

CONTAINER NOISE BARRIER MANAGEMENT PLAN

Moorebank Logistics Park – East Precinct

19 MARCH 2020

MOOREBANK INTERMODAL TERMINAL ALLIANCE

Moorebank Logistics Park – East Precinct

Container Noise Barrier Management Plan

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REVISIONS

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003	24/05/2019	Updated to address DP&E Comments	██████████	██████████
004	19/06/2019	Updated to address further DP&E Comments	██████████	██████████
005	03/02/2020	Updated to include Area 2 as an operational area	██████████	██████████
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ACRONYMS AND DEFINITIONS

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

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

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

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

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1 INTRODUCTION

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

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

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

1.1 Background

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

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

The main features of the MLP East Precinct include:

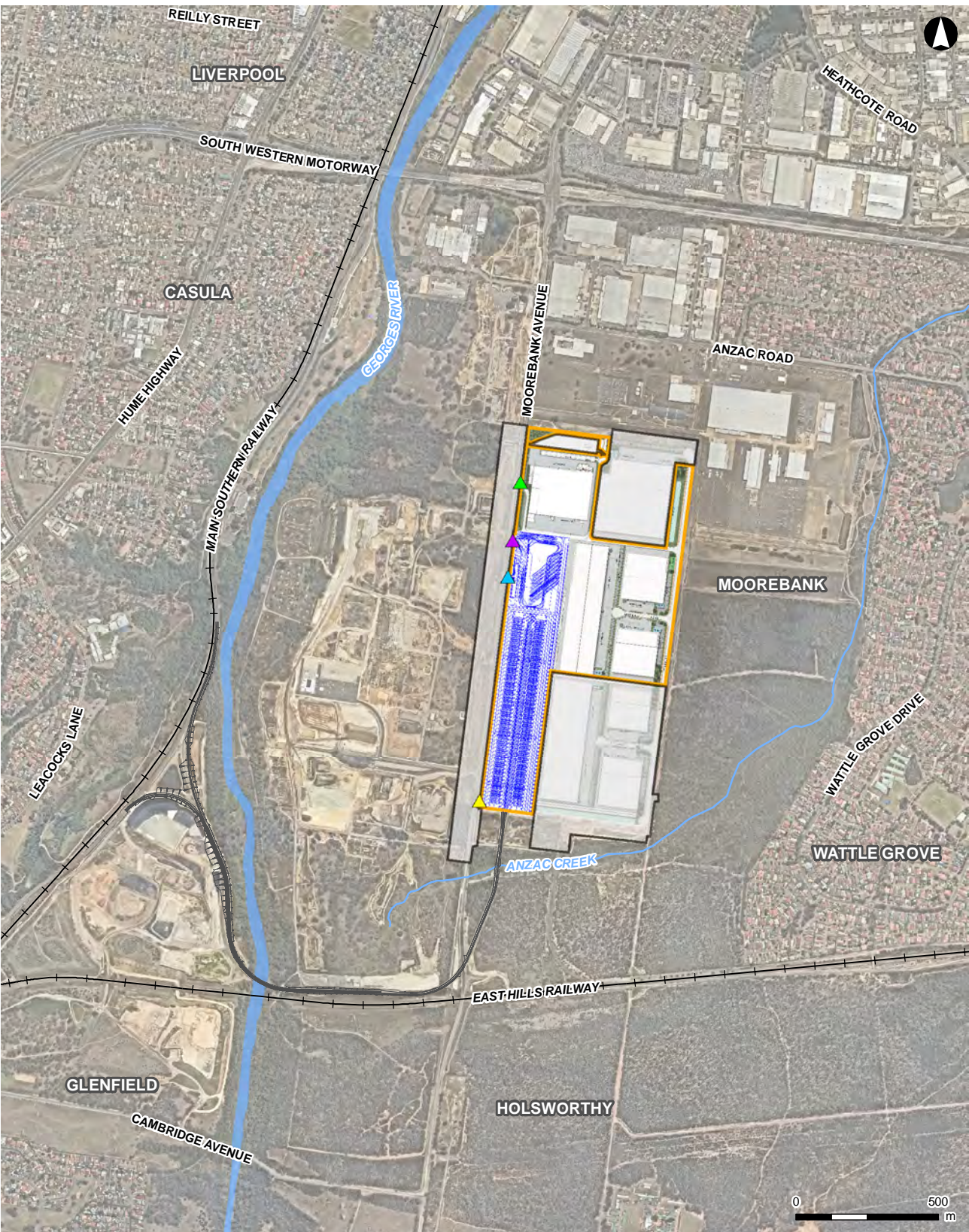
- An Import Export (IMEX) Terminal. The IMEX Terminal comprises:
 - Truck processing, holding and loading areas with an entrance and exit from Moorebank Avenue
 - Rail loading and container storage areas serviced by container handling equipment
 - An Administration facility and associated car parking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



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

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

Container Noise Barrier Management Plan



LEGEND

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

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 Aerial imagery supplied by Neamap (Sep, 2019)



Figure 1-1: Site Location

1.2 Purpose and Application

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

This CNBMP has been prepared in accordance with:

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

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

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

1.3 Objectives and Targets

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

Table 1-1: Objectives and Targets

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

1.4 Approval

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

2 STATUTORY REQUIREMENTS

2.1 Legal and Other Obligations

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

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

2.2 Development Consent

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

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

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

2.2.1 EPBC Act Approval

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

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

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

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

2.2.2 EP&A Act Approval

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

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

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

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

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

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

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

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

CoC	Requirement	Sections or documents where requirements addressed
	<p>Section 4 of the NSW Industrial Noise Policy must also be applied to the measured noise levels where applicable.</p> <p>To determine compliance with the $L_{A1,1 \text{ minute}}$ noise limits, noise from the project is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the project is impractical, the EPA may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).</p> <p>The noise emission limits identified above apply under meteorological conditions of:</p> <ul style="list-style-type: none"> (i) wind speeds of up to 3 m/s at 10 metres above ground level; or (ii) 'F' atmospheric stability class. 	<p>disturbance levels in Condition B80 of SSD 7628 have been adopted in preference to the LA1 noise management levels in Condition F5B of SSD 6766.</p> <p>Section 4 details noise monitoring and reporting requirements which will assess compliance with noise criteria</p>

2.3 Roles and Responsibilities

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

Table 2-4: Roles and Responsibilities

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

2.4 Training

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

This site-specific induction training will include:

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

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

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

3 IMPLEMENTATION

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

3.1 Existing Environment

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

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

3.2 Meteorological Conditions

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

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

Table 3-1: Weather Categories and conditions

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

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

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

3.2.1 Meteorological Station

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

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

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

3.3 Noise Management Level

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

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

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

3.4 Sleep Disturbance Assessment

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

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

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

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

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

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

3.5 Sensitive Receivers

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

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

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

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

²

³ CONCAWE Category 4

⁴ CONCAWE Category 6

Container Noise Barrier Management Plan

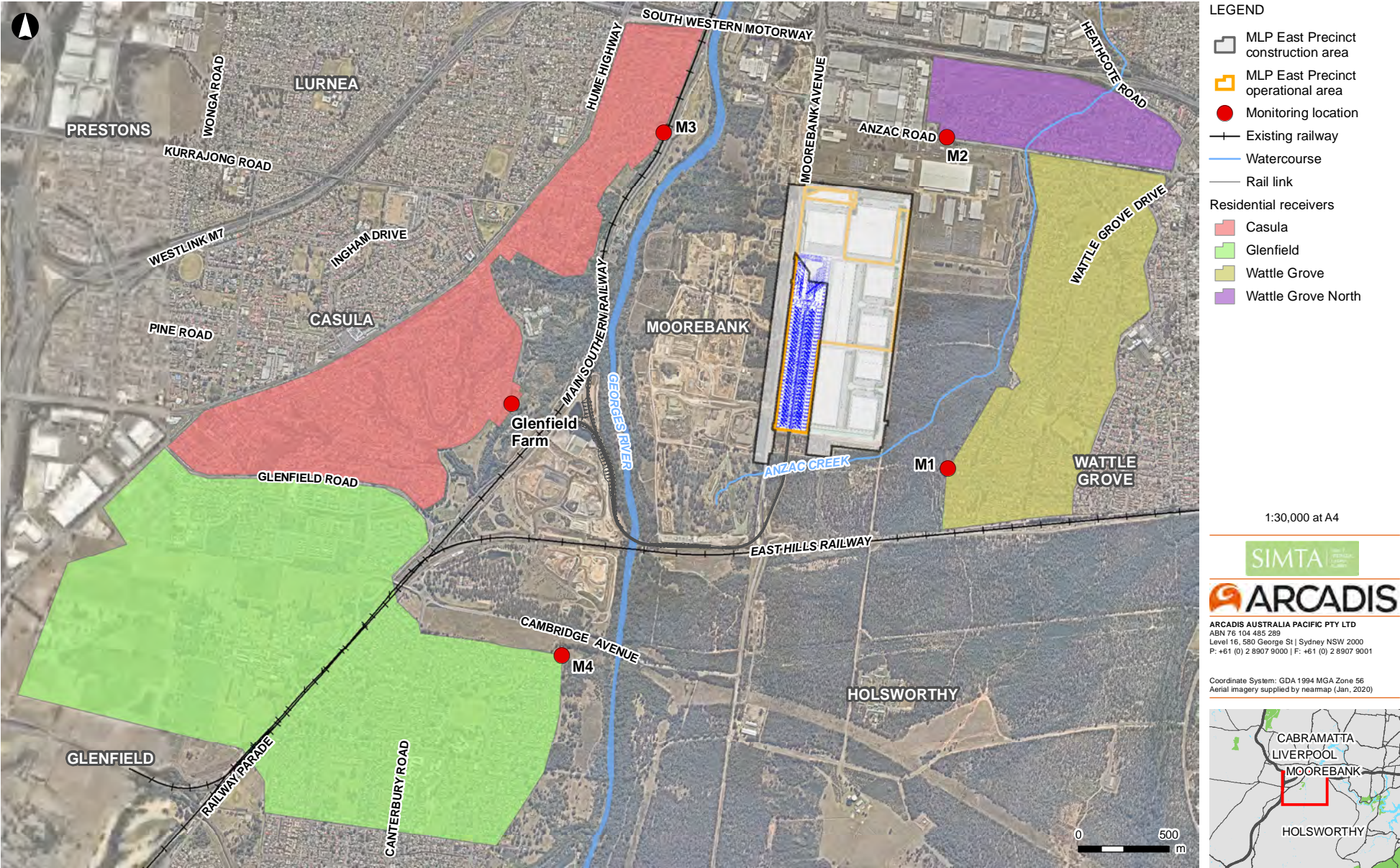


Figure 3-1: Noise catchment areas and noise monitoring locations

3.6 Container Noise Barrier

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

3.6.1 Container Noise Barrier Specification

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

Table 3-5: Container Noise Barrier Specification

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

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

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

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

Container Noise Barrier Management Plan

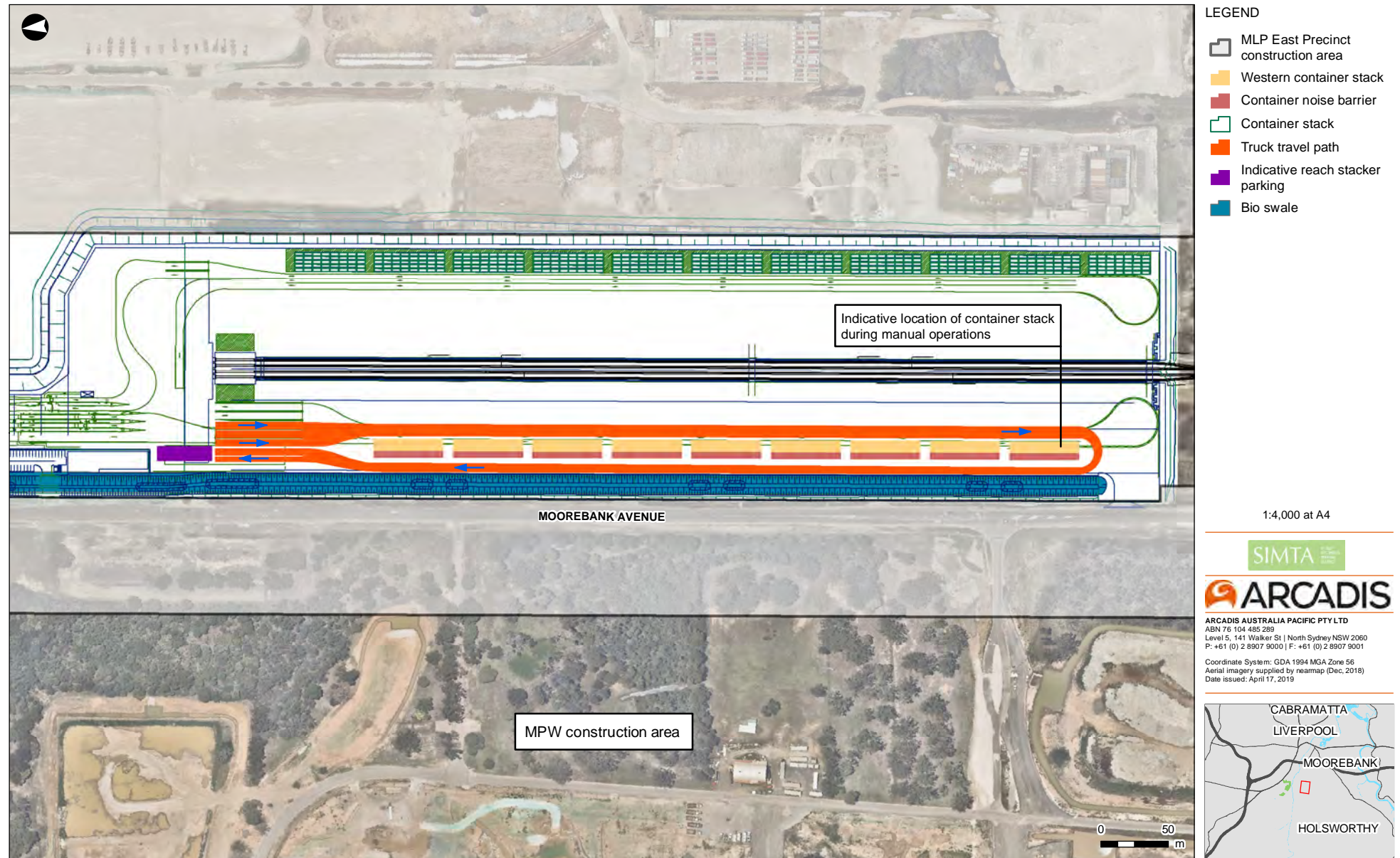


Figure 3-2: Container Noise Barrier Location

3.6.2 Container Noise Barrier Stacking Arrangement

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

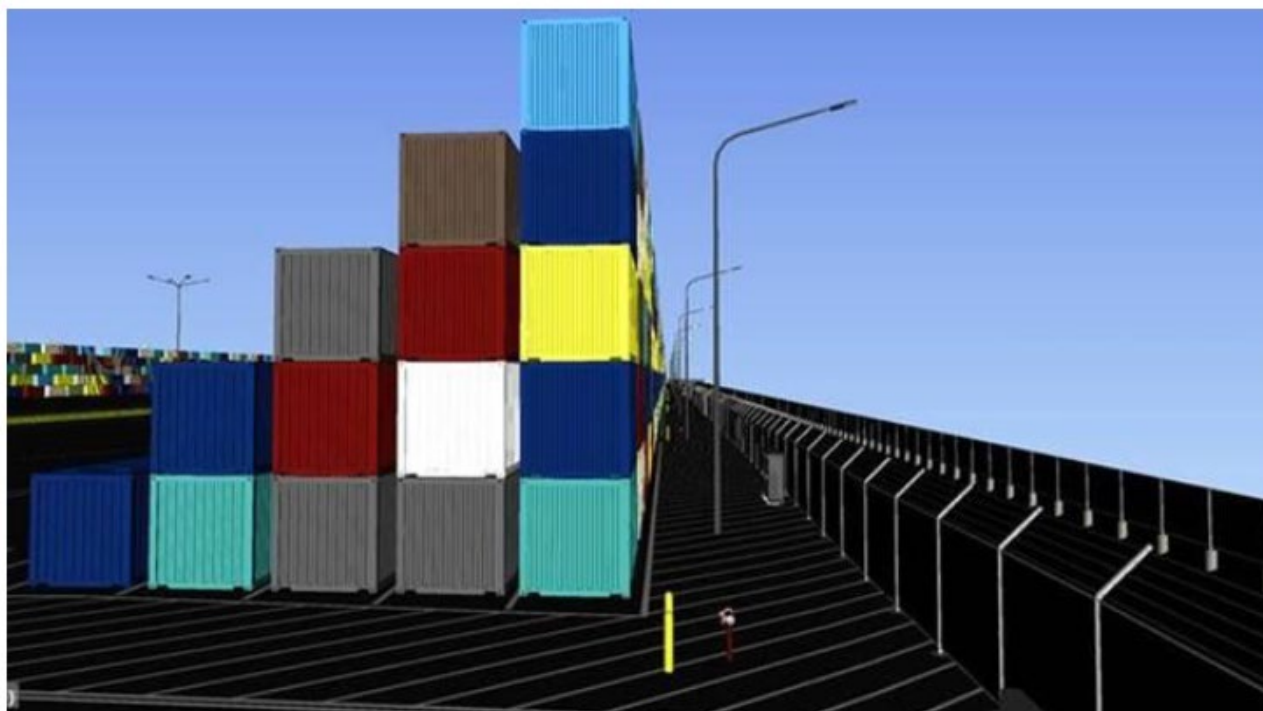


Figure 3-3: Indicative container stack arrangement

3.6.3 Alternative Arrangements in Adverse Meteorological Conditions

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

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

3.7 Management Measures

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

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

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

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

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

4 MONITORING AND REVIEW

4.1 Monitoring Requirements

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

4.1.1 Continuous Noise Monitoring

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

4.1.2 Attended Noise Surveys

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

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

4.1.3 Noise Monitoring Locations

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

Table 4-1: Noise Monitoring Locations

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

4.1.4 Noise Monitoring Reporting Criteria

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

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

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

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

4.1.5 Exceedances of Monitoring Criteria

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

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

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

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

4.2 Reporting

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

Table 4-2: Environmental Reporting Requirements

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

4.3 Review and Improvement

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

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

4.4 Incidents

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

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

4.5 Complaints

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

4.6 Non-Compliance, Non-Conformances and Corrective Actions

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