

JOHN HOLLAND

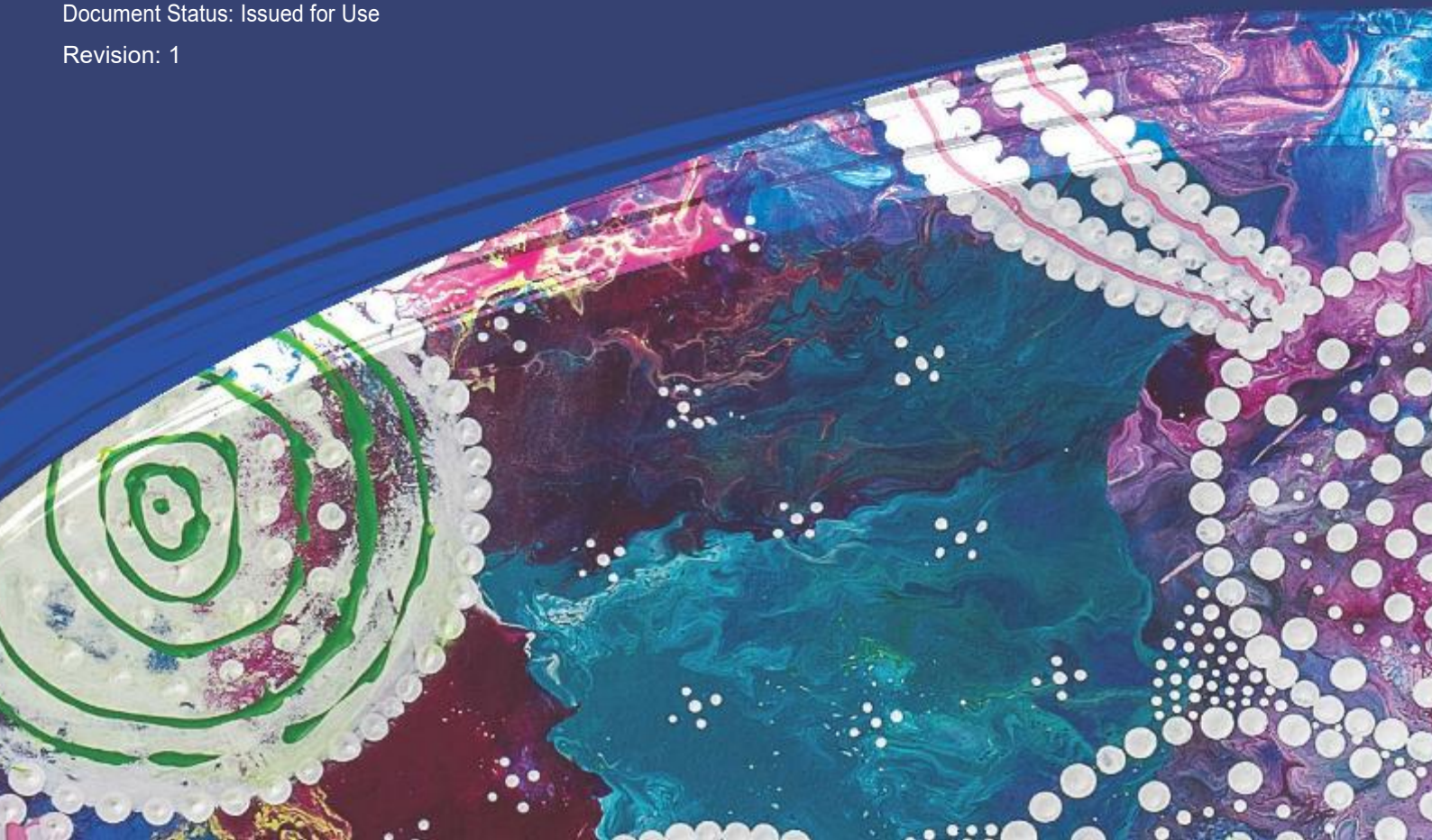
INLAND RAIL
ILLABO TO STOCKINBINGAL PROJECT

Sub Plan: Noise and Vibration Management Plan

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Document Control

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Signature Date	JOHN HOLLAND Document Number 5-0019-220-PMA-00-PL-0054 Revision 1 **Approved** Mr Daniel Lidbetter - John Holland Pty Ltd Mar 31, 2026, 7:58 AM GMT+11:00 This review has been completed using Aconex Workflow for the Inland Rail - Illabo to Stockinbingal (I2S) Project.	JOHN HOLLAND Document Number 5-0019-220-PMA-00-PL-0054 Revision 1 **Approved** Justin McCarthy - John Holland Pty Ltd Mar 30, 2026, 5:42 PM GMT+11:00 This review has been completed using Aconex Workflow for the Inland Rail - Illabo to Stockinbingal (I2S) Project.

Revision History

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Table of Contents

1 Revisions and Distribution 9
1.1 Revisions 9
1.2 Distribution 9
2 References, Definitions and Abbreviations 10
2.1 Definitions and Abbreviations 10
2.2 Compliance Roadmap 13
2.2.1 Federal Conditions Approval 13
2.2.2 State Conditions of Approval 13
2.2.3 Revised Mitigation Measures 23
3 Introduction 27
3.1 Context 27
3.2 Background 27
3.2.1 The Project 27
3.2.2 Statutory Context 30
3.3 Scope of the plan 30
3.4 Environmental Management Systems Overview 30
3.4.1 Environmental Management System 30
3.4.2 Global Mandatory Requirements 32
3.4.3 Plan preparation, endorsement and approval 33
3.4.4 Interactions with other management plans and strategies 33
3.5 Consultation 33
4 Purpose and Objectives 34
4.1 Purpose 34
4.2 Objectives 34
4.2.1 Performance Outcomes 35
4.3 Targets 35
5 Environmental Requirements 36
5.1 Relevant legislation and Guidelines 36
5.2 Environment Protection Licence 37
5.3 Sustainability 37
6 Existing Environment 40
6.1 Existing Noise Environment 40

6.2 Sensitive Receivers 40
6.3 Existing noise levels (background/ambient) 41
6.3.1 Noise Catchment Areas 44
7 Noise and Vibration Criteria 45
7.1 Overview 45
7.2 Construction Hours 46
7.2.1 Permitted work hours 46
7.2.2 Variation to work hours 47
7.3 Construction Noise Objectives 48
7.3.1 Residential Receivers 48
7.3.2 Other Sensitive Land Uses 50
7.3.3 Annoying Noise 51
7.3.4 Highly Noise Intensive Work 52
7.3.5 Ground-borne noise 52
7.4 Construction Traffic Noise 52
7.5 Construction Vibration Objectives 53
7.5.1 Human comfort 53
7.5.2 Structural and Cosmetic damage 55
7.5.3 Heritage Items and Buried Pipework 55
7.6 Construction Blasting Objectives 57
7.6.1 Human comfort 57
7.6.2 Structural Damage 58
8 Environmental Aspects and Impacts 60
8.1 Construction Activities 60
8.2 Noise Impacts 61
8.2.1 Assessment process 61
8.2.2 Detailed assessment 61
8.2.3 Sleep disturbance 69
8.2.4 Construction traffic noise 71
8.3 Vibration Impacts 73
8.4 Blast Impacts 76
9 Environmental Mitigation and Management Measures 79
9.1 Ongoing risk analysis 79
9.1.1 CNVIS 79
9.1.2 Noise and Vibration Management Tool – KNOWnoise 80
9.2 Maximum noise levels for plant and equipment 80

9.3 Traffic Noise Management 81
9.4 Construction Fatigue and Cumulative Impacts 81
9.4.1 Construction fatigue 81
9.4.2 Cumulative impacts 82
9.5 Minimising Vibration Impacts 83
9.5.1 Property Condition Surveys 83
9.5.2 Vibration Trials 84
9.6 OOHW 84
9.7 Additional Management Measures 84
9.7.1 Communication (CO) 85
9.7.2 Respite Offer (RO) 85
9.7.3 Alternative Accommodation (AA) 86
9.7.4 Agreements with Owners (AO) 86
9.8 Community Consultation 86
9.9 Blast Management 86
9.10 Early Implementation of Operational Noise Mitigation Measures 87
9.11 Community, religious, educational institutions and noise sensitive businesses 88
9.12 General Noise and Vibration Mitigation and Management Measures 88
10 Compliance Management 102
10.1 Roles and Responsibilities 102
10.2 Training 102
10.3 Monitoring and Inspections 102
10.4 Hold Points 104
10.5 Noise and Vibration Exceedances 104
10.6 Non-Compliance and Non-Conformance 105
10.7 Incident Reporting 105
10.8 Auditing 105
10.9 Reporting 105
10.10 Complaints Management 105
11 Review and Improvement 105
11.1 Continuous Improvement 105
11.2 Plan Amendments and Version Control 106
Appendix A – Noise catchment areas and sensitive receivers 107
Appendix B Construction equipment and sound power levels 113
Appendix C Detailed noise predictions 117
Appendix D Minimum working distances for vibration-intensive activity 118

Appendix E Consultation Summary Report 123
Appendix F – OOHW Protocol 125
Appendix G – Noise and Vibration Monitoring Program 126

Figures

Figure 3-1 Project Locality (Source: Illabo to Stockinbingal - Environmental Impact Statement, 2022) 28
Figure 3-2 Key Project Features (Source: Illabo to Stockinbingal - Environmental Impact Statement, 2022) 29
Figure 3-3 PDCA model 31
Figure 3-4 EMS structure 32
Figure 6-1 NCAs and monitoring locations 43
Figure 7-1 Construction related road traffic noise assessment approach 53
Figure 8-1 Construction traffic routes 72
Figure 8-2 Vibration for typical equipment at various distances 74
Figure 8-3 MIC management for meeting blast criteria 77
Figure 8-4 Blast location relative to nearest sensitive receivers 78
Figure 1-1 Project Locality (Source: Illabo to Stockinbingal - Environmental Impact Statement, 2022) 132
Figure 2-1 NCAs and monitoring locations 139

Tables

Table 2-1Definitions and abbreviations 10
Table 2-2 State CoA relevant to the NVMSP 13
Table 2-3 Updated Mitigation Measures relevant to this NVMSP 23
Table 4-1 Performance outcomes 35
Table 5-1 Principal legislation and guidelines relevant to NVMSP 36
Table 5-2 ISC Requirements 38
Table 6-1 Non–residential sensitive receivers sourced from the EIS Chapter 16 40
Table 6-2 Heritage structures potentially at risk from vibration sourced from the EIS Chapter 16 41
Table 6-3 Summary of unattended noise monitoring sourced from the EIS Chapter 8 41
Table 6-4 Noise catchment area summary 44
Table 7-1 Noise and vibration guidelines application to this Project 45
Table 7-2 Permitted work hours for the Project 46

Table 7-3 Noise Management Levels at residential receivers 48
Table 7-4 Adopted NMLs for residential receivers 49
Table 7-5 NMLs at other sensitive land uses 51
Table 7-6 Acceleration values for continuous and impulsive vibration 54
Table 7-7 BS 7385 cosmetic and structural damage safe limits 55
Table 7-8 DIN 4150 guideline values for short term vibration on structures 56
Table 7-9 DIN 4150 guideline values for short term vibration on pipelines and services 57
Table 7-10 Human comfort limits for airblast overpressure 57
Table 7-11 Human comfort limits for ground-borne vibration due to blasting 58
Table 7-12 Structural damage limits due to airblast overpressure from blasting 59
Table 7-13 Ground-borne vibration limits for cosmetic damage from vibration due to blasting .. 59
Table 7-14 DIN 4150 guideline values for short-term vibration on buried pipework 59
Table 8-1 Construction scenarios 60
Table 8-2 Summary of impacts - Section 1 Standard hours 62
Table 8-4 Summary of impacts - Section 1 outside standard hours 63
Table 8-5 Summary of impacts - Section 2 Standard hours 63
Table 8-6 Summary of impacts - Section 2 outside standard hours 64
Table 8-7 Summary of impacts - Section 3 Standard hours 65
Table 8-8 Summary of impacts - Section 3 outside standard hours 65
Table 8-9 Summary of impacts - Section 4 Standard hours 66
Table 8-10 Summary of impacts - Section 4 outside standard hours 66
Table 8-11 Summary of impacts - Section 5 Standard hours 67
Table 8-12 Summary of impacts - Section 5 outside standard hours 67
Table 8-13 Summary of impacts - Section 6 Standard hours 68
Table 8-14 Summary of impacts - Section 6 outside standard hours 68
Table 8-15 Sleep disturbance assessment 69
Table 8-16 Construction-related traffic volumes 71
Table 8-17 Construction traffic noise assessment 73
Table 8-18 Recommended minimum working distances – human comfort 74
Table 8-19 Minimum working distances - cosmetic damage 75
Table 9-1 Noise management measures for airborne noise 84
Table 9-2 Noise management measures for ground borne noise 84
Table 9-3 Vibration management measures 85
Table 9-4 Noise and vibration mitigation and management measures 89
Table 10-1 Inspection requirements 103
Table 10-2 Hold points applicable to noise and vibration management 104

Table 1-1 State CoA relevant to the NVMSP 133
Table 1-2 Updated Mitigation Measures relevant to this NVMP 134
Table 2-1 Summary of unattended noise monitoring sourced from the EIS Chapter 8 137
Table 2-2 Noise catchment area summary 138
Table 3-1 Adopted NMLs for residential receivers 140
Table 3-2 NMLs for other sensitive receivers 140
Table 3-3 Acceleration values for continuous and impulsive vibration 141
Table 3-4 Cosmetic and structural damage safe limits 143
Table 3-5 Guideline values for short term vibration on structures 143
Table 3-6 Guideline values for short term vibration on pipelines and services 144
Table 3-7 Noise management measures for airborne noise 145
Table 3-8 Vibration management measures 145
Table 4-1 Key guidelines relevant to noise monitoring 146
Table 4-2 Noise monitoring procedure 148
Table 5-1 Key guidelines relevant to vibration monitoring 150
Table 5-2 Vibration monitoring procedure 153
Table 5-3 Recommended minimum working distances – human comfort 154
Table 5-4 Minimum working distances - cosmetic damage 155
Table 6-1 Actions for Monitoring outcomes 158

1 Revisions and Distribution

1.1 Revisions

Draft issues of this document are identified as Revision A, B, C etc. Following acceptance by the document approver, the first finalised revision will be Revision 0. Subsequent revisions will have an increase of “1” in the revision number (1, 2, 3 etc.).

1.2 Distribution

The controlled master version of this document is available for distribution as appropriate and maintained on the document management system being used on the project. All circulated hard copies of this document are deemed to be uncontrolled.

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Project Personnel	Aconex Distribution

2 References, Definitions and Abbreviations

2.1 Definitions and Abbreviations

Definitions and abbreviations to be applied to this Noise and Vibration Management Sub-Plan are listed in Table 2-1.

Table 2-1Definitions and abbreviations

Term / Abbreviation	Definition / Expanded text
AA	Alternate accommodation
ACR period	Annual Compliance Report period
ARTC	Australian Rail Track Corporation
BS 7385.2	*British Standard BS 7385.2:1993—Evaluation and Measurement for Vibration in Buildings: Part 2—Guide to damage levels from ground borne vibration* British Standards Institute, 1993)
BS 5228	*British Standard BS 5228.2:2009—Code of Practice for noise and vibration control on construction and open sites: Part 2 Vibration* (British Standards Institute, 2009)
BS 6472	*British Standard BS 6472:2008—Guide to Evaluation of Human Exposure to Vibration in Buildings (1 Hz to 80 Hz)* (British Standards Institute, 2008)
CCS	Community Consultation Strategy
CEMF	Construction Environmental Management Framework
CEMP	Construction Environmental Management Plan as defined in Conditions C12 and C13.
CMP	Construction Monitoring Program
CNVIS	Construction Noise and Vibration Impact Statement
CNVMF	*Inland Rail Specification – NSW Construction Noise and Vibration Management Framework, Revision 2 dated 03/09/2024* (0-0000-902-EMN-00-SP-0001) (CNVMF)
CO	Communication
CO1	Communication Category 1
CO2	Communication Category 2
CoA	The Minister's Conditions of Approval for the CSSI
Construction	Includes work required to construct the CSSI as defined in the documents listed in Condition A1, including commissioning trials of equipment and temporary use of any part of the CSSI, but excluding low impact work which is carried out or completed prior to approval of the CEMP
Consultation	To provide information and actively engage with and obtain and consider feedback from stakeholders during development of post approval documents. How the feedback has been considered and whether any changes have been made in response to this feedback is then documented and communicated back to stakeholders. Consultation should not be limited to one-way notification about the project.
CSSI	Critical State Significant Infrastructure, as generally described in Schedule 1 (of the Conditions of Approval), the carrying out of which is approved under the terms of the Conditions of Approval.
dB(A)	Decibels using the A-weighted scale measured according to the frequency of the human ear
DCCEEW	Department of Climate Change, Energy, the Environment and Water

Term / Abbreviation	Definition / Expanded text
DIN 4150-3	*German Standard DIN 4150-3: Structural Vibration – effects of vibration on structures*
DPHI	Department of Planning, Housing and Infrastructure
EIS	The Environmental Impact Statement referred to in Condition A1 submitted to the Planning Secretary seeking approval to carry out the CSSI described in it, as revised if required by the Planning Secretary under the EP&A Act, and including any additional information provided by the Proponent in support of the application for approval of the CSSI
EMS	Environmental Management System
Environment	Includes all aspects of the surroundings of humans, whether affecting any human as an individual or in his or her social groupings.
Environmental Assessment Documentation	• Inland Rail – Illabo to Stockinbingal Environmental Impact Statement (ARTC 2022) • Illabo to Stockinbingal Project Response to Submissions (ARTC 2023) • Response to Submissions – Appendix E - Biodiversity Development Assessment Report version 12 (IRDJV, June 2024) • I2S – Mitigation Measures (Inland Rail, April 2024) • Illabo to Stockinbingal (SSI-9604) Additional and Appropriate Measures for Box Gum Woodland Impacts (Inland Rail, June 2024) • Technical and Approvals Consultancy Services: Illabo to Stockinbingal – Box Gum Woodland Gum Flat Rehabilitation Opportunity (IRDJV, June 2024)
EPA	Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPBC Act	*Commonwealth Environment Protection and Biodiversity Conservation Act 1999*
EPL	Environment Protection Licence under the P*rotection of the Environment Operations Act 1997*
ER	Environmental Representative for the CSSI as approved by the Planning Secretary
GMR	Global Mandatory Requirements
ICNG	*Interim Construction Noise Guideline (Department of Environment and Climate Change* (DECC), NSW, 2009)
IMS	JHG Integrated Management System
Incident	An occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance.
ISC	Infrastructure Sustainability Council
IR-NVMS	*Inland Rail Noise and Vibration Management Strategy* (0-0000-900-EMN-00-ST-0001
IRPL	Inland Rail Pty Ltd
I2S	Inland Rail – Illabo to Stockinbingal Project
JHG	John Holland Group
km	Kilometre
LAeq (15min)	The A-weighted equivalent continuous (energy average) A-weighted sound pressure level of the construction works under consideration over a 15-minute period and excludes other noise sources such as from industry, road, rail and the community
LA (max)	The A-weighted maximum noise level only from the construction works under consideration, measured using the fast time weighting on a sound level meter
LGA	Local Government Area

Term / Abbreviation	Definition / Expanded text
Material Harm	is harm that: (a) involves actual or potential harm to the health or safety of human beings or to the environment that is not trivial; or (b) results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000, (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment).
MWD	Minimum working distances
NCA	Noise Catchment Area
NML	Noise Management Level
Non-compliance	An occurrence, set of circumstances or development that is a breach of this approval.
NPfI	*Noise Policy for Industry* (NSW Environmental Protection Authority (NSW EPA), 2017)
NSW	New South Wales
NVMSP	Construction Noise and Vibration Management Sub-plan required under CoA Condition C19
OOHW	Out-of-hours work
PDCA	Plan-Do-Check-Act
Planning Secretary	Planning Secretary of the Department (or nominee, whether nominated before or after the date on which this approval was granted).
POEO Act	*Protection of the Environment Operations Act 1997*
PPV	Peak Particle Velocity
Project	Inland Rail – Illabo to Stockinbingal Project
RAPs	Registered Aboriginal Parties
RBL	The Rating Background Level for each period is the medium value of the ABL values for the period over all of the days measured. There is therefore an RBL value for each period (day, evening and night)
Relevant councils	Cootamundra Gundagai Reginal Council; Junee Council
RMMs	Revised Mitigation Measures
RNP	*NSW Road Noise Policy* (NSW EPA, 2011)
RO	Respite offer
SEARs	Secretary's Environmental Assessment Requirements
SMART	Specific, Measurable, Achievable, Realistic and Timely
SPL	Sound Pressure Levels
SSD	State Significant Development
SSI	State Significant Infrastructure
SWL	Sound Power Level
TWAF	Temporary workforce accommodation facility
Work	Any physical work for the purpose of the CSSI including construction and low impact work but not including operational maintenance work

2.2 Compliance Roadmap

The Inland Rail – Illabo to Stockinbingal Project (I2S), the Project, is subject to both state and federal approval. Further project background is provided in Section 3.2.

The following section provides a tabular representation of the Project approval requirements, as described in the Federal and State Conditions of Approval (CoA), and a reference link to detail how these requirements would be achieved during Project delivery.

A cross reference is also included to indicate where each requirement is addressed in this Noise and Vibration Management Sub-plan (NVMSP) or other Project management documentation.

2.2.1 Federal Conditions Approval

There are no noise and vibration related conditions from the Commonwealth CoA relevant to this NVMSP (EPBC-2018/8233).

2.2.2 State Conditions of Approval

The State CoA (SSI-9406) relevant to the Project and NVMSP under the *Environmental Planning and Assessment Act 1979* are provided in Table 2-2.

Table 2-2 State CoA relevant to the NVMSP

CoA No.	Condition Requirements	Document Reference
A1	The Proponent must carry out the CSSI in accordance with the terms of approval and generally in accordance with the: a) Inland Rail – Illabo to Stockinbingal Environmental Impact Statement (ARTC 2022); b) Illabo to Stockinbingal Project Response to Submissions (ARTC 2023);I2S – Mitigation Measures (Inland Rail, April 2024);	Section 2 and 3
A2	The CSSI must be carried out in accordance with all procedures, commitments, preventative actions, performance criteria and mitigation measures set out in accordance with the documents listed in Condition A1 unless otherwise specified in, or required under, this approval.	Section 3 and 9
A3	In the event of an inconsistency between: a) the conditions of this approval and any document listed in Condition A1(a) to (f) inclusive, the conditions of this approval will prevail to the extent of the inconsistency; and b) any document listed in Condition A1(a) to (f) inclusive, the most recent document will prevail to the extent of the inconsistency. Note: For the purpose of this condition, there will be an inconsistency between a term of this approval and any document if it is not possible to comply with both the term and the document.	Noted
A4	The Proponent must comply with the written requirements or directions of the Planning Secretary, including in relation to: a) the environmental performance of the CSSI; b) any document or correspondence in relation to the CSSI; c) any notification given to the Planning Secretary under the terms of this approval; d) any audit of the construction or operation of the CSSI; e) the terms of this approval and compliance with the terms of this approval (including anything required to be done under this approval); f) the carrying out of any additional monitoring or mitigation measures; and	CEMP and Section 9.4.1

CoA No.	Condition Requirements	Document Reference
	g) in respect of ongoing monitoring and management obligations, compliance with an updated or revised version of a guideline, protocol, Australian Standard or policy required to be complied with under this approval.	
A10	Where the terms of this approval require a document or monitoring program to be prepared or a review to be undertaken in consultation with identified parties, evidence of the consultation undertaken must be submitted with the corresponding documentation to the Planning Secretary and the Environmental Representative (as relevant) in accordance with the Post Approval Guidance: Defining Engagement Terms (DPIE, 2020). The evidence must include: a) documentation of the engagement with the party identified in the condition of approval that has occurred before submitting the document for approval; b) a log of the dates of engagement or attempted engagement with the identified party; c) documentation of the follow-up with the identified party where engagement has not occurred to confirm that they do not wish to engage or have not attempted to engage after repeated invitations; d) an outline of the issues raised by the identified party and how they have been addressed; and e) a description of the outstanding issues raised by the identified party and the reasons why they have not been addressed.	Section 3.5
A26	For the duration of Work and for no less than twelve (12) months after the completion of construction of the CSSI, the approved ER must: (a) receive and respond to communication from the Planning Secretary in relation to the environmental performance of the CSSI; (b) consider and inform the Planning Secretary on matters specified in the terms of this approval; (c) consider and recommend to the Proponent any improvements that may be made to work practices to avoid or minimise adverse impact to the environment and to the community; (d) review documents identified in Conditions A11, A18, B1, C5, C12, C17, C27, and E109, and any other documents that are identified by the Planning Secretary, to ensure they are consistent with requirements in or under this approval and if so: (i) make a written statement to this effect before submission of such documents to the Planning Secretary (if those documents are required to be approved by the Planning Secretary); or (ii) make a written statement to this effect before the implementation of such documents (if those documents are required to be submitted to the Planning Secretary / Department or are not required to be submitted to the Planning Secretary / Department); (iii) provide a written statement / submission via the Major Projects portal to the Planning Secretary advising the documents have been endorsed by the ER; (e) regularly monitor the implementation of the documents listed in Conditions A11, A18, B1, C5, C12, C17, C27, and E109 to ensure implementation is being carried out in accordance with the document and the terms of this approval; (f) as may be requested by the Planning Secretary, help plan, attend or undertake audits of the CSSI commissioned by the Department including scoping audits, programming audits, briefings and site visits, but not independent environmental audits required under Condition A28 of this approval;	Section 3.4.3

CoA No.	Condition Requirements	Document Reference
	(g) as may be requested by the Planning Secretary, assist in the resolution of community complaints; (h) assess the impacts of minor ancillary facilities as required by Condition C9 of this approval; (i) consider any minor amendments to be made to the CEMP, CEMP Sub-plans and Construction Monitoring Programs that comprise updating or are of an administrative nature, and are consistent with the terms of this approval and the CEMP, CEMP Sub-plans and Construction Monitoring Programs approved by the Planning Secretary and, if satisfied such amendment is necessary, approve the amendment. This does not include any modifications to the terms of this approval; and (j) prepare and submit to the Planning Secretary and other relevant regulatory agencies, for information and make publicly available, an Environmental Representative Monthly Report providing the information set out in the Environmental Representative Protocol under the heading "Environmental Representative Monthly Reports." The Environmental Representative Monthly Report must be submitted within seven (7) calendar days following the end of each month for the duration of the ER's engagement for the CSSI.	
A34	The Planning Secretary must be notified via the Major Projects Website immediately after the Proponent becomes aware of an incident. The notification must identify the CSSI (including the application number and the name of the CSSI if it has one) and set out the location and nature of the incident.	Section 10.7
A35	Subsequent notification must be given and reports submitted in accordance with the requirements set out in APPENDIX A. The requirement to notify the Department under this condition excludes incidents which are solely required to be notified to the Office of the National Rail Safety Regulator.	Section 10.7
A36	The Planning Secretary must be notified via the Major Projects Website within seven days after the Proponent becomes aware of any non-compliance. The notification must identify the CSSI (including the project number and the name of the CSSI if it has one), set out the condition/s that is non-compliant, the nature of the breach; the reason for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.	Section 10.7
A37	A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.	Section 10.6
C9	Minor ancillary facilities including lunch sheds, office sheds, portable toilet facilities, material lay down sites, stockpile areas, areas used to assemble infrastructure and the like can be established and used where they satisfy the following criteria: (a) are located within the construction boundary; and (b) have been assessed by the ER to have - (i) minimal amenity impacts to surrounding residences and businesses, after consideration of matters such as compliance with the Interim Construction Noise Guideline (DECC, 2009), traffic and access impacts, dust and odour impacts, and visual (including light spill) impacts, and (ii) minimal environmental impact with respect to waste management and flooding, and (iii) no impacts on biodiversity, soil and water, and heritage items beyond those already approved under other terms of this approval.	Section 9.3 Section 9.12 CEMP
C10	Boundary screening must be erected between ancillary facilities (excluding minor ancillary facilities) and temporary workforce accommodation facility, adjacent to and visible from sensitive land use(s) (including occupied	Section 9.12

<table>
<tr><th>CoA No.</th><th>Condition Requirements</th><th>Document Reference</th></tr>
<tr><td></td><td>residences on agricultural properties) for the duration of the time that the ancillary facility or accommodation facility is in use, unless otherwise agreed with the owner and occupier of the adjacent sensitive land use(s).

Boundary screening must minimise visual impacts on adjacent sensitive land use(s) and not create a fire hazard.</td><td></td></tr>
<tr><td>C14</td><td>CEMP(s) (and relevant CEMP sub-plans) must be submitted to the Planning Secretary for approval except those permitted to be endorsed by others pursuant to a CEMF approved by the Planning Secretary under Condition C1.</td><td>Section 3.4.3</td></tr>
<tr><td>C15</td><td>Where a CEMP (and relevant CEMP sub-plans) requires the Planning Secretary's approval, the CEMP (and relevant CEMP sub-plans) must be endorsed by the ER and then submitted to the Planning Secretary for approval no later than one (1) month before the commencement of construction, or where construction is staged, no later than one (1) month before the commencement of each stage.</td><td>Section 3.4.3</td></tr>
<tr><td>C17</td><td>Except as provided by Condition C1, the following CEMP Sub-plans must be prepared in consultation with the relevant state agencies, relevant councils and RAPs identified for each CEMP Sub-plan. Evidence of consultation must be provided consistent with Condition A10.

<table><tr><th></th><th>Required CEMP Sub-plan</th><th>Relevant authorities to be consulted for each CEMP Sub-plan</th></tr><tr><td>(b)</td><td>Noise and Vibration</td><td>Relevant Councils</td></tr></table>
Notes

1. CEMP Sub-plan(s) may reflect the staged construction of the project through geographical activities, temporal activities or activity-based contracting and staging.

2. Nothing in this condition prevents the Proponent from combining any of the above CEMP Sub-plans.

3. The Biodiversity CEMP Sub-Plan must be consistent with goals and objectives, mitigation measures and monitoring requirements of the Commonwealth approved conservation advice and any Recovery Plans for all Matters of National Environmental Significance.</td><td>Section 3.5</td></tr>
<tr><td>C18</td><td>The CEMP Sub-plans listed in Condition C17 must state how:

(a) the environmental performance outcomes identified in the documents listed in Condition A1, as modified by these conditions, will be achieved;

(b) the mitigation measures identified in the documents listed in Condition A1, as modified by these conditions will be implemented;

(c) the relevant terms of this approval will be complied with; and

(d) issues requiring management during construction, as identified through ongoing environmental risk analysis, will be managed.</td><td>

Section 4

Section 9

Section 2.2

Section 10</td></tr>
<tr><td>C19</td><td>The Construction Noise and Vibration Sub-plan must include, but not be limited to:

a) an approach to assess and manage construction fatigue from noise impacts on an ongoing basis;

b) mitigation for construction traffic noise impacts from additional construction traffic and road diversions.</td><td>

Section 9.4

Section 9.3

For C19 c); Section 9.5.2</td></tr>
</table>

<table>
<tr><th>CoA No.</th><th>Condition Requirements</th><th>Document Reference</th></tr>
<tr><td></td><td>c) vibration levels at a range of distances from vibration intensive equipment such as excavators and vibratory rollers before undertaking works with the specific type and size of equipment.</td><td>and
Section 8.3</td></tr>
<tr><td>C21</td><td>The Construction Traffic, Transport and Access Management Sub-plan (CTTAMP) must be consistent with any agreements with the relevant roads authority about the use and management of local roads and include measures to:
(b) minimise noise and amenity impacts of heavy vehicles entering and exiting construction compounds, and ancillary sites, and driving through populated areas, including school zones at speed limited times;</td><td>Construction Traffic Management Plan
Section 2.2.2</td></tr>
<tr><td>C26</td><td>Construction must not commence until the CEMP and all CEMP Sub-plans have been approved by the Planning Secretary or endorsed by the ER (as applicable and as identified in the CEMF approved under Condition C1). The CEMP and CEMP Sub-plans, as approved by the Planning Secretary, including any minor amendments approved by the ER, must be implemented for the duration of construction. Where the CSSI is being staged, construction of that stage is not to commence until the relevant CEMP and sub-plans have been endorsed by the ER and approved by the Planning Secretary or ER.</td><td>Section 3.4.3</td></tr>
<tr><td>C27</td><td>Except as provided by Condition C1 the following Construction Monitoring Programs must be prepared in consultation with the relevant state agencies and relevant councils identified for the Construction Monitoring Programs to compare actual performance of construction of the CSSI against performance predicted in the documents specified in Condition A1.
<table>
<tr><th></th><th>Required Construction Monitoring Programs</th><th>Relevant government authorities to be consulted for each Construction Monitoring Program</th></tr>
<tr><td>(a)</td><td>Noise and Vibration</td><td>Nil</td></tr>
</table></td><td>Section 10.3
Appendix G</td></tr>
<tr><td>C28</td><td>Each Construction Monitoring Program (CMP) must have consideration of SMART principles and provide:
(a) details of baseline data available;
(b) details of baseline data to be obtained and when;
(c) details of all monitoring of the CSSI to be undertaken;
(d) the parameters of the CSSI to be monitored;
(e) the frequency of monitoring to be undertaken;
(f) the location of monitoring and reasons for choosing the location;
(g) the reporting of monitoring results and analysis results against relevant criteria;
(h) details of the methods that will be used to analyse the monitoring data;
(i) procedures to identify and implement additional mitigation measures where the results of the monitoring indicate unacceptable project impacts;
(j) any consultation to be undertaken in relation to the monitoring programs; and
(k) any specific requirements as required by Condition C29.</td><td>Section 10.3
Appendix G</td></tr>
</table>

CoA No.	Condition Requirements	Document Reference
C30	The Noise Monitoring Program must be prepared and implemented in accordance with the requirements of Approved Methods for the Measurement and Analysis of Environmental Noise (EPA).	Section 10.3 Appendix G
C31	CMPs must be submitted to the Planning Secretary for approval except those permitted to be endorsed by others pursuant to a CEMF approved by the Planning Secretary under Condition C1.	Section 10.3 Appendix G
C32	Where a CMP requires Planning Secretary's approval, the CMP must be endorsed by the ER and then submitted to the Planning Secretary for approval no later than one (1) month before the commencement of construction, or where construction is staged, no later than one (1) month before the commencement of each stage.	Section 10.3 Appendix G
C34	Construction must not commence until the relevant CMP(s) have been approved by the Planning Secretary or endorsed by the ER, (as applicable and as identified in the CEMF approved under Condition C1), and all relevant baseline data for the specific construction activity has been collected.	Section 10.3 Appendix G
C35	The CMP(s), as approved or endorsed (as relevant), including any minor amendments approved by the ER, must be implemented for the duration of construction and for any longer period set out in the monitoring program or specified by the Planning Secretary, whichever is the greater.	Section 10.3 Appendix G
C36	The results of the CMP(s) must be made publicly available in the form a Construction Monitoring Report at the frequency identified in the relevant CMP. Note: Where a relevant CEMP Sub-plan exists, the relevant Construction Monitoring Program may be incorporated into that CEMP Sub-plan.	Section 10.3 Appendix G
E1	Work must be undertaken during the following hours: (a) 7:00 am to 6:00 pm Mondays to Fridays; (b) 7:00 am to 6:00 pm Saturdays; and (c) at no time on Sundays or public holidays.	Section 7.2
E2	Despite Condition E1, work (excluding establishment of the temporary workforce accommodation facilities) may be undertaken during the hours of 6:00 am to 6:00 pm each day provided: a) no work affects any given receiver between the hours of 6:00 pm on a Saturday and 7:00 am on a Monday every second week; b) only low impact noise activities (defined in Condition E3(b)) are permitted between 6.00 am and 7.00 am; and c) consultation with affected receivers occurs at least every three months, or more frequently following complaints recorded in the Complaints Register required by Condition B8, to determine respite or additional mitigation measures. In consulting with the affected receivers, the following must be provided: (i) a progressive schedule of anticipated hours of works beyond those permitted by Condition E1 for periods of no less than three months; (ii) a description of the anticipated construction activities, location and duration of the work; (iii) the noise characteristics and likely noise levels of the work;	Section 7.2 Section 9.8 Section 9.12

CoA No.	Condition Requirements	Document Reference
	(iv) the practical measures implemented to minimise noisy work and heavy vehicle movements before 7:00am and any time on a Sunday; and (v) mitigation and management measures which aim to achieve the relevant noise management levels identified in the documents listed under Condition A1 (including the circumstances in which respite or other offers will be available and details about how the affected receivers can access these). Evidence of consultation and the outcomes, including any changes to construction practices or staging, must be reviewed by the ER and provided to the Planning Secretary on request. Notes: 1. This condition does not affect any other offers of respite or noise mitigation required under this approval. 2. This condition does not prevent a working schedule of ten consecutive days of work followed by four consecutive days of no work provided one day of no work is a Sunday and that consultation with affected receivers about respite and mitigation occurs every three months;	
E3	Despite Conditions E1 and E2 work may be undertaken outside the hours specified in the following circumstances: (a) Safety and emergencies, including: (i) for the delivery of materials required by the NSW Police Force or other authority for safety reasons; or (ii) where it is required in an emergency to avoid injury or the loss of life, to avoid damage or loss of property or to prevent environmental harm; or b) Low impact noise activities, including: (i) construction that causes LAeq(15 minute) noise levels: • no more than 5 dB(A) above the rating background level at any residence in accordance with the ICNG, and • no more than the 'noise affected' NMLs specified in Table 3 of the ICNG at other sensitive land uses; and (ii) construction that causes LAFmax noise levels no more than 15 dB(A) above the rating background level at any residence during the night period as defined in the Noise Policy for Industry (EPA, 2017); and (iii) construction that causes: • continuous or impulsive vibration values, measured at the most affected residence, are no more than the preferred values for human exposure to vibration specified in Table 2.2 of Assessing vibration: A technical guideline (DEC, 2006), or • intermittent vibration values, measured at the most affected residence, are no more than the preferred values for human exposure to vibration, specified in Table 2.4 of Assessing vibration: A technical guideline (DEC, 2006); or c) By approval or agreement, including: (i) where different construction hours are permitted or required under an EPL in force in respect of the CSSI; or (ii) works which are not subject to an EPL that are approved under an Out-of-Hours Work Protocol as required by Condition E5; or (iii) negotiated agreements with directly affected residents and sensitive land uses. On becoming aware of the need for emergency work in accordance with Condition E3(a)(ii) above, the ER, the Planning Secretary and the EPA must be notified of the reasons for such work. The Proponent must use best	Section 7.2 Section 9.6 (OOHW Protocol) Appendix F (OOHW Protocol)

CoA No.	Condition Requirements	Document Reference
	endeavours to notify as soon as practicable all noise and/or vibration affected sensitive land uses of the likely impact and duration of those work. All negotiated agreements with owners and occupiers of sensitive land uses to carry out work in accordance with Condition E3(c)(iii) must be in writing, and include the hours, duration and likely noise levels compared to the NML defined in the ICNG. The negotiated agreement must be agreed and finalised before the commencement of work affecting the sensitive land uses.	
E4	Except as permitted by an EPL or approved through an Out of Hours Work Protocol (for work not subject to an EPL), highly noise intensive work (defined in Table 1) that results in an exceedance of the applicable NML at the same receiver must only be undertaken: (a) between the hours of 8:00 am to 6:00 pm Monday to Friday (excluding public holidays); (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 of at least one hour between each block of highly noise intensive work. For the purpose of this condition, 'continuous' includes any period during which there is less than a one-hour respite between ceasing and recommencing any work that is the subject of this condition.	Section 7.3.4 Section 9.6 (OOHW Protocol) Appendix F (OOHW Protocol)
E5	An Out-of-Hours Work Protocol must be prepared to identify a process for the consideration, management and approval of work which is outside the hours defined in Conditions E1 and E2, and that is not subject to an EPL. The Protocol must be approved by the Planning Secretary before commencement of any out-of-hours work. The Protocol must be prepared in consultation with the EPA. The Protocol must: a) provide a process for the consideration of out-of-hours work against the relevant noise and vibration criteria, including the determination of low and high-risk activities; b) provide a process for the identification and implementation of mitigation measures for residual impacts, including respite periods in consultation with the community at each affected location; c) identify procedures to facilitate the coordination of out-of-hours work approved by an EPL to ensure appropriate respite is provided; d) identify an approval process that considers the risk of activities, proposed mitigation, management, and coordination, including where: (i) the ER review all proposed out of hours activities and confirm their risk levels; (ii) low risk activities can be approved by the ER, and (iii) high risk activities that are approved by the Planning Secretary; and e) identify Department, EPA and community notification arrangements for approved out-of-hours work, which maybe detailed in the Communication Strategy.	Section 9.6 (OOHW Protocol) Appendix F (OOHW Protocol)
E6	Work that results in noise levels above NMLs at community, religious, educational institutions and noise and vibration-sensitive businesses and critical working areas (such as theatres, laboratories and operating theatres) must not be timetabled within sensitive periods or during important events, unless other reasonable arrangements with the affected institutions or businesses are made at no cost to the affected institution or business or as otherwise approved by the Planning Secretary.	Section 9.11
E7	Mitigation measures must be implemented with the aim of achieving the following construction noise management levels and vibration criteria:	Section 7 Section 9

CoA No.	Condition Requirements	Document Reference
	(a) construction 'noise affected' NMLs established using the ICNG; (b) vibration criteria established using the Assessing vibration: A technical guideline (DEC, 2006) (for human exposure); (c) Australian Standard AS 2187.2 - 2006 Explosives - Storage and use - Use of explosives; (d) BS 7385 Part 2-1993 Evaluation and measurement for vibration in buildings Part 2 as they are applicable to Australian conditions; (e) the vibration limits set out in the German standard DIN 4150-3: Structural vibration- effects of vibration on structures (for structural damage); and (f) Project noise trigger levels and maximum noise level event trigger levels established using the Noise Policy for Industry (EPA, 2017) for noise generated by mechanical plant and on-site vehicles at temporary workforce accommodation facilities. Any work identified as exceeding the NMLs and/or vibration criteria must be managed in accordance with the Construction Noise and Vibration Management Sub-plan required by Condition C17. Note: The ICNG identifies 'particularly annoying' activities that require the addition of 5 dB(A) to the predicted level before comparing to the construction Noise Management Level.	
E8	Owners and occupiers of properties at risk of exceeding the screening criteria for cosmetic damage must be notified before construction that generates vibration commences in the vicinity of those properties. If the potential exceedance is to occur more than once or extend over a period of 24 hours, owner and occupiers must be provided with a schedule of potential exceedances for the duration of the potential exceedances, unless otherwise agreed by the owner and occupier. These properties must be identified and considered in the Construction Noise and Vibration Management Sub-plan required by Condition C17.	Section 9.5 Section 9.12
E9	The Proponent must coordinate work with other Inland Rail projects, including any work to relocate or connect utilities conducted under any approval pathway, to minimise cumulative and consecutive noise and vibration impacts and maximise respite for affected sensitive receivers. Coordination and mitigation measures must be detailed in the Noise and Vibration Management Sub-plan required by Condition C17.	Section 9.4 Section 9.12
E10	If blasting is proposed during construction, a Blast Management Strategy must be prepared and must include: (a) sequencing and review of trial blasting to inform blasting; (b) regularity of blasting; (c) intensity of blasting; (d) monitoring blast overpressure and ground vibration; (e) consultation with utility asset owners and managers; (f) measures to minimise blasting impacts; (g) periods of relief; and (h) blasting program.	Section 9.9
E11	The Blast Management Strategy must be endorsed by a suitably qualified and experienced person.	Section 9.9
E12	The Blast Management Strategy must be prepared in accordance with relevant guidelines to ensure that all blasting and associated activities are carried out so as not to generate unacceptable noise and vibration impacts or pose a significant risk to sensitive receivers.	Section 9.9

CoA No.	Condition Requirements	Document Reference
E13	The Blast Management Strategy must be submitted to the Planning Secretary for approval no later than one month prior to the commencement of blasting. The Strategy as submitted to the Planning Secretary, must be implemented for all blasting activities.	Section 9.9
E14	Blasting associated with the CSSI must only be undertaken during the following hours: (a) 9:00 am to 5:00 pm, Monday to Friday, inclusive; (b) 9:00 am to 1:00 pm, Saturday; and (c) at no time on Sunday or on a public holiday; or as authorised through an EPL if blasting is proposed outside of these hours. This condition does not apply in the event of a direction from police or other relevant authority or utilities for safety or emergency reasons to avoid loss of life, property loss and/or to prevent environmental harm.	Section 9.9 Section 7.6
E20	Operational noise mitigation measures identified in Condition E15 and Condition E17 (such as at-property architectural treatments) that will not be affected by construction work, must be implemented: (a) within twelve (12) months of the commencement of construction affecting the impacted receiver/s; (b) in the case of at-property treatments, as agreed with the landowner; or (c) as agreed by the Planning Secretary.	Section 9.10
E21	Where implementation of operational noise mitigation measures are not proposed in accordance with Condition E20, the Proponent must submit to the Planning Secretary a report providing justification as to why, along with details of temporary measures that would be implemented to reduce construction noise impacts, until such time that the operational noise mitigation measures identified in Condition E15 and Condition E17 are implemented. The report must be endorsed by the ER and submitted to the Planning Secretary prior to the commencement of construction which would affect the identified sensitive receivers.	Section 9.10
E111	Temporary workforce accommodation facilities must be completed prior to commencement of construction. The accommodation facilities must be designed to ensure sufficient capacity to house the peak workforce and operate to ensure for the surrounding community and accommodation facility occupants: (a) environmental amenity, particularly in relation to noise, air quality and lighting; and (b) security, in particular for vulnerable community members and workers.	Section 9.12 Temporary Workforce Accommodation Facility Management Plan
E113	Delivery servicing is limited to the work hours specified in Conditions E1 and E2, unless any out of hours noise related to the delivery servicing complies with Condition E3.	Section 9.12 Temporary Workforce Accommodation Facility Management Plan
E114	Outdoor recreation areas of the accommodation facilities can only be used between 7.00am and 10.00pm daily.	Section 9.12 Temporary Workforce Accommodation

CoA No.	Condition Requirements	Document Reference
		Facility Management Plan
E118	The Employee Code of Conduct applies to all employees on the CSSI site (including the temporary workforce accommodation facilities) and those living in the community in the surrounding towns. The Employee Code of Conduct must: (a) set out the ethical standards for the behaviour and conduct of employees on and off the site, including for driving on public roads; (b) include disciplinary actions where employee behaviour and conduct do not meet the ethical behaviour standards; and (c)include processes for responding to and addressing community complaints about the behaviour and conduct of employees.	Section 9.12 Section 9.4 Temporary Workforce Accommodation Facility Management Plan
E145	Before commencement of any work, a structural engineer must undertake condition surveys of all buildings, structures, utilities and the like identified in the documents listed in Condition A1 as being at risk of damage. The results of the surveys must be documented in a Condition Survey Report for each item surveyed. Copies of Condition Survey Reports must be provided to the owners of the items surveyed, and no later than one month before the commencement of construction.	Section 9.5.1
E146	After completion of construction, condition surveys of all items for which condition surveys were undertaken in accordance with Condition E145 of this approval must be undertaken by a structural engineer. The results of the surveys must be documented in a Condition Survey Report for each item surveyed. Copies of Condition Survey Reports must be provided to the landowners of the items surveyed, and no later than three (3) months following the completion of construction.	Section 9.5.1
E147	The Proponent, where liable, must rectify any property damage caused directly or indirectly (for example from vibration or from groundwater change) by the construction or operation at no cost to the owner. Alternatively the Proponent may pay compensation for the property damage as agreed with the property owner.	Section 9.5.1

2.2.3 Revised Mitigation Measures

The Revised Mitigation Measures relevant to the development of this NVMSP are listed in Table 2-3.

Table 2-3 Updated Mitigation Measures relevant to this NVMSP

Ref.	Issue	Mitigation Measure	Timing	NVMSP Reference
NV-1	Managing the potential for construction noise and vibration impacts	Location and activity-specific construction noise and vibration impact statements would be prepared based on a more detailed understanding of the construction methods, including the size and type of construction equipment, duration and timing of works, construction traffic associated with the proposal, and detailed reviews of local receivers as required.	Design Pre - construction	Section 9.1

NV-2	Minimising the potential for construction vibration (structural) impacts	Where vibration levels are predicted to exceed the screening criteria, a more detailed assessment of the structure and vibration monitoring would be carried out in accordance with the Inland Rail NSW Construction Noise and Vibration Management Framework, to ensure vibration levels remain below appropriate limits for that structure.	Design Pre - construction	Section 9.5 Appendix G – Section 5
NV-3	Blasting management	A blast management strategy would be prepared in accordance with relevant guidelines, and in consultation with the NSW Environment Protection Authority, and would include: - sequencing and review of trial blasting to inform blasting - regularity of blasting - intensity of blasting - periods of relief - blasting program. Traffic management during drilling and blasting which impact on TfNSW roads shall be carried out in accordance with AS 1742: Manual of Uniform Traffic Control Devices Monitoring of airblast and ground vibration caused by blasting would be conducted in line with AS 2187.2:2006: Storage and use Part 2: Explosives (Standards Australia, 2006). Monitoring would be conducted at the nearest sensitive receiver and non-sensitive receiver (if closer to the blasting zone than the closest sensitive receiver) and assessed in accordance with the criteria outlined in this document.	Design Pre - construction	Section 9.9
NV-6	Managing the potential for noise and vibration impacts during construction	A construction noise and vibration management plan would be prepared and implemented in accordance with the Inland Rail NSW Construction Noise and Vibration Management Framework. The plan would include measures, processes and responsibilities to manage and monitor noise and vibration, and minimise the potential for impacts during construction.	Pre - construction Construction	This NVMSP
NV-7	Impacts of out-of-hours work	An out-of-hours work (OOHW) protocol would be developed to define the process for considering, approving and managing OOHW, including implementation of feasible and reasonable measures and communication requirements to separately address the following situations: o works that routinely occur within the construction hours generally proposed for the proposal but outside Interim	Pre - construction Construction	Section 9.6 (OOHW Protocol) Appendix F (OOHW Protocol)

		Construction Noise Guideline standard hours ○ works (such as evening and night works during rail possessions) that would occur outside the construction hours proposed for the proposal Measures would be aimed at pro-active communication and engagement with potentially affected receivers, provision of respite periods and/or alternative accommodation for defined exceedance levels. All work outside the proposal construction hours would be undertaken in accordance with the Inland Rail NSW Construction Noise and Vibration Management Framework and in accordance with the OOHW protocol. The protocol would provide guidance for the preparation of OOHW plans for each construction work location and for key works, and guidance around mitigating impacts to receivers at Stockinbingal. OOHW plans would be prepared in consultation with key stakeholders (including the NSW Environment Protection Authority) and the community and incorporated into the construction noise and vibration management plan (mitigation measure NV-6).		
NV-8	Minimising the potential for construction vibration (structural) impacts	If vibration-generating activities are conducted within minimum working distances of a sensitive receiver, attended vibration measurements would be undertaken at the commencement of vibration-generating activities to confirm that structural vibration limits are within the acceptable range. Where vibration levels are found to be unacceptable, alternative work methods would be implemented so the vibration impacts are reduced to acceptable levels.	Construction	Section 9.5
NV-9	Minimising the potential for construction vibration (structural) impacts	Dilapidation surveys: Property condition surveys would be completed prior to any vibration-intensive work being carried out at or within the minimum distances that may cause cosmetic damage. Where a receiver is determined to be structurally unsound, a reassessment of the minimum working distances would be required. Minimum working distances would be confirmed prior to carrying out any vibration intensive work onsite.	Pre-construction Construction	Section 9.5.1
NV-10	Impacts on heritage items as a result of construction vibration	Prior to the commencement of vibration-intensive works within the minimum working distances for cosmetic damage for heritage items, the potential for damage to the item would be assessed. Where there is potential	Pre-construction Construction	Section 7.5.3 Section 9.12

		for damage, alternative methods that generate less vibration would be investigated and substituted where practicable. Where residual cosmetic damage risks remain, condition surveys would be carried out and vibration monitoring with real-time notification of exceedance would occur during the activity. Site activities would be modified, where practicable, to avoid exceeding the cosmetic damage criteria. Any identified vibration-related damage to the items would be rectified.		
NV-11	Minimising potential for impacts of blasting	Blasting would be undertaken during the recommended standard hours for blasting. Management measures defined by the blasting management strategy would be implemented.	Construction	Section 9.9
CR-1	Cumulative impacts	Coordination and consultation would occur with the proponents of any current development proposals, with potential for cumulative impacts at the appropriate project stages. If consultation with these proponents during detailed design confirms the likelihood of a cumulative impact, ongoing consultation and coordination would include: • provision of regular updates on construction planning for the proposal • identification of key potential conflict points with other construction projects • developing mitigation strategies in order to manage conflicts. Depending on the nature of the conflict, this could involve coordination of traffic management arrangements between projects, where reasonable and feasible.	Pre-construction Construction	Section 9.4

3 Introduction

3.1 Context

This NVMSP has been prepared for the construction of the Project. This NVMSP has been prepared to address the requirements related to noise and vibration management associated with CoA (SSI-9406), the measures listed in the Environmental Impact Statement (EIS) as amended by the Submissions Report (known as RMMs), Environmental Protection License (EPL), EPBC Controlled Action Approval (EPBC Referral 2018/8233) and all applicable legislation, guidelines, standards and specifications.

3.2 Background

3.2.1 The Project

The Project is in south-western New South Wales (NSW) in the Riverina region (refer to Figure 3-1). Illabo is a small town located at the southern end of the alignment 16 kilometres (km) north-east of Junee in the Junee Local Government Area (LGA).

Stockinbingal is situated at the northern end of the Project, approximately 20 km north-west of Cootamundra in the Cootamundra–Gundagai Regional LGA. The major towns surrounding the Project are Wagga Wagga, about 50 km to the south, Young to the north-east and Cootamundra to the east.

The Project comprises a new rail corridor that would connect Illabo to Stockinbingal. The alignment branches out from the existing rail line north-east of Illabo and travels north to join the Stockinbingal–Parkes Line west of Stockinbingal. The route will travel primarily through undeveloped land predominantly used for agriculture.

The Project includes modifications to the tie-in points at Illabo and Stockinbingal to allow for trains to safely enter and exit the Illabo to Stockinbingal section of Inland Rail. The alignment also crosses several local and private roads, watercourses and privately owned properties. Additionally, no major towns are located within the Project site between Illabo and Stockinbingal.

The Project will include a total extent of approximately 42.5 km, including 39 km of new, greenfield railway which will incorporate the following key features:

- single track standard gauge on a combination of existing ground level embankments and within cuttings
- new bridges and road overpasses
- crossing loop and maintenance siding
- new level crossings, stock crossings and upgrades to existing level crossings
- new major stormwater diversion and minor drainage works associated with installation and upgrades to culverts.

The Project will also include upgrades to approximately 3 km of existing track associated with tie-in works and construction of an additional 1.7 km of new track to maintain the existing rail network connections. Road upgrade works will also be undertaken to re-align approximately 1.4 km of Burley Griffin Way to provide a road-over-rail bridge at Stockinbingal. Re-alignment of Ironbong Road will also be completed to allow for safe sight lines. A temporary workforce accommodation camp will be constructed to house the workforce for the duration of the Project.

A detailed Project description is provided in Section 3 of the Construction Environmental Management Plan (CEMP). Key features of the Project are shown on Figure 3-2.

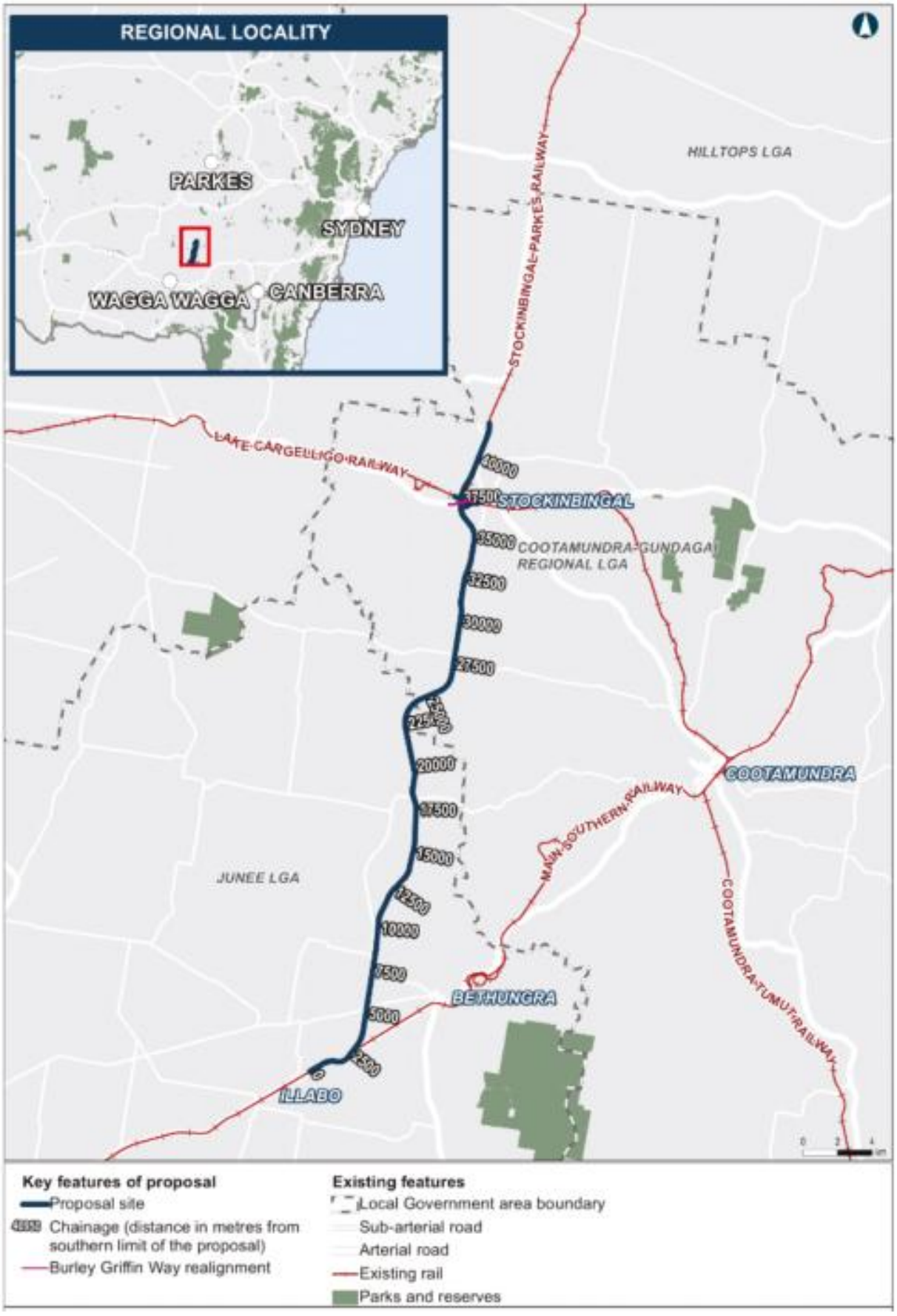


Figure 3-1 Project Locality (Source: Illabo to Stockinbingal - Environmental Impact Statement, 2022)

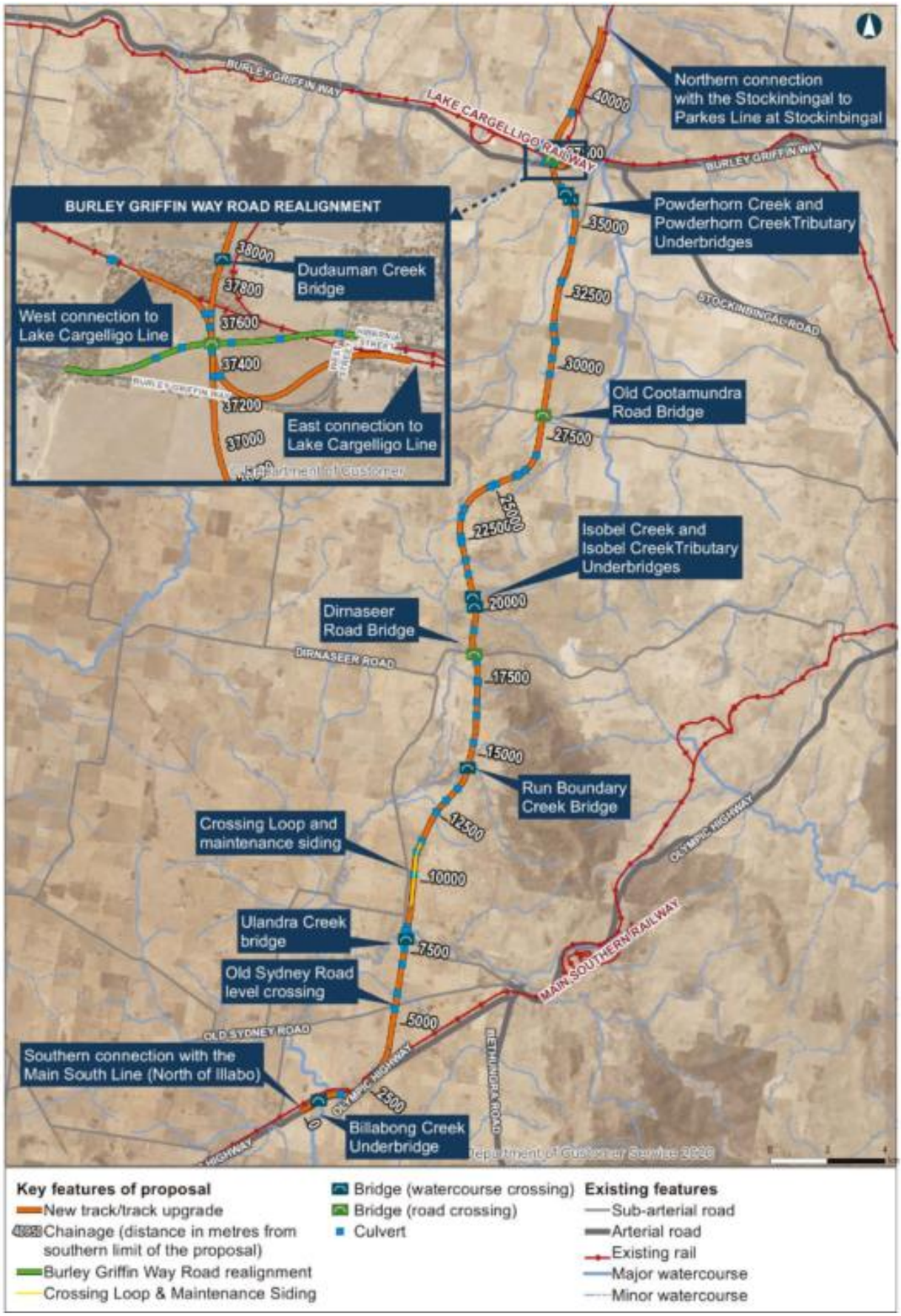


Figure 3-2 Key Project Features (Source: Illabo to Stockinbingal - Environmental Impact Statement, 2022)

3.2.2 Statutory Context

The Project was declared Critical State Significant Infrastructure (CSSI) in 2021, requiring approval under Division 5.2 of the *NSW Environmental Planning and Assessment Act 1979*. In accordance with the Secretary's Environmental Assessment Requirements (SEARs) (dated 30 April 2021), an EIS was prepared by Australian Rail Track Corporation (ARTC) in August 2022. The EIS was exhibited by the Department of Planning, Housing and Infrastructure (DPHI) for a period of six (6) weeks, commencing on 14 September 2022 and concluding on 26 October 2022.

Following public exhibition of the EIS, ARTC prepared a Submissions Report to respond to submissions and describe Project design refinements.

Approval for the Project was granted on 4 September 2024 by the Minister for Planning (SSI-9406) and was subject to a number of CoAs.

The Project was determined to be a controlled action under the EPBC Act. The Project received EPBC Controlled Action Approval from Department of Climate Change, Energy, the Environment and Water (DCCEEW) (EPBC Referral 2018/8233) on 28 October 2024.

3.3 Scope of the plan

This NVMSP will outline how the Project will minimise environmental risks and achieve environmental outcomes associated with noise and vibration management. This NVMSP:

- Provides a description of Project construction activities
- Details environmental obligations attached to the Project including the Infrastructure Approval (SSI-9406), Commonwealth EPBC Approval (EPBC 2018/8233), RMMs, ARTC/Inland Rail Pty Ltd (IRPL) specifications and any other relevant documentation.
- Identifies legislation and external licenses, permits and approvals required for the Project.
- Describes objectives, targets, and the Project specific noise and vibration criteria to be implemented throughout the Project.
- Describes construction activities and the associated environmental aspects and impacts. This includes preparation of a Construction Noise and Vibration Impact Statement (CNVIS) for the Project to identify impacts to sensitive receivers.
- Details the noise model which will be developed for the Project.
- Detail general mitigation measures to be implemented to minimise the impacts of noise and vibration.
- Describe how noise and vibration will be considered in design of the Project.
- Describe the noise and vibration monitoring program.
- Describe compliance management items including roles and responsibilities, training, monitoring and inspections, non-compliance protocols, incident response, auditing, reporting complaints management etc.
- Describe review and improvement requirements for the Project.

3.4 Environmental Management Systems Overview

3.4.1 Environmental Management System

The Project Environmental Management System (EMS) is based on the ISO 14001 accredited JHG EMS, which itself forms part of the overall JHG Integrated Management System (IMS), tailored to satisfy Project-specific requirements. It provides a framework to ensure an integrated approach to meeting Project requirements and defines how the Project will minimise impacts to the environment. It comprises a

combination of governance documentation, Project-specific management plans (including this NVMSP), procedures and tools.

The basis for the EMS is the concept of Plan-Do-Check-Act (PDCA), as shown in Figure 3-3.

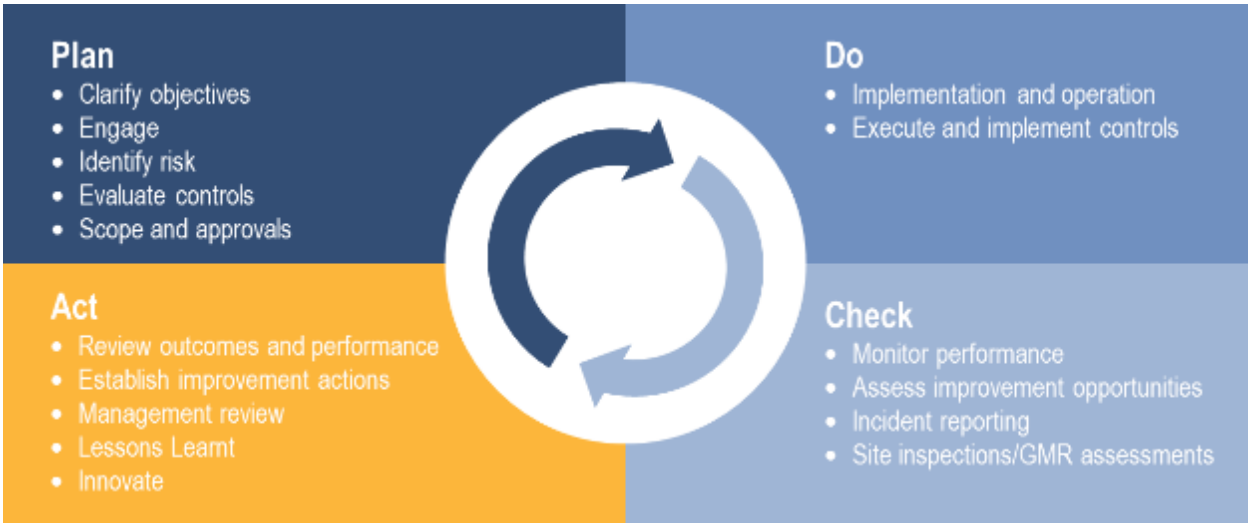


Figure 3-3 – PDCA model

The PDCA model provides an iterative process to achieve continual improvement. As applied to the Project environmental processes, it can be briefly described as follows

- **Plan**: Establish environmental objectives and processes necessary to deliver results in accordance with the JHG environmental policy.
- **Do**: Implement the environmental processes as planned.
- **Check**: Monitor and measure processes against the environmental policy, including its commitments, environmental objectives, and operating criteria, and report the results.
- **Act:** to continually improve the environmental processes.

The framework introduced in ISO14001 is integrated into a PDCA model within the EMS and in turn the Project CEMP and this NVMSP.

In accordance with the JHG Environmental Policy (refer to Appendix A5 of the CEMP), the Project will:

- Continually improve the EMS to enhance performance, through management review and CEMP and NVMSP revisions
- Maintain third party certification of the overarching EMS to ISO 14001 with independent verification of implementation and effectiveness.

The EMS provides structure to environmental management of the Project and covers areas such as training, record management, inspections, objectives, and policies. This NVMSP has been prepared as part of the EMS using JHG documentation as the basis for some documents (Figure 3-4).

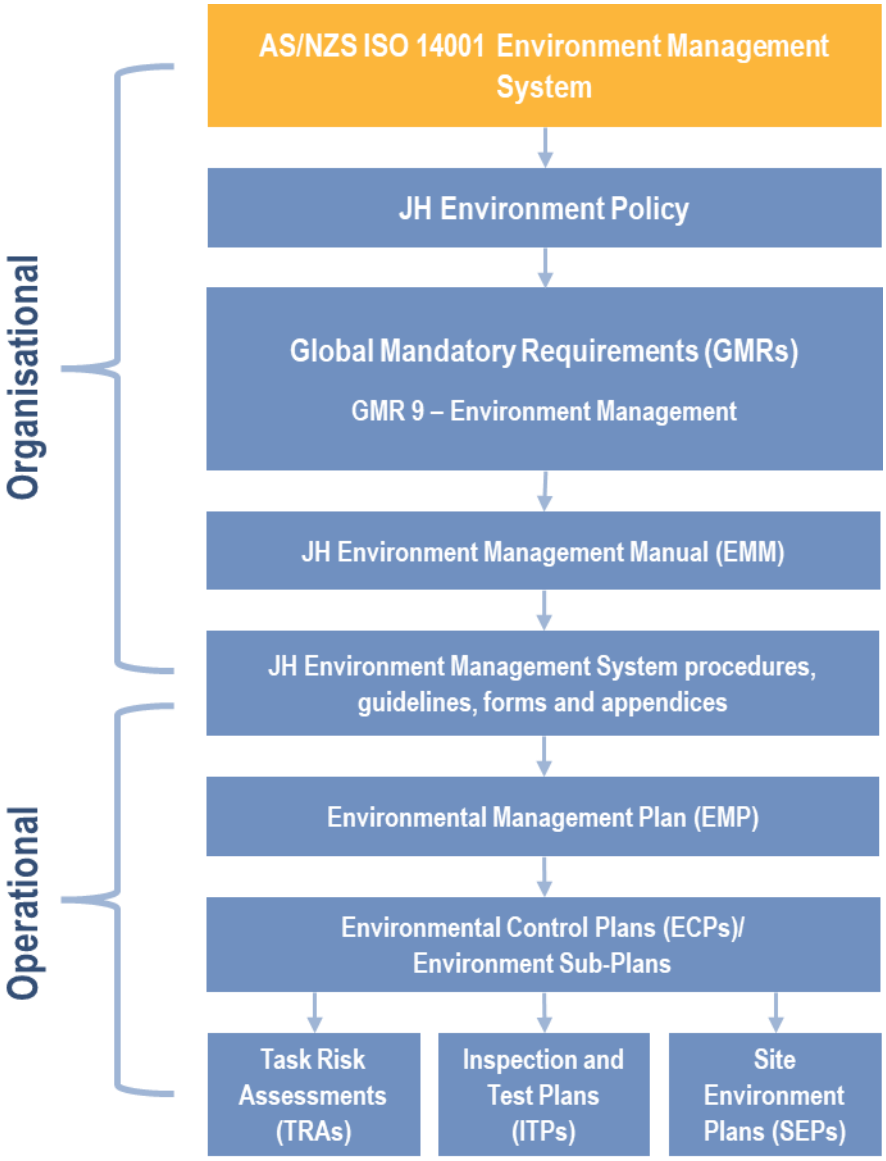


Figure 3-4 EMS structure

The EMS contains policies, standards, manuals, plans, procedures, processes, and other documents that enable the Project to achieve its objectives through planned and controlled processes.

3.4.2 Global Mandatory Requirements

JHG's Global Mandatory Requirements (GMRs) outline the control strategies and minimum standards for managing, and where possible, eliminating key risks across the Project. GMRs which are relevant to the NVMSP and will be implemented include GMR 9 – Environmental Management. This GMR has been developed to:

- Minimise the impact of our activities on the environment and communities.
- Be a reliable and trustworthy partner to our customers, dedicated to providing environmentally sustainable solutions throughout our diverse business.

The GMR's form part of the Project EMS and are to be used as tools in development of planning documents for management of environmental risks / impacts. Requirements of the GMR are integrated into this NVMSP.

3.4.3 Plan preparation, endorsement and approval

This NVMSP has been prepared by suitably qualified personnel from Inti Pty Ltd, JHG, Hutchinson Weller and has been endorsed by the Environmental Representative (ER). The NVMSP will then be submitted to the Planning Secretary for approval no later than one month before the commencement of construction. In accordance with CoA 15, construction will not commence until the CEMP and all CEMP Sub-plans have been approved by the Planning Secretary.

3.4.4 Interactions with other management plans and strategies

This NVMSP is a sub-plan to the CEMP. This NVMSP is also associated with the following documents which have been reviewed and incorporated into this NVMSP where applicable:

- Chapter 16 – Noise and Vibration (from the EIS)
- Chapter 27 – Environmental Management and Mitigation (from the EIS)
- Chapter 17 – Social and Economic (from the EIS)
- Appendix H - Construction Noise and Vibration Framework (from the EIS)
- Tech paper 8 – Construction Noise and Vibration (from the EIS)
- Appendix F – Noise and Vibration Assessment Clarifications (Response to Submissions)
- Appendix B – Revised Mitigation Measures (Response to Submissions)
- Out of Hours Work Protocol (OOHWP) (refer to Appendix E)
- Construction Traffic, Transport and Access Management Sub-plan
- Noise and Vibration Monitoring Program (refer to Appendix G)
- Blast Management Strategy (Section 9.9)
- Community Consultation Strategy (CCS)
- Social Impact Management Plan (SIMP)

3.5 Consultation

In accordance with CoA C17 of the Infrastructure Approval (SSI-9406), JHG is required to consult with the following agencies in relation to this NVMSP.

- Relevant councils, including:
  - Junee Shire Council
  - Cootamundra Gundagai Council

Where future comments are received from an agency or group that has been requested to provide comment on this Plan, JHG will consider the comments and incorporate them into the Plan where relevant.

Where works are being undertaken in accordance with CoA E2 (Monday to Sunday; 6am to 6pm), consultation with affected receivers must occur at least every three months, or more frequently in response to complaints, to determine appropriate respite or additional mitigation measures. In consulting with the affected receivers, the following must be provided:

- a progressive schedule of anticipated hours of works beyond those permitted by CoA E1 for periods of no less than three months;
- a description of the anticipated construction activities, location and duration of the work;
- the noise characteristics and likely noise levels of the work;

- the practical measures implemented to minimise noisy work and heavy vehicle movements before 7:00am and any time on a Sunday; and
- mitigation and management measures which aim to achieve the relevant noise management levels identified in the documents listed under CoA A1 (including the circumstances in which respite or other offers will be available and details about how the affected receivers can access these).

Evidence of consultation and the outcomes, including any changes to construction practices or staging, must be reviewed by the ER and provided to the Planning Secretary on request.

It's noted that there are additional requirements for works undertaken in accordance with CoA E2 which are detailed in Section 7.2.

4 Purpose and Objectives

4.1 Purpose

The purpose of this NVMSP is to describe how noise and vibration will be minimised and/or managed during the construction of the Project in accordance with requirements detailed in Section 4.2, with consideration given to the Specific, Measurable, Achievable, Realistic and Timely (**SMART**) principles.

These include:

- **S**pecific – outlining mitigation and management measures during construction as identified within the EIS.
- **M**easurable – Inspection and monitoring requirements detailed in Section 10.3 of this NVMSP include specific measures or indicators for which inspection and monitoring requirements will be triggered. Provision of Project-specific inspection and monitoring requirements for noise and vibration during construction are also included in the Noise Monitoring Program (detailed in Appendix G).
- **Ac**hievable – Ongoing compliance with the relevant CoA outlined in the Project approvals (Section 2.2 of this NVMSP) is achievable throughout the delivery of the Project and represents the minimum requirements to be implemented by JHG.
- **R**elevant - The management measures outlined in Section 9 of this Plan represent JHG's approach to monitoring and tracking against the objectives, targets and environmental performance outcomes (which are identified in Section 4 of this NVMSP).
- **T**ime-bound – On a broader scale, the management measures set out within this NVMSP are required to be implemented for the duration of construction, setting a clear and defined time frame and includes reference to other temporal applications, including during detailed design, pre-construction, post-construction and/or operation.

4.2 Objectives

The objective of this NVMSP is to provide a tool that outlines the mitigation and management measures described within the following documents for implementation during construction activities:

- The EIS prepared for the Project
- The Submissions Report prepared for the Project, including the RMMs
- Infrastructure Approval (SSI-9409) and associated Minister's CoA
- Commonwealth EPBC Controlled Action Approval (EPBC 2018/8233)
- Relevant conditions of the Project's EPL
- ARTC/IRPL Specifications

- Legislative requirements detailed in Section 5 of this NVMSP

4.2.1 Performance Outcomes

Project design and construction will be prepared in consideration of the 'desired performance outcomes' provided in the SEARs. Project-specific performance outcomes are further defined in Chapter 27 (Table 27.7) of the EIS. The environmental performance outcomes related to noise and vibration for the Project are included in the Table 4-1 below.

Table 4-1 Performance outcomes

Item	I2S Specific Environmental Performance Outcomes	Where addressed
Noise and Vibration - amenity	The proposal minimises impacts to the local community as far as practicable by: • controlling construction and operational noise and vibration at the source • controlling construction and operational noise and vibration on the source to receiver transmission path • implementing feasible and reasonable measures to minimise the noise and vibration impacts of construction and operational activities on local sensitive receivers.	Section 9
Noise and Vibration - structural	The proposal minimises impacts to structures as far as practicable by: • controlling vibration at the source • controlling vibration on the source to receiver transmission path • implementing feasible and reasonable measures to minimise vibration impacts of construction activities on structures.	Section 9

4.3 Targets

The following targets related to noise and vibration matters have been identified for implementation during the Project:

- Compliance with the relevant legislative requirements, Infrastructure Approval (SSI-9406), EPBC Controlled Action Approval (EPBC 2018/8233), relevant RMMs and the Project EPL.
- Compliance with noise and vibration specific criteria as detailed in Section 7.
- Mitigation measures specified in the documents listed in Section 9 of this NVMSP must be implemented to minimise the impact of noise and vibration during construction.
- No structural or cosmetic damage to any building or structures during the construction phase.
- Training on noise and vibration management provided to all relevant construction personnel through site inductions, awareness training and toolboxes.
- Minimise stakeholder complaints and ensure all complaints are addressed in a timely and appropriate manner, in accordance with the Community Consultation Strategy (CCS).
- Compliance with John Holland Group (JHG) GMRs.

5 Environmental Requirements

5.1 Relevant legislation and Guidelines

The primary legislation, guidelines and standards relevant to noise and vibration management are presented in Table 5-1. Also refer to Appendix A1 of the CEMP for a full register of legal and other requirements for the Project.

Table 5-1 Principal legislation and guidelines relevant to NVMSP

Legislation	➢ *Environmental Planning and Assessment Act 1979* (EP&A Act) ➢ *Protection of the Environment Operations Act 1997* (POEO Act) ➢ *Protection of the Environment Operations (Noise Control) Regulation 2017*
Guidelines and Specifications	➢ *Interim Construction Noise Guideline (Department of Environment and Climate Change* (DECC), NSW, 2009) (ICNG) ➢ *NSW Road Noise Policy* (NSW EPA, 2011) (RNP) ➢ *Assessing Vibration: a technical guideline* (Department of Environment and Conservation, NSW, 2006) ➢ *German Standard DIN 4150-3:2016 Structural Vibration – effects of vibration on structures* (GS DIN 4150-3) ➢ *British Standard BS 7385.2:1993—Evaluation and Measurement for Vibration in Buildings: Part 2—Guide to damage levels from ground borne vibration* (British Standards Institute, 1993) (BS 7385.2) ➢ *British Standard BS 5228.2:2009—Code of Practice for noise and vibration control on construction and open sites: Part 2 Vibration* (British Standards Institute, 2009) (BS 5228.2) ➢ *British Standard BS 6472:2008—Guide to Evaluation of Human Exposure to Vibration in Buildings (1 Hz to 80 Hz)* (British Standards Institute, 2008) (BS 6472) ➢ *Technical Basis for Guidelines to Minimise Annoyance Due to Blasting Overpressure and Ground Vibration* (ANZECC 1990) or other limit set by conditions of consent *AS 2187: Part 2-2006 'Explosives - Storage and Use - Part 2: Use of Explosives'* ➢ *Australian Standard 2187: Part 2-2006 'Explosives - Storage and Use - Part 2: Use of Explosives*' (AS 2187) ➢ *Australian Standard AS 2436-2010 – Guide to noise and vibration control on construction, demolition and maintenance sites* (AS 2436) ➢ *Australian Standard AS 1055—2018 Acoustic—Description and Measurement of Environmental Noise* (AS 1055) ➢ *Noise Policy for Industry* (NSW Environmental Protection Authority (NSW EPA), 2017) (NPfI) ➢ *Rail Infrastructure Noise Guideline* (NSW EPA, 2013) ➢ *Draft Construction Noise Guideline* (NSW EPA, 2020) ➢ *Inland Rail Noise and Vibration Management Strategy* (0-0000-900-EMN-00-ST-0001) (IR-NVMS) ➢ *Inland Rail Specification – NSW Construction Noise and Vibration Management Framework, Revision 2 dated 03/09/2024* (0-0000-902-EMN-00-SP-0001) (CNVMF)

	➢ *NSW – Legislation, Guidelines and Policies - Noise and Vibration Guideline* (5-0000-902-EEC-00-GU-0005)

5.2 Environment Protection Licence

The Project will be subject to an EPL under the *Protection of Environmental Operations Act 1997* (POEO Act) as a Scheduled Activity for 'railway activities – rail infrastructure construction'. The EPL will be obtained prior to Construction commencement and will include clauses requiring the licensee to minimise the emission of pollution from the premises. Where required, this NVMSP will be updated to include the relevant conditions. More information about the EPL is also included in the Project CEMP.

5.3 Sustainability

In accordance with CoA E148, JHG is required to achieve a minimum 'excellent' rating for both 'Design' and 'As built' civil works, under the Infrastructure Sustainability Council (ISC) of Australia infrastructure rating tool, or through the use of an equivalent process or an equivalent level of performance using a demonstrated equivalent rating tool. JHG will be delivering the ISC rating using v1.2.

The implementation of ISC requirements is embedded across all relevant works and environmental management practices. Noise and vibration will be managed under the relevant credits including Dis-2 and Dis-3 and will be aligned with commitments made in the Project Sustainability Management Plan. Some key requirements, goals and measures relevant to noise and vibration are provided in Table 5-2.

Table 5-2 ISC Requirements

Credit	Credit Name	Benchmark	Must Statement (Updated with Rulings August 2023)	Where addressed
Dis-2	Noise	Measures to mitigate noise during construction and operation have been identified and implemented AND Monitoring of noise is undertaken at appropriate intervals and in response to complaints during construction	• 'The assessor must provide evidence to show that the requirements of the guideline have been met. • Noise goals are limits that must not be exceeded or noise levels that Projects aim to keep within.	Section 9.12 Section 10.3 Appendix G
		For construction, modelling and monitoring demonstrates no recurring or major divergences from the noise management process in ISC approved noise guidelines AND For operation, modelling demonstrates no recurring or major exceedances of noise goals	• A divergence from the noise management process is defined as a goal being predicted to be exceeded and one or more of the relevant mitigation measures not being implemented. • Implemented means implemented as part of the relevant construction activity, rather than in response to monitoring 'discovering' an exceedance. • A recurring divergence is defined as more than two divergences of a similar nature within a 12month period. A major divergence is defined as a noise goal being predicted to be exceeded by more than 10 dB(A) and one or more of the additional mitigation measures not being implemented. • Exceedances are measured noise levels greater than 2 dBA above the noise goals. • Recurring exceedances are defined as more than two exceedances of a similar nature within a 12-month period. Major exceedances are defined as exceeding noise goals or objectives by more than 10 dB(A)	Section 10.5
		For construction, modelling and monitoring demonstrates no divergence from the noise management process in ISC approved noise guidelines AND For operation, modelling demonstrates no exceedances of noise goals.		Section 10.5
Dis-3	Vibration	Measures to mitigate vibration during construction and operation have been identified and implemented AND Monitoring of vibration is undertaken at appropriate intervals and in response to complaints during construction	• Vibration goals are limits that must not be exceeded or vibration levels which the Project aims to keep within.	Section 9.5 Section 9.12 Section 10.3 Appendix G

		For construction, modelling and monitoring demonstrates no exceedances of vibration goals for structural damage to buildings and structures. AND For operation, modelling and monitoring demonstrates no recurring or major exceedances of vibration goals for human comfort criteria AND No physical damage has been caused to any buildings or structures by vibration caused by construction or operation	• Exceedances are measured vibration levels above the vibration goals. Recurring exceedances are defined as more than two of a similar type within a 12 month period. Major exceedances are defined as more than doubling the vibration goals. • For Design and As Built, where the risk of vibration impacts from operations is insignificant, modelling of operational vibration impacts is not required. Suitable evidence to demonstrate that the risk vibration is insignificant must be provided for verification. Evidence -could include an impact assessment, expert advice or a vibration management plan. Other types of evidence would also be appropriate. Modelling and monitoring of construction impacts would still be required unless vibration impacts generally can be shown to be low or nil materiality.	Section 10.5
		For operation, modelling demonstrates no exceedances of vibration goals for human comfort criteria		N/A

Note:

1) Additional Guidance, IS Technical Manual v1.2 (August 2023 Rulings)

6 Existing Environment

The following information has been summarised from the EIS Chapter 16 – Noise and Vibration, and other relevant documentation detailed in Section 3.4.4.

6.1 Existing Noise Environment

The existing noise environment is typical of a rural landscape, zoned as Primary Production (RU1). Land within Stockinbingal and Illabo are zoned as Village (RU5), Public Recreation (RE1), Large Lot Residential (R5). Most of the Project site is sparsely settled and experiences little road traffic noise generally leading to low background noise levels.

Burley Griffin Way, Olympic Highway, and the existing rail lines are the primary noise sources within the Project site which are zoned as Infrastructure (SP2), however, traffic along these roads is typically of low volume and does not significantly impact the background noise levels of the surrounding environment.

The most significant existing sources of vibration along the Proposal site include those generated by traffic on the local road network and existing rail operations at Illabo and Stockinbingal. Although not measured directly, vibration from existing road and rail sources would be below the structural damage and human comfort criteria for all vibration-sensitive receivers (refer to section 3.1.2 of Technical Paper 8: Construction Noise and Vibration Impact).

6.2 Sensitive Receivers

217 sensitive receivers have been identified though aerial-imagery combined with the Geocoded National Address File (G-NAF) within a 2.6 kilometre radius of the Project area, with most in the town of Stockinbingal. Receivers generally consist of low-density residential areas, predominantly in the form of single storey residential dwellings. The distance to the nearest residential property is about 25 m from the Project boundary. Residential receivers outside of Stockinbingal are typically isolated rural residential dwellings in open farmland. Non-residential, sensitive receivers include commercial/industrial buildings, places of worship, educational and recreation as in Table 6-1. Heritage structures that may be sensitive to vibration are listed in Table 6-2.

Table 6-1 Non–residential sensitive receivers sourced from the EIS Chapter 16

Sensitive receiver type	Location	Distance from Project
Various commercial/industrial buildings	Hibernia Street and Martin Street	Between 10m and 300m
Passive recreation	Stockinbingal Cemetery	300m
Place of worship	St Joseph's Catholic Church	500m
Place of worship	St James Anglican Church	550m
Active recreation	Britannia St Tennis Courts	250m
Active recreation	Stockinbingal Bowling Club	100m
Active recreation	Stockinbingal Recreation Ground	1000m
Active recreation	Stockinbingal Public School	300m
Education	Stockinbingal Public School	300m

Table 6-2 Heritage structures potentially at risk from vibration sourced from the EIS Chapter 16

Heritage type	Location (source)	Distance from Project
Non-Aboriginal heritage	Stockinbingal Railway Station (Cootamundra LEP (i78))	Within Project boundary
Non-Aboriginal heritage	Stockinbingal Heritage Conservation Area (Cootamundra LEP (C3))	Within Project boundary
Non-Aboriginal heritage	Cohen's Trade Palace, CWA Rooms (Cootamundra LEP (i71))	10m
Non-Aboriginal heritage	Ellwood's Hall (Cootamundra LEP (i82))	40m
Non-Aboriginal heritage	Bank of NSW and residence (Cootamundra LEP (i73))	15m
Non-Aboriginal heritage	Baker, William Fallon (Cootamundra LEP (i75))	30m
Non-Aboriginal heritage	Stock and station (former Powderhorn Museum) (Cootamundra LEP (i76))	60m
Non-Aboriginal heritage	Post office and residence (Cootamundra LEP (i66))	80m
Non-Aboriginal heritage	Stockinbingal Cemetery	250m

6.3 Existing noise levels (background/ambient)

Noise monitoring was carried out at six locations in February 2019 as part of the EIS. Locations were selected to represent the existing ambient (background) noise environment in the Project area, considering factors such as topography, proximity to the Project area, and contributions from other noise sources like road, industrial, or rail noise.

Unattended noise loggers recorded noise levels for various descriptors over a two-week period. The results are summarised in Table 6-3 with monitoring locations illustrated in Figure 6-1.

Operator-attended noise surveys were also conducted at each location to characterise the noise environment, identify noise sources, and validate unattended noise logger measurements. Despite the time since initial monitoring, no significant developments have occurred in the study area and measured levels represent the current acoustic environment.

Table 6-3 Summary of unattended noise monitoring sourced from the EIS Chapter 8

Noise monitor ID	RBL dB(A)			Ambient noise level dB(A)		
	Day	Evening	Night	Day	Evening	Night
NM01	27	30	28	45	45	47
NM02	28	28	29	46	49	45
NM03	29	28	29	46	49	45
NM04	30	26	22	60	58	53
NM05	27	27	22	43	42	38

Noise monitor ID	RBL dB(A)			Ambient noise level dB(A)		
	Day	Evening	Night	Day	Evening	Night
NM06	27	22	19	57	57	52

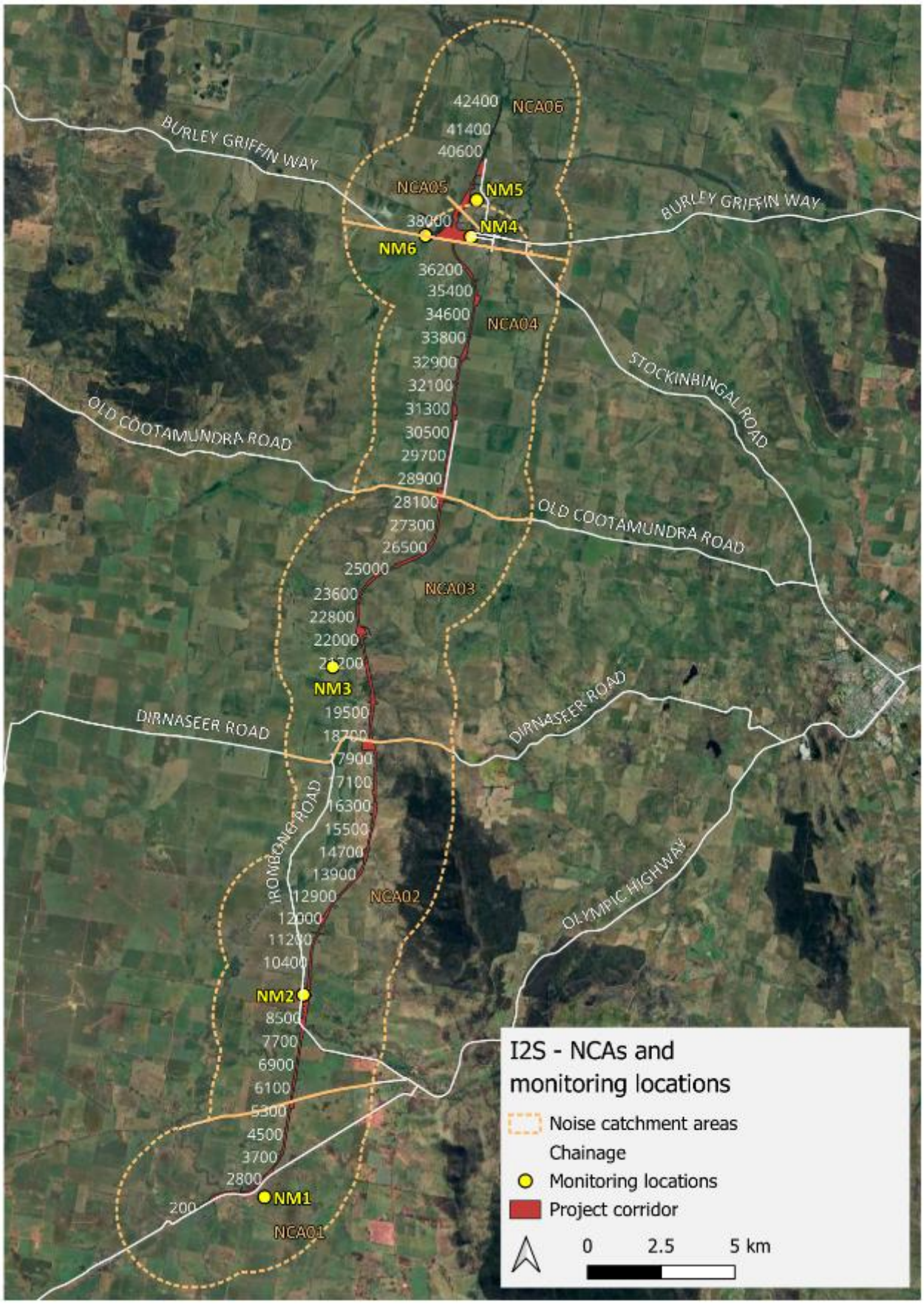


Figure 6-1 NCAs and monitoring locations

6.3.1 Noise Catchment Areas

Sensitive noise and vibration receivers near the project have been divided into Noise Catchment Areas (NCAs) to group receivers with similar land use and ambient noise environments, facilitating application of representative Noise Management Levels (NMLs) and ensuring a more targeted and efficient assessment of potential noise impacts.

The project has been divided into six NCAs, as illustrated in Figure 6-1, and summarised in Table 6-4.

Table 6-4 Noise catchment area summary

Noise Catchment Area	Corresponding Noise Monitor ID	Description
NCA01	NM1	12 scattered rural receivers from south of the Olympic Highway to Old Sydney Road.
NCA02	NM2	16 scattered rural receivers between Old Sydney Road and Dirnaseer Road.
NCA03	NM3	7 scattered rural receivers between Old Sydney Dirnaseer Road and Old Cootamundra Road
NCA04	NM6	16 scattered rural receivers between Old Cootamundra Road and Burley Griffen Way
NCA05	NM4	Stockinbingal town area – 146 sensitive receivers including residences (125), educational (1),recreational (4) and commercial (12)
NCA06	NM5	20 scattered rural receivers north of Stockinbingal township and Burley Griffen Way to the northern extent of the project.

7 Noise and Vibration Criteria

7.1 Overview

The policies and standards outlined in Table 7-1 have been used to establish construction noise and vibration management objectives for the Project.

Table 7-1 Noise and vibration guidelines application to this Project

Environment Impact	
Construction hours	Infrastructure Approval (SSI-9406) Project EPL
Airborne noise	Infrastructure Approval (SSI-9406) Interim Construction Noise Guideline (ICNG)
Sleep disturbance and maximum noise events	No specific guidelines. Guidance taken from the ICNG and the Road Noise Policy (RNP)
Ground-borne noise	Infrastructure Approval (SSI-9406) ICNG
Construction-related road traffic noise	No specific guidelines. Guidance taken from the ICNG and RNP
Vibration (disturbance to building occupants)	Infrastructure Approval (SSI-9406) NSW DECC's *Assessing vibration; a technical guideline, published in February 2006*, in line with CoA E7, which incorporates *British Standard BS 6472-2008, Evaluation of human exposure to vibration in buildings (1-80Hz)*
Vibration (structural damage to buildings)	Infrastructure Approval (SSI-9406) *British Standard 7385:1993 Evaluation and measurement of vibration in buildings – Part 2 Guide to damage from ground-borne vibration* DIN4150-2016 Structural vibration Part 3: Effects of vibration on Structures (for structurally unsound heritage structures)
Vibration (structural damage to buried services)	*German Standard DIN 4150:1999 – Part 3 Structural vibration in buildings – Effects on structures*
Vibration (sensitive scientific and medical equipment)	*ASHRAE Applications Handbook (SI) 2003, Chapter 47 Sound and Vibration Control Gordon GC 28 September 1999 Generic Vibration Criteria for Vibration Sensitive Equipment* *Australian Standard 2834-1995 Computer Accommodation, Chapter 2.9 Vibration*

7.2 Construction Hours

7.2.1 Permitted work hours

Permitted works hours for the Project, in accordance with CoA E1 to E14, are summarised in Table 7-2.

Standard hours for the Project are 7am-6pm Monday to Saturday (excluding public holidays) (as per Condition E1). Despite this, subject to compliance with Condition E2, works can be completed between 6am and 6pm Monday to Sunday. On a fortnightly basis, there will be no works between 6pm Saturday and 7am Monday.

These construction hours differ from standard construction hours, with an hour before 7am and work during weekends. Implemented mitigation measures will take into consideration of noise and vibration impacts during these times as discussed in Section 9.

Works undertaken outside these standard approved hours, or Out-of-Hours Work (OOHW), will only be performed under the out-of-hours works protocol described in Section 9.6 or in accordance with an EPL.

Table 7-2 Permitted work hours for the Project

Applicable Construction Period	CoA	Applicable Working Hours		
		Monday- Friday	Saturday	Sunday / Public Holiday
Standard construction hours	E1	7:00am to 6:00pm	7:00am to 6:00pm	No work
CoA E2 construction hours[1]	E2	6:00am to 6:00pm	6:00am to 6:00pm	6:00am to 6:00pm
Highly noise intensive works[2]	E4	8:00am to 6:00pm	8:00am to 1:00pm	No work
Standard Blasting Hours	Nil	9.00am to 5.00pm	9.00am to 1.00pm	No Blasting

Notes:
1) In accordance with CoA E2, works can only be undertaken during these times provided:
- a) no work affects any given receiver between the hours of 6:00 pm on a Saturday and 7:00 am on a Monday every second week;
- b) only low impact noise activities (defined in Condition E3(b)) are permitted between 6.00 am and 7.00 am; and
- c) consultation with affected receivers occurs at least every three months, or more frequently following complaints recorded in the Complaints Register required by Condition B8, to determine respite or additional mitigation measures.

In consulting with the affected receivers, the following must be provided:
(i) a progressive schedule of anticipated hours of works beyond those permitted by Condition E1 for periods of no less than three months;
(ii) a description of the anticipated construction activities, location and duration of the work;
(iii) the noise characteristics and likely noise levels of the work;
(iv) the practical measures implemented to minimise noisy work and heavy vehicle movements before 7:00am and any time on a Sunday; and
(v) mitigation and management measures which aim to achieve the relevant noise management levels identified in the documents listed under Condition A1 (including the circumstances in which respite or other offers will be available and details about how the affected receivers can access these).
Evidence of consultation and the outcomes, including any changes to construction practices or staging, must be reviewed by the ER and provided to the Planning Secretary on request.
2) CoA E4, refers to highly noise intensive works that result in an exceedance of the applicable NML at same receiver.
Must only be undertaken in continuous blocks not exceeding three hours each with a minimum respite of at least one hour between each block of highly noise intensive work. For the purpose of this condition, 'continuous' includes any period during which there is less than a one-hour respite between ceasing and recommencing any work that is the subject of this condition.

7.2.2 Variation to work hours

Certain activities may be justified out outside of standard construction hours for and Condition E3 provides for specific circumstances including the following.

a) Safety and Emergencies, including:

i. For the delivery of materials required by the NSW Police Force or other authority for safety reasons; or

ii. Where it is required in an emergency to avoid injury or the loss of life, to avoid damage or loss of property or to prevent environmental harm.

On becoming aware of the need for emergency work in accordance with (a), the ER, the Planning Secretary and the EPA must be notified of the reasons for such work. Best endeavours must be used to notify all noise and/or vibration affected residents and owners/occupiers of properties identified sensitive land use(s) of the likely impact and duration of those work.

b) Low impact noise activities, that meet the following criteria:

i. Construction that causes LAeq(15 minute) noise levels:

- No more than 5 dB(A) above the rating background level at any residence in accordance with the ICNG, and
- No more than the 'Noise affected' NMLs specified in Table 3 of the ICNG at other sensitive land use(s); and

ii. Construction that causes LAFmax noise levels no more than 15 dB above the rating background level at any residence during the night period as defined in the Noise Policy for Industry. and

iii. Construction that causes:

- Continuous or impulsive vibration values, measured at the most affected residence no more than the preferred values for human exposure to vibration, specified in Table 2.2 of Assessing Vibration: a technical guideline (DEC, 2006), or
- Intermittent vibration values measured at the most affected residence no more than the preferred values for human exposure to vibration, specified in Table 2.4 of Assessing Vibration: a technical guideline (DEC, 2006).

c) By Approval or agreement, including:

i. Where different construction hours are permitted under an EPL in force in respect of the CSSI; or

ii. Works which are not subject to an EPL that are approved under an Out-of-Hours Work Protocol as required by Condition E5; or

iii. Negotiated agreements with directly affected residents and sensitive land use(s).

On becoming aware of the need for emergency work in accordance with Condition E3(a), the ER, the Planning Secretary and the EPA must be notified of the reasons for such work. JHG will use best endeavours to notify as soon as practicable all noise and/or vibration affected sensitive land uses of the likely impact and duration of those work.

All negotiated agreements with owners and occupiers of sensitive land uses to carry out work in accordance with Condition E3(c)(iii) must be in writing, and include the hours, duration and likely noise levels compared to the NML defined in the ICNG. The negotiated agreement must be agreed and finalised before the commencement of work affecting the sensitive land uses.

7.3 Construction Noise Objectives

The ICNG provides guidelines for the assessment and management of construction noise. The ICNG focuses on applying a range of work practices to minimise construction noise impacts rather than focusing on achieving numeric noise levels. The main objectives of the ICNG are to:

- Identify and minimise noise from construction works
- Focus on applying all 'feasible' and 'reasonable' work practices to minimise construction noise impacts
- Encourage construction during the recommended standard hours only, unless approval is given for works that cannot be undertaken during these hours
- Reduce time spent dealing with complaints at the Project implementation stage
- Provide flexibility in selecting site-specific feasible and reasonable work practices to minimise noise impacts.

7.3.1 Residential Receivers

Table 7-3 below, which was sourced from the ICNG, shows how NMLs at residential receivers are determined and how they are to be applied. The rating background level (RBL) is used when determining the noise management level (NML). The RBL is the overall single-figure background noise level measured in each relevant assessment period (during or outside the recommended standard hours). The term and methodology to obtain RBLs is described in detail within the RNP.

Table 7-3 Noise Management Levels at residential receivers

Time of Day	NML $L_{AEQ\ (15min)}$	How to Apply
Standard hours: • Monday to Saturday 7am to 6pm • CoA E2 construction hours (see Section 7.2)	RBL + 10 dB(A)	The noise affected level represents the point above which there may be some community reaction to noise. Where the predicted or measured LAeq (15 min) is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level. JHG should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
	Highly noise affected >75dB(A)	The highly noise affected level represents the point above which there may be strong community reaction to noise. Where noise is above this level, JHG would carefully consider other ways to reduce noise to below this level. If no quieter work method is feasible or reasonable and the works proceed, the proponent would provide respite periods and communicate with the impacted residents.
Outside construction standard hours	RBL +5 dB(A)	A strong justification would typically be required for works outside the recommended standard hours. JHG should apply all feasible and reasonable work practices to meet the noise affected level.

		Where all feasible and reasonable practices have been applied and noise is more than 5 dB above the RBL, additional noise mitigation measures should be applied

7.3.1.1 Sleep Disturbance

Construction noise during the night (10pm to 7am Monday to Saturday, 10pm to 8am Sunday) has the potential to awaken residents from sleep. Guidance for the assessment of sleep disturbance is provided in the RNP.

With the aim of limiting sleep disturbance due to environmental noise, the RNP notes a screening test of LAF1,1min should not exceed the ambient LA90 + 15dB. Section 5.4 of the RNP then goes on to state:

- maximum internal noise levels below 50 to 55dBA Lmax would be unlikely to awaken people from sleep; and
- one or two noise events per night, with maximum internal noise levels of 65–70dBA, are not likely to affect health and wellbeing significantly.

The guidance within the RNP indicates that internal noise levels of 50 to 55dBA Lmax are unlikely to cause sleep awakenings. It follows that at levels above 55dBA Lmax, sleep awakening would be considered likely.

Assuming receivers may have windows partially open for ventilation, a +10dB(A) inside to outside correction has been adopted as indicated in the ICNG. Therefore, sleep disturbance external noise screening levels of LAmax of RBL+15dB and an awakening criterion of LAmax 65dBA, have been adopted.

Where the screening level is not likely to be exceeded, no disturbance to sleep is reasonably likely. Where this screening level is exceeded, review of planned activities should be undertaken to better understand the risk. Where the awakening criterion is exceeded, further review of management techniques is required to limit the number and nature of these exceedances.

7.3.1.2 Adopted Project NMLs for Residential Receivers

Based on the measured RBLs and requirements of the ICNG, Project-specific NML's for residential receivers are provided in Table 7-4.

Table 7-4 Adopted NMLs for residential receivers

NCA	Noise Management Levels ($L_{Aeq(15min)}$ -dBA) (measured externally)				
	Standard hours (RBL +10dB)	Out of Hours (RBL +5dB)			Sleep disturbance L_{AFmax} (RBL +15dB)
	Day[1]	Day[1]	Evening[2]	Night[2]	
NCA01	45	40	35	35	45
NCA02	45	40	35	35	45
NCA03	45	40	35	35	45

NCA	Noise Management Levels ($L_{Aeq(15min)}$ -dBA) (measured externally)				
	Standard hours (RBL +10dB)	Out of Hours (RBL +5dB)			Sleep disturbance L_{AFmax} (RBL +15dB)
	Day[1]	Day[1]	Evening[2]	Night[2]	
NCA04	45	40	35	35	45
NCA05	45	40	35	35	45
NCA06	45	40	35	35	45

1 - Section 2.3 of the NPfI states that minimum RBLs should be applied to the noise monitoring results. As such, where background levels (Section 6.3) are below 35 dBA during the day period, and 30 dBA during the evening and night periods, levels have been set to these minimum levels.

2- Time of day for evening and night periods (from the NPfI, EPA 2017) are as follows:

- evening – the period from 6 pm to 10 pm
- night – the remaining periods (10pm to 7am Monday to Saturday and 10pm to 8am on Sundays and public holidays)

7.3.2 Other Sensitive Land Uses

The ICNG provides noise management levels for commercial and industrial premises and ‘other sensitive’ land uses (ICNG, Table 3). The management levels for other noise sensitive receivers not listed in the ICNG that are applicable to the Project, are listed in Table 7-5.

Table 7-5 NMLs at other sensitive land uses

Land Use	NML($L_{Aeq(15min)}$)	Where NML Applies	Reference	Accumulated Façade Loss	External Equivalent NML ($L_{Aeq(15min)}$)
Classrooms at schools and other educational institutions	45 dB(A)	Internal noise level	ICNG	10 dB(A)	55 dB(A)
Places of worship	45 dB(A)	Internal noise level	ICNG	10 dB(A)	55 dB(A)
Hotel (bars and lounges)	50 dB(A)	Internal noise level	AS2107 'maximum'	20 dB(A)	70 dB(A)
Restaurant, bar (Bars and lounges/ Restaurant)	50 dB(A)	Internal noise level	AS2107 'maximum'	20 dB(A)	70 dB(A)
Passive recreation (e.g. area used for reading, meditation)	60 dB(A)	External noise level	ICNG	-	60 dB(A)
Active recreation (e.g. sports fields)	65 dB(A)	External noise level	ICNG	-	65 dB(A)
Commercial premises (including offices and retail outlets)	70 dB(A)	External noise level	ICNG	-	70 dB(A)
Industrial premises	75 dB(A)	External noise level	ICNG	-	75 dB(A)

7.3.3 Annoying Noise

The ICNG identifies 'particularly annoying' activities that require the addition of 5 dB(A) to the predicted level before comparing to the construction NML. Annoying activities identified in the ICNG include:

- use of 'beeper' style reversing or movement alarms, particularly at night-time;
- use of power saws, such as used for cutting timber, rail lines, masonry, road pavement or steel work;
- grinding metal, concrete or masonry;
- rock drilling;
- line drilling;
- vibratory rolling;
- rail tamping and regulating;
- bitumen milling or profiling;
- jackhammering, rock hammering or rock breaking; and
- impact piling.

Where monitoring has confirmed that activities described above do not possess annoying characteristics in accordance with the NPfI (e.g. tonality, low frequency), addition of 5 dB(A) will not apply.

7.3.4 Highly Noise Intensive Work

In accordance with CoA E4, highly noise intensive work typically, defined as annoying noise above,

which results in an exceedance of the applicable NML at the same receiver must only be undertaken:

a) between the hours of 8:00 am to 6:00 pm Monday to Friday (excluding public holidays);

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 of at least one hour between each block of highly noise intensive work.

These hours apply except as permitted by the EPL or approved through the Out of Hours Work Protocol (for work not subject to an EPL).

For the purpose of this CoA, 'continuous' includes any period during which there is less than a one-hour respite between ceasing and recommencing any work that is the subject of this CoA.

7.3.5 Ground-borne noise

Ground-borne noise is generated by vibration transmitted through the ground into a structure and in some instances, can cause the floors or walls of a structure to vibrate which can result in an audible low frequency 'rumble' inside the structure, known as ground-borne or regenerated noise.

The ICNG provides ground-borne noise management levels for residences which indicate when management actions should be implemented as follows:

- evening (6pm to 10pm) Leq (15 min) 40dBA; and
- night-time (10pm to 7am) Leq (15 min) 35dBA.

The ground-borne noise levels are only considered during evening and night-time periods, as the objectives are to protect the amenity and sleep of people when they're at home. Ground-borne noise management levels only apply where ground borne noise levels are higher than airborne noise levels, such as for underground tunnelling works.

7.4 Construction Traffic Noise

When trucks and other vehicles are operating within the boundary of a construction site, road vehicle noise contributions are included in the overall predicted LAeq(15minute) construction site noise emissions. When construction-related traffic moves onto the public road network a different noise assessment methodology is appropriate, as vehicle movements would be regarded as 'additional road traffic' rather than as part of the construction site.

The ICNG refers to the RNP for the assessment of noise from construction traffic on public roads. In line with the RNP, the Project will adopt the approach for assessing and managing construction traffic noise impact outlined in Figure 7-1. Note, 'Day' refers to 7am to 10pm and 'Night' refers to 10pm to 7am.

An assessment of traffic noise level increases is presented in Section 9.3 to address the initial screening test. Appropriate additional assessments are identified as necessary and will be completed prior to use of the proposed traffic routes.

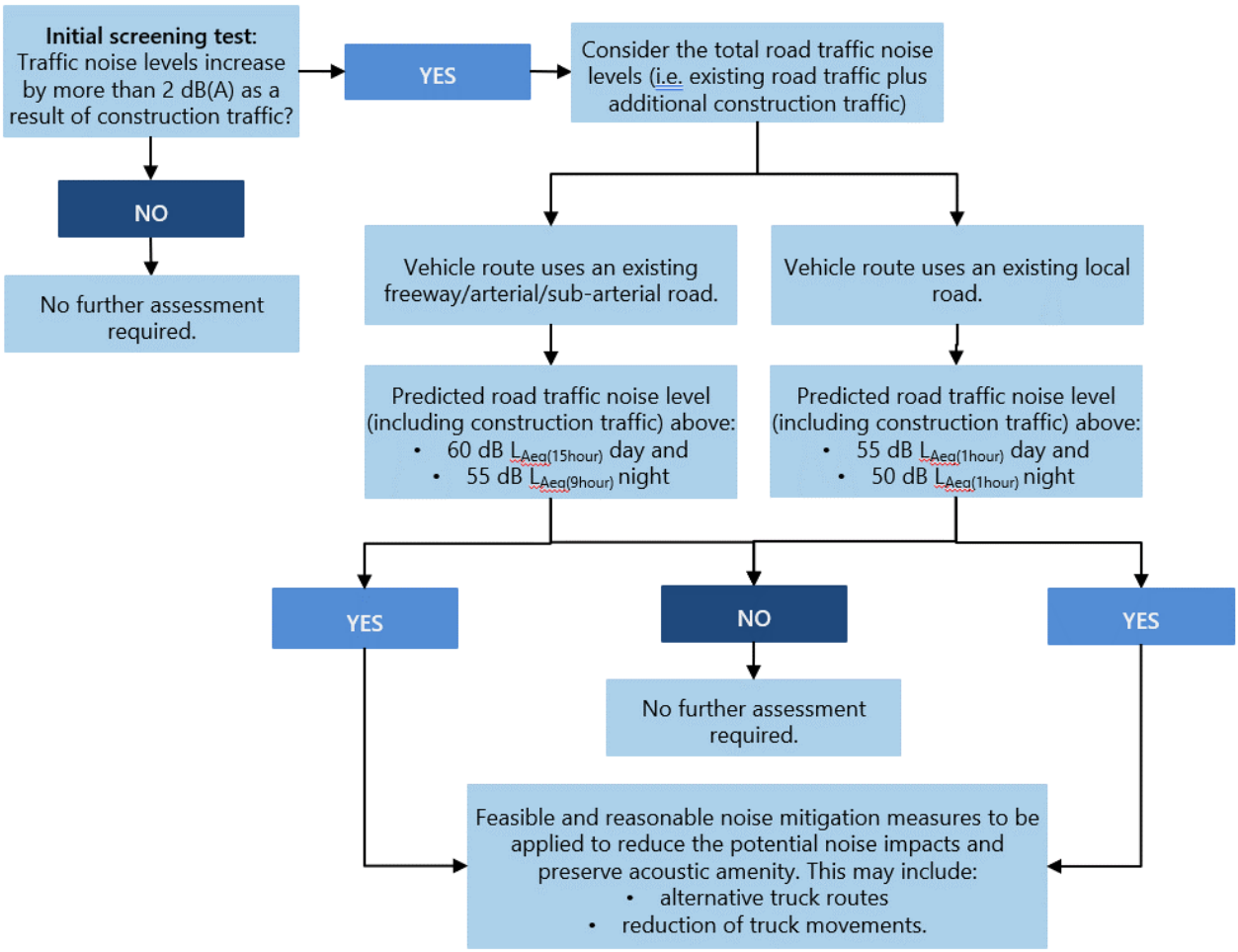


Figure 7-1 Construction related road traffic noise assessment approach

7.5 Construction Vibration Objectives

Construction vibration is associated with three main types of impact:

- Human comfort – Disturbance to building occupants: vibration in which the occupants or users of the building are inconvenienced or possibly disturbed.
- Potential damage to buildings – vibration in which the integrity of the building or structure itself may be prejudiced.
- Potential damage to sensitive equipment in a building.

This section describes the types of vibration and the criteria associated with managing their impacts.

7.5.1 Human comfort

In accordance with CoA E7, assessment of potential disturbance from tactile vibration on human occupants of building made in accordance with *Assessing vibration: A technical guideline* (DEC, 2006). This guideline provides criteria which are based on the BS6472. Sources of vibration are defined as either 'continuous', 'impulsive' or 'intermittent'.

- **Continuous vibration** – Continues uninterrupted for a defined period (usually throughout the daytime and/or night-time). Examples include machinery, steady road traffic, continuous construction activity (such as road header excavation).
- **Impulsive vibration** – A rapid build-up to a peak followed by a damped decay that may or may not involve several cycles of vibration (depending on frequency and damping). It can also consist

of a sudden application of several cycles at approximately the same amplitude, providing the duration is short (typically less than 2 seconds). Examples include infrequent activities that create up to three distinct vibration events in an assessment period, e.g. occasional dropping of heavy equipment, occasional loading and unloading

- **Intermittent vibration** – Can be defined as interrupted periods of continuous or repeated periods of impulsive vibration that varies significantly in magnitude. Examples include trains, nearby intermittent construction activity, passing heavy vehicles, forging machines, impact pile driving, jack hammers. Where the number of vibration events in an assessment period is three or fewer, they would be assessed against impulsive vibration criteria.

Preferred and maximum values for continuous and impulsive vibration are assessed on the basis of acceleration values as provided in Table 7-6.

Table 7-6 Acceleration values for continuous and impulsive vibration

Location	Assessment period[1]	RMS acceleration m/s^2				Peak particle velocity mm/s	
		Preferred values		Maximum values		Preferred values	Maximum values
		Z-Axis	X and Y Axes	Z-Axis	X and Y Axes		
Continuous Vibration							
Critical areas[2]	Day or night-time	0.0050	0.0036	0.010	0.0072	0.14	0.28
Residences	Daytime	0.010	0.0071	0.020	0.017	0.28	0.56
	Night-time	0.007	0.005	0,014	0.010	0.20	0.40
Offices, schools, educational institutions, and places of worship	Day or night-time	0.020	0.014	0,040	0.028	0.56	1.1
Workshops	Day or night-time	0.04	0.029	0.080	0.058	1.1	2.2
Impulsive vibration							
Critical areas	Day or night-time	0.0050	0.0036	0.010	0.0072	0.14	0.28
Residences	Daytime	0.3	0.21	0.60	0.42	8.6	17.0
	Night-time	0.10	0.071	0.20	0.14	2.8	5.6
Offices, schools, educational institutions, and places of worship	Day or night-time	0.64	0.46	1.28	0.92	18.0	36.0
Workshops	Day or night-time	0.64	0.46	1.28	0.92	18.0	36.0

(1) Daytime is 7.00am to 10.00pm and night-time is 10.00pm to 7.00am
(2) Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring.

7.5.2 Structural and Cosmetic damage

Potential damage of buildings by vibration is managed by ensuring vibration impacting the structure does not exceed the limits in the *British Standard BS 7385-1:1990 - Evaluation and measurement for vibration in buildings*. The standard suggests levels at which 'cosmetic', 'minor' and 'major' categories of damage might occur. Cosmetic damage consists of minor non-structural effects such as hairline cracks on drywall surfaces, hairline cracks in mortar joints and cement render, enlargement of existing cracks and separation of partitions or intermediate walls from load-bearing walls. 'Minor' damage is considered possible at vibration magnitudes which are twice those given and 'major' damage to a building structure may occur at levels greater than four times those values. The cosmetic and structural damage levels within this standard are outlined in Table 7-7. The limits presented in Table 7-7 relate predominantly to transient vibration which does not give rise to resonant responses in structures, and to low-rise buildings. Where the dynamic loading caused by continuous vibration is such as to give rise to dynamic magnification due to resonance, then the guide values in Table 7-7 may need to be reduced by up to 50 percent. This is especially applicable at the lower frequencies where lower guide values apply.

On this basis, the following peak particle velocity (PPV) has been adopted as the assessment criteria for sound structures:

- Reinforced or framed structures – 25 mm/s
- Unreinforced or light framed structures – 7.5 mm/s.

For structures where the predicted and/or measured vibration levels are greater than shown above (peak component particle velocity), a more detailed analysis of the building structure, vibration source, dominant frequencies and dynamic characteristics of the structure would be undertaken to determine the applicable safe vibration level and approach to construction near the structure.

Table 7-7 BS 7385 cosmetic and structural damage safe limits

Group	Type of building	Peak Component Particle Velocity in Frequency Range of Predominant Pulse	
		4 Hz to 15 Hz	15Hz and above
1	Reinforced or framed structures. Industrial and heavy commercial buildings.	50 mm/s at 4 Hz and above	
2	Unreinforced or light framed structures. Residential or light commercial type buildings.	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above

7.5.3 Heritage Items and Buried Pipework

The GS DIN 4150-3 provides a conservative criterion for vibration limits for different buildings and buried pipework and has been used to identify the vibration criteria for the Project where the BS 7385 does not apply. The GS DIN 4150-3 values for PPV (mm/s) measured at the foundation of buildings are summarised in Table 7-8.

Table 7-8 DIN 4150 guideline values for short term vibration on structures

Group	Type Of Structure	Guideline Values Vibration Velocity (Mm/S)				
		Foundations, All Directions at a Frequency of:			Topmost Floor, Horizontal	Floor Slabs, Vertical
		1 to 10Hz	10 to 50 Hz	50 to 100 Hz	All Frequencies	All Frequencies
1	Buildings used for commercial purposes, industrial buildings and buildings of similar design	20	20 to 30	40 to 50	40	20
2	Residential buildings and buildings of similar design and/or occupancy	5	5 to 15	15 to 20	15	20
3	Structures that because of their particular sensitivity to vibration, cannot be classified into Group 1 or 2 and are of great intrinsic value e.g. heritage listed buildings	3	3 to 8	3 to 8	8	20

As noted in BS 7385, heritage buildings and structures should not be assumed to be more sensitive to vibration, unless structurally unsound. A conservative vibration damage screening level (peak component particle velocity) for heritage buildings/structures will be set to **3mm/s** (the more stringent criterion in the GS DIN 4150-3). This does not necessarily reflect that there would be a vibration impact on the structure if this level is exceeded, instead it is a suitable vibration level that is used as part of the construction vibration management process to trigger further investigation.

Any heritage structure predicted to exceed the screening level would be further investigated, and appropriate vibration criteria for the structure adopted. The general approach to managing potential vibration impacts on heritage items would be to:

1. Identify heritage items where the 3mm/s peak component particle velocity objective may be exceeded during specific construction activities
2. Carry out an assessment on identified heritage items, to confirm structural integrity of the building and confirm if item is ‘structurally sound’
3. Adopt the appropriate screening level from BS 7385 or other appropriate level as determined by the noise and vibration consultant if the item was confirmed as ‘structurally sound’, or
4. Adopt the more conservative cosmetic damage level of 3mm/s peak component particle velocity if the item was confirmed as ‘structurally unsound’.

For buried pipework, Table 7-9 will be used as a guide and further consultation with utility owners will be undertaken to apply the most appropriate vibration criteria for each utility. Where consultation confirms that alternate vibration criteria are required for specific utilities, that alternate criteria will be implemented in consultation with the noise and vibration consultant.

Table 7-9 DIN 4150 guideline values for short term vibration on pipelines and services

Pipe/Service material	Guideline Values for Vibration Velocity Measured on the Pipe
Steel (including welded pipes)	100 mm/s
Clay, concrete, reinforced concrete, pre-stressed concrete, metal (with or without flange)	80 mm/s
Masonry, plastic	50 mm/s

7.6 Construction Blasting Objectives

CoA E12 requires blasting does not generate unacceptable noise and vibration impacts or pose a significant risk to sensitive receivers.

Ground vibration and overpressure generated by construction blasting are assessed according to the Australian Standard, *AS 2187 Explosives – Storage and use Part 2: Use of Explosives*.

A Blast Management Strategy will be prepared in accordance with CoA E10, for ongoing risk analysis; however guidelines for airblast overpressure and ground-borne vibration are provided in the following sections for management of human comfort and structural damage.

7.6.1 Human comfort

AS 2187 provides recommended limits for ground vibration and airblast overpressure, which summarised in Table 7-10 and Table 7-11 respectively. Adhering to these limits should maintain airblast and vibration at levels which present a low risk of impact to residents. These levels would not be exceeded without written agreement from affected residents.

Table 7-10 Human comfort limits for airblast overpressure

Category	Type of blasting operations	Peak sound pressure level (dBL)	
		95% of blasts per year	Maximum values
Sensitive Site[1]	Operations lasting longer than 12 months or more than 20 blasts	115	120[2]
Sensitive Site[1]	Operations lasting for less than 12 months or less than 20 blasts	120	125[2]
Occupied non-sensitive sites, such as factories and commercial premises	All blasting	-	125[2,3]

(1) A sensitive site includes houses and low rise residential buildings, hospitals, theatres, schools, etc., occupied by people.
(2) Unless agreement is reached with occupier that a higher limit may apply.
(3) For sites containing equipment sensitive to vibration, the vibration should be kept below manufacturer's specifications or levels that can be shown to adversely affect the equipment operation.

Table 7-11 Human comfort limits for ground-borne vibration due to blasting

Category	Type of blasting operations	Peak sound pressure level (dBL)	
		95% of blasts per year	Maximum values
Sensitive Site[1]	Operations lasting longer than 12 months or more than 20 blasts	5	10[2]
Sensitive Site[1]	Operations lasting for less than 12 months or less than 20 blasts	-	10[2]
Occupied non-sensitive sites, such as factories and commercial premises	All blasting	-	25[2,3]

(1) A sensitive site includes houses and low-rise residential buildings, hospitals, theatres, schools, etc., occupied by people.
(2) Unless agreement is reached with occupier that a higher limit may apply.
(3) For sites containing equipment sensitive to vibration, the vibration should be kept below manufacturer's specifications or levels that can be shown to adversely affect the equipment operation.

7.6.2 Structural Damage

In addition to human comfort limits for blasting, recommended airblast levels will not exceed specific levels to minimise the risk of structural damage. These are shown in Table 7-12. The limits for cosmetic structural damage due to ground-borne vibration are as per Table 7-13. A damage limit of 100mm/s peak particle velocity has been adopted for unoccupied reinforced structures. Limits for other structures such as power lines above ground are dependent on their structural design methodology. For buried pipework, the limits within GS DIN 4150 have been adopted as per Table 7-14.

Where additional structures or assets such as utilities are identified near blast sites, asset owners will be consulted to ensure blast vibration limits are in line with asset owners' requirements.

These limits would not be exceeded at any time.

Table 7-12 Structural damage limits due to airblast overpressure from blasting

Category	Type of blasting operations	Peak sound pressure level (dBL)
Structures that include masonry, plaster and plasterboard in their construction and also unoccupied structures of reinforced concrete or steel construction	All blasting	133[1]
Service structures, such as pipelines, powerlines and cables located above the ground	All blasting	Limit to be determined by structural design methodology

(1) Unless agreement is reached with the owner that a higher limit may apply

Table 7-13 Ground-borne vibration limits for cosmetic damage from vibration due to blasting

Type of building	Peak component particle velocity in frequency range of predominant pulse[3]	
	4Hz to 15Hz	15Hz and above

Reinforced or framed structures. Industrial and heavy commercial buildings[1]	50mm/s at 4Hz and above	50mm/s at 4Hz and above
Unreinforced or light framed structure. Residential or light commercial type buildings[2]	15mm/s at 4Hz increasing to 20mm/s at 15Hz[4]	20mm/s at 15Hz increasing to 50mm/s at 40Hz and above

(1) Refer to Line 1 in Figure 2.1 of DIN 4150
(2) Refer to Line 2 in Figure 2.1 of DIN 4150
(3) Values referred to are at the base of the building.
(4) For unreinforced or light framed structures, at frequencies below 4Hz, a maximum displacement of 0.6mm (zero to peak) should not be exceeded.

Table 7-14 DIN 4150 guideline values for short-term vibration on buried pipework

Category	Guideline values for velocity measured on the pipe in mm/s
Steel (including welded pipe)	100
Clay, concrete, reinforced concrete, pre-stressed concrete, metal (with or without flange)	80
Masonry, plastic	50

8 Environmental Aspects and Impacts

8.1 Construction Activities

The Project will involve a range of activities incorporating various heavy machinery, plant and equipment that will operate in a number of locations across the Project over extended periods. To assist in managing impacts over the length of the project corridor, it has been divided into six sections. These sections are illustrated in Appendix A and categories of construction likely to interact with these receivers are identified in Table 8-1.

Additional detail on the proposed use of each construction compound is included in CEMP, Appendix8.

Table 8-1 Construction scenarios

Activity	Relevant section						Indicative duration
	1	2	3	4	5	6	
Utility relocation and property adjustments	✓	✓	✓	✓	✓	✓	1 month
Site establishment, compounds and general site preparations	✓	✓	✓	✓	✓	✓	1 month
Earthworks	✓	✓	✓	✓	✓	✓	2 months
Drainage	✓	✓	✓	✓	✓	✓	1 month
Material processing (crushing)			✓	✓		✓	3 months
Drill and blast			✓	✓		✓	2 months
Track work	✓	✓	✓	✓	✓	✓	2 months
Bridge construction – at over and under-pass sites	✓	✓	✓	✓	✓	✓	2 months
Landscaping and demobilisation	✓	✓	✓	✓	✓	✓	3 months
Compound operation – general	✓	✓	✓	✓	✓	✓	Duration of construction
Compound operation – batching plant						✓	1 year

8.2 Noise Impacts

8.2.1 Assessment process

The potential for noise impacts on sensitive receivers is dependent on several factors including:

- Type and number of plant and machinery being used in any location
- The time and duration of the work
- The distance of the works to sensitive receivers
- Topography and barriers
- Existing background noise
- Meteorology

To adequately manage the level of risk to the community for each project phase, assessment is undertaken at two key stages:

- At the time of writing this CNVMP, detailed impact assessment has been completed addressing works for the duration of the project. This assessment addresses the main project phases in each of the sections described above. The outcome of this stage of assessment allows appropriate noise mitigation measures to be prepared and implemented for commencement of construction.
- Ongoing risk analysis will be completed as the project progresses. This risk analysis will be performed using a project-specific noise and vibration tool, KNOWnoise as described in Section 9.1.2. This project specific noise prediction tool will be used to prepare site-specific or activity-specific noise assessments where any new activities and/or variations to the activities or locations are proposed during delivery, such as out-of-hours work (in line with the out-of-hours protocol in Appendix F).

8.2.2 Detailed assessment

For each construction section, 1 – 6, the scenarios outlined in Table 8-1 have been included in a noise model developed using SoundPlan noise modelling software. Calculations were completed in accordance with the ISO9613 prediction method at all identified noise-sensitive receivers. The model included:

- Topography – based on LPI Lidar data captured in 2015.
- Individual sensitive receivers – One receiver location representing each residential dwelling and located at 1.5 metres height up to 2,000 metres from the works.
- Noise sources –Activities and equipment provided by John Holland and summarised in Table 8-1 were included in the noise model as area sources at a source height of 1.5m. Equipment and estimated sound power levels for each scenario are provided in Appendix B.
- Ground absorption set to 0.5 for mixed ground types.
- Meteorology –worst-case conditions (gentle breeze from source to receiver and stable conditions).

Refer to Appendix C for the detailed noise predictions.

A summary of predicted levels for Sections 1 – 6 for each construction phase are presented in the following sections including the number of receivers likely to exceed the NMLs for day, evening and night.

Section 1 - CH: 0 to 2900

Section 1 is sparsely populated and represents a low risk of noise impacts for most scenarios. A summary of results for standard hours works (NML is 45 dBA for all receivers) is shown in Table 8-2. Earthworks would be the noisiest scenario and would likely result in one receiver experiencing moderately intrusive noise levels at the works' closest point to the home. This would be for a limited time as work is completed and equipment moves away.

Table 8-2 Summary of impacts - Section 1 Standard hours

		Activity	Maximum level dB(A)		Predicted no. receivers with exceedance of NML STANDARD hours				
			Res	Non-res	Rec. >75	0-10	10-20	20+	30+
Section 1	1	Utilities relocations & property adjustments	57	0	0	1	1	0	0
	2	Site establishment	57	0	0	2	2	0	0
	3	Earthworks	61	0	0	0	3	1	0
	4	Drainage	56	0	0	3	1	0	0
	5	Material processing	0	0	0	0	0	0	0
	6	Drill and blast	0	0	0	0	0	0	0
	7	Track work	60	0	0	0	4	0	0
	8	Removal of redundant track	0	0	0	0	0	0	0
	9	Stock crossings & private access	0	0	0	0	0	0	0
	10	Level crossing and grade separated road - Earthworks and drainage	44	0	0	0	0	0	0
	11	Level crossing & grade separated road - Paving & line-marking	43	0	0	0	0	0	0
	12	Signals - Minor earthworks & cabling	37	0	0	0	0	0	0
	13	CSR - Minor earthworks & cabling	37	0	0	0	0	0	0
	14	Bridge site - Piling & concrete pours	40	0	0	0	0	0	0
	15	Rail Access Road - Earthworks & compacting	54	0	0	3	1	0	0
	16	Demobilise & landscape	58	0	0	2	2	0	0
	17	Compound operation	44	0	0	0	0	0	0
	18	Concrete batching	0	0	0	0	0	0	0

Based on similar activities performed during standard hours, the level of impact will be greater during OOH day, eve/night periods due to the lower NML (40 dBA for OOH day and 35 dBA for evening and night). A summary of predicted levels for OOH works is presented in Table 8-3.

OOH Day hours results apply to where CoA E2 requirements cannot be met (e.g. on a Sunday). As per CoA E3(b) only low noise works are permitted before 7am. These results are provided for completeness but indicate specific assessment would be required to ensure E3(a) and (b) are achieved for most activities.

Table 8-3 Summary of impacts - Section 1 outside standard hours

Activity			Predicted no. receivers with exceedance of NML							
			OOH DAY hours				OOH EVE/NIGHT hours			
			0-10	10-20	20+	30+	0-10	10-20	20+	30+
Section 1	1	Utilities relocations & property adjustments	1	1	1	0	2	2	1	0
	2	Site establishment	0	3	1	0	2	2	2	0
	3	Earthworks	2	2	2	0	4	2	4	1
	4	Drainage	0	3	1	0	1	3	1	0
	5	Material processing	0	0	0	0	0	0	0	0
	6	Drill and blast	0	0	0	0	0	0	0	0
	7	Track work	1	3	1	0	2	1	4	0
	8	Removal of redundant track	0	0	0	0	0	0	0	0
	9	Stock crossings & private access	0	0	0	0	0	0	0	0
	10	Level crossing and grade separated road - Earthworks and drainage	1	0	0	0	2	1	0	0
	11	Level crossing & grade separated road - Paving & line-marking	1	0	0	0	1	1	0	0
	12	Signals - Minor earthworks & cabling	0	0	0	0	1	0	0	0
	13	CSR - Minor earthworks & cabling	0	0	0	0	1	0	0	0
	14	Bridge site - Piling & concrete pours	0	0	0	0	1	0	0	0
	15	Rail Access Road - Earthworks & compacting	0	4	0	0	1	3	1	0
	16	Demobilise & landscape	1	3	1	0	1	3	2	0
	17	Compound operation	1	0	0	0	0	1	0	0
	18	Concrete batching	0	0	0	0	0	0	0	0

Section 2 - CH: 2901 to 8840

Section 2 is sparsely populated and represents a low risk of noise impacts for all scenarios. A summary of results for standard hours works is shown in Table 8-4. Earthworks would be the noisiest scenario and would likely result in one receiver experiencing clearly audible noise levels at the works' closest point to the home. This would be for a limited time as work is completed and equipment moves away. Generally work in Section 2 is low risk.

Table 8-4 Summary of impacts - Section 2 Standard hours

	Activity		Maximum level dB(A)		Predicted no. receivers with exceedance of NML STANDARD hours				
			Res	Non-res	Rec. >75	0-10	10-20	20+	30+
Section 2	1	Utilities relocations & property adjustments	42	0	0	0	0	0	0
	2	Site establishment	46	0	0	1	0	0	0
	3	Earthworks	51	0	0	1	2	0	0
	4	Drainage	45	0	0	0	0	0	0
	5	Material processing	0	0	0	0	0	0	0
	6	Drill and blast	0	0	0	0	0	0	0
	7	Track work	49	0	0	3	0	0	0
	8	Removal of redundant track	0	0	0	0	0	0	0
	9	Stock crossings & private access	39	0	0	0	0	0	0
	10	Level crossing and grade separated road - Earthworks and drainage	41	0	0	0	0	0	0
	11	Level crossing & grade separated road - Paving & line-marking	40	0	0	0	0	0	0
	12	Signals - Minor earthworks & cabling	29	0	0	0	0	0	0
	13	CSR - Minor earthworks & cabling	26	0	0	0	0	0	0
	14	Bridge site - Piling & concrete pours	31	0	0	0	0	0	0
	15	Rail Access Road - Earthworks & compacting	45	0	0	0	0	0	0
	16	Demobilise & landscape	46	0	0	2	0	0	0
	17	Compound operation	36	0	0	0	0	0	0
	18	Concrete batching	0	0	0	0	0	0	0

A summary of predicted levels for OOH works is presented in Table 8-5.

Noisy activities in the OOH Evening/Night period may result in moderately intrusive noise at more than 20 dB above the NML for the night period at one receiver during earthworks.

OOH Day hours results apply to where CoA E2 requirements cannot be met (e.g. on a Sunday). As per CoA E3(b) only low noise works are permitted before 7am. These results are provided for completeness but indicate specific assessment would be required to ensure E3(a) and (b) are achieved for most activities.

Table 8-5 Summary of impacts - Section 2 outside standard hours

Activity			Predicted no. receivers with exceedance of NML							
			OOH DAY hours				OOH EVE/NIGHT hours			
			0-10	10-20	20+	30+	0-10	10-20	20+	30+
Section 2	1	Utilities relocations & property adjustments	1	0	0	0	3	1	0	0
	2	Site establishment	2	1	0	0	4	3	0	0
	3	Earthworks	5	3	0	0	3	6	2	0
	4	Drainage	3	0	0	0	3	3	0	0
	5	Material processing	0	0	0	0	0	0	0	0
	6	Drill and blast	0	0	0	0	0	0	0	0
	7	Track work	2	3	0	0	5	5	0	0
	8	Removal of redundant track	0	0	0	0	0	0	0	0
	9	Stock crossings & private access	0	0	0	0	4	0	0	0
	10	Level crossing and grade separated road - Earthworks and drainage	1	0	0	0	2	1	0	0
	11	Level crossing & grade separated road - Paving & line-marking	0	0	0	0	2	0	0	0
	12	Signals - Minor earthworks & cabling	0	0	0	0	0	0	0	0
	13	CSR - Minor earthworks & cabling	0	0	0	0	0	0	0	0
	14	Bridge site - Piling & concrete pours	0	0	0	0	0	0	0	0
	15	Rail Access Road - Earthworks & compacting	3	0	0	0	3	3	0	0
	16	Demobilise & landscape	1	2	0	0	5	3	0	0
	17	Compound operation	0	0	0	0	1	0	0	0
	18	Concrete batching	0	0	0	0	0	0	0	0

Section 3 - CH: 8841 to 18500

Section 3 is sparsely populated and represents a low risk of noise impacts for most receivers. A summary of results for standard hours works is shown in Table 8-6.

Predicted noise levels are generally compliant or exceeding the NML at up to 3 residents.

Table 8-6 Summary of impacts - Section 3 Standard hours

Activity			Maximum level dB(A)		Predicted no. receivers with exceedance of NML STANDARD hours				
			Res	Non-res	Rec. >75	0-10	10-20	20+	30+
Section 3	1	Utilities relocations & property adjustments	42	0	0	0	0	0	0
	2	Site establishment	56	0	0	2	1	0	0
	3	Earthworks	58	0	0	1	2	0	0
	4	Drainage	55	0	0	2	1	0	0
	5	Material processing	46	0	0	1	0	0	0
	6	Drill and blast	42	0	0	0	0	0	0
	7	Track work	60	0	0	2	2	0	0
	8	Removal of redundant track	0	0	0	0	0	0	0
	9	Stock crossings & private access	46	0	0	1	0	0	0
	10	Level crossing and grade separated road - Earthworks and drainage	47	0	0	1	0	0	0
	11	Level crossing & grade separated road - Paving & line-marking	46	0	0	1	0	0	0
	12	Signals - Minor earthworks & cabling	31	0	0	0	0	0	0
	13	CSR - Minor earthworks & cabling	33	0	0	0	0	0	0
	14	Bridge site - Piling & concrete pours	42	0	0	0	0	0	0
	15	Rail Access Road - Earthworks & compacting	52	0	0	2	0	0	0
	16	Demobilise & landscape	57	0	0	2	1	0	0
	17	Compound operation	45	0	0	0	0	0	0
	18	Concrete batching	53	0	0	0	1	0	0

A summary of predicted levels for OOH works is presented in Table 8-7.

OOH Eve/Night period may result in moderately intrusive noise at more than 20 dB above the NML for the night period during several for 2 receivers close to the corridor. Most other receivers would experience noise levels of a audible to clearly audible nature.

OOH Day hours results apply to where CoA E2 requirements cannot be met (e.g. on a Sunday). As per CoA E3(b) only low noise works are permitted before 7am. These results are provided for completeness but indicate specific assessment would be required to ensure E3(a) and (b) are achieved for most activities.

Table 8-7 Summary of impacts - Section 3 outside standard hours

Activity			Predicted no. receivers with exceedance of NML							
			OOH DAY hours				OOH EVE/NIGHT hours			
			0-10	10-20	20+	30+	0-10	10-20	20+	30+
Section 3	1	Utilities relocations & property adjustments	1	0	0	0	0	1	0	0
	2	Site establishment	1	2	1	0	2	3	1	0
	3	Earthworks	5	3	0	0	3	6	2	0
	4	Drainage	1	3	0	0	1	3	1	0
	5	Material processing	4	1	0	0	6	5	0	0
	6	Drill and blast	1	0	0	0	6	1	0	0
	7	Track work	1	3	1	0	6	3	2	0
	8	Removal of redundant track	0	0	0	0	0	0	0	0
	9	Stock crossings & private access	0	1	0	0	2	1	0	0
	10	Level crossing and grade separated road - Earthworks and drainage	1	1	0	0	0	2	0	0
	11	Level crossing & grade separated road - Paving & line-marking	1	1	0	0	0	2	0	0
	12	Signals - Minor earthworks & cabling	0	0	0	0	0	0	0	0
	13	CSR - Minor earthworks & cabling	0	0	0	0	0	0	0	0
	14	Bridge site - Piling & concrete pours	1	0	0	0	0	1	0	0
	15	Rail Access Road - Earthworks & compacting	1	2	0	0	4	3	0	0
	16	Demobilise & landscape	1	2	1	0	4	3	1	0
	17	Compound operation	1	0	0	0	0	1	0	0
	18	Concrete batching	0	1	0	0	1	0	1	0

Section 4 - CH: 18501 to 28300

Section 1 is sparsely populated and represents a low risk of noise impacts for most receivers. A summary of results for standard hours works is shown in Table 8-8.

Up to three receivers may experience clearly audible construction noise during earthworks, crushing rock, drilling and track work. Up to another three receivers may experience noticeable levels of noise across a number of activities.

Table 8-8 Summary of impacts - Section 4 Standard hours

Activity			Maximum level dB(A)		Predicted no. receivers with exceedance of NML STANDARD hours				
			Res	Non-res	Rec. >75	0-10	10-20	20+	30+
Section 4	1	Utilities relocations & property adjustments	43	0	0	0	0	0	0
	2	Site establishment	50	0	0	3	0	0	0
	3	Earthworks	55	0	0	0	3	0	0
	4	Drainage	49	0	0	3	0	0	0
	5	Material processing	56	0	0	1	3	0	0
	6	Drill and blast	52	0	0	2	1	0	0
	7	Track work	53	0	0	1	3	0	0
	8	Removal of redundant track	0	0	0	0	0	0	0
	9	Stock crossings & private access	47	0	0	1	0	0	0
	10	Level crossing and grade separated road - Earthworks and drainage	50	0	0	1	0	0	0
	11	Level crossing & grade separated road - Paving & line-marking	49	0	0	1	0	0	0
	12	Signals - Minor earthworks & cabling	0	0	0	0	0	0	0
	13	CSR - Minor earthworks & cabling	30	0	0	0	0	0	0
	14	Bridge site - Piling & concrete pours	37	0	0	0	0	0	0
	15	Rail Access Road - Earthworks & compacting	48	0	0	3	0	0	0
	16	Demobilise & landscape	51	0	0	2	1	0	0
	17	Compound operation	34	0	0	0	0	0	0
	18	Concrete batching	0	0	0	0	0	0	0

A summary of predicted levels for OOH works is presented in Table 8-9.

Noisy activities in the OOH Eve/Night period may result in moderately intrusive noise at 1 or 2 homes with levels more than 20 dB above the NML for the night period including during earthworks, rock crushing and track work. It is unlikely these elements would occur at night.

OOH Day hours results apply to where CoA E2 requirements cannot be met (e.g. on a Sunday). As per CoA E3(b) only low noise works are permitted before 7am. These results are provided for completeness but indicate specific assessment would be required to ensure E3(a) and (b) are achieved for most activities.

Table 8-9 Summary of impacts - Section 4 outside standard hours

		Activity	Predicted no. receivers with exceedance of NML							
			OOH DAY hours				OOH EVE/NIGHT hours			
			0-10	10-20	20+	30+	0-10	10-20	20+	30+
Section 4	1	Utilities relocations & property adjustments	1	0	0	0	2	1	0	0
	2	Site establishment	1	3	0	0	4	4	0	0
	3	Earthworks	5	3	0	0	1	5	3	0
	4	Drainage	1	3	0	0	3	4	0	0
	5	Material processing	3	3	1	0	2	4	3	0
	6	Drill and blast	2	3	0	0	3	4	1	0
	7	Track work	3	4	0	0	2	4	3	0
	8	Removal of redundant track	0	0	0	0	0	0	0	0
	9	Stock crossings & private access	1	1	0	0	5	2	0	0
	10	Level crossing and grade separated road - Earthworks and drainage	0	1	0	0	2	1	0	0
	11	Level crossing & grade separated road - Paving & line-marking	0	1	0	0	1	1	0	0
	12	Signals - Minor earthworks & cabling	0	0	0	0	0	0	0	0
	13	CSR - Minor earthworks & cabling	0	0	0	0	0	0	0	0
	14	Bridge site - Piling & concrete pours	0	0	0	0	1	0	0	0
	15	Rail Access Road - Earthworks & compacting	2	3	0	0	2	5	0	0
	16	Demobilise & landscape	2	3	0	0	3	4	1	0
	17	Compound operation	0	0	0	0	0	0	0	0
	18	Concrete batching	0	0	0	0	0	0	0	0

Section 5 - CH: 28301 to 37300

Section 5 is sparsely populated but is adjacent to the south of Stockinbingal, mainly in NCA04. A summary of results for standard hours works is shown in Table 8-10.

With more receivers close to the project, the number of impacts would increase. During standard hours, there is a low risk of noticeable and, in one case, clearly audible noise during earthworks for up to 23 homes. No receivers would be highly noise affected (i.e. >75 dBA).

Table 8-10 Summary of impacts - Section 5 Standard hours

Activity			Maximum level dB(A)		Predicted no. receivers with exceedance of NML STANDARD hours				
			Res	Non-res	Rec. >75	0-10	10-20	20+	30+
Section 5	1	Utilities relocations & property adjustments	37	24	0	0	0	0	0
	2	Site establishment	47	41	0	2	0	0	0
	3	Earthworks	52	47	0	22	1	0	0
	4	Drainage	46	40	0	1	0	0	0
	5	Material processing	0	0	0	0	0	0	0
	6	Drill and blast	0	0	0	0	0	0	0
	7	Track work	50	45	0	11	0	0	0
	8	Removal of redundant track	0	0	0	0	0	0	0
	9	Stock crossings & private access	37	31	0	0	0	0	0
	10	Level crossing and grade separated road - Earthworks and drainage	39	25	0	0	0	0	0
	11	Level crossing & grade separated road - Paving & line-marking	38	24	0	0	0	0	0
	12	Signals - Minor earthworks & cabling	27	21	0	0	0	0	0
	13	CSR - Minor earthworks & cabling	21	0	0	0	0	0	0
	14	Bridge site - Piling & concrete pours	37	32	0	0	0	0	0
	15	Rail Access Road - Earthworks & compacting	47	41	0	1	0	0	0
	16	Demobilise & landscape	48	42	0	3	0	0	0
	17	Compound operation	29	22	0	0	0	0	0
	18	Concrete batching	0	0	0	0	0	0	0

A summary of predicted levels for OOH works is presented in Table 8-11.

Noisy activities in the OOH Eve/Night period would result in slightly higher levels of impact at many more receivers. Low to moderate levels of exceedance of the NML are expected at a larger number of receivers during site establishment, earthworks, drainage, trackwork, and landscaping.

OOH Day hours results apply to where CoA E2 requirements cannot be met (e.g. on a Sunday). As per CoA E3(b) only low noise works are permitted before 7am. These results are provided for completeness but indicate specific assessment would be required to ensure E3(a) and (b) are achieved for most activities.

Table 8-11 Summary of impacts - Section 5 outside standard hours

		Activity	Predicted no. receivers with exceedance of NML							
			OOH DAY hours				OOH EVE/NIGHT hours			
			0-10	10-20	20+	30+	0-10	10-20	20+	30+
Section 5	1	Utilities relocations & property adjustments	0	0	0	0	2	0	0	0
	2	Site establishment	18	2	0	0	72	20	0	0
	3	Earthworks	70	23	0	0	45	92	1	0
	4	Drainage	12	1	0	0	71	13	0	0
	5	Material processing	0	0	0	0	0	0	0	0
	6	Drill and blast	0	0	0	0	0	0	0	0
	7	Track work	62	11	0	0	53	73	0	0
	8	Removal of redundant track	0	0	0	0	0	0	0	0
	9	Stock crossings & private access	0	0	0	0	3	0	0	0
	10	Level crossing and grade separated road - Earthworks and drainage	0	0	0	0	1	0	0	0
	11	Level crossing & grade separated road - Paving & line-marking	0	0	0	0	1	0	0	0
	12	Signals - Minor earthworks & cabling	0	0	0	0	0	0	0	0
	13	CSR - Minor earthworks & cabling	0	0	0	0	0	0	0	0
	14	Bridge site - Piling & concrete pours	0	0	0	0	2	0	0	0
	15	Rail Access Road - Earthworks & compacting	15	1	0	0	73	16	0	0
	16	Demobilise & landscape	34	3	0	0	58	37	0	0
	17	Compound operation	0	0	0	0	0	0	0	0
	18	Concrete batching	0	0	0	0	0	0	0	0

Section 6 - CH: 37300 to 42600

Section 6 is close to the population of Stockinbingal and NCA05/NCA06. Receivers may fall within 25 metres of works for specific activities. A summary of results for standard hours works is shown in Table 8-12. These levels are a reasonable worst-case scenario with construction activity at its closest point to each receiver.

With more receivers close to the project, the impacts would increase. During standard hours, there is a risk of moderately and highly intrusive noise at a large number of receivers. Activities such as site establishment, drainage, track work and landscaping will need to be managed carefully, including consideration of respite for up to 17 receivers likely to be highly noise affected (>75 dBA).

Table 8-12 Summary of impacts - Section 6 Standard hours

		Activity	Maximum level dB(A)		Predicted no. receivers with exceedance of NML STANDARD hours				
			Res	Non-res	Rec. >75	0-10	10-20	20+	30+
Section 6	1	Utilities relocations & property adjustments	83	54	2	22	14	2	2
	2	Site establishment	91	85	16	32	40	34	19
	3	Earthworks	89	70	1	27	59	17	3
	4	Drainage	90	84	14	24	41	31	16
	5	Material processing	64	49	0	41	8	1	0
	6	Drill and blast	59	44	0	13	1	0	0
	7	Track work	95	89	17	30	46	48	20
	8	Removal of redundant track	65	56	0	21	9	2	0
	9	Stock crossings & private access	48	34	0	2	0	0	0
	10	Level crossing and grade separated road - Earthworks and drainage	83	57	1	26	14	3	1
	11	Level crossing & grade separated road - Paving & line-marking	82	56	1	27	11	3	1
	12	Signals - Minor earthworks & cabling	48	60	0	12	1	0	0
	13	CSR - Minor earthworks & cabling	0	0	0	0	0	0	0
	14	Bridge site - Piling & concrete pours	45	35	0	0	0	0	0
	15	Rail Access Road - Earthworks & compacting	78	59	1	34	16	4	1
	16	Demobilise & landscape	92	86	16	33	40	38	19
	17	Compound operation	71	40	0	2	0	1	1
	18	Concrete batching	54	47	0	6	3	0	0

A summary of predicted levels for OOH works is presented in Table 8-13.

Noisy activities outside standard hours represent a high risk of adverse impacts. Works in the OOH Eve/Night period would result in highly intrusive noise at more than 30 dB above the NML for many activities with trackwork, landscaping, drainage and site establishment the main causes for concern.

These results indicate specific assessment would be required to ensure E3(a) and (b) are achieved for most activities.

Table 8-13 Summary of impacts - Section 6 outside standard hours

Activity			Predicted no. receivers with exceedance of NML							
			OOH DAY hours				OOH EVE/NIGHT hours			
			0-10	10-20	20+	30+	0-10	10-20	20+	30+
Section 5	1	Utilities relocations & property adjustments	39	30	8	2	31	61	16	2
	2	Site establishment	22	52	54	21	9	55	73	34
	3	Earthworks	28	58	45	8	7	55	76	17
	4	Drainage	27	46	50	21	13	52	71	31
	5	Material processing	65	49	1	0	20	106	9	1
	6	Drill and blast	40	13	1	0	65	53	1	0
	7	Track work	12	52	70	29	10	39	93	48
	8	Removal of redundant track	42	26	6	0	31	63	11	2
	9	Stock crossings & private access	0	2	0	0	7	2	0	0
	10	Level crossing and grade separated road - Earthworks and drainage	37	33	10	1	33	63	17	3
	11	Level crossing & grade separated road - Paving & line-marking	35	32	9	1	34	62	14	3
	12	Signals - Minor earthworks & cabling	13	12	1	0	25	25	1	0
	13	CSR - Minor earthworks & cabling	0	0	0	0	0	0	0	0
	14	Bridge site - Piling & concrete pours	3	0	0	0	17	3	0	0
	15	Rail Access Road - Earthworks & compacting	36	44	10	1	29	70	20	4
	16	Demobilise & landscape	18	51	60	24	9	52	77	38
	17	Compound operation	5	2	1	1	22	7	1	1
	18	Concrete batching	35	9	0	0	41	41	3	0

8.2.3 Sleep disturbance

There is potential for sleep disturbance during the night period (which the Noise Policy for Industry (EPA, 2017) defines as 10pm-7m (Monday to Saturday) and 10pm-8am Sundays and public holidays. Assessment of OOH works in the previous sections indicated exceedances of the night NML for most activities when undertaken before 7am. Table 8-14 summarises the likely number of receivers whose sleep works prior to 7am may affect.

Though most Sections would result in exceedance of the conservative screening level, only works in Section 6 at night would see exceedance of the awakening criteria and this should be considered for all works encroaching on the night period.

Table 8-14 Sleep disturbance assessment

Work area	Activity		Predicted no. receivers with exceedance of sleep criteria	
			LAmax > RBL + 15	Awakening (>65 dBA)
Section 1	1	Utilities relocations & property adjustments	2	0
	2	Site establishment	4	0
	3	Earthworks	5	0
	4	Drainage	4	0
	5	Material processing	0	0
	6	Drill and blast	0	0
	7	Track work	5	0
	8	Removal of redundant track	0	0
	9	Stock crossings & private access	0	0
	10	Level crossing and grade separated road - Earthworks and drainage	1	0
	11	Level crossing & grade separated road - Paving & line-marking	1	0
	12	Signals - Minor earthworks & cabling	0	0
	13	CSR - Minor earthworks & cabling	1	0
	14	Bridge site - Piling & concrete pours	1	0
	15	Rail Access Road - Earthworks & compacting	0	0
	16	Demobilise & landscape	1	0
	17	Compound operation	1	0
	18	Concrete batching	0	0
Section 2	1	Utilities relocations & property adjustments	0	0
	2	Site establishment	3	0
	3	Earthworks	6	0
	4	Drainage	3	0

Work area	Activity		Predicted no. receivers with exceedance of sleep criteria	
			LAmax > RBL + 15	Awakening (>65 dBA)
	5	Material processing	0	0
	6	Drill and blast	0	0
	7	Track work	5	0
	8	Removal of redundant track	0	0
	9	Stock crossings & private access	0	0
	10	Level crossing and grade separated road - Earthworks and drainage	1	0
	11	Level crossing & grade separated road - Paving & line-marking	0	0
	12	Signals - Minor earthworks & cabling	0	0
	13	CSR - Minor earthworks & cabling	1	0
	14	Bridge site - Piling & concrete pours	0	0
	15	Rail Access Road - Earthworks & compacting	0	0
	16	Demobilise & landscape	1	0
	17	Compound operation	0	0
	18	Concrete batching	0	0
Section 3	1	Utilities relocations & property adjustments	0	0
	2	Site establishment	5	0
	3	Earthworks	6	0
	4	Drainage	5	0
	5	Material processing	3	0
	6	Drill and blast	5	0
	7	Track work	6	0
	8	Removal of redundant track	0	0
	9	Stock crossings & private access	1	0
	10	Level crossing and grade separated road - Earthworks and drainage	3	0
	11	Level crossing & grade separated road - Paving & line-marking	2	0
	12	Signals - Minor earthworks & cabling	1	0
	13	CSR - Minor earthworks & cabling	3	0
	14	Bridge site - Piling & concrete pours	2	0
	15	Rail Access Road - Earthworks & compacting	1	0

Work area	Activity		Predicted no. receivers with exceedance of sleep criteria	
			LAmax > RBL + 15	Awakening (>65 dBA)
	16	Demobilise & landscape	3	0
	17	Compound operation	2	0
	18	Concrete batching	1	0
Section 4	1	Utilities relocations & property adjustments	1	0
	2	Site establishment	4	0
	3	Earthworks	7	0
	4	Drainage	4	0
	5	Material processing	6	0
	6	Drill and blast	7	0
	7	Track work	7	0
	8	Removal of redundant track	0	0
	9	Stock crossings & private access	2	0
	10	Level crossing and grade separated road - Earthworks and drainage	1	0
	11	Level crossing & grade separated road - Paving & line-marking	1	0
	12	Signals - Minor earthworks & cabling	2	0
	13	CSR - Minor earthworks & cabling	1	0
	14	Bridge site - Piling & concrete pours	1	0
	15	Rail Access Road - Earthworks & compacting	2	0
	16	Demobilise & landscape	1	0
	17	Compound operation	1	0
	18	Concrete batching	2	0
Section 5	1	Utilities relocations & property adjustments	0	0
	2	Site establishment	12	0
	3	Earthworks	80	0
	4	Drainage	12	0
	5	Material processing	0	0
	6	Drill and blast	0	0
	7	Track work	61	0
	8	Removal of redundant track	0	0

Work area	Activity		Predicted no. receivers with exceedance of sleep criteria	
			LAmax > RBL + 15	Awakening (>65 dBA)
	9	Stock crossings & private access	0	0
	10	Level crossing and grade separated road - Earthworks and drainage	0	0
	11	Level crossing & grade separated road - Paving & line-marking	0	0
	12	Signals - Minor earthworks & cabling	0	0
	13	CSR - Minor earthworks & cabling	0	0
	14	Bridge site - Piling & concrete pours	0	0
	15	Rail Access Road - Earthworks & compacting	0	0
	16	Demobilise & landscape	0	0
	17	Compound operation	0	0
	18	Concrete batching	0	0
Section 6	1	Utilities relocations & property adjustments	58	2
	2	Site establishment	100	29
	3	Earthworks	116	16
	4	Drainage	100	29
	5	Material processing	90	1
	6	Drill and blast	115	1
	7	Track work	99	51
	8	Removal of redundant track	78	4
	9	Stock crossings & private access	3	0
	10	Level crossing and grade separated road - Earthworks and drainage	74	3
	11	Level crossing & grade separated road - Paving & line-marking	70	3
	12	Signals - Minor earthworks & cabling	3	0
	13	CSR - Minor earthworks & cabling	74	3
	14	Bridge site - Piling & concrete pours	70	3
	15	Rail Access Road - Earthworks & compacting	3	0
	16	Demobilise & landscape	74	3
	17	Compound operation	70	3
	18	Concrete batching	3	0

8.2.4 Non-residential impacts

Work in Section 1 – 4 are not likely to impact any non-residential receivers. In Section 5, works should not exceed the NML at any non-residential receivers. Once works are close to Stockinbingal, in Section 6, receivers may be affected.

A summary of reasonable worst-case noise at these receivers for activities in Section 6 predicted to exceed the NML is provided in Table 8-15. Exceedance of the NML for site establishment, drainage, Track work and demobilisation / landscaping is predicted at up to five receivers. Most are minor exceedances; however, two sites may experience exceedances of more than 10 dB.

Table 8-15 Predicted noise from works in Section 6 at non-residential receivers

Receiver			NML	*Predicted LAeq, 15 min*			
Ref	Address	Type		Site est	Drain	Track work	Demob/ & l/scape
73	14 Dudauman St	Industrial	75	85	84	89	86
81	24 Hibernia St	Commercial	70	73	72	77	74
84	34-36 Hibernia St	Commercial	70	64	63	68	65
85	Commercial Hotel 32 Martin St	Commercial	70	81	80	84	81
88	26-28 Hibernia St	Commercial	70	71	70	74	71
89	Commercial Hotel 32 Martin St	Commercial	70	68	67	71	69
95	38 Hibernia St	Commercial	70	63	62	66	64
96	40 Hibernia St	Commercial	70	63	62	67	64
97	30 Hibernia St	Commercial	70	64	63	68	65
102	Ellwoods Hall 30 Martin St	Commercial	70	60	59	64	61
104	Stockinbingal Bowling Greens	Active recreation area	65	61	60	65	62
113	64 Hibernia St	Industrial	75	65	64	68	66
115	48 Hibernia St	Commercial	70	64	63	68	65
131	Britannia Street Tennis Courts	Active recreation area	65	49	48	53	50
138	St James Anglican	Place of Worship	65	53	52	57	54
151	Stockinbingal Public School	Educational	55	48	47	52	49
152	Stockinbingal Public School	Educational	55	51	50	54	51
153	Stockinbingal Public School	Educational	55	50	49	53	51
155	Stockinbingal Public School	Educational	55	48	47	52	49
156	Stockinbingal Public School	Educational	55	50	49	53	50
179	St Josephs Catholic	Place of Worship	65	46	45	50	47
195	Stockinbingal Recreation Ground	Active recreation area	65	41	40	45	42
200	Stockinbingal Cemetery	Passive recreation area	60	53	52	56	53

8.2.5 Construction traffic noise

Construction-related traffic numbers were estimated in the project's EIS, as summarised in Table 8-16. Traffic routes are illustrated in Figure 8-1.

Table 8-16 Construction-related traffic volumes

Vehicle type		2-way trips per day
Light vehicles	Cars and utilities	80
Heavy vehicles	Plant deliveries	3
	Quarry deliveries	63
	Concrete deliveries	45
	Inter-section formation haulage	72
	Earthworks general fill haulage	136
	Water tankers	18

Based on existing traffic and forecast construction-related traffic, an assessment was completed in the EIS of the likelihood of traffic noise impacts. As discussed in Section 7.4, a two-stage approach is typically adopted for assessment of traffic noise. The first being a test of 'perceptible increase' where a 2 dB change in traffic noise may be perceptible to the community compared with existing traffic noise. Where there is likely to be a perceptible increase, traffic noise is compared to the limits specified in the Road Noise Policy.

As summarised in Table 8-19, most traffic routes are likely to experience an increase in traffic volumes over existing levels by more than 60%, which would result in perceptible increases in traffic noise. Once compared with the RNP criteria, only one construction route, Troy Street is likely to exceed acceptable traffic noise levels and appropriate controls should be considered in this case.

Out of hours works may be necessary from time to time to work within rail corridor possession constraints or for over-size deliveries or for other quality or safety reasons. Where these are necessary, traffic movements would be considered in the CNVIS process for the proposed work.

Cumulative impacts with project work on the Albury to Illabo section of the Inland Rail project are unlikely, with around 3 kilometres between the start of the project and the town of Illabo. Project-related vehicles on the Olympic Highway outside around 600 metres of the project would not be readily perceptible as being project-related and are typically not assessed as such.

Mitigation measures are discussed in Section 9.



Figure 8-1 Construction traffic routes

Table 8-17 Construction traffic noise assessment

Route	Increase in noise by construction traffic (dB)		Comply with RNP management level?	
	Day	Night	Day	Night
Burley Griffin Way (East)	1.6	0.7	Yes	Yes
Burley Griffin Way (West)	1.4	0.6	Yes	Yes
Grogan Road	9.3	3.1	Yes	Yes
Hibernia Street	3.0	0.4	Yes	Yes
Troy Street	16.9	6.9	NO	Yes
Dudauman Road	10.5	4.0	Yes	Yes
Corbys Lane	0.1	6.9	Yes	Yes
Old Cootamundra Road	7.0	2.0	Yes	Yes
Dimaseer Road	10.0	5.8	Yes	Yes
Ironbong Road	16.8	7.4	Yes	Yes
Old Sydney Road	17.4	10.0	Yes	Yes
Olympic Highway	2.7	0.5	Yes	Yes
Retreat Road	13.4	6.9	Yes	Yes
Junee Reefs Road	13.4	7.8	Yes	Yes
Goldfields Highway	31.7	0.5	Yes	Yes
Stockinbingal Road	4.5	2.0	Yes	Yes

8.3 Vibration Impacts

Use of vibration-intensive equipment near sensitive receivers and structures can cause concerns with regard to human well-being and damage of structures.

Vibration radiation is different to the propagation of airborne noise and is site specific, with actual vibration levels dependent on factors including the type of plant used and the way it is operated as well as the intervening distance and geology between the activity and the receiver.

Indicative vibration levels for typical construction equipment at various distances are illustrated in Figure 8-2. This chart demonstrates vibration close to some equipment can be at high levels but impacts decrease quickly over distance.

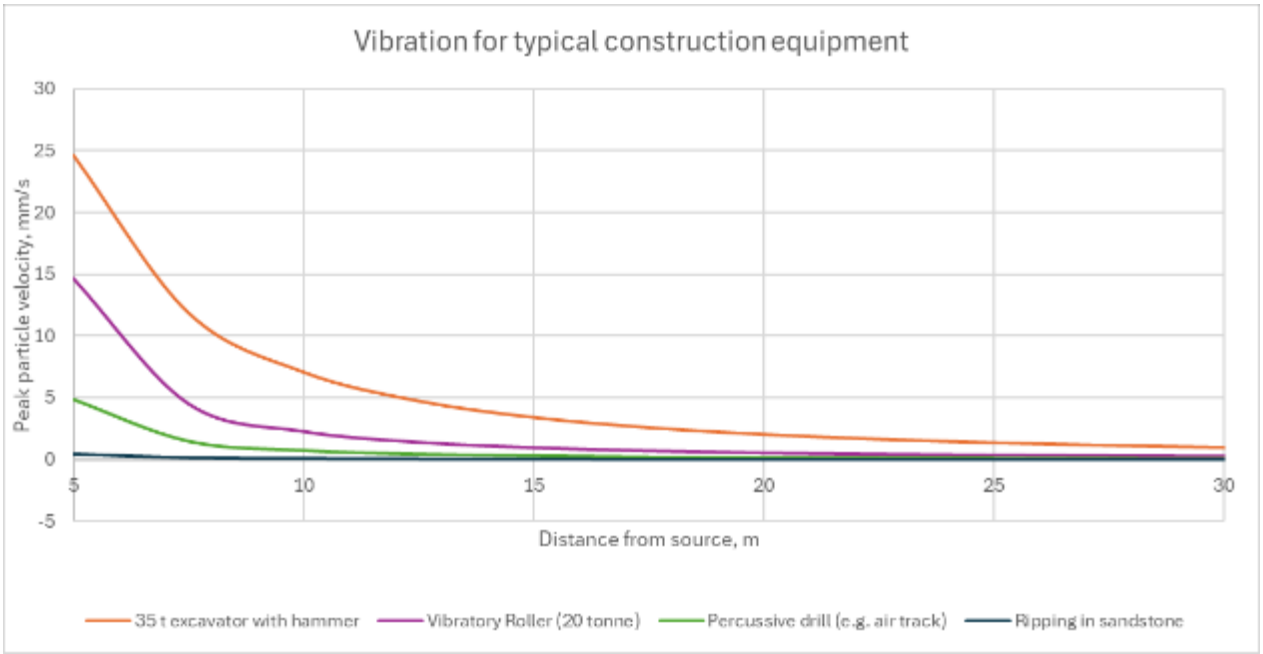


Figure 8-2 Vibration for typical equipment at various distances

Human exposure

At properties near the construction works, nearby receivers may feel vibration when vibration-intensive equipment is in use. Recommended minimum working distances for typical vibration intensive construction equipment for human comfort (response) are shown in Table 8-18.

These distances relate to screening vibration criteria for human comfort and are a guide only. For most construction activities, vibration emissions are intermittent in nature and for this reason, higher vibration levels occurring over shorter time periods are allowed.

Table 8-18 Recommended minimum working distances – human comfort

Vibration intensive plant	Rating/Description	Critical area[1]	Residence (Day)	Residence (Night)	Office	Workshop
Vibratory Roller	<50 kN (1–2 tonne)	25 m	17 m	20 m	11 m	7 m
	<100 kN (2–4 tonne)	25 m	17 m	20 m	11 m	7 m
	<200 kN (4–6 tonne)	50 m	33 m	40 m	21 m	14 m
	<300 kN (7–13 tonne)	124 m	81 m	100 m	52 m	34 m
	>300 kN (13–18 tonne)	124 m	81 m	100 m	52 m	34 m
	>300 kN (>18 tonne)	124 m	81 m	100 m	52 m	34 m
Small hydraulic hammer	300 kg (5 to 12 t excavator)	9 m	6 m	7 m	4 m	3 m
Medium hydraulic hammer	900 kg (12 to 18 t excavator)	29 m	19 m	23 m	12 m	8 m

Vibration intensive plant	Rating/Description	Critical area[1]	Residence (Day)	Residence (Night)	Office	Workshop
Large hydraulic hammer	1,600 kg (18 to 34 t excavator)	91 m	59 m	73 m	38 m	25 m
Vibratory pile driver	sheet piles	25 m	17 m	20 m	11 m	7 m
Piling rig – bored	⩽ 800 mm	5 m	4 m	4 m	3 m	2 m
Jackhammer	Handheld	3 m	2 m	2 m	2 m	1 m

1) Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring.

Buildings and structures

Recommended minimum working distances to reduce the risk of cosmetic damage to buildings or structures from typical vibration intensive construction equipment are presented in Table 8-19.

These distance aim to reduce the risk of cosmetic damage (as per BS 7385:1993 and DIN 4150-3:2016) and are based on the vibration screening criteria in Section 7.5. The minimum working distances are indicative and will vary depending on the plant item, building types and foundations and local geotechnical conditions.

Table 8-19 Minimum working distances - cosmetic damage

Vibration significant plant	Rating/Description	Reinforced or frame structures (BS7385)	Unreinforced or light framed structures (BS7385)	Structurally unsound heritage structures (DIN 4150-3)
Vibratory Roller	<50 kN (1–2 tonne)	3 m	5 m	11 m
	<100 kN (2–4 tonne)	3 m	6 m	13 m
	<200 kN (4–6 tonne)	6 m	12 m	25 m
	<300 kN (7–13 tonne)	8 m	15 m	31 m
	>300 kN (13–18 tonne)	10 m	20 m	40 m
	>300 kN (>18 tonne)	12 m	25 m	50 m
Small hydraulic hammer	300 kg (5 to 12 t excavator)	1 m	2 m	5 m
Medium hydraulic hammer	900 kg (12 to 18 t excavator)	4 m	7 m	15 m
Large hydraulic hammer	1,600 kg (18 to 34 t excavator)	11 m	22 m	44 m
Vibratory pile driver	sheet piles	10 m	2 m to 20 m	5 m to 40 m
Piling rig – bored	⩽ 800 mm	1 m	2 m (nominal)	5 m
Jackhammer	Handheld	1 m	1 m (nominal)	3 m

Based on reasonable worst-case vibration-intensive plant of a 20 tonne vibratory roller, structures within the nominal minimum working distances are summarised below. The minimum working distances are conservative, at 100 metres for human comfort, 50 metres for unsound heritage structures and 25 metres for light framed structures such as residential dwellings. Maps showing the minimum working distance relative to all receivers is provided in Appendix D. A larger resolution map for Section 6 is provided in Figure 8-3.

- Section 1 – Nil
- Section 2 – Nil
- Section 3 – Receiver 18 (Acquired – to be demolished)
- Section 4 – Nil
- Section 5 – Nil
- Section 6
    - Cosmetic damage: Receivers 110, 195, 126, 74, 63, 65, 64, 62, 67, 66, 68, 69, 72
    - Human comfort: Receivers 102, 138, 128, 120, 114, 111, 116, 99, 96, 97, 85, 95, 92, 98, 91, 89, 86, 90, 103, 79, 57, 56, 58, 61, 70
    - Heritage: Kurrajong trees, Stockinbingal Railway Station, Cohen's Trade Place (CWA Rooms), Bank of NSW (residence) Federation period shop, Baker, William Fallon

8.4 Blast Impacts

This section provides an overview of the potential impacts associated with blasting undertaken on the Project. As detailed in Section 9.9, a Blast Management Strategy (separate to this NVMSP) will be developed in accordance with CoA E10 to E14 which will provide further specific assessment and management of blasting activities.

Blasting may be necessary in some cuts along the corridor. Blasting can result in concern from the community on effects of vibration and overpressure on health and on property. By controlling blast design parameters such as the Mass Instantaneous Charge (MIC), blast vibration and overpressure can be kept below the criteria established in Section 7.6. This will minimise the risk of these impacts.

Blast sites are illustrated in Figure 8-5 with nearest sensitive receivers indicated.

To manage blast impacts, control of the MIC is necessary. Based on the following formular for ground-borne vibration and airblast overpressure, Figure 8-4 illustrates the minimum distances required to meet the criteria for given MIC values.

$V = 1140\left(\frac{R}{Q^{1/2}}\right)^{-1.6}$ for ground borne vibration and $P = 100\left(\frac{R}{Q^{1/3}}\right)^{-1.45}$ for airblast overpressure

Where

- R is the distance from blast site and receiver, m
- Q is the explosive charge (MIC), kg
- V is ground borne vibration as vector peak particle velocity, mm/s
- P is the air blast over pressure in kPa

The constants are taken from AS 2187 and will be verified and modified as needed in line with the Blast Management Strategy.

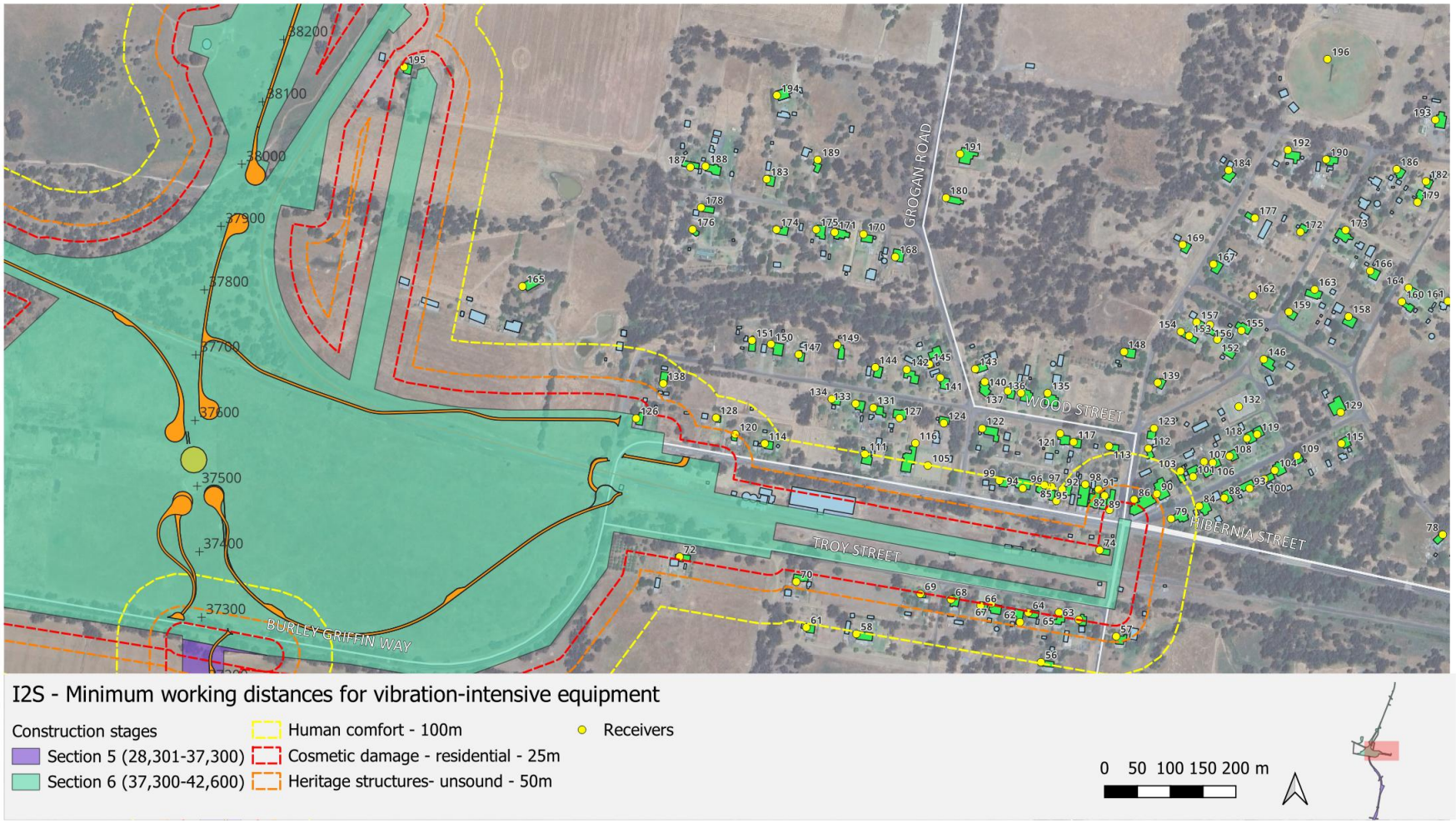


Figure 8-3 Minimum working distances for works in Section 6

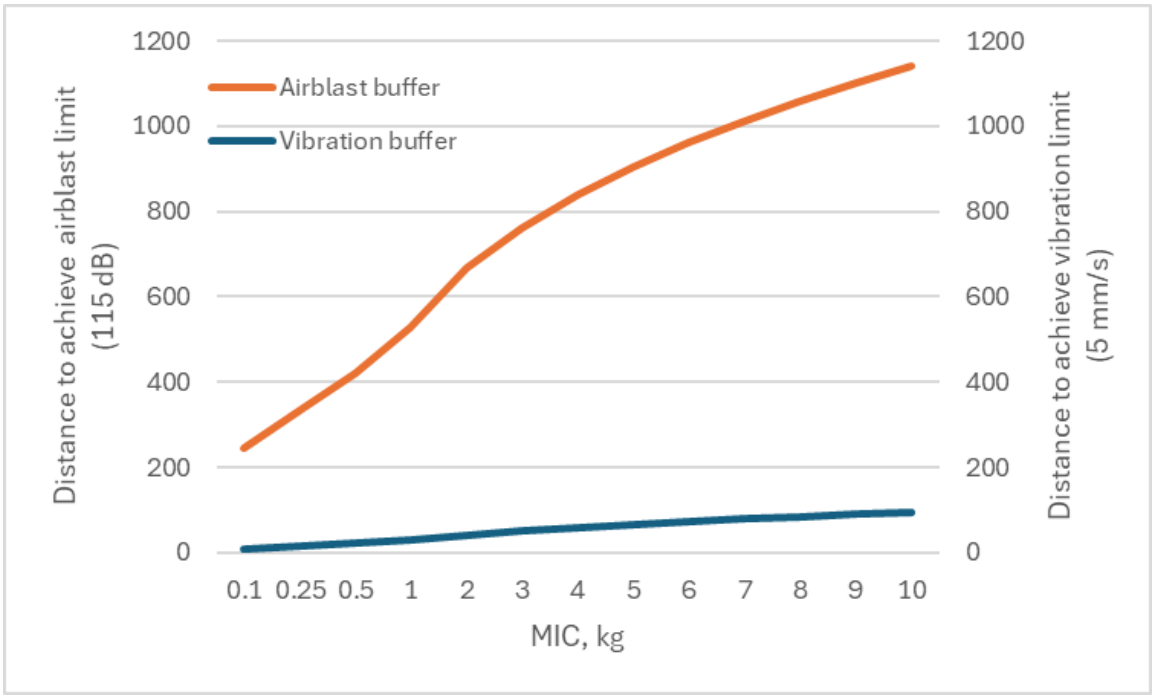
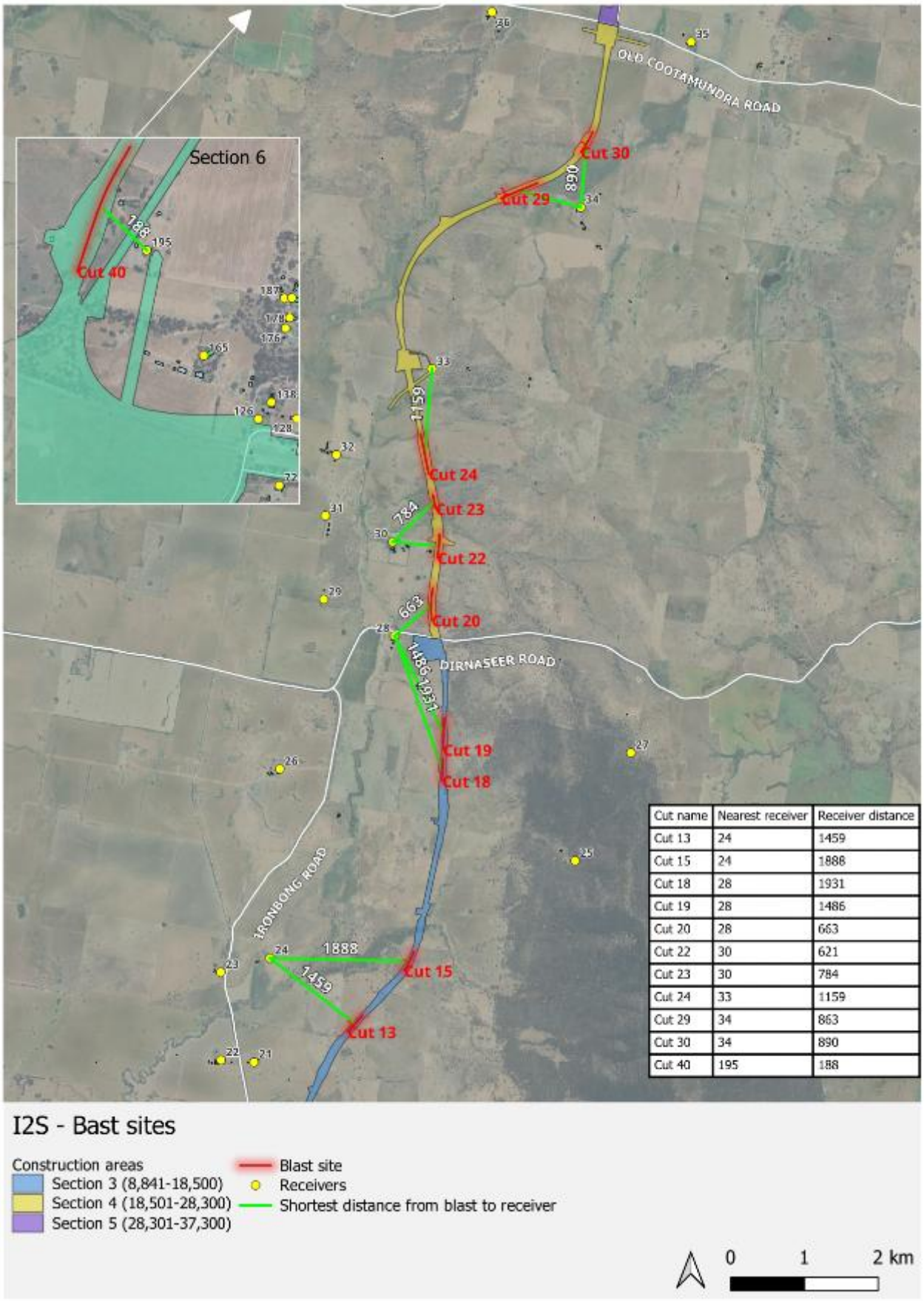


Figure 8-4 MIC management for meeting blast criteria

The distance to the nearest receivers for each blast site varies, with the closest in Section 6 (Cut 40) being less than 200 m and the furthest in Section 3 (Cut 15) at just under 2000m. Ground borne vibration should be straightforward to achieve as MIC will be limited to avoid exceeding airblast limits and vibration is not as sensitive. MIC will be restricted in Section 6 (Cut 40) and will be determined based on a trial blast as described in the Blast Management Strategy.

Each blast shall be designed with the nearest receivers in mind to achieve the blast management levels for vibration and overpressure.



Cut name	Nearest receiver	Receiver distance
Cut 13	24	1459
Cut 15	24	1888
Cut 18	28	1931
Cut 19	28	1486
Cut 20	28	663
Cut 22	30	621
Cut 23	30	784
Cut 24	33	1159
Cut 29	34	863
Cut 30	34	890
Cut 40	195	188

Figure 8-5 Blast location relative to nearest sensitive receivers

9 Environmental Mitigation and Management Measures

9.1 Ongoing risk analysis

This NVMP forms the first stage of impact assessment and is used to establish reasonable and feasible mitigation measures to commence construction.

As the project progresses, construction activities may vary from those assessed in this document or further detail may be warranted to establish more targeted measures. Potential impacts from ongoing noise and vibration impacts will be assessed through additional noise and vibration impact statements (CNVIS). These would be completed by the project's acoustic consultant in some case or through the project team using a project-specific construction noise estimation tool (KNOWnoise).

9.1.1 CNVIS

CNVIS will be a key site management tool providing clear instructions for managing specific worksites. Where an activity is not adequately addressed in the NVMSP and, in the judgement of the Environment Manager, its complexity requires the knowledge and experience of the project's acoustic consultant, a project-specific CNVIS will be prepared by the acoustic consultant before any works that result in noise and vibration impacts commence at the relevant construction worksite.

In accordance with CoA E7, any construction work identified in the CNVIS as exceeding the noise management levels and/ or vibration criteria established in Section 7 must be managed in accordance with this NVMSP.

Each CNVIS would set out the mitigation and management measures required for the construction stage, based on consultation with affected sensitive receivers. They will address:

- Scope of work covered by CNVIS
- Justification for OOHW (where required)
- Nearest noise and vibration sensitive receivers
- Construction noise and vibration objectives (outlined in Section 7)
- Construction noise and vibration impact assessment
- Mitigation options, preferred management measures and ongoing risk management
- Noise and vibration monitoring requirements and auditing process.

Construction noise and vibration impacts associated with a construction worksite would be assessed by identifying the construction activities for each worksite and stage of the Project, including likely plant and equipment. Construction noise and vibration from the identified activities would be predicted and assessed against the relevant noise and vibration objectives to identify the risk of impact. Where there is a risk of impact, all reasonable and feasible noise and vibration management measures would be recommended to reduce or manage the impacts as much as practicable.

Monitored noise and vibration levels will be analysed against the predictions made in the relevant CNVIS. This will allow for ongoing review and verification of the predictive model, and a feedback mechanism to construction planning to ensure ongoing noise and vibration risks are identified and managed appropriately.

Physical noise mitigation measures (where required) such as temporary noise barriers and acoustic enclosures around fixed plant will be outlined in the CNVIS. Furthermore, specific management measures such as staging of works, respite periods and community notification will also be summarised and implemented.

The CNVIS will identify the sensitive receivers that JHG would notify regarding upcoming works to ensure ongoing noise and vibration risks are managed throughout the Project. This notification will include the likely noise and vibration impacts during the assessed works, the duration of impact and any additional mitigation (e.g. respite periods) that may be required to manage noise and vibration impacts.

9.1.2 Noise and Vibration Management Tool – KNOWnoise

Most CNVISs would be completed by the project team using the 3D construction noise and vibration management tool, KNOWnoise. This tool has been developed specifically for the Project to allow specific work areas and activities to be planned, assessed and managed as construction works progress. It would also allow cumulative noise impact from other aspects of the Project or, where relevant, noise from other construction projects, to be assessed and managed in accordance with this NVMSP.

KNOWnoise incorporates ground elevation contours, building heights, the built environment and atmospheric conditions to predict construction noise in accordance with the *International Standard ISO 9613-2:1996 implementing quality standard ISO 17534-1:2015*. All relevant sensitive receivers are integrated into KNOWnoise.

CNVISs prepared through KNOWnoise would establish the overall impacts associated with worksites and ancillary facilities. The Project environment team would use KNOWnoise to manage construction noise and vibration impact by defining specific work areas/activities in the CNVIS as construction progresses and identifying:

- Sensitive receivers where predicted noise levels are above the NMLs so that, where there are residual impacts even after all feasible and reasonable mitigation measures have been adopted, mitigation and management measures can be applied in accordance with this NVMSP
- Buildings/structures within minimum working distances established for cosmetic damage and human annoyance so that appropriate mitigation and management measures can be applied in accordance with this NVMSP.

Noise and vibration monitoring data would be collected throughout delivery of the Project. This feedback loop would ensure the prediction tool is verified and adjusted as required to ensure accuracy across the Project.

9.2 Maximum noise levels for plant and equipment

The Sound Power Level (SWL) represents the total noise output of operating plant and equipment. The SWL is used as a main assumption when predicting Sound Pressure Levels (SPL) at nearby receivers.

All plant and equipment used for the Project should be no higher than the SWL provided in Appendix B. Relevant plant and equipment will be subject to periodic noise level checks to verify compliance.

The target SWL are not critical and would not apply in the following circumstances:

- there are no sensitive receivers which will be impacted by noise i.e. located a great distance away from the works.
- additional mitigation measures are implemented to ameliorate the noise to acceptable levels e.g. noise mats installed, equipment placed behind solid structure, alternative accommodation offered etc.
- specialist plant/equipment where no other reasonable and feasible quieter alternatives exist.
- The cause of the exceedance during measurement is an exception which would not frequently occur during use of the plant/equipment e.g. road saw cutting through an abnormally hard section of material.

Where target SWL and SPLs are exceeded, and is not categorised into the abovementioned circumstances, the specific plant and equipment will be investigated to minimise noise impacts e.g. quieter plant and equipment, additional mitigation measures, timing restrictions etc.

9.3 Traffic Noise Management

In accordance with CoA C19, JHG will implement the following mitigation measures to minimise the impacts of traffic noise associated with construction of the Project.

- Deliveries will be minimised where possible. During deliveries, due care will be taken to minimise impacts by limiting periods of engine idling, use of radios instead of shouting, use of non-tonal reversing beepers where possible, avoiding use of chains for lifting or restraining where possible, avoiding local roads where possible, and unloading / loading undertaken during standard hours. It's noted that tonal reversing alarms are considered highly noise intensive work and are to be managed in accordance with Section 7.3.4, and the OOHWP (Appendix F) if works are being undertaken outside standard construction hours. Additional mitigation measures to manage highly noise intensive works, including tonal beepers is provided in Table 9-4.
- Early occupation and later release of road carriageways and construction sites will be considered, where feasible to minimise noise impacts to receivers from night works.
- The number of vehicle trips to and from site will be optimised including where possible, the use of buses to transport workers to/from the workers accommodation to the work front.
- Haul trucks will be filled to capacity unless impractical to reduce the number of haulage movements.
- Where possible, work compounds, storage areas, parking areas, unloading/loading areas and other semi-permanent construction sites should be located away from noise sensitive receivers. Where this is not possible, the orientation and layout of the work site shall consider noise impacts, and opportunities to shield receivers from noise through the use of site buildings and stockpiles should be considered.
- Ancillary facilities are to be located as far away from sensitive receivers as practical.
- In accordance with CoA E113, the temporary workforce accommodation facility (TWAF) is to have delivery servicing limited to standard construction hours as detailed in Section 9.12, unless being undertaken in accordance with the OOHW Protocol in Section 9.6.
- In accordance with CoA E118, the Employee Code of Conduct sets out the ethical standards for the behaviour and conduct of employees on and off the site, including for driving on public roads. The code of conduct is provided on the Project website – https://inlandrail.com.au/where-we-go/projects/illabo-to-stockinbingal/planning-approval-documents/

9.4 Construction Fatigue and Cumulative Impacts

9.4.1 Construction fatigue

Construction noise and vibration can result in adverse impacts at any time during a project. 'Construction fatigue' has a different connotation and applies to impacts on receivers who may be affected by multiple or prolonged construction projects with sustained impacts over and above the level of disturbance a stand-alone project typically provides.

Factors relevant to noise and vibration, which may lead to fatigue, include:

- prolonged exposure to noise and vibration impacts over a single project in one geographic location;
- noise and/or vibration exposure from concurrent or consecutive projects within the same geographic area or
- poor management of impacts to receivers.

Considering the length of the project corridor, the duration of various activities within this corridor and sparse population, the risk of fatigue in any one geographic location is low as works will generally progress and move away from individual localities.

The exception to this is Section 6 of the project corridor, which is adjacent to the more densely populated town of Stockinbingal and will result in relatively greater durations and combinations of construction activities. These impacts can be managed in line with any typical construction project with appropriate ongoing consideration of potential for impacts and mitigation measures to maintain impacts at a practical minimum.

The Temporary Workforce Accommodation Facility (TWAF) has the potential for on-going noise impacts, however, given the low number and location of the nearest sensitive receivers to the camp (to the east) and the short construction timeline of the camp, it can be concluded that the potential for construction fatigue from the operation of the camp is low. A Temporary Workforce Accommodation Facility (TWAF) Management Plan will be prepared which will outline the operation of the worker accommodation facility and will include the mitigation measures that will be implemented as required under Condition of Approval A18 and as per the requirements of C4. Information about the camp can be found in the Site Establishment Management Plan and the TWAF Management Plan.

Other Inland Rail projects may be coincident or consecutive with this project since they must tie-in to the north and south extents. However, these tie-in areas are sparsely populated with minimal concern of extended impacts.

Therefore the risk of construction fatigue is low and measures described in this CNVMSP are adequate to address impacts as they arise, with a focus on mitigating noise at the source, consultation with affected receivers, providing appropriate respite and completing the project in an efficient manner to reduce the overall project duration.

9.4.2 Cumulative impacts

In accordance with CoA C19, E9 and RMM CR-1, to manage cumulative impacts, JHG will implement the following mitigation measures with the aim of minimising concurrent works near sensitive receivers.

- Coordination and consultation would occur with the proponents of any current development proposals, with potential for cumulative impacts at the appropriate Project stages. If consultation with these proponents during detailed design confirms the likelihood of a cumulative impact, ongoing consultation and coordination would include:
  - provision of regular updates on construction planning for the Proposal
  - identification of key potential conflict points with other construction projects
  - developing mitigation strategies in order to manage conflicts.

  Depending on the nature of the conflict, this could involve coordination of traffic management arrangements between projects, where reasonable and feasible.
- Work will be coordinated between Project construction sites and / or non-project construction works to minimise cumulative noise impacts. This may include but not be limited to scheduled coordination meetings with adjacent construction projects. Outcomes of any coordination efforts may result in adjustment of the Project's noise assessment.
- Coordination between Project teams and other CSSI, SSI and SSD projects that are being constructed nearby where there may be cumulative impacts.
- Where reasonable and feasible, rescheduling of work to provide respite to impacted noise sensitive land user(s) so that appropriate respite is provided to sensitive receivers.

- Consideration to the provision of alternative respite or mitigation to impacted noise sensitive land users e.g. vouchers to spend time away from home at a quieter location, or breaks from certain construction activities or temporary relocation
- Where there is potential for cumulative impacts community consultation will be undertaken to gauge impacts from construction noise and any unknown impacts from concurrent or consecutive sets of construction works.
- Considering changes to construction methodology and/or plant and equipment to minimise impacts
- Additional at source or near source mitigation will be considered where construction noise levels may result in cumulative construction noise impacts, where modified programming of construction methodologies alteration is not practical.

In addition to the above, JHG will coordinate work with other Inland Rail projects, including any work to relocate or connect utilities conducted under any approval pathway, to minimise cumulative and consecutive noise and vibration impacts and maximise respite for affected sensitive receivers.

9.5 Minimising Vibration Impacts

If vibration-generating activities are conducted within minimum working distances of a sensitive receiver (Section7.5) indicating a potential exceedance of vibration screening criteria, a more detailed assessment of the structure would be carried out in accordance with the *Inland Rail NSW Construction Noise and Vibration Management Framework*, to ensure vibration levels remain below appropriate limits for that structure. Vibration monitoring would also be undertaken at the commencement of vibration-generating activities to confirm that structural vibration limits are within the acceptable range and appropriate for that structure. Where vibration levels are found to be unacceptable, alternative work methods would be implemented so the vibration impacts are reduced to acceptable levels. Further details on vibration monitoring are provided in Appendix G.

In addition to mitigation measures outlined in Table 9-4, where human comfort vibration criteria (Section 7.5.1) are exceeded, additional mitigation measures provided in Table 9-3 will be implemented.

9.5.1 Property Condition Surveys

Before commencement of any vibration-intensive work being carried out at or within the minimum distances that may cause cosmetic damage, a structural engineer will undertake condition surveys of all buildings, structures, utilities and the like identified in the documents listed in CoA A1 as being at risk. These distances may be reviewed should other factors arise such as new construction methods or legitimate concerns from residents.

Property condition surveys will only be undertaken where the assets/property landowners has provided consent to complete the property condition survey. The results of the surveys must be documented in a Condition Survey Report for each item surveyed. Copies of Condition Survey Reports must be provided to the owners of the items surveyed, and no later than one month before the commencement of construction.

After completion of construction, post construction condition surveys will be undertaken by a structural engineer on all assets/properties which undertook a pre-construction property condition survey. The results of the surveys must be documented in a Condition Survey Report for each item surveyed. Copies of Condition Survey Reports must be provided to the landowners of the items surveyed, and no later than three months following the completion of construction.

The Project must rectify any property damage caused directly or indirectly by the construction at no cost to the owner. Alternatively the Proponent may pay compensation for the property damage as agreed with the property owner.

9.5.2 Vibration Trials

In addition to the measures listed above and in accordance with CoA C19, JHG will undertake vibration trials on vibration intensive plant and equipment which will be used extensively throughout the Project. Trials will be undertaken at a range of distances which will be used to verify, and if required, update the MWDs provided in Section 8.3.

9.6 OOHW

In accordance with CoA E5, an OOHW Protocol (Appendix F) has been prepared to manage all works undertaken outside the standard construction hours detailed in Section 7.2, that are not subject to an EPL.

OOHW subject to an EPL will be undertaken in accordance with the EPL and any relevant conditions.

Where works are undertaken within the existing rail corridors located at Illabo and Stockinbingal, JHG will obtain permission and access to the corridor from the relevant operating group who is responsible for management of this area of the corridor (UGL or ARTC).

9.7 Additional Management Measures

Where works are outside of standard construction hours detailed in Section 7.2. JHG will implement additional measures commensurate with the impacts as described in Table 9-1 (airborne noise), Table 9-2 (ground borne noise) and Table 9-3 (vibration). As detailed in the CNVF, the measures may be adopted to suit Project needs and community expectations in consultation with ARTC/IRPL and the ER.

Table 9-1 Noise management measures for airborne noise

Time Period		Exceedance of NML	Perception	Duration	Management Measure
OOHW Rest Period – Evenings	Monday – Sunday 6pm – 10pm (including public holidays)	<5	Noticeable	Any	CO1
		5-15	Clearly audible	Any	CO1
		16-25	Moderately intrusive	Any	CO1, CO2
		>25	Highly intrusive	Any	CO1, CO2
				>2 consecutive sleep periods	CO1, CO2, RO
OOHW Sleep Period – Night	10pm to 7am (Mon to Sat) and 10pm to 8am (Sundays and public holidays)	<5	Noticeable	Any	CO1
		5-15	Clearly audible	Any	CO1
		16-25	Moderately intrusive	Any	CO1, CO2
				>2 consecutive sleep periods	CO1, CO2, RO, AO
		>25	Highly intrusive	Any	CO1, CO2, RO
				>2 consecutive sleep periods	CO1, CO2, RO, AO, AA

Table 9-2 Noise management measures for ground borne noise

Time Period		Exceedance of NML	Perception	Duration	Management Measure
OOHW Rest Period – Evenings	Monday – Sunday 6pm – 10pm (including public holidays)	<5	Noticeable	Any	CO1
		5-15	Clearly audible	Any	CO1
		16-25	Moderately intrusive	Any	CO1, CO2
		>25	Highly intrusive	Any	CO1, CO2
				>2 consecutive sleep periods	CO1, CO2, RO
OOHW Sleep Period –	10pm to 7am (Mon to Sat) and 10pm to 8am	<5	Noticeable	Any	CO1
		5-15	Clearly audible	Any	CO1
		16		Any	CO1, CO2

Night	(Sundays and public holidays)		Moderately intrusive	>2 consecutive sleep periods	CO1, CO2, RO, AO, AA
		>25	Highly intrusive	Any	CO1, CO2, RO
				>2 consecutive sleep periods	CO1, CO2, RO, AO, AA

Table 9-3 Vibration management measures

Time Period		Duration	Exceedance of 'preferred value'	Exceedance of 'maximum value'
OOHW Rest Period – Evenings	Monday – Sunday 6pm – 10pm (including public holidays)	Any	CO1, CO2	CO1, CO2, RO
OOHW Sleep Period – Night	Monday – Sunday 10pm – 6am (including public holidays)	Any	CO1, CO2, RO	CO1, CO2, RO, AA

9.7.1 Communication (CO)

The level of noise and vibration impact and duration shall guide communication with receivers by the JHG and/or ARTC/IRPL. Accurate and timely communication is essential to manage and understand community expectations for out of hours works. Two categories of communication (CO) have been developed commensurate with the scale of the impact. The purpose of the communication is described below, but the method of communication will be at the discretion of JHG and in accordance with the CCS which is provided on the Project website – https://inlandrail.com.au/illabo-to-stockinbingal-community-communication-strategy/.

- **Category 1 CO1**: Communication to provide information on the Proposal via letter box drop, email, newsletter, media advertisements and/or website a minimum of 5 days prior to the works commencing.
- **Category 2 CO2**: Communication should be personalised (e.g. door knock, meeting, telephone call). Contact with these residents should commence early to enable feedback to be considered by the Proposal.

At minimum, the information provided to stakeholders (CO1 or CO2) will include:

- The reason the works are required to be undertaken outside of the standard program construction hours
- A diagram that identifies the location of the proposed works in relation to nearby cross streets and local landmarks
- The nature, scope and duration of the works, including start and finish times
- The expected noise and/or vibration impacts on receivers
- Information on how to obtain further information or make a complaint, including an after-hours number and Inland Rail Program website

9.7.2 Respite Offer (RO)

Residential receivers subject to lengthy periods of noise or vibration may be eligible for a respite offer (RO). The purpose of such an offer is to provide residents with respite from an ongoing impact and may comprise of pre-purchased movie tickets, dinner vouchers or similar.

Respite can also be provided by limiting high noise generating works and allowing at least a one-hour respite period between blocks of work. Where possible, the timing of this respite should be discussed with the impacted community.

Respite offers are not applicable to non-residential receivers.

9.7.3 Alternative Accommodation (AA)

Alternate accommodation (AA) options (i.e. accommodation in motels away from the worksite) may be provided for residents living in close proximity to construction sites.

Acceptable accommodation measures shall be developed by JHG for the affected community and be approved by the IRPL Representative prior to discussion with the resident.

9.7.4 Agreements with Owners (AO)

JHG/IRPL may negotiate agreements with residents impacted during the construction period. All negotiated agreements with owners and occupiers of sensitive land uses must be in writing, and include the hours, duration and likely noise levels compared to the ICNG NMLs. The negotiated agreement must be agreed and finalised before the commencement of work affecting the sensitive land uses.

9.8 Community Consultation

The Community and Stakeholder Engagement Team will use a range of communication tools to provide clear, effective and timely information to the predicted affected sensitive receivers and stakeholders in accordance with the CCS. The method of communication will be chosen based on the nature of works and the potential impacts assessed in noise modelling.

Where appropriate, mitigation measures for the works will be considered in consultation with the community. This will include respite periods and will consider the predicted noise levels and the likely frequency and duration of any out-of-hours works that sensitive land uses would be exposed to, including the number of noise awakening events.

As required by Condition E2, consultation with affected receivers will be undertaken on at least a 3-monthly basis. Should complaints be received, consultation with complainants would occur more frequently (based on the nature of the complaints and the works the works they relate to).

Consultation will include the following:

(i) a progressive schedule of anticipated hours of works beyond those permitted by Condition E1 for periods of no less than three months;

(ii) a description of the anticipated construction activities, location and duration of the work;

(iii) the noise characteristics and likely noise levels of the work;

(iv) the practical measures implemented to minimise noisy work and heavy vehicle movements before 7:00am and any time on a Sunday; and

(v) mitigation and management measures which aim to achieve the relevant noise management levels identified in the documents listed under Condition A1 (including the circumstances in which respite or other offers will be available and details about how the affected receivers can access these).

Evidence of this consultation will be reviewed by the ER and available to the Planning Secretary on request.

9.9 Blast Management

Where blasting is proposed to be undertaken for the Project, in accordance with CoA E10-E14, a Blast Management Strategy will be prepared (separate to this NVMSP) by a suitably qualified and experienced person and include the following.

- Sequencing and review of trial blasting to inform blasting;
- Regularity of blasting;
- Intensity of blasting;
- Monitoring blast overpressure and ground vibration;
- Consultation with utility asset owners and managers;
- Measures to minimise blasting impacts;
- Periods of relief; and
- Blasting program.

The Blast Management Strategy must be prepared in accordance with relevant guidelines to ensure that all blasting and associated activities are carried out so as not to generate unacceptable noise and vibration impacts or pose a significant risk to sensitive receivers. The Blast Management Strategy will be submitted to the Planning Secretary for approval no later than one month prior to the commencement of blasting. The Strategy as submitted to the Planning Secretary, will be implemented for all blasting activity.

As detailed in Section 7.2, blasting associated with the CSSI must only be undertaken during the following hours, unless authorised through an EPL if blasting is proposed outside these hours.

- 9:00 am to 5:00 pm, Monday to Friday, inclusive;
- 9:00 am to 1:00 pm, Saturday; and
- at no time on Sunday or on a public holiday;

This CoA does not apply in the event of a direction from police or other relevant authority or utilities for safety or emergency reasons to avoid loss of life, property loss and/or to prevent environmental harm.

9.10 Early Implementation of Operational Noise Mitigation Measures

In accordance with CoA E20, operational noise mitigation measures to be undertaken as part of the Operational Noise and Vibration Review – Rail (CoA E15) and Operational Noise and Vibration Review – Road (CoA E17) (such as at-property architectural treatments) that will not be affected by construction work, must be implemented:

- within twelve (12) months of the commencement of construction affecting the impacted receiver/s;
- in the case of at-property treatments, as agreed with the landowner; or
- as agreed by the Planning Secretary.

Where implementation of operational noise mitigation measures are not proposed in accordance with the above, the Project must submit to the Planning Secretary a report providing justification as to why, along with details of temporary measures that would be implemented to reduce construction noise impacts, until such time that the operational noise mitigation measures are implemented. The report must be endorsed by the ER and submitted to the Planning Secretary prior to the commencement of construction which would affect the identified sensitive receivers.

Examples of potential operational noise mitigation measures which may be implemented are provided below noting that it will be subject to the Operational Noise and Vibration Review for Rail (CoA E15) and Road (CoA E17).

- At property treatments such as double glazing of windows, acoustic seals around doors and windows etc.
- Placement of noise barriers (noise walls, mounds etc.) between the noise source and receivers

- Treatment at the noise source including acoustic enclosures/barries, railway manufacturing/grinding to achieve ISO 3095 roughness spectra, railway speed reductions, regular maintenance, absorptive pavement/vegetation, horn usage etc.

9.11 Community, religious, educational institutions and noise sensitive businesses

In line with Condition E6, impacts on noise sensitive non-residential land uses has been assessed. Such receivers are located in Stockinbingal; however predictions indicate NMLs for Places of Worship and public school should not be exceeded.

Where ongoing risk analysis including activity and site-specific CNVIS is completed and indicates impacts above the NML are likely, such works would not be timetabled within sensitive periods or during important events as identified through community consultation, unless other reasonable arrangements with the affected institutions or businesses are made at no cost to the affected institution or business or as otherwise approved by the Planning Secretary.

9.12 General Noise and Vibration Mitigation and Management Measures

In accordance with the CoA, mitigation measures will be implemented with the aim of achieving specific measures and requirements to address contract specifications, CoA and RMMs in relation impacts of noise and vibration on the environment. These measures are outlined in Table 9-4.

Table 9-4 Noise and vibration mitigation and management measures

Ref	Measure / Requirement	Timing / Frequency	Responsibility	Reference / Source
General, Training and Awareness				
NV1	A construction NVMSP would be prepared and implemented in accordance with the CNVMF. The NVMSP would include measures, processes and responsibilities to manage and monitor noise and vibration, and minimise the potential for impacts during construction. The NVMSP must be endorsed by the ER and then submitted to the Planning Secretary for approval no later than one (1) month before the commencement of construction.	Prior to construction	JHG Site Supervisor JHG Environment Manager	RMM NV-6 CoA C19
NV2	Location and activity-specific construction noise and vibration impact statements would be prepared based on a more detailed understanding of the construction methods, including the size and type of construction equipment, duration and timing of works, construction traffic associated with the Project, and detailed reviews of local receivers as required.	Throughout construction	JHG Construction Manager JHG Environment Manager	RMM NV-1
NV3	Training will be provided to relevant Project personnel, including relevant sub-contractors on noise and vibration requirements from this NVMSP through inductions, toolboxes or targeted training. Training will cover the following: • Nominated construction hours, restrictions and general requirements for OOHW • Avoiding use of radios or stereos outdoors during standard working hours where residents or Public Schools may be affected and at all times during work outside standard working hours • Avoiding shouting and minimise talking loudly and slamming vehicle doors • Avoiding communicating and signalling using horns • Where practical, operate machines at low speed or power and switch off when not used rather than left idling for prolonged periods • Minimising reversing • Avoiding dropping materials from height and avoiding metal to metal contact on material • All site personnel will be responsible for managing noise from their work activities and to work in a manner that will minimise noise emissions • Measures to minimise sleep disturbance impacts from construction vehicles.	Prior to construction Construction	JHG Environment Manager	Specification NSW Construction Noise and Vibration Framework (CNVF) – Table 4 Good practice

Ref	Measure / Requirement	Timing / Frequency	Responsibility	Reference / Source
NV4	Daily site-specific briefings for all employees and contractors will include: • Site specific noise management measures; • Location of nearest noise sensitive receivers; • Construction employee parking areas; • Behavioural practices (e.g. avoid swearing, shouting, dropping materials from heights); and • Designated loading/unloading areas and procedures.	Construction	JHG Site Supervisor	CNVF – Table 4
NV5	The location of sensitive receivers, heritage items and any other relevant information is to be included in Sensitive Area Plans and communicated to the workforce.	Prior to construction	JHG Environment Manager	Good practice
NV6	Prior to arriving on site, drivers will be advised of designated vehicle routes, parking locations, acceptable delivery hours specific to the site and other relevant practices (i.e. minimising the use of engine brakes and no extended periods of engine idling). This will be communicated using notifications under contract provisions and communication with companies using heavy vehicles.	Construction	JHG Site Supervisor	Good practice
NV7	CNVISs will be prepared for the Project in accordance with Section 9.1. Verification of predicted levels will be undertaken in accordance with the CNVIS.	Prior to construction Construction	JHG Environment Manager	Good practice
NV8	In accordance with CoA E20, operational noise mitigation measures to be undertaken as part of the Operational Noise and Vibration Review – Rail (CoA E15) and Operational Noise and Vibration Review – Road (CoA E17) (such as at-property architectural treatments) that will not be affected by construction work, must be implemented: • within twelve (12) months of the commencement of construction affecting the impacted receiver/s; • in the case of at-property treatments, as agreed with the landowner; or • as agreed by the Planning Secretary.	Construction	JHG Environment Manager JHG Construction Manager	CoA E20
Construction Hours				
NV9	Works would be undertaken during approved working hours as detailed in Section 7.2.	Construction	JHG Environment Manager	CoA E1-E4

Ref	Measure / Requirement	Timing / Frequency	Responsibility	Reference / Source
			JHG Construction Manager JHG Site Supervisor	
NV10	Where works are undertaken outside standard construction hours including where COA E2 and E3b cannot be met, works are to be undertaken in accordance with Section 9.6 and the applicable OOHWP or relevant EPL requirements.	Construction	JHG Environment Manager JHG Construction Manager JHG Site Supervisor	RMM NV-7 CoA E5 CoA E5
NV11	Despite CoA E1, work (excluding establishment of the temporary workforce accommodation facilities) may be undertaken during the hours of 6:00 am to 6:00 pm each day provided: (a) no work affects any given receiver between the hours of 6:00 pm on a Saturday and 7:00 am on a Monday every second week; (b) only low impact noise activities (defined in Condition E3(b)) are permitted between 6.00 am and 7.00 am; and (c) consultation with affected receivers occurs at least every three months, or more frequently following complaints recorded in the Complaints Register required by Condition B8, to determine respite or additional mitigation measures. In consulting with the affected receivers, the following must be provided: (i) a progressive schedule of anticipated hours of works beyond those permitted by Condition E1 for periods of no less than three months; (ii) a description of the anticipated construction activities, location and duration of the work; (iii) the noise characteristics and likely noise levels of the work; (iv) the practical measures implemented to minimise noisy work and heavy vehicle movements before 7:00am and any time on a Sunday; and (v) mitigation and management measures which aim to achieve the relevant noise management levels identified in the documents listed under Condition A1 (including the circumstances in which respite or other offers will be available and details about how the affected receivers can access these). Evidence of consultation and the outcomes, including any changes to construction practices or staging, must be reviewed by the ER and provided to the Planning Secretary on request. Notes:	Construction	JHG Environment Manager JHG Construction Manager JHG Site Supervisor	CoA E2

Ref	Measure / Requirement	Timing / Frequency	Responsibility	Reference / Source
	1. This condition does not affect any other offers of respite or noise mitigation required under this approval. 2. This condition does not prevent a working schedule of ten consecutive days of work followed by four consecutive days of no work provided one day of no work is a Sunday.			
NV12	Except as permitted by an EPL or approved through an OOHWP (for work not subject to an EPL), highly noise intensive work that results in an exceedance of the applicable NML at the same receiver must only be undertaken: (a) between the hours of 8:00 am to 6:00 pm Monday to Friday (excluding public holidays); (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 of at least one hour between each block of highly noise intensive work. For the purpose of CoA E4, 'continuous' includes any period during which there is less than a one-hour respite between ceasing and recommencing any work that is the subject of this condition.	Construction	JHG Environment Manager JHG Construction Manager JHG Site Supervisor	CoA E4
NV13	High noise and vibration generating activities, which exceed the NML for sensitive receivers, would only be carried out in continuous blocks, not exceeding three hours each, with a minimum respite period of one hour between each block.	Construction	JHG Environment Manager JHG Construction Manager JHG Site Supervisor	CoA E4
NV14	Work that results in noise levels above NMLs at community, religious, educational institutions and noise and vibration-sensitive businesses and critical working areas (such as theatres, laboratories and operating theatres) must not be timetabled within sensitive periods or during important events, unless other reasonable arrangements with the affected institutions or businesses are made at no cost to the affected institution or business or as otherwise approved by the Planning Secretary.	Construction	JHG Community and Stakeholder Manager	CoA E6
NV15	Blasting associated with the CSSI must only be undertaken during the following hours: • 9:00 am to 5:00 pm, Monday to Friday, inclusive;	Construction	JHG Construction Manager	CoA E14

Ref	Measure / Requirement	Timing / Frequency	Responsibility	Reference / Source
	• 9:00 am to 1:00 pm, Saturday; and • at no time on Sunday or on a public holiday; or as authorised through an EPL if blasting is proposed outside of these hours. Refer to Section 7.2 and 9.9 for further details.			
NV16	OOHW deliveries will be minimised where possible. Where out of hours deliveries are required, due care will be taken to minimise impacts which may include no extended periods of engine idling, use of radios instead of shouting, use of non-tonal reversing beepers where possible, avoiding use of chains for lifting or restraining where possible and unloading / loading undertaken during standard hours.	Construction	JHG Site Supervisor	Good practice
NV17	When working adjacent to schools, medical centres, childcare centres or places of worship, particularly noisy activities will be scheduled outside of operating or service hours where possible.	Construction	JHG Site Supervisor JHG Community and Stakeholder Manager	CNVF – Table 4
NV18	Delivery servicing which is undertaken outside working hours provided in Section 7.2 will need to comply with the relevant OOHW requirements detailed in Section 9.6.	Construction	JHG Site Supervisor	CoA E113
Plant and Equipment				
NV19	All plant and equipment used for the Project should target to be no higher than the SWL and SPL shown in Appendix B. Relevant plant and equipment will be subject to periodic noise level checks to verify compliance.	Construction	JHG Site Supervisor JHG Environment Manager	Good practice
NV20	Equipment that is used intermittently is to be shut down when not in use.	Construction	JHG Site Supervisor	CNVF – Table 4
NV21	The offset distance between noisy plant and noise sensitive receivers will be maximised.	Construction	JHG Site Supervisor	CNVF – Table 4
NV22	Static plant should be located as far as possible from sensitive receivers, be located to take advantage of natural acoustic screening such as terrain, site buildings, etc and where necessary for reduction of noise impacts, provided with an acoustic enclosure.	Construction	JHG Site Supervisor	CNVF – Table 4

Ref	Measure / Requirement	Timing / Frequency	Responsibility	Reference / Source
NV23	Plant and equipment will be used and maintained in a proper and efficient manner, in accordance with the manufacturers' specification. Plant and equipment will be inspected as part of prestarts, which will include a visual check that mufflers are not defective and that noise does not sound excessive.	Construction	JHG Site Supervisor	CNVF – Table 4
NV24	Avoid the simultaneous operation of noisy plant within discernible range of noise sensitive receivers where possible.	Construction	JHG Site Supervisor	CNVF – Table 4
NV25	Non-tonal reversing beepers (or an equivalent mechanism) must be fitted and used on all relevant construction vehicles and mobile plant regularly used on site and for out of hours work. Consider the use of ambient sensitive alarms that adjust output relative to the ambient noise level. This does not apply to plant/equipment which require tonal alarms as per relevant safety legislation/guidelines i.e. Elevated Work Platforms, cranes etc.	Construction	JHG Site Supervisor	CNVF – Table 4
NV26	Where reasonable and feasible, noise and vibration impacts will be reduced through the selection of less noise intensive equipment and methods and electric/hydraulic equipment wherever possible. Plant and equipment will use the minimum size and power requirement to complete a task.	Construction	JHG Site Supervisor	CNVF – Table 4
NV27	The distance between noisy plant items and nearby noise sensitive receivers will be maximised where feasible, with equipment orientated within the available space to reduce noise, this will be documented on site layout plans. Additionally, the use of alternative construction and demolition techniques will be considered where reasonable and feasible to reduce construction noise and vibration impacts.	Construction	JHG Site Supervisor JHG Construction Manager	Good practice
NV28	Relevant stationary noise sources, such as generators, pumps, compressors etc. which are causing significant noise impacts to sensitive receivers will be enclosed or shielded (noise mats) where reasonable and feasible.	Construction	JHG Site Supervisor	Good practice
Compounds				
NV29	Construction compound site layouts, including minor ancillary facilities, are to maximise opportunities to mitigate noise impacts in accordance with the ICNG. Where reasonable and feasible, this may include: • connection to power to avoid generator use • planning vehicle movements to minimise need for vehicle reversing movements	Prior to construction Construction	JHG Site Supervisor JHG Construction Manager	Good practice

Ref	Measure / Requirement	Timing / Frequency	Responsibility	Reference / Source
	• placement of site offices/solid structures to maximise shielding. • shielding of stationary noise sources • use of noise blankets • solid perimeter hoarding • selecting access points/roads away from sensitive receivers • minimising the need to reverse (triggering reverse alarm noise impacts)			
NV30	Boundary screening must be erected between ancillary facilities (excluding minor ancillary facilities) and temporary workforce accommodation facility, adjacent to and visible from sensitive land use(s) (including occupied residences on agricultural properties) for the duration of the time that the ancillary facility or accommodation facility is in use, unless otherwise agreed with the owner and occupier of the adjacent sensitive land use(s). Boundary screening must minimise visual impacts on adjacent sensitive land use(s) and not create a fire hazard.	Construction	JHG Site Supervisor JHG Construction Manager	CoA C10
NV31	Where possible, construction compounds should be located a minimum of 1km from the nearest resident or noise sensitive receiver.	Construction	Site Supervisor	CNVF – Table 4
NV32	Temporary workforce accommodation facilities must be completed prior to commencement of construction. The accommodation facilities must be designed to ensure sufficient capacity to house the peak workforce and operate to ensure for the surrounding community and accommodation facility occupants: (a) environmental amenity, particularly in relation to noise, air quality and lighting; and (b) security, in particular for vulnerable community members and workers.	Prior to construction	JHG Site Supervisor JHG Construction Manager	CoA E111
NV33	Outdoor recreation areas of the accommodation facilities can only be used between 7.00am and 10.00pm daily.	Construction	JHG Site Supervisor JHG Construction Manager	CoA E145
Road Noise				
NV34	The number of vehicle trips to and from site will be optimised.	Construction	Site Supervisor	CNVF – Table 4

Ref	Measure / Requirement	Timing / Frequency	Responsibility	Reference / Source
NV35	Deliveries will be minimised where possible. During deliveries, due care will be taken to minimise impacts by limiting periods of engine idling, use of radios instead of shouting, use of non-tonal reversing beepers where possible, avoiding use of chains for lifting or restraining where possible, avoiding local roads where possible, and unloading / loading undertaken during standard hours.	Construction	JHG Construction Manager	Good practice
NV36	Early occupation and later release of road carriageways and construction sites will be considered, where feasible to minimise noise impacts to receivers from night works.	Construction	JHG Site Supervisor JHG Construction Manager	Good practice
NV37	In accordance with CoA E113, the TWAF is to have delivery servicing limited to standard construction hours as detailed in Section 7.2, unless being undertaken in accordance with the OOHW Protocol in Section 9.6.	Construction	JHG Site Supervisor JHG Construction Manager	CoA E113
NV38	In accordance with CoA E118, the Employee Code of Conduct will set out the ethical standards for the behaviour and conduct of employees on and off the site, including for driving on public roads. The code of conduct is provided on the Project website – https://inlandrail.com.au/where-we-go/projects/illabo-to-stockinbingal/planning-approval-documents/	Construction	JHG Construction Manager	CoA E118
Vibration Management				
NV39	Before commencement of any work, a structural engineer must undertake condition surveys of all buildings, structures, utilities and the like identified as being at risk of damage. The results of the surveys must be documented in a Condition Survey Report for each item surveyed. Copies of Condition Survey Reports must be provided to the owners of the items surveyed, and no later than one month before the commencement of construction.	Prior to construction	JHG Construction Manager	CoA E145
NV40	After completion of construction, condition surveys of all items for which condition surveys were undertaken in accordance with CoA E145 of this approval must be undertaken by a structural engineer. The results of the surveys must be documented in a Condition Survey Report for each item surveyed. Copies of Condition Survey Reports must be provided to the landowners of the items surveyed, and no later than three (3) months following the completion of construction.	Construction	JHG Construction Manager	CoA E146

Ref	Measure / Requirement	Timing / Frequency	Responsibility	Reference / Source
NV41	The Proponent, where liable, must rectify any property damage caused directly or indirectly (for example from vibration or from groundwater change) by the construction or operation at no cost to the owner. Alternatively the Proponent may pay compensation for the property damage as agreed with the property owner.	Construction	JHG Construction Manager	CoA E147
NV42	Where vibration levels are predicted to exceed cosmetic damage screening criteria, a more detailed assessment of the structure and vibration monitoring would be carried out in accordance with the CNVMF, to ensure vibration levels remain below appropriate limits for that structure. See Section 9.5 for further details. Where human comfort vibration criteria (Section 7.5.1) are exceeded, additional mitigation measures provided in Table 9 3 will be implemented.	Pre-construction	JHG Environment Manager	RMM-NV2 Good practice
NV43	JHG will undertake vibration trials on vibration intensive plant and equipment which will be used extensively throughout the Project. Trials will be undertaken at a range of distances which will be used to verify, and if required, update the MWDs provided in Section 8.3.	Construction	JHG Environment Manager	CoA C19
NV44	Where vibration and overpressure from blasting or construction activities are predicted to approach the relevant limits, dilapidation surveys on potentially affected buildings shall be undertaken.	Construction	JHG Environment Manager JHG Construction Manager	CNVF – Table 4
NV45	Prior to the commencement of vibration-intensive works within the minimum working distances for cosmetic damage for heritage items, the potential for damage to the item would be assessed. Where there is potential for damage, alternative methods that generate less vibration would be investigated and substituted where practicable. Where residual cosmetic damage risks remain, condition surveys would be carried out and vibration monitoring with real-time notification of exceedance would occur during the activity. Site activities would be modified, where practicable, to avoid exceeding the cosmetic damage criteria. Any identified vibration-related damage to the items would be rectified.	Construction	JHG Environment Manager JHG Construction Manager	RMM NV-10
Noise and Vibration Monitoring				

Ref	Measure / Requirement	Timing / Frequency	Responsibility	Reference / Source
NV46	Noise and vibration monitoring will be carried out in accordance with Section 10.3.	Construction	JHG Environment Manager JHG Construction Manager JHG Site Supervisor	Good practice
NV47	The Noise Monitoring Program must be prepared and implemented in accordance with the requirements of *Approved Methods for the Measurement and Analysis of Environmental Noise* (EPA). The Noise Monitoring Program must be endorsed by the ER and then submitted to the Planning Secretary for approval no later than one (1) month before the commencement of construction	Prior to construction	JHG Environment Manager	CoA C30
NV48	Verification monitoring will be carried out confirm that actual noise and vibration levels are consistent with noise and vibration impact predictions and that the management measures that have been implemented are appropriate.	Construction	JHG Environment Manager	Good practice
NV49	Attended noise and/or vibration monitoring will be offered upon receipt of a complaint, unless monitoring results at or near the receiver for the activity have been collected recently and are within the predicted noise and/or vibration levels. Measured noise/vibration levels will be compared to predicted levels to confirm that all appropriate mitigation measures have been implemented	Construction	JHG Environment Manager	Good practice
NV50	All noise monitoring for the purposes of determining compliance with the conditions of the CoAs and EPL will consider and be generally undertaken in accordance with; (a) Australian Standard AS 1055: 2018 Acoustics - Description and measurement of environmental noise; and (b) the compliance monitoring guidance provided in the chapter 7 'Monitoring Performance' of the Noise Policy for Industry (EPA, 2017).	Construction	JHG Environment Manager	Good practice
NV51	All vibration monitoring will be: a) undertaken in accordance with the technical guidance provided in the Assessing Vibration: a technical guideline (DEC, 2006); and b) assessed and reported against the acceptable and maximum values of human exposure to vibration set out in Section 7.5 of this guideline.	Construction	JHG Environment Manager	CoA E7
NV52	All noise and vibration monitoring for the purposes of determining compliance with the conditions of the CoAs and EPL will be undertaken by a Competent Person as defined by the EPA.	Construction	JHG Environment Manager	Good practice

Ref	Measure / Requirement	Timing / Frequency	Responsibility	Reference / Source
NV53	If vibration-generating activities are conducted within minimum working distances of a sensitive receiver, attended vibration measurements would be undertaken at the commencement of vibration-generating activities to confirm that structural vibration limits are within the acceptable range. Where vibration levels are found to be unacceptable, alternative work methods would be implemented so the vibration impacts are reduced to acceptable levels.	Construction	JHG Environment Manager	NV-8
Blast Management				
NV54	A blast management strategy would be prepared in accordance with relevant guidelines, and in consultation with the EPA, and would include: • sequencing and review of trial blasting to inform blasting • regularity of blasting • intensity of blasting • periods of relief • blasting program. Monitoring of airblast and ground vibration caused by blasting would be conducted in line with *AS 2187.2:2006: Storage and use Part 2: Explosives* (Standards Australia, 2006). Monitoring would be conducted at the nearest sensitive receiver and non-sensitive receiver (if closer to the blasting zone than the closest sensitive receiver) and assessed in accordance with the criteria outlined in this document.	Construction	JHG Construction Manager	RMM NV-3 CoA E10 – E13
NV55	Blasting would be undertaken during the recommended standard hours for blasting. Management measures defined by the blasting management strategy would be implemented.	Construction	JHG Construction Manager	RMM NV-11
Cumulative Impacts and Construction Fatigue				
NV56	Mitigation measures detailed in Section 9.4 will be implemented where practical to manage any cumulative impacts and construction fatigue.	Construction	JHG Environment Manager JHG Construction Manager	CoA C19 RMM CR-1
NV57	The Proponent must coordinate work with other Inland Rail projects, including any work to relocate or connect utilities conducted under any approval pathway, to minimise cumulative and consecutive noise and vibration impacts and	Construction	JHG Environment Manager	CoA E9

Ref	Measure / Requirement	Timing / Frequency	Responsibility	Reference / Source
	maximise respite for affected sensitive receivers. Coordination and mitigation measures must be detailed in the NVMSP required by CoA C17.		JHG Construction Manager	
Consultation and Complaints Management				
NV58	Consultation of the NVMSP is to be undertaken in accordance with CoA C17	Prior to construction	JHG Community and Stakeholder Manager	CoA C17
NV59	All consultation, including those required for OOHW, will be undertaken in accordance with the CCS and Stakeholder and Community Engagement Plan. Minimum notification timeframes for relevant works will be implemented.	Construction	JHG Community and Stakeholder Manager	CEMF
NV60	Where works are conducted outside of standard construction hours detailed in Section 7.2, and noise and vibration result are in exceedance of noise management levels, JHG will implement additional measures detailed in the CNVMF.	Construction	JHG Environment Manager	CNVF
NV61	Affected sensitive receivers will be consulted prior to the undertaking of OOHW to determine appropriate mitigation measures which may include respite periods.	Construction	JHG Community and Stakeholder Manager	Good practice
NV62	Owners and occupiers of properties at risk of exceeding the screening criteria for cosmetic damage must be notified before construction that generates vibration commences in the vicinity of those properties. If the potential exceedance is to occur more than once or extend over a period of 24 hours, owner and occupiers must be provided with a schedule of potential exceedances for the duration of the potential exceedances, unless otherwise agreed by the owner and occupier. These properties are identified in Section 8.3 and Appendix D.	Construction	JHG Community and Stakeholder Manager	CoA E8
NV63	Consultation will be carried out with affected receivers in response to a complaint relating to construction noise and/or vibration impacts in order to organise attended noise and/or vibration monitoring.	Construction	JHG Community and Stakeholder Manager	Good practice
NV64	All validated complaints related to noise will be investigated to determine whether the works were compliant with the OOHW permit. Complaints will be recorded and managed as detailed in Section 10.10. Any noise and/or vibration monitoring required following a complaint is detailed in Section 10.3 and Appendix G.	Construction	JHG Environment Manager	CNVF – Table 4

Ref	Measure / Requirement	Timing / Frequency	Responsibility	Reference / Source
NV65	A telephone, email and web-based community information service shall be established to allow the community to obtain additional information on construction activities, provide feedback or make a complaint. Community contact details are provided in the CCS which is available of the Project website – https://inlandrail.com.au/illabo-to-stockinbingal-community-communication-strategy/.	Construction	JHG Community and Stakeholder Manager	CNVF – Table 4
NV66	Regular communications on the activities and progress of the Proposal shall be provided to the community (e.g. via newsletter, email and/or website).	Construction	JHG Community and Stakeholder Manager	CNVF – Table 4 CoA E2

10 Compliance Management

10.1 Roles and Responsibilities

Roles and responsibilities related to the environment discipline and the Projects organisational structure are outlined in Section 7.1 of the CEMP.

In addition to this, JHG have engaged a noise and vibration specialist to:

- Prepare, review, comment and endorse this NVMSP.
- Preparation of the Project-wide CNVIS.
- Development of the noise and vibration management tool (KNOWnoise) for the Project.
- Provide any specialist noise and vibration guidance on blasting activities and the Blast Management Plan
- Assist and/or undertake vibration trials where relevant
- Provide any advice/guidance on vibration criteria and MWDs, including for heritage structures
- Provide advice and guidance to manage and minimise potential impacts to sensitive receivers.
- Undertake noise and vibration monitoring.

10.2 Training

All employees, contractors and sub-contractors working on site will undergo site induction training that includes construction noise and vibration management issues tailored to the Illabo to Stockinbingal Project. The induction training will address elements related to noise and vibration management including, but not limited to the following.

- Existence and requirements of this sub-plan
- Relevant legislation
- Approved Project construction hours
- The process for seeking approval for OOHW, including consultation
- Location of noise sensitive areas along the alignment
- Complaints reporting
- General noise and vibration management measures
- Specific responsibilities to minimise impacts on the community and built environment from noise and vibration associated with the works.

Additional daily and task-specific training and awareness material may be delivered to relevant staff and workforce, in the form of toolbox talks and pre-start meetings, to ensure that where detailed information is required, it is accessible to all involved with the Project.

All noise and vibration monitoring for the purposes of determining compliance with the conditions of the CoAs and EPL will be undertaken by a Competent Person as defined by the Projects EPL.

Refer to Section 7.1 of the CEMP for further detail.

10.3 Monitoring and Inspections

Noise and vibration monitoring will be undertaken in accordance with the Noise and Vibration Monitoring Program (Appendix G), prepared in line with CoA C27, C28 and C30. The Noise and Vibration Monitoring

Program must be prepared and implemented in accordance with the requirements of *Approved Methods for the Measurement and Analysis of Environmental Noise* (EPA). Monitoring will include, but not limited to the following.

- Periodic noise monitoring at various stages of the Project to verify predicted noise levels from the CNVIS
- Spot checks for noise intensive plant and equipment to confirm they comply with target SPLs
- Attended noise and vibration monitoring undertaken outside standard construction hours, where required by the OOHW permit and associated CNVIS.
- Noise and/or vibration monitoring following a legitimate complaint (in accordance with the Program)
- Vibration trials for various plant and equipment at a range of distances.
- As directed by an authorised officer of the EPA
- Vibration monitoring with works are close to, or within MWDs.
- As requested/required by asset owners of buried services when conducting works within MWD's.
- Any other noise and vibration monitoring as required by the Project.

In accordance with CoA C32 and C34, construction will not commence until the Noise and Vibration Monitoring Program has been approved by the Planning Secretary and all relevant baseline data has been collected. The Noise and Vibration Monitoring Program will be implemented for the duration of construction of the Project (CoA C35).

Table 10-1 details the inspections related to noise and vibration required to be undertaken during for the Project. A full list of inspections is provided in Section 9.1 of the CEMP.

Table 10-1 Inspection requirements

Inspection	Timing	Responsibility	Documentation/Records
Daily visual surveillance	Daily	JHG Site Supervisor	Site diary when notable items observed
General environmental inspections, which includes noise and vibration management	Weekly	JHG Environment Manager/Advisor	JHG Environmental inspection checklist
OOHW inspections	As required during relevant OOHW	JHG Environment Manager/Advisor	JHG Environmental inspection checklist (which includes OOHW provisions)
GMR inspection	Monthly	JHG Site Supervisor, JHG Environment Manager/Advisor	JHG Environmental inspection checklist GMR inspection form
ARTC/IRPL environmental inspections	As required	ARTC/IRPL personnel	ARTC/IRPL Environmental inspection checklist
ER inspections	As required	ER	ER Inspection Report
External agencies inspections i.e. Environmental Protection Authority, DPHI	As required	External regulator	Agency inspection forms, checklists, emails or other relevant documentation.

10.4 Hold Points

In accordance with CEMF, the following hold points in Table 10-2 are applicable to noise and vibration management. Hold points are to be released by ARTC/IRPL prior to any OOHW.

Table 10-2 Hold points applicable to noise and vibration management

Hold Point	Releasing Authority	Record
Outside Hours Work Permit for proposed out of hours works	ARTC/IRPL Principal Environment Advisor (or Delegate)	Submission of evidence to ARTC/IRPL 5 days before commencing works
Relaxation of impact to sensitive receivers	ARTC/IRPL Principal Environment Advisor (or Delegate)	Submission of evidence to ARTC/IRPL 5 days before commencing works.

10.5 Noise and Vibration Exceedances

Monitored noise and vibration levels will be analysed against the noise and vibration objectives and predictions made in the relevant CNVIS or using the Project's noise modelling tool (KNOWnoise). Where monitored construction levels are found to be above noise or vibration management levels and predicted levels, the following actions will be undertaken.

1. Assess the noise/vibration generating sources and activities to identify a potential source of the exceedance,
2. Confirm the monitored levels are not being impacted by other noise or vibration sources,
3. Confirm if the exceedance is due to an uncharacteristically noisy or vibration-intensive piece of equipment,
4. Confirm that the modelling reflects the actual activity being undertaken,
5. Implement other feasible and reasonable measures which may include reducing plant size, modifying time of works, changing operational settings (e.g. turning off the vibratory function of the machine), utilising alternative construction methodology or a combination of these,
6. Following on from the previous steps, works which are causing the exceedance are to cease in the following circumstances:
   - Noise – recorded noise levels are higher than predicted levels and increases the 'Management Measure' (Section 9.7) for any sensitive receivers e.g. from RO to AA.
   - Vibration – where vibration levels are exceeding cosmetic/structural damage criteria (Section 7.5)
7. Ensure the learnings from the above are fed back into the assessment process and KNOWnoise for fine-tuning,
8. Continue work where impacts can be reduced,
9. Where noise cannot be reduced for this activity, re-assess the extent of impacts based on new information (e.g. revised equipment sound power level) and implement appropriate mitigation and management measures.
10. Communicate lessons learnt to relevant personnel.
11. JHG will review the activity and, where possible, modify it to prevent any recurrence.

This process follows SMART principles in that the actions are specific and measurable, the outcomes are achievable and realistic, and all steps are time-focussed.

10.6 Non-Compliance and Non-Conformance

Non-compliances and non-conformances, including those related to noise and vibration management, are detailed in Section 9.3 of the CEMP. This includes the definitions of non-compliance and non-conformance, corrective and preventative actions, communication of corrective and preventative actions to staff and non-conformance close-out.

10.7 Incident Reporting

Incident management, including those related to noise and/or vibration management, are detailed in Section 8 of the CEMP. This includes incident classification, notification and reporting including to external authorities, incident investigation and closeout.

10.8 Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this sub plan, CoA and other relevant approvals, licenses and guidelines. Audit requirements are detailed in Section 9.4 of the CEMP.

10.9 Reporting

Reporting will be undertaken in accordance with Section 9.5 of the CEMP. Specific noise and vibration reporting is provided in Section 7 of the Noise and Vibration Monitoring Program (Appendix G).

10.10 Complaints Management

Section 7.6 of the CEMP details communication and complaints management processes and procedures. The CCS identifies key stakeholder groups that will be consulted and engaged with during the Project and outlines the communication tools that will be used to consult and engage with these groups. During construction, any comments, feedback or complaints relating to noise and/or vibration management issues will be addressed through the Complaints Management System. The Complaints Management System includes a complaints register within the stakeholder database.

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11 Review and Improvement

11.1 Continuous Improvement

Continuous improvement of this NVMSP will be achieved by the ongoing evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement.

The continuous improvement process is designed to:

- Identify areas of opportunity for improvement of environmental management and performance;
- Determine the cause or causes of non-conformances and deficiencies;
- Develop and implement a plan of corrective and preventative action to address any non conformances and deficiencies;
- Verify the effectiveness of the corrective and preventative actions;
- Document any changes in procedures resulting from process improvement; and
- Make comparisons with objectives and targets.

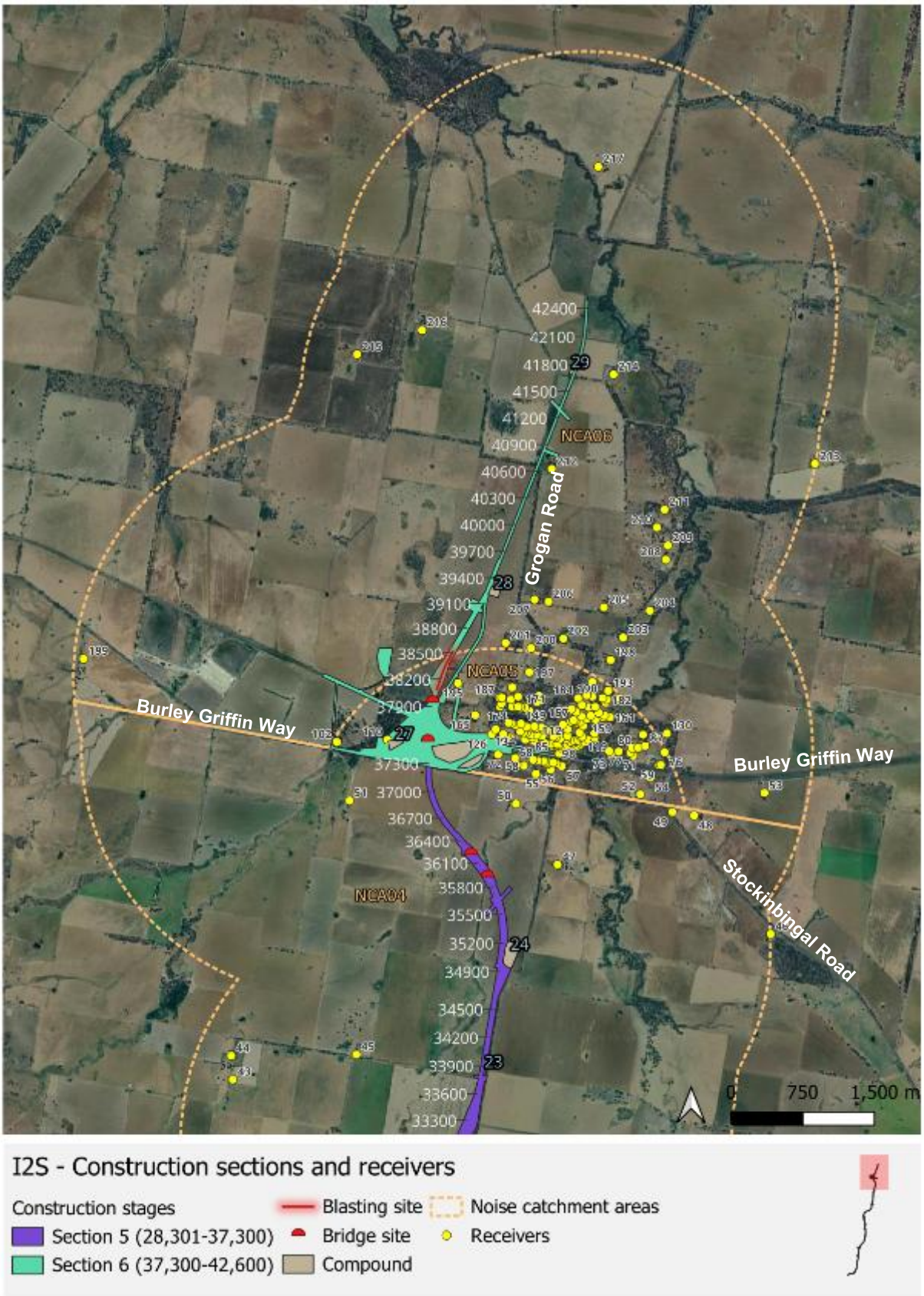
11.2 Plan Amendments and Version Control

The processes described in Section 9.7
NVMSP. This includes a review, and where necessary, an update every 6 months.
updated in response to the following.

- Changes to the Project EMS.
- Non-compliances, incidents, or recurring issues.
- In response to internal or external audits.
- Changes in legislation.
- Changes in the risk assessment.
- Changes in environmental management practices or technology.

Only the JHG Environment Manager, or delegate, has the authority to change any of the environmental management documentation.

Appendix A – Noise catchment areas and sensitive receivers

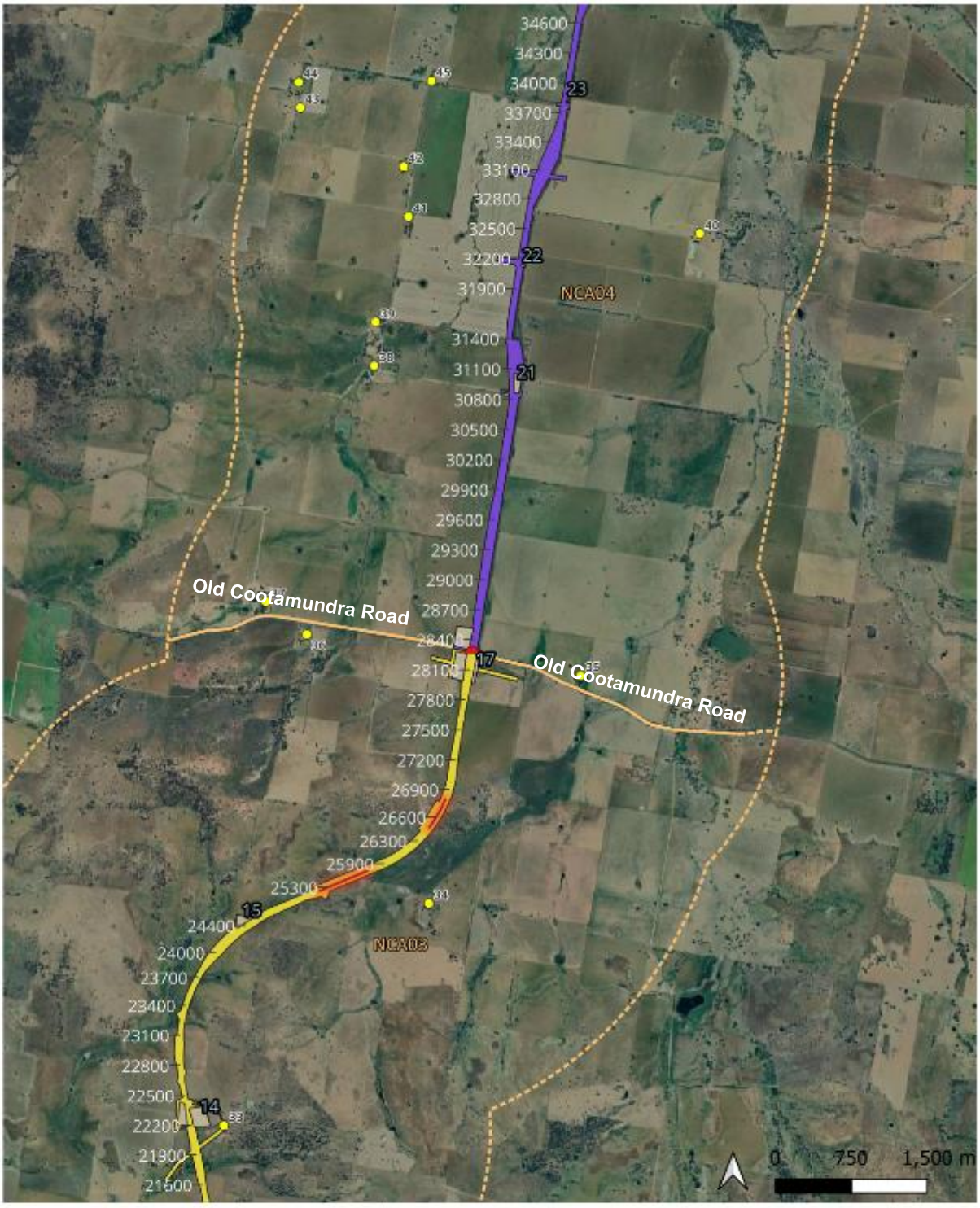


I2S - Construction sections and receivers

Construction stages
Section 5 (28,301-37,300)
Section 6 (37,300-42,600)

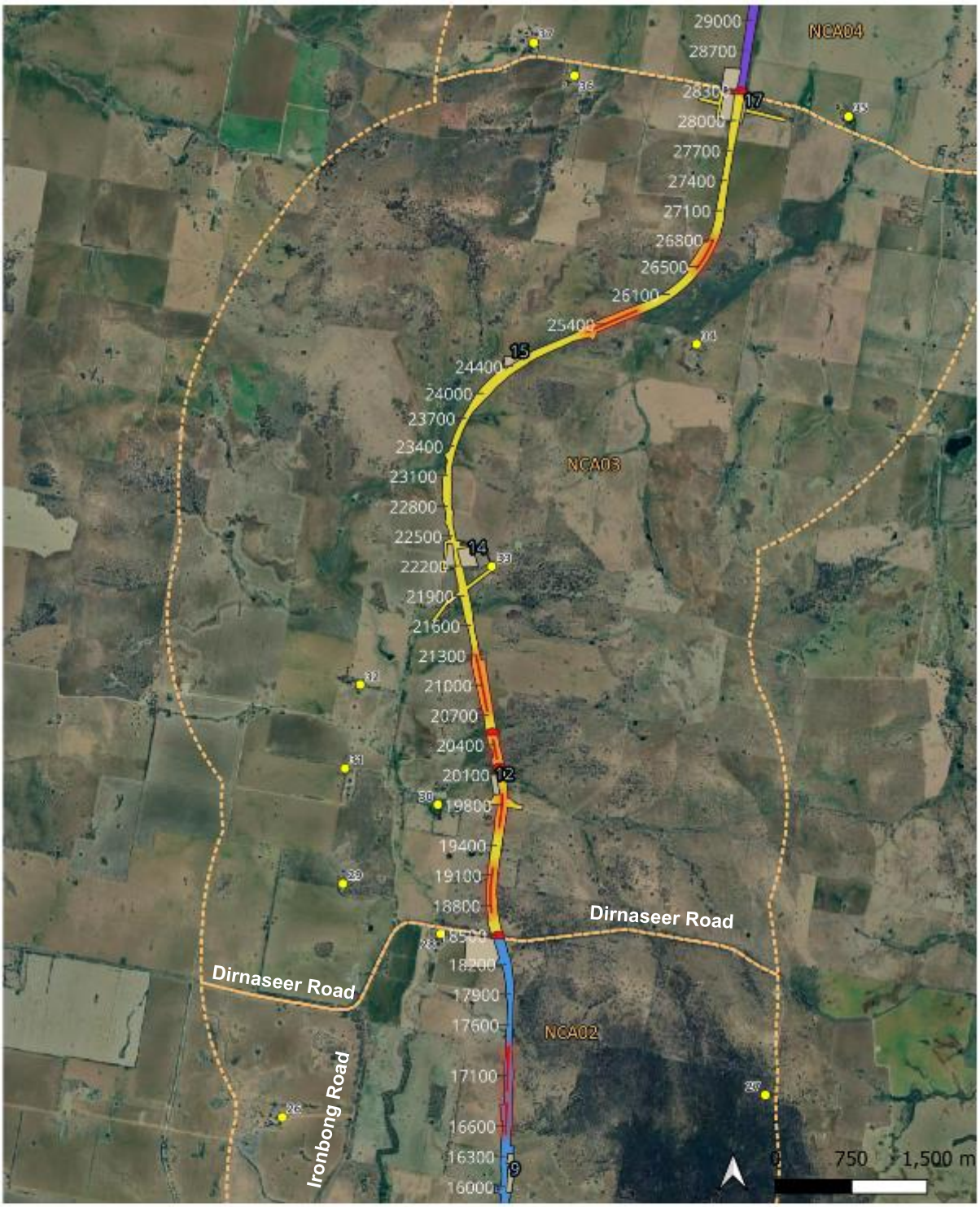
Blasting site
Bridge site
Compound

Noise catchment areas
Receivers



I2S - Construction sections and receivers

Construction stages
Section 4 (18,501-28,300)
Section 5 (28,301-37,300)
Blasting site
Bridge site
Compound
Noise catchment areas
Receivers

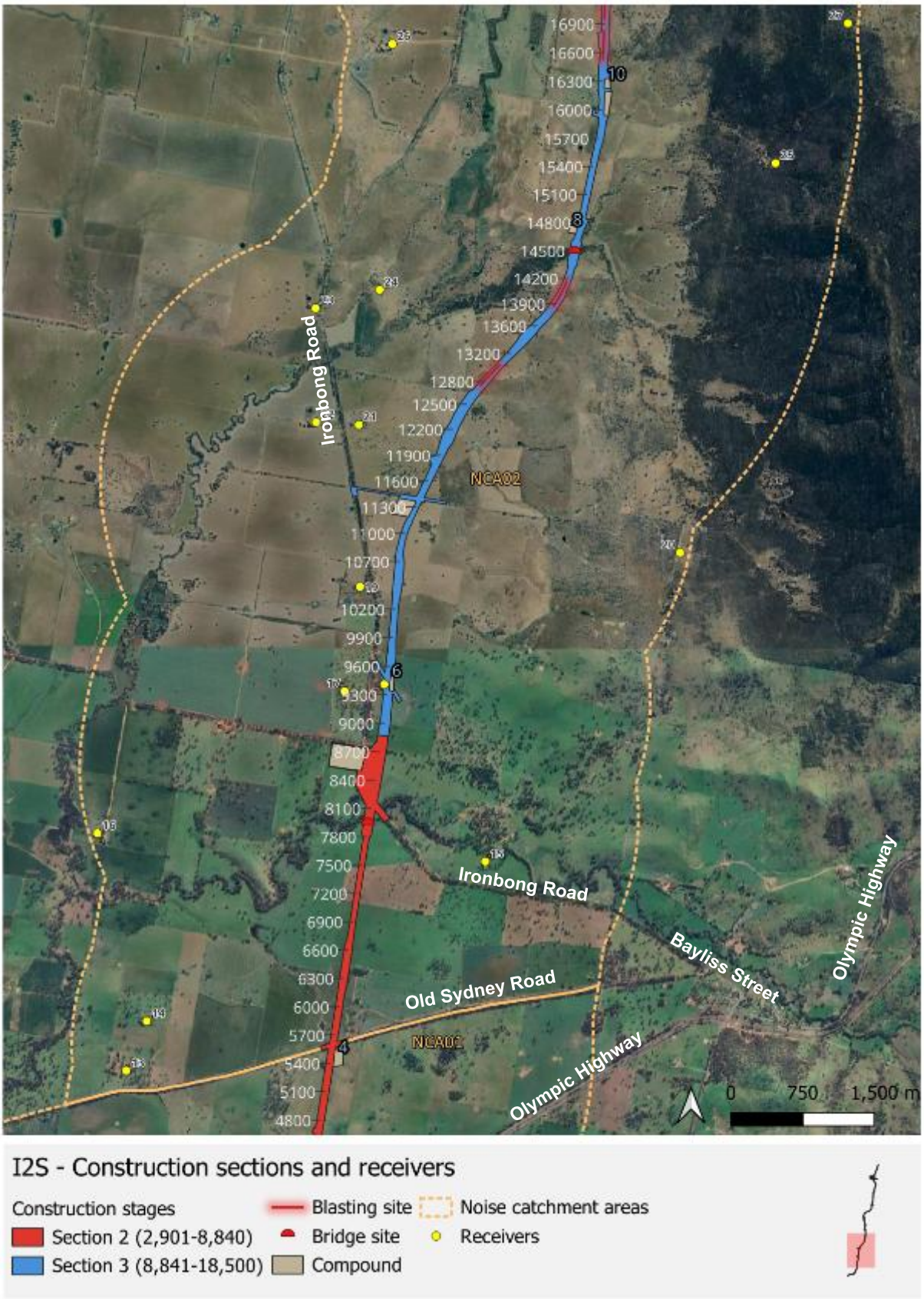


I2S - Construction sections and receivers

Construction stages
Section 3 (8,841-18,500)
Section 4 (18,501-28,300)
Section 5 (28,301-37,300)

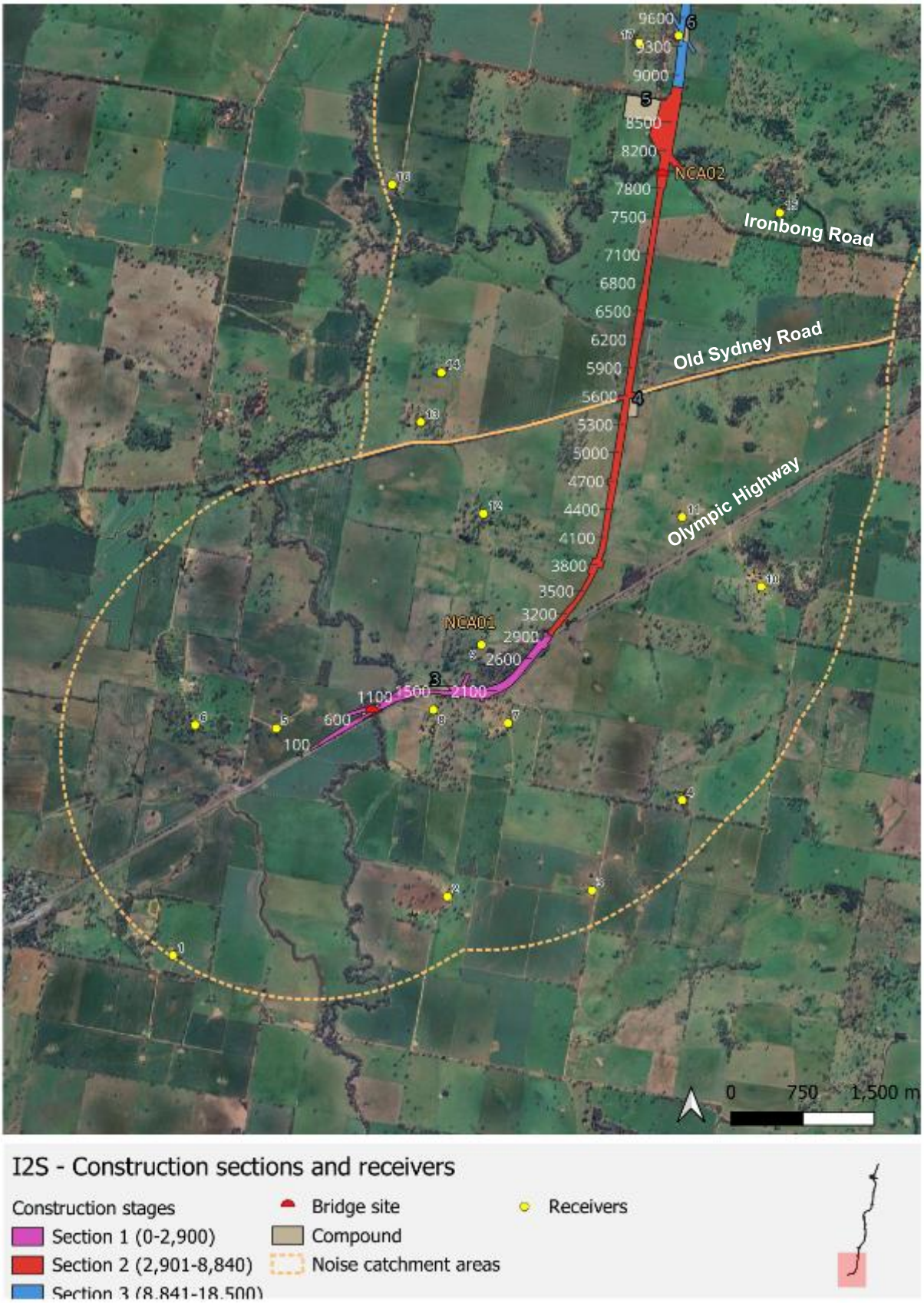
Blasting site
Bridge site
Compound
Noise catchment areas

Receivers



I2S - Construction sections and receivers

Construction stages
Section 2 (2,901-8,840)
Section 3 (8,841-18,500)
Blasting site
Bridge site
Compound
Noise catchment areas
Receivers



I2S - Construction sections and receivers

Construction stages
- Section 1 (0-2,900)
- Section 2 (2,901-8,840)
- Section 3 (8,841-18,500)

Bridge site
Compound
Noise catchment areas

Receivers

Appendix B Construction equipment and sound power levels

Phase		Location	Sections	Task		Equipment	QTY	SWL, dBA	Usage	Penalty, dB	Lmax	Equipment SWL, LAeq,15 minute	Activity SWL LAeq, 15 min	LAmax
A	Enabling works	Whole site	1 to 6 Utility locations	1	Utilities relocations property adjustments	Excavator 20 tonne	1	105	0.4	0	110	101	112	114
						Excavator 30 tonne	1	109	0.4	0	114	105		
						Articulated dump truck 30 tonne	2	108	0.2	0	113	104		
						Franna Crane 20 tonne	1	98	0.4	0	103	94		
						Road crane (varies)	1	104	0.4	0	109	100		
						Positrak	1	107	0.3	0	112	102		
						Smooth drum vibratory roller	1	105	0.4	5	113	106		
						Bucket truck	1	100	0.3	0	105	95		
						Crane borer	1	100	0.2	0	105	93		
				2	Site establishment	Grader (e.g. 14G)	1	108	0.4	0	113	104	114	117
						Articulated dump truck 30 tonne	2	108	0.2	0	113	104		
						Excavator 30 tonne	1	109	0.4	0	114	105		
						Smooth drum vibratory roller	1	109	0.4	5	117	110		
						Padfoot roller	1	109	0.6	0	117	107		
						Portable generator	1	98	1	0	99	98		
						Water cart	1	103	0.4	0	108	99		
B	Main Construction Works	Whole site	1 to 6 Earthworks extent	3	Earthworks	Articulated dump truck 30 tonne - 40 tonne	4	108	0.2	0	113	107	119	123
						Excavator 30 tonne	1	109	0.4	0	114	105		
						Scraper (e.g. 627)	1	110	0.4	0	115	106		
						Grader (e.g. 14G)	1	108	0.4	0	113	104		
						Dozer (e.g. D8)	1	117	0.4	0	122	113		
						Dozer (e.g. D10)	1	118	0.4	0	123	114		
						Watercart	1	103	0.4	0	108	99		
						Truck and Dog	2	108	0.2	0	113	104		
						Stabliser	1	112	0.6	0	117	110		
						Spreader truck	1	104	0.4	0	109	100		

Phase	Location	Sections	Task		Equipment	QTY	SWL, dBA	Usage	Penalty, dB	Lmax	Equipment SWL, LAeq,15 minute	Activity SWL LAeq, 15 min	LAmax
					Padfoot roller	1	109	0.6	0	117	107		
					Smooth drum vibratory roller	1	109	0.4	5	117	110		
	Whole site	1 to 6	4	Drainage	Excavator 20 tonne	1	105	0.4	0	110	101	113	117
					Articulated dump truck 30 tonne	2	108	0.2	0	113	104		
					Smooth drum vibratory roller	1	109	0.4	5	117	110		
					Padfoot roller	1	109	0.6	0	117	107		
					Water cart	1	103	0.4	0	108	99		
	Blast sites	3, 4 and 6	5	Material processing (crushing)	Articulated Dump Truck (30 tonne)	2	108	0.2	0	113	104	122	124
					Excavator 20 tonne	1	105	0.4	0	110	101		
					Jaw crusher	1	116	0.6	5	124	119		
					Cone crusher	1	113	0.6	5	121	116		
					Dozer (e.g. D8)	1	117	0.4	0	122	113		
					Front End Loader	1	112	0.4	0	117	108		
					Water cart	1	103	0.4	0	108	99		
	Blast sites	3, 4 and 6	6	Drill and blast	Blast hole drill rig	1	118	0.8	0	126	117	117	126
					Explosives truck	1	90	1	0	95	90		
	Whole site	1 to 6	7	Track work	Front End Loader	1	109	0.4	0	114	105	117	121
					Excavator (Hi-rail) 14 tonne with Octopus attachment	1	104	0.4	0	109	100		
					Excavator 5 tonne	1	94	0.4	0	99	90		
					Articulated dump trucks (25 tonne - 30 tonne)	2	108	0.2	0	113	104		
					Hydrema 14 tonne	2	108	0.4	0	113	107		
					Drott	1	116	0.4	0	121	112		
					Regulator	1	114	0.4	0	119	110		
					Tamper	1	113	0.4	0	118	109		
					Dyhamic track stabiliser	1	113	0.4	0	118	109		

Phase		Location	Sections	Task		Equipment	QTY	SWL, dBA	Usage	Penalty, dB	Lmax	Equipment SWL, LAeq,15 minute	Activity SWL LAeq, 15 min	LAmax
						Welding rig	1	100	0.2	0	105	93		
		Bridge sites	1 to 6 road and water crossings	8	Piling and concrete pours	Piling rig (bored)	1	105	0.4	0	115	101	108	115
						Excavator 20 tonne	1	105	0.4	0	110	101		
						Concrete agitator	1	103	0.3	0	108	98		
						Concrete pump	1	108	0.3	0	113	103		
						Road crane	1	104	0.4	0	109	100		
						Franna	1	98	0.4	0	103	94		
C	Finishing works	Whole site	1 to 6	9	Demobilise and landscape	Articulated dump trucks (25 tonne - 30 tonne)	2	108	0.2	0	113	104	115	122
						Excavator 20 tonne	1	105	0.4	0	110	101		
						Excavator 5 tonne	1	94	0.4	0	99	90		
						Grader (e.g. 14G)	1	108	0.4	0	113	104		
						Dozer (e.g. D8)	1	117	0.4	0	122	113		
						Hydroseed truck	1	106	0.4	0	111	102		
						Watercart	1	103	0.4	0	108	99		
D	Compound operations	Ancillary sites		10	Compound operation	Generator	1	98	1	0	99	98	103	108
					Stockpiling, deliveries, laydown and amenities	Light vehicles	4	85	0.4	0	90	87		
						delivery vehicles	2	90	1	0	95	93		
						Franna crane	1	98	0.4	0	103	94		
						Water cart	1	103	0.4	0	108	99		
				11	Concrete batching Compound 26	Batching plant	1	110	1	0	115	110	111	115
						Generator	1	98	1	0	99	98		
						Light vehicles	4	85	0.4	0	90	87		
						Delivery trucks	2	90	1	0	95	93		
						Concrete agitators	2	103	0.3	0	108	101		

Appendix C Detailed noise predictions

Receiver				Assessment criteria						Predicted LAeq, 15 min for works in Section 1										
										1	2	3	4	5	6	7	8	9	10	11
Ref	NCA	Address	Type	Standard hours	Weekend day	Evening	Night	LAeq, 15min	Lmax	Utilities relocations	Site establishment	Earthworks	Drainage	Material processing	Drill and blast	Track work	Piling and concrete pours	Demobilise and landscape	Compound operation	Concrete batching
		> 75 dBA (highly affected)		0 - 10 dB > day NML			10-20 dB > day NML			0 - 10dB > night NML			10-20 dB > night NML			20 - 30dB > night NML			30+ > night NML	
1	NCA01	167 EURONGILLY RD, ILLABO	Residential	45	40	35	35	45	65	26	28	32	27	0	0	31	18	29	14	0
2	NCA01	173 ALLAWAH RD, ILLABO	Residential	45	40	35	35	45	65	28	31	37	30	0	0	35	25	32	20	0
3	NCA01	308 WALBRIDGE LANE, ILLABO	Residential	45	40	35	35	45	65	28	32	37	31	0	0	35	20	33	17	0
4	NCA01	470 LANGWELL LANE, BETHUNGRA	Residential	45	40	35	35	45	65	28	31	36	30	0	0	34	18	31	16	0
5	NCA01	72 WARRENS LANE, ILLABO	Residential	45	40	35	35	45	65	48	49	51	48	0	0	52	32	49	29	0
6	NCA01	BEHTUNGRA PARK 37 WARRENS LANE, ILLABO	Residential	45	40	35	35	45	65	38	40	44	39	0	0	43	27	41	22	0
7	NCA01	WALBRIDGE LANE ILLABO	Residential	45	40	35	35	45	65	39	51	56	50	0	0	55	28	52	32	0
8	NCA01	2184 OLYMPIC HWY, ILLABO	Residential	45	40	35	35	45	65	57	57	61	56	0	0	60	40	58	44	0
9	NCA01	2325 OLYMPIC HWY, BETHUNGRA	Residential	45	40	35	35	45	65	42	50	54	49	0	0	53	30	50	34	0
10	NCA01	2552 OLYMPIC HWY, BETHUNGRA	Residential	45	40	35	35	45	65	27	30	35	29	0	0	33	0	30	12	0
11	NCA01	2253 OLYMPIC HWY, BETHUNGRA	Residential	45	40	35	35	45	65	29	32	38	31	0	0	36	16	33	13	0
12	NCA01	2242 OLD SYDNEY RD, ILLABO	Residential	45	40	35	35	45	65	32	36	41	35	0	0	39	23	36	21	0
13	NCA02	2231 OLD SYDNEY RD, BETHUNGRA	Residential	45	40	35	35	45	65	25	28	34	27	0	0	32	16	29	16	0
14	NCA02	2231 OLD SYDNEY RD, BETHUNGRA	Residential	45	40	35	35	45	65	23	26	32	25	0	0	30	17	27	13	0
15	NCA02	312 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	17	23	16	0	0	21	0	18	0	0
16	NCA02	656 EULOMO SETTLEMENT RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	18	23	17	0	0	21	0	18	0	0
17	NCA02	555 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
18	NCA02	IRONBONG ROAD BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
19	NCA02	693 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
20	NCA02	Olympic Highway Bethungra	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
21	NCA02	852 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
22	NCA02	853 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
23	NCA02	971 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
24	NCA02	960 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
25	NCA02	1260 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
26	NCA02	1303 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
27	NCA02	1321 DIRNASEER RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
28	NCA02	1673 DIRNASEER RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
29	NCA03	27 DUDAUMAN RD, DIRNASEER	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
30	NCA03	109 YOURALLA LANE, DIRNASEER	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
31	NCA03	619 Blackgate Road DIRNASEER	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
32	NCA03	241 DUDAUMAN RD, DIRNASEER	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
33	NCA03	386 DUDAUMAN RD, DIRNASEER	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
34	NCA03	1129 OLD COOTAMUNDRA RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
35	NCA04	1240 OLD COOTAMUNDRA RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
36	NCA03	1519 OLD COOTAMUNDRA RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
37	NCA04	1570 OLD COOTAMUNDRA RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
38	NCA04	661 DUDAUMAN RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
39	NCA04	661 DUDAUMAN RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
40	NCA04	6 DUDAUMAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
41	NCA04	531 DUDAUMAN RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
42	NCA04	143 CORBYS LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
43	NCA04	239 CORBYS LANE STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
44	NCA04	237 CORBYS LANE STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
45	NCA04	270 DUDAUMAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
46	NCA04	1989 STOCKINBINGAL RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
47	NCA04	117 DUDAUMAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
48	NCA04	2158 STOCKINBINGAL RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
49	NCA04	2158 STOCKINBINGAL RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
50	NCA04	9 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
51	NCA04	BURLEY GRIFFEN WAY STOCKINGBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
52	NCA05	5 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
53	NCA06	8 GILMOURS LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
54	NCA05	3 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
55	NCA05	21 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
56	NCA05	4 ADAMS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
57	NCA05	17 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
58	NCA05	18 ADAMS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
59	NCA05	4 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
60	NCA05	4 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
61	NCA05	22 ADAMS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
62	NCA05	25 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
63	NCA05	15 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
64	NCA05	21 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
65	NCA05	21 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
66	NCA05	33-35 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
67	NCA05	29 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
68	NCA05	33-35 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
69	NCA05	37 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
70	NCA05	57 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
71	NCA05	1 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
72	NCA05	71 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0

Receiver				Assessment criteria						1	2	3	4	5	6	7	8	9	10	11
Ref	NCA	Address	Type	Standard hours	Weekend day	Evening	Night	LAeq, 15min	Lmax	Utilities relocations	Site establishment	Earthworks	Drainage	Material processing	Drill and blast	Track work	Piling and concrete pours	Demobilise and landscape	Compound operation	Concrete batching
		> 75 dBA (highly affected)		0 - 10 dB > day NML			10-20 dB > day NML			0 - 10dB > night NML			10-20 dB > night NML			20 - 30dB > night NML			30+ > night NML	
73	NCA05	1 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
74	NCA05	14 DUDAUMAN ST, STOCKINBINGAL	Industrial	75	75	75	75	75	75	0	0	0	0	0	0	0	0	0	0	0
75	NCA05	1 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
76	NCA05	2 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
77	NCA05	2 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
78	NCA05	1 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
79	NCA05	23 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
80	NCA05	16 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
81	NCA05	20 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
82	NCA05	24 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
83	NCA05	16 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
84	NCA05	21 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
85	NCA05	34-36 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
86	NCA05	COMMERCIAL HOTEL 32 MARTIN ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
87	NCA05	12 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
88	NCA05	19 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
89	NCA05	26-28 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
90	NCA05	COMMERCIAL HOTEL 32 MARTIN ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
91	NCA05	30 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
92	NCA05	34-36 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
93	NCA05	15-17 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
94	NCA05	40 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
95	NCA05	38 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
96	NCA05	38 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
97	NCA05	40 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
98	NCA05	30 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
99	NCA05	44-46 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
100	NCA05	15-17 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
101	NCA05	26 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
102	NCA05	BURLEY GRIFFEN WAY STOCKINGBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
103	NCA05	ELLWOODS HALL 30 MARTIN ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
104	NCA05	13 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
105	NCA05	Stockinbingal Bowling Greens	Active recreation area	65	65	65	65	65	65	0	0	0	0	0	0	0	0	0	0	0
106	NCA05	22 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
107	NCA05	24 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
108	NCA05	18 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
109	NCA05	9 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
110	NCA05	BURLEY GRIFFEN WAY STOCKINGBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
111	NCA05	52 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
112	NCA05	11-13 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
113	NCA05	12 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
114	NCA05	64 HIBERNIA ST, STOCKINBINGAL	Industrial	75	75	75	75	75	75	0	0	0	0	0	0	0	0	0	0	0
115	NCA05	3 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
116	NCA05	48 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
117	NCA05	1 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
118	NCA05	12 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
119	NCA05	12 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
120	NCA05	68 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
121	NCA05	3 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
122	NCA05	11 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
123	NCA05	11-13 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
124	NCA05	16 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
125	NCA05	12A ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
126	NCA05	2 WEST ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
127	NCA05	15 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
128	NCA05	72 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
129	NCA05	2 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
130	NCA05	2A ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
131	NCA05	17 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
132	NCA05	Britannia Street Tennis Courts	Active recreation area	65	65	65	65	65	65	0	0	0	0	0	0	0	0	0	0	0
133	NCA05	19 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
134	NCA05	21 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
135	NCA05	2 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
136	NCA05	6 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
137	NCA05	6 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
138	NCA05	33 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
139	NCA05	St James Anglican	Place of Worship	65	65	65	65	65	65	0	0	0	0	0	0	0	0	0	0	0
140	NCA05	11 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
141	NCA05	8 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
142	NCA05	10 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
143	NCA05	9 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
144	NCA05	12 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
145	NCA05	14 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0

Receiver				Assessment criteria						1	2	3	4	5	6	7	8	9	10	11
Ref	NCA	Address	Type	Standard hours	Weekend day	Evening	Night	LAeq, 15min	Lmax	Utilities relocations	Site establishment	Earthworks	Drainage	Material processing	Drill and blast	Track work	Piling and concrete pours	Demobilise and landscape	Compound operation	Concrete batching
		> 75 dBA (highly affected)		0 - 10 dB > day NML			10-20 dB > day NML			0 - 10dB > night NML			10-20 dB > night NML			20 - 30dB > night NML			30+ > night NML	
146	NCA05	13 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
147	NCA05	18 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
148	NCA05	6 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
149	NCA05	14-16 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
150	NCA05	20 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
151	NCA05	22 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
152	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	0	0	0	0	0	0	0	0	0	0	0
153	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	0	0	0	0	0	0	0	0	0	0	0
154	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	0	0	0	0	0	0	0	0	0	0	0
155	NCA05	14 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
156	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	0	0	0	0	0	0	0	0	0	0	0
157	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	0	0	0	0	0	0	0	0	0	0	0
158	NCA05	5 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
159	NCA05	11 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
160	NCA05	1 YEO YEO ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
161	NCA05	1 YEO YEO ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
162	NCA05	12 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
163	NCA05	11 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
164	NCA05	6 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
165	NCA05	7 WEST ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
166	NCA05	9 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
167	NCA05	2 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
168	NCA05	3 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
169	NCA05	4 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
170	NCA05	5 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
171	NCA05	9 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
172	NCA05	6 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
173	NCA05	5 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
174	NCA05	11 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
175	NCA05	9 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
176	NCA05	17 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
177	NCA05	5 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
178	NCA05	17 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
179	NCA05	13 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
180	NCA05	St Josephs Catholic	Place of Worship	65	65	65	65	65	65	0	0	0	0	0	0	0	0	0	0	0
181	NCA05	14 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
182	NCA05	15 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
183	NCA05	69 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
184	NCA05	2 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
185	NCA05	14 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
186	NCA05	3 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
187	NCA05	20 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
188	NCA05	20 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
189	NCA05	12 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
190	NCA05	7 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
191	NCA05	GROGAN ROAD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
192	NCA05	1 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
193	NCA05	2 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
194	NCA05	69 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
195	NCA05	183 LEWINS LANE STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
196	NCA05	Stockinbingal Recreation Ground	Active recreation area	65	65	65	65	65	65	0	0	0	0	0	0	0	0	0	0	0
197	NCA05	75 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
198	NCA06	29 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
199	NCA06	LINDNERS LANE STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
200	NCA06	101 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
201	NCA06	Stockinbingal Cemetery	Passive recreation area	60	60	60	60	60	60	0	0	0	0	0	0	0	0	0	0	0
202	NCA06	116 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
203	NCA06	61 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
204	NCA06	KOITAKI 100 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
205	NCA06	93 RACECOURSE LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
206	NCA06	11 RACECOURSE LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
207	NCA06	11 RACECOURSE LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
208	NCA06	159 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
209	NCA06	169 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
210	NCA06	OLD WALLENDBEEN ROAD STOCKINGBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
211	NCA06	207 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
212	NCA06	3925 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
213	NCA06	LALOKI LANE STOCKINGBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
214	NCA06	135 FREEMANS LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
215	NCA06	63 BOYDS LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
216	NCA06	304 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
217	NCA06	214 MILVALE RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0

Receiver				Assessment criteria						Predicted LAeq, 15 min for works in Section 2										
										1	2	3	4	5	6	7	8	9	10	11
Ref	NCA	Address	Type	Standard hours	Weekend day	Evening	Night	LAeq, 15min	Lmax	Utilities relocations	Site establishment	Earthworks	Drainage	Material processing	Drill and blast	Track work	Piling and concrete pours	Demobilise and landscape	Compound operation	Concrete batching
		> 75 dBA (highly affected)		0 - 10 dB > day NML			10-20 dB > day NML			0 - 10dB > night NML			10-20 dB > night NML			20 - 30dB > night NML			30+ > night NML	
1	NCA01	167 EURONGILLY RD, ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
2	NCA01	173 ALLAWAH RD, ILLABO	Residential	45	40	35	35	45	65	24	26	32	25	0	0	30	0	27	0	0
3	NCA01	308 WALBRIDGE LANE, ILLABO	Residential	45	40	35	35	45	65	27	30	35	29	0	0	33	0	31	9	0
4	NCA01	470 LANGWELL LANE, BETHUNGRA	Residential	45	40	35	35	45	65	28	30	36	29	0	0	34	0	31	11	0
5	NCA01	72 WARRENS LANE, ILLABO	Residential	45	40	35	35	45	65	23	26	31	25	0	0	29	0	27	7	0
6	NCA01	BEHTUNGRA PARK 37 WARRENS LANE, ILLABO	Residential	45	40	35	35	45	65	20	22	28	21	0	0	26	0	23	0	0
7	NCA01	WALBRIDGE LANE ILLABO	Residential	45	40	35	35	45	65	36	39	45	38	0	0	43	0	40	13	0
8	NCA01	2184 OLYMPIC HWY, ILLABO	Residential	45	40	35	35	45	65	33	35	41	34	0	0	39	0	36	12	0
9	NCA01	2325 OLYMPIC HWY, BETHUNGRA	Residential	45	40	35	35	45	65	42	45	51	44	0	0	49	0	46	15	0
10	NCA01	2552 OLYMPIC HWY, BETHUNGRA	Residential	45	40	35	35	45	65	29	36	41	35	0	0	39	14	37	19	0
11	NCA01	2253 OLYMPIC HWY, BETHUNGRA	Residential	45	40	35	35	45	65	34	42	48	41	0	0	46	17	43	27	0
12	NCA01	2242 OLD SYDNEY RD, ILLABO	Residential	45	40	35	35	45	65	33	37	42	36	0	0	40	13	38	21	0
13	NCA02	2231 OLD SYDNEY RD, BETHUNGRA	Residential	45	40	35	35	45	65	31	33	39	32	0	0	37	17	34	22	0
14	NCA02	2231 OLD SYDNEY RD, BETHUNGRA	Residential	45	40	35	35	45	65	30	32	38	31	0	0	36	20	33	20	0
15	NCA02	312 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	36	38	43	37	0	0	42	31	39	23	0
16	NCA02	656 EULOMO SETTLEMENT RD, BETHUNGRA	Residential	45	40	35	35	45	65	27	31	35	30	0	0	34	23	31	20	0
17	NCA02	555 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	38	46	51	45	0	0	49	30	46	36	0
18	NCA02	IRONBONG ROAD BETHUNGRA	Residential	45	40	35	35	45	65	37	46	51	45	0	0	49	29	46	54	0
19	NCA02	693 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	29	34	40	33	0	0	38	23	35	33	0
20	NCA02	Olympic Highway Bethungra	Residential	45	40	35	35	45	65	19	23	28	22	0	0	26	21	23	16	0
21	NCA02	852 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	23	27	33	26	0	0	30	23	28	32	0
22	NCA02	853 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	21	26	31	25	0	0	30	19	27	26	0
23	NCA02	971 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	16	19	25	18	0	0	23	21	20	21	0
24	NCA02	960 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	19	24	18	0	0	22	25	19	19	0
25	NCA02	1260 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	24	0	0	0
26	NCA02	1303 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	23	0	10	0
27	NCA02	1321 DIRNASEER RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	17	0	0	0
28	NCA02	1673 DIRNASEER RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	17	0	0	0
29	NCA03	27 DUDAUMAN RD, DIRNASEER	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	13	0	0	0
30	NCA03	109 YOURALLA LANE, DIRNASEER	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
31	NCA03	619 Blackgate Road DIRNASEER	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
32	NCA03	241 DUDAUMAN RD, DIRNASEER	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
33	NCA03	386 DUDAUMAN RD, DIRNASEER	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
34	NCA03	1129 OLD COOTAMUNDRA RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
35	NCA04	1240 OLD COOTAMUNDRA RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
36	NCA03	1519 OLD COOTAMUNDRA RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
37	NCA04	1570 OLD COOTAMUNDRA RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
38	NCA04	661 DUDAUMAN RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
39	NCA04	661 DUDAUMAN RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
40	NCA04	6 DUDAUMAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
41	NCA04	531 DUDAUMAN RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
42	NCA04	143 CORBYS LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
43	NCA04	239 CORBYS LANE STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
44	NCA04	237 CORBYS LANE STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
45	NCA04	270 DUDAUMAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
46	NCA04	1989 STOCKINBINGAL RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
47	NCA04	117 DUDAUMAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
48	NCA04	2158 STOCKINBINGAL RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
49	NCA04	2158 STOCKINBINGAL RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
50	NCA04	9 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
51	NCA04	BURLEY GRIFFEN WAY STOCKINGBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
52	NCA05	5 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
53	NCA06	8 GILMOURS LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
54	NCA05	3 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
55	NCA05	21 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
56	NCA05	4 ADAMS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
57	NCA05	17 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
58	NCA05	18 ADAMS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
59	NCA05	4 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
60	NCA05	4 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
61	NCA05	22 ADAMS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
62	NCA05	25 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
63	NCA05	15 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
64	NCA05	21 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
65	NCA05	21 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
66	NCA05	33-35 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
67	NCA05	29 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
68	NCA05	33-35 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
69	NCA05	37 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
70	NCA05	57 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
71	NCA05	1 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
72	NCA05	71 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0

Receiver				Assessment criteria						1	2	3	4	5	6	7	8	9	10	11
Ref	NCA	Address	Type	Standard hours	Weekend day	Evening	Night	LAeq, 15min	Lmax	Utilities relocations	Site establishment	Earthworks	Drainage	Material processing	Drill and blast	Track work	Piling and concrete pours	Demobilise and landscape	Compound operation	Concrete batching
		> 75 dBA (highly affected)		0 - 10 dB > day NML			10-20 dB > day NML			0 - 10dB > night NML			10-20 dB > night NML			20 - 30dB > night NML			30+ > night NML	
73	NCA05	1 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
74	NCA05	14 DUDAUMAN ST, STOCKINBINGAL	Industrial	75	75	75	75	75	75	0	0	0	0	0	0	0	0	0	0	0
75	NCA05	1 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
76	NCA05	2 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
77	NCA05	2 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
78	NCA05	1 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
79	NCA05	23 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
80	NCA05	16 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
81	NCA05	20 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
82	NCA05	24 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
83	NCA05	16 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
84	NCA05	21 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
85	NCA05	34-36 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
86	NCA05	COMMERCIAL HOTEL 32 MARTIN ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
87	NCA05	12 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
88	NCA05	19 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
89	NCA05	26-28 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
90	NCA05	COMMERCIAL HOTEL 32 MARTIN ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
91	NCA05	30 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
92	NCA05	34-36 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
93	NCA05	15-17 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
94	NCA05	40 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
95	NCA05	38 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
96	NCA05	38 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
97	NCA05	40 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
98	NCA05	30 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
99	NCA05	44-46 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
100	NCA05	15-17 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
101	NCA05	26 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
102	NCA05	BURLEY GRIFFEN WAY STOCKINGBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
103	NCA05	ELLWOODS HALL 30 MARTIN ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
104	NCA05	13 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
105	NCA05	Stockinbingal Bowling Greens	Active recreation area	65	65	65	65	65	65	0	0	0	0	0	0	0	0	0	0	0
106	NCA05	22 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
107	NCA05	24 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
108	NCA05	18 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
109	NCA05	9 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
110	NCA05	BURLEY GRIFFEN WAY STOCKINGBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
111	NCA05	52 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
112	NCA05	11-13 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
113	NCA05	12 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
114	NCA05	64 HIBERNIA ST, STOCKINBINGAL	Industrial	75	75	75	75	75	75	0	0	0	0	0	0	0	0	0	0	0
115	NCA05	3 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
116	NCA05	48 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
117	NCA05	1 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
118	NCA05	12 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
119	NCA05	12 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
120	NCA05	68 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
121	NCA05	3 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
122	NCA05	11 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
123	NCA05	11-13 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
124	NCA05	16 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
125	NCA05	12A ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
126	NCA05	2 WEST ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
127	NCA05	15 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
128	NCA05	72 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
129	NCA05	2 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
130	NCA05	2A ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
131	NCA05	17 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
132	NCA05	Britannia Street Tennis Courts	Active recreation area	65	65	65	65	65	65	0	0	0	0	0	0	0	0	0	0	0
133	NCA05	19 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
134	NCA05	21 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
135	NCA05	2 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
136	NCA05	6 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
137	NCA05	6 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
138	NCA05	33 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
139	NCA05	St James Anglican	Place of Worship	65	65	65	65	65	65	0	0	0	0	0	0	0	0	0	0	0
140	NCA05	11 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
141	NCA05	8 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
142	NCA05	10 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
143	NCA05	9 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
144	NCA05	12 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
145	NCA05	14 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0

Receiver				Assessment criteria						1	2	3	4	5	6	7	8	9	10	11
Ref	NCA	Address	Type	Standard hours	Weekend day	Evening	Night	LAeq, 15min	Lmax	Utilities relocations	Site establishment	Earthworks	Drainage	Material processing	Drill and blast	Track work	Piling and concrete pours	Demobilise and landscape	Compound operation	Concrete batching
		> 75 dBA (highly affected)		0 - 10 dB > day NML			10-20 dB > day NML			0 - 10dB > night NML			10-20 dB > night NML			20 - 30dB > night NML			30+ > night NML	
146	NCA05	13 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
147	NCA05	18 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
148	NCA05	6 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
149	NCA05	14-16 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
150	NCA05	20 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
151	NCA05	22 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
152	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	0	0	0	0	0	0	0	0	0	0	0
153	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	0	0	0	0	0	0	0	0	0	0	0
154	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	0	0	0	0	0	0	0	0	0	0	0
155	NCA05	14 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
156	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	0	0	0	0	0	0	0	0	0	0	0
157	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	0	0	0	0	0	0	0	0	0	0	0
158	NCA05	5 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
159	NCA05	11 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
160	NCA05	1 YEO YEO ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
161	NCA05	1 YEO YEO ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
162	NCA05	12 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
163	NCA05	11 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
164	NCA05	6 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
165	NCA05	7 WEST ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
166	NCA05	9 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
167	NCA05	2 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
168	NCA05	3 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
169	NCA05	4 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
170	NCA05	5 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
171	NCA05	9 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
172	NCA05	6 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
173	NCA05	5 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
174	NCA05	11 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
175	NCA05	9 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
176	NCA05	17 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
177	NCA05	5 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
178	NCA05	17 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
179	NCA05	13 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
180	NCA05	St Josephs Catholic	Place of Worship	65	65	65	65	65	65	0	0	0	0	0	0	0	0	0	0	0
181	NCA05	14 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
182	NCA05	15 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
183	NCA05	69 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
184	NCA05	2 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
185	NCA05	14 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
186	NCA05	3 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
187	NCA05	20 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
188	NCA05	20 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
189	NCA05	12 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
190	NCA05	7 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
191	NCA05	GROGAN ROAD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
192	NCA05	1 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
193	NCA05	2 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
194	NCA05	69 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
195	NCA05	183 LEWINS LANE STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
196	NCA05	Stockinbingal Recreation Ground	Active recreation area	65	65	65	65	65	65	0	0	0	0	0	0	0	0	0	0	0
197	NCA05	75 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
198	NCA06	29 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
199	NCA06	LINDNERS LANE STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
200	NCA06	101 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
201	NCA06	Stockinbingal Cemetery	Passive recreation area	60	60	60	60	60	60	0	0	0	0	0	0	0	0	0	0	0
202	NCA06	116 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
203	NCA06	61 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
204	NCA06	KOITAKI 100 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
205	NCA06	93 RACECOURSE LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
206	NCA06	11 RACECOURSE LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
207	NCA06	11 RACECOURSE LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
208	NCA06	159 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
209	NCA06	169 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
210	NCA06	OLD WALLENDBEEN ROAD STOCKINGBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
211	NCA06	207 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
212	NCA06	3925 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
213	NCA06	LALOKI LANE STOCKINGBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
214	NCA06	135 FREEMANS LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
215	NCA06	63 BOYDS LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
216	NCA06	304 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
217	NCA06	214 MILVALE RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0

Receiver				Assessment criteria						*Predicted LAeq, 15 min for works in Section 3*										
										1	2	3	4	5	6	7	8	9	10	11
Ref	NCA	Address	Type	Standard hours	Weekend day	Evening	Night	LAeq, 15min	Lmax	Utilities relocations	Site establishment	Earthworks	Drainage	Material processing	Drill and blast	Track work	Piling and concrete pours	Demobilise and landscape	Compound operation	Concrete batching
		> 75 dBA (highly affected)		0 - 10 dB > day NML			10-20 dB > day NML			0 - 10dB > night NML			10-20 dB > night NML			20 - 30dB > night NML			30+ > night NML	
1	NCA01	167 EURONGILLY RD, ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
2	NCA01	173 ALLAWAH RD, ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
3	NCA01	308 WALBRIDGE LANE, ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
4	NCA01	470 LANGWELL LANE, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
5	NCA01	72 WARRENS LANE, ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
6	NCA01	BEHTUNGRA PARK 37 WARRENS LANE, ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
7	NCA01	WALBRIDGE LANE ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
8	NCA01	2184 OLYMPIC HWY, ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
9	NCA01	2325 OLYMPIC HWY, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
10	NCA01	2552 OLYMPIC HWY, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
11	NCA01	2253 OLYMPIC HWY, BETHUNGRA	Residential	45	40	35	35	45	65	0	19	25	18	0	0	23	0	20	0	0
12	NCA01	2242 OLD SYDNEY RD, ILLABO	Residential	45	40	35	35	45	65	0	18	24	17	0	0	21	0	19	0	0
13	NCA02	2231 OLD SYDNEY RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	20	25	19	0	0	23	0	20	0	0
14	NCA02	2231 OLD SYDNEY RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	22	28	21	0	0	25	0	23	0	0
15	NCA02	312 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	33	39	32	25	21	37	0	34	0	0
16	NCA02	656 EULOMO SETTLEMENT RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	28	33	27	0	0	31	0	29	0	0
17	NCA02	555 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	48	54	47	31	27	52	0	49	0	0
18	NCA02	IRONBONG ROAD BETHUNGRA	Residential	45	40	35	35	45	65	0	86	91	85	32	27	89	0	87	0	0
19	NCA02	693 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	53	58	52	39	34	56	0	53	12	0
20	NCA02	Olympic Highway Bethungra	Residential	45	40	35	35	45	65	19	29	35	28	36	32	33	0	30	15	0
21	NCA02	852 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	21	47	49	46	46	42	50	0	47	17	0
22	NCA02	853 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	18	43	44	42	40	36	47	0	44	13	0
23	NCA02	971 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	21	34	40	33	42	37	37	0	35	16	14
24	NCA02	960 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	24	35	41	34	43	39	39	12	36	20	16
25	NCA02	1260 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	33	35	41	34	41	36	38	17	36	24	21
26	NCA02	1303 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	30	33	38	32	40	36	36	21	34	21	26
27	NCA02	1321 DIRNASEER RD, BETHUNGRA	Residential	45	40	35	35	45	65	24	29	34	28	36	32	32	20	29	15	23
28	NCA02	1673 DIRNASEER RD, BETHUNGRA	Residential	45	40	35	35	45	65	42	56	54	55	44	40	60	42	57	45	53
29	NCA03	27 DUDAUMAN RD, DIRNASEER	Residential	45	40	35	35	45	65	30	39	42	38	38	33	43	28	40	28	36
30	NCA03	109 YOURALLA LANE, DIRNASEER	Residential	45	40	35	35	45	65	30	36	41	35	36	32	40	29	37	25	33
31	NCA03	619 Blackgate Road DIRNASEER	Residential	45	40	35	35	45	65	25	30	35	29	32	28	33	24	30	17	25
32	NCA03	241 DUDAUMAN RD, DIRNASEER	Residential	45	40	35	35	45	65	23	27	32	26	29	25	31	21	28	16	24
33	NCA03	386 DUDAUMAN RD, DIRNASEER	Residential	45	40	35	35	45	65	19	23	28	22	26	21	26	17	24	12	20
34	NCA03	1129 OLD COOTAMUNDRA RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
35	NCA04	1240 OLD COOTAMUNDRA RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
36	NCA03	1519 OLD COOTAMUNDRA RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
37	NCA04	1570 OLD COOTAMUNDRA RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
38	NCA04	661 DUDAUMAN RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
39	NCA04	661 DUDAUMAN RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
40	NCA04	6 DUDAUMAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
41	NCA04	531 DUDAUMAN RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
42	NCA04	143 CORBYS LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
43	NCA04	239 CORBYS LANE STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
44	NCA04	237 CORBYS LANE STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
45	NCA04	270 DUDAUMAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
46	NCA04	1989 STOCKINBINGAL RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
47	NCA04	117 DUDAUMAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
48	NCA04	2158 STOCKINBINGAL RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
49	NCA04	2158 STOCKINBINGAL RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
50	NCA04	9 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
51	NCA04	BURLEY GRIFFEN WAY STOCKINGBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
52	NCA05	5 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
53	NCA06	8 GILMOURS LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
54	NCA05	3 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
55	NCA05	21 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
56	NCA05	4 ADAMS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
57	NCA05	17 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
58	NCA05	18 ADAMS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
59	NCA05	4 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
60	NCA05	4 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
61	NCA05	22 ADAMS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
62	NCA05	25 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
63	NCA05	15 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
64	NCA05	21 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
65	NCA05	21 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
66	NCA05	33-35 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
67	NCA05	29 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
68	NCA05	33-35 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
69	NCA05	37 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
70	NCA05	57 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
71	NCA05	1 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
72	NCA05	71 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0

Receiver				Assessment criteria						1	2	3	4	5	6	7	8	9	10	11
Ref	NCA	Address	Type	Standard hours	Weekend day	Evening	Night	LAeq, 15min	Lmax	Utilities relocations	Site establishment	Earthworks	Drainage	Material processing	Drill and blast	Track work	Piling and concrete pours	Demobilise and landscape	Compound operation	Concrete batching
		> 75 dBA (highly affected)		0 - 10 dB > day NML			10-20 dB > day NML			0 - 10dB > night NML			10-20 dB > night NML			20 - 30dB > night NML			30+ > night NML	
73	NCA05	1 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
74	NCA05	14 DUDAUMAN ST, STOCKINBINGAL	Industrial	75	75	75	75	75	75	0	0	0	0	0	0	0	0	0	0	0
75	NCA05	1 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
76	NCA05	2 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
77	NCA05	2 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
78	NCA05	1 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
79	NCA05	23 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
80	NCA05	16 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
81	NCA05	20 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
82	NCA05	24 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
83	NCA05	16 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
84	NCA05	21 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
85	NCA05	34-36 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
86	NCA05	COMMERCIAL HOTEL 32 MARTIN ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
87	NCA05	12 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
88	NCA05	19 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
89	NCA05	26-28 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
90	NCA05	COMMERCIAL HOTEL 32 MARTIN ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
91	NCA05	30 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
92	NCA05	34-36 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
93	NCA05	15-17 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
94	NCA05	40 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
95	NCA05	38 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
96	NCA05	38 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
97	NCA05	40 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
98	NCA05	30 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
99	NCA05	44-46 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
100	NCA05	15-17 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
101	NCA05	26 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
102	NCA05	BURLEY GRIFFEN WAY STOCKINGBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
103	NCA05	ELLWOODS HALL 30 MARTIN ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
104	NCA05	13 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
105	NCA05	Stockinbingal Bowling Greens	Active recreation area	65	65	65	65	65	65	0	0	0	0	0	0	0	0	0	0	0
106	NCA05	22 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
107	NCA05	24 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
108	NCA05	18 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
109	NCA05	9 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
110	NCA05	BURLEY GRIFFEN WAY STOCKINGBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
111	NCA05	52 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
112	NCA05	11-13 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
113	NCA05	12 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
114	NCA05	64 HIBERNIA ST, STOCKINBINGAL	Industrial	75	75	75	75	75	75	0	0	0	0	0	0	0	0	0	0	0
115	NCA05	3 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
116	NCA05	48 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
117	NCA05	1 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
118	NCA05	12 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
119	NCA05	12 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
120	NCA05	68 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
121	NCA05	3 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
122	NCA05	11 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
123	NCA05	11-13 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
124	NCA05	16 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
125	NCA05	12A ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
126	NCA05	2 WEST ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
127	NCA05	15 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
128	NCA05	72 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
129	NCA05	2 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
130	NCA05	2A ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
131	NCA05	17 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
132	NCA05	Britannia Street Tennis Courts	Active recreation area	65	65	65	65	65	65	0	0	0	0	0	0	0	0	0	0	0
133	NCA05	19 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
134	NCA05	21 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
135	NCA05	2 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
136	NCA05	6 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
137	NCA05	6 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
138	NCA05	33 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
139	NCA05	St James Anglican	Place of Worship	65	65	65	65	65	65	0	0	0	0	0	0	0	0	0	0	0
140	NCA05	11 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
141	NCA05	8 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
142	NCA05	10 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
143	NCA05	9 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
144	NCA05	12 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
145	NCA05	14 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0

Receiver				Assessment criteria						1	2	3	4	5	6	7	8	9	10	11
Ref	NCA	Address	Type	Standard hours	Weekend day	Evening	Night	LAeq, 15min	Lmax	Utilities relocations	Site establishment	Earthworks	Drainage	Material processing	Drill and blast	Track work	Piling and concrete pours	Demobilise and landscape	Compound operation	Concrete batching
		> 75 dBA (highly affected)		0 - 10 dB > day NML			10-20 dB > day NML			0 - 10dB > night NML			10-20 dB > night NML			20 - 30dB > night NML			30+ > night NML	
146	NCA05	13 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
147	NCA05	18 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
148	NCA05	6 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
149	NCA05	14-16 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
150	NCA05	20 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
151	NCA05	22 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
152	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	0	0	0	0	0	0	0	0	0	0	0
153	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	0	0	0	0	0	0	0	0	0	0	0
154	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	0	0	0	0	0	0	0	0	0	0	0
155	NCA05	14 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
156	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	0	0	0	0	0	0	0	0	0	0	0
157	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	0	0	0	0	0	0	0	0	0	0	0
158	NCA05	5 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
159	NCA05	11 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
160	NCA05	1 YEO YEO ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
161	NCA05	1 YEO YEO ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
162	NCA05	12 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
163	NCA05	11 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
164	NCA05	6 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
165	NCA05	7 WEST ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
166	NCA05	9 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
167	NCA05	2 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
168	NCA05	3 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
169	NCA05	4 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
170	NCA05	5 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
171	NCA05	9 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
172	NCA05	6 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
173	NCA05	5 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
174	NCA05	11 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
175	NCA05	9 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
176	NCA05	17 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
177	NCA05	5 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
178	NCA05	17 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
179	NCA05	13 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
180	NCA05	St Josephs Catholic	Place of Worship	65	65	65	65	65	65	0	0	0	0	0	0	0	0	0	0	0
181	NCA05	14 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
182	NCA05	15 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
183	NCA05	69 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
184	NCA05	2 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
185	NCA05	14 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
186	NCA05	3 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
187	NCA05	20 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
188	NCA05	20 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
189	NCA05	12 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
190	NCA05	7 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
191	NCA05	GROGAN ROAD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
192	NCA05	1 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
193	NCA05	2 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
194	NCA05	69 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
195	NCA05	183 LEWINS LANE STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
196	NCA05	Stockinbingal Recreation Ground	Active recreation area	65	65	65	65	65	65	0	0	0	0	0	0	0	0	0	0	0
197	NCA05	75 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
198	NCA06	29 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
199	NCA06	LINDNERS LANE STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
200	NCA06	101 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
201	NCA06	Stockinbingal Cemetery	Passive recreation area	60	60	60	60	60	60	0	0	0	0	0	0	0	0	0	0	0
202	NCA06	116 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
203	NCA06	61 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
204	NCA06	KOITAKI 100 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
205	NCA06	93 RACECOURSE LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
206	NCA06	11 RACECOURSE LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
207	NCA06	11 RACECOURSE LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
208	NCA06	159 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
209	NCA06	169 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
210	NCA06	OLD WALLENDBEEN ROAD STOCKINGBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
211	NCA06	207 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
212	NCA06	3925 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
213	NCA06	LALOKI LANE STOCKINGBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
214	NCA06	135 FREEMANS LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
215	NCA06	63 BOYDS LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
216	NCA06	304 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
217	NCA06	214 MILVALE RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0

Receiver				Assessment criteria						*Predicted LAeq, 15 min for works in Section 4*										
										1	2	3	4	5	6	7	8	9	10	11
Ref	NCA	Address	Type	Standard hours	Weekend day	Evening	Night	LAeq, 15min	Lmax	Utilities relocations	Site establishment	Earthworks	Drainage	Material processing	Drill and blast	Track work	Piling and concrete pours	Demobilise and landscape	Compound operation	Concrete batching
		> 75 dBA (highly affected)		0 - 10 dB > day NML			10-20 dB > day NML			0 - 10dB > night NML			10-20 dB > night NML			20 - 30dB > night NML			30+ > night NML	
1	NCA01	167 EURONGILLY RD, ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
2	NCA01	173 ALLAWAH RD, ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
3	NCA01	308 WALBRIDGE LANE, ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
4	NCA01	470 LANGWELL LANE, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
5	NCA01	72 WARRENS LANE, ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
6	NCA01	BEHTUNGRA PARK 37 WARRENS LANE, ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
7	NCA01	WALBRIDGE LANE ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
8	NCA01	2184 OLYMPIC HWY, ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
9	NCA01	2325 OLYMPIC HWY, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
10	NCA01	2552 OLYMPIC HWY, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
11	NCA01	2253 OLYMPIC HWY, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
12	NCA01	2242 OLD SYDNEY RD, ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
13	NCA02	2231 OLD SYDNEY RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
14	NCA02	2231 OLD SYDNEY RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
15	NCA02	312 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
16	NCA02	656 EULOMO SETTLEMENT RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
17	NCA02	555 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
18	NCA02	IRONBONG ROAD BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
19	NCA02	693 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
20	NCA02	Olympic Highway Bethungra	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
21	NCA02	852 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
22	NCA02	853 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
23	NCA02	971 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
24	NCA02	960 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	18	24	17	0	0	21	0	19	0	0
25	NCA02	1260 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	16	23	29	22	27	22	27	0	24	7	0
26	NCA02	1303 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	20	27	33	26	34	30	31	15	28	11	0
27	NCA02	1321 DIRNASEER RD, BETHUNGRA	Residential	45	40	35	35	45	65	20	26	31	25	32	28	29	15	26	10	0
28	NCA02	1673 DIRNASEER RD, BETHUNGRA	Residential	45	40	35	35	45	65	36	50	55	49	56	52	53	30	51	26	0
29	NCA03	27 DUDAUMAN RD, DIRNASEER	Residential	45	40	35	35	45	65	29	36	41	35	43	39	39	26	37	22	0
30	NCA03	109 YOURALLA LANE, DIRNASEER	Residential	45	40	35	35	45	65	43	47	53	46	52	47	51	37	48	34	0
31	NCA03	619 Blackgate Road DIRNASEER	Residential	45	40	35	35	45	65	35	38	43	37	45	41	41	32	39	27	0
32	NCA03	241 DUDAUMAN RD, DIRNASEER	Residential	45	40	35	35	45	65	34	40	44	39	46	41	44	30	41	24	0
33	NCA03	386 DUDAUMAN RD, DIRNASEER	Residential	45	40	35	35	45	65	50	81	57	80	48	44	85	28	82	48	0
34	NCA03	1129 OLD COOTAMUNDRA RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	28	49	54	48	54	49	52	24	49	24	0
35	NCA04	1240 OLD COOTAMUNDRA RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	36	44	44	43	40	36	48	32	45	28	0
36	NCA03	1519 OLD COOTAMUNDRA RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	35	39	42	38	41	36	43	30	40	26	0
37	NCA04	1570 OLD COOTAMUNDRA RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	29	33	36	32	37	32	37	25	34	21	0
38	NCA04	661 DUDAUMAN RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	24	26	31	25	29	25	30	20	27	15	0
39	NCA04	661 DUDAUMAN RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	22	24	30	23	26	22	28	18	25	13	0
40	NCA04	6 DUDAUMAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	16	19	24	18	0	0	22	13	19	8	0
41	NCA04	531 DUDAUMAN RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	18	20	26	19	0	0	24	14	21	9	0
42	NCA04	143 CORBYS LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	16	18	24	17	0	0	22	12	19	7	0
43	NCA04	239 CORBYS LANE STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
44	NCA04	237 CORBYS LANE STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
45	NCA04	270 DUDAUMAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
46	NCA04	1989 STOCKINBINGAL RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
47	NCA04	117 DUDAUMAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
48	NCA04	2158 STOCKINBINGAL RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
49	NCA04	2158 STOCKINBINGAL RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
50	NCA04	9 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
51	NCA04	BURLEY GRIFFEN WAY STOCKINGBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
52	NCA05	5 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
53	NCA06	8 GILMOURS LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
54	NCA05	3 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
55	NCA05	21 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
56	NCA05	4 ADAMS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
57	NCA05	17 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
58	NCA05	18 ADAMS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
59	NCA05	4 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
60	NCA05	4 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
61	NCA05	22 ADAMS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
62	NCA05	25 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
63	NCA05	15 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
64	NCA05	21 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
65	NCA05	21 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
66	NCA05	33-35 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
67	NCA05	29 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
68	NCA05	33-35 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
69	NCA05	37 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
70	NCA05	57 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
71	NCA05	1 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
72	NCA05	71 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0

Receiver				Assessment criteria						1	2	3	4	5	6	7	8	9	10	11
Ref	NCA	Address	Type	Standard hours	Weekend day	Evening	Night	LAeq, 15min	Lmax	Utilities relocations	Site establishment	Earthworks	Drainage	Material processing	Drill and blast	Track work	Piling and concrete pours	Demobilise and landscape	Compound operation	Concrete batching
		> 75 dBA (highly affected)		0 - 10 dB > day NML			10-20 dB > day NML			0 - 10dB > night NML			10-20 dB > night NML			20 - 30dB > night NML			30+ > night NML	
73	NCA05	1 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
74	NCA05	14 DUDAUMAN ST, STOCKINBINGAL	Industrial	75	75	75	75	75	75	0	0	0	0	0	0	0	0	0	0	0
75	NCA05	1 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
76	NCA05	2 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
77	NCA05	2 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
78	NCA05	1 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
79	NCA05	23 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
80	NCA05	16 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
81	NCA05	20 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
82	NCA05	24 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
83	NCA05	16 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
84	NCA05	21 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
85	NCA05	34-36 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
86	NCA05	COMMERCIAL HOTEL 32 MARTIN ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
87	NCA05	12 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
88	NCA05	19 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
89	NCA05	26-28 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
90	NCA05	COMMERCIAL HOTEL 32 MARTIN ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
91	NCA05	30 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
92	NCA05	34-36 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
93	NCA05	15-17 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
94	NCA05	40 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
95	NCA05	38 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
96	NCA05	38 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
97	NCA05	40 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
98	NCA05	30 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
99	NCA05	44-46 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
100	NCA05	15-17 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
101	NCA05	26 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
102	NCA05	BURLEY GRIFFEN WAY STOCKINGBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
103	NCA05	ELLWOODS HALL 30 MARTIN ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
104	NCA05	13 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
105	NCA05	Stockinbingal Bowling Greens	Active recreation area	65	65	65	65	65	65	0	0	0	0	0	0	0	0	0	0	0
106	NCA05	22 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
107	NCA05	24 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
108	NCA05	18 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
109	NCA05	9 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
110	NCA05	BURLEY GRIFFEN WAY STOCKINGBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
111	NCA05	52 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
112	NCA05	11-13 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
113	NCA05	12 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
114	NCA05	64 HIBERNIA ST, STOCKINBINGAL	Industrial	75	75	75	75	75	75	0	0	0	0	0	0	0	0	0	0	0
115	NCA05	3 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
116	NCA05	48 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0
117	NCA05	1 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
118	NCA05	12 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
119	NCA05	12 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
120	NCA05	68 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
121	NCA05	3 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
122	NCA05	11 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
123	NCA05	11-13 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
124	NCA05	16 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
125	NCA05	12A ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
126	NCA05	2 WEST ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
127	NCA05	15 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
128	NCA05	72 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
129	NCA05	2 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
130	NCA05	2A ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
131	NCA05	17 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
132	NCA05	Britannia Street Tennis Courts	Active recreation area	65	65	65	65	65	65	0	0	0	0	0	0	0	0	0	0	0
133	NCA05	19 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
134	NCA05	21 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
135	NCA05	2 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
136	NCA05	6 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
137	NCA05	6 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
138	NCA05	33 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
139	NCA05	St James Anglican	Place of Worship	65	65	65	65	65	65	0	0	0	0	0	0	0	0	0	0	0
140	NCA05	11 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
141	NCA05	8 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
142	NCA05	10 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
143	NCA05	9 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
144	NCA05	12 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
145	NCA05	14 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0

Receiver				Assessment criteria						1	2	3	4	5	6	7	8	9	10	11
Ref	NCA	Address	Type	Standard hours	Weekend day	Evening	Night	LAeq, 15min	Lmax	Utilities relocations	Site establishment	Earthworks	Drainage	Material processing	Drill and blast	Track work	Piling and concrete pours	Demobilise and landscape	Compound operation	Concrete batching
		> 75 dBA (highly affected)		0 - 10 dB > day NML			10-20 dB > day NML			0 - 10dB > night NML			10-20 dB > night NML			20 - 30dB > night NML			30+ > night NML	
146	NCA05	13 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
147	NCA05	18 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
148	NCA05	6 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
149	NCA05	14-16 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
150	NCA05	20 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
151	NCA05	22 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
152	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	0	0	0	0	0	0	0	0	0	0	0
153	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	0	0	0	0	0	0	0	0	0	0	0
154	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	0	0	0	0	0	0	0	0	0	0	0
155	NCA05	14 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
156	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	0	0	0	0	0	0	0	0	0	0	0
157	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	0	0	0	0	0	0	0	0	0	0	0
158	NCA05	5 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
159	NCA05	11 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
160	NCA05	1 YEO YEO ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
161	NCA05	1 YEO YEO ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
162	NCA05	12 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
163	NCA05	11 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
164	NCA05	6 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
165	NCA05	7 WEST ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
166	NCA05	9 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
167	NCA05	2 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
168	NCA05	3 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
169	NCA05	4 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
170	NCA05	5 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
171	NCA05	9 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
172	NCA05	6 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
173	NCA05	5 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
174	NCA05	11 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
175	NCA05	9 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
176	NCA05	17 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
177	NCA05	5 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
178	NCA05	17 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
179	NCA05	13 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
180	NCA05	St Josephs Catholic	Place of Worship	65	65	65	65	65	65	0	0	0	0	0	0	0	0	0	0	0
181	NCA05	14 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
182	NCA05	15 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
183	NCA05	69 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
184	NCA05	2 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
185	NCA05	14 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
186	NCA05	3 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
187	NCA05	20 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
188	NCA05	20 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
189	NCA05	12 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
190	NCA05	7 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
191	NCA05	GROGAN ROAD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
192	NCA05	1 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
193	NCA05	2 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
194	NCA05	69 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
195	NCA05	183 LEWINS LANE STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
196	NCA05	Stockinbingal Recreation Ground	Active recreation area	65	65	65	65	65	65	0	0	0	0	0	0	0	0	0	0	0
197	NCA05	75 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
198	NCA06	29 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
199	NCA06	LINDNERS LANE STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
200	NCA06	101 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
201	NCA06	Stockinbingal Cemetery	Passive recreation area	60	60	60	60	60	60	0	0	0	0	0	0	0	0	0	0	0
202	NCA06	116 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
203	NCA06	61 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
204	NCA06	KOITAKI 100 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
205	NCA06	93 RACECOURSE LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
206	NCA06	11 RACECOURSE LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
207	NCA06	11 RACECOURSE LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
208	NCA06	159 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
209	NCA06	169 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
210	NCA06	OLD WALLENDBEEN ROAD STOCKINGBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
211	NCA06	207 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
212	NCA06	3925 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
213	NCA06	LALOKI LANE STOCKINGBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
214	NCA06	135 FREEMANS LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
215	NCA06	63 BOYDS LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
216	NCA06	304 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
217	NCA06	214 MILVALE RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0

Receiver				Assessment criteria						Predicted LAeq, 15 min for works in Section 5										
										1	2	3	4	5	6	7	8	9	10	11
Ref	NCA	Address	Type	Standard hours	Weekend day	Evening	Night	LAeq, 15min	Lmax	Utilities relocations	Site establishment	Earthworks	Drainage	Material processing	Drill and blast	Track work	Piling and concrete pours	Demobilise and landscape	Compound operation	Concrete batching
		> 75 dBA (highly affected)		0 - 10 dB > day NML			10-20 dB > day NML			0 - 10dB > night NML			10-20 dB > night NML			20 - 30dB > night NML			30+ > night NML	
1	NCA01	167 EURONGILLY RD, ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
2	NCA01	173 ALLAWAH RD, ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
3	NCA01	308 WALBRIDGE LANE, ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
4	NCA01	470 LANGWELL LANE, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
5	NCA01	72 WARRENS LANE, ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
6	NCA01	BEHTUNGRA PARK 37 WARRENS LANE, ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
7	NCA01	WALBRIDGE LANE ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
8	NCA01	2184 OLYMPIC HWY, ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
9	NCA01	2325 OLYMPIC HWY, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
10	NCA01	2552 OLYMPIC HWY, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
11	NCA01	2253 OLYMPIC HWY, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
12	NCA01	2242 OLD SYDNEY RD, ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
13	NCA02	2231 OLD SYDNEY RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
14	NCA02	2231 OLD SYDNEY RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
15	NCA02	312 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
16	NCA02	656 EULOMO SETTLEMENT RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
17	NCA02	555 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
18	NCA02	IRONBONG ROAD BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
19	NCA02	693 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
20	NCA02	Olympic Highway Bethungra	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
21	NCA02	852 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
22	NCA02	853 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
23	NCA02	971 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
24	NCA02	960 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
25	NCA02	1260 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
26	NCA02	1303 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
27	NCA02	1321 DIRNASEER RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
28	NCA02	1673 DIRNASEER RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
29	NCA03	27 DUDAUMAN RD, DIRNASEER	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
30	NCA03	109 YOURALLA LANE, DIRNASEER	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
31	NCA03	619 Blackgate Road DIRNASEER	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
32	NCA03	241 DUDAUMAN RD, DIRNASEER	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
33	NCA03	386 DUDAUMAN RD, DIRNASEER	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
34	NCA03	1129 OLD COOTAMUNDRA RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	28	31	36	30	0	0	34	0	31	19	0
35	NCA04	1240 OLD COOTAMUNDRA RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	37	40	45	39	0	0	43	0	41	27	0
36	NCA03	1519 OLD COOTAMUNDRA RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	35	38	42	37	0	0	41	0	38	27	0
37	NCA04	1570 OLD COOTAMUNDRA RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	29	32	37	31	0	0	35	0	33	21	0
38	NCA04	661 DUDAUMAN RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	34	37	42	36	0	0	40	0	37	26	0
39	NCA04	661 DUDAUMAN RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	33	36	42	35	0	0	40	13	37	25	0
40	NCA04	6 DUDAUMAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	30	35	39	34	0	0	39	17	36	22	0
41	NCA04	531 DUDAUMAN RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	30	40	45	39	0	0	43	17	41	26	0
42	NCA04	143 CORBYS LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	31	39	42	38	0	0	43	19	40	24	0
43	NCA04	239 CORBYS LANE STOCKINBINGAL	Residential	45	40	35	35	45	65	26	30	35	29	0	0	34	18	31	17	0
44	NCA04	237 CORBYS LANE STOCKINBINGAL	Residential	45	40	35	35	45	65	26	30	34	29	0	0	33	19	31	17	0
45	NCA04	270 DUDAUMAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	37	40	45	39	0	0	44	24	41	28	0
46	NCA04	1989 STOCKINBINGAL RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	22	28	33	27	0	0	31	20	29	17	0
47	NCA04	117 DUDAUMAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	28	46	49	45	0	0	49	37	47	29	0
48	NCA04	2158 STOCKINBINGAL RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	22	31	36	30	0	0	34	24	32	19	0
49	NCA04	2158 STOCKINBINGAL RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	22	32	37	31	0	0	36	25	33	19	0
50	NCA04	9 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	25	44	49	43	0	0	47	37	45	24	0
51	NCA04	BURLEY GRIFFEN WAY STOCKINGBINGAL	Residential	45	40	35	35	45	65	23	41	47	40	0	0	45	30	42	19	0
52	NCA05	5 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	22	33	38	32	0	0	37	27	34	20	0
53	NCA06	8 GILMOURS LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	19	29	34	28	0	0	33	22	30	17	0
54	NCA05	3 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	24	33	39	32	0	0	37	25	34	21	0
55	NCA05	21 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	23	39	44	38	0	0	43	33	40	22	0
56	NCA05	4 ADAMS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	23	38	43	37	0	0	41	31	38	21	0
57	NCA05	17 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	25	38	43	37	0	0	42	30	39	23	0
58	NCA05	18 ADAMS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	23	41	46	40	0	0	44	34	42	21	0
59	NCA05	4 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	31	37	30	0	0	35	25	32	18	0
60	NCA05	4 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	31	36	30	0	0	34	24	32	18	0
61	NCA05	22 ADAMS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	25	41	46	40	0	0	45	34	42	23	0
62	NCA05	25 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	25	40	45	39	0	0	44	34	41	23	0
63	NCA05	15 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	22	39	44	38	0	0	42	30	40	21	0
64	NCA05	21 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	23	40	45	39	0	0	43	31	41	21	0
65	NCA05	21 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	25	37	43	36	0	0	41	31	38	23	0
66	NCA05	33-35 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	23	39	44	38	0	0	42	31	40	21	0
67	NCA05	29 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	23	38	43	37	0	0	42	31	39	21	0
68	NCA05	33-35 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	23	40	46	39	0	0	44	31	41	21	0
69	NCA05	37 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	23	40	46	39	0	0	44	32	41	21	0
70	NCA05	57 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	25	44	48	43	0	0	47	34	44	23	0
71	NCA05	1 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	32	37	31	0	0	35	26	33	18	0
72	NCA05	71 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	22	45	50	44	0	0	49	33	46	21	0

Receiver				Assessment criteria						1	2	3	4	5	6	7	8	9	10	11
Ref	NCA	Address	Type	Standard hours	Weekend day	Evening	Night	LAeq, 15min	Lmax	Utilities relocations	Site establishment	Earthworks	Drainage	Material processing	Drill and blast	Track work	Piling and concrete pours	Demobilise and landscape	Compound operation	Concrete batching
		> 75 dBA (highly affected)		0 - 10 dB > day NML			10-20 dB > day NML			0 - 10dB > night NML			10-20 dB > night NML			20 - 30dB > night NML			30+ > night NML	
73	NCA05	1 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	33	38	32	0	0	36	27	34	19	0
74	NCA05	14 DUDAUMAN ST, STOCKINBINGAL	Industrial	75	75	75	75	75	75	22	37	42	36	0	0	40	30	37	20	0
75	NCA05	1 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	34	40	33	0	0	38	28	35	18	0
76	NCA05	2 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	23	33	38	32	0	0	36	26	34	20	0
77	NCA05	2 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	35	40	34	0	0	38	29	36	19	0
78	NCA05	1 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	33	38	32	0	0	36	27	34	19	0
79	NCA05	23 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	24	38	43	37	0	0	41	31	38	22	0
80	NCA05	16 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	33	38	32	0	0	36	25	34	18	0
81	NCA05	20 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	32	37	31	0	0	35	25	32	18	0
82	NCA05	24 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	22	37	42	36	0	0	40	29	38	20	0
83	NCA05	16 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	31	37	30	0	0	35	25	32	18	0
84	NCA05	21 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	24	37	43	36	0	0	41	30	38	22	0
85	NCA05	34-36 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	24	37	42	36	0	0	41	30	38	22	0
86	NCA05	COMMERCIAL HOTEL 32 MARTIN ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	22	38	43	37	0	0	42	32	39	20	0
87	NCA05	12 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	23	33	39	32	0	0	37	27	34	20	0
88	NCA05	19 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	37	42	36	0	0	40	30	38	19	0
89	NCA05	26-28 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	22	38	43	37	0	0	41	29	39	20	0
90	NCA05	COMMERCIAL HOTEL 32 MARTIN ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	22	38	43	37	0	0	42	29	39	19	0
91	NCA05	30 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	23	37	41	36	0	0	40	29	37	21	0
92	NCA05	34-36 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	22	40	45	39	0	0	43	29	41	20	0
93	NCA05	15-17 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	35	40	34	0	0	38	28	35	19	0
94	NCA05	40 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	22	39	44	38	0	0	42	30	40	20	0
95	NCA05	38 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	24	40	45	39	0	0	43	32	40	22	0
96	NCA05	38 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	22	40	45	39	0	0	44	30	41	20	0
97	NCA05	40 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	22	39	44	38	0	0	43	30	40	20	0
98	NCA05	30 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	24	37	43	36	0	0	41	31	38	22	0
99	NCA05	44-46 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	22	38	42	37	0	0	41	30	38	20	0
100	NCA05	15-17 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	37	42	36	0	0	40	28	38	20	0
101	NCA05	26 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	24	37	42	36	0	0	40	31	38	22	0
102	NCA05	BURLEY GRIFFEN WAY STOCKINGBINGAL	Residential	45	40	35	35	45	65	20	42	47	41	0	0	46	27	43	16	0
103	NCA05	ELLWOODS HALL 30 MARTIN ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	21	38	43	37	0	0	41	31	39	19	0
104	NCA05	13 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	36	41	35	0	0	39	28	37	19	0
105	NCA05	Stockinbingal Bowling Greens	Active recreation area	65	65	65	65	65	65	0	0	0	0	0	0	0	0	0	0	0
106	NCA05	22 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	35	40	34	0	0	38	27	36	19	0
107	NCA05	24 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	24	37	42	36	0	0	40	28	38	22	0
108	NCA05	18 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	35	40	34	0	0	38	28	35	19	0
109	NCA05	9 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	34	39	33	0	0	37	27	35	19	0
110	NCA05	BURLEY GRIFFEN WAY STOCKINGBINGAL	Residential	45	40	35	35	45	65	21	47	52	46	0	0	50	29	48	18	0
111	NCA05	52 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	24	39	44	38	0	0	42	29	40	22	0
112	NCA05	11-13 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	22	38	43	37	0	0	42	28	39	20	0
113	NCA05	12 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	36	41	35	0	0	40	29	37	19	0
114	NCA05	64 HIBERNIA ST, STOCKINBINGAL	Industrial	75	75	75	75	75	75	22	41	47	40	0	0	45	21	42	19	0
115	NCA05	3 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	33	39	32	0	0	37	27	34	18	0
116	NCA05	48 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	24	39	45	38	0	0	43	31	40	22	0
117	NCA05	1 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	36	41	35	0	0	39	29	36	19	0
118	NCA05	12 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	22	36	41	35	0	0	39	28	37	19	0
119	NCA05	12 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	34	39	33	0	0	38	27	35	19	0
120	NCA05	68 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	22	42	48	41	0	0	46	31	43	19	0
121	NCA05	3 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	24	39	44	38	0	0	43	31	40	22	0
122	NCA05	11 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	24	40	45	39	0	0	44	32	41	22	0
123	NCA05	11-13 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	36	42	35	0	0	40	28	37	19	0
124	NCA05	16 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	38	43	37	0	0	42	29	39	19	0
125	NCA05	12A ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	20	30	36	29	0	0	34	24	31	17	0
126	NCA05	2 WEST ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	22	43	48	42	0	0	47	31	44	19	0
127	NCA05	15 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	24	39	44	38	0	0	42	30	40	21	0
128	NCA05	72 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	42	47	41	0	0	45	31	43	19	0
129	NCA05	2 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	36	41	35	0	0	39	27	37	18	0
130	NCA05	2A ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	19	29	35	28	0	0	33	23	30	16	0
131	NCA05	17 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	39	44	38	0	0	43	29	40	19	0
132	NCA05	Britannia Street Tennis Courts	Active recreation area	65	65	65	65	65	65	0	0	0	0	0	0	0	0	0	0	0
133	NCA05	19 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	41	47	40	0	0	44	30	42	19	0
134	NCA05	21 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	40	45	39	0	0	43	30	41	19	0
135	NCA05	2 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	37	42	36	0	0	40	29	38	19	0
136	NCA05	6 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	37	42	36	0	0	41	29	38	19	0
137	NCA05	6 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	37	42	36	0	0	41	29	38	19	0
138	NCA05	33 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	22	42	48	41	0	0	46	30	43	19	0
139	NCA05	St James Anglican	Place of Worship	65	65	65	65	65	65	21	37	42	36	0	0	40	28	37	18	0
140	NCA05	11 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	40	45	39	0	0	44	31	41	19	0
141	NCA05	8 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	38	44	37	0	0	42	29	39	19	0
142	NCA05	10 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	24	41	46	40	0	0	44	32	42	21	0
143	NCA05	9 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	38	42	37	0	0	41	29	38	19	0
144	NCA05	12 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	39	44	38	0	0	42	29	40	19	0
145	NCA05	14 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	23	40	45	39	0	0	44	29	41	21	0

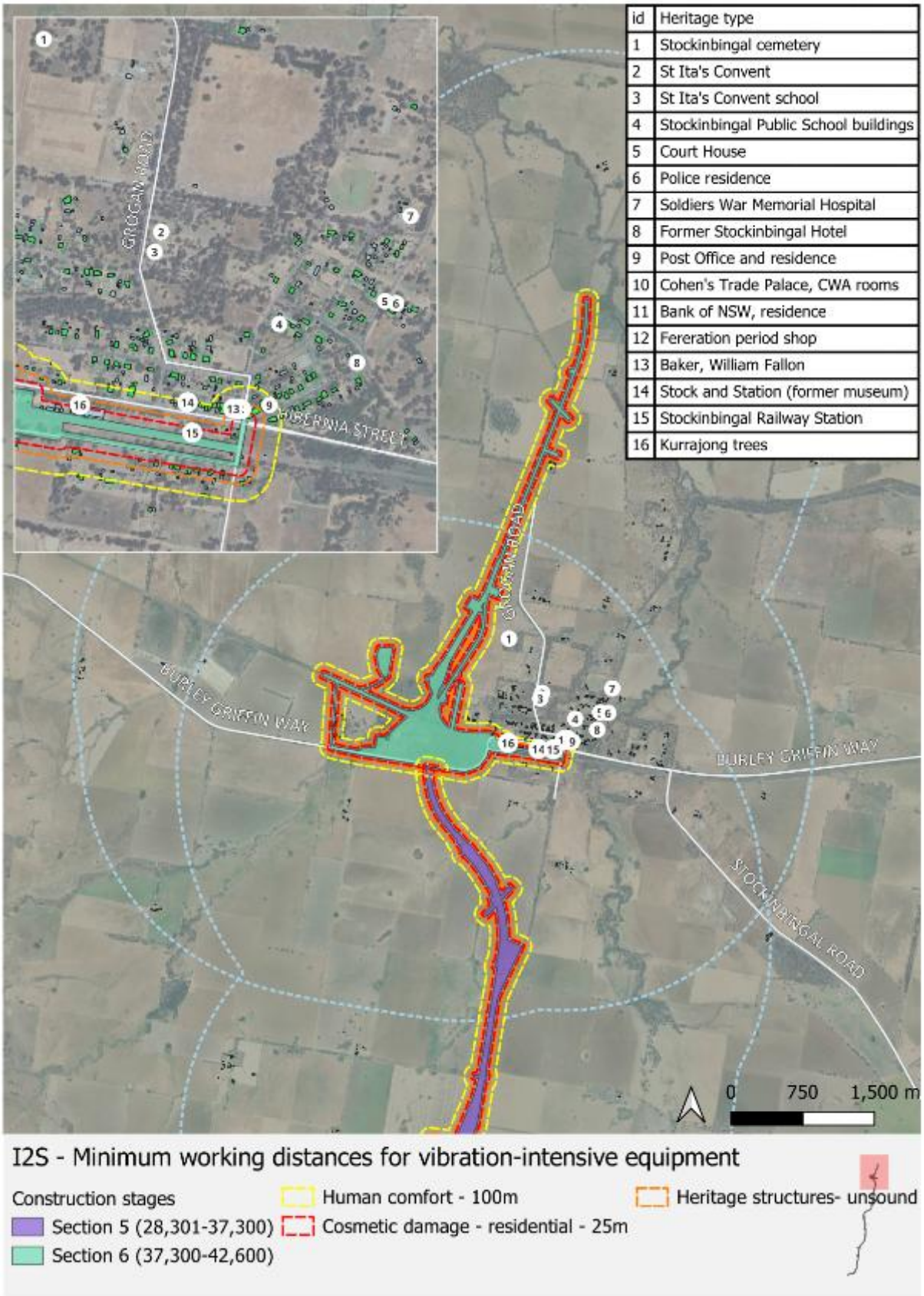
Receiver				Assessment criteria						1	2	3	4	5	6	7	8	9	10	11
Ref	NCA	Address	Type	Standard hours	Weekend day	Evening	Night	LAeq, 15min	Lmax	Utilities relocations	Site establishment	Earthworks	Drainage	Material processing	Drill and blast	Track work	Piling and concrete pours	Demobilise and landscape	Compound operation	Concrete batching
		> 75 dBA (highly affected)		0 - 10 dB > day NML			10-20 dB > day NML			0 - 10dB > night NML			10-20 dB > night NML			20 - 30dB > night NML			30+ > night NML	
146	NCA05	13 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	34	39	33	0	0	38	27	35	18	0
147	NCA05	18 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	22	40	45	39	0	0	43	29	41	19	0
148	NCA05	6 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	36	41	35	0	0	39	28	36	18	0
149	NCA05	14-16 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	23	39	44	38	0	0	43	32	40	21	0
150	NCA05	20 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	23	43	48	42	0	0	46	32	44	21	0
151	NCA05	22 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	22	41	47	40	0	0	45	30	42	19	0
152	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	20	34	40	33	0	0	38	27	35	18	0
153	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	20	36	41	35	0	0	39	29	36	20	0
154	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	20	35	40	34	0	0	38	27	36	18	0
155	NCA05	14 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	20	34	39	33	0	0	37	27	35	18	0
156	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	20	34	40	33	0	0	38	27	35	18	0
157	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	20	35	40	34	0	0	38	27	35	18	0
158	NCA05	5 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	20	33	38	32	0	0	37	26	34	17	0
159	NCA05	11 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	20	33	39	32	0	0	37	26	34	18	0
160	NCA05	1 YEO YEO ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	22	33	39	32	0	0	37	25	34	17	0
161	NCA05	1 YEO YEO ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	20	35	40	34	0	0	38	25	35	17	0
162	NCA05	12 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	20	34	39	33	0	0	37	26	35	17	0
163	NCA05	11 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	20	37	42	36	0	0	40	26	37	17	0
164	NCA05	6 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	20	32	37	31	0	0	36	25	33	17	0
165	NCA05	7 WEST ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	23	43	48	42	0	0	47	32	44	20	0
166	NCA05	9 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	20	33	38	32	0	0	36	25	33	17	0
167	NCA05	2 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	20	34	39	33	0	0	38	26	35	17	0
168	NCA05	3 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	23	40	45	39	0	0	44	30	41	20	0
169	NCA05	4 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	20	35	40	34	0	0	38	26	35	17	0
170	NCA05	5 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	20	38	43	37	0	0	42	28	39	18	0
171	NCA05	9 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	20	38	43	37	0	0	42	28	39	18	0
172	NCA05	6 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	20	33	38	32	0	0	37	26	34	17	0
173	NCA05	5 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	22	34	39	33	0	0	37	28	35	20	0
174	NCA05	11 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	20	39	44	38	0	0	43	28	40	18	0
175	NCA05	9 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	20	39	44	38	0	0	42	28	39	18	0
176	NCA05	17 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	22	40	45	39	0	0	44	29	41	19	0
177	NCA05	5 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	20	34	39	33	0	0	37	26	34	17	0
178	NCA05	17 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	20	40	45	39	0	0	43	28	41	17	0
179	NCA05	13 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	33	38	32	0	0	36	27	34	19	0
180	NCA05	St Josephs Catholic	Place of Worship	65	65	65	65	65	65	20	37	42	36	0	0	40	27	38	17	0
181	NCA05	14 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	19	31	36	30	0	0	35	24	32	16	0
182	NCA05	15 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	19	32	37	31	0	0	36	24	33	16	0
183	NCA05	69 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	20	39	44	38	0	0	42	28	39	17	0
184	NCA05	2 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	19	36	41	35	0	0	40	26	37	17	0
185	NCA05	14 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	32	38	31	0	0	36	26	33	18	0
186	NCA05	3 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	19	33	39	32	0	0	37	25	34	16	0
187	NCA05	20 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	22	39	45	38	0	0	43	30	40	19	0
188	NCA05	20 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	20	42	47	41	0	0	45	28	42	17	0
189	NCA05	12 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	20	41	46	40	0	0	44	28	41	17	0
190	NCA05	7 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	19	33	38	32	0	0	36	25	33	16	0
191	NCA05	GROGAN ROAD, STOCKINBINGAL	Residential	45	40	35	35	45	65	22	36	41	35	0	0	40	28	37	19	0
192	NCA05	1 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	22	35	41	34	0	0	39	28	36	19	0
193	NCA05	2 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	19	31	37	30	0	0	35	24	32	16	0
194	NCA05	69 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	19	38	43	37	0	0	41	27	38	18	0
195	NCA05	183 LEWINS LANE STOCKINBINGAL	Residential	45	40	35	35	45	65	19	40	46	39	0	0	44	27	41	16	0
196	NCA05	Stockinbingal Recreation Ground	Active recreation area	65	65	65	65	65	65	0	0	0	0	0	0	0	0	0	0	0
197	NCA05	75 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	19	38	43	37	0	0	42	28	39	16	0
198	NCA06	29 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	17	30	36	29	0	0	34	22	31	14	0
199	NCA06	LINDNERS LANE STOCKINBINGAL	Residential	45	40	35	35	45	65	0	22	28	21	0	0	26	13	23	0	0
200	NCA06	101 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	18	34	39	33	0	0	37	24	35	14	0
201	NCA06	Stockinbingal Cemetery	Passive recreation area	60	60	60	60	60	60	0	0	0	0	0	0	0	0	0	0	0
202	NCA06	116 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	20	32	37	31	0	0	36	24	33	16	0
203	NCA06	61 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	19	29	34	28	0	0	33	21	30	15	0
204	NCA06	KOITAKI 100 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	27	32	26	0	0	30	19	28	11	0
205	NCA06	93 RACECOURSE LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	16	29	34	28	0	0	32	20	30	12	0
206	NCA06	11 RACECOURSE LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	16	31	36	30	0	0	34	21	31	12	0
207	NCA06	11 RACECOURSE LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	16	31	36	30	0	0	35	21	32	12	0
208	NCA06	159 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	27	33	26	0	0	31	19	28	11	0
209	NCA06	169 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	24	29	23	0	0	28	16	25	9	0
210	NCA06	OLD WALLENDBEEN ROAD STOCKINGBINGAL	Residential	45	40	35	35	45	65	0	24	29	23	0	0	27	16	25	8	0
211	NCA06	207 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	26	31	25	0	0	29	17	26	10	0
212	NCA06	3925 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	27	32	26	0	0	30	17	27	9	0
213	NCA06	LALOKI LANE STOCKINGBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
214	NCA06	135 FREEMANS LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	19	25	18	0	0	23	0	20	0	0
215	NCA06	63 BOYDS LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	20	25	19	0	0	23	0	21	0	0
216	NCA06	304 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	19	25	18	0	0	23	0	20	0	0
217	NCA06	214 MILVALE RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0

Receiver				Assessment criteria						*Predicted LAeq, 15 min for works in Section 6*										
										1	2	3	4	5	6	7	8	9	10	11
Ref	NCA	Address	Type	Standard hours	Weekend day	Evening	Night	LAeq, 15min	Lmax	Utilities relocations	Site establishment	Earthworks	Drainage	Material processing	Drill and blast	Track work	Piling and concrete pours	Demobilise and landscape	Compound operation	Concrete batching
		> 75 dBA (highly affected)		0 - 10 dB > day NML			10-20 dB > day NML			0 - 10dB > night NML			10-20 dB > night NML			20 - 30dB > night NML			30+ > night NML	
1	NCA01	167 EURONGILLY RD, ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
2	NCA01	173 ALLAWAH RD, ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
3	NCA01	308 WALBRIDGE LANE, ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
4	NCA01	470 LANGWELL LANE, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
5	NCA01	72 WARRENS LANE, ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
6	NCA01	BEHTUNGRA PARK 37 WARRENS LANE, ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
7	NCA01	WALBRIDGE LANE ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
8	NCA01	2184 OLYMPIC HWY, ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
9	NCA01	2325 OLYMPIC HWY, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
10	NCA01	2552 OLYMPIC HWY, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
11	NCA01	2253 OLYMPIC HWY, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
12	NCA01	2242 OLD SYDNEY RD, ILLABO	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
13	NCA02	2231 OLD SYDNEY RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
14	NCA02	2231 OLD SYDNEY RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
15	NCA02	312 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
16	NCA02	656 EULOMO SETTLEMENT RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
17	NCA02	555 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
18	NCA02	IRONBONG ROAD BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
19	NCA02	693 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
20	NCA02	Olympic Highway Bethungra	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
21	NCA02	852 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
22	NCA02	853 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
23	NCA02	971 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
24	NCA02	960 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
25	NCA02	1260 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
26	NCA02	1303 IRONBONG RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
27	NCA02	1321 DIRNASEER RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
28	NCA02	1673 DIRNASEER RD, BETHUNGRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
29	NCA03	27 DUDAUMAN RD, DIRNASEER	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
30	NCA03	109 YOURALLA LANE, DIRNASEER	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
31	NCA03	619 Blackgate Road DIRNASEER	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
32	NCA03	241 DUDAUMAN RD, DIRNASEER	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
33	NCA03	386 DUDAUMAN RD, DIRNASEER	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
34	NCA03	1129 OLD COOTAMUNDRA RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
35	NCA04	1240 OLD COOTAMUNDRA RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
36	NCA03	1519 OLD COOTAMUNDRA RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
37	NCA04	1570 OLD COOTAMUNDRA RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
38	NCA04	661 DUDAUMAN RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
39	NCA04	661 DUDAUMAN RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	0	0	0	0	0	0	0	0	0	0	0
40	NCA04	6 DUDAUMAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	18	22	28	21	0	0	26	0	23	7	15
41	NCA04	531 DUDAUMAN RD, COOTAMUNDRA	Residential	45	40	35	35	45	65	18	21	26	20	0	0	24	13	21	8	16
42	NCA04	143 CORBYS LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	20	22	28	21	26	21	25	15	23	10	18
43	NCA04	239 CORBYS LANE STOCKINBINGAL	Residential	45	40	35	35	45	65	20	23	29	22	26	22	27	15	24	11	18
44	NCA04	237 CORBYS LANE STOCKINBINGAL	Residential	45	40	35	35	45	65	22	24	30	23	27	23	28	16	25	12	19
45	NCA04	270 DUDAUMAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	26	28	34	27	31	27	31	21	29	17	24
46	NCA04	1989 STOCKINBINGAL RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	21	27	34	26	28	23	30	15	28	12	20
47	NCA04	117 DUDAUMAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	34	41	45	40	38	33	44	26	42	25	32
48	NCA04	2158 STOCKINBINGAL RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	28	36	41	35	35	30	40	22	37	19	26
49	NCA04	2158 STOCKINBINGAL RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	29	39	41	38	35	30	42	22	40	20	27
50	NCA04	9 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	43	48	53	47	43	38	51	32	49	34	40
51	NCA04	BURLEY GRIFFEN WAY STOCKINGBINGAL	Residential	45	40	35	35	45	65	44	47	52	46	43	38	50	33	48	32	36
52	NCA05	5 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	31	41	44	40	37	32	44	24	41	22	30
53	NCA06	8 GILMOURS LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	24	34	37	33	31	26	38	17	35	15	23
54	NCA05	3 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	31	42	44	41	37	32	46	23	43	22	29
55	NCA05	21 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	44	57	60	56	44	39	60	32	58	34	40
56	NCA05	4 ADAMS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	41	61	57	60	43	38	65	30	62	32	38
57	NCA05	17 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	42	71	54	70	46	42	75	33	72	32	40
58	NCA05	18 ADAMS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	46	61	64	60	45	40	65	33	62	37	43
59	NCA05	4 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	33	43	45	42	39	34	47	25	44	24	31
60	NCA05	4 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	31	42	43	41	36	32	45	23	42	21	29
61	NCA05	22 ADAMS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	49	62	65	61	46	41	66	34	63	38	44
62	NCA05	25 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	44	75	58	74	45	41	79	33	76	35	41
63	NCA05	15 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	42	82	57	81	43	38	86	32	83	32	39
64	NCA05	21 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	44	79	58	78	43	39	82	33	80	34	40
65	NCA05	21 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	41	79	57	78	43	39	83	30	80	32	38
66	NCA05	33-35 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	43	77	60	76	44	39	81	32	78	33	40
67	NCA05	29 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	43	78	60	77	44	39	81	31	78	33	40
68	NCA05	33-35 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	46	80	62	79	44	40	83	32	80	36	41
69	NCA05	37 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	46	78	64	77	45	40	81	32	78	35	41
70	NCA05	57 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	51	76	72	75	46	42	79	34	77	40	45
71	NCA05	1 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	33	45	45	44	38	34	48	24	46	23	31
72	NCA05	71 TROY ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	60	82	71	81	48	44	85	36	83	47	50

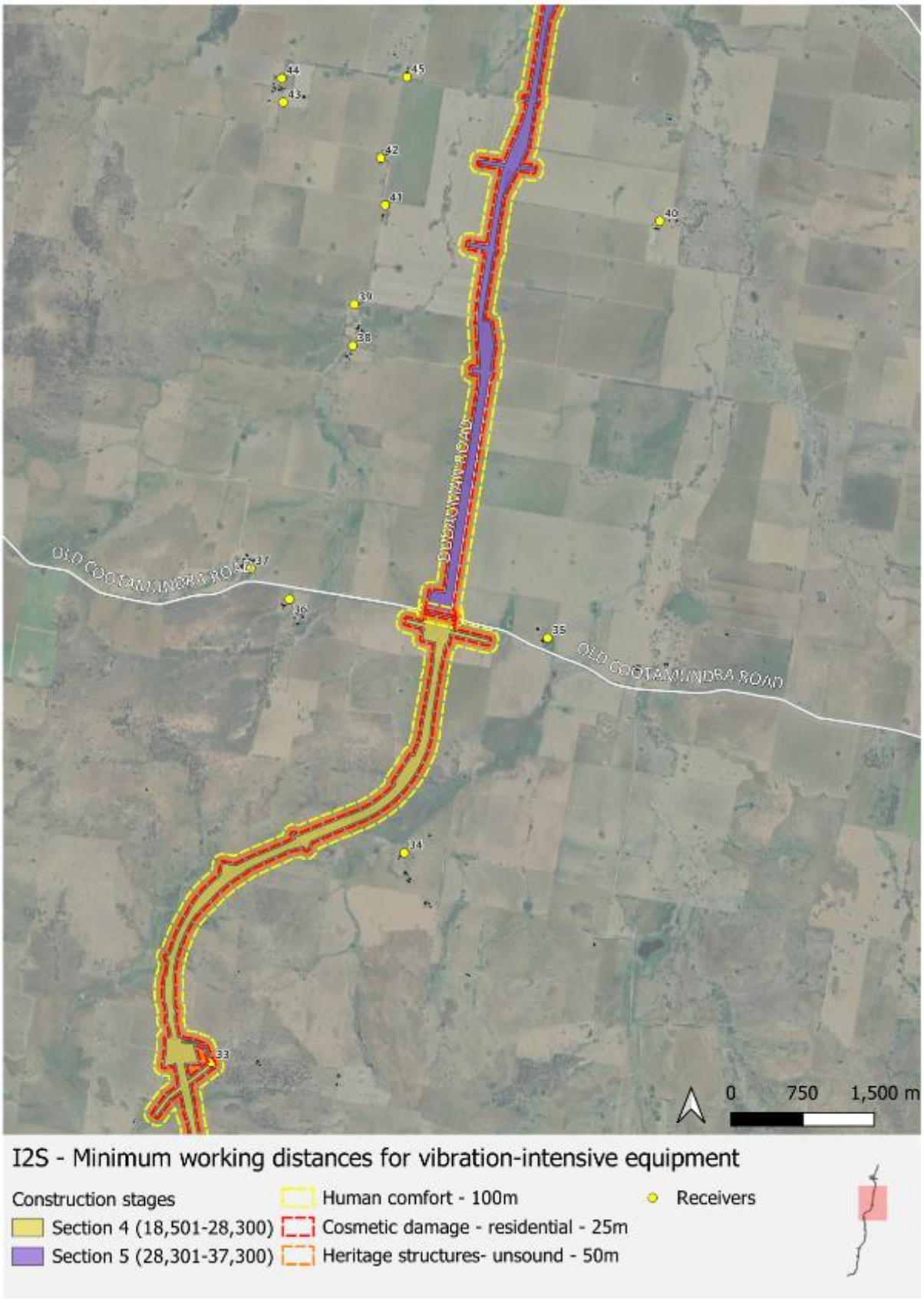
Receiver				Assessment criteria						1	2	3	4	5	6	7	8	9	10	11
Ref	NCA	Address	Type	Standard hours	Weekend day	Evening	Night	LAeq, 15min	Lmax	Utilities relocations	Site establishment	Earthworks	Drainage	Material processing	Drill and blast	Track work	Piling and concrete pours	Demobilise and landscape	Compound operation	Concrete batching
		> 75 dBA (highly affected)		0 - 10 dB > day NML			10-20 dB > day NML			0 - 10dB > night NML			10-20 dB > night NML			20 - 30dB > night NML			30+ > night NML	
73	NCA05	1 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	37	49	49	48	42	37	53	28	50	27	35
74	NCA05	14 DUDAUMAN ST, STOCKINBINGAL	Industrial	75	75	75	75	75	75	41	85	56	84	43	38	89	30	86	31	38
75	NCA05	1 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	35	47	47	46	41	36	50	27	47	26	33
76	NCA05	2 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	33	43	44	42	39	34	46	25	44	24	31
77	NCA05	2 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	34	46	47	45	41	37	50	28	47	24	32
78	NCA05	1 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	35	49	48	48	40	35	52	26	50	25	33
79	NCA05	23 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	39	68	54	67	44	40	72	29	69	29	36
80	NCA05	16 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	35	44	45	43	40	36	48	27	45	25	32
81	NCA05	20 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	33	45	46	44	38	34	48	25	46	23	31
82	NCA05	24 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	43	73	56	72	45	41	77	32	74	32	40
83	NCA05	16 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	32	44	44	43	38	33	47	24	45	23	30
84	NCA05	21 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	38	61	48	60	44	40	64	29	61	29	35
85	NCA05	34-36 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	42	64	56	63	46	42	68	33	65	32	39
86	NCA05	COMMERCIAL HOTEL 32 MARTIN ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	41	81	55	80	45	41	84	30	81	32	39
87	NCA05	12 ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	34	43	45	42	40	35	47	26	44	25	32
88	NCA05	19 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	36	55	44	54	42	37	59	28	56	26	34
89	NCA05	26-28 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	43	71	56	70	46	41	74	32	71	32	40
90	NCA05	COMMERCIAL HOTEL 32 MARTIN ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	42	68	55	67	43	38	71	32	69	32	39
91	NCA05	30 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	41	67	54	66	45	41	71	32	68	32	40
92	NCA05	34-36 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	45	62	54	61	46	42	65	33	63	33	41
93	NCA05	15-17 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	37	55	46	54	44	39	59	28	56	28	35
94	NCA05	40 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	43	62	57	61	44	40	65	32	63	32	39
95	NCA05	38 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	43	65	56	64	44	40	69	32	66	34	39
96	NCA05	38 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	45	63	58	62	43	39	66	34	64	35	42
97	NCA05	40 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	44	63	59	62	44	39	67	33	64	36	41
98	NCA05	30 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	42	64	55	63	46	41	68	32	65	32	40
99	NCA05	44-46 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	44	62	56	61	46	42	66	34	63	34	42
100	NCA05	15-17 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	39	55	50	54	43	39	59	30	56	30	37
101	NCA05	26 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	38	60	48	59	42	38	63	29	61	28	36
102	NCA05	BURLEY GRIFFEN WAY STOCKINGBINGAL	Residential	45	40	35	35	45	65	48	82	59	81	46	42	85	37	82	37	39
103	NCA05	ELLWOODS HALL 30 MARTIN ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	41	60	53	59	45	40	64	33	61	32	38
104	NCA05	13 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	37	56	48	55	44	39	59	28	57	28	35
105	NCA05	Stockinbingal Bowling Greens	Active recreation area	65	65	65	65	65	65	0	0	0	0	0	0	0	0	0	0	0
106	NCA05	22 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	38	49	50	48	42	38	53	29	50	28	36
107	NCA05	24 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	41	59	51	58	45	40	63	31	60	31	39
108	NCA05	18 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	38	56	49	55	42	38	59	28	57	28	36
109	NCA05	9 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	37	50	48	49	41	37	54	28	51	27	35
110	NCA05	BURLEY GRIFFEN WAY STOCKINGBINGAL	Residential	45	40	35	35	45	65	75	85	69	84	50	46	88	43	85	71	45
111	NCA05	52 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	51	65	60	64	50	46	68	35	65	36	44
112	NCA05	11-13 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	41	59	54	58	46	41	62	29	59	32	39
113	NCA05	12 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	41	60	53	59	43	39	63	30	61	30	38
114	NCA05	64 HIBERNIA ST, STOCKINBINGAL	Industrial	75	75	75	75	75	75	54	65	70	64	48	43	68	35	66	40	47
115	NCA05	3 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	36	50	47	49	41	36	53	27	50	27	34
116	NCA05	48 HIBERNIA ST, STOCKINBINGAL	Commercial	70	70	70	70	70	70	47	64	56	63	49	44	68	35	65	34	42
117	NCA05	1 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	41	56	52	55	44	39	60	30	57	30	38
118	NCA05	12 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	38	53	49	52	42	37	56	28	53	28	35
119	NCA05	12 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	37	52	47	51	42	37	56	28	53	27	35
120	NCA05	68 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	58	71	68	70	48	44	74	36	72	41	48
121	NCA05	3 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	44	56	57	55	45	40	60	33	57	33	41
122	NCA05	11 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	46	59	55	58	45	40	63	34	60	35	43
123	NCA05	11-13 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	42	57	52	56	46	41	61	32	58	30	38
124	NCA05	16 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	45	58	54	57	46	41	61	32	58	34	41
125	NCA05	12A ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	32	43	42	42	38	33	46	24	44	22	30
126	NCA05	2 WEST ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	83	91	89	90	50	46	95	38	92	46	54
127	NCA05	15 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	47	57	58	56	47	43	61	33	58	35	42
128	NCA05	72 HIBERNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	60	67	69	66	49	44	70	36	67	41	49
129	NCA05	2 MARTIN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	39	50	50	49	41	37	54	30	51	29	37
130	NCA05	2A ELLWOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	30	40	40	39	37	32	44	23	41	21	28
131	NCA05	17 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	48	57	59	56	49	44	61	35	58	37	45
132	NCA05	Britannia Street Tennis Courts	Active recreation area	65	65	65	65	65	65	0	0	0	0	0	0	0	0	0	0	0
133	NCA05	19 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	51	56	62	55	47	42	60	36	57	38	46
134	NCA05	21 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	50	56	61	55	47	43	59	34	57	37	44
135	NCA05	2 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	42	54	51	53	44	40	57	31	54	31	39
136	NCA05	6 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	43	54	52	53	45	40	57	31	54	31	39
137	NCA05	6 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	43	54	52	53	45	40	57	31	54	32	40
138	NCA05	33 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	59	65	69	64	50	46	69	38	66	43	51
139	NCA05	St James Anglican	Place of Worship	65	65	65	65	65	65	40	53	51	52	43	39	57	29	54	29	37
140	NCA05	11 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	46	56	55	55	47	43	59	34	57	35	43
141	NCA05	8 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	45	55	54	54	46	41	59	32	56	33	41
142	NCA05	10 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	49	56	59	55	49	44	60	35	57	36	44
143	NCA05	9 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	42	54	52	53	48	43	58	34	55	32	40
144	NCA05	12 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	48	53	58	52	47	42	57	35	54	35	43
145	NCA05	14 GERALDRA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	47	55	55	54	49	44	58	35	56	36	44

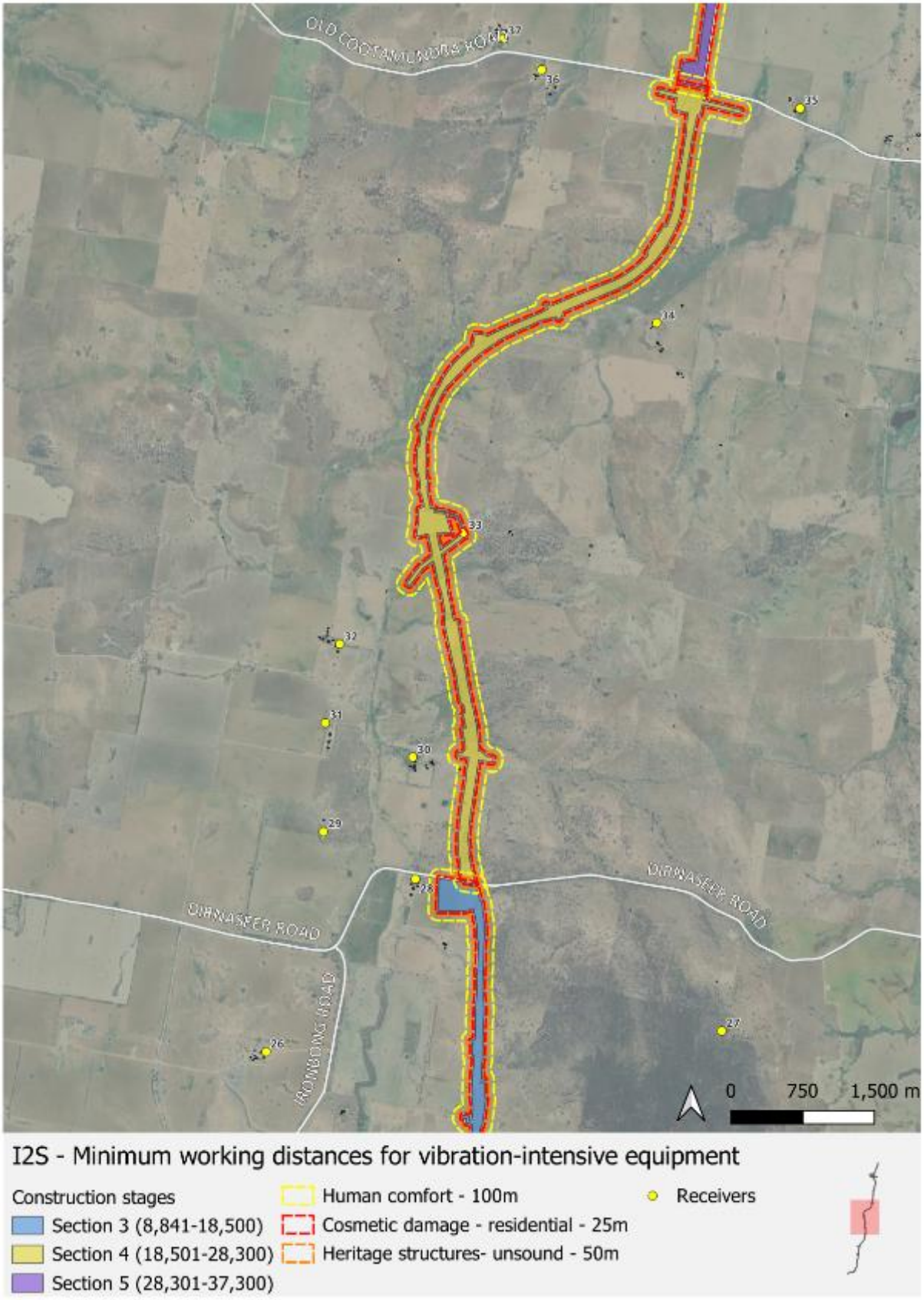
Receiver				Assessment criteria						1	2	3	4	5	6	7	8	9	10	11
Ref	NCA	Address	Type	Standard hours	Weekend day	Evening	Night	LAeq, 15min	Lmax	Utilities relocations	Site establishment	Earthworks	Drainage	Material processing	Drill and blast	Track work	Piling and concrete pours	Demobilise and landscape	Compound operation	Concrete batching
		> 75 dBA (highly affected)		0 - 10 dB > day NML			10-20 dB > day NML			0 - 10dB > night NML			10-20 dB > night NML			20 - 30dB > night NML			30+ > night NML	
146	NCA05	13 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	38	49	48	48	42	38	52	28	49	27	35
147	NCA05	18 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	51	55	59	54	48	44	58	35	56	37	45
148	NCA05	6 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	40	53	49	52	44	39	56	30	53	30	37
149	NCA05	14-16 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	49	57	60	56	48	43	60	34	57	36	44
150	NCA05	20 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	54	58	63	57	50	45	61	37	58	40	48
151	NCA05	22 WOOD ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	55	58	64	57	49	45	61	36	59	40	46
152	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	38	48	47	47	45	41	52	31	49	28	36
153	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	39	51	47	50	43	38	54	29	51	28	36
154	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	39	50	48	49	45	41	53	30	51	28	36
155	NCA05	14 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	37	47	45	46	45	40	50	28	48	27	35
156	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	36	48	45	47	45	41	52	31	49	27	35
157	NCA05	Stockinbingal Public School	Educational	55	55	55	55	55	55	39	50	47	49	43	38	53	32	50	28	36
158	NCA05	5 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	36	46	47	45	44	39	50	27	47	26	34
159	NCA05	11 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	37	46	45	45	42	37	50	28	47	26	34
160	NCA05	1 YEO YEO ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	35	46	45	45	43	38	50	27	47	25	33
161	NCA05	1 YEO YEO ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	37	46	47	45	43	38	50	29	47	27	35
162	NCA05	12 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	38	46	46	45	42	38	50	28	47	27	35
163	NCA05	11 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	39	46	48	45	44	40	49	30	47	29	37
164	NCA05	6 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	35	45	45	44	41	37	48	27	45	25	33
165	NCA05	7 WEST ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	52	58	63	57	55	50	61	41	59	44	52
166	NCA05	9 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	36	45	44	44	41	37	49	27	46	26	33
167	NCA05	2 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	38	47	47	46	43	39	50	29	47	28	35
168	NCA05	3 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	45	51	56	50	49	45	54	36	52	35	43
169	NCA05	4 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	39	47	47	46	43	39	51	29	48	28	36
170	NCA05	5 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	45	48	53	47	48	43	52	34	49	33	41
171	NCA05	9 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	46	48	54	47	48	44	52	34	49	34	42
172	NCA05	6 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	37	44	45	43	42	38	48	28	45	26	34
173	NCA05	5 BRITANNIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	36	46	44	45	44	39	50	27	47	26	34
174	NCA05	11 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	47	49	55	48	52	47	53	37	50	35	43
175	NCA05	9 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	46	49	54	48	51	46	53	37	50	34	42
176	NCA05	17 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	49	52	57	51	51	47	55	37	52	37	45
177	NCA05	5 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	37	45	46	44	43	38	48	29	45	27	35
178	NCA05	17 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	47	50	55	49	53	49	54	37	51	36	44
179	NCA05	13 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	35	43	43	42	41	37	46	27	43	25	32
180	NCA05	St Josephs Catholic	Place of Worship	65	65	65	65	65	65	42	46	51	45	47	42	50	32	47	31	39
181	NCA05	14 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	34	41	42	40	42	38	45	28	42	24	31
182	NCA05	15 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	34	41	43	40	41	37	45	27	42	24	32
183	NCA05	69 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	46	49	54	48	50	45	52	36	50	34	42
184	NCA05	2 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	40	45	48	44	43	39	48	30	46	29	37
185	NCA05	14 HOSKINS ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	33	44	42	43	40	36	47	26	44	23	31
186	NCA05	3 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	35	41	43	40	44	39	45	29	42	25	33
187	NCA05	20 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	48	51	56	50	54	49	54	37	51	36	43
188	NCA05	20 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	45	50	55	49	51	47	54	37	51	37	45
189	NCA05	12 CAMBRIA ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	47	49	55	48	52	47	53	37	50	35	43
190	NCA05	7 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	35	42	43	41	42	38	46	28	43	25	33
191	NCA05	GROGAN ROAD, STOCKINBINGAL	Residential	45	40	35	35	45	65	42	47	50	46	47	42	51	32	48	30	38
192	NCA05	1 DUDAUMAN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	38	45	46	44	45	40	49	31	46	28	36
193	NCA05	2 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	34	41	42	40	41	37	44	26	42	24	32
194	NCA05	69 O'BRIEN ST, STOCKINBINGAL	Residential	45	40	35	35	45	65	43	46	51	45	50	46	49	35	47	32	40
195	NCA05	183 LEWINS LANE STOCKINBINGAL	Residential	45	40	35	35	45	65	60	84	63	83	64	59	87	45	85	33	41
196	NCA05	Stockinbingal Recreation Ground	Active recreation area	65	65	65	65	65	65	0	0	0	0	0	0	0	0	0	0	0
197	NCA05	75 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	42	45	50	44	49	44	48	33	45	32	40
198	NCA06	29 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	38	39	43	38	41	37	42	26	40	27	31
199	NCA06	LINDNERS LANE STOCKINBINGAL	Residential	45	40	35	35	45	65	23	31	33	30	30	26	34	19	32	13	20
200	NCA06	101 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	43	46	50	45	49	45	49	32	47	34	35
201	NCA06	Stockinbingal Cemetery	Passive recreation area	60	60	60	60	60	60	0	0	0	0	0	0	0	0	0	0	0
202	NCA06	116 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	44	44	49	43	45	41	47	29	44	31	33
203	NCA06	61 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	35	37	40	36	40	36	40	25	37	25	29
204	NCA06	KOITAKI 100 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	33	34	39	33	38	34	37	23	35	24	26
205	NCA06	93 RACECOURSE LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	38	38	43	37	41	37	42	25	39	28	29
206	NCA06	11 RACECOURSE LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	51	48	52	47	46	41	52	28	49	37	31
207	NCA06	11 RACECOURSE LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	58	52	55	51	47	42	56	29	53	41	31
208	NCA06	159 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	35	37	41	36	39	34	40	23	37	27	26
209	NCA06	169 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	32	35	38	34	36	31	38	20	36	24	23
210	NCA06	OLD WALLENDBEEN ROAD STOCKINGBINGAL	Residential	45	40	35	35	45	65	33	37	39	36	36	32	40	20	37	25	23
211	NCA06	207 OLD WALLENDBEEN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	33	37	38	36	38	33	40	22	38	25	25
212	NCA06	3925 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	41	60	46	59	40	36	63	24	61	39	25
213	NCA06	LALOKI LANE STOCKINGBINGAL	Residential	45	40	35	35	45	65	25	30	32	29	31	26	34	15	31	18	18
214	NCA06	135 FREEMANS LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	29	49	35	48	32	27	53	16	50	37	18
215	NCA06	63 BOYDS LANE, STOCKINBINGAL	Residential	45	40	35	35	45	65	25	31	33	30	32	28	34	17	32	19	18
216	NCA06	304 GROGAN RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	26	34	34	33	32	27	38	16	35	23	17
217	NCA06	214 MILVALE RD, STOCKINBINGAL	Residential	45	40	35	35	45	65	19	36	26	35	0	0	39	0	37	19	0

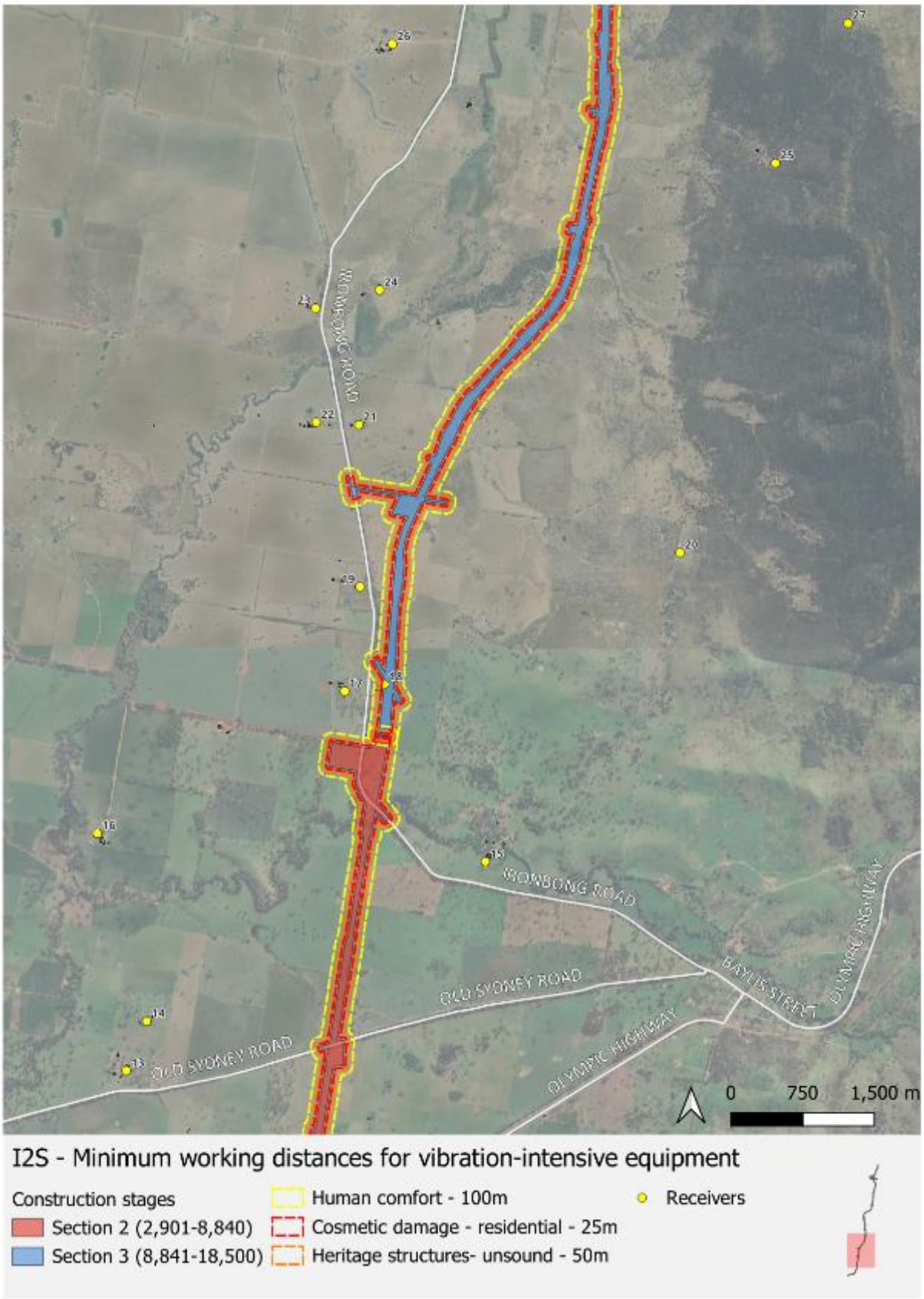
Appendix D Minimum working distances for vibration-intensive activity



id	Heritage type
1	Stockinbingal cemetery
2	St Ita's Convent
3	St Ita's Convent school
4	Stockinbingal Public School buildings
5	Court House
6	Police residence
7	Soldiers War Memorial Hospital
8	Former Stockinbingal Hotel
9	Post Office and residence
10	Cohen's Trade Palace, CWA rooms
11	Bank of NSW, residence
12	Fereration period shop
13	Baker, William Fallon
14	Stock and Station (former museum)
15	Stockinbingal Railway Station
16	Kurrajong trees


OLD COOTAMUNDRA ROAD
OLD COOTAMUNDRA ROAD
0
750
1,500 m
I2S - Minimum working distances for vibration-intensive equipment
Construction stages
Section 4 (18,501-28,300)
Section 5 (28,301-37,300)
Human comfort - 100m
Cosmetic damage - residential - 25m
Heritage structures- unsound - 50m
Receivers


OLD COOTAMUNDRA ROAD
DIRNASEER ROAD
DIRNASEER ROAD
ROWDING ROAD
0
750
1,500 m
I2S - Minimum working distances for vibration-intensive equipment
Construction stages
Section 3 (8,841-18,500)
Section 4 (18,501-28,300)
Section 5 (28,301-37,300)
Human comfort - 100m
Cosmetic damage - residential - 25m
Heritage structures- unsound - 50m
Receivers

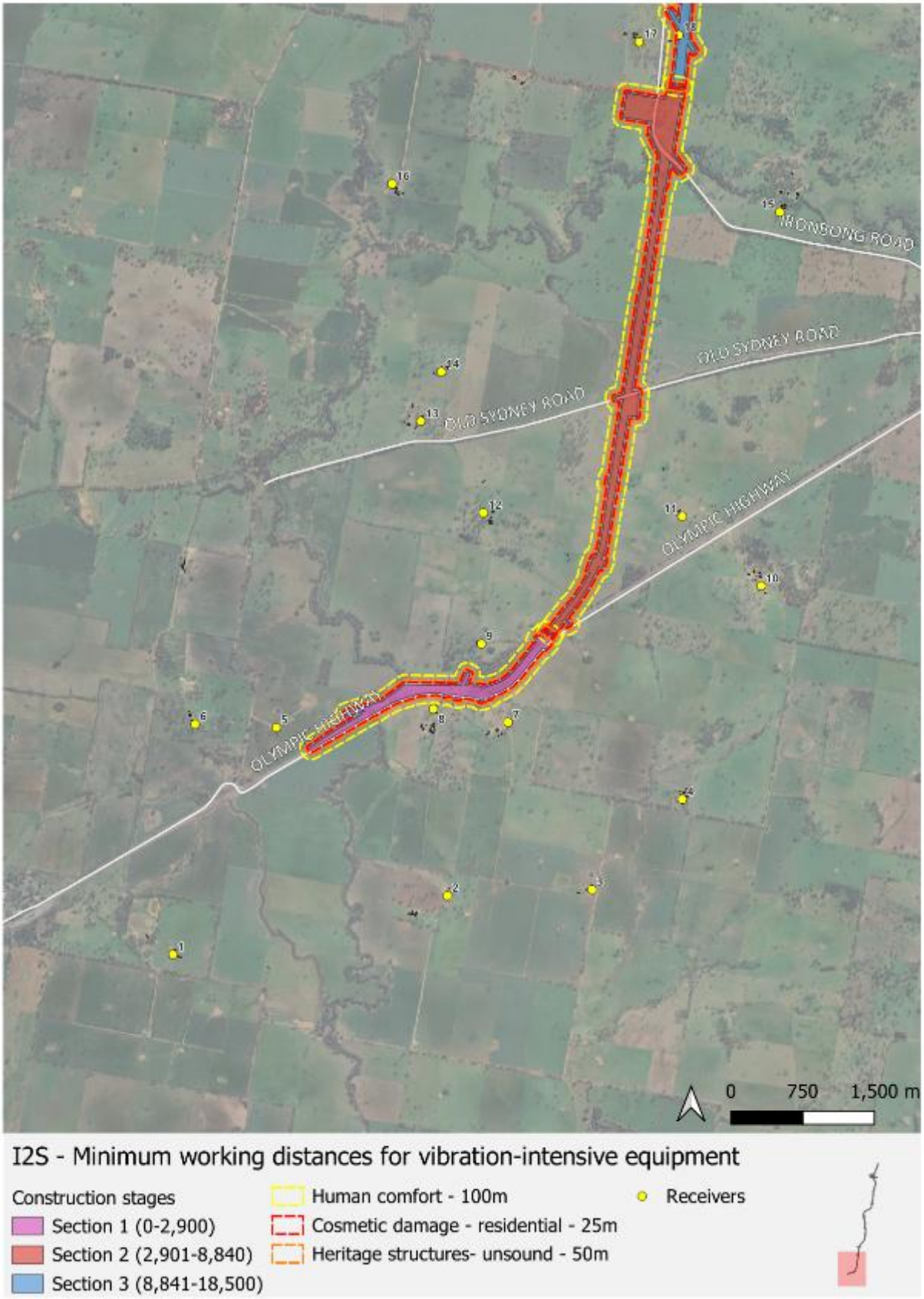


I2S - Minimum working distances for vibration-intensive equipment

Construction stages
Section 2 (2,901-8,840)
Section 3 (8,841-18,500)

Human comfort - 100m
Cosmetic damage - residential - 25m
Heritage structures- unsound - 50m

Receivers



I2S - Minimum working distances for vibration-intensive equipment

Construction stages
- Section 1 (0-2,900)
- Section 2 (2,901-8,840)
- Section 3 (8,841-18,500)

- Human comfort - 100m
- Cosmetic damage - residential - 25m
- Heritage structures- unsound - 50m
- Receivers

Appendix E Consultation Summary Report

Cootamundra Gundagai (CGRC) & Junee Councils

Date	Details of Engagement / Attempted Engagement
15/04/2025	Two presentations to Junee Council and Cootamundra- Gundagai Regional Council undertaken as face to face sessions that captured SIMP and environmental management plans for council review (including the Noise & Vibration Management Plan).
22/04/2025	Provision of the presentation meeting minutes from the 15/04 to both councils for review. The minutes included a slide capturing upcoming management plans being prepared for council consultation as per Condition C17 of the CoA.
26/06/2025	Submission of the Noise & Vibration Management Plan to both councils via Aconex. This submission was made by IRPL.
26/06/2025	Monthly meeting held with Junee Council via Teams. Discussion and agreement made in this meeting to undertake a face-to-face workshop on the C17 management plans (including the Noise & Vibration Management Plan).
17/06/2025	Weekly meeting held with Cootamundra Gundagai Council via Teams. Discussion and agreement made in this meeting to undertake a face-to-face workshop on the C17 management plans (including the Noise & Vibration Management Plan).
1/07/2025	Face to face workshop held with Junee Council, IRPL and JHG staff. Comments and questions made on the Noise & Vibration Management Plan (see attached meeting minutes).
1/07/2025	Face to face workshop held with Cootamundra Gundagai Council, IRPL and JHG staff. Comments and questions made on the Noise & Vibration Management Plan (see attached meeting minutes).
7/07/2025	Provision of meeting slides to Junee Council with a follow up request to confirm if the Council would be providing any further comments on the Plan.
8/07/2025	Confirmation from Cootamundra Gundagai Council that no further comments on the Noise & Vibration Management Plan.
10/07/2025	Provision of meeting minutes to Junee Council with a follow up request to confirm if the Council would be providing any further comments on the Plan.
21/07/2025	Email from JHG to Junee Council requesting confirmation that the comments had been closed out and that no further comments anticipated. Meeting minutes from the face-to-face workshop were provided on 10/07/2025 with follow up meeting minutes with close out of actions on the Noise & Vibration Management Plan included and submitted via email on 21/07/2025

Comment Raised	Project Response	Where addressed	Status
CGRC	Nil Comments (refer to engagement evidence)	NA	NA
Junee Council	Condition E2 permits works between 6am-6pm including on Sundays and public holidays). Section 7.2.1 of the NVMP refers to management of any works that trigger this 7-day period by requiring compliance with Condition E2(c) and will	Section 7.2.1	Closed (In the event that JHG receive further comments from Junee

Comment Raised	Project Response	Where addressed	Status
When E2 (7 days) will be? Ie, will it clash with public holidays at any stage? **JHG will check with scheduling team however, the E2 condition will need to be programmed appropriately as per the NVMP** Council don't want it to clash with public holidays or 2 weekends in a row because community will complain to Junee Council (usually get most complaints for noise is on public holidays and on Sundays).	be undertaken by JHG to ensure that any respite or mitigation measures are implemented. This consultation would include notification of any works proposed on a public holiday period. E2 (c) consultation with affected receivers occurs at least every three months, or more frequently following complaints recorded in the Complaints Register required by Condition B8, to determine respite or additional mitigation measures. In consulting with the affected receivers, the following must be provided: (i) a progressive schedule of anticipated hours of works beyond those permitted by Condition E1 for periods of no less than three months; (ii) a description of the anticipated construction activities, location and duration of the work; (iii) the noise characteristics and likely noise levels of the work (iv) the practical measures implemented to minimise noisy work and heavy vehicle movements before 7:00am and any time on a Sunday; and (v) mitigation and management measures which aim to achieve the relevant noise management levels identified in the documents listed under Condition A1 (including the circumstances in which respite or other offers will be available and details about how the affected receivers can access these). Evidence of consultation and the outcomes, including any changes to construction practices or staging, must be reviewed by the ER and provided to the Planning Secretary on request.		Council, these will be incorporated into the Plan where relevant to Noise & Vibration.

Appendix F – OOHW Protocol

INLAND RAIL

ILLABO TO STOCKINBINGAL PROJECT

I2S | Out-of-Hours-Work Protocol

Document Number: 5-0019-220-EEC-00-PO-0001

Document Status: Issued for Review

Revision: F

Document Control

Document Title	I2S | Out of Hours Work Protocol
IRPL Document No.	5-0019-220-EEC-00-PO-0001
Prepared By	Tess Anastakis (JH), Ryan Maxwell (IntiAPAC)
Document Owner	Daniel Lidbetter (Environmental Approvals Manager)
	REVIEWED BY
Name	Andy Robertson
Title	Environment & Sustainability Manager
Signature **Date**	Rev F Refer to Aconex Workflow Dated 4/09/2025

Revision History

REVISION	DATE ISSUED	DESCRIPTION
A	03/12/2024	Issued for Review
B	06/02/2025	Issued for Review
C	01/04/2025	Issued for Review
D	06/05/2025	Issued for Review
E	17/06/2025	Issued for Review
F	3/09/2025	Issued for Review

Table of Contents

1.0 Introduction 8
1.1 Conditions of Approval 8
1.2 Updated Environmental Management Measures 12
1.3 Consultation with EPA 14
2.0 Construction Hours of Work 15
2.1 Work Hours (Construction) 15
2.2 Work Hours (Low Impact Work) 17
2.3 Highly Noise Intensive Work 17
2.4 Justification to OOHWs 18
3.0 OOHW Protocol 21
3.1 Construction Noise and Vibration Impact Statement 21
3.1.1 Noise Assessment 21
3.1.2 Vibration Assessment 22
3.1.3 OOHW Risk Levels 22
3.2 OOHW Permit 23
3.3 OOHW Noise and Vibration Management and Mitigation Measures 23
3.3.1 Communication (CO) 25
3.3.2 Respite Offer (RO) 26
3.3.3 Negotiated Agreements 26
3.3.4 Alternative Accommodation (AA) 26
3.4 Approval of OOHW 27
4.0 OOHW Stakeholder Consultation and Communication 28
4.1 General 28
4.1.1 Agency Notification 28
4.1.2 Emergency Works Notification 28
4.1.3 Community Notification 28
4.1.4 Community Consultation 29
4.1.5 Negotiated Agreements 29
4.2 Coordination of OOHW 30
4.2.1 Cumulative Impacts 30
4.2.2 Works Subject to an EPL 31
5.0 OOHW Monitoring, Exceedances and Reporting 32
5.1 Monitoring 32
5.1.1 Track Possession Monitoring 32

5.2 Management Response 32
5.3 Inductions and Training 33
5.4 Roles and Responsibilities 34
5.5 Non-Conformance and Reporting 35
5.5.1 Noise and Vibration Related Non-Conformance 35
5.5.2 Non-Conformance Reporting and Close-Out 35
5.5.3 Communicating Corrective and Preventative Actions 35
5.5.4 Change Management 36
6.0 Appendices 37
Appendix A – EPA Consultation 37
Appendix B – OOHW Permit Template 38

Abbreviations / Definitions

Term/Abbreviation	Definition
ARTC	Australian Rail Track Corporation
CSSI	Critical State Significant Infrastructure
CCS	Community Communication Strategy
CEMP	Construction Environmental Management Plan
CNVIS	Construction Noise and Vibration Impact Statement
CoA	Conditions of Approval
CSSI	Critical State Significant Infrastructure
dB(A)	Decibels using the A-weighted scale measured according to the frequency of the human ear.
DPHI	Department of Planning Housing and Infrastructure, also referred to as the Planning Secretary
Environmental Assessment Documentation	• Inland Rail – Illabo to Stockinbingal Environmental Impact Statement (ARTC 2022) • Illabo to Stockinbingal Project Response to Submissions (ARTC 2023) • Response to Submissions – Appendix E - Biodiversity Development Assessment Report version 12 (IRDJV, June 2024) • I2S – Mitigation Measures (Inland Rail, April 2024) • Illabo to Stockinbingal (SSI-9604) Additional and Appropriate Measures for Box Gum Woodland Impacts (Inland Rail, June 2024) • Technical and Approvals Consultancy Services: Illabo to Stockinbingal – Box Gum Woodland Gum Flat Rehabilitation Opportunity (IRDJV, June 2024)
EIS	Environmental Impact Statement
EPA	NSW Environment Protection Authority
EPL	Environmental Protection Licence
ER	Environmental Representative
Highly noise affected [75dB(A)]	As defined in the Interim Construction Noise Guideline (DECC, 2009), the highly noise affected level represents the point above which there may be strong community reaction to noise. • Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account: • Times identified by the community when they are less sensitive to noise (such as before and after school for works near schools, or mid-morning or mid-afternoon for works near residences • If the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.
Highly noise intensive work	Works which are defined as annoying under the Interim Construction Noise Guideline (DECC, 2009) including:

Term/Abbreviation	Definition
	i. Use of power saws, such as used for cutting timber, rail lines, masonry, road pavement or steel work ii. Grinding metal, concrete or masonry iii. Rock drilling iv. Line drilling v. Vibratory rolling vi. Bitumen milling or profiling vii. Jackhammering, rock hammering or rock breaking iii. Impact piling. ix. Use of 'beeper' style reversing or movement alarms, particularly at night-time"
ICNG	Interim Construction Noise Guideline
IRPL	Inland Rail Pty Ltd
ISC Benchmark	A benchmark listed in the Infrastructure Sustainability Council's IS v2.1 Technical Manual Design and As Built Rating, notably Env-2 (noise) and Env-3 (vibration)
I2S	Illabo to Stockinbingal
JHG	John Holland
LAeq (15min)	The A-weighted equivalent continuous (energy average) A-weighted sound pressure level of the construction works under consideration over a 15-minute period and excludes other noise sources such as from industry, road, rail and the community.
LA (max)	The A-weighted maximum noise level only from the construction works under consideration, measured using the fast time weighting on a sound level meter.
LGA	Local Government Area
LIW	Low Impact Works
MWD	Minimum working distances
NCA	Noise Catchment Area
NML	Noise Management Level as defined in the *Interim Construction Noise Guideline (DECC, 2009)*
CNVMSP	Construction Noise and Vibration Management Sub-Plan (or Plan)
NVMoP	Noise and Vibration Monitoring Program
NPI	Noise Policy for Industry, Environment Protection Agency 2017
NSW	New South Wales
OOHW	Out-of-hours works
POEO Act	*Protection of Environmental Operations Act 1997*
PPV	Peak-Particle Velocity
Feasible and reasonable	Consideration of best practice taking into account the benefit of proposed measures and their technological and associated operational application in the NSW and Australian context. Feasible relates to engineering considerations and what is practical to build. Reasonable relates to the application of

Term/Abbreviation	Definition
	judgement in arriving at a decision, taking into account mitigation benefits and cost of mitigation versus benefits provided, community views and nature and extent of potential improvements.
RBL	The Rating Background Level for each period is the medium value of the ABL values for the period over all of the days measured. There is therefore an RBL value for each period (day, evening and night).
ROL	Road Occupancy Licence
SMART	Specific, measurable, achievable, relevant, and time-based
UEMM	Updated Environmental Management Measures
VDV	Vibration Dose Value
Work	Any physical work for the purpose of the CSSI including construction and low impact work but not including operational maintenance work

1.0 Introduction

This Out-of-Hours Work (OOHW) Protocol (herein referred to as the Protocol) for Inland Rail – Illabo to Stockinbingal Project (I2S or the Project) has been prepared in accordance with Condition of Approval (CoA) E5 of SSI-9406. This Protocol identifies a process for the consideration, management and approval of works which are outside the standard construction hours defined in CoA E1 and E2 (OOHW) and that are not subject to an Environment Protection Licence (EPL).

All works occurring under approval SSI-9406 are intended to ultimately be performed in accordance with the Project construction EPL. However, some works will be required to be undertaken prior to obtaining an EPL (eg. low impact investigation or utility works that require a road occupancy licence). Once an EPL is obtained, OOHW undertaken within the EPL premised area will be undertaken in accordance with the licence conditions.

CoA E5 requires that this Protocol is prepared in consultation with the NSW Environmental Protection Authority (EPA) and approved by the Planning Secretary. OOHW will not commence until this Protocol and the necessary consultation has been undertaken and the OOHW is approved by either the ER or the Planning Secretary. OOHW subject to CoA E5 will not commence until this Protocol and the necessary consultation has been undertaken and the OOHW is approved by either the ER or the Planning Secretary in accordance with CoA E5 (d).

1.1 Conditions of Approval

The CoA relevant to this Protocol are listed in Table 1-1 below. A reference is also included to indicate where the CoA is addressed in this Protocol or other Project documents.

Table 1-1 – Conditions of Approval related to the OOHW Protocol

CoA No.	Condition Requirements	Document Reference
B2	(e) detail the measures for advising the community in advance of upcoming construction including upcoming out-of-hours work as required by Condition E5 and blasting activities.	Section 3.2, 3.3.1, 4.1, 5.4, CCS
E1	**Work Hours** Work must be undertaken during the following hours: (a) 7:00 am to 6:00 pm Mondays to Fridays; (b) 7:00 am to 6:00 pm Saturdays; and (c) at no time on Sundays or public holidays.	Section 2.1
E2	Despite Condition E1, work (excluding establishment of the temporary workforce accommodation facilities) may be undertaken during the hours of 6:00 am to 6:00 pm each day provided:	-
	a. no work affects any given receiver between the hours of 6:00 pm on a Saturday and 7:00 am on a Monday every second week;	Section 2.1
	b. only low impact noise activities (defined in Condition E3(b)) are permitted between 6.00 am and 7.00 am; and	Section 2.1
	c. consultation with affected receivers occurs at least every three months, or more frequently following complaints recorded in the Complaints Register required by Condition B8, to determine respite or additional	Section 2.1 and 4.1.4

CoA No.	Condition Requirements	Document Reference
	mitigation measures. In consulting with the affected receivers, the following must be provided: i. a progressive schedule of anticipated hours of works beyond those permitted by Condition E1 for periods of no less than three months; ii. a description of the anticipated construction activities, location and duration of the work; iii. the noise characteristics and likely noise levels of the work; iv. the practical measures implemented to minimise noisy work and heavy vehicle movements before 7:00am and any time on a Sunday; and v. mitigation and management measures which aim to achieve the relevant noise management levels identified in the documents listed under Condition A1 (including the circumstances in which respite or other offers will be available and details about how the affected receivers can access these).	
	Evidence of consultation and the outcomes, including any changes to construction practices or staging, must be reviewed by the ER and provided to the Planning Secretary on request.	Section 4.2
E3	**Variation to Work Hours** Despite Conditions E1 and E2 work may be undertaken outside the hours specified in the following circumstances: a. Safety and emergencies, including: i. for the delivery of materials required by the NSW Police Force or other authority for safety reasons; or ii. where it is required in an emergency to avoid injury or the loss of life, to avoid damage or loss of property or to prevent environmental harm; or b. Low impact noise activities, including: i. construction that causes LAeq(15 minute) noise levels: ◦ no more than 5 dB(A) above the rating background level at any residence in accordance with the Interim Construction Noise Guideline (ICNG), and ◦ no more than the 'noise affected' NMLs specified in Table 3 of the ICNG at other sensitive land uses; and ii. construction that causes LAFmax noise levels no more than 15 dB(A) above the rating background level at any residence during the night period as defined in the Noise Policy for Industry (EPA, 2017); and iii. construction that causes: ◦ continuous or impulsive vibration values, measured at the most affected residence, are no more than the preferred values for human exposure to vibration specified in Table 2.2 of Assessing vibration: A technical guideline (DEC, 2006), or ◦ intermittent vibration values, measured at the most affected residence, are no more than the preferred values for human exposure to vibration, specified in Table 2.4 of Assessing vibration: A technical guideline (DEC, 2006); or	Section 2.4

CoA No.	Condition Requirements	Document Reference
	(c) By approval or agreement, including: i. where different construction hours are permitted or required under an EPL in force in respect of the CSSI; or ii. works which are not subject to an EPL that are approved under an Out-of-Hours Work Protocol as required by Condition E5; or iii. negotiated agreements with directly affected residents and sensitive land uses. On becoming aware of the need for emergency work in accordance with Condition E3(a)(ii) above, the ER, the Planning Secretary and the EPA must be notified of the reasons for such work. The Proponent must use best endeavours to notify as soon as practicable all noise and/or vibration affected sensitive land uses of the likely impact and duration of those work. All negotiated agreements with owners and occupiers of sensitive land uses to carry out work in accordance with Condition E3(c)(iii) must be in writing, and include the hours, duration and likely noise levels compared to the NML defined in the ICNG. The negotiated agreement must be agreed and finalised before the commencement of work affecting the sensitive land uses.	
E4	**High Noise Intensive Work** Except as permitted by an EPL or approved through an Out of Hours Work Protocol (for work not subject to an EPL), highly noise intensive work (defined in Table 1) that results in an exceedance of the applicable NML at the same receiver must only be undertaken: a. between the hours of 8:00 am to 6:00 pm Monday to Friday (excluding public holidays); 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 of at least one hour between each block of highly noise intensive work. For the purpose of this condition, 'continuous' includes any period during which there is less than a one-hour respite between ceasing and recommencing any work that is the subject of this condition.	Section 2.2 and 2.3
E5	**Out-of-Hours Work Protocol – Work not subject to an EPL** An Out-of-Hours Work Protocol must be prepared to identify a process for the consideration, management and approval of work which is outside the hours defined in Conditions E1 and E2, and that is not subject to an EPL. The Protocol must be approved by the Planning Secretary before commencement of any out-of-hours work. The Protocol must be prepared in consultation with the EPA. The Protocol must:	This Protocol
	a. provide a process for the consideration of out-of-hours work against the relevant noise and vibration criteria, including the determination of low and high-risk activities;	Section 3.1, 3.2 and 3.4
	b. provide a process for the identification and implementation of mitigation measures for residual impacts, including respite periods in consultation with the community at each affected location;	Section 3.1, 3.3 and 4

CoA No.	Condition Requirements	Document Reference
	c. identify procedures to facilitate the coordination of out-of-hours work approved by an EPL to ensure appropriate respite is provided;	Section 4.2
	d. identify an approval process that considers the risk of activities, proposed mitigation, management, and coordination, including where: i. the ER review all proposed out of hours activities and confirm their risk levels; ii. low risk activities can be approved by the ER, and iii. high risk activities that are approved by the Planning Secretary; and	Section 3, 3.2 and 3.4
	e. identify Department, EPA and community notification arrangements for approved out-of-hours work, which maybe detailed in the Communication Strategy.	Section 4.1
E6	Work that results in noise levels above NMLs at community, religious, educational institutions and noise and vibration-sensitive businesses and critical working areas (such as theatres, laboratories and operating theatres) must not be timetabled within sensitive periods or during important events, unless other reasonable arrangements with the affected institutions or businesses are made at no cost to the affected institution or business or as otherwise approved by the Planning Secretary.	Section 4.1
E7	Mitigation measures must be implemented with the aim of achieving the following construction noise management levels and vibration criteria: a. construction 'noise affected' NMLs established using the ICNG; b. vibration criteria established using the Assessing vibration: A technical guideline (DEC, 2006) (for human exposure); c. Australian Standard AS 2187.2 - 2006 Explosives - Storage and use - Use of explosives; d. BS 7385 Part 2-1993 Evaluation and measurement for vibration in buildings Part 2 as they are applicable to Australian conditions; e. the vibration limits set out in the German standard DIN 4150-3: Structural vibration- effects of vibration on structures (for structural damage); and f. Project noise trigger levels and maximum noise level event trigger levels established using the Noise Policy for Industry (EPA, 2017) for noise generated by mechanical plant and on-site vehicles at temporary workforce accommodation facilities. Any work identified as exceeding the NMLs and/or vibration criteria must be managed in accordance with the Construction Noise and Vibration Management Sub-plan required by Condition C17. Note: *The ICNG identifies 'particularly annoying' activities that require the addition of 5 dB(A) to the predicted level before comparing to the construction Noise Management Level.*	Section 3.3
E8	Owners and occupiers of properties at risk of exceeding the screening criteria for cosmetic damage must be notified before construction that generates vibration commences in the vicinity of those properties. If the potential exceedance is to occur more than once or extend over a period of 24 hours,	Section 4.1

CoA No.	Condition Requirements	Document Reference
	owner and occupiers must be provided with a schedule of potential exceedances for the duration of the potential exceedances, unless otherwise agreed by the owner and occupier. These properties must be identified and considered in the Construction Noise and Vibration Management Sub-plan required by Condition C17.	
E9	The Proponent must coordinate work with other Inland Rail projects, including any work to relocate or connect utilities conducted under any approval pathway, to minimise cumulative and consecutive noise and vibration impacts and maximise respite for affected sensitive receivers. Coordination and mitigation measures must be detailed in the Noise and Vibration Management Sub-plan required by Condition C17.	Section 4.2

1.2 Updated Environmental Management Measures

The Updated Environmental Management Measures (UEMMs) relevant to this Protocol are listed in Table 1-2 below. A reference is also included to indicate where the UEMM is addressed in this Protocol or other Project documents.

Table 1-2 – Updated Environmental Management Measures (UEMMs) related to the OOHW Protocol

CoA No.	Condition Requirements	Document Reference
NV-1	**Managing the potential for construction noise and vibration impacts** Location and activity-specific construction noise and vibration impact statements would be prepared based on a more detailed understanding of the construction methods, including the size and type of construction equipment, duration and timing of works, construction traffic associated with the proposal, and detailed reviews of local receivers as required.	Section 3
NV-2	**Minimising the potential for construction vibration (structural) impacts** Where vibration levels are predicted to exceed the screening criteria, a more detailed assessment of the structure and vibration monitoring would be carried out in accordance with the Inland Rail NSW Construction Noise and Vibration Management Framework, to ensure vibration levels remain below appropriate limits for that structure.	CNVMSP
NV-6	**Managing the potential for noise and vibration impacts during construction** A construction noise and vibration management plan would be prepared and implemented in accordance with the Inland Rail NSW Construction Noise and Vibration Management Framework. The plan would include measures, processes and responsibilities to manage and monitor noise and vibration, and minimise the potential for impacts during construction.	CNVMSP
NV-7	**Impacts of out-of-hours work**	This Protocol

CoA No.	Condition Requirements	Document Reference
	An out-of-hours work (OOHW) protocol would be developed to define the process for considering, approving and managing OOHW, including implementation of feasible and reasonable measures and communication requirements to separately address the following situations: • works that routinely occur within the construction hours generally proposed for the proposal but outside Interim Construction Noise Guideline standard hours • works (such as evening and night works during rail possessions) that would occur outside the construction hours proposed for the proposal Measures would be aimed at pro-active communication and engagement with potentially affected receivers, provision of respite periods and/or alternative accommodation for defined exceedance levels. All work outside the proposal construction hours would be undertaken in accordance with the Inland Rail NSW Construction Noise and Vibration Management Framework and in accordance with the OOHW protocol. The protocol would provide guidance for the preparation of OOHW plans for each construction work location and for key works, and guidance around mitigating impacts to receivers at Stockinbingal. OOHW plans would be prepared in consultation with key stakeholders (including the NSW Environment Protection Authority) and the community and incorporated into the construction noise and vibration management plan (mitigation measure NV-6).	
NV-8	**Minimising the potential for construction vibration (structural) impacts** If vibration-generating activities are conducted within minimum working distances of a sensitive receiver, attended vibration measurements would be undertaken at the commencement of vibration-generating activities to confirm that structural vibration limits are within the acceptable range. Where vibration levels are found to be unacceptable, alternative work methods would be implemented so the vibration impacts are reduced to acceptable levels.	CNVMP
NV-9	**Minimising the potential for construction vibration (structural) impacts** Dilapidation surveys: Property condition surveys would be completed prior to any vibration-intensive work being carried out at or within the minimum distances that may cause cosmetic damage. Where a receiver is determined to be structurally unsound, a reassessment of the minimum working distances would be required. Minimum working distances would be confirmed prior to carrying out any vibration intensive work onsite.	CNVMP
NV-10	**Impacts on heritage items as a result of construction vibration** Prior to the commencement of vibration-intensive works within the minimum working distances for cosmetic damage for heritage items, the potential for damage to the item would be assessed. Where there is potential for damage, alternative methods that generate less vibration would be investigated and substituted where practicable.	CNVMP HMSP

CoA No.	Condition Requirements	Document Reference
	Where residual cosmetic damage risks remain, condition surveys would be carried out and vibration monitoring with real-time notification of exceedance would occur during the activity. Site activities would be modified, where practicable, to avoid exceeding the cosmetic damage criteria. Any identified vibration-related damage to the items would be rectified.	

1.3 Consultation with EPA

This Protocol was developed in consultation with the EPA in accordance with Condition E5. A summary of consultation is provided in Appendix A.

2.0 Construction Hours of Work

2.1 Work Hours (Construction)

Project construction hours for the I2S Project are:

- 6:00am to 6:00pm each day provided the conditions in E2 are met.

Where the Conditions in E2 cannot be met, the project work hours are:

- 7:00 am to 6:00 pm Mondays to Fridays;
- 7:00 am to 6:00 pm Saturdays; and
- At no time on Sundays or public holidays

Highly Intensive Works

- 8:00am pm to 6:00pm Monday to Friday (excluding public holidays)
- 8:00am to 1:00pm Saturday

Project construction hours for the I2S Project are from 6:00am to 6:00pm each day, provided that all conditions in E2 are met.

Where the Conditions in E2 cannot be met, under E1, the project work hours are:

- 7:00am to 6:00pm Mondays to Fridays;
- 7:00am to 6:00pm Saturdays; and
- At no time on Sundays or public holidays

Highly noise intensive work that results in an exceedance of the applicable NML will only be undertaken to the conditions in E4 below:

- 8:00 am to 6:00 pm Monday to Friday (excluding public holidays);
- 8:00 am to 1:00 pm Saturday; and
- in continuous blocks not exceeding three hours each, with a minimum respite of at least one hour between each block of highly noise intensive work;

Note: Continuous blocks not exceeding three hours each with a minimum respite of at least one hour between each block of highly noise intensive work must be implemented.

Works between 6:00am to 6:00pm may be undertaken in accordance with CoA E2. An assessment of all OOHW must be reviewed by the ER prior to being undertaken. OOHW assessment and approval is required for all work activities outside of the hours specified above.

A summary of the permitted works hours for the Project in accordance with CoA E1 to E14 is provided in Table 2-1.

Table 2-1 – Permitted work hours for the Project

Applicable Construction Period	CoA	Applicable Working Hours		
		Monday- Friday	Saturday	Sunday / Public Holiday
Standard construction hours	E1	7:00am to 6:00pm	7:00am to 6:00pm	No work

Applicable Construction Period	CoA	Applicable Working Hours		
		Monday- Friday	Saturday	Sunday / Public Holiday
CoA E2 construction hours[1]	E2	6:00am to 6:00pm	6:00am to 6:00pm	6:00am to 6:00pm
Highly noise intensive works[2]	E4	8:00am to 6:00pm	8:00am to 1:00pm	No work

Notes:

1) In accordance with CoA E2, works can only be undertaken during these times, provided that:
   - no work affects any given receiver between the hours of 6:00 pm on a Saturday and 7:00 am on a Monday every second week;
   - only low impact noise activities (defined in Condition E3(b)) are permitted between 6.00 am and 7.00 am; and
   - consultation with affected receivers occurs at least every three months, or more frequently following complaints recorded in the Complaints Register required by Condition B8, to determine respite or additional mitigation measures.
   - For provision of the consultation requirements under Condition E2(c), refer to Section 4.2

2) In accordance with CoA E4, refers to highly noise intensive works that result in an exceedance of the applicable NML at same receiver.

Must only be undertaken in continuous blocks not exceeding three hours each with a minimum respite of at least one hour between each block of highly noise intensive work. For the purpose of this condition, 'continuous' includes any period during which there is less than a one-hour respite between ceasing and recommencing any work that is the subject of this condition.

The Protocol has been prepared for works outside the hours defined in CoA E1 and E2 and not subject to an EPL, in accordance with CoA E5.

2.2 Work Hours (Low Impact Work)

The I2S Project may undertake works prior to the approval of the Project Construction Environmental Management Plan (CEMP) and sub-plans where it meets the definition of “Low Impact Work” as defined in CSSI 9406.

Project work hours for all works defined as Low Impact Work are:

- 7:00 am to 6:00 pm Mondays to Fridays;
- 7:00 am to 6:00 pm Saturdays; and
- At no time on Sundays or public holidays.

Where Low Impact Works are required outside the standard hours above, they are considered OOHW and must adhere to the criteria set under Condition E3(b) of the CSSI:

i. Construction that causes LAeq(15 minute) noise levels:
- *no more than 5 dB(A) above the rating background level at any residence in accordance with the ICNG, and*
- *no more than the ‘noise affected’ NMLs specified in Table 3 of the ICNG at other sensitive land uses; and*

ii. construction that causes LAFmax noise levels no more than 15 dB(A) above the rating background level at any residence during the night period as defined in the Noise Policy for Industry (EPA, 2017); and

iii. construction that causes:
- *continuous or impulsive vibration values, measured at the most affected residence, are no more than the preferred values for human exposure to vibration specified in Table 2.2 of Assessing vibration: A technical guideline (DEC, 2006), or*
- *intermittent vibration values, measured at the most affected residence, are no more than the preferred values for human exposure to vibration, specified in Table 2.4 of Assessing vibration: A technical guideline (DEC, 2006);*

2.3 Highly Noise Intensive Work

Highly noise intensive work is any activity which is defined as annoying under the Interim Construction Noise Guideline (ICNG) and includes:

a. use of ‘beeper’ style reversing or movement alarms, particularly at night-time;
b. use of power saws, such as used for cutting timber, rail lines, masonry, road pavement or steel work;
c. grinding metal, concrete or masonry;
d. rock drilling;
e. line drilling;
f. vibratory rolling;
g. bitumen milling or profiling;
h. jackhammering, rock hammering or rock breaking;
i. impact piling; and
j. rail track tamping.

In accordance with CoA E4, except as permitted by an EPL or approved under this Protocol, highly noise intensive work that results in an exceedance of the applicable Noise Management Level (NML) at the same receiver must only be undertaken: between 8am-6pm (Monday- Friday), 8am-1pm (Saturdays) excluding Public Holidays, and in continuous blocks not exceeding three hours each. For the purpose of this condition,

'continuous' includes any period during which there is less than a one-hour respite between ceasing and recommencing any work that is the subject of this condition.

2.4 Justification to OOHWs

Where works are undertaken outside standard construction hours, there must be appropriate justification. This justification must be derived from CoA E2, E3 and E4, and informed by the ICNG. While guidance may be drawn from the IRPL CNVF, these documents are not part of the project approval and do not provide authorisation for OOHW. Their contents may assist in demonstrating the need for OOHW but do not remove the requirement for approval where applicable. All OOHW must be justified. However, OOHW not covered by an EPL, E2, E3(a), E3(b), E3(c)(i) or E3(iii) requires approval by the ER or DPHI per E5(d) and this Protocol.

Table 2-2– Justification for OOHW regulated through this Protocol

Category	OOHW Justification
Safety or emergency work (CoA E3a)	i. for the delivery of materials required by the NSW Police Force or other authority for safety reasons ii. where it is required in an emergency to avoid injury or the loss of life, to avoid damage or loss of property or to prevent environmental harm. On becoming aware of the need for emergency work, the ER, the Planning Secretary and the EPA must be notified of the reasons for such work. The Proponent must use best endeavours to notify as soon as practicable all noise and/or vibration affected sensitive land uses of the likely impact and duration of those work.

Low impact noise work (CoA E3b)	Low impact noise activities include:
	Construction that causes LAeq(15 minute) noise levels:
	
	• no more than 5 dB(A) above the rating background level at any residence in accordance with the ICNG, and
	• no more than the 'noise affected' NMLs specified in Table 3 of the ICNG at other sensitive land uses; and
	• construction that causes LAFmax noise levels no more than 15 dB(A) above the rating background level at any residence during the night period as defined in the Noise Policy for Industry (EPA, 2017); and
	• construction that causes:
	  ○ Continuous or impulsive vibration values, measured at the most affected residence, are no more than the preferred values for human exposure to vibration specified in Table 2.2 of Assessing vibration: A technical guideline (DEC, 2006), or
	  ○ intermittent vibration values, measured at the most affected residence, are no more than the preferred values for human exposure to vibration, specified in Table 2.4 of *Assessing vibration: A technical guideline* (DEC, 2006).

Other out-of-hours works (ICNG)	Works which could result in a high risk to construction personnel or public safety, based on a risk assessment carried out in accordance with AS/NZS ISO 31000:2009 "Risk Management – Principles and Guidelines" Work undertaken in a rail possession for operational or safety reasons.

Category	OOHW Justification
	• where the relevant road network operator has advised the Proponent in writing that carrying out the works and activities could result in a high risk to road network operational performance • where the TfNSW Transport Management Centre (or other road authority) has advised the Proponent in writing that a road occupancy licence is required and will not be issued for the works or activities during standard construction hours • where the relevant utility service operator has advised the Proponent in writing that carrying out the works and activities could result in a high risk to the operation and integrity of the utility network • Any other reasonable reason as determined by the ER.
Negotiated agreement (CoA E3(c)	Where negotiated agreements with directly affected residents and sensitive land uses have been reached
Additional reasons (to support justification only, not exempt from approval) – informed by IRPL CNVF	The following factors, while not listed in the Conditions of Approval, may help justify OOHW. However, if not covered by an EPL, E2, E3(a), E3(b), E3(c)(i) or E3(iii), these works must be approved under E5(d): i. The delivery of oversized plant or structures that police or other authorities have determined requires special arrangements to transport along public roads; ii. Emergency work to avoid the loss of life or damage to property, or to prevent environmental harm; iii. Works that do not exceed the noise management level adopted in the Construction Noise and Vibration Management Plan (CNVMSP) at the nearest receiver; iv. Works that do not exceed the 'preferred' human exposure vibration level adopted in the Construction Noise and Vibration Management Plan (CNVMSP) at the nearest receiver; v. Where agreement is reached between the Contractor and/or ARTC and potentially affected sensitive receivers. Agreements must be made in writing (refer to Section 7.2.2 of the ICNG for further guidance); vi. Works to ensure construction personnel, road user or public safety; vii. Works that cannot be undertaken during the day due to ambient daytime temperatures that may be carried out during the night; viii. Rail tamping where the stress-free temperature of the rail cannot be achieved during the Standard Program Working Hours; and ix. Works required to be conducted during a track possession.
Exclusions – OOHW activities not requiring approval (E2)	Work (excluding establishment of the temporary workforce accommodation facilities) may be undertaken during the hours of 6:00am to 6:00pm each day provided: a) no work affects any given receiver between the hours of 6:00pm on a Saturday and 7:00am on a Monday every second week; b) only low impact noise activities (Defined in Condition E3(b)) are permitted between 6:00am and 7:00am; c) consultation with affected receivers occurs at least every three months, or more frequently following complaints recorded in the Complaints Register required

Category	OOHW Justification
	by CoA B8, to determine respite or additional mitigation measures. In consulting with the affected receivers, the following must be provided: i. A progressive schedule of anticipated hours of works beyond those permitted by CoA E1 for periods of no less than three months; ii. A description of the anticipated construction activities, location and duration of the work; iii. The noise characteristics and likely noise levels of the work; iv. The practical measures implemented to minimise noisy work and heavy vehicle movements before 7:00am and any time on a Sunday; v. Mitigation and management measures which aim to achieve the relevant noise management levels identified in the documents listed under CoA A1 (including the circumstances in which respite or other offers will be available and details about how the affected receivers can access these). Evidence of consultation and the outcomes, including any changes to construction practices or staging, must be reviewed by the ER and provided to the Planning Secretary on request.

3.0 OOHW Protocol

Figure 3-1 illustrates the OOHW Protocol process, and Sections 3.1 to 3.4 provide further guidance on OOHW assessment, mitigation and approval.

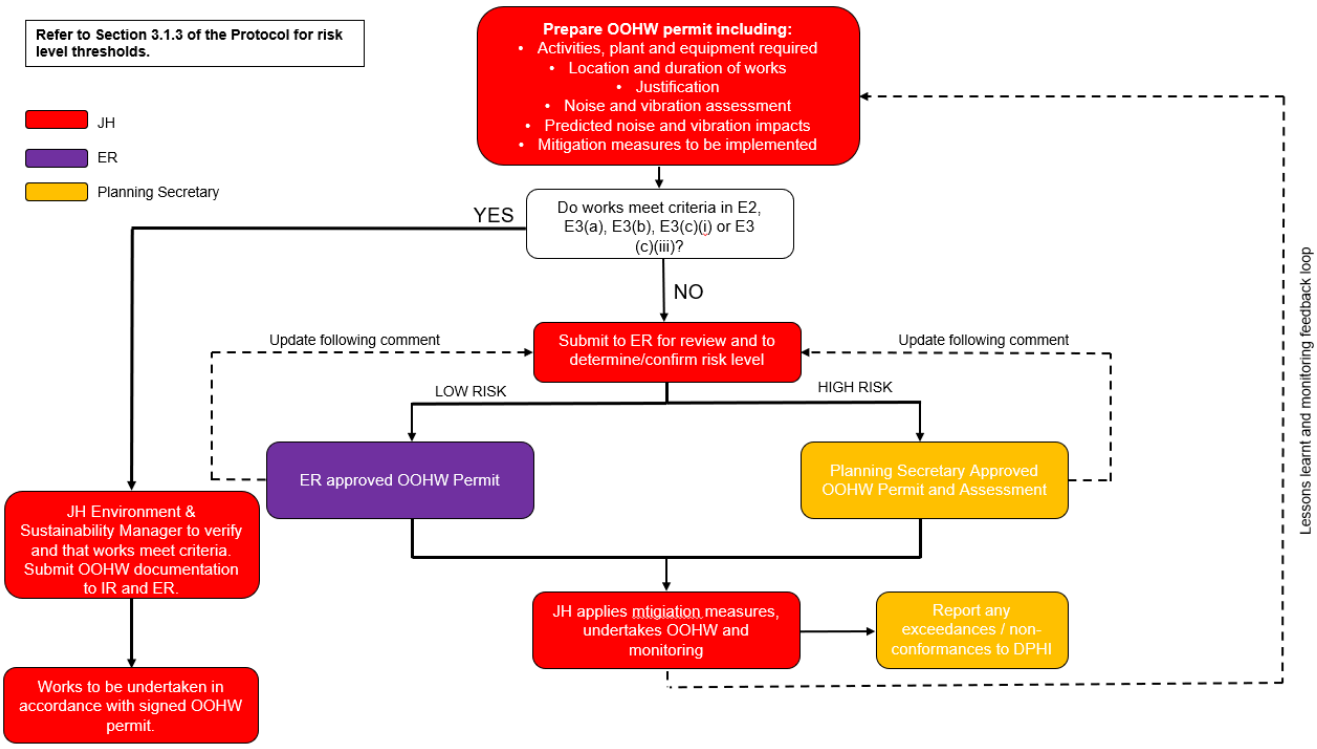


Figure 3-1 – JH process for obtaining OOHW approval

3.1 Construction Noise and Vibration Impact Statement

To identify the likely noise and vibration impacts from the proposed OOHW, a task specific Construction Noise and Vibration Impact Statement (CNVIS) will be undertaken comprised of a noise assessment and vibration assessment (where required) as detailed in Section 3.1.1 and Section 3.1.2.

3.1.1 Noise Assessment

To manage potential impacts from noise and vibration during OOHW, JHG's noise and vibration specialists have developed tools that enable the prediction and assessment of potential noise and vibration impacts, including ground-borne noise. Ground-borne noise, which originates from vibrations caused by construction activities that are transmitted through the ground, is evaluated using predictive tools that assess its potential impacts on nearby sensitive receivers. These prediction tools provide assistance in managing noise and vibration impacts on sensitive receivers, based on the specific work areas and types of construction machinery operating in the work area. The tools will identify the potentially affected sensitive receivers, the predicted impacts and any additional mitigation measures required. To minimise cumulative noise impacts, the prediction tools will also consider any other OOHW that is planned during the proposed OOHW.

Prior to undertaking any OOHW, JHG will undertake a construction noise and vibration assessment to consider the noise and vibration impacts for any activities proposed outside standard construction hours.

Assessments will be prepared using the project noise and vibration management tool. The assessment will include:

- details of the work to be undertaken,
- plant and equipment required,
- scheduling and duration of the work,
- predicted impacts on sensitive receivers,
- the works location,
- proposed mitigation measures.

The results of the OOHW noise assessment, including the selection of reasonable and feasible management measures from the Construction Noise and Vibration Management Sub-Plan (CNVMSP) and ICNG, will be considered by the JHG construction team and the JHG Environment Manager. This will be used to determine the appropriate approval pathway for the OOHW. Ongoing monitoring and validation of predictive outputs will be undertaken as detailed in the CNVMSP. Monitoring and validation are to be undertaken in accordance with Section 5.1.

3.1.2 Vibration Assessment

An assessment of vibration intensive activities that may impact sensitive receivers or structures will be required for out of hours vibration intensive works. The proposed OOHW activities will be assessed for compliance with safe working distances detailed in the CNVIS, including:

- cosmetic and/or structural impacts (including safe working distances)
- human comfort impacts due to vibration and ground borne noise.

3.1.3 OOHW Risk Levels

In accordance with Condition E5, OOHW undertaken through this Protocol will be managed as either Low Risk or High Risk. Low Risk and High Risk OOHW are defined below:

3.1.3.1 Low Risk OOHW Activities

OOHW is considered low risk where it meets the following criteria:

- Activities that do not exceed the NML by more than 15 dB(A) at the most affected noise sensitive receiver;
- Activities that do not exceed NML by more than 15 dB, where limited to:
    - 2 consecutive evenings/nights in a calendar week;
    - 3 evenings/nights per week; or
    - 10 evenings/nights per month;
- Activities covered by E3(b);
- Where construction works are planned to extend over more than two consecutive nights the LAmax should not exceed the existing L90 noise level by more than 15dB(A).

- Activities where a negotiated agreement has been reach with affected receivers.

Low risk OOHW may be approved by the ER under E5(d)(ii), or self approved by the JHG E&E Manager if compliant with the requirements in E2, E3(a), E3(b), E3(c)(i) or E3(c)(iii) and the OOHWs have been justified and agreed by the ER and IR. High risk OOHW will be submitted to DPHI for approval under E5(d)(iii)

3.1.3.2 High Risk OOHW Activities

OOHW activities are deemed high risk where they do not conform to the parameters outlined in Section 3.1.3.1.

Despite the criteria for high risk works outlined above, High Risk OOHW is also any OOHW deemed to be high risk by the ER.

3.2 OOHW Permit

An OOHW Permit will be completed that summarises the activities, equipment required, location and duration and includes a detailed justification for works. Predicted noise and vibration impacts and appropriate mitigation measures will be determined as per Section 3.3 of this Protocol. The OOHW Permit will be submitted to the Environmental Representative (ER)/Inland Rail Proprietary Limited (IRPL) for review. If deemed low risk, the ER will approve the OOHW Permit, and if deemed high risk, approval will be sought from the Planning Secretary – see Section 3.4 for further details. Upon approval of the OOHW Permit, community consultation and notification will proceed in line with the Community Communication Strategy (CCS), as outlined in Section 4 of this Protocol. Any requirements or mitigation measures detailed in the OOHW Permit will be implemented as required. An OOHW Permit template has been provided in Appendix B.

OOHW that are predicted to generate noise and/or vibration impacts that align with the parameters set by Condition E3(b), and which produce noise levels at or below the 'noise affected' NMLs as stipulated in the ICNG at the nearest sensitive receiver, will be approved by the JHG Environment Manager prior to the commencement of OOHW. Justification of compliance with E3(b) will need to be provided to IR and ER.

3.3 OOHW Noise and Vibration Management and Mitigation Measures

Following preparation of the CNVIS as described in Section 3.1 of this Protocol, reasonable and feasible mitigation measures will be implemented with the aim of achieving the following construction noise management levels and vibration criteria.

- construction 'noise affected' NMLs established using the ICNG;
- vibration criteria established using the *Assessing vibration: A technical guideline* (DEC, 2006) (for human exposure);
- *Australian Standard AS 2187.2 - 2006 Explosives - Storage and use - Use of explosives*;
- *BS 7385 Part 2-1993 Evaluation and measurement for vibration in buildings Part 2* as they are applicable to Australian conditions;
- IRPL *NSW Construction Noise and Vibration Framework*;
- The Project Construction Noise and Vibration CEMP Sub-Plan once developed;
- the vibration limits set out in the *German standard DIN 4150-3: Structural vibration- effects of vibration on structures* (for structural damage); and
- Project noise trigger levels and maximum noise level event trigger levels established using the *Noise Policy for Industry* (EPA, 2017) for noise generated by mechanical plant and on-site vehicles at temporary workforce accommodation facilities.

In addition, IRPL NSW Construction Noise and Vibration Framework details that the Project should consider implementing the additional management measures for OOHW where NMLs cannot be achieved. These additional management measures are detailed in in Table 3-1 for airborne noise, Table 3-2 for ground borne noise, and Table 3-3 for vibration.

Table 3-1 – Noise management measures for airborne noise

Time Period		Exceedance of NML	Perception	Duration	Communication Category /Management Measure
OOHW Period 1	Monday – Sunday 6pm – 10pm, Sunday and public holidays 8am – 6pm	<5	Noticeable	Any	CO1
		5-15	Clearly audible	Any	CO1
		16-25	Moderately intrusive	Any	CO1, CO2
		>25	Highly intrusive	Any	CO1, CO2
				>2 consecutive sleep periods	CO1, CO2, RO
OOHW Period 2	Monday – Saturday 10pm – 7am, Sunday and public holidays: 6pm – 7am the following day (unless that day is a Sunday or public holiday, then to 8am)	<5	Noticeable	Any	CO1
		5-15	Clearly audible	Any	CO1
		16-25	Moderately intrusive	Any	CO1, CO2
				>2 consecutive sleep periods	CO1, CO2, RO, AO
		>25	Highly intrusive	Any	CO1, CO2, RO
				>2 consecutive sleep periods	CO1, CO2, RO, AO, AA

Notes:

1) Communication (CO)

Category 1 CO1: Communication to provide information on the proposal via letter box drop, email, newsletter, media advertisements and/or website a minimum of 5 days prior to the works commencing.

Category 2 CO2: Communication should be personalised (e.g. door knock, meeting, telephone call). Contact with these residents should commence early to enable feedback to be considered by the proposal.

2) Respite Offer (RO)

Residential receivers subject to lengthy periods of noise or vibration may be eligible for a respite offer in accordance with tables 6, 7 and 8. The purpose of such an offer is to provide residents with respite from an ongoing impact and may comprise of pre-purchased movie tickets, dinner vouchers or similar. Respite offers are not applicable to non-residential receivers. Respite can also be provided by limiting high noise generating works and allowing at least a one-hour respite period between blocks of work. Where possible, the timing of this respite should be discussed with the impacted community.

3) Agreements with owners (AO)

The Project may negotiate agreements with residents impact during the construction period. All negotiated agreements with owners and occupiers of sensitive land uses must be in writing, and include the hours, duration and likely noise levels compared to the ICNG NMLs. The negotiated agreement must be agreed and finalised before the commencement of work affecting the sensitive land uses.

4) AA – Alternative Accommodation (only applicable for more than 2 consecutive nights of work)

Table 3-2 - Noise management measures for ground borne noise

Time Period		Exceedance of NML	Perception	Duration	Communication Category /Management Measure
OOHW Period 1	Monday – Sunday 6pm – 10pm, Sunday and public holidays 8am – 6pm	<5	Noticeable	Any	CO1
		5-15	Clearly audible	Any	CO1
		16-25	Moderately intrusive	Any	CO1, CO2
		>25	Highly intrusive	Any	CO1, CO2
				>2 consecutive sleep periods	CO1, CO2, RO
OOHW Period 2	Monday – Saturday 10pm – 7am, Sunday and public holidays: 6pm – 7am the following day (unless that day is a Sunday or public holiday, then to 8am)	<5	Noticeable	Any	CO1
		5-15	Clearly audible	Any	CO1
		16-25	Moderately intrusive	Any	CO1, CO2
				>2 consecutive sleep periods	CO1, CO2, RO, AO
		>25	Highly intrusive	Any	CO1, CO2, RO,
				>2 consecutive sleep periods	CO1, CO2, RO, AO, AA**

Table 3-3 – Vibration management measures

Time Period		Duration	Exceedance of 'preferred value'	Exceedance of 'maximum value'
OOHW Period 1	Monday – Sunday 6pm – 10pm, Sunday and public holidays 8am – 6pm	Any	CO1, CO2	CO1, CO2, RO
OOHW Period 2	Monday – Saturday 10pm – 7am, Sunday and public holidays: 6pm – 7am the following day (unless that day is a Sunday or public holiday, then to 8am)	Any	CO1, CO2, RO	CO1, CO2, RO

**AA – Alternative Accommodation (only applicable for more than 2 consecutive nights of work)

3.3.1 Communication (CO)

The level of noise and vibration impact and duration shall guide communication with receivers by JHG and/or IRPL. Accurate and timely communication is essential to manage and understand community expectations for out of hours works. Two categories of communication (CO) have been developed commensurate with

the scale of the impact. The purpose of the communication is described below, but the method of communication will be at the discretion of JHG.

- Category 1 CO1: Communication to provide information on the proposal via letter box drop, email, newsletter, media advertisements and/or website a minimum of 5 days prior to the works commencing.
- Category 2 CO2: Communication should be personalised (e.g. door knock, meeting, telephone call). Contact with these residents should commence early to enable feedback to be considered by the proposal.

At minimum the information provided to Stakeholders (CO1 or CO2) will include:

- The reason the works are required to be undertaken outside of the standard program construction hours
- A diagram that identifies the location of the proposed works in relation to nearby cross streets and local landmarks
- The nature, scope and duration of the works, including start and finish times
- The expected noise impacts on receivers
- Information on how to obtain further information or make a complaint, including an after-hours number and Inland Rail Program website

3.3.2 Respite Offer (RO)

Residential receivers subject to lengthy periods of noise or vibration may be eligible for a respite offer (RO). The purpose of such an offer is to provide residents with respite from an ongoing impact and may comprise of pre-purchased movie tickets, dinner vouchers or similar.

Respite can also be provided by limiting high noise generating works and allowing at least a one-hour respite period between blocks of work. Where possible, the timing of this respite should be discussed with the impacted community.

Respite offers are not applicable to non-residential receivers.

3.3.3 Negotiated Agreements

The Project may negotiate agreements with residents impact during the construction period. All negotiated agreements with owners and occupiers of sensitive land uses must be in writing, and include the hours, duration and likely noise levels compared to the ICNG NMLs. The negotiated agreement must be agreed and finalised before the commencement of work affecting the sensitive land uses. Negotiated Agreements are further discussed in Section 4.1.5

3.3.4 Alternative Accommodation (AA)

Alternate accommodation (AA) options (i.e. accommodation in motels away from the worksite) may be provided for residents living in close proximity to construction sites. Alternative Accommodation is only applicable for more than 2 consecutive nights of work.

Acceptable accommodation measures shall be developed by JHG for the affected community and be approved by the IRPL Representative prior to discussion with the resident.

3.4 Approval of OOHW

Following preparation of the OOHW Permit, including the CNVIS and other relevant information, the JHG Environment & Sustainability Manager will make an initial determination on whether the works are considered low or high risk. The OOHW Permit will then be provided to the ER for review and final determination on whether it's considered low or high risk. Where possible, the OOHW Permit will be provided to the ER ten days prior to the planned works for low risk works. For OOHW Permits considered high risk, a longer lead time will be likely and should be provided to the ER as early as possible.

For OOHW permits considered to be low risk, the ER has authority to approve in accordance with CoA E5(d)(ii). For OOHW considered to be high risk, the OOHW permit will be issued to the Planning Secretary for review and approval in accordance with E5(d)(iii).

Following approval by the ER or the Planning Secretary, the approved OOHW Permit will be provided to the relevant construction team by the JHG Environment Manager. On receipt of the approved OOHW Permit, any standard and additional mitigation measures that relate to the OOHW will be:

- Implemented prior to OOHW (such as specific conditions that relate to the community).
- Communicated to relevant workforce and site personnel before each shift to introduce/reinforce work restrictions, management measures and expected workforce behaviour.
- Implemented during OOHW and monitored by the JHG Environment Team to confirm/validate the noise/vibration predictions where required by the permit.

4.0 OOHW Stakeholder Consultation and Communication

4.1 General

The Community and Stakeholder Team will use a range of communication tools to provide clear, effective and timely information to the predicted affected sensitive receivers and stakeholders in accordance with the CCS (*4-0000-220-PCS-00-ST-0001*) prepared in accordance with CoA B1 and B2. The choice of communication method will depend on the type of work and its potential impacts, incorporating the management measures specified in Section 3.3. While considering sensitive receivers, such as religious and educational institutions mentioned in E6, it is crucial to ensure that works are not timetabled within sensitive periods unless other reasonable agreements are made. A detailed overview of the communication methods for OOHW notification to the local community is detailed within the CCS and Section 4.1.3 below.

4.1.1 Agency Notification

In accordance with Coa E5(e), the Planning Secretary will be notified of all approved OOHW undertaken under this Protocol, including low-impact works approved by the ER. Approved application forms are to be issued to the EPA and the Planning Secretary by appropriate communication channels (via DPHI Submissions Portal, nominated EPA Representative email or other agreed means).

4.1.2 Emergency Works Notification

On becoming aware of the need for emergency work in accordance with Condition E3(a)(ii), the ER, the Planning Secretary and the EPA must be notified of the reasons for such work.

4.1.3 Community Notification

As noted above, the Project will ensure that all notifications to residents, landowners and businesses that are affected by OOHW will be notified in accordance with the Project CCS. A summary of the notification process has been included in Table 4-1below.

Table 4-1 Community Notification process (I2S Community Communication Strategy)

Audience	Tool/activity	Description	Timing	Specifications
Local community, directly impacted residents and businesses, emergency services.	Out-of-hours work (OOHW) notifications and notices	Community notifications adhere to the requirements of the project specific Construction Noise and Vibration Impact Statements (CNVIS), Environmental Protection Licence (EPL) and Out of Hours Work (OOHW) Protocol (this Protocol).	Between 10 to 30 days prior to commencement of the OOHW works. Unless stipulated otherwise by an EPL.	Consultation will be consistent with the CoA and any OOHW will identify a range of reasonable and feasible mitigation measures and respite options (outlined in this Protocol). These options will be consulted with affected community members at each location.

4.1.4 Community Consultation

Where works are being undertaken in accordance with CoA E2 (Monday to Sunday; 6am to 6pm) as per Table 2-1, consultation with affected receivers must occur at least every three months, or more frequently in response to complaints, to determine appropriate respite or additional mitigation measures. In consulting with the affected receivers, the following must be provided:

- a progressive schedule of anticipated hours of works beyond those permitted by Condition E1 for periods of no less than three months;
- a description of the anticipated construction activities, location and duration of the work;
- the noise characteristics and likely noise levels of the work;
- the practical measures implemented to minimise noisy work and heavy vehicle movements before 7:00am and any time on a Sunday; and
- mitigation and management measures which aim to achieve the relevant noise management levels identified in the documents listed under CoA A1 (including the circumstances in which respite or other offers will be available and details about how the affected receivers can access these).

Evidence of consultation and the outcomes, including any changes to construction practices or staging, must be reviewed by the ER and provided to the Planning Secretary on request.

It's important to note that 1) this condition does not affect any other offers of respite or noise mitigation required under this approval, and 2) this condition does not prevent a working schedule of ten consecutive days or work followed by four consecutive days of no work, provided one day of no work is a Sunday and that consultation with affected receivers about respite and mitigation occurs every three months.

4.1.5 Negotiated Agreements

Where noise or vibration modelling for proposed OOHW shows that high risk factors and/or screening criteria is predicted to be exceeded, and the work would otherwise be subject to approval by the Planning Secretary, Inland Rail may enter into individual voluntary agreements with all directly affected residents and land uses in accordance with CoA E6, E8 and E3 (c)(iii). Consideration of relevant OOHW applications as low-risk activities are subject to the following:

- Community agreements must include all relevant information required for community consultation (refer 4.1.4), but also:
    - Advise of the level and extent of the potential impact of the proposed OOHW
    - Identify any unique measures or requirements agreed to by both parties (e.g. regular advice on the status of the OOHW by text message)
    - Document the period in which the agreement remains in effect
    - Provide a mechanism to review annually and/or revise the agreement where circumstances might have changed.

In these situations, an application for OOHW can only be categorised as a low-risk activity if agreement with directly affected residents and land uses has been reached.

All negotiated agreements with owners and occupiers of sensitive land uses to carry out work in accordance with CoA E3(c)(iii) must be in writing, and include the hours, duration and likely noise levels compared to the NML defined in the ICNG. The negotiated agreement must be agreed and finalised before the commencement of work affecting the sensitive land uses. The record must include the date, time and place

of the conversation and those in attendance. It must also include any special circumstances under which the receiver has advised that they are in agreement with the OOHW. The record must be signed by the I2S Inland Rail Project representative in attendance and an electronic copy retained.

Details of identified receiver properties that have been deemed vacant or unoccupied are to be included in the consultation records. All agreements would be recorded in accordance with the processes outlined in the I2S Communications Strategy captured in the Consultation Manager database. In addition, identify Department EPA and community notification arrangements for approved OOHW, which may be detailed in the Communication Strategy. Any agreements made for the purposes of undertaking OOHW that might otherwise be categorised as a high risk activity would be made available to the ER and/or Planning Secretary on request.

4.2 Coordination of OOHW

4.2.1 Cumulative Impacts

In accordance with Condition E5(c), cumulative noise and vibration impacts from concurrent Out-of-Hours Works (OOHW) must be identified, assessed and, where reasonable and feasible, avoided or mitigated. These cumulative impacts may arise from:

- OOHWs undertaken by this Project under CoA E2 or an EPL;
- Other OOHWs in the vicinity that may not be subject to an EPL (e.g. by nearby infrastructure projects, utility works, or unrelated construction activities);
- Consecutive or overlapping OOHW periods that impact the same sensitive receivers.

To manage these risks, JHG will implement the following mitigation and coordination measures:

- Coordination and consultation with the proponents of nearby or overlapping construction activities, particularly where there is potential for cumulative noise or vibration impacts. This includes projects at the Illabo and Stockinbingal tie-in locations.
- Provision of regular updates to neighbouring project teams regarding work schedules and potential impact zones;
- Identification of high-risk periods or “conflict windows” where concurrent OOHWs may exceed NMLs or cumulative thresholds;
- Coordination of traffic and access arrangements where overlapping projects increase vehicle movements or site activity near sensitive receivers;
- Scheduling adjustments to reduce the temporal overlap of noisy or vibration-generating works;
- Assessment of cumulative noise exposure and update of the Project’s noise impact predictions where overlapping OOHWs are confirmed;
- Implementation of additional at-source or near-source noise mitigation where practical, such as temporary barriers, alternate equipment, or changed methodology;
- Provision of respite or alternative mitigation (e.g. accommodation, vouchers, reduced shift intensity) where impacts cannot be avoided;

- Consultation with affected community members to understand their experience of cumulative impacts and refine mitigation strategies accordingly;
- Where cumulative impacts are unavoidable, consideration will be given to longer, uninterrupted respite windows to reduce fatigue and annoyance.

In addition to the above, JHG will coordinate works with other Inland Rail projects and any associated utility relocation activities, regardless of approval pathway, to manage and minimise overlapping OOHW periods and deliver respite to sensitive receivers.

4.2.2 Works Subject to an EPL

For works which are subject to an EPL, an OOHW permit will be prepared which will adequately assess the potential noise and/or vibration impacts and mitigation measures associated with the OOHW under the relevant EPL. Works subject to an EPL must be conducted in agreement with the EPL holder and the requirements of the relevant EPL.

5.0 OOHW Monitoring, Exceedances and Reporting

5.1 Monitoring

Construction noise and vibration monitoring for OOHW will be undertaken by JHG in accordance with the CNVMP and relevant CoAs, including E5.

The monitoring program will:

- measure noise impacts at affected receivers,
- record any exceedances of predicted noise models,
- describe construction related noise observations,
- describe non-construction related noise observations.

Monitoring will be conducted for:

- High-risk OOHW activities, as determined by the ER or Planning Secretary
- OOHW permits that specify monitoring as a condition
- In response to community complaints regarding noise or vibration
- As directed by an authorised officer of the EPA or DPHI.

Monitoring may include:

- Attended noise monitoring at the most affected sensitive receivers
- Verification monitoring to confirm compliance with predicted noise levels
- Exceedance recording and reporting, including likely cause/source and any mitigation actions taken
- Documentation of non-construction related noise sources, if present

Monitoring will be conducted for works undertaken outside standard construction hours, where required by the OOHW permit and in response to complaints. Results will be reviewed and, where required, submitted to the ER and/or Planning Secretary in accordance with this Protocol.

5.1.1 Track Possession Monitoring

If there is the potential to impact sensitive receivers during an OOHW track possession, a monitoring program (outlined in Section 5.1) shall be initiated by JHG to confirm predicted noise and vibration levels and identify any additional feasible and reasonable measures to reduce impact on receivers. The monitoring program (for either noise, vibration or both) shall be risk based, and not need to occur if there are no impacted receivers within the vicinity of the works.

5.2 Management Response

Where monitored noise and vibration levels are found to be above modelling predictions or noise/vibration goals during OOHWs, the following actions will be undertaken:

- Identify whether the exceedance is caused from JHG construction related sources.
- Confirm if the exceedance is due to an uncharacteristically loud/vibratory piece of equipment.
- Confirm that the modelling reflects the actual activity being undertaken.
- If determined to be caused by JHG construction, cease the noise and/or vibration generating source causing the exceedance.

- Identify if the equipment can be swapped out for another piece of equipment or alternative equipment or plant, or if additional mitigation can be included in the site design.
- Implement other feasible and reasonable measures which may include reducing plant size, modifying time of works, changing operational settings (such as turning off the vibratory function of the machine), and utilising alternative construction methodology or a combination of these.
- Continue work where impacts can be reduced or if the exceedance is deemed minor i.e. does not trigger additional community mitigation measures to be implemented such as ER.
- Refine the noise modelling assessment process based on the learnings. For example, if noise or vibration predictions are lower/higher than expected, noise modelling would take this into consideration to more accurately predict impacts for future works.
- Communicate lessons learnt to relevant personnel.

5.3 Inductions and Training

To maintain compliance during OOHW, particularly regarding noise and vibration management, project inductions are conducted that cover noise control principles, vibration mitigation measures and approved work hours. These inductions are complemented by prestart briefings, which offer site teams and contractors a chance to discuss noise and vibration mitigation measures suited to specific tasks and site conditions.

5.4 Roles and Responsibilities

Roles and responsibilities relating to this Protocol are provided in Table 5-1.

Table 5-1: Roles and Responsibilities

Role	Responsibility
Project Noise and Vibration Specialist	• Development of the noise and vibration management tool used to undertake Construction Noise & Vibration Impact Statements (CNVIS) for the Project. • Provide advice to Project personnel on the implementation and selection of practical noise mitigation measures during OOHW as required. • Provide advice to Project personnel on the implementation and selection of practical vibration mitigation measures, particularly associated with safe working distances for cosmetic, structural and human comfort screening levels. • Provide advice and guidance to manage and minimise potential impacts to sensitive receivers for noise and vibration.
Inland Rail Proprietary Limited (IRPL)	• Liaise with relevant agencies relating to OOHW (i.e. EPA, DPHI).
John Holland Group (JHG) environmental personnel	• Prepare CNVIS assessments and OOHW permits where OOHW is deemed justified and required. • Undertake noise and vibration monitoring during OOHW and in response to complaints, or as directed by the EPA or DPHI. • Work with the project team to develop a construction methodology and mitigation measures required to be implemented in completing the OOHW works.
JHG Environment and Sustainability Manager	• Review OOHW noise activities where OOHW works are not predicted to exceed parameters of CoA E3 (b). • Work with the project team to develop a construction methodology and mitigation measures required to be implemented in completing the OOHW works. • Ensure that all relevant project staff and sub-contractors are aware of this OOHW Protocol and the process to follow while working under an OOHW permit that has been approved through this Protocol.
Environmental Representative (ER)	• Review and approve OOHW where it is demonstrated the OOHW is low risk (refer to Section 3.1.3). • Recommend appropriate mitigation measures for OOHW works.
Planning Secretary	• Approve this OOHW Protocol. • Review and approve OOHW where it is demonstrated the OOHW is high risk (refer to Section 3.1.3).
Environmental Protection Authority (EPA)	• Provide feedback on the preparation of this OOHW protocol.
JHG Community and Stakeholder Engagement Team	• Ensure that all community consultation activities are carried out in accordance with the CCS. • Report any environmental issues to the Inland Rail Principal Environment Advisor raised by stakeholders or members of the community. • Communicate general project progress, performance and issues to stakeholders including the community. • Maintain the 24-hour complaints hotline.

Role	Responsibility
	• Maintain the complaint register.

5.5 Non-Conformance and Reporting

5.5.1 Noise and Vibration Related Non-Conformance

A noise and vibration related non-conformance for OOHW are generally considered to be the following (but are not limited to):

- Where a piece of plant/equipment is being used which:
  - has not been assessed in noise/vibration modelling (OOHW Permit) and
  - is causing an exceedance of the predicted noise impacts at relevant sensitive receivers and
  - the exceedance is causing an increase in the proposed management of mitigation measure (Section 3.3 for any sensitive receivers e.g. from CO to RO.
- When vibration levels are exceeding cosmetic damage criteria unless approved or monitored by a vibration expert.
- Relevant noise and vibration mitigation measures have not been implemented in accordance with an OOHW Permit, and monitoring shows exceedance of predicted levels at relevant sensitive receivers due to the construction noise impacts.
- Where relevant works occur outside standard construction hours without an approved OOHW Permit
- Where a community complaint has not been addressed in a timely manner.

5.5.2 Non-Conformance Reporting and Close-Out

Where a non-conformance is detected, a report will be raised in Project's adopted management software (e.g. H360 and Soteria). Non-conformances will be documented with the following information:

- Date raised and by whom.
- Description of the deficiency (non-conformance).
- Cause and proposed remedy and action to prevent recurrence.
- Reinspection information.
- Date closed and by whom.

Details included in non-conformance reports will be specific to the event that has taken place, and will include notification to the ER. The Project Environment and Sustainability Manager will sign-off on completion of agreed actions to signify close-out. This will ensure that all relevant information regarding non-conformances is captured, addressed, and communicated to the appropriate parties, including regulatory authorities and stakeholders (EPA, DPHI, sensitive receivers), in a timely and transparent manner. The reporting process will also detail the corrective actions taken to rectify the non-conformances and to prevent their recurrence.

5.5.3 Communicating Corrective and Preventative Actions

The following mechanisms will be used to communicate lessons learned:

- Site improvement notices.

- Pre-start meetings.
- Toolbox talks.
- Project meetings.
- Reporting.

The Project Environment and Sustainability Manager will be responsible for review and approval of material for discussion and presentation of lessons learned. This will ensure that the material is fit-for-purpose, and readily understandable and implementable by our personnel, contributing to continual improvement for the Project, Inland Rail, and broader industry.

5.5.4 Change Management

Where the scope, timing, or methodology of OOHW changes after an OOHW permit has been approved, the permits must be reassessed to determine if re-approval is required. Any material change that may increase predicted noise, vibration, or impact duration to the identified receivers (including new receivers) must be referred to the ER for review in consultation with the Planning Secretary where applicable. Revised permits must be documented and issued prior to implementation of the changed works, and affected stakeholders must be re-consulted where relevant.

6.0 Appendices

Appendix A – EPA Consultation

Daniel Lidbetter-JHG

From: Hannes Badenhorst <hannes.badenhorst@epa.nsw.gov.au>
Sent: Wednesday, 2 July 2025 10:01 AM
To: Daniel Lidbetter-JHG
Cc: Nick Van Lijf
Subject: RE: CSSI 9406: Illabo to Stockinbingal- E5 Out of Hours Protocol (EPA consultation).
Attachments: OPS-OUT-EPA Response to Management Plan - Inland Rail – Illabo to Stockinbingal Project - SSI-9406- Daniel Lidbetter-RFW.pdf

Hi Daniel,

Please see attached EPA's response to CSSI 9406: Illabo to Stockinbingal- E5 Out of Hours Protocol.

Regards,

Hannes Badenhorst
Operations Officer
Regulatory Operations
NSW Environment Protection Authority
D 02 6983 4918 | **M** 0417 373 903

www.epa.nsw.gov.au @NSW_EPA

The EPA acknowledges the traditional custodians of the land and waters where we work. As part of the world's oldest surviving culture, we pay our respect to Aboriginal elders past, present and emerging.

Report pollution and environmental

From: Daniel Lidbetter-JHG <Daniel.Lidbetter3@jhg.com.au>
Sent: Friday, 20 June 2025 3:04 PM
To: Hannes Badenhorst <hannes.badenhorst@epa.nsw.gov.au>; Nick Van Lijf <Nicholas.VanLijf@epa.nsw.gov.au>; INFOEnvironment Mailbox <info@environment.nsw.gov.au>; EPA CSB Regulatory & Compliance Support Unit Mailbox <compliance.services@epa.nsw.gov.au>
Cc: Andy Robertson-JHG <Andy.Robertson2@jhg.com.au>; Ryan Maxwell-JHG <Ryan.Maxwell2@jhg.com.au>; Charlie Dack-JHG <Charlie.Dack@jhg.com.au>; Tess Anastakis-JHG <Tess.Anastakis@jhg.com.au>; Luke Ryalls <lryalls@inlandrail.com.au>; Daniel Lumby <dlumby@inlandrail.com.au>; Saad Khan <skhan2@inlandrail.com.au>; Susan Kay <skay@inlandrail.com.au>
Subject: CSSI 9406: Illabo to Stockinbingal- E5 Out of Hours Protocol (EPA consultation).
Importance: High

Dear Nick & Hannes,

In accordance with Condition E5 of the Project Approval (CSSI-9406), please find the attached Out of Hours Protocol (non EPL) for the EPA's review.

Condition E5 requires the development of this Protocol in consultation with the EPA.

Please note, this Protocol will only be in place for works prior to the EPL being activated (commencement of construction), potentially for Low Impact Works prior to any scheduled rail construction activities. Can you please review and let me know if you have any comments.

Regards

Dan

Daniel Lidbetter

Environmental Approvals Manager
Inland Rail | Illabo to Stockinbingal (I2S)

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E: daniel.lidbetter3@jhg.com.au
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John Holland acknowledges the Traditional Custodians of the lands on which we work and live. We pay our respects to their Elders both past and present and extend that respect to all Aboriginal and Torres Strait Islander Peoples.

This email is intended for the addressee(s) named and may contain confidential and/or privileged information.
If you are not the intended recipient, please notify the sender and then delete it immediately.
Any views expressed in this email are those of the individual sender except where the sender expressly and with authority states them to be the views of the Environment Protection Authority.

PLEASE CONSIDER THE ENVIRONMENT BEFORE PRINTING THIS EMAIL

DOC25502867-1
02July 2025

JOHN HOLLAND PTY LTD
Level 3/65 PIRRAMA ROAD,
PYRMONT
NSW 2009

Via Planning Portal

EPA Advice Out of Hours Protocol – Illabo to Stockinbingal –SSI-9406

Dear Mr Lidbetter

Thank you for consulting with the Environment Protection Authority (EPA) in regard to your request to review the CSSI 9406: Illabo to Stockinbingal- E5 Out of Hours Protocol (OOHW) for the inland rail Illabo to Stockinbingal project (SSI-9406).

The EPA encourage the development of such plans to ensure that proponents and licensees have determined how they will meet their statutory obligations and environmental objectives. The EPA no longer approves or endorses these plans however, as our role is to set environmental objectives for environmental management, not to be involved in developing strategies such as this plan to achieve those objectives. As such, we have no specific comments on the plan.

It is recommended that you contact us directly should you identify any necessary changes to the premises' Environment Protection Licence (EPL) that may result from the proposed management plan updates.

If you have any questions, please contact Hannes Badenhorst directly by telephoning 131 555 or by electronic mail at info@epa.nsw.gov.au

Yours sincerely,

Hannes Badenhorst
Senior Operations Officer
NSW Environment Protection Authority

Appendix B – OOHW Permit Template

Part A: General Details					
Permit date:		**Project name:**		**Location:**	
Permit Author:				**Date:**	

Contact Details:

Position	Name	Contact Number/Email
JHG Supervisor		
JHG Construction Manager		
JHG Communications Manager		
JHG Environmental Manager		

A. Details of Proposed Scope of Works

Proposed Works	
Extended Hours Proposed	
Plant / Equipment	
Location	
Duration	
Has a noise assessment been prepared to predict noise impacts associated with the proposed works?	Yes / No
Are works modelled to exceed NMLs at sensitive receivers?	Yes / No If no, proceed to Section C. This permit is to be approved by the JHG Environment Manager with a completed noise model/noise assessment appended to this permit. If yes, the rest of this permit must be completed.
Justification	.
Highly Noise Intensive Works	Yes / No
Noise Impact Level	☐ Non-discernible – below RBL ☐ Noticeable – <5 dBA above NML ☐ Clearly Audible – 5-15 dBA above NML ☐ Moderately Intrusive – 15-25 dBA above NML ☐ Highly Intrusive – >25 dBA above NML

Requirements	☐ Noise assessment completed ☐ General Community Notification (CO1) ☐ Specific Community Notification (CO2) ☐ Respite (RO) ☐ Alternative Accommodation (AA)
Approval	☐ JH Environment Manager Approval ☐ ER Approval ☐ Planning Secretary Approval

B. Mitigation Measures		
Noise / Vibration Mitigation Measure	**Reasonable / Feasible (Y/N)**	**Comments**
Have you considered programming of noisy activities to reduce community impacts?		
Are there alternative plant or methods that can be used to reduce noise? E.g. using smaller equipment to do the job, or using a different (quieter) method to do the job		
Noise barriers/mats to assist noise management for all noisy works where practical		
Where possible, trucks and vehicles to be parked up between noisy works when operating near sensitive receivers.		
Where possible, noisiest activities will commence closest to sensitive receivers and move away from them as work progresses.		
All plant and equipment to minimise reversing where possible and must include the use of non-tonal reversing beepers (or an equivalent mechanism, e.g. 'quackers')		
Staff to be briefed before works - no loud talking, excessive use of radios, music, swearing, be mindful of the community. Turn off equipment when not in use. Do not drop tools, equipment, and materials		
Supervisors will make note of, and have removed off site and replaced any equipment item observed to have defective noise controls e.g. defective muffler, loose or missing cowling or engine compartment panels etc		
During high noise impact works 3 hours on 1 hour off must be enforced unless the high noise activity is to be completed before midnight.		
Can temporary relocation (eg. accommodation) be offered to the adjacent sensitive receivers?		
Is minimum distance for cosmetic damage or human comfort triggered		

Are there any additional measures that could be incorporated to further mitigate any noise impacts?		

C. Approval Status	
Approval	☐JHG Environment Manager ☐Environmental Representative ☐Planning Secretary Approval
☐ OOHW Approved / Endorsed ☐ OOHW Approved with conditions (see below) ☐ OOHW Rejected	
Conditions for Approval:	
Assessment of Risk Factors: ☐ Low ☐High	
JHG Approval:	
Position: Name: Date: Signature:	
ER Approval (if applicable):	
Name: Date: Signature:	

Appendix G – Noise and Vibration Monitoring Program

Table of Contents

1 Introduction
1.1 Overview
1.2 Project context
1.3 Planning context
1.4 Construction Noise and Vibration Framework
1.5 Environmental protection license
1.6 SMART principles
1.7 Consultation
1.8 Approval
2 Baseline data
2.1 Existing Noise Environment
2.2 Noise Catchment Areas
2.3 Additional baseline data to be obtained
3 Noise and vibration objectives
3.1 Noise
3.2 Vibration
3.3 Additional management measures
4 Construction noise monitoring
4.1 Applicable guidelines
4.2 Instrumentation
4.3 Qualifications
4.4 Monitoring locations and frequency
4.5 Procedures
5 Construction vibration monitoring
5.1 Applicable guidelines
5.2 Instrumentation
5.3 Qualifications
5.4 Transducer mounting
5.5 Monitoring locations, frequency and duration
5.6 Procedures
5.7 Minimum working distances
5.8 Conversions

6 Monitoring records and review

6.1 Documentation

6.2 Review outcomes

7 Reporting

Glossary

Term	Definition
ARTC	Australian Rail Track Corporation
CEMP	Construction Environmental Management Plan
CNVF	Inland Rail NSW Construction Noise and Vibration Management Framework
CoA	Conditions of Approval
Construction	Includes work required to construct the CSSI as defined in the Project Description described in the documents listed in CoA A1 including commissioning trials of equipment and temporary use of any part of the CSSI but excluding Low Impact Work which is carried out or completed prior to approval of the CEMP.
CSSI	Critical State Significant Infrastructure
dB	Decibel (referenced 20 µPa)
dB(A)	A-weighted decibel (referenced 20 µPa)
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DIPNR	Department of Infrastructure, Planning and Natural Resources
DPE	NSW Department of Planning and Environment
DPI	Department of Primary Industries
DPHI	Department of Planning, Housing and Infrastructure
EAD	Environmental Assessment Documentation that includes: Inland Rail – Albury to Illabo Environmental Impact Statement (ARTC, August 2022); Albury to Illabo Response to Submissions (ARTC, November 2023); Albury to Illabo Preferred Infrastructure Report (ARTC, November 2023); Albury to Illabo Preferred Infrastructure Report Response to Submissions (ARTC, February 2024); Inland Rail – Albury to Illabo (SSI-10055) Response to request for additional information – Air Quality Assessment (letter dated 1 May 2024); Part 1 - Revised Technical Paper 8: Biodiversity Development Assessment Report (WSP, February 2024); Part 2 - Revised Technical Paper 8: Biodiversity Development Assessment Report (WSP, February 2024).
EHG	Environment and Heritage Group (a part of NSW DPE)
EIS	Environmental Impact Statement
EPA	Environmental Protection Authority (NSW)
EPL	Environment Protection Licence
Environmental Representative (ER)	The Environmental Representative(s) for the CSSI approved by the Planning Secretary
ISO	International Standards Organisation

Term	Definition
LA10	The noise level exceeded for 10% of the 15 minute interval. This is commonly referred to as the average maximum noise level.
LA90	The noise level exceeded for 90% of the sample period. This noise level is described as the average minimum background sound level (in the absence of the source under consideration), or simply the background level.
LAeq	A-weighted equivalent continuous noise level, providing a representation of the cumulative level of noise exposure over a defined period.
LAeq(15 minute)	The A-weighted equivalent continuous noise level for a 15-minute period, typically the worst-case 15-minute period.
LAmax	The A-weighted maximum sound pressure level of an event measured with a sound level meter.
km	Kilometre
mm	Millimetre
NVMoP	Noise and Vibration Monitoring Program
NVMSP	Noise and Vibration Management Plan
Planning Secretary	Secretary of the NSW Department of Infrastructure, Housing and Infrastructure, or delegate
PIR	Preferred Infrastructure Report
Primary CoA/UMM	CoA and/or UMMs that are specific to the development of this Monitoring Program
POEO Act	NSW Protection of Environment Operations Act 1997
PPV	Peak particle velocity (mm/s)
RBL	Rating background level
VDV	Vibration dose values (m/s1.75)

1 Introduction

1.1 Overview

This Noise and Vibration Monitoring Program (NVMoP) is an appendix to the Noise and Vibration Management Sub Plan (NVMSP) that forms part of the Construction Environmental Management Plan (CEMP) for the Inland Rail – Illabo to Stockinbingal Project (I2S), the Project

The purpose of this NVMoP is to provide details of how John Holland will monitor noise and vibration during construction of the project to compare actual performance of construction of the Project against performance predicted in the EIS and NVMSP.

This NVMP is applicable to all activities during construction of the project, including all areas where physical works will occur or areas that may otherwise be impacted by the construction. All project staff and sub-contractors are required to comply with the requirements of this NVMoP and related environmental management plans, over the full duration of the construction program.

Blasting and operational noise and vibration monitoring requirements do not fall within the scope of this NVMoP.

1.2 Project context

The Project is in south-western New South Wales (NSW) in the Riverina region (refer to Figure 1-1). Illabo is a small town located at the southern end of the alignment 16 kilometres (km) north-east of Junee in the Junee Local Government Area (LGA).

Stockinbingal is situated at the northern end of the Project, approximately 20 km north-west of Cootamundra in the Cootamundra–Gundagai Regional LGA. The major towns surrounding the Project are Wagga Wagga, about 50 km to the south, Young to the north-east and Cootamundra to the east.

A detailed Project description is provided in Section 3 of the CEMP. In summary, the Project comprises a new rail corridor that would connect Illabo to Stockinbingal. The alignment branches out from the existing rail line north-east of Illabo and travels north to join the Stockinbingal–Parkes Line west of Stockinbingal. The route will travel primarily through undeveloped land predominantly used for agriculture.

The alignment crosses several local and private roads, watercourses and privately owned properties. Additionally, no major towns are located within the Project site between Illabo and Stockinbingal.

The Project will total approximately 42.5 km, including 39 km of new, greenfield railway with key features:

- new single track standard gauge
- new bridges and road overpasses
- crossing loop and maintenance siding
- new level crossings, stock crossings and upgrades to existing level crossings
- upgrades to approximately 3 km of existing track associated with tie-in works
- an additional 1.7 km of new track to maintain the existing rail network connections
- road upgrade works to re-align approximately 1.4 km of Burley Griffin Way and Ironbong Road.
- A temporary workforce accommodation camp will be constructed to house the workforce for the duration of the Project.

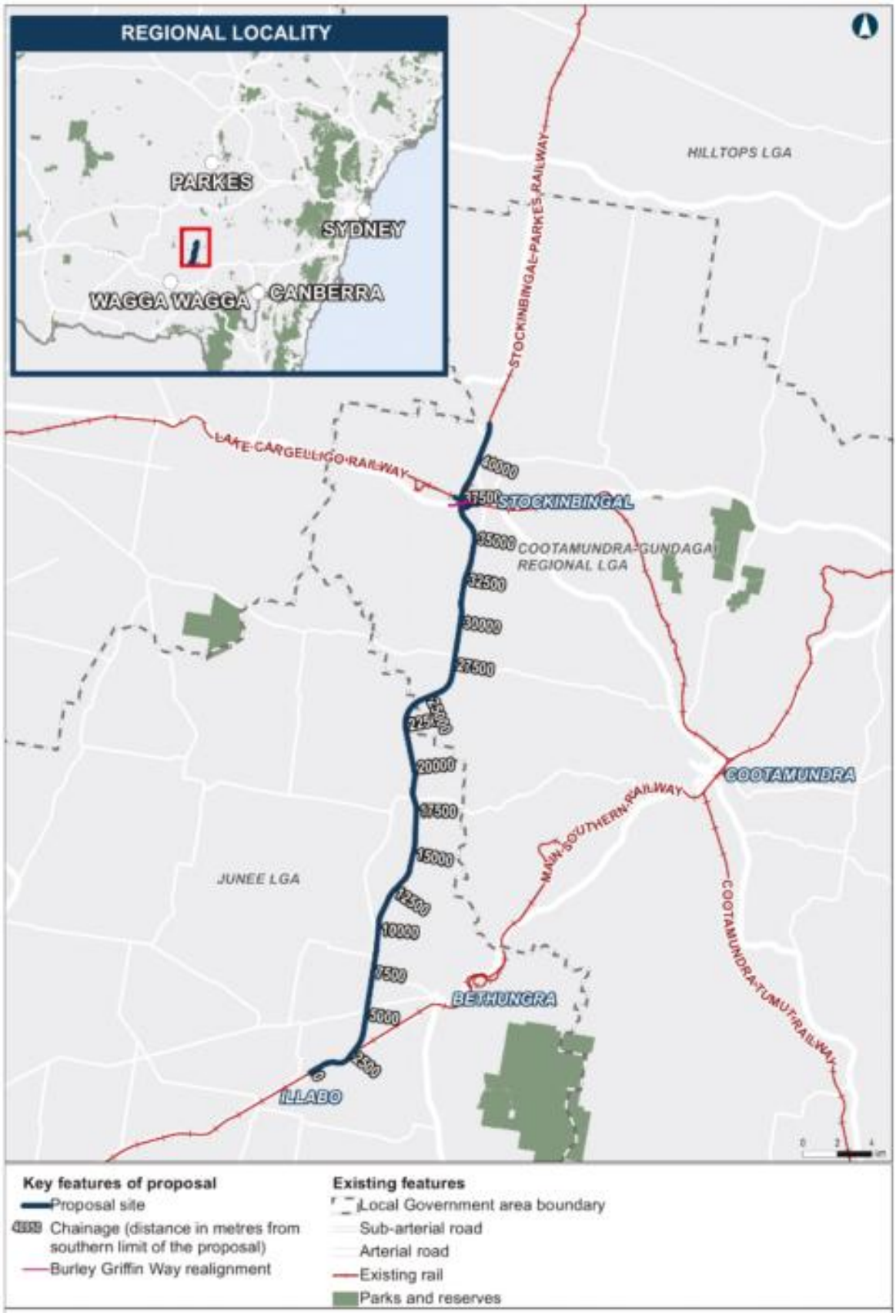


Figure 1-1 Project Locality (Source: Illabo to Stockinbingal - Environmental Impact Statement, 2022)

1.3 Planning context

The Project was declared Critical State Significant Infrastructure (CSSI) in 2021, and an EIS was prepared by Australian Rail Track Corporation (ARTC) in August 2022. Following public display from September to October 2022 and preparation of a Submissions Report, approval of the project was granted in September 2024 by the Minister for Planning under approval number SSI-9406.

In accordance with the Secretary's Environmental Assessment Requirements (SEARs) (dated 30 April 2021). The EIS was exhibited by the Department of Planning, Housing and Infrastructure (DPHI) for a period of six (6) weeks, commencing on 14 September 2022 and concluding on 26 October 2022.

The approval was subject to conditions including preparation of a construction monitoring program (CoA C27) for noise and vibration.

Conditions applicable to noise and vibration are presented in the NVMSP. Conditions relevant to this NVMoP are presented in Table 1-1.

Monitoring requirements identified in the Submissions Report as Revised Environmental Management Measures (RMMs) relevant to noise and vibration are listed in Table 1-2.

These requirements define the scope of this NVMoP, with cross references provided in each table for ease of navigation.

Table 1-1 State CoA relevant to the NVMSP

<table>
<tr><th>CoA No.</th><th>Condition Requirements</th><th>Document Reference</th></tr>
<tr><td>C27</td><td>Except as provided by Condition C1 the following Construction Monitoring Programs must be prepared in consultation with the relevant state agencies and relevant councils identified for the Construction Monitoring Programs to compare actual performance of construction of the CSSI against performance predicted in the documents specified in Condition A1.
<table>
<tr><th></th><th>Required Construction Monitoring Programs</th><th>Relevant government authorities to be consulted for each Construction Monitoring Program</th></tr>
<tr><td>(a)</td><td>Noise and Vibration</td><td>Nil</td></tr>
</table></td><td>This document</td></tr>
<tr><td rowspan="8">C28</td><td>Each Construction Monitoring Program (CMP) must have consideration of SMART principles and provide:</td><td>Section 1.6</td></tr>
<tr><td>(a) details of baseline data available;</td><td>Section 2.1</td></tr>
<tr><td>(b) details of baseline data to be obtained and when;</td><td>Section 2</td></tr>
<tr><td>(c) details of all monitoring of the CSSI to be undertaken;</td><td rowspan="4">Section 4(noise)
Section 5 (vibration)</td></tr>
<tr><td>(d) the parameters of the CSSI to be monitored;</td></tr>
<tr><td>(e) the frequency of monitoring to be undertaken;</td></tr>
<tr><td>(f) the location of monitoring and reasons for choosing the location;</td></tr>
<tr><td>(g) the reporting of monitoring results and analysis results against relevant criteria;</td><td>Section 3
Section 7</td></tr>
</table>

CoA No.	Condition Requirements	Document Reference
	(h) details of the methods that will be used to analyse the monitoring data;	Section 4 Section 5 Section 6
	(i) procedures to identify and implement additional mitigation measures where the results of the monitoring indicate unacceptable project impacts;	Section 6.2
	(j) any consultation to be undertaken in relation to the monitoring programs; and	Section 1.7
	(k) any specific requirements as required by Condition C29.	Not applicable
C30	The Noise Monitoring Program must be prepared and implemented in accordance with the requirements of Approved Methods for the Measurement and Analysis of Environmental Noise (EPA).	Section 4
C31	CMPs must be submitted to the Planning Secretary for approval except those permitted to be endorsed by others pursuant to a CEMF approved by the Planning Secretary under Condition C1.	Section 1.8
C32	Where a CMP requires Planning Secretary's approval, the CMP must be endorsed by the ER and then submitted to the Planning Secretary for approval no later than one (1) month before the commencement of construction, or where construction is staged, no later than one (1) month before the commencement of each stage.	Section 1.8
C34	Construction must not commence until the relevant CMP(s) have been approved by the Planning Secretary or endorsed by the ER, (as applicable and as identified in the CEMF approved under Condition C1), and all relevant baseline data for the specific construction activity has been collected.	Section 1.8
C35	The CMP(s), as approved or endorsed (as relevant), including any minor amendments approved by the ER, must be implemented for the duration of construction and for any longer period set out in the monitoring program or specified by the Planning Secretary, whichever is the greater.	Section 1.8
C36	The results of the CMP(s) must be made publicly available in the form a Construction Monitoring Report at the frequency identified in the relevant CMP. Note: Where a relevant CEMP Sub-plan exists, the relevant Construction Monitoring Program may be incorporated into that CEMP Sub-plan.	Section 7

Table 1-2 Updated Mitigation Measures relevant to this NVMP

Ref.	Issue	Mitigation Measure	Timing	NVMSP Reference
NV-2	Minimising the potential for construction vibration (structural) impacts	Where vibration levels are predicted to exceed the screening criteria, a more detailed assessment of the structure and vibration monitoring would be carried out in accordance with the Inland Rail NSW Construction Noise and Vibration Management Framework, to ensure vibration levels remain below appropriate limits for that structure.	Design Pre - construction	Noise and Vibration Management plan Section 9.5 This Document Appendix G – Section 5
NV-6	Managing the potential for noise and vibration impacts during construction	A construction noise and vibration management plan would be prepared and implemented in accordance with the Inland Rail NSW Construction Noise and Vibration Management Framework. The plan would include measures, processes and responsibilities to manage and monitor noise and vibration, and minimise the potential for impacts during construction.	Pre - construction Construction	This document
NV-8	Minimising the potential for construction vibration (structural) impacts	If vibration-generating activities are conducted within minimum working distances of a sensitive receiver, attended vibration measurements would be undertaken at the commencement of vibration-generating activities to confirm that structural vibration limits are within the acceptable range. Where vibration levels are found to be unacceptable, alternative work methods would be implemented so the vibration impacts are reduced to acceptable levels.	Construction	Section 5
NV-10	Impacts on heritage items as a result of construction vibration	Prior to the commencement of vibration-intensive works within the minimum working distances for cosmetic damage for heritage items, the potential for damage to the item would be assessed. Where there is potential for damage, alternative methods that generate less vibration would be investigated and substituted where practicable. Where residual cosmetic damage risks remain, condition surveys would be carried out and vibration monitoring with real-time notification of exceedance would occur during the activity. Site activities would be modified, where practicable, to avoid exceeding the cosmetic damage criteria. Any identified vibration-related damage to the items would be rectified.	Pre-construction Construction	Section 5

1.4 Construction Noise and Vibration Framework

The Inland Rail NSW Construction Noise and Vibration Management Framework (CNVMF) requires compliance noise and vibration monitoring to be undertaken “in accordance with this Framework”. This requires noise measurements to be undertaken with *AS1055.1-1997 Acoustics – Description and Measurement of Environmental Noise – General Procedures* and *Approved Methods for Measurement and Analysis of Environmental Noise in NSW* (EPA 2022).

Vibration measurements shall be undertaken in accordance with *Assessing Vibration: a technical guideline* and *BS7385 Part 2-1993 Evaluation and measurement of vibration in buildings*.

1.5 Environmental protection license

The Project will be subject to an Environment Protection Licence (EPL) under the POEO Act as a Scheduled Activity for 'railway activities - rail infrastructure construction'. The EPL will be obtained prior to construction commencement. Where required, this monitoring plan will be updated to include the relevant conditions of the EPL.

1.6 SMART principles

Noise and vibration monitoring procedures demonstrate consideration of SMART (Specific, Measurable, Achievable, Realistic and Timely) principles which will be applied during ongoing implementation of this Monitoring Program.

1.7 Consultation

With reference to CoA C27, consultation is not required for this NVMoP.

1.8 Approval

This NVMP will be endorsed by the ER and then submitted to the Planning Secretary for approval no later than one (1) month before the commencement of construction. Construction will not commence until this NVMP has been approved by the Planning Secretary

The requirements of this NVMoP will be implemented for the duration of construction and for any longer period specified by the Planning Secretary.

2 Baseline data

2.1 Existing Noise Environment

The existing noise environment is typical of a rural landscape, zoned as Primary Production (RU1). Land within Stockinbingal and Illabo are zoned as Village (RU5), Public Recreation (RE1), Large Lot Residential (R5). Most of the Project site is sparsely settled and experiences little road traffic noise generally leading to low background noise levels.

Burley Griffin Way, Olympic Highway, and the existing rail lines are the primary noise sources within the Project site which are zoned as Infrastructure (SP2), however, traffic along these roads is typically of low volume and does not significantly impact the background noise levels of the surrounding environment.

The most significant existing sources of vibration along the Proposal site include those generated by traffic on the local road network and existing rail operations at Illabo and Stockinbingal. Although not measured directly, vibration from existing road and rail sources would be below the structural damage and human comfort criteria for all vibration-sensitive receivers.

Noise monitoring was carried out at six locations in February 2019 as part of the EIS. Locations were selected to represent the existing ambient (background) noise environment in the Project area, considering factors such as topography, proximity to the Project area, and contributions from other noise sources like road, industrial, or rail noise.

Unattended noise loggers recorded noise levels for various descriptors over a two-week period. The results are summarised in Table 2-1 with monitoring locations illustrated in Figure 2-1.

Operator-attended noise surveys were also conducted at each location to characterise the noise environment, identify noise sources, and validate unattended noise logger measurements. Despite the time since initial monitoring, no significant developments have occurred in the study area and measured levels represent the current acoustic environment.

Table 2-1 Summary of unattended noise monitoring sourced from the EIS Chapter 8

Noise monitor ID	RBL dB(A)[1]			Ambient noise level dB(A)		
	Day[2]	Evening[2]	Night[2]	Day[2]	Evening[2]	Night[2]
NM01	35(27)	30	30(28)	45	45	47
NM02	35(28)	30(28)	30(29)	46	49	45
NM03	35(29)	30(28)	30(29)	46	49	45
NM04	35(30)	30(26)	30(22)	60	58	53
NM05	35(27)	30(27)	30(22)	43	42	38
NM06	35(27)	30(22)	30(19)	57	57	52

Note 1: RBL data has been adjusted to reflect the minimum RBL as per NPfI standard (bracketed figure indicates measured value).
Note 2: Time periods defined as – Day: 7.00am to 6.00pm Monday to Saturday, 8.00am to 6.00pm Sunday; Evening, 6.00pm to 10.00pm; Night 10.00pm to 7.00am Monday to Saturday, 10.00pm to 8.00am Sunday

2.2 Noise Catchment Areas

Sensitive noise and vibration receivers near the project have been divided into Noise Catchment Areas (NCAs) to group receivers with similar land use and ambient noise environments, facilitating application of representative Noise Management Levels (NMLs) and ensuring a more targeted and efficient assessment of potential noise impacts.

The project has been divided into six NCAs, as illustrated in Figure 2-1, and summarised in Table 2-2.

Table 2-2 Noise catchment area summary

Noise Catchment Area	Corresponding Noise Monitor ID	Description
NCA01	NM1	12 scattered rural receivers from south of the Olympic Highway to Old Sydney Road.
NCA02	NM2	16 scattered rural receivers between Old Sydney Road and Dirnaseer Road.
NCA03	NM3	7 scattered rural receivers between Old Sydney Dirnaseer Road and Old Cootamundra Road
NCA04	NM6	16 scattered rural receivers between Old Cootamundra Road and Burley Griffen Way
NCA05	NM4	Stockinbingal town area – 146 sensitive receivers including residences (125), educational (1), recreational (4) and commercial (12)
NCA06	NM5	20 scattered rural receivers north of Stockinbingal township and Burley Griffen Way to the northern extent of the project.

2.3 Additional baseline data to be obtained

The baseline data obtained to inform the EIS is sufficient to fulfil the monitoring requirements for the project.

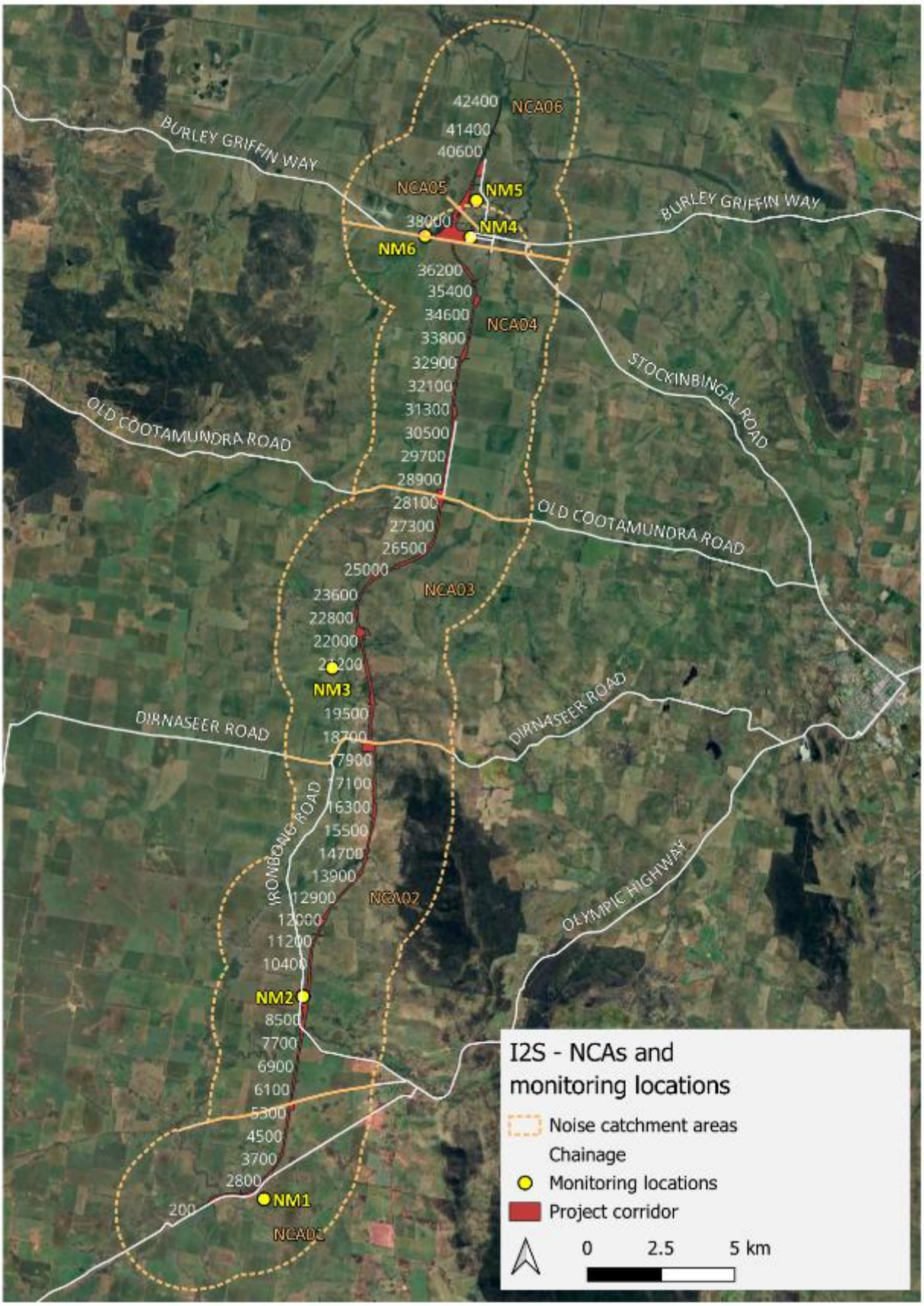


Figure 2-1 NCAs and monitoring locations

3 Noise and vibration objectives

3.1 Noise

Further detail on the adoption of NMLs for the project are found in the NVMSP. In summary, based on the measured RBLs and requirements of the ICNG, project-specific NML's for residential receivers are provided in Table 3-1

Table 3-1 Adopted NMLs for residential receivers

NCA	Noise Management Levels ($L_{Aeq(15min)}$ -dBA)				Sleep disturbance L_{AFmax} (RBL +15dB)
	Standard hours (RBL +10dB)	Out of Hours (RBL +5dB)			
	Day[1]	Day[1]	Evening	Night	
NCA01	45	40	35	35	45
NCA02	45	40	35	35	45
NCA03	45	40	35	35	45
NCA04	45	40	35	35	45
NCA05	45	40	35	35	45
NCA06	45	40	35	35	45

The ICNG provides noise management levels for commercial and industrial premises and 'other sensitive' land uses. The management levels for other noise sensitive receivers not listed in the ICNG that are applicable to the Project

Table 3-2 NMLs for other sensitive receivers

Land Use	NML($L_{Aeq(15min)}$	Where NML Applies	Reference	Assumed Façade Loss	External Equivalent NML ($L_{Aeq(15min)}$
Classrooms at schools and other educational institutions	45 dB(A)	Internal noise level	ICNG	10 dB(A)	55 dB(A)
Places of worship	45 dB(A)	Internal noise level	ICNG	10 dB(A)	55 dB(A)
Hotel (bars and lounges)	50 dB(A)	Internal noise level	AS2107 'maximum'	20 dB(A)	70 dB(A)
Restaurant, bar (Bars and lounges/ Restaurant)	50 dB(A)	Internal noise level	AS2107 'maximum'	20 dB(A)	70 dB(A)
Passive recreation (e.g. area used for reading, meditation)	60 dB(A)	External noise level	ICNG	-	60 dB(A)
Active recreation (e.g. sports fields)	65 dB(A)	External noise level	ICNG	-	65 dB(A)
Commercial premises (including offices and retail outlets)	70 dB(A)	External noise level	ICNG	-	70 dB(A)
Industrial premises	75 dB(A)	External noise level	ICNG	-	75 dB(A)

The ICNG identifies 'particularly annoying' activities that require the addition of 5 dB(A) to the predicted level before comparing to the construction NML. Annoying activities identified in the ICNG include:

- use of 'beeper' style reversing or movement alarms, particularly at night-time;
- use of power saws, such as used for cutting timber, rail lines, masonry, road pavement or steel work;
- grinding metal, concrete or masonry;
- rock drilling;
- line drilling;
- vibratory rolling;
- rail tamping and regulating;
- bitumen milling or profiling;
- jackhammering, rock hammering or rock breaking; and
- impact piling.

Where monitoring has confirmed that activities described above do not possess annoying characteristics in accordance with the NPfI (e.g. tonality, low frequency), the above addition of 5 dB(A) will not apply.

3.2 Vibration

Description of the types of vibration assessed in this NVMoP is provided in the NVMSP. Objectives for the management of human comfort and structural damage are presented below.

Human comfort

Preferred and maximum values for continuous and impulsive vibration are assessed on the basis of acceleration values as provided in Table 3-3.

Table 3-3 Acceleration values for continuous and impulsive vibration

Location	Assessment period[1]	RMS acceleration m/s^2				Peak particle velocity mm/s	
		Preferred values		Maximum values		Preferred values	Maximum values
		Z-Axis	X and Y Axes	Z-Axis	X and Y Axes		
Continuous Vibration							
Critical areas[2]	Day or night-time	0.0050	0.0036	0.010	0.0072	0.14	0.28
Residences	Daytime	0.010	0.0071	0.020	0.017	0.28	0.56
	Night-time	0.007	0.005	0,014	0.010	0.20	0.40
Offices, schools, educational institutions, and places of worship	Day or night-time	0.020	0.014	0,040	0.028	0.56	1.1
Workshops	Day or night-time	0.04	0.029	0.080	0.058	1.1	2.2
Impulsive vibration							

Location	Assessment period[1]	RMS acceleration m/s^2				Peak particle velocity mm/s	
		Preferred values		Maximum values		Preferred values	Maximum values
		Z-Axis	X and Y Axes	Z-Axis	X and Y Axes		
Critical areas	Day or night-time	0.0050	0.0036	0.010	0.0072	0.14	0.28
Residences	Daytime	0.3	0.21	0.60	0.42	8.6	17.0
	Night-time	0.10	0.071	0.20	0.14	2.8	5.6
Offices, schools, educational institutions, and places of worship	Day or night-time	0.64	0.46	1.28	0.92	18.0	36.0
Workshops	Day or night-time	0.64	0.46	1.28	0.92	18.0	36.0

(1) Daytime is 7.00am to 10.00pm and night-time is 10.00pm to 7.00am

(2) Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring.

Structural and Cosmetic damage

Potential damage of buildings by vibration is managed by ensuring vibration impacting the structure does not exceed the limits presented in Table 3-4. The limits presented in Table 3-4 relate predominantly to transient vibration which does not give rise to resonant responses in structures, and to low-rise buildings.

Where the dynamic loading caused by continuous vibration is such as to give rise to dynamic magnification due to resonance, then the guide values in Table 3-4 may need to be reduced by up to 50 percent. This is especially applicable at the lower frequencies where lower guide values apply.

On this basis, the following peak particle velocity (PPV) has been adopted as the assessment criteria for structurally sound buildings:

- Reinforced or framed structures – 25 mm/s
- Unreinforced or light framed structures – 7.5 mm/s.

For structures where the predicted and/or measured vibration levels are greater than shown above (peak component particle velocity), a more detailed analysis of the building structure, vibration source, dominant frequencies and dynamic characteristics of the structure would be undertaken to determine the applicable safe vibration level and approach to construction near the structure.

Table 3-4 Cosmetic and structural damage safe limits

Group	Type of building	Peak Component Particle Velocity in Frequency Range of Predominant Pulse	
		4 Hz to 15 Hz	15Hz and above
1	Reinforced or framed structures. Industrial and heavy commercial buildings.	50 mm/s at 4 Hz and above	
2	Unreinforced or light framed structures. Residential or light commercial type buildings.	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above

Heritage Items and Buried Pipework

Table 3-5 provides conservative criteria for vibration limits for different buildings and buried pipework and has been used to identify the vibration criteria for the Project where the BS 7385 does not apply.

Table 3-5 Guideline values for short term vibration on structures

Group	Type Of Structure	Guideline Values Vibration Velocity (Mm/S)				
		Foundations, All Directions at a Frequency of:			Topmost Floor, Horizontal	Floor Slabs, Vertical
		1 to 10Hz	10 to 50 Hz	50 to 100 Hz	All Frequencies	All Frequencies
1	Buildings used for commercial purposes, industrial buildings and buildings of similar design	20	20 to 30	40 to 50	40	20
2	Residential buildings and buildings of similar design and/or occupancy	5	5 to 15	15 to 20	15	20
3	Structures that because of their particular sensitivity to vibration, cannot be classified into Group 1 or 2 and are of great intrinsic value e.g. heritage listed buildings	3	3 to 8	3 to 8	8	20

As noted in BS 7385, heritage buildings and structures should not be assumed to be more sensitive to vibration, unless structurally unsound. A conservative vibration damage screening level (peak component particle velocity) for heritage buildings/structures will be set to **3mm/s**; however, this does not necessarily reflect that there would be a vibration impact on the structure if this level is exceeded, instead it is a suitable vibration level that is used as part of the construction vibration management process to trigger further investigation.

Any heritage structure predicted to exceed the screening level would be further investigated, and appropriate vibration criteria for the structure adopted. The general approach to managing potential vibration impacts on heritage items would be to:

1. Identify heritage items where the 3mm/s peak component particle velocity objective may be exceeded during specific construction activities
2. Carry out an assessment on identified heritage items, to confirm structural integrity of the building and confirm if item is 'structurally sound'
3. Adopt the appropriate screening level from BS 7385 or other appropriate level as determined by the noise and vibration consultant if the item was confirmed as 'structurally sound', or
4. Adopt the more conservative cosmetic damage level of 3mm/s peak component particle velocity if the item was confirmed as 'structurally unsound'.

For buried pipework, Table 3-6 will be used as a guide and further consultation with utility owners will be undertaken to apply the most appropriate vibration criteria for each utility. Where consultation confirms that alternate vibration criteria are required for specific utilities, that alternate criteria will be implemented in consultation with the noise and vibration consultant.

Table 3-6 Guideline values for short term vibration on pipelines and services

Pipe/Service material	Guideline Values for Vibration Velocity Measured on the Pipe
Steel (including welded pipes)	100 mm/s
Clay, concrete, reinforced concrete, pre-stressed concrete, metal (with or without flange)	80 mm/s
Masonry, plastic	50 mm/s

3.3 Additional management measures

Where works are outside of standard construction hours and noise and vibration result in exceedance of management levels described above, the Project team will implement additional measures commensurate with the impacts as described in Table 3-7 (airborne noise) and Table 3-8 (vibration). As detailed in the CNVMF, the measures may be adopted to suit Project needs and community expectations in consultation with ARTC/IRPL and the ER.

Table 3-7 – Noise management measures for airborne noise

Time Period		Exceedance of NML	Perception	Duration	Management Measure
OOHW Rest Period – Evenings	Monday – Sunday 6pm – 10pm (including public holidays)	<5	Noticeable	Any	CO1
		5-15	Clearly audible	Any	CO1
		15-25	Moderately intrusive	Any	CO1, CO2
		>25	Highly intrusive	Any	CO1, CO2
				>2 consecutive sleep periods	CO1, CO2, RO
OOHW Sleep Period – Night	10pm to 7am (Mon to Sat) and 10pm to 8am (Sundays and public holidays)	<5	Noticeable	Any	CO1
		5-15	Clearly audible	Any	CO1
		15	Moderately intrusive	Any	CO1, CO2
				>2 consecutive sleep periods	CO1, CO2, RO
		>25	Highly intrusive	Any	CO1, CO2, RO
				>2 consecutive sleep periods	CO1, CO2, RO, AA

Table 3-8 – Vibration management measures

Time Period		Duration	Exceedance of 'preferred value'	Exceedance of 'maximum value'
OOHW Rest Period – Evenings	Monday – Sunday 6pm – 10pm (including public holidays)	Any	CO1, CO2	CO1, CO2, RO
OOHW Sleep Period – Night	10pm to 7am (Mon to Sat) and 10pm to 8am (Sundays and public holidays)	Any	CO1, CO2, RO	CO1, CO2, RO, AA

Communication (CO)

Accurate and timely communication is essential to manage and understand community expectations for out of hours works. Two categories of communication (CO) have been developed commensurate with the scale of the impact. The purpose of the communication is described below, but the method of communication will be at the discretion of JHG and in accordance with the CCS.

- **Category 1 CO1**: Communication to provide information on the Proposal via letter box drop, email, newsletter, media advertisements and/or website a minimum of 5 days prior to the works commencing.
- **Category 2 CO2**: Communication should be personalised (e.g. door knock, meeting, telephone call). Contact with these residents should commence early to enable feedback to be considered by the Proposal.

At minimum, the information provided to stakeholders (CO1 or CO2) will include:

- The reason the works are required to be undertaken outside of the standard program construction hours
- A diagram that identifies the location of the proposed works in relation to nearby cross streets and local landmarks
- The nature, scope and duration of the works, including start and finish times
- The expected noise and/or vibration impacts on receivers
- Information on how to obtain further information or make a complaint, including an after-hours number and Inland Rail Program website

Respite Offer (RO)

Residential receivers subject to lengthy periods of noise or vibration may be eligible for a respite offer (RO). The purpose of such an offer is to provide residents with respite from an ongoing impact and may comprise of pre-purchased movie tickets, dinner vouchers or similar.

Respite can also be provided by limiting high noise generating works and allowing at least a one-hour respite period between blocks of work. Where possible, the timing of this respite should be discussed with the impacted community.

Respite offers are not applicable to non-residential receivers.

Alternative Accommodation (AA)

Alternate accommodation (AA) options (i.e. accommodation in motels away from the worksite) may be provided for residents living in close proximity to construction sites.

Acceptable accommodation measures shall be developed by JHG for the affected community and be approved by the IRPL Representative prior to discussion with the resident.

4 Construction noise monitoring

4.1 Applicable guidelines

All noise monitoring undertaken under this NVMP would be in accordance with applicable monitoring guidelines. A summary of relevant guidelines for noise monitoring is presented in Table 4-1.

Table 4-1 Key guidelines relevant to noise monitoring

Guidelines and Specifications	• *Approved methods for the measurement and analysis of environmental noise in NSW* (Environment Protection Authority 2022) • *Interim Construction Noise Guideline (Department of Environment and Climate Change* (DECC), NSW, 2009) (ICNG) • *Noise Policy for Industry* (NSW Environmental Protection Authority (NSW EPA), 2017) (NPfI) • *NSW Construction Noise and Vibration Management Framework* (0-0000-902-EMN-00-SP-0001) (CNVMF) • *Australian Standard AS 1055: 2018 Acoustics - Description and measurement of environmental noise*

4.2 Instrumentation

All noise monitoring instrumentation would be compliant with the requirements set out in Section 2.1 of the EPA *Approved methods for the measurement and analysis of environmental noise in NSW* (2022). That is, noise measurements for the purposes of determining compliance with a licence or consent

must be based on the use of a Class 1 sound level meter as specified in AS/NZS IEC 61672.1:2019 Electroacoustics: sound level meter specifications.

Field calibration checks of the instrumentation must be carried out before and after measurements are made. The sound level meter must be calibrated using a reference sound source (sound calibrator) before and after making a measurement. If the noise level recorded during the post-measurement check differs by more than 1.0 decibel from the noise level recorded during the pre-measurement check, all measurements made in the intervening period must be disregarded.

4.3 Qualifications

Any person monitoring or analysing environmental noise must be appropriately qualified and experienced in acoustics to a sufficient standard to enable that person to accurately interpret and apply the advice set out in acoustics standards, guidelines and policies (competent person).

All project staff measuring and analysing environmental noise will have experience in noise and vibration monitoring and will have received relevant training from an acoustic consultant on noise monitoring if required.

4.4 Monitoring locations and frequency

As described in Section 8.2 of the NVMP, construction activities will occur across six sections of the Project alignment and generally involve eleven different types of activities. Pending the sequence of construction activities across the alignment, the location and type of work will vary in each project section and is not defined at the time of the making of this Plan.

This uncertainty does not allow for pre-determined locations to undertake noise monitoring. Noise and vibration monitoring locations will vary throughout construction and will be determined on a case-by-case basis through reference to a CNVIS or via the project construction noise and vibration management tool, KNOWnoise.

Locations will be selected for affected sensitive receivers relevant to the project and also for non-sensitive receivers (e.g. commercial/educational) predicted to be impacted by significant exceedances of the NML from work in standard hours.

Subject to property owner approval, noise monitoring will be conducted at properties representative of the impacts from construction work subject to the measurement.

In line with the ICNG, noise levels will be measured at the property boundary most exposed to construction noise at a height of 1.5 metres above ground level. If the property boundary is more than 30 metres from the residence, the location for measuring or predicting noise levels is at the most noise-affected point within 30 metres of the residence.

Other factors that may help determine specific monitoring locations include:

- the safety of the person undertaking the measurement
- security of the noise monitoring equipment if to be left unattended
- availability of power if needed
- the purpose of the measurement, such as noise complaint
- the sensitivity of the receiver to noise
- background noise levels, which may confound the measurement
- the expected impact duration.

The frequency of airborne monitoring would be dependent on the purpose of monitoring and is likely to change for each event as described further below.

4.5 Procedures

Noise monitoring for the Project will be undertaken to quantify airborne noise levels associated with construction activities as described in Table 4-2.

Table 4-2 Noise monitoring procedure

Monitoring details	Frequency	Test procedure
At commencement of activities for which a CNVIS has been prepared to confirm actual noise levels.	On the first occasion of activities for which a CNVIS has been prepared	Noise measurements for the purposes of determining compliance with a licence or consent must be based on the use of a Class 1 sound level meter (or equivalent) as specified in AS/NZS IEC 61672.1:2019 Electroacoustics: sound level meter specifications. Sound level meter configured for "fast" time weighting and "A" frequency weighting. Outdoor measurements should be undertaken at least 3.5 metres from any reflecting structure (other than the ground) and at a height of 1.2 to 1.5 metres above ground level or the floor of interest if pertinent to a building, unless good acoustic practice means that a different position is more appropriate. Tests will not be carried out during rain or when the wind speed at the test site exceeds 5 m/s. Conditions such as wind velocity and direction, temperature, relative humidity and cloud cover will be recorded. Site activity during noise monitoring should be representative of a typical 15-minute period. The following noise parameters will be recorded as a minimum: • LAeq(15minute) - Equivalent A-weighted sound level • LAFmax; Maximum A-weighted sound pressure level • LAF90(15minute) - A-weighted sound pressure level exceeded for 90% of the measurement time • LAF10(15minute) - A-weighted sound pressure level exceeded for 10% of the measurement time The LAeq and LAmax contribution from the project will be quantified and compared to the project's NMLs and predicted noise levels.
Following receipt of a legitimate complaint is received.	Relevant to a received noise complaint where it is determined that the results of the process will assist in resolving or understanding the receiver's issue, or where this is identified as necessary to confirm mitigation measures are suitable	
Attended Validation monitoring	At least the first night of out of hours work where work is being undertaken in accordance with a community agreement (under an EPL), or as otherwise detailed in the EPL. During night time out of hours work with significant noise predictions or long durations (for more than 2 consecutive nights, for more than 3 nights in a week). As requested by the ER As requested by DPHI (i.e. for an approval under the Out of Hours Work Protocol, or as otherwise directed) As requested by the EPA In response to complaints (where attended validation monitoring would assist in resolving the complaint)	

Monitoring details	Frequency	Test procedure
		Where the noise is considered 'annoying' such as impulsive, tonal or low frequency sounds, a 5 dB penalty is applicable to the measured noise level in line with the ICNG. Field calibration checks of the instrumentation must be carried out before and after measurements are made.
Spot checks of noise intensive plant	In conjunction with attended monitoring at commencement of activities If verifiable data confirming the sound power level of the item is not available, attended measurements shall be conducted on relevant plant/equipment to verify the sound power level for modelling purposes.	Sound level meter configured for "fast" time weighting and "A" frequency weighting. Test environment to be free from reflecting objects. Tests will not be carried out during rain or when the wind speed at the test site exceeds 5 m/s. Monitoring over representative period of time to characterise equipment activity, e.g. rock breaking or loading a bogie cycle. The following noise parameters will be recorded as a minimum: • LAeq(15minute) - Equivalent A-weighted sound level • LAFmax; Maximum A-weighted sound pressure level • LAF90(15minute) - A-weighted sound pressure level exceeded for 90% of the measurement time

5 Construction vibration monitoring

5.1 Applicable guidelines

All vibration monitoring undertaken under this NVMP would be done in accordance with applicable monitoring guidelines. A summary of relevant guidelines is presented in Table 5-1

Table 5-1 Key guidelines relevant to vibration monitoring

Guidelines and Specifications	• *Assessing Vibration: a technical guideline* (Department of Environment and Conservation, NSW, 2006) • *German Standard DIN 4150-3:2016 Structural Vibration – effects of vibration on structures* (GS DIN 4150-3) • *British Standard BS 7385.2:1993—Evaluation and Measurement for Vibration in Buildings: Part 2—Guide to damage levels from ground borne vibration* (British Standards Institute, 1993) (BS 7385.2) • *British Standard BS 5228.2:2009—Code of Practice for noise and vibration control on construction and open sites: Part 2 Vibration* (British Standards Institute, 2009) (BS 5228.2) • *British Standard BS 6472:2008—Guide to Evaluation of Human Exposure to Vibration in Buildings (1 Hz to 80 Hz)* (British Standards Institute, 2008) (BS 6472) • *Australian Standard AS 2775–2004 Mechanical vibration and shock—Mechanical mounting of accelerometers* • *Inland Rail Noise and Vibration Management Strategy (0-0000-900-EMN-00-ST-0001)* (IR-NVMS) • *Inland Rail NSW Construction Noise and Vibration Management Framework* • *NSW Construction Noise and Vibration Management Framework* (0-0000-902-EMN-00-SP-0001) (CNVMF) • *NSW – Legislation, Guidelines and Policies - Noise and Vibration Guideline* (5-0000-902-EEC-00-GU-0005)

5.2 Instrumentation

The vibration sensor should be able to record peak component particle velocity (PPV) in three orthogonal directions and faithfully reproduce the vibration in the frequency and magnitude ranges in which vibration response may be expected.

Assessing vibration: A technical guideline does not mandate a specific class of instrument. However guidance is provided as follows.

A vibration measuring system usually includes the following instrumentation:

- transducers, typically piezoelectric accelerometers or geophones
- signal-conditioning equipment
- a data recording and analysis system.

Performance characteristics for the measurement instrumentation should meet the requirements set out in BS 6841 and BS 7482 Parts 1 and 3. A dynamic range of 40 dB is adequate for most purposes, but 50 dB is preferred. The signal to-noise ratio (with respect to the background vibration) should generally be not less than 5 dB.

5.3 Qualifications

Any person monitoring or analysing vibration must be appropriately qualified and experienced in acoustics to a sufficient standard to enable that person to accurately interpret and apply the advice set out in acoustics standards, guidelines and policies (competent person).

All project staff measuring and analysing environmental vibration will have experience in vibration monitoring and will have received relevant training from an acoustic consultant on vibration monitoring if required.

5.4 Transducer mounting

Measurements should be undertaken at the base of the nearest receivers' building on the side of the building facing the source of vibration. If doing so is not feasible, measuring vibration on the ground outside of the building is possible, although may require additional engineering analysis;

Should the works location change, the geophones will be relocated to remain at the closest point of the structure to the works.

Mounting vibration transducers to structures should generally comply with *Australian Standard AS 2775–2004 Mechanical vibration and shock—Mechanical mounting of accelerometers*. Factors to consider when mounting the transducer to a structure include:

- the mass of the transducer should not be greater than 10 per cent of that of the building element to which they are fixed (geophone transducers are often heavier than accelerometers).
- avoid brackets
- Use studs (bolts), quick setting rigid adhesives such as super glue or other epoxies or magnets
- Do not use double sides foam tape
- Avoid floors with carpets or soft vinyl tiles

When mounting on the ground, ensure firm mounting by:

- On rock, asphalt, concrete, fasten to the surface with a bolt, epoxy or other quick setting rigid cement
- In firm soil, fix transducer to a stiff steel or aluminium 'star picket' or other stake of at least 300mm driven through loose soil layer and insert until projecting out a few millimetres above ground, ensuring close contact between transducer, stake and ground
- In softer ground, bury and tamp to a depth of at least 3 x the main dimension of the transducer or mounting unit. Alternatively, fix to rigid surface plate (e.g. well bedded paving slab).

The transducer shall not be mounted on loose tiles, loose gravel or other resilient surfaces

Consider reflections from other structures such as buildings and trees to reduce reflections. The transducer should be orientated toward the source.

5.5 Monitoring locations, frequency and duration

Similarly to section 4.4 of this Monitoring Program, construction activities will occur across six sections of the Project alignment and generally involve eleven different types of activities. Pending the

sequence of construction activities across the alignment, the location and type of work will vary in each project section and is not defined at the time of the making of this Plan.

This uncertainty does not allow for pre-determined locations to undertake vibration monitoring. Vibration monitoring locations will vary throughout construction and will be determined on a case-by-case basis through reference to a CNVIS or via the project construction noise and vibration management tool, KNOWnoise.

Vibration monitoring will be undertaken at vibration sensitive locations within the 'minimum working distances' established for each item of plant during the commencement of use of each plant on site. Further, a more detailed assessment of the structure and would also be carried out in accordance with the Inland Rail NSW Construction Noise and Vibration Management Framework, to ensure vibration levels remain below appropriate limits for that structure. See Section 9.5 of the NVMSP for further details.

Vibration monitoring locations will consider factors including:

- The location of previous monitoring sites
- The proximity of the receiver to a Project worksite and consideration of safe working distances
- Availability of power and security
- The sensitivity of the receiver to vibration
- The expected duration of the impact.

For human comfort, measurements should be undertaken within a complainant's offending space or within spaces which receivers frequently use when construction work is on-going. The measurement location is preferably at a point on a structure (typically the floor) where vibration is typically experienced by a complainant.

Some locations may be the boundary of construction sites while others may be within the property of sensitive receivers, where access is granted.

Where monitoring is planned to extend over a longer period than practicable for attended monitoring, such as when works will remain within a minimum working distance, instrumentation will have the ability to warn plant operators via flashing light, SMS, or email that vibration is approaching levels and where there is potential for cosmetic damage to buildings or structures.

Where unattended vibration monitors are left in place on a private property, they will be picked up at a mutually agreed time with the resident. Vibration data will be processed statistically and stored in memory.

All short term attended vibration monitoring will be recorded over a representative sampling interval where the worst-case vibration levels can be captured. Where unattended vibration monitoring is proposed, monitoring will be undertaken continuously whilst the vibrating plant is operational to capture the worst-case vibration levels within the pre-determined 'minimum working distance' from the potentially affected building.

5.5.1 Condition surveys

In accordance with CoA E145, E146 and NV-10, condition surveys will be conducted for all buildings, structures utilities and the like at risk of being damaged. This may include

5.6 Procedures

Vibration monitoring for the Project will be undertaken to quantify vibration levels associated with construction activities as described in Table 5-2.

Table 5-2 Vibration monitoring procedure

Monitoring details	Frequency	Test procedure
Vibratory work within minimum working distances for sensitive receivers (see Section 3.2)	As required	Transducer to be affixed to the ground or building in accordance with AS 2775–2004. Cosmetic damage PPV with sufficient temporal resolution to determine vibration impacts and the dominant frequency of vibration will be recorded for assessment against the cosmetic damage criteria. To determine site specific minimum working distances, monitoring will be conducted for at least three (3) distances from the vibration source, including a representative distance for the nearest receiver. The plant will be tested in setting in which it is expected to operate. For example, vibrator rollers may include both 'high' and 'low' settings. Human comfort In situations where human comfort is the main concern, VDV should be assessed through the installation of an accelerometer or velocity-based sensor set to appropriately calculate cumulative VDVs during the periods when construction work is undertaken. In situations where human comfort is the main concern, a metric which is appropriate for estimating the vibration dose values should be considered. Details regarding the determination of cumulative VDVs are outlined in BS 6472-1.
When a legitimate complaint is received in relation to human exposure to vibration levels and/or suspected property damage due to vibration impacts and monitoring is considered an appropriate response	As required	
For refining construction methodology to reduce vibration levels	As required	
Where an activity may occur within minimum working distances for cosmetic damage (see Section 3.2)	As required	Transducer to be affixed to the ground or building in accordance with AS 2775–2004. Vibration logger to continuously measure vibration levels while the relevant works are occurring within the minimum distance for cosmetic damage. Measurement to be conducted as close as possible to, or on, the sensitive structure. PPV with sufficient temporal resolution to determine vibration impacts and the dominant frequency of vibration will be recorded for assessment against the cosmetic damage criteria and against human comfort (screening criteria).

Monitoring details	Frequency	Test procedure
Vibration generating activities that have the potential to impact on heritage items in accordance with CoA E8 and NV-10.	As required	Identify minimum working distances to prevent cosmetic damage (see Section 3.2). When conducting vibration testing at a heritage item, advice from a heritage specialist must be sought on methods and locations for installing equipment used for vibration, movement and noise monitoring at heritage-listed structures (in accordance with NV10 and E8).
For vibration near buried pipework or other sensitive structures	As required	Specialised vibration monitoring advice from an acoustic consultant should be sought for assessing sensitive structures where required. The advice should be determined on a case-by-case basis for each vibration sensitive structure.

5.7 Minimum working distances

Minimum working distances for human comfort (human exposure) and cosmetic damage and are outlined in Table 5-3 and Table 5-4 respectively. These tables reflect information also presented in the NVMSP. These minimum working distances are indicative and will vary depending on the item of plant (particularly its power rating), local geotechnical conditions and the frequency content of the construction vibration levels.

Attended vibration monitoring will be undertaken to determine site-specific minimum working distances for structural damage and human response, where vibration intensive plant/equipment may be used within the indicative minimum working distances.

Additionally, further detailed analysis based on the frequency dependent guideline vibration levels in BS7385-2:1993 and DIN4150-3:2016 may be utilised in conjunction with site specific measurements to derive alternative cosmetic damage objectives and minimum working distances.

For heritage listed/fragile structures, specialist advice from an appropriately qualified structural engineer who is familiar with heritage structures is required to support any proposed relaxation of the initial cosmetic damage screening criterion.

Table 5-3 Recommended minimum working distances – human comfort

Vibration intensive plant	Rating/Description	Critical area[1]	Residence (Day)	Residence (Night)	Office	Workshop
Vibratory Roller	<50 kN (1–2 tonne)	25 m	17 m	20 m	11 m	7 m
	<100 kN (2–4 tonne)	25 m	17 m	20 m	11 m	7 m
	<200 kN (4–6 tonne)	50 m	33 m	40 m	21 m	14 m
	<300 kN (7–13 tonne)	124 m	81 m	100 m	52 m	34 m
	>300 kN (13–18 tonne)	124 m	81 m	100 m	52 m	34 m
	>300 kN (>18 tonne)	124 m	81 m	100 m	52 m	34 m

Vibration intensive plant	Rating/Description	Critical area[1]	Residence (Day)	Residence (Night)	Office	Workshop
Small hydraulic hammer	300 kg (5 to 12 t excavator)	9 m	6 m	7 m	4 m	3 m
Medium hydraulic hammer	900 kg (12 to 18 t excavator)	29 m	19 m	23 m	12 m	8 m
Large hydraulic hammer	1,600 kg (18 to 34 t excavator)	91 m	59 m	73 m	38 m	25 m
Vibratory pile driver	sheet piles	25 m	17 m	20 m	11 m	7 m
Piling rig – bored	⩽ 800 mm	5 m	4 m	4 m	3 m	2 m
Jackhammer	Handheld	3 m	2 m	2 m	2 m	1 m

1) Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring.

Table 5-4 Minimum working distances - cosmetic damage

Vibration significant plant	Rating/Description	Reinforced or frame structures (BS7385)	Unreinforced or light framed structures (BS7385)	Structurally unsound heritage structures (DIN 4150-3)
Vibratory Roller	<50 kN (1–2 tonne)	3 m	5 m	11 m
	<100 kN (2–4 tonne)	3 m	6 m	13 m
	<200 kN (4–6 tonne)	6 m	12 m	25 m
	<300 kN (7–13 tonne)	8 m	15 m	31 m
	>300 kN (13–18 tonne)	10 m	20 m	40 m
	>300 kN (>18 tonne)	12 m	25 m	50 m
Small hydraulic hammer	300 kg (5 to 12 t excavator)	1 m	2 m	5 m
Medium hydraulic hammer	900 kg (12 to 18 t excavator)	4 m	7 m	15 m
Large hydraulic hammer	1,600 kg (18 to 34 t excavator)	11 m	22 m	44 m
Vibratory pile driver	sheet piles	10 m	2 m to 20 m	5 m to 40 m

Piling rig – bored	⩽ 800 mm	1 m	2 m (nominal)	5 m
Jackhammer	Handheld	1 m	1 m (nominal)	3 m

5.8 Conversions

5.8.1 Noise

Ideally, measurements of compliance for noise would be measured at the target location. At times, lack of access or high background noise levels may require an intermediate location to be selected, closer to the source. In these cases, the measured noise should be extrapolated to the target location via the following relationship. Note, this method works best when terrain between source and receiver is flat and clear, because effects of topography on attenuation are much reduced.

$$SPL_2 = SPL_1 - 20log\left(\frac{R_2}{R_1}\right)$$

Where:
SPL1 – Sound pressure level at location 1
SPL2 – Sound pressure level at location 2
R – distance from source to reference level (R1) and distance from source to receiver (R2)

For sound power level spot checks, a measurement of sound pressure level can be converted to sound power level via the following equation. This formula assumes a point source on a hard reflective surface with no attenuation from source to receiver due to barriers, air absorption or ground effects and no directivity or reflection effects from the source.

$$SWL = SPL - 20logR + 8$$

Where:
SPL – Sound pressure level (dBA)
SWL – Sound power level (dBA)
R – distance from source to measurement location

Quick guide:

SPL measurement distance from source, m	Decibels to be added to the SPL to establish SWL, dB
1	8
2	14
5	22
7	25
10	28
15	31

5.8.2 Vibration

Ideally, vibration would be measured directly on a structure. Where access is not available, vibration will, at times, be monitored in proximity to the equipment and measured levels extrapolated to the nearest structure based on the following equation for geometric damping (conservatively ignoring material damping).

$$PPV_2 = PPV_1 \left(\frac{R_1}{R_2}\right)^n$$

Where:
PPV – Peak particle velocity at the source (PPV_1) and at the receiver (PPV_2)
R – distance from source to reference level (R_1) and distance from source to receiver (R_2)
N – ground factor assumed as 1 for body waves

For human comfort, intermittent vibration is assessed using the vibration dose concept which relates to vibration magnitude and exposure time. Acceptable values for intermittent vibration, in terms of vibration dose values (VDV), require the measurement of the overall weighted Root Mean Square (RMS) acceleration levels over the frequency range 1 Hz to 80 Hz. To calculate VDV the following formula is used:

$$VDV = \left[\int_0^T a^4(t)dt\right]^{0.25}$$

Where:
VDV - vibration dose value in $m/s^{1.75}$
a (t) - the frequency-weighted rms of acceleration in m/s^2
T - the total period of the day (in seconds) during which vibration may occur.

6 Monitoring records and review

6.1 Documentation

For each monitoring event, the following information shall be recorded:

- Date and time of measurement
- Name of person undertaking the measurement
- Type and model number of instruments
- Sample times, measurement time intervals and time of day
- Map of area showing measurement location, source location and sensitive receivers
- Measurement location details and number of measurements at each location
- Operation and load conditions of the plant under investigation
- Measured noise parameters (as applicable) including LA90, LAeq, LA10, LA (max);
- Measured vibration parameters (as applicable) including the following criteria where relevant: mm/s (structural damage), m/s2, 1-80Hz (Human Comfort) and m/s1.75 (VDV).
- Estimated contribution of the Project's activities vs. noise from extraneous and environmental sources (e.g. traffic, aircraft, trains, dogs barking, insects); and
- Where possible, describe the frequency of noise events noticeably above the LAeq level, i.e. transient or impulsive events at or around the LAMax value for the monitoring period, either numerically (e.g. up to 5 events in the monitoring period) or subjectively (frequent/single event).

On conclusion of each monitoring event, the monitoring results will be compared to input or output data, or relevant criteria as described in Table 6-1. The intention of all monitoring is to provide improved noise and vibration management outcomes, ensure compliance with criteria and reduce impacts to receivers.

Table 6-1 Actions for Monitoring outcomes

Reason for monitoring	Comparison	Outcome
To ensure accurate input into modelling or predictions	Compare to modelling inputs, for example: • Of background (non-construction) noise levels • Of plant and equipment sound power levels • To confirm efficacy of mitigation measures (e.g. noise mounds)	Make corrections to models as appropriate to ensure future predictions and modelling outcomes are more accurate.
To review accuracy of modelling or predictions outcomes	Compare to model outputs	Make corrections to models as appropriate to ensure future predictions and modelling outcomes are more accurate.
As identified by a construction noise and vibration impact assessment	Noise and vibration assessment outcomes	To confirm noise and vibration impacts are consistent with predictions and appropriate mitigation measures are implemented.
To confirm compliance with relevant criteria	Compare to relevant noise and vibration criteria	To identify where additional mitigation measures may be required.
In response to a complaint	Compare to relevant noise and vibration criteria, and model outcomes (such as in the case of Out of Hours Works Permits).	To identify where additional mitigation measures may be required.

Where a non-compliance with criteria is identified or results of monitoring are otherwise unsatisfactory, additional measures will be implemented as discussed below.

6.2 Review outcomes

Monitored noise and vibration levels will be analysed against the noise and vibration objectives listed in Section 3 and predictions made in the relevant CNVIS or using the Project's predictive tool (KNOWnoise). Results will be utilised to confirm model predictions and confirm vibration minimum working distances (i.e. 'site law').

As part of standard construction management, the mitigation measures described in the NVMSP will be applied. Where monitored construction levels are found to be above noise or vibration criteria, predictions or are otherwise unsatisfactory, the following actions will be undertaken:

- Assess the noise/vibration generating sources and activities to identify a potential source of the exceedance;
- Confirm the monitored levels are not being impacted by other noise or vibration sources;
- Confirm if the exceedance is due to an uncharacteristically noisy or vibration-intensive piece of equipment;
- Confirm that the modelling reflects the actual activity being undertaken;

- Implement other feasible and reasonable measures which may include:
    - reducing plant type or size,
    - modifying time of works,
    - changing operational settings (such as turning off the vibratory function of the machine),
    - utilising alternative construction methodology
    - implementation of additional respite periods to provide residents with respite from ongoing impact
    - consultation with residents to confirm if alternative construction hours or respite periods may provide greater relief from construction impacts
    - supplementary or augmented noise and vibration controls in place during construction
    - consideration of alternative construction methodology, including reconsideration of short term programming to split up noisy activities
    - additional consultation with affected receivers, including notification and complaint handling procedures.
- Ensure that the learnings from the above are fed back into the noise modelling assessment process for fine-tuning;
- Continue work where impacts can be reduced;
- Where noise cannot be reduced for this activity, re-assess the extent of impacts based on new information (e.g. revised equipment sound power level) and implement appropriate mitigation and management measures;
- Communicate lessons learnt to relevant personnel; and
- JH will review the activity and where possible, modify the work or activity to prevent any recurrence. Lessons learnt will be communicated to relevant personnel in toolbox talks.

In the case of an exceedance in SWL the item of plant may require:

- Maintenance;
- A non-tonal movement alarm;
- An enclosure around items of stationary plant (e.g. pumps or generators); and
- Replacement/substitution

Where monitored construction levels are found to be below predicted noise or vibration levels, there may be an opportunity to highlight a technique or item of equipment that can be used in other situations to reduce noise impacts or amend the noise predictions for improved accuracy. In this situation:

- Assess the noise/vibration generating sources and activities to identify potentially lower noise levels than anticipated
- Confirm if the reduced level is due to equipment sound power or operating variables
- Where sound power is lower, include data in register of plant noise levels for future reference
- Where operation is less intense, or other mitigation has been applied to reduce levels, make a note in the register of plant noise levels for future reference and identification of any trends.

7 Reporting

A six-monthly Construction Monitoring Report will be prepared detailing the results of monitoring in accordance with this Monitoring Program.

The Construction Monitoring Reports will be submitted to the ER, Planning Secretary and to relevant regulatory agencies (i.e. the EPA) for information 3 months after the reporting period ends. The NVMoR will be made publicly available.

Reports will include, but not be limited to, the following information:

- The date(s) and time at which the monitoring was undertaken;
- The locations and description of monitoring undertaken;
- A summary of monitoring data;
- Comparison of monitoring results with the relevant objectives identified in Section 3 of this Monitoring Program and whether they have been met;
- Details of any alteration to the Monitoring Program;
- Summary of any complaints received regarding construction noise and vibration.

Separate from the Construction Monitoring Report, additional records relating to noise and vibration training, toolbox talks, monitoring results and audit results will be prepared, maintained, and stored in line with the CEMP. The complaints management and reporting procedure is described in the CEMP.