PUBLIC

Noise and Vibration Management Plan EnergyConnect (NSW - Western Section) Stage 2

45860-HSE-PL-D-0019

REV	DATE	GENERAL DESCRIPTION	PREPARED	REVIEWED	VERIFIED	APPROVED
H	6/07/2022	Revised to address DPE comments	A.Kriegel	R.Walker-Edwards	B.Calligeros	S.Basanta
0	24/01/2024	Revised to Elecnor template	R.Walker-Edwards	C.Curlewis	G.Crighton	G.Arrien

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Revision History	
Rev.	**Detailed Description**
A	Issued for internal review
B	Issued for Transgrid review
C	Issued for Transgrid review and to address Infrastructure Approval
D	Updated following Transgrid review and for issue to agencies
E	Updated following Transgrid review and for issue to the Environmental Representative
F	Updated following receipt of Environmental Representative comments and issued to DPE
G	Revised to address DPE comments
H	Revised to address DPE comments
0	Revised to update to Elecnor template and Elecnor management system

Key Document Stakeholders
To be communicated with during reviews and revisions of this document

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Abbreviations

Acronym	Definition
AA	Acoustic Advisor
AWS	Automatic Weather Station
BoM	Bureau of Meteorology
EWMS	Environmental work method statements
Amendment Report	*EnergyConnect (NSW – Western Section) Amendment Report*
ANZEC	Australian and New Zealand Environment Council
Appendix I of the Amendment Report	*EnergyConnect (NSW - Western Section) Addendum noise and vibration impact assessment*
AS/NZ	Australian Standard / New Zealand Standard
Base hours	Construction work hours defined in the *EnergyConnect (NSW – Western Section) Environmental Impact Statement* as seven days per week (Monday to Sunday) between 7am and 7pm
BSI	British standard institution
CCS	Community Communication Strategy
CEMP	Construction Environmental Management Plan
CNVG	*Construction Noise and Vibration Guideline* (Roads and Maritime 2016)
CNVIS	Construction noise and vibration impact statement
Council	Wentworth Shire Council
CSSI	Critical State significant infrastructure
DAWE	(former) Department of Agriculture, Water and the Environment
dB	Decibel
dBA	Decibel (A-weighted)
DEC	(former) Department of Environment and Conservation
DECC	(former) Department of Environment and Climate Change
DECCW	(former) Department of Environment, Climate Change and Water
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DPE or Department	NSW Department of Planning and Environment
DPIE	NSW Department of Planning, Industry and Environment now known as NSW Department of Planning and Environment
EIS	*EnergyConnect (NSW – Western Section) Environmental Impact Statement*
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPA	NSW Environment Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPL	Environment Protection Licence
ER	Environmental Representative
ICNG, the	*Interim Construction Noise Guideline* (Department of Environment and Climate Change 2009)
NML	Noise management level
NPfI	Noise Policy for Industry (EPA, 2017)

Acronym	Definition
NSW	New South Wales
NVMP	Noise and Vibration Management Plan
ONR	Operational Noise Review
OOHW	Out of hours work
OOHW Protocol	Out of Hours Works Protocol
PAD	Potential archaeological deposit
Planning Secretary	Planning Secretary under the EP&A Act, or nominee
POEO Act	*Protection of the Environment Operations Act 1997*
Project, the	EnergyConnect (NSW – Western Section)
RBL	Rating background level
Response to DPIE Request for Information	The 'additional information letter dated 10 August 2021' in the definition section of the Infrastructure Approval; document is also titled *EnergyConnect (NSW – Western Section) Response to DPIE Request for Information – 7 May 2021 and subsequent discussions*
RMMs	Revised mitigation measures
RNP	Road Noise Policy
SA	South Australia
SAP	Sensitive area plans
SecureEnergy	Transgrid has engaged Elecnor Australia, trading as SecureEnergy, to design and construct the EnergyConnect project.
SSI	State significant infrastructure
Submissions Report	*EnergyConnect (NSW – Western Section) Submissions Report*
Technical Paper 8 of the EIS	Technical Paper 8 of the EnergyConnect (NSW – Western Section) Environmental Impact Statement (Noise and vibration impact assessment)
WMS	Work method statements

1 Introduction

1.1 Context

This Noise and Vibration Management Plan (NVMP or this plan) forms part of the Construction Environmental Management Plan (CEMP) for Stage 2 of EnergyConnect (NSW – Western Section).

This document has been prepared for construction activities for Stage 2 of the project, and supersedes the existing Stage 1 Noise and Vibration Management Plan. It does not address the operational phase of the project.

This plan has been prepared to address the relevant requirements of the Infrastructure Approval (SSI 10040), the *EnergyConnect (NSW – Western Section) Environmental Impact Statement* (EIS), the *EnergyConnect (NSW – Western Section) Submissions Report* (Submissions Report), the *EnergyConnect (NSW – Western Section) Amendment Report* (Amendment Report) and the additional information letter dated 10 August 2021 (Response to DPIE Request for Information).

1.2 Background

On 29 August 2019 the then NSW Minister for Planning and Public Spaces declared the NSW component of EnergyConnect to be critical State significant infrastructure (CSSI) under the *Environmental Planning and Assessment Act 1979* (EP&A Act) on the basis that it is critical to the State for environmental, economic or social reasons. Within NSW, EnergyConnect is therefore subject to assessment under Part 5, Division 5.2 of the EP&A Act.

Transgrid have two environmental planning approval applications for the sections within NSW:

- EnergyConnect (NSW – Western Section) – SA/NSW border to Buronga and Buronga to the NSW/Victorian border (the project); and
- EnergyConnect (NSW – Eastern Section) – Buronga to Wagga Wagga.

A referral under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) was submitted on 27 May 2020. The Australian Department of Agriculture, Water and the Environment (DAWE) determined the project to be a controlled action on 26 June 2020 and thus, it would be assessed using the bilateral assessment process. As such, the project also requires approval from the Australian Minister for the Environment under the EPBC Act.

The EIS was prepared for the project in October 2020 and was placed on public exhibition from 30 October 2020 to 10 December 2020. A total of 20 submissions were received, with 15 from government agencies, three from organisations and two from the public.

The Submissions Report was prepared for the project in response to the submissions and was finalised on 14 April 2021.

Transgrid also prepared a separate Amendment Report to document design changes and additional environmental assessment undertaken since exhibition of the EIS. The Amendment Report describes the updated project for which approval has been sought and was finalised on 14 April 2021.

On 7 May 2021, Department of Planning and Environment (DPE or Department) requested additional information (*EnergyConnect (NSW – Western Section) (SSI-10040) Request for Additional Information*) to assist with the assessment of the project. In response Transgrid prepared and provided the Response to DPIE Request for Information, which included revised mitigation measures (RMMs) in Appendix G which are to be applied. The Response to DPIE Request for Information was dated 10 August 2021.

Approval for the project under the EP&A Act was granted by the NSW Minister for Planning and Public Spaces (Infrastructure Approval SSI 10040). Approval for the project under the EPBC Act was granted by the Australian Minister for the Environment.

Transgrid have engaged Elecnor Australia, trading as SecureEnergy, to design and construct their portion of the EnergyConnect project.

1.3 Staging

Condition E2 allows preparation of plans on a staged basis, with the approval of the Planning Secretary. Where a plan is staged, the scope of works can be carried out without addressing particular requirements of conditions of approval that are not applicable to the particular stage. This NVMP is staged in accordance with condition E2.

On 26 November 2021 the project advised DPE of the intention to stage construction of the project and sought the Secretary's approval to prepare and submit any strategy, plan or program required by the Infrastructure Approval on a staged basis. The two proposed stages are as follows:

- Stage 1 – upgrade of the existing substation at Buronga, establishment of the Buronga accommodation camp and construction compound, and use and access of two water supply points off Corbett Avenue, Buronga to supply raw water for construction and potable water for the accommodation camp; and
- Stage 2 – all other construction activities.

On 24 December 2021 the Planning Secretary approved the submission of relevant strategies, plans or programs on this staged basis in accordance with condition E2 of Schedule 2 of the Infrastructure Approval. Elecnor Australia (Elecnor) will construct the project in accordance with the approved stages identified above and will prepare and submit the CEMP and CEMP Sub-plans (and other relevant strategies, plans or programs - including this NVMP) on a staged basis.

The conditions of the Infrastructure Approval, and the RMMs identified in Appendix G of the Response to DPIE Request for Information, that are relevant to construction noise and vibration are included in Table 2.1 and Table 2.2, respectively. The applicability of each requirement to this NVMP is also addressed in the identified tables.

This NVMP has been prepared specifically for EnergyConnect (NSW – Western Section) Stage 2 and will be implemented for the duration of Stage 2 of construction. The key project components of Stage 2 of construction include, but are not limited to, the activities provided in Table 1.1.

Table 1.1 - Key project components of Stage 2 of construction

Key activity	Description of key activity
Pre-construction minor works permitted in accordance with the Infrastructure Approval	Key activities nominated in this stage will have already commenced as part of the pre-construction minor works permitted in accordance with the Infrastructure Approval. The definition of 'construction' within the Infrastructure Approval excludes these activities. They will therefore not be subject to the Stage 2 CEMP and CEMP sub-plans. Irrespective of this, these activities will occur in accordance with the relevant conditions of the Infrastructure Approval. Key activities include: • environmental investigations, including biodiversity and heritage protection, salvage and recordings; • Aboriginal heritage assessment, mitigation (ie exclusions zones) and salvage activities, including subsurface testing/test excavation, additional survey, and consultation with RAPs;

Key activity	Description of key activity
	• other survey work, such as road dilapidation surveys, and surveys of the general alignment and existing utilities; • installation of environmental management measures, fencing, enabling works; • connections and pre-commissioning of utilities (wastewater treatment plant, electrical power, lighting etc.).
Continuation of any outstanding Stage 1 construction activities	Construction activities undertaken during Stage 1 of the project will continue where required. This includes, but is not limited to continuation of the following activities: • any outstanding construction earthworks activity at the Buronga substation; • operation of the Buronga earthworks material site, including the crushing and screening plant, where required; • operation of the Buronga construction compound including offices and laydown area; and • use of access and egress points.
Establishment of Wentworth accommodation camp Establishment and operation of Wentworth construction compound	The main activities that would be undertaken at the Wentworth accommodation camp and construction compound include: • clearing of vegetation within the disturbance area; • clearing and removal of topsoils. Topsoil would be stockpiled on site for later reuse; • establishing the Wentworth accommodation and associated facilities, site offices, amenities, wastewater treatment plant, power generators, hazardous material and fuel storage area, and internal roads; and • establishing and operating Wentworth construction including but not limited to amenities compound site offices, concrete batching plant, internal roads and other ancillary facilities.
Buronga substation upgrade and expansion	The existing Buronga 220kV substation would be upgraded and expanded to add a new 330kV substation on the land parcel adjacent to the existing 220kV substation. The upgrade and expansion of the Buronga substation would consist of the following key activities in addition to the works undertaken during Stage 2 of construction: • civil works including: – underground mesh installation (earthing grid); – foundation and footing works for the electrical equipment; and – installation of the synchronous condenser (SynCon) building slab; • mechanical works including: – erection of the SynCon, transformers, shunt reactor and capacitor banks; – installation of oil treatment; – gantry erection; – installation of electrical equipment; – installation of supporting steel structure; – overhead HV cables and cable pulling; – switchyard building installation (including control equipment); and – construction of the SynCon building; • electrical works including: – LV cable pulling, cable dressing and terminations; and – outdoor installation of the lighting system.
Establishment ancillary facilities along the transmission line corridor	A number of minor staging, storage and laydown ancillary areas would be required within the project corridor for temporary storage of materials, plant and equipment required to construct the various elements of the proposal (in particular transmission line structures). Some temporary mobile batching

Key activity		Description of key activity
		plant locations may also need to be established to enable for easily access to concrete. Upon completion of works, these ancillary sites would be cleared of any temporary infrastructure and equipment, and rehabilitated. These sites would be in place for shorter periods at locations suitable to support the construction works as they move along the alignment.
Property adjustment work, including adjustments to property fencing		Installation or adjustment of gates and fences would be required at some locations along the alignment to enable access from the nearest roadway to construction areas. These would be constructed in consultation with the relevant council and/or affected landholder.
Water supply points – establishment and/or use		A series of water supply points have been identified as suitable connection points to existing water supply pipelines. The proposed water supply points which are to be established and / or used include: • Alcheringa Drive, Buronga; • Modica Crescent, Buronga; • Fletchers Lake Drive, Dareton; • Beverley Street, Wentworth; and • 690 Pomona Road, Pomona/Oxley Drive, Pomona.
Construct access points		The establishment of access points would include: • establishing vehicle access and egress points including adjustment of state and regional roads to ensure safe vehicle movements; and • establishing truck wheel wash or rumble grids. The definition of construction within the Infrastructure Approval does not include road upgrades (which includes access points). Road upgrade works are, however, incorporated within the Traffic and Transport Management Plan as required by condition D40 b).
Construct access tracks		Access to each tower would be required during construction. Access tracks would be required to be traversable by a range of vehicles. Access tracks would fall into two broad groups: • un-improved access tracks - using existing roads or tracks, or driving on existing soil or ground surface with minimal or no prior preparation; and • constructed access tracks – around six metres wide and would generally follow the natural contour of the land as far as practicable to minimise the amount of cut and fill and soil disturbance. Access tracks would also include drainage control features such as table drains or cross banks to minimise erosion. Constructed access tracks would be required in areas, outside identified heritage risk zones, where there are no existing roads or tracks, or where terrain conditions prevent continuous access along the line easement between road crossings.
Temporary works		The project will require a significant quantity of temporary works during construction. Temporary works will be undertaken outside identified heritage risk zones. The temporary works will includes, but not limited to, the following: • earthworks, including trenches, excavations, temporary slopes, stockpiles, and embankments; • structures, such as formwork, shoring, edge protection, temporary bridges, solid fencing/guardrails/barriers and signage, temporary scaffold; and • equipment/plant foundations, such as work platforms, crane, and piling platforms.
Transmission line construction	Earthworks and transmission tower	Excavation works and establishment of construction pads at each tower site would be required for the installation of foundations, levelling around the individual tower foundations, drainage and grading or preparation for

Key activity		Description of key activity
	footing construction	construction at the tower site. Excavations would typically be up to five metres in depth. Construction of footings and foundation works for the new transmission line towers includes: • piling. Typical transmission line tower piling depth would be generally up to 6-15 metres below ground level and would depend on ground conditions (e.g. greater piling depths would be required where soft soil types are present). The foundation type would also vary (subject to detailed design) but would consist of either: – bored pile (reinforced concrete); – driven or screw pile (concrete or steel); and – helical screw anchor, or cast in-situ reinforced concrete; • excavation to create bench sites (stepped ground excavation) where required to provide a level platform for equipment setup, the erection of the tower and other construction activities. Benching would be constructed by use of earthing equipment such as graders and excavators; • steel fabrication works; and • concrete pours.
	Assembly and erection of transmission line towers	The transmission line towers would typically be erected by assembling in sections on the ground and hoisting or lifting successive sections into place using cranes. Alternatively, towers may be erected in place on the footings by installing individual members. These towers would include infrastructure such as step bolts, climbing attachment plates, ladders, platforms, climbing barriers, identification plates, warning plates, other fixtures and fittings for the attachment of earth wires and insulators.
	Stringing of transmission lines including conductors and overhead earth wires and optical ground wire	Following erection and securing of the tower, the transmission line would be strung by either a ground pulled draw wire (with brake/winch sites) or a line stringing drone. The area required for the construction of each tower would require access for tower assembly and stringing works. Where a transmission tower is proposed to allow for a direction change of the transmission line, a larger area would be required (to allow for brake and winching sites). At a typical site, this would include a temporary area of up around 60 metres by 80 metres at each transmission line tower location. Stringing of transmission line would also be required across the following three major watercourses: • the Great Darling Anabranch, Wentworth NSW; • Darling River, Ellerslie NSW; and • Murray River, Monak NSW / Red Cliffs Victoria. The general construction methodology is to assemble and erect a transmission line structure on either side of each major river crossing. A drone would then be used to take a lead wire over the river to allow cables to then be pulled and strung tower to tower.
	Installation of earthing conductors	The following key activities will be undertaken: • installation of earthing conductors at each of the transmission tower arms; and • installation of earthing or isolation sections of fences and gates where the transmission line crosses or closely runs parallels to a metallic fence.
Utility works, adjustments and protection		Utility adjustment works would be required to convert several overhead distribution powerlines up to and including 66kV to underground cables. The existing alignment of the Broken Hill transmission line would require relocation at two locations. This would comprise of: • a permanent relocation of the existing transmission line in the vicinity of the Darling River. This would require the construction of two new

Key activity	Description of key activity
	monopoles, and the stringing of conductors/earth wires between the existing and new structures. The redundant tower would be decommissioned; and • a temporary relocation of a section of the existing transmission line that currently passes through the existing Buronga substation. This would be temporarily relocated around 200 metres to the east of its current alignment (along the eastern boundary of the existing substation site). Once the construction works to upgrade the substation are completed, the alignment of the 220kV Broken Hill line would be restored in a location generally consistent with the original line location. General utility protection and adjustment works, where required, to allow for the Buronga substation expansion and upgrade works to occur, the establishment and operation of the construction compound and accommodation camps, and where else required.
Decommissioning of existing infrastructure	Decommissioning and removal of: • the existing 220 kV transmission line between Buronga substation and the NSW / Victoria border; • the temporary bypass transmission line infrastructure installed to allow construction of the new double circuit 220kV line; and • a single tower on the existing 220kV Broken Hill line in the vicinity of the Darling River.
Progressive site rehabilitation and landscaping	Site rehabilitation would be carried out progressively along completed sections of the transmission line as well as the expanded substation site. These activities includes: • removal of redundant environmental controls within the transmission tower footprint; and • removal of temporary equipment and machinery.

Some activities nominated in this stage will have already commenced as part of the pre-construction minor works permitted in accordance with the Infrastructure Approval. Following approval of the CEMP for Stage 2, these works remain excluded from the definition of 'construction' and will therefore not be subject to the Stage 2 CEMP and this NVMP.

1.4 Environmental management system

The overall environmental management system for the project is described in Section 4 of the CEMP.

This NVMP is a sub-plan that forms part of the CEMP and is also part of the environmental management framework for the project, as described in the CEMP. Figure 1.1 shows the CEMP framework for the project.

Management measures identified in this plan will be incorporated into relevant site-based documents including, but not limited to, site or activity specific work packs or work method statements (WMSs), sensitive area plans (SAPs) or training and awareness material.

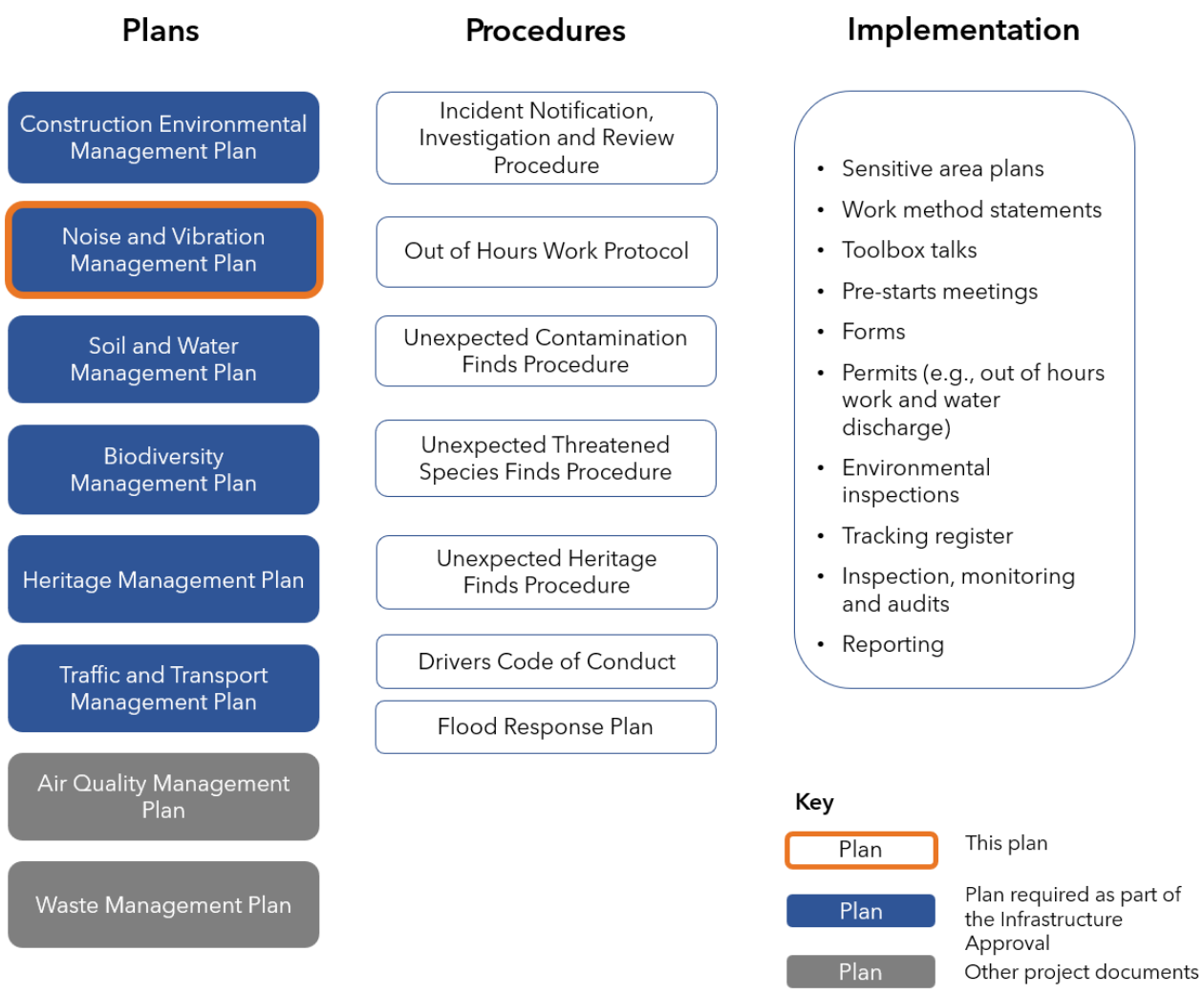

Figure 1.1 - CEMP framework

1.5 Purpose and objective

The purpose of this NVMP is to describe the approach to manage noise and vibration impacts that will be adopted during construction of the project.

The key objective of this plan is to detail management measures and inform site procedures for implementation so that noise and vibration impacts are minimised. To achieve this the following will be undertaken:

- implement appropriate measures to address the requirements outlined in the Infrastructure Approval, EIS and Response to DPIE Request for Information;
- implement appropriate measures during construction to minimise potential noise and vibration impacts to sensitive receivers; and
- implement appropriate measures to comply with relevant legislative requirements as described in Section 2.1 of this plan.

As a means of assessing environmental performance, environmental objectives (performance measures), targets (criteria) and performance indicators have been established for the project and are provided within Table 4.2 of the CEMP. All performance measures and indicators are applicable to the project, however, those most relevant to noise and vibration are detailed in Table 1.2.

Table 1.2 - Environmental objectives, targets and performance indicators relevant to noise and vibration

Aspect	Objectives (performance measures)	Targets (criteria)	Performance indicators
Compliance	Implement and comply with the CEMP and associated management plans	• Zero non-compliances identified during each compliance audit of CEMP and sub-plans	Number of non-compliance arising from each audit.
Engage with stakeholders and the broader community, minimise complaints and respond to any complaints within a suitable timeframe	Disseminate regular project updates and other information to keep the community informed of the project, particularly out of hours works. Record and respond to complaints, including noise and vibration complaints, within a timely manner.	• All project updates provided within the timeframes specified within the Community Communication Strategy. • All complaints are reviewed within the timeframes specified within the Community Communication Strategy.	Timeliness of project updates per project website; and timeliness of complaints response as recorded in the complaints register.
Training and improvement	Provide adequate training to ensure construction activities are undertaken safely and with minimal risk to the environment. Continuously improve environmental performance	• Regular environmental training that focuses on the specific project activities and associated environmental risks. • Regular pre-start meetings and toolbox talks in accordance with Section 6.	Records of inductions, toolbox talks with environmental focus, daily pre-start meetings.

1.6 Preparation of this plan

In accordance with condition B6 of the Infrastructure Approval, this plan has been prepared and reviewed by a suitably qualified and experienced person. This plan was prepared by Alison Kriegel and reviewed by Rebecca Walker-Edwards. Mattia Tabachi (Renzo Tonin) has had input into this plan.

Alison Kriegel has over 15 years of construction environmental management experience, including the preparation of management plans in a range of State significant infrastructure projects. Rebecca Walker-Edwards is a specialist in the post-approval process for major infrastructure projects and has over 25 years of experience and has been involved in the preparation and review of an extensive range of major infrastructure projects in NSW.

Mattia Tabacchi is suitably qualified and experienced in the field of noise and vibration. Mattia has over 12 years of experience in environmental and building acoustics including an extensive range of major infrastructure projects in Australia.

1.7 Consultation

1.7.1 Development of this plan and the Out of Hours Works Protocol

In accordance with condition B2 a) and condition D3 of the Infrastructure Approval, this plan and the Out of Hours Works Protocol (OOHW Protocol) have been prepared in consultation with Wentworth Shire Council (council). This plan and the OOHW Protocol were issued to Council for review and comment. Despite requests for comments, no comments were received from Wentworth Shire Council in relation to the Noise and Vibration Management Plan or the OOHW Protocol. During council's review of the OOHW Protocol, council confirmed that they had no comments. Details of all correspondence and consultation which occurred with council were submitted to DPE along with the submission of this management plan.

1.7.2 Negotiated agreements

In accordance with condition D2 c) of the Infrastructure Approval, an agreement with sensitive receivers (owners and occupiers) may be negotiated to carry out works in accordance with the hours and noise limits specified in the agreement.

Where multiple receivers are affected by works, a substantial majority of the receivers must agree to the specified hours and noise limits proposed by the project.

All negotiated agreements will be in writing and will be finalised before the commencement of relevant works.

1.7.3 Consultation with affected receivers regarding mitigation measures

Where construction activities are required that may generate noise levels that are likely to exceed the relevant noise management levels at any sensitive receivers, additional noise assessment(s) will be undertaken (refer to Section 7.1). If exceedances are confirmed, consultation with affected receivers will be carried out to understand the affected receiver's preferences for mitigation and management measures as required by RMM NV4.

Previous feedback received during consultation may be applied to subsequent, similar scenarios.

1.7.4 Consultation with affected receivers regarding noise intensive equipment outside of standard construction hours

Where noise intensive equipment (Section 4.8) is likely to result in an exceedance of the applicable noise management levels at sensitive receivers outside of standard construction hours (refer Section 4.1), consultation with affected sensitive receivers regarding use of the proposed noise intensive equipment will take place in accordance with the OOHW Protocol (Appendix A).

1.7.5 Ongoing communication and consultation

Elecnor will use a range of tools in accordance with the Community Communication Strategy (CCS) (45860-CM-PL-G-1001) to facilitate ongoing consultation and communication with the community and stakeholders regarding the project. Communication tools include, but are not limited to, stakeholder briefings, project website, community drop-in sessions via the project's mobile van, door knocks and project factsheets. Notifications will be issued for, but not limited to following, commencement of construction, significant milestones and changes to the scope of work. Refer to the CCS for further information.

In accordance with condition E12 a) of the Infrastructure Approval, project documents including the EIS, approved strategies, plans or programs required under the conditions of approval and independent reports will be publicly available on the project website. The project website is https://www.projectenergyconnect.com.au. A 24-hour toll-free telephone number (1800 490 666) is also available for any project enquiries.

1.7.6 Complaints

Complaints will be managed by the Engagement Team with the use of the Sales Force database. Complaints will be received via phone calls, emails and letters. Any complaint received is regarded as a high priority and will be recorded, tracked and responded to in accordance with the CCS. Complaints will be investigated and dealt with impartially. The key principles of the complaint management process include:

- acknowledge - Elecnor staff should respect the communities' right to voice their concerns. All complaints received should be acknowledged to the complainant either by telephone or in writing;

- resolve - Elecnor staff should aim at first contact, resolution for all community concerns. Elecnor staff should investigate community concerns in detail before negotiating a resolution. All Elecnor staff should use their relevant discretions to achieve a mutually acceptable resolution to complaints;
- escalate - all Elecnor staff should aim to escalate the complaint if the community member remains dissatisfied with the investigation and/or resolution offered by their first point of contact at Elecnor. All complaints where community request to speak to a higher-level representative, should also be escalated;
- record - Elecnor staff should aim through the Engagement Team at recording all relevant information, on the community account in Sales Force, regarding customer concerns along with details of all discussions had with the community member in the process of investigating and/resolving the complaint. Detailed information on the resolutions offered to address community concerns should also be clearly recorded;
- communicate - Elecnor staff should remain in constant touch with the community member while their concerns are being investigated. The community member should be informed of all steps of the investigation and the resulting outcome at appropriate times;
- report - Elecnor should report on all complaints received to the Elecnor Management Team and Transgrid. The reporting should include information on the number as well as type of complaints being received, the status of these complaints from time to time and the resulting outcomes or resolutions offered to close them;
- feedback - the Elecnor Engagement Team should aim at regular and intensive reviews to identify possible trends in the complaints being received. These reviews should be aimed at highlighting improvements required to avoid complaints being repeated;
- action - Elecnor should aim at effective implementation of improvements suggested directly by the community or highlighted by complaint trends.

Wherever possible, complaints will be resolved directly between Elecnor and the stakeholder. If a complaints management process has been followed and the issue cannot be resolved, dispute resolution will be undertaken in accordance with the CCS. As part of this, a Community Complaints Mediator will be engaged to address any complaint where a member of the public is not satisfied by Elecnor's response. The escalated review process will include an assessment of the details of the complaint received, any findings of the investigation undertaken in response to the complaint, and any further matters raised by the complainant.

If a complaint requires referral to senior management and Transgrid, the complainant will be informed of this and the outcome of the review process. DPE may also request that the Environmental Representative (ER) assist in dispute resolution of community complaints.

All complaints will be provided to the ER and a summary of complaints received, such as a complaints register, will be updated monthly on the project website in accordance with condition E12.

1.8 Submission and approval

Prior to submission to DPE, the NVMP was reviewed by the ER to ensure that the plan was consistent with the requirements of the Infrastructure Approval. A written statement to this effect was prepared and submitted to DPE. This review was undertaken in accordance with condition A19 of the Infrastructure Approval.

This NVMP was submitted to DPE for review and approval by the Planning Secretary prior to the commencement of Stage 2 of construction.

Stage 2 of construction did not commence until the CEMP and all sub-plans required under condition B2, or where staging is proposed the plans required for that stage, were approved by the Planning Secretary. The approved NVMP will be implemented for the duration of the Stage 2 construction activities.

1.9 Periodic review

This NVMP will be reviewed at least annually in accordance with Section 1.10 of the CEMP – Updating the CEMP. Any updates to the NVMP will be approved as described in Section 1.0 of the CEMP. This includes the review and, if necessary, revision of this Noise and Vibration Management Plan within three months of the following:

- submission of an incident report under condition E6 of the Infrastructure Approval;
- submission of an audit report under condition E11 of the Infrastructure Approval; or
- any modifications to the Infrastructure Approval.

Any updates to the NVMP will be approved as described in Section 1.10 of the CEMP.

2 Environmental requirements

2.1 Legislation

Legislation relevant to the management of noise and vibration includes:

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

Relevant provisions of the above legislation are detailed within the register of legal and other requirements included in Appendix A1 of the CEMP. The legislation relevant to noise and vibration is replicated in Appendix B of this NVMP.

2.2 Conditions of Approval

The conditions of the Infrastructure Approval relevant to noise and vibration for Stage 2 of the project are presented in Table 2.1. A cross reference is also included to indicate where the condition is addressed within this plan or other project management documents.

Table 2.1 - Conditions of Approval relevant to noise and vibration

<table>
<tr><th>Condition no.</th><th>Requirement</th><th>Where addressed</th><th>How addressed</th></tr>
<tr><td>A1</td><td>In meeting the specific performance measures and criteria of this approval, all reasonable and feasible measures must be implemented to prevent, and if prevention is not reasonable and feasible, minimise, any material harm to the environment that may result from the construction, operation, rehabilitation, upgrading or decommissioning of the development.</td><td>Section 7</td><td>Section 7 identifies the management measures to be implemented to prevent and if prevention is not reasonable and feasible, minimise harm.
Additional mitigation measures have been included within the OOHW Protocol in Appendix A.</td></tr>
<tr><td>B1</td><td>Prior to commencing construction, a Construction Environmental Management Plan (CEMP) must be prepared to detail how the performance outcomes, commitments and mitigation measures specified in the EIS will be implemented and achieved during construction to the satisfaction of the Planning Secretary.</td><td>Section 2.3
Section 7
The CEMP</td><td>The CEMP has been prepared and will be implemented during construction. The CEMP incorporates and responds to relevant conditions of the Infrastructure Approval and RMMs identified in the EIS, Submissions Report, Amendment Report and Response to DPIE Request for Information.
Section 2.3 and Section 7 of this NVMP describe how the commitments of the EIS relevant to noise and vibration will be implemented.</td></tr>
<tr><td>B2</td><td>The following CEMP Sub-plans must be prepared in consultation with the relevant government agencies identified for each CEMP Sub-plan in Table 1.
Table 1: CEMP Sub-plans<table><tr><th></th><th>Required CEMP Sub-plan</th><th>Relevant government agencies and stakeholders to be consulted for each CEMP Sub-plan</th></tr></table></td><td>Section 1.7</td><td>This NVMP was provided to Wentworth Shire Council for consultation. Council has reviewed and confirmed that they had no comment for the Stage 2 NVMP.</td></tr>
</table>

Condition no.	Requirement	Where addressed	How addressed
	(a) Noise and Vibration — Council		
B3	Details of all information requested by an agency to be included in a CEMP Sub-plan as a result of consultation must be provided with the relevant CEMP Sub-Plan.	Section 1.7	This NVMP has been developed in consultation with Wentworth Shire Council. Details of all consultation with Wentworth Shire Council will be submitted to DPE along with the submission of this NVMP.
B4	Any of the CEMP Sub-plans may be submitted along with, or subsequent to, the submission of the CEMP but in any event prior to commencing construction.	Section 1.8	This NVMP was submitted as a CEMP Sub-Plan to DPE for review and approval by the Planning Secretary prior to commencing Stage 2 of construction.
B5	Construction must not commence until the CEMP and all CEMP Sub-plans have been approved by the Planning Secretary. The CEMP and CEMP Sub-plans, as approved by the Planning Secretary, must be implemented for the duration of construction. Where construction of the development is staged, construction of a stage must not commence until the CEMP and sub-plans for that stage have been approved by the Planning Secretary.	Section 1.8	Stage 2 of construction commenced after the CEMP and all CEMP Sub-plans (including this NVMP), or where staging was proposed and the plans required for that stage, were approved by the Planning Secretary. The CEMP and CEMP Sub-plans (including this NVMP) will be implemented for the duration of construction for Stage 2.
B6	The CEMP and CEMP Sub-plans required under this approval must be prepared by suitably qualified and experienced persons in accordance with relevant guidelines, and include where relevant:	Title page Section 1.6	This NVMP has been jointly prepared by suitably qualified and experienced people and in accordance with relevant guidelines.
	a) a summary of relevant background or baseline data;	Section 3	The existing known noise and vibration environment adjacent to the Stage 2 disturbance area is outlined in Section 3.
	b) details of:		
	(i) the relevant statutory requirements (including any relevant approval or licence conditions);	Section 2 Appendix B	The relevant legislation, conditions, RMMs and guidelines applicable to noise and vibration are outlined in Section 2. Appendix B provides further detail on the relevant legislation applicable to heritage.
	(ii) any relevant limits or performance measures and criteria; and	Section 4 Section 1.5 Section 4.2 of the CEMP – Objectives and targets	Section 4 identifies specific noise and vibration criteria for the project. Further to this, the objectives (performance measures) and targets (criteria) relevant to noise and vibration management are outlined in Section 1.5 of this NVMP. The CEMP also provides project-wide environmental objectives (performance measures) and targets (criteria).

Condition no.	Requirement	Where addressed	How addressed
	(iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;	Section 1.5 Section 4.2 of the CEMP – Objectives and targets	The performance indicators relevant to noise and vibration management are outlined in Section 1.5 of this NVMP. The CEMP also provides project-wide performance indicators.
	c) any relevant commitments or recommendations identified in the EIS;	Section 2.3	Relevant noise and vibration commitments and recommendations identified in the EIS, known as RMMS, have been outlined in Section 2.3.
	d) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	Section 7	Specific noise and vibration related safeguards and management measures to address potential impacts associated with Stage 2 of construction and comply with the relevant statutory requirements, limits and performance measures are outlined in Section 7.
	e) a program to monitor and report on the:		
	(i) impacts and environmental performance of the development (including a table summarising all the monitoring and reporting obligations under the conditions of this approval); and	Section 8, including; Section 8.3 Section 8.4 Section 8.5 Section 8.6	Monitoring, inspections, auditing and reporting is outlined in Section 8.3 to 8.6 of this NVMP.
	(ii) effectiveness of the management measures set out pursuant to paragraph (d);	Section 8	Monitoring of the effectiveness of the management measures is outlined in Section 8 through compliance management.
	f) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;	Section 8.8 Section 8 of the CEMP- Incidents and emergencies Section 10 of the CEMP - Reporting Section 11 of the CEMP – Non-compliance, non-conformance, corrective and preventative action	Section 8.8 outlines a contingency plan in the event that unpredicted impacts are identified. The CEMP also provides additional detail regarding incidents and emergencies, reporting, non-compliance, non-conformance, corrective and preventative actions.
	g) a program to investigate and implement ways to improve the environmental performance of the development over time;	Section 1.9 Section 8 Section 1.9 of the CEMP – Continuous improvement	Section 8 of this NVMP outlines procedures for compliance management, including details for monitoring, inspections, auditing and reporting. Actions to undertake in the event that monitored noise levels exceed the modelling predictions are identified in Section 8.8 of this NVMP.

Condition no.	Requirement	Where addressed	How addressed
			This NVMP will reviewed at least annually as described in Section 1.9 of this NVMP. The Plan-Do-Check-Act model will be applied to the continuous improvement process, also outlined in Section 1.9 of the CEMP.
	h) a protocol for managing and reporting any: (i) incident, non-compliance or exceedance of any impact assessment criterion and performance criterion;	Section 8.7 Section 8.8 Section 8 of the CEMP – Incidents and emergencies Section 10 of the CEMP – Reporting Section 11 of the CEMP – Non-compliance, non-conformance, corrective and preventative action	Section 8.7 and 8.8 describe the procedures for emergencies, incidents and non-compliances, including those related to noise and vibration. Actions to undertake in the event that monitored noise levels exceed the modelling predictions are identified in Section 8.8 of this NVMP. Additional detail for managing incidents and emergencies, non-compliances and non-conformances is included in the CEMP. The protocol for reporting of any incidents, non-compliances or non-conformances is included in Section 10 of the CEMP.
	(ii) complaint; or	Section 1.7.5 Community Communication Strategy	A summary of the complaints management procedure and reporting of complaints is included in Section 1.7.5 of this NVMP. The procedure for managing and reporting any complaints is described in the *Enquiries, Complaint and Dispute Resolution Management Procedure* provided in the CCS. The procedure includes a complaints management process which outlines how Elecnor will respond to complaints related to the project. In the event of a noise and vibration related complaint, the complaints management process will be implemented.
	(iii) failure to comply with other statutory requirements;	Section 8.7 Section 8 of the CEMP – Incidents and emergencies Section 10 of the CEMP – Reporting Section 11 of the CEMP – Non-compliance, non-conformance, corrective and	In the event of failure to comply with statutory requirements, the procedures summarised in Section 8.7 of this NVMP and described in more detail in the CEMP would be followed.

Condition no.	Requirement	Where addressed	How addressed
		preventative action	
	i) set out the procedures that would be implemented to: (i) keep the local community and relevant agencies informed about the construction and environmental performance of the development;	Section 1.7 Community Communication Strategy	The local community and relevant agencies will be kept informed of construction progress and environmental performance through communication tools such as notifications, the project's mobile van and the project website as summarised in Section 1.7 of this NVMP. Detailed information regarding project communication is found in the CCS.
	(ii) receive, handle, respond to, and record complaints;	Section 1.7 Community Communication Strategy	Section 1.7.5 of this NVMP summarises the complaints management system, which includes a process to manage complaints including receiving, recording, tracking and responding to complaints within a defined timeframe. The complaints management system is described in detail in the CCS.
	(iii) resolve any disputes that may arise;	Section 1.7.5 Community Communication Strategy	Section 1.7.5 of this NVMP describes dispute resolution, which is described in detail in the CCS. Wherever possible, complaints will be resolved directly between Elecnor and the stakeholder.
	(iv) respond to any non-compliance;	Section 8.7 Section 10.1 of the CEMP – Reporting non-compliances Section 11 of the CEMP – Non-compliance, non-conformance, corrective and preventative action	Section 8.7 of this NVMP outlines that where a non-compliance has been identified, corrective actions will be developed as required and implemented to address the non-conformance that occurred (as described in more detail in the CEMP). Reporting of non-compliances will be undertaken as described in the CEMP.
	(v) respond to emergencies; and	Section 8.7 Section 8.1 of the CEMP – Emergency preparedness and emergency responses	Emergency management and planning including environmental emergencies related to noise and vibration will be undertaken in accordance with the Elecnor management system and relevant procedures as described in Section 8.7 of this NVMP. Additional detail regarding emergency management is described in the CEMP.
	j) a description of the roles and environmental responsibilities, authority and accountability for all relevant	Table 7.1 Section 8.1 Section 8.2	Section 8.2 identifies that Elecnor's organisational structure and overall roles and responsibilities are outlined in the CEMP.

Condition no.	Requirement	Where addressed	How addressed
	employees, as well as training and awareness; and	Section 4.9 of the CEMP – Roles and responsibilities	Specific responsibilities for the implementation of mitigation measures are detailed in Table 7.1 of this NVMP. Training and awareness for all site personnel is outlined in Section 8.1.
	k) a protocol for periodic review of the CEMP and associated Sub-plans and programs.	Section 1.9 Section 1.10 of the CEMP – Updating the CEMP	This NVMP will be reviewed at least annually in accordance with the CEMP.
	The Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.	Noted	Noted
D1	Road upgrades, construction, upgrading and decommissioning activities may only be undertaken between: a) 7 am to 6 pm Monday to Friday; b) 8 am to 1 pm Saturdays; and c) at no time on Sundays and NSW public holidays; unless the Planning Secretary agrees otherwise.	Section 4.1	The standard construction hours for the project are identified in Section 4.1
D2	The following construction, upgrading and decommissioning activities may be carried out outside the hours specified in condition D1 above: a) the delivery or dispatch of materials as requested by the NSW Police Force or other public authorities for safety reasons; b) emergency work to avoid the loss of life, property or to prevent material harm to the environment; or c) works carried out in accordance with the hours and noise limits specified in any negotiated agreements with sensitive receivers (owners and occupiers), provided the negotiated agreements are in writing and finalised before the commencement of works.	Section 4.1 Section 1.7.3 Table 7.1 – N14	The permitted variations to the standard construction hours are identified in Section 4.1 Agreements may be sought with sensitive receivers to undertake works in accordance with negotiated hours and noise limits as identified in Section 1.7.2.
D3	An Out-of-Hours Work Protocol must be prepared to identify a process for the consideration, management and approval of works which are outside the hours defined in conditions D1, D2 and D7. The Protocol must be approved by the Planning Secretary before commencing works. The Protocol must: a) be prepared in consultation with Council; b) provide a process for the consideration of out-of-hours works against the relevant noise and vibration criteria,	Appendix A	An OOHW Protocol has been prepared to satisfy this requirement. It has been prepared in consultation with Wentworth Shire Council and has been included in Appendix A of the Stage 2 NVMP. Council has reviewed the Stage 2 NVMP and had no comments on the OOHW Protocol.

Condition no.	Requirement	Where addressed	How addressed
	including the determination of low and high-risk activities; c) provide a process for the identification of mitigation measures for potential impacts, including respite periods in consultation with any affected receivers; d) provide a process for the identification of out-of-hours works undertaken by third parties in the vicinity of the site, and coordination of out-of-hours works with these third parties to achieve respite periods in locations where receivers may be affected by concurrent activities; e) identify an approval process that considers the risk of activities, proposed mitigation, management, and coordination, including where: • low risk activities can be undertaken without the approval of the Planning Secretary and with the approval of the ER; and • high risk activities that are approved by the Planning Secretary; and f) identify Department, Council and community notification arrangements for approved out of hours work.		
D4	The Proponent must take all reasonable and feasible steps to minimise the construction, upgrading or decommissioning noise of the development in the locations where the noise is audible to sensitive receivers, including any associated traffic noise.	This NVMP, particularly Section 7	Section 7 provides the management measures to minimise noise impacts on sensitive receivers.
D5	The Proponent must implement mitigation measures:		
	a) to ensure that the noise generated by any construction, upgrading or decommissioning activities is managed in accordance with the requirements for construction 'noise affected' management levels established in accordance with *Interim Construction Noise Guideline* (DECC, 2009); and	Section 4.1 Section 6.2 Section 7	Construction 'noise affected' management levels are described as project 'noise management levels' throughout this NVMP and have been established in accordance with the ICNG as identified in Section 6.2. In line with the ICNG, where predicted or measured noise levels exceed the noise management level (refer to construction noise impacts in Section 6.2), feasible and reasonable work practices will be identified and implemented, such as those included in Section 7.
	b) with the aim of achieving the road traffic noise assessment criteria for residential land uses from *NSW Road Noise Policy* (DECCW, 2011).	Section 4.7 Section 6.4 Table 7.1- N7B	The road traffic noise assessment criteria is described in Section 4.7. A consideration of construction road traffic noise is presented in Section 6.4.

<table>
<tr><th>Condition no.</th><th>Requirement</th><th>Where addressed</th><th>How addressed</th></tr>
<tr><td></td><td></td><td></td><td>Measures to minimise the impacts of construction road traffic are identified in Table 7.1.</td></tr>
<tr><td>D6</td><td>The Proponent must comply with the following vibration limits:
a) vibration criteria established using the Assessing vibration: a technical guideline (DEC, 2006) (for human exposure);
b) BS 7385 Part 2-1993 “Evaluation and measurement for vibration in buildings Part 2” as they are “applicable to Australian conditions”; and
c) vibration limits set out in the German Standard DIN 4150-3: Structural Vibration- effects of vibration on structures (for structural damage).</td><td>Section 4.6
Section 6.3</td><td>The nominated vibration criteria is described in Section 4.6.
No works proposed within Stage 2 of the project that require vibration generating plant within the minimum working distances to relevant vibration sensitive receivers as described in Section 6.3.</td></tr>
<tr><td>D7</td><td>Blasting may only be carried out on the site between 9 am and 5 pm Monday to Friday and between 9 am to 1 pm on Saturday. No blasting is allowed on Sundays or public holidays.</td><td>N/A</td><td>Not applicable to Stage 2.
No blasting is proposed.</td></tr>
<tr><td>D8</td><td>The Proponent must ensure that any blasting carried out on the site does not exceed the criteria in Table 2.
Table 2: Blasting criteria
<table>
<tr><th>Location</th><th>Airblast overpressure (dB(Lin Peak))</th><th>Ground vibration (mm/s)</th><th>Allowable exceedance</th></tr>
<tr><td rowspan="2">Any non-associated residence</td><td>120</td><td>10</td><td>0%</td></tr>
<tr><td>115</td><td>5</td><td>5% of the total number of blasts or events over a rolling period of 12 months</td></tr>
</table></td><td>N/A</td><td>Not applicable to Stage 2.
No blasting is proposed.</td></tr>
<tr><td>D9</td><td>The Proponent must implement all reasonable and feasible measures with the aim of ensuring that the noise generated by the operation of the development does not exceed 40 dB(A) LAeq,15min, at the reasonably most affected point of the residence, in accordance with the NSW Noise Policy for Industry (EPA, 2017) at any non-associated residence.</td><td>N/A</td><td>Not applicable to Stage 2.
This condition is relevant to the operational phase of the project.</td></tr>
<tr><td>D10</td><td>Within 12 months of the date of this approval, the Proponent must prepare an Operational Noise Review to confirm noise predictions and control measures that would</td><td>N/A</td><td>Not applicable to Stage 2.
This condition is relevant to the operational phase of the project.</td></tr>
</table>

Condition no.	Requirement	Where addressed	How addressed
	be implemented for the operation of the development. The Review must: a) be prepared by a suitably qualified and experienced person whose appointment has been endorsed by the Planning Secretary; b) be prepared in consultation with the landowner of impacted residences; c) identify receivers predicted to experience noise levels that exceed 40 dB(A) LAeq, 15min at the reasonably most affected point of the residence, determined in accordance with the *NSW Noise Policy for Industry* (EPA, 2017); d) detail the noise mitigation measures to achieve the noise criteria identified, including the timing of implementation; e) provide evidence of consultation with affected landowners; f) include a consultation strategy to seek feedback from directly affected landowners on the noise mitigation measures; and g) identify procedures for the management of operational noise complaints. The Proponent must implement any identified mitigation measures prior to the commencement of operation.		
D11	Within 6 months of the commencement of operations (or the commencement of operation of a stage, if the development is to be staged), the Proponent must: a) undertake noise monitoring to determine whether the development is complying with the relevant conditions of this approval; and b) submit a copy of the monitoring results to the Department.	N/A	Not applicable to Stage 2. This condition is relevant to the operational phase of the project.
D12	The Proponent must undertake further noise monitoring of the development if required by the Planning Secretary.	N/A	Not applicable to Stage 2. This condition is relevant to the operational phase of the project.
D13	The Noise and Vibration CEMP Sub-Plan required under condition B2 must:		
	a) ensure the requirements in conditions D1 to D12 are complied with;	Refer above for conditions D1 to D12.	Refer above for conditions D1 to D6. Conditions D7 to D8 are not applicable as no blasting is proposed. Conditions D9 to D12 are not applicable as they relate to operational requirements.
	b) include a description of the reasonable and feasible measures that would be	Table 7.1	Management and mitigation measures implemented to

Condition no.	Requirement	Where addressed	How addressed
	implemented to minimise noise and vibration impacts of the development;		minimise noise and vibration impacts of the project are included in Section 7, particularly Table 7.1.
	c) include a detailed description of the noise and vibration management system for the development;	This NVMP, particularly Section 7 and Section 8	The noise and vibration management system is described throughout this NVMP, particularly the management and mitigation measures included in Section 7, and the compliance management included in Section 8.
	d) include a protocol for the identification, notification and management of works that exceed the noise management levels; and	Section 7.1 Table 7.1 Section 8.3 Community Communication Strategy Appendix A	A protocol for the management of activities that could result in noise levels that exceed the noise management levels at sensitive receivers is identified in Section 7.1. Notification, as required, will be undertaken in accordance with the Community Communication Strategy. Works would be managed in accordance with the management measures identified in Table 7.1 and monitored as described in Section 8.3. Any works undertaken outside the hours identified in conditions D1, D2 and D7, including those that could exceed the noise management levels, would be undertaken in accordance with the OOHW Protocol in Appendix A.
	e) include a monitoring program that evaluates and reports on the effectiveness of the noise and vibration management system.	Section 8.3 Section 8.4 Section 8.6	The effectiveness of the management measures identified in Section 7 of this NVMP will be monitored and reported through the program provided in Sections 8.3, 8.4 and 8.6

2.3 Revised mitigation measures

The revised mitigation measures (RMMs) for the project are defined in Appendix G of the Response to DPIE Request for Information. The RMMs relevant to noise and vibration management are presented in Table 2.2 below.

A cross reference is also included to indicate where the measure is addressed within this plan or other project management documents. The management measures that will be implemented for the project are provided in Section 7 of this plan.

Table 2.2 - Revised mitigation measures relevant to noise and vibration

Reference	Revised mitigation measures	Application location(s)	Where addressed	How addressed
NV1	An Operational Noise Review will be prepared to confirm the predicted noise impacts from the proposal (based on the final detailed design) and refine the operational mitigation measures that will be implemented so operational noise impacts complies with the proposal noise trigger levels, where feasible and reasonable.	All locations	Table 7.1	An Operational Noise Review has been prepared to confirm the predicted noise impacts from the project.
NV2	Where exceedances of the proposal specific trigger noise levels are predicted, feasible and reasonable operational noise and vibration mitigation measures will be further investigated during detailed design, in consultation with the affected receivers. This may include (in order of priority): • land use planning and provision of appropriate buffer distances to increase the distance between the final transmission line alignment and the surrounding sensitive receivers and ultimately minimise the number of sensitive receivers within the audible risk noise zones • noise control at the noise source • noise control along the noise transfer path, such as noise barriers • noise control at the receiver, such as 'at property' treatment to upgrade aspects of the dwellings including the façade or ventilation systems. Additional measures identified through this process will be implemented prior to commencement of operation.	Transmission line (330kV only)	Table 7.1	Where exceedances of the operational project trigger noise levels are predicted, feasible and reasonable operational noise and vibration mitigation measures will be further investigated during detailed design, in consultation with the affected receivers.
NV3	Construction methodologies and measures that minimise noise and vibration levels during construction will be investigated during detailed design and implemented where feasible and reasonable.	All locations	This NVMP, particularly Section 7	Measures to minimise noise and vibration levels during construction are identified in Section 7 of this NVMP.
	This will be supported through the completion of additional assessments (where construction noise levels are likely to exceed relevant noise management levels) based on the final construction methodology. This will: • consider the proposed layouts of work areas or construction compounds and accommodation camps • the noise and vibration generating activities that will take place	All locations	Section 7.1 Table 7.1	Where construction noise levels are likely to exceed relevant noise management levels, additional assessments would be undertaken.

Reference	Revised mitigation measures	Application location(s)	Where addressed	How addressed
	• assess the predicted noise and vibration levels against the relevant management levels • incorporate feasible and reasonable mitigation and management measures in accordance with the ICNG.			
NV4	Further engagement and consultation with affected receivers will be carried out to understand their preferences for mitigation and management measures where exceedances of noise management levels are predicted. Based on this consultation, appropriate mitigation and management options will be considered and implemented where feasible and reasonable to minimise the impacts.	All locations	Section 1.7.4 Table 7.1 – N6 Appendix A Community Communication Strategy	Where sensitive receivers are expected to experience noise levels that exceed the noise management levels, consultation will be carried out to understand the affected receiver's preference for mitigation and management measures. Where this work is undertaken outside of the hours identified in conditions D1, D2 and D7, consultation will be undertaken as described in the OOHW Protocol (Appendix A).
NV5	A Construction Noise and Vibration Management Plan (CNVMP) will be prepared by the construction contractor prior to construction works and will (as a minimum):	All locations	This plan	This NVMP has been prepared to satisfy RMM NV5.
	• examine feasible and reasonable noise mitigation where management levels are likely to be exceeded		Table 7.1	Measures to minimise and manage noise and vibration impacts are included in Section 7, particularly Table 7.1.
	• examine feasible and reasonable noise measures to manage traffic noise impacts on public roads where exceedances above 2 dB are identified at any sensitive receiver		Table 7.1 - N7	Mitigation measures to minimise noise levels associated with project construction road traffic are included in Table 7.1.
	• describe associated noise and vibration monitoring programs, as required		Section 8.3	A monitoring program is described in Section 8.3.
	• describe proactive and reactive strategies for dealing with any noise complaints		Section 1.7.1 Section 1.7.5	Proactive strategies to prevent complaints include

Reference	Revised mitigation measures	Application location(s)	Where addressed	How addressed
			Table 7.1 – N19 Section 8.7 Community Communication Strategy	notification and consultation with sensitive receivers. Complaints management is undertaken in accordance with the Community Communication Strategy as described in Section 1.7.5. In the event of a noise and vibration related complaint, the actions identified in the complaints management process will be implemented.
	• outline community consultation measures including notification requirements.		Section 1.7 Community Communication Strategy	Consultation and notification to be undertaken is described in Section 1.7.
	This CNVMP will be implemented for the duration of construction.		Section 1.3	This NVMP will be implemented for the duration of Stage 2 of construction.
NV6	An out of hours works (OOHW) protocol will be implemented for all construction activities likely to generate noise levels above the relevant noise management level at any sensitive receiver outside the standard construction hours defined in *Interim Construction Noise Guideline* (DECC, 2009). The OOHW protocol and will include: • details of what works are required outside standard construction hours • noise management safeguards and other reasonable and feasible mitigation and management measures (including agreement with sensitive receivers), including avoiding or minimising activities or the use of equipment likely to generate the highest noise levels, and implementing respite periods where works are likely to result in NML exceedances for sensitive receivers • community consultation procedures, including letterbox drops, notification protocols, and site contact information for the works • complaints handling procedures.	All locations	Appendix A	An out of hours works protocol has been prepared in line with condition D3 of the Infrastructure Approval and is included in Appendix A of this NVMP

Reference	Revised mitigation measures	Application location(s)	Where addressed	How addressed
	The OOHW protocol would not apply to the operation of the accommodation camps at Buronga and Wentworth.			
NV7	Where noise intensive equipment is to be used near sensitive receivers and is likely to result in an exceedance of the applicable noise management level, the works will be scheduled during standard construction hours (unless agreements with affected sensitive receivers have been reached).	All locations	Table 7.1 – N15 Appendix A	Where noise intensive equipment will be used near sensitive receivers and is predicted to result in an exceedance of the noise management level, the relevant equipment will be used during standard construction hours, unless agreement is reached with the affected sensitive receivers, or the associated activity is otherwise permitted through condition D2 or D3.
NV8	Where residences or other sensitive receivers/structures are within the minimum working distances for vibration (as identified in Table 17-3 of the EIS): • different construction methods with lower source vibration levels will be investigated and implemented, where feasible • attended vibration measurements will be undertaken at the start of the works to determine actual vibration levels at the structure. Works will cease if the monitoring indicates vibration levels are likely to, or do, exceed the relevant criteria.	All locations	Section 6.3	No residences or other sensitive receivers/structures are within the minimum working distances for vibration as a result of the Stage 2 works.
NV9	Temporary batching plants along the transmission line corridor will be positioned to ensure compliance with NMLs at the nearest sensitive receivers.	Transmission line	Table 7.1	Temporary batching plants along the transmission line corridor will be positioned to ensure compliance with noise management levels at the nearest sensitive receiver.
NV10	If blasting is required, a blasting vibration and overpressure assessment will be completed to demonstrate that blasting and associated activities will not exceed noise and vibration limits at residences or other sensitive receivers. Based on outcomes of this assessment, a blast management strategy will be implemented that details how blasting will be carried out in a manner that complies with relevant noise and vibration limits,	Blasting	N/A	Not applicable to Stage 2. No blasting is proposed.

Reference	Revised mitigation measures	Application location(s)	Where addressed	How addressed
	and notification requirements with landholders.			
LP6	Procedures will be implemented so that potential impacts or conflicts between livestock and construction activities are appropriately managed. Procedures will be developed in consultation with affected landholders will include management of: • noise intensive activities during sensitive periods within the livestock production cycle (such as lambing and calving) • vehicle movements and other activities within the vicinity of livestock • movement of stock away from potential stressors created by construction activities.	Transmission line	Table 7.1 – N10	Landowners using disturbance areas for livestock grazing will be consulted prior to the commencement of works regarding alternatives for the management of their stock during these activities.

2.4 Guidelines

The main guidelines, specifications and policy documents relevant to this plan include:

- NSW *Interim Construction Noise Guideline* (the ICNG) (Department of Environment and Climate Change (DECC) 2009);
- *Noise Policy for Industry* (NPfI) (Environment Protection Authority (EPA) 2017);
- *NSW Road Noise Policy* (RNP) (Department of Environment, Climate Change and Water (DECCW) 2011);
- *NSW Assessing Vibration – a technical guideline* (Department of Environment and Conservation (DEC) 2006);
- British Standard BS 6472-2008, 'Evaluation of human exposure to vibration in buildings (1-80Hz)';
- British Standard 7385: Part 2-1993 'Evaluation and measurement of vibration in buildings';
- German Standard DIN4150-2016 Structural vibration Part 3: Effects of vibration on Structures;
- AS/NZS 2107:2016 Acoustics – Recommended design sound levels and reverberation times for building interiors;
- Association of Australian Acoustical Consultants (AAAC): Guideline for Child Care Centre Acoustic Assessment (2013).

The documents identified above are considered by the project as described and referenced throughout this NVMP.

3 Existing environment

The following section summarises the existing noise and vibration environment within and adjacent to the project. The key reference documents include:

- Chapter 17 of the EIS;
- Technical Paper 8 of the EIS (Noise and vibration impact assessment) (Technical Paper 8 of the EIS);
- Section 6.10 of the Amendment Report;
- Appendix I of the Amendment Report (Addendum noise and vibration impact assessment); and
- Section 4, Section 9.2 and Appendix F of the Response to DPIE Request for Information.

Existing noise levels within and surrounding the project are influenced by the surrounding agricultural and rural residential land uses as well as local traffic and the operation of the existing Buronga substation.

3.1 Sensitive receivers

The locations of the nearest sensitive receivers to the project works are shown in Figure 3.1.

A revised list of residential receivers for the entire project was provided in Table 4.1 and visually represented in Appendix C, Figure 17-1 of the Response to DPIE Request for Information (reproduced as Figure 3.1).

As described in the Response to DPIE Request for Information, when a receiver is located greater than approximately 1.5km from a component of the site, the distance is noted as >1.5km. The Response to DPIE Request for Information states no noise or vibration impacts are predicted from the works at this distance or greater.

Table 3.1 - Sensitive receivers

Receiver ID	Address	Receiver Type	Approximate distance to:			
			Transmission line corridor boundary	Compound / accommodation camp facilities	Water supply points	Buronga substation
R1967	'Regunyah' homestead complex, north of Renmark Road Pine Camp NSW 2648	Residential dwelling	1,015m	>1.5km from all camps and compounds	>1.5km from all water supply points	>1.5km
R1968		Residential dwelling	1,080m			
R3346	'Noola' homestead, south of Renmark Road	Residential dwelling	>1.5km	>1.5km	>1.5km	>1.5km
R3341	'Talgarry' homestead, east of Rufus Road	Residential dwelling	<1.5km	>1.5km	>1.5km	>1.5km
R3385	'Wilton' homestead, 3080 Anabranch Mail Road	Residential dwelling	720m	>1.5km	>1.5km	>1.5km

Receiver ID	Address	Receiver Type	Approximate distance to:			
			Transmission line corridor boundary	Compound / accommodation camp facilities	Water supply points	Buronga substation
R2035	'Glen Esk' homestead Anabranch South, NSW 2648	Residential dwelling	1,065m	>1.5km	>1.5km	>1.5km
R1548	Anabranch South, NSW 2648	Residential dwelling	1,130m	>1.5km	>1.5km	>1.5km
R1489	'Dunvegan' Homestead complex at 2042 Low Darling Road, Wentworth, NSW	Residential dwelling	210m	>1.5km	>1.5km	>1.5km
R2023		Residential dwelling	280m	>1.5km	>1.5km	>1.5km
R2022	Low Darling Road, Wentworth, NSW	Residential dwelling (shed with accommo dation)	130m	>1.5km	>1.5km	>1.5km
R1965	Wentworth, NSW 2648	Residential dwelling	620m	>1.5km	>1.5km	>1.5km
R3400	'Sturts Billabong' homestead on Low Darling Road	Residential dwelling	<1.5km	>1.5km	>1.5km	>1.5km
R3627	Lot 1 DP1180587, Ellerslie substation Pooncarie Road	Utility facility	165m	>1.5km	>1.5km	>1.5km
R2026	694 Arumpo Road	Residential dwelling	>1.5km	>1.5km	>1.5km	>1.5km (2,070m)
R2027	Opp 694 Arumpo Road	Residential dwelling	>1.5km	>1.5km	>1.5km	>1.5km (2,340m)
R2028	16A Drovers Drive, Mallee	Residential dwelling	>1.5km	>1.5km	>1.5km	>1.5km
R2029	16B Drovers Drive, Mallee	Residential dwelling	>1.5km	>1.5km	>1.5km	>1.5km
R986	Trentham cliffs, NSW 2738	Industry facility	1,400m	>1.5km	>1.5km	>1.5km
R980	88 Alfred Elms Road	Residential dwelling	1,010m	>1.5km	>1.5km	>1.5km
R980	87 Alfred Elms Road	Residential dwelling	1,105m	>1.5km	>1.5km	>1.5km
R963	59 Chanters Lane	Industry facility	1,150m	>1.5km	>1.5km	>1.5km
R960, R961	Trentham Cliffs, NSW 2738	Residential dwelling	1,100m	>1.5km	>1.5km	>1.5km
R959	6187 Sturt Highway	Residential dwelling	1,185m	>1.5km	>1.5km	>1.5km
R958	Monak, NSW 2738	Residential dwelling	1,140m	>1.5km	>1.5km	>1.5km
R957	Monak, NSW 2738	Residential dwelling	1,110m	>1.5km	>1.5km	>1.5km

Receiver ID	Address	Receiver Type	Approximate distance to:			
			Transmission line corridor boundary	Compound / accommodation camp facilities	Water supply points	Buronga substation
R956	Monak, NSW 2738	Residential dwelling	1,370m	>1.5km	>1.5km	>1.5km
R647	Trentham cliffs, NSW 2738	Industry facility - Sheds	380m	>1.5km	>1.5km	>1.5km
R3433	59 Chanters Lane	Residential dwelling	1,150m	>1.5km	>1.5km	>1.5km
R2103	Ellerslie, NSW 2648	Education facility	>1.5km	>1.5km	>1.5km	>1.5km
R2033	'Allanvale' homestead	Residential dwelling	>1.5km	>1.5km	>1.5km	>1.5km
R1411	'Warriwillah' homestead, Ellerslie Road	Residential dwelling	>1.5km	>1.5km	>1.5km	>1.5km
R13972	240B Ellerslie Road	Education facility	1,550m	>1.5km	>1.5km	>1.5km
R13650	248A Ellerslie Road	Communit y facility	1,450m	>1.5km	>1.5km	>1.5km
R3144	Residence and Fort Courage Caravan Park, 1703 Old Renmark Rd, Wentworth	Residential dwelling	>1.5km	680 m (Residence) and 570 m (Caravan Park) to the Wentworth main construction compound and accommodation	>1.5km	>1.5km
R14914	1600 Tooperoopna Road, Rufus (Lot 2, DP623782)	Residential dwelling	>1.5km	570 m to the Wentworth main construction compound and accommodation	>1.5km	>1.5km
Including: R3432, R962, R963, R967, R978- 980	Numerous residences to the east of the Sturt Highway, on the outskirts of Trentham Cliffs	Residential dwelling	>1.5km	>1.5km	>1.5km	>1.5km
-	42 Arthur Street, Wentworth (Wentworth residential area surrounds this receiver)	Residential dwelling	>1.5km	>1.5km	6 m to Beverley Street, Wentworth water supply point	>1.5km
-	82 Allombo Road (Corner Channel Road) Coomealla	Residential dwelling	>1.5km	>1.5km	255 m to Fletchers Lake Drive, Dareton water supply point	>1.5km

Receiver ID	Address	Receiver Type	Approximate distance to:			
			Transmission line corridor boundary	Compound / accommodation camp facilities	Water supply points	Buronga substation
-	48 River Drive, Buronga (Buronga residential area surrounds this receiver)	Residential dwelling	>1.5km	>1.5km	>1.5km	>1.5km
-	690 Pomona Road, Pomona	Residential dwelling	>1.5km	>1.5km	10 m to 690 Pomona Road, Pomona water supply point	>1.5km

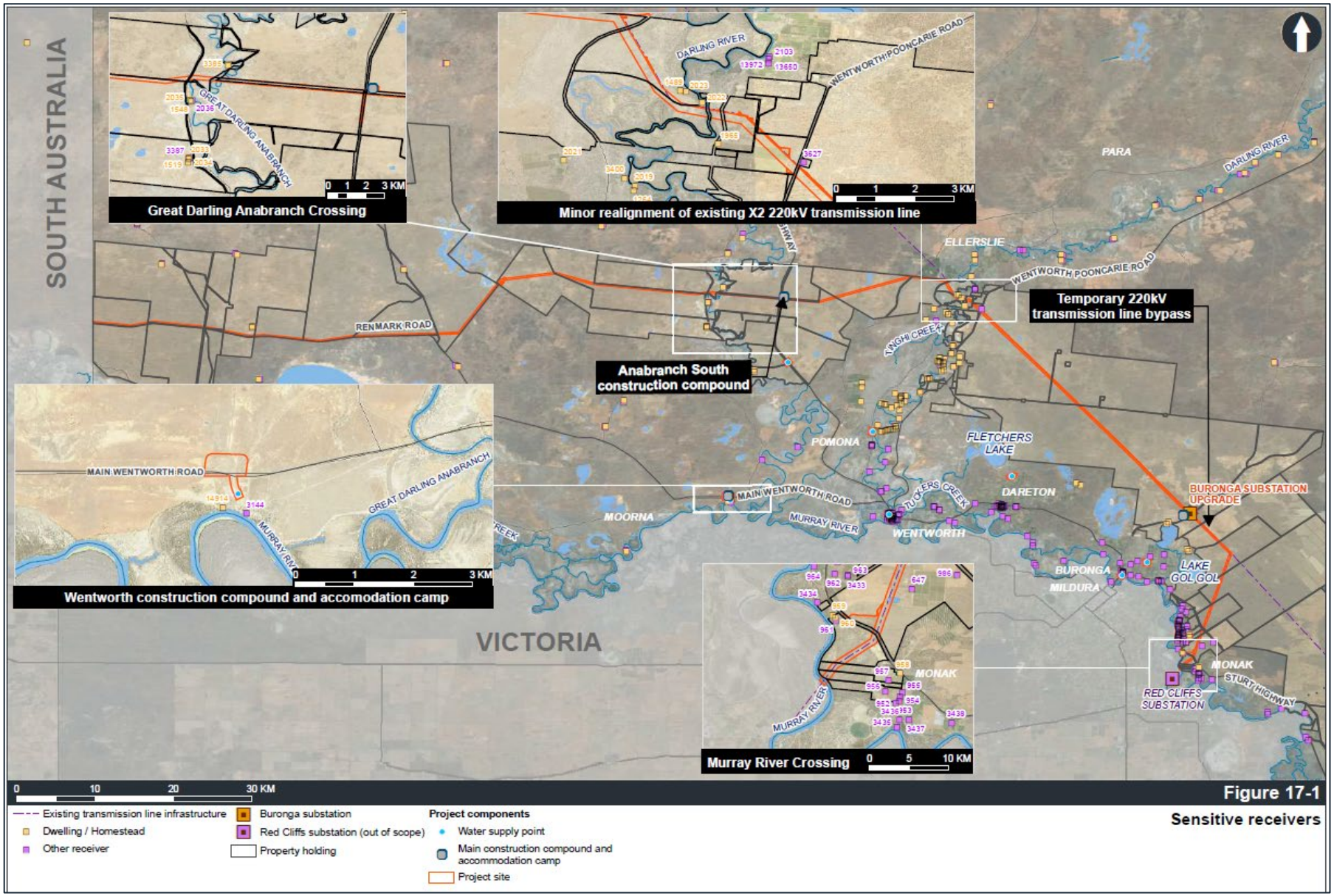

Figure 3.1 - Noise sensitive receivers (source WSP, Response to DPIE Request for Information)

3.2 Aboriginal heritage

Appendix E of the Amendment Report – *Revised Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report* identifies the location of the recorded Aboriginal heritage features in the vicinity of the project. The potential archaeological deposits (PADs) and Aboriginal objects are located within and in close proximity to the project site as shown in Appendix A of the *Heritage Management Plan* (45860-HSE-PL-D-0022).

Appendix E of the Amendment Report identified that there is a heightened likelihood of Aboriginal burials associated with the landform at the following sites and/or associated PADs:

- PAD10;
- PAD25;
- PAD26/PEC-W-102; and
- PAD27/PEC-W-103.

Therefore, reference to these PADs has been included in this NVMP as a conservative approach, and the mitigation measure N3 included in Table 7.1. Potential vibration impacts on Aboriginal heritage were not identified in either the noise and vibration impact assessments or the above referenced heritage assessment prepared during the assessment phase of the project.

Additional information regarding the nature and management measures associated with these PADs and objects is included in the *Heritage Management Plan* (45860-HSE-PL-D-0022).

3.3 Measured noise levels

Unattended noise monitoring was undertaken at one location during the assessment process undertaken for the EIS. Table 3.2 details the noise levels that were measured during the noise monitoring which occurred between 26 May and 10 June 2020 at 694 Arumpo Road, Wentworth NSW (referred to as noise monitoring location NM1).

The EIS advises that this noise monitoring location was selected as it was considered to be representative of the existing background noise levels that would be experienced across the project.

The main noise sources observed during monitoring included birds, motor vehicles, dogs barking and light wind, which is typical of rural and natural sounds and is expected to be generally consistent across the proposal study area.

Table 3.2 - Unattended noise measurement results at NM1

Measured noise level (dBA)					
Rating background level (RBL) dBA			Ambient noise level $L_{Aeq(15min)}$		
Day[1]	Evening[1]	Night[1]	Day[1]	Evening[1]	Night[1]
35 (24)[2]	30 (21)[2]	30 (22)[2]	45	39	34

Notes (as per the EIS):

(1) Time periods defined as – Day: 7am to 6pm Monday to Saturday, 8am to 6pm Sunday; Evening: 6pm to 10pm; Night: 10pm to 7am Monday to Saturday, 10pm to 8am Sunday

(2) Where background levels are below the minimum assumed RBLs outlined in the NPfI, they have been adjusted to 35dBA during the day period, and 30dBA during the evening and night periods in accordance with the NPfI

To characterise the existing noise environment, short term (attended) noise measurements was also undertaken at representative locations as summarised in Table 3.3.

Table 3.3 - Attended noise measurement results at NM1

ID	Date and Time	Measured Noise Level			Comments
		$L_{A90(15min)}$	$L_{Aeq(15min)}$	L_{Amax}	
NM1 roadside	26/5/2020 4:11PM	23	58	81	Background: rural noise environment. Sources: Bird noise – 33–35dBA, car pass by – 81dBA, dogs barking, light winds – 24–25dBA
NM1 roadside	26/5/2020 4:30PM	23	36	55	Background: rural noise environment. Sources: Bird noise – 33–35dBA, car pass by – 81dBA, dogs barking, light winds – 24–25dBA

Background noise levels were observed to be low during the daytime period and dominated by rural and natural sounds. Background noise levels of less than 30dBA were observed during both readings, which were found to be consistent with the findings of the unattended noise monitoring program.

3.4 Vibration sensitive receivers

The vibration sensitive receivers include all regularly occupied buildings, at sufficient levels vibration can lead to cosmetic (and structural) building damage along with causing disturbance to the occupants. Vibrations may also affect sensitive structures such as heritage buildings.

There are three listed non-Aboriginal heritage sites with curtilages that are located partially within the proposal study area (as defined in the Technical Paper 8 of the EIS) and the transmission line corridor, however, no structural components associated with those sites are identified within the transmission line corridor (or within 1km of the proposal study area), as shown in Table 3.4 .

Table 3.4 - Heritage within the proposal study area and an additional 1km buffer zone

Site Name	Item ID	Category	Significance
Sturts Billabong	I27	Historic Landscape	Local
Nulla Nulla Woolshed	I81	Woolshed (Built)	Local
Nulla Nulla Homestead	I82	Residential Dwelling (Built)	Local

4 Noise and vibration criteria

The EPA recommends management levels and goals when assessing construction noise and vibration. These are outlined in:

- the ICNG (DECC, 2009), and
- Assessing Vibration: a technical guideline (DEC, 2006).

Relevant elements of these documents are summarised below.

4.1 Construction hours

4.1.1 Standard construction hours

In accordance with condition D1, and in line with the ICNG standard construction hours, road upgrades, construction, upgrading and decommissioning activities may only be undertaken between:

- 7am to 6pm Monday to Friday;
- 8am to 1pm Saturdays; and
- at no time on Sundays and NSW public holidays

unless the Planning Secretary agrees otherwise.

4.1.2 Variation to standard construction hours

The following construction, upgrading and decommissioning activities may be carried out outside the hours specific in condition D1:

- the delivery or dispatch of materials as requested by the NSW Police Force or other public authorities for safety reasons;
- emergency work to avoid the loss of life, property or to prevent material harm to the environment; or
- works carried out in accordance with the hours and noise limits specified in any negotiated agreements with sensitive receivers (owners and occupiers), provided the negotiated agreements are in writing and finalised before the commencement of works.

The EIS defined the term base hours. The EIS assessed the impacts of construction occurring seven days per week (Monday to Sunday) between 7am and 7pm (base hours). Any works outside of the standard construction hours detailed within Section 4.1.1, will only be undertaken subject to the requirements of condition D2 or the requirements of the OOHW Protocol (Section 4.2).

4.2 Out of hours works protocol

An Out-of-Hours Works (OOHW) Protocol (required in accordance with condition D3) is provided in Appendix A to identify the process for the consideration, management and approval of works to be undertaken outside the hours defined in conditions D1, D2 and D7 of the Infrastructure Approval.

Works that comply with the conditions D1, D2 and D7 are not required to be undertaken in accordance with the processes outlined in the OOHW Protocol.

4.3 Construction noise and assessment 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; and
- provide flexibility in selecting site-specific feasible and reasonable work practices to minimise noise impacts.

4.4 Quantitative noise assessment criteria

Construction noise assessment goals presented in the ICNG are referenced to noise management levels for residential, sensitive land uses and commercial/ industrial premises.

4.4.1 Residential premises

Table 4.1 (reproduced from Table 2 of the ICNG) sets out the noise management levels for construction noise at residences.

In Table 4.1 the rating background level (RBL) is used when determining the management level. 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 RBL is described in detail in the *Noise Policy for Industry* (NPfI) (EPA 2017).

As a guide, the difference between the internal noise level and the external noise level is typically 10dB with windows open for adequate ventilation.

Table 4.1 - Noise at residents using quantitative assessment

Time of day	Management Level $L_{Aeq\ (15min)}$ *	How to apply
Recommended standard hours: • Monday to Friday 7am to 6pm • Saturday 8am to 1pm • No work on Sundays or public holidays	Noise affected RBL + 10dB	The noise affected level represents the point above which there may be some community reaction to noise. • Where the predicted or measured $L_{Aeq\ (15min)}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level. • The proponent 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 75dBA	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

Time of day	Management Level $L_{Aeq\ (15min)}$ *	How to apply
		– if the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.
Outside recommended standard hours	Noise affected RBL + 5dB	• A strong justification would typically be required for works outside the recommended standard hours. • The proponent 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 5dBA above the noise affected level, the proponent should negotiate with the community.

* Noise levels apply at the property boundary that is most exposed to construction noise, and at a height of 1.5m above ground level. If the property boundary is more than 30m from the residence, the location for measuring or predicting noise levels is at the most noise- affected point within 30m of the residence. Noise levels may be higher at upper floors of the noise affected residence.

4.4.2 Other land uses (non-residential)

Other sensitive land uses, such as schools, typically find noise from construction to be disruptive when the properties are being used (such as during school times).

Table 4.2 presents noise management levels for other non-residential land uses based on the principle that the characteristic activities for each of these land uses should not be unduly disturbed. The noise management levels apply when premises are in use during any assessment period.

Internal noise levels are assessed at the centre of the occupied room. External noise levels are assessed at the most affected point within 50m of the area boundary. Where internal noise levels cannot be measured, external noise levels may be used. A conservative estimate of the difference between internal and external noise levels is 10dB for buildings other than residences. Some buildings may achieve greater performance, such as where windows are fixed (that is, cannot be opened).

The management levels in Table 4.2 are adopted from the ICNG and Technical Paper 8 of the EIS (Table 5.6).

Table 4.2 - Noise at sensitive land uses (non-residents) using quantitative assessment

Land use	Noise management level ($L_{Aeq(15min)}$)	Where noise management level applies	Assumed façade loss (conservative) (dBA)	External equivalent noise management level ($L_{Aeq(15min)}$)	Reference
Cinema space, theatre, auditorium	35	Internal noise level	20	55	AS2107 'maximum'
Hotel (sleeping areas: hotels near minor roads)	35	Internal noise level	20	55	AS2107 'maximum'
Classrooms at schools and other educational institutions	45	Internal noise level	10	55	AS2107 'maximum'
Childcare centre (sleeping areas)	40	Internal noise level	10	50	AAAC Guideline for Child Care Centre Acoustic Assessment

Land use	Noise management level ($L_{Aeq(15min)}$)	Where noise management level applies	Assumed façade loss (conservative) (dBA)	External equivalent noise management level ($L_{Aeq(15min)}$)	Reference
Hospital wards and operating theatres	45	Internal noise level	20	65	ICNG
Places of worship	45	Internal noise level	20	65	ICNG
Library (reading areas)	45	Internal noise level	20	65	AS2107 'maximum'
Community centres – municipal buildings	50	Internal noise level	10	60	AS2107 'maximum'
Restaurant, bar (bars and lounges/ restaurant)	50	Internal noise level	20	70	AS2107 'maximum'
Passive recreation (e.g. area used for reading, meditation)	60	External noise level	--	60	ICNG
Active recreation (e.g. sports fields)	65	External noise level	--	65	ICNG
Commercial premises (including offices and retail outlets)	70	External noise level	--	70	ICNG
Industrial premises	75	External noise level	--	75	ICNG

4.4.3 Sleep disturbance criteria

Where construction works are planned to extend over more than two consecutive nights, the potential for works to disturb sleep should be considered. Factors that may be important in assessing the extent of impact on sleep include how often high noise events occur at night, the predicted maximum noise levels, whether there are times when there is a clear change in the noise environment (such as during early morning shoulder periods), and the degree of maximum noise levels above the background noise level.

A night-time sleep disturbance 'screening criterion' noise goal of RBL +15dB is used to identify the receivers where there is potential for sleep disturbance.

Where the sleep disturbance screening criterion is exceeded, further assessment is conducted to determine whether the 'awakening reaction' level of L_{Amax} 55dBA internal (i.e. 65dBA external assuming an open window or 75dBA external assuming a closed window) would be exceeded and the likely number of these events. The awakening reaction level is the level above which sleep disturbance is considered likely.

4.5 Project noise management levels for residential receivers

The project noise management levels presented in Table 4.3 are based on the existing background noise levels and are determined in accordance with the ICNG.

Table 4.3 - Noise management levels for residential receivers

Location	Rating background level (RBL) L_{A90}			Noise management level $L_{Aeq(15min)}$				Sleep disturbance $L_{A1(1min)}$
	Day (7am – 6pm)	Evening (6pm – 10pm)	Night (10pm – 7am)	Standard Hours[1] (RBL+10dB)	Out of hours work (OOHW)[2] (RBL+5dB)			
				Day	Day	Evening	Night	RBL + 15dB
All locations	35 (24)[3]	30 (21)[3]	30 (22)[3]	45	40	35	35	45

Notes:

(1) ICNG standard construction hours are defined as Monday – Friday: 7am – 6pm, Saturday: 8am – 1pm with no work on Sundays or public holidays. Note though that this project will have Base Hours of 7am – 7pm seven days per week. Please refer to Section 4.1 for information relating to working hours.

(2) Out of hours work time periods are defined as:

Day: 7am to 8am Saturday, 1pm to 6pm Saturday and 8am to 6pm on Sunday and public holidays

Evening: 6pm to 10pm Monday to Sunday

Night: 10pm to 7am Monday to Saturday, 10pm to 8am Sunday

(3) Where background levels are below the minimum assumed RBLs outlined in the NPfI, they have been adjusted to 35dBA during the day period, and 30dBA during the evening and night periods in accordance with the NPfI

4.6 Vibration criteria

Effects of ground vibration on buildings resulting from construction may be segregated into the following three categories:

- human exposure – disturbance to building occupants: vibration in which the occupants or users of the building are inconvenienced or possibly disturbed;
- effects on building contents – vibration where the building contents may be affected;
- effects on building structures – vibration in which the integrity of the building or structure itself may be prejudiced.

4.6.1 Human comfort

Vibration criteria relating to human comfort that are applicable to this project are taken from the DEC (2006) document *Assessing Vibration – A Technical Guideline* and include the following.

- continuous vibration – from uninterrupted sources (Table 4.4);
- impulsive vibration – up to three instances of sudden impact e.g. dropping heavy items, per monitoring period (Table 4.5); and
- intermittent vibration – such as from drilling, compacting or activities that would result in continuous vibration if operated continuously (Table 4.6).

For Table 4.4, Table 4.5 and Table 4.6, 'day' is defined as 7am to 10pm and 'night' as 10pm to 7am.

Table 4.4 - Human comfort - continuous vibration acceleration criteria (m/s²) 1-80Hz

Location	Assessment period	Preferred values (m/s²)		Maximum values (m/s²)	
		z-axis	x- and y-axis	z-axis	x- and y-axis
Residences	Day	0.010	0.0071	0.020	0.014
	Night	0.007	0.005	0.014	0.010
Offices, schools, educational institutions and places of worship	Day or night	0.020	0.014	0.040	0.028

Location	Assessment period	Preferred values (m/s²)		Maximum values (m/s²)	
		z-axis	x- and y-axis	z-axis	x- and y-axis
Workshops	Day or night	0.04	0.029	0.080	0.058

Table 4.5 - Human comfort - impulsive vibration acceleration criteria (m/s²) 1-80Hz

Location	Assessment period	Preferred values		Maximum values	
		z-axis	x- and y-axis	z-axis	x- and y-axis
Residences	Day	0.30	0.21	0.60	0.42
	Night	0.10	0.071	0.20	0.14
Offices, schools, educational institutions and places of worship	Day or night	0.64	0.46	1.28	0.92
Workshops	Day or night	0.64	0.46	1.28	0.92

Table 4.6 - Intermittent vibration impacts criteria (m/s$^{1.75}$) 1-80Hz

Location	Day (7am – 10pm)		Night (10pm – 7am)	
	Preferred values	Maximum values	Preferred values	Maximum values
Residences	0.20	0.40	0.13	0.26
Offices, schools, educational institutions and places of worship	0.40	0.80	0.40	0.80
Workshops	0.80	1.60	0.80	1.60

4.6.2 Structural damage

Two standards by which building damage from construction-induced vibration are commonly assessed include:

- British Standard 7385: Part 2-1993 Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration (BSI 1993);
- German DIN 4150: Part 3 – 1999 Effects of Vibration on Structure (DIN 1999).

The German standard provides the most stringent criteria and will be used in this NVMP. The DIN guideline values for peak particle velocity (mm/s) measured at the foundation of the building are summarised in Table 4.7. The criteria are frequency dependent and specific to particular categories of structure.

Table 4.7 - Structural damage criteria

Type of structure	Peak Component Particle Velocity, mm/s			
	Vibration at the foundation at a frequency of			Vibration of horizontal plane of highest floor at all frequencies
	1Hz to 10Hz	10Hz to 50Hz	50Hz to 100Hz*	
Buildings used for commercial purposes, industrial buildings and buildings of similar design	20	20 to 40	40 to 50	40
Dwellings and buildings of similar design and/or use	5	5 to 15	15 to 20	15
Structures that, because of their sensitivity to vibration, do not correspond to those listed in	3	3 to 8	8 to 10	8

lines 1 and 2 and are of great intrinsic value (e.g. buildings that are under a preservation order)				

* For frequencies above 100Hz, at least the values specified in this column shall be applied.

4.6.3 Minimum working distances

The EIS identified minimum working distances for typical items of vibration intensive equipment to minimise potential for vibration related impacts. These are reproduced in Table 4.8.

Where vibration intensive equipment such as vibratory rollers, hydraulic hammers, bored piling rigs or jackhammers are used at a greater distance from sensitive receivers than the specified minimum working distance, there is negligible risk of structural damage or impacts on human comfort. Where recommended minimum working distances are not met, more detailed consideration of potential vibration impacts and the construction approach would occur during detailed design.

Table 4.8 - Minimum working distances for vibration intensive plant

Equipment	Rating / Description	Minimum working distance (m)		
		Human response (DEC 2006)	Cosmetic damage to non-heritage structures (BSI 1993)	Damage to heritage structures (DIN 4150-3:1999-02)
Vibratory roller	<50kN (typically 1-2t)	15 to 20	5	11
	<100kN (typically 2-4t	20	6	13
	<200kN (typically 4-6t)	40	12	15
	<300kN (typically 7-13t)	100	15	30
	>300kN (typically 13-18t)	100	20	40
	>300kN (>18t)	100	25	50
Small hydraulic hammer	300kg – 5 to 12t excavator	7	2	5
Medium hydraulic hammer	900kg – 12 to 18t excavator	23	7	15
Large hydraulic hammer	1600kg – 18 to 34t excavator	73	22	44
Vibratory pile driver	Sheet piles	20	2 to 20	5
Pile boring	≤800mm	N/A	2	5
Jackhammer	Hand held	Avoid contact with structure	1	3

4.7 Construction road traffic noise

Technical Paper 8 of the EIS notes that traffic impacts associated with construction vehicles are assessed using guidance from the *Road Noise Policy* (RNP). The RNP provides guidance on the assessment of noise impacts on sensitive receivers from additional road traffic generated by the proposal operating on a public road network.

The RNP makes a distinction between the assessment of freeway/arterial/sub-arterial roads and local roads. Freeway/arterial/sub-arterial roads are assessed over day (7am to 10pm) and night (10pm to 7am) periods.

Table 4.9 presents a summary of applicable road traffic criteria for residential receivers identified in Table 3 of the RNP.

Table 4.9 - Road traffic noise criteria for receivers on existing roads affected by the additional traffic from the project

Road type	External road traffic noise criteria[1]	
	Day 7am – 10pm	Night 10pm – 7am
Freeway/arterial/sub-arterial roads	60dBA $L_{Aeq(15hour)}$	55dBA $L_{Aeq(9hour)}$
Local roads	55dBA $L_{Aeq(1hour)}$	50dBA $L_{Aeq(1hour)}$

(1) Façade corrected noise levels

The application notes from the RNP detail the requirements for operation-generated traffic noise as follows:

For existing residences and other sensitive land uses affected by additional traffic on existing roads generated by land use developments, any increase in the total traffic noise level as a result of the development should be limited to 2 dB above that of the noise level without the development. This limit applies where the noise level without the development is within 2 dB of, or exceeds, the relevant day or night noise assessment criterion.

Therefore, if the road traffic noise levels increase by more than 2dB as a result of the proposed construction traffic, and the criteria outlined in Table 4.9 are exceeded, mitigation options should be investigated.

4.8 Noise intensive equipment

Elecnor considers noise intensive equipment as having a sound power level above 115dBA (refer to Table B.1 of Technical Paper 8 of the EIS). Noise intensive equipment that may be used during works includes:

- piling rig;
- D8 dozer;
- excavator with hammer;
- pneumatic jackhammer; or
- mulcher/chipper.

5 Environmental aspects and impacts

5.1 Construction activities

An environmental aspect is an element of an organisation's activities, products, or services that has or may have an impact on the environment (ISO 14001 Environmental management systems). The relationship of aspects and impacts is one of cause and effect.

The key aspects of Stage 2 that could result in adverse impacts to noise and vibration include the use of noise and/or vibration producing equipment for the following activities:

- vegetation clearing and grubbing activities;
- topsoil stripping;
- topsoil/material handling including stockpiling, material and spoil loading and material and spoil haulage;
- earthworks;
- surface grading and compaction;
- operating plant and equipment, including crushing and screening (as required);
- tower assembly and stringing;
- movement of vehicles including light and heavy vehicles;
- establishment of the construction compound and accommodation camp at Wentworth; and
- operation of the construction compounds.

5.2 Impacts

Potential impacts attributable to works might include:

- loss of amenity for residential and non-residential sensitive receivers;
- reputational impacts due to complaints from the public;
- disturbance of Aboriginal heritage items and potential archaeological deposits;
- disturbance of livestock; and
- for vibration:
  - cosmetic building damage (and structural damage in extreme cases);
  - loss of amenity due to perceptible vibration, termed human comfort; and
  - impacts on the condition and structural integrity of key infrastructure.

Noise and vibration impacts due to works will be intermittent and transient in nature. Due to the scope of works proposed for Stage 2 and the distance to sensitive receivers, works at Buronga and the Anabranch South construction compound are not expected to exceed the noise management levels at any sensitive receivers (refer Section 6.2) and there is negligible risk of structural damage or impacts on human comfort due to the use of vibration intensive equipment at Buronga and the Anabranch South construction compound (refer Section 6.3).

Works at Wentworth construction compound and accommodation camp have the potential to exceed noise management levels, particularly during site establishment of the construction compound and accommodation camp (refer Section 6.2.2.2).

A conservative noise assessment for construction of the transmission line identified potential exceedances of noise management levels for all assessed construction scenarios (refer Section

6.2.3). A total of five unique receivers were identified as experiencing noise levels exceeding the noise management levels during ICNG standard construction hours (refer Table 2.2 of the Response to DPIE Request for Information). Actual noise levels experienced during construction are expected to be generally well below the predicted noise levels at any identified receiver and all receivers would not be impacted at any one time given their spread along the transmission corridor.

Where construction noise levels are likely to exceed the relevant noise management levels, additional noise assessment(s) will be undertaken in accordance with RMM NV3 (refer Section 7.1.1).

No works are proposed within the minimum working distances for cosmetic damage, human response and heritage sensitivity based on the assessment of the safe working distances for vibration generating plant within the transmission line corridor to relevant vibration sensitive receivers.

Further detail of the potential noise and vibration impacts resulting from specific proposed activities from Stage 2 works is provided within Section 6. The environmental management described in Section 7 (particularly the measures in Table 7.1) have been developed to address the potential noise and vibration impacts described here and in Section 6.

6 Construction noise and vibration assessment

6.1 Construction activities

Appendix B of Technical Paper 8 of the EIS includes a summary of the construction scenarios and noise levels for plant and equipment that were assessed to predict noise impacts associated with the project.

The scenarios relevant to Stage 2 works that were assessed include:

- Buronga substation construction:
  - enabling works;
  - earthworks and civil construction works;
  - electrical construction works;
  - pre-commissioning; and
  - demobilisation and rehabilitation;
- construction compounds and accommodation camps:
  - enabling works;
  - enabling works – site establishment;
  - operation of the compound – standard hours;
  - operation of the compound – outside standard hours; and
  - demobilisation / rehabilitation;
- transmission line construction:
  - enabling works;
  - site establishment and access tracks;
  - earthworks and civil construction works;
  - tower assembly;
  - tower erection;
  - tower stringing;
  - commissioning/energisation; and
  - demobilisation and rehabilitation.

Additional detail regarding the types of activities included in each scenario and assessed equipment is included in Appendix C of this plan.

6.2 Construction noise impacts

Condition D5 a) of the Infrastructure Approval states that noise generated by any construction activities must be managed in accordance with the requirements for construction 'noise affected' management levels established in accordance with the ICNG.

Construction 'noise affected' management levels are described as project 'noise management levels' throughout this NVMP and have been established in accordance with the ICNG as identified in Section 4.5. In line with the ICNG, where predicted or measured noise levels exceed the noise management level, feasible and reasonable works practices will be identified and implemented, such as those included in Section 7 of this NVMP.

The information in the following sections describes the potential noise impacts for Stage 2 activities compared to the noise management levels. The information is generally obtained from noise assessments presented in Chapter 17 and Technical Paper 8 of the EIS, Section 6.10 and Appendix I of the Amendment Report and Response to DPIE Request for Information.

6.2.1 Buronga substation

Overview

Section 5.2.2 of Technical Paper 8 of the EIS found that construction works at the Buronga substation upgrade and expansion site would comply with relevant noise management levels at the nearest sensitive receivers for all construction work phases, with noise levels predicted to be less than 30dBA at the nearest sensitive receiver.

The Amendment Report included a change to the earthworks material site, with the layout amended to being located to the north-east and north-west of the Buronga substation upgrade and expansion site (refer Figure 6.2).

Subject to geotechnical investigations, a mobile crushing and screening plant may be required and established at the Buronga substation earthworks site. An indicative location for the crushing and screening activities is shown in Figure 6.1.

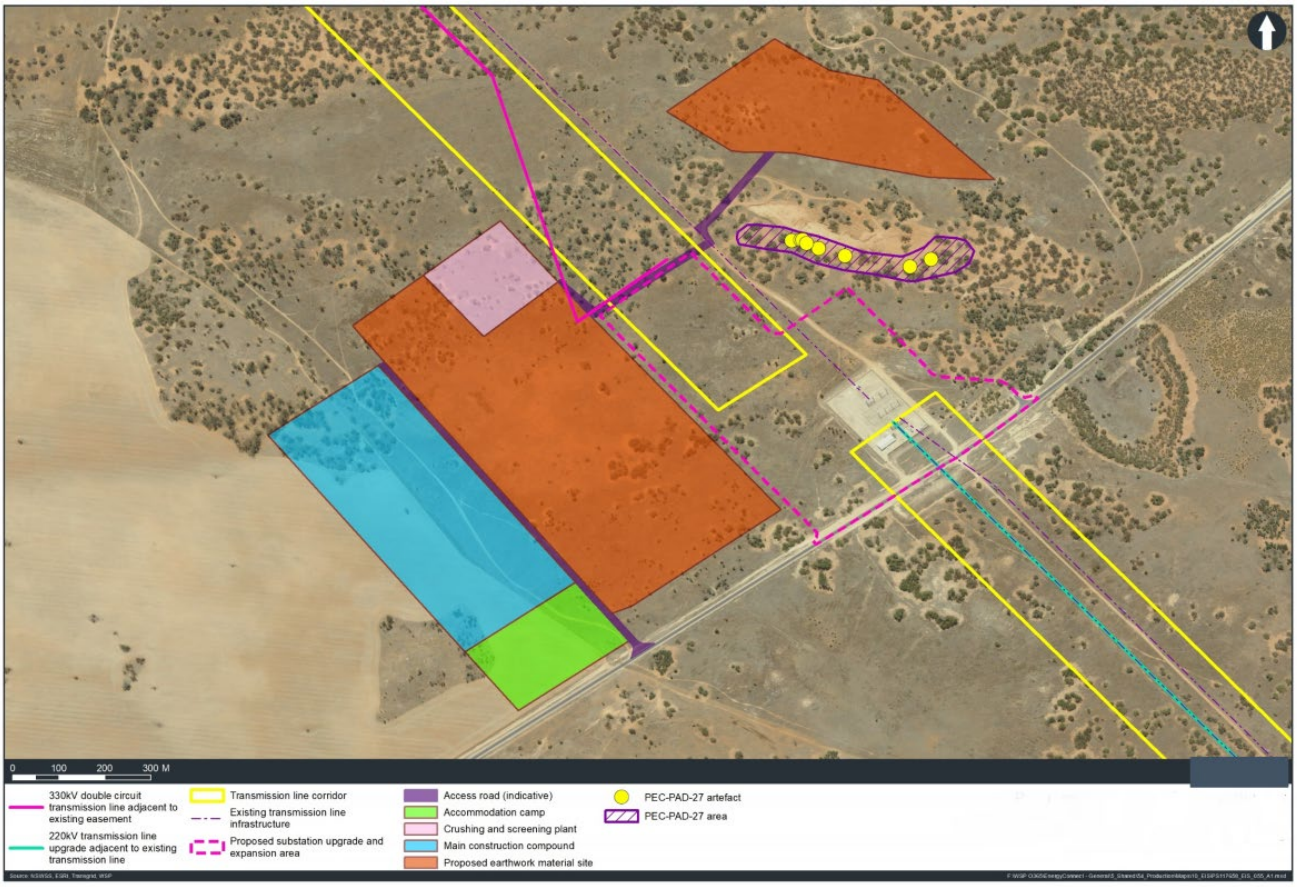

Figure 6.1 - Buronga earthwork material site (orange), construction compound (blue) and accommodation camp (green)

Potential impacts

The Amendment Report identified that the assessment of the earthworks and crushing and screening activities would see a negligible change in impacts to the predicted noise levels at the nearest sensitive receivers compared to the results presented in Section 5.2.2 of Technical Paper

8 of the EIS, which are also presented in Table 6.1. The crushing activities are not expected to exceed the noise management levels at the nearest sensitive receiver where a buffer distance of 500m can be maintained between equipment and that receiver.

All activities at the Buronga substation upgrade and expansion, including those undertaken outside the ICNG standard construction hours (also defined by condition D1), are anticipated to generate noise levels that would comply with relevant noise management levels at the nearest sensitive receiver, as identified in Table 6.1.

In accordance with condition D3, any planned works proposed to be undertaken outside the hours defined in conditions D1, D2 and D7 of the Infrastructure Approval, will be undertaken in accordance with the OOHW Protocol included in Appendix A.

Table 6.1 - Predicted noise levels – Buronga substation upgrade and expansion (Source WSP)

Construction work phase	Period[1]	Project NML $L_{eq(15min)}$ dBA	Predicted noise level $L_{eq(15min)}$ dBA	Exceedance of project NMLs $L_{eq(15min)}$ dBA	Highly noise affected NML 75dBA or greater $L_{eq(15min)}$
Enabling works	SH day	45	Less than 30	-	-
	OOHW day	40	Less than 30	-	-
	OOHW E/N	35	Less than 30	-	-
Earthworks and civil construction works	SH day	45	Less than 30	-	-
	OOHW day	40	Less than 30	-	-
	OOHW E/N	35	Less than 30	-	-
Electrical construction works	SH day	45	Less than 30	-	-
	OOHW day	40	Less than 30	-	-
	OOHW E/N	35	Less than 30	-	-
Pre-commissioning and commissioning	SH day	45	Less than 30	-	-
	OOHW day	40	Less than 30	-	-
	OOHW E/N	35	Less than 30	-	-
Demobilisation / rehabilitation	SH day	45	Less than 30	-	-
	OOHW day	40	Less than 30	-	-
	OOHW E/N	35	Less than 30	-	-

Note: Exceedance classes – Less than or meets noise management level (NML); NML+1–10dB; NML+11 – 20dB; NML+21dB or more

(1) SH day = ICNG standard construction hours, OOHW day = 7am to 8am and 1pm to 6pm Saturday, 8am to 6pm Sunday, OOHW E/N = 6pm to 7am Monday to Saturday and 6pm to 8am Sunday.

6.2.2 Construction compounds and accommodation camps

The construction compound and accommodation camp sites are located at:

- Buronga;
- Wentworth; and
- Anabranch South (construction compound only).

The Stage 2 NVMP relates to the construction works associated with the establishment and operation or use of the construction compounds and the establishment of the accommodation camps at Buronga and Wentworth.

6.2.2.1 Buronga construction compound and accommodation camp

Overview

The nearest receiver to the Buronga construction compound and accommodation camp is located approximately 1.8km from the site boundary. The construction compound will generally operate during the construction base hours of 7am to 7pm. Any works outside of the standard construction hours detailed within Section 4.1.1, will only be undertaken subject to the requirements of condition D2 or the requirements of the OOHW Protocol (condition D3).

Potential impacts

The EIS predicted the noise levels due to the Buronga construction compound and accommodation camp during standard hours of work and OOHW periods.

Based on the distance to sensitive receivers, no receivers are predicted to experience noise levels above the relevant noise management level due to noise resulting from establishment or operation activities associated with the Buronga construction compound or establishment activities associated with the accommodation camp. This is demonstrated by the predicted noise levels listed within Table 6.2.

Table 6.2 - Predicted noise levels – Buronga construction compound and accommodation camp (source WSP)

Construction work phase	Period[1]	Project NML $L_{eq(15min)}$ dBA	Predicted noise level $L_{eq(15min)}$ dBA	Exceedance of project NMLs $L_{eq(15min)}$ dBA	Highly noise affected NML 75dBA or greater $L_{eq(15min)}$
Enabling works	SH day	45	Less than 30	-	-
	OOHW day	40	Less than 30	-	-
	OOHW E/N	35	Less than 30	-	-
Enabling works – site establishment	SH day	45	Less than 30	-	-
	OOHW day	40	Less than 30	-	-
	OOHW E/N	35	Less than 30	-	-
Operation of the compound	SH day	45	Less than 30	-	-
	OOHW day	40	Less than 30	-	-
	OOHW E/N	35	Less than 30	-	-
Demobilisation / rehabilitation	SH day	45	Less than 30	-	-
	OOHW day	40	Less than 30	-	-
	OOHW E/N	35	Less than 30	-	-

Note: Exceedance classes – Less than or meets noise management level (NML); NML+1–10dB; NML+11 – 20dB; NML+21dB or more

(1) SH day = ICNG standard construction hours, OOHW day = 7am to 8am and 1pm to 6pm Saturday, 8am to 6pm Sunday, OOHW E/N = 6pm to 7am Monday to Saturday and 6pm to 8am Sunday.

6.2.2.2 Wentworth construction compound and accommodation camp site

Overview

The Wentworth construction compound and accommodation camp site is located on the northern side of Renmark Road, around 17km west of the township of Wentworth. The compound is to provide a range of facilities including, laydown facilities, concrete batching plants, accommodation for around 200 workers, offices, construction support facilities, parking and other workers facilities.

The construction compound will generally operate during the construction base hours of 7am to 7pm. Any works outside of the standard construction hours detailed within Section 4.1.1, will only be undertaken subject to the requirements of condition D2 or the requirements of the OOHW Protocol (condition D3). This may include obtaining negotiated agreements with sensitive receivers in accordance with condition D2(c).

The location of the site is indicated in an inset in Figure 3.1. The compound and accommodation camp site is approximately 680m from the residential receiver R3144, 570m from the Fort Courage Caravan Park and around 570m from a short stay accommodation and residence (receiver R14914). The access roads are over 200m from these receivers.

Potential Impacts

An assessment of potential noise generated during the establishment and operation of the Wentworth construction compound and accommodation camp included in the Amendment Report predicted noise levels at the nearest receiver (R3144 Fort Courage Caravan Park and R14914 residential receiver, both located 570m from the site) during standard hours of work and out-of-hours work (OOHW) periods. The results are presented within Table 6.3.

Table 6.3 - Predicted noise levels – Wentworth construction compound and accommodation camp (source WSP)

Construction work phase	Period[1]	Project NML $L_{eq(15min)}$ dBA	Predicted noise level range $L_{eq(15min)}$ dBA	Exceedance of project NMLs $L_{eq(15min)}$ dBA	Highly noise affected NML 75dBA or greater $L_{eq(15min)}$
Enabling works	SH day	45	Up to 39	-	-
	OOHW day	40	Up to 39	-	-
	OOHW E/N	35	Up to 39	Up to 4	-
Enabling works – site establishment of the compound and accommodation camp	SH day	45	Up to 48	Up to 3	-
	OOHW day	40	Up to 48	Up to 8	-
	OOHW E/N	35	Up to 48	Up to 13	-
Operation of the compound	SH day	45	Up to 39	-	-
	OOHW day	40	Up to 39	-	-
	OOHW E/N	35	Up to 39	Up to 4	-
Demobilisation / rehabilitation	SH day	45	Up to 43	-	-
	OOHW day	40	Up to 43	Up to 3	-
	OOHW E/N	35	Up to 43	Up to 8	-

Note: Exceedance classes – Less than or meets noise management level (NML); NML+1–10dB; NML+11 – 20dB; NML+21dB or more

(1) SH day = ICNG standard construction hours, OOHW day = 7am to 8am and 1pm to 6pm Saturday, 8am to 6pm Sunday, OOHW E/N = 6pm to 7am Monday to Saturday and 6pm to 8am Sunday.

6.2.2.3 Anabranch South construction compound

Overview

The EIS assessed the Anabranch South site as a construction compound and accommodation camp. The Amendment Report revised the activities of the site to remove the accommodation camp. The Anabranch South construction compound site includes laydown areas, vehicle and equipment storage, maintenance sheds, potential stockpile areas, and demountable offices and parking (for up to around 10 staff). The nearest receivers to site are approximately 1.8km from the site boundary.

The Anabranch South construction compound will generally operate during the construction base hours of 7am to 7pm. Any works outside of the standard construction hours detailed within Section 4.1.1, will only be undertaken subject to the requirements of condition D2 or the requirements of the OOHW Protocol (condition D3).

Potential impacts

The EIS predicted the noise levels due to the Anabranch South construction compound and accommodation camp during standard hours of work and OOHW periods. The Amendment Report concluded that these predicted levels would be reduced further as a result of removal of accommodation camp activities.

Based on the distance to sensitive receivers, no receivers are predicted to experience noise levels above the relevant noise management level due to noise resulting from construction or operation activities associated with the Anabranch South site. This is demonstrated by the predicted noise levels listed within Table 6.4.

Table 6.4 - Predicted noise levels – Anabranch South construction compound (source WSP)

Construction work phase	Period[1]	Project NML $L_{eq(15min)}$ dBA	Predicted noise level $L_{eq(15min)}$ dBA	Exceedance of project NMLs $L_{eq(15min)}$ dBA	Highly noise affected NML 75dBA or greater $L_{eq(15min)}$
Enabling works	SH day	45	Less than 30	-	-
	OOHW day	40	Less than 30	-	-
	OOHW E/N	35	Less than 30	-	-
Enabling works – site establishment	SH day	45	Less than 30	-	-
	OOHW day	40	Less than 30	-	-
	OOHW E/N	35	Less than 30	-	-
Operation of the compound	SH day	45	Less than 30	-	-
	OOHW day	40	Less than 30	-	-
	OOHW E/N	35	Less than 30	-	-
Demobilisation / rehabilitation	SH day	45	Less than 30	-	-
	OOHW day	40	Less than 30	-	-
	OOHW E/N	35	Less than 30	-	-

Note: Exceedance classes – Less than or meets noise management level (NML); NML+1–10dB; NML+11 – 20dB; NML+21dB or more

(1) SH day = ICNG standard construction hours, OOHW day = 7am to 8am and 1pm to 6pm Saturday, 8am to 6pm Sunday, OOHW E/N = 6pm to 7am Monday to Saturday and 6pm to 8am Sunday.

6.2.3 Transmission line construction

Overview

Given the linear nature of the works associated with construction of the transmission line, noise levels were calculated in Technical Paper 8 of the EIS using the former Roads and Maritime Service's Construction Noise Estimator. Results are presented as a range based on the proximity to sensitive receivers. The majority of receivers are located more than 500m from the works as presented in Table 3.1.

Potential impacts

The construction of the transmission line has the potential to result in the exceedance of noise management levels for all assessed construction scenarios. The predicted noise levels for the

transmission line construction works presented in Table 6.5 are conservative, as the assessment did not include screening impacts from terrain and assumed all plant identified in Appendix C of this NVMP was operational at any one time. As described in Section 5.2.2.2 of Technical Paper 8 of the EIS, actual noise levels experienced during construction are expected to be generally well below the predicted noise levels in Table 6.5 at any identified receiver.

A total of five receivers were identified as experiencing noise levels exceeding the noise management levels during ICNG standard construction hours (refer Table 2.2 of the Response to DPIE Request for Information).

Due to the progressive nature of works at different locations along the transmission line corridor, all receivers would not be impacted for the entire duration of works.

Table 6.5 - Predicted noise levels – transmission line construction (source WSP)

Construction work phase	Period[1]	Project NML $L_{eq\ 15\ min}$ dBA	Predicted noise level range $L_{eq\ 15\ min}$ dBA	Exceedance of ICNG NMLs $L_{eq\ 15\ min}$ dBA	Highly noise affected NML 75dBA or greater $L_{eq\ 15\ min}$
Enabling works	SH day	45	25-59	Up to 14	-
	OOHW day	40	25-59	Up to 19	-
	OOHW E/N	35	25-59	Up to 24	-
Site establishment and access tracks	SH day	45	35-69	Up to 24	-
	OOHW day	40	35-69	Up to 29	-
	OOHW E/N	35	35-69	Up to 34	-
Earthworks and civil construction works[2]	SH day	45	35-71	Up to 26	-
	OOHW day	40	35-71	Up to 31	-
	OOHW E/N	35	35-71	Up to 36	-
Tower assembly	SH day	45	28-62	Up to 17	-
	OOHW day	40	28-62	Up to 22	-
	OOHW E/N	35	28-62	Up to 27	-
Tower erection	SH day	45	29-63	Up to 18	-
	OOHW day	40	29-63	Up to 23	-
	OOHW E/N	35	29-63	Up to 28	-
Tower stringing	SH day	45	29-63	Up to 18	-
	OOHW day	40	29-63	Up to 23	-
	OOHW E/N	35	29-63	Up to 28	-
Commissioning /energisation	SH day	45	38-55[3]	Up to 10[3]	-
	OOHW day	40	38-55[3]	Up to 15[3]	-
	OOHW E/N	35	38-55[3]	Up to 20[3]	-
Demobilisation and rehabilitation	SH day	45	29-63	Up to 18	-
	OOHW day	40	29-63	Up to 23	-
	OOHW E/N	35	29-63	Up to 28	-

Note: Exceedance classes – Less than or meets noise management level (NML); NML+1–10dB; NML+11 – 20dB; NML+21dB or more

(1) SH day = ICNG standard construction hours, OOHW day = 7am to 8am and 1pm to 6pm Saturday, 8am to 6pm Sunday, OOHW E/N = 6pm to 7am Monday to Saturday and 6pm to 8am Sunday.

(2) Decommissioning of redundant 220kV transmission towers would use similar equipment to that assessed in the 'earthworks and civil construction works' scenario, and as such, as not been assessed as a separate scenario.

(3) Values updated in Table 2.2 and Table 2.3 of the Additional Information.

6.2.4 Construction water supply

Overview

The Amendment Report identified seven water supply points which would provide connection points to existing water supply pipelines and where water supply infrastructure will be installed.

Potential Impacts

The Amendment Report considered the potential impacts from the water supply points, which are presented in Table 6.6. The distance to the nearest sensitive receivers for some locations was revised in Table 4.1 of the Response to DPIE Request for Information.

Table 6.6 - Potential for construction noise impact at water supply points (source WSP)

Water Supply Location	Status	Distance to nearest sensitive receiver (m)	Construction works required	Potential construction noise impacts of proposed amendments
Alcheringa Road, Buronga	New	2m to utility station, 700m to Alcheringa St (receiver R3430)	Installation of a new standpipe and connection to the existing Western Murray Irrigation pipeline. The area is currently cleared and adjacent to Alcheringa Road.	Minimal impact (<2dBA) due to the distance from the receiver from construction activities and vehicle movements
Modica Crescent*	Existing	80m to 3 Modica Crescent	No new infrastructure would be required	Negligible from construction activities
Fletchers Lake Drive, Dareton	New	255m to 82 Allombo Road (corner with Channel Road) Coomealla	Installation of a new standpipe and connection to the existing Western Murray Irrigation pipeline. The area is not currently utilised.	Minimal impact (<2dBA) due to the distance from the receiver from construction activities and vehicle movements
Beverley Street, Wentworth	Existing	6m to 42 Arthur St	No new infrastructure would be required	Negligible from construction activities
690 Pomona Road, Pomona	Existing	10m to 690 Pomona Road	No new infrastructure would be required	Negligible from construction activities
* Modica Crescent was assessed and approved through the Stage 1 Traffic Strategy and correspondence issued to DPIE				

6.2.5 Temporary bypass line

Overview

The Amendment Report included the description and assessment of a proposed bypass line between Buronga and the Victorian border. The bypass line consists of around 6.5km of temporary transmission line and around 60 transmission poles. Figure 6.2 shows an overview of the proposed 220kV temporary bypass line.

Potential impacts

The temporary bypass line is located within the affectation area assessed in Technical Paper 8 of the EIS. Appendix I of the Amendment Report predicted the impact to be unchanged from the noise impact predicted in Technical paper for construction of the transmission line and included in Table 6.5 of this NVMP.

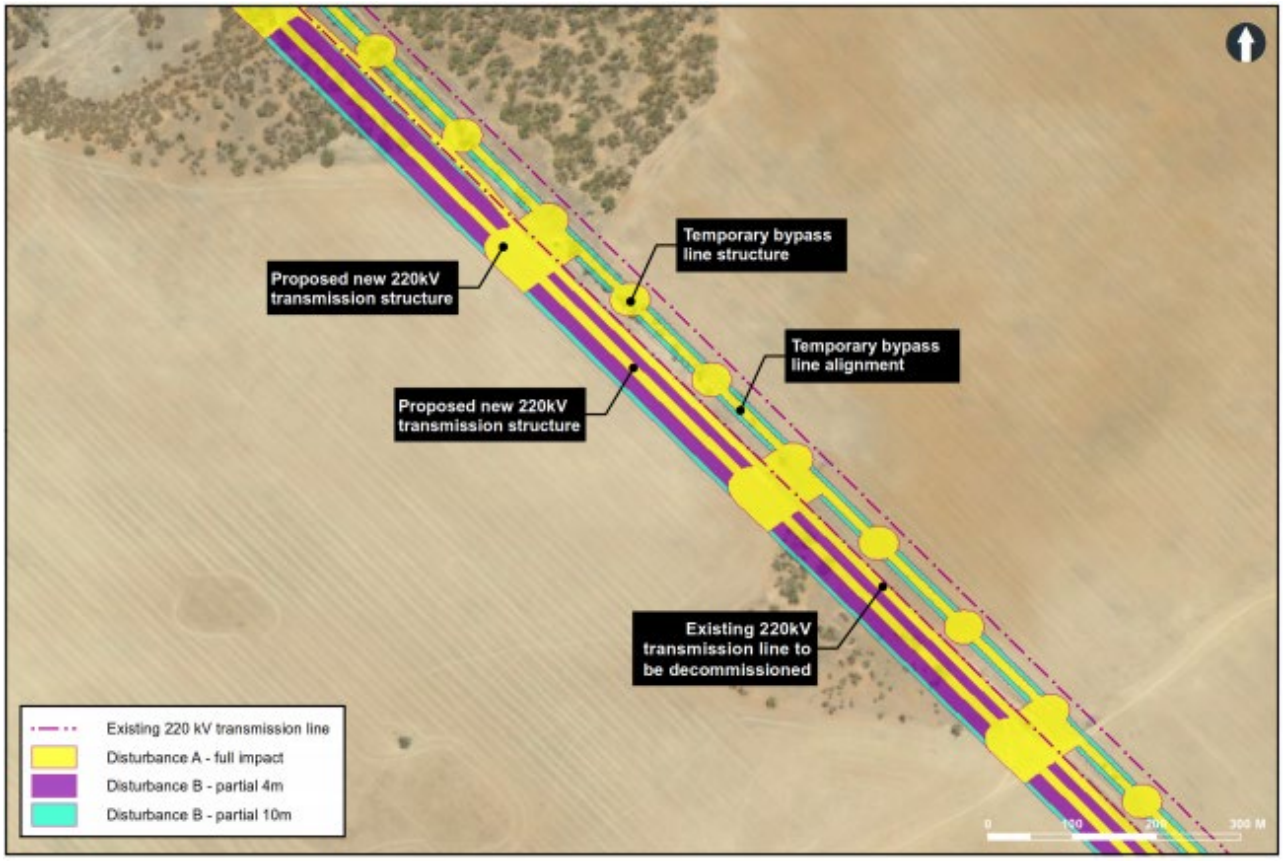

Figure 6.2 - Overview of the proposed 220kV temporary bypass line (source WSP)

6.3 Construction vibration impacts

At sufficient levels, vibration can lead to cosmetic (and possibly structural) building damage and can cause disturbance to occupants. Vibration can also affect sensitive structures, which could include heritage listed buildings. There are no historic heritage listed buildings in the vicinity of the project works.

Due to the linear nature of construction works along the length of the transmission line, impacts have been assessed based on buffer distances from the transmission line corridor. As identified in Section 5.3.5.1 and Appendix B-2 of Technical Paper 8 of the EIS, no works are proposed within the minimum working distances for cosmetic damage, human response and heritage sensitivity based on the assessment of the safe working distances for vibration generating plant within the transmission line corridor to relevant vibration sensitive receivers.

Vibration impacts as a result of potential water supply points were not identified in Appendix I of the Amendment Report. Water supply point locations where new infrastructure is required, are located more than 100m from sensitive receivers.

6.4 Construction road traffic noise

Appendix I of the Amendment Report assessed the road traffic noise impacts from revised road traffic numbers. Indicative vehicle movements for construction the project were identified in Table 2.5 of Appendix I of the Amendment Report for the Buronga substation upgrade and expansion site and transmission line works.

Table 2.6 of Appendix I of the Amendment Report presented the construction traffic noise assessment on the key haulage routes adopting traffic volumes for the transmission line works (peak vehicle movements of 300 light vehicles and 200 heavy vehicles movements per day). The results presented in Table 2.6 of Appendix I of the Amendment Report identified that the

construction road traffic noise levels are predicted to comply with relevant *Road Noise Policy* (RNP) noise criteria (Section 4.7) at all proposal affected roads. Relevant data from Table 2.6 of Appendix I of the Amendment Report is included in Table 6.7.

Table 6.7 - Predicted road traffic noise levels and impacts

Road name and location	Distance to nearest sensitive receiver (m)	RNP classification / road traffic noise criteria (dBA)[1]	Predicted noise level of base traffic (dBA)	Predicted noise level of base traffic with construction traffic (dBA)	Increase in noise level generate by construction traffic (dBA)	Compliant with RNP management level
Silver City Highway (B79). Ellerslie – between Broken Hill and Wentworth (from Broken Hill to Renmark Road, Wentworth)	60	Sub-arterial / 60	45	50	5.5	Yes
Silver City Highway (B79). Wentworth Town Centre (from Renmark Road, Wentworth to Delta Road in Wentworth)	20	Sub-arterial / 60	55	57	1.6	Yes
Silver City Highway (B79) – between Dareton and Buronga (from Fletchers Lake Road to Corbett Avenue)[2]	20	Sub-arterial / 60	58	60	1.6	Yes
Silver City Highway (B79) within Buronga Town Centre (from Corbett Avenue to Sturt Highway)[2]	20	Sub-arterial / 60	59	59	0.8	Yes
Sturt Highway (A20) George Chaffey Bridge – between Mildura and Silver City Highway, Buronga[2]	20	Sub-arterial / 60	64	65	0.4	Yes
Sturt Highway (A20) within Buronga (between Silver City Highway and Knights Road in Gol Gol)	20	Sub-arterial / 60	56	57	1.5	Yes
Arumpo Road (north of Mourquong Road, Mourquong)	30	Sub-arterial / 60	47	53	5.5	Yes
Renmark Road	70	Sub-arterial / 60	38	49	11.0	Yes

[1] External road traffic noise criteria for Day (7am – 10pm) from Table 3 of the Road Noise Policy

[2] Locations where the predicted noise level is within 2dB or exceeds the RNP road traffic noise criteria

Although compliant with the RNP criteria, there would be a general increase in the noise contribution from construction vehicles along all assessed roads. Increases in noise levels are predicted to be generally limited to below 2 dB with the exception of Silver City Highway, Arumpo Road and Renmark Road, which were found to experience increases of 5.5dB, 5.5dB and 11.0dB respectively (Table 2.6 of Appendix I of the Amendment Report, and also Table 6.7). The noise assessment is considered to be conservative using peak hour volumes and peak vehicle movements for the entire project.

Where road traffic noise levels increase by more than 2dB as a result of construction traffic, consideration will be given to applying feasible and reasonable noise mitigation measures as outlined within Table 7.1 to reduce the potential noise impacts and preserve acoustic amenity. This would apply to affected receivers along the Silver City Highway (Broken Hill to Wentworth), Arumpo Road and Renmark Road. Consideration will also be given to the actual noise levels associated with construction traffic and whether or not these levels comply with the road traffic noise criteria in the RNP as identified in Table 4.9 of this NVMP.

7 Environmental management

7.1 Exceedances of noise management levels

7.1.1 Additional noise assessments

As described in Section 6.2.2.2 and Section 6.2.3, the assessment of potential noise impacts carried out in the EIS and Amendment Report indicated that noise generated by construction activities may exceed the relevant noise management levels at sensitive receivers at various times.

Where construction activities are required that could generate noise levels that are likely to exceed the relevant noise management levels at any sensitive receivers, additional noise assessment(s) will be undertaken in accordance with RMM NV3.

Additional noise assessments will:

- consider the location of proposed activities;
- consider the noise and vibration generating activities that will take place;
- assess the predicted noise and vibration levels against the relevant management levels; and
- identify feasible and reasonable mitigation and management measures in accordance with the ICNG.

These noise assessments may be undertaken as a construction noise and vibration impact statement (CNVIS), or through a construction noise estimation tool developed for use on the project.

The construction noise estimation tool incorporates specific work areas and equipment for each activity to calculate the potential noise and vibration impacts. The tool can also calculate minimum working distances from sensitive receivers to be maintained on site by various plant and activities to avoid exceedances of human comfort and structural damage vibration limits.

Additional noise assessments undertaken for the project will be document controlled separately from this NVMP.

Where predicted exceedances are confirmed, necessary notification requirements will be identified, which will be undertaken in accordance with the *Community Communication Strategy* (45860-CM-PL-G-1001).

Works that potentially exceed the noise management levels will be undertaken in accordance with the relevant measures identified in Table 7.1, and any additional measures that are identified through the additional noise assessments described above. Monitoring will be undertaken as described in Section 8.3.

7.2 Management measures

A range of environmental requirements and mitigation measures are identified in the EIS, the Response to DPIE Request for Information and the Infrastructure Approval. Safeguards and management measures will be implemented to minimise or manage impacts to noise and vibration as required by RMM NV7 and condition D4.

Specific safeguards and management measures that will be implemented to address noise and vibration impacts associated with Stage 2 of the project are identified in Table 7.1.

Table 7.1 - Noise and vibration management measures

ID	Measurement / Requirement	When to implement	Responsibility	Source document
General				
N1	Training and awareness programs will be delivered to project personnel, including relevant sub-contractors on noise and vibration requirements (including operating hours) through inductions, toolboxes and targeted training.	Pre-construction and construction	Environmental Advisor, Environmental Manager, Health, Safety, Security and Environment team	Good practice
N2	An Operational Noise Review will be prepared within 12 months of the date of the Infrastructure Approval (SSI 10040), in consultation with affected landowners, to confirm noise predictions and control measures that will be required for the operation of the project. Any operational noise mitigation measures will be implemented prior to the commencement of operation.	Within 12 months of the Infrastructure Approval (ONR) and pre-operation (mitigation measures)	Environmental Manager	Condition D10
N3	The location of known Aboriginal heritage items and potential archaeological deposits (PADs) in the vicinity of the project will be shown on sensitive area plans and their location communicated to site personnel prior to the commencement of works in the area.	Pre-construction and construction	Environmental Advisor, Supervisors	Good practice Condition D31
Construction noise				
N4A	A Construction Noise and Vibration Management Plan (CNVMP) will be prepared by the construction contractor prior to construction works and will (as a minimum): • examine feasible and reasonable noise mitigation where management levels are likely to be exceeded • examine feasible and reasonable noise measures to manage traffic noise impacts on public roads where exceedances above 2 dB are identified at any sensitive receiver • describe associated noise and vibration monitoring programs, as required; • describe proactive and reactive strategies for dealing with any noise complaints • outline community consultation measures including notification requirements. This CNVMP will be implemented for the duration of construction.	Pre-construction	Environmental Advisor, Environmental Manager	RMM NV5 DPE comment
N4	Plant and equipment used on site will maintained in a proper and efficient condition and operated in a proper and efficient manner.	Pre-construction and construction	Supervisors, Health & Safety team	Condition A12 POEO Act

ID	Measurement / Requirement	When to implement	Responsibility	Source document
N5	Construction methodologies and measures that minimise noise and vibration levels during construction will be investigated during detailed design and implemented where feasible and reasonable. This will be supported through the completion of additional assessments (where construction noise levels are likely to exceed relevant noise management levels) based on the final construction methodology. This will: • consider the proposed layouts of work areas or construction compounds and accommodation camps • the noise and vibration generating activities that will take place • assess the predicted noise and vibration levels against the relevant management levels • incorporate feasible and reasonable mitigation and management measures in accordance with the ICNG.	Detailed design and construction	Environmental Manager, Environmental Advisor	RMM NV3
N6	Further engagement and consultation with affected receivers will be carried out to understand their preferences for mitigation and management measures where exceedances of noise management levels are predicted. Based on this consultation, appropriate mitigation and management options will be considered and implemented where feasible and reasonable to minimise the impacts.	Detailed design and construction	Engagement Manager, Environmental Manager	RMM NV4
N7	Where noise levels associated with project construction road traffic are expected to result in increases greater than 2dB at any affected receiver, feasible and reasonable noise measures will be examined to reduce potential noise impacts. Measures may include: • a driver's code of conduct will be developed and implemented (refer to *Traffic and Transport Management Plan* (45860-HSE-PL-D-0018)); • horns will be used for emergency or safety reasons only; • heavy vehicle parking, idling and queuing on public roads will be discouraged (except where permitted, e.g. water supply points); and • all heavy and light vehicles associated with the project will travel to and from site via the routes nominated in the *Traffic and Transport Management Plan* (45860-HSE-PLD-0018), unless otherwise approved by the Planning Secretary.	Pre-construction and construction	Supervisors, Construction Manager, Environmental Manager, Engagement Manager	RMM NV5

ID	Measurement / Requirement	When to implement	Responsibility	Source document
N7B	Where the noise level without the development is either within 2dB or exceeds the relevant road traffic noise criteria (Table 4.9), and noise levels associated with project construction road traffic results in increases greater than 2dB at any affected receiver, feasible and reasonable noise measures will be examined to reduce potential noise impacts. Measures may include: • minimising peak traffic movements or regulating time of use; • reducing traffic speed (where safe to do); or • clustering vehicle movements.	Construction	Any regulation or clustering of vehicle movements to minimise construction road traffic noise will be as directed by the Construction Manager (or their delegate). The Environmental Manager will inform the relevant Construction Manager of the exceedance and the requirements of NV7B.	Condition D5 b) NSW Road Noise Policy EPA's Applying the NSW Road Noise Policy Application notes DPE comments
N8	Temporary batching plants along the transmission line corridor will be positioned to ensure compliance with noise management levels at the nearest sensitive receivers.	Construction	Supervisor, Environmental Manager	RMM NV9
N9	Prior to the use of any Secondary Access Routes and Water Supply Routes identified in the Infrastructure Approval, an updated noise assessment will be undertaken to identify residences that would potentially experience road traffic noise above the relevant assessment criteria from Table 3 in the *NSW Road Noise Policy* (2011). Consideration will be given to appropriate mitigation measures, if required.	Pre-construction and construction	Environmental Manager, Construction Manager	Condition D37
N10	Procedures will be implemented so that potential impacts or conflicts between livestock and construction activities are appropriately managed. Procedures will be developed in consultation with affected landholders will include management of: • noise intensive activities during sensitive periods within the livestock production cycle (such as lambing and calving) • vehicle movements and other activities within the vicinity of livestock • movement of stock away from potential stressors created by construction activities. The procedure states that landowners using disturbance areas for livestock grazing will be consulted prior to the commencement of works regarding alternatives for the management of their stock during these activities.	Pre-construction and construction	Land and Property Access Manager	RMM LP6
Construction compounds and accommodation camps				
N11	At Wentworth, where possible, noise generating equipment will be strategically positioned to take advantage of screening from other structures to reduce the transmission of noise between work sites and receiver locations.	Detailed design and construction	Supervisors, Construction Manager, Environmental Manager	RMM NV3

ID	Measurement / Requirement	When to implement	Responsibility	Source document
N12	Measures to design the layout of the Wentworth accommodation camp will be implemented to minimise noise levels during construction where feasible and reasonable. Measures may include: • appropriate siting of equipment; • equipment selection; and/or • use of screening.	Detailed design and construction	Construction Manager, Environmental Manager	RMM NV3
Working hours				
N13A	An out of hours works (OOHW) protocol will be implemented for all construction activities likely to generate noise levels above the relevant noise management level at any sensitive receiver outside the standard construction hours defined in Interim Construction Noise Guideline (DECC, 2009). The OOHW protocol and will include: • details of what works are required outside standard construction hours • noise management safeguards and other reasonable and feasible mitigation and management measures (including agreement with sensitive receivers), including avoiding or minimising activities or the use of equipment likely to generate the highest noise levels, and implementing respite periods where works are likely to result in NML exceedances for sensitive receivers • community consultation procedures, including letterbox drops, notification protocols, and site contact information for the works • complaints handling procedures. The OOHW protocol would not apply to the operation of the accommodation camps at Buronga and Wentworth.	Pre-construction and construction	Supervisors, Construction Manager, Environmental Manager	RMM NV6
N13	Any works outside of the hours defined in condition D1, D2 and D7 will be undertaken in accordance with the Out of Hours Work Protocol in Appendix A.	Detailed design and construction	Supervisors, Construction Manager, Environmental Manager, Transgrid	RMM NV6
N14	Works may be undertaken in accordance with the hours and noise limits specified in negotiated agreements with affected sensitive receivers. Where multiple receivers are affected by works, a substantial majority of the receivers must agree to the specified hours and noise limits proposed by the project. Negotiated agreements must be in writing and finalised prior to the relevant works.	Pre-construction and Construction	Supervisors, Environmental Manager, Engagement Manager	Condition D2 c)

ID	Measurement / Requirement	When to implement	Responsibility	Source document
N15	Where noise intensive equipment is to be used near sensitive receivers and is likely to result in an exceedance of the applicable noise management level, the works will be scheduled during standard construction hours (unless agreements with affected sensitive receivers have been reached), or the associated activity is otherwise permitted through condition D2 or D3.	Construction	Supervisors, Construction Manager, Environmental Manager	RMM NV7
Operational noise				
N16	An Operational Noise Review will be prepared to confirm the predicted noise impacts from the project (based on the final detailed design) and refine the operational mitigation measures that will be implemented so operational noise impacts comply with the proposal noise trigger levels, where feasible and reasonable. Where exceedances of the operational project trigger noise levels are predicted, feasible and reasonable operational noise and vibration mitigation measures will be further investigated during detailed design, in consultation with the affected receivers. This may include (in order of priority): • land use planning and provision of appropriate buffer distances to increase the distance between the final transmission line alignment and the surrounding sensitive receivers and ultimately minimise the number of sensitive receivers within the audible risk noise zones • noise control at the noise source • noise control along the noise transfer path, such as noise barriers • noise control at the receiver, such as 'at property' treatment to upgrade aspects of the dwellings including the façade or ventilation systems. Additional measures identified through this process will be implemented prior to commencement of operation.	Detailed design	Engineering Manager, Environmental Manager, Engagement Manager	RMM NV1, RMM NV2
Vibration				
N17	Offset distance between high vibration plant items and nearby vibration sensitive receivers will be maximised where possible.	Construction	Supervisors, Construction Manager, Environmental Manager	RMM NV8

ID	Measurement / Requirement	When to implement	Responsibility	Source document
N18	Where residences or other sensitive receivers/structures are within the minimum working distances for vibration (as identified in Table 17-3 of the EIS, reproduced in Table 4.8 of this NVMP): • different construction methods with lower source vibration levels will be investigated and implemented, where feasible • attended vibration measurements will be undertaken at the start of the works to determine actual vibration levels at the structure. Works will cease if the monitoring indicates vibration levels are likely to, or do, exceed the relevant criteria.	Construction	Supervisors, Construction Manager, Environmental Advisor	RMM NV8
Consultation and complaints management				
N19	Where exceedances of noise management levels are predicted, residents / sensitive receivers will be notified of construction activities that are likely to affect their noise and vibration amenity in accordance with the *Community Communication Strategy* (45860-CM-PL-G-1001). This proactive communication will include: • the types of activities to be undertaken; • the timing of activities including expected start and finish; • the location of activities; • details of the community information line and how to make an enquiry and / or complaint.	Construction	Engagement Manager	RMM NV5
N20	All complaints received will be managed in accordance with the *Community Communication Strategy* (45860-CM-PL-G-1001).	Construction	Engagement Manager	RMM NV5
Monitoring and reporting				
N21	Noise and vibration monitoring will be undertaken in accordance with Section 8.1.	Construction	Environmental Manager, Environmental Advisor	RMM NV5
N22	If noise monitoring indicates that predicted noise levels are exceeded, or if noise complaints are received during construction, a review of noise mitigation measures will be undertaken to determine if additional noise mitigation controls are required.	Construction	Supervisors, Construction Manager, Environmental Manager, Environmental Advisor	RMM NV5

8 Compliance management

8.1 Training and awareness

All site personnel will undergo the Elecnor site induction prior to the personnel participating in on-site construction activities. The induction training addresses elements related to noise and vibration management including, but not limited to:

- complying with the conditions of the Infrastructure Approval;
- the environmental management system, including the CEMP;
- sensitive receivers in close proximity to project locations;
- management measures that are necessary to comply with to minimise and manage potential impacts to those sensitive receivers; and
- the *Out-of-Hours Works Protocol* (45860-HSE-PR-D-0001).

Targeted training in the form of toolbox talks or specific training will also be delivered to personnel with a key role in noise and vibration management. Examples of training topics include:

- vibration awareness in the vicinity of Aboriginal heritage features; and
- noise monitoring.

Records of training, including attendance, will be retained by Elecnor.

8.2 Roles and responsibilities

Elecnor's organisational structure and overall roles and responsibilities are outlined in Section 4 of the CEMP. Specific responsibilities for the implementation of mitigation measures are detailed in Section 7 of this NVMP.

8.3 Monitoring

The impacts and environmental performance of the project relevant to noise and vibration, and the effectiveness of the management measures identified in Section 7 will be monitored through the proposed monitoring program in Table 8.1.

Table 8.1 - Monitoring program

Item	Scope	Frequency	Equipment	Responsibility	Records/ reporting
Commencement of new activity – attended noise monitoring	At the commencement of a new activity or location where exceedances of the noise management levels are predicted to occur at the most affected receiver.	Commencement of activities predicted to exceed noise management levels	Hand held calibrated noise monitor	Environmental Advisor	Noise monitoring records
Road traffic noise	Where predicted road traffic noise levels of base traffic (without the development) are within 2dB, or exceed, the road traffic noise criteria (refer to Table 6.7).	Once, during use of relevant routes	Hand held calibrated noise monitor or attended monitoring	Environmental Advisor	Noise monitoring records

Item	Scope	Frequency	Equipment	Responsibility	Records/ reporting
Commencement of new activity – attended vibration measurements	At the commencement of a new relevant activity where sensitive receivers / structures are located within the minimum working distances for vibration (Table 4.8).	Commencement of activities within minimum working distances	Vibration monitor	Environmental Advisor	Vibration monitoring records
Complaint-based monitoring	Where complaints are received, noise monitoring may be undertaken at sensitive receivers to determine if the actual construction noise generated exceeds the predicted 'worst case' construction noise levels identified in this plan.	As required	Hand held calibrated noise monitor	Environmental Manager Environmental Advisor	Noise monitoring records
Weekly inspections	Inspection of the environmental controls and implementation of the noise and vibration mitigation measures outlined in Table 7.1.	Weekly	Not applicable	Environmental Advisor Supervisors	Weekly Environmental Inspection Checklist

8.4 Inspections

Weekly inspections will be performed by the Environmental team and documented in a weekly environmental checklist. The inspections will check the implementation and effectiveness of the management measures identified in Section 7 and the environmental performance of the project relevant to noise and vibration. Visual inspection of any noise controls, e.g. hoarding or noise barriers will be undertaken.

8.5 Auditing

No noise specific audits are identified in the Infrastructure Approval or the RMMs.

Audits will be undertaken to assess the effectiveness of the management measures and overall compliance with this plan, and other relevant approvals, licences and guidelines. Audit requirements are detailed in Section 9.3 of the CEMP – Auditing.

8.6 Reporting

Reporting which will be undertaken in accordance with the NVMP is summarised within Table 8.2.

Table 8.2 - Reporting program

Item	Scope	Frequency	Responsibility	Recipient
Monitoring reporting	Monitoring reports will include the results of monitoring undertaken during the reporting period and an assessment of the effectiveness of the noise and vibration management system. Monitoring reports will be prepared six-monthly. Reporting of noise and vibration matters on the project website in accordance with condition E12.	As required	Environmental Manager	Transgrid

Item	Scope	Frequency	Responsibility	Recipient
Audit reports	Independent audits undertaken in accordance with the Infrastructure Approval will include audits of noise and vibration management measures (based on the Independent Auditor's program). Audit reports will be prepared. Further detail in relation to auditing is provided within Section 9.3 of the CEMP.	Independent audits will be undertaken within 12 weeks from the commencement of construction and then at intervals, no greater than 26 weeks from the date of the initial Independent Audit or as otherwise agreed by the Secretary.	Environmental Manager / Independent Auditor	Transgrid DPE ER

8.7 Emergencies, incidents and non-compliances

Emergency management and planning including emergencies related to noise and vibration will be undertaken in accordance with the management system and relevant procedures. Emergencies will be managed in accordance with the relevant Health, Safety, Security and Environment (HSSE) Plan as identified in Section 8.1 of the CEMP – Emergency preparedness and emergency response.

Environmental incidents, including incidents related to noise and vibration will be managed as described in Section 8.2 of the CEMP – Environmental incidents and the *Incident, Notification and Investigation Procedure Flowchart* provided in Appendix A4 of the CEMP.

Incident reporting is described in Section 8.3 of the CEMP – Incident notification and reporting.

Where a non-compliance with the Infrastructure Approval has been identified, including those relevant to noise and vibration, corrective actions will be developed as required and implemented to address the non-compliance that occurred.

Reporting of non-compliances will be undertaken as described in Section 10.1 of the CEMP – Reporting non-compliances.

8.8 Contingency plan

Although the project has been assessed through the environmental impact assessment process and potential impacts identified, unpredicted impacts may occur as the project progresses. In the event that unexpected impacts are identified, the action or cause will be categorised and as required will be managed as:

- an emergency or environmental incident in accordance with Section 8 of the CEMP – Incidents and emergencies; and/or
- a non-compliance or non-conformance in accordance with Section 11 of the CEMP – Non-compliance, non-conformance, corrective and preventative action.

Reporting of the unpredicted impacts would be in line with the above processes and as described in Section 10 of the CEMP – Reporting.

Through the identification of corrective and/or preventative actions through the above processes, the following steps will occur as relevant:

a) determine the relevant impact assessment criterion/criteria, below which the impact should be reduced, consistent with the requirements of this NVMP;

b) identify options to reduce the unexpected impacts to below the relevant criterion/criteria and appropriate timeframe for implementation;

c) implement the selected measure(s) to reduce the unexpected impacts; and

d) identify and implement an appropriate monitoring program to determine the effectiveness of the selected measure(s) to reduce the unexpected impact.

If the above monitoring program identifies that the unexpected impacts have not been reduced to below the nominated criterion/criteria, items b) to d) of the contingency process will be repeated.

Appendix A - Out of hours works protocol

PUBLIC

Out of Hours Works Protocol
EnergyConnect (NSW - Western Section)

45860-HSE-PR-D-0001

REV	DATE	GENERAL DESCRIPTION	PREPARED	REVIEWED	VERIFIED	APPROVED
F	7/12/2021	Issued for DPIE review	A. Kriegel	R. Walker-Edwards/ Mattia Tabacchi	G. Crighton	D. Whatmough
G	2/02/2022	Issued for DPIE review	K.Nestmann/ M.Lee	R. Walker-Edwards	G. Crighton	D. Whatmough
H	8/03/2022	Issued for DPIE review	R.Walker-Edwards	A.Kriegel	G. Crighton	D. Whatmough
I	5/02/2024	Revised to Elecnor template	R.Walker-Edwards	C.Curlewis	G.Crighton	G.Arrien

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Revision History	
Rev.	**Detailed Description**
A	Issued for internal review
B	Issued for Transgrid review
C	Issued for Transgrid review and to address draft Infrastructure Approval (Revision 4 dated 25 August 2021)
D	Issued for Transgrid review and to address the Infrastructure Approval
E	Issued for Transgrid review
F	Issued to address ER comments, for ER endorsement and for DPIE review
G	Issued to address DPIE comments
H	Revised to address DPIE comments
I	Revised to update to the Elecnor template and Elecnor management system

Key Document Stakeholders
To be communicated with during reviews and revisions of this document

1 Introduction

This Out of Hours Works Protocol (OOHW Protocol or protocol) supports the Noise and Vibration Management Plan (NVMP), which forms part of the Construction Environment Management Plan (CEMP) for EnergyConnect (NSW – Western Section).

This OOHW Protocol has been prepared to address condition D3 of the Infrastructure Approval (SSI 10040) and revised mitigation measure (RMM) NV6 identified in Appendix G of the additional information letter dated 10 August 2021 (Response to DPIE Request for Information).

In accordance with condition D3 of the Infrastructure Approval, this OOHW Protocol has been prepared in consultation with Wentworth Shire Council and was approved by the Planning Secretary prior to works being undertaken outside the hours defined in condition D1, D2 and D7.

No blasting is proposed for the project, and therefore condition D7 is not considered for the rest of the protocol. In the event that blasting is proposed, this OOHW Protocol will be updated appropriately to consider condition D7.

This OOHW Protocol is applicable to works that are proposed outside the hours defined in condition D1 and D2. Works that comply with hours defined in conditions D1 and D2 are not required to be undertaken in accordance with the processes outlined in this Protocol.

2 Construction hours

2.1 Standard construction hours

In accordance with condition D1, and in line with the ICNG standard construction hours, road upgrades, construction, upgrading and decommissioning activities may only be undertaken between:

- 7am to 6pm – Monday to Friday;
- 8am to 1pm – Saturdays; and
- at no time on Sundays and NSW public holidays;

unless the Planning Secretary agrees otherwise.

2.2 Variation to standard construction hours

The following construction, upgrading and decommissioning activities may be carried out outside the hours specified in condition D1:

- the delivery or dispatch of materials as requested by the NSW Police Force or other public authorities for safety reasons;
- emergency work to avoid the loss of life, property or to prevent material harm to the environment; or
- works carried out in accordance with the hours and noise limits specified in any negotiated agreements with sensitive receivers (owners and occupiers), provided the negotiated agreements are in writing and finalised before the commencement of works.

Any other planned works which are proposed to occur outside of the hours detailed within condition D1, or the circumstances listed within condition D2, must be undertaken in accordance with this OOHW Protocol.

3 OOHW process

3.1 Justification

Generally, works are considered justified as OOHW:

- to sustain the operational integrity of the electricity network or other services/utilities (e.g. water, gas, sewerage, drainage) and to minimise potential services/utilities disruptions;
- to promote the safety of construction personnel and/or the general public;
- to sustain the operational integrity of the road network or to promote the safety of road users where proposed works are in the vicinity of a main road;
- where works are required to be completed continuously (over a longer period than the ICNG standard construction day); and
- where works do not result in impacts to noise affected and vibration affected sensitive receivers (i.e. compliant with the noise management levels and vibration criteria as outlined in Section 4 of the NVMP).

Construction activities that are likely to be required to occur outside of standard construction hours are provided within Table 3.1.

Table 3.1 – Indicative list of construction activities likely to be required outside of standard construction hours

Stage	Stage 1	Stage 2
Construction activities	Construction activities which are likely to be required to occur outside of standard construction hours during Stage 1 include: • vegetation clearing and grubbing activities; • topsoil stripping; • topsoil/material handling including stockpiling, material and spoil loading and material and spoil haulage; • earthworks; • surface grading and compaction; • crushing and screening (as required); • movement of vehicles including light and heavy vehicles; • establishment of the construction compound and accommodation camp at Buronga; and • operation of the construction compound at Buronga.	Construction activities which are likely to be required to occur outside of standard construction hours during Stage 2 include: • vegetation clearing and grubbing activities; • topsoil stripping; • topsoil/material handling including stockpiling, material and spoil loading and material and spoil haulage; • earthworks; • surface grading and compaction; • operating plant and equipment, including crushing and screening (as required); • tower assembly, erection and stringing; • movement of vehicles including light and heavy vehicles; • establishment of the construction compound and accommodation camp at Wentworth; • operation of the construction compounds; • commissioning / energisation; and • rehabilitation and decommissioning.

The justification of the proposed OOHW activities will be identified in the OOHW permit as identified in Section 3.2. The OOHW is considered to be justified if it is compliant with the noise management levels.

3.2 OOHW permit

For the proposed OOHW, the following process will be implemented:

1. OOHW permit prepared by the team/engineers requesting the works that summarises the activities, equipment required, location and duration and justifies why the activities are needed outside standard construction hours.
2. The OOHW permit will be submitted to the Environment Team, who will undertake a noise assessment for the OOHW (or review the assessment, if this has been completed as part of Step 1).
3. Where exceedances of noise management levels are predicted, the Engagement Team (or delegates) will undertake consultation with potentially affected receivers to understand their preferences for noise mitigation
4. and management measures (RMM NV4, condition D3 c). Previous feedback on preferences for mitigation and management measures may be applied to subsequent, similar scenarios.

   Where noise intensive equipment will be used near sensitive receivers and is predicted to result in an exceedance of the noise management level, the relevant equipment will be used during standard construction hours, unless agreement is reached with the affected receiver (RMM NV7) or the associated activity is otherwise permitted through condition D2 or D3 (in accordance with this OOHW Protocol).
5. The Environment Team will determine the appropriate mitigation measures based on the predicted noise level and duration of works, and determine the appropriate risk level (refer to Section 6.1).
6. The OOHW permit will be submitted to the appropriate party for review and approval (refer to Section 6.2).
7. The OOHW permit will be assessed and approved or not approved.
8. If approved, community consultation and notification will be undertaken as required, in accordance with the *Community Communication Strategy* (45860-CM-PL-G-1001) and OOHW will proceed.

OOHW permits may be issued for extended periods of time where the risk of amenity impacts due to noise and vibration are negligible and/or where similar activities will be undertaken for an extended period of time. OOHW permits may also be issued on an area basis (rather than an activity basis) for project areas and locations where there is minimal risk of noise impacts due to the absence of noise sensitive receivers. The approval process for OOHW is identified in Section 6.

3.3 Coordination of third party OOHW

To identify and coordinate any OOHW undertaken by third parties in the vicinity of the project site, where sensitive receivers would be noise affected by the Elecnor Australia (Elecnor) works, the following will occur:

- Elecnor to use best endeavours to identify other potential OOHW in the vicinity of the proposed Elecnor OOHW. This may include OOHW undertaken by third parties (e.g. utility providers, road authorities), other State significant infrastructure or State significant development projects;
- Elecnor to provide as much notice as possible regarding proposed OOHW to any other parties;

- Elecnor to communicate with any other parties. If there are multiple OOHW proposed in the same vicinity and sensitive receivers would be noise affected, the proposed OOHW will be reviewed to determine respite periods; and
- in the event that the OOHW proposed by all parties cannot be coordinated to provide appropriate respite for noise affected receivers, the following will occur:
  - further communication with third party regarding their proposed works;
  - consultation with affected receivers regarding negotiated agreements (condition D2 c);
  - modification or rescheduling proposed OOHW; or
  - consideration of additional respite or mitigation.

It is noted that other parties may have their own procedures in place regarding out of hours works. This procedure may need to be altered on a case-by-case basis to consider external influences.

4 OOHW assessment

4.1 Noise assessment

A construction noise assessment will be undertaken to consider proposed works outside of the hours defined in conditions D1 and D2 of the Infrastructure Approval. Assessments are most likely to be undertaken through a construction noise tool or as location and activity-specific construction noise and vibration impact statements (CNVIS).

The construction noise tool will enable the prediction and assessment of potential noise impacts resulting from proposed OOHW in specific work areas. The prediction tool provides assistance in identifying noise impacts on sensitive receivers, based on the specific work areas and types of machinery operating in the work area. The tool will identify the potentially noise affected sensitive receivers, the magnitude of any predicted exceedance of relevant noise management levels and any additional mitigation measures required.

The results of the assessment(s) will be used to determine the requirements for actions in accordance with this OOHW Protocol (refer Appendix A).

4.2 Noise intensive equipment

Elecnor considers noise intensive equipment as having a sound power level above 115dBA (refer to Table B.1 of Technical Paper 8 of the EIS). Noise intensive equipment includes:

- piling rig;
- D8 dozer;
- excavator with hammer;
- pneumatic jackhammer; or
- mulcher/chipper.

Where noise intensive equipment will be used near sensitive receivers and is predicted to result in an exceedance of the relevant noise management level, the relevant equipment will be used during standard construction hours, unless agreement is reached with the affected sensitive receivers (RMM NV7), or associated activity is otherwise permitted through condition D2 or D3.

4.3 Vibration

Where vibration intensive activities are proposed during the OOHW, these will be assessed for compliance with minimum working distances for human comfort and structural damage identified in Section 4.6.3 of the NVMP.

5 OOHW management and mitigation measures

The results of the noise assessment process described in Section 4.1 will be used to determine the most appropriate reasonable and feasible management measures from the NVMP and any additional measures that might be required. Where exceedances of the noise management levels are expected, mitigation measures identified in Table 5.2 will be implemented for the OOHW period 1 and OOHW period 2 visually represented in Table 5.1.

ICNG standard construction hours and the nominated OOHW periods are represented in Table 5.1.

Table 5.1 - ICNG standard construction hours and OOHW periods

Day	12am	1am	2am	3am	4am	5am	6am	7am	8am	9am	10am	11am	12pm	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm
Monday																								
Tuesday																								
Wednesday		OOHW period 2							ICNG standard construction hours										OOHW period 1					
Thursday																								
Friday																								
Saturday																								
Sunday/PH																								

Notes:
PH = public holiday; ICNG standard construction hours = white; OOHW period 1 = grey; OOHW period 2 = orange

The mitigation measures below are in line with the measures described in Section 8.1.2 of Technical Paper 8 of the EIS. The application of the mitigation measures is dependent on the predicted noise levels and on the specific time period as identified in Table 5.2. The nominated mitigation measures are:

- **Notification** (N): the notification may consist of a letterbox drop (or equivalent) detailing work activities, time periods over which these will occur, impacts and mitigation measures. Notifications will be provided a minimum of five (5) working days prior to the start of works. Given that the affected sensitive receivers are also likely to be affected landholders for the project, phone call and email will be favoured for these notifications;
- **Respite period 1** (R1): where out-of-hours construction noise in OOHW period 1 is limited to no more than three consecutive evenings per week;
- **Respite period 2** (R2): where out-of-hours construction noise in OOHW period 2 is limited to two consecutive nights; and
- **Duration respite** (DR): respite periods may be counterproductive in reducing the impact on the community for longer duration projects. In these instances, where it can be agreed upon by affected residents, it may be beneficial to increase the work duration, number of evenings or nights worked through duration respite so that the project can be completed more quickly. The project will engage with affected receivers to determine support for duration respite. Where possible, negotiated agreements permitted in accordance with condition D2 c) are the preferred project approach in lieu of duration respite.

Table 5.2 - Mitigation measures for implementation during OOHW

	dBA above NML	Mitigation measures	Mitigation measure detail(s)
OOHW period 1[1]	0	--	--
	>0 to <5	--	--
	≥5	N, R1, DR	Respite period 1: evening construction noise shall be limited to no more than three (3) consecutive evenings per week except where there is a duration respite.
OOHW period 2[2]	0	--	--
	>0 to <5	N	--
	≥5	N, R1, R2, DR	Respite period 2: night construction noise shall be limited to two (2) consecutive nights per week and should be limited to six nights per month except for where there is a duration respite. Where possible, high noise generating works shall be completed before 11pm.

Notes:

N = Notification, DR = Duration respite (where feasible), R1 = Respite period 1, R2 = Respite period 2

(1) OOHW period 1: Mon-Fri (6pm – 10pm), Sat (7am – 8am; 1pm – 10pm), Sun/Pub Hol (8am – 6pm)

(2) OOHW period 2: Mon – Fri (10pm – 7am), Sat (10pm – 8am), Sun/Pub Hol (6pm – 7am)

The mitigation measures and the recommended restrictions in consecutive evenings/nights are applicable per affected receiver. For example, works may be undertaken three consecutive evenings in one location, and then move to a different location with distinct receivers for another three evenings, and so on.

6 Approval process

6.1 Risk level

The following section outlines the assessment criteria to determine risk level of the proposed out of hours works. The risk category considers both the predicted noise impact relative to the appropriate noise management level and the duration of works. Low risk activities do not exceed the criteria described in Table 6.1. If, after the implementation of management measures, the proposed activities exceed the criteria described in Table 6.1, the OOHW are considered to be high risk.

Table 6.1 - OOHW risk limitations

	dBA above NML	Risk limitations
Negligible risk		
OOHW period 1[1]	0	Predicted noise levels must be below or equal to the noise management levels.
OOHW period 2[2]		
Low risk		
OOHW period 1	>0 to <5	--
	≥5	OOHW may be undertaken during any OOHW day periods[3] and not more than three consecutive evening periods in a week.
OOHW period 2	>0 to <5	--
	≥5	OOHW limited to not more than two consecutive night periods in a week and limited to six nights per month. Noise intensive equipment will be used during standard construction hours, unless necessary. Where noise intensive equipment is required outside of standard construction hours, all endeavours shall be made to complete use of noise intensive equipment by 11pm.
High risk		
OOHW period 1	≥5	OOHW that are undertaken for more than three consecutive evening periods in a week.
OOHW period 2	≥5	OOHW that are undertaken for more than two consecutive night periods in a week, or more than six nights in a month.

Notes:
(1) Mon-Fri (6pm – 10pm), Sat (7am – 8am; 1pm – 10pm), Sun/Pub Hol (8am – 6pm)
(2) Mon – Fri (10pm – 7am), Sat (10pm – 8am), Sun/Pub Hol (6pm – 7am)
(3) Sat (7am – 8am; 1pm-6pm), Sun/Pub Hol (8am – 6pm)

In instances where OOHW will be undertaken in both an evening period and a night period, the limitations for consecutive days for the OOHW period 2 will be implemented.

The low risk limitations identified in Table 6.1 are applicable per affected receiver. For example, low risk OOHW may be approved for three consecutive evenings in one location, and approved for the next three consecutive evenings (or overlapping evenings) in a distinct location with distinct receivers.

6.2 Approval pathway

An approval process that considers the risk of the proposed out of hours work activities has been identified in Table 6.2 in accordance with condition D3 e).

Table 6.2 - OOHW approval pathway

Risk level	Approval pathway
Negligible	Environmental Manager
Low	Environmental Representative
High	Planning Secretary

Once the risk level (refer Section 6.1) has been determined, considering the noise assessment and duration of proposed works, the OOHW permit and supporting assessment will be provided to the relevant approval authority.

The Environmental Representative has the authority to approve OOHW assessed to be low risk as described in Section 6.1, while the Planning Secretary will be required to approve any OOHW assessed to be high risk. If, during the assessment process, the Environmental Representative is of the opinion that the proposed works do not meet the low risk criteria described in Section 6.1, the Environmental Representative will inform Elecnor of this opinion. The proposed works may be revised, or the permit will be provided to the Planning Secretary for assessment.

Once reviewed, the OOHW permit may be approved or not approved through the approval pathway. If not approved, the proposed works may be modified and resubmitted in line with the flow chart presented in Appendix A.

If approved, the OOHW may be undertaken in accordance with the OOHW permit and any identified mitigation measures.

7 OOHW stakeholder consultation and communication

The Engagement Team will use a range of communication tools to provide clear, effective and timely information to the predicted affected sensitive receivers and stakeholders. The method of communication will be selected based on the type of works, potential impacts and individual receiver.

7.1 Notification

Where required in the additional mitigation measures identified in Table 5.2, affected receivers will be notified of upcoming OOHW activities at least five working days prior to the start of works. Notification details are described in Section 5.

Notification will also be provided to Wentworth Shire Council and Department of Planning and Environment (DPE) via email prior to the commencement of relevant works.

In the event of unexpected OOHW (emergency or other) the Environmental Manager and Engagement Manager (or delegates) will be contacted. Elecnor will use best endeavours to notify all noise and/or vibration affected sensitive land user(s) of the likely impact and duration of those work. Wentworth Shire Council and DPE will also be notified of any unexpected OOHW.

7.2 Consultation

All consultation will be undertaken in accordance with the *Community Communication Strategy* (45860-CM-PL-G-1001), which includes a description of communication tools such as letterbox drops, phone calls and emails.

Where exceedances of noise management levels are predicted during OOHW, consultation will be undertaken with affected receivers to understand their preferences for mitigation and management measures (in accordance with RMM NV4 and condition D3 c). The results of this consultation may be applied in similar subsequent OOHW activities.

Where agreements are reached with the potentially noise affected sensitive receivers regarding OOHW the proposed work can proceed without an OOHW permit (in accordance condition D2 c)).

8 OOHW compliance management

8.1 Monitoring

Noise monitoring will be undertaken in accordance with Section 8.3 of the NVMP to confirm actual noise levels do not exceed predicted noise levels. Noise monitoring will be undertaken in the following scenarios:

- at the commencement of new OOHW activities that are predicted to exceed the noise management level at sensitive receivers; and
- in response to complaints received as a result of OOHW construction activities.

8.2 Continual improvement

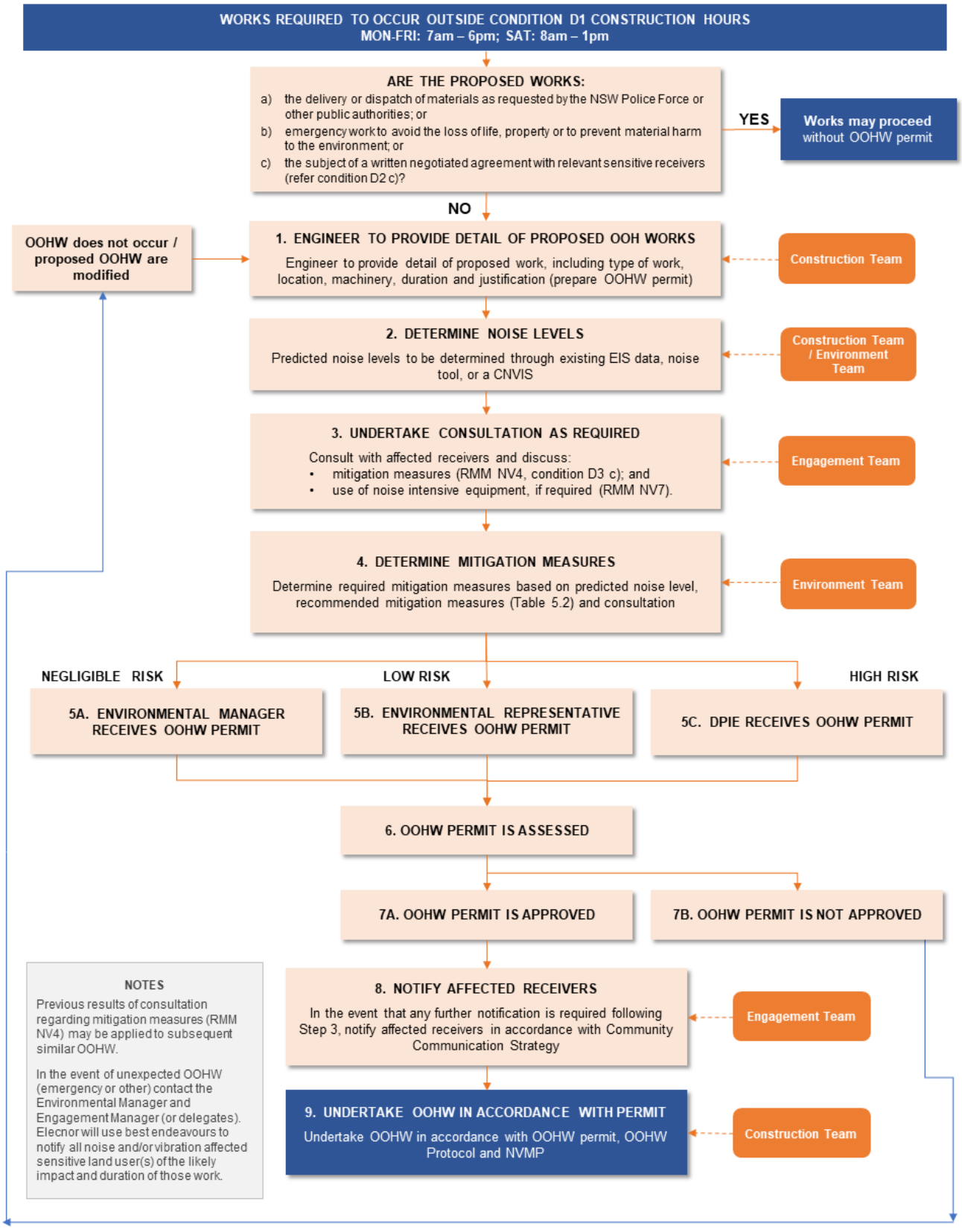
Where monitored construction noise levels are found to be above modelling predictions or in response to complaints, the process described in Section 8.9 of the NVMP will be implemented, which includes:

- confirm the monitored levels are due to project works;
- determine if the exceedance is due to an uncharacteristically loud piece of equipment;
- confirm that the actual activity being undertaken is the same as the modelled scenario on which the predictions are based;
- review feasible and reasonable mitigation measures that were applied and revise if necessary, which may include reducing plant size, modifying time of works, utilising alternative construction methodology; and
- communicate lessons learnt, as required, to relevant personnel.

Section 1.7.5 of the NVMP outlines the complaints management process. The key principles of the complaint management process will be implemented for OOHW, as outlined in the NVMP.

Appendix A – Out of hours works protocol flow chart

Noise Management Procedure
OUT OF HOURS WORK PROCEDURE



Appendix B - Relevant legislation

Legislation/ Regulations	Aspect	Reference	Requirement	Applicability	Responsibility
Environmental Planning and Assessment Act 1979 (EP&A Act)	All	Section 5.5	A determining authority has the duty to fully consider the environmental impact (including Aboriginal or non-Aboriginal heritage) of an activity and is required to 'take into account the fullest extent possible all matters affecting, or likely to affect the environment' arising from the proposal.	The *EnergyConnect (NSW - Western Section) Environmental Impact Statement* was submitted to Department of Planning and Environment in October 2020 and publicly exhibited between 26 September 2019 and 10 December 2020. On 14 April 2021, the response to submissions was finalised in the *EnergyConnect (NSW - Western Section) – Submissions Report*. A separate *EnergyConnect (NSW - Western Section) – Amendment Report*, to document design changes and additional environmental assessment undertaken, was also finalised on 14 April 2021. Transgrid prepared and provided a memorandum titled *EnergyConnect (NSW – Western Section) Response to DPIE Request for Information – 7 May 2021 and subsequent discussions to DPIE* on the 10 August 2021 in response to DPIE requested additional information (EnergyConnect (NSW – Western Section) (SSI-10040) Request for Additional Information).	Transgrid
		Section 5.19	Approval of the Minister required to carry out critical State significant infrastructure (CSSI). Comply with the conditions of the Infrastructure Approval and generally in accordance with the revised mitigation measures from the Response to DPIE Request for Information.	The project requires approval from the NSW Minister for Planning and Public Spaces under Division 5.2, Part 5 of the EP&A Act. The project was assessed as above. Approval for EnergyConnect (NSW - Western Section) was granted by the Minister for Planning and Public Spaces.	Transgrid
Protection of the Environment Operations Act 1997 (POEO Act)	Plant maintenance and operation	Section 139	Do not operate plant if it emits noise caused by failure to maintain or operate the plan in a proper and efficient manner.	Yes, the relevant management measures have been incorporated within the Noise and Vibration Management Plan.	Elecnor

Appendix C - Construction scenarios and noise levels for plant and equipment

Table C.1 Construction scenarios and associated plant and equipment – Buronga substation construction (source Appendix B-1 of EIS Technical paper 8)

STAGE	SCENARIO	ACTIVITY EXPLANATION	EQUIPMENT	NO OF PLANT PER 15 MINUTE PERIOD	INDIVIDUAL EQUIPMENT MAXIMUM L_{EQ} SOUND POWER LEVEL dBA
1	Enabling works	Works include: — dilapidation surveys — road surveys — tower/easement survey and LiDAR — flora/fauna/heritage surveys — geotechnical investigations	Flatbed Hi - Ab truck	1	107
			Watercart	1	107
			Geotech boring rig (Geotech only)	1	112
			Light vehicles	2	88
2	Earthworks and Civil Construction Works	Site establishment, substation bench, footings and civil infrastructure (drainage/utilities) — clearing grubbing — vegetation removal — strip topsoil — major earthworks fill using site won (borrow pit) material and imported fill — potential stabilisation of material insitu. — installation of utilities infrastructure (drainage, conduit runs) — footings and foundations for equipment (piled and reinforced concrete (RC)) — building installation — spray seals, surfacing, white lining, barrier installation — access road installation — security fence install	Flatbed Hi - Ab truck	1	107
			Concrete agitator	0.5	109
			Concrete pump	0.5	102
			Bob cat	1	104
			10-15 tonne roller	1	109
			Watercart	1	107
			Piling rig	0.5	116
			CAT 140M grader	0.5	113
			D8 Dozer	0.5	116
			30-45 tonne excavator	1	110
			20 tonne excavator	1	110
			12-15 tonne excavator	1	104
			7-10 tonne excavator	1	104
			5 tonne excavator	1	100
			Excavator with hammer	0.5	119
			12-15 tonne franna crane	0.5	98
			15-25 tonne franna crane	0.5	98
			70 tonne crane	0.5	113
			>200 tonne crane	0.5	113
			Scraper	2	110
			Backhoe	1	111
			Pneumatic jackhammer	0.5	115
			Dumper truck	2	110
			Elevated working platforms	0.5	98
			Chainsaw	3	114
			Mulcher/Chipper	2	116

STAGE	SCENARIO	ACTIVITY EXPLANATION	EQUIPMENT	NO OF PLANT PER 15 MINUTE PERIOD	INDIVIDUAL EQUIPMENT MAXIMUM L_{EQ} SOUND POWER LEVEL dBA
3	Electrical Construction Works	Installation of electrical plant, equipment and connections. — local earthworks — pit and conduit installation including insitu RC pits — lifting and installation of large equipment — installation an d fitout of buildings	Flatbed Hi - Ab truck	1	107
			Cable truck	2	108
			Concrete agitator	0.5	109
			Concrete pump	0.5	102
			Bob cat	1	104
			Watercart	1	107
			20 tonne excavator	1	110
			15-25 tonne franna crane	1	98
			70 tonne crane	0.5	113
			≥200 tonne crane	0.5	113
			Stringing Winches	4	103
			Backhoe	1	111
			Elevated working platforms	4	98
4	Pre-commissioning and commissioning	Predominantly electrical work but defect rectification could include any of the activities listed in stage 4	Flatbed Hi - Ab truck	1	107
			Cable truck	1	108
			Concrete agitator	0.5	109
			Concrete pump	0.5	102
			Bob cat	1	104
			Watercart	1	107
			CAT 140M grader	0.5	113
			20 tonne excavator	0.5	110
			5 tonne excavator	0.4	100
			15-25 tonne franna crane	1	98
			70 tonne crane	0.5	113
			≥200 tonne crane	0.5	113
			Stringing Winches	4	103
			Backhoe	1	111
			Elevated working platforms	4	98

STAGE	SCENARIO	ACTIVITY EXPLANATION	EQUIPMENT	NO OF PLANT PER 15 MINUTE PERIOD	INDIVIDUAL EQUIPMENT MAXIMUM L_{EQ} SOUND POWER LEVEL dBA
5	Demobilisation and rehabilitation	Predominantly electrical work but defect rectification could include any of the activities listed in stage 4	Flatbed Hi - Ab truck	1	107
			Concrete agitator	0.5	109
			Concrete pump	0.5	102
			Bob cat	1	104
			Watercart	1	107
			CAT 140M grader	0.5	113
			20 tonne excavator	0.5	110
			5 tonne excavator	0.4	100
			15-25 tonne franna crane	0.5	98
			70 tonne crane	0.5	113
			Backhoe	0.5	111
			Elevated working platforms	2	98

Source: TransGrid

Table C.2 Construction scenarios and associated plant and equipment – main construction compounds and accommodation camps (source Appendix B-1 of EIS Technical paper 8)

STAGE	SCENARIO	ACTIVITY EXPLANATION	EQUIPMENT	NO OF PLANT PER 15 MINUTE PERIOD	INDIVIDUAL EQUIPMENT MAXIMUM L_{EQ} SOUND POWER LEVEL dBA
1a	Enabling works	Works include: — dilapidation surveys — road surveys — tower/easement survey and LiDAR — flora/fauna/heritage surveys — geotechnical investigations	Flatbed Hi - Ab truck	1	107
			Watercart	1	107
			Geotech boring rig (Geotech only)	1	112
			Light vehicles	2	88
1b	Enabling works – site establishment	Establishment of the compound/laydown: — clearing grubbing — vegetation removal — taking deliveries — earthworks to establish hardstand — installation of utilities infrastructure (drainage, conduit runs, sewerage) — installation of site/accommodation sheds — installation of roofs and walkways — spray seals, white lining, barrier installation — installation of workshops, containers, canopies — furnishing and utilities connections	Flatbed Hi - Ab truck	1	107
			Concrete agitator	0.5	109
			Concrete pump	0.5	102
			Bob cat	1	104
			10-15 tonne roller	1	109
			Watercart	1	107
			CAT 140M grader	0.5	113
			D8 Dozer	0.5	116
			30-45 tonne excavator	1	110
			20 tonne excavator	1	110
			12-15 tonne excavator	1	104
			7-10 tonne excavator	1	104
			5 tonne excavator	1	100
			Excavator with hammer	0.5	119
			12-15 tonne franna crane	0.5	98
			15-20 tonne franna crane	0.5	98
			70 tonne crane	0.2	113
			Backhoe	1	111
			Pneumatic jackhammer	0.5	115
			Dumper truck	2	110
			Elevated working platforms	0.5	98
			Chainsaw	0.1	114
			Mulcher/Chipper	0.1	116

STAGE	SCENARIO	ACTIVITY EXPLANATION	EQUIPMENT	NO OF PLANT PER 15 MINUTE PERIOD	INDIVIDUAL EQUIPMENT MAXIMUM L_{EQ} SOUND POWER LEVEL dBA
2a	Operation of the compound – standard hours	Activities include: — office works — staff/worker meetings/briefings — material handling — logistics (loading/unloading trucks) — taking deliveries — de-stuffing/re-distribution of materials — staff training — maintenance	Front end loader Excavator (tracked) 35t Road truck Light vehicles Power generator Concrete batching plant	1 1 1 1 1	91 110 108 88 103
2b	Operation of the compound – outside standard hours	As above Saturday and Sundays As above but following the OOHW protocol for night works			
3	Operation of the accommodation camp		Generators Once/twice a week: Bin/Skip collection Sewer/cess pump out Deliveries (food/water)		
4	Demobilisation / rehabilitation	Site rehabilitation Removal of temporary works Seeding/stabilising Minor landscaping Removal of materials Defect rectification Inspections Road repairs as required	Semi Trailer Flatbed Hi - Ab truck Concrete agitator Concrete pump Bob cat 10-15 tonne roller Watercart CAT 140M grader 30-45 tonne excavator 20 tonne excavator 5 tonne excavator 15-25 tonne franna crane 70 tonne crane Backhoe Dumper truck Elevated working platforms	1 1 0.5 0.5 1 0.5 1 0.5 0.5 0.5 0.5 0.5 0.2 1 0.5 1	108 107 109 102 104 109 107 113 110 110 100 98 113 111 110 98

Table C.3 Construction scenarios and associated plant and equipment – Transmission line construction (source Appendix B-1 of EIS Technical paper 8)

STAGE	SCENARIO	ACTIVITY EXPLANATION	EQUIPMENT	NO OF PLANT PER 15 MINUTE PERIOD	INDIVIDUAL EQUIPMENT MAXIMUM L_{EQ} SOUND POWER LEVEL dBA
1	Enabling works	Works include: — dilapidation surveys — road surveys — tower/easement survey and LiDAR — flora/fauna/heritage surveys — geotechnical investigations	Flatbed Hi - Ab truck	1	107
			Watercart	1	107
			Geotech boring rig (Geotech only)	1	112
			Light vehicles	2	88
2	Site establishment and access tracks	— clearing/grubbing — vegetation removal — mulching — grading/improving access routes	Flatbed Hi - Ab truck	2	107
			Concrete agitator	0.5	109
			Concrete pump	0.5	102
			Bob cat	2	104
			10-15 tonne roller	1	109
			Watercart	2	107
			CAT 140M grader	0.5	113
			D8 Dozer	0.5	116
			30-45 tonne excavator	0.5	110
			20 tonne excavator	0.5	110
			Chainsaw	4	114
			Mulcher/Chipper	2	116

STAGE	SCENARIO	ACTIVITY EXPLANATION	EQUIPMENT	NO OF PLANT PER 15 MINUTE PERIOD	INDIVIDUAL EQUIPMENT MAXIMUM L_{EQ} SOUND POWER LEVEL dBA
3	Earthworks and Civil Construction Works Decommissioning of redundant 220kV transmission line structures in discrete locations	Installation of foundations and temporary works for following activities. — levelling ground — crane pad temp. works (improving ground or installing temporary pads) — bored piling, install reinforcement and concreting — RC pad footings — concrete/steel driven piles — installation of screw piles — spreading excavated material	Scraper	3	
			Semi Trailer	1	108
			Flatbed Hi - Ab truck	1	107
			Concrete agitator	0.5	109
			Concrete pump	0.4	102
			Bob cat	2	104
			10-15 tonne roller	1	109
			Watercart	3	107
			Piling rig	4	116
			CAT 140M grader	0.5	113
			D8 Dozer	1	116
			30-45 tonne excavator	1	110
			20 tonne excavator	0.5	110
			12-15 tonne excavator	1	104
			7-10 tonne excavator	1	104
			5 tonne excavator	1	100
			Excavator with hammer	0.5	119
			Scraper	0.5	110
			15-25 tonne franna crane	1	98
			Backhoe	1	111
			Pneumatic jackhammer	1	115
			Dumper truck	2	110
			Elevated working platforms	1	98
			Geotech boring rig	0.5	112
4	Tower Assembly	Assembly of steel structure on ground	Semi Trailer	1	108
			Bob cat	1	104
			Watercart	1	107
			15-25 tonne franna crane	1	98
			≥200 tonne crane	1	113
			Stringing Winches	2	103
			Backhoe	1	111
			Elevated working platforms	4	98

STAGE	SCENARIO	ACTIVITY EXPLANATION	EQUIPMENT	NO OF PLANT PER 15 MINUTE PERIOD	INDIVIDUAL EQUIPMENT MAXIMUM L_{EQ} SOUND POWER LEVEL dBA
5	Tower Erection	Lifting the assembled pieces into position (may be in one piece or may be multiple lifts)	Flatbed Hi - Ab truck	1	107
			Cable truck	1	108
			Concrete agitator	0.5	109
			Concrete pump	0.5	102
			Bob cat	1	104
			Watercart	1	107
			15-25 tonne franna crane	1	98
			70 tonne crane	0.5	113
			≥200 tonne crane	0.5	113
			Stringing Winches	4	103
			Backhoe	1	111
			Elevated working platforms	4	98
6	Tower Stringing	Pull line pulled between structures in up to 10km runs Line could be pulled by vehicle or drone Winches and cable trucks used to pull conductors Connections between conductors at breaks in line and changes in direction	Semi Trailer	1	108
			Cable truck	3	108
			Watercart	1	107
			20 tonne excavator	1	110
			15-25 tonne franna crane	1	98
			70 tonne crane	1	113
			Stringing Winches	2	103
			Elevated working platforms	4	98
			Drone		81
7	Commissioning/Energisation	Predominantly electrical works	Cable truck	1	108
			Stringing Winches	1	103
			Elevated working platforms	2	98

STAGE	SCENARIO	ACTIVITY EXPLANATION	EQUIPMENT	NO OF PLANT PER 15 MINUTE PERIOD	INDIVIDUAL EQUIPMENT MAXIMUM L_{EQ} SOUND POWER LEVEL dBA
8	Demobilisation and rehabilitation	Site rehabilitation	Semi Trailer	1	108
		Removal of temporary works	Flatbed Hi - Ab truck	1	107
		Seeding/stabilising	Concrete agitator	0.5	109
		Minor landscaping	Concrete pump	0.5	102
		Removal of materials	Bob cat	1	104
		Defect rectification	10-15 tonne roller	0.5	109
		Inspections	Watercart	1	107
		Road repairs as required	CAT 140M grader	0.5	113
			30-45 tonne excavator	0.5	110
			20 tonne excavator	0.5	110
			5 tonne excavator	0.5	100
			15-25 tonne franna crane	0.5	98
			Backhoe	1	111
			Dumper truck	0.5	110
			Elevated working platforms	1	98