted to the Secretary on noise monitoring of mechanical plant and other noisy equipment for a minimum period of one week where valid data is collected. 	Site SHEQ Manager/ Advisor	CoC B85 (SSD 7628)

4.3 Exceedances of Noise and Vibration Management Levels

In the event of an exceedance of the noise management levels, the following actions will be undertaken in the order in which they are listed:

- Works/rail traffic will cease or reduce immediately at the direction of the Site HSEQ Manager/Advisor
- Plant and machinery exhaust/fittings/noise attenuators etc will be inspected and verified for noise levels
- Noise monitors will be assessed by suitably qualified persons to confirm they are operating within manufacturer specifications
- Limited work/rail operations to resume and additional monitoring undertaken to verify noise or vibration levels.

During operations, noise impacts associated with operations and construction will be difficult to isolate, as such, any exceedances of noise and vibration criteria while construction works are occurring will be assessed against the construction noise and vibration criteria to confirm compliance. As described in Section 3.2, The most stringent criteria based on the activity being undertaken at the time of the noise complaint or exceedance will be adopted for the assessment.

4.3.1 Contingency Measures

In the event that the above responses are not sufficient to resolve the detected exceedance of noise or vibration management levels, the following corrective measures will be implemented:

- an investigation will be undertaken to determine the sources and/or causes of exceedance of the noise or vibration management levels
- a specialist noise and vibration consultant will be engaged to identify feasible options to mitigate exceedance of the noise or vibration management levels. Options available at the time of this ONVMP include:
 - use of alternative plant with lower noise emissions;
 - reduced work/rail operations that meet the noise or vibration management levels
 - re-calibration of noise models and/or updates to and re-approval of this ONVMP, as necessary
 - any other mitigation recommended by the noise and vibration consultant.

Following this, work/rail operations will resume and monitoring continued to demonstrate whether or not noise or vibration management levels are exceeded.

4.4 Review and Improvement

Review and improvement (including updates) of this ONVMP will be undertaken in accordance with the CoCs and Section 6.2 of the OEMP [PREC-QPMS-EN-APP-00001]. Continuous improvement will be achieved by the ongoing evaluation of environmental management performance and effectiveness of this ONVMP against environmental policies, objectives and targets, timely review of the ONVMP and review/re-approval under the EP&A Act and EPBC Act.

A copy of the revised and re-approved ONVMP and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure, as outlined in Section 1.4.1 of the OEMP.

4.5 Incidents

All noise and vibration incidents are to be reported and managed in accordance with Qube's Incident Reporting and Management Procedure (SHEMS-QM-13-PR-0126). Incidents are classified based on the incident's severity as shown in Section 4.6 of the OEMP [PREC-QPMS-EN-APP-00001].

All incidents will be managed and reported according to Section 4.6 of the OEMP.

4.6 Complaints

All noise and vibration complaints will be handled in accordance with Section 4.5.1 of the OEMP and the Community Communication Strategy (CCS).

4.7 Non-Compliance, Non-Conformances and Corrective Actions

Non-compliance, non-conformances and resulting corrective actions are to be managed in accordance with Section 6.4 of the OEMP.



APPENDIX A EVIDENCE OF CONSULTATION

Operational Noise and Vibration Management Plan (Revision 002 dated 30 April 2019)

Status of comments from LCC

Stakeholder	Comment Date	Stakeholder Comment	Arcadis Response	Response Date
LCC	21/06/2019	<p>Typographical errors noted in the ONVMP include:</p> <ul style="list-style-type: none"> Section 2.1 (p. 8) of the ONVMP contains multiple references to the 'Assessing Vibration: A Technical Guideline (DECC, 2006)'; 	Extra reference to 'Assessing Vibration: A Technical Guideline (DECC, 2006)' has been removed.	25/06/19
LCC	21/06/2019	<ul style="list-style-type: none"> Table 3-16 (p. 31) of the ONVMP refers to 'Longer Term Road Noise Strategies' instead of 'Longer Term Road Noise Strategies'; 	The title has been corrected to "Longer Term Road <u>Noise</u> Strategies"	25/06/19
LCC	21/06/2019	<ul style="list-style-type: none"> Table 3-23 (p. 37) of the ONVMP refers to 'compression breaking' instead of 'compression braking'; and 	'compression breaking' has been updated to 'compression <u>braking</u> '; and	25/06/19
LCC	21/06/2019	<ul style="list-style-type: none"> The Reference Column in Table 3-23 (p. 37) of the ONVMP refers to SSB 7628 instead of SSD 7628. <p>It is requested that the consultants review the ONVMP to ensure that all typographical errors are rectified.</p>	All reference to SSB have been updated to <u>SSD</u>	25/06/19
LCC	21/06/2019	<p><u>Tonal alarms</u></p> <p>Table 3-23 (ID NV-6) of the ONVMP stipulates that 'the use of tonal alarms by heavy vehicles is to be minimised except as required in an emergency or by legislation. Where possible, tonal alarms are to be replaced with more silent options, such as reversing cameras, non-tonal alarms etc'.</p> <p>Condition B88 of SDD 7628 requires best practice plant and the preparation of a risk assessment to determine if non-tonal reversing alarms can be fitted as a condition of site entry. Whilst it is acknowledged that the design of the facility will direct vehicles to travel in a forward direction, it is likely that operation of the Intermodal will not preclude reversing vehicles. Further consideration must be given to the implementation of appropriate best practice alternatives to tonal alarms and the regulation of their use on-site.</p>	<p>In the OTAMP and the drivers code of conduct, it is stated that the use of tonal-reversing alarms (beepers) must be minimised as far as possible, except as required in an emergency situation or by legislation. The plan requires that where possible tonal alarms (beeps) should be replaced by quieter options (squawk).</p> <p>Training and awareness programs will also be provided on implementation of the ONVMP and the CBNMP i.e. to minimise the use of tonal reversing.</p> <p>Two new measures have been included in Table 3-23 (NV-6a-b) referring to the Drivers Code of Conduct and training and awareness.</p>	25/06/19

Stakeholder	Comment Date	Stakeholder Comment	Arcadis Response	Response Date
LCC	21/06/2019	<p><u>Noise Monitoring</u></p> <p>Table 3-23 of the ONVMP (p. 41) indicates that noise monitoring will be undertaken to compare actual noise performance of the MLP East Precinct against the noise management levels for a minimum of twelve months following occupation of the entire site.</p> <p>Condition F4 of SSD 6766 required the Operation Environmental Management Plan to include measures for regular performance monitoring of noise generated by the project and measures to proactively respond to and deal with noise complaints.</p> <p>Council's Environmental Health Section believes that noise monitoring shall be undertaken for the entire duration of the site's operation. The implementation of a comprehensive noise monitoring program covering the entire operational phase of the Project would assist in measuring ongoing compliance. As outlined within our earlier submission regarding the Operational Air Quality Management Plan, the Environmental Health Section supports comprehensive monitoring initiatives during the operational phase of the development to encourage environmental best practice and facilitate adherence with the Approval.</p>	<p>A programme for comprehensive noise monitoring has been devised and is summarised in Section 4.1, particularly Table 4-1.</p> <p>Noise monitoring has been divided into on-track monitoring (throughout operations), continuous noise monitoring for up to 12 months following occupation of the entire site as required by CoC B64 (SSD 7628) and attended monitoring which will be undertaken to upon receipt of a complaint which enables compliance with CoC F4(f)(i) under SSD 6766.</p> <p>Continuous monitors have been installed within the property of residential receivers however due to the sensitive nature of having these on residential properties they will not be able to be operated for the life of the project. However, as nominated in Table 4-1 and Section 4.1.3, attended monitoring will be undertaken to determine compliance during operations upon receipt of complaints. Notwithstanding, regular monitoring throughout operations is also being undertaken with the on-track monitors which are permanently installed.</p> <p>Section 4.1.2, Section 4.1.3 and Table 4-1 have been updated to include this statement.</p> <p><u>LCC Comment</u></p> <p><i>LCC internal team outlined that there were still concerns about the duration of the proposed noise monitoring program. Regardless, the DPIE will need to be satisfied that the proposed monitoring program satisfies the conditions of consent.</i></p>	<p>25/06/19</p> <p>4/7/2019</p>

Stakeholder	Comment Date	Stakeholder Comment	Arcadis Response	Response Date
LCC	21/06/2019	<p><u>Reporting</u></p> <p>Table 4-2 of the ONVMP (p. 45) indicates that Operational Noise Monitoring Reports will be submitted to the Secretary and NSW EPA within 60 days of completing the noise monitoring as per the conditions of consent. The NSW EPA has been reluctant to provide feedback in relation to the Operational Management Plans and regulate non-scheduled construction and operational activities at the facility. Therefore, it is unclear whether the NSW EPA will review the Operational Noise Monitoring Reports once received.</p> <p>The Department of Planning and Environment will have primary responsibility for assessing compliance with the approval during the construction and operational phases of the project. Therefore, it is believed that the Operational Noise Monitoring Reports must be submitted to the Department of Planning and Environment as they are equipped with the appropriate skills, knowledge and enforcement powers to regulate the proposed development.</p>	<p>Agreed. The Operational Noise Monitoring Reports will be submitted to both DPIE and the EPA within 60 days of completing the operational noise monitoring in accordance with SSD 7628 Condition B87.</p>	25/06/19

Status of comments from TfNSW

Stakeholder	Comment Date	Stakeholder Comment	Arcadis Response	Response Date
TfNSW	11/07/2019	Measure NV-13 in Table 3-23 (page 39) commits to switching off idling locomotives “during periods of inactivity”. Details in relation to “period of inactivity” are to be included in the Plan;	NV-13 has been updated to detail the requirement to shut down locomotives when the planned inactivity period is 30 minutes or greater.	06/08/2019
TfNSW	11/07/2019	Measure NV-16 in Table 3-23 (page 39) commits to installing an electrified locomotive shifter to reduce the need for excessive locomotive idling. Details of the procedure that is to be put in place for using this electrified shifter are to be included in the Plan; and	<p>The general procedure for the loco shifter is as follows:</p> <ul style="list-style-type: none"> • Train pulls in to stop point • Loco detaches from wagon sets • Loco pulls on to shifter • Shifter moves to required railroad • Loco heads out of terminal to connect on to opposite end of wagon sets • Train departs the terminal. <p>NV-16 has been updated to reflect the following: “An electrified locomotive shifter will be installed to reduce the need for excessive locomotive idling. Once train has pulled in to stop point, electrified locomotive shifter will be used to transfer locomotive to the required railroad so that it can connect to opposite end of wagon set. Electrified locomotive shifter should be used to enable idling down of locomotives and minimise noise production where possible.”</p>	06/08/2019
TfNSW	11/07/2019	Measure NV-18 in Table 3-23 (page 40) commits to all rolling stock being upgraded to comply with best practice within 7 years of IMEX operation. It is noted that measure NV-18 only refers to Condition G6(a) which requires best-practice locomotives. It is recommended	New measure, NV-18(b) included which states that the commitments made in the Best Practice Report – Wagons, must be implemented.	06/08/2019



Stakeholder	Comment Date	Stakeholder Comment	Arcadis Response	Response Date
		that NV-18 also refers to condition G6(b) which requires best-practice wagons.		



APPENDIX B CONTAINER NOISE BARRIER MANAGEMENT PLAN

CONTAINER NOISE BARRIER MANAGEMENT PLAN

Moorebank Logistics Park – East Precinct

27 MARCH 2020

Moorebank Logistics Park – East Precinct

Author

██████████

[REDACTED]

██████████

██████████

□ □ □ □ □

PREC-QPMS-EN-PLN-0004

27/03/2020

006

Author/Reviewer Details	Qualifications and Experience
<p>█████ Patel</p> <p>Arcadis</p> <p>Level 16/580 George Street</p> <p>Sydney NSW 2000</p>	<p>MSc BSC (hons)</p> <p>█████ has 14 years of environmental management experience in post approval roles including the development of construction and operational environmental management plans, auditing, compliance and on-site environmental management. █████ has completed the Certificate of Competence in Environmental Noise Measurement issued by the Institute of Acoustics (UK).</p>
<p>██████████████████</p> <p>Renzo Tonin & Associates</p> <p>Level 1, 418a Elizabeth Street</p> <p>Surry Hills NSW 2010</p>	<p>FIEAust, CPEng, BEng, MAAS</p> <p>█████ has more than 20 years of NSW experience as a noise and vibration consultant and assessing the potential impacts and mitigation required for large infrastructure projects.</p>

Revision	Date	Description	Author/ Reviewer	Approved by
001	16/04/2019	Draft – Issued for Client Review	[REDACTED]	[REDACTED]
002	23/04/2019	Draft – Addressed Client Comments	[REDACTED]	[REDACTED]

Revision	Date	Description	Author/ Reviewer	Approved by
003	24/05/2019	Updated to address DP&E Comments		
004	19/06/2019	Updated to address further DP&E Comments		
005	03/02/2020	Updated to include Area 2 as an operational area		
006	27/03/2020	Updated to address Mod 2		

ACRONYMS AND DEFINITIONS

Acronym / Term	Meaning
CCS	Community Communication Strategy
CNB	Container Noise Barrier
CoA	Conditions of Approval
CoC	Conditions of Consent
CNBMP	Container Noise Barrier Management Plan
DAWE	Department of Agriculture, Water and the Environment
DIPNR	Department of Infrastructure Planning and Natural Resources
DotEE	Commonwealth Department of the Environment and Energy (Now known as DAWE)
DP&E	Department of Planning and Environment
DPI	Department of Primary Industries
EIS	Environmental Impact Statement
EMS	Environmental Management System
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPA	NSW Environment Protection Authority
EPL	Environment Protection Licence
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act 1999</i>
Facility	The MPE Concept (MP10_0193), MPE Stage 1 (SSD 6766) and MPE Stage 2 (SSD 7628) Project, including the operation of the IMEX terminal, warehousing and distribution facilities. A rail link is included as part MPE Stage 1 (SSD 6766) and connects the Facility to the SSFL.
IMEX Terminal	Import Export Terminal. Includes the following key components: <ul style="list-style-type: none"> Truck processing, holding and loading areas with entrance and exit from Moorebank Avenue Rail loading and adjacent container storage areas serviced by container handling equipment Administration facility and associated car parking with light vehicle access from Moorebank Avenue
INP	NSW Industrial Noise Policy
MLP	Moorebank Logistics Park encompassing Moorebank Precinct East (MPE) and Moorebank Precinct West (MPW)
MLP Approvals	<ul style="list-style-type: none"> <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) Approval (No. 2011/6229), March 2014 MPE Concept Approval received 29 September 2014 (MP10_0193). MPE Stage 1 approved 12 December 2016 (SSD 6766) MPE Stage 2 approved 31 January 2018 (SSD 7628) MPW Concept and Stage 1 approved 3 June 2016 (SSD 5066) MPW Stage 2 still under review by DP&E
MLP East Precinct	The term referred to the operations of MPE Stage 1 and MPE Stage 2 Projects under the MPE Concept Approval (MP 10_0193) including the operation of RALP, IMEX and warehousing and distribution facilities

Acronym / Term	Meaning
MLP Owner	Qube Holdings (Qube)
MPE	Moorebank Precinct East
MPW	Moorebank Precinct West
NPI	Noise Policy for Industry
OEMP	Operational Environmental Management Plan
ONVMP	Operational Noise and Vibration Management Plan
Operational area / Operational footprint	Extent of operational activities for the operation of the MLP – East Precinct
POEO Act	<i>Protection of the Environment Operations Act 1997 (NWS)</i>
PUD	Pick-up and delivery vehicles
Rail link	Part of MPE Stage 1 (SSD 6766), connecting the MPE site to the SSFL. The Rail link is to be utilised for the operation of the Facility.
RtS	Response to Submissions
SHEMS	Safety Health and Environmental Management System
SSD	State significant development
SSFL	Southern Sydney Freight Line

The following technical terms, abbreviations and definitions are used in this plan. A glossary of relevant acoustical concepts and terminology is provided in below:

Acronym / Term	Meaning
L _{Aeq}	Equivalent Continuous Sound Level. The 'equivalent noise level' is the summation of noise events and integrated over a selected period of time.
L _{Aeq,15min}	Equivalent Continuous Sound Level, over a period of 15 minutes
L _{1min} / L _{max}	The maximum sound pressure level measured over a given period.
dBA	A-weighted decibels. The ear is not as effective in hearing low frequency sounds as it is hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the 'A' filter. A sound level measured with this filter switched on is denoted as dBA. Practically all noise is measured using the A filter.
NCA	Noise Catchment Area
NML	Noise Management Level
SWL	Sound power level

CONTENTS

REVISIONS	I
ACRONYMS AND DEFINITIONS	III
1 INTRODUCTION	1
1.1 Background.....	1
1.2 Purpose and Application.....	4
1.3 Objectives and Targets.....	4
1.4 Approval.....	4
2 STATUTORY REQUIREMENTS.....	5
2.1 Legal and Other Obligations	5
2.2 Development Consent	5
2.2.1 EPBC Act Approval.....	5
2.2.2 EP&A Act Approval.....	6
2.3 Roles and Responsibilities	9
2.4 Training.....	9
3 IMPLEMENTATION	11
3.1 Existing Environment.....	11
3.2 Meteorological Conditions	11
3.2.1 Meteorological Station	12
3.3 Noise Management Level.....	12
3.4 Sleep Disturbance Assessment.....	12
3.5 Sensitive Receivers	13
3.6 Container Noise Barrier	15
3.6.1 Container Noise Barrier Specification.....	15
3.6.2 Container Noise Barrier Stacking Arrangement	17
3.6.3 Alternative Arrangements in Adverse Meteorological Conditions	17
3.7 Management Measures	17
4 MONITORING AND REVIEW	20
4.1 Monitoring Requirements	20
4.1.1 Continuous Noise Monitoring	20
4.1.2 Attended Noise Surveys	20
4.1.3 Noise Monitoring Locations	20
4.1.4 Noise Monitoring Reporting Criteria	20
4.1.5 Exceedances of Monitoring Criteria.....	21
4.2 Reporting	21
4.3 Review and Improvement.....	22
4.4 Incidents	22
4.5 Complaints.....	22
4.6 Non-Compliance, Non-Conformances and Corrective Actions	22

LIST OF TABLES

Table 1-1: Objectives and Targets	4
Table 2-1: EPBC Act Conditions of Approval (CoA).....	6
Table 2-2: CoC F5 of SSD 6766 (MPE Stage 1).....	6
Table 2-3: CoCs of SSD 7628 (MPE Stage 2)	8
Table 2-4: Roles and Responsibilities	9
Table 3-1: Weather Categories and conditions	11
Table 3-2: Noise Management Levels for Night-time Period.....	12
Table 3-3: Predicted L_{Amax} Noise Levels at Sensitive Receivers.....	13
Table 3-4: Sensitive Receivers and Approximate Distance from IMEX Terminal	13
Table 3-5: Container Noise Barrier Specification	15
Table 3-6: Management Measures during night-time operations of the IMEX Terminal.....	18
Table 4-1: Noise Monitoring Locations	20
Table 4-2: Environmental Reporting Requirements	21

LIST OF FIGURES

Figure 1-1: Site Location.....	3
Figure 3-1: Noise catchment areas and noise monitoring locations	14
Figure 3-2: Container Noise Barrier Location	16
Figure 3-3: Indicative container stack arrangement	17

1 INTRODUCTION

The Sydney Intermodal Terminal Alliance (SIMTA) received approval for the construction and operation of Stages 1 and 2 of the Moorebank Precinct East (MPE) Project (SSD 6766, SSD 7628 and SSD 7628 MOD 2 respectively), which together comprise the two stages of development under the MPE Concept Approval (MP10_0193) and Department of the Environment and Energy (DotEE) Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) Approval and Mitigation Measures (No. 2011/6229).

This Container Noise Barrier Management Plan (CNBMP) has been developed to outline the management practices and procedures that will be implemented during night-time operations of the MPE Stage 1 Import Export (IMEX) Terminal.

This CNBMP addresses the relevant requirements of the Project Approvals, including the Environmental Impact Statement (EIS), Response to Submissions (RtS) and Minister's Conditions of Consent (CoCs), and all applicable guidelines and standards specific to the management of container noise during nighttime operations of the IMEX Terminal.

1.1 Background

The MLP is an integral component of the Freight, Ports and Transport strategies of both the NSW and Commonwealth governments to help manage the challenges of an expected tripling of freight volumes at Port Botany by 2031.

The MLP aims to streamline the freight logistics supply chain from port to store, deliver savings to businesses and consumers, and help service the rapidly growing demand for imported goods in south-west Sydney. It is located approximately 27 kilometres (km) south-west of the Sydney Central Business District and approximately 26 km west of Port Botany within the Liverpool Local Government Area. The MLP is divided into an East Precinct and a West Precinct, located east and west of Moorebank Avenue respectively, (Figure 1-1). The MLP East Precinct is operational and is managed under an Operation Environmental Management Plan (OEMP), while the MLP West Precinct is still currently under construction.

The main features of the MLP East Precinct include:

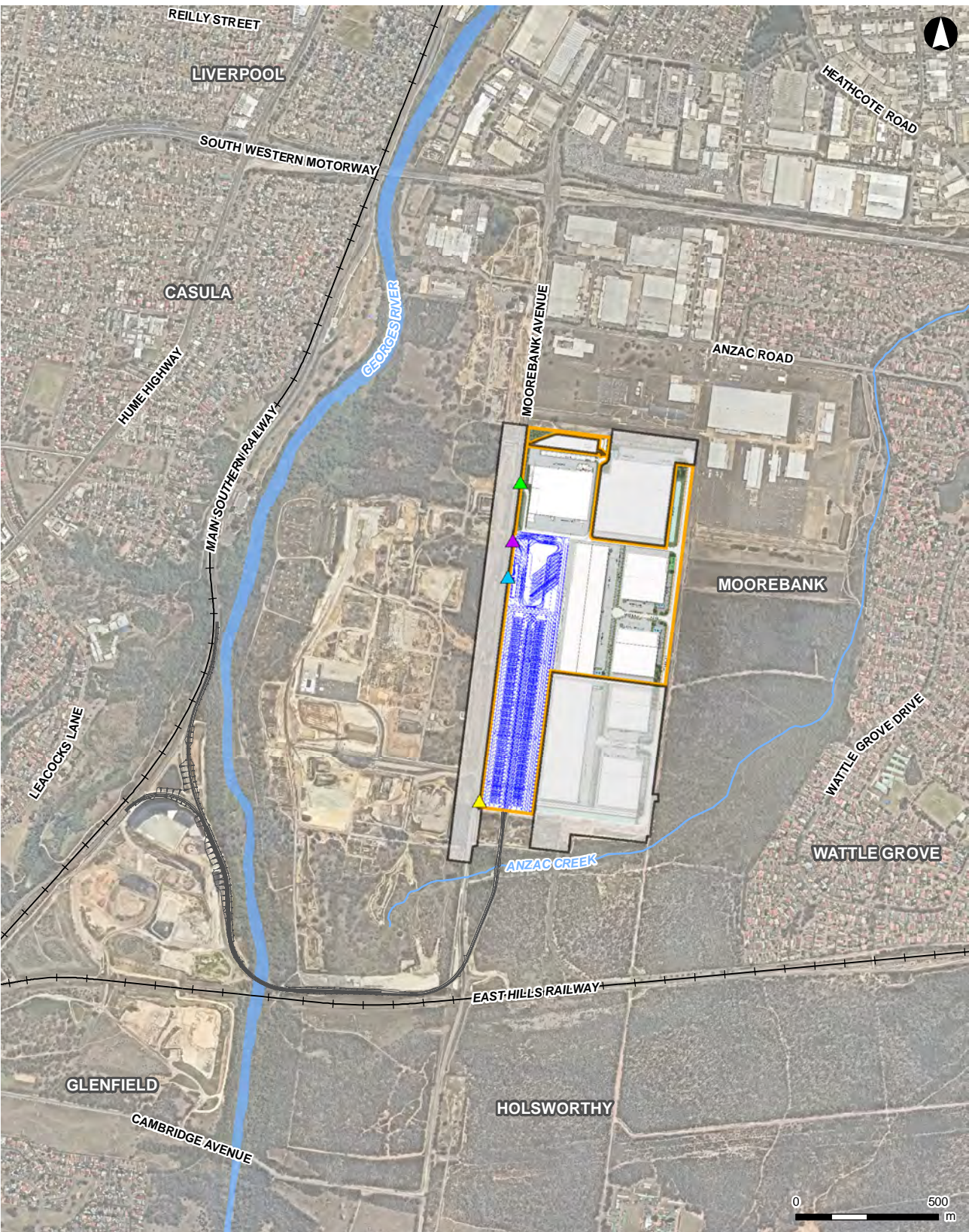
- An Import Export (IMEX) Terminal. The IMEX Terminal comprises:
 - Truck processing, holding and loading areas with an entrance and exit from Moorebank Avenue
 - Rail loading and container storage areas serviced by container handling equipment
 - An Administration facility and associated car parking with light vehicle access from Moorebank Avenue
- A Rail Link connecting the IMEX terminal and the Southern Sydney Freight Line (SSFL) traversing Moorebank Avenue, Anzac Creek, Georges River and Glenfield Waste Facility
- Associated ancillary infrastructure including signage, lighting, landscaping, water management
- Warehouse and distribution facilities including warehousing up to 21 m in height, typically ranging in size from 20,000 m² to 62,000 m².
 - Office and administration facilities
 - Amenities
 - Car parking
 - Truck loading/unloading docks
 - Internal parking for pick-up and delivery vehicles (PUD)
 - Specialised sortation and conveyor equipment
 - Hardstand areas that provide trailer parking spaces, external PUD parking spaces, vehicle manoeuvring areas and access to the main internal site road
 - Signage for business identification purposes, including backlit illuminated signage on each warehouse
 - Internal fit-out, comprising racking and storage.



- A freight village including a mix of retail, commercial and light industrial spaces typically up 15 metres in height and varying in size and design
- An internal road network to enable efficient movement of vehicles, dispatch of freight from the warehouses and transport of containers between the IMEX Terminal and warehouse and distribution facilities

The location of the MLP East Precinct is shown in Figure 1-1.

Container Noise Barrier Management Plan



LEGEND

- MLP East Precinct construction area
- MLP East Precinct operational area
- ▲ Warehouse access
- ▲ IMEX truck access
- ▲ IMEX office access
- ▲ Emergency access
- +— Existing railway
- Watercourse
- Operational rail link

ARCADIS AUSTRALIA PACIFIC PTY LTD
 ABN 76 104 485 289
 Level 16, 500 George St | Sydney NSW 2000
 P: +61 (0) 2 8907 9000 | F: +61 (0) 2 8907 9001
 Coordinate System: GDA 1994 MGA Zone 56
 Date issued: March 12, 2020
 Aerial imagery supplied by Neamap (Sep, 2019)



Figure 1-1: Site Location

1.2 Purpose and Application

This CNBMP has been developed to address the requirements of MPE Stage 1 CoC F5A (SSD 6766) which requires the preparation of an CNBMP, to the satisfaction of the Secretary of the Department of Planning and Environment (DP&E) prior to the commencement of operation.

This CNBMP has been prepared in accordance with:

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Approval (No. 2011/6229), March 2014
- MPE Concept Approval (MP 10_0193), 29 September 2014
- State Significant Development (SSD) Consent SSD 6766, 13 March 2018 (superseding initial approval 12 December 2016)
- Moorebank Precinct East – Stage 1 – Environmental Impact Statement (Arcadis Australia Pacific Pty Limited, May 2015)
- Moorebank Precinct East – Stage 1 – Response to Submissions (Arcadis Australia Pacific Pty Limited, September 2015)

This CNBMP identifies the operational noise management measures that will be applied to night-time operations and activities undertaken across the IMEX Terminal to manage identified night-time operational noise risks, including the stacking of containers to be used as a noise barrier. The specific CoCs and FCMMs relevant to the development of this plan are identified in Section 2.2

The most recent, approved version of this plan will be implemented to manage the Facility activities.

1.3 Objectives and Targets

Table 1-1 outlines the objectives and targets set out for IMEX Terminal for the management of container noise during night-time operations. These objectives and targets were developed by the Principal's Representative based on collective industry experience and best practice.

Table 1-1: Objectives and Targets

Objective	Target	Timeframe	Accountability
Minimise night-time operational noise impacts on residents through the implementation of management measures	No exceedances of noise criteria	Duration of Operations	Area Manager: IMEX
Comply with relevant CoCs, applicable legislative and other requirements	No written warnings or infringement notices	Duration of Operations	Site Safety, Health, Environment and Quality (SHEQ) Manager/advisor (Site SHEQ Manager/Advisor)
Promptly investigate any complaints made by the surrounding residents and implement appropriate mitigation measures as required	No validated complaints from the community regarding night-time noise	Duration of Operations	IMEX Area Manager Community Liaison Manager Site SHEQ Manager/Advisor

1.4 Approval

This CNBMP will be submitted to the Secretary no later than one month prior to the commencement of operation.

2 STATUTORY REQUIREMENTS

2.1 Legal and Other Obligations

The legislation, planning instruments and guidelines considered during development of this plan are listed below with specific details provided in the Legislation Register within Appendix B of the OEMP.

- *Environmental Planning and Assessment Act 1979*
- *Environmental Planning and Assessment Regulation 2000*
- *Environment Protection and Biodiversity (EPBC) Act 1999*
- *Protection of the Environment Operations (Noise Control) Regulation 2017*
- Additional legislation, standards and guidelines relating to the management of container noise during night-time operations include:
- *NSW EPA Industrial Noise Policy 2000*
- *NSW EPA Noise Policy for Industry 2017*
- *AS1055.1-2018 Acoustics - Description and Measurement of Environmental Noise – General Procedures*

2.2 Development Consent

The operation of the MLP East Precinct was approved under both the *Environmental Planning and Assessment Act 1979* (EP&A Act) and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Both these approvals have environmental conditions relevant to the operational works for the MLP East Precinct, which are discussed below.

The operational requirements for the Facility, including consultation, impact mitigation and management, is documented in the following suite of documents:

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Approval (No. 2011/6229), March 2014
- *State Significant Development (SSD) Consent SSD 6766*, approved 13 March 2018 (superseding initial approval 12 December 2016)

2.2.1 EPBC Act Approval

The EPBC Act approval for the MPE Concept was granted by DotEE in March 2014 (No. 2011/6229). Approval was required due to impacts on listed threatened species and communities (Sections 18 and 18A of the EPBC Act) and Commonwealth land (Sections 26 and 27A of the EPBC Act).

The operation of the MLP East Precinct has been designed to be consistent with the EPBC Act Approval conditions, where relevant. Specific conditions and commitments that are required to be addressed in this plan are identified within Table 2-1.

Table 2-1: EPBC Act Conditions of Approval (CoA)

Commonwealth	Requirement	Document Reference
Annexure A – Summary of Mitigation Measures	<p>Operation</p> <p>To reduce noise and vibration impacts of the SIMTA proposal during operation, the following recommendations as presented within Wilkinson Murray (2013) would be implemented:</p> <p>SIMTA would make provisions for a potential noise barrier along the western boundary of the SIMTA site. The requirement for the barrier will be confirmed during detailed assessments at each development application stage for approval under the NSW State planning approval process</p>	This CNBMP

2.2.2 EP&A Act Approval

The MLP East Precinct was approved under Part 4, Division 4.7 (previously Division 4.1 prior to 1 March 2018) of the EP&A Act. Approval for MPE Stage 1 was originally received on 12 December 2016 (SSD 6766) and subject to appeal, with revised CoC issued from the Land and Environment Court on 13 March 2018; approval for MPE Stage 2 was received on 31 January 2018 (SSD 7628).

The CoCs include requirements to be addressed in this plan and delivered during operation of the Facility. These requirements, and how they are addressed are provided within Table 2-2 for CoC relating to SSD 6766 and Table 2-3 for CoC relating to SSD 7628.

Table 2-2: CoC F5 of SSD 6766 (MPE Stage 1)

CoC	Requirement	Sections or documents where requirements addressed
F5A	The Applicant shall prepare and implement (following approval) a Container Noise Barrier Management Plan (CNBMP). The plan shall be:	This CNBMP
	Prepared by a suitably experienced and qualified acoustics consultant	Refer to authors details on Page (i)
	Shall outline the management practices and procedures that are to be followed during night-time operation of the site	Section 3.7; Table 3-6
	Shall outline procedures for the stacking of containers to be used as noise barriers. The plan shall include, but not necessarily be limited to:	Section 3.6.1
a)	The preparation of a specification for the stacking of containers to achieve the required level of noise reduction so as to comply with the:	Section 3.6.1
	Night-time period * The night-time period is defined as 10pm-7am Mon-Sat and 10pm-8am Sundays and Public Holidays	Section 3.6.1
	Project specific noise levels** at the nearest affected residential receivers ** Contained within the LAeq (15 min) column in Table A in Condition F5B	Section 3.4; Table 3-2

CoC	Requirement	Sections or documents where requirements addressed
	<p>Sleep disturbance trigger levels*** at the nearest affected residential receivers</p> <p>*** Contained within the Review of Operational Sleep Disturbance Impacts</p>	Section 3.4; Table 3-3
	<p>Include such details as the minimum numbers of containers, their locations, stacking heights, orientation and maximum gap between containers. The Plan shall include any restrictions on stacking of containers above two high if this is found necessary.</p>	Section 3.6.1
	<p>The measurement of noise from operation of the site and an assessment of compliance with the project specific noise levels and the sleep disturbance trigger levels at the nearest affected residential receivers at the following times:</p>	<p>Section 3.4; Table 3-2</p> <p>Section 3.4; Table 3-3</p> <p>Section 4.1.1</p> <p>Section 4.2; Table 4-2</p>
b)	<p>i) not less than 3 months and not more than 6 months after commencement of operation, noise surveys shall be conducted on three separate nights for a period of not less than 2 hours whilst train wagons are being loaded with containers</p>	<p>Section 4.1.2</p> <p>Section 3.7; Table 3-6; CN-10</p>
	<p>ii) thereafter for 6 months on one night per month for a period of not less than 2 hours whilst train wagons are being loaded with containers. Noise measurements shall be conducted in accordance with the EPA's Industrial Noise Policy</p>	<p>Section 4.1</p> <p>Section 4.1.2</p> <p>Section 3.7; Table 3-6; CN-10</p>
c)	<p>the details of each noise survey shall be documented in a report with a drawing showing the observed location of containers which are subject to the Plan, the measurement equipment used, its calibration status, environmental conditions, receiver locations, methodology, a detailed description of the activities on site, the results obtained and whether or not compliance has been achieved with the project specific noise levels and the sleep disturbance trigger levels at the nearest affected residential receivers.</p>	<p>Section 4.1.2</p> <p>Section 4.2</p> <p>Section 3.7; Table 3-6; CN-10</p>
d)	<p>if the report concludes that the project specific noise levels and the sleep disturbance trigger levels for the night-time period at the nearest affected residential receivers are not being complied with, then recommendations shall be made by the acoustic consultant to amend the Plan accordingly and the Applicant shall implement those recommendations as soon as practical provided they are feasible and reasonable.</p>	<p>Section 4.1.5</p> <p>Section 4.3</p>
e)	<p>the Plan shall include a description of the roles and responsibilities for relevant employees involved in the operation of the CNBMP, including relevant training and induction provisions for ensuring that employees are aware of their environmental and compliance obligations under the Plan.</p>	<p>Section 2.3</p> <p>Section 2.4</p>
	<p>The Plan shall be submitted for the approval of the Secretary no later than one month prior to the commencement of operation. Copies of the detailed reports and the Plan (as amended) shall be provided to the Secretary and made available on the Project Website.</p>	<p>Section 1.4</p> <p>Section 4.1.5</p> <p>Section 4.3</p>

CoC	Requirement	Sections or documents where requirements addressed																									
F5B	Industrial noise (excluding activities covered by the NSW Rail Infrastructure Noise Guideline) generated by the development is to be measured and evaluated for compliance generally in accordance with the relevant requirements of the NSW Industrial Noise Policy (as may be updated from time to time).	It is noted that MPE Stage 2 Development Consent (SSD 7628) CoC B80 states that the “Noise generated by operation of the development inclusive of MPE Stage 1 operations must not exceed the noise limits in Table 5” [of the consent].”																									
	<table><tr><th>Sensitive receiver</th><th>Day (LAeq(15 min))</th><th>Evening (LAeq(15 min))</th><th>Night (LAeq(15 min))</th><th>Night (LA1 (1 min))</th></tr><tr><td>Wattle Grove (NCA 1)</td><td>43</td><td>42</td><td>42</td><td>52</td></tr><tr><td>Wattle Grove (NCA 2)</td><td>41</td><td>41</td><td>41</td><td>51</td></tr><tr><td>Casula (NCA 3)</td><td>45</td><td>42</td><td>38</td><td>47</td></tr><tr><td>Glenfield (NCA 4)</td><td>46</td><td>46</td><td>40</td><td>50</td></tr></table>	Sensitive receiver	Day (LAeq(15 min))	Evening (LAeq(15 min))	Night (LAeq(15 min))	Night (LA1 (1 min))	Wattle Grove (NCA 1)	43	42	42	52	Wattle Grove (NCA 2)	41	41	41	51	Casula (NCA 3)	45	42	38	47	Glenfield (NCA 4)	46	46	40	50	The noise limits specified by SSD 7628 CoC B80 have therefore been adopted.
	Sensitive receiver	Day (LAeq(15 min))	Evening (LAeq(15 min))	Night (LAeq(15 min))	Night (LA1 (1 min))																						
	Wattle Grove (NCA 1)	43	42	42	52																						
	Wattle Grove (NCA 2)	41	41	41	51																						
	Casula (NCA 3)	45	42	38	47																						
Glenfield (NCA 4)	46	46	40	50																							
Note: References to sensitive receivers should be read in conjunction with the description of sensitive receivers in the EIS noting that Casula includes Glenfield Farm.	Section 4 details noise monitoring and reporting requirements which will assess compliance with noise criteria																										
F5C	The noise criteria in Table A of condition F5B are to apply under all meteorological conditions except the following: a) wind speeds greater than 3 m/s at 10 metres above ground level; or b) stability category F temperature inversion conditions and wind speeds greater than 2 m/s at 10 m above ground level; or c) stability category G temperature inversion conditions.	Section 3.6.3																									

Table 2-3: CoCs of SSD 7628 (MPE Stage 2)

CoC	Requirement	Sections or documents where requirements addressed																				
B80	Noise generated by operation of the development inclusive of MPE Stage 1 operations must not exceed the noise limits in Table 5.	Section 3.3; Table 3-2																				
	Table 5: Noise Limits dB(A)	Since the LAeq noise management levels in Condition B80 of SSD 7628 are more stringent than the LAeq noise management levels in Condition F5B of SSD 6766, compliance with the LAeq noise management levels in Condition B80 of SSD 7628 will ensure compliance with the LAeq noise management levels in Condition F5B of SSD 6766.																				
	<table><tr><th>Location (residential receivers)</th><th>Day (LAeq(15 min))</th><th>Evening (LAeq(15 min))</th><th>Night (LAeq(15 min))</th><th>Night (LA1 (1 min))</th></tr><tr><td>Casula</td><td>35</td><td>35</td><td>35</td><td>52</td></tr><tr><td>Glenfield</td><td>35</td><td>35</td><td>35</td><td>52</td></tr><tr><td>Wattle Grove</td><td>35</td><td>35</td><td>35</td><td>52</td></tr></table>	Location (residential receivers)	Day (LAeq(15 min))	Evening (LAeq(15 min))	Night (LAeq(15 min))	Night (LA1 (1 min))	Casula	35	35	35	52	Glenfield	35	35	35	52	Wattle Grove	35	35	35	52	q noise management levels in Condition B80 of SSD 7628 will ensure compliance with the LAeq noise management levels in Condition F5B of SSD 6766.
	Location (residential receivers)	Day (LAeq(15 min))	Evening (LAeq(15 min))	Night (LAeq(15 min))	Night (LA1 (1 min))																	
	Casula	35	35	35	52																	
Glenfield	35	35	35	52																		
Wattle Grove	35	35	35	52																		
Notes:	Since the noise criteria within the Noise Policy for Industry (EPA 2017) considers more recent sleep disturbance research compared with the NSW Industrial Noise Policy (EPA, 2000), the LA1 sleep																					
To determine compliance with the LAeq,15 minute noise limits, noise from the development is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the project is impractical, the EPA may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in																						

CoC	Requirement	Sections or documents where requirements addressed
	<p>Section 4 of the NSW Industrial Noise Policy must also be applied to the measured noise levels where applicable.</p> <p>To determine compliance with the $L_{A1,1 \text{ minute}}$ noise limits, noise from the project is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the project is impractical, the EPA may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).</p> <p>The noise emission limits identified above apply under meteorological conditions of:</p> <p>(i) wind speeds of up to 3 m/s at 10 metres above ground level; or</p> <p>(ii) 'F' atmospheric stability class.</p>	<p>disturbance levels in Condition B80 of SSD 7628 have been adopted in preference to the LA1 noise management levels in Condition F5B of SSD 6766.</p> <p>Section 4 details noise monitoring and reporting requirements which will assess compliance with noise criteria</p>

2.3 Roles and Responsibilities

Key roles and responsibilities applicable to this CNBMP are presented in Table 2-4.

Table 2-4: Roles and Responsibilities

Roles	Responsibilities
IMEX Area Manager	<ul style="list-style-type: none"> Induct and train IMEX terminal staff on the requirements of this CNBMP
Site Safety, Health, Environment and Quality Manager / Advisor (Site HSEQ Manager / Advisor)	<ul style="list-style-type: none"> Monitoring the implementation of this CNBMP, including compliance with relevant CoCs. Undertake the monitoring and reporting requirements of this CNBMP
Qualified Acoustic Consultant	<ul style="list-style-type: none"> Will be engaged to undertake the noise surveys required by this CNBMP
Shift Supervisor	<ul style="list-style-type: none"> Monitoring of weather conditions during the night-time period. Reduce of stop works in the event of a noise exceedance during night-time night-time operations. Implementing this CNBMP
All other personnel	<ul style="list-style-type: none"> Comply fully with applicable requirements of this CNBMP Follow instructions of Shift Supervisor, as required, during adverse meteorological conditions.

2.4 Training

All staff, contractors and sub-contractors shall undergo site specific induction training, which will include container noise barrier management training developed with an emphasis on understanding and managing noise impacts arising from night-time night-time operation of the IMEX Terminal.

This site-specific induction training will include:

- The location of sensitive receivers and monitoring locations
- Relevant noise mitigation measures and procedures
- Any limitations on high noise generating activities
- Designated loading/unloading areas and procedures
- Details of the complaints handling procedure
- Details of the environmental incident procedures

- Non-conformance, preventative and corrective action procedures
- Outline the consequences of not complying with these measures
- Ensuring plant and equipment is well maintained and not making excessive noise
- Operation of vehicles to minimise noise and vibration impacts, i.e. use of designated haulage routes, use of non-tonal reversing beepers, turning off plant, equipment and vehicles when not in use.

Personnel directly involved in implementing container noise barrier control measures will be given specific training in the various measures to be implemented.

3 IMPLEMENTATION

This section addresses the key night-time night-time period operational noise risks associated with operation of the IMEX Terminal and the environmental controls established to manage key risks. In accordance with CoC F5(a), the night-time night-time period is defined as 10pm-7am Monday to Saturday and 10pm-8am Sundays and Public Holidays.

3.1 Existing Environment

The existing noise environment in the vicinity of the IMEX Terminal is best described as 'urban', being an area with an acoustical environment that:

- Is dominated by 'urban hum' or industrial source noise
- Has through traffic with characteristically heavy and continuous traffic flows during peak periods
- Is near commercial districts or industrial districts
- Has any combination of the above, where 'urban hum' means the aggregate sound of many unidentifiable, mostly traffic-related sound sources.

3.2 Meteorological Conditions

At relatively large distances from a source, the resultant noise levels at sensitive receivers can be influenced by meteorological conditions, particularly temperature inversions and winds; and can therefore vary from hour to hour and night to night.

The CONCAWE noise propagation model divides the range of possible meteorological conditions into six separate "weather categories" from Category 1 to Category 6. Weather category 1 provides "best case" (i.e. lowest noise level) weather conditions for the propagation of noise, whilst weather Category 6 provides "worst case" - Adverse Meteorological Conditions" (i.e. highest noise level), when source to receiver gradient winds exist and/or there are temperature inversions. The categories are described in Table 3-1.

Table 3-1: Weather Categories and conditions

Weather Category	Conditions
1, 2 and 3	Weather conditions are generally characterised by wind blowing from the receptor to the noise source during the daytime with a temperature lapse (Pasquill stability class A, B and C)
4	Provides "neutral" weather conditions for noise propagation. Category 4 conditions can be characterised by no wind and a mild temperature lapse (Pasquill stability class D). Typically, this weather condition occurs during the day
5 and 6	Categories 5 and 6 are "worst-case – Adverse Meteorological Conditions" when winds up to 3m/s source to receiver exist and/or and temperature inversion (Pasquill stability class E, F and G)

Temperature inversions and gradient winds associated with Category 5 and 6 have the potential to enhance noise levels at sensitive receivers during night-time night-time operations of the IMEX Terminal. The night-time night-time noise management levels are applicable under all weather conditions except those outlined in CoC FC5 and detailed below:

- Wind speeds greater than 3 m/s at 10 metres above ground level
- Stability category F temperature inversion conditions and wind speeds greater than 2 m/s at 10 m above ground level
- Stability category G temperature inversion conditions.

3.2.1 Meteorological Station

A temporary meteorological station will be installed prior to the commencement of operations, to record weather conditions for the first 12 months of operations. Following which, a suitably qualified consultant(s) will be engaged to determine the significance of noise-enhancing conditions and assess the need for a permanent meteorological station. Significance will be based on the threshold of occurrence of 30 per cent, in accordance with the *NSW EPA Noise Policy for Industry, 2017* (NPI).

The following indicative information will be monitored or communicated by the meteorological station:

- Wind speed and direction
- Temperature lapse rate (15 minutes)
- Weather data will be stored to allow for post-processing in the event of complaints, or noise exceedances.
- SMS notification (or similar) will inform the night-time Shift Supervisor of adverse conditions.

3.3 Noise Management Level

Table 3-2 identifies the noise management levels (NML) for the operation of the IMEX Terminal during the night-time period under all meteorological conditions other than the adverse meteorological conditions outlined in CoC FC5. It is noted that the MPE Stage 2 Development Consent (SSD 7628) CoC B80 states that the “*Noise generated by operation of the development inclusive of MPE Stage 1 operations must not exceed the noise limits in Table 5*” [of the consent]. The noise limits specified by SSD 7628 CoC B80 have therefore been adopted for this management plan.

Table 3-2: Noise Management Levels for Night-time Period.

Sensitive receiver	Day ($LA_{eq}(15 \text{ min})$)	Evening ($LA_{eq}(15 \text{ min})$)	Night ($LA_{eq}(15 \text{ min})$)	Night ($LA_{1(1 \text{ min})} / LA_{max}$)
Wattle Grove (NCA 1)	35	35	35	52
Wattle Grove (NCA 2)	35	35	35	52
Casula (NCA 3)	35	35	35	52
Glenfield (NCA 4)	35	35	35	52

3.4 Sleep Disturbance Assessment

Transient noise events associated with the operation of the IMEX Terminal, with the potential to cause sleep disturbance include horns, tonal reversing alarms, pneumatic trailer brakes, and ‘banging’ noises associated with moving and stacking containers. The use of horns and tonal reversing alarms within the facility will be strongly discouraged, and promulgated via the Operational Noise Management Plan (ONMP).

The occasional use of horns by trucks and other mobile equipment may be required under emergency situations. Due to the open access arrangement of the IMEX Terminal, there is potential for tonal reversing alarms to occasionally be used, most likely by trucks accessing the IMEX Terminal. The LA_{max} sound power level (SWL) of a tonal reversing alarm is up to 110 dBA. Notwithstanding the above, the loudest LA_{max} noise source, with potential to cause sleep disturbance impacts, is pneumatic trailer brakes on trucks. The LA_{max} SWL of a truck trailer brake is up to 122 dBA. It should be noted that this is significantly louder than a tonal reversing alarm. The predicted LA_{max} noise levels at nearby receivers due to pneumatic trailer brakes are shown in Table 3-3¹.

¹ This information has been based on the Noise and Vibration Impact Assessment, prepared by Wilkinson Murray in December 2016 as part of the MPE Stage 2 EIS.

Table 3-3: Predicted L_{Amax} Noise Levels at Sensitive Receivers

Receiver	Predicted L_{Amax} Noise Level (dBA)		Sleep Disturbance Screening Level ² (L_{Amax} dBA)	Exceedance (dB)
	Calm ³	Adverse ⁴		
NCA 1: Wattle Grove	50	53	52	1
NCA 2: Wattle Grove North	32	34	51	0
NCA 3: Casula	32	35	47	0
NCA 4: Glenfield	22	26	50	0

Note: The sleep disturbance screening levels in this table are based on the values adopted in CoC F5A(a) of SSD 6766 and differ from the sleep disturbance screening levels in CoC B80 of SSD 7628

3.5 Sensitive Receivers

The potentially most affected residential receivers in the vicinity of the IMEX Terminal are located in the suburbs of Casula, Glenfield and Wattle Grove. Table 3-4 identifies the potentially most affected residential receivers near the IMEX Terminal and Figure 3-1 shows the noise catchment areas and their respective noise monitoring locations.

Receiver locations are representative of locations with the highest predicted L_{Amax} noise levels in each NCA and are readily accessible. An additional monitoring location within NCA3: Casula, will be undertaken at the boundary of Glenfield Farm if an exceedance is detected at the residential receiver.

Table 3-4: Sensitive Receivers and Approximate Distance from IMEX Terminal

Noise Catchment Area (NCA)	Monitoring Location	Approximate distance (m) from IMEX terminal
NCA 1: Wattle Grove	M1	770
NCA 2: Wattle Grove North	M2	1,050
NCA 3: Casula	M3	960
NCA 4: Glenfield	M4	1,250

²

³ CONCAWE Category 4

⁴ CONCAWE Category 6

Container Noise Barrier Management Plan

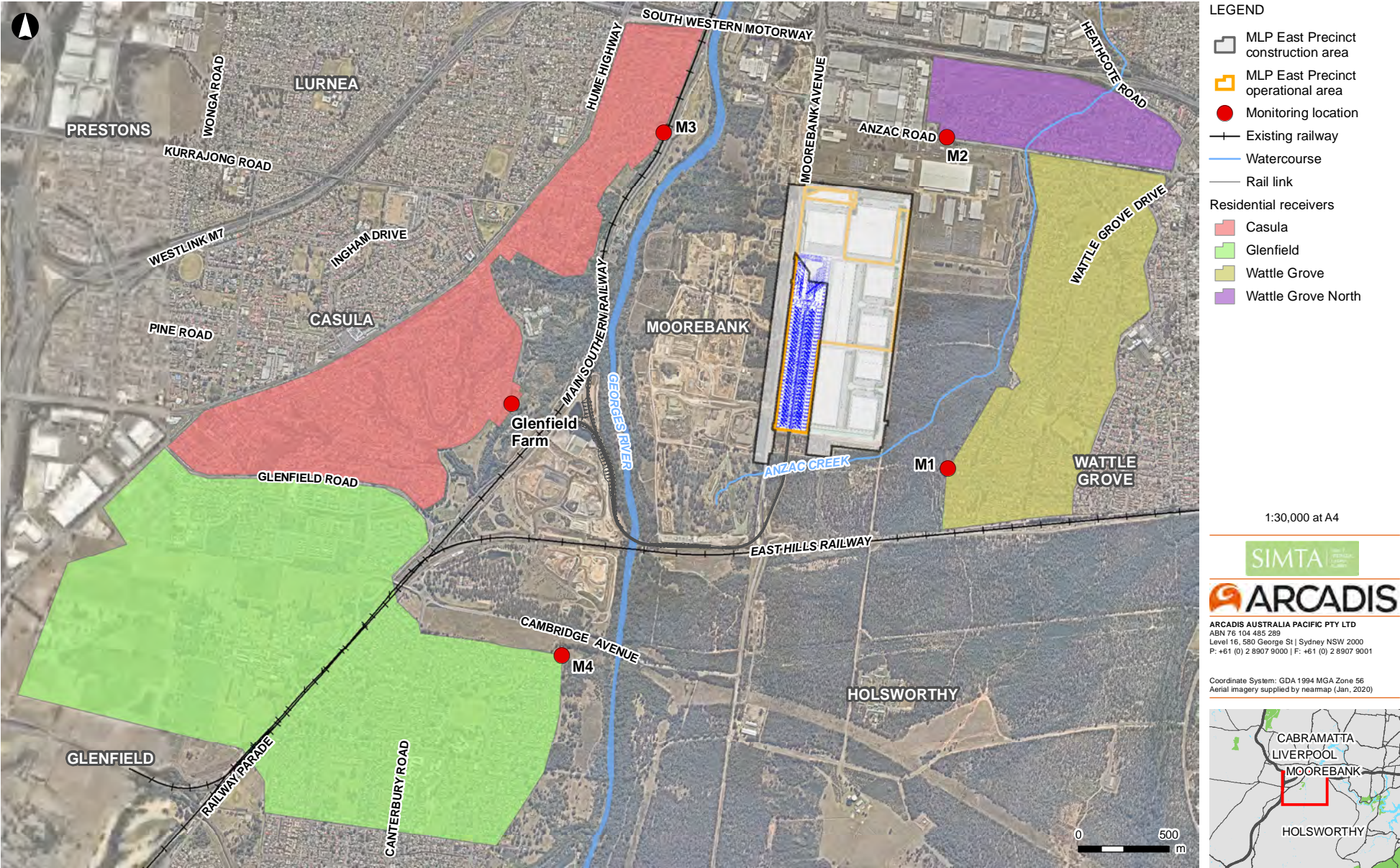


Figure 3-1: Noise catchment areas and noise monitoring locations

3.6 Container Noise Barrier

In accordance with CoC F5A of SSD 6766, a Container Noise Barrier (CNB) will be implemented along the western apron of the IMEX Terminal to minimise noise impacts to sensitive receivers during night-time operations.

3.6.1 Container Noise Barrier Specification

Table 3-5 provides a summary of the container noise barrier specification, including dimensions, number and orientation of the last row of operational containers that will be used to form the barrier.

Table 3-5: Container Noise Barrier Specification

Location	IMEX
Night-time Period	The night-time period is defined as 10pm-7am Mon-Sat and 10pm-8am Sundays and Public Holidays
Number of trains per night	2 ⁵
Number of container stacks	9
Dimensions of container stacks	52m (length) x 14m (width)
Gap between container stacks	7m
Stacking height	2 (minimum) – 5 (maximum) containers high
Number of containers in CNB	144 – 360 containers ⁶
Orientation	Stacked parallel to the rail link
Container Noise Barrier	The CNB will be formed from the last row of operational containers, which will act as the noise barrier during night-time operations. During the day the containers will be stacked up to 5 containers high, however during night-time operations, the CNB will be maintained at one 'tier' higher than the adjacent inner container rows to minimise 'banging' noises associated with moving container.

As shown in Figure 3-2, trucks will travel south on the eastern side of the container stack, where they will be loaded and unloaded, before turning around at the southern end of the rail apron, where they will travel north to the exit gate via a 6m wide path. The western rail apron will have sufficient space for the loading and unloading of containers from both the locomotives and heavy vehicles.

⁵ While the EIS has advised that there will be four trains per night, at the commencement of operations there will only be two trains per night.

⁶ Assumes a minimum stacking height of two containers and a maximum stacking height of five containers

Container Noise Barrier Management Plan

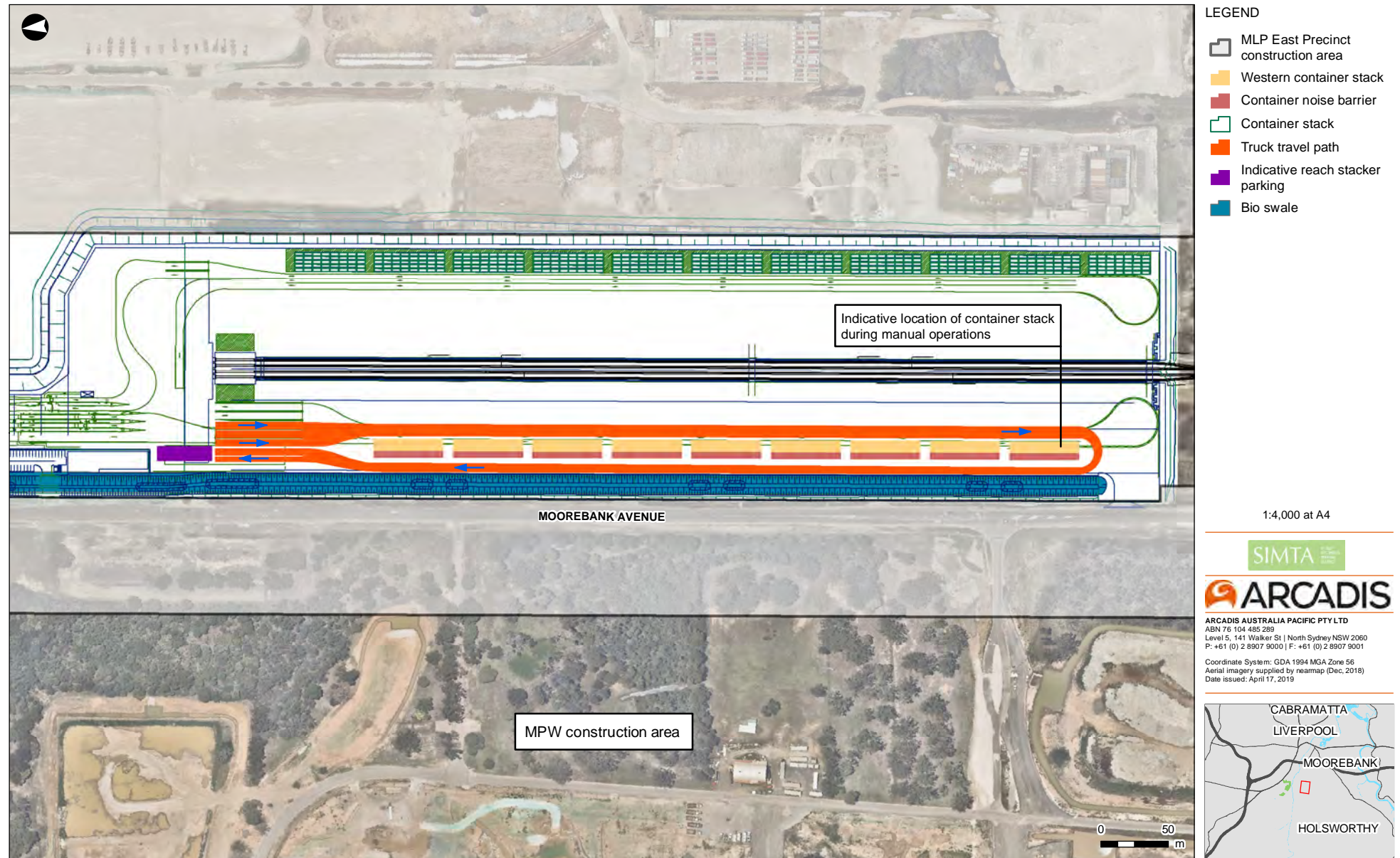


Figure 3-2: Container Noise Barrier Location

3.6.2 Container Noise Barrier Stacking Arrangement

The CNB will be formed from the last row of operational containers and will act as the noise barrier during night-time operations. During the day, containers will be stacked up to five containers high, however during night-time operations, the CNB will be maintained at one 'tier' higher than all other inner container rows, as shown indicatively in Figure 3-3. The stacking of containers on top of the CNB will not be permitted during night-time operations.

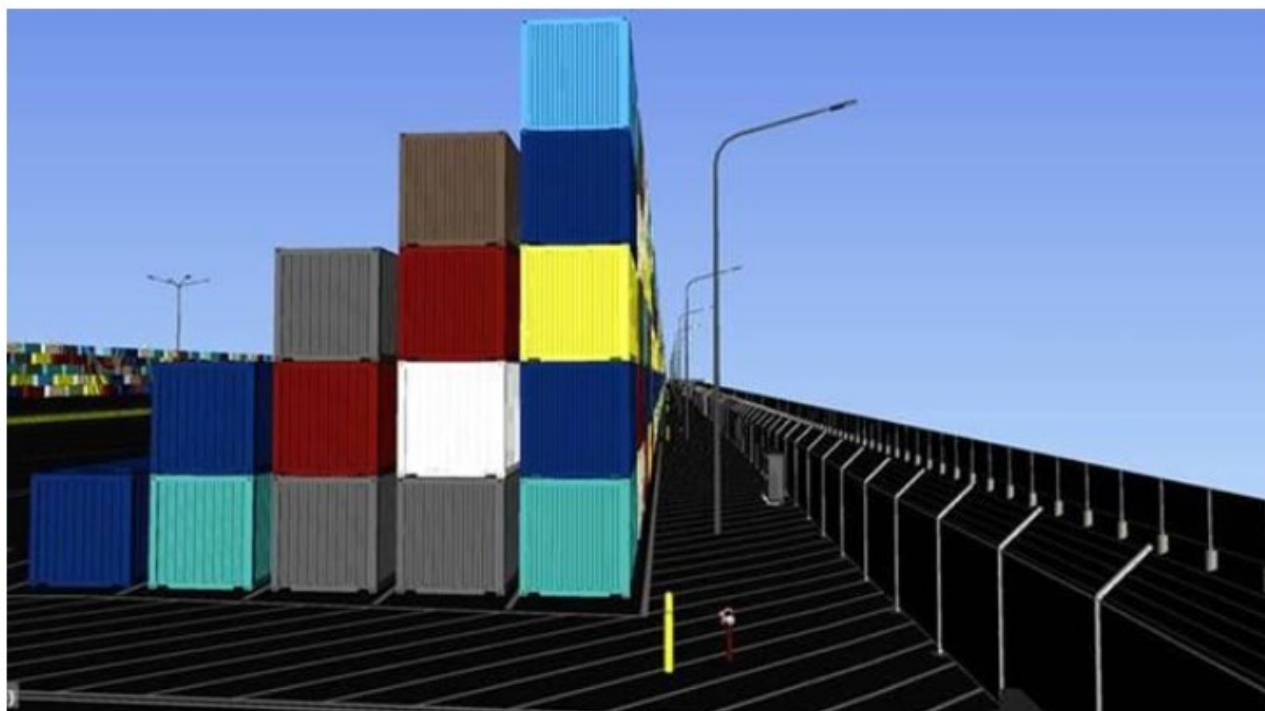


Figure 3-3: Indicative container stack arrangement

3.6.3 Alternative Arrangements in Adverse Meteorological Conditions

In the event of an exceedance of the noise management levels during adverse meteorological conditions, an investigation will be undertaken by the Shift Supervisor, in accordance with Section 4.1.5, to identify potential sources and/or causes and implement the prescribed mitigation measures, as required.

In the event that the initial measures do not resolve the noise exceedances, where space permits, containers will be unloaded directly onto the hardstand during night-time operations (to avoid stacking noise) and loaded onto the container stack during the day.

3.7 Management Measures

This section describes the overall approach to managing and mitigating noise risks to sensitive receivers during night-time operation of the IMEX Terminal.

Management measures are summarised in Table 3-6. These measures are based on the requirements of the CoC and best practice, as well as Qube's Environmental Management System requirements and standards.

Table 3-6: Management Measures during night-time operations of the IMEX Terminal

ID	Management Measure	Timing	Responsibility	Reference
CN-1	A specific induction will be provided to all staff, contractors and sub-contractors working within the IMEX Terminal with an emphasis on understanding the requirements of this CNBMP and managing noise impacts during night-time operation of the IMEX Terminal	Duration of Operations	Site SHEQ Manager/Advisor Area Manager: IMEX Shift Supervisor All personnel	F5A (SSD 6766) F5B (SSD 6766) F5C (SSD 6766)
CN-2	Meteorological conditions will be monitored during the night-time period	Duration of Operations	Shift Supervisor	F5A(e) (SSD 6766)
CN-3	During night-time operation of the IMEX Terminal, the last row of operational containers that form the CNB will be maintained at one 'tier' higher than the inner operational rows. No stacking of containers on top of the CNB will be permitted during night-time operations	Duration of Operations	Shift Supervisor All personnel	F5A(a) (SSD 6766)
CN-4	<p>In the event of an exceedance during adverse meteorological conditions (Table 3-1) during night-time periods, works will cease or reduce and an investigation will be undertaken to determine potential sources and/or causes, plant and machinery will be checked and verified for noise levels and weather conditions will be recorded</p> <p>In the event that an investigation does not identify any potential sources and/or causes for the exceedance, the following alternative mitigation measures will be implemented, where reasonable and feasible.</p> <ul style="list-style-type: none"> Where space permits, containers will be unloaded directly onto the hardstand during night-time operations and loaded onto the container stack during the day Review and re-calibration of the noise monitors will be undertaken, as required, to confirm they are operating within manufacturer specifications If the noise surveys identify noise exceedances, Qube will engage a qualified acoustic consultant to provide recommendations to amend this CNBMP accordingly. Recommendations made by the acoustic consultant will be implemented as soon as practical, where feasible and reasonable. 	Duration of Operations	Area Manager: IMEX Shift Supervisor All personnel	F5A(a) (SSD 6766)

ID	Management Measure	Timing	Responsibility	Reference
CN-5	During manual operations, trucks will access the hardstand on the eastern side of the CNB so noise generating activities associated with the loading and unloading of containers are minimised at the nearest residential receivers	Duration of Manual Operations	Area Manager: IMEX Shift Supervisor All personnel	F5A(a) (SSD 6766)
CN-6	The use of non-tonal movement alarms, or alternatives such as reversing cameras and proximity alarms, will be used in place of tonal alarms where feasible and reasonable, except as required in an emergency or mandated by legislation	Duration of Operations	Area Manager: IMEX Shift Supervisor All personnel	F5A(a) (SSD 6766)
CN-7	To minimise container stacking and loading noise, they will be placed down and not dropped onto the hardstand, vehicles or container stacks	Duration of Operations	Area Manager: IMEX Shift Supervisor All personnel	F5A(a) (SSD 6766)
CN-8	All plant and equipment used at the IMEX Terminal will be maintained in a proper and efficient condition, and operated in a proper and efficient manner.	Duration of Operations	Area Manager: IMEX Shift Supervisor All personnel	F5A(a) (SSD 6766)
CN-9	In the event of any night-time noise related complaint or adverse comment from the community, noise levels will be investigated. Remedial action will be implemented where feasible and reasonable. The procedures for managing complaints is provided within the Community Communication Strategy	Duration of Operations	Area Manager: IMEX Shift Supervisor All personnel	F5A(b) (SSD 6766) F5A(d) (SSD 6766)
CN-10	Three noise surveys will be undertaken not less than three months and not more than six months after the commencement of operation, thereafter, six noise surveys undertaken each month on one night per month. A Noise Survey Report will be submitted to the Secretary following each survey	First 12 months of Operation	Site SHEQ Manager/Advisor Qualified Acoustic Consultant (as engaged)	F5A(b) (SSD 6766)

4 MONITORING AND REVIEW

4.1 Monitoring Requirements

Noise monitoring will be conducted as per the requirement of this CNBMP and the CoC. Noise measurements shall be undertaken consistent with the procedures documented in *NSW Environmental Protection Authority (EPA) - Noise Policy for Industry (2017)*, which supersedes the *NSW EPA Industrial Noise Policy (2000)*, and AS1055.1-2018 Acoustics - Description and Measurement of Environmental Noise – General Procedures.

4.1.1 Continuous Noise Monitoring

The measurement of night-time operational noise from the IMEX Terminal will be undertaken by continuous real-time noise monitors (installed as per CoC B64 of SSD 7628) at the sensitive receiver locations identified in Figure 3-1, to confirm compliance with the noise management levels and the sleep disturbance trigger levels identified in Section 3.2 and Section 3.3 respectively.

4.1.2 Attended Noise Surveys

Attended noise surveys will be conducted by a qualified acoustic consultant on three separate nights, within a period of not less than three months and not more than six months after the commencement of operation. Thereafter, surveys will be conducted on one night per month for a period of six months.

Each survey will be undertaken for a period of not less than two hours whilst train wagons are being loaded with containers.

4.1.3 Noise Monitoring Locations

The attended and continuous noise monitoring surveys will be conducted at the nearest affected residential receivers in each NCA in Table 4-1.

Table 4-1: Noise Monitoring Locations

Monitoring Location	Address	NCA
M1	16 Corryton Court, Wattle Grove	NCA1
M2	22 Glenelg Court, Wattle Grove	NCA2
M3	11 Buckland Road, Casula	NCA3
M4	26 Goodenough Street, Glenfield	NCA4
Glenfield Farm	88 Leacocks Lane, Casula	N/A

4.1.4 Noise Monitoring Reporting Criteria

As a minimum, the noise survey reports will provide details of the following:

- A detailed description of the activities being undertaken during the monitoring period
- A drawing showing the observed location of containers and stack heights
- The measurement equipment and calibration status
- Environmental conditions
- Receiver locations
- Methodology

- The results obtained and whether or not compliance has been achieved with the:
 - Noise Management Levels (Table 3-2), and
 - Sleep disturbance trigger levels (Table 3-3)

A copy of the detailed reports will be provided to the Secretary and made available on the SIMTA website.

4.1.5 Exceedances of Monitoring Criteria

Monitoring criteria applicable to the CNBMP are provided in Table 3-2. In the event that noise from the IMEX Terminal during night-time operations exceeds the noise management levels or the sleep disturbance trigger levels for the night-time period at the nearest affected residential receivers, the following activities will be undertaken to determine the potential causes and/or sources and whether consideration of additional mitigation measures are required to minimise potential impacts.

- Works will cease or reduce, at the direction of the Shift Supervisor, and an investigation will be undertaken to determine the potential sources and/or causes
- Plant and machinery will be checked and verified for noise levels and appropriate exhaust/fittings/noise attenuators etc.
- Weather conditions at the time of the exceedance will be recorded

In the event that the investigation did not identify any potential sources and/or causes for the noise, the following alternative mitigation measures will be implemented, where reasonable and feasible:

- Where space permits, containers will be unloaded directly onto the hardstand during night-time operations and loaded onto the container stack during the day
- Review and re-calibration of the noise monitors will be undertaken, as required, to confirm they are operating within manufacturer specifications
- If the noise surveys identify noise exceedances, Qube will engage a qualified acoustic consultant to provide recommendations to amend this CNBMP accordingly.
- Recommendations made by the acoustic consultant will be implemented as soon as practical, where feasible and reasonable

4.2 Reporting

Reporting, monitoring and auditing will be undertaken in accordance with the overarching OEMP [PREC-QPMS-EN-APP-00001]. Reporting requirements applicable to this CNBMP are summarised in Table 4-2.

Table 4-2: Environmental Reporting Requirements

Requirement	Area/Location	Responsibility	Frequency	Report content
Noise Survey Report	Noise Monitoring locations identified in Section 4.1.1	Site SHEQ Manager/ Advisor Qualified Acoustic Consultant	Noise Survey Reports will be submitted to the Secretary for the three noise surveys undertaken not less than three months and not more than six months after the commencement of operation, thereafter, for the six noise surveys undertaken each month on one night per month	<ul style="list-style-type: none"> • Figure of observed location of containers subject of the plan • Description of measurement equipment used and calibration status • Environmental conditions • Receiver locations • Methodology used • Detailed description of site activities • Results obtained • Status of compliance specific noise levels and the sleep disturbance trigger levels at the nearest affected residential receivers

4.3 Review and Improvement

Review and improvement of this plan will be undertaken in accordance with the CoCs and Section 6.2 of the OEMP [PREC-QPMS-EN-APP-00001]. Continuous improvement will be achieved by the ongoing evaluation of environmental management performance and effectiveness of this plan against environmental policies, objectives and targets. In the event that the noise surveys conclude that the NMLs and the sleep disturbance trigger levels for the night-time period at the nearest affected residential receivers are not being complied with, the CNBMP will be amended by implementing the recommendations made by the acoustic consultant, as soon as practical provided they are feasible and reasonable.

A copy of the updated plan and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure, as outlined in Section 1.4.1 of the OEMP. Copies of the detailed reports and the Plan (as amended) will be made available on the Project Website.

4.4 Incidents

All night-time operational noise incidents will be reported and managed in accordance with Qube's Incident Reporting and Management Procedure (SHEMS-QM-13-PR-0126). Incidents are classified based on the incident's severity as shown in Section 4.6 of the OEMP [PREC-QPMS-EN-APP-00001].

All incidents will be managed and reported according to Section 4.6 of the OEMP.

4.5 Complaints

Complaints handling will be undertaken in accordance with Section 4.5.1 of the OEMP and the Community Communication Strategy (CCS).

4.6 Non-Compliance, Non-Conformances and Corrective Actions

Non-compliance, non-conformances and resulting corrective actions will be managed in accordance with Section 6.4 of the OEMP.