OPERATIONAL NOISE AND VIBRATION MANAGEMENT PLAN

Moorebank Intermodal Precinct – East Precinct

13 DECEMBER 2024

ESR AUSTRALIA

Moorebank Intermodal Precinct – East Precinct

Operation Noise and Vibration Management Plan

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REVISIONS

Revision	Date	Description	Prepared by	Approved by
001	15/04/2019	Draft – for client review	[redacted]	[redacted]
002	30/04/2019	Draft – addressing client comments	[redacted]	[redacted]
003	04/06/2019	Draft – addressing ER comments	[redacted]	[redacted]
004	05/06/2019	Addressing additional ER comments	[redacted]	[redacted]
005	10/07/2019	Addressing stakeholder and DPE comments	[redacted]	[redacted]
006	05/08/2019	Updated to address TfNSW comments	[redacted]	[redacted]
007	09/08/2019	Updated to address additional DPE comments	[redacted]	[redacted]
008	20/08/2019	Updated to address DotEE comments	[redacted]	[redacted]
009	28/08/2019	Updated to address DotEE comments	[redacted]	[redacted]
010	24/09/2019	Update to include 'equivalent locations' for Night Time Rail Noise Monitoring	[redacted]	[redacted]
011	05/02/2020	Updated to include Area 2 as an operational area	[redacted]	[redacted]
012	27/03/2020	Updated to address Mod 2	[redacted]	[redacted]
013	19/12/2022	Updated to include: • Warehouse layout changes • Traffic changes to access points to IMEX and PIWE • Mods 1-4 to SSD 7628 • Changes to MLP East Precinct site management • Logo updated	[redacted]	[redacted]
014	13/12/2024	Updated for: • Approval of Modifications 5 and 6 • MIP name change • Ownership and template change	[redacted]	[redacted]

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
DCCEEW	Department of Climate Change, Energy, the Environment and Water (formerly DotEE, Department of the Environment and Energy)
DIPNR	Department of Infrastructure Planning and Natural Resources
DJLU	Defence Joint Logistics Unit
DotEE	Commonwealth Department of the Environment and Energy
DPE	Department of Planning and Environment (formerly DPIE, Department of Planning, Industry and Environment)
DPHI	Department of Planning, Housing & Infrastructure (Previously DPE)
EIS	Environmental Impact Statement
EMS	Environmental Management System
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPA	NSW Environment Protection Authority
EPL	Environment Protection Licence
ER	Environmental Representative
Facility	The MIP East Precinct Project (as approved by MP10_0193, SSD 6766 (Stage 1) and SSD 7628 (Stage 2 as modified). The Facility includes the operation of the IMEX terminal, warehousing and distribution facilities. A rail link is included as part Stage 1 (SSD 6766) and connects the Facility to the Southern Sydney Freight Line.
FCMMs	Final Compilation of Mitigation Measures
GFA	Gross floor area
IMEX	Import Export Terminal. Includes the following key components: • 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
INP	NSW Industrial Noise Policy
ISO	International Organisation for Standardization
Material harm	Material harm is harm that:

Acronym / Term	Meaning
	• Involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or • 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).
MIP	Moorebank Intermodal Precinct
MIP East Precinct Approvals	• EPBC Act approved in March 2014 (EPBC 2011/6229) • Concept Approval received 29 September 2014 (MP10_0193). • Stage 1 approved 12 December 2016 (SSD 6766) • Stage 2 approved 31 January 2018 (SSD 7628) • Stage 2 Modification 1 approved 14 March 2022 (SSD 7628 MOD 1) • Stage 2 Modification 2 approved 31 January 2020 (SSD 7628 MOD 2) • Stage 2 Modification 3 approved 18 December 2020 (SSD 7628 MOD 3) • Stage 2 Modification 4 approved 19 January 2021 (SSD 7628 MOD 4) • Stage 2 Modification 5 approved 4 September 2023 (SSD 7628 MOD 5) • Stage 2 Modification 6 approved 22 February 2024 (SSD 7628 MOD 6)
MIP West Precinct Approvals	• Concept and Stage 1 approved 3 June 2016 (SSD 5066) • Stage 2 approved 11 November 2019 (SSD 7709) • Stage 3 approved 11 May 2021 (SSD 10431)
MLP	Moorebank Logistics Park (now MIP)
Moorebank Intermodal Precinct	Refers to the whole Moorebank Intermodal Precinct, i.e. MIP East Precinct and the MIP West Precinct
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 MIP – East Precinct
POEO Act	*Protection of the Environment Operations Act 1997 (NWS)*
PUD	Pick-up and delivery vehicles
Operational personnel	All persons listed in Section 3.3 including sub-contractors and tenants working on the MIP East Precinct site.
Rail link	Part of MIP East Precinct Stage 1 (SSD 6766), connecting the MIP East Precinct site to the SSFL. The Rail link is to be utilised for the operation of the Facility.
RING	Rail Infrastructure Noise Guideline
RNMP	Rail Noise Management Plan
RtS	Response to Submissions

Acronym / Term	Meaning
SHEMS	Safety Health and Environmental Management System
SHEQ	Safety, Health, Environment and Quality
SIMTA	Sydney Intermodal Terminal Alliance (the original applicant for Stage 1 (SSD 6766) and Stage 2 (SSD 7628), and Stage 2 MOD1 to MOD5)
SSD	State significant development
SSFL	Southern Sydney Freight Line
TfNSW	Transport for New South Wales (including former Roads and Maritime Services)
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).

Terms	Explanation
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 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	*Environmental Planning and Assessment Act 1979*
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

Terms	Explanation
	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

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1 INTRODUCTION

The Moorebank Intermodal Precinct (MIP)[1] 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 construction and operation of Stages 1 and 2 of the MIP East Precinct (SSD 6766 and SSD 7628 (as modified by MOD 1, MOD 2, MOD 3, MOD 4, MOD 5 and MOD6, respectively) was approved on 12 December 2016 and 31 January 2018, respectively. The project was also approved under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (EPBC 2011/6229) on 6 March 2014. Together, the approvals comprise the two stages of development under the MPE Concept Approval (MP10_0193) which was approved on 29 September 2014.

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 MIP East Precinct.

1.1 Background

The MIP 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 MIP 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 MIP is divided into an East Precinct and a West Precinct, located east and west of Moorebank Avenue respectively, (Figure 1-2). The MIP East Precinct is operational and is managed under an Operation Environmental Management Plan (OEMP), while the MIP West Precinct is still currently under construction.

The main features of the MIP 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 m^2 to 62,000 m^2.
  - Office and administration facilities
  - Amenities
  - Car parking

[1] In 2022, LOGOS Property took over the management of the warehouse and distribution facilities, as well as the overall management of the Moorebank Logistic Park (MLP), including both the East and West Precincts. Following this, the MLP is now known as the MIP (Moorebank Intermodal Precinct). The two precincts are known as MIP East Precinct and MIP West Precinct. This is reflected throughout the OEMP.

  - 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 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 MIP East Precinct is shown in Figure 1-2 as the 'MIP East Precinct operational area.'

In 2022, LOGOS Property took over the management of the warehouse and distribution facilities, as well as the overall management of the MIP East Precinct. Qube Logistics will continue to maintain responsibility for the IMEX and the Rail Link. In July 2024, ESR Group acquired the remaining interest in LOGOS, and overall management of the MIP East Precinct, is now the responsibility of ESR Australia & NZ (ESR)[2]. Section 2 of the OEMP describes the operational areas of responsibilities for ESR and Qube Logistics. This is also summarised in Figure 1-1.

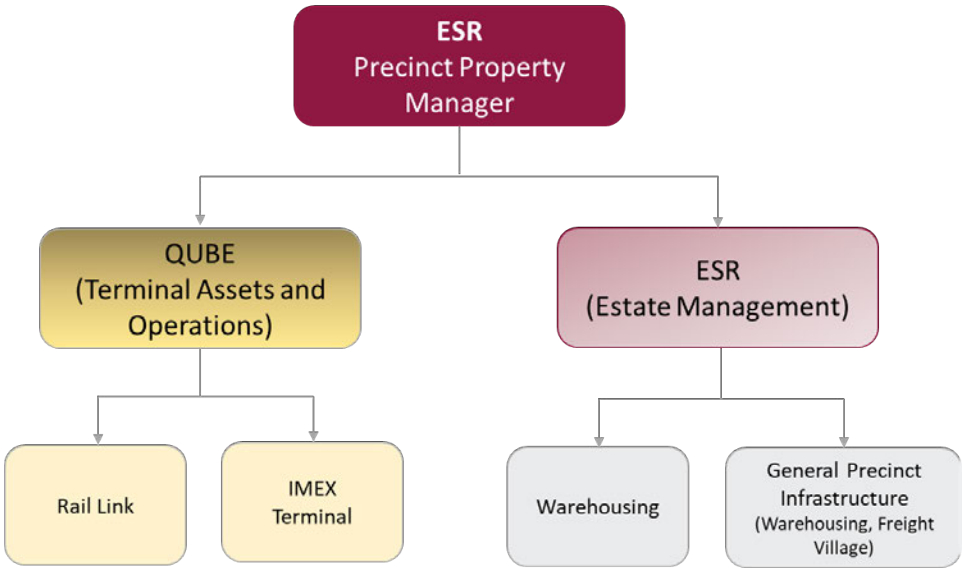


Figure 1-1: Environmental Management Structure

[2] ESR is currently in process of updating procedures and processes from LOGOS to ESR. Documentation listed in the OEMP will be updated overtime to reflect ESR naming conventions. Where existing LOGOS documents are being used (e.g. Sustainability Policy, EMS), these are still referred to in the OEMP.

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 MIP East Precinct Stage 1 CoC (SSD 6766) and MIP East Precinct 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 and Environment (DPE) 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 MIP 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 MIP 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 MIP, including both the East Precinct and the West Precinct, unless this has been prepared and approved under an approval for the MIP West Precinct site. The NVMP will be progressively applied to MIP East Precinct, however, staged to exclude MIP West Precinct as MIP West Precinct Stage 2 is not yet approved.

The proposed staged/progressive application of the OEMP, as described in the POPD, is shown on Figure 1-3, with dates of operation detailed in Table 1-1. Note that these dates are estimates and are subject to change. Area 1 and Area 2 are currently operational.

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

Area	Approximate Dates	Component
Area 1	Q3 2019	IMEX, Rail Link and Warehouse 1
Area 2	Q4 2020	Warehouse 3, 4 and 5
Area 3	Q4 2023	Warehouse 6 and 7
Area 4	Q4 2025	Freight village
Area 5	Q4 2025	Warehouse 2
Area 6	Q1 2026	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 MIP 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 MIP 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 DPE for approval as described in Section 1.3.2.

Until the entire MIP 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 1-3. 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.

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 at the time of preparing the OEMP, 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 MIP 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 for MIP East Precinct
Ensure compliance with relevant conditions, applicable legislative and other requirements	100% compliance with CoC	Operations	Site SHEQ Manager/Advisor for MIP East Precinct
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 for MIP East Precinct
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 for MIP East Precinct

1.6 Consultation

As requested by DPE, 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**
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	MIP representative	Email to confirm progress of review	Open
	17/6/2019	MIP representative	Email to confirm date of comments submission	Open
	17/6/2019	LCC representative	Confirmation of receipt of email	Open
	20/6/2019	MIP representative	Email to confirm progress of review	Open
	20/6/2019	MIP representative	Email to confirm date of comments submission	Open
	20/6/2019	LCC representative	Confirmation of receipt of email	Open
	21/6/2019	MIP representative	Comments on ONVMP received	Open
	28/06/2019	LCC representative	Email to provide response to comments	Open

Agency	Date	Person contacted	Comment	Status
	02/07/2019	MIP representative	Email stating consultation is closed subject to DPE approval	**Closed**
Transport for NSW (TfNSW)	05/06/2019	TfNSW representative	Draft plan emailed for review and comment	Open
	11/07/2019	MIP representative	Comments on ONVMP received	Open
	06/08/2019	TfNSW representative	Email to provide response to comments	Open
	12/08/2019	MIP representative	Email stating comments are closed / accepted	**Closed**

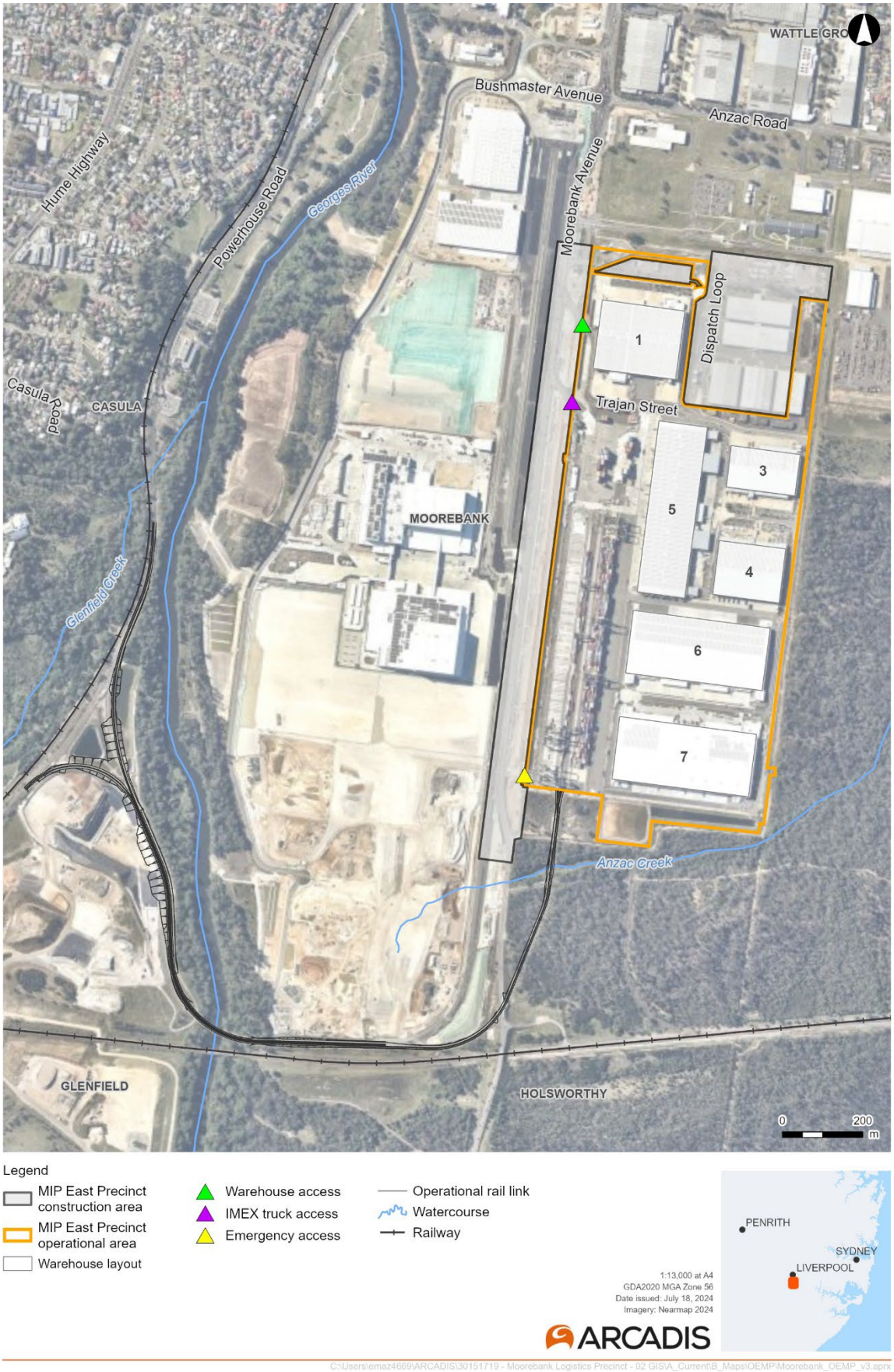


Figure 1-2 MIP East Precinct Site Location

Figure 1-3: Proposed staged/progressive staging of the MIP East Precinct

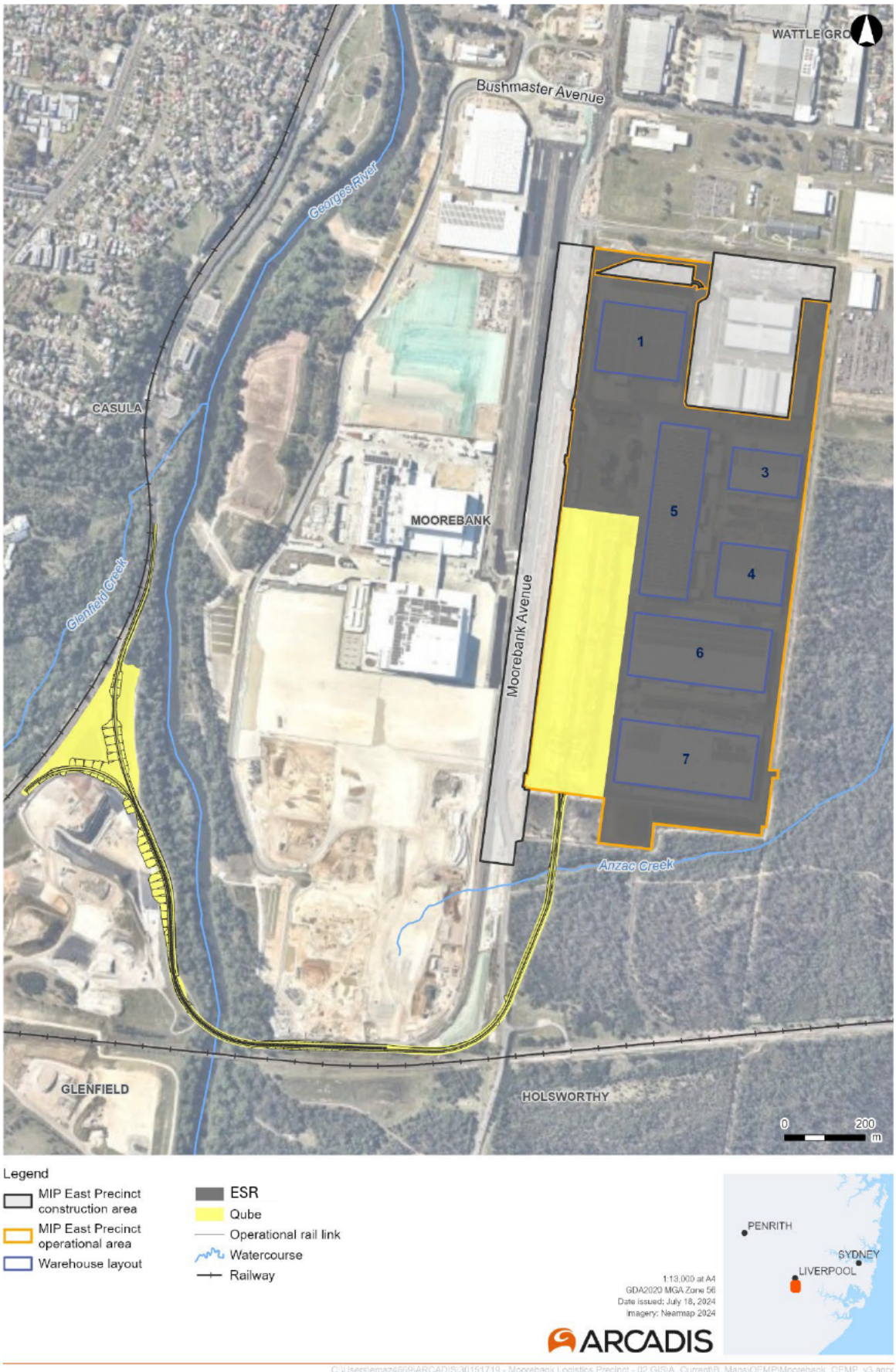


Figure 1-4: Areas of responsibilities maintained by ESR and Qube Logistics

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 superseded by NSW EPA Noise Policy for Industry 2017
- NSW EPA Rail Infrastructure Noise Guideline 2013
- Australian Standard 1055:2018 A*coustics – Description and measurement of environmental noise*
- Assessing Vibration: A Technical Guideline (DEC, 2006)
- International Organisation for Standardization (ISO) 3095:2013 A*coustics - 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 MIP 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 MIP 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
- MIP East Precinct 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
- SSD 7628 MOD 1, approved 14 March 2022

- SSD 7628 MOD 2, approved 31 January 2020
- SSD 7628 MOD 3, approved 18 December 2020
- SSD 7628 MOD 4, approved 19 January 2021
- SSD 7628 MOD 5, approved 4 September 2023
- SSD 7628 MOD 6, approved 22 February 2024
- 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 MIP East Precinct 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). SIMTA was the original applicant for the EPBC approval. The approval is now jointly held between ESR and Qube.

The operation of the MIP 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 2-1. The table also specifically identifies where each of the CoA and commitments are satisfied.

Table 2-1: EPBC Act CoA

CoA	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

CoA	Requirement	Sections or documents where requirements addressed
	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
	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	**Operation** To reduce noise and vibration impacts of the proposal during operation, the following recommendations as presented within Wilkinson Murray (2013) would be implemented:	
	Provisions for a potential noise barrier along the western boundary of the 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 MIP West Precinct project. This noise wall has been included in the operational noise model, however, will not be installed until MIP West Precinct Stage 2 is fully constructed. Notwithstanding, a container noise barrier will be maintained along the western boundary of the IMEX Terminal, as detailed within the F5A Management Plan
	Facilities such as administration buildings and employee carparks would be placed in locations to provide an increased buffer distance between the site operations and sensitive receptors, i.e. the north-eastern corner and eastern portions of the site	As per Figure 1-2, 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 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 1-2.

2.2.2 EP&A Act Approval

The MIP 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 MIP East Precinct 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 MIP East Precinct 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 (MIP East Precinct Stage 1)

<table>
<tr><th>CoC</th><th>Requirement</th><th>Sections or documents where requirements addressed</th></tr>
<tr><td colspan="3">Primary</td></tr>
<tr><td>F4(f)(i)</td><td>…
(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
…</td><td>Section 3.5.8; Table 3-23; NV-11</td></tr>
<tr><td>F5B</td><td>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).
<table>
<tr><th>Sensitive receiver</th><th>Day ($L_{Aeq(15\ min)}$)</th><th>Evening ($L_{Aeq(15\ min)}$)</th><th>Night ($L_{Aeq(15\ min)}$)</th><th>Night ($L_{A1\ (1\ min)}$)</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>
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.</td><td>Section 3.2.2, Table 3-5

Note that the more stringent ($L_{Aeq(15\ min)}$ / 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).
The more stringent $LA_{1\ (1\ min)}$ / LA_{max} identified here have been adopted for IMEX and Rail for the night-time period.</td></tr>
<tr><td>F5C</td><td>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.</td><td>Section 3.2.2</td></tr>
<tr><td rowspan="3">G7B</td><td>The Applicant shall:</td><td></td></tr>
<tr><td>(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)</td><td>Section 3.1.1; Figure 3-1
Section 4.1.1; Table 4-1</td></tr>
<tr><td>(b) the noise survey shall be conducted in accordance with the EPA's Rail Infrastructure Noise Guideline 2013 to determine:
(i) the contribution of any new rail traffic travelling to and from the development
(ii) the increase in the total rail traffic noise level caused by any new rail traffic to and from the development</td><td>Section 4.1.1; Table 4-1</td></tr>
</table>

CoC	Requirement	Sections or documents where requirements addressed
	(c) the noise survey shall be conducted for not less than 12 contiguous days in the winter months (July, August or September)	Section 4.1.1; Table 4-1
G7B	(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: 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 Glenfield Farm caused by any new rail traffic to and from the development to not exceed 2dB(A)	Section 4.1.1; Table 4-1
	(e) the report of the noise survey including the results and recommendations shall be provided to the Secretary	Section 4.2; Table 4-2
G15	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
	(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	Section 4.2; Table 4-2

CoC	Requirement	Sections or documents where requirements addressed
	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	
G15	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
Secondary		
E25	The Applicant shall prepare a review of sleep disturbance impacts based on detailed design, including: 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	Prior to the commencement of operation, the Applicant shall prepare a Brake Squeal Report on brake squeal identifying the following:	Refer to Brake Squeal Report
	(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.)	Refer to Brake Squeal Report Section 4.2; Table 4-2
	(b) The root cause of brake squeal, including the influence of the design, set-up and maintenance of both brake shoes and brake rigging	Refer to Brake Squeal Report
	(c) Possible solutions to mitigate or eliminate brake squeal, including modifications to brake rigging and alternative brake shoe designs and compounds	Refer to Brake Squeal Report
	(d) Any monitoring system proposed to capture brake squeal	Refer to Brake Squeal Report Section 4.1.1; Table 4-1
F5A	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: ……	Refer to the F5A Management Plan Section 4.1.1; Table 4-1

CoC	Requirement	Sections or documents where requirements addressed
G6	Port shuttle operations must use: (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 MIP East Precinct Stage 1 Best Practice Review (Arcadis, 2017) Section 3.5.8; Table 3-23; NV-18; NV-25
G6	(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 MIP East Precinct 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) $L_{AF(max)}$ 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

CoC	Requirement	Sections or documents where requirements addressed
G7	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
	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
G7A	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
	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	Section 3.5.8; Table 3-23; NV-14; NV-15

CoC	Requirement	Sections or documents where requirements addressed
	Track to ensure the correct wheel / rail contact position and hence to encourage proper rolling stock steering	

Table 2-3: CoCs of SSD 7628 (MIP East Precinct 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 Activity: Operation; Day: Monday to Sunday; Time: 24 hours	Section 3.4.1
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) Location (residential receivers): Casula, Glenfield, Wattle Grove Day ($L_{Aeq(15\ min)}$): 35, 35, 35 Evening ($L_{Aeq(15\ min)}$): 35, 35, 35 Night ($L_{Aeq(15\ min)}$): 35, 35, 35 Night ($L_{A1\ (1\ min)}$): 52, 52, 52 Notes: To determine compliance with the $L_{Aeq,15\ minute}$ 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. To determine compliance with the $L_{A1,1\ minute}$ 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 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.	Section 3.1.2 Section 3.2.2, Table 3-5 Note that the more stringent ($L_{Aeq(15\ min)}$ / LA_{max} Noise Management Levels identified here have been adopted for the day, evening and night time period The more stringent $LA_{1\ (1\ min)}$ / LA_{max} from SSD 6766 CoC F5B has been adopted for IMEX and Rail for the night-time period (Table 2-2).
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	Section 3.5.1 Section 3.5.1.3, Table 3-15 and Table 3-16

CoC	Requirement	Sections or documents where requirements addressed
	criteria outlined in the NSW RNP (EPA, 2011), and how their effectiveness would be measured	Also refer to Workplace Travel Plan
	When these measures would be implemented	Table 3-23
B83	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	Before the commencement of operations, a Precinct Operational Environmental Management Plan must be prepared to the satisfaction of the Secretary. The OEMP Must: (g) Include the management plans required under this approval, including: …… vi) Operational Noise and Vibration Management Plan ……	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: i. the relevant statutory requirements (including any relevant approval, licence or lease conditions);	Section 2; Table 2-1, Table 2-2, Table 2-3, Table 2-4 and Table 2-5
	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

CoC	Requirement	Sections or documents where requirements addressed
	h) a protocol for periodic review of the plan.	Section 4.3
Secondary		
A19	Where conditions of this consent require a document to be prepared in consultation with an identified party, the Applicant must: (a) Consult with the relevant party prior to submitting the subject document to the Secretary for approval;	Section 1.6, Table 1-3 Appendix A
A19	(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: (i) Details of the consultation undertaken;	Section 1.6, Table 1-3 Appendix A
	(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
B81	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
	(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
B84	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.
B85	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
B86	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
B86	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:	
	(a) use of best practice plant	Section 3.5.8; Table 3-23; NV-17; NV 18; NV-19; NV-20 Refer to Tenant WOEMP Refer to the MIP East Precinct 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:	
	(a) continue to implement all reasonable and feasible best practice noise mitigation measures	Section 3.5.1 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 MIP East Precinct Stage 1 RtS (Arcadis September 2015), and the MIP East Precinct 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 (MIP East Precinct 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 MIP 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.
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

FCMM	Requirement	Sections or documents where requirements addressed
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: • 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: • Container handling equipment will be fitted with broadband 'quacker' reversing alarms.	Section 3.5.8; Table 3-23; NV-7

Table 2-5: FCMM (MIP East Precinct 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: … • Operational Noise and Vibration Management Plan (ONVMP) ...	This Plan
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)

FCMM	Requirement	Sections or documents where requirements addressed
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	• Accountable for the environmental performance, including noise and vibration, of the MIP East Precinct. • Provides sufficient resources to implement, develop and maintain the ONVMP throughout the operating life of the MIP 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 MIP East Precinct • Reviews and approves changes to the ONVMP
IMEX Terminal Manager Rail Link Area Manager Estate Manager	• 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 for MIP East Precinct	• 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 • Reports noise and vibration incidents to IMEX Terminal 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	• Responsible for their own environmental performance for operational activities on leased areas

Roles	Responsibilities
	• Reports noise and vibration incidents to Qube's IMEX Terminal Manager and / or the Site SHEQ Manager/Advisor for MIP East Precinct • Track their compliance with the relevant noise and vibration requirements in the CoC and provides Environmental Compliance Reports to ESR which detail their compliance status with the CoC relevant to the respective WOEMP for inclusion in ESR Annual Compliance Reports as required.
Train Operators / Site Personnel	• 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)	• 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 MIP East Precinct and the environmental controls established to manage key risks.

3.1 Existing Environment

The existing environment in the vicinity of the MIP 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.

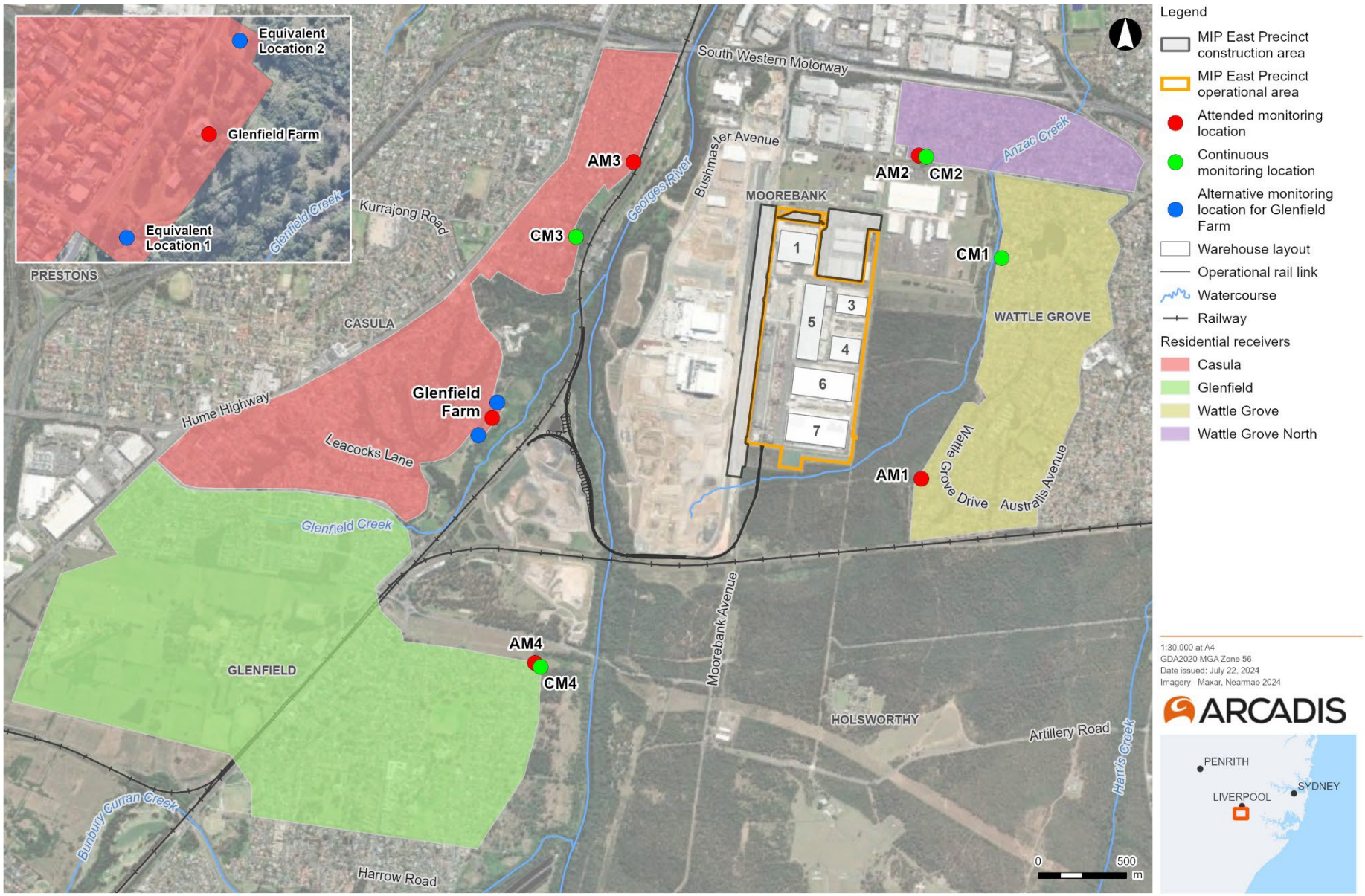
3.1.1 Sensitive Receivers

The potentially most affected residential receivers in the vicinity of the MIP 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 MIP West Precinct, 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 MIP 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
MIP West Precinct (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 MIP West Precinct site to enable the development of the Project and these are no longer considered sensitive receivers for the operation of the MIP. The Defence National Storage Distribution Centre (DNSDC) formerly occupied the MIP East Precinct site but relocated this operation to the DJLU, immediately north of the MIP East Precinct site as shown in Figure 3-1.



Date: 22/07/2024 Path: C:\Users\emaz4669\ARCADIS\30151719 - Moorebank Logistics Precinct - 02 GIS\A_Current\B_Maps\OEMP\Moorebank_OEMP_v3.aprx

Figure 3-1: Sensitive Receivers

3.1.2 Background Noise Levels

Background noise monitoring to satisfy CoC B62 and B63 of the MIP East Precinct 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 MIP East Precinct Concept Plan which were used to inform the noise management levels for the MIP East Precinct Stage 2 EIS. Therefore, no change to the Noise Management Levels (NMLs) identified in the MIP East Precinct 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 MIP 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 MIP East Precinct 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 MIP 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 MIP East Precinct Stage 1 and MIP East Precinct 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 $LA_{1\ (1\ min)}$ / LA_{max} criteria.

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

The operation of the MIP East Precinct (Warehouses 1, 3, 4, 5, IMEX and Rail) will be required to comply with the more stringent $LA_{eq(15\ min)}$ 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 $LA_{1\ (1\ min)}$ / LA_{max} specified in SSD 6766 CoC 5FB. The Operational Noise Limits for the MIP 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 ($LA_{eq(15\ min)}$)	Evening ($LA_{eq(15\ min)}$)	Night ($LA_{eq(15\ min)}$)	Night ($LA_{1\ (1\ min)}$ / 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 MIP 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 ($L_{Aeq,\ period}$)
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 MIP 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 MIP 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 for MIP East Precinct.

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 MIP 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

Source	Sound Power Level at Octave Band Centre Frequency									Overall SWL (dBA)
	31.5	63	125	250	500	1k	2k	4k	8k	
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 indictive 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 Murray[3] 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 ≤ curve radius < 500m
- +8 dBA where 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.

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

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)
- 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 MIP East Precinct.

3.5.1 Road Noise Impact

As described above, light and heavy vehicles would enter and exit the MIP 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 MIP 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 MIP 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 MIP East Precinct Stage 1 Noise and Vibration Impact Assessment, Report No, 12186-S1 Version D (2015) and MIP East Precinct 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	• 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
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 MIP East Precinct Stage 2 Response to Submissions report[4].

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

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

Receiver	Predicted Level ($LA_{eq,\ night}$ dBA)		Existing Rail Noise Levels ($LA_{eq,\ night}$ dBA)	Criteria ($LA_{eq,\ night}$ dBA) [5]	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

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

Receiver	Predicted Level (LA_{max} dBA)		Existing Rail Noise Levels (LA_{max} dBA)	Criteria (LA_{max} 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 LAmax,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 $LA_{eq,\ night}$ 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 $LA_{eq,\ night}$ 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

[5] 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)

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 MIP 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 MIP East Precinct are presented in Table 3-19. As the MIP East Precinct Stage 1 (SSD 6766) and MIP East Precinct 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 MIP West Precinct 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 F5A Management Plan (Appendix B).

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

Receiver	Predicted $L_{Aeq, period}$ Noise Level (dBA)				Criteria (dBA)			Complies?
	Day	Evening	Night[6]		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

[6] The calm and adverse meteorological conditions are identified in Section 3.1.3

3.5.5 Intrusiveness

The predicted LAeq, 15min operational noise levels at nearby receivers due to the MIP East Precinct are presented in Table 3-20.

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

3.5.6 Sleep Disturbance Assessment

Transient noise events associated with the operation of the MIP 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 MIP 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 LA_{max} 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 LA_{max} 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 LAmax 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 MIP East Precinct and MIP West Precinct Stage 2, and assesses them against the relevant amenity criteria.

The LA_{eq}, period noise levels at sensitive receivers due to the concurrent operation of the MIP East Precinct and the MIP West Precinct Stage 2 site were predicted by combining the computer noise models developed for each operational Facility[7]. 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[8] (dBA)			Complies?
	Day	Evening	Night		Day	Evening	Night	
			Calm	Adverse				
Wattle Grove	27	27	25	29	35	35	35	Yes
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 MIP East Precinct and MIP West Precinct 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 ESR (as MIP East Precinct Property Manager) and Qube's (as IMEX and Rail Link Operations Manager) requirements and standards, which include, but are not limited to the following:

- LOGOS WHSMS-LOGOS-007 Incident Reporting & Management Procedure
- LOGOS Work Health & Safety (WHS) Management Plan
- Qube SHSMS-QH-02-PR-004 Legislative and Regulatory Obligations Procedure
- Qube SHEMS-QL-09-PR-0058 Consultation and Communication Procedure

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

[8] As this section relates to cumulative impacts against MIP East Precinct and MIP West Precinct 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 MIP East Precinct, refer to Section 3.2.2

- Qube SHEMS-QH-PR-0022 Corrective and Preventive Action Procedure
- Qube SHEMS-QL-13-PR-0126 Incident Reporting
- Qube SHEMS-QL-05-PR-0025 Records Management Procedure
- Qube SHSMS-QH-06-PR-0015 Environmental Aspects and Impacts Identification Procedure
- Qube SHEMS- QH-SHE-PO-012 Safety Health and Sustainability Policy.

Table 3-23: Noise Mitigation Measures

ID	Management Measure	Timing	Responsibility	Reference
MIP East Precinct				
NV-1	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. 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.	Operations	Site SHEQ Manager/ Advisor for MIP East Precinct Area Managers: • IMEX Terminal (Qube) • Rail Link (Qube) • Estate Manager (ESR) Rail operators All staff	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 for MIP East Precinct	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 F5A Management Plan. 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 for MIP East Precinct	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 for MIP East Precinct	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 for MIP East Precinct	FCMM 4.1B (MIP East Precinct Stage 1)
NV-5	All vehicles and equipment will be well maintained in accordance with the manufacturer's specifications	Operations	Site SHEQ Manager/ Advisor for MIP East Precinct	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 for MIP East Precinct	CoC B88 (SSD 7628)
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 for MIP East Precinct	CoC B88(b) (SSD 7628)

ID	Management Measure	Timing	Responsibility	Reference
NV-6b	Training and awareness programs will be provided on implementation of the ONVMP and the F5A Management Plan to minimise noise emissions including limiting the use of tonal reversing alarms	Operations	Site SHEQ Manager/ Advisor for MIP East Precinct	CoC B88(b) (SSD 7628)
NV-7	Container handling equipment will be fitted with broadband 'quacker' reversing alarms	Operations	Site SHEQ Manager/ Advisor for MIP East Precinct	FCMM 4.2A (MIP East Precinct Stage 1)
NV-8	Unnecessary idling for vehicles will be avoided with engines turned off during periods of inactivity.	Operations	Site SHEQ Manager/ Advisor for MIP East Precinct	FCMM 4.1B (MIP East Precinct 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 for MIP East Precinct	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 for MIP East Precinct	FCMM 4.1B (MIP East Precinct 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 for MIP East Precinct	CoC F4(f)(i) (SSD 6766)

ID	Management Measure	Timing	Responsibility	Reference
NV-11a	Additional mitigation measures to reduce the impact of road noise on the receivers from the facility include: • 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 The effectiveness of these measures will be reported within the Annual Review required under CoC C10 of SSD 7628.	Operation	Site SHEQ Manager/ Advisor for MIP East Precinct	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 for MIP East Precinct Qube's IMEX Terminal and Rail Link Manager	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 for MIP East Precinct Qube's IMEX Terminal and Rail Link Manager	FCMM 4.1B (MIP East Precinct 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 for MIP East Precinct Qube's IMEX Terminal and Rail Link Manager	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	Qube's IMEX Terminal and Rail Link Manager	CoC G8(b) (SSD 6766) FCMM 3D (MIP East Precinct 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	Commencement of operations	Site SHEQ Manager/ Advisor for MIP East Precinct Qube's IMEX Terminal and Rail Link Manager	FCMM 4.1B (MIP East Precinct Stage 1)

ID	Management Measure	Timing	Responsibility	Reference
	used to enable idling down of locomotives and minimise noise production.			
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 for MIP East Precinct Qube's IMEX Terminal and Rail Link Manager	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	Operations Manager Site SHEQ Manager/ Advisor for MIP East Precinct Qube's IMEX Terminal and Rail Link Manager	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 Qube's IMEX Terminal and Rail Link Manager Site SHEQ Manager/ Advisor for MIP East Precinct	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: • Where the plant/equipment with highest noise efficiency is prohibitively more expensive than other equipment with disproportionally minimal improvement in noise efficiency	Operations	Site SHEQ Manager/ Advisor for MIP East Precinct Qube's IMEX Terminal and Rail Link Manager	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: • Where the plant/equipment with highest noise efficiency is prohibitively more expensive than other equipment with disproportionally minimal improvement in noise efficiency	Operations	Site SHEQ Manager/ Advisor for MIP East Precinct Qube's IMEX Terminal and Rail Link Manager	CoC B88(a) (SSD 7628)

ID	Management Measure	Timing	Responsibility	Reference
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 for MIP East Precinct Qube's IMEX Terminal and Rail Link Manager	FCMM 3B (MIP East Precinct 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 for MIP East Precinct Qube's IMEX Terminal and Rail Link Manager	CoC F5(d) (SSD 6766) FCMM 3B (MIP East Precinct Stage 1)
NV-23	The noise management measures detailed in the F5A Management Plan (Appendix B) will be implemented.	Operations	Site SHEQ Manager/ Advisor for MIP East Precinct Qube's IMEX Terminal and Rail Link Manager	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 for MIP East Precinct Qube's IMEX Terminal and Rail Link Manager	CoC B81 (SSD 6766)
NV-25	The noise management measures detailed in the MIP East Precinct Stage 1 Best Practice Review (Arcadis, 2017) will be implemented.	Operations	Site SHEQ Manager/ Advisor for MIP East Precinct Qube's IMEX Terminal and Rail Link Manager	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 for MIP East Precinct Qube's IMEX Terminal and Rail Link Manager	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 for MIP East Precinct	CoC B155 (SSD 7628) Operation Community Communication Strategy

ID	Management Measure	Timing	Responsibility	Reference
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 for MIP East Precinct	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.

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

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	Continuous rail noise monitoring will be undertaken from the commencement of operations of the IMEX terminal. The monitoring system will capture the following information: • 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 • LAeq(15hour) and LAeq(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 *Rail Infrastructure Noise Guideline* (EPA, 2013). • Other information as required by the Secretary	Exceedance of noise management levels 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.	Notification to Site HSEQ Manager/Advisor An investigation will be undertaken to determine sources and/or causes of exceedence 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	On-track monitors **Validation:** Predicted noise impacts identified in Table 3-17 and 3-18.	CoC G7 (SSD 6766)
Wayside Angle of Attack Monitoring	Rail Link	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: • Angle of attack from a wheel on each axle of every train • Time and date of each axle passby	Wagons wheels exceed the ASA standard angle of attack	Refer to Wayside Angle of Attack Report for detail: Bogies in breach of the angle of attack requirements are required to be rectified by the train operator, or The operator must submit a plan to rectify the performance of the wagon to the satisfaction of the Lead Rolling	Site HSEQ Manager/ Advisor	On-track monitors **Validation** Predicted noise impacts identified in Table 3-17 and 3-18.	CoC G7A (SSD 6766)

Monitoring Focus	Area/ Location	Frequency / Duration	Exceedance / Trigger	Response / Remedial Measures	Responsibility	Monitors to be used / Validation of impacts	CoC
		• Identification number of each item of rolling stock		Stock Engineer, Asset Standards Authority.			
Night Time Rail Noise Monitoring	Glenfield Farm (or an equivalent location if access is denied)[9] The following equivalent locations have been identified: 1. 90 Leacocks Lane, Casula 2. Public Park to the north of Glenfield Farm	Between 3 and 12 months, following the commencement of operations of the IMEX terminal, noise surveys will be conducted for a minimum of 12 contiguous days during the winter months of July, August or September. 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: • The contribution of any new rail traffic travelling to and from the MIP East Precinct • The increase in the total rail traffic noise level caused by any new rail traffic to and from the MIP East Precinct	A sustained increase in the total rail traffic noise level of more than 2dB(A) for more than 30% of nights surveyed against established baseline noise levels	Within 12 months of Noise Survey Report, construct a noise barrier along the sections of rail link in 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.	Site HSEQ Manager/ Advisor	Attended noise monitoring at Glenfield Farm **Validation** Predicted noise impacts identified in Table 3-17 and 3-18.	CoC G7B(a-d) (SSD 6766)
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	Notification to Site HSEQ Manager/Advisor 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	Site HSEQ Manager/ Advisor	On-track monitors **Validation** Predicted noise impacts identified in Table 3-17 and 3-18.	CoC F5(d) (SSD 6766) FCMM 3B (MIP East Precinct Stage 1)

[9] 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
				in Section 4.3 and Section 4.3.1 will be implemented.			
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) 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)	Exceedance of noise management levels identified in the F5A Management Plan	Refer to F5A Management Plan for detail: Works will cease or reduce, and an investigation will be undertaken to determine the 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.	Site HSEQ Manager/ Advisor	Continuous and attended monitoring located at residential receivers **Validation** Predicted noise impacts identified in Table 3-19.	CoC F5A (SSD 6766)
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	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
				designed and constructed to prevent noise levels exceeding 2 dB on background.			
MIP East Precinct							
Operational Noise Monitoring	All nominated receivers (reference)	Noise monitoring to compare actual noise performance of the MIP East Precinct against the noise management levels will be undertaken as follows: • 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	Notification to 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	Continuous and attended monitoring located at residential receivers **Validation** Predicted impacts identified in Table 3-19, Table 3-20, Table 3-21, Table 3-22.	CoC F4(f)(i) (SSD 6766) CoC G15 (SSD 6766) CoC B64 (SSD 7628) CoC B86 (SSD 7628) FCMM 2E (MIP East Precinct Stage 2) CoC B80 (SSD 7628) CoC F5B (SSD 6766)
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	Notification to 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 Noise consultant (if required)	Attended monitoring **Validation** Predicted impacts identified in Table 3-19, Table 3-20, Table 3-21, Table 3-22.	CoC F4(f)(i) (SSD 6766) CoC B80 (SSD 7628) CoC F5B (SSD 6766)

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)

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 for MIP East Precinct, 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 locations[10]:

- 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 LA_{max} 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.

[10] 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 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 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	• Published within 24 hours on project Website • Annually, from the commencement of operations of the IMEX terminal to and including 2031	• The noise results will be publicly accessible from the project Website within 24 hours of a train passing the noise monitors, unless unforeseen circumstances (i.e a system malfunction) have occurred. • The $L_{Aeq(15hour)}$ 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 **for MIP East Precinct** Qube's IMEX Terminal and Rail Link Manager	CoC G7 (SSD 6766)
Wayside Angle of Attack Reporting	Rail Link	• Accessible by train operators on the project website within 24 hours • Six-monthly report	• The results from the wayside angle of attack monitoring system will be accessible by train operators from the project 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 **for MIP East Precinct** Qube's IMEX Terminal and Rail Link Manager	CoC G7A (SSD 6766)
Night Time Rail Noise Monitoring Report	Glenfield Farm (or an equivalent location if access is denied)	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 **for MIP East Precinct** Qube's IMEX Terminal and Rail Link Manager	CoC G7B(e) (SSD 6766)

Requirement	Area/Location	Timeframe	Reporting Requirements	Responsibility	CoC
	The following equivalent locations have been identified: 1. 90 Leacocks Lane, Casula 2. Public Park to the north of Glenfield Farm				
Container Noise Barrier Report	IMEX Terminal	For 12 months following the commencement of operations of the IMEX terminal	• Between 3 and 6 months after commencement of operations • Monthly for 6 months after first measurement event.	Site SHEQ Manager/ Advisor **for MIP East Precinct** Qube's IMEX Terminal and Rail Link Manager	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 **for MIP East Precinct** Qube's IMEX Terminal and Rail Link Manager	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 **for MIP East Precinct** Qube's IMEX Terminal and Rail Link Manager	CoC G6(b) (SSD 6766)
Effectiveness of Friction Modifiers	Rail Link	First 3 months of operations	A friction modifier report will, at a minimum, include the following information: • The extent of use of friction modifiers • Short-term monitoring results undertaken during the first 3 months of operation.	Site SHEQ Manager/ Advisor **for MIP East Precinct** Qube's IMEX Terminal and Rail Link Manager	FCMM 3B
Brake Squeal Noise Report	Rail Link	Prior to the commencement of operations	Brake Squeal Reports will, at a minimum, include the following information: • The extent of brake squeal across the fleet of rail vehicles that frequently use the terminals	Site SHEQ Manager/ Advisor **for MIP East Precinct** Qube's IMEX Terminal and Rail Link Manager	CoC F5 (SSD 6766)

Requirement	Area/Location	Timeframe	Reporting Requirements	Responsibility	CoC
			• 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.		
MIP East Precinct					
Operational Noise Monitoring Report	MIP East Precinct	• 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 site, or as otherwise agreed by the Secretary. • The Operational Noise Monitoring Reports will be submitted to the Secretary and the EPA within 60 days of completing the noise monitoring	Operational Noise Monitoring Reports will, at a minimum, include the following information: • 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 • 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	Site SHEQ Manager/ Advisor **for MIP East Precinct** Qualified Acoustic Consultant	CoC G15 (SSD 6766) CoC B86 (SSD 7628) FCMM 2E (MIP East Precinct Stage 2)

Requirement	Area/Location	Timeframe	Reporting Requirements	Responsibility	CoC
			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 MIP East Precinct between the date of commencement of operation and the date the report was prepared.		
Best Practice Noise Mitigation Review	MIP East Precinct	Annually	• 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 for MIP East Precinct	CoC B90(c) (SSD 7628)
Monitoring Report for Mechanical Plant	Each Warehouse and Freight Village	Within two months of occupation of each warehouse	• 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 for MIP East Precinct	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 the Incident Reporting & Management Procedure [**WHSMS-LOGOS-007**] and Qube's Incident Reporting and Management Procedure [**SHEMS-QL-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	Typographical errors noted in the ONVMP include: • 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	• Table 3-16 (p. 31) of the ONVMP refers to 'Longer Term Road Nosie Strategies' instead of 'Longer Term Road Noise Strategies';	The title has been corrected to "Longer Term Road Noise Strategies"	25/06/19
LCC	21/06/2019	• Table 3-23 (p. 37) of the ONVMP refers to 'compression breaking' instead of 'compression braking'; and	compression breaking' has been updated to 'compression braking'; and	25/06/19
LCC	21/06/2019	• The Reference Column in Table 3-23 (p. 37) of the ONVMP refers to SSB 7628 instead of SSD 7628. It is requested that the consultants review the ONVMP to ensure that all typographical errors are rectified.	All reference to SSB have been updated to SSD	25/06/19
LCC	21/06/2019	**Tonal alarms** 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'. 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.	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). 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. Two new measures have been included in Table 3-23 (NV-6a-b) referring to the Drivers Code of Conduct and training and awareness.	25/06/19

Stakeholder	Comment Date	Stakeholder Comment	Arcadis Response	Response Date
LCC	21/06/2019	<u>Noise Monitoring</u> Table 3-23 of the ONVMP (p. 41) indicates that noise monitoring will be undertaken to compare actual noise performance of the MIP East Precinct against the noise management levels for a minimum of twelve months following occupation of the entire site. 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. 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.	A programme for comprehensive noise monitoring has been devised and is summarised in Section 4.1, particularly Table 4-1. 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. 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. Section 4.1.2, Section 4.1.3 and Table 4-1 have been updated to include this statement. ***<u>LCC Comment</u>*** *LCC internal team outlined that there were still concerns about the duration of the proposed noise monitoring program. Regardless, the DPE will need to be satisfied that the proposed monitoring program satisfies the conditions of consent.*	25/06/19 4/7/2019
LCC	21/06/2019	<u>Reporting</u> Table 4-2 of the ONVMP (p. 45) indicates that Operational Noise Monitoring Reports will be submitted to the Secretary and NSW EPA	Agreed. The Operational Noise Monitoring Reports will be submitted to both DPE and the EPA within 60 days	25/06/19

Stakeholder	Comment Date	Stakeholder Comment	Arcadis Response	Response Date
		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. 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.	of completing the operational noise monitoring in accordance with SSD 7628 Condition B87.	

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	The general procedure for the loco shifter is as follows: • 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. 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."	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 that NV-18 also refers to condition G6(b) which requires best-practice wagons.	New measure, NV-18(b) included which states that the commitments made in the Best Practice Report – Wagons, must be implemented.	06/08/2019

Tilley, Heather

To: Patel, Ketan
Subject: RE: Operational Noise and Vibration Management Plan Moorebank Logistics Park- East Precinct

Hi Ketan

Final comment from LCC on the above plan to be documented in the consultation log. Please note that we have now closed out consultation with LCC on this plan and Stormwater Monitoring Program.

Thanks,
Ibrahim

Regards,

IBRAHIM AWAD
ENVIRONMENTAL MANAGER

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Sent: Tuesday, 2 July 2019 2:07 PM
To: Ibrahim Awad <iawad@tacticalgroup.com.au>
Cc: Nathan Cairney <ncairney@tacticalgroup.com.au>; Fei Chen <fchen@tacticalgroup.com.au>
Subject: RE: Operational Noise and Vibration Management Plan Moorebank Logistics Park- East Precinct

Hi Ibrahim,

I have forwarded your response to our submission to our internal team and note that the majority of concerns are addressed. They 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.

Kind regards,

Luke Oste
Strategic Planner

02 8711 7886 | | OsteL@liverpool.nsw.gov.au | www.liverpool.nsw.gov.au
Customer Service: 1300 36 2170 | 33 Moore Street Liverpool, NSW 2170, Australia

From: Ibrahim Awad [mailto:iawad@tacticalgroup.com.au]
Sent: Tuesday, 2 July 2019 8:11 AM
To: Luke Oste <OsteL@liverpool.nsw.gov.au>
Cc: Nathan Cairney <ncairney@tacticalgroup.com.au>; Fei Chen <fchen@tacticalgroup.com.au>
Subject: RE: Operational Noise and Vibration Management Plan Moorebank Logistics Park- East Precinct

Hi Luke

Please find attached our response table addressing LCC's comments on the ONVMP as well as the updated plan with the amendments marked in track changes.

Can you please confirm that you are satisfied with these changes so that we can move to close out our consultation with LCC on this plan?

Thanks and regards,
Ibrahim

Regards,

IBRAHIM AWAD
ENVIRONMENTAL MANAGER

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From: Ibrahim Awad
Sent: Friday, 21 June 2019 4:30 PM

To: Luke Oste <OsteL@liverpool.nsw.gov.au>
Cc: Nathan Cairney <ncairney@tacticalgroup.com.au>; Fei Chen <fchen@tacticalgroup.com.au>
Subject: RE: Operational Noise and Vibration Management Plan Moorebank Logistics Park- East Precinct

Hi Luke

Thanks for this. We will review and come back to you with a response to your comments shortly.

Regards,
Ibrahim

Regards,

IBRAHIM AWAD
ENVIRONMENTAL MANAGER

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From: Luke Oste <OsteL@liverpool.nsw.gov.au>
Sent: Friday, 21 June 2019 4:16 PM
To: Ibrahim Awad <iawad@tacticalgroup.com.au>
Subject: Fwd: Operational Noise and Vibration Management Plan Moorebank Logistics Park- East Precinct

Hi Ibrahim,

As discussed, please find Councils comments for the ONVMP.

Please don't hesitate to contact me with any concerns or comments.

Kind regards,

Luke

Luke Oste
Strategic Planner

LIVERPOOL CITY COUNCIL | LIVERPOOL THE GREAT SOUTH WEST

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From: Neil Ramsay
Sent: Friday, June 21, 2019 3:24:37 PM
To: Luke Oste
Cc: Steven Tuntevski; David Smith
Subject: Operational Noise and Vibration Management Plan Moorebank Logistics Park- East Precinct

Dear Luke,

I refer to your request for the Environmental Health Section to review the Operational Noise and Vibration Management Plan (ONVMP) Moorebank Logistics Park- East Precinct (Report No. PREC-QPMS-EN-PLN-0008, Revision 002) prepared by Daniel Prior and Conrad Weber dated 30th April 2019. According to the consultants, the ONVMP was developed to address the requirements of the *Environment Protection and Biodiversity Conservation Act 1999* Approval, Mitigation Measures (No. 2011/6229), Moorebank Intermodal Precinct East (MPE) Stage 1 Conditions of Consent (CoC) (SSD 6766) and MPE Stage 2 CoC (SSD 7628).

The purpose of this email is to review the ONVMP (Report No. PREC-QPMS-EN-PLN-0008, Revision 002) to determine the adequacy of proposed environmental management measures that will be implemented during operation of the Moorebank Logistics Park- East Precinct. It is noted that the NSW EPA previously confirmed that they do not wish to comment on any of the Operational Management Plans for the Intermodal as a licence is not required for Schedule 1 activities under the *Protection of the Environment Operations (POEO) Act 1997*.

Approval Requirements

The Applicant is required to prepare and implement an Operational Environmental Management Plan (OEMP) outlining environmental management practices and procedures to be followed during the operational phase of the development. The Plan must be prepared in consultation with relevant agencies and include regular noise monitoring and response measures to deal with complaints. Development Consents SSD 6766 and SSD 7628 require the Applicant to prepare the Plan in consultation with the relevant agencies or stakeholders prior to submitting the document to the Secretary for approval.

In accordance with Condition B83 of Development Consent SSD 7628, the Operational Noise Management Plan must outline: management actions to address any potential non-compliance with the nominated limits; contingency measures to be implemented in the event management actions do not reduce levels to a compliant level; and additional feasible and reasonable measures to those proposed in the documents specified under Condition A2 that would be implemented with the objectives of meeting the NSW Road Noise Policy.

Operational Noise and Vibration Management Plan (ONVMP) Moorebank Logistics Park- East Precinct (Report No. PREC-QPMS-EN-PLN-0008, Revision 002) prepared by Daniel Prior and Conrad Weber dated 30th April 2019

Typographical errors noted in the ONVMP include:

- Section 2.1 (p. 8) of the ONVMP contains multiple references to the 'Assessing Vibration: A Technical Guideline (DECC, 2006)';

- Table 3-16 (p. 31) of the ONVMP refers to 'Longer Term Road Nosie Strategies' instead of 'Longer Term Road Noise Strategies';

- Table 3-23 (p. 37) of the ONVMP refers to 'compression breaking' instead of 'compression braking'; and

- The Reference Column in Table 3-23 (p. 37) of the ONVMP refers to SSB 7628 instead of SSD 7628.

It is requested that the consultants review the ONVMP to ensure that all typographical errors are rectified.

Tonal Alarms

- 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'.

  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.

Noise Monitoring

- 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. 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.

  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.

Reporting

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.

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.

Regards,

Neil Ramsay
Senior Environmental Health Officer

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Tilley, Heather

To: Luke Oste
Subject: RE: Operational Noise & Vibration Management Plan - Moorebank Logistics Park - MPE East Precinct - Stage 1 F4f (iv) SSD6766 and Stage 2 B59 (SSD7628)

Hi Ibrahim,

I am in the process of chasing comments for both the ONVMP and the External Lighting Report.

Apologies that this is taking time, I will be in touch as soon with any updates on progress.

Kind regards,

Luke Oste
Strategic Planner

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02 8711 7886 | | OsteL@liverpool.nsw.gov.au | www.liverpool.nsw.gov.au
Customer Service: 1300 36 2170 | 33 Moore Street Liverpool, NSW 2170, Australia

From: Ibrahim Awad [mailto:iawad@tacticalgroup.com.au]
Sent: Wednesday, 12 June 2019 12:22 PM
To: Luke Oste <OsteL@liverpool.nsw.gov.au>
Cc: David Smith <SmithD@liverpool.nsw.gov.au>; Nathan Cairney <ncairney@tacticalgroup.com.au>; Fei Chen <fchen@tacticalgroup.com.au>
Subject: FW: Operational Noise & Vibration Management Plan - Moorebank Logistics Park - MPE East Precinct - Stage 1 F4f (iv) SSD6766 and Stage 2 B59 (SSD7628)

Hi Luke

Do you have any further updates on LCC's comments / close out of consultation on the ONVMP and External Lighting Report?

You mentioned when we spoke last week that you'd try to get these to us by early this week.

Please let me know if there's anything we can help with in this process.

Thanks,

Ibrahim

Regards,

IBRAHIM AWAD
ENVIRONMENTAL MANAGER

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From: Ibrahim Awad
Sent: Thursday, 6 June 2019 2:36 PM
To: 'Luke Oste' <OsteL@liverpool.nsw.gov.au>
Cc: David Smith <SmithD@liverpool.nsw.gov.au>; Nathan Cairney <ncairney@tacticalgroup.com.au>; Fei Chen <fchen@tacticalgroup.com.au>
Subject: FW: Operational Noise & Vibration Management Plan - Moorebank Logistics Park - MPE East Precinct - Stage 1 F4f (iv) SSD6766 and Stage 2 B59 (SSD7628)

Hi Luke

The ONVMP was sent to LCC on 13 May 19 and comments due on 29th May 19 – please see email below. This plan is not required to be consulted on in the CoC but rather was recommended for consultation with LCC by DPE.

We'd be grateful if you could provide a quick review and any comments by Monday 10 June 19 and / or otherwise confirmation if you do not wish to review / comment in order for us to close this out and submit to DPE for approval.

Please let me know if there is anything we can do to help in this process.

Thanks,
Ibrahim

Regards,

IBRAHIM AWAD
ENVIRONMENTAL MANAGER

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From: Ibrahim Awad
Sent: Monday, 13 May 2019 9:53 AM
To: Murray Wilson <WilsonMu@liverpool.nsw.gov.au>
Cc: Nathan Cairney <ncairney@tacticalgroup.com.au>; Fei Chen <fchen@tacticalgroup.com.au>
Subject: Operational Noise & Vibration Management Plan - Moorebank Logistics Park - MPE East Precinct - Stage 1 F4f (iv) SSD6766 and Stage 2 B59 (SSD7628)

Hi Murray

We've recently completed the Operational Noise & Vibration Management Plan (ONVMP) for the above development.

The planning approvals for the above project do not explicitly require the Principal to consult with Liverpool Council on the ONVMP. However it has been suggested in our discussions with DPE that Liverpool Council may none-the-less be interested in knowing how noise and vibration issues related to the Facility will be managed. We are therefore providing this plan to you via the below Dropbox link for your review and comment.

https://www.dropbox.com/s/x7ylogdpzjnoxgh/PREC-QPMS-EN-PLN-0008_ONVMP_clean.pdf?dl=0

If it would help the consultation process, we would be pleased to meet with you to talk through the identified noise & vibration risks and proposed mitigations. Please let me know if you'd like to go ahead with this approach and your preferred meeting dates /time and suggested attendees or otherwise if you not require us to consult with you on this particular plan.

We are hoping to finalise the consultations on this document by the 29th May '19 to allow these documents to be submitted to DPE for their review and approval shortly thereafter. If there is anything that we can do in addition to the above to support meeting that timeframe, please don't hesitate to let us know so that we can action accordingly.

You may also be interested to know that the Operations Environmental Management Plan (OEMP) for the Moorebank Precinct East has now been finalised and can made available to you upon request. The related sub-plans are still at various stages of development but can also be made available to you, upon request, and once complete.

Thanks and regards,

Ibrahim

Regards,

IBRAHIM AWAD
ENVIRONMENTAL MANAGER

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W www.tacticalgroup.com.au

Tilley, Heather

From: Ibrahim Awad <iawad@tacticalgroup.com.au>
Sent: Monday, 17 June 2019 12:11 PM
To: Luke Oste
Cc: David Smith; Nathan Cairney; Fei Chen
Subject: RE: Noise and Vibration, and External Lighting Reports

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Luke

Thanks for this. On the ONVMP, we look forward to receiving your comments by Friday this week.

On the External Lighting Report, we have noted your comments and will now consider our consultation on this Report closed.

Thanks and speak soon.

Regards,
Ibrahim

Regards,

IBRAHIM AWAD
ENVIRONMENTAL MANAGER

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From: Luke Oste <OsteL@liverpool.nsw.gov.au>
Sent: Monday, 17 June 2019 11:52 AM
To: Ibrahim Awad <iawad@tacticalgroup.com.au>
Cc: David Smith <SmithD@liverpool.nsw.gov.au>
Subject: Noise and Vibration, and External Lighting Reports

Hi Ibrahim,

In regard to the Noise and Vibration Plan (ONVMP), we can have comments back to you at the earliest by Friday this week. We apologise for this delay. I just tried to call but didn't get through to you, don't hesitate to call me back if you would like to discuss.

In terms of the External Lighting Report, Council does not have the internal resources to assess and provide comments. We will not be able to provide comment on this report.

Kind regards,

Luke Oste
Strategic Planner

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Tilley, Heather

From: Ibrahim Awad <iawad@tacticalgroup.com.au>
Sent: Thursday, 20 June 2019 1:04 PM
To: Luke Oste
Cc: Nathan Cairney; Fei Chen
Subject: RE: ONVMP - LCC Consultation - Moorebank Logistics Park MPE Stage 2

Thanks Luke and look forward to hearing back from you then.

Regards,
Ibrahim

Regards,

IBRAHIM AWAD
ENVIRONMENTAL MANAGER

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From: Luke Oste <OsteL@liverpool.nsw.gov.au>
Sent: Thursday, 20 June 2019 12:50 PM
To: Ibrahim Awad <iawad@tacticalgroup.com.au>
Cc: Nathan Cairney <ncairney@tacticalgroup.com.au>; Fei Chen <fchen@tacticalgroup.com.au>
Subject: RE: ONVMP - LCC Consultation - Moorebank Logistics Park MPE Stage 2

Hi Ibrahim,

As stated at the beginning of this week, we endeavour to provide this information to you by COB tomorrow.

Kind regards,

Luke Oste
Strategic Planner

02 8711 7886 | | OsteL@liverpool.nsw.gov.au | www.liverpool.nsw.gov.au
Customer Service: 1300 36 2170 | 33 Moore Street Liverpool, NSW 2170, Australia

From: Ibrahim Awad [mailto:iawad@tacticalgroup.com.au]
Sent: Thursday, 20 June 2019 11:46 AM
To: Luke Oste <OsteL@liverpool.nsw.gov.au>
Cc: Nathan Cairney <ncairney@tacticalgroup.com.au>; Fei Chen <fchen@tacticalgroup.com.au>
Subject: ONVMP - LCC Consultation - Moorebank Logistics Park MPE Stage 2

Hi Luke

Do you have any further updates on when we are likely to receive your comments on the above plan?

Thanks,
Ibrahim

Regards,

IBRAHIM AWAD
ENVIRONMENTAL MANAGER

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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	Typographical errors noted in the ONVMP include: • 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	• Table 3-16 (p. 31) of the ONVMP refers to 'Longer Term Road Nosie Strategies' instead of 'Longer Term Road Noise Strategies';	The title has been corrected to "Longer Term Road Noise Strategies"	25/06/19
LCC	21/06/2019	• Table 3-23 (p. 37) of the ONVMP refers to 'compression breaking' instead of 'compression braking'; and	compression breaking' has been updated to 'compression braking'; and	25/06/19
LCC	21/06/2019	• The Reference Column in Table 3-23 (p. 37) of the ONVMP refers to SSB 7628 instead of SSD 7628. It is requested that the consultants review the ONVMP to ensure that all typographical errors are rectified.	All reference to SSB have been updated to SSD	25/06/19
LCC	21/06/2019	**Tonal alarms** 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'. 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.	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). 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. Two new measures have been included in Table 3-23 (NV-6a-b) referring to the Drivers Code of Conduct and training and awareness.	25/06/19

Stakeholder	Comment Date	Stakeholder Comment	Arcadis Response	Response Date
LCC	21/06/2019	<u>Noise Monitoring</u> 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. 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. 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.	A programme for comprehensive noise monitoring has been devised and is summarised in Section 4.1, particularly Table 4-1. 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. 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. Section 4.1.2, Section 4.1.3 and Table 4-1 have been updated to include this statement. ***<u>LCC Comment</u>*** *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.*	25/06/19 4/7/2019

Stakeholder	Comment Date	Stakeholder Comment	Arcadis Response	Response Date
LCC	21/06/2019	<u>Reporting</u> 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. 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.	Agreed. The Operational Noise Monitoring Reports will be submitted to both DP&E and the EPA within 60 days of completing the operational noise monitoring in accordance with SSD 7628 Condition B87.	25/06/19

Prior, Daniel

Subject: FW: Documentation Review - EPA comments

From: Craig Flemming <Craig.Flemming@epa.nsw.gov.au>
Sent: Monday, 29 April 2019 3:48 PM
To: Ian Irwin <iirwin@tacticalgroup.com.au>
Cc: Fei Chen <fchen@tacticalgroup.com.au>; Ibrahim Awad <iawad@tacticalgroup.com.au>
Subject: RE: Documentation Review

HI Ian,

As you are aware, The EPA routinely declines to comment on Management Plans and other post approval documentation.

I understand there are numerous such documents required by the various consents for the Moorebank Precincts.

I suggest that you send a comprehensive list of all the documents that require consultation with the EPA. The EPA will then identify which, if any, the EPA will review.
This way you can quickly satisfy the need to consult with the EPA without the need for redundant correspondence reiterating the EPA's position one by one for each document.

Please note that at this stage there is no role for the EPA in your project during the operating stage and therefore any operational related plans are not going to be of interest to the EPA. You should consider, regardless of the consent conditions, whether it would be appropriate to consult with the appropriate regulatory authority under POEO Act for operational matters.

If, in future, there is a need for an operational licence under POEO, the relevant documentation may be required for the licence application.

Regards,

Craig Flemming
Unit Head, Sydney Industry Section
Metropolitan Branch, NSW Environment Protection Authority
T 02 9995 6927 M 0436 675 169
craig.flemming@epa.nsw.gov.au www.epa.nsw.gov.au @EPA_NSW

Report pollution and environmental incidents 131 555 (NSW only)
or +61 2 9995 5555

Mr Ibrahim Awad
Environmental Manager
Tactical Group
Level 15
124 Walker Street
North Sydney NSW 2060

Dear Mr Awad

Moorebank Logistics Park OEMP - East Precinct - MPE Stage 1 & 2 (SSD6766) and (SSD7628)

Thank you for your correspondence dated 23 May 2019, requesting Transport for NSW (TfNSW) comments on the above:

It is advised that the following reports for the Moorebank Logistics Park – East Precinct have been reviewed and the detailed comments on the above reports are included in **TAB A**:

- Operational Environmental Management Plan, dated 2 April 2019; and
- Operational Noise and Vibration Management Plan dated 5 June 2019.

If you require clarification on the above, please don't hesitate to contact Para Sangar, Senior Transport Planner on 0466 024 892.

Yours sincerely

11/7/2019
Mark Ozinga
Principal Manager, Land Use Planning and Development
Customer Strategy and Technology

Objective Number CD19/05014

TAB A – Detailed Comments

Operational Environmental Management Plan (OEMP)

Appendix A of the OEMP lists the operational conditions of approval, including condition G7A which requires the proponent installs an Angle of Attack monitor to continuously capture each axle of every train, and report to the Secretary of the Department of Planning and Environment every six months. It is recommended that the six-monthly report to the Secretary include a full copy in an electronic format of all captured data for the previous six months.

Operational Noise and Vibration Management Plan

The following comments are provided in relation to Noise and Vibration Plan:

- 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;
- 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
- 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 that NV-18 also refers to condition G6(b) which requires best-practice wagons.

Moorebank Logistics Park ONVMP - East Precinct - MPE Stage 1 & 2 (SSD6766) and (SSD7628)

TfNSW Consultation Close Out – 11 July 2019 – ONVMP

TfNSW Comment #	TfNSW Comment	Proponent Response	Response Date	TfNSW Review Date	TfNSW Response
ONVMP					
1	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	12Aug2019	Accept
2	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	The general procedure for the loco shifter is as follows: • 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 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	06/08/2019	12Aug2019	Accept

		locomotive shifter should be used to enable idling down of locomotives and minimise noise production where possible."			
3	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 that NV-18 also refers to condition G6(b) which requires best-practice wagons.	New measure, NV-18(b) included which states that the commitments made in the Best Practice Report – Wagons, must be implemented.	06/08/2019	12Aug2019	Accept

APPENDIX B F5A MANAGEMENT PLAN

MOOREBANK INTERMODAL PRECINCT

Moorebank Intermodal Precinct – East Precinct

Condition F5A Management Plan

Authors	[redacted]
Checker	[redacted]
Approver	[redacted]
Report No	PREC-QPMS-EN-PLN-0004
Date	22/11/2023
Revision	08

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This Revision Author Details

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REVISIONS

Revision	Date	Description	Prepared by	Approved by
001	16/04/2019	Draft – issued for Client Review	[redacted]	[redacted]
002	23/04/2019	Draft- Addressed Client Comments	[redacted]	[redacted]
003	24/05/2019	Update to address DP&E Comments	[redacted]	[redacted]
004	19/06/2019	Update to address further DP&E Comments	[redacted]	[redacted]
005	03/02/2020	Update to include Area 2 as an operational area	[redacted]	[redacted]
006	19/03/2020	Update to address Mod 2	[redacted]n	[redacted]
007	28/03/2023	Updated for change in ownership, Department changes and warehouse layout changes	[redacted]	[redacted]
008	22/11/2023	Update to address IMEX Terminal TEU increase capacity	[redacted]	[redacted]

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ACRONYMS AND DEFINITIONS

Acronym / Term	Meaning
C-ASC	Cantilever automated stacking cranes
CoC	Condition(s) of Consent
dB(A)	A-weighted decibel. The A- weighting noise filter simulates the response of the human ear at relatively low levels, where the ear is not as effective in hearing low frequency sounds as it is in 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 is denoted as dB(A). Practically all noise is measured using the A filter.
DCCEEW	Department of Climate Change, Energy, the Environment and Water (formerly DotEE)
DotEE	Commonwealth Department of the Environment and Energy (now DCCEEW)
DPE	Department of Planning and Environment
EIS	Environmental Impact Statement
EP&A Act	Environmental Planning and Assessment Act 1979
EPA	NSW Environment Protection Authority
EPBC Act	Environmental Protection and Biodiversity Conservation Act 1999
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 of MPE Stage 1 (SSD 6766) and connects the Facility to the Southern Sydney Freight Line.
FCMM	Final Compilation of Mitigation Measures
IMEX Terminal	Import Export Terminal. Includes the following key components: • 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.
L_{Aeq} or L_{eq}	The "equivalent noise level" is the summation of noise events and integrated over a selected period of time, which would produce the same energy as a fluctuating sound level. When A-weighted, this is written as the LAeq.
$L_{Aeq,15min}$	The Laeq noise level for over a period of 15 minutes.
L1	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.
L_{max}	The maximum sound pressure level measured over a given period.
MIP	Moorebank Intermodal Precinct (formerly Moorebank Logistics Park)

Acronym / Term	Meaning
MIP East Approvals	• Environment Protection and Biodiversity Conservation Act 1999 (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) as modified by Appeal Number 2017/81889 Stage 1 Approval (SS 6766) outcome dated 13 March 2018
MIP 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 a rail link to the Southern Sydney Freight Line, IMEX and warehousing and distribution facilities.
MPE	Moorebank Precinct East
MPW	Moorebank Precinct West
NCA	Noise Catchment Area
NML	Noise Management Level
NIA	Noise Impact Assessment
OEMP	Operational Environmental Management Plan
PUD	Pick-up and delivery vehicles
Rail link	Part of MPE Stage 1 (SSD 6766), connecting the MPE Site to the Southern Sydney Freight Line. The Rail link is to be utilised for the operation of the Facility.
RtS	Response to Submissions
SHEQ	Safety, Health, Environment and Quality
SSD	State significant development
TEU	Twenty-foot equivalent unit
TISEPP	State Environmental Planning Policy (Transport and Infrastructure) 2021

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1 INTRODUCTION

The approval for the construction and operation of the Moorebank Intermodal Precinct (MIP) (formerly Moorebank Logistics Park) was obtained progressively as follows:

- Moorebank Precinct East (MPE) Concept Approval (MP10_0193) on 29 September 2014
- MPE Stage 1 (Stage significant development (SSD) 6766) on 12 December 2016
- MPE Stage 2 (SSD 7628) on 31 January 2018, as modified
- Department of Climate Change, Energy, the Environment and Water (DCCEEW) *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Approval and Mitigation Measures (No. 2011/6229) on 6 March 2014.

A management plan addressing Condition F5A of SSD 6766 was originally prepared by Arcadis (Container Noise Barrier Management Plan Rev 4, June 2019) to outline the management practices and procedures that would be implemented during night-time operations of the MPE Stage 1 Import Export (IMEX) Terminal.

This revised Condition F5A Management Plan continues to address the relevant requirements of CoC F5A for the management of container stacking during night-time operations of the IMEX Terminal. This management plan now also includes consideration of the operational shift to electrified automatic night-time stacking via the use of Cantilever Automated Stacking Cranes (C-ASC) (large gantry cranes) for yard stacking and electrified Automated Stacking Cranes (ASC) for rail servicing. This system, which is quieter than manual operations has only recently been implemented onsite and so has not previously been considered as part of the measures to mitigate potential noise impacts associated with night-time container stacking.

Approval to increase the operational capacity of the IMEX has also recently been sought (Section 1.2). In support of the application, a Noise Impact Assessment (NIA) (Renzo Tonin & Associates, August 2023) was prepared to identify any potential adverse acoustic impacts associated with the operational capacity increase, and outline management measures required to mitigate these impacts. This management plan has been updated to include these measures.

The title of the plan has been amended to reflect the dynamic, transient, and temporary nature of container placement on site. Additionally, it removes any undue perceptions of a singular permanent structure being in place on the MPE 1 Site to mitigate and manage noise emissions, which does not reflect the actual nature of onsite container operations and working container management or the required outcomes of CoC F5A. Recent modelling completed by Renzo Tonin & Associates (RTA) (August 2023) has found that noise emissions generated by operations at the IMEX requires mitigation via a number of measures working in parallel, along with consideration of prevailing meteorological conditions. Container stacks acting as noise barriers were found to be only one potential component of a wider strategy that can more effectively manage the impacts of noise emissions on sensitive receivers.

1.1 Background

The MIP 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.

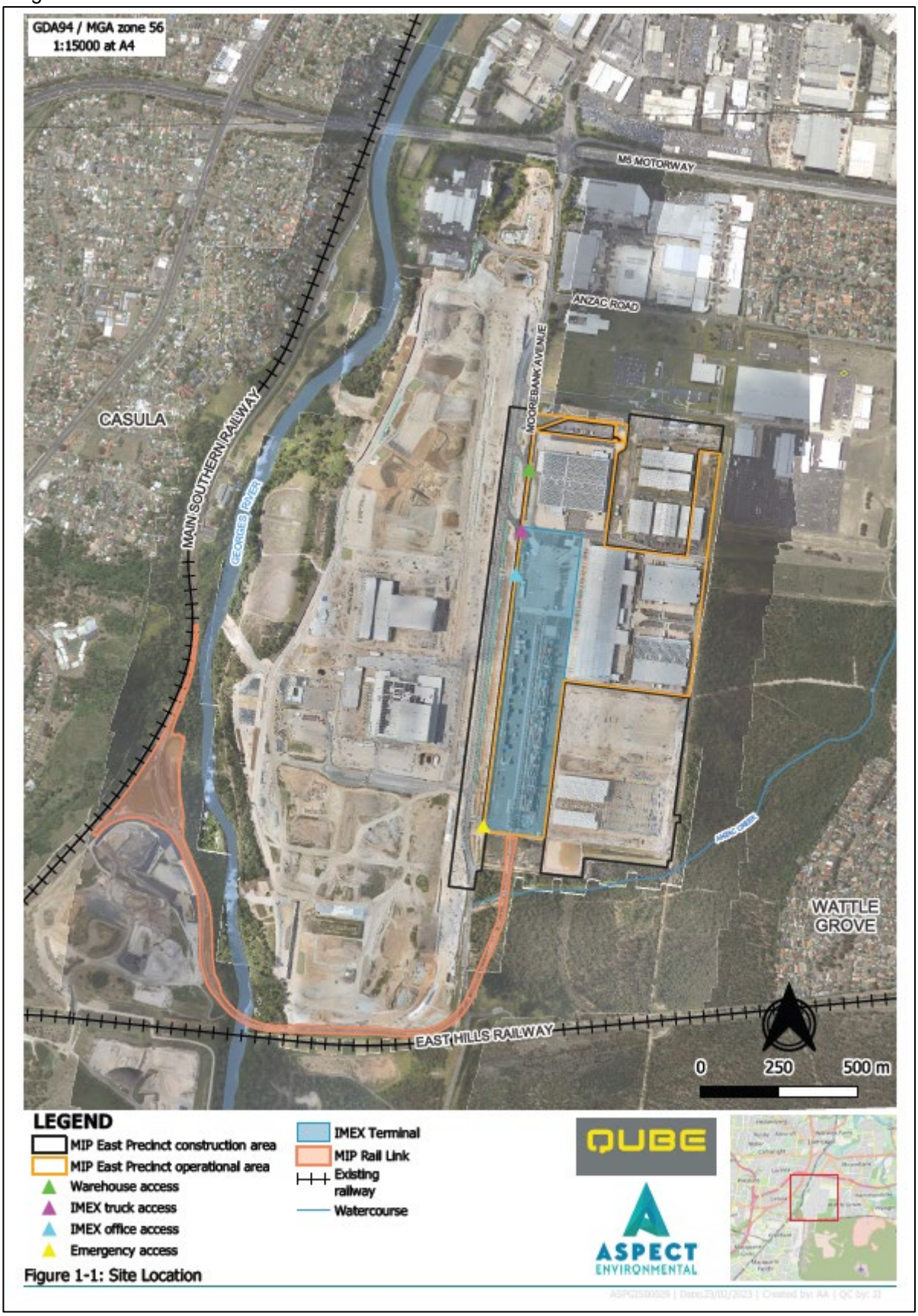
The MIP aims to streamline the freight logistics supply chain from port to store, deliver savings to businesses and consumers, and help service the rapidly growing demand for imported goods in south-west Sydney. It is located approximately 27km south-west of the Sydney Central Business District and approximately 26km west of Port Botany within the Liverpool Local Government Area. The MIP is divided into an East Precinct (MPE) and a West Precinct (MPW), located east and west of Moorebank Avenue respectively, (Figure 1-1).

The main features of the MIP East Precinct include:

- The IMEX Terminal comprised of:
  - 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
- Warehouse and distribution facilities
- A freight village including a mix of retail, commercial and light industrial spaces
- 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.

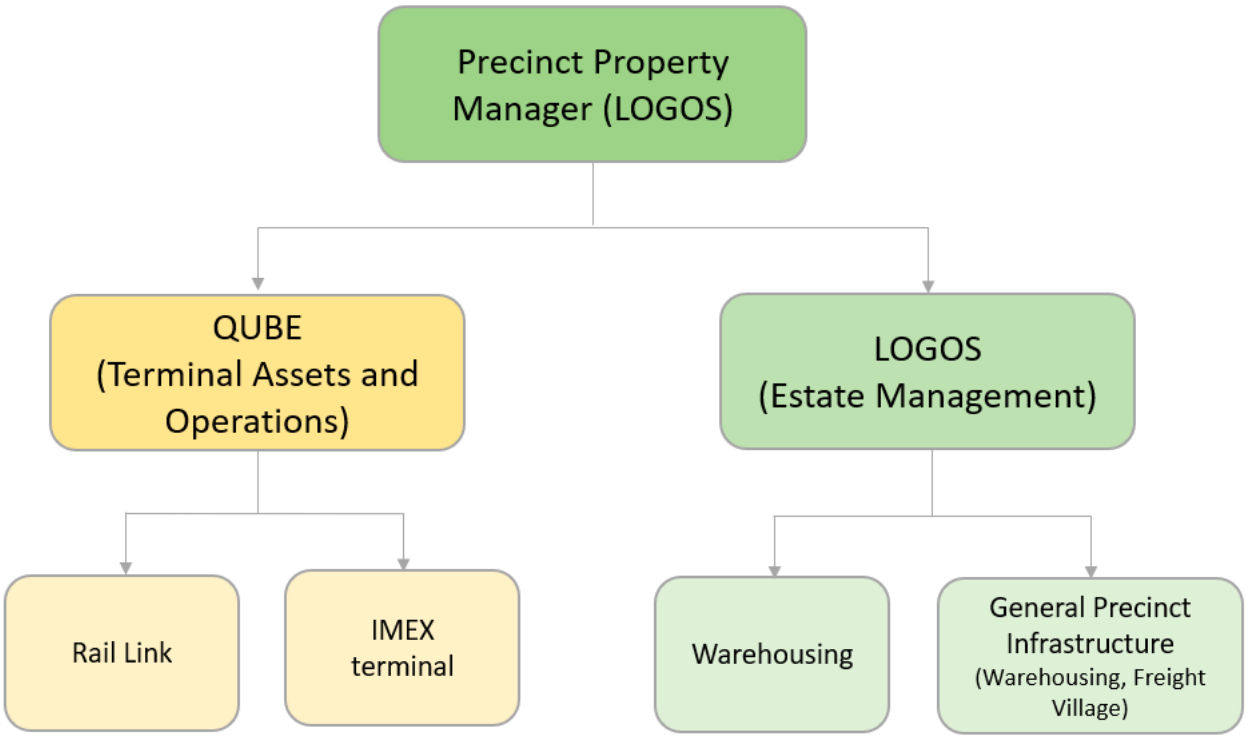
The location of the MIP East Precinct is shown in Figure 1-1.

Figure 1-1: Site location



In 2022, LOGOS Property took over the management of the warehouse and distribution facilities, as well as the overall management of the MLP East Precinct. Qube Logistics will continue to maintain responsibility for the IMEX and the Rail Link. Section 2 of the OEMP describes the operational areas of responsibilities for LOGOS Property and Qube Logistics. This is summarised in Figure 1-2.

Figure 1-2: Environmental Management Structure



1.2 IMEX Terminal Capacity Increase

The increase in IMEX Terminal capacity from 250,000 TEU to 500,000 TEU, is subject to a complying development certificate (CDC) under Chapter 6 of the *State Environmental Planning Policy (Transport and Infrastructure) 2021* (TISEPP). A NIA to support the application was prepared by RTA (August 2023).

The NIA assessed operational noise impacts associated with the increase in TEU capacity and identified the anticipated impact of the TEU increase on baseline noise conditions. The NIA considered noise generated by additional trains at the terminal, terminal activities and increased vehicle movements and included measures to mitigate the potential increases in noise from these operational activities. These measures were identified to control noise emissions, with consideration of other potential noise emissions from other MIP (MPW & MPE) activities along with the acoustic shielding provided by the overall MIP design, including the MPE and MPW warehousing build out adjacent to the IMEX both east and west. This assessment, also considered the interim stage while this is being constructed.

This Plan now presents mitigations and management for any potential adverse noise impacts associated with the TEU increase - including electrified automated stacking and other NIA recommend mitigation and management measures.

1.3 Purpose and Application

The purpose of this management plan is to outline the management practices and procedures to be followed during night-time operations and the methodology for stacking of containers during these night-time operations to manage noise emissions to the nearest residential receivers, where required.

This Condition F5A Management Plan has been developed to address the requirements of MPE Stage 1 CoC F5A (SSD 6766) which requires the preparation of a Management Plan, to the satisfaction of the Secretary of the Department of Planning and Environment (DPE) prior to the commencement of operation. The specific CoC and FCMMs relevant to the development of this plan are identified in Section 2.2.

The IMEX Terminal is approved for 24/7 operation and will include following noise generating activities:

- Container truck movements
- Crane operations
- Reach stacker operations
- Train operations
- Combi lift operations/ straddle carrier operations.

It will receive and dispatch containers on a 24/7 basis which will result in a varying number of stored transient working containers onsite at any one time. The most recent, approved version of this plan will be implemented to manage the Facility activities.

1.4 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: Objective 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	IMEX Terminal Manager
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 for MPE
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[1] Manager Site SHEQ Manager/Advisor for MPE

[1] Community complaints are managed by the Precinct Operator.

1.5 Approval

The CNBMP Rev 4 (Arcadis June 2019) was approved by DPE (16/08/2019).

This Condition F5A Management Plan will be submitted to the Secretary as an update to the previously approved Plan.

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 Operational Environmental Management Plan (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*
- *State Environmental Planning Policy (Transport and Infrastructure) Amendment (Moorebank Freight Intermodal Precinct) 2022 (Moorebank SEPP)*

Additional legislation, standards and guidelines relating to the management of container noise during night-time operations include:

- *Industrial Noise Policy 2000* (NSW Environment Protection Authority (EPA))
- *Noise Policy for Industry 2017* (EPA)

2.2 Development Consent

The operation of the MIP 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 MIP 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.

This Condition F5A Management Plan has been prepared in accordance with:

- EPBC Act Approval (No. 2011/6229), March 2014
- MPE Concept (MP 10_0193), 29 September 2014
- MPE Stage 1 (SSD 6766), as modified by Appeal Number 2017/81889 Stage 1 Approval (SS 6766) outcome dated 13 March 2018
- MPE Stage 1 – EIS (Arcadis Australia Pacific Pty Limited, May 2015)
- MPE Stage 1 – RtS (Arcadis Australia Pacific Pty Limited, September 2015).

The EP&A Act and EPBC Act approval requirements are discussed in the following section.

2.2.1 EPBC Act Approval

The EPBC Act approval for the MPE Concept was granted by DCCEEW (formerly DotEE) in March 2014 (No. 2011/6229).

The operation of the MIP East Precinct has been designed to be consistent with the EPBC Act approval conditions. 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

Commonwealth	Requirement	Document Reference
Annexure A – Summary of Mitigation Measures	**Operation** To reduce noise and vibration impacts of the SIMTA proposal during operation, the following recommendations as presented within Wilkinson Murray (2013) would be implemented: 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.	This Plan In response to updated noise monitoring and modelling in support of the increase in IMEX Terminal capacity from 250,000 to 500,000 TEU, the Condition F5A Management Plan has been revised to implement recommendations for the mitigation and management of night-time noise levels arising from container placement at nearby residential receivers. Additionally, this Plan reflects the progressive development of the MPW Precinct to the west of Moorebank Avenue and the presence of new, large warehousing and distribution facilities which provide acoustic shielding to residences in Casula, to the west of the MPE 1 facility. This Plan focuses on providing noise mitigation for night-time container placement.

2.2.2 EP&A Act Approval

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.

The CoC include requirements to be addressed in this plan and delivered during operation of the IMEX Terminal. These requirements, and how they are addressed are summarised within Table 2-2 and Table 2-3 for MP10_0193 and SSD 6766 respectively.

The MPE Stage 2 consent (SSD 7628), at Condition B80, includes LAeq noise management levels that represent a cumulative set of noise criteria for MPE 1 and MPE 2. However, as identified by RTA in their most recent Noise Impact Assessment (August 2023, Section 2.1.2), this set of criteria is inconsistent with the EIS derived noise limits derived in accordance with NSW EPA policy, the expected noise emission performance from MPE as detailed in the EIS, and former approvals.

As part of the MPW Stage 2 (SSD 7709) Modification 1, a review of the applicable operational noise requirements across MIP was undertaken (Renzo Tonin, June 2020). The review identified operational noise requirements are inconsistent across the MIP and not aligned with EPA or DPE methodologies for regulating industrial noise emissions. As a result, the updated MPW Stage 2 consolidated consent now includes, at Condition B131, a set of cumulative noise criteria applicable to operations across MPE and MPW (Table 2-4).

When assessing noise emission for IMEX operations, the noise limits specified in Condition F5B of SSD 6766 and Condition B131 of SSD 7709 would be applicable for this plan.

Table 2-2: MPE Concept CoC (MP10_0193)

Condition	Requirement	Sections or documents where requirements addressed
2.1	Under section 75P(2)(c) of the Act, the following environmental assessment requirements apply with respect to future development that is subject to Part 4 Division 4.1 Act:	Note
Noise and Vibration	Any future Development Application shall include an updated assessment of noise and vibration impacts. The assessment shall: a) The assessment shall: …	-
	ii. assess operational noise and vibration impacts and identify feasible and reasonable measures proposed to be implemented to minimise operational noise impacts of the intermodal facility and rail link, including the preparation of an Operational Noise Management and Monitoring Plan; and	Section 3
	iii. be prepared in accordance with: NSW Industrial Noise Policy (EPA 2000), Interim Construction Noise Guideline (DECC 2009), Assessing Vibration: a technical guide (DEC 2006), the Rail Infrastructure Noise Guideline (EPA 2013), Development Near Rail Corridors and Busy Roads Interim Guideline (DoP 2008), and the NSW Road Noise Policy 2011.	Section 2.1

Table 2-3: MPE Stage 1 CoC (SSD 6766)

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 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 and for the stacking of containers to be used as noise barriers. The plan shall include, but not necessarily be limited to:	This Plan Refer to authors details on Page (i) Section 3.5
F5A(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 project specific noise levels** and the sleep disturbance trigger levels*** for the night-time period* at the nearest affected residential receivers and which is to 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.	Section 3
F5A(b)	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: 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; 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.	Section 2.1 Section 3.5 Section 4
F5A(c)	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.	Section 4
F5A(d)	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.	Section 4

<table>
<tr><th>CoC</th><th>Requirement</th><th>Sections or documents where requirements addressed</th></tr>
<tr><td>F5A(e)</td><td>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.</td><td>Section 2.3
Section 2.4</td></tr>
<tr><td></td><td>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.</td><td>Section 1.5
Section 4</td></tr>
<tr><td></td><td>* The night-time period is defined as 10pm-7am Mon-Sat and 10pm-8am Sundays and Public Holidays
** Contained within the LAeq (15 min) column in Table A in Condition F5B
*** Contained within the Review of Operational Sleep Disturbance Impacts</td><td>-</td></tr>
<tr><td>F5B</td><td>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).
Table A: Noise Criteria dB(A)
<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>
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.</td><td>Section 3.4
Section 4 details noise monitoring and reporting requirements which will assess compliance with noise criteria</td></tr>
<tr><td>F5C</td><td>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.</td><td>Section 3.2</td></tr>
</table>

Table 2-4: MPW Stage 2 CoC (SSD 7709)

<table>
<tr><th>CoC</th><th>Requirement</th><th>Sections or documents where requirements addressed</th></tr>
<tr><td>B131</td><td>The noise generated by the development must not exceed the noise limits in Table 4 which are generated by the overall precinct operations (defined as all activities approved for MPW and MPE).
Table 4: Operational Noise Limits dB(A)
<table><tr><th>Location (residential receivers)</th><th>Day $L_{Aeq,15\ minute}$</th><th>Evening $L_{Aeq,15\ minute}$</th><th>Night $L_{Aeq,15\ minute}$</th><th>Night L_{AFmax} Sleep Arousal Screening Level</th></tr><tr><td>Casula</td><td>46 dB</td><td>44 dB</td><td>39 dB</td><td>52 dB</td></tr><tr><td>Glenfield</td><td>49 dB</td><td>46 dB</td><td>42 dB</td><td>52 dB</td></tr><tr><td>Wattle Grove</td><td>44 dB</td><td>42 dB</td><td>42 dB</td><td>52 dB</td></tr><tr><td>Wattle Grove North</td><td>41 dB</td><td>41 dB</td><td>41 dB</td><td>52 dB</td></tr></table>Notes:
To determine compliance with the $L_{Aeq,15\ minute}$ 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 m of a dwelling where the dwelling is more than 30 m 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 7 of the NPI). The modification factors in Fact Sheet C of NPI must also be applied to the measured noise levels where applicable.
To determine compliance with the LAFmax Sleep Arousal Screening Level in Table 4 above, noise from the project is to be measured at 1 m 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 7 of the NPI).

The noise emission limits identified above apply under meteorological conditions of:
(i) wind speeds of up to 3 m/s at 10 m above ground level; or
(ii) 'F' atmospheric stability class.</td><td>Section 3.3, Table 3-4

The noise limit requirements detailed within Condition B131 are applicable to operations within MPE Stage 1 (i.e. of the IMEX terminal) as the condition applies to the cumulative noise emissions of all noise generating activities in the MIP (MPE & MPW), SSD 6766, SSD 7628 and SSD 7709.

Section 4 details noise monitoring and reporting requirements which will assess compliance with noise criteria.</td></tr>
</table>

2.3 Roles and Responsibilities

Key roles and responsibilities applicable to this Condition F5A Management Plan are presented in Table 2-6.

Table 2-5: Roles and responsibilities

Roles	Responsibilities
IMEX Terminal Manager	• Co-ordinate induction and training of IMEX Terminal staff on the requirements of this Plan
Site HSEQ Manager/Advisor for MPE	• Monitoring the implementation of this Plan, including compliance with relevant CoC • Undertake the monitoring and reporting requirements of this Plan
Qualified Acoustic Consultant	• Will be engaged to undertake the noise surveys required by this Plan
Shift Supervisor	• Monitoring of weather conditions during the night-time period • Implementing this Plan, in particular the actions and activities detailed in Section 4.2 in the event that noise criteria are exceeded during night time operations.
All other personnel	• Comply with applicable requirements of this Plan • Follow instructions of Shift Supervisor, in relation to container placement during night-time operations

2.4 Training

All staff, contractors and sub-contractors shall undergo site-specific induction training which will include container handling noise mitigation and management training developed with an emphasis on understanding and managing noise impacts arising from 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
- Identifying the specifications for the placement and stacking of containers during night-time operations to manage and minimise noise emissions.
- Any limitations on high noise-generating activities
- Designated loading/unloading areas and procedures
- Details of the complaints handling procedure (complaints are received by Precinct Operator)
- Details of the environmental incident procedures
- Non-conformance, preventative and corrective action procedures
- An outline of the consequences of not complying with these measures
- Plant and equipment maintenance requirements
- Operation of vehicles to minimise noise and vibration impacts, e.g., use of designated container handling areas/locations, use of non-tonal reversing beepers, using alternate

onsite signaling systems to horns, and turning off plant, equipment and vehicles when not in use.

Personnel directly involved in implementing container handling noise control measures will be given specific training in the various measures to be implemented as per Section 3, including stacking times and locations, allocated areas, priorities of containers, orientation and placement.

3 IMPLEMENTATION

This section addresses the key night-time period operational noise risks associated with operation of the IMEX Terminal in respect of container placement and stacking. In accordance with CoC F5A(a), the night-time period is defined as 10pm-7am Monday to Saturday and 10pm-8am Sundays and Public Holidays.

3.1 Existing Environment

The IMEX terminal is surrounded by the residential suburbs of Wattle Grove, Casula and Glenfield.

Background noise levels at the nearby residences were established through long-term background noise monitoring during the approval process. The noise monitoring was undertaken by Wilkinson Murray (now RWDI) for the *SIMTA Concept Plan Noise Impact Assessment* (NIA) [*Wilkinson Murray, Report No. 12186-C, Version C, 2 August 2013* (MPE Concept NIA)] in addition to further monitoring undertaken related to the Land and Environment Court Appeal No. 2017/81889.

These monitored noise levels then informed the operational noise limits identified in SSD 6766 F5B Table A.

The Rating Background Levels (RBLs) were then defined for each of the four defined residential noise catchment areas surrounding the IMEX terminal.

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.

As further explained in the NPfI, certain meteorological/weather conditions may increase noise levels at receiver locations by focusing sound-wave propagation paths at a single point. Such refraction of sound waves can occur during temperature inversions (atmospheric conditions where temperatures increase with height above ground level), and where there is a wind gradient (that is, wind velocities increasing with height) with wind direction from the source to the receiver.

As per the NPfI, these noise-enhancing meteorological conditions need to be considered when predicting the likely levels of noise emission for an industrial activity. Subject to the distance and meteorological conditions, noise-enhancing meteorological conditions can typically increase noise levels by up to 5 dB(A) at distances similar to that of receivers around MIP.

The night-time noise management levels are applicable under the meteorological conditions as outlined in CoC F5C (SSD 6766) and CoC B131 (SSD 7709), and so are applicable for all weather conditions except those detailed below:

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

- Stability category G temperature inversion conditions.

To properly manage noise emissions from the IMEX terminal, these noise-enhancing conditions require monitoring and consideration, so that the appropriate recommended management measures are adopted where required. When noise-enhancing conditions are not certain management measures would not be needed for noise emissions to achieve the noise requirements at nearby residences.

3.3 Prevailing Meteorological Conditions

3.3.1 Meteorological Station

Todoroski Air Sciences was engaged to supply and install a meteorological station on the MPE Stage 1 (required under condition A54 of SSD 7709 (MPW Stage 2)) to record weather conditions. Previous versions of this Plan identified a requirement for installation of a temporary meteorological station prior to commencement of MPE operations. The MPW Stage 2 meteorological station was utilised for this purpose and is also appropriate for use with the MPE Stage 1 requirements.

The following information is monitored by the meteorological station:

- Wind speed
- Sigma-theta (the standard deviation of wind direction)

Weather data is being stored to allow for post-processing in the event of complaints, or noise exceedances.

3.3.2 Project specific meteorological forecasting

Todoroski Air Sciences has also been engaged to provide a forecasting and monitoring tool, whereby the forecast wind and temperature inversion risks in coming days can be identified. The appropriate mitigation and management measure can be implemented as required as part of operational planning, in response to the forecast conditions.

Night-time Shift Supervisors would have access to the outputs from the meteorological station and would be aware in advance of the predicted weather conditions, to enable implementation of the applicable noise mitigation measures and operational practices.

Noise management measures, combined with the applicable prevailing meteorological conditions, are summarised in Section 3.5.

3.4 Sensitive Receivers

The residential receivers in the vicinity of the IMEX Terminal with the greatest potential for being adversely impacted by noise are located in the suburbs of Casula, Glenfield and Wattle Grove.

Table 3-1 and Figure 3-1 identifies these residential receiver noise catchment areas Figure 3-1 also identifies key potentially noise-affected receivers from IMEX terminal operations in each noise catchment area (NCA), which are where attended measurements would typically be conducted, subject to the operational activity being monitored.

Alternate monitoring locations may be appropriate subject to the operational activity being monitored. Any monitoring locations should be appropriately justified.

Table 3-1: Sensitive receivers and approximate distance from IMEX Terminal

Noise Catchment Area (NCA)	Typical Monitoring Location	Approximate distance (m) from IMEX Terminal
NCA 1: Wattle Grove	AM1	770
NCA 2: Wattle Grove North	AM2	1,050
NCA 3: Casula	AM3	960
NCA 4: Glenfield	AM4	1,750

Noise monitoring at nearby residential receivers for the Precinct noise emissions are managed by the Precinct Operator in line relevant conditions of consent, compliance monitoring requirements, and requirements of both the Construction Noise and Vibration Management Plan (CNVMP) and Operational Noise and Vibration Management Plan (ONVMP).

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

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

3.5 Noise Management Criteria

As detailed in Section 2.2.2, the noise limits specified by SSD 6766 CoC F5C and SSD 7709 CoC B131 are applicable for the operation of IMEX Terminal and have therefore been adopted for this management plan.

Table 3-2 and Table 3-3 identify the operational noise limits for the operations of the IMEX Terminal during the night-time period. These noise limits apply under the meteorological conditions as outlined in CoC F5C (SSD 6766) and CoC B131 (SSD 7709).

Table 3-2: Noise criteria, dB(A) (SSD 6766)

Sensitive receiver	Day ($L_{Aeq,15\,min}$)	Evening ($L_{Aeq,15\,min}$)	Night ($L_{Aeq,15\,min}$)	Night ($L_{A1,1\,min}$)
Wattle Grove (NCA 1)	43	42	42	52
Wattle Grove North (NCA 2)	41	41	41	51
Casula (NCA 3)	45	42	38	47
Glenfield (NCA 4)	46	46	40	50

Table 3-3: Operational noise limits, dB(A) (SSD 7709)

Sensitive receiver	Day ($L_{Aeq,15\,min}$)	Evening ($L_{Aeq,15\,min}$)	Night ($L_{Aeq,15\,min}$)	Night (L_{AFmax})
Wattle Grove (NCA 1)	44	42	42	52
Wattle Grove North (NCA 2)	41	41	41	52
Casula (NCA 3)	46	44	39	52
Glenfield (NCA 4)	49	46	42	52

3.6 Noise Management

3.6.1 Application strategies

Based on the recently completed NIA by RTA (August 2023) and in accordance with NPfI, measures for reducing noise impacts from industrial activities should follow three main control strategies:

- reducing noise at source
- reducing noise in transmission to the receiver
- reducing noise at the receiver.

These control strategies should be considered in a hierarchical way so that all the measures that reduce noise for a large number of receivers (that is, source controls) are exhausted before more localised mitigation measures are considered.

The NIA by RTA (August 2023) identified that due to the actual nature of onsite container handling operations and working container management, alternate noise control strategies to the implementation of a single permanent noise barrier were required to achieve the required outcomes of CoC F5A.

In the context of the MIP, due to the distance between the IMEX terminal and the nearby residences, the prevailing meteorological conditions can result in noise enhancing conditions, which will increase the noise levels from IMEX noise generating activities at nearby receivers. Noting that this can substantially change the noise level at the potentially impacted receivers, it is important to take this into consideration when developing a noise control strategy (Section 3.2).

In accordance with CoC F5A of SSD 6766, container stacking is implemented at the IMEX Terminal to reduce noise impacts to sensitive receivers during night-time operations when required. However, the NIA prepared by RTA in support of the IMEX TEU capacity increase proposal, has found that various container yard container stack heights can alter the noise emissions to nearby receivers, through both shielding or reflection. Furthermore, the numbers of containers present onsite at any given time is variable depending on operational activities. Additionally, not all potentially impacted residential receivers may be located such that the container yard is located in between the noise sources and the receivers, where it can act as a noise barrier. As such, increasing container stacks and/or container heights does not provide a holistic solution to noise emissions mitigation.

A series of management and mitigation strategies have been developed for the IMEX operations – utilising a combination of noise control measures both ‘at source’ and ‘in the noise transmission path’ approaches. These strategies include implementation of container stacking at selected locations (depending on the location of operational activities). The level of mitigation required is driven by the prevailing meteorological conditions, which are monitored by IMEX operations staff.

With the implementation of this strategy (Section 3.5.2), the IMEX operations (up to a maximum capacity of 500,000 TEU) are then predicted to achieve the applicable noise emissions criteria. By achieving these criteria, operations will also aid the MIP in achieving the overall applicable cumulative noise limits as part of the final MIP arrangement.

3.6.2 Mitigation and Management Measures

3.5.2.1 Mitigation and Management Measures – Noise Impact Assessment Recommendations

The NIA prepared by RTA (August 2023) in support of the IMEX capacity increase to 500,000 TEU concluded that with the implementation of a number of mitigation and management measures, with consideration of the prevailing meteorological conditions, operations are predicted to achieve noise emissions criteria at sensitive receivers.

Figure 3-2, Figure 3-3, Figure 3-4 and Figure 3-5 identify the mitigation measures, the triggers for their implementation and the locations within the IMEX footprint to which they should be applied.

The measures include both general ‘at source’ treatment measures (for implementation across all conditions), requirements for container stacking and other operational-based measures to reduce night-time noise emissions to nearby residences (M1 – M12).

Figure 3-2: Recommended mitigation measure (NIA, RTA, August 2023)

Table 3-9: Recommended noise mitigation measures – Noise controls

Applicable activity / noise source	Details	Mitigation control type	Applicable for	NCAs benefiting from mitigation measure
Reach stackers	5 dB(A) of mitigation to reach stackers is required, comprising the installation of residential grade mufflers to achieve a maximum pass-by noise level of 108 dB(A).	Noise source control	Noise emissions $L_{Aeq\ 15min}$	All NCAs
Cranes - broadband movement alarms	Broadband movement alarms would be shifted to the ground level.	Noise source control	Noise emissions $L_{Aeq\ 15minute}$	All NCAs

Table 3-10: Recommended additional management measures during applicable meteorological conditions

Item	Applicable activity / noise source	Applicable assessment periods Evening: 6pm – 10pm Night: 10pm – 7am	Applicable when meteorological conditions include temperature inversions OR wind as per below		Applicable for	Details	NCAs benefiting from mitigation measure
			Temperature inversion	Wind[1]			
General noise management							
M1	Minimise truck idle time on arrival/departure	Night	All met conditions	All met conditions	Noise emissions $L_{Aeq\ 15minute}$	If trucks are to wait for extended periods of time at arrival area (ie. greater than 2 minutes) they are to turn off their engine.	All NCAs
M2	Truck and reach stacker horns	Night	All met conditions	All met conditions	Noise emissions $L_{Aeq\ 15minute}$	Horns are not to be used as part of the loading process at night.	All NCAs
M3	Warehouse container operation (reach stacker)	Night	Inversion risk conditions medium or greater (ie. Class E/F)	0.5 – 3m/s (all directions)	Noise emissions $L_{Aeq\ 15minute}$	Containers are taken to warehouses combi lifts or straddle carriers only.	All NCAs
Casula noise management							
M4	Container truck loading activity noise emissions	Evening	Inversion risk conditions medium or greater (ie. Class E/F)	0.5 – 3m/s (NE to S)	Noise emissions $L_{Aeq\ 15min}$	Schedule trucks loading/unloading activities so that the number of trucks that would be loaded/unloaded within a 15-minute period would be limited to 9 truck movements. Other trucks to wait at the truck arrival area with engine switched off. When truck movements are greater than 6 movements in a 15-minute period (and no more than 9) in the evening, see M5 for warehouse container operations linked mitigation.	Casula

Figure 3-3: Recommended mitigation measure (NIA, RTA, August 2023)

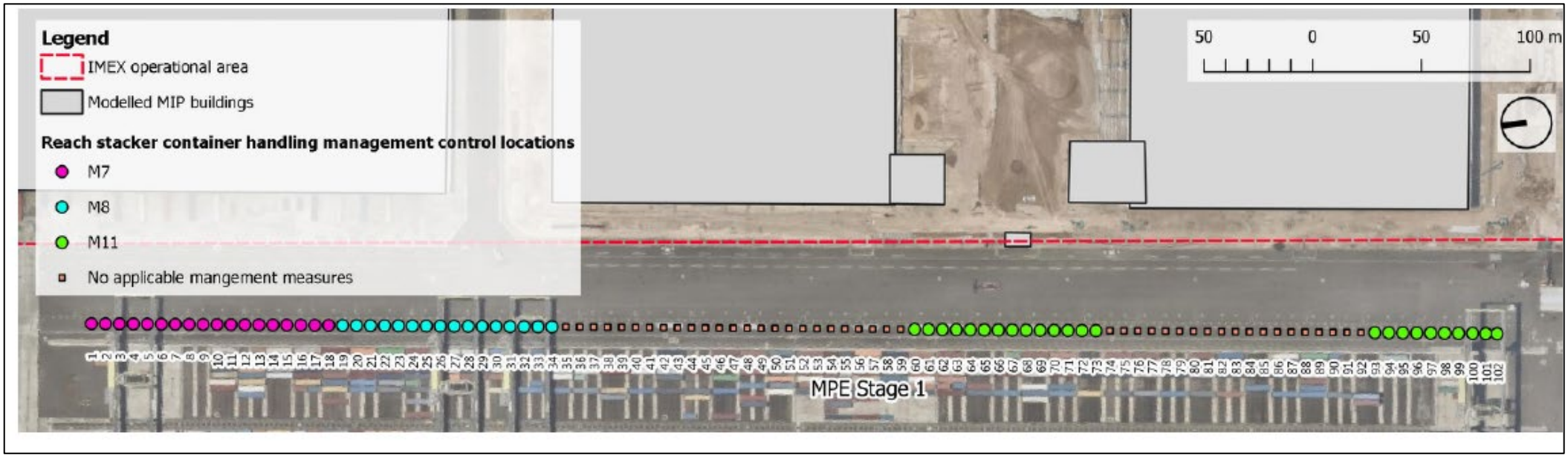
Item	Applicable activity / noise source	Applicable assessment periods Evening: 6pm – 10pm Night: 10pm – 7am	Applicable when meteorological conditions include temperature inversions OR wind as per below		Applicable for	Details	NCAs benefiting from mitigation measure
			Temperature inversion	Wind[1]			
M5	Warehouse container operations	Evening	Inversion risk conditions medium or greater (ie. Class E/F)	0.5 – 3m/s (NE to S)	Noise emissions $L_{Aeq\ 15min}$	When truck movements through the facility are greater than 6 movements in a 15-minute period, container movements to warehouses are not permitted. There should be no more than 9 truck movements in a 15-minute period (as per M4). Container movements to warehouses can only happen when truck movements through the facility are 6 trucks or less in a 15-minute period, and they are to be moved by combi lift or straddle carriers.	Casula
M6	Container truck loading activity noise emissions	Night	Inversion risk conditions low (ie. Class D)	All wind up to 3m/s (NE to S)	Maximum noise levels events (L_{Amax}) Noise emissions $L_{Aeq\ 15min}$	**Strategic container stacking (where no containers)** Where truck container loading/unloading is to take place in a location where there are no containers in the yard in the immediate vicinity of the operations, containers should be placed there to a minimum 2 containers high. These containers are to extend either side north/south of where container loading will take place for a minimum 4 containers in length. See note 2.	Casula
M7	Container handling high noise events	Night	Inversion risk conditions medium or greater (ie. Class E/F)	0.5 – 3m/s (NE to S)	Maximum noise levels events (L_{Amax})	**Strategic container stacking (yard containers up to 2 high)** Assuming the container yard is a minimum 2 containers high in the immediate night operations area (as per M6), truck container loading/unloading is to take place outside of the following locations during the night: • Slots 1 to 18 (inclusive)	Casula
M8	Container handling noise emissions	Night	Inversion risk conditions medium or greater (ie. Class E/F)	0.5 - 3m/s (NE to S)	Maximum noise levels events (L_{Amax}) Noise emissions $L_{Aeq\ 15min}$	**Strategic container stacking (yard containers up to 2 high)** Where truck container loading/unloading is proposed for: • Slot 19 to 34 (inclusive), and • existing containers are up to 2 high (per M6), the yard containers are to be increased to a minimum 4 high and extend either side of where container loading will take place for a minimum 4 containers in length. See note 2.	Casula

Figure 3-4: Recommended mitigation measure (NIA, RTA, August 2023)

Item	Applicable activity / noise source	Applicable assessment periods Evening: 6pm – 10pm Night: 10pm – 7am	Applicable when meteorological conditions include temperature inversions OR wind as per below		Applicable for	Details	NCAs benefiting from mitigation measure
			Temperature inversion	Wind[1]			
M9	Container truck loading activity noise emissions	Night	Inversion risk conditions medium or greater (ie. Class E/F)	0.5 – 3m/s (NE to S)	Noise emissions $L_{Aeq\ 15min}$	Schedule trucks loading/unloading activities so that up to 6 trucks are loaded/unloaded within a 15-minute period. Other trucks to wait at the truck arrival area with engine switched off. When truck movements are greater than 4 movements in a 15 minute period (and no more than 6) in the night, please see M10 for warehouse container operations linked mitigation.	Casula
M10	Warehouse container operations	Night	Inversion risk conditions medium or greater (ie. Class E/F)	0.5 – 3m/s (NE to S)	Noise emissions $L_{Aeq\ 15min}$	When truck movements through the facility are 4 or greater within a 15-minute period, container movements to warehouses are not permitted. There should be no more than 6 truck movements in a 15-minute period (as per M9). Container movements to warehouses can only happen when truck movements through the facility are 4 trucks or less in a 15-minute period, and they are to be moved by combi lift or straddle carriers.	Casula
Wattle Grove noise management							
M11	Container handling noise emissions and high noise events	Night	Inversion risk conditions medium or greater (ie. Class E/F)	0.5 - 3m/s (NW to SW)	Maximum noise levels events (L_{Amax}) Noise emissions $L_{Aeq\ 15min}$	Assuming the eastern container yard is a minimum 2 containers high, truck container loading/unloading is to take place outside of the following locations during the night period: • Slots 60 to 73 • Slots 93 to 102	Wattle Grove
M12	Warehouse container operation (WH7)	Evening and Night	Inversion risk conditions medium or greater (ie. Class E/F)	0.5 – 3m/s (NW to SW)	Noise emissions $L_{Aeq\ 15minute}$	Containers to be taken to WH7 only by combi lifts or straddle carriers during the evening and night.	Wattle Grove

Notes
1. Wind directions apply to + or minus 22.5 degrees from the indicated wind direction.
2. In all cases, the containers being used to shield for noise are to be located no further than 1 metre apart, and a minimum of 2 containers deep is required. If this is not the case containers will not provide an effective barrier for the majority of receivers it is protecting.
3. LAeq15minute management measures assume that all MPW (north) warehouses will be constructed, when determining measures to achieve a suitable contribution to Casula receivers.

Figure 3-5: Reach stacker container handling high noise events management - management zones (RTA, NIA, August 2023)



3.5.2.1 Additional Mitigation Measures

A number of additional management measures have been identified to be implemented to manage noise emissions during night-time operations. These measures are based on the requirements of the CoC, as well as Qube's Environmental Management System requirements and standards. These measures are summarised in Table 3-5.

Table 3-4 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 Plan and managing noise impacts during night-time operation of the IMEX Terminal.	Duration of Operations	Site SHEQ Manager/Advisor for MPE IMEX Terminal Manager 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	F5C (SSD 6766)
CN-3	In the event of a monitored exceedance during night-time periods further investigation would be undertaken to confirm. Where appropriate the suspected noise source works would cease or reduce and an investigation would be undertaken to determine potential sources and/or causes, plant and machinery would be checked and verified for noise levels and weather conditions would be recorded. In the event that an investigation does not identify any potential sources and/or causes for the exceedance, the following alternative mitigation measures would be implemented, where reasonable and feasible. • revisiting management measures/practices/sequencing etc to reduce noise levels and minimise impacts on receivers • If the noise surveys identify noise exceedances, Qube would engage a qualified acoustic consultant to provide recommendations to amend this Plan accordingly. • Recommendations made by the acoustic consultant would be implemented as soon as practical, where feasible and reasonable.	Duration of Operations	IMEX Terminal Manager Shift Supervisor All personnel	F5A (SSD 6766)
CN-4	To minimise container stacking and loading noise, manual handling (reach stacker, combilift, straddle carrier) operators would use work practices to ensure to place containers and not drop them onto the	Duration of Operations	IMEX Terminal Manager Shift Supervisor All personnel	F5A(a) (SSD 6766)

ID	Management Measure	Timing	Responsibility	Reference
	hardstand, vehicles or container stacks.			
CN-5	All plant and equipment used at the IMEX Terminal would be maintained in a proper and efficient condition, and operated in a proper and efficient manner.	Duration of Operations	IMEX Terminal Manager Shift Supervisor All personnel	F5A(a) (SSD 6766)
CN-6	In the event of any night-time noise related complaint or adverse comment from the community as managed by the Precinct Operator, noise emission levels would be investigated. Remedial action would be implemented where feasible and reasonable in accordance with this management plan. The procedures for managing complaints is provided within the Community Communication Strategy managed by the Precinct Operator.	Duration of Operations	IMEX Terminal Manager Shift Supervisor All personnel	F5A(b) (SSD 6766) F5A(d) (SSD 6766)
CN-7	Manual stacker loading and unloading of the trains has ceased and permanent electrified automatic night-time stacking of containers has commenced. This subsequently reduce noise impacts associated with container stacking and loading within the container yard.	During Automatic Operation	IMEX Terminal Manager Shift Supervisor	F5A(a) (SSD 6766)

4 MONITORING AND REVIEW

4.1 Monitoring Requirements

Noise monitoring will be conducted as per the requirement of this Plan and the CoC. Noise measurements shall be undertaken consistent with the procedures documented in NSW EPA-*Noise Policy for Industry* (2017), which supersedes the NSW EPA Industrial Noise Policy (2000).

Noise monitoring procedures, locations and reporting will be completed in accordance with the latest approved MPE Stage 1 ONVMP.

4.2 Exceedances of Monitoring Criteria

Monitoring criteria applicable to the Condition F5A Management Plan are provided in Section 3.4. In the event that noise from the IMEX Terminal during night-time operations exceeds the operational noise criteria for the night-time period at nearby 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.

- Identification of the monitored exceedance is to be reported to the Site HSEQ Manager/Advisor.
- Works identified as causing the exceedance 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.
- Determine if the exceedance is an atypical or single occurrence, or sustained occurrence.
- Plant and machinery will be checked and verified for noise levels and appropriate exhaust/fittings/noise attenuators.
- Weather conditions at the time of the exceedance will be recorded.

In the event that a review of activities did not identify any potential sources and/or causes for the noise, the following alternative mitigation measures will be implemented, where reasonable and feasible.

- revisiting management measures/practices/sequencing to reduce noise levels and minimise impacts on receivers
- If the noise surveys identify noise exceedances, Qube will engage a qualified acoustic consultant to provide recommendations to amend this Plan accordingly.
- Recommendations made by the acoustic consultant will be implemented as soon as practical, where feasible and reasonable.

4.3 Review and Improvement

Review and improvement of this plan will be undertaken in accordance with the CoC and Section 6.2 of the OEMP [PREC-QPMS-EN-APP-00001]. Continuous improvement opportunities will be captured through the ongoing evaluation of environmental management performance and effectiveness of this plan against environmental policies, objectives and targets.

A copy of any 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 LOGOS Incident Reporting & Management Procedure (WHSMS-LOGOS-007) and 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 (as managed by the Precinct Operator).

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.