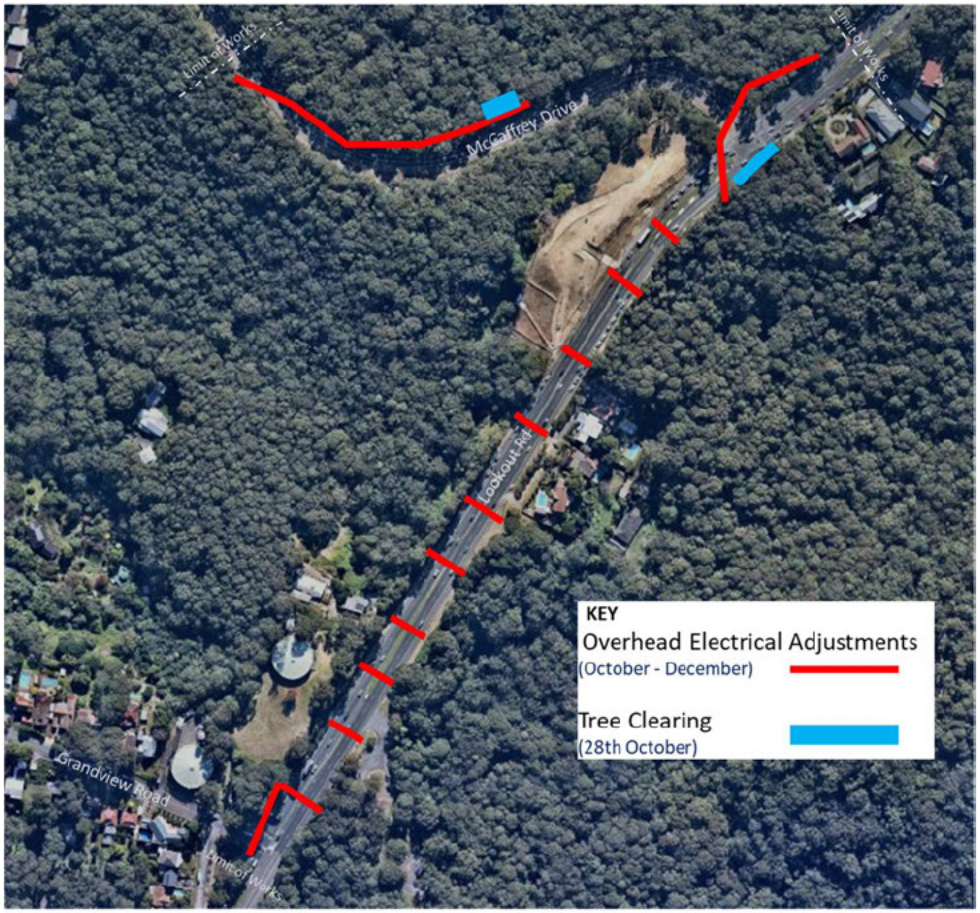
RP2J Project OOHW application form

Out of hours work approval request form			
No:	**Notification date:**	**Approval date:**	**Project:**
027	**19/10/2021**		**RP2J – Southern Utilities**
A. Contact details	**Name**	**Mobile number**	**Email**
Contractor Environmental Site Representative	Richard Lipar	[redacted]	[redacted]
Contractor Project Manager	Mike Billington	[redacted]	[redacted]
Contractor Foreman	Daniel Tregeagle	[redacted]	[redacted]
Contractor Project Engineer	Joey O'Connor	[redacted]	[redacted]
B. Details of work: Include a map showing location of work extent and nearest sensitive receivers			
Location / chainages:	Lookout Rd and McCaffrey Drive Overhead Electrical Adjustments 		
NCA/s:	NCA-13		

Out of hours work approval request form	
Description of works – also include a brief description of the sequence of activities:	Works involve minor tree clearing, dressing electrical poles and stringing new conductors, electrical outages and cut-overs. Refer to **Appendix A** for more detailed summary of planned shifts, location, activities and plant.
Machinery/ plant to be used	Refer to **Appendix A** for detailed summary of machinery / plant that will be used and corresponding shifts.
Traffic control measures required:	Lookout Road Northbound and Southbound Lane Closures McCaffrey Drive Eastbound Lane Closures
Lighting required:	Lighting towers will be provided to highlight road works zone for motorists, and battery operated task lighting will be provided at specific locations.
Proposed dates:	28/10/21 (1 Night at Lookout Road/McCaffrey Drive intersection) 01/11/21 – 02/11/21 (2 Nights on McCaffrey Drive and Lookout/McCaffrey intersection) 15/11/21 – 18/10/21 (4 Nights on Lookout Road) 12/12/21 – 13/12/21 (2 Nights on Lookout Road) Should dates change due to wet weather or other circumstances, an email notification will be provided with an update on impacts and/or revised dates.
Proposed times:	Start 1900 – Finish 0500 on each shift
Justification – why does work need to occur outside of standard construction hours?: (attach support information as required)	Work needs to be carried out under lane closures on McCaffrey Drive and Lookout Road for the safety of workers and public. This cannot happen during the day as City of Newcastle Council and TfNSW will not issue a Road Occupancy Licence (ROL) for daytime lane closures on McCaffrey Drive or concurrent lane closures on Lookout Road. Additionally electrical outage dates and times are dictated by Ausgrid in consideration of impacts to customers with night outages being low use periods.
C. Risk assessment	
NML (refer Table 3-2 of OOHW protocol)	Evening: 54 dB(A). Night: 38 dB(A)
Is the work highly noise intensive? (above 75dB(A) $L_{Aeq\ (15\ minute)}$)	No
Risk factor category (refer section 4.3 of OOHW protocol):	Low Risk. Maximum worst case cumulative predicted noise level ($L_{Aeq\ 15\ min.}$) = 57dB(A). This is <25dB(A) above RBL (33dB(A)).
D. Details of noise or vibration assessment completed:	

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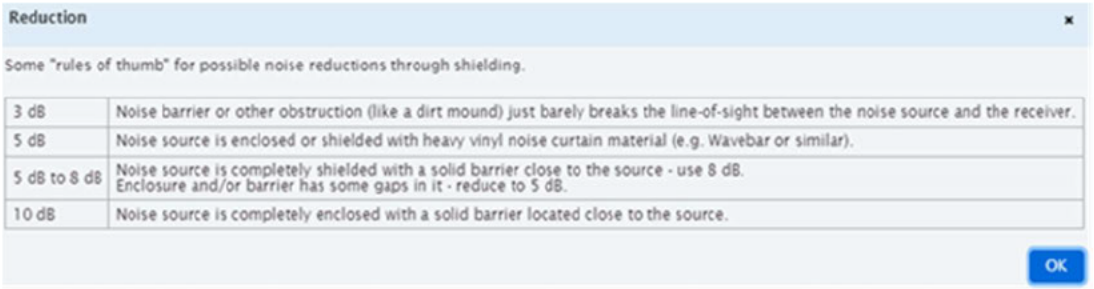
Detailed noise assessments were completed using noise modelling program named *KNOWnoise: Minor Works* which is developed and owned by Hutchison Weller. This program, and it's more advanced version *KNOWnoise,* are used on many large-scale infrastructure projects to determine and model likely noise impacts on sensitive receivers.

As works are predicted to carry over the Evening and Night OOHW Periods, a detailed noise assessment was completed to determine predicted noise impacts for the Night Period only, as this is the worst case for the RBL (refer Appendix B). Detailed noise assessment reports are attached to this OOHW Application. Report includes a map of predicted impacts on sensitive receivers, and predicted noise levels at each receiver's address.

Where noise reductions such as noise blankets are applied to the noise assessments it is detailed in the table in **Appendix B** of the noise assessments. The reductions applied are in line with the following:



Reduction

Some "rules of thumb" for possible noise reductions through shielding.

3 dB	Noise barrier or other obstruction (like a dirt mound) just barely breaks the line-of-sight between the noise source and the receiver.
5 dB	Noise source is enclosed or shielded with heavy vinyl noise curtain material (e.g. Wavebar or similar).
5 dB to 8 dB	Noise source is completely shielded with a solid barrier close to the source - use 8 dB. Enclosure and/or barrier has some gaps in it - reduce to 5 dB.
10 dB	Noise source is completely enclosed with a solid barrier located close to the source.

OK

All applicable data was added to the model, including but not limited to, specific information on the proposed activity, project adopted RBLs and NMLs, extent of works, plant and equipment to be used, proposed mitigation measures etc. Using this data, and data within the program, detailed noise assessment reports were produced giving accurate predicted noise impacts for the period assessed. Specific assessment methodology is described on Page 3 of each report.

Predicted impacts:

The noise assessment considers 4 separate activites/location of work, impacts are summarised as follows:

McCaffrey Drive/Lookout Road Tree Clearing (28/10/21)

The predicted maximum worst case cumulative noise level (LAeq, 15 min) is 57dB(A).
There is 1 receiver that will be moderately impacted (15-25 dB(A) above NML).
There are 5 receivers for which the works will be Clearly Audible (6-15 dB(A) above NML).

McCaffrey Drive Ausgrid Outage #2 (01/11/21 & 02/11/21)

The predicted maximum worst case cumulative noise level (LAeq, 15 min) is 55dB(A).
There are 2 receivers that will be moderately impacted (15-25 dB(A) above NML).
There are 16 receivers for which the works will be Clearly Audible (6-15 dB(A) above NML).

Lookout Road (North) Pre-Stringing LV Overheads (15/11/21 and 16/11/21)

The predicted maximum worst case cumulative noise level (LAeq, 15 min) is 50dB(A).
There are 4 receivers for which the works will be Clearly Audible (6-15 dB(A) above NML).

Lookout Road (South) Pre-Stringing LV Overheads (17/11/21 and 18/11/21)

The predicted maximum worst case cumulative noise level (LAeq, 15 min) is 57dB(A).
There are 3 receivers that will be moderately impacted (15-25 dB(A) above NML).
There are 3 receivers for which the works will be Clearly Audible (6-15 dB(A) above NML).

Lookout Road Ausgrid Outage #3 (12/12/21 and 13/12/21)

The predicted maximum worst case cumulative noise level (LAeq, 15 min) is 57dB(A).
There are 3 receivers that will be moderately impacted (15-25 dB(A) above NML).
There are 5 receivers for which the works will be Clearly Audible (6-15 dB(A) above NML).

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Refer to the following detailed Noise Assessments in **Appendix B**:

Predicted Vibration Impacts:

No vibration impacts are predicted as a result of these works. No plant or equipment will encroach within the minimum safe working distance (18m).

The activity is not considered to encroach into either “human comfort” or “structural damage” vibration criteria, based on distance, and equipment and methodology used.

E. Proposed mitigation measures, including respite

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To address previous noise complaints received during tree clearing works on McCaffrey Drive, the methodology has been changed to exclude mulching on nights. Branches will be cut then dragged to a location that is accessible during dayshift to carry out mulching. Works on Lookout Road that are in closer proximity to houses will be completed as a priority in the earlier part of the evening, before moving down to McCaffrey Drive.

The following mitigation measures were proposed based on those identified in the *OOHW Protocol – Section 5.1* and *Table 5-1: Hierarchy for application of additional mitigation for airborne noise.*

Standard Mitigation Measures (OOHW Protocol):

- Modifying behavioural practices on site
- Equipment selection / maintaining and monitoring plant
- Use and siting of plant and hoardings
- Site inductions
- Use of non-tonal reversing alarms
- Stakeholder notification
- Planning noisier work to be carried out earlier in the period.

NVMP Mitigation measures:

- Reduction of machinery usage outside these properties during the night period is also noted.
- Where practical, operating machines at low speed / power and switching them off when not in use rather than leaving them idling for prolonged periods;
- Minimising the reversing of machines;
- All employees, contractors and subcontractors are to receive an environmental induction.
- No swearing or unnecessary shouting or loud stereos/radios on site.
- Limit compression braking at night in residential areas.
- No dropping of materials from height, throwing of metal items and slamming of doors.

Additional Mitigation Measures (OOHW Protocol):

For Residents 5-15 dB(A) above NML

- Notification
- Verification
- Duration Respite

Residents 15-25 dB(A) above NML

- Individual briefing (Notification)
- Verification
- Respite period 2 (completing only 2 consecutive nights work in areas that impact these residents).

F. Community consultation

Outline consultation undertaken for the proposed OOHW:

The properties identified in **Appendix E** will be provided a written notification describing the upcoming OOH works and likely impacts. Refer to **Appendix D** for draft notification letters to be delivered no more than 5 days prior to undertaking the works. Additionally the properties identified as moderately impacted will receive individual briefings via email or phone call. Should dates change for any reason, then letters will be revised to reflect the revised date. Update emails will also to sent to residents identified as moderately impacted.

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Has respite periods for OOHW been identified with the affected community on a monthly basis and a three-month schedule of likely OOHW provided (refer CoA E29)?

Yes, likely OOHW identified in 3 monthly look-ahead notification which covers likely OOHW. October notification was delivered to the community on 7/10/21. Refer to **Appendix C** for three month Lookahead.

Respite has been taken into account with the first works on McCaffrey Drive planned to start about 2 weeks after previous OOHW on McCaffrey Drive on 08/10/21.

Has the outcome of community consultation, the identified respite periods and scheduling of likely OOHW been provided to the ER, EPA and Planning Secretary?

The outcomes of community consultation, the identified respite periods and likely schedule of OOHW is provided to the ER, EPA and the Planning Secretary on a monthly basis. Transport for NSW also provides this information to the ER and Planning Secretary through the OOHW application process when relevant to OOHW, and when approval is sought.

G. Respite framework

Outline any previous respite within the last month and the status of community agreements (where relevant)?

Respite has been taken into account with the first works on McCaffrey Drive planned to start about 2 weeks after previous OOHW on McCaffrey Drive on 08/10/21. Note that OOHW scheduled on 25th – 27th October is at the southern end of the project and not affecting the same set of residents as this application.

Have cumulative impacts from OOHW permitted by an EPL been considered during the development appropriate respite?

N/A

H. Details of non-residential receivers (if any) and corresponding NMLs

Comments:

Using the current noise assessment software it is noted that noise at the nearby sensitive receiver of John Hunter Hospital will not exceed the NML of 38db(A) during the planned works.

I. Are there any properties at risk of exceeding the screening criteria for cosmetic damage?

Comments:

No – All properties are >18m from works.

I. Review/ Endorsements

Contractor Community Liaison Representative	Community notified		Date: 07 Oct 2021
	The affected sensitive receivers will be notified no later than 5 days prior to start of work via email		
	Have the works been reviewed and endorsed?		Yes
	Name:	Signature:	Date:
	Nikki Taylor	[redacted]	19/10/21
	Comments:		

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Transport for NSW Environmental Manager (or delegate)	Agreed mitigation measures:		
	Have the works been reviewed and endorsed? Yes / ~~No~~ Have the works been approved where neither low or high risk? ~~Yes~~ / No		
	Name:	Signature:	Date:
	Andrew Grainger	[redacted]	20/10/2021
	Comments:		
Transport for NSW Project Manager	Have the works been reviewed and endorsed? Yes / ~~No~~ Have the works been approved where neither low or high risk? ~~Yes~~ / No		
	Name:	Signature:	Date:
	Brett Kendall	[redacted]	21/10/2021
	Comments:		
ER approval (low risk activities)	Are the works approved? Yes / No		
	Name: Simon Williams	Signature:	Date:
		[redacted]	22/10/2021
	Comments:		
Planning Secretary approval (high risk activities)	Are the works approved? Yes / No		
	Name:	Signature:	Date:
	Comments:		

Appendix A – Detailed Schedule of Activities

SHIFT NO.	PLANNED DATE	LOCATION	ACTIVITIES & SEQUENCE	PLANT USED	REF. NOISE ASSESSMENTS
1	**Thu, 28 Oct 21**	Lookout Rd/McCaffrey Drive Intersection McCaffrey Drive - Eastbound Shoulder	1900 - 1930: Complete pre-start briefing with project team at compound 1930 - 1945: Set up traffic control and close northbound lane 2015 - 2030: Mobilise equipment to the work area 2030-2300: Tree Clearing on McCaffrey/Lookout Rd Intersection 2330 - 01:30: Tree Clearing on McCaffrey Drive 0130 - 0200: Clean up and de-mobilise from roadway 0215 – 0300: Remove traffic control and reopen lanes to traffic	Lighting Towers x 2 Chain Saw Mobile Crane Truck (10Tonne)	RP2J - 008.1 Assessment - Tree Clearing
RESPITE PERIOD					
2	**Mon, 1 Nov 21**	Lookout Rd - NB Carriageways CH7740 to 7860 McCaffrey Drive - Eastbound Shoulder CH60 to CH280	1900 - 1930: Complete pre-start briefing with project team at compound 1930 - 1945: Set up traffic control and close northbound lane 2015 - 2030: Mobilise equipment to the work area 2030-2300 Install power pole 52 2300 - 0400: String & Connect HV/LV Cables & connect to existing cables 0345 - 0415: Clean up and de-mobilise from roadway 0415 – 0500: Remove traffic control and reopen lanes to traffic	Lighting Towers x 2 Crane Borer (Truck 12-15 tonne) Bucket Truck (EWP)	Assessment ID 006 Ausgrid Outage 2 McCaffrey Drive
3	**Tue, 2 Nov 21**	McCaffrey Drive - Westbound CH60 to CH280	1900 - 1930: Complete pre-start briefing with project team at compound 1930 - 1945: Set up traffic control and close northbound lane 2015 - 2030: Mobilise equipment to the work area 2030 - 0400: Remove OH wires and remove redundant poles 0345 - 0415: Clean up and de-mobilise from roadway 0415 – 0500: Remove traffic control and reopen lanes to traffic	Lighting Towers x 2 Crane Borer (Truck 12-15 tonne) Chain Saw Bucket Truck (EWP)	Assessment ID 006 Ausgrid Outage 2 McCaffrey Drive
RESPITE PERIOD					
4	**Mon, 15 Nov 21**	Lookout Road ND & SB Carrigeways & Shoulder CH7800 to CH7600	1900 - 1930: Complete pre-start briefing with project team at compound 1930 - 1945: Set up traffic control and close northbound & southbound kerb lane & shoulder 2015 - 2030: Mobilise equipment to the work area 2030 - 0400: String & Connect LV Cables across Lookout Road 0345 - 0415: Clean up and de-mobilise from roadway 0415 – 0500: Remove traffic control and reopen lanes to traffic	Lighting Towers x 2 Truck 10 tonne Bucket Truck (EWP) x 2	RP2J - 009 Assessment Report 15-16 Nov Pre String LV
5	**Tue, 16 Nov 21**	Lookout Road ND & SB Carrigeways & Shoulder CH7800 to CH7600	1900 - 1930: Complete pre-start briefing with project team at compound 1930 - 1945: Set up traffic control and close northbound & southbound kerb lane & shoulder 2015 - 2030: Mobilise equipment to the work area 2030 - 0400: String & Connect LV Cables across Lookout Road 0345 - 0415: Clean up and de-mobilise from roadway 0415 – 0500: Remove traffic control and reopen lanes to traffic	Lighting Towers x 2 Truck 10 tonne Bucket Truck (EWP) x 2	RP2J - 009 Assessment Report 15-16 Nov Pre String LV
6	**Wed, 17 Nov 21**	Lookout Road ND & SB Carrigeways & Shoulder CH7600 to CH7400	1900 - 1930: Complete pre-start briefing with project team at compound 1930 - 1945: Set up traffic control and close northbound & southbound kerb lane & shoulder 2015 - 2030: Mobilise equipment to the work area 2030 - 0400: String & Connect LV Cables across Lookout Road 0345 - 0415: Clean up and de-mobilise from roadway 0415 – 0500: Remove traffic control and reopen lanes to traffic	Lighting Towers x 2 Truck 10 tonne Bucket Truck (EWP) x 2	RP2J - 010 Assessment Report 17-18 Nov Pre String LV
7	**Thr, 18 Nov 21**	Lookout Road ND & SB Carrigeways & Shoulder CH7280 to CH7140	1900 - 1930: Complete pre-start briefing with project team at compound 1930 - 1945: Set up traffic control and close northbound & southbound kerb lane & shoulder 2015 - 2030: Mobilise equipment to the work area 2030 - 0400: String & Connect LV Cables across Lookout Road 0345 - 0415: Clean up and de-mobilise from roadway 0415 – 0500: Remove traffic control and reopen lanes to traffic	Lighting Towers x 2 Truck 10 tonne Bucket Truck (EWP) x 2	RP2J - 010 Assessment Report 17-18 Nov Pre String LV
RESPITE PERIOD					
8	**Sun, 12 Dec 21**	Lookout Road ND & SB Carrigeways & Shoulder CH7700 to CH7140	1900 - 1930: Complete pre-start briefing with project team at compound 1930 - 1945: Set up traffic control and implement Eastbound Lane Closure 2015 - 2030: Mobilise equipment to the work area 2030 - 0400: String New HV/LV cables & commission 0345 - 0415: Clean up de-mobilise from roadway 0415 – 0500: Remove traffic control and reopen lanes to traffic	Lighting Towers x 2 Bucket Truck (EWP) x 2	Assessment ID 010 - Ausgrid Outage 3

9	**Mon, 13 Dec 21**	Lookout Road ND & SB Carrigeways & Shoulder CH7700 to CH7140	1900 - 1930: Complete pre-start briefing with project team at compound 1930 - 1945: Set up traffic control and implement Eastbound Lane Closure 2015 - 2030: Mobilise equipment to the work area 2030 - 0400: String New HV/LV cables & commission 0345 - 0415: Clean up de-mobilise from roadway 0415 – 0500: Remove traffic control and reopen lanes to traffic	Lighting Towers x 2 Bucket Truck (EWP) x 2	Assessment ID 010 - Ausgrid Outage 3
RESPITE PERIOD					

Appendix B - RP2J - Southern Utilities - Noise Impact Assessments

Construction noise impact assessment

RP2J

Proposed works	Dressing Pole 37 & Tree Clearing		
Proponent	Quickway		
Assessment Date	12/10/2021		
Prepared by	Quickway	**Assessment Id**	008.1

Introduction

This report has been prepared using the construction noise self-assessment platform KNOWnoise: *Minor Works* and presents an assessment of the likely noise impacts related to proposed works associated with the above project. Where possible, these works would be completed during standard construction hours; however, there may be a need to work outside these hours due to technical, community or access limitations. The location of the proposed works is illustrated in Appendix A.

Planned works

A description of the proposed works is as follows.

Dressing Pole 37 & Tree Clearing

Proposed activities and equipment for the works are summarised in Appendix B.

Though subject to change, the works are expected to commence on 28/10/2021 and be completed in a single shift.

Assessment criteria and mitigation requirements

The Interim Construction Noise Guideline (ICNG) (DECC 2009) describes noise more than the background level as potentially having an adverse impact on sensitive receivers and increasing the likelihood of complaint. During standard construction hours, where construction noise is within 10 dB(A) of the RBL, impacts would be acceptable.

Where construction noise is more than 10 dB(A) above the RBL during standard construction hours, a residential receiver is considered noise affected and the proponent should undertake all reasonable and feasible steps necessary to manage the impact and consult with the affected community.

Above a LAeq, 15 minute noise level of 75 dB(A), a receiver is highly affected, requiring consideration of additional mitigation measures including alternative accommodation in the night period.

Outside standard construction hours, construction noise at a residential receiver more than 5 dB(A) above the RBL is taken to be noise affected.

In addition, annoying noise such as rock hammers, impact piling, or other impulsive noise sources usually result in greater annoyance than continuous construction noise. A 5 dB(A) penalty is applicable to such activities prior to comparison with the NMLs.

Other sensitive land uses, such as schools and offices, typically find noise from construction disruptive when the properties are being used (such as during work and school times). Table 2 presents NMLs from the ICNG for sensitive land uses based on the principle that the characteristic activities for each of these land uses should not be unduly disturbed.

Table 1 Non-residential sensitive land uses noise management levels

Land use	Noise assessment location	NML ($L_{Aeq,15min}$)
Classrooms at schools and other educational institutions	Internal	45
Places of worship		
Active recreation areas (such as sporting activities and activities which generate their own noise or focus for participants)	External	65
Passive recreation areas (contemplative activities that generate little noise and where benefits are compromised by external noise intrusion, for example, reading, meditation)	External	60
Industrial premises	External	75
Office, retail outlets	External	70

As part of planning for out of hours works, standard mitigation measures, as described in the ICNG and CNVG, would be implemented where reasonable and feasible. However, after these measures have been applied, noise and vibration levels may continue to exceed the NMLs.

In this case, additional mitigation measures outlined in the CNVG, which largely focus on engagement with affected sensitive receivers, should be implemented where reasonable and feasible, unless other agreements are in place with the impacted receiver.

Triggers and additional mitigation measures for airborne noise are summarised in Table 2. Further details of specific additional mitigation measures are described in the CNVG.

Table 2 Triggers for additional mitigation measures – Airborne noise (Roads and Maritime 2016)

Predicted airborne LAeq(15min) noise level at receiver			
Perception	dB(A) above RBL	dB(A) above NML	Additional mitigation measures
All hours			
75 dB(A) or greater			N, V, PC, RO
Standard hours: Mon - Fri (7am – 6pm), Sat (8am – 1pm), Sun/Pub Hol (Nil)			
Noticeable	5 to 10	0	-
Clearly audible	10 to 20	< 10	-
Moderately intrusive	20 to 30	10 to 20	N, V
Highly intrusive	> 30	> 20	N, V
OOHW Period 1: Mon – Fri (6pm – 10pm), Sat (7am – 8am & 1pm – 10pm), Sun/Pub Hol (8am – 6pm)			
Noticeable	5 to 10	<5	-
Clearly audible	10 to 20	5 to 15	N, R1, DR
Moderately intrusive	20 to 30	15 to 25	V, N, R1, DR
Highly intrusive	> 30	>25	V, IB, N, R1, DR, PC, SN
OOHW Period 2: Mon – Fri (10pm – 7am), Sat (10pm – 8am), Sun/Pub Hol (6pm – 7am)			
Noticeable	5 to 10	<5	N
Clearly audible	10 to 20	5 to 15	V, N, R2, DR
Moderately intrusive	20 to 30	15 to 25	V, IB, N, PC, SN, R2, DR
Highly intrusive	> 30	>25	AA, V, IB, N, PC, SN, R2, DR

Notes:
PC = Phone calls
V = verification
IB = Individual briefings
N= Notification
AA = Alternative accommodation
SN = Specific notifications
RO = Respite offer
R1 = Respite period 1
R2 = Respite period 2
DR = Duration respite
Perception = relates to levels above RBL
NML = Noise management level
HA = Highly affected

Existing environment and noise management levels

The proposed works would be undertaken in a predominantly Suburban/ Urban, characterised as:

Areas with low density transportation.

Typically local traffic, light vehicles, intermittent traffic flow

Background noise levels adopted for the project area and associated noise management levels (NMLs) are summarised in Table 3. NMLs have been established in line with the ICNG.

Table 3 Construction NMLs

Land use	**Suburban/ Urban**		Using custom background noise data?		**Yes**
Criterion	Day	Weekend Day	Evening	Night	Sleep
RBL	56	56	49	33	
NML	66	61	54	38	48

Sleep disturbance

The ICNG recommends where construction works are planned to extend over more than two consecutive nights, the maximum noise level should be considered for the purposes of establishing the likelihood of sleep disturbance. The Road Noise Policy suggests that maximum internal noise levels below 50-55 dB(A) are unlikely to awaken people from sleep and one or two noise events per night, with maximum internal noise levels of 65-70 dB(A) are not likely to affect health and wellbeing significantly.

Based on this, a sleep awakening criterion of 55 dB(A) (internal) is typically adopted for works. Given that noise attenuation of 10 dB(A) is typically provided by an open window, a sleep awakening criterion of LAmax 65 dB(A) (external) has been applied to residential bedroom façades. This is consistent with the sleep disturbance threshold described in Appendix E of the CNVG.

Assessment methodology

Based on the nominated works area (illustrated in Appendix A), proposed equipment and the minimum distance from the works to each sensitive receiver, noise levels were calculated based on CONCAWE (1981) P*ropagation of noise from petroleum and petrochemical complexes to neighboring communities.*

This method considers geometric spreading, atmospheric absorption, ground effects and is valid for meteorological conditions of a gentle breeze from source to receiver and stable atmosphere (temperature inversion).

KNOWnoise: Minor works is a 2-Dimensional assessment platform and does not consider terrain effects (e.g. hills, valleys) or the presence of solid structures such as homes or noise barriers. This will result in a conservative prediction, suitable for the project being assessed.

Considering the nature of the works and the type of surrounding land uses, sensitive receivers up to a radius of 600 metres from the works have been included in the assessment.

Sound power levels and predicted noise levels depend on the number of plant items operating at any one time and their precise location relative to a sensitive receiver. Equipment was assumed to be working at the worst-case location relative to each receiver and represents a worst-case assessment. Where the activity is further away from receivers or less equipment is used the predicted levels will decrease.

Sound power levels for plant and equipment expected to be used for each activity has been estimated based on guidance in the following standards and guidelines as well as typical measured noise levels for specific equipment.

- Australian Standard AS2436-2010: Guide to noise and vibration control on construction, demolition and maintenance sites
- Construction Noise and Vibration Strategy 7TP-ST-157/2.0 (CNVS), (TfNSW, 2018)
- Construction Noise and Vibration Guideline (CNVG) (Roads and Maritime Services, 2016)
- British Standard 5228-1:2009 Code of practice for noise and vibration control on construction and open sites

- United Kingdom Department for Environment, Food and Rural Affairs (DEFRA) Noise database for prediction of noise on construction and open sites

Construction noise sources and associated sound power levels are listed in Appendix B. The maximum predicted LAeq noise level within the work area was identified for each receiver.

Predicted noise levels

Detailed predicted noise levels for each potentially affected receiver are presented Appendix C.

A summary of predicted noise levels in comparison with ICNG assessment criteria for the Night period is presented in Table 4.

Table 4 Summary of predicted noise levels with comparison against ICNG criteria for the Night period.

Criterion	Predicted number of receivers
Maximum cumulative predicted $L_{Aeq,\ 15\ minute}$ noise level	57 dB(A)
Number of highly noise affected receivers (>75 dB)	0
1 – 10 dB above NML	4
10 – 20 dB above NML	3
20+ dB above NML	0

For works outside standard hours, up to 0 receivers are predicted to be classified as Highly Impacted during the Night period. A summary of the number of receivers in each class is presented in Table 5.

Table 5 Summary of predicted noise levels with comparison against CNVG criteria

Impact class	Predicted noise level	Predicted number of receivers
Noticeable	1 – 5 dB above NML	2
Clearly audible	5 – 15 dB above NML	5
Moderately impacted	15 – 25 dB above NML	1
Highly Impacted	> 25 dB above NML	0

Predicted impact classes for the Night period are illustrated graphically in Appendix C. Each identified receiver in the study area has been coloured to highlight the predicted level of impact.

Sleep disturbance

In the event works are planned for more than two consecutive nights, up to 0 are expected to exceed the sleep awakening criteria. Where any exceedances if the awakening criteria are predicted, additional care should be taken and mitigation measures implemented in the with the CNVG.

Proposed noise mitigation measures

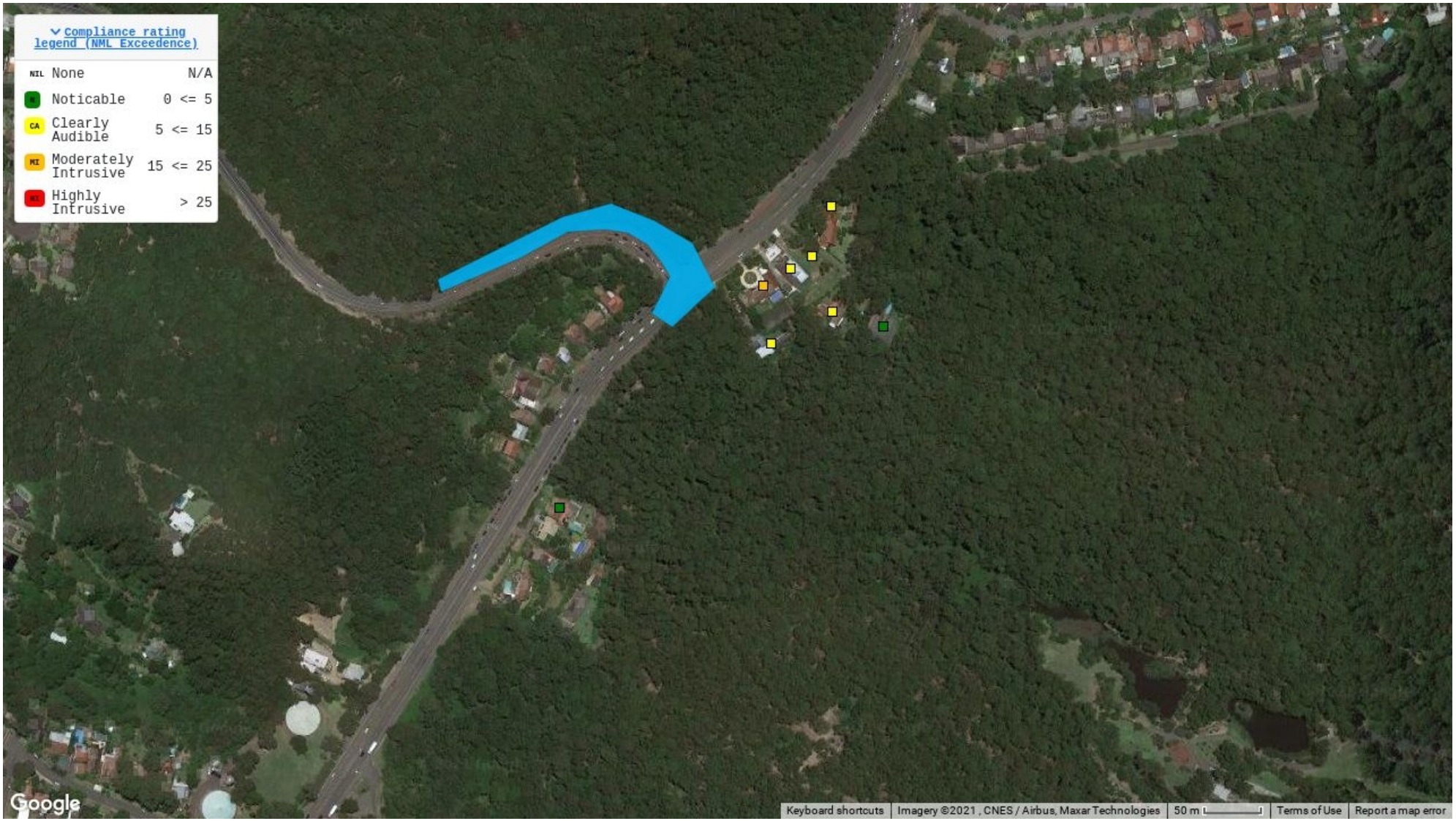
The safeguards and controls listed in Table 6 will be implemented where reasonable and feasible with the intention of achieving the project noise criteria and to maintain noise impacts at a practical minimum.

Table 6 Safeguards and controls

Action	Description
Community consultation or notification	Notify the affected community. The notification will detail work activities, dates and hours, impacts and mitigation measures, indication of work schedule over the night time period, any operational noise benefits from the works (where applicable) and contact telephone number. Notification should be a minimum of 7 calendar days prior to the start of works. For projects other than maintenance works more advanced consultation or notification may be required.
Site inductions	All employees, contractors and subcontractors are to receive an environmental induction. The induction would at least include: • all project specific and relevant standard noise and vibration mitigation measures • relevant licence and approval conditions • permissible hours of work • any limitations on high noise generating activities • location of nearest sensitive receivers • construction employee parking areas • designated loading/unloading areas and procedures site opening/closing times (including deliveries) environmental incident procedures
Behaviour	No swearing or unnecessary shouting or loud stereos/radios on site. Limit compression braking at night in residential areas. No dropping of materials from height, throwing of metal items and slamming of doors.
Verification	Where indicated in Appendix C, a noise verification program would be undertaken for the duration of the works.
Construction hours	Where feasible and reasonable, construction should be carried out during the standard daytime working hours. Work generating high noise and/or vibration levels should be scheduled during less sensitive time periods.
Respite for out-of-hours works	Respite would be scheduled as indicated in Appendix C and described in the CNVG.
Equipment selection	Use quieter construction methods where feasible and reasonable. Ensure plant including the silencer is well maintained. Plant noise levels will have an operating noise emission level compliant with Appendix F of the CNVG
Use and siting of plant	The offset distance between noisy plant and adjacent sensitive receivers is to be maximised. Plant used intermittently to be throttled down or shut down. Noise-emitting plant to be directed away from sensitive receivers.

Action	Description
Plan worksites and activities to minimise noise and vibration.	Locate compounds away from sensitive receivers and discourage access from local roads. Plan traffic flow, parking and loading/unloading areas to minimise reversing movements within the site. Where additional activities or plant may only result in a marginal noise increase and speed up works, consider limiting duration of impact by concentrating noisy activities at one location and move to another as quickly as possible. Very noise activities should be scheduled for normal working hours. If the work can not be undertaken during the day, it should be completed before 11:00pm. Where practicable, work should be scheduled to avoid major student examination periods when students are studying for examinations such as before or during Higher School Certificate and at the end of higher education semesters.
Non-tonal reverse alarms	Non-tonal reversing beepers (or an equivalent mechanism) must be fitted and used on all construction vehicles and mobile plant regularly used on site and for any out of hours work.
Shield stationary noise sources such as pumps, generators, and compressors	These should be enclosed or shielded where reasonable and feasible.
Implement any project specific mitigation measures	
1	Sound Blankets where required
2	Limit plant idling

Appendix A Project location and predicted level of impact



Appendix B Proposed activities and equipment

Tree Removal

Equipment	Quantity	Usage	Reduction	SWL
Chainsaw (petrol)	1	10 %	5	97
Mobile Crane (all terrain) (20 tonne)	1	10 %	5	85
Truck (10 tonne)	1	30 %	5	90
Daymakers / Lighting plant	1	70 %	5	86

Activity Sound Power Level: 98

Appendix C Detailed noise predicted for each receiver and activity

Assessment: Dressing Pole 37 & Tree Clearing				Night	Results summary		
NCA	ID	Address	Land use	NML	Cumulative Predicted LAeq, 15 minute noise level	Exceedance of NML, dB	Impact classification
	538254	117 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	39	1	**Noticable**
	538165	79 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	44	6	**Clearly Audible**
	538143	79A LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	45	7	**Clearly Audible**
	538142	79B LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	41	3	**Noticable**
	538140	85 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	50	12	**Clearly Audible**
	538130	81 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	51	13	**Clearly Audible**
	538103	83 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	57	19	**Moderately Intrusive**
	538101	81A LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	47	9	**Clearly Audible**

Construction noise impact assessment

RP2J

Proposed works	Ausgrid Outage 2 - McCaffrey Drive		
Proponent	Quickway		
Assessment Date	05/10/2021		
Prepared by	Quickway	**Assessment Id**	006

Introduction

This report has been prepared using the construction noise self-assessment platform KNOWnoise: *Minor Works* and presents an assessment of the likely noise impacts related to proposed works associated with the above project. Where possible, these works would be completed during standard construction hours; however, there may be a need to work outside these hours due to technical, community or access limitations. The location of the proposed works is illustrated in Appendix A.

Planned works

A description of the proposed works is as follows.

Ausgrid Outage and Power Pole Removal

Proposed activities and equipment for the works are summarised in Appendix B.

Though subject to change, the works are expected to commence around 01/11/2021 and would be completed by 03/11/2021.

Assessment criteria and mitigation requirements

The Interim Construction Noise Guideline (ICNG) (DECC 2009) describes noise more than the background level as potentially having an adverse impact on sensitive receivers and increasing the likelihood of complaint. During standard construction hours, where construction noise is within 10 dB(A) of the RBL, impacts would be acceptable.

Where construction noise is more than 10 dB(A) above the RBL during standard construction hours, a residential receiver is considered noise affected and the proponent should undertake all reasonable and feasible steps necessary to manage the impact and consult with the affected community.

Above a LAeq, 15 minute noise level of 75 dB(A), a receiver is highly affected, requiring consideration of additional mitigation measures including alternative accommodation in the night period.

Outside standard construction hours, construction noise at a residential receiver more than 5 dB(A) above the RBL is taken to be noise affected.

In addition, annoying noise such as rock hammers, impact piling, or other impulsive noise sources usually result in greater annoyance than continuous construction noise. A 5 dB(A) penalty is applicable to such activities prior to comparison with the NMLs.

Other sensitive land uses, such as schools and offices, typically find noise from construction disruptive when the properties are being used (such as during work and school times). Table 2 presents NMLs from the ICNG for sensitive land uses based on the principle that the characteristic activities for each of these land uses should not be unduly disturbed.

Table 1 Non-residential sensitive land uses noise management levels

Land use	Noise assessment location	NML ($L_{Aeq,15min}$)
Classrooms at schools and other educational institutions	Internal	45
Places of worship		
Active recreation areas (such as sporting activities and activities which generate their own noise or focus for participants)	External	65
Passive recreation areas (contemplative activities that generate little noise and where benefits are compromised by external noise intrusion, for example, reading, meditation)	External	60
Industrial premises	External	75
Office, retail outlets	External	70

As part of planning for out of hours works, standard mitigation measures, as described in the ICNG and CNVG, would be implemented where reasonable and feasible. However, after these measures have been applied, noise and vibration levels may continue to exceed the NMLs.

In this case, additional mitigation measures outlined in the CNVG, which largely focus on engagement with affected sensitive receivers, should be implemented where reasonable and feasible, unless other agreements are in place with the impacted receiver.

Triggers and additional mitigation measures for airborne noise are summarised in Table 2. Further details of specific additional mitigation measures are described in the CNVG.

Table 2 Triggers for additional mitigation measures – Airborne noise (Roads and Maritime 2016)

Predicted airborne LAeq(15min) noise level at receiver			
Perception	dB(A) above RBL	dB(A) above NML	Additional mitigation measures
All hours			
75 dB(A) or greater			N, V, PC, RO
Standard hours: Mon - Fri (7am – 6pm), Sat (8am – 1pm), Sun/Pub Hol (Nil)			
Noticeable	5 to 10	0	-
Clearly audible	10 to 20	< 10	-
Moderately intrusive	20 to 30	10 to 20	N, V
Highly intrusive	> 30	> 20	N, V
OOHW Period 1: Mon – Fri (6pm – 10pm), Sat (7am – 8am & 1pm – 10pm), Sun/Pub Hol (8am – 6pm)			
Noticeable	5 to 10	<5	-
Clearly audible	10 to 20	5 to 15	N, R1, DR
Moderately intrusive	20 to 30	15 to 25	V, N, R1, DR
Highly intrusive	> 30	>25	V, IB, N, R1, DR, PC, SN
OOHW Period 2: Mon – Fri (10pm – 7am), Sat (10pm – 8am), Sun/Pub Hol (6pm – 7am)			
Noticeable	5 to 10	<5	N
Clearly audible	10 to 20	5 to 15	V, N, R2, DR
Moderately intrusive	20 to 30	15 to 25	V, IB, N, PC, SN, R2, DR
Highly intrusive	> 30	>25	AA, V, IB, N, PC, SN, R2, DR

Notes:
PC = Phone calls
V = verification
IB = Individual briefings
N= Notification
AA = Alternative accommodation
SN = Specific notifications
RO = Respite offer
R1 = Respite period 1
R2 = Respite period 2
DR = Duration respite
Perception = relates to levels above RBL
NML = Noise management level
HA = Highly affected

Existing environment and noise management levels

The proposed works would be undertaken in a predominantly Suburban/ Urban, characterised as:

Areas with low density transportation.

Typically local traffic, light vehicles, intermittent traffic flow

Background noise levels adopted for the project area and associated noise management levels (NMLs) are summarised in Table 3. NMLs have been established in line with the ICNG.

Table 3 Construction NMLs

Land use	**Suburban/ Urban**		Using custom background noise data?		**Yes**
Criterion	Day	Weekend Day	Evening	Night	Sleep
RBL	56	56	49	33	
NML	66	61	54	38	48

Sleep disturbance

The ICNG recommends where construction works are planned to extend over more than two consecutive nights, the maximum noise level should be considered for the purposes of establishing the likelihood of sleep disturbance. The Road Noise Policy suggests that maximum internal noise levels below 50-55 dB(A) are unlikely to awaken people from sleep and one or two noise events per night, with maximum internal noise levels of 65-70 dB(A) are not likely to affect health and wellbeing significantly.

Based on this, a sleep awakening criterion of 55 dB(A) (internal) is typically adopted for works. Given that noise attenuation of 10 dB(A) is typically provided by an open window, a sleep awakening criterion of LAmax 65 dB(A) (external) has been applied to residential bedroom façades. This is consistent with the sleep disturbance threshold described in Appendix E of the CNVG.

Assessment methodology

Based on the nominated works area (illustrated in Appendix A), proposed equipment and the minimum distance from the works to each sensitive receiver, noise levels were calculated based on CONCAWE (1981) P*ropagation of noise from petroleum and petrochemical complexes to neighboring communities.*

This method considers geometric spreading, atmospheric absorption, ground effects and is valid for meteorological conditions of a gentle breeze from source to receiver and stable atmosphere (temperature inversion).

KNOWnoise: Minor works is a 2-Dimensional assessment platform and does not consider terrain effects (e.g. hills, valleys) or the presence of solid structures such as homes or noise barriers. This will result in a conservative prediction, suitable for the project being assessed.

Considering the nature of the works and the type of surrounding land uses, sensitive receivers up to a radius of 600 metres from the works have been included in the assessment.

Sound power levels and predicted noise levels depend on the number of plant items operating at any one time and their precise location relative to a sensitive receiver. Equipment was assumed to be working at the worst-case location relative to each receiver and represents a worst-case assessment. Where the activity is further away from receivers or less equipment is used the predicted levels will decrease.

Sound power levels for plant and equipment expected to be used for each activity has been estimated based on guidance in the following standards and guidelines as well as typical measured noise levels for specific equipment.

- Australian Standard AS2436-2010: Guide to noise and vibration control on construction, demolition and maintenance sites
- Construction Noise and Vibration Strategy 7TP-ST-157/2.0 (CNVS), (TfNSW, 2018)
- Construction Noise and Vibration Guideline (CNVG) (Roads and Maritime Services, 2016)
- British Standard 5228-1:2009 Code of practice for noise and vibration control on construction and open sites

- United Kingdom Department for Environment, Food and Rural Affairs (DEFRA) Noise database for prediction of noise on construction and open sites

Construction noise sources and associated sound power levels are listed in Appendix B. The maximum predicted LAeq noise level within the work area was identified for each receiver.

Predicted noise levels

Detailed predicted noise levels for each potentially affected receiver are presented Appendix C.

A summary of predicted noise levels in comparison with ICNG assessment criteria for the Night period is presented in Table 4.

Table 4 Summary of predicted noise levels with comparison against ICNG criteria for the Night period.

Criterion	Predicted number of receivers
Maximum cumulative predicted $L_{Aeq,\ 15\ minute}$ noise level	55 dB(A)
Number of highly noise affected receivers (>75 dB)	0
1 – 10 dB above NML	55
10 – 20 dB above NML	5
20+ dB above NML	0

For works outside standard hours, up to 0 receivers are predicted to be classified as Highly Impacted during the Night period. A summary of the number of receivers in each class is presented in Table 5.

Table 5 Summary of predicted noise levels with comparison against CNVG criteria

Impact class	Predicted noise level	Predicted number of receivers
Noticeable	1 – 5 dB above NML	57
Clearly audible	5 – 15 dB above NML	16
Moderately impacted	15 – 25 dB above NML	2
Highly Impacted	> 25 dB above NML	0

Predicted impact classes for the Night period are illustrated graphically in Appendix C. Each identified receiver in the study area has been coloured to highlight the predicted level of impact.

Sleep disturbance

In the event works are planned for more than two consecutive nights, up to 0 are expected to exceed the sleep awakening criteria. Where any exceedances if the awakening criteria are predicted, additional care should be taken and mitigation measures implemented in the with the CNVG.

Proposed noise mitigation measures

The safeguards and controls listed in Table 6 will be implemented where reasonable and feasible with the intention of achieving the project noise criteria and to maintain noise impacts at a practical minimum.

Table 6 Safeguards and controls

Action	Description
Community consultation or notification	Notify the affected community. The notification will detail work activities, dates and hours, impacts and mitigation measures, indication of work schedule over the night time period, any operational noise benefits from the works (where applicable) and contact telephone number. Notification should be a minimum of 7 calendar days prior to the start of works. For projects other than maintenance works more advanced consultation or notification may be required.
Site inductions	All employees, contractors and subcontractors are to receive an environmental induction. The induction would at least include: • all project specific and relevant standard noise and vibration mitigation measures • relevant licence and approval conditions • permissible hours of work • any limitations on high noise generating activities • location of nearest sensitive receivers • construction employee parking areas • designated loading/unloading areas and procedures site opening/closing times (including deliveries) environmental incident procedures
Behaviour	No swearing or unnecessary shouting or loud stereos/radios on site. Limit compression braking at night in residential areas. No dropping of materials from height, throwing of metal items and slamming of doors.
Verification	Where indicated in Appendix C, a noise verification program would be undertaken for the duration of the works.
Construction hours	Where feasible and reasonable, construction should be carried out during the standard daytime working hours. Work generating high noise and/or vibration levels should be scheduled during less sensitive time periods.
Respite for out-of-hours works	Respite would be scheduled as indicated in Appendix C and described in the CNVG.
Equipment selection	Use quieter construction methods where feasible and reasonable. Ensure plant including the silencer is well maintained. Plant noise levels will have an operating noise emission level compliant with Appendix F of the CNVG
Use and siting of plant	The offset distance between noisy plant and adjacent sensitive receivers is to be maximised. Plant used intermittently to be throttled down or shut down. Noise-emitting plant to be directed away from sensitive receivers.

Action	Description
Plan worksites and activities to minimise noise and vibration.	Locate compounds away from sensitive receivers and discourage access from local roads. Plan traffic flow, parking and loading/unloading areas to minimise reversing movements within the site. Where additional activities or plant may only result in a marginal noise increase and speed up works, consider limiting duration of impact by concentrating noisy activities at one location and move to another as quickly as possible. Very noise activities should be scheduled for normal working hours. If the work can not be undertaken during the day, it should be completed before 11:00pm. Where practicable, work should be scheduled to avoid major student examination periods when students are studying for examinations such as before or during Higher School Certificate and at the end of higher education semesters.
Non-tonal reverse alarms	Non-tonal reversing beepers (or an equivalent mechanism) must be fitted and used on all construction vehicles and mobile plant regularly used on site and for any out of hours work.
Shield stationary noise sources such as pumps, generators, and compressors	These should be enclosed or shielded where reasonable and feasible.
Implement any project specific mitigation measures	
1	Limit Plant Usage
2	Limit Plant Idling outside residences

Appendix A Project location and predicted level of impact

Appendix B Proposed activities and equipment

Electrical Connection

Equipment	Quantity	Usage	Reduction	SWL
Elevated Working Platform	2	50 %	3	86
Daymakers / Lighting plant	2	70 %	3	91
Truck (12-15 tonne)	1	25 %	3	97

Activity Sound Power Level: 98

Power Pole Removal McCaffrey Drive

Equipment	Quantity	Usage	Reduction	SWL
Chain saw	1	5 %	3	90
Daymakers / Lighting plant	2	70 %	3	91
Elevated Working Platform	1	20 %	3	79
Truck (12-15 tonne)	1	20 %	3	96

Activity Sound Power Level: 98

Appendix C Detailed noise predicted for each receiver and activity

Assessment: Ausgrid Outage 2 - McCaffrey Drive				Night	Results summary		
NCA	ID	Address	Land use	NML	Cumulative Predicted LAeq, 15 minute noise level	Exceedance of NML, dB	Impact classification
	533592	119 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	40	2	**Noticable**
	533587	117 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	41	3	**Noticable**
	533586	121C LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	39	1	**Noticable**
	533579	121A LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	38	0	**Noticable**
	533577	121B LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	40	2	**Noticable**
	533576	119 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	41	3	**Noticable**
	533535	3A MARSHALL STREET NEW LAMBTON HEIGHTS	RES	38	40	2	**Noticable**
	533473	1 RIDGEWAY ROAD NEW LAMBTON HEIGHTS	RES	38	40	2	**Noticable**
	533456	38 FLORALIA CLOSE NEW LAMBTON HEIGHTS	RES	38	41	3	**Noticable**
	533454	34 FLORALIA CLOSE NEW LAMBTON HEIGHTS	RES	38	40	2	**Noticable**
	533447	79 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	51	13	**Clearly Audible**
	533441	30 FLORALIA CLOSE NEW LAMBTON HEIGHTS	RES	38	39	1	**Noticable**
	533429	32 FLORALIA CLOSE NEW LAMBTON HEIGHTS	RES	38	39	1	**Noticable**
	533423	79A LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	47	9	**Clearly Audible**
	533422	79B LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	44	6	**Clearly Audible**
	533420	85 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	48	10	**Clearly Audible**
	533411	36 FLORALIA CLOSE NEW LAMBTON HEIGHTS	RES	38	41	3	**Noticable**
	533410	81 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	54	16	**Moderately Intrusive**
	533408	2 RIDGEWAY ROAD NEW LAMBTON HEIGHTS	RES	38	38	0	**Noticable**
	533407	1 RIDGEWAY ROAD NEW LAMBTON HEIGHTS	RES	38	39	1	**Noticable**
	533397	71 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	42	4	**Noticable**
	533385	28 FLORALIA CLOSE NEW LAMBTON HEIGHTS	RES	38	38	0	**Noticable**
	533381	1A RIDGEWAY ROAD NEW LAMBTON HEIGHTS	RES	38	38	0	**Noticable**
	533379	83 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	55	17	**Moderately Intrusive**
	533377	81A LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	52	14	**Clearly Audible**
	533373	14 KINGSWAY AVENUE RANKIN PARK	RES	38	41	3	**Noticable**
	533369	43 KINGSWAY AVENUE RANKIN PARK	RES	38	45	7	**Clearly Audible**
	533366	329 MCCAFFREY DRIVE RANKIN PARK	RES	38	41	3	**Noticable**
	533364	57 KINGSWAY AVENUE RANKIN PARK	RES	38	41	3	**Noticable**
	533361	47 KINGSWAY AVENUE RANKIN PARK	RES	38	45	7	**Clearly Audible**
	533357	23 KINGSWAY AVENUE RANKIN PARK	RES	38	40	2	**Noticable**
	533355	37 KINGSWAY AVENUE RANKIN PARK	RES	38	45	7	**Clearly Audible**
	533353	10 KINGSWAY AVENUE RANKIN PARK	RES	38	39	1	**Noticable**
	533352	33 KINGSWAY AVENUE RANKIN PARK	RES	38	44	6	**Clearly Audible**
	533351	49 KINGSWAY AVENUE RANKIN PARK	RES	38	44	6	**Clearly Audible**
	533349	61 KINGSWAY AVENUE RANKIN PARK	RES	38	40	2	**Noticable**
	533348	32 KINGSWAY AVENUE RANKIN PARK	RES	38	39	1	**Noticable**
	533347	30 KINGSWAY AVENUE RANKIN PARK	RES	38	39	1	**Noticable**

Appendix C Detailed noise predicted for each receiver and activity

Assessment: Ausgrid Outage 2 - McCaffrey Drive				Night	Results summary		
NCA	ID	Address	Land use	NML	Cumulative Predicted LAeq, 15 minute noise level	Exceedance of NML, dB	Impact classification
	533346	19 KINGSWAY AVENUE RANKIN PARK	RES	38	39	1	**Noticable**
	533344	24 KINGSWAY AVENUE RANKIN PARK	RES	38	42	4	**Noticable**
	533342	28 KINGSWAY AVENUE RANKIN PARK	RES	38	40	2	**Noticable**
	533340	321 MCCAFFREY DRIVE RANKIN PARK	RES	38	39	1	**Noticable**
	533335	59 KINGSWAY AVENUE RANKIN PARK	RES	38	41	3	**Noticable**
	533332	12 KINGSWAY AVENUE RANKIN PARK	RES	38	40	2	**Noticable**
	533331	41 KINGSWAY AVENUE RANKIN PARK	RES	38	46	8	**Clearly Audible**
	533329	34 KINGSWAY AVENUE RANKIN PARK	RES	38	38	0	**Noticable**
	533328	27 KINGSWAY AVENUE RANKIN PARK	RES	38	41	3	**Noticable**
	533325	39 KINGSWAY AVENUE RANKIN PARK	RES	38	45	7	**Clearly Audible**
	533322	331 MCCAFFREY DRIVE RANKIN PARK	RES	38	42	4	**Noticable**
	533321	22 KINGSWAY AVENUE RANKIN PARK	RES	38	42	4	**Noticable**
	533320	327 MCCAFFREY DRIVE RANKIN PARK	RES	38	41	3	**Noticable**
	533318	51 KINGSWAY AVENUE RANKIN PARK	RES	38	44	6	**Clearly Audible**
	533317	45 KINGSWAY AVENUE RANKIN PARK	RES	38	45	7	**Clearly Audible**
	533316	323 MCCAFFREY DRIVE RANKIN PARK	RES	38	39	1	**Noticable**
	533315	29 KINGSWAY AVENUE RANKIN PARK	RES	38	42	4	**Noticable**
	533314	21 KINGSWAY AVENUE RANKIN PARK	RES	38	39	1	**Noticable**
	533305	325 MCCAFFREY DRIVE RANKIN PARK	RES	38	40	2	**Noticable**
	533302	8 KINGSWAY AVENUE RANKIN PARK	RES	38	39	1	**Noticable**
	533296	335 MCCAFFREY DRIVE RANKIN PARK	RES	38	44	6	**Clearly Audible**
	533295	69 KINGSWAY AVENUE RANKIN PARK	RES	38	38	0	**Noticable**
	533293	319 MCCAFFREY DRIVE RANKIN PARK	RES	38	38	0	**Noticable**
	533292	26 KINGSWAY AVENUE RANKIN PARK	RES	38	41	3	**Noticable**
	533288	25 KINGSWAY AVENUE RANKIN PARK	RES	38	40	2	**Noticable**
	533287	31 KINGSWAY AVENUE RANKIN PARK	RES	38	43	5	**Noticable**
	533284	20 KINGSWAY AVENUE RANKIN PARK	RES	38	42	4	**Noticable**
	533283	333 MCCAFFREY DRIVE RANKIN PARK	RES	38	43	5	**Clearly Audible**
	533282	16 KINGSWAY AVENUE RANKIN PARK	RES	38	42	4	**Noticable**
	533281	55 KINGSWAY AVENUE RANKIN PARK	RES	38	42	4	**Noticable**
	533278	65 KINGSWAY AVENUE RANKIN PARK	RES	38	39	1	**Noticable**
	533276	6 KINGSWAY AVENUE RANKIN PARK	RES	38	38	0	**Noticable**
	533275	63 KINGSWAY AVENUE RANKIN PARK	RES	38	40	2	**Noticable**
	533273	67 KINGSWAY AVENUE RANKIN PARK	RES	38	39	1	**Noticable**
	533271	18 KINGSWAY AVENUE RANKIN PARK	RES	38	42	4	**Noticable**
	533268	14 KINGSWAY AVENUE RANKIN PARK	RES	38	41	3	**Noticable**
	533266	53 KINGSWAY AVENUE RANKIN PARK	RES	38	42	4	**Noticable**

Construction noise impact assessment

RP2J

Proposed works	009		
Proponent	Quickway		
Assessment Date	18/10/2021		
Prepared by	Quickway	**Assessment Id**	009

Introduction

This report has been prepared using the construction noise self-assessment platform KNOWnoise: *Minor Works* and presents an assessment of the likely noise impacts related to proposed works associated with the above project. Where possible, these works would be completed during standard construction hours; however, there may be a need to work outside these hours due to technical, community or access limitations. The location of the proposed works is illustrated in Appendix A.

Planned works

A description of the proposed works is as follows.

009- Pre String LV across Lookout Road

Proposed activities and equipment for the works are summarised in Appendix B.

Though subject to change, the works are expected to commence around 15/11/2021 and would be completed by 17/11/2021.

Assessment criteria and mitigation requirements

The Interim Construction Noise Guideline (ICNG) (DECC 2009) describes noise more than the background level as potentially having an adverse impact on sensitive receivers and increasing the likelihood of complaint. During standard construction hours, where construction noise is within 10 dB(A) of the RBL, impacts would be acceptable.

Where construction noise is more than 10 dB(A) above the RBL during standard construction hours, a residential receiver is considered noise affected and the proponent should undertake all reasonable and feasible steps necessary to manage the impact and consult with the affected community.

Above a LAeq, 15 minute noise level of 75 dB(A), a receiver is highly affected, requiring consideration of additional mitigation measures including alternative accommodation in the night period.

Outside standard construction hours, construction noise at a residential receiver more than 5 dB(A) above the RBL is taken to be noise affected.

In addition, annoying noise such as rock hammers, impact piling, or other impulsive noise sources usually result in greater annoyance than continuous construction noise. A 5 dB(A) penalty is applicable to such activities prior to comparison with the NMLs.

Other sensitive land uses, such as schools and offices, typically find noise from construction disruptive when the properties are being used (such as during work and school times). Table 2 presents NMLs from the ICNG for sensitive land uses based on the principle that the characteristic activities for each of these land uses should not be unduly disturbed.

Table 1 Non-residential sensitive land uses noise management levels

Land use	Noise assessment location	NML ($L_{Aeq,15min}$)
Classrooms at schools and other educational institutions	Internal	45
Places of worship		
Active recreation areas (such as sporting activities and activities which generate their own noise or focus for participants)	External	65
Passive recreation areas (contemplative activities that generate little noise and where benefits are compromised by external noise intrusion, for example, reading, meditation)	External	60
Industrial premises	External	75
Office, retail outlets	External	70

As part of planning for out of hours works, standard mitigation measures, as described in the ICNG and CNVG, would be implemented where reasonable and feasible. However, after these measures have been applied, noise and vibration levels may continue to exceed the NMLs.

In this case, additional mitigation measures outlined in the CNVG, which largely focus on engagement with affected sensitive receivers, should be implemented where reasonable and feasible, unless other agreements are in place with the impacted receiver.

Triggers and additional mitigation measures for airborne noise are summarised in Table 2. Further details of specific additional mitigation measures are described in the CNVG.

Table 2 Triggers for additional mitigation measures – Airborne noise (Roads and Maritime 2016)

Predicted airborne LAeq(15min) noise level at receiver			
Perception	dB(A) above RBL	dB(A) above NML	Additional mitigation measures
All hours			
75 dB(A) or greater			N, V, PC, RO
Standard hours: Mon - Fri (7am – 6pm), Sat (8am – 1pm), Sun/Pub Hol (Nil)			
Noticeable	5 to 10	0	-
Clearly audible	10 to 20	< 10	-
Moderately intrusive	20 to 30	10 to 20	N, V
Highly intrusive	> 30	> 20	N, V
OOHW Period 1: Mon – Fri (6pm – 10pm), Sat (7am – 8am & 1pm – 10pm), Sun/Pub Hol (8am – 6pm)			
Noticeable	5 to 10	<5	-
Clearly audible	10 to 20	5 to 15	N, R1, DR
Moderately intrusive	20 to 30	15 to 25	V, N, R1, DR
Highly intrusive	> 30	>25	V, IB, N, R1, DR, PC, SN
OOHW Period 2: Mon – Fri (10pm – 7am), Sat (10pm – 8am), Sun/Pub Hol (6pm – 7am)			
Noticeable	5 to 10	<5	N
Clearly audible	10 to 20	5 to 15	V, N, R2, DR
Moderately intrusive	20 to 30	15 to 25	V, IB, N, PC, SN, R2, DR
Highly intrusive	> 30	>25	AA, V, IB, N, PC, SN, R2, DR

Notes:
PC = Phone calls
V = verification
IB = Individual briefings
N= Notification
AA = Alternative accommodation
SN = Specific notifications
RO = Respite offer
R1 = Respite period 1
R2 = Respite period 2
DR = Duration respite
Perception = relates to levels above RBL
NML = Noise management level
HA = Highly affected

Existing environment and noise management levels

The proposed works would be undertaken in a predominantly Suburban/ Urban, characterised as:

Areas with low density transportation.

Typically local traffic, light vehicles, intermittent traffic flow

Background noise levels adopted for the project area and associated noise management levels (NMLs) are summarised in Table 3. NMLs have been established in line with the ICNG.

Table 3 Construction NMLs

Land use	**Suburban/ Urban**		Using custom background noise data?		**Yes**
Criterion	Day	Weekend Day	Evening	Night	Sleep
RBL	56	56	49	33	
NML	66	61	54	38	48

Sleep disturbance

The ICNG recommends where construction works are planned to extend over more than two consecutive nights, the maximum noise level should be considered for the purposes of establishing the likelihood of sleep disturbance. The Road Noise Policy suggests that maximum internal noise levels below 50-55 dB(A) are unlikely to awaken people from sleep and one or two noise events per night, with maximum internal noise levels of 65-70 dB(A) are not likely to affect health and wellbeing significantly.

Based on this, a sleep awakening criterion of 55 dB(A) (internal) is typically adopted for works. Given that noise attenuation of 10 dB(A) is typically provided by an open window, a sleep awakening criterion of LAmax 65 dB(A) (external) has been applied to residential bedroom façades. This is consistent with the sleep disturbance threshold described in Appendix E of the CNVG.

Assessment methodology

Based on the nominated works area (illustrated in Appendix A), proposed equipment and the minimum distance from the works to each sensitive receiver, noise levels were calculated based on CONCAWE (1981) P*ropagation of noise from petroleum and petrochemical complexes to neighboring communities.*

This method considers geometric spreading, atmospheric absorption, ground effects and is valid for meteorological conditions of a gentle breeze from source to receiver and stable atmosphere (temperature inversion).

KNOWnoise: Minor works is a 2-Dimensional assessment platform and does not consider terrain effects (e.g. hills, valleys) or the presence of solid structures such as homes or noise barriers. This will result in a conservative prediction, suitable for the project being assessed.

Considering the nature of the works and the type of surrounding land uses, sensitive receivers up to a radius of 600 metres from the works have been included in the assessment.

Sound power levels and predicted noise levels depend on the number of plant items operating at any one time and their precise location relative to a sensitive receiver. Equipment was assumed to be working at the worst-case location relative to each receiver and represents a worst-case assessment. Where the activity is further away from receivers or less equipment is used the predicted levels will decrease.

Sound power levels for plant and equipment expected to be used for each activity has been estimated based on guidance in the following standards and guidelines as well as typical measured noise levels for specific equipment.

- Australian Standard AS2436-2010: Guide to noise and vibration control on construction, demolition and maintenance sites
- Construction Noise and Vibration Strategy 7TP-ST-157/2.0 (CNVS), (TfNSW, 2018)
- Construction Noise and Vibration Guideline (CNVG) (Roads and Maritime Services, 2016)
- British Standard 5228-1:2009 Code of practice for noise and vibration control on construction and open sites

- United Kingdom Department for Environment, Food and Rural Affairs (DEFRA) Noise database for prediction of noise on construction and open sites

Construction noise sources and associated sound power levels are listed in Appendix B. The maximum predicted LAeq noise level within the work area was identified for each receiver.

Predicted noise levels

Detailed predicted noise levels for each potentially affected receiver are presented Appendix C.

A summary of predicted noise levels in comparison with ICNG assessment criteria for the Night period is presented in Table 4.

Table 4 Summary of predicted noise levels with comparison against ICNG criteria for the Night period.

Criterion	Predicted number of receivers
Maximum cumulative predicted $L_{Aeq,\ 15\ minute}$ noise level	50 dB(A)
Number of highly noise affected receivers (>75 dB)	0
1 – 10 dB above NML	6
10 – 20 dB above NML	1
20+ dB above NML	0

For works outside standard hours, up to 0 receivers are predicted to be classified as Highly Impacted during the Night period. A summary of the number of receivers in each class is presented in Table 5.

Table 5 Summary of predicted noise levels with comparison against CNVG criteria

Impact class	Predicted noise level	Predicted number of receivers
Noticeable	1 – 5 dB above NML	3
Clearly audible	5 – 15 dB above NML	4
Moderately impacted	15 – 25 dB above NML	0
Highly Impacted	> 25 dB above NML	0

Predicted impact classes for the Night period are illustrated graphically in Appendix C. Each identified receiver in the study area has been coloured to highlight the predicted level of impact.

Sleep disturbance

In the event works are planned for more than two consecutive nights, up to 0 are expected to exceed the sleep awakening criteria. Where any exceedances if the awakening criteria are predicted, additional care should be taken and mitigation measures implemented in the with the CNVG.

Proposed noise mitigation measures

The safeguards and controls listed in Table 6 will be implemented where reasonable and feasible with the intention of achieving the project noise criteria and to maintain noise impacts at a practical minimum.

Table 6 Safeguards and controls

Action	Description
Community consultation or notification	Notify the affected community. The notification will detail work activities, dates and hours, impacts and mitigation measures, indication of work schedule over the night time period, any operational noise benefits from the works (where applicable) and contact telephone number. Notification should be a minimum of 7 calendar days prior to the start of works. For projects other than maintenance works more advanced consultation or notification may be required.
Site inductions	All employees, contractors and subcontractors are to receive an environmental induction. The induction would at least include: • all project specific and relevant standard noise and vibration mitigation measures • relevant licence and approval conditions • permissible hours of work • any limitations on high noise generating activities • location of nearest sensitive receivers • construction employee parking areas • designated loading/unloading areas and procedures site opening/closing times (including deliveries) environmental incident procedures
Behaviour	No swearing or unnecessary shouting or loud stereos/radios on site. Limit compression braking at night in residential areas. No dropping of materials from height, throwing of metal items and slamming of doors.
Verification	Where indicated in Appendix C, a noise verification program would be undertaken for the duration of the works.
Construction hours	Where feasible and reasonable, construction should be carried out during the standard daytime working hours. Work generating high noise and/or vibration levels should be scheduled during less sensitive time periods.
Respite for out-of-hours works	Respite would be scheduled as indicated in Appendix C and described in the CNVG.
Equipment selection	Use quieter construction methods where feasible and reasonable. Ensure plant including the silencer is well maintained. Plant noise levels will have an operating noise emission level compliant with Appendix F of the CNVG
Use and siting of plant	The offset distance between noisy plant and adjacent sensitive receivers is to be maximised. Plant used intermittently to be throttled down or shut down. Noise-emitting plant to be directed away from sensitive receivers.

Action	Description
Plan worksites and activities to minimise noise and vibration.	Locate compounds away from sensitive receivers and discourage access from local roads. Plan traffic flow, parking and loading/unloading areas to minimise reversing movements within the site. Where additional activities or plant may only result in a marginal noise increase and speed up works, consider limiting duration of impact by concentrating noisy activities at one location and move to another as quickly as possible. Very noise activities should be scheduled for normal working hours. If the work can not be undertaken during the day, it should be completed before 11:00pm. Where practicable, work should be scheduled to avoid major student examination periods when students are studying for examinations such as before or during Higher School Certificate and at the end of higher education semesters.
Non-tonal reverse alarms	Non-tonal reversing beepers (or an equivalent mechanism) must be fitted and used on all construction vehicles and mobile plant regularly used on site and for any out of hours work.
Shield stationary noise sources such as pumps, generators, and compressors	These should be enclosed or shielded where reasonable and feasible.
Implement any project specific mitigation measures	
1	limit plant idling
2	turn off plant when not in use
3	Sound blankets to be used where required

Appendix A Project location and predicted level of impact

Appendix B Proposed activities and equipment

Pre-string LV Cables

Equipment	Quantity	Usage	Reduction	SWL
Daymakers / Lighting plant	2	70 %	3	91
Elevated Working Platform	3	30 %	3	86
Truck (10 tonne)	1	15 %	3	89

Activity Sound Power Level: 94

Appendix C Detailed noise predicted for each receiver and activity

Assessment: 009				Night	Results summary		
NCA	ID	Address	Land use	NML	Cumulative Predicted LAeq, 15 minute noise level	Exceedance of NML, dB	Impact classification
	542495	79 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	50	12	**Clearly Audible**
	542465	79A LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	39	1	**Noticable**
	542462	85 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	42	4	**Noticable**
	542449	81 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	46	8	**Clearly Audible**
	542434	71 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	40	2	**Noticable**
	542413	83 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	47	9	**Clearly Audible**
	542411	81A LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	45	7	**Clearly Audible**

Construction noise impact assessment

RP2J			
Proposed works	010		
Proponent	Quickway		
Assessment Date	18/10/2021		
Prepared by	Quickway	**Assessment Id**	010

Introduction

This report has been prepared using the construction noise self-assessment platform KNOWnoise: *Minor Works* and presents an assessment of the likely noise impacts related to proposed works associated with the above project. Where possible, these works would be completed during standard construction hours; however, there may be a need to work outside these hours due to technical, community or access limitations. The location of the proposed works is illustrated in Appendix A.

Planned works

A description of the proposed works is as follows.

Prestring LV across Lookout Road

Proposed activities and equipment for the works are summarised in Appendix B.

Though subject to change, the works are expected to commence around 17/11/2021 and would be completed by 19/11/2021.

Assessment criteria and mitigation requirements

The Interim Construction Noise Guideline (ICNG) (DECC 2009) describes noise more than the background level as potentially having an adverse impact on sensitive receivers and increasing the likelihood of complaint. During standard construction hours, where construction noise is within 10 dB(A) of the RBL, impacts would be acceptable.

Where construction noise is more than 10 dB(A) above the RBL during standard construction hours, a residential receiver is considered noise affected and the proponent should undertake all reasonable and feasible steps necessary to manage the impact and consult with the affected community.

Above a LAeq, 15 minute noise level of 75 dB(A), a receiver is highly affected, requiring consideration of additional mitigation measures including alternative accommodation in the night period.

Outside standard construction hours, construction noise at a residential receiver more than 5 dB(A) above the RBL is taken to be noise affected.

In addition, annoying noise such as rock hammers, impact piling, or other impulsive noise sources usually result in greater annoyance than continuous construction noise. A 5 dB(A) penalty is applicable to such activities prior to comparison with the NMLs.

Other sensitive land uses, such as schools and offices, typically find noise from construction disruptive when the properties are being used (such as during work and school times). Table 2 presents NMLs from the ICNG for sensitive land uses based on the principle that the characteristic activities for each of these land uses should not be unduly disturbed.

Table 1 Non-residential sensitive land uses noise management levels

Land use	Noise assessment location	NML ($L_{Aeq,15min}$)
Classrooms at schools and other educational institutions	Internal	45
Places of worship		
Active recreation areas (such as sporting activities and activities which generate their own noise or focus for participants)	External	65
Passive recreation areas (contemplative activities that generate little noise and where benefits are compromised by external noise intrusion, for example, reading, meditation)	External	60
Industrial premises	External	75
Office, retail outlets	External	70

As part of planning for out of hours works, standard mitigation measures, as described in the ICNG and CNVG, would be implemented where reasonable and feasible. However, after these measures have been applied, noise and vibration levels may continue to exceed the NMLs.

In this case, additional mitigation measures outlined in the CNVG, which largely focus on engagement with affected sensitive receivers, should be implemented where reasonable and feasible, unless other agreements are in place with the impacted receiver.

Triggers and additional mitigation measures for airborne noise are summarised in Table 2. Further details of specific additional mitigation measures are described in the CNVG.

Table 2 Triggers for additional mitigation measures – Airborne noise (Roads and Maritime 2016)

Predicted airborne LAeq(15min) noise level at receiver			
Perception	dB(A) above RBL	dB(A) above NML	Additional mitigation measures
All hours			
75 dB(A) or greater			N, V, PC, RO
Standard hours: Mon - Fri (7am – 6pm), Sat (8am – 1pm), Sun/Pub Hol (Nil)			
Noticeable	5 to 10	0	-
Clearly audible	10 to 20	< 10	-
Moderately intrusive	20 to 30	10 to 20	N, V
Highly intrusive	> 30	> 20	N, V
OOHW Period 1: Mon – Fri (6pm – 10pm), Sat (7am – 8am & 1pm – 10pm), Sun/Pub Hol (8am – 6pm)			
Noticeable	5 to 10	<5	-
Clearly audible	10 to 20	5 to 15	N, R1, DR
Moderately intrusive	20 to 30	15 to 25	V, N, R1, DR
Highly intrusive	> 30	>25	V, IB, N, R1, DR, PC, SN
OOHW Period 2: Mon – Fri (10pm – 7am), Sat (10pm – 8am), Sun/Pub Hol (6pm – 7am)			
Noticeable	5 to 10	<5	N
Clearly audible	10 to 20	5 to 15	V, N, R2, DR
Moderately intrusive	20 to 30	15 to 25	V, IB, N, PC, SN, R2, DR
Highly intrusive	> 30	>25	AA, V, IB, N, PC, SN, R2, DR

Notes:
PC = Phone calls
V = verification
IB = Individual briefings
N= Notification
AA = Alternative accommodation
SN = Specific notifications
RO = Respite offer
R1 = Respite period 1
R2 = Respite period 2
DR = Duration respite
Perception = relates to levels above RBL
NML = Noise management level
HA = Highly affected

Existing environment and noise management levels

The proposed works would be undertaken in a predominantly Suburban/ Urban, characterised as:

Areas with low density transportation.

Typically local traffic, light vehicles, intermittent traffic flow

Background noise levels adopted for the project area and associated noise management levels (NMLs) are summarised in Table 3. NMLs have been established in line with the ICNG.

Table 3 Construction NMLs

Land use	**Suburban/ Urban**		Using custom background noise data?		**Yes**
Criterion	Day	Weekend Day	Evening	Night	Sleep
RBL	56	56	49	33	
NML	66	61	54	38	48

Sleep disturbance

The ICNG recommends where construction works are planned to extend over more than two consecutive nights, the maximum noise level should be considered for the purposes of establishing the likelihood of sleep disturbance. The Road Noise Policy suggests that maximum internal noise levels below 50-55 dB(A) are unlikely to awaken people from sleep and one or two noise events per night, with maximum internal noise levels of 65-70 dB(A) are not likely to affect health and wellbeing significantly.

Based on this, a sleep awakening criterion of 55 dB(A) (internal) is typically adopted for works. Given that noise attenuation of 10 dB(A) is typically provided by an open window, a sleep awakening criterion of LAmax 65 dB(A) (external) has been applied to residential bedroom façades. This is consistent with the sleep disturbance threshold described in Appendix E of the CNVG.

Assessment methodology

Based on the nominated works area (illustrated in Appendix A), proposed equipment and the minimum distance from the works to each sensitive receiver, noise levels were calculated based on CONCAWE (1981) P*ropagation of noise from petroleum and petrochemical complexes to neighboring communities.*

This method considers geometric spreading, atmospheric absorption, ground effects and is valid for meteorological conditions of a gentle breeze from source to receiver and stable atmosphere (temperature inversion).

KNOWnoise: Minor works is a 2-Dimensional assessment platform and does not consider terrain effects (e.g. hills, valleys) or the presence of solid structures such as homes or noise barriers. This will result in a conservative prediction, suitable for the project being assessed.

Considering the nature of the works and the type of surrounding land uses, sensitive receivers up to a radius of 600 metres from the works have been included in the assessment.

Sound power levels and predicted noise levels depend on the number of plant items operating at any one time and their precise location relative to a sensitive receiver. Equipment was assumed to be working at the worst-case location relative to each receiver and represents a worst-case assessment. Where the activity is further away from receivers or less equipment is used the predicted levels will decrease.

Sound power levels for plant and equipment expected to be used for each activity has been estimated based on guidance in the following standards and guidelines as well as typical measured noise levels for specific equipment.

- Australian Standard AS2436-2010: Guide to noise and vibration control on construction, demolition and maintenance sites
- Construction Noise and Vibration Strategy 7TP-ST-157/2.0 (CNVS), (TfNSW, 2018)
- Construction Noise and Vibration Guideline (CNVG) (Roads and Maritime Services, 2016)
- British Standard 5228-1:2009 Code of practice for noise and vibration control on construction and open sites

- United Kingdom Department for Environment, Food and Rural Affairs (DEFRA) Noise database for prediction of noise on construction and open sites

Construction noise sources and associated sound power levels are listed in Appendix B. The maximum predicted LAeq noise level within the work area was identified for each receiver.

Predicted noise levels

Detailed predicted noise levels for each potentially affected receiver are presented Appendix C.

A summary of predicted noise levels in comparison with ICNG assessment criteria for the Night period is presented in Table 4.

Table 4 Summary of predicted noise levels with comparison against ICNG criteria for the Night period.

Criterion	Predicted number of receivers
Maximum cumulative predicted $L_{Aeq,\ 15\ minute}$ noise level	57 dB(A)
Number of highly noise affected receivers (>75 dB)	0
1 – 10 dB above NML	2
10 – 20 dB above NML	5
20+ dB above NML	0

For works outside standard hours, up to 0 receivers are predicted to be classified as Highly Impacted during the Night period. A summary of the number of receivers in each class is presented in Table 5.

Table 5 Summary of predicted noise levels with comparison against CNVG criteria

Impact class	Predicted noise level	Predicted number of receivers
Noticeable	1 – 5 dB above NML	1
Clearly audible	5 – 15 dB above NML	3
Moderately impacted	15 – 25 dB above NML	3
Highly Impacted	> 25 dB above NML	0

Predicted impact classes for the Night period are illustrated graphically in Appendix C. Each identified receiver in the study area has been coloured to highlight the predicted level of impact.

Sleep disturbance

In the event works are planned for more than two consecutive nights, up to 0 are expected to exceed the sleep awakening criteria. Where any exceedances if the awakening criteria are predicted, additional care should be taken and mitigation measures implemented in the with the CNVG.

Proposed noise mitigation measures

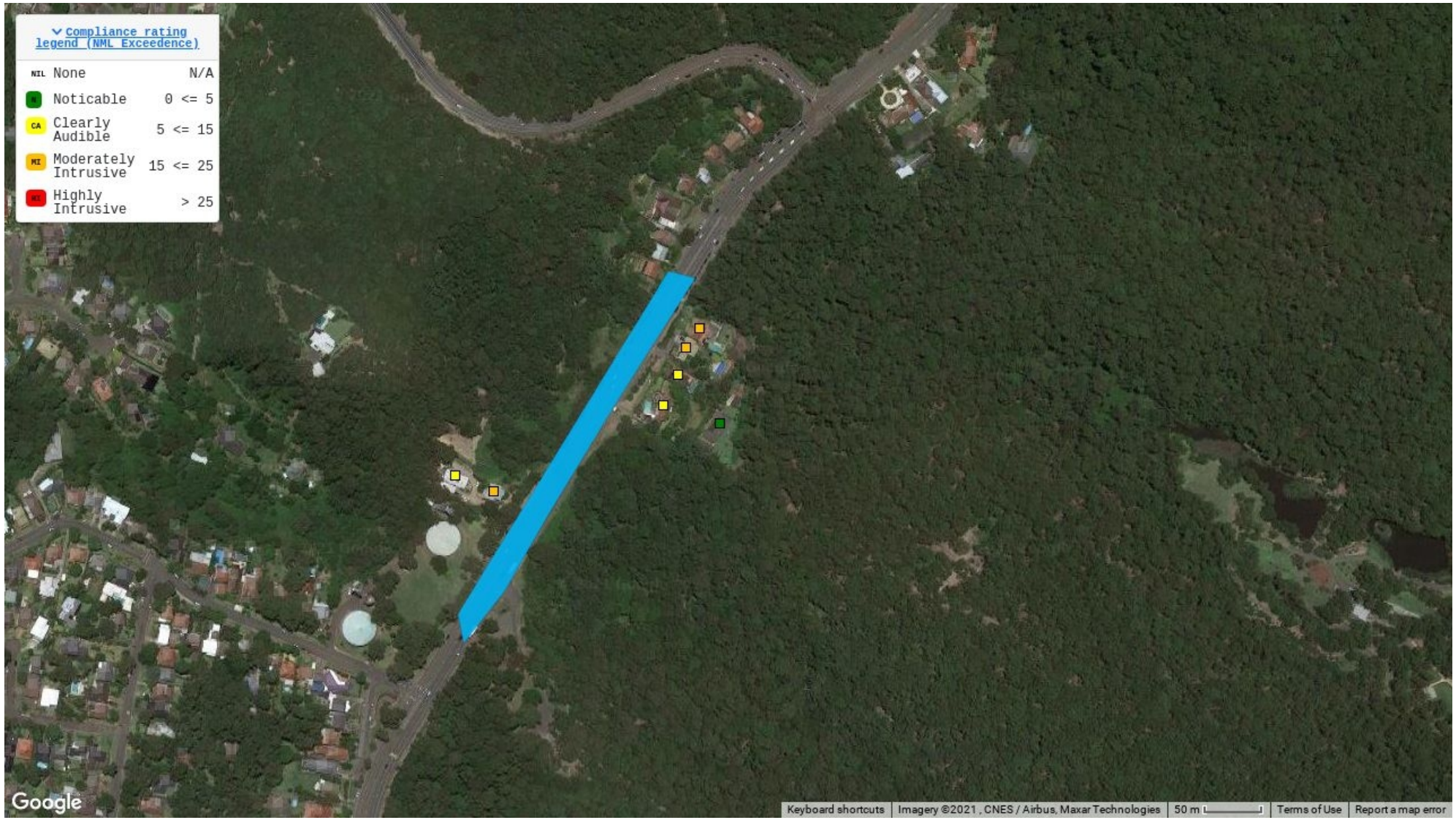
The safeguards and controls listed in Table 6 will be implemented where reasonable and feasible with the intention of achieving the project noise criteria and to maintain noise impacts at a practical minimum.

Table 6 Safeguards and controls

Action	Description
Community consultation or notification	Notify the affected community. The notification will detail work activities, dates and hours, impacts and mitigation measures, indication of work schedule over the night time period, any operational noise benefits from the works (where applicable) and contact telephone number. Notification should be a minimum of 7 calendar days prior to the start of works. For projects other than maintenance works more advanced consultation or notification may be required.
Site inductions	All employees, contractors and subcontractors are to receive an environmental induction. The induction would at least include: • all project specific and relevant standard noise and vibration mitigation measures • relevant licence and approval conditions • permissible hours of work • any limitations on high noise generating activities • location of nearest sensitive receivers • construction employee parking areas • designated loading/unloading areas and procedures site opening/closing times (including deliveries) environmental incident procedures
Behaviour	No swearing or unnecessary shouting or loud stereos/radios on site. Limit compression braking at night in residential areas. No dropping of materials from height, throwing of metal items and slamming of doors.
Verification	Where indicated in Appendix C, a noise verification program would be undertaken for the duration of the works.
Construction hours	Where feasible and reasonable, construction should be carried out during the standard daytime working hours. Work generating high noise and/or vibration levels should be scheduled during less sensitive time periods.
Respite for out-of-hours works	Respite would be scheduled as indicated in Appendix C and described in the CNVG.
Equipment selection	Use quieter construction methods where feasible and reasonable. Ensure plant including the silencer is well maintained. Plant noise levels will have an operating noise emission level compliant with Appendix F of the CNVG
Use and siting of plant	The offset distance between noisy plant and adjacent sensitive receivers is to be maximised. Plant used intermittently to be throttled down or shut down. Noise-emitting plant to be directed away from sensitive receivers.

Action	Description
Plan worksites and activities to minimise noise and vibration.	Locate compounds away from sensitive receivers and discourage access from local roads. Plan traffic flow, parking and loading/unloading areas to minimise reversing movements within the site. Where additional activities or plant may only result in a marginal noise increase and speed up works, consider limiting duration of impact by concentrating noisy activities at one location and move to another as quickly as possible. Very noise activities should be scheduled for normal working hours. If the work can not be undertaken during the day, it should be completed before 11:00pm. Where practicable, work should be scheduled to avoid major student examination periods when students are studying for examinations such as before or during Higher School Certificate and at the end of higher education semesters.
Non-tonal reverse alarms	Non-tonal reversing beepers (or an equivalent mechanism) must be fitted and used on all construction vehicles and mobile plant regularly used on site and for any out of hours work.
Shield stationary noise sources such as pumps, generators, and compressors	These should be enclosed or shielded where reasonable and feasible.
Implement any project specific mitigation measures	
1	limit plant idling
2	noise blankets where required

Appendix A Project location and predicted level of impact



Appendix B Proposed activities and equipment

Prestring LV

Equipment	Quantity	Usage	Reduction	SWL
Daymakers / Lighting plant	2	60 %	3	91
Elevated Working Platform	2	25 %	3	83
Light vehicle	1	15 %	3	74

Activity Sound Power Level: 92

Appendix C Detailed noise predicted for each receiver and activity

Assessment: 010				Night	Results summary		
NCA	ID	Address	Land use	NML	Cumulative Predicted LAeq, 15 minute noise level	Exceedance of NML, dB	Impact classification
	542908	117 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	56	18	**Moderately Intrusive**
	542907	121C LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	51	13	**Clearly Audible**
	542902	136 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	56	18	**Moderately Intrusive**
	542901	138 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	44	6	**Clearly Audible**
	542900	121A LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	40	2	**Noticable**
	542898	121B LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	53	15	**Clearly Audible**
	542897	119 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	57	19	**Moderately Intrusive**

Construction noise impact assessment

010.2 - Ausgrid Outage 3

Proposed works	Ausgrid Outage 3		
Proponent	Quickway		
Assessment Date	12/10/2021		
Prepared by	Quickway	**Assessment Id**	010

Introduction

This report has been prepared using the construction noise self-assessment platform KNOWnoise: *Minor Works* and presents an assessment of the likely noise impacts related to proposed works associated with the above project. Where possible, these works would be completed during standard construction hours; however, there may be a need to work outside these hours due to technical, community or access limitations. The location of the proposed works is illustrated in Appendix A.

Planned works

A description of the proposed works is as follows.

Ausgrid Outage 3

Proposed activities and equipment for the works are summarised in Appendix B.

Though subject to change, the works are expected to commence around 12/12/2021 and would be completed by 14/12/2021.

Assessment criteria and mitigation requirements

The Interim Construction Noise Guideline (ICNG) (DECC 2009) describes noise more than the background level as potentially having an adverse impact on sensitive receivers and increasing the likelihood of complaint. During standard construction hours, where construction noise is within 10 dB(A) of the RBL, impacts would be acceptable.

Where construction noise is more than 10 dB(A) above the RBL during standard construction hours, a residential receiver is considered noise affected and the proponent should undertake all reasonable and feasible steps necessary to manage the impact and consult with the affected community.

Above a LAeq, 15 minute noise level of 75 dB(A), a receiver is highly affected, requiring consideration of additional mitigation measures including alternative accommodation in the night period.

Outside standard construction hours, construction noise at a residential receiver more than 5 dB(A) above the RBL is taken to be noise affected.

In addition, annoying noise such as rock hammers, impact piling, or other impulsive noise sources usually result in greater annoyance than continuous construction noise. A 5 dB(A) penalty is applicable to such activities prior to comparison with the NMLs.

Other sensitive land uses, such as schools and offices, typically find noise from construction disruptive when the properties are being used (such as during work and school times). Table 2 presents NMLs from the ICNG for sensitive land uses based on the principle that the characteristic activities for each of these land uses should not be unduly disturbed.

Table 1 Non-residential sensitive land uses noise management levels

Land use	Noise assessment location	NML ($L_{Aeq,15min}$)
Classrooms at schools and other educational institutions	Internal	45
Places of worship		
Active recreation areas (such as sporting activities and activities which generate their own noise or focus for participants)	External	65
Passive recreation areas (contemplative activities that generate little noise and where benefits are compromised by external noise intrusion, for example, reading, meditation)	External	60
Industrial premises	External	75
Office, retail outlets	External	70

As part of planning for out of hours works, standard mitigation measures, as described in the ICNG and CNVG, would be implemented where reasonable and feasible. However, after these measures have been applied, noise and vibration levels may continue to exceed the NMLs.

In this case, additional mitigation measures outlined in the CNVG, which largely focus on engagement with affected sensitive receivers, should be implemented where reasonable and feasible, unless other agreements are in place with the impacted receiver.

Triggers and additional mitigation measures for airborne noise are summarised in Table 2. Further details of specific additional mitigation measures are described in the CNVG.

Table 2 Triggers for additional mitigation measures – Airborne noise (Roads and Maritime 2016)

Predicted airborne LAeq(15min) noise level at receiver			
Perception	dB(A) above RBL	dB(A) above NML	Additional mitigation measures
All hours			
75 dB(A) or greater			N, V, PC, RO
Standard hours: Mon - Fri (7am – 6pm), Sat (8am – 1pm), Sun/Pub Hol (Nil)			
Noticeable	5 to 10	0	-
Clearly audible	10 to 20	< 10	-
Moderately intrusive	20 to 30	10 to 20	N, V
Highly intrusive	> 30	> 20	N, V
OOHW Period 1: Mon – Fri (6pm – 10pm), Sat (7am – 8am & 1pm – 10pm), Sun/Pub Hol (8am – 6pm)			
Noticeable	5 to 10	<5	-
Clearly audible	10 to 20	5 to 15	N, R1, DR
Moderately intrusive	20 to 30	15 to 25	V, N, R1, DR
Highly intrusive	> 30	>25	V, IB, N, R1, DR, PC, SN
OOHW Period 2: Mon – Fri (10pm – 7am), Sat (10pm – 8am), Sun/Pub Hol (6pm – 7am)			
Noticeable	5 to 10	<5	N
Clearly audible	10 to 20	5 to 15	V, N, R2, DR
Moderately intrusive	20 to 30	15 to 25	V, IB, N, PC, SN, R2, DR
Highly intrusive	> 30	>25	AA, V, IB, N, PC, SN, R2, DR

Notes:
PC = Phone calls
V = verification
IB = Individual briefings
N= Notification
AA = Alternative accommodation
SN = Specific notifications
RO = Respite offer
R1 = Respite period 1
R2 = Respite period 2
DR = Duration respite
Perception = relates to levels above RBL
NML = Noise management level
HA = Highly affected

Existing environment and noise management levels

The proposed works would be undertaken in a predominantly Suburban/ Urban, characterised as:

Areas with low density transportation.

Typically local traffic, light vehicles, intermittent traffic flow

Background noise levels adopted for the project area and associated noise management levels (NMLs) are summarised in Table 3. NMLs have been established in line with the ICNG.

Table 3 Construction NMLs

Land use	**Suburban/ Urban**		Using custom background noise data?		**Yes**
Criterion	Day	Weekend Day	Evening	Night	Sleep
RBL	56	56	49	33	
NML	66	61	54	38	35

Sleep disturbance

The ICNG recommends where construction works are planned to extend over more than two consecutive nights, the maximum noise level should be considered for the purposes of establishing the likelihood of sleep disturbance. The Road Noise Policy suggests that maximum internal noise levels below 50-55 dB(A) are unlikely to awaken people from sleep and one or two noise events per night, with maximum internal noise levels of 65-70 dB(A) are not likely to affect health and wellbeing significantly.

Based on this, a sleep awakening criterion of 55 dB(A) (internal) is typically adopted for works. Given that noise attenuation of 10 dB(A) is typically provided by an open window, a sleep awakening criterion of LAmax 65 dB(A) (external) has been applied to residential bedroom façades. This is consistent with the sleep disturbance threshold described in Appendix E of the CNVG.

Assessment methodology

Based on the nominated works area (illustrated in Appendix A), proposed equipment and the minimum distance from the works to each sensitive receiver, noise levels were calculated based on CONCAWE (1981) P*ropagation of noise from petroleum and petrochemical complexes to neighboring communities.*

This method considers geometric spreading, atmospheric absorption, ground effects and is valid for meteorological conditions of a gentle breeze from source to receiver and stable atmosphere (temperature inversion).

KNOWnoise: Minor works is a 2-Dimensional assessment platform and does not consider terrain effects (e.g. hills, valleys) or the presence of solid structures such as homes or noise barriers. This will result in a conservative prediction, suitable for the project being assessed.

Considering the nature of the works and the type of surrounding land uses, sensitive receivers up to a radius of 600 metres from the works have been included in the assessment.

Sound power levels and predicted noise levels depend on the number of plant items operating at any one time and their precise location relative to a sensitive receiver. Equipment was assumed to be working at the worst-case location relative to each receiver and represents a worst-case assessment. Where the activity is further away from receivers or less equipment is used the predicted levels will decrease.

Sound power levels for plant and equipment expected to be used for each activity has been estimated based on guidance in the following standards and guidelines as well as typical measured noise levels for specific equipment.

- Australian Standard AS2436-2010: Guide to noise and vibration control on construction, demolition and maintenance sites
- Construction Noise and Vibration Strategy 7TP-ST-157/2.0 (CNVS), (TfNSW, 2018)
- Construction Noise and Vibration Guideline (CNVG) (Roads and Maritime Services, 2016)
- British Standard 5228-1:2009 Code of practice for noise and vibration control on construction and open sites

- United Kingdom Department for Environment, Food and Rural Affairs (DEFRA) Noise database for prediction of noise on construction and open sites

Construction noise sources and associated sound power levels are listed in Appendix B. The maximum predicted LAeq noise level within the work area was identified for each receiver.

Predicted noise levels

Detailed predicted noise levels for each potentially affected receiver are presented Appendix C.

A summary of predicted noise levels in comparison with ICNG assessment criteria for the Night period is presented in Table 4.

Table 4 Summary of predicted noise levels with comparison against ICNG criteria for the Night period.

Criterion	Predicted number of receivers
Maximum cumulative predicted $L_{Aeq,\ 15\ minute}$ noise level	57 dB(A)
Number of highly noise affected receivers (>75 dB)	0
1 – 10 dB above NML	7
10 – 20 dB above NML	5
20+ dB above NML	0

For works outside standard hours, up to 0 receivers are predicted to be classified as Highly Impacted during the Night period. A summary of the number of receivers in each class is presented in Table 5.

Table 5 Summary of predicted noise levels with comparison against CNVG criteria

Impact class	Predicted noise level	Predicted number of receivers
Noticeable	1 – 5 dB above NML	6
Clearly audible	5 – 15 dB above NML	5
Moderately impacted	15 – 25 dB above NML	3
Highly Impacted	> 25 dB above NML	0

Predicted impact classes for the Night period are illustrated graphically in Appendix C. Each identified receiver in the study area has been coloured to highlight the predicted level of impact.

Sleep disturbance

In the event works are planned for more than two consecutive nights, up to 0 are expected to exceed the sleep awakening criteria. Where any exceedances if the awakening criteria are predicted, additional care should be taken and mitigation measures implemented in the with the CNVG.

Proposed noise mitigation measures

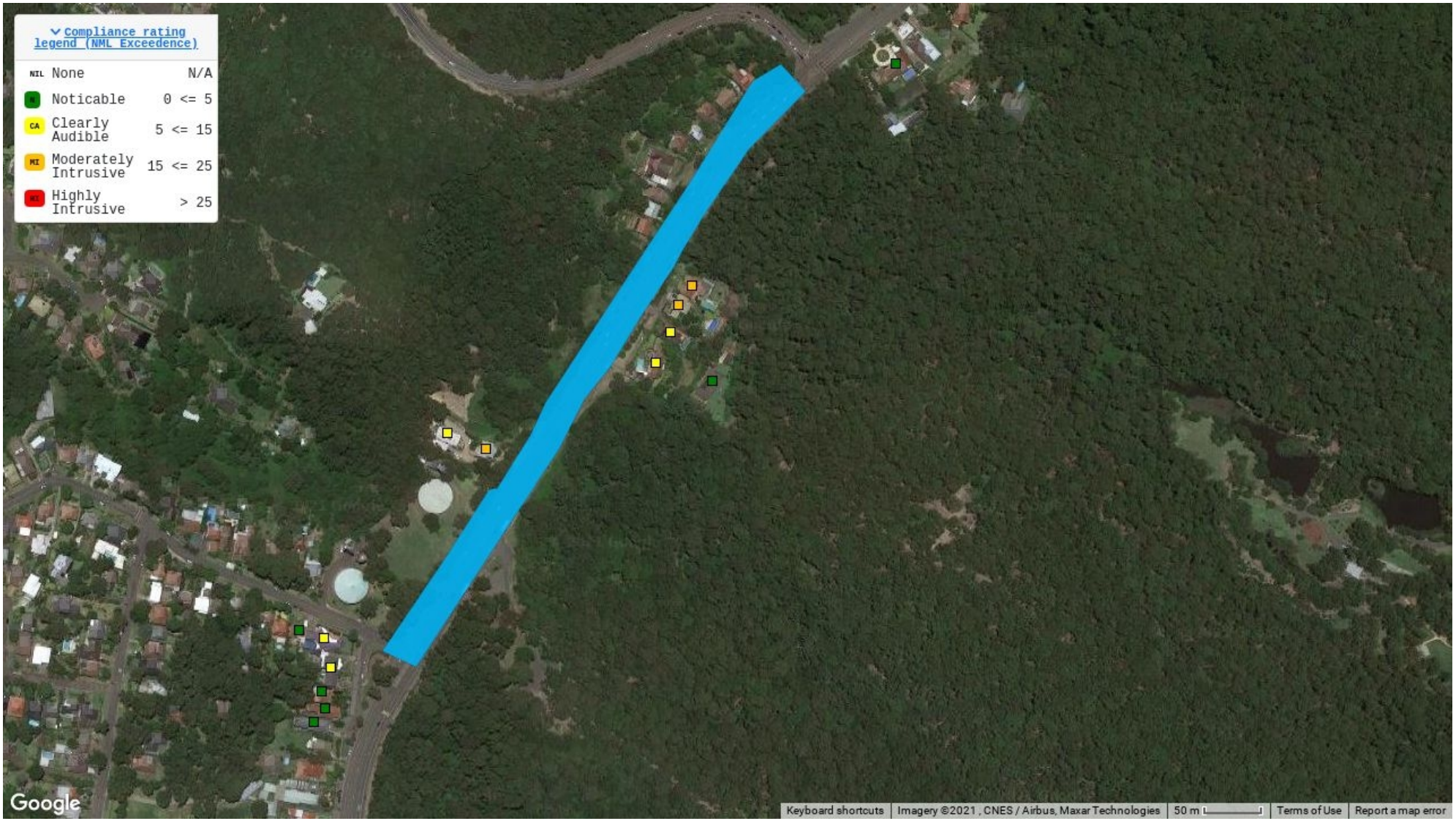
The safeguards and controls listed in Table 6 will be implemented where reasonable and feasible with the intention of achieving the project noise criteria and to maintain noise impacts at a practical minimum.

Table 6 Safeguards and controls

Action	Description
Community consultation or notification	Notify the affected community. The notification will detail work activities, dates and hours, impacts and mitigation measures, indication of work schedule over the night time period, any operational noise benefits from the works (where applicable) and contact telephone number. Notification should be a minimum of 7 calendar days prior to the start of works. For projects other than maintenance works more advanced consultation or notification may be required.
Site inductions	All employees, contractors and subcontractors are to receive an environmental induction. The induction would at least include: • all project specific and relevant standard noise and vibration mitigation measures • relevant licence and approval conditions • permissible hours of work • any limitations on high noise generating activities • location of nearest sensitive receivers • construction employee parking areas • designated loading/unloading areas and procedures site opening/closing times (including deliveries) environmental incident procedures
Behaviour	No swearing or unnecessary shouting or loud stereos/radios on site. Limit compression braking at night in residential areas. No dropping of materials from height, throwing of metal items and slamming of doors.
Verification	Where indicated in Appendix C, a noise verification program would be undertaken for the duration of the works.
Construction hours	Where feasible and reasonable, construction should be carried out during the standard daytime working hours. Work generating high noise and/or vibration levels should be scheduled during less sensitive time periods.
Respite for out-of-hours works	Respite would be scheduled as indicated in Appendix C and described in the CNVG.
Equipment selection	Use quieter construction methods where feasible and reasonable. Ensure plant including the silencer is well maintained. Plant noise levels will have an operating noise emission level compliant with Appendix F of the CNVG
Use and siting of plant	The offset distance between noisy plant and adjacent sensitive receivers is to be maximised. Plant used intermittently to be throttled down or shut down. Noise-emitting plant to be directed away from sensitive receivers.

Action	Description
Plan worksites and activities to minimise noise and vibration.	Locate compounds away from sensitive receivers and discourage access from local roads. Plan traffic flow, parking and loading/unloading areas to minimise reversing movements within the site. Where additional activities or plant may only result in a marginal noise increase and speed up works, consider limiting duration of impact by concentrating noisy activities at one location and move to another as quickly as possible. Very noise activities should be scheduled for normal working hours. If the work can not be undertaken during the day, it should be completed before 11:00pm. Where practicable, work should be scheduled to avoid major student examination periods when students are studying for examinations such as before or during Higher School Certificate and at the end of higher education semesters.
Non-tonal reverse alarms	Non-tonal reversing beepers (or an equivalent mechanism) must be fitted and used on all construction vehicles and mobile plant regularly used on site and for any out of hours work.
Shield stationary noise sources such as pumps, generators, and compressors	These should be enclosed or shielded where reasonable and feasible.
Implement any project specific mitigation measures	
1	Limit Plant idling
2	Plant not to be left idling infront of properties
3	Sound blankets to be used where required

Appendix A Project location and predicted level of impact



Appendix B Proposed activities and equipment

Ausgrid Outage 3

Equipment	Quantity	Usage	Reduction	SWL
Daymakers / Lighting plant	2	60 %	5	89
Elevated Working Platform	2	25 %	5	81

Activity Sound Power Level: 89

Appendix C Detailed noise predicted for each receiver and activity

Assessment: Ausgrid Outage 3				Night	Results summary		
NCA	ID	Address	Land use	NML	Cumulative Predicted LAeq, 15 minute noise level	Exceedance of NML, dB	Impact classification
	541694	117 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	56	18	**Moderately Intrusive**
	541693	121C LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	51	13	**Clearly Audible**
	541685	136 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	56	18	**Moderately Intrusive**
	541683	138 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	43	5	**Clearly Audible**
	541682	121A LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	39	1	**Noticable**
	541680	121B LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	53	15	**Clearly Audible**
	541679	119 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	57	19	**Moderately Intrusive**
	541534	164 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	45	7	**Clearly Audible**
	541502	168 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	40	2	**Noticable**
	541408	166 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	42	4	**Noticable**
	541406	160 LOOKOUT ROAD NEW LAMBTON HEIGHTS	NONE	38	45	7	**Clearly Audible**
	541405	170 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	38	0	**Noticable**
	541397	3 GRANDVIEW ROAD NEW LAMBTON HEIGHTS	RES	38	40	2	**Noticable**
	541309	83 LOOKOUT ROAD NEW LAMBTON HEIGHTS	RES	38	39	1	**Noticable**

Appendix C – 3 Month Look Ahead Notification Letter

October 2021

Out of hours early work at New Lambton Heights from October to December

The NSW Government is funding early work for the Newcastle Inner City Bypass between Rankin Park and Jesmond.

Transport for NSW have awarded a contract to Quickway to relocate major utilities at the southern end of the Rankin Park to Jesmond project to help prepare for the main construction of the bypass. This early work will be continuing from October to December.

We will be carrying out essential night work on Lookout Road and surrounding areas. Work is required outside normal project hours for the safety of workers and road users, and to minimise traffic delays.

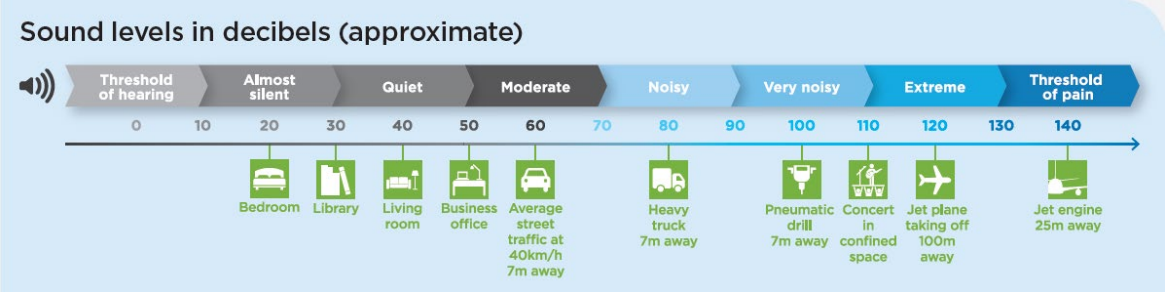
Work hours will be between **7pm** and **6am** from **Monday** to **Friday**, weather permitting. High impact noisy work will be done **before 11pm**. If wet weather prevents the work occurring as planned it will be rescheduled and you will be notified.

Date	Work Activity	Equipment
Mid October	Trenched Utility Crossings across Lookout Road and Grandview Road **Expected duration – six shifts over two weeks**	Traffic control, excavators, trucks, lighting towers, compaction rollers, road saw, asphalt profiler, asphalt paver, concrete agitator trucks
Late October	Electrical Overhead works on Lookout Road and McCaffrey Drive **Expected duration – one shift**	Traffic control, elevated working platforms, lighting towers
Early November	Electrical Overhead works on McCaffrey Drive and Lookout Road **Expected duration – two shifts**	Traffic control, trucks, excavator, elevated working platforms, lighting towers
Mid November	Overhead powerline works on Lookout Road **Expected duration – five shifts**	Traffic control, trucks, elevated working platforms, lighting towers
Early December	Electrical Overhead works on Lookout Road **Expected duration – two shifts**	Traffic control, trucks, elevated working platforms, lighting towers
December	Watermain installation on Lookout Road Southbound **Expected duration – five shifts**	Traffic control, excavators, trucks, lighting towers, compaction rollers, road saw

How will the work affect you?

The work will involve the use of machinery which generates noise, light and vibration. We will make every effort to minimise these impacts with our equipment selection, positioning of machines and noise blankets, turning off vehicles when not in use and using non-tonal reversing alarms. Appropriate respite periods for the night work will be provided in consultation with the community at each affected location. This may include limiting the number of consecutive nights and extending the duration night of work, or increasing the number of consecutive nights and shortening the duration of night work.

Noise levels will vary between moderate to noisy, the below diagram provides a guide to the noise you can expect. Directly affected residents will be contacted and advised of the likely impact and what we are doing to minimise disruption during the work.



Traffic changes

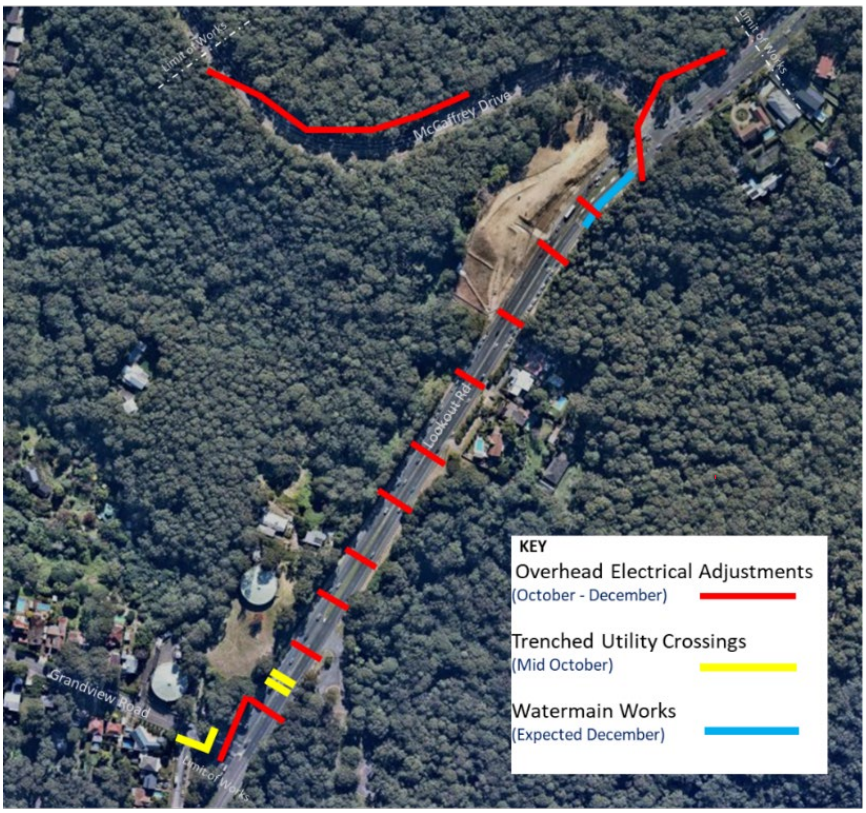
There will be temporary traffic changes to ensure the work zone is safe including partial closures of Grandview Road with detours in place and lane closures and contra-flow on Lookout Road. Please refer to detour notification for more information.

A 40km/h speed limit will apply during temporary lane closures on Lookout Road. Please keep to speed limits and follow the direction of traffic controllers and signs. For the latest traffic updates, you can call 132 701, visit livetraffic.com or download the Live Traffic NSW App.

Contact

If you would like to provide feedback, or have any questions about this work, please contact our project team on 1800 818 433 (24 hours – select option 2) or email southern.utilities.RP2J@quickway.com.au. For more information about the Newcastle Inner City Bypass between Rankin Park and Jesmond, visit nswroads.work/rp2j. Thank you for your patience during this important work.

Location of work



Appendix D

- **Draft Notification Letter 1 for works 28 Oct – 02 Nov**
- **Draft Notification Letter 2 for works 15 – 19 Nov**
- **Draft Notification Letter 3 for works 12 -13 Dec**

October 2021

Out of hours early work at New Lambton Heights from 1 November

The NSW Government is funding early work for the Newcastle Inner City Bypass between Rankin Park and Jesmond.

Transport for NSW has awarded a contract to Quickway to relocate major utilities at the southern end of the Rankin Park to Jesmond project to help prepare for the main construction of the bypass. This early work will be continuing in November.

We will be carrying out essential night work on McCaffrey Drive and Lookout Road. Work will include:

- installing new power poles and commissioning new overhead lines
- removing redundant overhead lines

Work is required outside normal project hours for the safety of workers and road users, and to minimise traffic delays.

We will be completing works over two nights from **7pm** to **5am** on **Monday 1 November** and **Tuesday 2 November** weather permitting. High impact noisy work will be done before **11pm**. If wet weather prevents the work occurring as planned, it will be rescheduled, and you will be notified.

How will the work affect you?

The work will involve the use of machinery which generates noise and light. We will make every effort to minimise these impacts with our equipment selection, positioning of machines and noise blankets, turning off vehicles when not in use and using non-tonal reversing alarms.

Traffic changes

There will be some temporary traffic changes to ensure the work zone is safe including lane closures on Lookout Road and McCaffrey Drive. A 40km/h speed limit will apply during temporary lane closures and travel times will be affected. Please keep to speed limits and follow the direction of traffic controllers and signs. For the latest traffic updates, you can call 132 701, visit livetraffic.com or download the Live Traffic NSW App.

Contact

If you would like to provide feedback, have any questions about this work or would like to provide your contact details for future notices, please contact or Community Relations Manager on 1800 818 433 (24 hours – select option 2) or email southern.utilities.RP2J@quickway.com.au.

For more information about the Newcastle Inner City Bypass between Rankin Park and Jesmond, visit nswroads.work/rp2j. Thank you for your patience during this important work.

November 2021

Out of hours early work at New Lambton Heights from 15th November 2021

The NSW Government is funding early work for the Newcastle Inner City Bypass between Rankin Park and Jesmond.

Transport for NSW has awarded a contract to Quickway to relocate major utilities at the southern end of the Rankin Park to Jesmond project to help prepare for the main construction of the bypass. This early work will be continuing in November.

We will be carrying out essential night work on Lookout Road. Work will include:

- Installing new overhead powerlines across Lookout Road

Work is required outside normal project hours for the safety of workers and road users, and to minimise traffic delays.

We will be completing works over four nights from **7pm** to **5am** between **Monday 15 November** and **Thursday 19 November** weather permitting. High impact noisy work will be done before **11pm**. If wet weather prevents the work occurring as planned, it will be rescheduled on, and you will be notified.

How will the work affect you?

The work will involve the use of machinery which generates noise and light. We will make every effort to minimise these impacts with our equipment selection, positioning of machines and noise blankets, turning off vehicles when not in use and using non-tonal reversing alarms.

Traffic changes

There will be some temporary traffic changes to ensure the work zone is safe including lane closures and temporary stoppages on Lookout Road. A 40km/h speed limit will apply during temporary lane closures and travel times will be affected. Please keep to speed limits and follow the direction of traffic controllers and signs. For the latest traffic updates, you can call 132 701, visit livetraffic.com or download the Live Traffic NSW App.

Contact

If you would like to provide feedback, have any questions about this work or would like to provide your contact details for future notices, please contact or Community Relations Manager on 1800 818 433 (24 hours – select option 2) or email southern.utilities.RP2J@quickway.com.au.

For more information about the Newcastle Inner City Bypass between Rankin Park and Jesmond, visit nswroads.work/rp2j. Thank you for your patience during this important work.

December 2021

Out of hours early work at New Lambton Heights from 12th December 2021

The NSW Government is funding early work for the Newcastle Inner City Bypass between Rankin Park and Jesmond.

Transport for NSW has awarded a contract to Quickway to relocate major utilities at the southern end of the Rankin Park to Jesmond project to help prepare for the main construction of the bypass. This early work will be continuing in October.

We will be carrying out essential night work on Lookout Road. Work will include:

- Installing new power poles and commissioning new overhead lines
- Removing redundant overhead lines

Work is required outside normal project hours for the safety of workers and road users, and to minimise traffic delays.

We will be completing works over two nights from **7pm** to **5am** on **Sunday 12 December** and **Monday 13 December** weather permitting. High impact noisy work will be done before **11pm**. If wet weather prevents the work occurring as planned, it will be rescheduled on, and you will be notified.

How will the work affect you?

The work will involve the use of machinery which generates noise and light. We will make every effort to minimise these impacts with our equipment selection, positioning of machines and noise blankets, turning off vehicles when not in use and using non-tonal reversing alarms.

Traffic changes

There will be some temporary traffic changes to ensure the work zone is safe including lane closures and temporary stoppages on Lookout Road. A 40km/h speed limit will apply during temporary lane closures and travel times will be affected. Please keep to speed limits and follow the direction of traffic controllers and signs. For the latest traffic updates, you can call 132 701, visit livetraffic.com or download the Live Traffic NSW App.

Contact

If you would like to provide feedback, have any questions about this work or would like to provide your contact details for future notices, please contact or Community Relations Manager on 1800 818 433 (24 hours – select option 2) or email southern.utilities.RP2J@quickway.com.au.

For more information about the Newcastle Inner City Bypass between Rankin Park and Jesmond, visit nswroads.work/rp2j. Thank you for your patience during this important work.

Appendix E – Consultation Record

Address	NCA	Land Use	NML (RBL +5 dB(A))	Predicted Noise Level at reciever	Exceedance of NML	Exceedance of RBL	OOH Protocol Risk Rating (high/low)	Impact Classification	Mitigation Measures (PC, V, IB, N, AA, SN, RO, R1, R2, DR)	Date Notification completed / sent	Notification type (SMS / Email / Phone Call / Notification Letter / Door knock)	Written Agreement to all OoHW
119 LOOKOUT ROAD NEW LAMBTON HEIGHTS	13	Residential	38	57	19	24	Low	Moderately Intrusive	V, IB, N	TBC	Email or Phone Call	[redacted]
83 LOOKOUT ROAD NEW LAMBTON HEIGHTS	13	Residential	38	57	19	24	Low	Moderately Intrusive	V, IB, N	TBC	Email or Phone Call	
117 LOOKOUT ROAD NEW LAMBTON HEIGHTS	13	Residential	38	56	18	23	Low	Moderately Intrusive	V, IB, N	TBC	Email or Phone Call	
136 LOOKOUT ROAD NEW LAMBTON HEIGHTS	13	Residential	38	56	18	23	Low	Moderately Intrusive	V, IB, N	TBC	Email or Phone Call	
81 LOOKOUT ROAD NEW LAMBTON HEIGHTS	13	Residential	38	54	16	21	Low	Moderately Intrusive	V, IB, N	TBC	Email or Phone Call	
121B LOOKOUT ROAD NEW LAMBTON HEIGHTS	13	Residential	38	53	15	20	Low	Clearly Audible	N, V	TBC	Notification Letter	
81A LOOKOUT ROAD NEW LAMBTON HEIGHTS	13	Residential	38	52	14	19	Low	Clearly Audible	N, V	TBC	Notification Letter	
79 LOOKOUT ROAD NEW LAMBTON HEIGHTS	13	Residential	38	51	13	18	Low	Clearly Audible	N, V	TBC	Notification Letter	
121C LOOKOUT ROAD NEW LAMBTON HEIGHTS	13	Residential	38	51	13	18	Low	Clearly Audible	N, V	TBC	Notification Letter	
85 LOOKOUT ROAD NEW LAMBTON HEIGHTS	13	Residential	38	50	12	17	Low	Clearly Audible	N, V	TBC	Notification Letter	
79A LOOKOUT ROAD NEW LAMBTON HEIGHTS	13	Residential	38	47	9	14	Low	Clearly Audible	N, V	TBC	Notification Letter	
41 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	46	8	13	Low	Clearly Audible	N, V	TBC	Notification Letter	
164 LOOKOUT ROAD NEW LAMBTON HEIGHTS	13	Residential	38	45	7	12	Low	Clearly Audible	N, V	TBC	Notification Letter	
39 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	45	7	12	Low	Clearly Audible	N, V	TBC	Notification Letter	
37 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	45	7	12	Low	Clearly Audible	N, V	TBC	Notification Letter	
43 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	45	7	12	Low	Clearly Audible	N, V	TBC	Notification Letter	
45 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	45	7	12	Low	Clearly Audible	N, V	TBC	Notification Letter	
160 LOOKOUT ROAD NEW LAMBTON HEIGHTS	13	Residential	38	45	7	12	Low	Clearly Audible	N, V	TBC	Notification Letter	
47 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	45	7	12	Low	Clearly Audible	N, V	TBC	Notification Letter	
335 MCCAFFREY DRIVE RANKIN PARK	13	Residential	38	44	6	11	Low	Clearly Audible	N, V	TBC	Notification Letter	
49 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	44	6	11	Low	Clearly Audible	N, V	TBC	Notification Letter	
138 LOOKOUT ROAD NEW LAMBTON HEIGHTS	13	Residential	38	44	6	11	Low	Clearly Audible	N, V	TBC	Notification Letter	

Address	NCA	Land Use	NML (RBL +5 dB(A))	Predicted Noise Level at reciever	Exceedance of NML	Exceedance of RBL	OOH Protocol Risk Rating (high/low)	Impact Classification	Mitigation Measures (PC, V, IB, N, AA, SN, RO, R1, R2, DR)	Date Notification completed / sent	Notification type (SMS / Email / Phone Call / Notification Letter / Door knock)	Written Agreement to all OoHW
79B LOOKOUT ROAD NEW LAMBTON HEIGHTS	13	Residential	38	44	6	11	Low	Clearly Audible	N, V	TBC	Notification Letter	
33 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	44	6	11	Low	Clearly Audible	N, V	TBC	Notification Letter	
51 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	44	6	11	Low	Clearly Audible	N, V	TBC	Notification Letter	
333 MCCAFFREY DRIVE RANKIN PARK	13	Residential	38	43	5	10	Low	Clearly Audible	N, V	TBC	Notification Letter	
31 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	43	5	10	Low	Noticable	N	TBC	Notification Letter	
20 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	42	4	9	Low	Noticable	N	TBC	Notification Letter	
53 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	42	4	9	Low	Noticable	N	TBC	Notification Letter	
22 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	42	4	9	Low	Noticable	N	TBC	Notification Letter	
16 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	42	4	9	Low	Noticable	N	TBC	Notification Letter	
71 LOOKOUT ROAD NEW LAMBTON HEIGHTS	13	Residential	38	42	4	9	Low	Noticable	N	TBC	Notification Letter	
18 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	42	4	9	Low	Noticable	N	TBC	Notification Letter	
331 MCCAFFREY DRIVE RANKIN PARK	13	Residential	38	42	4	9	Low	Noticable	N	TBC	Notification Letter	
29 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	42	4	9	Low	Noticable	N	TBC	Notification Letter	
166 LOOKOUT ROAD NEW LAMBTON HEIGHTS	13	Residential	38	42	4	9	Low	Noticable	N	TBC	Notification Letter	
24 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	42	4	9	Low	Noticable	N	TBC	Notification Letter	
55 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	42	4	9	Low	Noticable	N	TBC	Notification Letter	
329 MCCAFFREY DRIVE RANKIN PARK	13	Residential	38	41	3	8	Low	Noticable	N	TBC	Notification Letter	
38 FLORALIA CLOSE NEW LAMBTON HEIGHTS	13	Residential	38	41	3	8	Low	Noticable	N	TBC	Notification Letter	
27 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	41	3	8	Low	Noticable	N	TBC	Notification Letter	
14 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	41	3	8	Low	Noticable	N	TBC	Notification Letter	
57 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	41	3	8	Low	Noticable	N	TBC	Notification Letter	
26 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	41	3	8	Low	Noticable	N	TBC	Notification Letter	

Address	NCA	Land Use	NML (RBL +5 dB(A))	Predicted Noise Level at reciever	Exceedance of NML	Exceedance of RBL	OOH Protocol Risk Rating (high/low)	Impact Classification	Mitigation Measures (PC, V, IB, N, AA, SN, RO, R1, R2, DR)	Date Notification completed / sent	Notification type (SMS / Email / Phone Call / Notification Letter / Door knock)	Written Agreement to all OoHW
327 MCCAFFREY DRIVE RANKIN PARK	13	Residential	38	41	3	8	Low	Noticable	N	TBC	Notification Letter	[redacted]
59 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	41	3	8	Low	Noticable	N	TBC	Notification Letter	
36 FLORALIA CLOSE NEW LAMBTON HEIGHTS	13	Residential	38	41	3	8	Low	Noticable	N	TBC	Notification Letter	
25 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	40	2	7	Low	Noticable	N	TBC	Notification Letter	
168 LOOKOUT ROAD NEW LAMBTON HEIGHTS	13	Residential	38	40	2	7	Low	Noticable	N	TBC	Notification Letter	
3 GRANDVIEW ROAD NEW LAMBTON HEIGHTS	13	Residential	38	40	2	7	Low	Noticable	N	TBC	Notification Letter	
61 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	40	2	7	Low	Noticable	N	TBC	Notification Letter	
121A LOOKOUT ROAD NEW LAMBTON HEIGHTS	13	Residential	38	40	2	7	Low	Noticable	N	TBC	Notification Letter	
28 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	40	2	7	Low	Noticable	N	TBC	Notification Letter	
12 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	40	2	7	Low	Noticable	N	TBC	Notification Letter	
3A MARSHALL STREET NEW LAMBTON HEIGHTS	13	Residential	38	40	2	7	Low	Noticable	N	TBC	Notification Letter	
325 MCCAFFREY DRIVE RANKIN PARK	13	Residential	38	40	2	7	Low	Noticable	N	TBC	Notification Letter	
34 FLORALIA CLOSE NEW LAMBTON HEIGHTS	13	Residential	38	40	2	7	Low	Noticable	N	TBC	Notification Letter	
63 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	40	2	7	Low	Noticable	N	TBC	Notification Letter	
23 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	40	2	7	Low	Noticable	N	TBC	Notification Letter	
10 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	39	1	6	Low	Noticable	N	TBC	Notification Letter	
30 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	39	1	6	Low	Noticable	N	TBC	Notification Letter	
323 MCCAFFREY DRIVE RANKIN PARK	13	Residential	38	39	1	6	Low	Noticable	N	TBC	Notification Letter	
65 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	39	1	6	Low	Noticable	N	TBC	Notification Letter	
1 RIDGEWAY ROAD NEW LAMBTON HEIGHTS	13	Residential	38	39	1	6	Low	Noticable	N	TBC	Notification Letter	
32 FLORALIA CLOSE NEW LAMBTON HEIGHTS	13	Residential	38	39	1	6	Low	Noticable	N	TBC	Notification Letter	
21 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	39	1	6	Low	Noticable	N	TBC	Notification Letter	

Address	NCA	Land Use	NML (RBL +5 dB(A))	Predicted Noise Level at reciever	Exceedance of NML	Exceedance of RBL	OOH Protocol Risk Rating (high/low)	Impact Classification	Mitigation Measures (PC, V, IB, N, AA, SN, RO, R1, R2, DR)	Date Notification completed / sent	Notification type (SMS / Email / Phone Call / Notification Letter / Door knock)	Written Agreement to all OoHW
8 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	39	1	6	Low	Noticable	N	TBC	Notification Letter	[redacted]
32 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	39	1	6	Low	Noticable	N	TBC	Notification Letter	
67 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	39	1	6	Low	Noticable	N	TBC	Notification Letter	
321 MCCAFFREY DRIVE RANKIN PARK	13	Residential	38	39	1	6	Low	Noticable	N	TBC	Notification Letter	
30 FLORALIA CLOSE NEW LAMBTON HEIGHTS	13	Residential	38	39	1	6	Low	Noticable	N	TBC	Notification Letter	
19 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	39	1	6	Low	Noticable	N	TBC	Notification Letter	
1A RIDGEWAY ROAD NEW LAMBTON HEIGHTS	13	Residential	38	38	0	5	Low	Noticable	N	TBC	Notification Letter	
2 RIDGEWAY ROAD NEW LAMBTON HEIGHTS	13	Residential	38	38	0	5	Low	Noticable	N	TBC	Notification Letter	
6 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	38	0	5	Low	Noticable	N	TBC	Notification Letter	
69 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	38	0	5	Low	Noticable	N	TBC	Notification Letter	
34 KINGSWAY AVENUE RANKIN PARK	13	Residential	38	38	0	5	Low	Noticable	N	TBC	Notification Letter	
319 MCCAFFREY DRIVE RANKIN PARK	13	Residential	38	38	0	5	Low	Noticable	N	TBC	Notification Letter	
28 FLORALIA CLOSE NEW LAMBTON HEIGHTS	13	Residential	38	38	0	5	Low	Noticable	N	TBC	Notification Letter	
170 LOOKOUT ROAD NEW LAMBTON HEIGHTS	13	Residential	38	38	0	5	Low	Noticable	N	TBC	Notification Letter	