

Construction Noise and Vibration Management Plan

Moorebank Precinct East Stage 1 – RALP No. 1

Project number:	N01031
Document number:	EN-PLN-0022
Revision date:	28 March 2019
Revision:	06

Document Approval

Rev.	Date	Prepared by	Reviewed by	Approved by	Remarks
A	18 Jan 2016	[REDACTED]	[REDACTED]	[REDACTED]	Initial draft
B	29 Apr 2016	[REDACTED]	[REDACTED]	[REDACTED]	Updated to address SIMTA comments
C	14 Jul 2016	[REDACTED]	[REDACTED]	[REDACTED]	For SIMTA's second review
D	21 Dec 2016	[REDACTED]	[REDACTED]	[REDACTED]	For Consultation
E	7 Feb 2017	[REDACTED]	[REDACTED]	[REDACTED]	For submission to DP&E
F	27 Mar 2017	[REDACTED]	[REDACTED]	[REDACTED]	Response to DP&E
G	6 Apr 2017	[REDACTED]	[REDACTED]	[REDACTED]	Additional DP&E submission
H	21 Apr 2017	[REDACTED]	[REDACTED]	[REDACTED]	Final DP&E update
I/00	15 May 2017	[REDACTED]	[REDACTED]	[REDACTED]	DP&E Approval Update
01	26 May 2017	[REDACTED]	[REDACTED]	[REDACTED]	OOHW Protocol update
02	19 Oct 2017	[REDACTED]	[REDACTED]	[REDACTED]	EPL update

Rev.	Date	Prepared by	Reviewed by	Approved by	Remarks
03	30 Nov 2017	[Redacted]	[Redacted]	[Redacted]	ER comments
04	18 May 2018	[Redacted]	[Redacted]	[Redacted]	L&EC Conditions
05	22 Oct 2018	[Redacted]	[Redacted]	[Redacted]	ER Approved Updates from RfMA0011, RfMA0012, RfMA0015, and RfMA0016
06	28 Mar 2019	[Redacted]	[Redacted]	[Redacted]	Updates following RfMA0018, RfMA0019, and RfMA0021
Signature:		[Redacted]			

Details of Revision Amendments and Authorship

Document Control

The Project Director is responsible for ensuring that this plan is reviewed and approved. The Environment Manager is responsible for updating this plan to reflect changes to legal and other requirements, as required.

Amendments

Any revisions or amendments must be approved by the Project Director before being distributed / implemented.

Revision Details

Revision	Details
A	Initial draft for SIMTA review
B	Updated to address SIMTA comments
C	For SIMTA's second review
D	For Consultation
E	Updated for submission to DP&E to address stakeholder consultation and ER review comments
F	Updated in response to comments from DP&E
G	Additional update for submission to DP&E
H	Final DP&E update
I/00	Update following conditional approval from DP&E Approved by DP&E
01	Update to OOHV Protocol to make more consistent
02	Update to include EPL requirements
03	Updated to respond to comments from the Environmental Representative
04	Updated to include new conditions issued by the Land & Environment Court of NSW (case #: 2017/00081889)
05	Updated following RfMA0011, RfMA0012, RfMA0015 and RfMA0016 with ER Approval
06	Updates following RfMA0018, RfMA0019, and RfMA0021

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Construction Noise and Vibration Management Plan

1. Overview

1.1 Purpose

This Construction Noise and Vibration Management Plan (CNVMP) addresses noise and vibration management on Sydney Intermodal Terminal Alliance's (SIMTA) Moorebank Intermodal Terminal Development Stage 1 – Rail Access Land Package (RALP) No. 1 (the Project) and the management of impacts to the environment and community.

This CNVMP addresses the following key requirements:

- Services Agreement – Schedule 5 Principal's Project Requirements
- Conditions of Approval under SSD-6676 SIMTA Intermodal Terminal Facility – Stage 1 (NSW)
- Stage 1 EIS (including Framework CEMP)
- Stage 1 Response to Submissions Report (including Final Compilation of Mitigation Measures)
- Conditions of Approval under MP10_0193 SIMTA Moorebank Intermodal Terminal Facility – Concept Plan (NSW)
- NSW Concept Plan EIS
- NSW Concept Plan Submissions Report (including Revised Statement of Commitments)
- Conditions of Approval under EPBC 2011/6229 SIMTA Intermodal Terminal (Commonwealth)
- Commonwealth Concept Plan EIS (including Framework CEMP)
- Other applicable legislative obligations
- Address the requirements of the EPL.

1.2 Project Scope

SIMTA's Moorebank Intermodal Terminal Development involves the construction and operation of the necessary infrastructure to support a container freight road volume of 250,000 twenty-foot equivalent units (TEU).

CPB Contractors' scope of work specifically applies to Stage 1 – RALP No. 1 which consists of a 2.8 kilometre rail line, along with its required infrastructure, to connect the Import-Export Terminal and Interstate Terminals to the Southern Sydney Freight Line (SSFL), and capable of accommodating trains up to 1,800m in length.

The SIMTA site is located in the Liverpool local government area. It is 27 kilometres south-west of the Sydney Central Business District (CBD), 26 kilometres west of Port Botany, 16 kilometres south of the Parramatta CBD, 0.6 kilometres from the M5 South-West Motorway, five kilometres east of the M5 South-West Motorway / Westlink M7 Motorway Interchange and connecting to the main north-south rail line via the Southern Sydney Freight Line.

The Moorebank Intermodal Terminal Development – RALP No. 1 is the first package of Stage 1 of the overall project and its construction will include:

- A northbound connection and a southbound connection to the SSFL
- Civil and earthworks, including remediation works and benching
- A Reinforced Earth Embankment (RE-Wall) through a section of the Glenfield Waste Services landfill site
- A bridge over the Georges River
- A culvert crossing over Anzac Creek
- Installation of new Moorebank Avenue overbridge
- Service relocation and protection
- Track work
- Signalling systems
- Security fencing

An indicative map of the Project is provided in Figure 1 below.

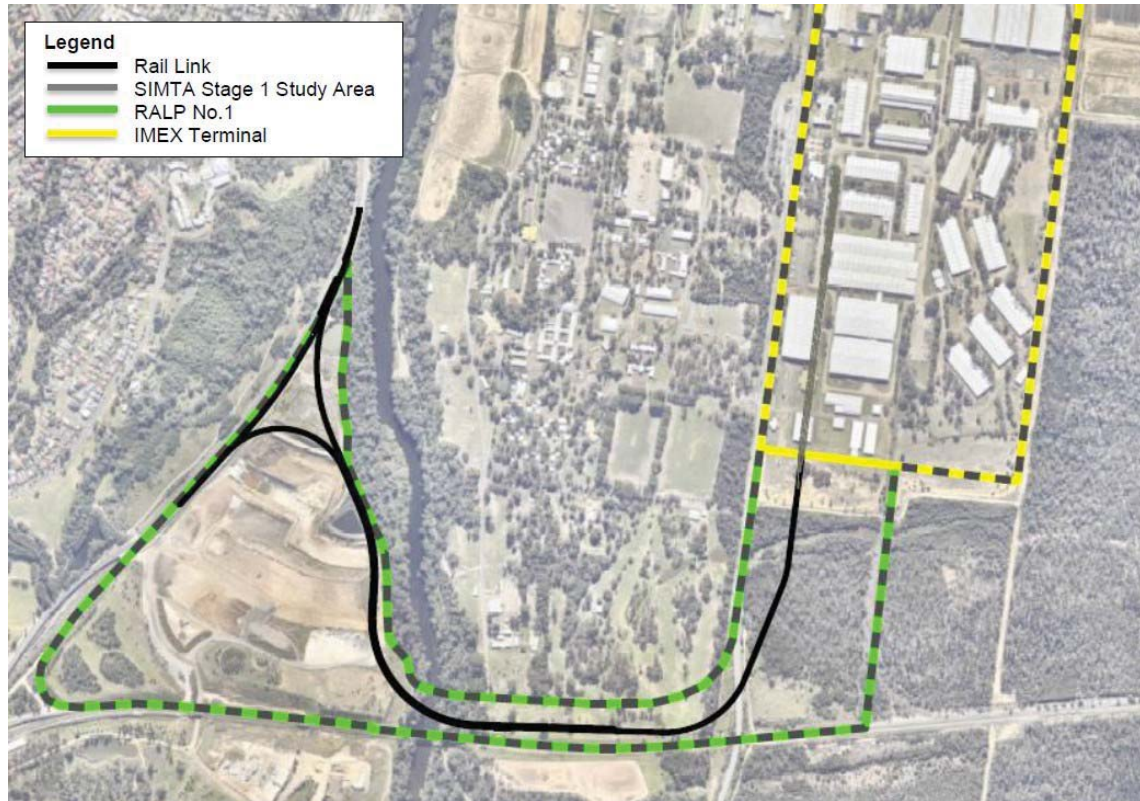


Figure 1: Indicative Project Map

1.3 Objectives

The following noise and vibration management objectives will apply to the construction of the Project:

- Works and activities would be undertaken in a manner that will minimise noise and vibration impacts on sensitive receivers
- Minimise unreasonable noise and vibration impacts on residents and businesses.
- Avoid structural damage to buildings or heritage items as a result of construction vibration.
- Undertake community consultation.
- Maintain positive, cooperative relationships with local stakeholders.
- Ensure compliance with relevant Conditions of Approval and the Environment Protection licence.

1.4 Definitions

Definitions for terms used in this plan are contained in the Glossary in Attachment B.

1.5 Interactions with Other Management Plans

This CNVMP is part of the Construction Environmental Management Plan (CEMP). Figure 2 below sets out interactions of this CNVMP with the other management plans implemented on the Project.

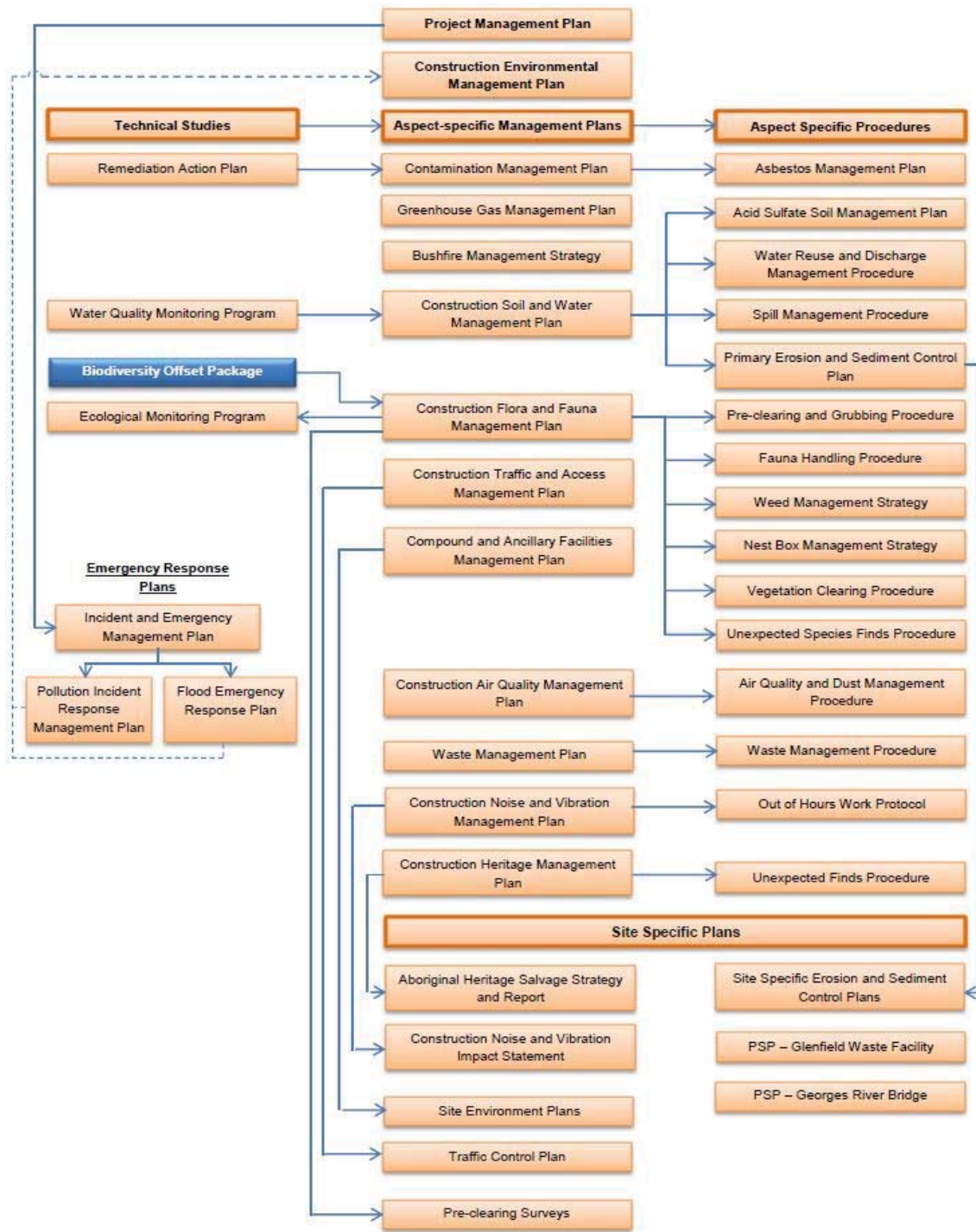


Figure 2: Environmental Documents Map

2. Legal and Other Requirements

2.1 Compliance Requirements

A compliance matrix against the relevant Conditions of Approval and other noise and vibration requirements is detailed in Attachment A.

2.2 Relevant Legislation

Local, State and Commonwealth legislation that apply criteria to the management of noise and vibration matters on the project include:

- *Environmental Planning and Assessment Act 1979* (EP&A Act)
- *Protection of the Environment Operations Act 1997* (POEO Act)

2.3 Guidelines

Local, State and Commonwealth legislation that apply criteria to the management of noise and vibration matters on the project include:

- Interim Construction Noise Guideline (ICNG) (DECC 2009)
- Noise Guide for Local Government (NGLG) (EPA 2013)
- NSW Road Noise Policy (DECCW 2011)
- Assessing Vibration: A Technical Guideline (AVTG) (DEC 2006)
- Australian Standard AS2436-1981 Guide to Noise Control on Construction, Maintenance and Demolition Sites
- British Standard BS 6472-2008, 'Evaluation of human exposure to vibration in buildings (1 - 80Hz)
- NSW Industrial Noise Policy (EPA 1999)
- AS 1055.1:1997 Description and Measurement of Environmental Noise – General Procedures
- German Standard DIN4150-1999 Structural vibration Part 3: Effects of vibration on Structure
- British Standard BS7385-2:1993 Evaluation and measurement for vibration in buildings – Part 2: Guide to damage levels from ground-borne vibration
- Sleep Disturbance (construction) Application Notes to Industrial Noise Policy (OEH 2010)
- Construction Noise Strategy (TfNSW 2011)

2.4 Additional Permits and Approvals

Environment Protection Licence requirements are identified in Section 2.4.1 below and in Attachment A. No additional permits or licences are expected to be required in relation to the management of noise and vibration on the Project.

2.4.1 Environment Protection Licence

Relevant sections of the Environmental Protection Licence (EPL #20966) to the CNVMP are listed in Table 22 in Attachment A.

3. Consultation and Stakeholders

3.1 Consultation on this Plan

The Stage 1 Conditions of Approval (CoA) require that the CNVMP be prepared in consultation with:

- Environment Protection Authority
- Department of Defence

Further, this CNVMP, as a Sub Plan to the CEMP, is required to be approved by Department of Planning and Environment (DP&E) prior to construction as required by the CoA.

Consolidated management plan consultation and approval requirements are identified in the CEMP.

This consultation is intended to assist in development and finalisation of the plan. Evidence of consultation is included in Attachment C.

Table 1 summarises relevant stakeholder comments as well as CPB Contractors' response including how issues raised will be addressed.

Table 1: Summary of Consultation

Agency	Status	Document Reference	Stakeholder Comments	CPB Response
EPA	Advice provided on 19/01/2017	N/A	EPA advised that they do not wish to provide comments.	Noted

Note that consultation with the EPA continues regarding the EPL, which was issued on 18 August 2017.

4. Roles and Responsibilities

The role titles and responsibilities that are used in this plan are outlined in Table 2 below.

Table 2: Roles and Responsibilities

Role	Responsibilities
Project Director	<ul style="list-style-type: none"> ■ Manage the delivery of the Project including overseeing implementation of noise and vibration management ■ Contractor's Representative ■ Assist Communications Manager to prepare response to complainants
Environment Manager	<ul style="list-style-type: none"> ■ Oversee the implementation of noise and vibration management initiatives, including monitoring ■ Assist Communications Manager to prepare response to complainants
Environmental Coordinator	<ul style="list-style-type: none"> ■ Oversee the implementation of noise and vibration management requirements on site, including monitoring ■ Assist Communications Manager to prepare response to complainants
Construction Manager	<ul style="list-style-type: none"> ■ Manage the delivery of the construction process, in relation to noise and vibration management across all sites in conjunction with the Environment team ■ Assist Communications Manager to prepare response to complainants
Project Engineer	<ul style="list-style-type: none"> ■ Manage the delivery of the construction process, in relation to noise and vibration management across all sites in conjunction with the Environment team ■ Implement noise and vibration management activities during construction works
Supervisor	<ul style="list-style-type: none"> ■ On-ground implementation and adherence with noise and vibration management requirements
Communications Manager	<ul style="list-style-type: none"> ■ Manage notification and consultation in relation to noise and vibration and liaise with the Environment Manager regarding the management of noise and vibration complaints ■ Undertaking activities required to consult, notify and deal with enquiries/complaints of residents, business owners and other stakeholders ■ Manage response to complainants
Specialist Noise and Vibration Consultant	<ul style="list-style-type: none"> ■ Specialist consultants will be engaged to undertake investigations, modelling, and specialised monitoring

Key environmental responsibilities are detailed throughout each Element in Part B of the CEMP.

4.1 Noise and Vibration Specialists

During delivery, a noise and vibration consultant will provide specialist advice and services in the implementation of this Plan to ensure that impacts can be avoided, minimised or appropriately mitigated. The noise and vibration consultant's tasks will complement the Environment Manager's and Environmental Coordinator's and may include:

- Preparation of Construction Noise and Vibration Impact Statements
- Undertake noise and vibration monitoring, when required
- Assist with stakeholder meetings, where required
- Assist in community consultation, where required
- Assist in determining suitable locations for future noise walls as part of the project design

4.2 Training

The noise and vibration component of the project induction will include information on:

- Noise and vibration mitigation techniques and measures to be implemented during construction of the Project
- Working within approved hours
- Working with noisy equipment away from sensitive receivers
- Using noise screens and temporary barriers
- Operating and maintaining plant and equipment to minimise noise
- Use of compression braking not being permitted in the vicinity of the site
- Turning off machinery when not in use
- Limiting the "clustering" of noisy plant / processes
- Out-of-hours works and its approval process
- Sensitive receivers
- EPL requirements, including the location of the nearest sensitive receivers
- Location of the all noise sensitive receivers

Ongoing toolbox talks on the requirements for management of noise and vibration will be used to reinforce and maintain awareness among the wider project team.

Additional advanced trainings, such as undertaking noise and vibration monitoring, will be undertaken as required and may be performed by an external trainer.

5. Existing Environment

5.1 Noise Catchment Areas and Other Sensitive Receivers

The Stage 1 EIS identified residential noise catchment areas (NCAs) and non-residential sensitive receivers. These are detailed in Table 3 and illustrated in Figure 3 below.

Table 3: Sensitive Receivers Identification and Distance to Project (source: Table 9-2, Stage 1 EIS, Hyder 2015)

Receiver ID	Description	Approximate Distance (m) to Rail Link
NCA1	Wattle Grove, south of Anzac Road	790
NCA2	Wattle Grove, north of Anzac Road	1900
NCA3	Casula	220
NCA4	Glenfield	760
S1	All Saints Senior College	260
S2	Casula Powerhouse	690
I1	DNSDC	1010

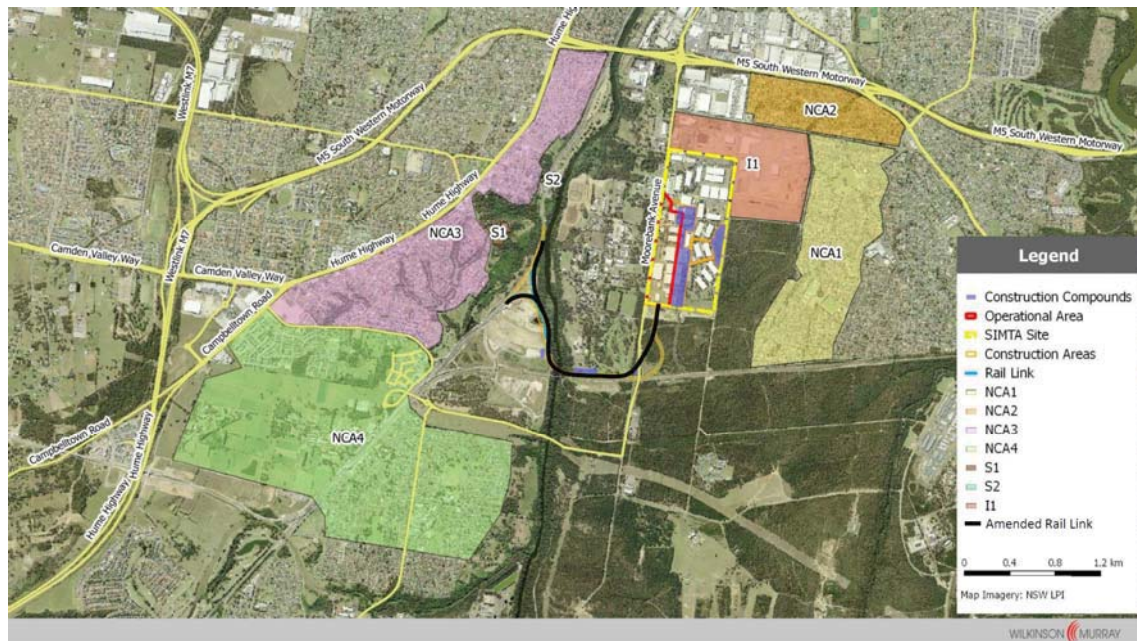


Figure 3: Sensitive Receivers and Noise Catchment Areas (source: Wilkinson Murray, 2015 – cited in Stage 1 EIS, 2015)

5.2 Rating Background Levels

The reported existing rating background noise levels (RBL) for daytime, evening and night time at sensitive receiver locations representative of each of the four noise catchment areas are given in Table 4.

Table 4: Sensitive Receivers Rating Background Levels (source: Table 9-3, Stage 1 EIS, Hyder 2015)

Receiver ID	Day (RBL, LAeq 90)	Eventing (RBL, LAeq 90)	Night (RBL, LAeq 90)
NCA1	42	37	37
NCA2	36	36	36
NCA3	41	37	34
NCA4	44	44	37

6. Aspects and Potential Impacts

6.1 Activities, Hazards and Risks

Activities conducted on the project that have the potential to create noise and vibration issues are listed in Table 5 below.

Table 5: Activities, Hazards and Risks

Project Activity	Environmental Hazard	Environmental Risk
Site Preparation Activities	<ul style="list-style-type: none"> ▪ Vegetation clearance / grubbing / demolition / enabling works 	<ul style="list-style-type: none"> ▪ Excessive noise and vibration generated from heavy plant and equipment
Construction Compound operation	<ul style="list-style-type: none"> ▪ Operation of construction compounds 	<ul style="list-style-type: none"> ▪ Noise from vehicle movements
Earthworks, Drainage & Utilities	<ul style="list-style-type: none"> ▪ Excavation and surface works ▪ 	<ul style="list-style-type: none"> ▪ Noise and vibration from earthworks, drainage and utilities ▪
Engineering Fill	<ul style="list-style-type: none"> ▪ Fill / Rail formation / Bridge construction 	<ul style="list-style-type: none"> ▪ Excessive noise and vibration from earthworks and piling
Pavement construction and rail alignment construction	<ul style="list-style-type: none"> ▪ Pavement / Permanent ways and rails systems 	<ul style="list-style-type: none"> ▪ Noise and vibration from pavement and rail alignment construction
Miscellaneous minor structural construction, utilities, finishing works	<ul style="list-style-type: none"> ▪ Commissioning / Demobilisation 	<ul style="list-style-type: none"> ▪ Noise and vibration from miscellaneous minor structural construction, utilities, finishing works
Major Structural construction, including Georges River Bridge, Anzac Creek Culvert, Reinforced Earth Embankment (RE-Wall) and Moorebank Avenue Overbridge	<ul style="list-style-type: none"> ▪ Major structural construction ▪ Excavation and surface works 	<ul style="list-style-type: none"> ▪ Excessive noise and vibration generated from heavy plant and equipment

6.2 Construction Work Site

The Rail Link alignment is shown in Figure 1 and indicates the area of work. Figure 4 below shows the indicative compound locations and access points. Distance from the Rail Link to the nearest receivers is provided in Table 3.

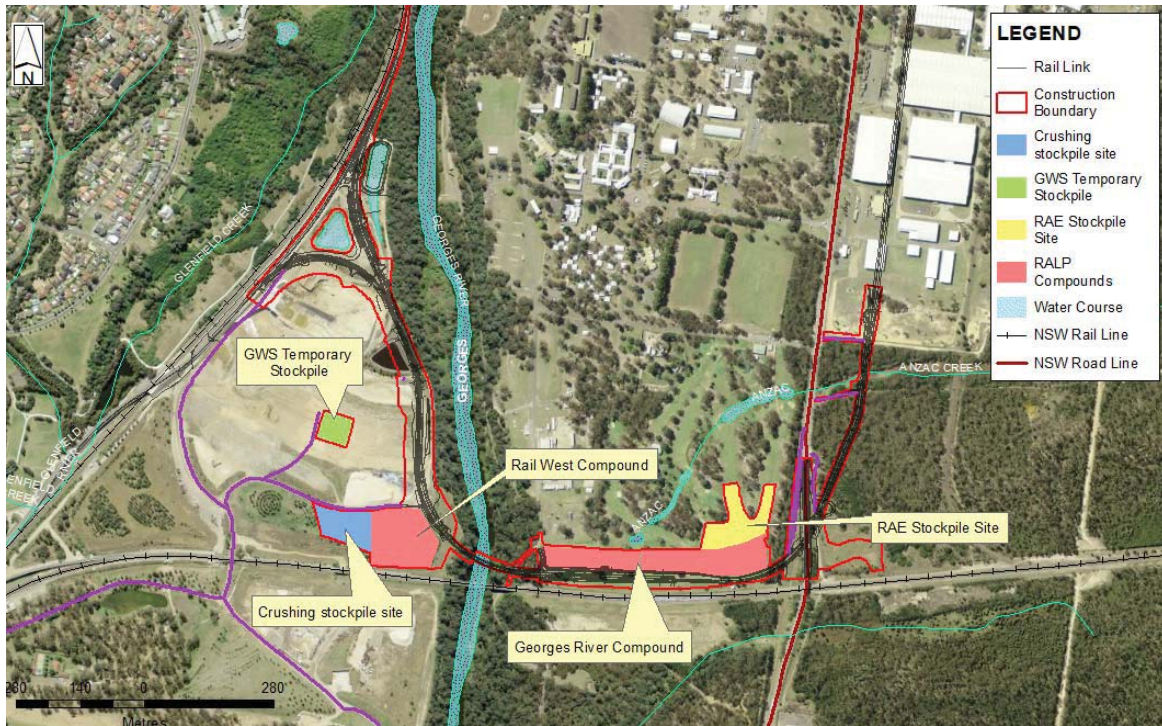


Figure 4: Indicative Compound Locations and Access Points

6.3 Construction Schedule

Construction of the Rail Link is commenced in the 2nd half of 2017. The indicative construction schedule as detailed in the EIS and copied here in Figure 5 had projected a construction timeline of approximately 18 months from commencement. Due to unforeseen delays associated with the unidentified finds relating to *Hibbertia* sp. on the project and landowner access issues west of the Georges River, project completion is now expected by end of 2019 or approximately 30 months.

Activity	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Pre-Construction Works, Site Clearing / Preparation																		
Earthworks, Drainage, Utilities																		
Structures (Georges River, Moorebank Avenue, Anzac Creek)																		
Track and Turnout Construction, Signalling Construction																		
Misc, Finishing Works, Demobilisation																		

Figure 5: Indicative construction schedule

6.4 Construction Activities and Noise Assessment in the EIS

Acoustic noise prediction software was used in the EIS to model the emissions from construction activities for each of the identified construction works periods. In each case, it was all equipment would operate simultaneously and continuously, which is considered to be conservatively representative of the typical worst case conditions. This would also account for the possible scenario that works periods may overlap in duration.

The worst-case predicted LA_{eq}, 15min construction noise levels at sensitive receivers during each key works period are presented in the following Table 6.

Table 6: Predicted LA_{eq}, 15min Construction Noise Levels (source: Table 9-12, Stage 1 EIS, Hyder 2015)

Receiver ID	Works Period dB(A)					NML (Standard Construction Hours)
	Site Establishment	Earthworks, Drainage & Utilities	Engineering Fill	Pavement & Rail Construction	Finishing Works	
NCA1	36	37	40	44	34	52
NCA2	22	24	27	27	20	46
NCA3	35	37	40	44	33	51
NCA4	27	29	32	39	25	54
S1	34	36	39	39	32	55
S2	32	34	37	39	30	75
I1	33	35	38	35	31	55

As can be seen predicted construction noise levels are expected to comply with the NMLs (sourced from section 9.3.1 in the EIS) for standard construction hours at all receivers. Refer to Figure 3 for sensitive receiver and noise catchment area locations.

6.5 Construction Vibration Assessment

The Stage 1 EIS (Section 9.3.2) concludes that given the substantial setback distances to nearby receivers, including existing buildings within the SIMTA site not to be removed during the project, any ground vibrations arising due to construction activities would be significantly below the relevant guideline criteria for human comfort and structural damage.

Other construction activities undertaken for the project would produce vibration levels that are below and are not significant in terms of human comfort and building damage criteria.

The minimum working distances in Table 11 provides guidance for vibratory works near buildings and structures and will be applied to works near the East Hills rail bridge over the Georges River.

6.6 Construction Noise and Vibration Impact Statements

Specific Construction Noise and Vibration Impact Statements (CNVIS) will be prepared in accordance with the OOHW Protocol (as required by Condition of Approval #E34 b) (iv)) to address the actual construction methodology for a particular proposed piece of OOHW, determine the actual impacts at the nearest receivers, be considered in the endorsement and approval of the OOHW Application and, if required, support EPL variation applications to the EPA for out-of-hours works proposals.

Each CNVIS will contain the following information:

- Identification of the nearest sensitive receivers to the proposed works
- Predicted noise levels based upon proposed activities and indicative plant and equipment to be used for specific activities at specific locations, particularly work that is required to be undertaken outside normal construction hours
- Mitigation measures to be implemented outside of those already provided within this plan, in accordance with the OOHW Protocol (Section 2)
- Monitoring locations to confirm predictions are accurate, as required.

CNVIS' will be prepared once the exact number, location, height, and timing of noise sources are known for a proposed OOHW Application, so that the general high-level predictions provided in the EIS and CNVMP can be refined down to more accurate impacts at specific receivers for an actual piece of work. The requirements for additional mitigation measures, as detailed in Section 2 of the OOHW Protocol, will then be determined.

7. Management, Controls and Mitigation Measures

7.1 Standard Working Hours

7.1.1 Standard Construction Hours

In accordance with Conditions of Approval (E19), work will be undertaken during the following standard construction hours or as otherwise approved as part of Out-of-Hours Work (OOHW) Protocol (Attachment E) and EPL.

The standard construction hours of work are:

- 7:00am to 6:00pm Mondays to Fridays, inclusive
- 8:00am to 1:00pm Saturdays
- At no time on Sundays or public holidays.

7.1.2 Noise Intensive Activities

Construction activities resulting in noise with impulsive or tonal characteristics, such as jackhammering, rock breaking, rock hammering, sheet piling and pile driving, will, in accordance with the Conditions of Approval (E20) and Environment Protection Licence, only be undertaken:

- Between the hours of 8:00am to 5:00pm Monday to Friday
- Between the hours of 8:00am to 1:00pm Saturday
- In continuous blocks not exceeding three hours each with a minimum respite from those activities and works of not less than one hour between each block.
- Unless except as expressly permitted by the OOHW Protocol (E21).

For the purposes of this requirement 'continuous' includes any period during which there is less than 1 (one) hour respite between ceasing and recommencing any of the work that is subject to this requirement.

7.2 Out-of-Hours Work

7.2.1 Permitted Out-of-Hours Work

All construction works are to be carried out within the hours identified in Section 7.1, except, as per Condition of Approval E21, where the construction works generate noise that is:

- No more than 5 dB(A) above rating background level at any residence in accordance with the Interim Construction Noise Guideline (DECC 2009)
- No more than the noise management levels specified in Table 3 of the Interim Construction Noise Guideline (DECC 2009) at other sensitive receivers
- For the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons (see Section 7.2.4)
- Where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm
 - See Section 7.2.5 for further details on emergency management
- Work works are approved through an Out-of-Hours Works (OOHW) Protocol (Attachment E of this Plan), as per Condition of Approval E21 d) and E34 b) (iv).
- Works approved through an EPL, including for works managed through the OOHW Protocol (Attachment E)
 - See Section 7.2.2 for further details on the EPL
- Identified works approved by the Secretary of DP&E.

Construction outside of standard construction hours, particularly during the night time period, will be limited to the greatest extent practicable. For example, works would be conducted by 10pm rather than throughout the night time period where possible.

During design development and construction planning, it is not possible to predict the full extent, location, timing and types of OOHW that will be required. Section 1.1.1 of the OOHW Protocol (Attachment E of this plan) provides typical types of OOHW expected to be required for part of this job.

The specific details of individual OOHW events will be detailed in the specific OOHW Applications. OOHW Applications, as per the OOHW Protocol, will be reviewed and endorsed for compliance with the project approval by the Project Environmental Representative, and then approved by the Project Environment Manager and/or the EPA. Summaries of OOHW undertaken will be provided to DP&E as part the Compliance Tracking Program (CoA C#4).

7.2.2 EPL Approved Out of Hours Works

The EPA issued an EPL to CPB Contractors for its works on 18 August 2017. The EPL allows a range of works outside of standard construction hours, which overlaps with the CoA E21. These include:

■ L3.3 – Approved out of hours works

- (a) Construction works or activities that cause noise levels that are:
 - (i) no more than 5 dBA above the relevant rating background level during the day, evening or night-time periods at any residence, when measured using the LAeq(15 minute) noise descriptor; and
 - (ii) no more than the noise management levels specified in Table 3 of the *Interim Construction Noise Guideline*(DECC, 2009) using the LAeq(15 minute) noise descriptor at other sensitive land uses.
- (b) Emergency works or activities required to avoid loss of life, damage to property or environmental harm.
- (c) Deliveries of plant, equipment, materials or structures that have been determined by the police or other authorised authorities to require special arrangements for transport along public roads for safety reasons.
- (d) Works that if carried out in compliance with Conditions L2.1 or L2.2 would cause unacceptable risks to construction personnel safety, public safety, road or rail network operational performance and/or essential utility services
- (e) Rail maintenance and repair work including tamping and regulating to remediate vertical or horizontal movement >4mm in track geometry that has occurred as a direct result of works being undertaken for the project.
- (f) During local possessions and described in condition L3.4
- (g) Out-of-hours works approved by the Minister for Planning in accordance with the *Environmental Planning and Assessment Act 1979*.

■ L3.4 – Works Approved Outside of Standard Construction hours – Local Possessions

- (a) Works and activities may be undertaken during any local possession, but only if:
 - (i) carrying on those works and activities during standard construction hours would cause unacceptable risks to;
 - (1) construction personnel safety;
 - (2) rail passenger and railways personnel safety; or
 - (3) railway network operational reliability as may be notified to the licensee from time to time by Sydney Trains and ARTC; and
- (b) High noise impact works and activities (excluding rail adjustment, tamping and regulating, and use of hand held rattle guns) may be undertaken during any local possession permissible by Condition L3.4(a) as follows:
 - (i) between the hours of 6:00am to 10:00pm on any day subject to the works and activities being undertaken in continuous blocks not exceeding 3 hours each with a minimum respite from those works and activities of not less than one hour between each block.
- (c) Rail adjustment, tamping and regulating, and the use of hand held rattle guns, may occur at any time during a local possession for works and activities permissible by Condition L3.4(a).

A number of the permitted types of OOHW detailed in the EPL are consistent with the types of out-of-hours detailed as allowed in Section 7.2.1 above. These include:

- L3.3(a)
- L3.3(b)
- L3.3(c)

- L3.3(d)
- L3.3(g)

7.2.3 Out-of-Hours Work Assessment and Approval

All out of hours works (except in emergency situations as managed under an EPL) will be assessed and managed via the Out-of-Hours Work Protocol (Attachment E). The OOHW Application approval process is generally as follows:

Table 7: OOHW Approval and Assessment Process

No.	Step	Detail
1	Work Identification	<ul style="list-style-type: none"> ■ Identify the need to undertake work activities outside standard construction hours. ■ Assess the reason why the OOHW is needed and if it can rescheduled for standard construction hours. ■ If the proposed OOHW is critical to the project, or are due to exceptional circumstances, prepare a document that provides justification for the works.
2	Environmental Protection Licence (EPL) assessment	<ul style="list-style-type: none"> ■ Assess the proposed OOHW against the works allowed under the project EPL (#20966). <ul style="list-style-type: none"> ○ Refer to condition L3.3 and L3.4 of the EPL ■ If the works do not comply with the EPL, a variation will be required to be submitted to the EPA.
3	Assess Alternatives	<ul style="list-style-type: none"> ■ Alternative(s) to be considered that may allow construction to be undertaken within standard construction hours. These can include but are not limited to: <ul style="list-style-type: none"> ○ Alternative equipment ○ Different construction methodology ○ Postponing scheduled works ■ If no other options are considered reasonable or feasible, an OOHW Application Form must be completed in consultation with the Environment Manager
4	OOHW Application Form	<ul style="list-style-type: none"> ■ The OOHW Application form in consultation with the Environment Manager will detail: <ul style="list-style-type: none"> ○ Description of proposed works / activities ○ Compliance with the EPL <ul style="list-style-type: none"> ■ If the works do not comply with the EPL, a variation will be required to be submitted to the EPA. ○ Expected duration ○ List of all noise/vibration generating plant and equipment ○ Predicted noise/vibration impacts (see step #4 below) ○ Proposed mitigation measures, based on predicted impacts ■ The template form is provided as Annexure A to the OOHW Protocol.
5	Undertake CNVIS	<ul style="list-style-type: none"> ■ The proposed OOHW is to be assessed for noise and vibration impacts on the surrounding receivers, via a CNVIS prepared by suitably qualified personnel, taking into account all proposed noise and vibration mitigation measures. The CNVIS will: <ul style="list-style-type: none"> ○ Identify the closest and/or most affected receivers; ○ Predict noise levels based on the NVIA scenarios (Table 6 of the CNVMP or Table 1 of the OOHW Protocol); or, if more appropriate, via modelling or via spreadsheet calculations; ○ Compare predicted values to the NMLs, and where relevant the criteria defined in the TfNSW CNS Additional Mitigation Measure Matrix (AMMM) ○ Provide a list of recommended mitigation measures for implementation ■ Predictions will account for potentially annoying (tonal, low frequency or impulsive) work activities by applying a 5 dB(A) penalty. ■ Predictions will account for all potential noise mitigation measures by applying a deductions to the values assessed above for the any noise reductions from the measures implemented. ■ Predictions will include an assessment of potential sleep disturbance impacts, if anticipated.

No.	Step	Detail
6	Risk / Impact Assessment	<ul style="list-style-type: none"> ■ Activities which are deemed to be inaudible at the nearest receivers (e.g. security operations, monitoring, survey) will not require a CNVIS ■ The criteria and resulting approval process for each level of impact(s) is based on the OOHW Application and the associated CNVIS. ■ Level of impact are detailed as low, medium, or high.risk. ■ The criteria and resulting approval process for each level of impact/risk are detailed in steps 7, 8 and 9 below.
7	Low Impact Works	<ul style="list-style-type: none"> ■ If the CNVIS (step #5 above) details that the proposed OOHWs <u>will not</u> generate $L_{Aeq, 15minute}$ noise levels more than 5 dB above the RBLs at any receiver and/or more than the NMLs specified in the CNVMP, the proposed OOHWs will be considered <u>LOW</u> environment risk. ■ The project Environment Manager will review and approve low risk OOHW Applications.
8	Medium Impact	<ul style="list-style-type: none"> ■ If the CNVIS (step #5 above) details that the proposed OOHWs <u>will</u> generate $L_{Aeq, 15minute}$ noise levels more than 5 dB above the RBLs at any receiver and/or more than the NMLs specified in the CNVMP, the proposed OOHWs will be considered <u>MEDIUM</u> environmental risk. ■ The project's Environmental Representative (ER) will review and endorse medium risk OOHW Applications prior to approval from the Project's Environment Manager. ■ Following endorsement from the ER, the OOHW Application will be reviewed and approved by the Project Environment Manager. ■ The OOHW Application will have to demonstrate the following for the approval of the Environmental Manager: <ul style="list-style-type: none"> ○ Justify the requirement for the works/activities to be undertaken outside of standard construction hours; ○ Compliance with the EPL ○ Summarise the findings of the CNVIS in the OOHW Application; ○ Detail the mitigations to be implemented for the specific OOHW applications, including consideration of the relevant requirements listed under the TfNSW CNS Additional Mitigation Measure Matrix (AMMM); ○ Detail the actions and notifications for the specific works ■ The Environment Manager will review the proposed works/activities, the predicted impacts and proposed mitigation measures, and consider if the documentation provided is acceptable. If so, the Environment Manager will approve the works following endorsement from the ER <ul style="list-style-type: none"> ○ The ER can request additional conditions in their approval of the OOHW Application if considered appropriate, and these are to be implemented if agreed to by the Environment Manager. ○ Any changes must be consistent with the EPL. ■ The proposed OOHW must comply with the EPL. ■ If the Environment Manager and the ER, as part of their review of the proposed works/activities, agree that the predicted impacts and proposed mitigation measures, considers that the proposed OOHW are high risk/impact, than the OOHW Application will be referred to the Department of Planning and Environment (DP&E) in accordance with step #9 below.
9	High Impact Works	<ul style="list-style-type: none"> ■ If the CNVIS (step #5 above), in consultation with the ER, identifies that the proposed OOHWs will generate significant noise levels, defined as "Highly Intrusive" in the TfNSW CNS AMMM ($L_{Aeq, 15minute}$ noise levels more than 30 dB above the RBLs), these applications will be considered a <u>HIGH</u> environmental risk and will be referred to DP&E for approval. ■ Prior to submission to DP&E for approval, the OOHW Application will require review and endorsement by both the Environment Manager and the project's ER. <ul style="list-style-type: none"> ○ The Project Environment Manager and ER will review the OOHW Application as per the requirements in step #8 above ■ The proposed OOHW must comply with the EPL. ■ The OOHW Application will have to demonstrate the following for the approval of DP&E: <ul style="list-style-type: none"> ○ Justify the requirement for the works/activities to be undertaken outside of standard construction hours;

No.	Step	Detail
		<ul style="list-style-type: none"> ○ Summarise the findings of the CNVIS in the OOHW Application; ○ Detail the mitigations to be implemented for the specific OOHW applications, including consideration of the relevant requirements listed under the TfNSW CNS Additional Mitigation Measure Matrix (AMMM); ○ Investigate further mitigation measures that may be implemented to further reduce impacts; ○ Detail the actions and notifications for the specific works ■ DP&E will review the proposed works/activities, the predicted impacts and proposed mitigation measures, and consider if the documentation provided is acceptable. If so, the DP&E will approve the works. <ul style="list-style-type: none"> ○ DP&E can stipulate additional conditions in their approval of the OOHW Application if considered appropriate and these are to be implemented as specified, provided that they do not contradict the requirements of the EPL ○ Any changes must be consistent with the EPL ○ Up to 3 weeks (15 business days) will be allowed for DP&E to review the OOHW Application.
10	OOHW Approval	<ul style="list-style-type: none"> ■ OOHW, no matter the level of risk, <u>will not</u> commence until approval is granted by the relevant authority detailed above.
11	Community Notification	<ul style="list-style-type: none"> ■ All OOHW will require the Additional Mitigation Measures Matrix (from the TfNSW CNS) to be implemented as well as the requirements listed in Condition L3.5 of the EPL ■ Notifications will be distributed to receivers potentially affected by the works. A notification boundary will be established for each OOHW Application, depending on the level and extent of impacts. ■ Notifications will be conducted in accordance with the processes established for the project. ■ Where works are predicted to have an impact on sensitive receivers in accordance with the Community Communication Strategy (CoA #D1), affected stakeholders and sensitive receivers will be notified of proposed OOHW (including the timing and duration) at least 7 days prior to the commencement of the works.
12	Mitigation and Monitoring	<ul style="list-style-type: none"> ■ All reasonable and feasible mitigation measures will be implemented for OOHW, including but not limited to the mitigation measures detailed in Section 7.9 of the CNVMP and the TfNSW CNS. ■ Attended noise and vibration monitoring, if required, will be undertaken as listed in the OOHW Application, with the assessment of its necessity based on the TfNSW CNS AMMM. <ul style="list-style-type: none"> ○ Noise and vibration monitoring will be undertaken by suitably qualified personnel. ○ Monitoring will be undertaken to the standards specified in Section 8 of the CNVMP and Condition M4.1 and M4.2 of the EPL. ■ Monitoring results will be assessed against the predictions in the CNVIS to determine if the predictions were accurate. Where noise and/or vibration levels are observed to regularly exceed the predicted levels in the CNVIS, works will be stopped and alternate methods and mitigation measures will be investigated.

7.2.4 Deliveries

Delivery of most plant and equipment to the project will be undertaken during standard construction hours. However, during the various stages of construction works, there will be instances where oversized deliveries are necessary. Oversized movements can cause disruptions to the existing traffic, and can be a potential hazard for road users. Therefore there is a requirement for these vehicles to move during off-peak hours when traffic volumes are typically at a minimum, thereby ensuring road user and public safety and minimising disruption to the road network. This is consistent with Condition L3.3(d) of the EPL.

The transportation of oversized equipment and machinery may require the occupation of more than one traffic lane. Where this occurs, all movements are to be strictly in accordance with RMS guidelines for oversized movements and where required the issuing of a Road Occupancy Licence (ROL).

7.2.5 Emergencies

Where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm, CPB Contractors will follow the process identified in the Incident and Emergency Management Plan. The CEMP and Pollution Incident Response Management Plan (PIRMP) also contain emergency response information that will also be implemented, such as relevant notifications.

If emergency out-of-hours works are required, the EPA will be notified in accordance with Condition L3.6 of the EPL.

7.3 Noise Management Framework

7.3.1 Construction Noise Goals

The ICNG (DECC, 2009) recommends noise management levels (NML) to reduce the likelihood of noise impacts arising from construction activities. The majority of construction is expected to occur during the following standard construction hours:

- 7.00am – 6.00pm Monday to Friday
- 8.00am – 1.00pm Saturday
- No work on Sunday or public holidays.

There may be times when construction would occur outside standard construction hours. Table 8 presents the established construction Noise Management Level (NML) for sensitive receivers in proximity to construction activities for the Project.

Table 8: Construction Noise Management Levels (source: Table 9-4 Stage 1 EIS, Hyder 2015)

Receiver ID	Construction Noise Management Levels ($LA_{eq, 15 \text{ min}}$)			
	Standard Construction Hours RBL + 10 dBA	Outside Standard Construction Hours (RBL + 5 dBA)		
		Day	Evening	Night
Residential Receivers				
NCA1	52	47	42	42
NCA2	46	41	41	41
NCA3	51	46	42	38
NCA4	54	49	49	42
Sensitive Receivers				
S1	55			
S2	55			
Industrial Receivers				
I1	75			

7.3.2 Sleep Disturbance

The ICNG recommends that where construction works are planned to extend over two or more consecutive nights, the assessment should consider maximum noise levels and the extent and frequency of maximum noise level events exceeding the RBL. The ICNG takes guidance from the NSW Environmental Criteria for Road Traffic Noise (ECRTN, EPA 1999) for recommended night time noise goals to minimise potential impacts and preserve acoustic amenity within receivers:

Maximum internal noise levels below 50-55dB(A) are unlikely to cause awakening reactions.

One or two events per night with maximum internal noise levels of 65-70dB(A) are not likely to affect health and wellbeing.

Taking guidance from the ECRTN, the NML for sleep disturbance adopted in this CNVMP is LA1(1min) 65 dB(A), applied at the façade (i.e. external).

A CNVIS for the construction period will be prepared. Where night works are anticipated, the CNVIS will include an assessment of sleep disturbance.

7.3.3 Construction Related Road Traffic Noise Objectives

On the roads immediately adjacent to construction sites, the community may associate heavy vehicle movements with the project. Once the heavy vehicles move further from construction sites onto major sub-arterial or arterial roads, the noise may be perceived as part of the general road traffic.

In most situations, it will be sufficient to undertake a qualitative assessment of the potential noise impacts associated with heavy vehicle movements. This assessment should take into consideration the number of heavy vehicle movements per hour or shift, the proximity of sensitive receivers, the duration of the construction works and the time of day. This assessment would be included in the preparation of each CNVIS.

All new plant and equipment to be used on site will be subjected to a Project Induction inspection by the safety team. This inspection is to ensure plant maintenance is up to date as per Manufacturer's recommendations. Included in this inspection is the check for non-tonal reversing beepers (or in combination with reversing cameras, proximity alarms etc).

7.4 Construction Vibration Objectives

This section provides a framework for managing construction vibration, however it is noted that the assessment in the Stage 1 EIS does not anticipate vibration impacts from the construction of the Project. Regular vibration monitoring is not therefore proposed, however may be performed in certain circumstances such as response to a complaint (refer Section 8.2 for vibration monitoring).

7.4.1 Disturbance to Building Occupants

Vibration potentially disturbing human occupants of buildings is managed by reference to DECC's 'Assessing Vibration; a technical guideline', published in February 2006, in accordance with Project Planning Approval Condition E19 b). This document provides criteria which are based on the British Standard BS 6472-1992, 'Evaluation of human exposure to vibration in buildings (1-80Hz)'.

Preferred and maximum values for continuous and impulsive vibration are given in the guideline and are reproduced below.

Table 9: Preferred and Maximum Levels for Human Comfort (source: Assessing Vibration; a technical guideline. DECC, 2006)

Location	Assessment period ¹	Preferred values z-axis x- and y-axis		Maximum values z-axis x- and y-axis	
Continuous vibration ³ (Weighted RMS Acceleration, m/s ² , 1-80Hz)					
Critical areas ²	Day or night-time	0.005	0.0036	0.010	0.0072
Residences	Daytime	0.010	0.0071	0.020	0.014
	Night-time	0.007	0.005	0.014	0.010
Offices, schools, educational institutions and places of worship	Day or night-time	0.020	0.014	0.040	0.028
Workshops	Day or night-time	0.04	0.029	0.080	0.058
Impulsive vibration ⁴ (Weighted RMS Acceleration, m/s ² , 1-80Hz)					
Critical areas ²	Day or night-time	0.005	0.0036	0.010	0.0072

Location	Assessment period ¹	Preferred values		Maximum values	
		z-axis	x- and y-axis	z-axis	x- and y-axis
Residences	Daytime	0.30	0.21	0.60	0.42
	Night-time	0.10	0.071	0.20	0.14
Offices, schools, educational institutions and places of worship	Day or night-time	0.64	0.46	1.28	0.92
Workshops	Day or night-time	0.64	0.46	1.28	0.92
Intermittent vibration ⁵ (Vibration Dose Values, VDV, m/s ^{1.75} , 1-80Hz)					
Critical areas ²	Day or night-time	0.10	0.20	-	-
Residences	Daytime	0.20	0.40	-	-
	Night-time	0.13	0.26	-	-
Offices, schools, educational institutions and places of worship	Day or night-time	0.40	0.80	-	-
Workshops	Day or night-time	0.80	1.60	-	-
Notes:	1. Daytime is 7.00 am to 10.00 pm and night-time is 10.00pm to 7.00 am 2. Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring. There may be cases where sensitive equipment or delicate tasks require more stringent criteria than the human comfort criteria specify above. 3. Stipulation of such criteria is outside the scope of their policy and other guidance documents (e.g. relevant standards) should be referred to. Source: BS 6472-1992 4. For continuous and impulsive vibration the preferred and maximum values are weighted acceleration rms values (m/s ²) 5. For intermittent vibration the preferred and maximum values are vibration dose values (VDVs), based on the weighted acceleration values (m/s ^{1.75})				

7.4.2 Structural Damage to Buildings

The German standard DIN 4150 - Part 3 - "Structural vibration in buildings - Effects on Structures", provides recommended maximum levels of vibration that reduce the likelihood of building damage caused by vibration. This standard too, presents recommended maximum limits over a range of frequencies measured in any direction at the foundation or in the plane of the uppermost floor.

The minimum 'safe limit' of vibration at low frequencies for commercial and industrial buildings is 20mm/s. For dwellings it is 5mm/s and for particularly sensitive structures (e.g. historical with preservation orders), it is 3mm/s. These limits increase as the frequency content of the vibration increases. These values are presented in Table 9 and are generally recognised to be conservative.

Table 10: Guideline Values for Vibration Velocity to be used when evaluating the effects of short-term vibration on structures (source: DIN 4150)

Type of Structure	Guideline Values for Velocity – PPV (mm/s)		
	1 Hz to 10 Hz	10 Hz to 50 Hz	50 Hz to 100 Hz
Buildings used for commercial purposes, industrial buildings, and buildings of similar design	20	20 to 40	40 to 50
Dwellings and buildings of similar design and/or occupancy	5	5 to 15	15 to 20

Type of Structure	Guideline Values for Velocity – PPV (mm/s)		
	1 Hz to 10 Hz	10 Hz to 50 Hz	50 Hz to 100 Hz
Structures that, because of their particular sensitivity to vibration, cannot be classified under either of the other classifications and are of great intrinsic value (e.g. heritage listed buildings/structures)	3	3 to 8	8 to 10

With respect to vibration impacts, the minimum working distances in Table 11 will be applied to works adjoining the East Hills rail bridge over the Georges River.

7.4.3 Minimum Working Distances for Vibration Intensive Equipment

As a guide, indicative minimum working distances for typical items of vibration intensive plant and equipment are provided in Table 11 below. The minimum working distances are quoted for the purpose of minimising:

- 'Cosmetic' damage (refer BS 7385)
- Human discomfort (refer DEC's Assessing Vibration – A Technical Guideline)

Table 11: Recommended Minimum Working Distances for Vibration Intensive Equipment

Plant Item	Rating Description	Minimum Working Distance	
		Cosmetic Damage	Human Response
Vibratory Roller	<50 kN (Typically 1-2 tonnes)	5 m	15 m to 20 m
	<100 kN (Typically 2-4 tonnes)	6 m	20 m
	<200 kN (Typically 4-6 tonnes)	12 m	40 m
	<300 kN (Typically 7-13 tonnes)	15 m	100 m
	<300 kN (Typically 13-18 tonnes)	20 m	100 m
	>300 kN (Typically >18 tonnes)	25 m	100 m
Small Hydraulic Hammer	300kg (5-12 tonne excavator)	2 m	7 m
Medium Hydraulic Hammer	900kg (12-18 tonne excavator)	7 m	23 m
Large Hydraulic Hammer	1600kg (18-34 tonne excavator)	22 m	73 m
Vibratory Pile Driver	Sheet Piles	2 m to 20 m	20 m
Pile Boring	≤ 800 mm	2 m (nominal)	N/A
Jackhammer	Hand held	1 m (nominal)	Avoid contact with structure
Notes:	More stringent conditions may apply to heritage or other sensitive structures		

In relation to human comfort (response), the minimum working distances in Table 11 relate to continuous vibration. For most construction activities, vibration emissions are intermittent in nature and for this reason, higher vibration levels, occurring over shorter periods are permitted.

Due to the distance (>200m) between the construction footprint and the nearest sensitive receivers, vibration impacts (including cosmetic damage) are not expected. Therefore, pre-construction dilapidation surveys of the nearest buildings are not required.

7.5 Mitigation Measures

Controls that are adequate to manage Noise and Vibration and to reduce risk to the lowest acceptable rating achievable are implemented before any relevant works commence. Elimination of the hazard is

the first preference of control, followed by engineering, then administrative controls. Controls used on this project are included in Table 12 below.

Table 12: Mitigation Measures

No.	Control	Timing	Accountability	Source
NV1	Undertake construction activities within the nominated hours of work to comply with contractual and legal requirements.	Construction	Construction Manager	CPB Contractors Mandatory Minimum
NV2	Any works that need to occur outside these hours must be approved by the Project Director or Environment Manager. All equipment must be serviced and maintained according to manufacturer's recommendations, or more frequently if required to minimise noise generated.	Construction	Project Director Environment Manager Construction Manager Supervisor Project Engineer Communications Manager	CPB Contractors Mandatory Minimum CoA
NV3	Undertake high noise generating works in accordance with project obligations	Construction	Construction Manager Supervisor Project Engineer	CPB Contractors Mandatory Minimum
NV4	Where intermittent high frequency noise is a high risk, and pending safety requirements, the least noise-intrusive reversing alarms must be used.	Construction	Construction Manager Supervisor Project Engineer	CPB Contractors Mandatory Minimum
NV5	In accordance with contractual requirements early consultation must be conducted with community stakeholders on the likely impacts of activities likely to cause disruption.	Construction	Project Director Environment Manager Communications Manager	CPB Contractors Mandatory Minimum
NV6	Limiting the hours of work in response to community concerns if required	Construction	Environment Manager Communications Manager Project Engineer	CPB Contractors Mandatory Minimum
NV7	Noise attenuation of fixed and mobile plant as required in order to achieve compliance is installed	Construction	Construction Manager Supervisor Project Engineer	CPB Contractors Mandatory Minimum
NV8	Consideration will be given to constructing and maintaining noise barriers to shield significant noise generating activities or plant as required in order to comply with CoA and EPL requirements.	Construction	Construction Manager Supervisor Project Engineer	CPB Contractors Mandatory Minimum
NV9	Adjust the Construction Traffic and Access Management Plan to minimise noise impacts as required.	Pre-construction Construction	Construction Manager Supervisor Project Engineer Environment Manager	CPB Contractors Mandatory Minimum
NV10	Activities will be altered or additional controls implemented where predictive modelling (noise or vibration) indicates potential impacts that exceed compliance limits.	Pre-construction Construction	Construction Manager Supervisor Project Engineer Environmental Coordinator	CPB Contractors Mandatory Minimum

No.	Control	Timing	Accountability	Source
NV11	In the event that implementation of all above-stated controls are insufficient to achieve compliance then mitigation measures (e.g. fitting air conditioners and double-glazing windows) are implemented at sensitive receptors.	Pre-construction Construction	Project Director Construction Manager Environment Manager Communications Manager	CPB Contractors Mandatory Minimum
NV12	Noise monitoring conducted in accordance with the requirements of the CoA and EPL and at a frequency and at locations to confirm compliance with the regulatory limits will be conducted.	Construction	Environment Manager Environmental Coordinator	CPB Contractors Mandatory Minimum
NV13	Work practices predicted to generate non-compliant vibration must be amended prior to commencing works to the extent required to comply with applicable limits, as long as changes are reasonable and feasible.	Pre-construction Construction	Construction Manager Supervisor Project Engineer Environment Manager	Good practice
NV14	Compression breaks will not be used by construction vehicles near the subject site.	Construction	Construction Manager Supervisor Project Engineer Environment Manager	CoAs
NV15	Plant and equipment that has reports of unsatisfactory noise performance will be reviewed to ensure maintenance is up to date and if replacement is required	Construction	Construction Manager Supervisor Project Engineer Environment Manager	CoAs
NV16	All equipment is serviced and maintained according to, as a minimum, the manufacturer's recommendations, or more frequently if required to minimise noise generated. Where the manufacturer's requirements are not available then industry best practice maintenance is applied. Plant Induction inspection performed on all plant prior to commencing on site (by Safety team)	Pre-construction Construction	Supervisor Project Engineer Safety Manager	Good practice C'th MM EPL
NV17	Where required, vibration monitoring conducted in accordance with the CoA and EPL and at a frequency and at locations to confirm compliance with the regulatory limits will be conducted.	Construction	Environment Manager Environmental Coordinator	CoA EPL
NV18	Quiet plant and processes will be selected wherever feasible and retrofitting reversing alarms that are quieter and display less annoying characteristics. Such alarms could include "smart alarms" and "quacker alarms".	Pre-construction Construction	Supervisor Project Engineer	FCMM C'th MM
NV19	Portable temporary screens to mitigate specific noise sources where appropriate.	Construction	Supervisor Project Engineer	C'th MM
NV20	Respite periods (e.g. for extended periods of driven piling and use of rock breakers).	Construction	Construction Manager Supervisor Project Engineer	C'th MM

No.	Control	Timing	Accountability	Source
NV21	Consideration of offset distances, orientation and position of noisy plant away from sensitive receivers, including the SME and DNSDC operations.	Pre-construction Construction	Construction Manager Supervisor Project Engineer Environment Manager	C'th MM
NV22	Completion of loading and unloading activities away from sensitive receivers.	Pre-construction Construction	Supervisor Project Engineer	C'th MM
NV23	Ground borne vibration levels would be measured and monitored to establish the minimum working separation between the equipment and nearby vibration sensitive receivers and buildings that have the potential to be impacted when vibration-generating equipment is used during construction of the SIMTA proposal.	Pre-construction Construction	Construction Manager Supervisor Project Engineer Environment Manager	C'th MM
NV24	Consideration of acoustic enclosures, erection of noise walls (hoardings) and respite periods where noise goals are not met.	Construction	Supervisor Project Engineer	CoA
NV25	Applicable buffer distances will be provided for vibration intensive works.	Construction	Supervisor Project Engineer Environmental Manager Communications Manager	CoA
NV26	Consideration will be given to the use of low-vibration generating equipment/ vibration dampeners or alternative construction methodology	Construction	Supervisor Project Engineer	CoA
NV27	Where required, pre- and post-construction dilapidation surveys of sensitive structures where blasting and/ or vibration is likely to result in damage to buildings and structures (including surveys being undertaken immediately following a monitored exceedance of the criteria)	Pre-construction Construction	Construction Manager Supervisor Project Engineer	CoA

7.6 Additional Noise and Vibration Mitigation Measures

Additional noise and vibration mitigation may be undertaken, taking into consideration the time period works are being undertaken and the level of impact.

Additional mitigation measures to be considered in preparing CNVISs include:

- Phone calls: phone calls detailing relevant information would be made to identified/ affected stakeholders;
- Letter box drops: used to disseminate information to interested stakeholders and/or to provide advanced warning of high noise impact activities during the day or potentially audible OOHW activities (can also be emailed)
- Individual briefings: used to inform stakeholders about the impacts of high noise activities and mitigation measures that will be implemented
- Respite offers: residents subjected to lengthy periods of noise or vibration may be eligible for a project specific respite offer
- Specific notifications: letterbox dropped, emailed or hand delivered to advise stakeholders that construction activities are likely to exceed the noise objectives

- **Monitoring:** noise or vibration monitoring offered to stakeholders in the event of complaints relating to noise or vibration emanating from the construction works
- **Alternative accommodation:** offered to residents living in close proximity to construction works that are likely to incur significant noise and/ or vibration

Where it is required, the adoption of additional mitigation measures during construction will be under the framework provided by the Construction Noise Strategy (TfNSW 2011). This strategy is used as a best practice guide to assist managing noise and vibration impacts. The table is provided below and in section 2.1 of the OOHV Protocol.

Table 13: TfNSW Additional Airborne Mitigation Measures Matrix

No.	Time Period		Mitigation Measures/Predicted $L_{Aeq(15min)}$ Noise Level above RBL			
			0 to 10 dB (A) Noticeable	10 to 20 dB (A) Clearly audible	20 to 30 dB (A) Moderately Intrusive	>30 dB (A) Highly Intrusive
OH1	Standard	Mon-Fri (7:00 am – 6:00 pm) Sat (8:00am – 1:00 pm) Sun/ Public Hol. (Nil)			Letterbox Drop Monitoring	Letterbox Drop Monitoring
OH2	Period 1	Mon-Fri (6:00pm – 10:00pm) Sat (7:00am – 8:00am & 1:00pm – 10:00 pm) Sun/ Public Hol. (8:00am – 6:00pm)		Letterbox Drop	Letterbox Drop Monitoring	Letterbox Drop Monitoring Individual Briefing Respite Offer Phone Calls Specific Notification
OH3	Period 2	Mon-Fri (10:00pm – 7:00am) Sat (10:00 pm – 7:00am) Sun/ Public Hol. (6:00pm - 8:00am)	Letterbox Drop	Letterbox Drop Monitoring	Letterbox Drop Monitoring Individual Briefing Phone Calls Specific Notification	Letterbox Drop Monitoring Individual Briefing Phone Calls Specific Notification Alternate Accommodation

7.6.1 EPL Community Notification Requirements

The Licensee must notify potentially affected noise sensitive receivers of any out of hours works in accordance with Condition L3.5 of the EPL. Notification is required by letterbox drop or electronic communication and via the project website at least 48 hours prior to the commencement of works. Refer to the EPL and the Community Communication Strategy for further information.

8. Review and Improvement

Noise and vibration monitoring is performed that complies with legal and contract requirements and which is sufficient to identify potential non-compliances before they occur.

- The Environmental Coordinator will undertake weekly inspections and monitoring of construction activities to ensure compliance with the requirements of this plan.
- The Weekly Environmental Inspection Checklist will be used to maintain compliance and effectiveness of controls. If actions are required, then an actions form will be completed and issued to the foreman for action. These actions will be tracked to ensure items are closed out within the appropriate timeframes.

Where monitoring determines non-compliance to be a risk or to have occurred, an incident report and corrective actions are raised in the Synergy.

Monitoring and analysis of data will be carried out by a competent person. Evidence of competence must be retained.

It is the accountability of the Environment Manager to ensure all monitoring is performed according to these requirements.

8.1 Noise Monitoring

- Suitably experienced personnel (such as Environment Coordinator or acoustic consultant) will carry out noise monitoring at least monthly (to confirm the effectiveness of the mitigation measures and impact predictions), in response to complaints, and in accordance with relevant Condition of Approval and EPL conditions.
- LA_{eq} (15 minute) measurements will be undertaken to determine if NMLs are being met
- Noise monitoring will be performed at the nearest sensitive receiver to a works activity and at complainant locations
- As required by an OOHW Application and associated CNVIS (Refer to OOHW Protocol)
- As required by an EPL.
 - Condition M4.1 of the EPL specifies the requirements to monitor noise impacts from construction works. This includes noise monitoring as directed by the EPA, of construction to inform mitigation measures, and as required for OOHW.
 - Condition M4.2 (a) of the EPL specifies the standards and guidelines that are applicable to noise monitoring.

Any exceedances of predicted noise impacts from works are to be reviewed to determine where noise levels can be reduced by the addition of further feasible and reasonable mitigation measures (refer to Table 12).

Noise monitoring locations are detailed in Section 8.3. These locations are subject to change as necessary to pick up the nearest sensitive receiver(s) as the construction worksites move.

Noise monitoring will be recorded on the Noise Compliance Monitoring Sheet (Attachment F).

8.2 Vibration Monitoring

Vibration has not been identified as an impact from the construction of the Rail Link due to the separation distances to the nearest receivers, and as such vibration monitoring is not proposed. Vibration monitoring will be developed as the Project progresses and a need arises and may consists of:

- Testing for both structural damage and human comfort where either the 'safe working distances' in Table 11 of the CNVMP cannot be complied with or vibration levels are predicted to be greater than the maximum values for human comfort as a result of works
- Where required at sensitive receivers to verify compliance with the Conditions of Approval per the Construction Heritage Management Plan
- As required by a CNVIS
- As required by an EPL

- Condition M4.1 of the EPL specifies the requirements to monitor vibration impacts from construction works. This includes vibration monitoring as directed by the EPA, of construction to inform mitigation measures, and as required for OOHV.
- Condition M4.2(b) of the EPL specifies the standards and guidelines that are applicable to vibration monitoring.
- In response to complaints in accordance with the requirements of an EPL.

Vibration monitoring, if required, will be recorded on the Vibration Compliance Monitoring Sheet (Attachment F).

8.3 Monitoring Locations

The proposed standard noise monitoring locations are shown in Attachment D. Table 14 below identifies the proposed monitoring locations and provides their relevant RBLs and NMLs. These locations may be adjusted as work locations move resulting in other receivers within each NCA to become closer.

Table 14: Proposed Noise Monitoring Locations, RBLs and NMLs (source: Wilkinson Murray, 2013 cited in Stage 1 EIS, 2015)

Location	RBL (NML) dBA		
	Daytime (7.00am – 6.00pm)	Evening (6.00pm – 10.00pm)	Night Time (10.00pm – 7.00am)
L1: 15 Larra Court, Wattle Grove	42 (52)	37 (42)	37 (42)
L2: 6 Namoi Court, Wattle Grove	36 (46)	36 (41)	36 (41)
L3: 2 Rushton Place, Casula	41 (51)	37 (42)	34 (39)
L4: 14 Goodenough Street, Glenfield	44 (54)	44 (49)	37 (42)

8.3.1 Additional Monitoring Locations

OOHV Applications will include an assessment of the nearest sensitive receivers and will identify the most appropriate noise monitoring location(s) depending on the location and extent of impacts. For works near NCA3, Glenfield Farm and the nearest residents on Leacock Lane closest to proposed work locations will have noise monitoring undertaken if the OOHV Application details that exceedances of the NMLs are predicted.

8.4 Reporting

The following noise and vibration reporting will be undertaken:

- Noise monitoring will be recorded on the Noise Monitoring Record Form.
- Vibration monitoring will be recorded on the Vibration Monitoring Record Form.
- As required by the EPL (Condition M1)
 - As holder of the EPL, all monitoring required by the EPL will be posted on the CPB Contractors website (www.cpbcon.com.au).
- In response to complaints a detailed response will be provided to the complainant.
- Plant and equipment noise levels will be recorded using the Plant and Equipment Noise Measurement Record Form.

Further reporting will be in line with the Construction Environmental Management Plan (CEMP).

In accordance with EPBC CoA No. 11, records will be maintained for all monitoring events should they be requested by the DotE or subject to audit.

8.4.1 EPL Reporting requirements

The following EPL conditions must be complied with:

- M1 – Monitoring records
 - M1.1 – The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.
 - M1.2 – All records required to be kept by this licence must be:

- (a) – in a legible form, or in a form that can readily be reduced to a legible form;
- (b) – kept for at least 4 years after the monitoring or event to which they relate took place; and
- (c) – produced in a legible form to any authorised officer of the EPA who asks to see them
- M1.3 – The following records must be kept in respect of any samples required to be collected for the purposes of this licence:
 - (a) – the date(s) on which the sample was taken;
 - (b) – the time(s) at which the sample was collected
 - (c) – the point at which the sample was taken; and
 - (d) – the name of the person who collected the sample
- R4.2 – Noise and Vibration Reports
 - (a) – When directed by an authorised officer of the EPA, the licensee must provide a Preliminary Noise Investigation Report prepared in accordance with Condition R4.2(b) and R4.2(c) within 48 hours of receiving that direction
 - (b) – The Preliminary Investigation Report provided pursuant to Condition R4.2(a) must detail the results of noise or vibration monitoring undertaken in accordance with Condition M4.1
 - (c) – The Preliminary Investigation Report provided pursuant to Condition R4.2(a) must:
 - (i) – include numerical and/or graphical representation of the noise and vibration monitoring results; and
 - (ii) – highlight any detected exceedance of noise predictions, noise goals and noise limits specified in:
 - (1) – this licence
 - (2) – relevant noise guidelines; and
 - (3) – relevant noise modelling
 - (d) – In the event of any exceedance of the noise predictions, goals or limits referred to in Condition R4.2(c), the licensee must:
 - (i) – modify work practices and methods and implement all practicable and reasonable measures to prevent a recurrence of the exceedance; and
 - (ii) – submit a Follow-up Noise Investigation Report to the EPA within 5 working days of receiving the direction to prepare the Preliminary Noise Investigation Report under Condition R4.2(a)
 - (e) – the Follow-up Noise Investigation Report must include:
 - (i) – confirmation of whether or not noise monitoring has been undertaken in accordance with AS2659 and the compliance monitoring guidance provided in the NSW Industrial Noise Policy (EPA, 2000).
 - (ii) – confirmation of whether or not vibration monitoring has been undertaken in accordance with the guidance provided in Assessing vibration: a technical guideline (DEC, 2006)
 - (iii) – details of the prevailing meteorological conditions during the period when the noise or vibration monitoring was undertaken;
 - (iv) – a map of each noise and vibration monitoring location in relation to the noise source, including relevant distance;
 - (v) – numerical and graphical representation of the noise and vibration monitoring results
 - (vi) – an analysis of the noise and vibration monitoring results
 - (vii) – details of any remedial action taken in relation to the matter; and
 - (viii) – in cases not the subject of remedial action, detailed justification of the decision not to undertake remedial action

8.5 Auditing

Both internal and external audits will be undertaken to assess the effectiveness of environmental controls, compliance with this sub-plan, Conditions of Approval and any other relevant approval and licence. Audit requirements are described in the CEMP.

As per Part B – Element 12 of the CEMP, the CNVMP will be reviewed every 6 months to ensure it is applicable to works on site. Any updates to the CNVMP will be in accordance with the criteria set out in the CEMP.

8.6 Continuous Improvement

Continual improvement is achieved through constant measurement and evaluation, audit and review of the effectiveness of the plan, and adjustment and improvement of the CEMP, project environmental outcomes and CPB Contractors' Environmental Management System.

This plan will be updated as required:

- To take into account changes to the environment or generally accepted environmental management practices, new risks to the environment or changes in law
- Where requested or required by the NSW Department of Planning and Environment or any other Authority
- In response to internal or external audits.

The updated plan must be endorsed by the Environment Manager and approved internally by the Project Director. Minor changes may be approved by the Environmental Representative. Minor changes would typically include those that:

- Are editorial in nature (e.g. staff and agency/authority name changes)
- Do not increase the magnitude of impacts on the environment when considered individually or cumulatively
- Do not compromise the ability of the project to meet approval or legislative requirements.

Where the Environmental Representative deems it necessary, the plan will be provided to relevant stakeholders for review and comment if required and forwarded to the Secretary of DP&E for approval.

9. Incident Response

9.1 Non-compliance and Exceedances

In the event of a noise or vibration non-compliance, the process within the CEMP will be followed.

9.2 Complaints Management

In the event of a noise or vibration complaints, the process within the Community Consultation Strategy will be followed. This summarised below.

CPB Contractors will handle enquiries and complaints in a responsive manner. Throughout the works, the team will be making contact with multiple and varied internal and external stakeholders. The Community Communications Strategy details procedures to ensure that the process of dealing with enquires and complaints by the CPB Contractors team is consistent and in line with SIMTA's enquiry and complaints handling management policies as detailed in the Project's Stakeholder and Community Liaison Plan.

The Environment Manager and Environmental Coordinator will assist the Communications Manager in responding to environmental complaints and maintain a register of Environmental Complaints for reporting to the EPA and other relevant agencies.

9.2.1 EPL specific requirements

Condition M2 requires that all pollution complaints are recorded. The requirement for a Telephone Complaints Line in Condition M3 is satisfied by SIMTA. The details of the line are detailed in the CCS and the SIMTA CES.

Condition M3.5 requires that noise and vibration complaints are investigated within 2 hours of the complaint being received by CPB. Condition M3.6 requires that the complainant is notified of the results of the investigation.

Condition R4.1 requires that complaints are reported to the EPA by 12pm the following business day.

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Attachments

Attachment A: Compliance Matrix

Contract Clauses

Specific contract clauses and references which set limits and/or govern impacts to noise and vibration matters on the project include:

Table 15: Principal's Project Requirements

Contract Document Reference	Requirement	Where Addressed
1.4(j)	Minimise dust and noise nuisance to adjacent properties;	Section 7 Table 12

Conditions of Project Environmental Approvals

Conditions of project environmental approvals that specifically address the management of noise and vibration matters include:

Stage 1 Conditions of Approvals

Table 16: Stage 1 Conditions of Approval

Stage 1 CoA Ref	Requirement	Where Addressed
C27	The Applicant shall design the rail link to accommodate the installation of trackside noise barriers for the full length of the rail link in the event they may be required at some future time to comply with the project specific noise levels.	Section 4.1 Design Report
	Construction Hours	
E19	Construction shall be undertaken during the following standard construction hours: a) 7:00am to 6:00pm Mondays to Fridays, inclusive; and b) 8:00am to 1:00pm Saturdays; c) at no time on Sundays or public holidays.	Section 7.1
E20	Activities resulting in a high noise impact shall only be undertaken: a) between the hours of 8:00 am to 5:00 pm Monday to Friday; b) between the hours of 8:00 am to 1:00 pm Saturday; and c) in continuous blocks not exceeding three hours each with a minimum respite from those activities and works of not less than one hour between each block. For the purposes of this condition, 'continuous' includes any period during which there is less than a one hour respite between ceasing and recommencing any of the work the subject of this condition.	Section 7.1
E21	Notwithstanding conditions E19 and E20, works may be undertaken outside the hours specified under those conditions in the following circumstances: a) construction works that cause LAeq (15 minute) noise levels that are: (i) No more than 5 dB above rating background level at any residence in accordance with the Interim Construction Noise Guideline (DECC, 2009); and (ii) No more than the noise management levels specified in Table 3 of the Interim Construction Noise Guideline (DECC, 2009) at other sensitive land uses; or	Section 7.2 Attachment E (OOHW Protocol)

Attachments

Stage 1 CoA Ref	Requirement	Where Addressed
	b) for the delivery of materials required by the police or other authorities for safety reasons; or c) where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm; or d) construction works approved through an Out-Of-Hours Work Protocol prepared as part of the Construction Noise and Vibration Management Plan required by condition E34(b), provided the relevant Council, local residents and other affected stakeholders and sensitive receivers are informed of the timing and duration at least 48 hours prior to the commencement of the works; or e) identified works approved by the Secretary.	
E22	<p>Construction Noise and Vibration</p>	
	<p>The Applicant shall implement all feasible and reasonable noise mitigation measures with the aim of achieving the following construction noise management levels and vibration criteria:</p> <p>a) construction noise management levels established using the Interim Construction Noise Guideline (DECC 2009);</p> <p>b) vibration criteria established using the Assessing Vibration: a Technical Guide (DECC 2006) (for human exposure); and</p> <p>c) the vibration limits set out in the German Standard DIN 4150-3: Structural Vibration- effects of vibration on structures (for structural damage).</p> <p>Any construction activities identified as exceeding the construction noise management levels and/or vibration criteria shall be managed in accordance with the Construction Noise and Vibration Management Plan required by condition E35(b).</p> <p>Note: The Interim Construction Noise Guideline identifies 'particularly annoying' activities that require the addition of 5dB(A) to the predicted level before comparing to the construction Noise Management Level.</p>	<p>Table 12</p> <p>Table 8</p> <p>Table 9 & 11</p> <p>Table 10</p>
	<p>Construction Traffic Noise</p>	
E23	<p>The Applicant is to ensure that construction vehicles operate so as to minimise any construction noise impacts from the construction site. Measures that could be used include toolbox talks, contracts that include provisions to deal with unsatisfactory noise performance for the vehicle and/or the operator, and specifying non-tonal movement alarms in place of reversing beepers or alternatives such as reversing cameras and proximity alarms, or a combination of these, where tonal alarms are not mandated by legislation.</p>	<p>Table 12</p> <p>Section 7.3.3</p> <p>Section 4.2</p>
E24	<p>No use of compression brakes shall be permitted for construction vehicles associated with construction in the vicinity of the subject site.</p>	<p>Table 12</p> <p>Section 4.2</p>
	<p>Construction Environmental Management Plan — Sub Plans</p>	
E34	<p>As part of the CEMP for the SSD, the Applicant shall prepare and implement:</p>	<p>CEMP</p> <p>This Plan</p>
E34 b)	<p>a Construction Noise and Vibration Management Plan to detail how construction noise and vibration impacts will be minimised and managed. The Plan shall be consistent with the guidelines contained in the Interim Construction Noise Guidelines (Department of Environment and Climate Change 2009). The plan shall be developed in consultation with the EPA and shall include, but not be limited to:</p>	<p>This Plan</p> <p>Section 3.1</p>
E34 b)	<p>(i) identification of the work areas, site compounds and access points;</p>	<p>Section 1.2</p>

Attachments

Stage 1 CoA Ref	Requirement	Where Addressed
		Section 6.2
E34 b)	(ii) identification of sensitive receivers and relevant construction noise and vibration goals applicable to the SSD and stipulated in the conditions above;	Section 5 Section 7.3.1 Section 7.4
E34 b)	(iii) details of construction activities and an indicative schedule for works, including the identification of key noise and/or vibration generating construction activities (based on representative construction scenarios, including at ancillary facilities) that have the potential to generate noise and/or vibration impacts on surrounding sensitive receivers, particularly residential areas;	Section 6.3 Section 6.4
E34 b)	(iv) an Out-of-Hours Work Protocol for the assessment, management and approval of works outside of standard construction hours as defined in condition E19 of this approval, for the Secretary's approval. The Out-of-Hours Work Protocol must detail: a) assessment of out-of-hours works against the relevant noise and vibration criteria; b) detailed mitigation measures for any residual impacts (that is, additional to general mitigation measures), including extent of at receiver treatments; and c) proposed notification arrangements.	Attachment E (OOHW Protocol)
E34 b)	(v) identification of feasible and reasonable measures proposed to be implemented to minimise and manage noise impacts (including construction traffic noise impacts), including, but not limited to, acoustic enclosures, erection of noise walls (hoardings) and respite periods;	Table 12 Section 6.6 Section 7.5
E34 b)	(vi) identification of feasible and reasonable procedures and mitigation measures to ensure relevant vibration criteria are achieved, including applicable buffer distances for vibration intensive works, use of low- vibration generating equipment/ vibration dampeners or alternative construction methodology, and pre- and post- construction dilapidation surveys of sensitive structures where blasting and/ or vibration is likely to result in damage to buildings and structures (including surveys being undertaken immediately following a monitored exceedance of the criteria);	Table 12 Section 6.6 Section 7.4 Section 7.5 Section 8.2
E34 b)	(vii) a description of how the effectiveness of mitigation and management measures would be monitored during construction, clearly indicating how often this monitoring would be conducted, the locations where monitoring would take place, how the results of this monitoring would be recorded and reported, and, if any exceedance is detected, how any noncompliance would be rectified; and	Section 8 Section 6.6 Section 7.5 Section 9.1
E34 b)	(viii) mechanisms for the monitoring, review and amendment of this plan.	Section 8 CEMP (Part B, Element 12)
E34 c)	a Construction Heritage Management Plan to ensure construction impacts on Aboriginal and non-Aboriginal heritage will be appropriately avoided, minimised and managed. The Plan shall be developed in consultation with OEH, the relevant Council, the NSW Heritage Council (for non-Aboriginal State heritage items) and the relevant Local Aboriginal Land Councils (for Aboriginal heritage), and include, but not necessarily be limited to:	CHMP
E34 c)	(ii) in relation to non-Aboriginal Heritage: a) identification of heritage items directly and indirectly affected by construction;	CHMP Section 8.2

Attachments

Stage 1 CoA Ref	Requirement	Where Addressed
	<p>b) consideration of methods to prevent damage to any retained heritage items, including:</p> <p>I. procedures for identifying minimum working distances to retained heritage items (including, at minimum, vibration testing and monitoring),</p> <p>II. detailed options for alteration of construction methodology should preferred values for vibration be exceeded, and</p> <p>III. commitment to implementing those options if preferred values for vibration are likely to be exceeded.</p>	Rail Link works are not expected cause vibratory impact on Heritage items

Stage 1 Final Compilation of Mitigation Measures

Table 17: Stage 1 Final Compilation of Mitigation Measures

Stage 1 FCMM Ref	Requirement	Where Addressed
0	General environmental management	
0A	<p>A Preliminary Construction Environmental Management Plan (PCEMP) has been prepared for the Proposal. The purpose of this PCEMP is to provide the preliminary, overarching framework for the management of potential environmental impacts resulting from construction activities.</p> <p>A number of other construction related management plans have also been prepared for the Proposal, including:</p>	Stage 1 EIS
0A	Construction Noise and Vibration Management Plan (CNVMP), prepared in accordance with the Interim Construction Noise Guideline 2009 (ICNG)	Stage 1 EIS
3A	A Construction Noise and Vibration Management Plan (CNVMP) (or equivalent) will be developed for the Proposal in accordance with the EPA's Interim Construction Noise Guidelines (ICNG). The following issues will be addressed within the plan:	This Plan
3A	Construction activities will have regard to the standard hours of 07:00 am to 18:00 pm Monday to Friday, and 08:00am to 13:00 pm Saturday. Any works undertaken outside of these hours will be undertaken in consultation with relevant authorities. Works outside these hours that may be permitted will include:	Section 7.1
3A	Any works which do not cause noise emissions to be audible at any nearby sensitive receptors or comply with the 'Outside Standard Construction Hours' prescribed in Section 9.	Section 7.2 Attachment E (OOHW Protocol)
3A	The delivery of materials which is required outside of these hours as requested by Police or other authorities for safety reasons.	Section 7.2 Attachment E (OOHW Protocol)
3A	Emergency work to avoid the loss of lives, property and/or to prevent environmental harm.	Section 7.2 Attachment E (OOHW Protocol)
3A	Works required to be undertaken during track possessions or road closures.	Section 7.2 Attachment E (OOHW Protocol)
3A	Any other work as approved through the CNVMP Process.	Section 7.2 Attachment E (OOHW Protocol)

Attachments

Stage 1 FCMM Ref	Requirement	Where Addressed
3A	Selection of quiet plant and processes wherever feasible and retrofitting reversing alarms that are quieter and display less annoying characteristics. Such alarms could include “smart alarms” and “quacker alarms”.	Table 12 Section 7.3
3A	Provision of training and awareness of administrative measures to reduce noise impacts, which will include the following: <ul style="list-style-type: none"> ■ Site awareness training/environmental inductions to provide instruction on noise mitigation techniques/measures to be implemented during construction of the Proposal ■ Working within approved hours ■ Working with noisy equipment away from sensitive receivers ■ Maintaining plant and equipment ■ Turning off machinery when not in use ■ Limiting the “clustering” of noisy plant / processes. 	Section 4.2
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.	Design Operations

NSW Concept Plan Conditions of Approval

Table 18: NSW Concept Plan Approval Conditions

NSW Concept Plan CoA Ref	Requirement	Where Addressed
2.5	Any future Development Application shall include an updated assessment of noise and vibration impacts. The assessment shall:	Stage 1 EIS
a)	The assessment shall: <ul style="list-style-type: none"> ■ assess construction noise and vibration impacts associated with construction of the intermodal facility including rail link, including impacts from construction traffic and ancillary facilities. The assessment shall identify sensitive receivers and assess construction noise/vibration generated by representative construction scenarios focusing on high noise generating works. Where work hours outside of standard construction hours are proposed, clear justification and detailed assessment of these work hours must be provided, including alternatives considered, mitigation measures proposed and details of construction practices, work methods, compound design, etc. ■ 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 ■ be prepared in accordance with: NSW Industrial Noise Policy (EPA 2000), Interim Construction Noise Guideline (DECC 2009), Assessing Vibration: a technical guide NSW Government Department of Planning and Environment 9 (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. 	Stage 1 EIS

Attachments

NSW Concept Plan Revised Statement of Commitments

Table 19: NSW Concept Plan Revised Statement of Commitments

NSW Concept Plan Revised SoC Ref	Requirement	Where Addressed
	Noise and Vibration	
1.38	Prior to undertaking demolition and construction on site, a Construction Noise and Vibration Management Plan should be prepared based on details of the proposed construction methodology, activities and equipment This should identify potential noise and vibration impacts and reasonable and feasible noise mitigation measures (such as those identified in this report) that may be implemented to minimise any potential impacts, including engineering and management controls.	This Plan
1.39	All construction activities will have regard to the standard hours of 7:00am to 6:00pm Monday to Friday and 8:00am to 1:00pm Saturday (with approval from relevant authorities). Any works undertaken outside of these hours will be undertaken in consultation with relevant authorities. Works outside these hours that may be permitted will include:	Section 7.1
a)	Any works which do not cause noise emissions to be audible at any nearby sensitive receptors.	Section 7.2
b)	The delivery of materials which is required outside of these hours as requested by Police or other authorities for safety reasons. Local residents, commercial and industrial premises will be informed of the timing and duration of approved works in accordance with the notification provisions outlined in the CNMP.	Section 7.2
c)	Emergency work to avoid the loss of lives, property and/or to prevent environmental harm.	Section 7.2
d)	Any other work as approved through the CNMP Process	Section 7.2 Attachment E (OOHW Protocol)
1.9	Air Quality	
1.91	The Proponent commits to undertaking a review of national and international 'best practice' for the design and operation of planning application intermodal facilities to identify reasonable and feasible for the first stage of management strategies to reduce air quality and noise impacts works (including the associated with construction and operation of the intermodal rail link) terminal development stages of the proposal.	Stage 1 EIS

Commonwealth Concept Plan Conditions of Approval

Table 20: Commonwealth Concept Plan Conditions of Approval

Commonwealth CoA Ref	Requirement	Where Addressed
	Construction Environment Management Plan	
7	For the better protection of Commonwealth land, the person taking the action must engage a suitably qualified expert(s) to prepare a Construction Environment Management Plan (CEMP), for the approval of the Minister. The CEMP must include in relation to construction of the proposed facility:	CEMP

Attachments

Commonwealth CoA Ref	Requirement	Where Addressed
b)	Identification and quantification of all potential impacts associated with noise, vibration, air quality, traffic, light spill, hydrological changes, contamination, and indigenous heritage (including cumulative impacts associated with the DoFs proposed intermodal) upon Commonwealth land. Consideration must be given to people and communities at SME, DNSDC, Defence housing, and the environment more generally in neighbouring bush land areas. Of note, the air quality assessment must quantify emissions arising from air pollutant sources for which there are established national air quality standards;	This Plan Other Aspect Specific Management Plans
d)	refined details (including implementation timeframes) for the mitigation measures outlined in the EIS (sections 7.4.2, 7.4.3, 7.4.6, 7.4.7, 7.4.8 and 7.4.9) and summarised at Annexure A;	Table 12
f)	identification of the trigger values and criteria for all matters mentioned in condition 7(b) (excluding light spill, land contamination and indigenous heritage) that will be adopted for monitoring and managing potential impacts to Commonwealth land;	Section 7.3 Section 7.4
g)	details of a comprehensive monitoring program (including locations, frequency and duration) for: i. validating the anticipated impacts associated with condition 7(b); and ii. determining the effectiveness of proposed mitigation/management measures;	Section 8 Attachment D (Noise Monitoring Locations)
h)	provisions to revise the approved CEMP in response to monitoring associated with condition 7(g) including, details of response/contingency mechanisms to address any exceedances of the relevant trigger values;	Section 8
i)	evidence of consultation with Defence regarding the adequacy of proposed mitigation measures in particular, those measures to mitigate potential light spill impacts upon residential dwellings within SME outside of standard construction hours; and	Section 3 CEMP
	Administrative Conditions	
Notes:	Management plans referred to in conditions 5 to 8 may be reorganised for administrative efficiency provided that all specified requirements are addressed and that each document is submitted with a clear description of the condition(s) it is intended to satisfy. For example, management plans may be further aggregated or disaggregated by construction stage, geographic area or management theme (including by 'species' in the case of condition 6). Where a plan is used to satisfy the requirements of both the State and the Commonwealth, that plan must clearly articulate where each of the Commonwealth's conditional criteria have been addressed within that plan.	Noted

Commonwealth Concept Plan Mitigation Measures

Table 21: Commonwealth Concept Plan Mitigation Measures

C'th Concept Plan MM Ref	Requirement	Where Addressed
7.4.1	Biodiversity	
7.4.1.3	<u>Mitigate</u>	
am)	Frequent maintenance of construction machinery and plant will be undertaken to minimise unnecessary noise.	Table 12

Attachments

C'th Concept Plan MM Ref	Requirement	Where Addressed
7.4.7	Noise	
7.4.7.1	<u>Construction</u>	
a)	A Construction Noise and Vibration Management Plan would be developed to implement best practice mitigation and management measures to minimise noise impacts on surrounding land uses and sensitive receivers, including Commonwealth Land during construction.	This Plan
	The Construction Noise and Vibration Management plan would address the following noise issues:	This Plan
b)	<p>Construction hours.</p> <p>All construction activities would have regard to the standard hours of 07:00 am to 18:00 pm Monday to Friday, and 08:00am to 13:00 pm Saturday (with approval from relevant authorities). Works outside these hours that may be permitted would include (Wilkinson Murray 2013):</p> <ul style="list-style-type: none"> ■ Any works which do not cause noise emissions to be audible at any nearby sensitive receptors. ■ The delivery of materials which is required outside of these hours as requested by Police or other authorities for safety reasons. Local residents would be informed of the timing and duration of approved works in accordance with the SIMTA's notification provisions. ■ Emergency work to avoid the loss of lives, property and/or to prevent environmental harm. 	Section 7.1 Section 7.2
c)	Any other work as approved through the Construction Noise and Vibration Management Plan Process.	Section 7.2 Attachment E (OOHW Protocol)
d)	<p>Training and awareness, which would include the following:</p> <p>Site awareness training/environmental inductions to provide instruction on noise mitigation techniques/measures to be implemented during construction of the SIMTA proposal.</p> <p>Working within approved hours.</p> <p>Working with noisy equipment away from sensitive receivers.</p> <p>Using noise screens and temporary barriers</p> <p>Maintaining plant and equipment.</p> <p>Turning off machinery when not in use.</p> <p>Limiting the "clustering" of noisy plant / processes.</p>	Section 4.2
e)	Communication, including a notification process to inform residents of respite times.	Section 0
f)	Incident and emergency response.	Section 9
g)	Non-conformance, preventative and corrective action procedures.	Section 8
h)	Selection of quiet plant and processes wherever feasible and retrofitting reversing alarms that are quieter and display less annoying characteristics. Such alarms could include "smart alarms" and "squawker alarms".	Table 12
i)	<p>Where appropriate, specific mitigation measures that may be considered would include:</p> <ul style="list-style-type: none"> ■ Portable temporary screens to mitigate specific noise sources. ■ Respite periods (e.g. for extended periods of driven piling and use of rock breakers). 	Table 12

Attachments

C'th Concept Plan MM Ref	Requirement	Where Addressed
	<ul style="list-style-type: none"> ■ Consideration of offset distances, orientation and position of noisy plant away from sensitive receivers, including the SME and DNSDC operations. ■ Completion of loading and unloading activities away from sensitive receivers. ■ Use of spotters, closed circuit television monitors, "smart" reversing alarms, or "squawker" type reversing alarms in place of traditional reversing alarms. ■ The anticipated effectiveness of some noise mitigation techniques in reducing construction noise impacts are presented in Table 84. 	
p)	Ground borne vibration levels would be measured and monitored to establish the minimum working separation between the equipment and nearby vibration sensitive receivers and buildings that have the potential to be impacted when vibration-generating equipment is used during construction of the SIMTA proposal.	Table 12 Stage 1 EIS

Environment Protection Licence

Environment Protection Licence clauses that specifically address the management of noise and vibration are included in Table 22 below.

Table 22: Environment Protection Licence

EPL Ref	Requirement	Where Addressed
L2.1	<p>Noise Limits</p> <p>All works and activities must be undertaken in a manner that will minimise noise and vibration impacts on sensitive receivers.</p>	Section 1.3 Section 4.2
L2.2	<p>Noise Limits</p> <p>The licensee must ensure that all feasible and reasonable noise and vibration mitigation and management measures are implemented during construction work authorised by this licence, in accordance with <i>the Interim Construction Noise Guideline</i> (DECC, 2009).</p>	Section 7.2.3 Section 7.5
L3.1	<p>Construction hours</p> <p>(a) Unless permitted by another condition of this licence, construction works and activities within the areas of the premises must only be undertaken during the following hours:</p> <p>(i) 7:00am to 6:00pm Monday to Friday inclusive;</p> <p>(ii) 8:00am to 1:00pm on Saturdays; and</p> <p>(iii) at no time on Sundays or public holidays.</p>	Section 7.1.1
L3.2	<p>Restrictions on high noise impact works and activities</p> <p>a) Notwithstanding Condition L2.1 and unless expressly permitted by another condition of this licence, high noise impact works and activities must only be undertaken during the following hours:</p> <p>(i) 8:00am to 5:00pm Monday to Friday inclusive;</p> <p>(ii) 8:00am to 1:00pm Saturdays; and</p> <p>(iii) at no time on Sundays and public holidays.</p> <p>(b) Where the high noise impact works and activities exceed the noise management levels at any residential receiver or any other sensitive receiver, the works and activities must be undertaken in continuous blocks not exceeding three (3) hours each with a minimum respite from those activities and works of not less than one (1) hour between each block.</p> <p>For the purposes of this condition:</p> <p>(i) "high noise impact works and activities" means jack hammering, rock breaking or hammering, impact pile driving, vibratory rolling,</p>	Section 7.1.2

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EPL Ref	Requirement	Where Addressed
	<p>cutting of pavement, concrete or steel, or other surface works that generate impulsive, tonal or low frequency noise, where the terms "impulsive noise", "tonal noise" and "low frequency noise" have the same meaning as in Section 4.2 of the <i>NSW Industrial Noise Policy</i> (EPA, 2000); and</p> <p>(ii) "continuous" includes any period during which there is less than a one (1) hour respite between ceasing and recommencing any of the work that is the subject of this condition.</p> <p>(iii) the "noise management levels" referred to in Condition L3.2(b) mean:</p> <p>(1) in the case of residential receivers, the "noise affected" management level specified in Table 2 of the <i>Interim Construction Noise Guideline</i> (DECC, 2009)</p> <p>(2) in the case of other sensitive receivers, the noise management level specified in Table 3 of the <i>Interim Construction Noise Guideline</i> (DECC, 2009).</p>	
L3.3	<p>Approved out of hours works</p> <p>The following construction works and activities may be undertaken outside of the hours specified by Condition L3.1 and Condition L3.2:</p> <p>(a) Construction works or activities that cause noise levels that are:</p> <p>(i) no more than 5 dBA above the relevant rating background level during the day, evening or night-time periods at any residence, when measured using the LAeq(15 minute) noise descriptor; and</p> <p>(ii) no more than the noise management levels specified in Table 3 of the <i>Interim Construction Noise Guideline</i> (DECC, 2009) using the LAeq(15 minute) noise descriptor at other sensitive land uses.</p> <p>For the purpose of Condition L3.3(a), noise impacts on sensitive receivers must be determined in accordance with the <i>Interim Construction Noise Guideline</i> (DECC, 2009) and the "night-time" period is as defined in the <i>NSW Industrial Noise Policy</i> (EPA, 2000).</p> <p>(b) Emergency works or activities required to avoid loss of life, damage to property or environmental harm.</p> <p>(c) Deliveries of plant, equipment, materials or structures that have been determined by the police or other authorised authorities to require special arrangements for transport along public roads for safety reasons.</p> <p>(d) Works that if carried out in compliance with Conditions L2.1 or L2.2 would cause unacceptable risks to construction personnel safety, public safety, road or rail network operational performance and/or essential utility services.</p> <p>(e) Rail maintenance and repair work including tamping and regulating to remediate vertical or horizontal movement >4mm in track geometry that has occurred as a direct result of works being undertaken for the project.</p> <p>(f) During local possessions and described in condition L3.4.</p> <p>(g) Out-of-hours works approved by the Minister for Planning in accordance with the <i>Environmental Planning and Assessment Act 1979</i>.</p>	<p>Section 7.2.1</p> <p>Section 7.2.2</p> <p>Section 7.2.3</p>
L3.4	<p>Works Approved Outside of Standard Construction Hours – Local Possessions</p> <p>(a) Works and activities may be undertaken during any local possession, but only if:</p> <p>(i) carrying on those works and activities during standard construction hours would cause unacceptable risks to;</p> <p>(1) construction personnel safety;</p> <p>(2) rail passenger and railways personnel safety; or</p>	<p>Section 7.2.1</p> <p>Section 7.2.2</p>

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EPL Ref	Requirement	Where Addressed
	<p>(3) railway network operational reliability as may be notified to the licensee from time to time by Sydney Trains and ARTC; and</p> <p>(b) High noise impact works and activities (excluding rail adjustment, tamping and regulating, and use of hand held rattle guns) may be undertaken during any local possession permissible by Condition L3.4(a) as follows:</p> <p>(i) between the hours of 6:00am to 10:00pm on any day subject to the works and activities being undertaken in continuous blocks not exceeding 3 hours each with a minimum respite from those works and activities of not less than one hour between each block.</p> <p>For the purposes of this condition 'continuous' includes any period during which there is less than a 1 hour respite between ceasing and recommencing any of the works or activities the subject of this condition.</p> <p>(c) Rail adjustment, tamping and regulating, and the use of hand held rattle guns, may occur at any time during a local possession for works and activities permissible by Condition L3.4(a).</p>	
L3.5	<p>Community notification of approved out of hours works</p> <p>(a) The licensee must notify potentially affected noise sensitive receivers of any out of hours works permitted by Condition L3.3(c), Condition L3.3(d), Condition L3.3(e), Condition L3.3(f) or Condition L3.3(g).</p> <p>(b) The licensee must notify affected stakeholders and potentially affected receivers of any out of hours works about the timing and duration of potential works at least 48 hours prior to the commencement of the works.</p> <p>(c) The notification required by this condition must be made via letterbox drop or electronic communication and via the project website.</p> <p>(d) The notification required by this condition must provide details of:</p> <p>(i) the reason why out of hours works are required</p> <p>(ii) time restrictions that apply to the proposed works</p> <p>(iii) the location, nature, scope and duration of the proposed works</p> <p>(iv) predicted noise impacts on sensitive receivers</p> <p>(v) how complaints may be made and additional information obtained; and</p> <p>(vi) the telephone complaints hotline required by Condition M3.1</p>	Section 7.2.3 Section 7.6
L3.6	<p>Emergency Works</p> <p>For emergency works permitted by Condition L3.3, the licensee must:</p> <p>(a) on becoming aware of the need to undertake emergency works or activities, notify the relevant EPA officer and Unit Head by email of the need for those works or activities; and</p> <p>(b) on the next working day following the emergency works, submit a report by email to the relevant EPA officer and Unit Head detailing:</p> <p>(i) the cause, time and duration of the emergency;</p> <p>(ii) the action taken by the licensee in relation to the emergency; and</p> <p>(iii) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of the emergency.</p>	Section 7.2.1 Section 7.2.2 Section 7.2.5
O2.1	<p>Maintenance of plant and equipment</p> <p>All plant and equipment installed at the premises or used in connection with the licensed activity:</p> <p>a) must be maintained in a proper and efficient condition; and</p> <p>b) must be operated in a proper and efficient manner.</p>	Section 1.3 Section 4.2 Section 7.5

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EPL Ref	Requirement	Where Addressed
M2.1	<p>Recording of pollution complaints</p> <p>The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.</p>	Section 9.2
M2.2	<p>Recording of pollution complaints</p> <p>The record must include details of the following:</p> <ul style="list-style-type: none"> a) the date and time of the complaint; b) the method by which the complaint was made; c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect; d) the nature of the complaint; e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and f) if no action was taken by the licensee, the reasons why no action was taken. 	Section 9.2
M2.3	<p>Recording of pollution complaints</p> <p>The record of a complaint must be kept for at least 4 years after the complaint was made.</p>	Section 9.2
M2.4	<p>Recording of pollution complaints</p> <p>The record must be produced to any authorised officer of the EPA who asks to see them.</p>	Section 9.2
M3.1	<p>Telephone complaints line</p> <p>The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.</p>	Section 9.2
M3.2	<p>Telephone complaints line</p> <p>Note: "operate" in Condition M3.1 means the licensee must ensure a telephone complaints line is operating.</p>	Section 9.2
M3.3	<p>Telephone complaints line</p> <p>The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.</p>	Section 9.2
M3.4	<p>Telephone complaints line</p> <p>The preceding two conditions do not apply until 18 August 2017 the date of the issue of this licence.</p>	Section 9.2
M3.5	<p>Noise and Vibration Complaints</p> <ul style="list-style-type: none"> a) The licensee must investigate noise and vibration complaints received from the occupants of dwellings or the managers of noise sensitive premises other than dwellings: <ul style="list-style-type: none"> (i) within two hours of the complaint being received; or (ii) in accordance with any prior complaint management agreement the licensee may have made with the complainant. b) The licensee must ensure that any investigation referred to in this condition that identifies works or activities being undertaken on the licensed premises as the likely source of the complaint, includes an offer to the complainant to undertake attended noise or vibration monitoring at their premises. c) If the occupant of the dwelling or the management of a noise sensitive receiver other than a dwelling accepts the offer of 	Section 9.2

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EPL Ref	Requirement	Where Addressed
	<p>attended noise or vibration monitoring the licensee must undertake that attended monitoring:</p> <p>(i) as soon as practicable; or</p> <p>(ii) at a time agreed with the complainant.</p>	
M3.6	<p>Notifying Results of Complaint Investigation</p> <p>The licensee must, in respect of each complaint made to the telephone complaints line required by Condition M3.1, advise each complainant of the results of its investigation of their complaint and any proposed remedial action.</p>	Section 9.2
M4.1	<p>Requirement to monitor noise and vibration</p> <p>(a) The licensee must undertake noise and vibration monitoring as directed by an authorised officer of the EPA.</p> <p>(b) The licensee must monitor noise and vibration caused by construction works and activities to inform noise and vibration management and mitigation requirements.</p> <p>(c) The noise monitoring undertaken by the licensee must include, but not be limited to, monitoring of noise resulting from out of hours works permitted by Condition L3.3(d), Condition L3.3(e) Condition L3.3(f) and Condition L3.3(g).</p> <p>(d) Noise monitoring locations for out of hours works must include, but not be limited to, locations that provide a representative measure of the noise levels at residential receiver locations that are predicted to be affected by LAeq(15 minute) noise levels that exceed the relevant rating background level by more than 20 dB(A) during any evening or night time period or at any time on a Sunday or Public Holiday.</p>	Section 8
M4.2	<p>Standards and guidelines for noise and vibration monitoring</p> <p>(a) All noise monitoring must be undertaken in accordance with <i>Australian Standard AS 2659.1 – 1998: Guide to the use of sound measuring equipment – Portable sound level meters</i>, or any revisions of that standard which may be made by Standards Australia, and the compliance monitoring guidance provided in the NSW Industrial Noise Policy (EPA, 2000).</p> <p>(b) All vibration monitoring must be undertaken in accordance with <i>Assessing vibration: a technical guideline</i> (DEC, 2006). All vibration monitoring results must be assessed and reported against the acceptable values of human exposure to vibration set out in Tables 2.2 and 2.4 of this guideline.</p>	Section 8
R4.1	<p>Daily Reports</p> <p>a) The licensee must submit, by 12:00 pm the following business day from which the complaint was received, a report to the EPA that provides details of all complaints received in relation to construction activities regulated by the licence on the telephone complaints line required by Condition M3.1 or a complaints email address.</p> <p>b) The report must:</p> <p>(i) be submitted to the email address nominated from time to time by the EPA;</p> <p>(ii) include a unique identifier number for each complaint together with the details required by condition M2.2;</p> <p>(iii) include the date and time, as reported by the complainant, of the event or incident which is the subject of the complaint;</p> <p>(iv) include an outline of the work or activity the subject of the complaint;</p> <p>(v) include the complaints received between 12.00 pm on that day and 12.00pm on the previous business day; and</p> <p>(vi) if the works have been carried out under Conditions L3.3(b), L3.3(c), L3.3(d), L3.3(e), L3.3(f) or L3.3(g), the report must include a copy of any assessments required by these conditions, unless</p>	Section 9.2

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EPL Ref	Requirement	Where Addressed
	<p>previously provided to EPA, and details of how the requirements of these conditions have been met.</p> <p>c) The licensee is not required to submit a report for any reporting period during which no complaints have been received.</p>	
R4.2	<p>Noise and Vibration Reports</p> <p>(a) When directed by an authorised officer of the EPA, the licensee must provide a Preliminary Noise Investigation Report prepared in accordance with Condition R4.2(b) and R4.2(c) within 48 hours of receiving that direction.</p> <p>(b) The Preliminary Investigation Report provided pursuant to Condition R4.2(a) must detail the results of noise or vibration monitoring undertaken in accordance with Condition M4.1.</p> <p>(c) The Preliminary Investigation Report provided pursuant to Condition R4.2(a) must:</p> <ul style="list-style-type: none"> (i) include numerical and/or graphical representation of the noise and vibration monitoring results; and (ii) highlight any detected exceedance of noise predictions, noise goals and noise limits specified in: <ul style="list-style-type: none"> (1) this licence; (2) relevant noise guidelines; and (3) relevant noise modelling. <p>d) In the event of any exceedance of the noise predictions, goals or limits referred to in Condition R4.2(c), the licensee must:</p> <ul style="list-style-type: none"> (i) modify work practices and methods and implement all practicable and reasonable measures to prevent a recurrence of the exceedance; and (ii) submit a Follow-up Noise Investigation Report to the EPA within 5 working days of receiving the direction to prepare the Preliminary Noise Investigation Report under Condition R4.2(a). <p>e) the Follow-up Noise Investigation Report must include:</p> <ul style="list-style-type: none"> (i) confirmation of whether or not noise monitoring has been undertaken in accordance with AS2659 and the compliance monitoring guidance provided in the NSW Industrial Noise Policy (EPA, 2000); (ii) confirmation of whether or not vibration monitoring has been undertaken in accordance with the guidance provided in the <i>Assessing vibration: a technical guideline</i> (DEC, 2006); (iii) details of the prevailing meteorological conditions during the period when the noise or vibration monitoring was undertaken; (iv) a map of each noise and vibration monitoring location in relation to the noise source, including relevant distances; (v) numerical and graphical representation of the noise and vibration monitoring results; (vi) an analysis of the noise and vibration monitoring results; (vii) details of any remedial action taken in relation to the matter; and (viii) in cases not the subject of remedial action, detailed justification of the decision not to undertake remedial action. 	Section 8.4
G2.1	<p>Environmental Induction</p> <p>a) The licensee must ensure that before any construction work is undertaken all personnel involved in undertaking that work receive environmental induction training.</p> <p>b) The induction training must:</p> <ul style="list-style-type: none"> (i) clearly identify the location of all noise sensitive receivers likely to be affected by noise or vibration generated during the course of work undertaken by those personnel; and (ii) highlight the licence requirements to minimise noise and vibration impacts on noise sensitive receivers. 	Section 4.2

EPL approved on 18 August 2017. CNVMP has been designed to comply with both the Conditions of Approval and the EPL requirements.

Attachments

Attachment B: Glossary

The following table outlines key terms used in this document and associated procedures:

Term	Definition
ARTC	Australian Rail Track Corporation
BoM	Bureau of Meteorology
CAP	Construction Area Plan – The main document prepared during the construction planning for that work area. Includes construction methodology, risk assessment, constructability reviews and Work Pack listing.
CCC	Campbelltown City Council
CCS	Community Communication Strategy
CEMP	Construction Environmental Management Plan
CNS	Construction Noise Strategy – TfNSW (2012)
CoA	Condition of Approval
DoD	Department of Defence (Commonwealth)
DotE	Department of the Environment (Commonwealth)
DP&E	Department of Planning and Environment
EIS	Environmental Impact Statement
EMS	Environmental Management System
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	Environmental Planning and Assessment Regulation 2000
EPA	Environment Protection Authority
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act 1999</i> (Commonwealth)
EPBC Approval	Approval (No. 2011/6229) granted under the EPBC Act on March 2014 by the Commonwealth Department of the Environment for the development of the SIMTA IMT Facility at Moorebank.
EPL	Environment Protection Licence
High-noise impact activities and work (CoA)	According to the Conditions of Approval: Means jack hammering, rock breaking or hammering, pile driving, vibratory rolling, cutting of pavement, concrete or steel or other work occurring on the surface that generates noise with impulsive, intermittent, tonal or low frequency characteristics.
High risk factors	Defined in the TfNSW CNS as: <ul style="list-style-type: none"> • Prolonged work (i.e. > 1week) • Sleep disturbance possible • Impulsive noise and vibration likely (e.g. vibratory rolling or rock breaking)
Highly Intrusive	Defined in the TfNSW CNS as: <ul style="list-style-type: none"> • >30 dBA above RBL
Highly Noise Affected	Defined in the ICNG (Section 4.1.1 and Table2) as 75 dB(A)

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Term	Definition
ICNG	Interim Construction Noise Guideline
IMEX	Import / Export
INP	Industrial Noise Policy
LCC	Liverpool City Council
LEP	Local Environmental Plan
LGA	Local Government Area
mAHD	Metres Australian Height datum
MIC	Moorebank Intermodal Company
MIC Project	Moorebank Intermodal Terminal Project (SSD-5066) approved under Part 4, Division 4.1 of the <i>Environmental Planning and Assessment Act 1979</i>
MNES	Matters of National Environmental Significance
NCA	Noise Catchment Area
NML	Noise Management Level
OEH	NSW Office of Environment and Heritage
PIRMP	Pollution Incident Response Management Plan
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
RailCorp Land	Lot 1 DP 825352 (part of the Rail Corridor) and owned by RailCorp
RALP No. 1	Rail Access Land Package No. 1 (this Project)
RBL	Rating Background Level
RMS	Roads and Maritime Services
RNP	Road Noise Policy
SIMTA	Sydney Intermodal Terminal Alliance – a consortium comprising Qube Holdings and Aurizon
SME	School of Military Engineering
SSD	State Significant Development
SSFL	Southern Sydney Freight Line
Stage 1 Site	The subject of this EIS, the western part of the SIMTA site which includes all areas to be disturbed by the Stage 1 Proposal (including the Operational area and Indicative Construction area). This area does not include the Rail Corridor.
TEU	Twenty-foot Equivalent Unit
TfNSW	Transport for NSW
Work Area	A separable portion of work that is identified early in construction planning to help drive early definition of construction methodology and alignment of design activities. Work Areas should be listed in the overall construction methodology. The planning document for a work area is called a Construction Area Plan.

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Term	Definition
Work Pack	A pack of relevant construction documents that contains relevant information for Site Engineers and foremen to manage the works. There will be multiple Work Packs contained in a CAP. A Work Pack contains work method statements, risk assessments, ITPs, drawings, site instructions, environmental controls, etc.
Work Procedure	A document that provides a detailed step-by-step description for how work activities will be carried out. May document Risks & Controls associated with each step

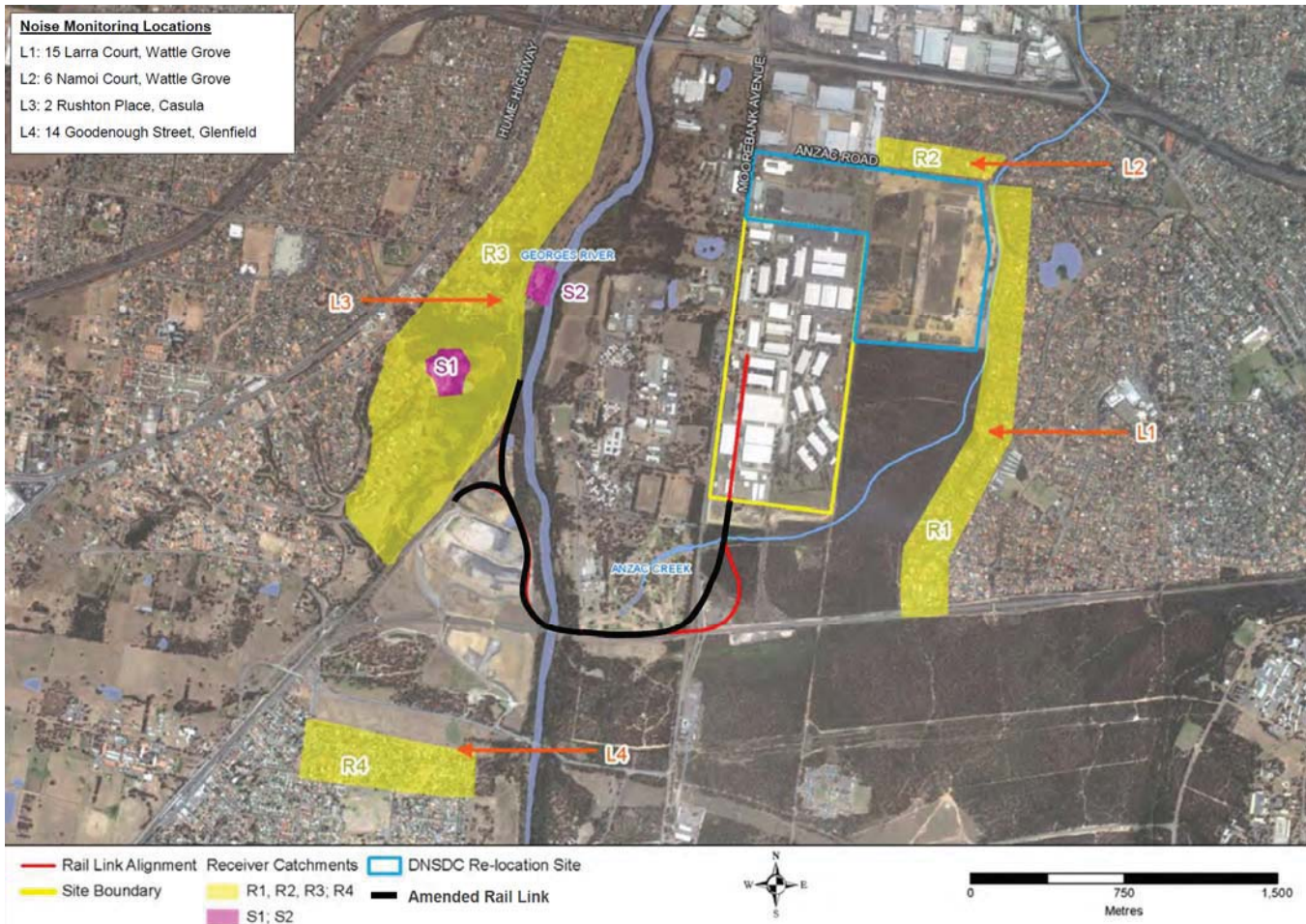
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Attachment C: Stakeholder Consultation Response

Attachments

Attachment D: Map of Noise Monitoring Locations

These locations are subject to change as work locations move resulting in other receivers within each NCA to become closer. OOHW Applications will include an assessment of the nearest sensitive receivers and will identify the most appropriate noise monitoring location(s) depending on the location and extent of impacts.



(Source: Wilkinson Murray, 2013 cited in Stage 1 EIS, 2015)

Attachments

Attachment E: Out-of-Hours Work Protocol

Out-of-Hours Work Protocol

Moorebank Intermodal Terminal Development Stage 1 – RALP No. 1

Project number:	N01031
Document number:	EN-PLN-0023
Revision date:	30 November 2017
Revision:	03

Document Approval

Rev.	Date	Prepared by	Reviewed by	Approved by	Remarks
A	1 Mar 2016	[REDACTED]	[REDACTED]	[REDACTED]	Initial draft
B	19 Apr 2016	[REDACTED]	[REDACTED]	[REDACTED]	Updated to address final CoA
C	14 Jul 2016	[REDACTED]	[REDACTED]	[REDACTED]	For SIMTA's second review
D	21 Dec 2016	[REDACTED]	[REDACTED]	[REDACTED]	Updated for final CoAs and for consultation
E	7 Feb 2017	[REDACTED]	[REDACTED]	[REDACTED]	Updated for submission to DP&E
F	28 Mar 2017	[REDACTED]	[REDACTED]	[REDACTED]	Updated for DP&E
G	6 Apr 2017	[REDACTED]	[REDACTED]	[REDACTED]	Additional DP&E submission
H	21 Apr 2017	[REDACTED]	[REDACTED]	[REDACTED]	Final for approval
I/00	15 May 2017	[REDACTED]	[REDACTED]	[REDACTED]	DP&E approval update
01	26 May 2017	[REDACTED]	[REDACTED]	[REDACTED]	Update for efficiency
02	29 Sep 2017	[REDACTED]	[REDACTED]	[REDACTED]	EPL update
03	30 Nov 2017	[REDACTED]	[REDACTED]	[REDACTED]	ER Comments

Rev.	Date	Prepared by	Reviewed by	Approved by	Remarks
Signature:					

Details of Revision Amendments and Authorship

Document Control

The Project Director is responsible for ensuring that this plan is reviewed and approved. The Environment Manager is responsible for updating this plan to reflect changes to legal and other requirements, as required.

Amendments

Any revisions or amendments must be approved by the Project Director before being distributed / implemented.

Revision Details

Revision	Details
A	Initial draft for SIMTA review
B	Updated to address final Conditions of Approval and for agency consultation
C	For SIMTA's second review
D	Updated for final CoAs and for consultation
E	Updated for submission to DP&E to address stakeholder consultation and ER review comments
F	Updated in response to comments from DP&E
G	Additional update for submission to DP&E
H	Final update for approval
I/00	Update following conditional approval from DP&E
01	Update of OOHW Protocol to provide more efficient approval process
02	Updated to include EPL requirements
03	Updated to respond to comments from the Environmental Representative

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Out-of-Hours Work Protocol

1. Out-of-Hours Work Process

This Out-of-Hours Work (OOHW) Protocol applies to all works to be undertaken outside the standard construction hours or respite periods under the Conditions of Approval/Consent (as per #E34 b) (iv)) and the Environmental Protection Licence (as applicable).

As an EPL is required for the project (Scheduled activities – extractive activities) under the Protection of the Environment Operations Act), this OOHW protocol has been design to comply with both the Conditions of Approval and the EPL. All works must comply with the Conditions of Approval as well as relevant EPL conditions.

The OOHW approval process is outlined in Section 1.1 and illustrated in the flow chart in Annexure B.

1.1 Assessment and approval process

As per section 7.2.3 of the CNVMP, this protocol presents the assessment, management, approval and mitigation process for works required outside of standard construction hours, including a staged approval delegation depending on the level of impact. Table 1 below outlines the step-by-step process that will be followed for OOHW. This is in conjunction with the flow chart in Annexure B

Table 1 - OOHW Assessment and Approval Process

No.	Step	Detail
1	Work Identification	<ul style="list-style-type: none"> ■ Identify the need to undertake work activities outside standard construction hours. ■ Assess the reason why the OOHW is needed and if it can rescheduled for standard construction hours. ■ If the proposed OOHW is critical to the project, or are due to exceptional circumstances, prepare a document that provides justification for the works.
2	Environmental Protection Licence (EPL) assessment	<ul style="list-style-type: none"> ■ Assess the proposed OOHW against the works allowed under the project EPL (#20966). <ul style="list-style-type: none"> ○ Refer to condition L3.3 and L3.4 of the EPL ■ If the works do not comply with the EPL, a variation will be required to be submitted to the EPA.
3	Assess Alternatives	<ul style="list-style-type: none"> ■ Alternative(s) to be considered that may allow construction to be undertaken within standard construction hours. These can include but are not limited to: <ul style="list-style-type: none"> ○ Alternative equipment ○ Different construction methodology ○ Postponing scheduled works ■ If no other options are considered reasonable or feasible, an OOHW Application Form must be completed in consultation with the Environment Manager
4	OOHW Application Form	<ul style="list-style-type: none"> ■ The OOHW Application form in consultation with the Environment Manager will detail: <ul style="list-style-type: none"> ○ Description of proposed works / activities ○ Compliance with the EPL <ul style="list-style-type: none"> ■ If the works do not comply with the EPL, a variation will be required to be submitted to the EPA. ○ Expected duration ○ List of all noise/vibration generating plant and equipment ○ Predicted noise/vibration impacts (see step #4 below) ○ Proposed mitigation measures, based on predicted impacts ● The template form is provided as Annexure A to the OOHW Protocol.
5	Undertake CNVIS	<ul style="list-style-type: none"> ■ The proposed OOHW is to be assessed for noise and vibration impacts on the surrounding receivers, via a CNVIS prepared by suitably qualified personnel, taking into account all proposed noise and vibration mitigation measures. The CNVIS will: <ul style="list-style-type: none"> ○ Identify the closest and/or most affected receivers; ○ Predict noise levels based on the NVIA scenarios (Table 6 of the CNVMP or Table 1 of the OOHW Protocol); or, if more appropriate, via modelling or via spreadsheet calculations;

No.	Step	Detail
		<ul style="list-style-type: none"> ○ Compare predicted values to the NMLs, and where relevant the criteria defined in the TfNSW CNS Additional Mitigation Measure Matrix (AMMM) ○ Provide a list of recommended mitigation measures for implementation ■ Predictions will account for potentially annoying (tonal, low frequency or impulsive) work activities by applying a 5 dB(A) penalty. ■ Predictions will account for all potential noise mitigation measures by applying a deductions to the values assessed above for the any noise reductions from the measures implemented. ■ Predictions will include an assessment of potential sleep disturbance impacts, if anticipated. ■ Activities which are deemed to be inaudible at the nearest receivers (e.g. security operations, monitoring, survey) will not require a CNVIS
6	Risk / Impact Assessment	<ul style="list-style-type: none"> ■ The criteria and resulting approval process for each level of impact is based on the OOHW Application and the associated CNVIS. ■ Level of impact are detailed as low, medium, or high risk. ■ The criteria and resulting approval process for each level of impact/risk are detailed in steps 7, 8 and 9 below.
7	Low Impact Works	<ul style="list-style-type: none"> ■ If the CNVIS (step #5 above) details that the proposed OOHWs <u>will not</u> generate $L_{Aeq, 15minute}$ noise levels more than 5 dB above the RBLs at any receiver and/or more than the NMLs specified in the CNVMP, the proposed OOHWs will be considered <u>LOW</u> environment risk. ■ The project Environment Manager will review and approve low risk OOHW Applications.
8	Medium Impact	<ul style="list-style-type: none"> ■ If the CNVIS (step #5 above) details that the proposed OOHWs <u>will</u> generate $L_{Aeq, 15minute}$ noise levels more than 5 dB above the RBLs at any receiver and/or more than the NMLs specified in the CNVMP, the proposed OOHWs will be considered <u>MEDIUM</u> environmental risk. ■ The project's Environmental Representative (ER) will review and endorse medium risk OOHW Applications prior to approval from the Project's Environment Manager. ■ Following endorsement from the ER, the OOHW Application will be reviewed and approved by the Project Environment Manager. ■ The OOHW Application will have to demonstrate the following for the approval of the Environmental Manager: <ul style="list-style-type: none"> ○ Justify the requirement for the works/activities to be undertaken outside of standard construction hours; ○ Compliance with the EPL ○ Summarise the findings of the CNVIS in the OOHW Application; ○ Detail the mitigations to be implemented for the specific OOHW applications, including consideration of the relevant requirements listed under the TfNSW CNS Additional Mitigation Measure Matrix (AMMM); ○ Detail the actions and notifications for the specific works ■ The Environment Manager will review the proposed works/activities, the predicted impacts and proposed mitigation measures, and consider if the documentation provided is acceptable. If so, the Environment Manager will approve the works following endorsement from the ER <ul style="list-style-type: none"> ○ The ER can request additional conditions in their approval of the OOHW Application if considered appropriate and these are to be implemented if agreed to by the Environment Manager. ○ Any changes must be consistent with the EPL. ■ The proposed OOHW must comply with the EPL. ■ If the Environment Manager and the ER, as part of their review of the proposed works/activities, agree that the predicted impacts and proposed mitigation measures, considers that the proposed OOHW are high risk/impact, than the OOHW Application will be referred to the Department of Planning and Environment (DP&E) in accordance with step #9 below.
9	High Impact Works	<ul style="list-style-type: none"> ■ If the CNVIS (step #5 above), in consultation with the ER, identifies that the proposed OOHWs will generate significant noise levels, defined as "Highly Intrusive" in the TfNSW CNS AMMM ($L_{Aeq, 15minute}$ noise levels more than 30

No.	Step	Detail
		<p>dB above the RBLs), these applications will be considered a <u>HIGH</u> environmental risk and will be referred to DP&E for approval.</p> <ul style="list-style-type: none"> ■ Prior to submission to DP&E for approval, the OOHW Application will require review and endorsement by both the Environment Manager and the project's ER. <ul style="list-style-type: none"> ○ The Project Environment Manager and ER will review the OOHW Application as per the requirements in step #8 above ■ The proposed OOHW must comply with the EPL. ■ The OOHW Application will have to demonstrate the following for the approval of DP&E: <ul style="list-style-type: none"> ○ Justify the requirement for the works/activities to be undertaken outside of standard construction hours; ○ Summarise the findings of the CNVIS in the OOHW Application; ○ Detail the mitigations to be implemented for the specific OOHW applications, including consideration of the relevant requirements listed under the TfNSW CNS Additional Mitigation Measure Matrix (AMMM); ○ Investigate further mitigation measures that may be implemented to further reduce impacts; ○ Detail the actions and notifications for the specific works ■ DP&E will review the proposed works/activities, the predicted impacts and proposed mitigation measures, and consider if the documentation provided is acceptable. If so, the DP&E will approve the works. <ul style="list-style-type: none"> ○ DP&E can stipulate additional conditions in their approval of the OOHW Application if considered appropriate and these are to be implemented as specified, provided that they do not contradict the requirements of the EPL ○ Any changes must be consistent with the EPL ○ Up to 3 weeks (15 business days) will be allowed for DP&E to review the OOHW Application.
10	OOHW Approval	<ul style="list-style-type: none"> ■ OOHW, no matter the level of risk, <u>will not</u> commence until approval is granted by the relevant authority detailed above. ■
11	Community Notification	<ul style="list-style-type: none"> ■ All OOHW will require the Additional Mitigation Measures Matrix (from the TfNSW CNS) to be implemented as well as the requirements listed in Condition L3.5 of the EPL ■ Notifications will be distributed to receivers potentially affected by the works. A notification boundary will be established for each OOHW Application, depending on the level and extent of impacts. ■ Notifications will be conducted in accordance with the processes established for the project. ■ Where works are predicted to have an impact on sensitive receivers in accordance with the Community Communication Strategy (CoA #D1), affected stakeholders and sensitive receivers will be notified of proposed OOHW (including the timing and duration) at least 7 days prior to the commencement of the works.
12	Mitigation and Monitoring	<ul style="list-style-type: none"> ■ All reasonable and feasible mitigation measures will be implemented for OOHW, including but not limited to the mitigation measures detailed in Section 7.9 of the CNVMP and the TfNSW CNS. ■ Attended noise and vibration monitoring, if required, will be undertaken as listed in the OOHW Application, with the assessment of its necessity based on the TfNSW CNS AMMM. <ul style="list-style-type: none"> ○ Noise and vibration monitoring will be undertaken by suitably qualified personnel. ○ Monitoring will be undertaken to the standards specified in Section 8 of the CNVMP and Condition M4.1 and M4.2 of the EPL. ■ Monitoring results will be assessed against the predictions in the CNVIS to determine if the predictions were accurate. Where noise and/or vibration levels are observed to regularly exceed the predicted levels in the CNVIS, works will be stopped and alternate methods and mitigation measures will be investigated.

1.2 Justification and assessment of alternatives

As per steps 1, 2 and 3 above, all proposed OOHW require a full justification as to why the works are required to be undertaken outside standard construction hours. The justification must include an assessment of alternatives that may allow construction to be undertaken within standard construction hours. Where it is considered possible (safe and reasonable) for works to be undertaken during standard hours, OOHW applications will not be further considered by the Environment Manager.

The Interim Construction Noise Guideline (ICNG) identifies five categories of works that may be required to be undertaken outside the standard construction hours:

- Construction works that cause LAeq (15 minute) noise levels that are:
 - No more than 5 dB above RBLs at any residence
 - No more than the NMLs specified in the CNVMP
- The delivery of oversized plant or structures that police or other authorities determine, require special arrangements to transport along public roads.
- Emergency work to avoid the loss of life or damage to property, or to prevent environmental harm.
- Maintenance and repair of public infrastructure where disruption to essential services and/or considerations of worker safety do not allow work within standard hours.
- Public infrastructure works that shorten the length of the project and are supported by the affected community.
- Works where a proponent demonstrates and justifies a need to operate outside the recommended standard hours.

For the last two categories, clear justification for the proposed OOHW is required as part of the CNVIS (Construction Noise and Vibration Impact Statement) process and will be detailed in the OOHW Application. For the last category, the following are examples for where OOHW would be required on this project, in addition to what is listed in the Conditions of Approval:

- Works that if carried out in normal construction hours would cause unacceptable risks to construction personnel safety, public safety, road network operational performance, rail network operational performance and/or essential utility services.
- Works for which the relevant road authority refuses to issue a road occupancy licence that would allow these works or activities to be carried out in normal construction hours
- Works for which the relevant rail authority refuses to issue a possession occupation permit, power out permit and/or safe working permit that would allow these works or activities to be carried out in normal construction hours

OOHW Applications, as per the OOHW Protocol and Annexure B, will be reviewed and endorsed for compliance with the project approval by the Project Environmental Representative, and then approved by the Project Environment Manager and/or the EPA. Summaries of OOHW undertaken will be provided to DP&E as part the Compliance Tracking Program (CoA #C4).

1.2.1 Predicted Types of Out-of-Hours Works

It is expected that, due to the nature of the activities, OOHW will be required in the vicinity of the following locations:

- Moorebank Avenue (live road)
 - Road Occupancy Licences (ROLs) required for works which limit traffic flow. ROLs typically restricted to outside peak traffic times, including nights
- Southern Sydney Freight Line (live rail line)
 - Track Possession or Power-out Permit required due to network performance and safety. Typically restricted to 56 hour continuous weekend shutdowns and/or night works.

The type of activities in these locations will likely include but not be limited to:

- Service Relocation
- Combined Service Route (CSR) installation
- Signalling
- Track Installation
- Earthworks

- Pavement works

Based on the typical activities listed above, the main types of plant and equipment required will include but is not limited to:

- Excavators
- Dump trucks
- Cranes
- Rollers
- Wacker packers
- Graders
- Rail grinding equipment
- Tamping machinery
- Hi-Rail Vehicles
- Water trucks
- Profilers
- Asphalt trucks
- Welders

Due to factors unknown during development of the EIS (for example: the number, type and location of equipment being used for a particular scheduled OOHW), the exact noise and vibration impacts at the nearest sensitive receivers for a specific scheduled OOHW is not able to be accurately predicted. It is therefore proposed to develop specific Construction Noise and Vibration Impact Statements (CNVIS') included, as part of the OOHW Application process. The OOHW Application will be reviewed and endorsed for compliance by the Project Environmental Representative (CoA #E4) and then approved by the project Environment Management (against the Planning Conditions) and/or the EPA (against the EPL, once received). This process is set out in Annexure B to the OOHW Protocol.

As it is not known exactly the number, type and location of equipment being used for a particular scheduled OOHW, the exact noise and vibration impacts at the nearest receivers cannot be accurately predicted. The Interim Construction Noise Guidelines (ICNGs) details that when planning for OOHW, in order to undertake a quantitative assessment of the predicted noise impacts, the exact number, location, height and timing of noise sources need to be established. These will be established prior to individual periods of proposed OOHW, with the specific noise impacts at the nearest sensitive receivers being calculated and provided along with justification for undertaking the works as part of the OOHW Application process.

1.2.2 Environmental Protection Licence

The EPA issued an EPL to CPB Contractors for its works on 18 August 2017. The EPL allows a range of works outside of standard construction hours. These include:

- L3.3 – Approved out of hours works
 - (a) Construction works or activities that cause noise levels that are:
 - (i) no more than 5 dBA above the relevant rating background level during the day, evening or night-time periods at any residence, when measured using the LAeq(15 minute) noise descriptor; and
 - (ii) no more than the noise management levels specified in Table 3 of the *Interim Construction Noise Guideline* (DECC, 2009) using the LAeq(15 minute) noise descriptor at other sensitive land uses.
 - (b) Emergency works or activities required to avoid loss of life, damage to property or environmental harm.
 - (c) Deliveries of plant, equipment, materials or structures that have been determined by the police or other authorised authorities to require special arrangements for transport along public roads for safety reasons.
 - (d) Works that if carried out in compliance with Conditions L2.1 or L2.2 would cause unacceptable risks to construction personnel safety, public safety, road or rail network operational performance and/or essential utility services

- (e) Rail maintenance and repair work including tamping and regulating to remediate vertical or horizontal movement >4mm in track geometry that has occurred as a direct result of works being undertaken for the project.
- (f) During local possessions
- (g) Out-of-hours works approved by the Minister for Planning in accordance with the *Environmental Planning and Assessment Act 1979*.
- L3.4 – Works Approved Outside of Standard Construction hours – Local Possessions
 - (a) Works and activities may be undertaken during any local possession, but only if:
 - (i) carrying on those works and activities during standard construction hours would cause unacceptable risks to;
 - (1) construction personnel safety;
 - (2) rail passenger and railways personnel safety; or
 - (3) railway network operational reliability as may be notified to the licensee from time to time by Sydney Trains and ARTC; and
 - (b) High noise impact works and activities (excluding rail adjustment, tamping and regulating, and use of hand held rattle guns) may be undertaken during any local possession permissible by Condition L3.4(a) as follows:
 - (i) between the hours of 6:00am to 10:00pm on any day subject to the works and activities being undertaken in continuous blocks not exceeding 3 hours each with a minimum respite from those works and activities of not less than one hour between each block.
 - (c) Rail adjustment, tamping and regulating, and the use of hand held rattle guns, may occur at any time during a local possession for works and activities permissible by Condition L3.4(a).

A number of the permitted types of OOHW detailed in the EPL are consistent with the types of out-of-hours detailed as allowed in Section 7.2.1 above. These include:

- L3.3(a)
- L3.3(b)
- L3.3(c)
- L3.3(d)
- L3.3(g)

All approved OOHW Applications will be provided to the EPA for their information.

1.3 Construction Noise and Vibration Impact Assessment

A Construction Noise and Vibration Impact Statement (CNVIS) will be prepared for individual periods of proposed OOHW, as required by the Conditions of Approval and Project EPL, to assess the extent of specific noise and / or vibration impacts the construction activities will have upon the community and residential receivers for individual periods of proposed OOHW. The CNVIS will be prepared in accordance with the guidelines in the Construction Noise and Vibration Management Plan (CNVMP). CNVISs are to be developed by an appropriately qualified person experienced in assessing the impacts of noise and vibration from civil engineering works.

As part of the assessment process:

- Any exceedance of the construction noise / vibration objectives will be identified
- The level of noise / vibration impact will be evaluated and classified
- Appropriate noise and vibration management and mitigation measures will be determined as detailed in the CNVMP and Section 2 below.
- An appropriate noise and vibration monitoring program will be developed to satisfy the Conditions of Approval and EPL.

The results of the CNVIS will be taken into consideration during the review and approval of an OOHW Application, as per Table 1 above.

Section 1.3.1 below provides a high level worst case prediction of noise impacts from OOHW. Predicted noise levels from individual specific OOHW Applications are expected to be lower than the levels identified in Table 2 below, as the number of plant and equipment actually required for an individual period of OOHW will be less.

1.3.1 Worst Case OOHW Impact Assessment

Table 1 below provides a high level prediction of worst case noise levels for standard activities that could be undertaken outside of standard construction hours. This worst case prediction is based on all possible plant and equipment operating at the same time at the locations closest to each Noise Catchment Area and other sensitive receivers. A more detailed accurate prediction will be included in specific OOHW Applications once the exact location and number/type of plant being used is confirmed closer to the time of proposed OOHW, as per Annexure B.

Initial worst case project wide noise modelling has predicted that the worst possible exceedance at the nearest residential receiver is 20 dBA above night time Noise Management Levels (NMLs) – See Table 1 below. The largest exceedance predicted is for the track installation works at the connections to Southern Sydney Freight Line, affecting Noise Catchment Area (NCA) #3.

Table 2: Predicted LA_{eq}, 15min Worst Case Construction Noise Levels

NCA / Receiver ID	Works – Worst Case OOHW dB(A)						OOHW NML dB(A)		
	Service Relocation	CSR	Signalling	Track Installation	Earthworks	Pavement Works	Day	Evening	Night
NCA1	29	34	12	34	26	40	49	49	42
NCA2	23	27	9	32	23	31	41	41	41
NCA3	29	49	36	59	50	36	46	42	39
NCA4	30	35	17	40	32	36	49	49	42
S1	29	44	28	50	42	37	55	55	55
S2	33	34	11	34	25	41	65	65	65
I1	28	46	32	55	47	35	55	55	55

It is noted that the nearest sensitive receivers within this catchment (residents on Leacocks Lane) are over 250m away from the nearest work location, therefore the impacts are not predicted to be as high as modelled in the worst case scenario. Actual mitigation measures to be implemented will be detailed in the specific OOHW Applications for proposed OOHW work, once the exact impacts at specific receivers are known.

1.3.2 OOHW Impact Mitigation

The CNVIS, and subsequently the OOHW Application Form (Annexure A), will detail recommended mitigation measures based on the predicted noise and vibration impacts. Where exceedances of the NMLs are predicted, additional mitigation measures will be implemented as per Section 2 of the OOHW Protocol, specifically Table 3.

These mitigation measures, taken from Transport for NSW's Construction Noise Strategy (2011) as a best practice guideline, will be in addition the general mitigation measures proposed in the CNVMP (Section 7.5). The mitigation measures detailed in the CNVMP are expected to reduce the noise impacts at the nearest receivers by managing the noise at its source. These mitigation measures include but are not limited to:

- Selecting quieter plant and processes wherever practical
- Service and maintenance of plant and equipment to minimise excessive noise generation
- Using non-tonal reversing beepers
- Consideration of offset distances, orientation, position and barriers for noisy plant

The highest predicted exceedance from the worst case predictions in Table 2 above is 20 dB(A) above NMLs (equal to 25dB(A) above RBLs), which, according to Table 3 below, would require letterbox drops, monitoring, individual briefings, phone calls and/or specific notifications. The extent of the additional mitigation measures and the most appropriate representative monitoring location(s) for a specific period of OOHW will be determined based on extent of exceedances following a work specific CNVIS, once the exact details of the work being undertaken are established as per Section 1.3 above.

1.3.3 Vibration Impacts Prediction

Based on the distances (>200m) between the work locations and the nearest sensitive receivers (residential), it is predicted that there would be no vibration impacts from construction works (works well outside the minimum work distances detailed in Table 10 of the CNVMP). As such, the mitigation measures detailed in Section 2.3 of the OOHW Protocol will not likely be required. This will be confirmed in specific OOHW Applications as part the due diligence process.

1.4 Risk / Impact Assessment

Following the development of the CNVIS, the Environment Manager, in consultation with the project ER, will assess whether the proposed OOHW's are low, medium or high risk. The classification is described in Table 1 and outlined below:

1.4.1 Low Risk OOHW

Low impact/risk OOHW is work that will not generate $L_{Aeq\ 15\ minute}$ noise levels more than 5 dB(A) above the RBLs (i.e. within the NMLs) at any sensitive receiver.

The project's Environment Manager can review and approve low impact OOHW Applications. A copy of these approved OOHW Applications will be provided to the ER and the EPA for information prior to commencement of the proposed works.

1.4.2 Medium Risk OOHW

Medium impact/risk OOHW is work that will generate $L_{Aeq\ 15\ minute}$ noise levels more than 5 dB(A) above the RBLs (i.e. above the NMLs) at any sensitive receiver. Noise levels for medium impact works must not exceed 30 dB(A) above RBLs (defined as 'Highly Intrusive' in the TfNSW CNS), as shown in Table 3 below.

The project's Environmental Representative (ER) will review and endorse medium impact OOHW Applications. Following endorsement by the ER, they are reviewed and endorsed by the project's Environment Manager. The ER, as part of their approval, can stipulate additional conditions (e.g. mitigation measures) that will be implemented as part of the approval of the OOHW Application.

1.4.3 High Risk OOHW

High impact/risk OOHW is work that will generate $L_{Aeq\ 15\ minute}$ noise levels more than 30 dB(A) above the RBLs) at any sensitive receiver. This noise level is defined as 'Highly Intrusive' in the TfNSW CNS, which is outlined in Table 3 below. These OOHW Applications will be referred to the Department of Planning and Environment (DP&E) for review and approval

In addition, if the project's ER, as part of their review of the proposed works/activities, the predicted impacts and proposed mitigation measures, considers that the proposed OOHW are high risk/impact, than the ER will refer the OOHW Application to DP&E for review and approval.

Prior to submission to DP&E, the OOHW Application will require the review and endorsement by both the project Environment Manager and ER. DP&E, as part of their approval, can stipulate additional conditions (e.g. mitigation measures) that will be implemented as part of the approval of the OOHW Application. A minimum of 3 weeks will be provided to the DP&E for their review.

1.5 Documentation and Approval

All OOHW (except in emergency situations) will be documented through the OOHW Application Form (Annexure A) and managed in compliance with the Conditions of Approval and EPL. No OOHW will commence until approval is granted by the relevant authority detailed in Section 1.4 above.

Summaries of OOHW undertaken will be provided to DP&E as part the Compliance Tracking Program (CoA #C4) and six-monthly compliance reporting.

1.5.1 EPA OOHW Approvals

If approval is required from the EPA (as part of an EPL variation) for OOHW, CPB will develop an OOHW Application for submission to EPA requesting a variation of the project's EPL. The application is to provide all required detail about the OOHW including the CNVIS, as detailed above. Submission of the EPL variation to EPA will be approximately 4-6 weeks prior to commencement of the works (as far as practicable). Any specific conditions in the EPL variation that relate to the OOHW will be:

- Actioned for implementation (such as any additional notification to the community).
- Tool-boxed to relevant workforce and site personnel before each shift to introduce/ reinforce works restrictions, management measures and expected workforce behaviour. These will include any EPL conditions.
- Implemented during works and monitored by CPB Contractors.

1.6 Community Notification

Notification to specific impacted noise sensitive receivers will be provided a minimum of 7 days prior to commencing any OOHW activity with the potential to impact on stakeholders as per Section 3.2.1 b) of the Principal's Project Requirements, noting MCoA E21(d) only requires 48 hour notification. Any additional notification requirements set by the ER, DP&E or the EPA in the issuing approval of the OOHW Application (and EPL variation in the case of the EPA) will be undertaken.

Any additional management measures identified for the works that require community notification are to be undertaken as detailed in Section 2 of this plan, and may include:

- Letterbox drop and / or email
- Project Website
- Phone calls
- Individual briefings
- The offer of alternate accommodation or other measures for respite if determined necessary.

Condition L3.5 of the EPL requires that community notification for OOHW are distributed by Letterbox or electronic communication, and via the project website

The extent of additional mitigation measures will depend on the results of the specific CNVIS for a specific piece of OOHW, with Tables 3, 4 and 5 below detailing the level of exceedances that require increased management measures, as per the TfNSW CNS.

Community notification requirements will be coordinated with the project's Communication Manager and be generally in accordance with the Community Communication Strategy (CoA #D1).

1.6.1 Enquiries / Complaints Management

All complaints are to be managed by the Project's Communications Team through the process detailed in the Community Communication Strategy (CCS).

1.7 Monitoring and Mitigation

On receipt of the OOHW approval, any specific conditions (e.g. additional mitigation measures) that relate to the OOHW are to be:

- Actioned for implementation (such as any additional notification to the community).
- Tool-boxed to relevant workforce and site personnel before each shift to introduce/ reinforce works restrictions, management measures and expected workforce behaviour.
- Implemented during works and monitored by CPB Contractors.

Attended noise and vibration monitoring is to be undertaken to verify that noise levels resulting from OOHW are in accordance with the levels predicted in the CNVIS and the EPL conditions.

Noise and vibration monitoring is to follow the process outlined in Sections 8.1 and 8.3 of the CNVMP.

Noise monitoring locations for OOHW will be determined during the OOHW Application review and approval process, once the noise impacts at the nearest sensitive receivers are established. Representative locations will be chosen based on the detailed work specific CNVIS and applying the guidelines set out in Section 2 below.

2. Management Strategies and Mitigation Measures

Management strategies and mitigation measures for OOHW are based on the Construction Noise Strategy (TfNSW 2011), as a best practice guideline. Prior to the implementation of additional mitigation measures, a number of standard mitigation measures will be implemented. These are listed in Section 7.5 of the Construction Noise and Vibration Management Plan and in Table 1 in the Construction Noise Strategy. If after the mitigation measures listed in the CNVMP and CNS are implemented and there are still impacts above the Noise Management Levels, then additional mitigation measures will be impacted based on the tables proposed below.

Noise and vibration impacts are not expected to be highly intrusive due to the distance to the nearest residential receivers (generally greater than 250m). Therefore no at-receiver treatments are proposed and only mitigation measures listed in the tables below will be undertaken.

2.1 Additional Airborne Noise Mitigation Measures

Table 33 below should be used to advise the appropriate additional noise mitigation. During construction at-receiver treatments will include individual briefings, phone calls, specific notifications and/or alternate accommodation.

Table 3: Airborne Noise Mitigation Measures

No.	Time Period		Mitigation Measures/Predicted L_{Aeq} (15min) Noise Level above RBL			
			0 to 10 dB (A) Noticeable	10 to 20 dB (A) Clearly audible	20 to 30 dB (A) Moderately Intrusive	>30 dB (A) Highly Intrusive
OH1	Standard	Mon-Fri (7:00 am – 6:00 pm) Sat (8:00am – 1:00 pm) Sun/ Public Hol. (Nil)			Letterbox Drop Monitoring	Letterbox Drop Monitoring
OH2	Period 1	Mon-Fri (6:00pm – 10:00pm) Sat (7:00am – 8:00am & 1:00pm – 10:00 pm) Sun/ Public Hol. (8:00am – 6:00pm)		Letterbox Drop	Letterbox Drop Monitoring	Letterbox Drop Monitoring Individual Briefing Respite Offer Phone Calls Specific Notification
OH3	Period 2	Mon-Fri (10:00pm – 7:00am) Sat (10:00 pm – 7:00am) Sun/ Public Hol. (6:00pm - 8:00am)	Letterbox Drop	Letterbox Drop Monitoring	Letterbox Drop Monitoring Individual Briefing Phone Calls Specific Notification	Letterbox Drop Monitoring Individual Briefing Phone Calls Specific Notification Alternate Accommodation

Once the noise impacts at the nearest sensitive receivers are established as part of the OOHW Application and a detailed CNVIS, the mitigation measures in the table will be applied. This includes selection of representative monitoring locations for the most affected sensitive receivers.

2.2 Additional Ground-borne Noise Mitigation Measures

Table 4 below should be used to advise the appropriate additional ground-borne noise mitigation.

Table 4: Ground-borne Noise Mitigation Measures

No.	Time Period		Mitigation Measures/Predicted L _{Aeq} (15min) Noise Level Exceedance		
			0 to 10 dB (A) Noticeable	10 to 20 dB (A) Moderately Intrusive	>20 dB (A) Highly Intrusive
OH4	Standard	Mon-Fri (7:00 am – 6:00 pm) Sat (8:00am – 1:00 pm) Sun/ Public Hol. (Nil)	Letterbox Drop	Letterbox Drop	Letterbox Drop Monitoring Specific Notification
OH5	Period 1	Mon-Fri (6:00pm – 10:00pm) Sat (7:00am – 8:00am & 1:00pm – 10:00 pm) Sun/ Public Hol. (8:00am – 6:00pm)	Letterbox Drop	Letterbox Drop Monitoring Respite Offer Specific Notification	Letterbox Drop Monitoring Individual Briefing Respite Offer Phone Calls Specific Notification
OH6	Period 2	Mon-Fri (10:00pm – 7:00am) Sat (10:00 pm – 7:00am) Sun/ Public Hol. (6:00pm - 8:00am)	Letterbox Drop Monitoring Specific Notification	Letterbox Drop Monitoring Individual Briefing Phone Calls Specific Notification Alternate Accommodation	Letterbox Drop Monitoring Individual Briefing Phone Calls Specific Notification Alternate Accommodation

2.3 Additional Vibration Mitigation Measures

Table 5 below should be used to advise the appropriate additional ground-borne vibration mitigation.

Table 5: Ground-borne Vibration Mitigation Measures

No.	Time Period		Mitigation Measures/Predicted Vibration Exceeds Maximum Levels	
OH7	Standard	Mon-Fri (7:00 am – 6:00 pm) Sat (8:00am – 1:00 pm) Sun/ Public Hol. (Nil)	Letterbox Drop Monitoring Respite Offer	
OH8	Period 1	Mon-Fri (6:00pm – 10:00pm) Sat (7:00am – 8:00am & 1:00pm – 10:00 pm) Sun/ Public Hol. (8:00am – 6:00pm)	Letterbox Drop Monitoring Individual Briefing	Respite Offer Phone Calls Specific Notification
OH9	Period 2	Mon-Fri (10:00pm – 7:00am) Sat (10:00 pm – 7:00am) Sun/ Public Hol. (6:00pm - 8:00am)	Letterbox Drop Monitoring Individual Briefing Respite Offer	Phone Calls Specific Notification Alternate Accommodation

If the predicted ground-borne vibration levels exceed the structural damage objectives in the CNVMP, a different construction method with lower source vibration levels will be considered. Attended measurements should be undertaken at the commencement of all high vibration generating activities. If there is any risk of exceedance of the structural damage objective a permanent vibration monitoring system will be installed, to warn plant operators when vibration levels are approaching the structural damage objective.

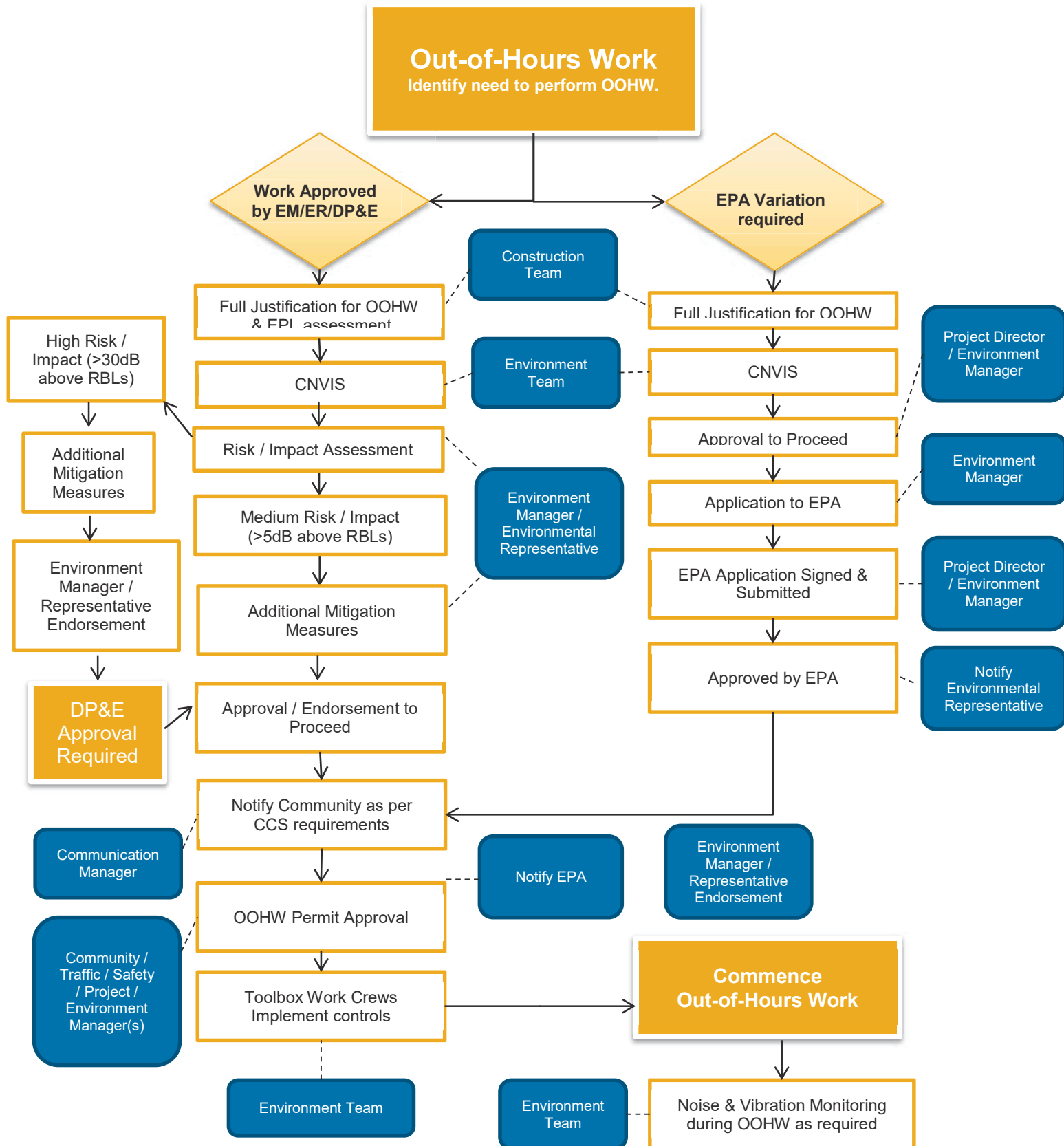
Annexure A – Out-of-Hours Application form



STANDARD OPERATING PROCEDURE
Construction Working Hours
Document Number: N01031-EN-FRM-0001-A

Item	Description	Information / Comments
1	Nature of the Work	
2	Plant to be Used	
3	Names of Persons performing the work	
4	Subcontractor Details (if applicable)	
5	Location of Work	
6	Date	
7	Start Time	
8	Finish Time	
9a	NOISE ASSESSMENT Provide details from noise assessment in CNVIS on works to be undertaken outside standard construction hours.	
9b	JUSTIFICATION Provide full justification as to why the works are required to be undertaken outside standard construction hours.	
9c	MITIGATION MEASURES Outline mitigation measures applicable to the works to be undertaken outside of hours from the CNVIS / CEMP (CNVMP)	
10	NOISE Will the work generate noise audible at the nearest residence?	
	Describe the activities generating noise	
	What measures are being taken to reduce noise impacts?	
11	TRAFFIC Will the work require traffic control?	
	Describe the location and nature of disruption to traffic proposed	
	Who is planning the traffic control?	
	Who will be responsible for the traffic control during the work?	

Annexure B – Out-of-Hours Work Flow Chart



Attachment F: Monitoring Sheets

