Transport
for NSW

Richmond Road Upgrade between M7 Motorway and Townson Road, Marsden Park

Noise and Vibration Assessment

November 2024

NSW GOVERNMENT

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Acknowledgement of Country

Transport for NSW acknowledges the traditional custodians of the land on which we work and live.

We pay our respects to Elders past and present and celebrate the diversity of Aboriginal people and their ongoing cultures and connections to the lands and waters of NSW.

Many of the transport routes we use today – from rail lines, to roads, to water crossings – follow the traditional Songlines, trade routes and ceremonial paths in Country that our nation's First Peoples followed for tens of thousands of years.

Transport for NSW is committed to honouring Aboriginal peoples' cultural and spiritual connections to the land, waters and seas and their rich contribution to society.

Approval and authorisation

Title	Richmond Road Upgrade between M7 Motorway and Townson Road, Marsden Park: Noise and Vibration Assessment
Accepted on behalf of Transport for NSW by:	Maddy Mukerjee, Project Development Manager
Signed	Maddy Mukerjee
Date:	20/11/2024

Document review tracking

Draft No.	Date	Comments
00	18 November 2024	Issued to TfNSW

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1. Introduction

The North-West Growth Area (NWGA) has been identified by the NSW Government as a key component to support urban growth in the greater Sydney region. When developed (2056 forecasts), the NWGA will provide approximately 90,000 homes accommodating 250,000 people. A key part of the identification of the NWGA was its proximity and connection to transport nodes including the M7 Motorway and ease of connection to the M4 Motorway, Sydney Metro northwest and the new Western Sydney Airport.

To unlock the potential of the NWGA, upgrades to transport infrastructure must align with current and forecasted needs, while considering forecasted population and economic growth. Richmond Road already experiences significant congestion, impacting travel times and hindering the potential for economic growth in the area. As the NWGA continues to grow there will be increasing pressure on Richmond Road and the transport network.

As part of the NWGA Transport Strategy, Transport for NSW (TfNSW) is proposing to upgrade Richmond Road between the M7 Motorway and Townson Road (the proposal). The proposal has the ultimate objectives of relieving the current corridor congestion and providing road capacity that supports growth.

The section of Richmond Road to be upgraded is located in the Blacktown City Council Local Government Area (LGA) and traverses the suburbs of Marsden Park, Colebee, Hassall Grove, Oakhurst, Dean Park and Glendenning. Key features of the proposal would include:

Key features of the proposal would include:

- Upgrade of Richmond Road between the M7 Motorway and Townson Road to six lanes (three lanes in each direction). This would include:
    - road widening between the M7 Motorway and the Alderton Drive / Langford Drive intersection including a new bridge structure over Bells Creek
    - widening into the median from the Alderton Drive / Langford Drive intersection to 250 metres north of the Hollinsworth Road / Townson Road intersection.
- Building a new flyover bridge from the M7 Motorway Rooty Hill Road North off-ramp landing on Richmond Road around 300 metres prior to Bells Creek. This would include:
    - a single lane bridge structure around 250 metres long and 8.4 metres wide for traffic heading northbound on Richmond Road
    - 170 metre embankment at the southern end of the bridge beginning at the M7 Motorway Rooty Hill Road North off-ramp, roughly five metres above the existing ground level
    - 150 metre long retaining wall located at the northern end of the bridge within the median of Richmond Road. At its highest point the retaining wall would be 8.4 metres high
    - minor re-surfacing of the existing M7 Motorway Rooty Hill Road North off-ramp where the ramp ties into the new flyover
    - no changes to existing gantry, exit lanes or lane functions on the M7 Motorway.
- Upgrades to the intersection of Richmond Road, Hollinsworth Road and Townson Road including:
    - an additional northbound through lane along Richmond Road (providing three through lanes towards Richmond)
    - an additional dedicated right turn lane from Richmond Road southbound onto Hollinsworth Road
    - a new left turn slip lane from Hollinsworth Road onto Richmond Road including a pedestrian island and crossing
    - staged pedestrian crossings across Richmond Road on the north and south sides of the intersection, with a pedestrian refuge in the median.
- Upgrades to the intersection of Richmond Road, Langford Drive and Alderton Drive including:

  - additional northbound and southbound through lanes along Richmond Road (providing three through lanes in both directions)
  - staged pedestrian crossings across Richmond Road on the north and south sides of the intersection, with a pedestrian refuge in the median.
- Upgrades to the intersection of Richmond Road, Rooty Hill Road North and the M7 Motorway ramps including:
  - two dedicated lanes on Richmond Road heading onto the M7 Motorway (southbound on-ramp)
  - two dedicated southbound through lanes on Richmond Road (towards Blacktown)
  - an additional right turn lane from Richmond Road southbound onto Rooty Hill Road North (providing two dedicated right turn lanes onto Rooty Hill Road North)
  - extension of 10 metres for the left turn lane from Richmond Road southbound onto M7 Motorway northbound on-ramp
  - relocation of the existing pedestrian crossing on Richmond Road approximately 160 metres south. This would be a new staged pedestrian crossing across Richmond Road, with a pedestrian refuge in the median at the intersection of Richmond Road and the M7 Motorway southbound on-ramp.
- Active transport provisions throughout the proposal area including:
  - moving the existing shared pedestrian and bike path on the western side of Richmond Road to be further west. This would be a four metre wide shared pedestrian and bike path on the western side of Richmond Road (between the M7 Motorway to approximately 150 metres south of the Richmond Road / Langford Drive / Alderton Drive intersection) where it would connect to the existing shared path.
- Building a new concrete bridge structure over Bells Creek for the northbound carriageway located approximately 14 metres west of the existing Bells Creek bridge. This would include:
  - a bridge structure around 29 metres long and 18 metres wide
  - three northbound travel lanes
  - a shared pedestrian and bike path on the western side, which replaces the existing boardwalk bridge next to the northbound Richmond Road carriageway.
- Retention of the five bus stops on Richmond Road between Yarramundi Drive and the Richmond Road / Hollinsworth Road / Townson Road intersection. The dedicated bus lanes at the intersection of Richmond Road with Langford Drive / Alderton Drive and Hollinsworth Road / Townson Road are also retained.
- Drainage and water quality structures along the proposal including:
  - adjustments to the pits and pipes of the existing stormwater network
  - two gross pollutant traps to the north and south of Bells Creek
  - open flooding channel on the eastern side of Richmond Road roughly between the M7 Motorway northbound on-ramp and Bells Creek for flood mitigation purposes. The channel would be around 425 metres long and 10 metres wide and would discharge into Bells Creek.
- Roadside furniture including safety barriers, signage, line marking, lighting and fencing.
- Earthwork cutting, embankments and retaining walls to accommodate the widened road alignment, flyover bridge and open flooding channel.
- Modified formal access to four properties along the upgraded sections of Richmond Road.
- Installation of a formal driveway access to the Blacktown Native Institution property within the Rooty Hill Road North road corridor, and removal of the informal access track to the property from Richmond Road.
- Property acquisition including full acquisition of one property and partial acquisition of two properties.
- Rehabilitation of disturbed areas and landscaping.
- Establishment and use of three temporary ancillary facilities during construction.

Refer to Figure 1-1a to 1-1e for the location and key features of the proposal.

The assessment has been prepared with reference to the following guidelines and documentation:

- Assessing Vibration – A Technical Guideline (DEC 2006) (AV:ATG)
- Interim Construction Noise Guideline (DECC, 2009) (ICNG)
- Construction Noise and Vibration Guideline (Roads) (TfNSW, 2023) (CNVG)
- NSW Road Noise Policy (DECCW, 2011) (RNP)
- Road Noise Criteria Guideline (TfNSW, 2023) (RNCG)
- Road Noise Mitigation Guideline (TfNSW, 2024) (RNMG)
- Road Noise Model Validation Guideline (TfNSW, 2022) (RNMVG)
- Noise Policy for Industry (EPA, 2017) (NPfI)
- At-Receiver Road Noise Treatment Guideline (Draft) (ARRNTG) (Roads and Maritime 2017).

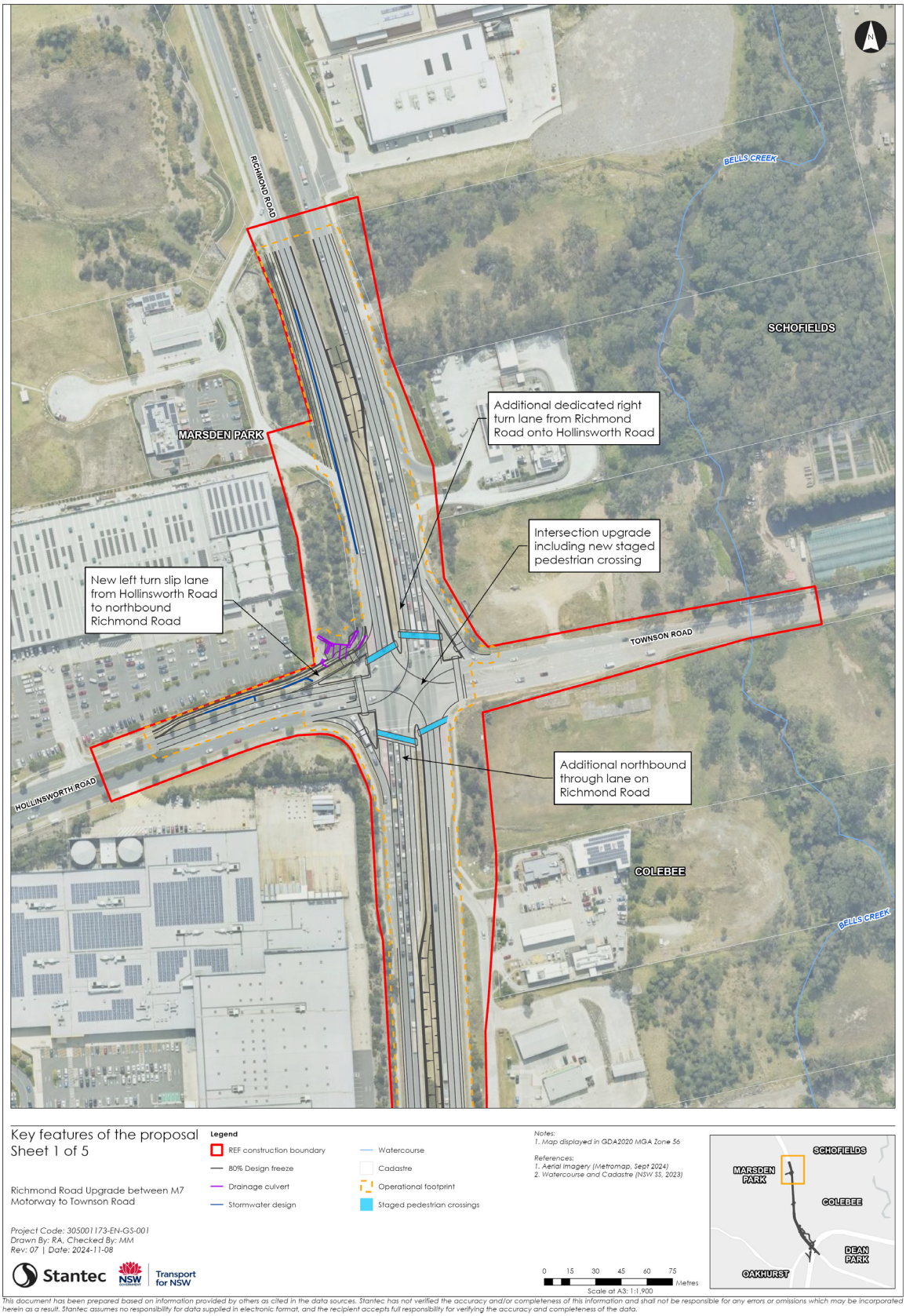


Figure 1-1a: Key features of the proposal

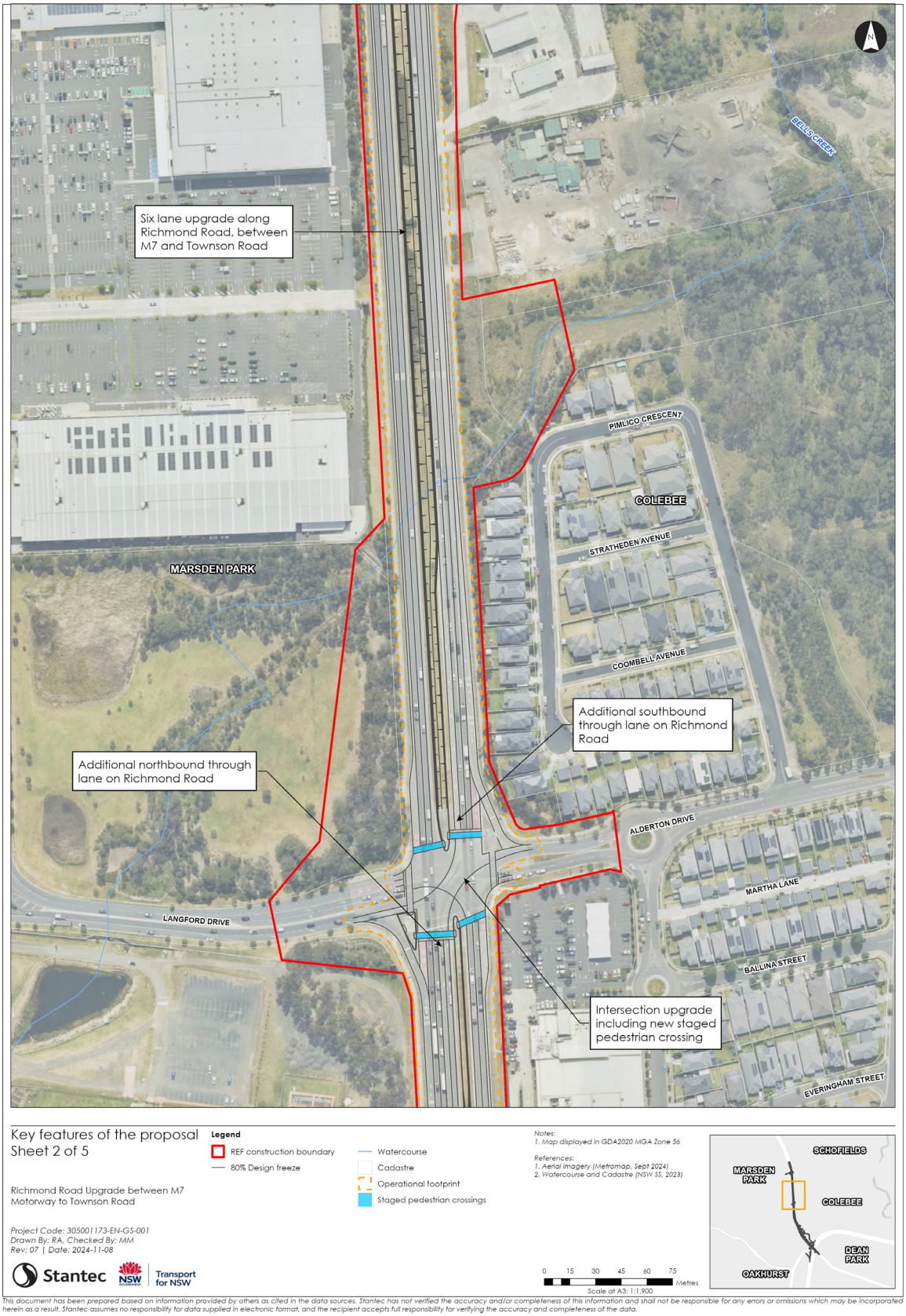


Figure 1-1b: Key features of the proposal

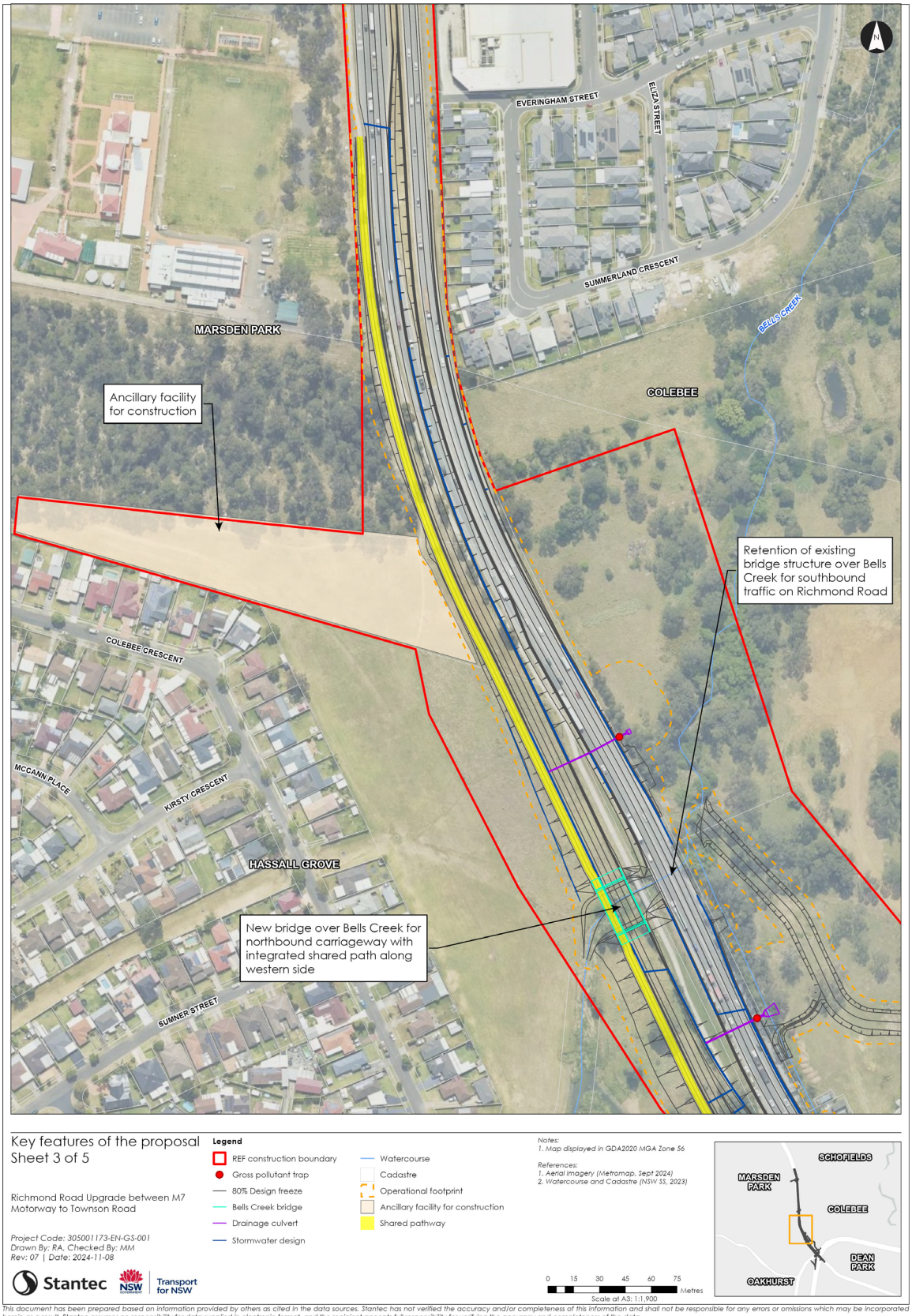


Figure 1-1c: Key features of the proposal

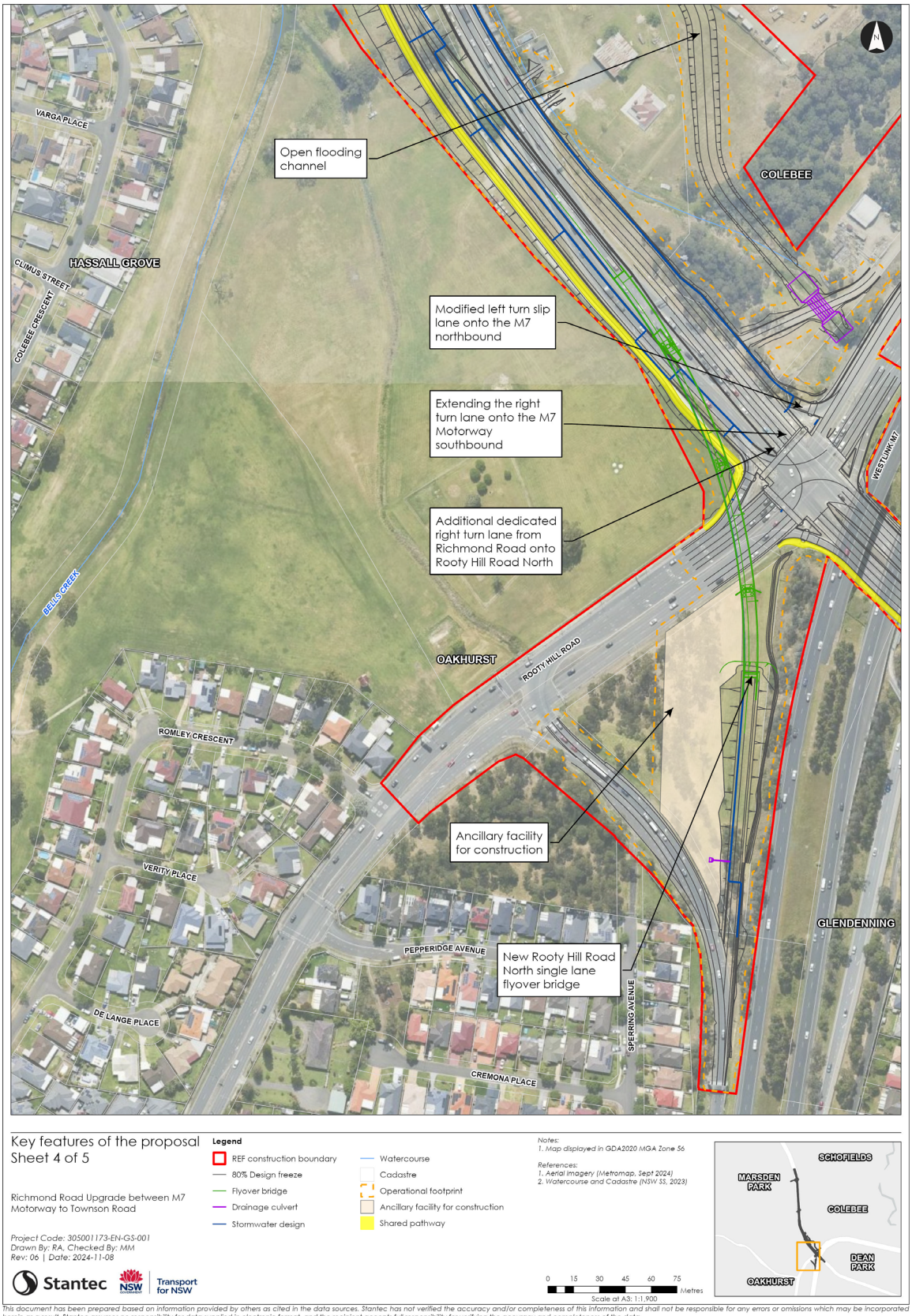


Figure 1-1d: Key features of the proposal

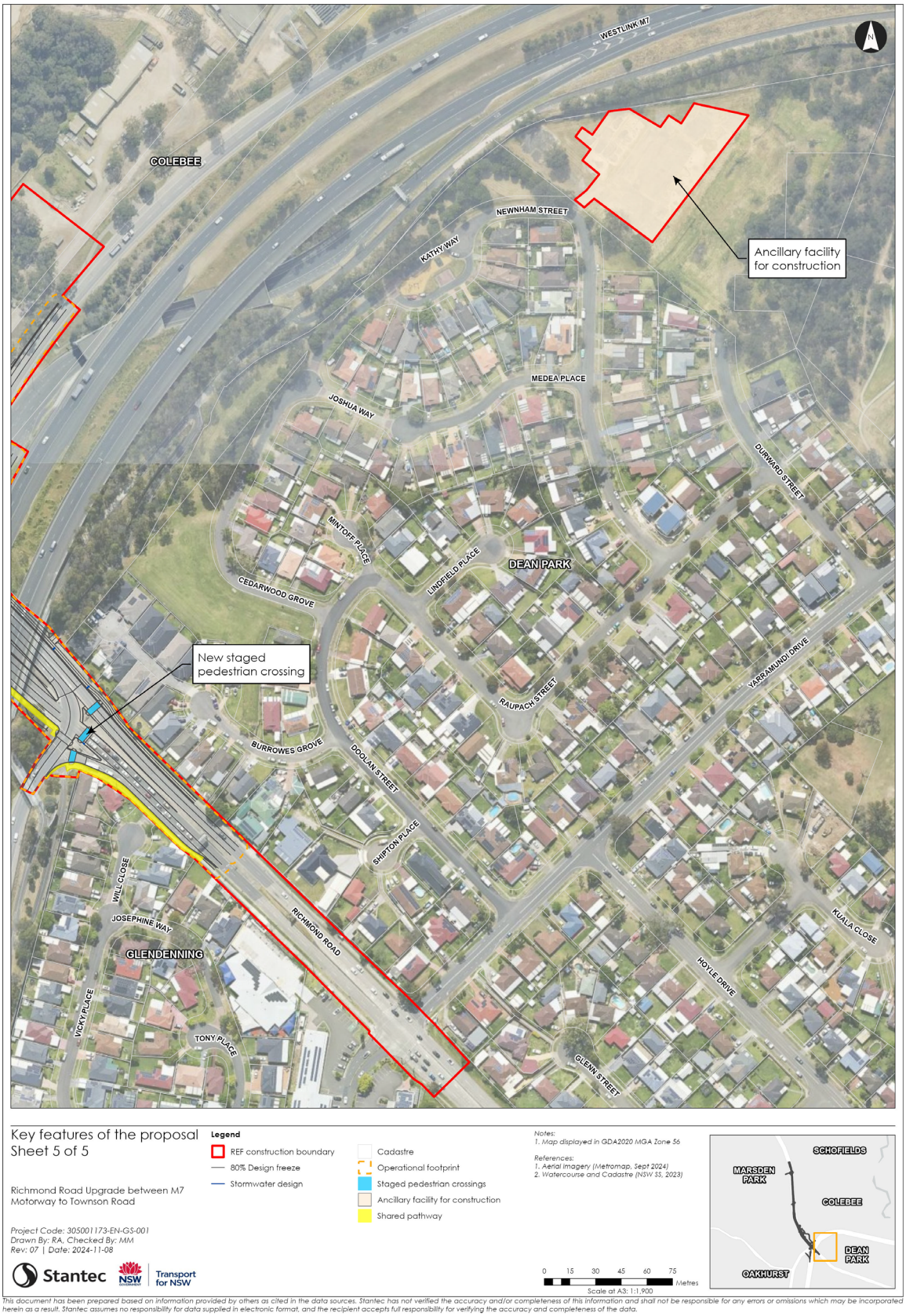


Figure 1-1e: Key features of the proposal

2. Existing ambient noise environment

2.1 Noise catchment areas (NCAs)

Noise catchment areas (NCAs) are groups of sensitive receivers that are likely to experience similar acoustic environments. Table 2-1 describes the location of the NCAs adopted for the proposal. Figure 2-1 and Figure 2-2 present the locations of the nominated NCAs.

Table 2-1: Noise catchment areas (NCAs)

NCA	Representative background monitoring location (Refer to Section 2.2)	Approximate number of receivers	Description
1	Logger 1	2	Mainly commercial and industrial land uses, including one mosque and childcare centre. No residential or other noise sensitive receivers identified.
2	Logger 10	155	Two storey medium density residential dwellings with a small number of rural residential dwellings. The remainder of the catchment area consists of bushland and industrial/commercial uses.
3	Logger 6	417	Single and two storey low to medium density residential dwellings. Includes a childcare centre.
4	Logger 9	164	Single and two storey low to medium density residential dwellings. The remainder of the catchment area consists of bushland and a shopping centre.
5	Logger 4	511	Single and two storey low density residential dwellings. Includes a primary school, high school, and childcare centres.
6	Logger 5	444	Single and two storey low density residential dwellings. Includes a childcare centre.
7	Logger 8	474	Single and two storey low density residential dwellings. Includes childcare centres, two primary schools, and sports fields.
8	Logger 8	488	Single and two storey low density residential dwellings. Includes a childcare centre, a primary school, and sports fields.

Figure 2-1: NCAs 1-4 – Northern extent of project

Figure 2-2: NCAs 5-8 – Southern extent of project

2.2 Noise monitoring and analysis

The existing acoustic environment generally consists of road traffic noise from Richmond Road, Westlink M7 Motorway, and Rooty Hill Road North, with residents further back from these roads affected by intermittent traffic on the local road network.

2.2.1 Unattended noise monitoring methodology

Unattended noise monitors were installed at ten locations within the study area for a period of 10 days to measure road traffic noise and ambient (i.e. background) noise levels. The noise monitors were configured to measure 15-minute statistics, between 27 February and 7 March 2024. The unattended noise monitors were configured to measure noise levels as follows:

- 'A' weighting
- 'Fast' response
- 15 minute statistical intervals
- Measurement descriptors L_{AMax}, L_{Aeq}, L_{A1}, L_{A10}, L_{A90}.

All monitoring was conducted in accordance with Australian Standard AS2702 – 1984, Acoustics-Methods for the Measurement of Road Traffic Noise and Australian Standard AS1055 – 2018 Acoustics – Description and Measurement of Environmental Noise.

The loggers were deployed at the following locations:

- **Logger 1** was located at Langford Park, Marsden Park on the western side of Richmond Road, approximately 12 metres from the nearest lane of Richmond Road. The microphone was approximately 1.4 metres above ground level.
- **Logger 2** was located on the northern side of the Westlink M7 Motorway on-ramp at Colebee, approximately 28 metres from the Westlink M7 Motorway on-ramp and approximately 40 metres from the northbound lane of the M7 Motorway. The microphone was approximately 1.4 metres above ground level.

- **Logger 3** was located at 45 Hollinsworth Road, Marsden Park on the western side of Richmond Road, approximately 16 metres from the nearest lane of Richmond Road. The microphone was approximately 1.4 metres above ground level.
- **Logger 4** was located at Colebee Reserve, Marsden Park (Lot 481 DP634363) to the north of Colebee Crescent and approximately 150 metres west of Richmond Road. The microphone was approximately 1.4 metres above ground level.
- **Logger 5** was located at Lot 50 DP1123597 on Rooty Hill Road North, Oakhurst, approximately 33 metres from the nearest lane of Rooty Hill Road North and 53 metres from the nearest lane of the Westlink M7 Motorway Off Ramp. The logger was also approximately 165 metres west of the northbound lane of the Westlink M7. The microphone was approximately 1.4 metres above ground level.
- **Logger 6** was located in the front yard of 3 Sugarloaf Crescent, Colebee, approximately 475 metres east of Richmond Road. The microphone was approximately 1.4 metres above ground level.
- **Logger 7** was located in the backyard of 6 Shipton Place, Dean Park on the northern side of Richmond Road, approximately 7 metres from the nearest lane of Richmond Road. The microphone was approximately 4 metres above ground level, above Colorbond fencing.
- **Logger 8** was located at 8 Cedarwood Grove, Dean Park, approximately 100 metres east of the southbound lane of the Westlink M7. The microphone was approximately 1.4 metres above ground level.
- **Logger 9** was located in the front yard of 20 Alderton Drive, Colebee, approximately 9 metres from the nearest lane of Alderton Drive. The microphone was approximately 1.4 metres above ground level.
- **Logger 10** was located at 35 Townson Road, Schofields, approximately 13 metres from the edge of Townson Road. The microphone was approximately 1.4 metres above ground level.

Unattended noise monitoring was carried out using the equipment in Table 2-2.

Table 2-2: Noise monitoring equipment

Logger	Location	Manufacturer – Model – Serial Number
1	Langford Park	ARL – Ngara – SN878012
2	Westlink M7	ARL – Ngara – SN878042
3	45 Hollinsworth Road	Rion – NL42 – SN00810713
4	Colebee Reserve	Rion – NL42 – SN00710677
5	Rooty Hill Road North	ARL – Ngara – SN8780FB
6	3 Sugarloaf Crescent	Rion – NL42 – SN00597172
7	6 Shipton Place	ARL – Ngara – SN878079
8	8 Cedarwood Grove	Rion – NL42 – SN00184110
9	20 Alderton Drive	Rion – NL42 – SN00184111
10	35 Townson Road	Rion – NL42 – SN001173756

The overall noise monitoring locations are presented in Figure 2-3 and Figure 2-4. Additional monitoring location information is provided in Appendix A.

Figure 2-3: Noise monitoring locations – Loggers 1, 3, 6, 9, and 10

Figure 2-4: Noise monitoring locations – Loggers 2, 4, 5, 7, and 8

2.2.2 Equipment calibration

Calibration of the measuring equipment was carried out before and after the monitoring with no significant drifts in calibration. All measuring equipment, including sound level meter and acoustic calibrators used for the assessment, carried current NATA laboratory certification.

2.2.3 Meteorological monitoring conditions

A summary of the meteorological conditions noted during the measurement period were as follows (weather data obtained from Bureau of Meteorology weather station 067119):

Conditions: Generally fine with light winds with some short periods of light rain (0.2mm).

Wind: 0 – 28 km/h

Detailed weather information recorded at the site during the monitoring period is provided on the noise charts presented in Appendix A: Noise Monitoring Results.

2.2.4 Measurement parameters

As environmental noise varies with time, the use of statistical descriptors is necessary to understand and describe these variations. For road traffic noise these descriptors are further classified for daytime (7am-10pm) and night-time (10pm-7am). For environmental noise, the assessment period is split into day (7am–6pm), evening (6pm–10pm) and night (10pm–7am). A-weighted statistical levels are used to describe ambient noise levels. The common descriptors used to describe environmental noise are described as follows:

L_{Amax}: the A-weighted maximum noise level measured during the measurement period

L_{A1}: the A-weighted noise level exceeded for 1% of the measurement period

L_{A10}: the A-weighted noise level exceeded for 10% of the measurement period, generally referred to as the average maximum sound pressure level.

L_{A90}: the A-weighted noise level exceeded for 90% of the measurement period, generally referred to as the average minimum sound pressure level or background noise level (refer *AS 1055 Acoustics – Description and Measurement of Environmental Noise*).

L_{Aeq}: the equivalent continuous noise level over the measurement period, generally referred to as the energy averaged sound pressure level over the measurement period.

2.3 Measured noise levels

The measured noise levels are presented in Table 2-3. Full noise data charts are presented in Appendix A.

Table 2-3 also highlights which loggers were used to determine representative background noise levels for each NCA. Refer to Section 2.1 for further information regarding the nominated NCAs.

Table 2-3: Measured noise levels

Logger*	Measured Environment	Location	Measured Noise Levels, dB(A)				
			$L_{Aeq, 15hr}$	$L_{Aeq, 9hr}$	Rating Background Level (RBL)		
			07:00-22:00	22:00-07:00	Day 07:00-18:00	Evening 18:00-22:00	Night 22:00-07:00
1	Road traffic noise	Langford Park	68	66	52	52	43
2	Road traffic noise	Westlink M7	65	62	59	53	46
3	Road traffic noise / Background NCA 1	45 Hollinsworth Road	67	65	58	56	48
4	Background NCA 5	Colebee Reserve	54	51	46	48	42
5	Road traffic noise / Background NCA 6	Rooty Hill Road North	62	59	53	53	44
6	Background NCA 3	3 Sugarloaf Crescent	53	53	42	42	41
7	Road traffic noise	6 Shipton Place	69	65	55	54	46
8	Background NCA 7 & NCA 8	8 Cedarwood Grove	56	53	49	46	43
9	Road traffic noise / Background NCA 4	20 Alderton Drive	63	58	47	45	42
10	Road traffic noise / Background NCA 2	35 Townson Road	61	57	46	45	44

**Note: Loggers 4, 6 & 8 were installed for the assessment of background noise levels only, they are not utilised in the assessment of operational road traffic noise (i.e. the measured L_{Aeq} noise levels are not relevant). The remaining loggers were set to record both road traffic noise and background noise levels or just road traffic noise levels.*

2.4 Attended noise measurements

Attended noise measurements were carried out during the installation and collection of the noise monitors to observe the acoustic environment at the logging locations.

The Rion NA28 sound level meters were used to measure a 15 minute period at each logger location. Calibration of the measuring equipment was carried out before and after the monitoring with no significant drifts in calibration.

Table 2-4: Attended noise measurement results

Adjacent Logger	Date / Time	L_{eq} dB(A)	L_{max} dB(A)	L_{10} dB(A)	L_{90} dB(A)	Observations
1	27/02/2024 12:27	67	83	70	54	Dominant noise source was from traffic on Richmond Road
	06/03/2024 17:12	65	81	67	52	
2	27/02/2024 11:01	66	79	69	62	Dominant noise source was from traffic on the Westlink M7
	07/03/2024 08:47	66	79	68	62	
3	27/02/2024 16:56	73	91	76	62	Dominant noise source was from traffic on Richmond Road, often coming to a stop due to the nearby intersection.
	07/03/2024 10:35	68	80	71	60	
4	27/02/2024 15:12	55	72	59	48	Distant traffic noise from Richmond Road, birds and insect noise.
	06/03/2024 16:12	56	65	60	46	
5	27/02/2024 14:03	63	85	66	55	Road traffic noise from Rooty Hill Road North and M7 offramp.
	06/03/2024 15:32	62	91	65	55	
6	27/02/2024 16:20	55	82	53	42	Distant traffic noise from Richmond Road and M7. Local road traffic, residential activities (landscaping equipment etc.), birds and insects.
	07/03/2024 07:50	52	72	55	45	
7	27/02/2024 09:17	61	85	63	51	Dominant noise source was from traffic on Richmond Road.
	07/03/2024 09:20	60	73	63	50	
8	27/02/2024 13:37	54	81	56	50	Road traffic noise from Westlink M7, insects and dogs barking.
	07/03/2024 09:55	55	75	57	51	

Adjacent Logger	Date / Time	L_{eq} dB(A)	L_{max} dB(A)	L_{10} dB(A)	L_{90} dB(A)	Observations
9	27/02/2024 17:15	65	76	69	51	Road traffic noise from Alderton Drive, distant traffic on Richmond Road.
	07/03/2024 08:13	62	76	66	48	
10	28/02/2024 14:46	65	80	70	55	Intermittent road traffic on Townson Road, distant traffic on Richmond Road, insects.
	07/03/2024 07:22	64	76	67	53	

3. Operational noise assessment

3.1 Noise criteria

Operational road traffic noise has been assessed in accordance with the NSW Road Noise Policy (RNP). The TfNSW Road Noise Criteria Guideline (RNCG) provides guidance on the implementation of the RNP.

Mitigation is considered where properties have exceeded the RNCG criteria and exceed the triggers to qualify for consideration of noise mitigation as per the *Road Noise Mitigation Guideline* (RNMG).

This section outlines the assessment criteria and methodology used for the assessment of operational road traffic noise for the year of opening and 10 years after opening.

3.1.1 Road Noise Policy 2011 (RNP)

The NSW Road Noise Policy (DECCW, July 2011) (RNP) provides definitions of the functional class of the road under consideration, outlined in Table 3-1. For the purposes of adoption of assessment criteria from the RNP, the Road Noise Criteria Guideline (RNCG) (TfNSW, 2023) states that collector roads are classed as sub-arterial roads.

Table 3-1: Assessed roads – Functional class

Road	Road Section	Functional Class
Richmond Road	Yarramundi Drive, Dean Park to Townson Road, Marsden Park	Freeways or motorways/arterial roads
Westlink M7 (and associated ramps)	North and south of Richmond Road	
Rooty Hill Road North	Richmond Road to Luxford Road	Sub-arterial roads
Alderton Drive	East of Richmond Road	Collector Roads
Townson Road	East of Richmond Road	

3.1.2 Road Noise Criteria Guideline (RNCG)

Noise criteria are assigned to sensitive receivers using TfNSW's Road Noise Criteria Guideline (RNCG). TfNSW's RNCG provides guidance on how to implement the EPA's *NSW Road Noise Policy (RNP)*. The assessment timeframe for the criteria is in the year of opening and 10 years after opening.

The project assessment area extends to where noise levels are dominated by other roads that are not being assessed as part of this project as defined in TfNSW's RNCG. This is up to a maximum distance of 600 metres from the project works for urban areas and possibly greater than 600 metres for rural areas.

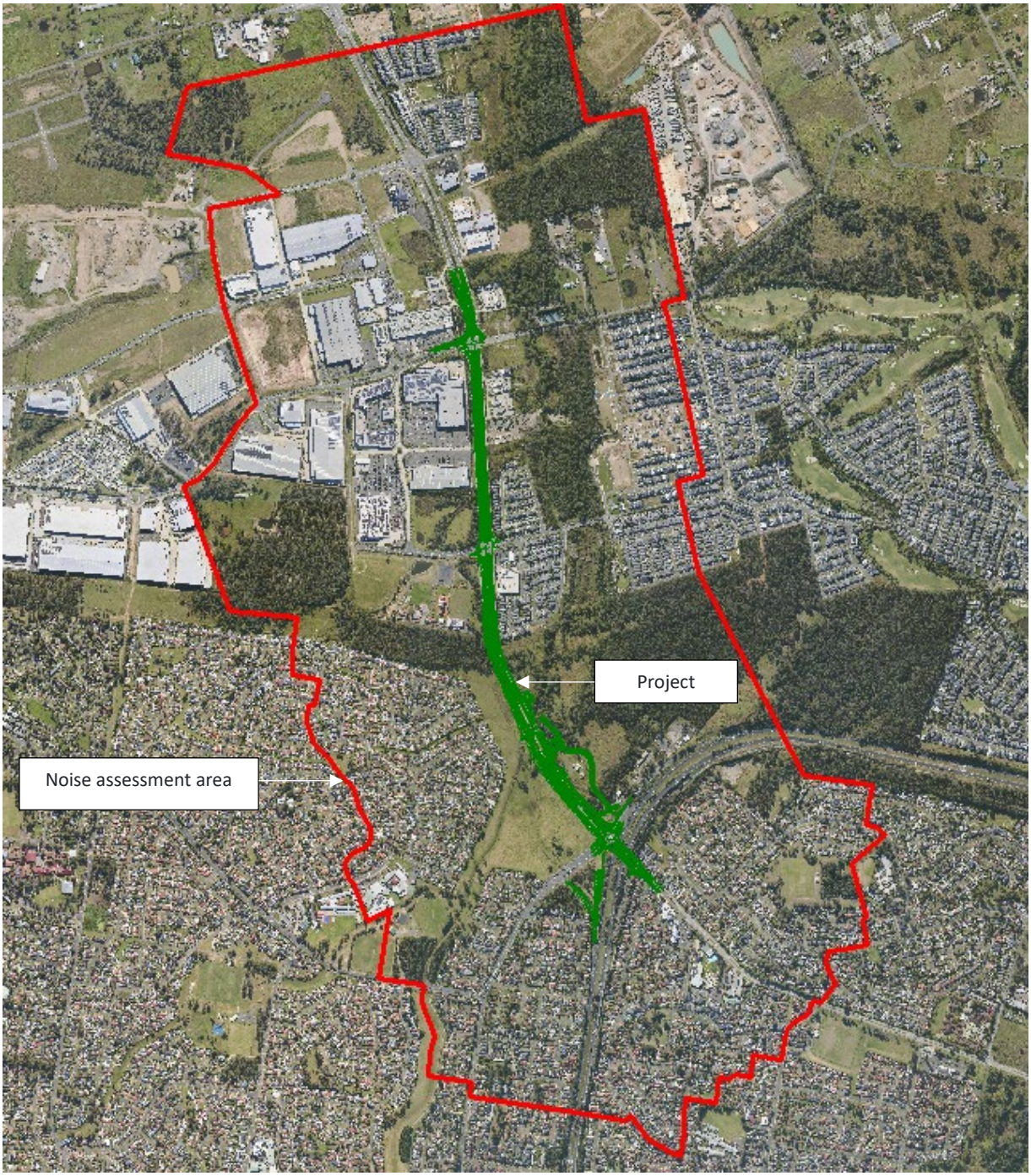


Figure 3-1: Project assessment area

Residences may be assigned new, redeveloped, transition zone or relative increase criteria depending on how the project will influence noise levels. For each façade of the residence, the most stringent applicable criteria will be used in the assessment.

Criteria are based on the road development type affecting a residence due to the road project. In some instances, residences may be exposed to noise from both new and redeveloped roads of different functional classes. In this instance the proportion of noise from each road is used to establish transition zone criteria. A further check is made to prevent large increases in noise level using the relative increase criteria, as presented in Table 3-4. For road projects where the main subject road is a local road, the relative increase criterion does not apply.

A road is defined as 'new' where the road is a bypass or has been substantially realigned (outside the RNCG tolerance band and/or existing grade). However, consideration can be given to whether a road has been substantially realigned for distances less than six times the existing lane width using local context for guidance. This is consistent with the RNCG.

To address the transition zone between new and redeveloped roads, traffic noise levels must be predicted for four scenarios, including:

1. New project roads only, daytime.
2. New project roads only, night-time.
3. Redeveloped project roads only, daytime.
4. Redeveloped project roads only, night-time.

Whether or not the noise limit for new or redeveloped roads applies to a receiver depends upon the relative exposure of the receiver's façade to the new or the redeveloped road.

The redeveloped road criteria are 5 dBA higher than the new road criteria, however, a receiver location with relatively equal exposure to both new and redeveloped roads will have target noise level between the higher and lower of the two noise limits.

The proposal consists of redeveloped road segments and does not contain any new road segments. Therefore, the resulting criteria will be the more stringent of the redeveloped road criteria (Table 3-2) or the relative increase criteria (Table 3-4).

The criteria for residences are summarised in Table 3-2.

Table 3-2: RNP Road traffic noise assessment criteria for residential land uses

Road category	Type of project/land use	Assessment criteria, dB(A)	
		Day (7am-10pm)	Night (10pm-7am)
Freeway/arterial/ sub-arterial roads	1. Existing residences affected by noise from new freeway/arterial/sub-arterial road corridors	$L_{Aeq,\ (15\ hour)}$ 55 (external)	$L_{Aeq,\ (9\ hour)}$ 50 (external)
	2. Existing residences affected by noise from redevelopment of existing freeway/arterial/sub-arterial roads	$L_{Aeq,\ (15\ hour)}$ 60 (external)	$L_{Aeq,\ (9\ hour)}$ 55 (external)
	3. Existing residences affected by noise from a transition zone between new and redeveloped roads	$L_{Aeq,\ (15\ hour)}$ 55 - 60 (external)	$L_{Aeq,\ (9\ hour)}$ 50 - 55 (external)
Local roads	4. Existing residences affected by noise from new local road corridors 5. Existing residences affected by noise from redevelopment of existing local roads 6. Existing residences affected by additional traffic on existing local roads generated by land use developments	$L_{Aeq,\ (1\ hour)}$ 55 (external)	$L_{Aeq,\ (1\ hour)}$ 50 (external)

The applicable RNCG criteria for non-residential sensitive receivers are shown in Table 3-3.

Table 3-3: RNP Road traffic noise assessment criteria for other sensitive land uses

Existing sensitive use	Location	*Assessment criteria, $L_{Aeq(1hr)}$ dB(A)	
		Day (7am-10pm)	Night (10pm-7am)
School classrooms	External (when in use)	50	-
Playgrounds	External (when in use)	55	-
Places of worship	External (when in use)	50	50
Open space (active use)	External (when in use)	60 ($L_{Aeq,15hr}$)	-
Childcare (sleeping rooms)	External (when in use)	45	-
Childcare (indoor play areas)	External (when in use)	50	-
Childcare (outdoor play areas)	External (when in use)	55	-

**It is generally accepted that most buildings provide a noise reduction of at least 10 dB(A) when windows are left 20% open. Therefore, where the noise goals are specified as internal in the RNCG, a 10 dB(A) reduction from external to internal noise levels has been adopted to allow an external assessment. For the above receivers, further investigation will be required to determine whether the internal noise levels at project completion comply the above criteria.*

Relative increase criteria

In addition to the assessment criteria outlined in Table 3-2, any increase in the total traffic noise level at a location due to a proposed project or traffic-generating development is required to be considered.

The RNCG states that residences experiencing increases in total traffic noise level above the relative increase criteria shown below in Table 3-4 should also be considered for mitigation. For other existing sensitive land uses as outlined in Table 3-3 the relative increase criteria should be applied to the respective $L_{Aeq,(period)}$ for that land use type, except for open space. For road projects where the main subject road is a local road, the relative increase criterion does not apply.

Table 3-4: Relative increase criteria

Road category	Type of project/land use	Total traffic noise increase, dB(A)	
		Day (7am-10pm)	Night (10pm-7am)
Freeway/arterial/sub-arterial roads and transit ways	New road corridor/redevelopment of existing* road/land use development with the potential to generate additional traffic on existing road	Existing $L_{Aeq, (15\ hour)}$ + 12 dBA (external)	Existing $L_{Aeq, (9\ hour)}$ + 12 dBA (external)

** 'existing' traffic noise level refers to the level from all road categories which would occur for the relevant 'no build' option. Where the existing $L_{Aeq, (period)}$ road traffic noise level is found to be less than 30 dBA, it is deemed to be 30 dBA.*

3.1.3 Maximum pass-by event noise criteria

Although sleep assessment goals are not defined within the EPA's Road Noise Policy (RNP) as there was determined to be insufficient evidence to set new indicators for potential traffic noise sleep disturbance, the RNP recommends that an assessment of maximum noise levels should be undertaken, where impacts may occur during the night. Appendix A of the RNCG outlines the following in relation to the assessment of maximum noise levels:

"This maximum noise assessment may be used to help prioritise and rank mitigation strategies but is not intended to be applied as a decisive criterion in itself as there is no definitive criterion".

In terms of the noise limits to be assessed, the RNCG provides the following:

- *Maximum internal noise levels below 50–55 dB(A) are unlikely to cause awakening reactions, and*
- *One or two noise events per night with maximum internal noise levels of 65–70 dB(A) are not likely to significantly affect health and wellbeing.*

At locations where road traffic is continuous rather than intermittent, the $L_{Aeq(9hour)}$ target noise levels should sufficiently account for sleep disturbance impacts. However, where the emergence of L_{Amax} over the ambient L_{Aeq} is equal to or greater than 15dBA, the $L_{Aeq(9hour)}$ criteria may not sufficiently account for sleep disturbance impacts.

A "maximum noise event" can therefore be defined as any pass-by for which $L_{Amax} - L_{Aeq(1hour)} \geq 15dBA$

3.1.4 Australian and international standards

The following standards provide criteria and methodologies that have been adopted in this assessment.

- Australian Standard AS1055:2018 *Acoustics – Description and measurement of environmental noise*.
- Australian Standard AS2107:2016 *Acoustics – Recommended design sound levels and reverberation times for building interiors.*
- Australian Standard AS2702 – 1984, *Methods for the Measurement of Road Traffic Noise.*
- ISO 9613-1:1993 *Acoustics — Attenuation of sound during propagation outdoors — Part 1: Calculation of the absorption of sound by the atmosphere*

- ISO 9613-2:1996 *Acoustics — Attenuation of sound during propagation outdoors — Part 2: General method of calculation.*

3.2 Triggers for qualifying a receiver for consideration of noise mitigation

3.2.1 Road Noise Mitigation Guideline (RNMG)

The Road Noise Mitigation Guideline (RNMG) provides guidance in managing and controlling road traffic generated noise and describes the principles to be applied when reviewing noise mitigation. The RNMG recognises that the criteria recommended by the RNCG are not always practicable and that it is not always feasible or reasonable to expect that they should be achieved.

The RNMG notes that the most effective way of minimising noise from vehicles and traffic is to control vehicle noise at the source. Where source measures are not feasible or reasonable (including for example not providing sufficient noise reduction), other feasible and reasonable methods are required to reduce levels to within acceptable margins. Such additional methods may include noise barriers and/or consideration of at-property treatment.

The RNMG provides three triggers where a receiver may qualify for consideration of noise mitigation (beyond the adoption of road design and traffic management measures). These are:

- The predicted Build noise level exceeds the RNCG controlling criterion and the noise level increase due to the project (i.e., the noise predictions for the Build minus the No Build) is greater than 2 dBA.

or

- The predicted Build noise level is 5dBA or more above the criteria (exceeds the cumulative limit) and the receiver is significantly influenced by project road noise, regardless of the incremental impact of the project.

or

- The noise level contribution from the road project is acute (daytime $L_{Aeq(15hour)}$ 65 dB or higher, or night-time $L_{Aeq(9hour)}$ 60 dB or higher) then it qualifies for consideration of noise mitigation even if noise levels are dominated by another road.

The eligibility of receivers for consideration of additional noise mitigation is determined before the benefit of additional noise mitigation (quieter pavement and noise barriers) is included. The requirement for the project is to provide reasonable and feasible additional mitigation for these eligible receivers to meet the RNCG controlling criterion. If the RNCG criterion cannot be satisfied with quieter pavement and/or noise barriers, then the receiver is eligible for consideration of at-property treatment.

The RNMG process is summarised in the flowchart in Figure 3-2.

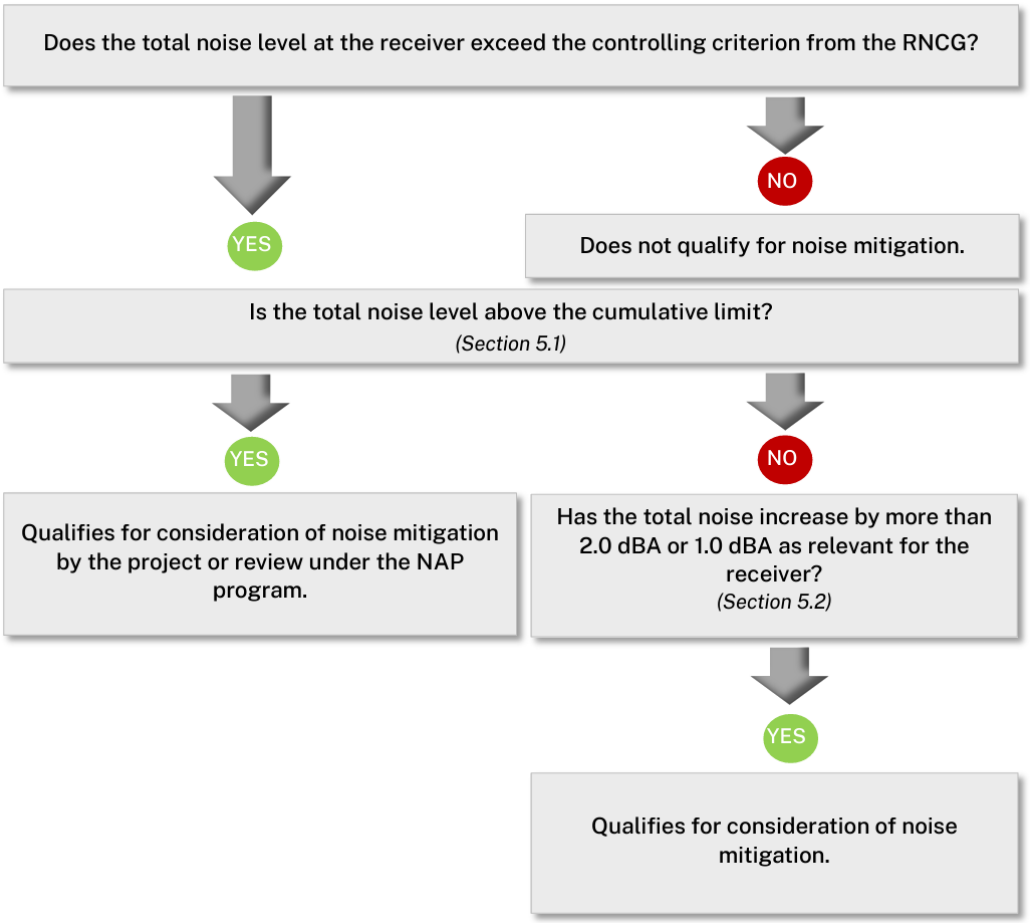


Figure 3-2: Summary of qualifying process for a receiver (Figure 5-1 of the RNMG)

3.3 Operational noise assessment

3.3.1 Modelling methodology

Noise modelling was undertaken using SoundPLAN 8.2 with a digital terrain model calculated from existing ground levels provided by the Stantec GIS team. SoundPLAN calculates road traffic noise levels based on the Calculation of Road Traffic Noise (CoRTN, UK Department of Transport, Welsh Division 1988) assessment methodology algorithms.

The Australia (NSW) CoRTN assessment methodology was adopted for the calculation of road traffic. SoundPLAN 8.2 was used for modelling and calculation. Three source heights are used per road: 0.5 metre for car exhausts / engines, 1.5 metres from truck engines and 3.6 metres for truck exhausts. The following noise level distributions as a function of height were applied to each of the car and truck source lines to allow for measured differences between exhaust, engine and tyre noise in accordance with the UK Transportation Noise Reference Book, (Paul Nelson 1987).

Cars:	0.5 metre high source line:	100 %
Trucks (tyres):	0.5 metre high source line:	29 %
Trucks (engine):	1.5 metres high source line:	57 %
Trucks (exhaust):	3.6 metres high source line:	14 %

The predicted results were used as the basis to produce noise prediction scenarios at all potentially affected receivers for the year 2028 (year of opening) and year 2038 (design year, ten years after project opens), both with and without the proposal to determine if the project will increase traffic noise impact by more than 2.0 dBA.

Modelled traffic noise scenarios are provided in accordance with the RNCG requirements, as outlined in Table 3-5.

Table 3-5: Modelled scenarios

Scenario	Year	Name	Description
1	2024	Model verification	Existing scenario based on current traffic data and road conditions.
2	2028	No build – year of opening	Predicted no build 2028 traffic volumes and pre-existing road alignments (i.e year 2028 model if the proposal were not to go ahead)
3	2028	Build – year of opening	Predicted 2028 traffic volumes with the proposed alignment
4	2038	No build – design year	Predicted no build 2038 traffic volumes and pre-existing road alignments (i.e year 2038 model if the proposal were not to go ahead)
5	2038	Build – design year	Predicted 2038 traffic volumes with the proposed alignment

3.3.2 Traffic modelling parameters

Table 3-6 details the sources of information used for the prediction of road traffic noise levels.

Table 3-6: Road traffic noise modelling inputs and assumptions

Modelling element	Input/assumption/source reference
Ground elevation geometry	Contours at 1 metre intervals provided by Stantec GIS team.
Road alignment	Existing: Contours at 1 metre intervals provided by Stantec GIS team and georeferenced Metromap aerial photos. Future: Proposed design alignment provided by the Stantec design team.
Existing traffic volumes and percentage of heavy vehicles - 2024	Provided by *Trans Traffic Survey*. Refer to Table 3-7. Provided by Westlink for M7 Motorway and associated ramps. Refer to Table 3-8.
Future traffic volumes and percentage of heavy vehicles – 2028 & 2038	Provided by Stantec traffic team. Refer to Appendix B.
Source heights and corrections	The noise model assumes three source heights: • Light vehicles at 0.5 metre with 0 dB correction. • Heavy vehicles at 0.5 metre with a -5.4 dB correction. • Heavy vehicles at 1.5 metres with a -2.4 dB correction. • Heavy vehicles at 3.6 metres with a -8.5 dB correction.
Existing road traffic speeds	Average Existing Traffic Speed: Provided by *Trans Traffic Survey*. Refer to Table 3-7. Surveyed sign posted speeds were 100 km/h, with 80 km/h zones for M7 road works from Richmond Road south (in both directions).
Design road traffic speeds	• 80 km/h, Richmond Road, changing down to 70 km/h approximately 200 metres west of Bells Creek. • 60 km/h, Townson Road. • 60 km/h, Rooty Hill Road. • 70 km/h, Citybound M7 Motorway on-ramp, 100 km/h after gantry. • 100 km/h, Outbound M7 off-ramp, 60 km/h at pinch point before tunnel.

Modelling element	Input/assumption/source reference
	• 70 km/h, Outbound M7 Motorway on-ramp, 100 km/h after merge point before gantry. • 100 km/h, Citybound M7 Motorway off-ramp,60 km/h before spread of lane. • 100 km/h, M7 Motorway Outbound, dropping to 80 km/h at the start of the barrier at the bridges (for road works). • 80 km/h (for road works), M7 Motorway Citybound, increasing to 100 km/h just after Richmond Road Exit. • 100 km/h for all future M7 Motorway design scenarios.
Road surface	M7 Motorway: Open Grade Asphalt (OGA). All other roads: Dense Grade Asphalt (DGA).
Road surface corrections	-2.0 dB(A) correction for OGA. 0 dB(A) correction for DGA.
Ground absorption	• 75 per cent soft ground for grass, wooded areas and park land • 50 per cent soft ground for residential/suburban land use • 10 per cent soft ground for commercial and industrial land uses
Receiver heights	1.5 metres above ground floor level. Subsequent floor level receiver heights have been modelled at +2.8 metres above the floor below.
Façade correction	+2.5 dB(A)
Corrections for Australian conditions	-1.7 dB(A) CoRTN correction for Australian conditions. -0.7 dB(A) CoRTN correction for free field locations.

Current traffic volumes

A traffic count and speed survey was carried out concurrently with the noise monitoring, with the traffic survey locations presented in Figure 2-3 and Figure 2-4 (Section 2.2). This traffic data was used in the model to verify the noise monitoring locations. Traffic counters were placed at a distance far enough away from noise monitors to ensure they did not affect the noise measurements. A summary of the speed survey and traffic count for existing road conditions (2024) are presented in Table 3-7.

Table 3-7: Speed survey and traffic count – 2024

Road	Direction	Average Speed (km/h)		Total Vehicles		Percentage Heavy Vehicles (%)	
		Day	Night	Day	Night	Day	Night
Townson Road	EB	57	58	2,200	185	13	16
	WB	58	57	3,441	314	12	25
Alderton Drive	EB	45	47	3,955	368	5	6
	WB	39	44	2,865	461	5	5
Rooty Hill Road North (south of M7 Motorway off-ramp)	NB	45	53	8,384	1,947	14	15
	SB	49	56	9,847	2,186	16	8
Rooty Hill Road North (north of M7 Motorway off-ramp)	NB	45	53	9,591	2,907	13	15
	SB	38	45	6,209	1,792	14	14
Richmond Road (north of Alderton Drive)	NB	52	71	20,581	4,787	16	16
	SB	44	68	18,510	4,753	15	21

Road	Direction	Average Speed (km/h)		Total Vehicles		Percentage Heavy Vehicles (%)	
		Day	Night	Day	Night	Day	Night
Richmond Road (south of Alderton Drive)	NB	40	52	21,708	4,902	12	11
	SB	56	59	18,825	5,120	11	11
Richmond Road (east of M7 Motorway)	EB	57	60	12,184	2,410	12	11
	WB	40	53	8,959	2,434	13	10

Traffic data for the M7 Motorway and associated ramps were provided by Westlink. Due to access restrictions within the Westlink controlled M7 Motorway road reserve, a traffic count and speed survey could not be conducted for these locations. A summary of the traffic data provided for the motorway and ramps is presented in Table 3-8.

Table 3-8: Provided traffic data for M7 Motorway and associated ramps – 2024

Road	Direction	Total Vehicles		Heavy Vehicles (%)	
		Day	Night	Day	Night
M7 Motorway East of Richmond Road	Citybound	27,935	5,589	11.4	19.8
M7 Motorway East of Richmond Road	Outbound	29,577	3,958	11.7	19.9
Citybound M7 Motorway on-ramp	Citybound	6,489	1,516	5.5	11.9
Outbound M7 Motorway off-ramp	Outbound	5,609	618	7.1	10.4
M7 Motorway at Richmond Road	Citybound	21,444	4,078	13.2	22.7
M7 Motorway at Richmond Road	Outbound	23,967	3,341	12.8	21.7
Citybound M7 Motorway off-ramp	Citybound	10,541	2,212	13.2	16.5
Outbound M7 Motorway on-ramp	Outbound	10,391	2,788	12.6	16.4
M7 Motorway South of Richmond Road	Citybound	31,985	6,291	13.2	20.5
M7 Motorway South of Richmond Road	Outbound	34,358	6,128	12.8	19.3

Predicted traffic volumes

The traffic volumes for year of opening (2028) and design year (2038) were provided by the Stantec Traffic team. Future traffic volumes for the Westlink M7 were extrapolated from current traffic volumes accounting for a 3% growth per annum. The model results were provided as hourly volumes. These volumes were analysed to determine 15-hour and 9-hour traffic volumes to correlate with calculating $L_{Aeq\ 15hr}$ and $L_{Aeq\ 9hr}$ noise levels. A full breakdown of the traffic data for the year of opening (2028) and design year (2038) is provided in Appendix B.

3.3.3 Model validation

Table 3-9 presents the results of the verification model. Note only the measured levels from Loggers 1-3, 5, and 9-10 were utilised for the assessment of road traffic noise. The remaining loggers (4, 6 and 8) were used to measure background noise levels only (for the construction noise component of the assessment, refer to Section 4).

Table 3-9: Model validation results

Logger	$L_{Aeq\ (15\ hour)}$ dBA Day (7am-10pm)		Difference Day (modelled – measured) dBA	$L_{Aeq\ (9\ hour)}$ dBA Night (10pm–7am)		Difference Night (modelled – measured) dBA	Difference (Day – Night) measured/modelled	
	Measured	Modelled		Measured	Modelled			
1	67.9	69.4	1.5	65.7	67.0	1.3	2.2/2.4	
2	65.4	66.5	1.1	61.8	64.1	2.3	3.6/2.4	
3	67.0	66.3	-0.7	65.1	63.1	-2.0	1.9/3.2	
5	61.7	63.3	1.6	58.7	60.5	1.8	3.0/2.8	
7	68.6	69.2	0.6	65.4	65.7	0.3	3.2/3.5	
9	62.8	62.5	-0.3	57.5	58.4	0.9	5.3/4.1	
10	61.4	63.3	1.9	56.7	57.9	1.2	4.7/5.4	
Median difference: Day			1.1	Median difference: Night		1.2	Median difference	3.4/3.2

All noise monitoring locations were found to be within the required tolerance of ±2dB(A) for road traffic noise models. The median for all roads is 1.1 and 1.2 dBA for the day and night periods respectively.

3.3.4 Predicted noise levels

Operational road traffic noise impacts, without mitigation, have been predicted for the year of opening (2028) and the design year (2038) for the day (7am-10pm) and night-time periods (10pm-7am). Tabulated results of the predicted operational road traffic noise impacts are presented in Appendix B, with the corresponding noise contour maps presented in Appendix C.

Detailed review of the proposal plans found that the entire project can be classified as a redeveloped road, therefore calculations to determine transition zone criteria were not required to be undertaken. Due to pre-existing high traffic noise levels from roads within the assessment footprint, the Relative Increase Criteria was found to be higher than the redeveloped road criteria (refer Table 3-2), resulting in the redeveloped road criteria applying to all receivers with direct line of sight to the project.

Based on the predicted traffic noise levels, up to 109 residential receiver locations are predicted to qualify for the consideration of mitigation. The number of receiver locations is briefly summarised as follows:

- NCA 4 – 56 Receiver locations on Summerland Crescent, Pimlico Crescent, Clearfield Street, Stratheden Avenue and Coombell Avenue
- NCA 5 – 28 Receiver locations on Colebee Crescent and Kirsty Crescent
- NCA 6 – 2 Receiver locations on Pepperidge Avenue
- NCA 7 – 10 Receiver locations on Will Close and Josephine Way
- NCA 8 – 13 Receiver locations on Burrowes Grove and Shipton Place

Overall, the project is not predicted to increase traffic noise levels by more than 2 dBA at the assessed receiver locations. Receiver locations qualifying for the consideration of mitigation exceed the applicable Acute or Cumulative criteria.

Non-residential receivers qualifying for the consideration of mitigation are the Baitul Huda Mosque and associated Khilafat Centenary Hall and the childcare centre located at 5 Woodburn Street.

3.3.5 Sensitivity analysis

The current assessment is deemed to be accurate based on its inputs, assumptions and model verification. However, further discussion is warranted to explore how small variations can impact the number of properties that trigger the consideration for mitigation. This sensitivity analysis aims to demonstrate these potential impacts while reaffirming the accuracy of the current model. A sensitivity factor of +/- 1 dBA shift in the 2038 design noise model has been analysed to understand whether small variations in the predicted outcomes could affect the overall number of dwellings qualifying for the consideration of mitigation. The analysis was conducted in 0.5 dBA increments for both the day and night periods with the results presented in Figure 3-3. Noise impacts should be further reviewed during the detailed design phase.

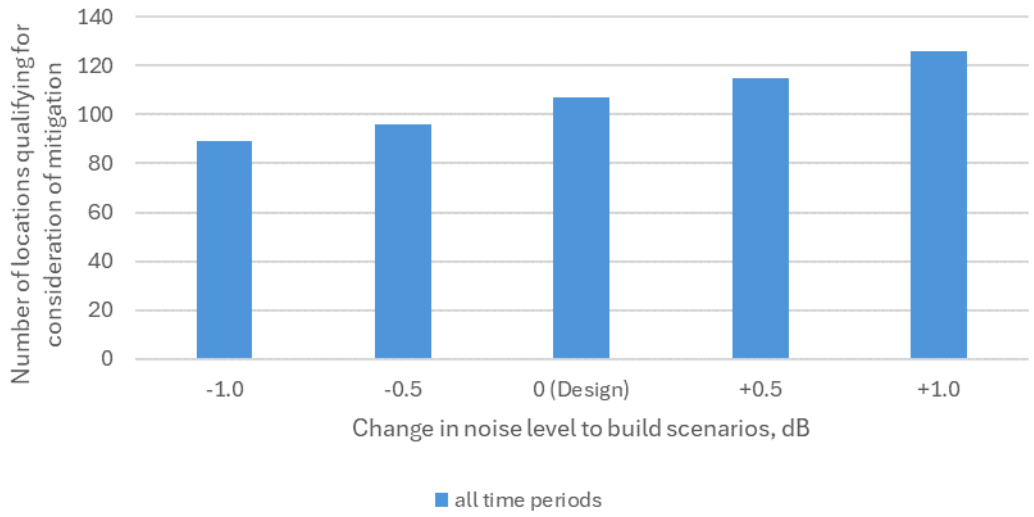


Figure 3-3: Sensitivity Analysis

Note that predicted noise levels for the night period are determining the receiver locations qualifying for the consideration of mitigation. Irrespective of the above results, the road traffic noise model has been validated to slightly over-predict traffic noise impacts.

3.3.6 Design of noise mitigation measures

The RNMG provides a consistent approach to implementing feasible and reasonable noise mitigation measures for road projects within NSW. In cases where affected receivers qualify for consideration of noise mitigation, the order of preference for treatments under the RNP is as follows:

1. Quieter pavement surfaces
2. Noise mounds
3. Noise walls
4. At-property treatments.

Quieter pavement surfaces

The residential receivers where exceedances of the criteria are predicted, are located in proximity to Richmond Road which will be constructed with DGA, one of the quietest readily available road surfaces. A quieter pavement surface should be considered where there are groups of four or more receivers that exceed the criteria and before the use of noise barriers.

Noise mounds and noise walls

After pavement treatments, acoustic barriers are the next preferred form of mitigation and should be considered where there are four or more closely spaced receivers. This assessment has reviewed the potential acoustic barriers, however there are a number of engineering considerations:

1. Effectiveness: Noise walls are not always effective in reducing noise for all affected areas. Their effectiveness can be limited by the topography, the height of the noise source, and the distance from the road.
2. Cost: The costs include not only the materials and construction but also ongoing maintenance.
3. Aesthetics and Community Impact: Noise walls can be visually intrusive and may not be welcomed by the community. They can block views and create a sense of enclosure.
4. Space Constraints: In urban areas, there may not be enough space to construct noise walls without impacting other infrastructure or properties.
5. Safety: Such as restriction on road vision.
6. Access: The barrier should be easily accessible for maintenance.
7. Environmental Impact: Noise walls can have environmental impacts, such as affecting local wildlife by creating barriers to movement and also other issues relating to floodway and stormwater flow.

For locations qualifying for the consideration of mitigation, a combination of the above factors may lead to at-property treatments being the preferred option. A summary of the constraints for each NCA is presented as follows:

Table 3-10: Noise walls – constraining factors

NCA	Constraining factors
NCA 4	NCA 4 has a pre-existing acoustic barrier to mitigate traffic noise from Richmond Road. Clarification is required around the ownership of the existing barriers. It is not considered feasible or practical to construct higher barriers in front of the existing barriers due to space constraints and aesthetics.
NCA 5	A barrier for this location would need to be constructed adjacent to Richmond Road as constructing a barrier adjacent to the residential properties on Colebee Crescent may not be feasible as the barrier would be on land that is not owned by TfNSW. A barrier constructed along Richmond Road may have reduced effectiveness due to the elevation of the road and receivers. Due to space constraints, the barrier alignment may sit off the road shoulder at a lower level. Additionally, bridges create additional design issues.
NCA 7 and 8	NCA 7 and 8 are located close to Richmond Road, separated by a small nature strip with a footpath. Therefore, space constraints are the main issue with barriers in these locations. Further complicating potential barrier design is the likelihood of services in the vicinity of potential barrier footings.

At-property treatments

Traffic noise levels due to the implementation of the project are predicted to exceed the cumulative and acute criteria at residential receivers identified in Table 3-11. In accordance with the NSW RNP, the extent of mitigation should be selected on the basis of feasible measures, which are considered reasonable on the basis of social, economic, and environmental effects, including the cost of the abatement measures.

In accordance with the At-Receiver Road Noise Treatment Guideline (Draft) (ARRNTG) treatments are determined based on the level of exceedance and specific treatments would be determined during the detailed design phase of the Project.

Table 3-11: Receiver locations qualifying for the consideration of mitigation

NCA	Address
NCA 4	5 Alderton Dr
NCA 4	7 Alderton Dr
NCA 4	9 Alderton Dr
NCA 4	11 Alderton Dr
NCA 4	13 Alderton Dr
NCA 4	15 Alderton Dr
NCA 4	17 Alderton Dr
NCA 4	19 Alderton Dr
NCA 4	1 Clearfield St
NCA 4	1A Clearfield St
NCA 4	19 Coombell Ave
NCA 4	17 Pimlico Cres

NCA	Address
NCA 4	19 Pimlico Cres
NCA 4	20 Pimlico Cres
NCA 4	21A Pimlico Cres
NCA 4	22 Pimlico Cres
NCA 4	24 Pimlico Cres
NCA 4	30 Pimlico Cres
NCA 4	30a Pimlico Cres
NCA 4	32 Pimlico Cres
NCA 4	34 Pimlico Cres
NCA 4	36 Pimlico Cres
NCA 4	38 Pimlico Cres
NCA 4	40 Pimlico Cres
NCA 4	42 Pimlico Cres
NCA 4	44 Pimlico Cres
NCA 4	46 Pimlico Cres
NCA 4	48 Pimlico Cres
NCA 4	50 Pimlico Cres
NCA 4	52 Pimlico Cres
NCA 4	54 Pimlico Cres
NCA 4	56 Pimlico Cres
NCA 4	6 Stratheden Ave
NCA 4	8 Stratheden Ave
NCA 4	11 Stratheden Ave
NCA 4	27 Summerland Cres
NCA 4	29 Summerland Cres
NCA 4	31 Summerland Cres
NCA 4	33 Summerland Cres
NCA 4	35 Summerland Cres
NCA 4	37 Summerland Cres
NCA 4	39 Summerland Cres
NCA 4	43 Summerland Cres
NCA 4	45 Summerland Cres
NCA 4	47 Summerland Cres
NCA 4	49 Summerland Cres
NCA 4	51 Summerland Cres
NCA 4	53 Summerland Cres
NCA 4	55 Summerland Cres
NCA 4	57 Summerland Cres
NCA 4	59 Summerland Cres
NCA 4	61 Summerland Cres
NCA 4	63 Summerland Cres
NCA 4	65 Summerland Cres
NCA 4	26A Ballina St
NCA 4	26b Ballina St
NCA 5	63 Colebee Cres
NCA 5	65 Colebee Cres
NCA 5	67 Colebee Cres
NCA 5	69 Colebee Cres
NCA 5	71 Colebee Cres
NCA 5	73 Colebee Cres
NCA 5	75 Colebee Cres
NCA 5	77 Colebee Cres
NCA 5	78 Colebee Cres
NCA 5	79 Colebee Cres
NCA 5	81 Colebee Cres

NCA	Address
NCA 5	83 Colebee Cres
NCA 5	85 Colebee Cres
NCA 5	87 Colebee Cres
NCA 5	89 Colebee Cres
NCA 5	91 Colebee Cres
NCA 5	93 Colebee Cres
NCA 5	95 Colebee Cres
NCA 5	97 Colebee Cres
NCA 5	99 Colebee Cres
NCA 5	99A Colebee Cres
NCA 5	101 Colebee Cres
NCA 5	103 Colebee Cres
NCA 5	105 Colebee Cres
NCA 5	107 Colebee Cres
NCA 5	109 Colebee Cres
NCA 5	111 Colebee Cres
NCA 5	64 Kirsty Cres
NCA 6	2 Pepperidge Ave
NCA 6	4 Pepperidge Ave
NCA 7	3 Josephine Way
NCA 7	5 Josephine Way
NCA 7	7 Josephine Way
NCA 7	3 Will Cl
NCA 7	4 Will Cl
NCA 7	5 Will Cl
NCA 7	6 Will Cl
NCA 7	7 Will Cl
NCA 7	9 Will Cl
NCA 7	11 Will Cl
NCA 8	3 Burrowes Grove
NCA 8	7 Burrowes Grove
NCA 8	9 Burrowes Grove
NCA 8	11 Burrowes Grove
NCA 8	12.10 Burrowes Grove
NCA 8	12.11 Burrowes Grove
NCA 8	12.7 Burrowes Grove
NCA 8	12.8 Burrowes Grove
NCA 8	12.9 Burrowes Grove
NCA 8	13 Burrowes Grove
NCA 8	15 Burrowes Grove
NCA 8	17 Burrowes Grove
NCA 8	4 Shipton Pl

3.4 Maximum noise level assessment for road traffic

The purpose of the maximum noise level assessment is to help rank and prioritize design options and mitigation strategies. Specific design objectives for sleep disturbance are not provided in the RNP. However, the RNP does provide a detailed review of internal sleep disturbance research, indicating that the main causes of sleep disturbance are the magnitude of the maximum noise level and the frequency of maximum noise level events. In simple terms, this refers to the number of instances where noise levels spike above the ambient level. With reference to Appendix A of the RNCG, a maximum noise level event can be defined as an instance where the L_{Amax} emergence over the ambient $L_{Aeq,\ 1h}$ is greater than 15 dB(A).

Section 5.4 of the RNP also states:

- *maximum internal noise levels below 50-55 dB(A) are unlikely to awaken people from sleep*
- *one or two noise events per night, with maximum internal noise levels of 65-70 dBA, are not likely to affect health and wellbeing significantly*.

3.4.1 Assessment methodology

The Ngara noise loggers store raw data results in 1/10 second intervals. This data has been reviewed to determine the number of maximum noise level events at logger location 1 (Richmond Road, west of M7), 5 (Rooty Hill Road North), and 7 (Richmond Road, east of M7). A summary of the maximum noise level events is provided in Table 3-12.

Table 3-12: Maximum noise level assessment summary

Time	Logger 1 - Richmond Road (west of M7)		Logger 5 – Rooty Hill Road North		Logger 7 - Richmond Road (east of M7)	
	Number of maximum noise level events	Measured Maximum SPL	Number of maximum noise level events	Measured Maximum SPL	Number of maximum noise level events	Measured Maximum SPL
22:00-23:00	0	80	1	86	0	81
23:00-00:00	3	81	2	79	2	87
00:00-01:00	9	85	2	85	2	86
01:00-02:00	11	81	0	70	7	79
02:00-03:00	1	84	3	75	6	79
03:00-04:00	4	84	6	82	8	81
04:00-05:00	3	87	1	73	2	83
05:00-06:00	0	85	2	77	1	85
06:00-07:00	1	89	1	81	1	86
9 hour	32 (total)	89 (max)	18 (total)	86 (max)	29 (total)	87 (max)

For receiver locations within NCA 4 (nearest to Logger 1), NCA 7 (nearest to Logger 7), and NCA 8 (nearest to Logger 7) the project will not reduce the distance between the dominant traffic stream and receivers. Furthermore, traffic volumes adjacent to these locations will not increase as a direct result of the project. Therefore, the frequency and loudness of maximum noise level events is unlikely to increase due to the project.

For residents within NCA 5 (between Loggers 1 and 5), the traffic stream may reduce from 145 metres to 115 metres from the receivers, therefore it is expected that the maximum noise level events would increase by approximately 1-2 dBA. Traffic volumes adjacent to this location will not increase as a direct result of the project. Therefore, the frequency of maximum noise level events is unlikely to increase due to the project.

4. Construction noise assessment

4.1 Construction noise criteria

4.1.1 Construction Noise and Vibration Guideline (CNVG-R)

The TfNSW *Construction Noise and Vibration Guideline (Roads)* (TfNSW, 2023) (CNVG-R) provides a framework for the assessment of noise during the construction phase of the project. The CNVG-R references the following documents to provide the criteria for the assessment of construction noise impacts:

- *Interim Construction Noise Guideline* (DECC, 2009) (ICNG)
- *Road Noise Policy* (DECCW, 2011) (RNP)

4.1.2 Interim Construction Noise Guideline (DECC, 2009)

Airborne construction noise

The Department of Environment and Climate Change (DECC) provides guidance for assessing construction noise impacts in the Interim Construction Noise Guideline (DECC, 2009) (ICNG).

The level of noise impact and the requirement for mitigation measures is generally determined by the timing and duration of the noise emissions and the perceived impact of the noise above existing background noise levels.

It is important to note that the guideline distinguishes between qualitative and quantitative noise assessments based on the type and duration of construction activities. For example, a qualitative assessment is warranted for road maintenance type works of short duration, whereas a quantitative assessment is preferred for major infrastructure works.

Section 4 of the guideline outlines the quantitative assessment method, which establishes noise limits and assessment requirements for proposed construction activities over three weeks duration.

The noise criterion for potentially affected residential properties, as taken from Section 4.1 of the guideline, is detailed in Table 4-1.

Table 4-1: Noise at residents using quantitative assessment (Source ICNG, 2009)

Time of day	Management level, $L_{Aeq(15min)}$	How to apply
Recommended standard hours: Monday to Friday: 7am to 6pm Saturday: 8am to 1pm: No work on Sundays or public holidays	Noise affected RBL + 10 dB	The noise affected level represents the point above which there may be some community reaction to noise. • Where the predicted or measured $L_{Aeq\ (15\ min)}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level. • The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
	Highly noise affected 75 dB(A)	The highly noise affected level represents the point above which there may be strong community reaction to noise. • Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account: 1. times identified by the community when they are less sensitive to noise (such as before and after school for works near schools, or mid-

Time of day	Management level, $L_{Aeq(15min)}$	How to apply
		morning or mid-afternoon for works near residences. 2. if the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.
Outside recommended standard hours	Noise affected RBL + 5 dB	• A strong justification would typically be required for works outside the recommended standard hours. • The proponent should apply all feasible and reasonable work practices to meet the noise affected level. • Where all feasible and reasonable practices have been applied and noise is more than 5 dB(A) above the noise affected level, the proponent should negotiate with the community. • For guidance on negotiating agreements see section 7.2.2. (of the guideline).

Notes:

1. *For Residential receivers - Noise levels apply at the property boundary that is most exposed to construction noise, and at a height of 1.5 metres above ground level. If the property boundary is more than 30 metres from the residence, the location for measuring or predicting noise levels is at the most noise-affected point within 30 metres of the residence. Noise levels may be higher at upper floors of the noise affected residence.*
2. *Other sensitive use receivers - Internal noise levels are to be assessed at the centre of the occupied room. External noise levels are to be assessed at the most affected point within 50 metres of the area boundary.*

A strong justification would typically be required for works outside the recommended standard hours in Table 4-1. The proponent should apply all feasible and reasonable work practices to meet the noise affected level. The definition of feasible and reasonable work practices is outlined in Section 1.4 of the ICNG, with the following excerpts providing a brief description:

"A work practice or abatement measure is feasible if it is capable of being put into practice or of being engineered and is practical to build given project constraints such as safety and maintenance requirements."

"Selecting reasonable measures from those that are feasible involves making a judgment to determine whether the overall noise benefits outweigh the overall adverse social, economic and environmental effects, including the cost of the measure."

A number of factors may be considered in selecting reasonable measures, including the level of impact, the number of people affected, and the order of treatments applied to previous, similar projects. Where all feasible and reasonable practices have been applied and noise remains more than 5 dB(A) above the noise affected level, the proponent should negotiate with the community on suitable mitigation measures. For guidance on negotiating agreements see section 7.2.2 of the ICNG.

Sleep disturbance

Appendix E of the CNVG-R provides indicative sleep disturbance distances for various plant and construction scenarios. Receivers located within these distances are at risk of sleep disturbance. The sleep disturbance distances are based on achieving a construction noise impact of 65 dBA L_{AMax} or less at a façade with an open window.

Construction traffic

For TfNSW projects, an initial screening test should first be applied by evaluating whether noise levels will increase by more than 2dBA due to construction traffic or a temporary reroute due to a road closure. Where increases are 2dBA or less then no further assessment is required. Where noise levels increase by more than 2dBA (2.1dBA) further assessment is required based upon TfNSW's Road Noise Criteria Guideline. This documents TfNSW's approach to implementing the EPA NSW Road Noise Policy. Consideration should also be given under the Road Noise Criteria Guideline as to whether the construction traffic or temporary reroute triggers new road criteria due to changes in road category.

4.1.3 Non-residential receivers

The Interim Construction Noise Guideline (ICNG) nominates noise objectives for non-residential noise sensitive receivers as presented in Table 4-2.

Table 4-2: Construction noise management level for non-residential receivers

Land use	Management Level, $L_{Aeq(15min)}$
Classrooms at schools and other educational institutions	Internal noise level 45dB(A)
Hospital wards and operating theatres	Internal noise level 45dB(A)
Places of worship	Internal noise level 45dB(A)
Active recreation areas (characterised by sporting activities and activities which generate their own noise or focus for participants, making them less sensitive to external noise intrusion)	External noise level 65dB(A)
Passive recreation areas (characterised by contemplative activities that generate little noise and where benefits are compromised by external noise intrusion, for example, reading, meditation)	External noise level 60dB(A)
Community centres	Depends on the intended use of the centre. Refer to the recommended 'maximum' internal levels in AS2107:2016 for specific uses.
Industrial premises	External noise level 75dB(A)
Offices, retail outlets	External noise level 70dB(A)
Childcare centre- Sleeping areas/Play areas	Internal noise level 35dB(A)/Internal noise level 40dB(A)

4.2 Construction noise design objectives

Based on the measured rating background noise levels from Table 2-3 (in Section 2.3) and the noise catchment areas (NCAs) in Section 2.1, the applicable noise management levels (NMLs) are outlined in Table 4-3.

Table 4-3: Construction noise management levels (NMLs) – Residential premises

NCA	Noise management level, dB(A)				Sleep disturbance L_{Amax} Mon-Sun: 10pm to 7am
	Standard hours (RBL + 10)	Outside standard hours (RBL + 5)			
	Day Mon-Fri: 7am to 6pm Sat: 8am to 1pm	Day Sat: 1pm to 6pm Sun: 7am to 6pm	Evening Mon-Sun: 6pm to 10pm	Night Mon-Sun: 10pm to 7am	
2	56	51	50	49	65
3	52	47	47	46	65
4	57	52	50	47	65
5	56	51	51*	47	65
6	63	58	58	49	65
7-8	59	54	51	48	65

** In accordance with the NSW Noise Policy for Industry (NPfI), in cases where the RBL for the evening time is greater than the daytime, it is generally recommended that noise management level for the evening be set at no greater than the noise management level for the daytime.*

Based on the ICNG noise management levels for non-residential receivers, the receivers in Table 4-4 have been identified.

Table 4-4: Construction noise management levels (NMLs) – Other noise sensitive land uses

Receiver	Management level, $L_{Aeq(15min)}$[1]
Schools/Education	
Glendenning Public School	External noise level 55dB(A)[2]
St. Francis of Assisi Primary School	
William Dean Public School	
St Clare's Catholic High School	
Hassall Grove Public School	
Places of worship	
Baitul Huda Mosque	External noise level 55dB(A)[2]
Active recreation	
Glendenning Reserve (sports field and tennis courts)	External noise level 65dB(A)
Joe McAleer Park	
Western Raptors Rugby Club	
Baitul Huda Mosque sports fields	
Passive recreation	
Blacktown Native Institute Site	External noise level 60dB(A)
Community centres	
Glendenning Neighbourhood Centre	External noise level 55dB(A)[2]
Hassall Grove Neighbourhood Centre	
Industrial premises	External noise level 75dB(A)
Offices, retail outlets	External noise level 70dB(A)
Childcare	
Kinda-Mindi Early Learning Centre	External noise level 45dB(A) (sleep areas)[2] External noise level 50dB(A) (play areas)[2]
Busy Bees Long Day Care	
Kids' Early Learning Dean Park	
Bright Beginnings Learning Centre	
Goodstart Early Learning Oakhurst	
Kids' Early learning Hassall Grove	
Prepare Early Education Centre Greenway Village	
Great Beginnings Marsden Park	
Young Academics Early Learning Centre	

[1] *Applies when premises are in use*

[2] *A conservative difference between outside and inside of 10dB applied.*

4.3 Construction noise assessment methodology

Noise modelling was conducted to determine the predicted level of construction noise impact at sensitive locations surrounding the proposal.

Works associated with the modelled stages are likely along the full length of the construction area. Therefore, construction works have generally been modelled as line sources, where relevant, operating simultaneously for each construction phase to provide the worst case predicted noise levels at each sensitive location.

Construction noise modelling was based on the data inputs and assumptions presented in Table 4-5.

Table 4-5: Construction noise modelling inputs

Modelling element	Input/assumption/source reference
Ground elevation geometry	Contours at 1 metre intervals provided by Stantec GIS personnel.
Ground absorption	• 100 per cent soft ground for grass, wooded areas and park land. • 50 per cent soft ground for residential/suburban land use. • 10 per cent soft ground for commercial and industrial land uses.
Assessment standard	CONCAWE noise model: Conservation of Clean Air and Water in Europe.
Weather conditions	Receiver is downwind of the source.
Receiver height	1.5m metres above ground floor level. Subsequent floor level receiver heights have been modelled at + 2.8 m above the floor below.
Source sound power levels	Refer to Section 4.6.

4.4 Modelled construction scenarios

Construction activities would be carried out in accordance with a Construction Environmental Management Plan (CEMP) to ensure construction work is carried out to TfNSW's specifications and legislative requirements.

The appointed Contractor would confirm the final construction methodology in discussion with TfNSW. An indicative work methodology is described in Table 4-6 and has been used for the purposes of this environmental assessment. Should the work method substantially differ from what is proposed, the Contractor would consult with TfNSW to determine if additional impact assessment is needed.

To provide an indicative assessment of construction noise impact, a noise model was created for each of the construction scenarios for the relevant time periods outlined in Table 4-6.

Table 4-6: Construction scenarios

Scenario number	Construction activities	Description
Scenario 1	Mobilisation and site establishment	• Notify all properties and stakeholders before commencement of work. • Obtain all licences and permits. • Demarcate site compounds, set equipment storage and fencing, establish access requirements. • Establish 'No-Go' zones for construction, particularly Tree Protection Zones and sensitive ecological areas and sensitive cultural heritage areas. • Install traffic management controls including any diversions.
Scenario 2	Installation of erosion and sediment controls	• Establish temporary erosion and sediment control (ESC) and drainage devices for stormwater management.
Scenario 3	Relocation and protection of existing services	• Adjust/relocate utility infrastructure (water, gas, electricity, and telecommunications) where required.
Scenario 4	Surface preparation	• Carry out all pre-clearance surveys. • Vegetation clearing, tree trimming, grubbing of scrub. • Remove and mulch vegetation in stages along the new road alignment. • Strip and stockpile topsoil in stages. • Prepare the surface using graders, dozers and other equipment.
	Earthworks	• Ensure all existing utility locations are known prior to breaking ground. • Relocate any infrastructure/utilities as required. • Implement traffic management controls. • Strip topsoil and subsoils and implement stockpile management/dust suppression. • Excavate cutting and create fill embankments. • Ensure any material to be disposed of offsite is sampled and tested for waste classification purposes. • Manage fill importing, grading, and compaction. • Install drainage devices, pipes, and culverts as per the design. • Install any water sensitive urban design (WSUD) features – swales, detention basins.
	Drainage	• Install/extend culverts. • Install drains, pipes and channels. • Install scour protection.
Scenario 5	Road pavement construction	• Install retaining walls. • Cut and fill related activities.

Scenario number	Construction activities	Description
		• Prepare and level subgrade materials. • Lay pavement material and compaction. • Install footpaths and adjacent surfaces. • Install new kerbs and any stormwater/drainage devices.
Scenario 6	Bridge construction	• Install erosion and sediment control devices as required. • Install abutment foundations. • Construct abutments and any retaining walls/batters. • Install load bearing structure, and pavement and any drainage features.
Scenario 7	Finishing works	• Conclude property access. • Complete tie-ins. • Install safety barriers. • Rehabilitate disturbed areas and landscape in accordance with the landscaping planting strategy. • Install line marking, signs and guideposts. • Install street lighting and signage.
	Site clean-up	• Decommission temporary facilities (e.g. compound sites). • Clean-up the site and dispose of all surplus waste materials.

4.5 Construction hours and duration

It is anticipated that construction would start in late 2025 and would take approximately 3 years to complete. This duration would be subject to funding, weather, securing the necessary access, and coordinating with other activities and events in the project area.

Where possible, construction would be carried out in accordance with standard construction hours as defined in the *Interim Construction Noise Guidelines* (INCG)(DECC, 2009) which are Monday to Friday (7am to 6pm) and (Saturday 8am to 1pm). However, to minimise disruption to the traffic along Richmond Road and local roads and surrounding landowners and businesses, and to provide a safe working environment, it would be necessary to carry out a large portion of the works outside of standard construction hours. There is the potential for some works to be undertaken up to five nights per week.

The following activities are likely to be conducted outside of standard working hours:

- intersection and tie-in activities
- placement of pavement along Richmond Road
- delivery of oversized plant, materials or structures including bridge elements
- utility relocation and installation work
- line marking and placement of new signage, fences and other road furniture.

Construction activities with the potential for significant impacts should be discouraged, if possible, during the night time period.

If night work is essential for road safety reasons, the use of high impact machinery such as pile-driving, vibratory rollers and impact devices (rock breakers and jackhammers) should be avoided where possible for night work construction in residential or other noise and vibration sensitive areas. Where night work is required in the vicinity of residential or other sensitive sites, careful planning is required, and a higher level of control is recommended to mitigate potential complaints of sleep disturbance.

4.6 Construction plant and equipment

The plant and equipment needed to build the proposal would be typical to any major road construction site. An indicative list of plant and equipment is provided in Table 4-7. The construction activities and plant and equipment list would be finalised by the Contractor following detailed design.

The plant equipment sound power levels were sourced from Australian Standard AS 2436-2010: *Guide to Noise Control on Construction, Maintenance and Demolition Sites* and the TfNSW *Construction Noise and Vibration Guideline*.

Table 4-7: Construction plant and equipment sound power levels (SWLs)

Scenario	Plant	Number operating	Sound power level (SWL) per item, dB(A)
Scenario 1: Mobilisation and site establishment	Franna crane 20t	1	98
	Excavator tracked 8-30t	2	110
	Front end loader 5-23t	1	112
	Road truck	2	108
	Light vehicles	4	88
	Generator	4	103
		Adjusted Total SWL[1]	**115**
Scenario 2: Installation of erosion and sediment controls	Excavator tracked 8-30t	2	110
	Bulldozer - D10	2	116
	Grader	1	113
	Water cart	1	107
	Front end loader 5-23t	1	112
	Dump truck	1	110
	Fuel truck	1	108
	Road truck	2	108
	Light vehicle	4	88
	Pneumatic hammer/drill	1	115
	Concrete saw	1	118
		Adjusted Total SWL[1]	**120**
Scenario 3: Relocation and protection of existing services	Excavator	1	110
	Backhoe	1	111
	Front end loader 5-23t	1	112
	Dump truck	2	110
	Road truck	1	108
	Light vehicle	4	88
	Concrete truck	1	109
	Utility locating NDD plant	2	109
	Pneumatic hammer/drill	1	115
	Concrete saw	1	118
		Adjusted Total SWL[1]	**119**
	Excavator tracked 8-30t	2	110

Scenario	Plant	Number operating	Sound power level (SWL) per item, dB(A)
Scenario 4: Bulk earthworks and materials haulage	Bulldozer	2	116
	Grader	2	113
	Water cart	1	107
	Front end loader 5-23t	1	112
	Vibratory roller	2	109
	Dump truck	4	110
	Road truck	2	108
	Fuel truck	1	108
	Light vehicle	8	88
	Utility locating NDD plant	1	109
	Wacker/plate compactor	1	109
		Adjusted Total SWL[1]	**120**
Scenario 5: Road pavement construction	Grader	1	113
	Profiler - 2m	1	116
	Roller - large pad foot/ smooth drum	1	109
	Vibratory roller	1	109
	Asphalt/bitumen truck, paver and sprayer	1	106
	Excavator	1	110
	Bulldozer	1	116
	Water cart	1	107
	Front end loader 5-23t	1	112
	Compactor	1	106
	Road broom	1	95
	Rubber-tyre roller	1	106
	Fuel truck	1	108
	Road truck	1	108
	Line marking machine	1	108
	Light vehicle	1	88
	Pneumatic hammer/drill	1	115
	Concrete saw	1	118
	Wacker/plate compactor	1	109
		Adjusted Total SWL[1]	**121**
Scenario 6: Bridge construction	Excavator	2	110
	Elevated work platform	2	98
	Franna crane 20t	1	98
	Concrete truck	2	109
	Piling Rig - bored	1	112
	Concrete pump	2	102

Scenario	Plant	Number operating	Sound power level (SWL) per item, dB(A)
	Vibratory roller	1	109
	Road truck	2	108
	Light vehicle	4	88
	Wacker/plate compactor	1	109
		Adjusted Total SWL[1]	**116**
Scenario 7: Finishing works, signposting, lighting and roadside furniture installation	Excavator	1	110
	Elevated work platform	1	98
	Franna crane 20t	1	98
	Concrete truck	1	109
	Road truck	1	108
	Light vehicle	4	88
	Wacker/plate compactor	1	109
	Pneumatic hammer/drill	1	115
		Adjusted Total SWL[1]	**115**

[1] The Adjusted Total SWL considers an estimate of operating time and number of each plant item over a 15-minute period based on typical construction activities, as opposed to the total cumulative impact of all the listed plant operating simultaneously, which is highly unlikely to occur in reality.

4.7 Traffic management and access

Traffic management and access controls would be developed during future design stages and implemented under a construction Traffic Management Plan (TMP).

Staging and traffic management

The purpose of building the proposal in stages is to reduce any impacts on traffic along Richmond Road and surrounding local roads whilst providing a safe environment for construction. An indicative traffic staging process is provided in the REF and would be confirmed by the Contractor. Certain work activities would also likely take place at night to minimise any traffic-related impacts.

The TMP would be prepared in accordance with the *Traffic Control at Work Sites Manual Version 6.1* (TfNSW, 2022) and approved by TfNSW before implementation. The TMP would provide details of the traffic management to be implemented during construction to ensure traffic flow on the surrounding network is maintained where possible.

Construction and delivery traffic and workforce vehicles

The proposal would generate heavy vehicle movements at regular intervals during construction. These heavy vehicle movements would mainly be associated with:

- delivery of construction materials
- site compound construction
- water delivery
- spoil and waste removal
- delivery and removal of construction equipment and machinery.

In addition, the proposal would generate light vehicle movements associated with the workforce, typically at the start and end of the working day between 6am and 7am and 6pm and 7pm.

Access

Property accesses and bus services would be maintained as far as possible throughout construction. Heavy vehicle movements on local roads would be minimised or detoured where possible.

Parking

The contractor would be required to include off-road parking provisions within the construction footprint. Sufficient parking would be provided for the project to prevent workers from parking on public roads.

4.8 Predicted construction noise levels

Predicted construction noise levels for each modelled scenario are presented in Appendix D in the form of noise contour maps.

The predicted noise impacts are based on the adjusted total sound power levels (SWLs) presented in Section 4.6. These SWLs consider an estimate of the operating time and number of each plant item over a 15-minute period based on typical construction activities. However, the predicted impacts are likely an overestimation as, even works within each scenario would be staged/staggered with plant and equipment spread out over the work site i.e. not all plant in use and not all plant located at the closest point to receivers. Therefore, during typical works, the noise impact is likely to be less than those modelled.

Table 4-8 presents an approximation of the number of residential receivers affected by each construction scenario for each NCA. These numbers are provided as an indicative guide, as the number of affected receivers may vary depending on the situation occurring e.g. type of plant/equipment in use, location of activity, additional screening etc. The table includes "Standard hours" and "Out of Hours Works Period 2 (night)" to present best-case and worst-case time periods respectively. The number of affected receivers for any works during the "Out of Hours Works Period 1" will fall within the "Standard hours" and "OOHW2" range presented in the table.

Based on the results in Table 4-8, *Scenario 5: Road pavement construction* is generally predicted to affect the greatest number of receivers, with receivers located within approximately 60 metres of these works at risk of being highly noise affected.

The predicted L_{Aeq} results detailed in the noise contour maps (refer to Appendix D) and the affected number of receivers in Table 4-8 show that the NMLs are likely to be exceeded for all construction scenarios during all time periods to varying extents. Therefore, project specific mitigation measures and management controls are presented in Section 4.9. To further reduce construction noise impacts, TfNSW's CNVG-R provides Standard Mitigation Measures which are presented in Appendix F of this report.

Table 4-8: Predicted number of residential properties affected by construction noise impacts

NCA	Perception	Approximate number of residential receivers						
		Scenario 1: Mobilisation and site establishment	Scenario 2: Installation of erosion and sediment controls	Scenario 3: Relocation and protection of existing services	Scenario 4: Bulk earthworks and materials haulage	Scenario 5: Road pavement construction	Scenario 6: Bridge construction	Scenario 7: Finishing works, signposting, lighting and roadside furniture
Standard hours: Mon - Fri (7am-6pm), Sat (8am-1pm), Sun/Pub Hol (Nil)								
NCA 2	Noticeable	0	1	0	1	1	0	0
	Clearly audible	0	0	0	0	0	0	0
	Moderately intrusive	0	0	0	0	0	0	0
	Highly intrusive	0	0	0	0	0	0	0

NCA	Perception	Approximate number of residential receivers						
		Scenario 1: Mobilisation and site establishment	Scenario 2: Installation of erosion and sediment controls	Scenario 3: Relocation and protection of existing services	Scenario 4: Bulk earthworks and materials haulage	Scenario 5: Road pavement construction	Scenario 6: Bridge construction	Scenario 7: Finishing works, signposting, lighting and roadside furniture
Out of Hours Works Period 2 (OOHW2): Mon - Fri (10pm-7am), Sat (10pm-8am), Sun/Pub Hol (6pm-7am)								
NCA 2	Noticeable	0	3	1	3	5	0	0
	Clearly audible	0	0	0	0	0	0	0
	Moderately intrusive	0	0	0	0	0	0	0
	Highly intrusive	0	0	0	0	0	0	0
Standard hours: Mon - Fri (7am-6pm), Sat (8am-1pm), Sun/Pub Hol (Nil)								
NCA 3	Noticeable	0	173	105	173	235	0	0
	Clearly audible	0	0	0	0	4	0	0
	Moderately intrusive	0	0	0	0	0	0	0
	Highly intrusive	0	0	0	0	0	0	0
Out of Hours Works Period 2 (OOHW2): Mon - Fri (10pm-7am), Sat (10pm-8am), Sun/Pub Hol (6pm-7am)								
NCA 3	Noticeable	0	236	174	236	325	0	5
	Clearly audible	0	4	0	4	18	0	0
	Moderately intrusive	0	0	0	0	0	0	0
	Highly intrusive	0	0	0	0	0	0	0
Standard hours: Mon - Fri (7am-6pm), Sat (8am-1pm), Sun/Pub Hol (Nil)								
NCA 4	Noticeable	13	18	21	18	25	0	33
	Clearly audible	4	73	71	73	77	0	59
	Moderately intrusive	0	32	41	32	38	0	30
	Highly intrusive	0	23	13	23	24	0	5
Out of Hours Works Period 2 (OOHW2): Mon - Fri (10pm-7am), Sat (10pm-8am), Sun/Pub Hol (6pm-7am)								
NCA 4	Noticeable	8	12	16	12	6	0	19
	Clearly audible	15	57	60	57	52	0	70
	Moderately intrusive	0	57	56	57	67	0	48
	Highly intrusive	0	36	31	36	39	0	9
Standard hours: Mon - Fri (7am-6pm), Sat (8am-1pm), Sun/Pub Hol (Nil)								
NCA 5	Noticeable	61	128	108	128	139	12	55
	Clearly audible	30	72	69	72	84	3	29
	Moderately intrusive	15	11	3	11	15	0	0
	Highly intrusive	10	0	0	0	0	0	0
Out of Hours Works Period 2 (OOHW2): Mon - Fri (10pm-7am), Sat (10pm-8am), Sun/Pub Hol (6pm-7am)								
NCA 5	Noticeable	110	162	157	162	248	45	115

NCA	Perception	Approximate number of residential receivers						
		Scenario 1: Mobilisation and site establishment	Scenario 2: Installation of erosion and sediment controls	Scenario 3: Relocation and protection of existing services	Scenario 4: Bulk earthworks and materials haulage	Scenario 5: Road pavement construction	Scenario 6: Bridge construction	Scenario 7: Finishing works, signposting, lighting and roadside furniture
	Clearly audible	65	162	118	162	183	15	67
	Moderately intrusive	19	27	25	27	31	0	6
	Highly intrusive	11	0	0	0	0	0	0
Standard hours: Mon - Fri (7am-6pm), Sat (8am-1pm), Sun/Pub Hol (Nil)								
NCA 6	Noticeable	5	14	17	14	20	2	21
	Clearly audible	4	29	24	29	30	2	15
	Moderately intrusive	0	2	1	2	2	0	2
	Highly intrusive	0	4	4	4	5	0	0
Out of Hours Works Period 2 (OOHW2): Mon - Fri (10pm-7am), Sat (10pm-8am), Sun/Pub Hol (6pm-7am)								
NCA 6	Noticeable	24	76	60	76	88	38	26
	Clearly audible	16	45	42	45	43	19	34
	Moderately intrusive	4	24	22	24	29	0	12
	Highly intrusive	0	5	4	5	6	0	0
Standard hours: Mon - Fri (7am-6pm), Sat (8am-1pm), Sun/Pub Hol (Nil)								
NCA 7	Noticeable	2	21	20	21	30	18	17
	Clearly audible	0	22	20	22	24	0	11
	Moderately intrusive	0	6	3	6	6	0	5
	Highly intrusive	0	11	11	11	12	0	7
Out of Hours Works Period 2 (OOHW2): Mon - Fri (10pm-7am), Sat (10pm-8am), Sun/Pub Hol (6pm-7am)								
NCA 7	Noticeable	5	114	106	114	106	12	69
	Clearly audible	3	39	34	39	52	25	26
	Moderately intrusive	0	14	11	14	19	0	7
	Highly intrusive	0	12	12	12	12	0	10
Standard hours: Mon - Fri (7am-6pm), Sat (8am-1pm), Sun/Pub Hol (Nil)								
NCA 8	Noticeable	0	96	80	96	90	6	22
	Clearly audible	0	38	31	38	48	3	20
	Moderately intrusive	0	5	5	5	4	0	3
	Highly intrusive	0	13	13	13	13	0	10
Out of Hours Works Period 2 (OOHW2): Mon - Fri (10pm-7am), Sat (10pm-8am), Sun/Pub Hol (6pm-7am)								
NCA 8	Noticeable	1	114	116	114	111	70	92
	Clearly audible	0	130	119	130	136	12	52
	Moderately intrusive	0	20	19	20	19	3	9

NCA	Perception	Approximate number of residential receivers						
		Scenario 1: Mobilisation and site establishment	Scenario 2: Installation of erosion and sediment controls	Scenario 3: Relocation and protection of existing services	Scenario 4: Bulk earthworks and materials haulage	Scenario 5: Road pavement construction	Scenario 6: Bridge construction	Scenario 7: Finishing works, signposting, lighting and roadside furniture
	Highly intrusive	0	13	13	13	16	0	10

Table 4-9 presented the predicted noise impacts from construction activities to non-residential receivers located within the study area. Predicted exceedance of the relevant noise management level (NML) is shown in red.

Table 4-9: Predicted construction noise impacts – Non-residential receivers

Receiver	NML, dB(A)	Predicted construction noise level, dB(A)						
		Construction scenario						
		1	2	3	4	5	6	7
Schools/Education								
Glendenning Public School	55	26	40	39	40	41	29	35
St. Francis of Assisi Primary School	55	39	57	56	57	58	45	52
William Dean Public School	55	21	32	31	32	33	29	27
St Clare's Catholic High School	55	43	50	49	50	51	44	45
Hassall Grove Public School	55	37	44	43	44	45	38	39
Places of worship								
Baitul Huda Mosque	55	64	72	71	72	73	41	67
Active recreation								
Glendenning Reserve (sports field and tennis courts)	65	29	41	40	41	42	34	36
Joe McAleer Park	65	25	35	34	35	36	30	30
Western Raptors Rugby Club	65	43	50	49	50	51	44	45
Baitul Huda Mosque sports fields	65	53	74	73	74	75	39	69
Passive recreation								
Blacktown Native Institute Site	60	60	75	75	75	75	74	72
Community centres								
Glendenning Neighbourhood Centre	55	31	41	40	41	42	34	36
Hassall Grove Neighbourhood Centre	55	40	42	41	42	43	37	37
Offices, retail outlets								
Retail outlets fronting/backing onto Richmond Road	70	45	80	79	80	81	34	75
Childcare								
Kinda-Mindi Early Learning Centre	50	34	47	46	47	48	40	42
Busy Bees Long Day Care	50	29	71	70	71	72	44	66

Receiver	NML, dB(A)	Predicted construction noise level, dB(A)						
		Construction scenario						
		1	2	3	4	5	6	7
Kids' Early Learning Dean Park	50	22	32	31	32	33	26	27
Bright Beginnings Learning Centre	50	35	49	48	49	50	41	44
Goodstart Early Learning Oakhurst	50	21	27	26	27	28	19	22
Kids' Early learning Hassall Grove	50	39	42	41	42	43	37	37
Prepare Early Education Centre Greenway Village	50	39	49	48	49	50	37	44
Great Beginnings Marsden Park	50	36	53	52	53	54	31	48
Young Academics Early Learning Centre	50	27	49	50	49	50	25	44

The majority of predicted exceedances for non-residential receivers are expected for locations fronting or backing onto Richmond Road, adjacent to the proposed construction works. Minor exceedances may also be predicted for receivers located further back from Richmond Road where construction works at intersections extend into side roads. To further reduce construction noise impacts, TfNSW's CNVG-R provides Standard Mitigation Measures, which are presented in Appendix F of this report.

4.8.1 Sleep disturbance

The CNVG-R recommends an external sound pressure level of L_{Amax} 65 dB(A) for nighttime works. Table 4-10 presents approximate offset distances for each construction scenario for night-time works.

Review of the noise monitoring data indicates that residential receivers located in close proximity to Richmond Road are already affected by maximum noise impacts of greater than 65dB(A) during the nighttime period, likely related to existing road traffic.

Table 4-10: Approximate distance from construction works to receiver – Sleep disturbance L_{Amax} 65 dB(A)

Time	Approximate distance from construction works to receiver (metres)*						
	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7
Night-time 10pm – 7am (Mon-Sun)	90	180	180	140	180	90	125

**The offset distances are based on direct line of sight or minimal screening to the construction works. These distances may be increased where residential receivers are heavily screened by other buildings or structures.*

4.8.2 Construction traffic impacts

A screening assessment was conducted to determine whether traffic associated with the construction is predicted to increase existing traffic noise levels by more than 2dB(A). The assessment considered the traffic and haulage information provided in Table 4-1.

Table 4-11: Construction traffic noise impact inputs and assumptions

Compound	Haulage route/access	Existing traffic volumes
1. Richmond Road (adjacent Colebee Crescent)	Richmond Road southeast	Richmond Road: • Refer to Table 3-7
2. M7 (adjacent Rooty Hill Road North)	M7 off-ramp and Rooty Hill Road North (northeast direction)	M7 off-ramp: • Refer to Table 3-8 Rooty Hill Road North:

Compound	Haulage route/access	Existing traffic volumes
		• Refer to Table 3-7
3. Adjacent Newnham Street	From Richmond Road via Yarramundi Drive, Durward Street, Raupach Street, and Newnham Street	Approximately 120 vehicle movements per day (worst case scenario based on number of dwellings at the northern end of Newnham Street). HV <1%

The results of the screening assessment are summarised below:

Compounds 1 and 2 are proposed to be used for plant/equipment storage, stockpiling, truck deliveries etc. Based on the existing high traffic volumes on the surrounding road network, any predicted increase in traffic noise levels would be due to the increase in the percentage of heavy vehicles as a result of these compounds.

Based on the high traffic volumes on the surrounding road network, the number of heavy vehicles associated with each compound (1 & 2) during the daytime period (7am-10pm) would need to average over 400 trucks per hour per compound to increase traffic noise levels by more than 2dB(A). Similarly, for the night-time period (10pm-7am), the number of heavy vehicles associated with each compound would need to be over 120 truck movements per hour per compound during the night-time period.

Given the nature of this construction project, these volumes of heavy vehicles are highly unlikely.

Compound 3 is proposed to be used for staff parking and site offices, with no heavy vehicle access. Therefore, any predicted increase in traffic noise levels would be due to the increase in overall traffic volumes on the local road network as a result of the compound access.

Based on the estimated daily traffic volumes for the quietest section of the access route (i.e Newnham Street) and the cumulative noise impact from the M7 during the lowest $L_{eq(1hr)}$ period, approximately 12 vehicles movements during any one hour of the night-time period could increase noise levels by more than 2dB(A). Given the proposed 24-hour use of the compound, these traffic volumes could be reached especially during the busiest one-hour periods (e.g. shift changes). Therefore, a further assessment would be required in accordance with TfNSW's Road Noise Criteria Guideline for the Newnham Street compound.

4.9 Mitigation

Standard recommendations for construction noise mitigation (as outlined in Appendix B of the CNVG-R) are provided in Appendix F of this report.

4.9.1 Hours of operation

Where possible, carry out works within standard hours as follows:

- 7am-6pm Monday to Friday, 8am-1pm Saturdays and no work on Sundays or public holidays

However, to minimise traffic disruption and to provide a safe working environment, it would be necessary to carry out a large portion of the works outside of standard construction hours, including the potential for some works to be undertaken up to five nights per week.

Construction activities with the potential for significant impacts should be discouraged, if possible, during the night-time period.

If night work is essential for road safety reasons, the use of high impact machinery such as pile-driving, vibratory rollers and impact devices (rock breakers and jackhammers) should be avoided where possible for night work construction in residential or other noise and vibration sensitive areas. Where night work is required in the vicinity of residential or other sensitive sites, careful planning is required, and a higher level of control is recommended to mitigate potential complaints of sleep disturbance. Refer to Section 4.9.3 and Appendix F for further mitigation measures.

4.9.2 Construction traffic

It is predicted that construction traffic associated with Compound 3 (adjacent Newnham Street) may potentially increase existing traffic noise levels by more than 2dB(A). Therefore, a further assessment would be required in accordance with TfNSW's Road Noise Criteria Guideline for the Newnham Street compound.

4.9.3 Construction stage specific mitigation

The CNVG-R stipulates that additional noise management measures may be required where noise levels are predicted to exceed the noise management levels.

The range of additional mitigation measures include, but are not limited to:

- Notification via letterbox or phone call
- Respite periods
- Alternative accommodation.

Identification of where additional mitigation measures may be required is based on the information presented below in Table 4-12.

Table 4-12: Triggers for additional mitigation measures – airborne noise

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

Predicted airborne LAeq(15min) noise level at receiver			Type of additional mitigation measures	Mitigation levels
Perception	dB(A) above RBL	dB(A) above NML		
Notes: *AA = Alternative Accommodation* *V = Verification* *IB = Individual Briefings* *N = Notification* *PC = Phone Calls* *SN = Specific Notifications*		*R1 = Respite Period 1* *R2 = Respite Period 2* *RO = Respite Offers* *DR = Duration Respite* *Perception = relates to level above RBL* *NML = Noise Management Level* *HA = Highly Affected ≥75 dB(A)*		

These additional mitigation measures may be required where noise levels are predicted to exceed the noise management levels. Refer to noise contour maps in Appendix D for areas where this is predicted to occur for each construction scenario.

A detailed description of each additional mitigation measure is presented below.

Notification (N)

Advanced warning of works and potential disruptions can assist in reducing the impact on the community. The notification may consist of a letterbox drop (or equivalent) detailing work activities, time periods over which these will occur, impacts and mitigation measures. Notification should be a minimum of five working days prior to the start of works. The approval conditions for projects may also specify requirements for notification to the community about works that may impact on them.

Specific notifications (SN)

Specific notifications are letterbox dropped (or equivalent) to identified stakeholders no later than seven calendar days ahead of construction activities that are likely to exceed the noise objectives. The specific notification provides additional information when relevant and informative to more highly affected receivers than covered in general letterbox drops.

The exact conditions under which specific notifications would proceed are defined in the CNVG-R. This form of communication is used to support periodic notifications, or to advertise unscheduled works.

Phone calls (PC)

Phone calls detailing relevant information made to identified/affected stakeholders within seven calendar days of proposed work. Phone calls provide affected stakeholders with personalised contact and tailored advice, with the opportunity to provide comments on the proposed work and specific needs. Where the resident cannot be telephoned then an alternative form of engagement should be used.

Individual briefings (IB)

Individual briefings are used to inform stakeholders about the impacts of high noise activities and mitigation measures that will be implemented. Project representatives would visit identified stakeholders at least 48 hours ahead of potentially disturbing construction activities. Individual briefings provide affected stakeholders with personalised contact and tailored advice, with the opportunity to comment on the project. Where the resident cannot be met with individually, then an alternative form of engagement should be used.

Respite offers (RO)

Respite Offers should be considered where there are high noise and vibration generating activities near receivers. As a guide work should be carried out in continuous blocks that do not exceed 3 hours each, with a minimum respite period of one hour between each block. The actual duration of each block of work and respite should be flexible to accommodate the usage of and amenity at nearby receivers.

The purpose of such an offer is to provide residents with respite from an ongoing impact. This measure is evaluated on a project-by-project basis and may not be applicable to all projects.

Respite period 1 (R1)

Out of hours construction noise in out of hours period 1 shall be limited to no more than three consecutive evenings per week except where there is a Duration Respite. Work during these periods should be separated by not less than one week and no more than 6 evenings per month.

Respite period 2 (R2)

Nighttime construction noise in out of hours period 2 shall be limited to two consecutive nights except for where there is a Duration Respite. For night work these periods of work should be separated by not less than one week and 6 nights per month. Where possible, high noise generating works shall be completed before 11pm.

Duration respite (DR)

Respite offers and respite periods 1 and 2 may be counterproductive in reducing the impact on the community for longer duration projects. In this instance and where it can be strongly justified it may be beneficial to increase the work duration, number of evenings or nights worked through Duration Respite so that the project can be completed more quickly.

The project team should engage with the community where noise levels are expected to exceed the NML to demonstrate support for Duration Respite.

Where there are few receivers above the NML each of these receivers should be visited to discuss the project to gain support for Duration Respite.

Alternative accommodation (AA)

Alternative accommodation options may be offered to residents living in close proximity to construction works that are likely to experience highly intrusive noise levels. The specifics of the offer will be identified on a project-by-project basis. Additional aspects for consideration shall include whether the highly intrusive activities occur throughout the night or before midnight.

Verification (V)

Please see Appendix F of the CNVG-R for more details about verification of noise and vibration levels as part of routine checks of noise levels or following reasonable complaints. This verification should include measurement of the background noise level and construction noise. Note that this is not required for projects of less than three weeks unless to assist in managing complaints.

5. Construction vibration assessment

5.1 Construction vibration criteria

5.1.1 Construction Noise and Vibration Guideline (CNVG-R)

The TfNSW *Construction Noise and Vibration Guideline (Roads)* (TfNSW, 2023) (CNVG-R) provides a framework for the assessment of vibration during the construction phase of the project. The CNVG-R references the following documents to provide the criteria for the assessment of construction vibration impacts:

- *Interim Construction Noise Guideline* (DECC, 2009) (ICNG)
- *Assessing Vibration – A Technical Guideline* (DEC, 2006) (AV:ATG)

The CNVG-R provides recommended minimum separation distances between vibration intensive plant and sensitive receivers for minimising the risk of cosmetic damage. The CNVG-R further states that the minimum working distance for cosmetic damage must be complied with at all times, unless otherwise approved by TfNSW or under the environmental licence as relevant. The minimum working distances are summarised in Table 5-4.

5.1.2 Assessing Vibration – A Technical Guideline

Vibration from activities associated with the project could potentially impact on the amenity of the occupants of dwellings or buildings located close to the site. Generally, vibration impact can be summarised into two categories:

- Effect on human comfort
- Structural or cosmetic damage to buildings.

Human comfort vibration criteria is addressed in the ICNG and refers to Section 2.5 of the document *Assessing Vibration: A Technical Guideline* (NSW AV:ATG) issued by DEC (2006). The AV:ATG outlines vibration limits in relation to human comfort. Criteria in this guideline are based on the British Standard BS6472-1992 Evaluation of human exposure to vibration in buildings (1-80Hz). Vibration sources are defined as Continuous, Impulsive or Intermittent. Table 5-1 provides a definition and examples of each type of vibration.

Table 5-1: Types of vibration

Type of vibration	Definition	How to apply
Continuous	Continues uninterrupted for a defined period (usually throughout the daytime and/or night-time).	Machinery, steady road traffic, continuous construction activity (such as tunnel boring machinery).
Impulsive	A rapid build-up to a peak followed by a damped decay that may or may not involve several cycles of vibration (depending on frequency and damping). It can also consist of a sudden application of several cycles at approximately the same amplitude, providing that the duration is short, typically less than 2 seconds.	Infrequent activities that create up to three distinct vibration events in an assessment period, e.g. occasional dropping of heavy equipment, occasional loading and unloading.
Intermittent	Can be defined as interrupted periods of continuous or repeated periods of impulsive vibration that varies significantly in magnitude.	Trains, nearby intermittent construction activity, passing heavy vehicles, forging machines, impact pile driving, jack hammers. Where the number of vibration events in an assessment period is three or fewer, this would be assessed against impulsive vibration criteria.

The criteria are to be applied to a single weighted root mean square (rms) acceleration source level in each orthogonal axis. Section 2.3 of the guideline states:

"Evidence from research suggests that there are summation effects for vibrations at different frequencies. Therefore, for evaluation of vibration in relation to annoyance and comfort, overall weighted rms acceleration values of the vibration in each orthogonal axis are preferred (BS 6472).'

When applying the criteria, it is important to note that vibration may enter the body along different orthogonal axes, i.e. x-axis (back to chest), y-axis (right side to left side) or z-axis (foot to head). The three axes are referenced to the human body. Thus, vibration measured in the horizontal plane should be compared with x- and y-axis criteria if the concern is for people in an upright position, or with the y and z- axis criteria if the concern is for people in the lateral position.

Preferred and maximum values for continuous and impulsive vibration are defined in Table 2.2 of the guideline and are reproduced in Section 5.2 of this report.

5.1.3 German Standard DIN 4150 (Building Damage)

In relation to structural damage, there is currently no Australian Standard that provides criteria for the assessment of structural damage to buildings. However, the German Standard DIN 4150-3: 1999-02 - *'Structural vibration - Effects of vibration on structures'*, provides recommended maximum levels of vibration that reduce the likelihood of building damage caused by vibration. This standard also presents recommended maximum limits over a range of frequencies measured in any direction at the foundation or in the plane of the uppermost floor.

These criteria are summarised in Section 5.2.

5.2 Construction vibration design objectives

Vibration from construction activities associated with the project could potentially impact on the amenity of the occupants of dwellings or buildings located close to the construction works. Generally, vibration impact can be summarised into two categories:

- Effect on human comfort
- Structural or cosmetic damage to buildings.

The vibration criteria is addressed in Section 2.5 of the document *Assessing Vibration: A Technical Guideline* (AVATG) issued by DEC (2006). The AVATG outlines vibration limits in relation to human comfort. Criteria in this guideline are based on the British Standard BS6472-1992 *Evaluation of human exposure to vibration in buildings (1-80Hz).* A summary of these criteria are detailed in Section 5.2.1.

In relation to structural damage, there is currently no Australian Standard that provides criteria for the assessment of structural damage to buildings. However, the German Standard DIN4150 Part 3 can be used to assess structural damage to buildings and provides maximum vibration levels, which are assessed over a frequency range. These criteria are summarised in Section 5.2.2.

5.2.1 BS6472-1992 Evaluation of human exposure to vibration in buildings (1-80Hz)

The vibration criteria for human comfort that apply to this project are presented in Table 5-2.

Table 5-2: Preferred and maximum levels for human comfort

Location	Assessment period	Preferred values		Maximum values	
		z-axis	x & y- axis	z-axis	x & y- axis
Continuous vibration[3] (Weighted RMS Acceleration, m/s^2, 1-80Hz)					
Critical areas[2]	Day or night-time	0.005	0.0036	0.010	0.0072
Residences	Daytime	0.010	0.0071	0.020	0.014
	Night-time	0.007	0.005	0.014	0.010

Location	Assessment period	Preferred values		Maximum values	
		z-axis	x & y- axis	z-axis	x & y- axis
Offices, schools, educational institutions and places of worship	Day or night-time	0.020	0.014	0.040	0.028
Workshops	Day or night-time	0.04	0.029	0.080	0.058
Impulsive vibration[3] (Weighted RMS Acceleration, m/s^2, 1-80Hz)					
Critical areas[2]	Day or night-time	0.005	0.0036	0.010	0.0072
Residences	Daytime	0.30	0.21	0.60	0.42
	Night-time	0.10	0.071	0.20	0.14
Offices, schools, educational institutions and places of worship	Day or night-time	0.64	0.46	1.28	0.92
Workshops	Day or night-time	0.64	0.46	1.28	0.92
Intermittent vibration[4] (Vibration Dose Values, VDV, $m/s^{1.75}$, 1-80Hz)					
Critical areas[2]	Day or night-time	0.10	0.20	-	-
Residences	Daytime	0.20	0.40	-	-
	Night-time	0.13	0.26	-	-
Offices, schools, educational institutions and places of worship	Day or night-time	0.40	0.80	-	-

Notes: *1. Daytime is 7.00 am to 10.00 pm and night-time is 10.00 pm to 7.00 am*
2. Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring. There may be cases where sensitive equipment or delicate tasks require more stringent criteria than the human comfort criteria specify above.
3. Stipulation of such criteria is outside the scope of their policy and other guidance documents (e.g. relevant standards) should be referred to. Source: BS 6472-2008
4. For continuous and impulsive vibration, the preferred and maximum values are weighted acceleration rms values (m/s^2)
5. For intermittent vibration the preferred and maximum values are vibration dose values (VDVs), based on the weighted acceleration values ($m/s^{1.75}$)

5.2.2 DIN 4150.3 Building Damage Criteria

The minimum 'safe limit' of vibration at low frequencies for buildings are presented in DIN 4150.3, as reproduced in Table 5-3 below.

Table 5-3: DIN 4130-3 Structural damage criteria

Group	Type of structure	Vibration Velocity, mm/s			
		At Foundation at frequency of			Plane of floor uppermost storey
		1 to 10 Hz	10 to 50 Hz	50 to 100 Hz	All frequencies
1	Buildings used for commercial purposes, industrial buildings and buildings of similar design	20	20 - 40	40 - 50	40

Group	Type of structure	Vibration Velocity, mm/s			
		At Foundation at frequency of			Plane of floor uppermost storey
		1 to 10 Hz	10 to 50 Hz	50 to 100 Hz	All frequencies
2	Dwellings and buildings of similar design and/or use	5	5 - 15	15 - 20	15
3	Structures that, because of their particular sensitivity to vibration, do not correspond to those listed in Group 1 or 2 and have intrinsic value (e.g. buildings under a preservation order)	3	3 - 8	8 - 10	8
***Note*:**	*At frequencies above 100 Hz, the values given in this column may be used as minimum values.*				

5.3 Construction vibration impact assessment

For the purposes of this assessment, the following proposed plant with the potential to generate the most vibration would need to be considered:

- Bored piling
- Rollers and compactors
- Pneumatic drilling
- Excavating equipment
- Loaded truck movements

Construction vibration levels vary depending on the distance from the equipment in use, the energy level imparted to the ground by the construction process, and the bedrock type. The highest vibration sources associated with the construction work would be piling, and vibratory rollers and compactors.

The minimum working distance for vibration intensive plant from sensitive receivers is listed in Table 2 of the CNVG-R. Table 5-4 presents these recommended minimum working distances for specific construction activities.

Table 5-4: Recommended minimum work distances for vibration intensive plant from sensitive receivers

Plant item	Rating/description	Minimum working distance		
		Cosmetic damage (BS 7385)	Cosmetic damage (DIN 4150) Heritage and other sensitive structures	Human response (OH&E Vibration Guideline)
Vibratory roller	< 50 kN (Typically 1-2 tonnes)	5 m	14 m	15 m to 20 m
	< 100 kN (Typically 2-4 tonnes)	6 m	16 m	20 m
	< 200 kN (Typically 4-6 tonnes)	12 m	33 m	40 m
	< 300 kN (Typically 7-13 tonnes)	15 m	41 m	100 m
	> 300 kN (Typically 13-18 tonnes)	20 m	54 m	100 m
	> 300 kN (> 18 tonnes)	25 m	68 m	100 m
Small Hydraulic Hammer	(300 kg - 5 to 12t excavator)	2 m	5 m	7 m
Medium Hydraulic Hammer	(900 kg – 12 to 18t excavator)	7 m	19 m	23 m
Large Hydraulic Hammer	(1600 kg – 18 to 34t excavator)	22 m	60 m	73 m
Vibratory Pile Driver	Sheet Piles	2 m to 20 m	50 m	20 m
Pile Boring	≤ 800 mm	2 m (nominal)	40 m	4 m
Jackhammer	Handheld	1 m (nominal)	2 m	2 m

The minimum working distances are indicative and will vary depending on the particular item of plant, local geotechnical conditions and the dominant frequency of the construction vibration levels. They apply to cosmetic damage of typical light-framed residential buildings and heritage/fragile buildings and assume that construction vibration could include low frequency content with associated increased risk of cosmetic damage. Contour maps showing the minimum working distances for cosmetic damage for the largest plant and equipment are shown in Appendix E of this report.

For high vibration sources, vibration monitoring is recommended to confirm the minimum working distances at specific site locations. Additionally, further detailed analysis based on the frequency dependent guideline vibration levels in BS7385-2:1993 and DIN4150-3:2016 may be utilised in conjunction with site-specific measurements to derive alternative cosmetic damage objectives and minimum working distances. For heritage listed / fragile structures, specialist advice from an appropriately qualified structural engineer who is familiar with heritage structures is required to support any proposed relaxation of the initial cosmetic damage screening criterion.

Furthermore, it is also recommended that the contractor undertakes a 'Before You Dig Australia' search to determine the location of any underground services which may be sensitive to vibration impacts.

5.3.1 Heritage structures

The following heritage items are located in proximity to the proposal (refer Figure 5-1):

- Blacktown Native Institution (BNI) (SHR No. 01866)
- Colebee and Nurragingy Land Grant (SHR No. 01877)

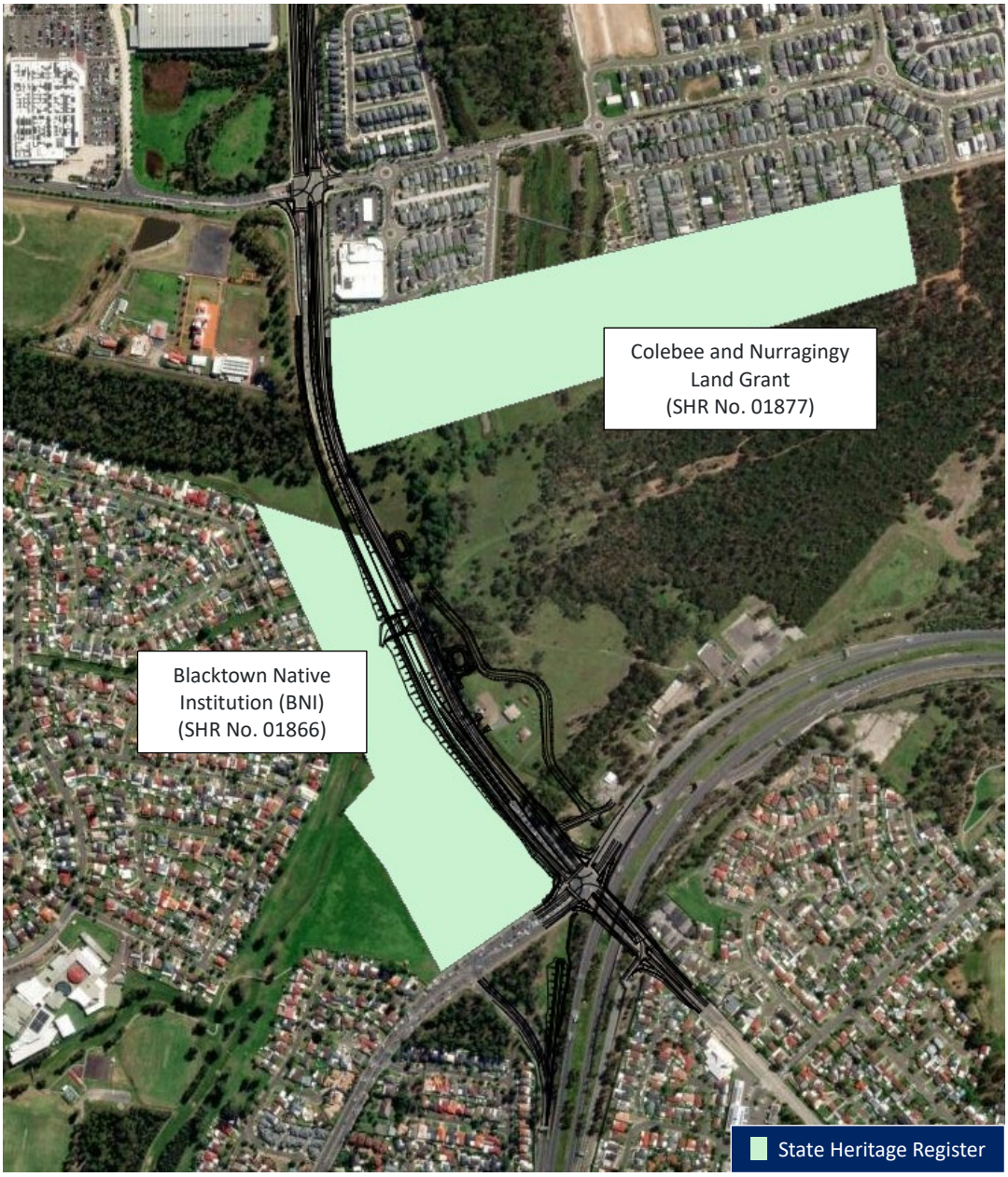


Figure 5-1: Heritage items in proximity to the proposal

The Colebee and Nurragingy Land Grant (SHR No. 01877) site is predominantly an undeveloped parcel of rural land and contains no heritage buildings or structures to be potentially impacted by construction vibration.

The Blacktown Native Institution (BNI) (SHR No. 01866) site contains archaeological remains and structures and therefore may potentially be impacted by construction vibration. If works are proposed at less than safe working distances in Table 5-4 for heritage listed items, specialist advice should be sought from an appropriately qualified structural engineer who is familiar with heritage structures to support any proposed relaxation of the initial cosmetic damage screening criterion. Any such relaxation shall be approved by EPA or under the environmental license as relevant.

5.4 Mitigation

Standard recommendations for construction vibration mitigation (as outlined in Appendix B of the CNVG-R) are provided in Appendix F of this report.

6. Conclusion

A Noise and Vibration Assessment has been conducted for the Richmond Road widening proposal, from Yarramundi Drive to Townson Road. The findings of the assessment are summarised as follows:

6.1 Noise monitoring

- Noise monitoring was undertaken at 10 locations between 27 February and 7 March 2024.
- Seven (7) noise monitoring locations were selected to measure traffic noise and background levels, and a further three (3) were selected to measure background noise levels only (to establish construction noise management levels).
- Noise monitors for road traffic noise were generally within 10-30 metres from the nearest lane of traffic, with traffic noise found to dominate the acoustic environment at these locations.

6.2 Operational road traffic noise

Operational road traffic noise has been assessed for the year of opening (2028) and the design year (2038). The results of the operational road traffic noise assessment can be summarised as follows:

- Operational noise modelling was undertaken with SoundPLAN and was verified against the measured traffic noise levels. The validated model is tending to over-predict the measured daytime traffic noise levels by 1.5 dBA and the measured nighttime traffic noise levels by 1.2 dBA.
- Based on the predicted road traffic noise levels, 109 residential and 3 non-residential receiver locations qualify for the consideration of mitigation.
- For all receivers, traffic noise impacts are not predicted to increase by more than 2 dBA. Receivers that qualify for the consideration of mitigation do so due to exceedances of the cumulative or acute criteria.
- Receivers qualifying for the consideration of mitigation predominantly consist of dwellings with pre-existing exposure to Richmond Road. For receivers in NCAs 4, 7, and 8, the traffic stream will not be significantly closer to the receivers. The maximum noise levels assessment found that maximum noise level events are unlikely to increase as a result of the project.
- The alignment of Richmond Road will move closer to residents within NCA 5 (Colebee Crescent residents). A number of receivers qualify for the consideration of mitigation in this area due to exceedance of the cumulative criteria. Residents in NCA 5 may also experience slightly louder (i.e., 1-2 dBA) maximum noise level events due to the traffic stream moving from 145 metres to 115 metres away.
- Mitigation measures for the receivers qualifying for the consideration of mitigation may include noise walls and/or at property treatments. Any treatments to be implemented as part of the project will be determined as the design of the project progresses.

6.3 Construction noise and vibration

Construction noise and vibration was assessed in accordance with CNVG-R with construction activities potentially impacting residents and other receivers within the assessment. The findings of the assessment are summarised as follows:

- In accordance with the criteria stipulated in Section 4.1, residential dwellings exposed to levels above the daytime RBL +10 dB(A) and above the relevant RBL +5 dB(A) for out-of-hours works (OOHW) are considered noise affected, with construction noise above 75 dB(A) considered highly noise affected. The noise levels are predicted to exceed 75 dB(A) at receivers generally located within approximately 40 metres of the construction works.
- It is expected that construction works would be undertaken within standard hours (Monday to Friday 7.00am to 6.00pm, Saturday 8.00am to 1.00pm) for the majority of the project, however, there may be some instances

where works outside of standard hours may be required. Works occurring outside of standard hours may require further management controls in order to reduce noise impacts.

- There is the potential for some works to be undertaken up to 5 nights per week. Depending on the night program, the relevant respite mitigation measures should be implemented. Refer to Section 4.9.3 of this report and Appendix C of the CNVG-R.
- Noise levels for all modelled scenarios are predicted to exceed the ICNG management levels for standard hours and out of hours at a number of residential properties due to their proximity to the works.
- An indicative L_{Amax} impact assessment has been carried out for works potentially occurring outside of standard hours. Best practice mitigation measures and noise management controls are recommended in Section 4 and Appendix F of this report.
- Construction traffic associated with access to the proposed site office compound adjacent Newnham Street (Compound 3) is predicted to increase traffic noise levels by more than 2dB. Therefore, further assessment would be required in accordance with TfNSW's Road Noise Criteria Guideline for this location.
- Human discomfort may be caused should large vibratory rollers be used within 100 metres of nearby receivers during standard construction hours. Safe work distances for vibratory rolling are provided in Section 5.3. If the listed equipment, including piling, drilling, compactors, etc., operate within the nominated distances in relation to neighbouring structures, vibration monitoring should be undertaken.
- Building damage may occur should large vibratory rollers be used within 20 metres of residential dwellings and within 50 metres of heritage buildings. Where works, including piling, drilling, compactors, etc., are proposed to be close to existing receivers or within the minimum working distance recommendations in Table 5-4, it is recommended that a construction vibration management plan be produced to determine a management methodology to monitor and prevent building damage. This may include provision of pre-construction dilapidation surveys and vibration monitoring during construction.
- The adjacent Blacktown Native Institution (BNI) (SHR No. 01866) heritage site contains archaeological remains and structures and therefore may potentially be impacted by construction vibration. If works are proposed at less than safe working distances in Table 5-4 for heritage listed items, specialist advice should be sought from an appropriately qualified structural engineer who is familiar with heritage structures to support any proposed relaxation of the initial cosmetic damage screening criterion. Any such relaxation shall be approved by the EPA or under the environmental license as relevant.
- Furthermore, it is also recommended that the contractor undertakes a Before You Dig Australia (BYDA) search to determine the location of any underground services which may be sensitive to vibration impacts.

In order to address potential construction noise and vibration impacts, site specific recommendations for managing noise impacts have been provided, in addition to TfNSW's standard mitigation measures provided in Appendix F of this report.

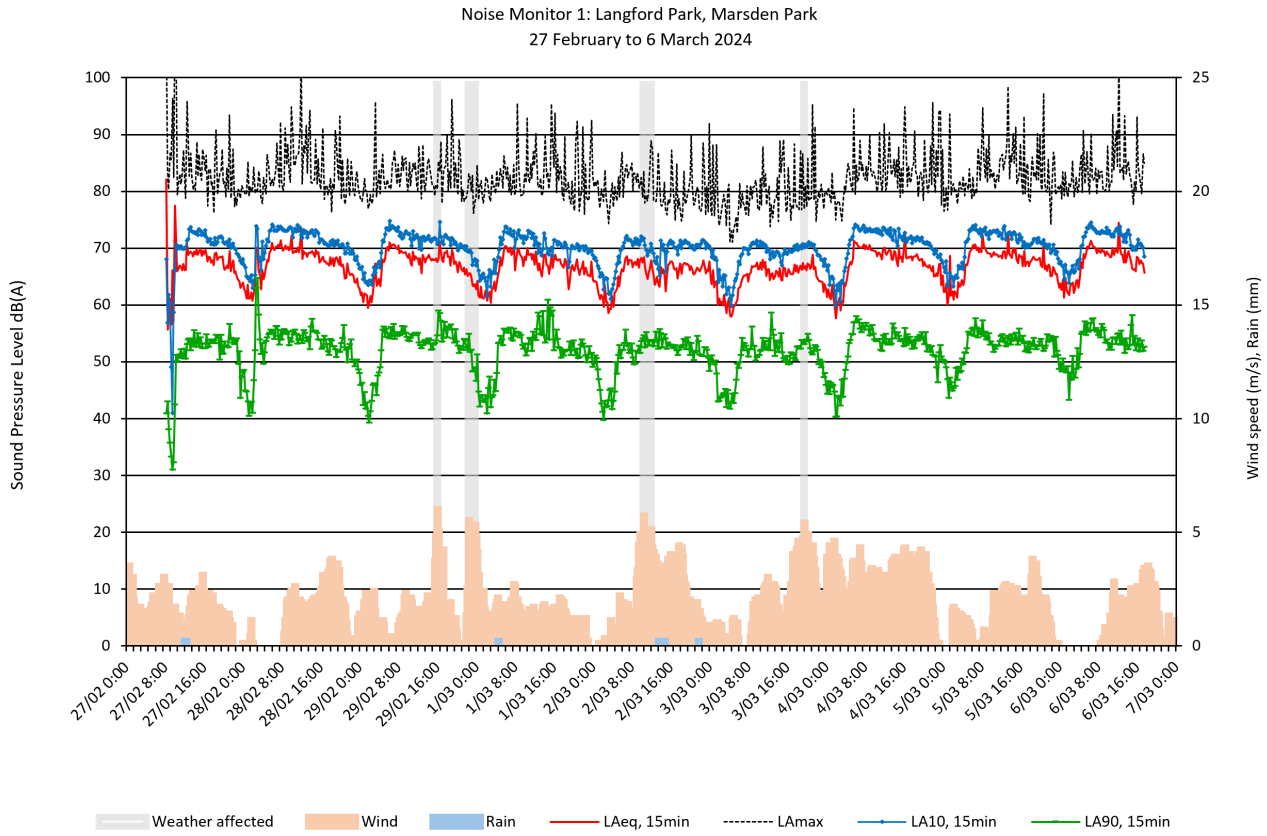
7. Definitions

Term	Definition
A–frequency weighting	A frequency based adjustment made to sound level measurement, by means of an electronic filter, in line with international standards. This approximates the frequency response of the human ear and accounts for reduced sensitivity at low frequency.
Background noise level	The underlying level of noise present in the ambient noise when extraneous noise is removed and excluding noise from the project under consideration. This is described using the L_{A90} descriptor.
CNVG-R	TfNSW's *Construction noise and vibration guideline (for roads)*
Day	Defined as 7am-10pm.
Decibel (dB)	A measure of sound level. The decibel is a logarithmic way of describing a ratio. The ratio may be power, sound pressure, voltage, intensity or other parameters. In the case of sound pressure, it is equivalent to 10 times the logarithm (to base 10) of the ratio of a given sound pressure squared to a reference sound pressure squared.
Decibel (A-weighted; dBA)	Unit used to measure 'A-weighted' sound pressure levels. A-weighting is a frequency-based adjustment made to sound-level measurement to approximate the response of the human ear.
Design year	Typically, 10 years after project opening (refer to EPA Road Noise Policy)
L_{A10}	The A-weighted sound pressure level measured using fast time weighting that is exceeded for 10% of the time over the relevant time period.
L_{A90}	The 'Background Noise Level' in the absence of project activities. This parameter represents the average minimum noise level during the daytime, evening and night-time periods respectively. It is the A-weighted sound pressure level measured using fast time weighting that is exceeded for 90% of the time over the relevant time period.
L_{Aeq}	Energy average A-weighted sound level – the steady sound level that, over a specified period of time, would produce the same energy equivalence as the fluctuating sound level actually occurring.
$L_{Aeq(15hour)}$	The L_{Aeq} noise level between the period of 7am–10pm.
$L_{Aeq(9hour)}$	The L_{Aeq} noise level between the period of 10pm–7am.
L_{Amax}	The 'Maximum Noise Level' for an event, used in the assessment of potential sleep disturbance during night-time periods. The subscript 'A' indicates that the noise levels are filtered to match normal human hearing characteristics (i.e. A-weighted). 'Fast' time constant is used for this measurement.
Night	Defined as 10pm-7am.
RNCG	*Road Noise Criteria Guideline* (TfNSW)
RNMG	*Road Noise Mitigation Guideline* (TfNSW)
REF	Review of Environmental Factors
EIS	Environmental Impact Statement

Appendix A: Noise Monitoring Results

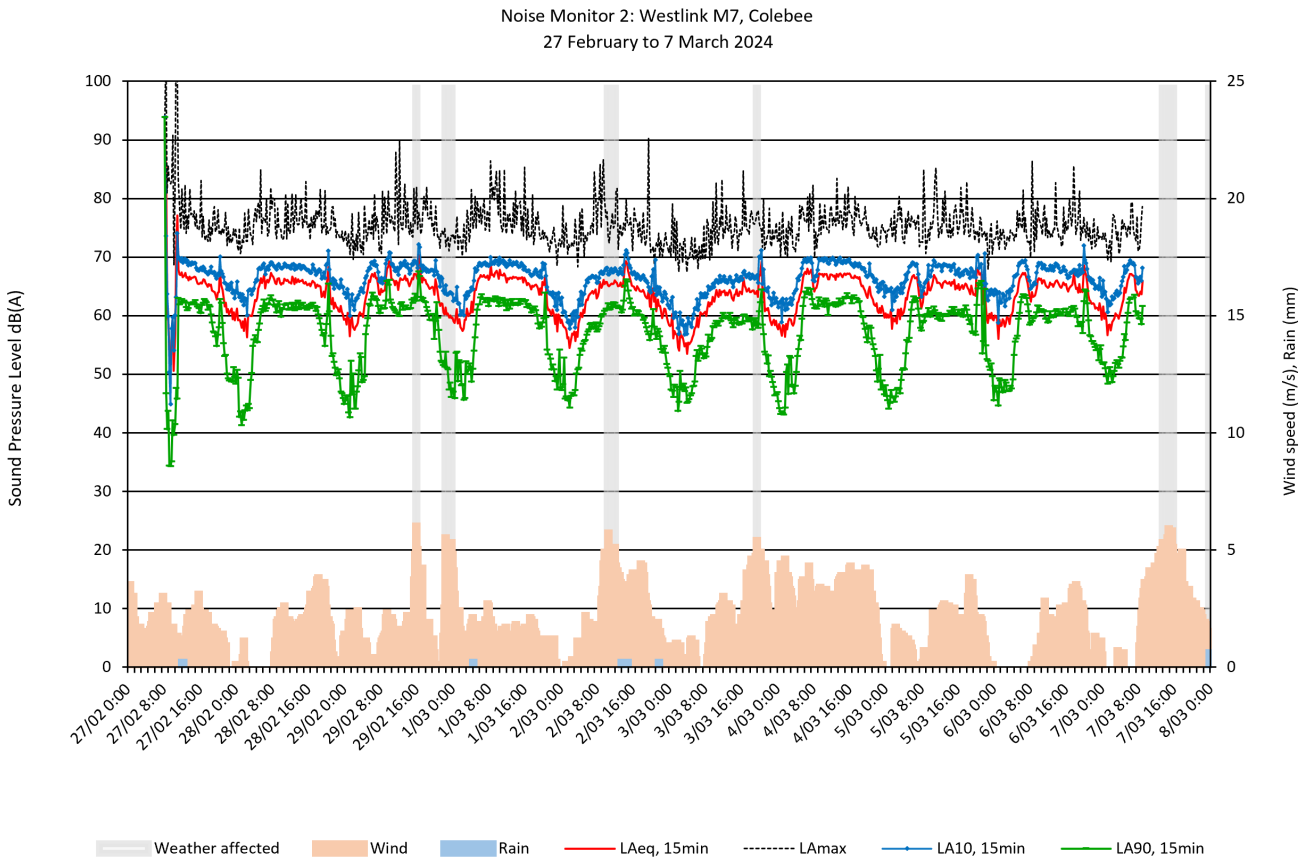
Logger 1: Langford Park, Marsden Park	
Address/Location	Langford Park, Marsden Park (Lot 1072 on DP1190772)
Description	Located at Langford Park, Marsden Park on the western side of Richmond Road, approximately 12 metres from the nearest lane of Richmond Road. The microphone was approximately 1.4 m above ground level.
Logging period	27 February to 6 March 2024
Acoustic environment	Dominant noise source was from traffic on Richmond Road.

Figure A-1: Noise monitoring chart – Logger 1



Logger 2: Westlink M7	
Address/Location	Adjacent Westlink M7 eastbound on-ramp (DP1100854)
Description	Located on the northern side of the Westlink M7 on-ramp at Colebee, approximately 28 metres from the Westlink M7 on-ramp and approximately 40 metres from the northbound lane of the M7. The microphone was approximately 1.4 metres above ground level.
Logging period	27 February to 7 March 2024
Acoustic environment	Dominant noise source was from traffic on the M7 Motorway.

Figure A-2: Noise monitoring chart – Logger 2



Logger 3: 45 Hollinsworth Road, Marsden Park	
Address/Location	45 Hollinsworth Road, Marsden Park (Lot 1 on DP1176437)
Description	Located on the western side of Richmond Road, approximately 16 metres from the nearest lane of Richmond Road. The microphone was approximately 1.4 metres above ground level.
Logging period	27 February to 7 March 2024
Acoustic environment	Dominant noise source was from traffic on Richmond Road, often coming to a stop due to the nearby intersection.

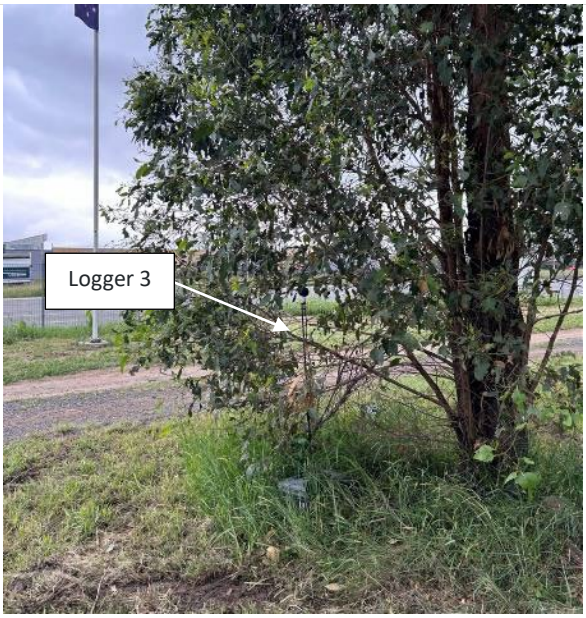
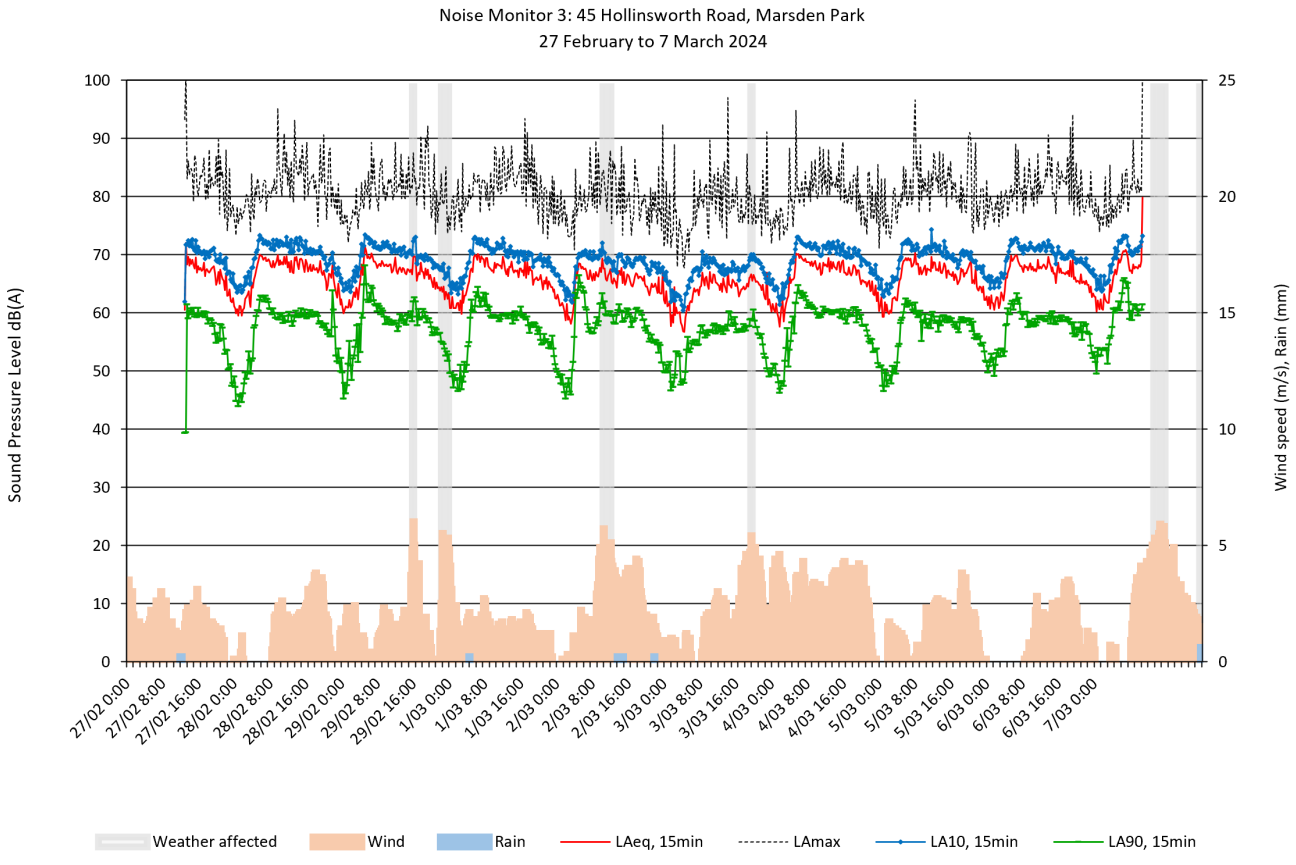


Figure A-3: Noise monitoring chart – Logger 3



Logger 4: Colebee Reserve, Marsden Park	
Address/Location	Lot 481 on DP634363
Description	Located to the north of Colebee Crescent and approximately 150 metres west of Richmond Road. The microphone was approximately 1.4 metres above ground level.
Logging period	27 February to 6 March 2024
Acoustic environment	Distant traffic noise from Richmond Road, birds and insect noise.

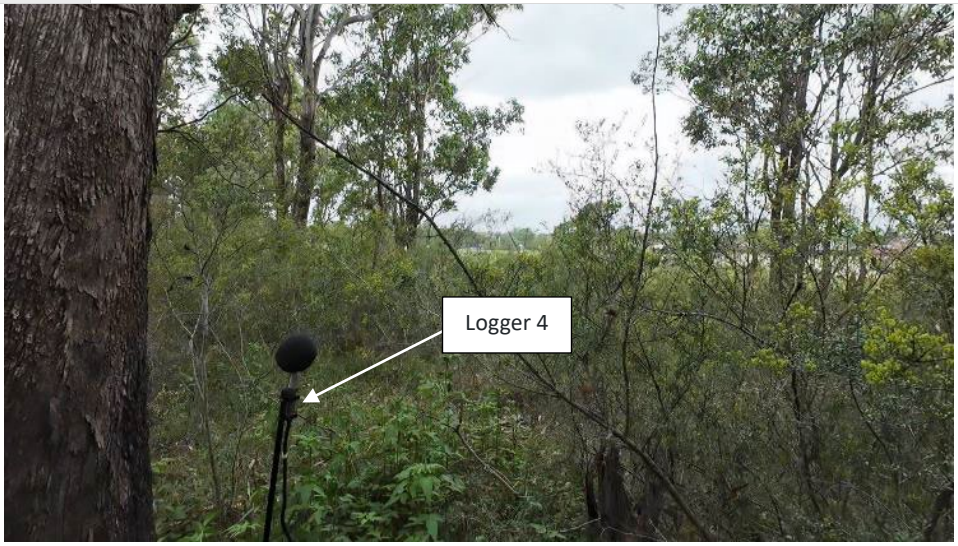
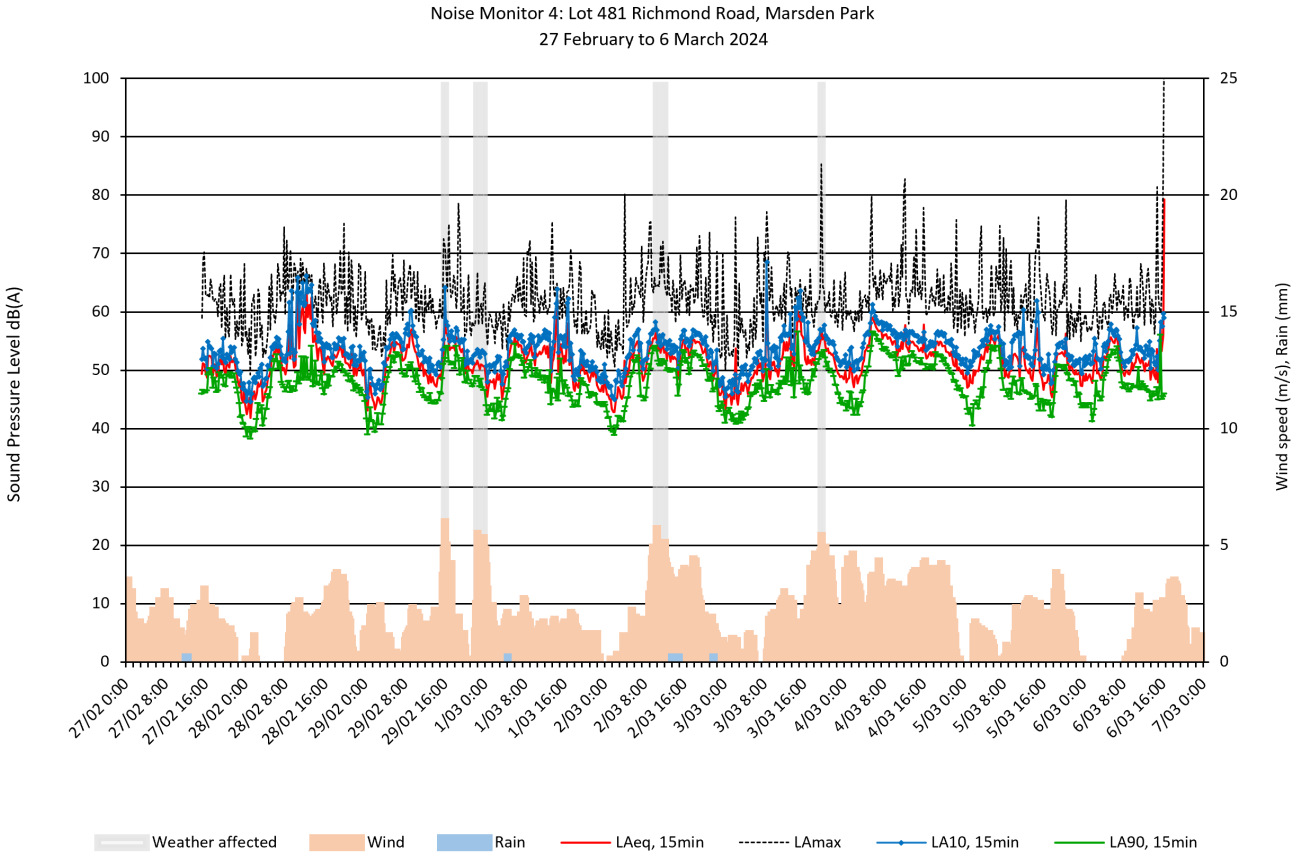
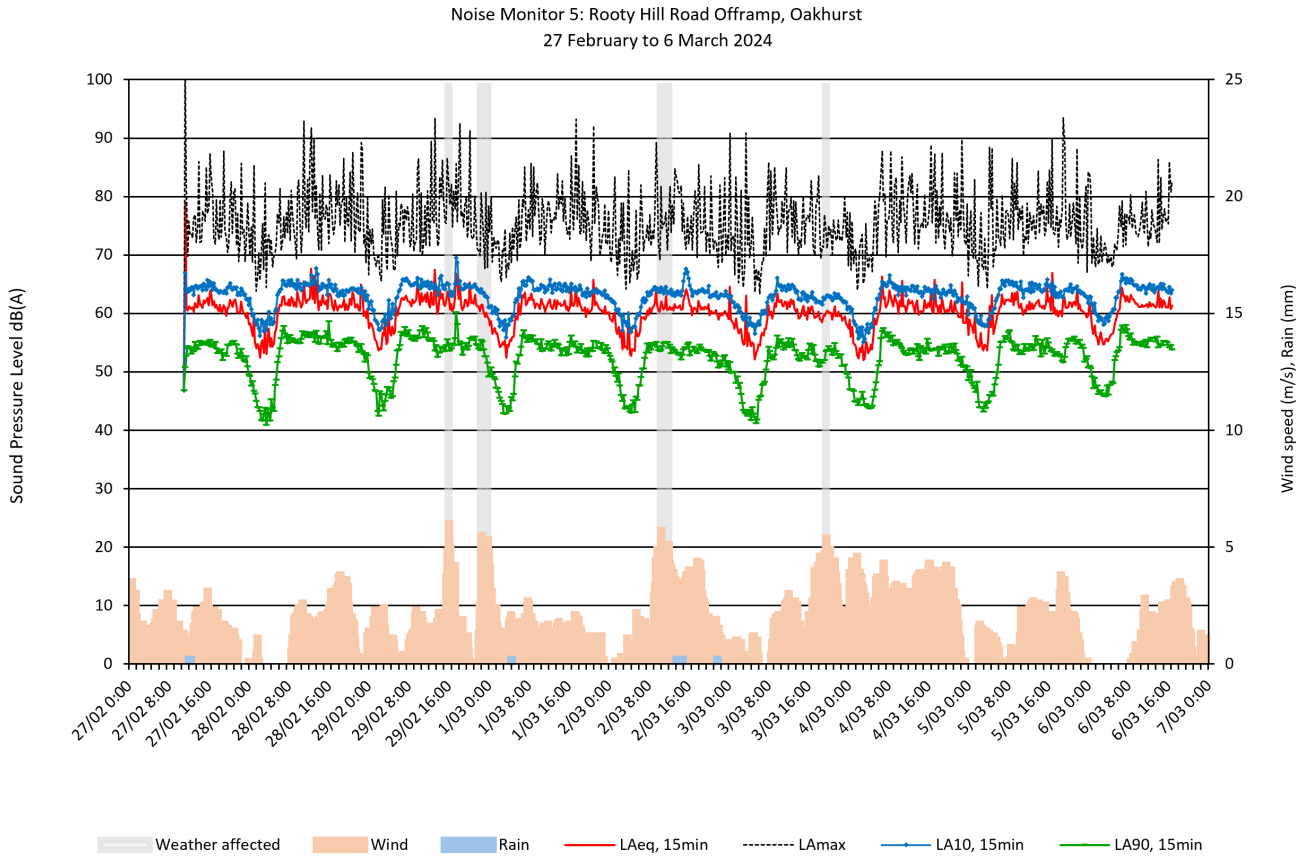


Figure A-4: Noise monitoring charts – Logger 4



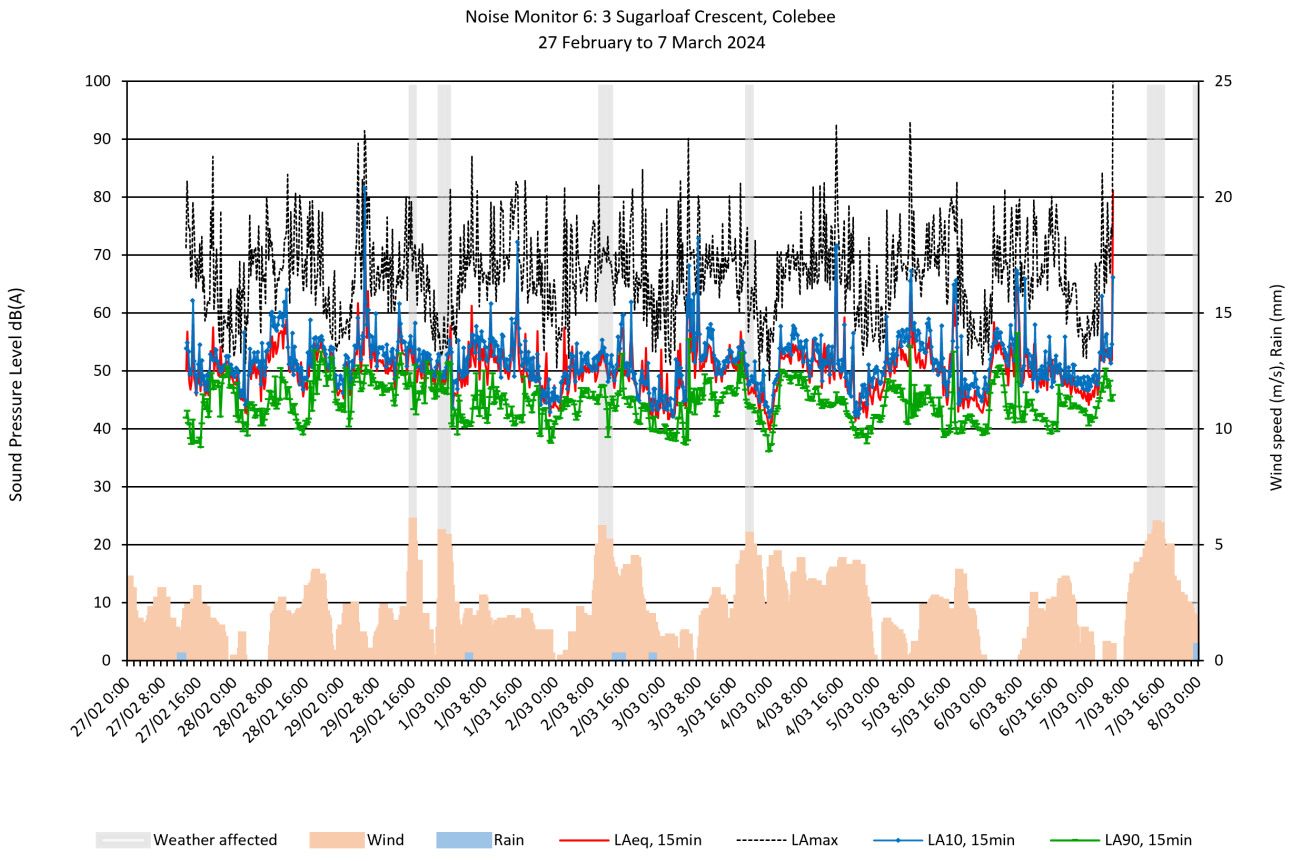
Logger 5: Rooty Hill Road North, Oakhurst	
Address/Location	Lot 50 on DP1123597
Description	Located approximately 33 metres from the nearest lane of Rooty Hill Road North and 53 metres from the nearest lane of the M7 Motorway off-ramp. The logger was also approximately 165 metres west of the northbound lane of the M7 Motorway. The microphone was approximately 1.4 m above ground level.
Logging period	27 February to 6 March 2024
Acoustic environment	Road traffic noise from Rooty Hill Road North and M7 Motorway off-ramp.

Figure A-5: Noise monitoring chart – Logger 5



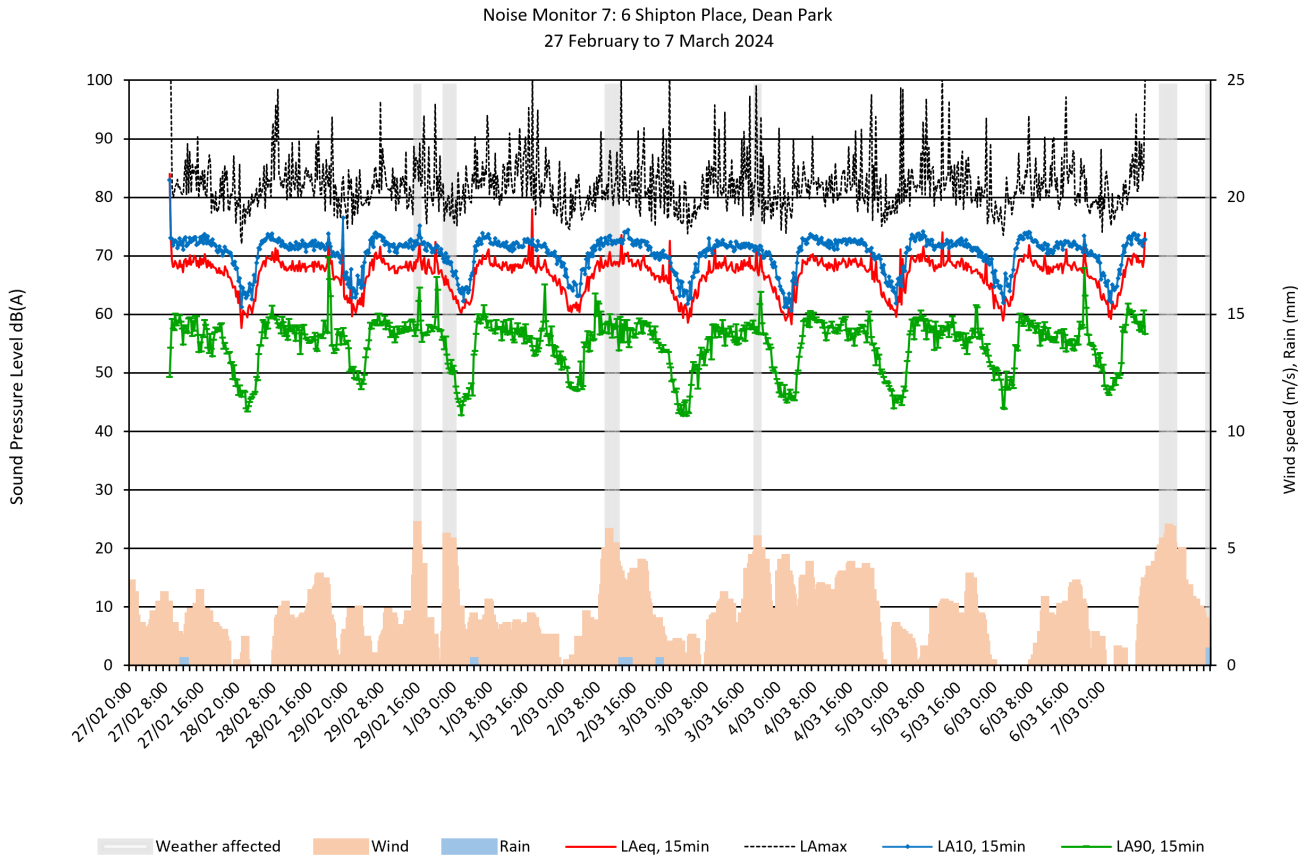
Logger 6: 3 Sugarloaf Crescent, Colebee	
Address/Location	3 Sugarloaf Crescent, Colebee (Lot 38 on DP1187631)
Description	Located in the front yard, approximately 475 metres east of Richmond Road. The microphone was approximately 1.4 metres above ground level.
Logging period	27 February to 7 March 2024
Acoustic environment	Distant traffic noise from Richmond Road and M7 Motorway. Local road traffic and residential activities (landscaping equipment etc.), birds and insects.

Figure A-6: Noise monitoring chart – Logger 6



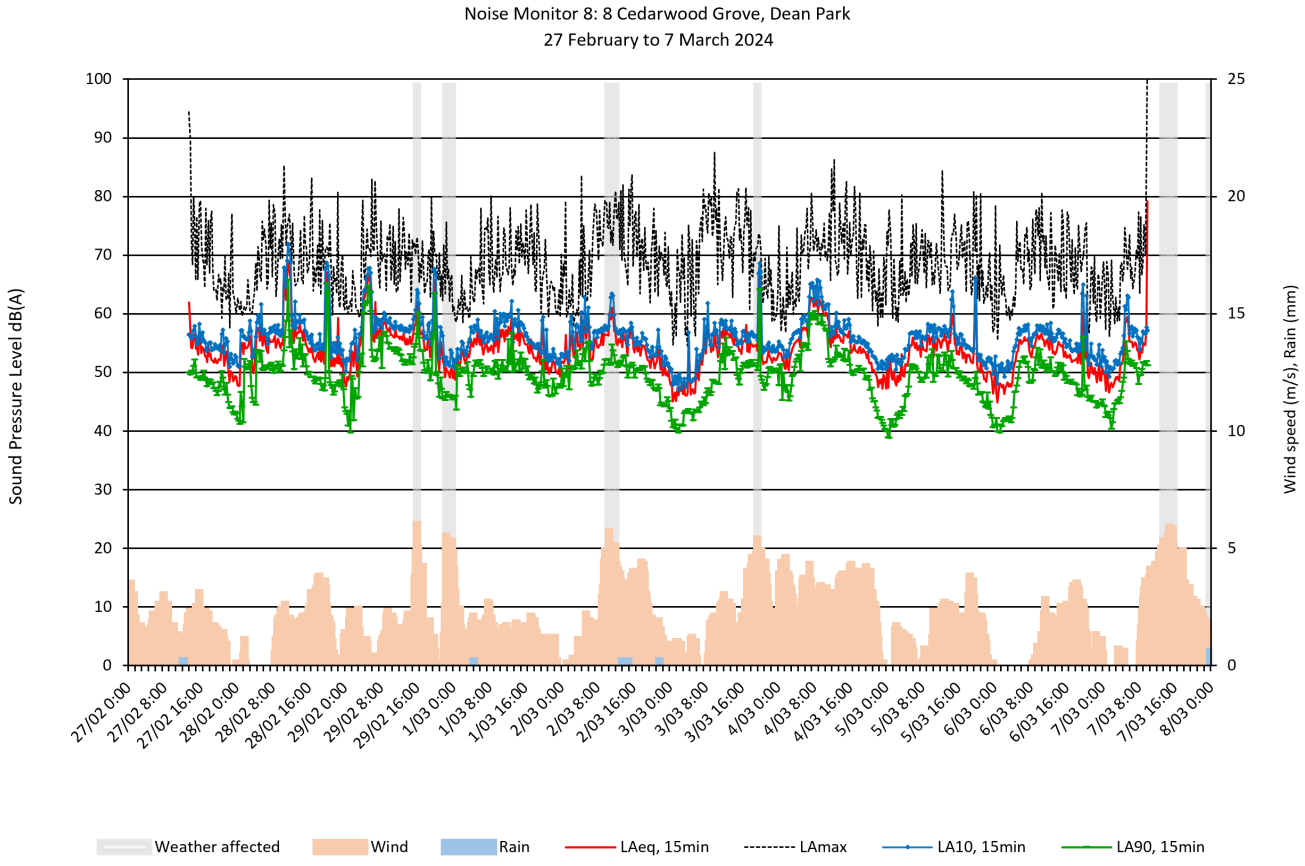
Logger 7: 6 Shipton Place, Dean Park	
Address/Location	6 Shipton Place, Dean Park (Lot 311 on DP775195)
Description	Located in the backyard, on the northern side of Richmond Road, approximately 7 metres from the nearest lane of Richmond Road. The microphone was approximately 4 metres above ground level, above a Colorbond fence.
Logging period	27 February to 7 March 2024
Acoustic environment	Dominant noise source was from traffic on Richmond Road.

Figure A-7: Noise monitoring chart – Logger 7



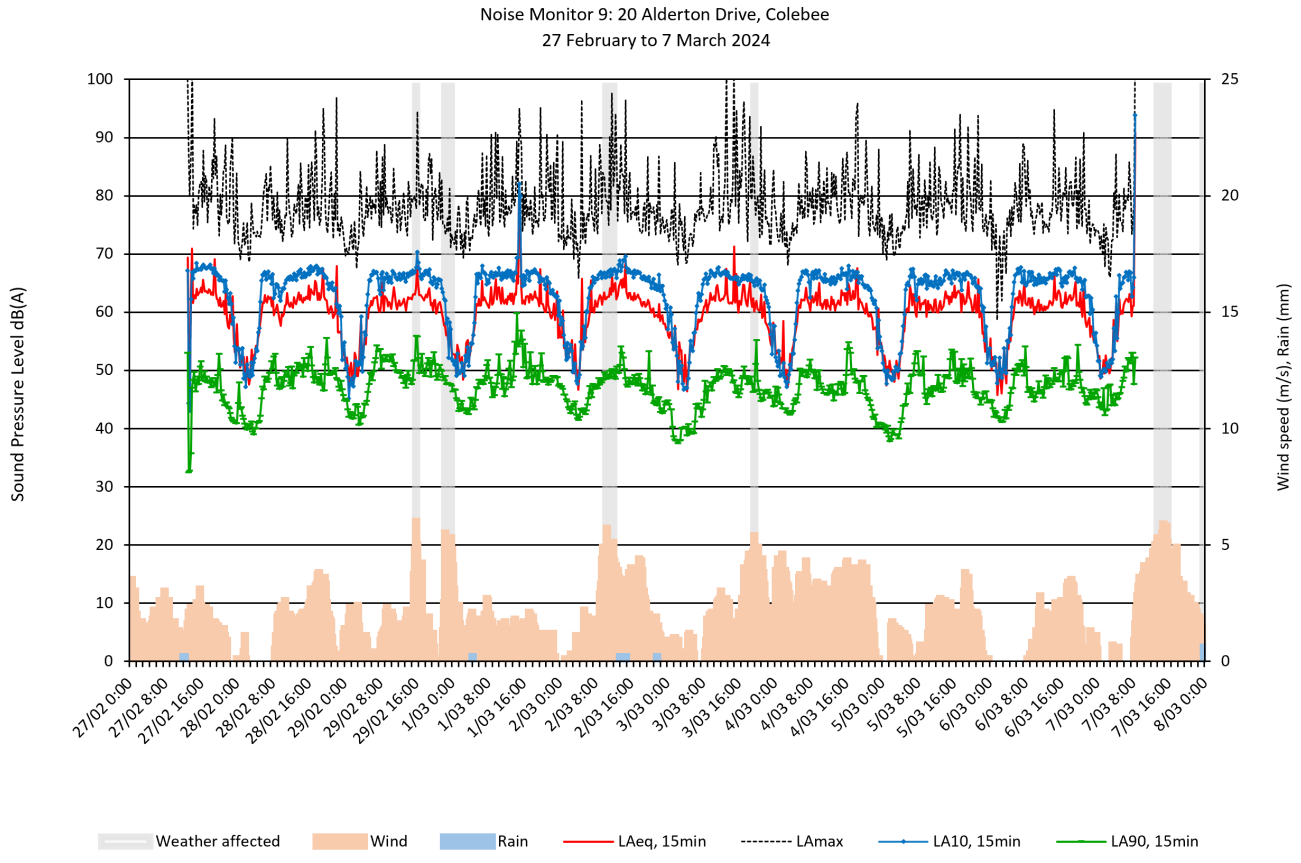
Logger 8: 8 Cedarwood Grove, Dean Park	
Address/Location	8 Cedarwood Grove, Dean Park (Lot 222 on DP862446)
Description	Located approximately 100 metres east of the southbound lane of the Westlink M7. The microphone was approximately 1.4 metres above ground level.
Logging period	27 February to 7 March 2024
Acoustic environment	Road traffic noise from M7 Motorway, insects and dogs barking.

Figure A-8: Noise monitoring chart – Logger 8



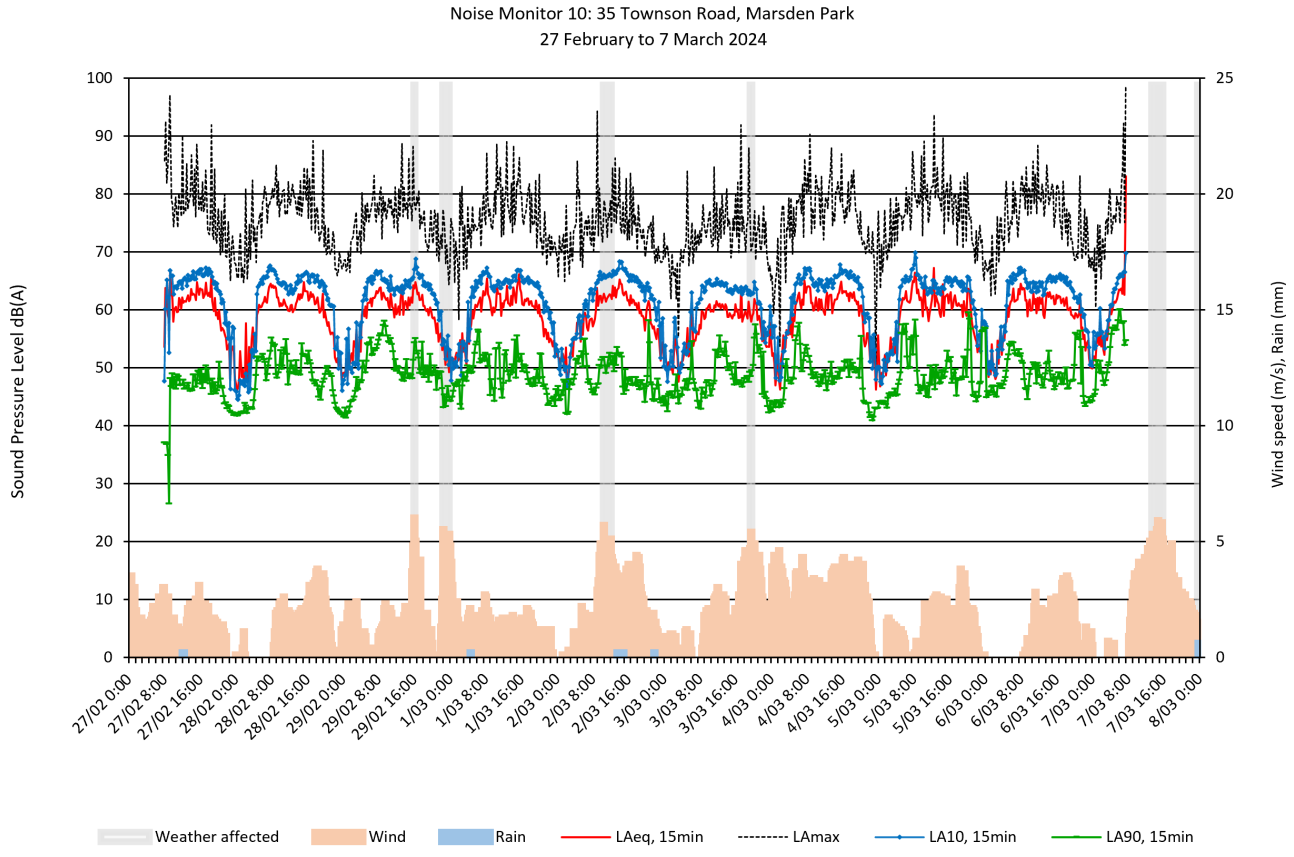
Logger 9: 20 Alderton Drive, Colebee	
Address/Location	20 Alderton Drive, Colebee (Lot 174 on DP1201618)
Description	Located in the front yard, approximately 9 metres from the nearest lane of Alderton Drive. The microphone was approximately 1.4 metres above ground level.
Logging period	27 February to 7 March 2024
Acoustic environment	Road traffic noise from Alderton Drive and distant traffic noise on Richmond Road.

Figure A-9: Noise monitoring chart – Logger 9



Logger 10: 35 Townson Road, Schofields	
Address/Location	35 Townson Road, Schofields (Lot 8 on DP17048)
Description	Located approximately 13 metres from the edge of Townson Road. The microphone was approximately 1.4 metres above ground level.
Logging period	27 February to 7 March 2024
Acoustic environment	Intermittent road traffic on Townson Road, distant traffic on Richmond Road, and insects.

Figure A-10: Noise monitoring chart – Logger 10



Appendix B: Tables

Table B-1: Traffic modelling parameters

Road	Direction	Vehicle class	Year of opening		Year of opening		Design year	
			Build/No Build		Build		Build/No Build	
			Day	Night	Day	Night	Day	Night
M7 east of Richmond Road	Citybound	Light	27,531	4,993	27,531	4,993	35,936	6,517
		Heavy	3,545	1,229	3,545	1,229	4,628	1,605
		Total	37,298		37,298		48,685	
M7 east of Richmond Road	Outbound	Light	29,041	3,528	29,041	3,528	37,906	4,605
		Heavy	3,862	875	3,862	875	5,042	1,143
		Total	37,306		37,298		48,695	
Citybound M7 on-ramp	Citybound	Light	11,367	3,287	11,367	3,287	14,600	4,222
		Heavy	1,076	311	1,076	311	1,917	555
		Total	16,042		37,298		21,294	
Outbound M7 off-ramp	Outbound	Light	11,100	2,857	11,100	2,857	12,613	3,246
		Heavy	1,210	312	1,210	312	1,739	448
		Total	15,478		37,298		18,046	
M7 at Richmond Road	Citybound	Light	20,708	3,506	20,708	3,506	27,030	4,577
		Heavy	3,147	1,030	3,147	1,030	4,108	1,345
		Total	28,392		37,298		37,060	
M7 at Richmond Road	Outbound	Light	23,246	2,911	23,246	2,911	30,342	3,800
		Heavy	3,416	805	3,416	805	4,459	1,051
		Total	30,379		37,298		39,653	
Citybound M7 off-ramp	Citybound	Light	13,090	3,981	13,090	3,981	14,372	4,371
		Heavy	3,124	950	3,124	950	3,638	1,106
		Total	21,145		37,298		23,488	
Outbound M7 on-ramp	Outbound	Light	13,898	3,816	13,898	3,816	15,037	4,129
		Heavy	3,417	938	3,417	938	4,224	1,160
		Total	22,070		37,298		24,550	
M7 south of Richmond Road	Citybound	Light	30,885	5,563	30,885	5,563	40,314	7,262
		Heavy	4,697	1,435	4,697	1,435	6,131	1,873
		Total	42,580		37,298		55,579	
M7 south of Richmond Road	Outbound	Light	33,345	5,503	33,345	5,503	43,524	7,183
		Heavy	4,877	1,314	4,877	1,314	6,366	1,715
		Total	45,039		37,298		58,789	
Rooty Hill Road North between M7 off-ramp and Richmond Road	North	Light	30,520	9,282	30,520	9,282	35,292	10,733
		Heavy	2,446	744	2,446	744	1,800	547
		Total	42,993		37,298		48,373	
Rooty Hill Road North between M7 off-ramp and Richmond Road	South	Light	20,707	5,990	20,707	5,990	27,590	7,981
		Heavy	862	249	862	249	1,386	401
		Total	27,808		37,298		37,357	

Road	Direction	Vehicle class	Year of opening		Year of opening		Design year	
			Build/No Build		Build		Build/No Build	
			Day	Night	Day	Night	Day	Night
Rooty Hill Road North south of M7 off-ramp	North	Light	24,299	5,733	24,299	5,733	35,809	8,448
		Heavy	1,083	256	1,083	256	1,683	397
		Total	31,371		37,298		46,337	
Rooty Hill Road North south of M7 off-ramp	South	Light	21,460	4,779	21,460	4,779	27,996	6,235
		Heavy	978	218	978	218	1,496	333
		Total	27,434		37,298		36,060	
Richmond Road east of M7	Citybound	Light	14,288	2,853	14,288	2,853	15,516	3,098
		Heavy	638	127	638	127	844	168
		Total	17,907		37,298		19,627	
Richmond Road east of M7	Outbound	Light	17,055	4,646	17,055	4,646	20,656	5,627
		Heavy	814	222	814	222	1,002	273
		Total	22,737		37,298		27,557	
Richmond Road M7 to Alderton Drive	Citybound	Light	41,296	11,340	41,296	11,340	54,012	14,832
		Heavy	4,739	1,301	4,739	1,301	6,997	1,921
		Total	58,676		37,298		77,763	
Richmond Road M7 to Alderton Drive	Outbound	Light	33,076	7,509	33,076	7,509	46,972	10,664
		Heavy	3,695	839	3,695	839	4,941	1,122
		Total	45,120		37,298		63,699	
Richmond Road Alderton Drive to Townson Road	Citybound	Light	31,622	8,194	31,622	8,194	44,706	11,584
		Heavy	3,256	844	3,256	844	5,478	1,419
		Total	43,915		37,298		63,187	
Richmond Road Alderton Drive to Townson Road	Outbound	Light	27,498	6,384	27,498	6,384	42,504	9,867
		Heavy	2,964	688	2,964	688	4,228	982
		Total	37,534		37,298		57,582	
Richmond Road north of Townson Road	Citybound	Light	29,432	7,627	29,432	7,627	42,238	10,945
		Heavy	3,111	806	3,111	806	4,954	1,284
		Total	40,976		37,298		59,420	
Richmond Road north of Townson Road	Outbound	Light	26,503	6,153	26,503	6,153	37,657	8,742
		Heavy	2,836	658	2,836	658	3,856	895
		Total	36,150		37,298		51,151	
Townson Road	East	Light	5,404	458	5,404	458	11,569	980
		Heavy	402	34	402	34	502	43
		Total	6,298		37,298		13,093	
Townson Road	West	Light	6,035	550	6,035	550	9,146	834
		Heavy	338	31	338	31	674	61
		Total	6,954		37,298		10,716	

Road	Direction	Vehicle class	Year of opening		Year of opening		Design year	
			Build/No Build		Build		Build/No Build	
			Day	Night	Day	Night	Day	Night
Alderton Drive	East	Light	7,381	687	7,381	687	8,399	781
		Heavy	539	50	539	50	579	54
		Total	8,656		37,298		9,813	
Alderton Drive	West	Light	7,125	1,167	7,125	1,167	7,270	1,191
		Heavy	550	90	550	90	554	91
		Total	8,932		37,298		9,106	

Table B-2: Operational noise predictions table

Address	Object number	Floor	Façade Direction	No build Year of opening		No build Design year		Build Year of opening		Build Design year		Build Project road contribution Year of opening		Build Project road contribution Design year		Does the project cause a >2dBA increase?		Is the cumulative limit exceeded?		Is it acute due to the project		Consider further additional noise mitigation?
				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
5 Alderton Dr	1420	G	S	67	63	68	64	67	63	68	63	62	59	64	60	no	no	yes	yes	no	yes	yes
5 Alderton Dr	1420	F2	S	70	66	71	67	70	66	71	67	67	63	68	65	no	no	yes	yes	yes	yes	yes
5 Alderton Dr	1421	F2	W	70	66	71	67	69	66	71	67	69	65	70	66	no	no	yes	yes	yes	yes	yes
7 Alderton Dr	1416	G	S	69	65	70	65	69	64	69	65	64	61	66	62	no	no	yes	yes	yes	yes	yes
7 Alderton Dr	1416	F2	S	70	66	71	67	70	65	71	66	66	63	68	64	no	no	yes	yes	yes	yes	yes
9 Alderton Dr	1412	G	S	69	65	70	65	69	64	70	65	64	60	65	62	no	no	yes	yes	yes	yes	yes
9 Alderton Dr	1413	G	W	67	63	68	64	67	63	68	64	64	60	65	62	no	no	yes	yes	yes	yes	yes
9 Alderton Dr	1412	F2	S	70	65	70	66	70	65	70	66	65	61	66	63	no	no	yes	yes	yes	yes	yes
9 Alderton Dr	1413	F2	W	68	64	69	65	68	64	69	65	65	61	66	63	no	no	yes	yes	yes	yes	yes
11 Alderton Dr	1408	G	S	67	62	67	63	67	62	67	63	60	57	62	58	no	no	yes	yes	no	no	no
11 Alderton Dr	1408	F2	S	68	63	68	64	68	63	68	63	62	58	63	60	no	no	yes	yes	no	yes	yes
12 Alderton Dr	1329	G	N	69	64	70	65	69	64	70	65	59	56	61	57	no	no	yes	yes	no	no	no
12 Alderton Dr	1329	F2	N	70	65	70	65	70	65	70	65	61	57	62	59	no	no	yes	yes	no	no	no
13 Alderton Dr	1404	G	S	68	63	68	64	68	63	68	64	62	58	63	59	no	no	yes	yes	no	no	no
13 Alderton Dr	1404	F2	S	68	64	69	64	68	64	69	64	63	59	64	61	no	no	yes	yes	no	yes	yes
13 Alderton Dr	1405	F2	W	66	62	67	63	66	62	67	63	63	59	64	61	no	no	yes	yes	no	yes	yes
14 Alderton Dr	1333	G	N	70	65	70	65	70	64	70	65	58	54	60	56	no	no	yes	yes	no	no	no
14 Alderton Dr	1333	F2	N	70	65	70	65	70	65	70	65	60	56	61	58	no	no	yes	yes	no	no	no
15 Alderton Dr	1400	G	S	67	63	68	64	67	63	68	63	62	58	63	59	no	no	yes	yes	no	no	no
15 Alderton Dr	1400	F2	S	68	64	69	64	68	63	69	64	63	59	64	60	no	no	yes	yes	no	yes	yes
16 Alderton Dr	1337	G	N	68	63	68	63	68	63	68	63	54	51	56	52	no	no	yes	yes	no	no	no
16 Alderton Dr	1337	F2	N	69	63	69	63	69	63	69	63	57	53	58	55	no	no	yes	yes	no	no	no
17 Alderton Dr	1396	G	S	69	64	70	65	69	64	70	65	61	58	63	59	no	no	yes	yes	no	no	no
17 Alderton Dr	1396	F2	S	70	65	70	65	70	64	70	65	62	59	64	60	no	no	yes	yes	no	yes	yes
18 Alderton Dr	1342	G	N	68	63	69	63	68	63	69	63	56	52	57	54	no	no	yes	yes	no	no	no
18 Alderton Dr	1342	F2	N	69	64	69	64	69	64	69	64	58	54	59	56	no	no	yes	yes	no	no	no

Address	Object number	Floor	Façade Direction	No build Year of opening		No build Design year		Build Year of opening		Build Design year		Build Project road contribution Year of opening		Build Project road contribution Design year		Does the project cause a >2dBA increase?		Is the cumulative limit exceeded?		Is it acute due to the project		Consider further additional noise mitigation?
				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
19 Alderton Dr	1392	G	S	70	64	70	65	70	64	70	64	61	57	62	58	no	no	yes	yes	no	no	no
19 Alderton Dr	1392	F2	S	70	65	70	65	70	64	70	65	62	58	63	60	no	no	yes	yes	no	yes	yes
20 Alderton Dr	1345	G	N	69	63	69	64	69	63	69	64	56	52	57	54	no	no	yes	yes	no	no	no
20 Alderton Dr	1345	F2	N	69	64	70	64	69	64	70	64	58	54	59	56	no	no	yes	yes	no	no	no
21 Alderton Dr	1388	G	S	68	63	69	63	68	63	69	63	59	55	60	56	no	no	yes	yes	no	no	no
21 Alderton Dr	1388	F2	S	69	64	69	64	69	63	69	64	60	56	61	58	no	no	yes	yes	no	no	no
22 Alderton Dr	1348	G	N	68	62	68	62	68	62	68	62	52	49	54	50	no	no	yes	yes	no	no	no
22 Alderton Dr	1348	F2	N	68	62	68	63	68	62	68	63	55	52	57	53	no	no	yes	yes	no	no	no
23 Alderton Dr	1384	G	S	69	64	70	64	69	64	70	64	59	56	61	57	no	no	yes	yes	no	no	no
23 Alderton Dr	1384	F2	S	70	64	70	65	70	64	70	65	61	57	62	58	no	no	yes	yes	no	no	no
24 Alderton Dr	1354	G	N	69	63	69	64	69	63	69	64	55	52	57	53	no	no	yes	yes	no	no	no
24 Alderton Dr	1354	F2	N	69	64	70	64	69	64	70	64	57	53	59	55	no	no	yes	yes	no	no	no
25 Alderton Dr	1380	G	S	69	64	69	64	69	64	69	64	59	55	60	57	no	no	yes	yes	no	no	no
25 Alderton Dr	1380	F2	S	70	64	70	65	70	64	70	65	60	56	61	58	no	no	yes	yes	no	no	no
26 Alderton Dr	1358	G	N	68	62	68	62	68	62	68	62	53	49	55	51	no	no	yes	yes	no	no	no
26 Alderton Dr	1358	F2	N	68	63	68	63	68	63	69	63	55	52	57	53	no	no	yes	yes	no	no	no
27 Alderton Dr	1376	G	S	69	64	69	64	69	63	69	64	58	55	60	56	no	no	yes	yes	no	no	no
27 Alderton Dr	1376	F2	S	69	64	70	64	69	64	70	64	60	56	61	57	no	no	yes	yes	no	no	no
28 Alderton Dr	1362	G	N	68	62	68	63	68	62	68	63	55	51	56	53	no	no	yes	yes	no	no	no
28 Alderton Dr	1362	F2	N	68	63	69	63	68	63	69	63	56	53	58	54	no	no	yes	yes	no	no	no
30 Alderton Dr	1366	G	N	68	63	69	63	68	63	69	63	55	51	57	53	no	no	yes	yes	no	no	no
30 Alderton Dr	1366	F2	N	69	63	69	63	69	63	69	63	56	53	58	54	no	no	yes	yes	no	no	no
32 Alderton Dr	1368	G	N	68	62	68	62	68	62	68	62	54	50	56	52	no	no	yes	yes	no	no	no
32 Alderton Dr	1368	F2	N	68	63	69	63	68	63	69	63	56	52	57	54	no	no	yes	yes	no	no	no
32A Alderton Dr	1372	G	N	60	56	61	57	60	56	61	56	50	46	51	48	no	no	no	yes	no	no	no
32A Alderton Dr	1372	F2	N	62	57	62	58	62	57	62	58	54	50	55	52	no	no	no	yes	no	no	no
44 Alderton Dr	2493	G	N	68	63	69	63	68	62	69	63	53	49	55	51	no	no	yes	yes	no	no	no
46 Alderton Dr	2497	G	N	70	64	70	64	70	63	70	64	52	48	54	50	no	no	yes	yes	no	no	no
46 Alderton Dr	2497	F2	N	70	64	70	64	70	64	70	64	54	51	56	52	no	no	yes	yes	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
47 Alderton Dr	2005	G	S	65	60	65	60	65	60	65	60	53	50	55	51	no	no	no	yes	no	no	no
48 Alderton Dr	2504	G	N	69	63	70	63	69	63	70	63	51	47	53	49	no	no	yes	yes	no	no	no
48 Alderton Dr	2504	F2	N	69	63	70	63	70	63	70	63	54	50	55	52	no	no	yes	yes	no	no	no
49 Alderton Dr	2217	G	S	70	63	70	63	70	63	70	63	53	49	54	51	no	no	yes	yes	no	no	no
50 Alderton Dr	2517	G	N	67	62	68	62	67	61	68	62	50	47	52	48	no	no	yes	yes	no	no	no
51 Alderton Dr	2534	G	S	68	62	68	62	68	62	68	62	51	48	53	49	no	no	yes	yes	no	no	no
51 Alderton Dr	2534	F2	S	69	63	69	63	69	63	69	63	54	51	55	52	no	no	yes	yes	no	no	no
52 Alderton Dr	2520	G	N	69	63	69	63	69	63	69	63	50	47	52	48	no	no	yes	yes	no	no	no
52 Alderton Dr	2520	F2	N	69	63	70	63	69	63	70	63	53	49	54	51	no	no	yes	yes	no	no	no
54 Alderton Dr	3086	G	N	69	63	69	63	69	63	69	63	50	47	52	48	no	no	yes	yes	no	no	no
54 Alderton Dr	3086	F2	N	70	63	70	63	70	63	70	64	53	49	54	51	no	no	yes	yes	no	no	no
55 Alderton Dr	2537	G	S	69	63	70	63	69	63	70	63	52	48	53	50	no	no	yes	yes	no	no	no
56 Alderton Dr	3090	G	N	69	63	69	63	69	63	69	63	50	47	52	48	no	no	yes	yes	no	no	no
57 Alderton Dr	2546	G	S	69	63	70	63	69	63	70	63	51	48	52	49	no	no	yes	yes	no	no	no
57 Alderton Dr	2546	F2	S	70	63	70	63	70	63	70	63	53	50	55	51	no	no	yes	yes	no	no	no
58 Alderton Dr	3091	G	NW	69	63	69	63	69	63	69	63	51	47	52	49	no	no	yes	yes	no	no	no
59 Alderton Dr	2548	G	S	68	62	68	62	68	62	68	62	49	46	50	47	no	no	yes	yes	no	no	no
59 Alderton Dr	2548	F2	S	68	62	69	62	68	62	69	62	53	49	54	50	no	no	yes	yes	no	no	no
60 Alderton Dr	3093	G	N	68	62	69	62	68	62	69	62	49	46	51	47	no	no	yes	yes	no	no	no
61 Alderton Dr	2550	G	S	69	63	69	63	69	62	69	63	51	47	52	49	no	no	yes	yes	no	no	no
61 Alderton Dr	2550	F2	S	69	63	70	63	69	63	70	63	53	50	55	51	no	no	yes	yes	no	no	no
62 Alderton Dr	3096	G	N	69	63	69	63	69	63	69	63	50	46	51	48	no	no	yes	yes	no	no	no
63 Alderton Dr	2552	G	S	68	62	68	62	68	62	68	62	49	46	50	47	no	no	yes	yes	no	no	no
63 Alderton Dr	2552	F2	S	68	62	69	62	68	62	69	62	52	49	54	50	no	no	yes	yes	no	no	no
64 Alderton Dr	3098	G	N	69	63	69	63	69	63	69	63	49	46	51	47	no	no	yes	yes	no	no	no
64 Alderton Dr	3098	F2	N	69	63	69	63	69	63	69	63	52	49	54	50	no	no	yes	yes	no	no	no
66 Alderton Dr	3101	G	N	69	63	69	63	69	63	69	63	49	45	51	47	no	no	yes	yes	no	no	no
66 Alderton Dr	3101	F2	N	69	63	70	63	69	63	70	63	52	48	53	49	no	no	yes	yes	no	no	no
68 Alderton Dr	3102	G	N	68	62	68	62	68	62	68	62	49	45	50	47	no	no	yes	yes	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
70 Alderton Dr	3104	G	N	69	62	69	62	69	62	69	62	49	46	51	47	no	no	yes	yes	no	no	no
72 Alderton Dr	3106	G	N	70	64	70	64	70	63	70	64	50	46	51	48	no	no	yes	yes	no	no	no
72 Alderton Dr	3106	F2	N	70	64	70	64	70	63	70	64	52	48	53	50	no	no	yes	yes	no	no	no
74 Alderton Dr	3110	G	N	68	62	68	62	68	62	68	62	48	44	50	46	no	no	yes	yes	no	no	no
75 Alderton Dr	3061	G	S	69	63	69	62	69	62	69	62	51	47	52	49	no	no	yes	yes	no	no	no
75 Alderton Dr	3061	F2	S	69	63	69	63	69	63	69	63	52	49	54	50	no	no	yes	yes	no	no	no
77 Alderton Dr	3064	G	S	68	62	69	62	68	62	69	62	51	47	52	48	no	no	yes	yes	no	no	no
77 Alderton Dr	3064	F2	S	69	63	69	63	69	62	69	63	52	49	54	50	no	no	yes	yes	no	no	no
79 Alderton Dr	3066	G	S	67	61	67	61	67	61	67	61	49	46	51	47	no	no	yes	yes	no	no	no
79 Alderton Dr	3066	F2	S	68	62	68	62	68	62	68	62	52	48	53	50	no	no	yes	yes	no	no	no
81 Alderton Dr	3067	G	S	68	62	68	62	68	62	68	62	51	47	52	48	no	no	yes	yes	no	no	no
1 Alroy Cres	2023	G	N	56	53	57	54	56	53	57	54	55	51	56	52	no	no	no	no	no	no	no
1 Alroy Cres	2023	F2	N	59	55	60	56	59	55	60	56	57	54	59	55	no	no	no	no	no	no	no
3 Alroy Cres	2731	G	N	56	52	57	53	56	53	57	53	54	51	55	52	no	no	no	no	no	no	no
3 Alroy Cres	2731	F2	N	59	55	60	56	59	55	60	56	57	54	58	55	no	no	no	no	no	no	no
4 Alroy Cres	2725	G	NE	56	52	57	53	56	52	57	53	54	51	55	52	no	no	no	no	no	no	no
5 Alroy Cres	2737	G	NE	56	52	57	54	56	53	57	54	54	51	55	52	no	no	no	no	no	no	no
6 Alroy Cres	2729	G	E	56	52	57	53	56	53	57	53	54	51	55	52	no	no	no	no	no	no	no
6 Alroy Cres	2728	G	N	56	52	57	53	56	53	57	53	54	51	56	52	no	no	no	no	no	no	no
26 Alroy Cres	2722	G	NE	56	53	57	54	56	53	57	54	55	52	56	53	no	no	no	no	no	no	no
28 Alroy Cres	2719	G	N	56	52	57	53	56	53	57	54	55	51	56	53	no	no	no	no	no	no	no
30 Alroy Cres	2039	G	SE	56	53	58	54	57	53	58	54	54	51	55	52	no	no	no	no	no	no	no
47 Alroy Cres	2716	G	N	55	51	56	53	55	52	56	53	54	51	55	52	no	no	no	no	no	no	no
49 Alroy Cres	2715	G	E	57	53	58	54	57	53	58	54	55	52	56	53	no	no	no	no	no	no	no
51 Alroy Cres	2710	G	E	56	53	57	54	56	53	57	54	54	51	56	52	no	no	no	no	no	no	no
53 Alroy Cres	2043	G	E	57	53	58	54	57	53	58	54	55	51	56	53	no	no	no	no	no	no	no
26 Amarina Bvd	2902	G	W	52	48	54	50	53	48	54	50	51	47	53	49	no	no	no	no	no	no	no
26 Amarina Bvd	2902	F2	W	57	52	58	54	57	53	58	54	55	51	57	53	no	no	no	no	no	no	no
27 Amarina Bvd	2899	G	W	53	49	55	51	53	49	55	51	52	49	54	50	no	no	no	no	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
27 Amarina Bvd	2899	F2	W	55	52	57	53	56	52	58	53	55	51	56	52	no	no	no	no	no	no	no
28 Amarina Bvd	2912	G	N	50	46	52	47	50	46	52	48	48	44	50	46	no	no	no	no	no	no	no
28 Amarina Bvd	2912	F2	N	55	51	57	53	56	52	57	53	54	50	55	52	no	no	no	no	no	no	no
29 Amarina Bvd	2937	G	N	53	49	54	50	53	49	55	51	52	48	54	50	no	no	no	no	no	no	no
29 Amarina Bvd	2937	F2	N	55	51	57	53	55	51	57	53	54	50	55	52	no	no	no	no	no	no	no
30 Amarina Bvd	2894	G	W	53	49	55	51	54	50	56	52	53	49	55	51	no	no	no	no	no	no	no
31 Amarina Bvd	2935	G	N	53	49	54	50	53	49	55	51	52	48	54	50	no	no	no	no	no	no	no
31 Amarina Bvd	2935	F2	N	55	51	57	53	55	51	57	53	54	50	55	52	no	no	no	no	no	no	no
32 Amarina Bvd	2891	G	S	53	49	54	51	53	49	55	51	53	49	54	51	no	no	no	no	no	no	no
32 Amarina Bvd	2892	F2	N	55	51	57	53	56	52	57	53	54	50	55	52	no	no	no	no	no	no	no
33 Amarina Bvd	2933	G	N	53	49	55	51	53	49	55	51	53	49	54	50	no	no	no	no	no	no	no
33 Amarina Bvd	2933	F2	N	55	51	57	53	56	52	57	53	54	50	56	52	no	no	no	no	no	no	no
34 Amarina Bvd	2889	G	S	53	49	54	50	53	49	54	51	52	49	54	50	no	no	no	no	no	no	no
34 Amarina Bvd	2890	F2	N	55	51	57	53	55	51	57	53	53	49	55	51	no	no	no	no	no	no	no
35 Amarina Bvd	2931	G	N	53	49	55	51	54	50	56	51	53	49	54	51	no	no	no	no	no	no	no
35 Amarina Bvd	2931	F2	N	55	51	57	53	56	52	57	53	54	50	56	52	no	no	no	no	no	no	no
36 Amarina Bvd	2887	G	N	52	48	54	50	53	48	54	50	50	47	52	48	no	no	no	no	no	no	no
36 Amarina Bvd	2887	F2	N	55	51	57	53	56	51	57	53	54	50	55	51	no	no	no	no	no	no	no
37 Amarina Bvd	2929	G	N	54	50	55	51	54	50	56	52	53	49	55	51	no	no	no	no	no	no	no
37 Amarina Bvd	2929	F2	N	55	51	57	53	56	52	57	53	54	50	56	52	no	no	no	no	no	no	no
38 Amarina Bvd	2885	G	S	53	50	55	51	54	50	55	51	53	50	55	51	no	no	no	no	no	no	no
38 Amarina Bvd	2886	F2	N	56	52	58	53	56	52	58	54	54	50	56	52	no	no	no	no	no	no	no
39 Amarina Bvd	1674	G	N	53	48	55	50	53	49	55	50	51	48	53	49	no	no	no	no	no	no	no
39 Amarina Bvd	1675	F2	W	55	51	56	52	55	51	56	52	54	50	56	52	no	no	no	no	no	no	no
40 Amarina Bvd	2811	G	W	57	52	58	54	57	53	59	54	55	51	57	53	no	no	no	no	no	no	no
41 Amarina Bvd	1668	G	N	54	50	56	51	54	50	56	52	52	48	53	50	no	no	no	no	no	no	no
41 Amarina Bvd	1668	F2	N	55	51	57	53	55	51	57	53	53	49	55	51	no	no	no	no	no	no	no
42 Amarina Bvd	1659	G	W	58	54	60	55	58	54	60	56	57	53	58	55	no	no	no	no	no	no	no
42 Amarina Bvd	1659	F2	W	58	54	60	56	59	54	60	56	57	53	59	55	no	no	no	no	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
43 Amarina Bvd	1663	G	W	58	54	59	55	58	54	60	56	57	53	58	55	no	no	no	no	no	no	no
43 Amarina Bvd	1663	F2	W	58	54	60	56	59	54	60	56	57	53	59	55	no	no	no	no	no	no	no
1 Amy Cl	601	G	W	61	57	62	58	61	57	61	57	49	47	50	47	no	no	no	yes	no	no	no
3 Amy Cl	624	G	S	57	54	58	55	57	54	57	54	44	43	45	43	no	no	no	no	no	no	no
5 Amy Cl	621	G	W	58	54	59	55	58	55	58	55	48	45	49	46	no	no	no	no	no	no	no
7 Amy Cl	618	G	N	58	54	59	55	58	54	58	55	48	46	49	47	no	no	no	no	no	no	no
7 Amy Cl	617	G	W	58	54	59	55	58	54	58	55	48	46	49	46	no	no	no	no	no	no	no
9 Amy Cl	613	G	N	57	54	58	55	57	54	58	54	49	46	50	47	no	no	no	no	no	no	no
9 Amy Cl	614	G	W	57	54	58	55	57	54	58	54	47	45	48	46	no	no	no	no	no	no	no
11 Amy Cl	610	G	NW	58	54	59	55	58	54	58	55	48	47	49	47	no	no	no	no	no	no	no
2 Ballina St	1318	G	N	56	52	57	53	56	52	57	53	51	48	53	49	no	no	no	no	no	no	no
2 Ballina St	1318	F2	N	58	54	59	55	58	54	59	55	54	51	56	52	no	no	no	no	no	no	no
3 Ballina St	1261	G	N	57	53	58	54	56	52	58	54	56	52	57	53	no	no	no	no	no	no	no
4 Ballina St	1314	G	N	56	53	57	54	56	53	57	54	53	50	55	51	no	no	no	no	no	no	no
4 Ballina St	1314	F2	N	58	55	59	56	58	55	59	56	56	52	57	54	no	no	no	no	no	no	no
5 Ballina St	1257	G	W	57	54	59	55	57	53	58	55	57	53	58	55	no	no	no	no	no	no	no
6 Ballina St	1308	G	N	56	53	57	54	56	53	57	54	54	50	55	52	no	no	no	no	no	no	no
6 Ballina St	1308	F2	N	58	55	59	56	58	55	59	56	56	53	58	54	no	no	no	no	no	no	no
7 Ballina St	1254	G	N	58	54	59	55	57	54	59	55	57	53	58	55	no	no	no	no	no	no	no
8 Ballina St	1304	G	N	57	52	58	53	57	52	58	53	54	51	56	52	no	no	no	no	no	no	no
8 Ballina St	1304	F2	N	58	54	60	56	59	54	60	56	57	53	58	54	no	no	no	no	no	no	no
9 Ballina St	1248	G	W	59	55	60	57	59	55	60	56	59	55	60	56	no	no	no	no	no	no	no
10 Ballina St	1302	G	N	55	51	56	52	55	51	56	52	52	49	54	50	no	no	no	no	no	no	no
10 Ballina St	1302	F2	N	57	54	59	55	58	54	59	55	55	52	57	53	no	no	no	no	no	no	no
11 Ballina St	1246	G	N	60	56	61	57	59	56	61	57	59	55	60	57	no	no	no	yes	no	no	no
12 Ballina St	1298	G	N	56	53	57	54	56	53	57	54	54	51	56	52	no	no	no	no	no	no	no
12 Ballina St	1298	F2	N	58	55	60	56	58	55	60	56	57	53	59	55	no	no	no	no	no	no	no
14 Ballina St	1294	G	N	56	53	57	54	56	53	57	54	54	51	56	52	no	no	no	no	no	no	no
14 Ballina St	1294	F2	N	59	55	60	56	59	55	60	56	57	53	59	55	no	no	no	no	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
16 Ballina St	1290	G	N	56	53	58	54	56	53	58	54	55	51	56	53	no	no	no	no	no	no	no
16 Ballina St	1290	F2	N	59	55	60	56	59	55	60	56	57	54	59	55	no	no	no	no	no	no	no
18 Ballina St	1286	G	N	57	53	58	54	56	52	58	54	55	51	56	53	no	no	no	no	no	no	no
18 Ballina St	1286	F2	N	59	55	60	56	59	55	60	56	57	54	59	55	no	no	no	no	no	no	no
20 Ballina St	1282	G	N	57	53	58	54	57	53	58	54	55	52	57	53	no	no	no	no	no	no	no
20 Ballina St	1282	F2	N	60	56	61	57	60	56	61	57	58	55	60	56	no	no	no	yes	no	no	no
22 Ballina St	1276	G	W	55	52	57	53	55	51	56	53	55	51	56	53	no	no	no	no	no	no	no
22 Ballina St	1276	F2	W	58	54	59	56	58	54	59	56	58	54	59	55	no	no	no	no	no	no	no
24 Ballina St	1273	G	W	57	53	58	55	57	53	58	54	56	53	58	54	no	no	no	no	no	no	no
24 Ballina St	1273	F2	W	59	56	61	57	59	55	60	57	59	55	60	57	no	no	no	no	no	no	no
26A Ballina St	1264	G	N	64	60	65	61	64	60	65	61	62	58	63	60	no	no	no	yes	no	yes	yes
26A Ballina St	1265	G	W	65	61	66	63	65	61	66	62	64	60	65	62	no	no	yes	yes	yes	yes	yes
26A Ballina St	1264	F2	N	65	61	66	62	65	61	66	62	63	59	64	61	no	no	yes	yes	no	yes	yes
26A Ballina St	1265	F2	W	66	62	67	63	66	62	67	63	65	61	66	63	no	no	yes	yes	yes	yes	yes
26b Ballina St	1268	G	W	64	61	66	62	64	60	65	62	63	60	65	61	no	no	no	yes	yes	yes	yes
26b Ballina St	1269	F2	N	63	60	65	61	63	60	65	61	63	59	64	60	no	no	no	yes	no	yes	yes
26b Ballina St	1268	F2	W	65	61	66	63	65	61	66	62	64	61	66	62	no	no	yes	yes	yes	yes	yes
17 Bexhill St	2905	G	N	54	50	56	51	54	50	56	51	52	48	54	50	no	no	no	no	no	no	no
17 Bexhill St	2905	F2	N	56	51	58	53	56	52	58	53	53	50	55	51	no	no	no	no	no	no	no
19 Bexhill St	2910	G	N	52	47	53	49	52	47	54	49	49	45	51	47	no	no	no	no	no	no	no
19 Bexhill St	2910	F2	N	55	50	57	52	55	50	57	52	52	48	53	50	no	no	no	no	no	no	no
20 Bexhill St	2906	G	S	51	47	52	48	51	47	52	49	50	47	52	48	no	no	no	no	no	no	no
20 Bexhill St	2907	F2	N	55	51	57	52	55	51	57	52	52	48	53	50	no	no	no	no	no	no	no
22 Bexhill St	2909	G	S	51	47	53	49	51	48	53	49	51	47	53	49	no	no	no	no	no	no	no
22 Bexhill St	2908	F2	N	54	50	56	52	54	50	56	52	52	48	53	49	no	no	no	no	no	no	no
23 Bexhill St	2883	G	N	53	49	55	51	54	49	56	51	52	48	53	49	no	no	no	no	no	no	no
23 Bexhill St	2883	F2	N	56	52	58	53	56	52	58	53	54	50	55	52	no	no	no	no	no	no	no
24 Bexhill St	2915	G	N	52	48	54	49	52	48	54	50	50	47	52	48	no	no	no	no	no	no	no
24 Bexhill St	2915	F2	N	56	51	57	53	56	51	58	53	53	49	55	51	no	no	no	no	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
25 Bexhill St	2882	G	N	54	50	56	52	55	50	57	52	53	49	55	51	no	no	no	no	no	no	no
26 Bexhill St	2917	G	S	52	48	53	50	52	48	53	50	51	48	53	49	no	no	no	no	no	no	no
26 Bexhill St	2916	F2	N	55	51	57	52	56	51	57	53	53	49	54	51	no	no	no	no	no	no	no
27 Bexhill St	2878	G	N	55	50	56	52	55	50	56	52	52	49	54	50	no	no	no	no	no	no	no
27 Bexhill St	2878	F2	N	56	52	58	53	56	52	58	53	53	50	55	51	no	no	no	no	no	no	no
28 Bexhill St	2874	G	S	52	48	54	50	52	48	54	50	52	48	54	50	no	no	no	no	no	no	no
28 Bexhill St	2874	F2	S	53	50	55	51	54	50	55	51	53	49	55	51	no	no	no	no	no	no	no
29 Bexhill St	2877	G	N	55	51	57	52	55	51	57	53	53	49	55	51	no	no	no	no	no	no	no
29 Bexhill St	2877	F2	N	56	52	58	54	57	52	58	54	54	50	55	52	no	no	no	no	no	no	no
30 Bexhill St	2872	G	N	51	47	53	49	52	47	53	49	50	46	52	48	no	no	no	no	no	no	no
30 Bexhill St	2872	F2	N	56	51	57	53	56	51	58	53	54	50	55	51	no	no	no	no	no	no	no
31 Bexhill St	2809	G	W	56	52	57	54	56	52	58	54	56	52	57	54	no	no	no	no	no	no	no
32 Bexhill St	2871	G	W	54	50	56	51	54	50	56	51	52	48	54	50	no	no	no	no	no	no	no
33 Bexhill St	1655	G	W	58	54	60	55	58	54	60	56	56	53	58	54	no	no	no	no	no	no	no
33 Bexhill St	1655	F2	W	59	54	60	56	59	55	61	56	57	53	59	55	no	no	no	yes	no	no	no
34 Bexhill St	2806	G	S	53	50	55	51	54	50	55	51	53	50	55	51	no	no	no	no	no	no	no
34 Bexhill St	2805	F2	N	56	51	58	53	56	51	58	53	52	48	53	50	no	no	no	no	no	no	no
36 Bexhill St	1651	G	W	58	54	60	56	59	54	60	56	56	53	58	54	no	no	no	no	no	no	no
36 Bexhill St	1651	F2	W	59	55	61	56	59	55	61	56	57	53	58	55	no	no	no	yes	no	no	no
2 Burrowes Grove	453	G	W	59	56	60	57	59	56	60	57	56	53	56	54	no	no	no	no	no	no	no
3 Burrowes Grove	270	G	NW	70	66	71	67	70	67	71	67	70	66	71	67	no	no	yes	yes	yes	yes	yes
3 Burrowes Grove	269	G	SW	73	68	74	69	73	69	74	70	71	67	72	68	no	no	yes	yes	yes	yes	yes
4 Burrowes Grove	449	G	S	59	56	60	56	59	56	60	57	56	54	57	54	no	no	no	no	no	no	no
7 Burrowes Grove	266	G	NW	66	63	67	63	67	64	67	64	66	63	66	64	no	no	yes	yes	yes	yes	yes
7 Burrowes Grove	267	G	SE	63	60	64	61	63	61	64	61	63	60	63	61	no	no	no	yes	no	yes	yes
7 Burrowes Grove	265	G	SW	68	64	69	65	68	65	69	66	67	64	68	65	no	no	yes	yes	yes	yes	yes
8 Burrowes Grove	446	G	S	59	55	60	56	59	55	59	56	55	52	55	53	no	no	no	no	no	no	no
9 Burrowes Grove	264	G	NW	65	62	66	62	65	63	66	63	64	62	65	62	no	no	yes	yes	yes	yes	yes
9 Burrowes Grove	262	G	SE	66	63	67	63	67	64	67	64	65	62	66	63	no	no	yes	yes	yes	yes	yes

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
9 Burrowes Grove	263	G	SW	69	65	70	66	70	66	70	67	69	65	69	66	no	no	yes	yes	yes	yes	yes
10 Burrowes Grove	444	G	W	59	55	60	56	59	56	59	56	56	53	56	54	no	no	no	no	no	no	no
11 Burrowes Grove	258	G	NW	71	67	72	68	71	68	72	68	71	67	72	68	no	no	yes	yes	yes	yes	yes
11 Burrowes Grove	259	G	SE	70	66	71	67	71	67	72	68	70	66	71	67	no	no	yes	yes	yes	yes	yes
11 Burrowes Grove	257	G	SW	74	69	74	70	74	70	75	70	73	69	74	70	no	no	yes	yes	yes	yes	yes
12.10 Burrowes Grove	238	G	NW	67	64	68	65	66	63	66	64	65	62	65	63	no	no	yes	yes	yes	yes	yes
12.10 Burrowes Grove	240	G	SE	65	62	65	62	65	63	66	63	65	62	65	63	no	no	yes	yes	yes	yes	yes
12.10 Burrowes Grove	237	G	SW	69	65	69	66	68	65	69	66	67	64	68	65	no	no	yes	yes	yes	yes	yes
12.11 Burrowes Grove	241	G	NW	67	63	68	64	66	63	66	64	64	62	65	63	no	no	yes	yes	yes	yes	yes
12.11 Burrowes Grove	243	G	SE	67	63	67	64	67	64	68	65	67	64	67	64	no	no	yes	yes	yes	yes	yes
12.11 Burrowes Grove	242	G	SW	69	65	70	66	69	66	69	66	68	65	69	66	no	no	yes	yes	yes	yes	yes
12.2 Burrowes Grove	205	G	SW	59	55	60	56	58	55	59	55	55	52	56	53	no	no	no	no	no	no	no
12.3 Burrowes Grove	211	G	NW	59	56	60	57	59	55	59	56	56	53	57	54	no	no	no	no	no	no	no
12.4 Burrowes Grove	215	G	NW	61	57	62	58	60	56	60	57	58	55	59	55	no	no	no	no	no	no	no
12.5 Burrowes Grove	219	G	NW	62	58	63	59	61	57	61	58	59	55	59	56	no	no	no	yes	no	no	no
12.5 Burrowes Grove	218	G	SW	62	58	63	59	61	57	61	58	59	56	60	56	no	no	no	yes	no	no	no
12.6 Burrowes Grove	222	G	SW	63	60	64	60	62	59	63	59	60	57	61	58	no	no	no	yes	no	no	no
12.7 Burrowes Grove	226	G	NW	71	68	72	69	70	66	70	67	69	66	70	67	no	no	yes	yes	yes	yes	yes
12.7 Burrowes Grove	228	G	SE	67	64	68	65	66	64	67	64	65	63	66	63	no	no	yes	yes	yes	yes	yes
12.7 Burrowes Grove	227	G	SW	71	68	72	68	70	67	71	67	69	66	70	67	no	no	yes	yes	yes	yes	yes
12.7 Burrowes Grove	226	F2	NW	73	69	74	70	71	68	72	68	71	67	72	68	no	no	yes	yes	yes	yes	yes
12.7 Burrowes Grove	228	F2	SE	73	69	73	70	72	68	72	69	71	67	72	68	no	no	yes	yes	yes	yes	yes
12.7 Burrowes Grove	227	F2	SW	76	72	77	73	75	71	75	71	74	70	75	71	no	no	yes	yes	yes	yes	yes
12.8 Burrowes Grove	230	G	SW	66	63	67	64	65	63	66	63	64	62	65	62	no	no	yes	yes	yes	yes	yes
12.8 Burrowes Grove	229	F2	NW	66	63	67	64	65	62	65	63	63	61	64	62	no	no	no	yes	no	yes	yes
12.8 Burrowes Grove	231	F2	SE	68	65	69	65	67	64	68	65	66	63	66	64	no	no	yes	yes	yes	yes	yes
12.8 Burrowes Grove	230	F2	SW	71	67	72	68	70	67	70	67	69	66	70	67	no	no	yes	yes	yes	yes	yes
12.9 Burrowes Grove	234	G	SW	68	64	69	65	67	64	67	65	65	63	66	64	no	no	yes	yes	yes	yes	yes
13 Burrowes Grove	254	G	NW	65	62	66	62	66	63	66	63	65	62	66	63	no	no	yes	yes	yes	yes	yes

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
13 Burrowes Grove	255	G	SE	64	61	65	61	64	62	65	62	64	61	65	62	no	no	no	yes	yes	yes	yes
13 Burrowes Grove	253	G	SW	69	66	70	66	70	66	71	67	70	66	70	67	no	no	yes	yes	yes	yes	yes
15 Burrowes Grove	251	G	NW	70	67	71	67	70	67	71	67	70	66	70	67	no	no	yes	yes	yes	yes	yes
15 Burrowes Grove	249	G	SE	69	65	69	65	69	66	70	66	69	65	70	66	no	no	yes	yes	yes	yes	yes
15 Burrowes Grove	250	G	SW	73	69	73	69	73	69	73	69	72	68	73	69	no	no	yes	yes	yes	yes	yes
15 Burrowes Grove	251	F2	NW	72	68	73	69	72	68	72	69	71	68	72	68	no	no	yes	yes	yes	yes	yes
15 Burrowes Grove	249	F2	SE	70	66	70	66	70	67	71	67	70	66	70	66	no	no	yes	yes	yes	yes	yes
15 Burrowes Grove	250	F2	SW	74	70	74	70	74	70	74	70	73	69	74	70	no	no	yes	yes	yes	yes	yes
17 Burrowes Grove	248	G	NW	66	63	67	64	65	63	66	64	64	62	65	63	no	no	yes	yes	yes	yes	yes
17 Burrowes Grove	247	G	SE	64	61	64	61	64	61	65	62	63	61	64	61	no	no	no	yes	no	yes	yes
17 Burrowes Grove	246	G	SW	70	66	71	67	70	67	71	67	69	66	70	67	no	no	yes	yes	yes	yes	yes
4 Cedarwood Grove	1700	G	SW	59	55	60	56	59	55	59	55	54	51	55	51	no	no	no	no	no	no	no
6 Cedarwood Grove	1694	G	NW	59	55	60	57	59	55	59	56	54	51	55	52	no	no	no	no	no	no	no
8 Cedarwood Grove	1691	G	NW	59	55	60	57	59	55	59	56	54	51	55	52	no	no	no	no	no	no	no
8 Cedarwood Grove	1690	G	SW	59	55	60	56	59	55	59	56	54	51	55	52	no	no	no	no	no	no	no
10 Cedarwood Grove	1720	G	NW	59	56	61	57	59	55	59	56	54	51	55	52	no	no	no	no	no	no	no
12 Cedarwood Grove	1722	G	NW	59	55	60	57	59	55	59	55	53	50	54	51	no	no	no	no	no	no	no
14 Cedarwood Grove	1729	G	NW	60	56	61	57	59	55	59	56	53	50	54	51	no	no	no	no	no	no	no
16 Cedarwood Grove	1752	G	NW	59	55	60	57	59	55	59	55	53	50	54	51	no	no	no	no	no	no	no
18 Cedarwood Grove	1755	G	NW	60	56	61	57	59	55	59	56	53	50	54	51	no	no	no	no	no	no	no
20 Cedarwood Grove	1758	G	W	60	56	61	57	59	56	59	56	53	50	54	51	no	no	no	no	no	no	no
1 Clearfield St	1326	G	N	70	65	70	65	70	64	70	65	59	55	61	57	no	no	yes	yes	no	no	no
1 Clearfield St	1324	G	W	67	63	68	64	67	63	68	64	63	59	65	61	no	no	yes	yes	yes	yes	yes
1 Clearfield St	1326	F2	N	70	65	70	65	70	64	70	65	60	57	62	58	no	no	yes	yes	no	no	no
1 Clearfield St	1324	F2	W	68	64	69	65	68	63	68	64	64	60	65	62	no	no	yes	yes	yes	yes	yes
1A Clearfield St	1320	G	W	66	62	67	63	65	62	67	63	63	60	65	61	no	no	yes	yes	yes	yes	yes
1A Clearfield St	1321	F2	N	66	62	67	63	66	62	67	63	62	59	64	60	no	no	yes	yes	no	yes	yes
1A Clearfield St	1320	F2	W	66	63	67	64	66	62	67	63	64	61	66	62	no	no	yes	yes	yes	yes	yes
7 Clearfield St	1234	G	N	62	58	63	60	62	58	63	59	61	57	63	59	no	no	no	yes	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
9 Clearfield St	1230	G	N	60	56	61	57	60	56	61	57	59	55	60	57	no	no	no	yes	no	no	no
9 Clearfield St	1230	F2	N	61	58	63	59	61	57	63	59	60	57	62	58	no	no	no	yes	no	no	no
11 Clearfield St	1226	G	N	58	54	59	55	58	54	59	56	57	54	59	55	no	no	no	no	no	no	no
13 Clearfield St	1221	G	W	56	53	58	54	56	52	57	54	56	52	57	53	no	no	no	no	no	no	no
13 Clearfield St	1221	F2	W	58	55	60	56	58	55	60	56	58	54	59	56	no	no	no	no	no	no	no
15 Clearfield St	1217	G	W	57	53	58	54	57	53	58	54	56	53	58	54	no	no	no	no	no	no	no
15 Clearfield St	1217	F2	W	59	55	60	56	59	55	60	56	58	55	60	56	no	no	no	no	no	no	no
27 Climus St	2702	G	S	55	51	56	52	55	52	56	52	52	49	53	50	no	no	no	no	no	no	no
29 Climus St	2696	G	N	55	51	56	52	55	52	56	53	54	51	56	52	no	no	no	no	no	no	no
31 Climus St	2692	G	N	55	52	56	53	56	52	57	53	55	51	56	53	no	no	no	no	no	no	no
32 Climus St	2699	G	E	56	53	58	54	57	53	58	54	54	51	55	52	no	no	no	no	no	no	no
33 Climus St	2691	G	N	55	51	56	53	55	52	57	53	55	51	56	52	no	no	no	no	no	no	no
34 Climus St	2701	G	N	56	52	57	54	56	53	58	54	55	52	57	53	no	no	no	no	no	no	no
35 Climus St	1951	G	E	57	53	58	54	57	54	58	55	55	52	57	53	no	no	no	no	no	no	no
36 Climus St	2708	G	E	57	53	58	55	57	54	58	55	56	52	57	54	no	no	no	no	no	no	no
37 Climus St	990	G	E	57	54	59	55	58	54	59	55	56	53	58	54	no	no	no	no	no	no	no
38 Climus St	2056	G	SE	57	54	58	55	58	54	58	55	56	53	57	54	no	no	no	no	no	no	no
35 Colebee Cres	2571	G	N	56	53	58	54	56	53	58	54	56	52	57	54	no	no	no	no	no	no	no
36 Colebee Cres	2583	G	E	57	53	58	55	57	53	58	55	56	53	58	54	no	no	no	no	no	no	no
36 Colebee Cres	2583	F2	E	61	58	62	59	61	58	62	59	61	57	62	59	no	no	no	yes	no	no	no
37 Colebee Cres	2569	G	N	57	53	58	54	56	53	58	54	56	53	58	54	no	no	no	no	no	no	no
38 Colebee Cres	2582	G	E	57	54	59	55	57	54	58	55	57	53	58	55	no	no	no	no	no	no	no
39 Colebee Cres	2567	G	N	57	53	58	55	57	53	58	54	57	53	58	54	no	no	no	no	no	no	no
40 Colebee Cres	2579	G	N	57	53	58	54	57	53	58	54	56	53	58	54	no	no	no	no	no	no	no
41 Colebee Cres	2565	G	N	56	52	57	53	55	52	57	53	55	52	57	53	no	no	no	no	no	no	no
42 Colebee Cres	2577	G	N	57	53	58	54	57	53	58	54	56	53	58	54	no	no	no	no	no	no	no
43 Colebee Cres	2561	G	N	58	54	59	55	57	54	59	55	57	54	59	55	no	no	no	no	no	no	no
44 Colebee Cres	2574	G	N	57	54	59	55	57	54	59	55	57	53	58	55	no	no	no	no	no	no	no
45 Colebee Cres	2560	G	N	58	54	59	56	58	54	59	55	57	54	59	55	no	no	no	no	no	no	no

Address	Object number	Floor	Façade Direction	No build Year of opening		No build Design year		Build Year of opening		Build Design year		Build Project road contribution Year of opening		Build Project road contribution Design year		Does the project cause a >2dBA increase?		Is the cumulative limit exceeded?		Is it acute due to the project		Consider further additional noise mitigation?
				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
46 Colebee Cres	1915	G	NE	58	54	59	55	57	54	59	55	57	54	59	55	no	no	no	no	no	no	no
47 Colebee Cres	2558	G	N	57	54	59	55	57	54	59	55	57	54	58	55	no	no	no	no	no	no	no
48 Colebee Cres	1070	G	E	58	55	59	56	58	54	59	56	57	54	59	55	no	no	no	no	no	no	no
48 Colebee Cres	1069	G	NE	58	54	59	56	58	54	59	56	58	54	59	55	no	no	no	no	no	no	no
49 Colebee Cres	1912	G	E	58	55	60	56	58	55	60	56	58	54	59	56	no	no	no	no	no	no	no
49 Colebee Cres	1911	G	N	58	55	60	56	58	55	60	56	58	55	60	56	no	no	no	no	no	no	no
50 Colebee Cres	1057	G	NE	59	56	61	57	59	56	61	57	59	56	60	57	no	no	no	yes	no	no	no
51 Colebee Cres	1907	G	E	60	57	62	58	60	56	61	58	60	56	61	58	no	no	no	yes	no	no	no
52 Colebee Cres	1054	G	NE	59	56	60	57	59	56	60	57	58	55	60	56	no	no	no	no	no	no	no
53 Colebee Cres	1903	G	N	58	55	60	56	58	55	59	56	58	55	59	56	no	no	no	no	no	no	no
54 Colebee Cres	1051	G	NE	59	55	60	57	59	56	60	57	58	55	60	56	no	no	no	no	no	no	no
55 Colebee Cres	1899	G	E	60	56	61	58	60	56	61	57	60	56	61	57	no	no	no	yes	no	no	no
56 Colebee Cres	1043	G	NE	59	56	60	57	59	56	61	57	59	55	60	57	no	no	no	yes	no	no	no
57 Colebee Cres	1065	G	E	61	58	62	59	61	58	62	59	61	57	62	59	no	no	no	yes	no	no	no
58 Colebee Cres	1038	G	E	60	56	61	57	60	57	61	58	59	56	61	57	no	no	no	yes	no	no	no
59 Colebee Cres	1061	G	N	60	57	62	58	60	57	61	58	60	56	61	58	no	no	no	yes	no	no	no
60 Colebee Cres	1033	G	E	60	56	61	57	60	56	61	58	59	56	61	57	no	no	no	yes	no	no	no
61 Colebee Cres	89	G	N	61	57	62	58	60	57	62	58	60	57	62	58	no	no	no	yes	no	no	no
62 Colebee Cres	1046	G	NE	60	56	61	57	60	57	61	58	59	56	61	57	no	no	no	yes	no	no	no
63 Colebee Cres	85	G	NE	62	59	64	60	62	59	64	60	62	59	64	60	no	no	no	yes	no	yes	yes
63 Colebee Cres	86	G	SE	63	59	64	61	63	60	64	61	63	60	64	61	no	no	no	yes	no	yes	yes
64 Colebee Cres	1028	G	NE	59	56	61	57	60	56	61	57	59	56	60	57	no	no	no	yes	no	no	no
65 Colebee Cres	82	G	NE	63	60	65	61	64	61	65	62	64	60	65	62	no	no	no	yes	yes	yes	yes
66 Colebee Cres	1022	G	NE	59	56	61	57	60	56	61	57	59	55	60	57	no	no	no	yes	no	no	no
67 Colebee Cres	77	G	NE	63	60	65	61	64	61	65	62	64	60	65	62	no	no	no	yes	yes	yes	yes
67 Colebee Cres	79	G	SE	61	58	63	59	62	59	64	60	62	59	63	60	no	no	no	yes	no	yes	yes
68 Colebee Cres	1954	G	E	60	56	61	57	60	57	61	58	59	56	60	57	no	no	no	yes	no	no	no
69 Colebee Cres	73	G	NE	63	60	65	61	64	61	65	62	64	60	65	62	no	no	no	yes	yes	yes	yes
70 Colebee Cres	1020	G	E	60	57	61	58	60	57	62	58	60	56	61	57	no	no	no	yes	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
71 Colebee Cres	70	G	NE	64	60	65	61	64	61	65	62	64	60	65	62	no	no	no	yes	yes	yes	yes
72 Colebee Cres	1014	G	NE	60	57	61	58	60	57	62	58	60	56	61	57	no	no	no	yes	no	no	no
73 Colebee Cres	67	G	E	64	60	65	61	64	61	66	62	64	61	65	62	no	no	yes	yes	yes	yes	yes
74 Colebee Cres	1011	G	E	60	56	61	57	60	57	61	58	59	56	61	57	no	no	no	yes	no	no	no
75 Colebee Cres	61	G	NE	63	59	64	60	63	60	64	61	63	59	64	61	no	no	no	yes	no	yes	yes
76 Colebee Cres	1006	G	E	58	55	60	56	59	56	60	57	58	54	59	56	no	no	no	no	no	no	no
77 Colebee Cres	58	G	NE	64	60	65	62	65	61	66	62	64	61	66	62	no	no	yes	yes	yes	yes	yes
77 Colebee Cres	59	G	SE	62	59	63	60	63	60	64	61	63	59	64	60	no	no	no	yes	no	yes	yes
78 Colebee Cres	999	G	E	58	55	59	56	59	55	60	56	57	54	58	55	no	no	no	no	no	no	no
78 Colebee Cres	999	F2	E	62	59	63	60	63	59	64	60	62	58	63	60	no	no	no	yes	no	yes	yes
79 Colebee Cres	53	G	E	63	60	65	61	64	61	66	62	64	61	65	62	no	no	yes	yes	yes	yes	yes
79 Colebee Cres	55	G	S	62	58	63	60	63	60	64	61	62	59	63	60	no	no	no	yes	no	yes	yes
80 Colebee Cres	996	G	E	58	55	60	56	59	55	60	56	57	54	59	55	no	no	no	no	no	no	no
81 Colebee Cres	49	G	E	64	61	65	62	65	62	66	63	65	61	66	63	no	no	yes	yes	yes	yes	yes
81 Colebee Cres	50	G	S	62	58	63	60	63	59	64	60	62	59	63	60	no	no	no	yes	no	yes	yes
83 Colebee Cres	46	G	N	62	58	63	59	62	59	64	60	62	59	64	60	no	no	no	yes	no	yes	yes
83 Colebee Cres	47	G	NE	64	61	66	62	65	62	66	63	65	61	66	63	no	no	yes	yes	yes	yes	yes
83 Colebee Cres	45	G	S	62	59	63	60	63	60	64	61	62	59	64	60	no	no	no	yes	no	yes	yes
85 Colebee Cres	41	G	NE	64	61	66	62	65	62	66	63	65	61	66	63	no	no	yes	yes	yes	yes	yes
86 Colebee Cres	2051	G	SE	57	54	58	55	57	54	58	55	56	52	57	53	no	no	no	no	no	no	no
87 Colebee Cres	37	G	E	64	61	66	62	65	62	67	63	65	62	66	63	no	no	yes	yes	yes	yes	yes
87 Colebee Cres	38	G	SE	62	59	64	60	63	60	65	61	63	59	64	61	no	no	no	yes	no	yes	yes
88 Colebee Cres	2047	G	E	57	53	58	55	57	54	58	55	55	52	57	53	no	no	no	no	no	no	no
89 Colebee Cres	33	G	NE	62	58	63	59	63	59	64	60	62	59	64	60	no	no	no	yes	no	yes	yes
91 Colebee Cres	29	G	NE	65	61	66	63	66	62	67	63	65	62	67	63	no	no	yes	yes	yes	yes	yes
91 Colebee Cres	30	G	NW	61	58	63	59	62	59	63	60	62	58	63	60	no	no	no	yes	no	yes	yes
91 Colebee Cres	31	G	S	63	59	64	60	64	60	65	61	63	60	64	61	no	no	no	yes	no	yes	yes
93 Colebee Cres	26	G	NE	64	60	65	62	65	61	66	63	65	61	66	62	no	no	yes	yes	yes	yes	yes
93 Colebee Cres	27	G	SE	62	59	63	60	63	60	64	61	63	59	64	61	no	no	no	yes	no	yes	yes

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
94 Colebee Cres	2035	G	SE	57	53	58	54	57	53	58	54	54	51	56	52	no	no	no	no	no	no	no
95 Colebee Cres	23	G	E	64	61	66	62	65	62	67	63	65	62	66	63	no	no	yes	yes	yes	yes	yes
96 Colebee Cres	2031	G	E	56	53	57	54	56	53	57	54	54	51	55	52	no	no	no	no	no	no	no
97 Colebee Cres	17	G	E	64	61	66	62	65	62	67	63	65	62	66	63	no	no	yes	yes	yes	yes	yes
97 Colebee Cres	18	G	N	61	58	63	59	62	59	64	60	62	59	64	60	no	no	no	yes	no	yes	yes
98 Colebee Cres	2027	G	SE	56	53	57	54	56	53	57	54	54	51	55	52	no	no	no	no	no	no	no
99 Colebee Cres	13	G	NE	64	61	66	62	65	62	67	63	65	62	66	63	no	no	yes	yes	yes	yes	yes
99 Colebee Cres	14	G	SE	62	59	63	60	63	60	64	61	63	59	64	60	no	no	no	yes	no	yes	yes
99A Colebee Cres	3141	G	NE	65	62	67	63	66	63	68	64	66	63	67	64	no	no	yes	yes	yes	yes	yes
100 Colebee Cres	2019	G	E	56	53	57	54	56	53	57	54	54	50	55	52	no	no	no	no	no	no	no
101 Colebee Cres	9	G	E	64	61	66	62	65	62	67	63	65	61	66	63	no	no	yes	yes	yes	yes	yes
102 Colebee Cres	2015	G	SE	56	52	57	54	56	53	57	54	54	50	55	51	no	no	no	no	no	no	no
103 Colebee Cres	95	G	E	63	60	65	61	64	61	65	62	64	60	65	61	no	no	no	yes	yes	yes	yes
103 Colebee Cres	94	G	N	62	58	63	60	63	60	64	61	63	59	64	61	no	no	no	yes	no	yes	yes
104A Colebee Cres	2011	G	SE	56	52	57	53	56	53	57	54	53	50	55	51	no	no	no	no	no	no	no
105 Colebee Cres	98	G	E	63	59	64	61	64	60	65	61	63	60	64	61	no	no	no	yes	no	yes	yes
105 Colebee Cres	97	G	N	61	58	63	59	63	59	64	60	62	59	64	60	no	no	no	yes	no	yes	yes
106 Colebee Cres	2007	G	SE	56	52	57	53	56	52	57	53	53	50	54	51	no	no	no	no	no	no	no
107 Colebee Cres	103	G	E	63	59	64	60	63	60	64	61	63	59	64	60	no	no	no	yes	no	yes	yes
108 Colebee Cres	2734	G	NE	54	50	55	51	54	50	55	51	52	49	53	50	no	no	no	no	no	no	no
109 Colebee Cres	107	G	E	62	59	63	60	63	59	64	60	62	58	63	60	no	no	no	yes	no	yes	yes
110 Colebee Cres	2741	G	SE	55	51	56	52	55	51	56	52	52	48	53	49	no	no	no	no	no	no	no
111 Colebee Cres	111	G	E	62	59	63	60	63	59	64	60	62	59	63	60	no	no	no	yes	no	yes	yes
113 Colebee Cres	115	G	E	62	58	63	60	63	59	64	60	62	58	63	59	no	no	no	yes	no	no	no
115 Colebee Cres	118	G	E	62	58	63	59	62	59	63	60	61	58	62	59	no	no	no	yes	no	no	no
117 Colebee Cres	121	G	SE	61	58	63	59	62	59	63	60	61	57	62	59	no	no	no	yes	no	no	no
119 Colebee Cres	125	G	SE	60	57	61	58	61	58	61	58	59	56	60	57	no	no	no	yes	no	no	no
121 Colebee Cres	129	G	SE	61	57	62	58	61	58	62	59	60	56	61	57	no	no	no	yes	no	no	no
123 Colebee Cres	134	G	SE	61	57	62	58	61	58	62	59	60	57	61	58	no	no	no	yes	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
125 Colebee Cres	139	G	SE	60	57	61	58	60	57	61	58	59	55	60	57	no	no	no	yes	no	no	no
127 Colebee Cres	144	G	SE	60	56	61	57	60	57	61	57	58	55	59	56	no	no	no	yes	no	no	no
129 Colebee Cres	147	G	SE	60	57	61	58	60	57	61	58	58	55	60	56	no	no	no	yes	no	no	no
131 Colebee Cres	152	G	SE	60	56	61	57	60	57	61	57	58	55	59	56	no	no	no	yes	no	no	no
133 Colebee Cres	156	G	SE	60	56	61	57	60	56	61	57	58	54	59	56	no	no	no	yes	no	no	no
135 Colebee Cres	160	G	SE	59	56	60	57	59	56	60	57	57	54	58	55	no	no	no	no	no	no	no
137 Colebee Cres	164	G	SE	59	56	60	57	59	56	60	57	57	54	58	55	no	no	no	no	no	no	no
139 Colebee Cres	170	G	SE	59	55	60	56	59	56	60	56	57	53	58	54	no	no	no	no	no	no	no
141 Colebee Cres	171	G	SE	59	55	60	56	59	56	60	57	57	53	58	54	no	no	no	no	no	no	no
143 Colebee Cres	178	G	SE	59	55	60	56	59	56	60	56	56	53	58	54	no	no	no	no	no	no	no
145 Colebee Cres	180	G	SE	58	55	59	56	58	55	59	56	55	52	57	53	no	no	no	no	no	no	no
147 Colebee Cres	187	G	SE	58	55	59	56	59	55	59	56	56	53	57	54	no	no	no	no	no	no	no
149 Colebee Cres	190	G	SE	58	55	59	56	58	55	59	56	55	52	57	53	no	no	no	no	no	no	no
151 Colebee Cres	193	G	SE	58	54	59	55	58	55	59	56	55	52	57	53	no	no	no	no	no	no	no
153 Colebee Cres	198	G	E	57	53	58	54	57	54	58	54	53	50	54	51	no	no	no	no	no	no	no
155 Colebee Cres	2088	G	E	57	54	58	55	57	54	58	55	55	51	56	53	no	no	no	no	no	no	no
157 Colebee Cres	2092	G	N	57	53	58	54	57	53	58	54	55	51	56	52	no	no	no	no	no	no	no
159 Colebee Cres	2096	G	E	56	53	57	54	56	53	57	54	54	50	55	51	no	no	no	no	no	no	no
161 Colebee Cres	2101	G	N	55	52	56	53	56	52	56	53	53	50	54	51	no	no	no	no	no	no	no
1 Coombell Ave	1627	G	S	58	53	59	54	58	53	59	54	53	50	55	51	no	no	no	no	no	no	no
1 Coombell Ave	1627	F2	S	60	55	60	56	60	55	60	56	56	52	57	53	no	no	no	no	no	no	no
2 Coombell Ave	1587	G	S	56	51	56	52	56	51	57	52	53	49	54	51	no	no	no	no	no	no	no
2 Coombell Ave	1585	G	W	54	51	56	52	54	51	56	52	54	50	56	52	no	no	no	no	no	no	no
2 Coombell Ave	1585	F2	W	57	53	59	55	57	54	59	55	57	53	59	55	no	no	no	no	no	no	no
3 Coombell Ave	1623	G	S	57	53	58	53	57	53	58	53	52	49	54	50	no	no	no	no	no	no	no
3 Coombell Ave	1623	F2	S	59	55	60	55	59	55	60	55	55	52	57	53	no	no	no	no	no	no	no
4 Coombell Ave	1582	G	W	55	51	56	53	55	51	57	53	55	51	56	53	no	no	no	no	no	no	no
4 Coombell Ave	1582	F2	W	58	54	60	56	59	55	60	56	58	55	60	56	no	no	no	no	no	no	no
5 Coombell Ave	1619	G	S	58	53	59	54	58	53	59	54	54	50	55	52	no	no	no	no	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
5 Coombell Ave	1619	F2	S	59	55	60	56	59	55	60	56	56	53	58	54	no	no	no	no	no	no	no
6 Coombell Ave	1577	G	W	55	52	57	53	56	52	57	54	55	52	57	53	no	no	no	no	no	no	no
7 Coombell Ave	1615	G	S	57	53	58	54	57	53	58	54	54	50	55	52	no	no	no	no	no	no	no
7 Coombell Ave	1615	F2	S	59	55	60	56	59	55	60	56	56	53	58	54	no	no	no	no	no	no	no
8 Coombell Ave	1574	G	N	55	52	57	53	56	52	57	54	56	52	57	54	no	no	no	no	no	no	no
9 Coombell Ave	1611	G	S	57	54	58	55	57	53	58	54	54	51	56	52	no	no	no	no	no	no	no
9 Coombell Ave	1611	F2	S	59	55	60	56	59	55	60	56	57	53	58	55	no	no	no	no	no	no	no
10 Coombell Ave	1569	G	W	56	52	57	54	56	53	58	54	56	53	58	54	no	no	no	no	no	no	no
11 Coombell Ave	1607	G	S	57	53	58	54	57	53	58	54	55	51	56	53	no	no	no	no	no	no	no
11 Coombell Ave	1605	F2	N	58	54	59	56	59	55	60	56	58	55	60	56	no	no	no	no	no	no	no
12 Coombell Ave	1566	G	N	58	55	60	56	59	55	61	57	59	55	61	57	no	no	no	yes	no	no	no
12 Coombell Ave	1566	F2	N	61	57	62	59	61	58	63	59	61	58	63	59	no	no	no	yes	no	no	no
13 Coombell Ave	1603	G	S	57	52	58	54	57	52	58	53	54	51	56	52	no	no	no	no	no	no	no
13 Coombell Ave	1601	F2	W	58	54	60	56	59	55	60	57	58	55	60	56	no	no	no	no	no	no	no
15 Coombell Ave	1599	G	S	57	53	58	54	57	53	58	54	55	52	57	53	no	no	no	no	no	no	no
15 Coombell Ave	1597	G	W	56	52	57	53	56	53	58	54	56	52	58	54	no	no	no	no	no	no	no
15 Coombell Ave	1597	F2	W	59	55	60	56	59	56	61	57	59	55	61	57	no	no	no	yes	no	no	no
17 Coombell Ave	1593	G	W	56	52	57	54	56	53	58	55	56	53	58	54	no	no	no	no	no	no	no
17 Coombell Ave	1593	F2	W	59	55	61	57	60	56	61	58	59	56	61	58	no	no	no	yes	no	no	no
19 Coombell Ave	1590	G	W	59	55	61	57	60	56	61	58	59	56	61	57	no	no	no	yes	no	no	no
19 Coombell Ave	1590	F2	W	62	58	63	60	62	59	64	60	62	59	64	60	no	no	no	yes	no	yes	yes
1 Cremona Pl	801	G	N	59	56	60	56	59	56	59	56	54	51	55	52	no	no	no	no	no	no	no
2 Cremona Pl	799	G	N	60	57	61	57	60	57	61	57	57	54	57	54	no	no	no	yes	no	no	no
3 Cremona Pl	853	G	N	58	54	59	55	58	54	58	55	52	49	53	50	no	no	no	no	no	no	no
4 Cremona Pl	807	G	N	59	55	60	56	58	55	59	56	54	51	55	52	no	no	no	no	no	no	no
6 Cremona Pl	810	G	N	58	55	59	56	58	55	59	56	54	51	55	51	no	no	no	no	no	no	no
8 Cremona Pl	814	G	N	58	55	59	55	58	54	58	55	53	50	54	51	no	no	no	no	no	no	no
8 Cremona Pl	814	F2	N	61	58	62	59	61	58	62	59	58	55	59	56	no	no	no	yes	no	no	no
10 Cremona Pl	818	G	N	57	54	58	55	57	54	58	55	53	50	54	51	no	no	no	no	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
10 Cremona Pl	818	F2	N	61	58	62	59	61	58	62	59	58	54	59	55	no	no	no	yes	no	no	no
12 Cremona Pl	823	G	N	57	54	59	55	57	54	58	55	53	50	53	50	no	no	no	no	no	no	no
14 Cremona Pl	827	G	N	57	54	58	55	57	54	58	55	52	49	53	50	no	no	no	no	no	no	no
16 Cremona Pl	831	G	N	58	54	59	55	58	54	59	55	52	49	53	50	no	no	no	no	no	no	no
18 Cremona Pl	835	G	N	59	56	61	57	60	56	61	57	52	49	53	49	no	no	no	yes	no	no	no
19 Cremona Pl	849	G	W	60	56	62	58	61	57	62	58	49	46	50	47	no	no	no	yes	no	no	no
3 Doolan St	473	G	NW	59	55	60	56	58	55	59	55	52	50	53	51	no	no	no	no	no	no	no
3 Doolan St	474	F2	SW	61	57	62	58	61	57	61	58	53	51	54	52	no	no	no	yes	no	no	no
4 Doolan St	2301	G	SW	58	54	59	55	58	54	58	55	51	49	52	50	no	no	no	no	no	no	no
5 Doolan St	465	G	SW	59	55	60	56	59	56	60	56	53	51	54	51	no	no	no	no	no	no	no
6 Doolan St	2306	G	SW	58	54	59	55	58	55	59	55	52	50	53	50	no	no	no	no	no	no	no
7 Doolan St	463	G	SW	59	56	60	57	59	56	60	56	54	51	54	52	no	no	no	no	no	no	no
8 Doolan St	2310	G	SW	58	55	59	55	58	54	59	55	51	48	52	49	no	no	no	no	no	no	no
9 Doolan St	457	G	W	59	56	60	56	59	56	60	56	54	52	55	52	no	no	no	no	no	no	no
10 Doolan St	2313	G	SW	59	55	60	56	59	55	59	55	52	49	53	50	no	no	no	no	no	no	no
12 Doolan St	2319	G	SW	59	55	60	56	59	55	59	56	53	51	54	51	no	no	no	no	no	no	no
13 Doolan St	1702	G	W	60	56	61	57	59	56	60	56	56	53	57	54	no	no	no	no	no	no	no
14 Doolan St	2321	G	SW	59	55	60	56	59	56	59	56	53	51	54	52	no	no	no	no	no	no	no
15 Doolan St	1706	G	W	59	55	60	56	59	56	59	56	55	52	56	53	no	no	no	no	no	no	no
16 Doolan St	2326	G	SW	59	55	60	56	59	55	59	56	54	51	54	52	no	no	no	no	no	no	no
17 Doolan St	1712	G	SW	59	55	60	56	59	55	59	55	54	50	54	51	no	no	no	no	no	no	no
18 Doolan St	2330	G	W	59	55	60	56	59	55	59	55	54	50	54	51	no	no	no	no	no	no	no
19 Doolan St	1714	G	NW	58	54	59	55	57	53	58	54	52	49	53	50	no	no	no	no	no	no	no
20 Doolan St	2334	G	W	59	55	60	56	59	55	59	55	54	50	54	51	no	no	no	no	no	no	no
22 Doolan St	2338	G	NW	59	55	60	56	59	55	59	55	54	50	54	51	no	no	no	no	no	no	no
22a Doolan St	2344	G	SW	57	54	58	55	57	54	58	54	52	49	53	50	no	no	no	no	no	no	no
21 Durward St	1890	G	W	58	54	59	55	57	54	58	54	49	46	51	47	no	no	no	no	no	no	no
21 Durward St	1890	F2	W	60	57	61	58	60	57	61	57	54	50	55	51	no	no	no	yes	no	no	no
3 Eliza St	2233	G	W	56	53	58	54	56	53	58	54	56	52	57	54	no	no	no	no	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
3 Eliza St	2233	F2	W	58	54	59	56	58	54	59	56	58	54	59	56	no	no	no	no	no	no	no
4 Eliza St	1204	G	W	57	53	58	54	56	53	58	54	56	53	57	54	no	no	no	no	no	no	no
5 Eliza St	2229	G	W	56	52	57	53	55	52	57	53	55	51	56	53	no	no	no	no	no	no	no
6 Eliza St	1203	G	E	57	53	58	55	57	53	58	54	55	52	57	53	no	no	no	no	no	no	no
6 Eliza St	1203	F2	E	58	55	60	56	58	55	59	56	57	54	58	55	no	no	no	no	no	no	no
7 Eliza St	2225	G	W	56	53	58	54	56	52	57	54	56	52	57	54	no	no	no	no	no	no	no
7 Eliza St	2227	F2	S	59	56	61	57	59	56	61	57	59	55	60	57	no	no	no	yes	no	no	no
8 Eliza St	1199	G	E	57	53	58	55	57	53	58	54	55	52	56	53	no	no	no	no	no	no	no
8 Eliza St	1199	F2	E	58	55	60	56	58	55	59	56	57	54	58	55	no	no	no	no	no	no	no
8 Eliza St	1196	F2	W	58	55	60	56	58	54	59	56	58	54	59	56	no	no	no	no	no	no	no
1 Everingham St	2253	G	W	55	51	56	52	55	51	56	52	54	51	56	52	no	no	no	no	no	no	no
3 Everingham St	2249	G	W	55	51	56	52	55	51	56	52	54	51	56	52	no	no	no	no	no	no	no
4 Everingham St	2277	G	S	55	51	56	53	55	51	56	52	54	50	55	51	no	no	no	no	no	no	no
4 Everingham St	2278	F2	W	58	54	59	56	58	54	59	56	58	54	59	56	no	no	no	no	no	no	no
5 Everingham St	2245	G	N	54	50	55	52	54	50	55	51	53	50	55	51	no	no	no	no	no	no	no
6 Everingham St	2273	G	S	56	52	57	53	55	52	57	53	54	51	56	52	no	no	no	no	no	no	no
7 Everingham St	2241	G	W	55	51	56	53	55	51	56	53	55	51	56	52	no	no	no	no	no	no	no
8 Everingham St	2271	G	S	56	52	57	53	55	52	57	53	54	51	56	52	no	no	no	no	no	no	no
9 Everingham St	2237	G	W	56	52	57	54	56	52	57	54	56	52	57	54	no	no	no	no	no	no	no
9 Everingham St	2237	F2	W	58	54	59	56	58	54	59	55	57	54	59	55	no	no	no	no	no	no	no
10 Everingham St	2265	G	S	56	52	57	53	55	52	56	53	54	51	55	52	no	no	no	no	no	no	no
11 Everingham St	1212	G	W	57	54	59	55	57	53	58	55	57	53	58	55	no	no	no	no	no	no	no
12 Everingham St	2261	G	W	55	52	57	53	55	52	57	53	55	51	56	53	no	no	no	no	no	no	no
13 Everingham St	1210	G	N	56	53	58	54	56	52	57	54	56	52	57	53	no	no	no	no	no	no	no
14 Everingham St	1240	G	S	56	52	57	54	56	52	57	54	55	52	57	53	no	no	no	no	no	no	no
15 Everingham St	1184	G	W	57	54	58	55	57	53	58	55	57	53	58	55	no	no	no	no	no	no	no
16 Everingham St	1238	G	S	56	53	58	54	56	53	57	54	56	52	57	53	no	no	no	no	no	no	no
16 Everingham St	1238	F2	S	59	55	60	56	58	55	60	56	58	54	59	55	no	no	no	no	no	no	no
17 Everingham St	1180	G	W	58	54	59	56	58	54	59	55	57	54	59	55	no	no	no	no	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
19 Everingham St	1177	G	W	60	56	61	58	59	56	61	57	59	56	61	57	no	no	no	yes	no	no	no
1 Gregory St	633	G	SW	65	61	66	62	65	61	65	61	42	39	43	40	no	no	no	yes	no	no	no
3 Gregory St	629	G	SW	66	62	67	63	66	62	66	62	42	39	43	40	no	no	yes	yes	no	no	no
3a Gregory St	413	G	W	72	69	73	70	73	69	73	69	48	45	49	45	no	no	yes	yes	no	no	no
5 Gregory St	625	G	SW	67	63	68	64	67	63	67	63	42	39	43	40	no	no	yes	yes	no	no	no
7 Gregory St	409	G	W	71	67	72	68	71	68	71	68	48	45	49	45	no	no	yes	yes	no	no	no
9 Gregory St	407	G	W	72	69	73	69	72	69	73	69	48	45	49	46	no	no	yes	yes	no	no	no
11 Gregory St	404	G	S	70	66	71	67	70	66	70	67	44	41	45	42	no	no	yes	yes	no	no	no
12 Gregory St	597	G	W	60	56	61	57	60	56	60	57	49	47	50	47	no	no	no	no	no	no	no
13 Gregory St	399	G	W	68	64	68	65	68	64	68	64	49	46	50	47	no	no	yes	yes	no	no	no
14 Gregory St	593	G	W	60	56	61	57	60	56	60	57	49	47	50	48	no	no	no	no	no	no	no
15 Gregory St	396	G	W	66	63	67	63	66	63	66	63	49	46	50	47	no	no	yes	yes	no	no	no
16 Gregory St	590	G	W	60	56	61	57	60	56	60	57	50	47	50	48	no	no	no	no	no	no	no
17 Gregory St	392	G	W	66	62	67	63	66	62	66	62	49	47	50	48	no	no	yes	yes	no	no	no
18 Gregory St	586	G	W	60	56	61	57	60	56	60	57	50	48	51	48	no	no	no	no	no	no	no
19 Gregory St	388	G	W	65	62	66	63	65	62	66	62	50	48	51	49	no	no	yes	yes	no	no	no
20 Gregory St	581	G	W	60	56	61	57	60	56	60	57	50	47	51	48	no	no	no	no	no	no	no
21 Gregory St	384	G	W	65	61	65	62	65	61	65	61	50	48	51	48	no	no	no	yes	no	no	no
22 Gregory St	605	G	N	59	56	60	57	59	56	59	56	50	48	51	49	no	no	no	no	no	no	no
23 Gregory St	380	G	W	64	61	65	62	64	61	65	61	51	48	51	49	no	no	no	yes	no	no	no
25 Gregory St	376	G	W	63	60	64	61	64	60	64	60	51	49	52	49	no	no	no	yes	no	no	no
27 Gregory St	372	G	W	64	60	65	61	64	60	64	61	51	49	52	50	no	no	no	yes	no	no	no
29 Gregory St	368	G	W	63	59	64	60	63	59	63	60	51	49	52	49	no	no	no	yes	no	no	no
31 Gregory St	365	G	W	64	60	64	61	64	60	64	60	52	49	52	50	no	no	no	yes	no	no	no
37 Gregory St	546	G	N	59	56	60	57	59	56	59	56	51	49	52	49	no	no	no	no	no	no	no
39 Gregory St	551	G	N	59	56	60	56	59	56	59	56	51	49	52	50	no	no	no	no	no	no	no
41 Gregory St	554	G	S	58	55	59	56	58	55	58	55	46	43	47	44	no	no	no	no	no	no	no
43 Gregory St	559	G	N	58	55	59	56	58	55	58	55	50	47	51	47	no	no	no	no	no	no	no
43 Gregory St	558	G	S	57	55	58	55	57	55	58	55	46	43	47	44	no	no	no	no	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
45 Gregory St	564	G	N	58	54	59	55	57	54	58	54	49	46	50	47	no	no	no	no	no	no	no
1 Hutt St	3069	G	S	69	63	70	63	69	63	70	63	51	47	52	49	no	no	yes	yes	no	no	no
1 Hutt St	3069	F2	S	70	63	70	63	69	63	70	63	52	49	54	50	no	no	yes	yes	no	no	no
3 Hutt St	3083	G	W	55	53	55	53	55	53	55	53	48	45	50	46	no	no	no	no	no	no	no
5 Hutt St	3085	G	E	53	52	54	52	53	51	53	52	43	39	45	41	no	no	no	no	no	no	no
7 Hutt St	3079	G	W	52	50	53	51	52	50	53	51	50	46	52	48	no	no	no	no	no	no	no
7 Hutt St	3079	F2	W	55	53	57	54	56	53	57	54	54	50	55	52	no	no	no	no	no	no	no
2 Irvington Rd	2213	G	W	56	52	58	54	57	53	58	54	56	52	57	54	no	no	no	no	no	no	no
4 Irvington Rd	2209	G	W	57	53	58	54	57	53	58	54	56	52	57	54	no	no	no	no	no	no	no
4 Irvington Rd	2209	F2	W	58	53	59	55	58	54	59	55	57	53	58	54	no	no	no	no	no	no	no
6 Irvington Rd	2205	G	W	57	53	58	54	57	53	58	54	56	52	57	54	no	no	no	no	no	no	no
6 Irvington Rd	2205	F2	W	57	53	59	55	58	54	59	55	57	53	58	54	no	no	no	no	no	no	no
8 Irvington Rd	1996	G	W	57	53	58	54	57	53	58	54	56	52	57	54	no	no	no	no	no	no	no
10 Irvington Rd	1994	G	W	57	53	58	54	57	53	59	54	56	52	58	54	no	no	no	no	no	no	no
12 Irvington Rd	1990	G	W	57	53	58	54	57	53	59	54	56	52	58	54	no	no	no	no	no	no	no
12 Irvington Rd	1990	F2	W	57	53	59	55	58	54	59	55	57	53	58	54	no	no	no	no	no	no	no
14 Irvington Rd	1989	G	W	57	53	58	54	57	53	58	54	56	52	58	54	no	no	no	no	no	no	no
14 Irvington Rd	1989	F2	W	57	53	59	55	58	54	59	55	57	53	58	54	no	no	no	no	no	no	no
18 Irvington Rd	1984	G	W	57	53	58	54	57	53	59	55	56	53	58	54	no	no	no	no	no	no	no
18 Irvington Rd	1984	F2	W	57	53	59	55	58	54	59	55	57	53	58	55	no	no	no	no	no	no	no
20 Irvington Rd	1981	G	W	57	53	58	54	57	53	59	55	56	53	58	54	no	no	no	no	no	no	no
20 Irvington Rd	1981	F2	W	57	53	59	55	58	54	59	55	57	53	58	55	no	no	no	no	no	no	no
22 Irvington Rd	1977	G	W	57	53	58	54	57	53	59	55	56	53	58	54	no	no	no	no	no	no	no
22 Irvington Rd	1977	F2	W	57	53	59	55	58	54	59	55	57	53	58	55	no	no	no	no	no	no	no
24 Irvington Rd	1976	G	W	57	53	58	54	57	53	59	55	56	53	58	54	no	no	no	no	no	no	no
24 Irvington Rd	1976	F2	W	57	53	59	55	58	54	59	55	57	53	58	55	no	no	no	no	no	no	no
26 Irvington Rd	1971	G	W	57	53	58	54	57	53	59	55	56	53	58	54	no	no	no	no	no	no	no
26 Irvington Rd	1971	F2	W	57	53	59	55	58	54	59	55	57	53	58	55	no	no	no	no	no	no	no
32 Irvington Rd	1967	G	W	57	53	59	55	57	53	59	55	56	53	58	54	no	no	no	no	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
32 Irvington Rd	1967	F2	W	58	54	59	55	58	54	59	55	57	53	59	55	no	no	no	no	no	no	no
3 Josephine Way	429	G	NE	69	66	70	67	70	67	71	67	67	64	68	65	no	no	yes	yes	yes	yes	yes
3 Josephine Way	430	G	NW	65	62	66	62	65	63	66	63	64	62	65	63	no	no	yes	yes	yes	yes	yes
3 Josephine Way	431	G	SE	68	64	68	65	68	64	69	65	62	59	63	60	no	no	yes	yes	no	yes	yes
4 Josephine Way	505	G	N	61	58	62	59	61	58	61	58	56	52	56	53	no	no	no	yes	no	no	no
5 Josephine Way	433	G	NE	70	67	71	67	70	67	71	68	66	63	67	64	no	no	yes	yes	yes	yes	yes
5 Josephine Way	434	G	NW	66	63	67	63	66	63	67	64	66	63	66	63	no	no	yes	yes	yes	yes	yes
7 Josephine Way	439	G	NE	71	67	72	68	71	68	72	69	65	62	66	63	no	no	yes	yes	yes	yes	yes
1 Joshua Way	1778	G	NW	61	57	62	58	61	57	61	57	53	50	54	51	no	no	no	yes	no	no	no
3 Joshua Way	1782	G	W	59	55	60	56	59	55	59	56	52	50	54	51	no	no	no	no	no	no	no
4 Joshua Way	1762	G	NW	59	55	60	56	59	55	59	55	53	50	54	51	no	no	no	no	no	no	no
4 Joshua Way	1762	F2	NW	61	57	62	58	61	57	61	57	55	52	56	53	no	no	no	yes	no	no	no
5 Joshua Way	1786	G	W	59	56	60	57	59	56	60	56	52	49	53	50	no	no	no	no	no	no	no
6 Joshua Way	1767	G	NW	58	54	59	55	58	54	58	54	53	50	54	51	no	no	no	no	no	no	no
4 Kathy Way	1880	G	NW	62	58	63	59	62	58	62	59	54	51	55	52	no	no	no	yes	no	no	no
6 Kathy Way	1875	G	NW	61	57	62	58	61	57	62	58	53	50	54	51	no	no	no	yes	no	no	no
8 Kathy Way	1871	G	W	60	56	61	57	59	56	60	56	53	50	55	51	no	no	no	no	no	no	no
10 Kathy Way	1866	G	NW	61	57	62	58	60	57	61	57	53	50	54	51	no	no	no	yes	no	no	no
12 Kathy Way	1862	G	NW	62	58	63	59	62	58	62	58	54	50	55	52	no	no	no	yes	no	no	no
14 Kathy Way	1859	G	NW	62	58	63	59	62	58	62	58	54	50	55	51	no	no	no	yes	no	no	no
16 Kathy Way	1855	G	NW	62	58	63	59	62	58	62	58	54	50	55	52	no	no	no	yes	no	no	no
18 Kathy Way	1850	G	NW	61	57	62	58	61	57	61	58	54	51	55	52	no	no	no	yes	no	no	no
20 Kathy Way	1846	G	W	62	58	63	59	62	58	62	59	54	51	56	52	no	no	no	yes	no	no	no
22 Kathy Way	1842	G	W	62	59	64	60	62	59	63	59	54	51	55	52	no	no	no	yes	no	no	no
35 Kirsty Cres	2616	G	NE	56	52	57	53	56	52	57	53	55	51	56	53	no	no	no	no	no	no	no
37 Kirsty Cres	2614	G	SE	56	52	57	53	56	52	57	54	55	51	56	53	no	no	no	no	no	no	no
37a Kirsty Cres	2610	G	NE	57	53	58	54	57	53	58	54	56	52	57	54	no	no	no	no	no	no	no
41 Kirsty Cres	1918	G	NE	57	54	58	55	57	54	59	55	57	53	58	54	no	no	no	no	no	no	no
43 Kirsty Cres	1923	G	NE	58	54	59	55	58	54	59	55	57	53	58	55	no	no	no	no	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
52 Kirsty Cres	2620	G	NE	54	51	55	52	54	51	55	52	53	50	54	51	no	no	no	no	no	no	no
52 Kirsty Cres	2620	F2	NE	58	55	59	56	58	55	60	56	58	54	59	55	no	no	no	no	no	no	no
54 Kirsty Cres	2621	G	NE	55	51	56	53	55	52	56	53	54	51	55	52	no	no	no	no	no	no	no
56 Kirsty Cres	2626	G	NE	55	52	57	53	56	52	57	53	55	51	56	52	no	no	no	no	no	no	no
56 Kirsty Cres	2626	F2	NE	60	56	61	58	60	57	61	58	60	56	61	57	no	no	no	yes	no	no	no
58 Kirsty Cres	2628	G	NW	54	51	56	52	54	51	56	52	54	51	55	52	no	no	no	no	no	no	no
60 Kirsty Cres	2633	G	SE	56	53	58	54	57	53	58	54	56	52	57	53	no	no	no	no	no	no	no
62 Kirsty Cres	2636	G	NE	58	54	59	56	58	55	59	56	58	54	59	55	no	no	no	no	no	no	no
64 Kirsty Cres	1926	G	NE	57	54	58	55	57	54	59	55	57	53	58	54	no	no	no	no	no	no	no
64 Kirsty Cres	1926	F2	NE	62	59	64	60	63	59	64	60	62	59	63	60	no	no	no	yes	no	yes	yes
21 Kyogle St	2939	G	W	51	47	53	49	51	47	53	49	50	47	52	48	no	no	no	no	no	no	no
21 Kyogle St	2939	F2	W	55	51	56	52	55	51	56	53	54	50	56	52	no	no	no	no	no	no	no
25 Kyogle St	2946	G	N	51	47	52	48	51	47	53	49	50	47	52	48	no	no	no	no	no	no	no
25 Kyogle St	2946	F2	N	54	50	56	52	54	50	56	52	54	50	55	51	no	no	no	no	no	no	no
26 Kyogle St	2866	G	N	48	44	50	46	48	44	50	46	48	44	49	46	no	no	no	no	no	no	no
26 Kyogle St	2866	F2	N	53	49	54	50	53	49	55	51	52	49	54	50	no	no	no	no	no	no	no
27 Kyogle St	2950	G	W	52	48	53	49	52	48	53	50	51	47	53	49	no	no	no	no	no	no	no
27 Kyogle St	2950	F2	W	55	51	56	53	55	51	57	53	54	51	56	52	no	no	no	no	no	no	no
28 Kyogle St	2861	G	S	48	45	50	46	49	45	50	46	48	44	49	46	no	no	no	no	no	no	no
28 Kyogle St	2862	F2	N	53	49	54	50	53	49	55	51	52	48	54	50	no	no	no	no	no	no	no
30 Kyogle St	2852	G	N	50	46	52	48	50	46	52	48	49	46	51	47	no	no	no	no	no	no	no
31 Kyogle St	2952	G	N	52	48	54	50	53	49	54	50	52	48	54	50	no	no	no	no	no	no	no
31 Kyogle St	2952	F2	N	54	50	56	52	55	51	56	53	54	50	56	52	no	no	no	no	no	no	no
32 Kyogle St	2846	G	N	50	46	52	48	50	46	52	48	50	46	51	48	no	no	no	no	no	no	no
32 Kyogle St	2846	F2	N	53	49	54	51	53	49	55	51	52	49	54	50	no	no	no	no	no	no	no
33 Kyogle St	2954	G	N	53	49	54	50	53	49	54	51	52	48	54	50	no	no	no	no	no	no	no
33 Kyogle St	2954	F2	N	55	51	56	52	55	51	57	53	54	51	56	52	no	no	no	no	no	no	no
34 Kyogle St	2838	G	N	51	48	53	49	52	48	53	50	51	48	53	49	no	no	no	no	no	no	no
34 Kyogle St	2838	F2	N	54	50	56	52	54	50	56	52	54	50	55	52	no	no	no	no	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
35 Kyogle St	2956	G	N	52	49	54	50	53	49	55	51	53	49	54	51	no	no	no	no	no	no	no
35 Kyogle St	2956	F2	N	54	50	56	52	55	51	56	53	54	50	56	52	no	no	no	no	no	no	no
1 Lindfield Pl	2414	G	SW	59	55	60	56	59	55	59	55	53	50	54	51	no	no	no	no	no	no	no
3 Lindfield Pl	2434	G	SW	57	53	58	54	57	53	57	54	52	49	53	50	no	no	no	no	no	no	no
5 Lindfield Pl	2438	G	NW	56	52	57	54	56	52	56	53	51	48	52	49	no	no	no	no	no	no	no
7 Lindfield Pl	2444	G	S	57	53	58	54	57	53	57	53	50	47	51	48	no	no	no	no	no	no	no
2 McCann Pl	2589	G	SE	56	52	57	54	56	53	57	54	55	52	56	53	no	no	no	no	no	no	no
3 McCann Pl	2606	G	NE	56	53	58	54	57	53	58	54	56	52	57	54	no	no	no	no	no	no	no
4 McCann Pl	2592	G	NE	57	54	59	55	57	54	59	55	57	54	58	55	no	no	no	no	no	no	no
5 McCann Pl	2604	G	E	56	52	57	53	56	52	57	53	55	51	56	53	no	no	no	no	no	no	no
6 McCann Pl	2596	G	NE	57	53	58	54	57	53	58	54	56	53	58	54	no	no	no	no	no	no	no
6 McCann Pl	2595	G	SE	57	53	58	54	57	53	58	54	56	53	57	54	no	no	no	no	no	no	no
8 McCann Pl	2597	G	NE	55	52	57	53	55	52	57	53	55	52	56	53	no	no	no	no	no	no	no
10 McCann Pl	2599	G	N	55	52	57	53	55	52	57	53	55	52	56	53	no	no	no	no	no	no	no
12 McCann Pl	2601	G	S	56	52	57	53	56	52	57	53	55	51	56	52	no	no	no	no	no	no	no
1 Medea Pl	2469	G	W	58	54	59	56	58	54	59	55	53	49	54	51	no	no	no	no	no	no	no
3 Medea Pl	2467	G	N	57	53	58	55	57	53	58	54	52	48	53	49	no	no	no	no	no	no	no
4 Medea Pl	1815	G	N	59	55	60	56	59	55	59	56	51	48	53	49	no	no	no	no	no	no	no
5 Medea Pl	2463	G	N	57	53	58	55	57	53	58	54	52	48	53	49	no	no	no	no	no	no	no
6 Medea Pl	1811	G	NW	59	55	60	56	59	55	59	55	52	49	53	50	no	no	no	no	no	no	no
7 Medea Pl	2460	G	S	58	54	59	55	57	54	58	54	50	47	51	48	no	no	no	no	no	no	no
8 Medea Pl	1807	G	NW	59	55	60	56	59	55	59	55	53	49	54	50	no	no	no	no	no	no	no
9 Medea Pl	2453	G	S	58	54	59	55	58	54	58	54	51	47	51	48	no	no	no	no	no	no	no
10 Medea Pl	1803	G	NW	59	55	60	56	59	55	59	55	53	49	54	50	no	no	no	no	no	no	no
11 Medea Pl	2452	G	N	57	53	58	54	57	53	57	54	52	48	53	49	no	no	no	no	no	no	no
12 Medea Pl	1799	G	NW	58	54	59	55	58	54	58	55	52	49	53	50	no	no	no	no	no	no	no
13 Medea Pl	2445	G	S	57	54	58	55	57	53	57	54	51	47	51	48	no	no	no	no	no	no	no
14 Medea Pl	1794	G	W	59	55	60	56	59	55	59	55	52	49	53	50	no	no	no	no	no	no	no
15 Medea Pl	1775	G	W	57	54	59	55	57	53	58	54	53	49	54	50	no	no	no	no	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
16 Medea Pl	1790	G	W	59	55	60	56	59	55	59	56	52	49	53	50	no	no	no	no	no	no	no
17 Medea Pl	1770	G	NW	57	54	59	55	57	53	57	54	52	49	53	50	no	no	no	no	no	no	no
2 Mintoff Pl	2410	G	SW	59	55	60	56	59	55	59	55	53	50	54	51	no	no	no	no	no	no	no
3 Mintoff Pl	1730	G	NW	58	54	59	55	58	54	58	54	53	50	54	51	no	no	no	no	no	no	no
4 Mintoff Pl	2406	G	SW	59	55	60	56	58	55	59	55	53	50	54	51	no	no	no	no	no	no	no
5 Mintoff Pl	1735	G	NW	59	55	60	56	58	55	59	55	53	50	54	51	no	no	no	no	no	no	no
6 Mintoff Pl	1746	G	SW	59	55	60	56	59	55	59	55	54	50	54	51	no	no	no	no	no	no	no
7 Mintoff Pl	1738	G	NW	59	55	60	56	58	54	58	55	53	50	54	51	no	no	no	no	no	no	no
8 Mintoff Pl	1742	G	NW	59	55	60	56	58	55	59	55	53	50	54	51	no	no	no	no	no	no	no
11 Nammoona Rd	3013	G	S	50	48	51	48	50	48	51	48	47	43	48	45	no	no	no	no	no	no	no
11 Nammoona Rd	3012	F2	N	53	49	55	51	54	50	55	51	53	49	55	51	no	no	no	no	no	no	no
12 Nammoona Rd	2992	G	S	50	46	51	47	50	46	51	47	48	45	50	46	no	no	no	no	no	no	no
12 Nammoona Rd	2993	F2	N	53	49	54	50	53	49	55	51	52	49	54	50	no	no	no	no	no	no	no
13 Nammoona Rd	3015	G	N	50	46	51	47	50	46	52	48	49	46	51	47	no	no	no	no	no	no	no
13 Nammoona Rd	3015	F2	N	53	49	55	51	54	50	55	51	53	50	55	51	no	no	no	no	no	no	no
14 Nammoona Rd	2994	G	S	49	45	50	46	49	44	50	46	47	43	48	45	no	no	no	no	no	no	no
14 Nammoona Rd	2995	F2	N	53	49	54	50	53	49	55	51	52	49	54	50	no	no	no	no	no	no	no
15 Nammoona Rd	3017	G	N	50	46	52	48	50	46	52	48	50	46	51	48	no	no	no	no	no	no	no
16 Nammoona Rd	2996	G	S	50	46	52	48	50	46	52	48	49	45	51	47	no	no	no	no	no	no	no
17 Nammoona Rd	3019	G	N	50	46	52	48	50	47	52	48	50	46	52	48	no	no	no	no	no	no	no
17 Nammoona Rd	3019	F2	N	53	49	55	51	54	50	55	51	53	49	55	51	no	no	no	no	no	no	no
18 Nammoona Rd	2998	G	S	50	46	51	47	50	46	51	47	48	44	49	46	no	no	no	no	no	no	no
18 Nammoona Rd	2999	F2	N	52	49	54	50	53	49	54	50	52	48	54	50	no	no	no	no	no	no	no
19 Nammoona Rd	3021	G	N	51	47	52	49	51	47	53	49	51	47	52	49	no	no	no	no	no	no	no
19 Nammoona Rd	3021	F2	N	54	50	55	51	54	50	56	52	54	50	55	51	no	no	no	no	no	no	no
20 Nammoona Rd	3000	G	S	51	46	52	48	51	46	52	48	49	46	51	47	no	no	no	no	no	no	no
20 Nammoona Rd	3001	F2	N	53	49	54	50	53	49	55	51	52	49	54	50	no	no	no	no	no	no	no
21 Nammoona Rd	3024	G	N	51	47	53	49	51	48	53	49	51	47	53	49	no	no	no	no	no	no	no
21 Nammoona Rd	3024	F2	N	54	50	56	52	54	50	56	52	54	50	55	52	no	no	no	no	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
22 Nammoona Rd	3002	G	S	51	47	52	48	51	47	52	48	49	46	51	47	no	no	no	no	no	no	no
22 Nammoona Rd	3003	F2	N	52	48	54	50	53	49	54	50	52	48	54	50	no	no	no	no	no	no	no
23 Nammoona Rd3	3026	G	N	51	47	52	48	51	47	53	49	50	47	52	48	no	no	no	no	no	no	no
23 Nammoona Rd3	3026	F2	N	54	50	56	52	54	50	56	52	54	50	55	52	no	no	no	no	no	no	no
24 Nammoona Rd	3004	G	S	51	47	52	49	51	47	52	48	50	46	51	47	no	no	no	no	no	no	no
24 Nammoona Rd	3005	F2	N	53	49	55	51	53	49	55	51	53	49	54	51	no	no	no	no	no	no	no
25 Nammoona Rd5	3027	G	N	52	48	53	49	52	48	54	50	52	48	53	50	no	no	no	no	no	no	no
25 Nammoona Rd5	3027	F2	N	54	50	56	52	55	51	56	53	54	51	56	52	no	no	no	no	no	no	no
26 Nammoona Rd	3007	G	N	51	47	52	48	51	47	53	49	51	47	53	49	no	no	no	no	no	no	no
26 Nammoona Rd	3007	F2	N	54	50	55	51	54	50	56	52	54	50	55	52	no	no	no	no	no	no	no
27 Nammoona Rd	3030	G	N	52	48	54	50	52	49	54	50	52	48	54	50	no	no	no	no	no	no	no
27 Nammoona Rd	3030	F2	N	54	50	56	52	55	51	56	53	54	51	56	52	no	no	no	no	no	no	no
28 Nammoona Rd	3009	G	N	52	48	53	49	52	48	54	50	52	48	53	50	no	no	no	no	no	no	no
28 Nammoona Rd	3009	F2	N	54	50	55	52	54	50	56	52	54	50	55	52	no	no	no	no	no	no	no
29 Nammoona Rd	3032	G	N	53	49	54	50	53	49	55	51	52	49	54	50	no	no	no	no	no	no	no
30 Nammoona Rd	3010	G	S	53	48	54	50	53	48	54	49	50	47	52	48	no	no	no	no	no	no	no
11 Newnham St	2473	G	W	58	55	59	56	58	55	59	55	52	49	53	50	no	no	no	no	no	no	no
14 Newnham St	1895	G	W	60	56	61	57	60	56	60	56	53	49	54	51	no	no	no	no	no	no	no
14 Newnham St	1895	F2	W	62	58	63	59	62	58	62	59	55	52	56	53	no	no	no	yes	no	no	no
15 Newnham St	1818	G	W	58	54	59	55	58	54	58	55	52	49	53	50	no	no	no	no	no	no	no
16 Newnham St	1888	G	W	58	55	60	56	58	55	59	55	52	49	53	50	no	no	no	no	no	no	no
16 Newnham St	1888	F2	W	61	57	62	59	61	57	62	58	55	52	56	53	no	no	no	yes	no	no	no
17 Newnham St	1822	G	W	59	56	61	57	59	56	60	56	52	49	53	50	no	no	no	no	no	no	no
18 Newnham St	1882	G	W	60	56	61	57	60	56	60	56	51	48	52	49	no	no	no	no	no	no	no
18 Newnham St	1882	F2	W	62	58	63	59	62	58	62	59	54	51	55	52	no	no	no	yes	no	no	no
19 Newnham St	1827	G	W	60	56	61	57	60	56	60	56	52	49	53	50	no	no	no	no	no	no	no
21 Newnham St	1831	G	N	59	55	60	57	59	55	60	56	49	45	50	46	no	no	no	no	no	no	no
21 Newnham St	1830	F2	W	64	60	65	61	64	60	64	60	55	52	57	53	no	no	no	yes	no	no	no
23 Newnham St	1835	G	N	62	58	63	59	62	58	62	58	51	48	53	49	no	no	no	yes	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
25 Newnham St	1839	G	W	63	59	64	60	62	59	63	59	54	51	55	52	no	no	no	yes	no	no	no
1 Pepperidge Ave	793	G	N	60	57	61	58	60	57	61	58	57	54	58	55	no	no	no	yes	no	no	no
2 Pepperidge Ave	719	G	N	65	62	66	63	64	61	65	62	62	59	63	60	no	no	no	yes	no	yes	yes
3 Pepperidge Ave	789	G	N	59	56	60	57	59	56	60	57	55	52	56	53	no	no	no	no	no	no	no
4 Pepperidge Ave	722	G	N	65	62	66	63	65	62	65	62	62	59	63	60	no	no	no	yes	no	yes	yes
5 Pepperidge Ave	786	G	N	59	56	60	57	59	56	60	57	55	52	56	53	no	no	no	no	no	no	no
6 Pepperidge Ave	726	G	N	65	62	66	63	64	61	65	62	62	59	62	59	no	no	no	yes	no	no	no
7 Pepperidge Ave	781	G	N	58	55	59	56	58	55	59	56	54	51	55	52	no	no	no	no	no	no	no
8 Pepperidge Ave	731	G	N	65	62	66	63	65	61	65	62	61	58	62	59	no	no	no	yes	no	no	no
9 Pepperidge Ave	777	G	N	59	55	60	56	59	55	60	56	54	51	55	52	no	no	no	no	no	no	no
10 Pepperidge Ave	736	G	N	65	62	66	63	65	62	66	63	61	58	62	59	no	no	yes	yes	no	no	no
11 Pepperidge Ave	774	G	N	59	55	60	56	59	55	60	56	53	50	54	51	no	no	no	no	no	no	no
12 Pepperidge Ave	738	G	N	65	61	66	62	64	61	65	62	60	57	61	58	no	no	no	yes	no	no	no
12 Pepperidge Ave	738	F2	N	66	62	67	63	66	62	67	63	61	58	62	59	no	no	yes	yes	no	no	no
13 Pepperidge Ave	770	G	N	59	56	60	57	59	56	60	57	53	50	54	51	no	no	no	no	no	no	no
14 Pepperidge Ave	742	G	N	66	62	67	63	65	62	67	63	60	57	61	58	no	no	yes	yes	no	no	no
14 Pepperidge Ave	742	F2	N	67	63	68	64	66	63	68	64	61	58	62	59	no	no	yes	yes	no	no	no
15 Pepperidge Ave	767	G	W	59	55	60	57	59	56	61	57	49	46	50	47	no	no	no	yes	no	no	no
16 Pepperidge Ave	745	G	N	66	62	67	64	66	63	67	64	60	57	61	58	no	no	yes	yes	no	no	no
16 Pepperidge Ave	745	F2	N	67	63	68	65	67	63	68	65	61	58	62	59	no	no	yes	yes	no	no	no
17a Pepperidge Ave	761	G	W	60	56	61	57	60	56	62	58	48	45	49	45	no	no	no	yes	no	no	no
18 Pepperidge Ave	750	G	N	67	63	68	64	67	63	68	64	60	57	61	58	no	no	yes	yes	no	no	no
18 Pepperidge Ave	750	F2	N	68	64	69	65	68	64	69	65	61	57	62	58	no	no	yes	yes	no	no	no
19 Pepperidge Ave	841	G	W	69	65	70	66	69	65	71	67	46	43	47	44	no	no	yes	yes	no	no	no
19 Pepperidge Ave	841	F2	W	69	65	71	67	70	66	71	67	51	48	52	49	no	no	yes	yes	no	no	no
20 Pepperidge Ave	755	G	N	68	64	70	66	68	65	70	66	59	56	60	57	no	no	yes	yes	no	no	no
21 Pepperidge Ave	837	G	W	70	66	72	68	71	67	72	68	49	45	50	46	no	no	yes	yes	no	no	no
21 Pepperidge Ave	837	F2	W	71	67	72	69	72	68	73	69	53	50	54	51	no	no	yes	yes	no	no	no
22 Pepperidge Ave	757	G	N	72	68	73	69	72	68	73	70	58	55	59	56	no	no	yes	yes	no	no	no

Address	Object number	Floor	Façade Direction	No build Year of opening		No build Design year		Build Year of opening		Build Design year		Build Project road contribution Year of opening		Build Project road contribution Design year		Does the project cause a >2dBA increase?		Is the cumulative limit exceeded?		Is it acute due to the project		Consider further additional noise mitigation?
				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
7 Pimlico Cres	1561	G	W	55	51	56	53	55	51	57	53	55	51	56	53	no	no	no	no	no	no	no
9 Pimlico Cres	1557	G	N	54	50	56	52	54	51	56	52	54	51	56	52	no	no	no	no	no	no	no
9 Pimlico Cres	1558	G	W	54	51	56	52	55	51	56	52	54	51	56	52	no	no	no	no	no	no	no
11 Pimlico Cres	1525	G	W	56	52	57	54	56	52	58	54	56	52	58	54	no	no	no	no	no	no	no
11 Pimlico Cres	1526	F2	N	59	55	60	57	59	55	61	57	59	55	61	57	no	no	no	yes	no	no	no
13 Pimlico Cres	1530	G	W	56	52	57	53	56	52	57	54	56	52	57	54	no	no	no	no	no	no	no
15 Pimlico Cres	1534	G	W	55	52	57	53	56	52	57	54	55	52	57	53	no	no	no	no	no	no	no
17 Pimlico Cres	1509	G	N	62	58	63	60	62	58	64	60	62	58	64	60	no	no	no	yes	no	yes	yes
19 Pimlico Cres	1507	G	N	64	60	65	62	64	60	66	62	64	60	66	62	no	no	yes	yes	yes	yes	yes
20 Pimlico Cres	1494	G	N	63	59	65	61	64	60	65	62	64	60	65	62	no	no	no	yes	yes	yes	yes
20 Pimlico Cres	1493	G	W	63	59	65	61	64	60	65	62	64	60	65	62	no	no	no	yes	yes	yes	yes
20 Pimlico Cres	1494	F2	N	64	61	66	62	65	61	66	63	64	61	66	63	no	no	yes	yes	yes	yes	yes
20 Pimlico Cres	1493	F2	W	64	61	66	62	65	61	66	63	65	61	66	63	no	no	yes	yes	yes	yes	yes
21A Pimlico Cres	1503	G	N	65	62	67	64	66	62	68	64	66	62	68	64	no	no	yes	yes	yes	yes	yes
21A Pimlico Cres	1498	G	N	65	62	67	63	66	62	67	64	66	62	67	64	no	no	yes	yes	yes	yes	yes
21A Pimlico Cres	1502	G	W	66	62	67	64	66	63	68	64	66	63	68	64	no	no	yes	yes	yes	yes	yes
21A Pimlico Cres	1497	G	W	65	61	66	63	65	62	67	63	65	62	67	63	no	no	yes	yes	yes	yes	yes
21A Pimlico Cres	1498	F2	N	67	63	68	65	67	63	69	65	67	63	69	65	no	no	yes	yes	yes	yes	yes
21A Pimlico Cres	1497	F2	W	66	63	68	65	67	63	69	65	67	63	69	65	no	no	yes	yes	yes	yes	yes
22 Pimlico Cres	1488	G	N	65	61	67	63	65	62	67	63	65	62	67	63	no	no	yes	yes	yes	yes	yes
22 Pimlico Cres	1487	G	W	66	62	68	64	67	63	68	65	67	63	68	65	no	no	yes	yes	yes	yes	yes
22 Pimlico Cres	1488	F2	N	66	63	68	64	66	63	68	65	66	63	68	65	no	no	yes	yes	yes	yes	yes
22 Pimlico Cres	1486	F2	S	62	59	64	60	63	59	64	61	63	59	64	61	no	no	no	yes	no	yes	yes
22 Pimlico Cres	1487	F2	W	67	64	69	65	68	64	69	66	68	64	69	66	no	no	yes	yes	yes	yes	yes
24 Pimlico Cres	1490	G	N	64	60	65	62	64	61	66	62	64	61	66	62	no	no	yes	yes	yes	yes	yes
24 Pimlico Cres	1489	G	W	64	61	66	62	65	61	67	63	65	61	67	63	no	no	yes	yes	yes	yes	yes
24 Pimlico Cres	1490	F2	N	65	61	67	63	65	62	67	63	65	62	67	63	no	no	yes	yes	yes	yes	yes
24 Pimlico Cres	1489	F2	W	66	62	67	64	66	62	68	64	66	62	68	64	no	no	yes	yes	yes	yes	yes
30 Pimlico Cres	1478	G	N	62	58	64	60	63	59	64	61	63	59	64	61	no	no	no	yes	no	yes	yes

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
30 Pimlico Cres	1479	G	S	62	58	63	60	62	59	64	61	62	59	64	61	no	no	no	yes	no	yes	yes
30 Pimlico Cres	1477	G	W	64	61	66	62	65	61	67	63	65	61	67	63	no	no	yes	yes	yes	yes	yes
30 Pimlico Cres	1478	F2	N	70	66	72	68	70	67	72	69	70	67	72	69	no	no	yes	yes	yes	yes	yes
30 Pimlico Cres	1479	F2	S	70	66	72	68	71	67	73	69	71	67	73	69	no	no	yes	yes	yes	yes	yes
30 Pimlico Cres	1477	F2	W	74	70	75	72	74	71	76	72	74	71	76	72	no	no	yes	yes	yes	yes	yes
30a Pimlico Cres	1481	G	W	63	59	64	61	64	60	65	62	64	60	65	62	no	no	no	yes	yes	yes	yes
32 Pimlico Cres	1469	G	W	64	60	65	62	65	61	66	63	65	61	66	63	no	no	yes	yes	yes	yes	yes
32 Pimlico Cres	1470	F2	N	65	61	67	63	66	63	68	64	66	62	68	64	no	no	yes	yes	yes	yes	yes
32 Pimlico Cres	1471	F2	S	67	63	68	65	68	64	70	66	68	64	70	66	no	no	yes	yes	yes	yes	yes
32 Pimlico Cres	1469	F2	W	71	68	73	69	72	69	74	71	72	69	74	71	no	no	yes	yes	yes	yes	yes
34 Pimlico Cres	1474	G	N	61	58	63	59	62	59	64	60	62	58	64	60	no	no	no	yes	no	yes	yes
34 Pimlico Cres	1475	G	S	61	58	63	59	62	58	64	60	62	58	64	60	no	no	no	yes	no	yes	yes
34 Pimlico Cres	1473	G	W	64	60	65	62	65	61	66	63	65	61	66	63	no	no	yes	yes	yes	yes	yes
34 Pimlico Cres	1474	F2	N	69	65	70	67	70	66	71	68	70	66	71	68	no	no	yes	yes	yes	yes	yes
34 Pimlico Cres	1475	F2	S	68	64	70	66	69	66	71	67	69	66	71	67	no	no	yes	yes	yes	yes	yes
34 Pimlico Cres	1473	F2	W	71	68	73	69	72	69	74	71	72	69	74	71	no	no	yes	yes	yes	yes	yes
36 Pimlico Cres	1465	G	W	63	59	65	61	64	60	66	62	64	60	66	62	no	no	yes	yes	yes	yes	yes
36 Pimlico Cres	1467	F2	N	67	63	68	65	68	64	70	66	68	64	70	66	no	no	yes	yes	yes	yes	yes
36 Pimlico Cres	1466	F2	S	65	61	66	63	66	62	68	64	66	62	68	64	no	no	yes	yes	yes	yes	yes
36 Pimlico Cres	1465	F2	W	70	66	72	68	71	68	73	69	71	68	73	69	no	no	yes	yes	yes	yes	yes
38 Pimlico Cres	1462	G	N	61	57	63	59	62	58	63	60	62	58	63	60	no	no	no	yes	no	yes	yes
38 Pimlico Cres	1461	G	W	63	60	65	61	64	60	65	62	64	60	65	62	no	no	no	yes	yes	yes	yes
38 Pimlico Cres	1462	F2	N	68	65	70	67	70	66	71	68	70	66	71	68	no	no	yes	yes	yes	yes	yes
38 Pimlico Cres	1463	F2	S	68	65	70	66	69	66	71	67	69	66	71	67	no	no	yes	yes	yes	yes	yes
38 Pimlico Cres	1461	F2	W	71	68	73	69	72	69	74	70	72	69	74	70	no	no	yes	yes	yes	yes	yes
40 Pimlico Cres	1459	G	S	61	57	63	59	61	58	63	60	61	58	63	60	no	no	no	yes	no	yes	yes
40 Pimlico Cres	1457	G	W	63	59	65	61	64	60	65	62	64	60	65	62	no	no	no	yes	yes	yes	yes
40 Pimlico Cres	1458	F2	N	64	60	66	62	65	62	67	63	65	62	67	63	no	no	yes	yes	yes	yes	yes
40 Pimlico Cres	1459	F2	S	67	63	69	65	68	64	70	66	68	64	70	66	no	no	yes	yes	yes	yes	yes

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
40 Pimlico Cres	1457	F2	W	69	66	71	67	70	67	72	69	70	67	72	69	no	no	yes	yes	yes	yes	yes
42 Pimlico Cres	1454	G	N	61	57	62	59	61	58	63	60	61	58	63	60	no	no	no	yes	no	yes	yes
42 Pimlico Cres	1453	G	W	63	60	65	61	64	60	66	62	64	60	66	62	no	no	yes	yes	yes	yes	yes
42 Pimlico Cres	1454	F2	N	67	63	68	65	68	64	70	66	68	64	70	66	no	no	yes	yes	yes	yes	yes
42 Pimlico Cres	1455	F2	S	64	61	66	62	66	62	67	64	66	62	67	64	no	no	yes	yes	yes	yes	yes
42 Pimlico Cres	1453	F2	W	69	66	71	68	71	67	73	69	71	67	73	69	no	no	yes	yes	yes	yes	yes
44 Pimlico Cres	1450	G	N	62	58	63	60	62	59	64	60	62	59	64	60	no	no	no	yes	no	yes	yes
44 Pimlico Cres	1451	G	S	62	58	63	60	62	58	64	60	62	58	64	60	no	no	no	yes	no	yes	yes
44 Pimlico Cres	1449	G	W	64	60	66	62	65	61	66	63	65	61	66	63	no	no	yes	yes	yes	yes	yes
44 Pimlico Cres	1450	F2	N	68	65	70	66	69	66	71	68	69	66	71	68	no	no	yes	yes	yes	yes	yes
44 Pimlico Cres	1451	F2	S	68	65	70	66	69	65	71	67	69	65	71	67	no	no	yes	yes	yes	yes	yes
44 Pimlico Cres	1449	F2	W	71	68	73	69	72	69	74	70	72	69	74	70	no	no	yes	yes	yes	yes	yes
46 Pimlico Cres	1446	G	S	62	58	63	60	62	58	63	60	62	58	63	60	no	no	no	yes	no	yes	yes
46 Pimlico Cres	1444	G	W	64	60	66	62	64	61	66	63	64	61	66	63	no	no	yes	yes	yes	yes	yes
46 Pimlico Cres	1445	F2	N	67	63	69	65	68	65	70	66	68	64	70	66	no	no	yes	yes	yes	yes	yes
46 Pimlico Cres	1446	F2	S	68	64	69	66	68	65	70	67	68	65	70	67	no	no	yes	yes	yes	yes	yes
46 Pimlico Cres	1444	F2	W	71	67	73	69	72	68	74	70	72	68	74	70	no	no	yes	yes	yes	yes	yes
48 Pimlico Cres	1442	G	N	61	58	63	60	62	59	64	60	62	59	64	60	no	no	no	yes	no	yes	yes
48 Pimlico Cres	1440	G	W	64	61	66	62	65	61	67	63	65	61	67	63	no	no	yes	yes	yes	yes	yes
48 Pimlico Cres	1442	F2	N	68	64	69	66	69	65	71	67	69	65	71	67	no	no	yes	yes	yes	yes	yes
48 Pimlico Cres	1441	F2	S	66	63	68	65	67	64	69	65	67	64	69	65	no	no	yes	yes	yes	yes	yes
48 Pimlico Cres	1440	F2	W	71	67	73	69	72	68	74	70	72	68	74	70	no	no	yes	yes	yes	yes	yes
50 Pimlico Cres	1437	G	N	62	58	63	60	62	59	64	61	62	59	64	61	no	no	no	yes	no	yes	yes
50 Pimlico Cres	1438	G	S	62	59	64	60	62	58	63	60	62	58	63	60	no	no	no	yes	no	yes	yes
50 Pimlico Cres	1436	G	W	65	61	66	63	65	61	67	63	65	61	67	63	no	no	yes	yes	yes	yes	yes
50 Pimlico Cres	1437	F2	N	68	64	70	66	69	66	71	67	69	66	71	67	no	no	yes	yes	yes	yes	yes
50 Pimlico Cres	1438	F2	S	71	68	73	69	71	67	73	69	71	67	73	69	no	no	yes	yes	yes	yes	yes
50 Pimlico Cres	1436	F2	W	74	70	76	72	74	71	76	72	74	71	76	72	no	no	yes	yes	yes	yes	yes
52 Pimlico Cres	1432	G	N	63	59	64	61	63	60	65	61	63	59	65	61	no	no	no	yes	yes	yes	yes

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
52 Pimlico Cres	1433	G	S	63	59	64	61	62	59	64	60	62	59	64	60	no	no	no	yes	no	yes	yes
52 Pimlico Cres	1431	G	W	65	62	67	63	65	61	67	63	65	61	67	63	no	no	yes	yes	yes	yes	yes
52 Pimlico Cres	1432	F2	N	72	68	73	70	72	68	74	70	72	68	74	70	no	no	yes	yes	yes	yes	yes
52 Pimlico Cres	1433	F2	S	73	69	74	71	72	69	74	70	72	69	74	70	no	no	yes	yes	yes	yes	yes
52 Pimlico Cres	1431	F2	W	75	72	77	73	75	71	77	73	75	71	77	73	no	no	yes	yes	yes	yes	yes
54 Pimlico Cres	1428	G	W	64	61	66	63	64	61	66	62	64	61	66	62	no	no	yes	yes	yes	yes	yes
54 Pimlico Cres	1429	F2	N	63	59	64	61	64	60	65	62	63	60	65	62	no	no	no	yes	yes	yes	yes
54 Pimlico Cres	1430	F2	S	72	69	73	70	71	68	73	69	71	68	73	69	no	no	yes	yes	yes	yes	yes
54 Pimlico Cres	1428	F2	W	74	71	76	72	74	70	75	72	74	70	75	72	no	no	yes	yes	yes	yes	yes
56 Pimlico Cres	1424	G	W	64	60	65	62	63	60	65	61	63	59	65	61	no	no	no	yes	yes	yes	yes
56 Pimlico Cres	1425	F2	S	70	67	72	68	70	66	71	68	69	66	71	67	no	no	yes	yes	yes	yes	yes
56 Pimlico Cres	1424	F2	W	72	68	73	70	71	68	73	69	71	68	73	69	no	no	yes	yes	yes	yes	yes
4 Piora St	2186	G	W	54	51	55	52	54	51	56	52	53	49	54	51	no	no	no	no	no	no	no
6 Piora St	2177	G	W	54	50	55	51	54	50	55	51	53	49	54	51	no	no	no	no	no	no	no
8 Piora St	2165	G	W	54	50	55	52	54	50	55	52	53	49	54	51	no	no	no	no	no	no	no
10 Piora St	2157	G	W	54	50	55	52	54	50	55	52	53	49	54	51	no	no	no	no	no	no	no
12 Piora St	2153	G	W	54	50	55	51	54	50	55	51	53	49	54	51	no	no	no	no	no	no	no
12 Piora St	2153	F2	W	57	53	58	55	57	54	59	55	56	53	58	54	no	no	no	no	no	no	no
14 Piora St	2150	G	W	54	50	55	51	54	50	55	51	53	49	54	51	no	no	no	no	no	no	no
16 Piora St	2145	G	W	54	50	55	51	54	50	55	51	53	49	54	50	no	no	no	no	no	no	no
16 Piora St	2145	F2	W	57	53	59	55	58	54	59	55	56	53	58	54	no	no	no	no	no	no	no
18 Piora St	2129	G	W	54	50	55	51	54	50	55	51	53	49	54	50	no	no	no	no	no	no	no
16 Raupach St	2418	G	SW	59	55	60	56	58	55	59	55	53	50	54	50	no	no	no	no	no	no	no
17 Raupach St	2395	G	NW	58	54	59	56	58	54	58	55	52	49	53	50	no	no	no	no	no	no	no
18 Raupach St	2421	G	SW	59	55	60	56	59	55	59	55	53	50	54	51	no	no	no	no	no	no	no
19 Raupach St	2391	G	NW	59	55	60	56	58	55	59	55	53	49	53	50	no	no	no	no	no	no	no
20 Raupach St	2425	G	SW	59	55	60	56	58	55	59	55	53	50	54	51	no	no	no	no	no	no	no
21 Raupach St	2386	G	NW	58	55	59	56	58	54	58	55	52	49	53	50	no	no	no	no	no	no	no
22 Raupach St	2429	G	NW	58	55	60	56	58	55	58	55	53	50	54	51	no	no	no	no	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
23 Raupach St	2382	G	SW	57	53	58	54	57	53	57	54	51	47	51	48	no	no	no	no	no	no	no
25 Raupach St	2366	G	SW	58	55	59	56	58	55	59	55	52	49	53	50	no	no	no	no	no	no	no
27 Raupach St	2362	G	SW	58	54	59	55	58	54	58	55	52	49	53	50	no	no	no	no	no	no	no
29 Raupach St	2357	G	SW	59	55	60	56	58	55	59	55	53	51	54	51	no	no	no	no	no	no	no
31 Raupach St	2354	G	SW	59	55	60	56	59	55	59	55	52	49	53	50	no	no	no	no	no	no	no
33 Raupach St	2352	G	SW	59	55	60	56	58	55	59	55	53	50	54	51	no	no	no	no	no	no	no
35 Raupach St	2348	G	SW	59	55	60	56	58	55	59	55	53	50	54	51	no	no	no	no	no	no	no
1 Romley Cres	939	G	SE	73	69	75	71	74	70	75	71	56	53	57	54	no	no	yes	yes	no	no	no
2 Romley Cres	877	G	SE	74	70	75	71	74	70	75	71	58	55	59	56	no	no	yes	yes	no	no	no
3 Romley Cres	942	G	NE	65	61	66	63	65	62	67	63	56	53	57	54	no	no	yes	yes	no	no	no
4 Romley Cres	882	G	SE	67	64	68	65	67	63	68	64	58	55	59	56	no	no	yes	yes	no	no	no
4 Romley Cres	882	F2	SE	68	65	69	66	68	64	69	65	59	56	60	57	no	no	yes	yes	no	no	no
5 Romley Cres	946	G	NE	62	58	63	59	62	58	63	59	55	52	56	53	no	no	no	yes	no	no	no
6 Romley Cres	886	G	NE	64	61	65	62	64	61	65	62	60	57	61	58	no	no	no	yes	no	no	no
7 Romley Cres	951	G	N	58	54	59	55	58	55	59	56	55	52	56	53	no	no	no	no	no	no	no
8 Romley Cres	892	G	SE	64	61	65	62	64	61	65	61	58	55	59	56	no	no	no	yes	no	no	no
9 Romley Cres	955	G	N	57	54	58	55	57	54	58	55	55	51	56	53	no	no	no	no	no	no	no
10 Romley Cres	895	G	N	62	59	63	60	62	59	63	60	59	56	61	57	no	no	no	yes	no	no	no
11 Romley Cres	958	G	N	57	53	58	54	57	53	58	54	55	51	56	52	no	no	no	no	no	no	no
12 Romley Cres	901	G	N	61	57	62	58	61	58	62	59	59	56	60	57	no	no	no	yes	no	no	no
13a Romley Cres	963	G	N	57	53	58	54	57	54	58	54	55	51	56	52	no	no	no	no	no	no	no
14 Romley Cres	905	G	N	61	57	62	58	61	58	62	58	59	55	60	57	no	no	no	yes	no	no	no
15 Romley Cres	980	G	E	56	53	57	54	56	53	57	54	52	49	53	50	no	no	no	no	no	no	no
16 Romley Cres	909	G	N	60	57	61	58	61	57	62	58	59	55	60	56	no	no	no	yes	no	no	no
17 Romley Cres	975	G	E	57	53	58	54	57	53	58	54	51	48	52	49	no	no	no	no	no	no	no
18 Romley Cres	910	G	N	60	56	61	57	60	57	61	58	58	55	59	56	no	no	no	yes	no	no	no
20 Romley Cres	914	G	E	60	57	61	58	60	57	61	58	58	54	59	55	no	no	no	yes	no	no	no
22 Romley Cres	918	G	NE	58	55	60	56	59	55	60	56	57	53	58	55	no	no	no	no	no	no	no
24 Romley Cres	922	G	E	57	54	58	55	57	54	58	55	53	50	54	51	no	no	no	no	no	no	no

Address	Object number	Floor	Façade Direction	No build Year of opening		No build Design year		Build Year of opening		Build Design year		Build Project road contribution Year of opening		Build Project road contribution Design year		Does the project cause a >2dBA increase?		Is the cumulative limit exceeded?		Is it acute due to the project		Consider further additional noise mitigation?
				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
26 Romley Cres	984	G	E	56	53	58	54	57	53	57	54	52	49	53	50	no	no	no	no	no	no	no
28 Romley Cres	989	G	E	56	53	58	54	57	53	58	54	53	50	54	51	no	no	no	no	no	no	no
480 Rooty Hill Rd N	845	G	W	67	64	69	65	68	64	69	66	49	46	50	47	no	no	yes	yes	no	no	no
14 Sandalwood Cr	2221	G	W	59	54	60	55	59	54	60	55	56	52	58	54	no	no	no	no	no	no	no
14 Sandalwood Cr	2221	F2	W	60	55	61	56	60	55	61	56	57	53	58	55	no	no	no	yes	no	no	no
16 Sandalwood Cr	2530	G	S	57	54	58	55	57	54	58	55	52	48	53	50	no	no	no	no	no	no	no
16 Sandalwood Cr	2529	G	W	57	54	58	54	57	54	58	55	53	50	55	51	no	no	no	no	no	no	no
16 Sandalwood Cr	2529	F2	W	59	56	60	56	59	56	60	56	55	51	57	53	no	no	no	no	no	no	no
20 Sandalwood Cr	2543	G	W	57	53	58	54	57	54	58	54	54	50	55	51	no	no	no	no	no	no	no
22 Sandalwood Cr	2544	G	N	54	51	56	53	55	51	56	53	54	50	56	52	no	no	no	no	no	no	no
22 Sandalwood Cr	2545	G	S	54	52	55	53	54	52	55	53	50	46	52	48	no	no	no	no	no	no	no
24 Sandalwood Cr	2555	G	N	54	52	56	53	55	52	56	53	54	50	56	52	no	no	no	no	no	no	no
25 Sandalwood Cr	3047	G	S	53	48	54	49	53	48	54	49	50	46	51	48	no	no	no	no	no	no	no
26 Sandalwood Cr	2557	G	N	54	51	56	53	55	52	56	53	54	50	55	52	no	no	no	no	no	no	no
27 Sandalwood Cr	3045	G	S	53	49	54	50	53	49	54	50	50	47	52	48	no	no	no	no	no	no	no
29 Sandalwood Cr	3043	G	S	53	50	54	51	53	50	54	51	50	46	51	47	no	no	no	no	no	no	no
29 Sandalwood Cr	3043	F2	S	55	52	56	53	55	52	56	53	52	49	54	50	no	no	no	no	no	no	no
30 Sandalwood Cr	3049	G	S	60	57	61	57	60	57	61	57	49	45	50	47	no	no	no	yes	no	no	no
31 Sandalwood Cr	3041	G	S	53	51	54	51	53	51	54	51	50	47	52	48	no	no	no	no	no	no	no
32 Sandalwood Cr	3051	G	S	60	57	61	57	60	57	61	57	48	45	50	46	no	no	no	yes	no	no	no
32 Sandalwood Cr	3051	F2	S	62	58	62	58	62	58	62	58	53	49	54	51	no	no	no	yes	no	no	no
33 Sandalwood Cr	3039	G	S	53	51	54	52	53	51	54	51	50	47	52	48	no	no	no	no	no	no	no
34 Sandalwood Cr	3053	G	S	61	56	62	57	61	56	62	57	50	47	52	48	no	no	no	yes	no	no	no
34 Sandalwood Cr	3053	F2	S	62	57	63	58	62	57	63	58	53	49	54	51	no	no	no	yes	no	no	no
35 Sandalwood Cr	3037	G	S	52	50	53	51	52	50	53	51	49	45	50	47	no	no	no	no	no	no	no
35 Sandalwood Cr	3037	F2	S	55	53	56	53	55	52	56	53	52	49	54	50	no	no	no	no	no	no	no
36 Sandalwood Cr	3055	G	S	61	57	61	57	61	57	61	57	51	47	52	49	no	no	no	yes	no	no	no
37 Sandalwood Cr	3035	G	S	53	51	54	51	53	51	53	51	50	47	52	48	no	no	no	no	no	no	no
38 Sandalwood Cr	3057	G	S	60	56	60	57	60	56	60	57	50	46	51	48	no	no	no	no	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
38 Sandalwood Cr	3057	F2	S	61	57	62	57	61	57	62	57	52	49	54	50	no	no	no	yes	no	no	no
39 Sandalwood Cr	3033	G	S	52	50	53	51	52	50	53	51	50	46	51	48	no	no	no	no	no	no	no
39 Sandalwood Cr	3033	F2	S	55	52	56	53	55	52	56	53	52	49	54	50	no	no	no	no	no	no	no
40 Sandalwood Cr	3072	G	S	59	55	59	55	59	55	59	55	51	48	53	49	no	no	no	no	no	no	no
42 Sandalwood Cr	3073	G	S	56	53	57	53	56	53	57	53	50	46	51	48	no	no	no	no	no	no	no
44 Sandalwood Cr	3076	G	N	50	48	52	49	51	48	52	49	50	46	51	48	no	no	no	no	no	no	no
44 Sandalwood Cr	3076	F2	N	53	51	55	52	54	51	55	52	53	49	54	51	no	no	no	no	no	no	no
46 Sandalwood Cr	3078	G	S	51	50	51	50	50	50	51	50	45	41	46	42	no	no	no	no	no	no	no
46 Sandalwood Cr	3078	F2	S	55	53	56	53	55	53	56	53	50	47	52	48	no	no	no	no	no	no	no
3 Shipton Pl	471	G	SW	59	55	60	56	59	56	60	56	51	49	52	50	no	no	no	no	no	no	no
4 Shipton Pl	273	G	NW	64	61	65	62	65	62	65	63	62	60	63	61	no	no	no	yes	no	yes	yes
4 Shipton Pl	274	G	SW	64	61	65	62	65	62	65	63	62	60	63	61	no	no	no	yes	no	yes	yes
5 Shipton Pl	291	G	SW	68	65	69	65	68	65	69	65	50	49	51	49	no	no	yes	yes	no	no	no
6 Shipton Ave	279	G	SW	63	60	64	61	63	61	64	61	59	57	59	58	no	no	no	yes	no	no	no
7 Shipton Pl	286	G	SW	69	65	70	66	69	65	70	66	52	51	53	52	no	no	yes	yes	no	no	no
9 Shipton Pl	281	G	SW	65	61	65	62	65	62	65	62	50	50	51	50	no	no	no	yes	no	no	no
1 Sonia Pl	2586	G	E	56	53	58	54	57	53	58	54	56	52	57	53	no	no	no	no	no	no	no
1 Sonia Pl	2586	F2	E	61	57	62	59	61	57	62	59	60	57	62	58	no	no	no	yes	no	no	no
2 Sperring Ave	637	G	E	60	57	61	58	61	58	61	58	43	40	44	41	no	no	no	yes	no	no	no
4 Sperring Ave	641	G	E	61	58	62	58	61	57	61	58	45	41	46	42	no	no	no	yes	no	no	no
6 Sperring Ave	647	G	E	61	58	62	59	61	58	61	58	45	41	45	42	no	no	no	yes	no	no	no
7 Sperring Ave	869	G	E	59	56	60	57	59	56	60	56	47	44	48	44	no	no	no	no	no	no	no
8 Sperring Ave	650	G	E	62	59	63	59	62	59	62	59	45	42	46	42	no	no	no	yes	no	no	no
9 Sperring Ave	866	G	E	60	56	60	57	59	56	60	56	49	46	50	47	no	no	no	no	no	no	no
10 Sperring Ave	656	G	E	62	60	63	60	62	59	62	60	45	41	46	42	no	no	no	yes	no	no	no
12 Sperring Ave	657	G	E	62	59	63	59	62	59	62	59	45	41	46	42	no	no	no	yes	no	no	no
13 Sperring Ave	859	G	E	59	56	60	56	59	56	59	56	52	49	53	50	no	no	no	no	no	no	no
14 Sperring Ave	663	G	S	60	58	61	58	60	58	61	58	44	41	45	42	no	no	no	yes	no	no	no
16 Sperring Ave	666	G	N	59	56	60	56	59	56	59	57	49	46	50	47	no	no	no	no	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
16 Sperring Ave	667	G	S	59	57	60	56	59	56	59	57	45	42	46	43	no	no	no	no	no	no	no
18 Sperring Ave	671	G	E	59	56	60	57	59	56	59	56	48	45	49	46	no	no	no	no	no	no	no
20 Sperring Ave	675	G	E	59	56	60	57	59	56	60	56	50	47	51	48	no	no	no	no	no	no	no
20 Sperring Ave	675	F2	E	63	60	64	61	63	60	63	60	54	51	54	52	no	no	no	yes	no	no	no
22 Sperring Ave	678	G	E	59	57	60	57	59	57	60	57	50	48	51	48	no	no	no	no	no	no	no
22 Sperring Ave	678	F2	E	63	60	64	61	63	60	64	61	54	52	55	52	no	no	no	yes	no	no	no
24 Sperring Ave	683	G	E	60	56	60	57	59	56	60	57	52	49	52	50	no	no	no	no	no	no	no
24 Sperring Ave	683	F2	E	63	60	64	61	63	60	64	60	56	53	57	54	no	no	no	yes	no	no	no
26 Sperring Ave	686	G	E	60	57	61	57	60	57	60	57	54	51	55	52	no	no	no	no	no	no	no
28 Sperring Ave	689	G	W	60	57	61	58	60	57	61	57	57	53	58	54	no	no	no	yes	no	no	no
30 Sperring Ave	693	G	E	60	57	61	57	60	57	60	57	55	52	56	53	no	no	no	no	no	no	no
32 Sperring Ave	697	G	W	61	58	62	58	60	57	61	58	58	55	59	55	no	no	no	yes	no	no	no
34 Sperring Ave	701	G	W	61	57	61	58	60	57	61	58	57	54	58	55	no	no	no	yes	no	no	no
34 Sperring Ave	703	F2	E	62	59	63	60	62	59	63	60	59	56	59	57	no	no	no	yes	no	no	no
34 Sperring Ave	701	F2	W	62	59	63	60	62	59	63	60	59	56	60	57	no	no	no	yes	no	no	no
36 Sperring Ave	705	G	W	61	58	62	58	60	57	61	58	57	54	58	55	no	no	no	yes	no	no	no
36 Sperring Ave	706	F2	N	62	59	63	60	62	59	62	60	59	57	60	58	no	no	no	yes	no	no	no
38 Sperring Ave	712	G	W	60	57	61	58	60	57	61	58	57	54	58	54	no	no	no	yes	no	no	no
38 Sperring Ave	710	F2	N	63	60	64	61	63	61	64	61	60	58	61	59	no	no	no	yes	no	no	no
40 Sperring Ave	713	G	W	63	60	63	60	62	59	63	60	59	57	60	58	no	no	no	yes	no	no	no
3 Stratheden Ave	1554	G	N	55	51	56	53	55	52	57	53	55	51	57	53	no	no	no	no	no	no	no
4 Stratheden Ave	1523	G	N	55	52	57	53	56	52	57	54	55	52	57	54	no	no	no	no	no	no	no
4 Stratheden Ave	1521	G	W	55	52	57	53	56	52	57	54	55	52	57	54	no	no	no	no	no	no	no
4 Stratheden Ave	1523	F2	N	60	57	62	58	61	57	63	59	61	57	62	59	no	no	no	yes	no	no	no
5 Stratheden Ave	1550	G	N	55	51	56	53	55	52	57	53	55	52	57	53	no	no	no	no	no	no	no
5 Stratheden Ave	1549	G	W	55	51	57	53	55	52	57	53	55	52	57	53	no	no	no	no	no	no	no
6 Stratheden Ave	1517	G	W	56	53	58	54	57	53	59	55	57	53	59	55	no	no	no	no	no	no	no
6 Stratheden Ave	1517	F2	W	61	58	63	59	62	58	64	60	62	58	63	60	no	no	no	yes	no	yes	yes
7 Stratheden Ave	1545	G	N	55	52	57	53	56	52	57	54	55	52	57	54	no	no	no	no	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
8 Stratheden Ave	1515	G	N	63	59	64	61	63	60	65	61	63	60	65	61	no	no	no	yes	yes	yes	yes
8 Stratheden Ave	1514	G	W	62	59	64	61	63	59	65	61	63	59	65	61	no	no	no	yes	yes	yes	yes
8 Stratheden Ave	1515	F2	N	65	61	67	63	65	62	67	63	65	62	67	63	no	no	yes	yes	yes	yes	yes
8 Stratheden Ave	1514	F2	W	65	61	66	63	65	61	67	63	65	61	67	63	no	no	yes	yes	yes	yes	yes
9 Stratheden Ave	1541	G	N	56	52	57	54	56	53	58	54	56	52	58	54	no	no	no	no	no	no	no
9 Stratheden Ave	1542	G	W	56	52	57	54	56	53	58	54	56	53	58	54	no	no	no	no	no	no	no
11 Stratheden Ave	1538	G	W	60	56	61	58	61	57	62	59	60	57	62	59	no	no	no	yes	no	no	no
11 Stratheden Ave	1537	F2	N	62	58	64	60	63	59	64	61	62	59	64	60	no	no	no	yes	no	yes	yes
11 Stratheden Ave	1538	F2	W	62	58	64	60	63	59	64	61	63	59	64	61	no	no	no	yes	no	yes	yes
1 Sugarloaf Cres	2193	G	W	57	53	58	55	57	54	58	55	56	52	57	53	no	no	no	no	no	no	no
3 Sugarloaf Cres	2189	G	W	57	54	58	55	57	54	58	55	56	52	57	54	no	no	no	no	no	no	no
5 Sugarloaf Cres	2181	G	W	57	53	58	54	57	53	59	55	56	52	57	54	no	no	no	no	no	no	no
7 Sugarloaf Cres	2173	G	W	57	53	58	54	58	53	59	55	56	52	57	54	no	no	no	no	no	no	no
9 Sugarloaf Cres	2170	G	W	57	53	58	54	57	53	59	55	56	52	57	54	no	no	no	no	no	no	no
11 Sugarloaf Cres	2162	G	W	57	53	58	55	57	53	59	55	56	52	57	54	no	no	no	no	no	no	no
13 Sugarloaf Cres	2142	G	W	57	53	58	54	57	53	59	55	56	52	57	54	no	no	no	no	no	no	no
15 Sugarloaf Cres	2138	G	W	57	53	58	55	57	53	58	55	56	52	57	54	no	no	no	no	no	no	no
17 Sugarloaf Cres	2133	G	W	57	53	58	54	57	53	58	55	56	52	57	54	no	no	no	no	no	no	no
19 Sugarloaf Cres	2124	G	W	57	53	58	54	57	53	58	55	56	53	57	54	no	no	no	no	no	no	no
21 Sugarloaf Cres	2108	G	W	57	53	58	55	57	53	58	55	56	53	57	54	no	no	no	no	no	no	no
21 Sugarloaf Cres	2108	F2	W	58	54	59	55	58	54	59	55	57	53	58	55	no	no	no	no	no	no	no
23 Sugarloaf Cres	2114	G	S	56	52	57	53	56	52	57	53	54	51	55	52	no	no	no	no	no	no	no
25 Sugarloaf Cres	2116	G	S	56	52	57	53	56	52	57	53	54	51	55	52	no	no	no	no	no	no	no
27 Sugarloaf Cres	2120	G	S	56	52	57	53	56	52	57	53	54	50	55	52	no	no	no	no	no	no	no
27 Sugarloaf Cres	2121	F2	W	57	53	59	55	57	54	58	55	56	53	57	54	no	no	no	no	no	no	no
6 Summerland Cres	2293	G	W	56	52	57	54	56	52	57	53	55	52	57	53	no	no	no	no	no	no	no
6 Summerland Cres	2293	F2	W	58	55	60	56	58	55	60	56	58	54	59	56	no	no	no	no	no	no	no
8 Summerland Cres	2290	G	S	55	51	56	52	54	51	55	52	53	49	54	50	no	no	no	no	no	no	no
10 Summerland Cres	2285	G	W	54	51	55	52	54	50	55	52	54	50	55	51	no	no	no	no	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
12 Summerland Cres	2282	G	S	55	51	56	53	55	51	56	52	53	50	55	51	no	no	no	no	no	no	no
12 Summerland Cres	2282	F2	S	57	53	58	55	57	53	58	54	56	52	57	54	no	no	no	no	no	no	no
14 Summerland Cres	2260	G	S	56	53	58	54	56	53	57	54	55	51	56	53	no	no	no	no	no	no	no
16 Summerland Cres	2086	G	S	55	52	57	53	55	52	56	53	53	50	55	51	no	no	no	no	no	no	no
18 Summerland Cres	2082	G	S	57	53	58	55	57	53	58	54	56	52	57	53	no	no	no	no	no	no	no
20 Summerland Cres	2077	G	S	57	54	59	55	57	54	58	55	56	53	58	54	no	no	no	no	no	no	no
20 Summerland Cres	2077	F2	S	59	55	60	57	59	55	60	57	58	55	59	56	no	no	no	no	no	no	no
22 Summerland Cres	2073	G	S	58	54	59	56	58	54	59	56	57	54	58	55	no	no	no	no	no	no	no
22 Summerland Cres	2073	F2	S	60	56	61	57	60	56	61	57	59	55	60	57	no	no	no	yes	no	no	no
24 Summerland Cres	2070	G	SE	59	55	60	56	58	55	60	56	58	54	59	55	no	no	no	no	no	no	no
24 Summerland Cres	2070	F2	SE	60	56	61	58	60	56	61	57	59	56	60	57	no	no	no	yes	no	no	no
26 Summerland Cres	2065	G	SE	59	56	60	57	59	56	60	57	58	55	59	56	no	no	no	no	no	no	no
26 Summerland Cres	2064	F2	SW	61	57	62	59	61	57	62	58	60	57	62	58	no	no	no	yes	no	no	no
27 Summerland Cres	1102	G	N	65	62	66	63	64	61	66	62	64	61	65	62	no	no	yes	yes	yes	yes	yes
27 Summerland Cres	1100	G	S	66	63	67	64	65	61	66	62	64	61	66	62	no	no	yes	yes	yes	yes	yes
27 Summerland Cres	1101	G	W	67	64	68	65	65	62	67	63	65	62	67	63	no	no	yes	yes	yes	yes	yes
28 Summerland Cres	2059	G	S	60	56	61	57	59	56	61	57	59	55	60	57	no	no	no	yes	no	no	no
29 Summerland Cres	1077	G	S	63	60	65	61	63	59	64	60	62	59	64	60	no	no	no	yes	no	yes	yes
30 Summerland Cres	1190	G	S	57	53	58	54	56	53	57	54	55	52	56	53	no	no	no	no	no	no	no
30 Summerland Cres	1190	F2	S	60	57	62	58	60	57	61	58	59	56	61	57	no	no	no	yes	no	no	no
31 Summerland Cres	1081	G	S	64	60	65	62	63	60	64	61	63	59	64	61	no	no	no	yes	no	yes	yes
31 Summerland Cres	1082	G	W	64	60	65	62	63	59	64	61	63	59	64	61	no	no	no	yes	no	yes	yes
31 Summerland Cres	1081	F2	S	65	62	67	63	65	61	66	62	64	61	66	62	no	no	yes	yes	yes	yes	yes
31 Summerland Cres	1082	F2	W	65	62	67	63	65	61	66	62	65	61	66	62	no	no	yes	yes	yes	yes	yes
32 Summerland Cres	1147	G	S	58	54	59	56	57	54	58	55	57	53	58	54	no	no	no	no	no	no	no
32 Summerland Cres	1147	F2	S	61	58	63	59	61	57	62	58	60	57	61	58	no	no	no	yes	no	no	no
32a Summerland Cres	1153	G	W	59	55	60	57	58	55	60	56	58	55	59	56	no	no	no	no	no	no	no
33 Summerland Cres	1086	G	S	64	61	66	62	64	60	65	61	63	60	65	61	no	no	no	yes	yes	yes	yes
34 Summerland Cres	1155	G	W	58	55	59	56	58	54	59	55	57	54	59	55	no	no	no	no	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
35 Summerland Cres	1088	G	S	66	62	67	63	65	61	66	62	64	61	66	62	no	no	yes	yes	yes	yes	yes
35 Summerland Cres	1089	G	W	65	62	67	63	64	61	66	62	64	61	66	62	no	no	yes	yes	yes	yes	yes
36 Summerland Cres	1160	G	W	58	55	59	56	58	54	59	55	57	54	59	55	no	no	no	no	no	no	no
37 Summerland Cres	1092	G	S	66	62	67	64	65	61	66	63	64	61	66	62	no	no	yes	yes	yes	yes	yes
37 Summerland Cres	1093	G	W	65	61	66	62	64	60	65	62	64	60	65	61	no	no	no	yes	yes	yes	yes
37 Summerland Cres	1092	F2	S	68	64	69	66	67	63	68	65	67	63	68	65	no	no	yes	yes	yes	yes	yes
37 Summerland Cres	1093	F2	W	68	65	69	66	67	64	68	65	67	64	68	65	no	no	yes	yes	yes	yes	yes
38 Summerland Cres	1168	G	W	58	55	60	56	58	54	59	56	58	54	59	56	no	no	no	no	no	no	no
39 Summerland Cres	1096	G	S	66	63	67	64	65	62	66	63	65	61	66	63	no	no	yes	yes	yes	yes	yes
39 Summerland Cres	1097	G	W	65	61	66	63	63	60	65	61	63	60	65	61	no	no	no	yes	yes	yes	yes
40 Summerland Cres	1172	G	W	58	55	60	56	58	54	59	56	58	54	59	56	no	no	no	no	no	no	no
43 Summerland Cres	1105	G	N	65	61	66	63	64	61	65	62	64	61	65	62	no	no	no	yes	yes	yes	yes
43 Summerland Cres	1104	G	W	66	62	67	64	65	61	66	63	65	61	66	63	no	no	yes	yes	yes	yes	yes
43 Summerland Cres	1105	F2	N	70	66	71	68	69	66	71	67	69	66	71	67	no	no	yes	yes	yes	yes	yes
43 Summerland Cres	1106	F2	S	69	65	70	67	68	64	69	66	68	64	69	66	no	no	yes	yes	yes	yes	yes
43 Summerland Cres	1104	F2	W	72	68	73	69	71	67	72	69	71	67	72	69	no	no	yes	yes	yes	yes	yes
45 Summerland Cres	1109	G	N	66	62	67	64	65	61	66	63	65	61	66	63	no	no	yes	yes	yes	yes	yes
45 Summerland Cres	1110	G	S	63	59	64	61	62	58	63	60	62	58	63	60	no	no	no	yes	no	yes	yes
45 Summerland Cres	1108	G	W	66	63	68	64	66	62	67	64	66	62	67	64	no	no	yes	yes	yes	yes	yes
45 Summerland Cres	1109	F2	N	71	67	72	69	70	67	72	68	70	67	72	68	no	no	yes	yes	yes	yes	yes
45 Summerland Cres	1110	F2	S	68	64	69	65	67	64	68	65	67	63	68	65	no	no	yes	yes	yes	yes	yes
45 Summerland Cres	1108	F2	W	72	69	73	70	71	68	73	69	71	68	73	69	no	no	yes	yes	yes	yes	yes
47 Summerland Cres	1114	G	N	64	60	65	62	63	60	64	61	63	60	64	61	no	no	no	yes	no	yes	yes
47 Summerland Cres	1113	G	W	66	63	67	64	65	62	67	63	65	62	67	63	no	no	yes	yes	yes	yes	yes
47 Summerland Cres	1114	F2	N	69	65	70	67	68	65	70	66	68	65	70	66	no	no	yes	yes	yes	yes	yes
47 Summerland Cres	1112	F2	S	67	63	68	64	66	63	67	64	66	63	67	64	no	no	yes	yes	yes	yes	yes
47 Summerland Cres	1113	F2	W	71	68	72	69	71	67	72	68	71	67	72	68	no	no	yes	yes	yes	yes	yes
49 Summerland Cres	1117	G	S	63	60	65	61	62	59	64	60	62	59	64	60	no	no	no	yes	no	yes	yes
49 Summerland Cres	1116	G	W	66	62	67	63	65	61	66	63	65	61	66	63	no	no	yes	yes	yes	yes	yes

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
49 Summerland Cres	1117	F2	S	68	64	69	66	67	64	69	65	67	64	69	65	no	no	yes	yes	yes	yes	yes
49 Summerland Cres	1116	F2	W	70	67	72	68	70	66	71	67	70	66	71	67	no	no	yes	yes	yes	yes	yes
51 Summerland Cres	1122	G	N	64	61	65	62	64	60	65	61	64	60	65	61	no	no	no	yes	yes	yes	yes
51 Summerland Cres	1120	G	S	64	61	66	62	63	60	65	61	63	60	65	61	no	no	no	yes	yes	yes	yes
51 Summerland Cres	1121	G	W	68	64	69	66	67	64	68	65	67	64	68	65	no	no	yes	yes	yes	yes	yes
51 Summerland Cres	1122	F2	N	70	66	71	68	69	66	71	67	69	66	71	67	no	no	yes	yes	yes	yes	yes
51 Summerland Cres	1120	F2	S	69	66	71	67	69	65	70	67	69	65	70	67	no	no	yes	yes	yes	yes	yes
51 Summerland Cres	1121	F2	W	73	69	74	71	72	69	74	70	72	69	74	70	no	no	yes	yes	yes	yes	yes
53 Summerland Cres	1125	G	N	62	59	64	60	62	58	63	60	62	58	63	60	no	no	no	yes	no	yes	yes
53 Summerland Cres	1126	G	S	63	59	64	61	62	58	63	60	62	58	63	60	no	no	no	yes	no	yes	yes
53 Summerland Cres	1124	G	W	67	63	68	65	66	63	67	64	66	63	67	64	no	no	yes	yes	yes	yes	yes
53 Summerland Cres	1125	F2	N	67	64	69	65	67	63	68	65	67	63	68	65	no	no	yes	yes	yes	yes	yes
53 Summerland Cres	1126	F2	S	68	64	69	66	67	64	69	65	67	64	69	65	no	no	yes	yes	yes	yes	yes
53 Summerland Cres	1124	F2	W	72	69	74	70	72	68	73	70	72	68	73	70	no	no	yes	yes	yes	yes	yes
55 Summerland Cres	1130	G	N	65	61	66	63	64	61	66	62	64	61	66	62	no	no	yes	yes	yes	yes	yes
55 Summerland Cres	1129	G	S	64	61	66	62	63	60	65	61	63	60	65	61	no	no	no	yes	yes	yes	yes
55 Summerland Cres	1128	G	W	68	64	69	66	67	64	68	65	67	64	68	65	no	no	yes	yes	yes	yes	yes
55 Summerland Cres	1130	F2	N	71	67	72	68	70	67	72	68	70	67	72	68	no	no	yes	yes	yes	yes	yes
55 Summerland Cres	1129	F2	S	70	66	71	68	69	66	70	67	69	66	70	67	no	no	yes	yes	yes	yes	yes
55 Summerland Cres	1128	F2	W	73	70	75	71	73	69	74	71	73	69	74	71	no	no	yes	yes	yes	yes	yes
57 Summerland Cres	1134	G	S	62	59	64	60	62	58	63	60	62	58	63	60	no	no	no	yes	no	yes	yes
57 Summerland Cres	1132	G	W	65	61	66	63	64	61	65	62	64	61	65	62	no	no	no	yes	yes	yes	yes
57 Summerland Cres	1133	F2	N	63	60	65	61	63	59	64	61	63	59	64	61	no	no	no	yes	no	yes	yes
57 Summerland Cres	1134	F2	S	67	63	68	65	66	63	68	64	66	63	68	64	no	no	yes	yes	yes	yes	yes
57 Summerland Cres	1132	F2	W	69	66	71	67	69	66	70	67	69	66	70	67	no	no	yes	yes	yes	yes	yes
59 Summerland Cres	1138	G	N	67	63	68	65	66	63	68	64	66	63	68	64	no	no	yes	yes	yes	yes	yes
59 Summerland Cres	1136	G	S	64	61	66	62	64	60	65	62	64	60	65	62	no	no	no	yes	yes	yes	yes
59 Summerland Cres	1137	G	W	68	65	69	66	68	64	69	66	68	64	69	66	no	no	yes	yes	yes	yes	yes
59 Summerland Cres	1138	F2	N	72	68	73	70	71	68	73	69	71	68	73	69	no	no	yes	yes	yes	yes	yes

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
59 Summerland Cres	1136	F2	S	70	67	72	68	70	66	71	68	70	66	71	68	no	no	yes	yes	yes	yes	yes
59 Summerland Cres	1137	F2	W	74	70	75	72	73	70	75	71	73	70	75	71	no	no	yes	yes	yes	yes	yes
61 Summerland Cres	1140	G	W	65	62	66	63	65	61	66	63	65	61	66	63	no	no	yes	yes	yes	yes	yes
61 Summerland Cres	1141	F2	N	65	61	66	63	64	61	66	62	64	61	66	62	no	no	yes	yes	yes	yes	yes
61 Summerland Cres	1142	F2	S	66	62	67	64	66	62	67	63	65	62	67	63	no	no	yes	yes	yes	yes	yes
61 Summerland Cres	1140	F2	W	70	66	71	67	69	66	71	67	69	66	71	67	no	no	yes	yes	yes	yes	yes
63 Summerland Cres	1145	G	S	63	60	64	61	63	59	64	61	63	59	64	61	no	no	no	yes	no	yes	yes
63 Summerland Cres	1144	G	W	66	63	67	64	66	62	67	64	66	62	67	64	no	no	yes	yes	yes	yes	yes
63 Summerland Cres	1145	F2	S	68	64	69	66	67	64	69	65	67	64	69	65	no	no	yes	yes	yes	yes	yes
63 Summerland Cres	1144	F2	W	71	67	72	69	71	67	72	69	71	67	72	69	no	no	yes	yes	yes	yes	yes
65 Summerland Cres	1166	G	N	68	64	69	66	67	64	69	65	67	64	69	65	no	no	yes	yes	yes	yes	yes
65 Summerland Cres	1164	G	S	64	60	65	62	63	60	65	61	63	60	65	61	no	no	no	yes	yes	yes	yes
65 Summerland Cres	1165	G	W	69	65	70	67	68	65	70	66	68	65	70	66	no	no	yes	yes	yes	yes	yes
65 Summerland Cres	1166	F2	N	71	67	72	69	70	67	72	68	70	67	72	68	no	no	yes	yes	yes	yes	yes
65 Summerland Cres	1164	F2	S	69	65	70	67	69	65	70	66	69	65	70	66	no	no	yes	yes	yes	yes	yes
65 Summerland Cres	1165	F2	W	73	69	74	71	72	69	74	70	72	69	74	70	no	no	yes	yes	yes	yes	yes
130 Summerland Cres	1192	G	S	58	54	59	55	58	54	59	55	56	53	58	54	no	no	no	no	no	no	no
130 Summerland Cres	1192	F2	S	61	57	62	58	60	57	62	58	60	56	61	58	no	no	no	yes	no	no	no
12 Sumner St	2654	G	SE	55	51	56	53	55	52	56	53	53	50	55	51	no	no	no	no	no	no	no
14 Sumner St	2656	G	SE	55	51	56	52	55	51	56	52	53	50	54	51	no	no	no	no	no	no	no
16 Sumner St	2657	G	SE	55	51	56	53	55	52	56	53	54	50	55	51	no	no	no	no	no	no	no
17 Sumner St	2640	G	SE	55	51	56	53	55	52	56	53	54	50	55	52	no	no	no	no	no	no	no
18 Sumner St	2659	G	NW	56	52	57	53	56	52	57	54	55	52	57	53	no	no	no	no	no	no	no
19 Sumner St	2641	G	SE	55	51	56	53	55	52	56	53	54	50	55	51	no	no	no	no	no	no	no
19 Sumner St	2641	F2	SE	58	55	59	56	58	55	59	56	57	53	58	55	no	no	no	no	no	no	no
20 Sumner St	2661	G	NW	56	52	57	54	56	53	57	54	56	52	57	54	no	no	no	no	no	no	no
21 Sumner St	2644	G	SE	55	51	56	53	55	52	56	53	54	50	55	52	no	no	no	no	no	no	no
21 Sumner St	2644	F2	SE	58	55	59	56	59	55	60	56	57	54	58	55	no	no	no	no	no	no	no
22 Sumner St	1935	G	NE	58	54	59	56	58	55	59	56	57	54	59	55	no	no	no	no	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
23 Sumner St	2645	G	N	56	52	57	53	56	52	57	53	55	52	57	53	no	no	no	no	no	no	no
23 Sumner St	2646	F2	SE	59	55	60	56	59	56	60	57	58	54	59	56	no	no	no	no	no	no	no
25 Sumner St	2648	G	NE	57	53	58	54	57	53	58	54	56	53	58	54	no	no	no	no	no	no	no
25 Sumner St	2648	F2	NE	61	57	62	58	61	57	62	59	60	57	62	58	no	no	no	yes	no	no	no
27 Sumner St	2652	G	E	57	53	58	55	57	54	58	55	56	53	57	54	no	no	no	no	no	no	no
29 Sumner St	1931	G	E	57	54	59	55	57	54	59	55	57	53	58	55	no	no	no	no	no	no	no
31 Sumner St	1030	G	NE	57	53	58	55	57	54	58	55	56	53	58	54	no	no	no	no	no	no	no
15 Tatham Rd	2868	G	N	51	48	53	49	52	48	53	49	51	47	53	49	no	no	no	no	no	no	no
15 Tatham Rd	2868	F2	N	53	50	55	51	54	50	55	52	53	50	55	51	no	no	no	no	no	no	no
17 Tatham Rd	2864	G	N	51	47	53	49	51	47	53	49	51	47	52	49	no	no	no	no	no	no	no
17 Tatham Rd	2864	F2	N	53	50	55	51	54	50	55	51	53	49	55	51	no	no	no	no	no	no	no
18 Tatham Rd	2859	G	S	49	45	51	47	50	46	51	47	49	45	51	47	no	no	no	no	no	no	no
18 Tatham Rd	2860	F2	N	51	47	53	49	51	47	53	49	51	47	52	48	no	no	no	no	no	no	no
18 Tatham Rd	2859	F2	S	51	47	53	49	51	47	53	49	51	47	52	49	no	no	no	no	no	no	no
19 Tatham Rd	2854	G	N	52	48	54	50	52	48	54	50	52	48	53	50	no	no	no	no	no	no	no
20 Tatham Rd	2857	G	S	50	46	51	47	50	46	51	48	49	45	51	47	no	no	no	no	no	no	no
21 Tatham Rd	2844	G	N	51	47	53	49	52	48	53	49	51	47	53	49	no	no	no	no	no	no	no
21 Tatham Rd	2844	F2	N	53	50	55	51	54	50	55	52	53	49	55	51	no	no	no	no	no	no	no
22 Tatham Rd	2855	G	S	50	46	51	47	50	46	51	48	49	46	51	47	no	no	no	no	no	no	no
22 Tatham Rd	2856	F2	N	52	48	54	50	52	48	54	50	52	48	53	50	no	no	no	no	no	no	no
23 Tatham Rd	2842	G	N	53	49	54	50	53	49	54	51	52	49	54	50	no	no	no	no	no	no	no
23 Tatham Rd	2842	F2	N	54	50	56	52	55	51	56	52	54	50	56	52	no	no	no	no	no	no	no
24 Tatham Rd	2850	G	N	50	47	52	48	51	47	52	48	50	46	52	48	no	no	no	no	no	no	no
25 Tatham Rd	2840	G	N	53	49	55	51	53	49	55	51	53	49	55	51	no	no	no	no	no	no	no
25 Tatham Rd	2840	F2	N	54	51	56	52	55	51	57	53	54	51	56	52	no	no	no	no	no	no	no
26 Tatham Rd	2847	G	S	52	48	53	49	52	48	53	49	51	48	53	49	no	no	no	no	no	no	no
27 Tatham Rd	2820	G	W	54	51	56	52	55	51	56	53	54	51	56	52	no	no	no	no	no	no	no
27 Tatham Rd	2820	F2	W	56	52	57	53	56	52	58	54	55	52	57	53	no	no	no	no	no	no	no
28 Tatham Rd	2823	G	N	52	48	53	49	52	48	54	50	51	48	53	49	no	no	no	no	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
28 Tatham Rd	2823	F2	N	54	50	56	52	55	51	56	52	54	50	56	52	no	no	no	no	no	no	no
30 Tatham Rd	2817	G	N	52	48	53	49	52	48	54	50	51	48	53	49	no	no	no	no	no	no	no
30 Tatham Rd	2817	F2	N	55	51	57	53	55	51	57	53	54	51	56	52	no	no	no	no	no	no	no
34 Tatham Rd	1687	G	W	57	53	59	55	57	53	59	55	56	53	58	54	no	no	no	no	no	no	no
34 Tatham Rd	1687	F2	W	57	53	59	55	58	54	59	55	57	53	58	55	no	no	no	no	no	no	no
2 Tony Pl	498	G	W	57	54	58	55	57	54	58	55	49	47	50	47	no	no	no	no	no	no	no
3 Tony Pl	577	G	N	60	56	61	57	59	56	60	56	52	50	53	50	no	no	no	no	no	no	no
4 Tony Pl	495	G	W	58	55	59	56	58	55	58	56	51	47	52	48	no	no	no	no	no	no	no
5 Tony Pl	576	G	N	59	56	60	56	59	55	59	56	52	49	53	50	no	no	no	no	no	no	no
6 Tony Pl	489	G	N	59	56	60	57	59	56	59	56	52	48	52	49	no	no	no	no	no	no	no
6 Tony Pl	492	G	W	59	56	60	57	59	56	59	56	51	48	52	49	no	no	no	no	no	no	no
7 Tony Pl	569	G	W	59	56	60	57	59	56	59	56	51	50	52	50	no	no	no	no	no	no	no
8 Tony Pl	486	G	N	62	59	63	60	62	59	62	60	47	45	48	45	no	no	no	yes	no	no	no
9 Tony Pl	565	G	W	60	56	61	57	59	56	60	57	52	50	52	51	no	no	no	no	no	no	no
11 Tony Pl	525	G	N	60	57	61	58	60	57	60	57	53	51	54	51	no	no	no	no	no	no	no
13 Tony Pl	510	G	N	60	57	61	58	60	57	60	58	54	51	54	51	no	no	no	no	no	no	no
35 Townson Rd	1629	G	W	59	55	61	56	60	55	61	57	57	54	59	55	no	no	no	yes	no	no	no
51 Townson Rd	1634	G	W	57	53	59	55	58	53	59	55	55	52	57	53	no	no	no	no	no	no	no
55 Townson Rd	1638	G	W	57	52	58	54	57	52	59	54	54	50	56	52	no	no	no	no	no	no	no
20 Treberth St	2784	G	N	63	58	65	59	63	58	65	59	49	45	50	47	no	no	no	yes	no	no	no
20 Treberth St	2784	F2	N	64	58	66	60	64	58	66	60	51	47	52	49	no	no	yes	yes	no	no	no
22 Treberth St	2782	G	N	63	58	65	59	63	58	65	59	49	45	50	46	no	no	no	yes	no	no	no
22 Treberth St	2782	F2	N	64	59	67	60	64	59	67	60	51	47	52	49	no	no	yes	yes	no	no	no
24 Treberth St	2780	G	N	62	57	64	58	62	57	64	58	45	41	46	42	no	no	no	yes	no	no	no
24 Treberth St	2780	F2	N	64	58	66	60	64	58	66	60	51	47	53	49	no	no	yes	yes	no	no	no
26 Treberth St	2778	G	N	63	58	65	59	63	57	65	59	45	41	47	43	no	no	no	yes	no	no	no
28 Treberth St	2776	G	N	65	59	67	61	65	59	67	61	51	47	52	49	no	no	yes	yes	no	no	no
30 Treberth St	2774	G	N	61	56	63	57	61	56	63	57	45	41	46	42	no	no	no	yes	no	no	no
30 Treberth St	2774	F2	N	62	57	65	59	62	57	65	59	51	47	52	49	no	no	no	yes	no	no	no

Address	Object number	Floor	Façade Direction	No build Year of opening		No build Design year		Build Year of opening		Build Design year		Build Project road contribution Year of opening		Build Project road contribution Design year		Does the project cause a >2dBA increase?		Is the cumulative limit exceeded?		Is it acute due to the project		Consider further additional noise mitigation?
				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
31 Treberth St	2802	G	N	55	49	56	51	55	50	57	51	51	47	53	49	no	no	no	no	no	no	no
32 Treberth St	2772	G	N	64	58	66	60	64	58	66	60	50	46	52	48	no	no	yes	yes	no	no	no
33 Treberth St	2800	G	N	55	49	56	51	55	50	57	51	51	47	53	49	no	no	no	no	no	no	no
33 Treberth St	2800	F2	N	57	52	58	53	57	52	58	53	53	49	54	51	no	no	no	no	no	no	no
34 Treberth St	2769	G	N	64	58	66	60	64	58	66	60	49	46	51	47	no	no	yes	yes	no	no	no
35 Treberth St	2799	G	N	55	50	57	51	55	50	57	52	51	47	53	49	no	no	no	no	no	no	no
35 Treberth St	2799	F2	N	57	52	58	53	57	52	59	54	53	49	54	51	no	no	no	no	no	no	no
36 Treberth St	2767	G	N	65	59	67	61	65	59	67	61	51	48	53	49	no	no	yes	yes	no	no	no
37 Treberth St	2797	G	N	53	48	55	50	53	48	55	50	49	45	51	47	no	no	no	no	no	no	no
37 Treberth St	2797	F2	N	57	52	59	54	57	52	59	54	53	50	55	51	no	no	no	no	no	no	no
38 Treberth St	2764	G	N	61	56	63	57	61	56	63	57	44	41	46	42	no	no	no	yes	no	no	no
38 Treberth St	2764	F2	N	62	57	65	59	63	57	65	59	50	46	51	48	no	no	no	yes	no	no	no
39 Treberth St	2795	G	N	55	50	57	52	55	50	57	52	52	48	53	50	no	no	no	no	no	no	no
40 Treberth St	2762	G	N	65	59	67	61	65	59	67	61	51	47	52	48	no	no	yes	yes	no	no	no
41 Treberth St	2793	G	N	56	50	57	52	56	50	57	52	52	48	53	49	no	no	no	no	no	no	no
42 Treberth St	2760	G	N	65	59	67	60	65	59	67	60	50	47	52	48	no	no	yes	yes	no	no	no
42 Treberth St	2760	F2	N	66	59	68	61	66	59	68	61	52	48	53	50	no	no	yes	yes	no	no	no
44 Treberth St	2758	G	N	64	58	66	60	64	58	66	60	48	45	50	46	no	no	yes	yes	no	no	no
44 Treberth St	2758	F2	N	65	59	68	61	65	59	68	61	53	49	54	51	no	no	yes	yes	no	no	no
45 Treberth St	2790	G	N	56	51	58	53	56	51	58	53	53	49	54	51	no	no	no	no	no	no	no
46 Treberth St	2756	G	N	66	60	68	61	66	59	68	61	52	49	54	50	no	no	yes	yes	no	no	no
47 Treberth St	2788	G	N	57	51	58	53	57	51	59	53	53	49	54	51	no	no	no	no	no	no	no
47 Treberth St	2788	F2	N	58	53	60	54	58	53	60	55	54	50	55	52	no	no	no	no	no	no	no
48 Treberth St	2752	G	N	62	57	64	58	62	57	64	58	45	42	47	43	no	no	no	yes	no	no	no
48 Treberth St	2752	F2	N	64	59	66	60	64	59	66	60	53	49	54	50	no	no	yes	yes	no	no	no
49 Treberth St	2786	G	N	57	51	58	53	56	51	58	53	51	47	53	49	no	no	no	no	no	no	no
51 Treberth St	1645	G	W	59	54	61	56	59	54	61	56	56	53	58	54	no	no	no	yes	no	no	no
60 Treberth St	2749	G	N	66	60	68	61	66	59	68	61	52	49	54	50	no	no	yes	yes	no	no	no
62 Treberth St	2747	G	N	62	57	64	58	62	57	64	58	46	42	48	44	no	no	no	yes	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
62 Treberth St	2747	F2	N	64	59	66	60	64	59	66	60	53	49	55	51	no	no	yes	yes	no	no	no
64 Treberth St	2745	G	N	66	60	68	61	66	59	68	61	53	49	54	51	no	no	yes	yes	no	no	no
66 Treberth St	1964	G	N	64	58	66	60	63	58	66	60	50	47	52	48	no	no	yes	yes	no	no	no
66 Treberth St	1964	F2	N	65	59	67	60	65	59	67	60	52	48	53	50	no	no	yes	yes	no	no	no
68 Treberth St	1959	G	N	64	58	66	60	64	58	66	60	47	43	48	45	no	no	yes	yes	no	no	no
68 Treberth St	1959	F2	N	65	59	67	60	65	59	67	60	50	47	52	48	no	no	yes	yes	no	no	no
70 Treberth St	1642	G	N	65	59	67	61	65	59	67	61	53	49	54	51	no	no	yes	yes	no	no	no
70 Treberth St	1642	F2	N	66	60	68	62	66	60	68	62	54	50	55	52	no	no	yes	yes	no	no	no
2 Tristan Cl	861	G	E	59	55	60	56	59	55	59	56	49	46	49	46	no	no	no	no	no	no	no
2 Tristan Cl	862	G	N	58	55	59	56	58	55	59	56	52	49	53	50	no	no	no	no	no	no	no
4 Tristan Cl	873	G	N	57	54	58	54	57	54	57	54	50	47	51	48	no	no	no	no	no	no	no
17 Tuncester St	2835	G	S	51	47	53	49	51	47	53	49	51	47	52	49	no	no	no	no	no	no	no
18 Tuncester St	2896	G	S	52	48	53	50	52	48	54	50	52	48	53	50	no	no	no	no	no	no	no
18 Tuncester St	2896	F2	S	53	49	55	51	53	50	55	51	53	49	55	51	no	no	no	no	no	no	no
19 Tuncester St	2834	G	N	51	47	53	49	51	47	53	49	51	47	52	49	no	no	no	no	no	no	no
19 Tuncester St	2834	F2	N	53	49	55	51	53	49	55	51	52	49	54	50	no	no	no	no	no	no	no
20 Tuncester St	2918	G	S	50	46	51	48	50	47	52	48	50	46	51	48	no	no	no	no	no	no	no
20 Tuncester St	2919	F2	N	53	49	55	51	53	49	55	51	52	49	54	50	no	no	no	no	no	no	no
21 Tuncester St	2831	G	N	52	48	54	50	53	49	54	50	52	48	54	50	no	no	no	no	no	no	no
21 Tuncester St	2831	F2	N	54	50	55	51	54	50	56	52	53	50	55	51	no	no	no	no	no	no	no
22 Tuncester St	2920	G	S	52	48	54	50	52	48	54	50	52	48	54	50	no	no	no	no	no	no	no
22 Tuncester St	2920	F2	S	53	50	55	51	54	50	55	51	53	49	55	51	no	no	no	no	no	no	no
23 Tuncester St	2830	G	N	52	48	53	49	52	48	54	50	52	48	53	50	no	no	no	no	no	no	no
23 Tuncester St	2828	F2	W	54	50	56	52	54	50	56	52	54	50	55	52	no	no	no	no	no	no	no
24 Tuncester St	2922	G	S	52	48	54	50	52	48	54	50	52	48	54	50	no	no	no	no	no	no	no
24 Tuncester St	2923	F2	N	53	49	55	51	54	50	55	51	53	49	54	51	no	no	no	no	no	no	no
24 Tuncester St	2922	F2	S	53	49	55	51	54	50	55	51	53	49	55	51	no	no	no	no	no	no	no
25 Tuncester St	2826	G	N	53	49	55	51	54	50	55	52	53	50	55	51	no	no	no	no	no	no	no
25 Tuncester St	2826	F2	N	54	50	56	52	55	51	57	53	54	50	56	52	no	no	no	no	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
26 Tuncester St	2924	G	S	52	49	54	50	53	49	54	50	52	49	54	50	no	no	no	no	no	no	no
26 Tuncester St	2925	F2	N	54	50	55	51	54	50	56	52	53	49	54	51	no	no	no	no	no	no	no
27 Tuncester St	2825	G	N	54	50	56	52	55	51	56	52	54	50	56	52	no	no	no	no	no	no	no
27 Tuncester St	2825	F2	N	55	51	57	53	55	51	57	53	55	51	56	53	no	no	no	no	no	no	no
28 Tuncester St	2926	G	S	53	49	54	50	53	49	54	50	52	49	54	50	no	no	no	no	no	no	no
28 Tuncester St	2926	F2	S	53	50	55	51	54	50	55	51	53	49	55	51	no	no	no	no	no	no	no
29 Tuncester St	2813	G	N	55	51	57	53	55	51	57	53	54	51	56	52	no	no	no	no	no	no	no
29 Tuncester St	2814	F2	W	57	53	59	55	58	54	59	55	57	53	58	55	no	no	no	no	no	no	no
30 Tuncester St	1679	G	N	52	48	54	50	53	49	54	50	52	48	54	50	no	no	no	no	no	no	no
30 Tuncester St	1679	F2	N	54	50	56	52	55	51	57	52	54	50	55	52	no	no	no	no	no	no	no
32 Tuncester St	1670	G	W	57	53	59	55	57	54	59	55	57	53	58	55	no	no	no	no	no	no	no
32 Tuncester St	1670	F2	W	58	54	59	55	58	54	60	56	57	53	59	55	no	no	no	no	no	no	no
33 Tuncester St	1684	G	W	57	53	59	55	58	54	59	55	57	53	58	54	no	no	no	no	no	no	no
3 Varga Pl	1004	G	N	56	53	58	54	57	54	58	55	56	53	58	54	no	no	no	no	no	no	no
4A Varga Pl	1942	G	E	56	52	57	54	56	53	57	54	55	52	56	53	no	no	no	no	no	no	no
4A Varga Pl	1942	F2	E	62	58	63	60	62	59	63	60	61	58	63	59	no	no	no	yes	no	no	no
5 Varga Pl	1947	G	E	56	53	58	54	57	54	58	55	56	52	57	54	no	no	no	no	no	no	no
7 Varga Pl	2677	G	N	56	53	58	54	57	53	58	55	56	52	57	54	no	no	no	no	no	no	no
8 Varga Pl	1939	G	E	57	53	58	55	57	54	58	55	56	53	58	54	no	no	no	no	no	no	no
9 Varga Pl	2680	G	N	56	53	57	54	57	53	58	54	56	52	57	53	no	no	no	no	no	no	no
10 Varga Pl	2672	G	E	57	53	58	54	57	54	58	55	56	53	57	54	no	no	no	no	no	no	no
11 Varga Pl	2681	G	N	57	53	58	54	57	54	58	55	56	53	58	54	no	no	no	no	no	no	no
12 Varga Pl	2676	G	E	56	52	57	54	56	53	57	54	55	52	56	53	no	no	no	no	no	no	no
13 Varga Pl	2684	G	E	57	54	58	55	57	54	58	55	56	53	57	54	no	no	no	no	no	no	no
14 Varga Pl	2669	G	E	55	52	57	53	56	52	57	53	55	51	56	52	no	no	no	no	no	no	no
15 Varga Pl	2686	G	N	57	53	58	55	57	54	58	55	56	53	58	54	no	no	no	no	no	no	no
16 Varga Pl	2666	G	S	55	52	57	53	56	52	57	53	54	51	55	52	no	no	no	no	no	no	no
18 Varga Pl	2665	G	SE	57	53	58	54	57	54	58	55	56	52	57	53	no	no	no	no	no	no	no
3 Verity Pl	970	G	E	57	54	59	55	58	54	59	55	50	47	51	47	no	no	no	no	no	no	no

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
5 Verity Pl	967	G	E	57	53	58	55	57	54	59	55	53	49	54	50	no	no	no	no	no	no	no
7 Verity Pl	935	G	NE	58	55	59	55	58	55	59	56	54	51	55	52	no	no	no	no	no	no	no
9 Verity Pl	931	G	E	70	66	71	67	70	67	72	68	55	52	56	53	no	no	yes	yes	no	no	no
11 Verity Pl	927	G	E	71	68	73	69	72	68	74	70	55	52	56	53	no	no	yes	yes	no	no	no
1 Vicky Pl	361	G	W	63	60	64	61	63	60	64	60	51	49	52	50	no	no	no	yes	no	no	no
2 Vicky Pl	541	G	W	61	58	62	59	61	57	61	58	51	48	52	49	no	no	no	yes	no	no	no
3 Vicky Pl	357	G	W	63	60	64	60	63	60	63	60	51	49	52	50	no	no	no	yes	no	no	no
4 Vicky Pl	537	G	W	61	58	62	59	61	58	61	58	53	50	53	51	no	no	no	yes	no	no	no
5 Vicky Pl	353	G	W	63	59	64	60	63	59	63	60	52	49	53	50	no	no	no	yes	no	no	no
6 Vicky Pl	533	G	W	62	58	63	59	61	58	62	58	53	50	54	51	no	no	no	yes	no	no	no
7 Vicky Pl	349	G	W	63	60	64	61	63	60	63	60	52	49	52	50	no	no	no	yes	no	no	no
8 Vicky Pl	529	G	W	61	58	62	59	61	58	61	58	52	50	53	51	no	no	no	yes	no	no	no
9 Vicky Pl	346	G	W	64	60	65	61	63	60	64	60	52	49	53	50	no	no	no	yes	no	no	no
10 Vicky Pl	521	G	W	62	59	63	60	62	58	62	59	55	53	56	53	no	no	no	yes	no	no	no
11 Vicky Pl	341	G	W	64	60	65	61	63	60	64	60	53	49	53	50	no	no	no	yes	no	no	no
12 Vicky Pl	517	G	W	62	58	63	59	62	58	62	58	55	52	56	53	no	no	no	yes	no	no	no
13 Vicky Pl	337	G	W	63	60	64	61	63	60	63	60	52	49	53	49	no	no	no	yes	no	no	no
14 Vicky Pl	514	G	W	62	59	63	59	62	58	62	59	56	53	56	54	no	no	no	yes	no	no	no
15 Vicky Pl	333	G	W	63	60	64	61	63	59	63	60	53	49	53	50	no	no	no	yes	no	no	no
16 Vicky Pl	502	G	N	61	58	62	59	61	58	61	58	56	53	57	54	no	no	no	yes	no	no	no
17 Vicky Pl	329	G	W	63	60	64	61	63	59	63	60	53	50	54	50	no	no	no	yes	no	no	no
19 Vicky Pl	325	G	W	63	60	64	61	63	59	63	60	53	50	54	51	no	no	no	yes	no	no	no
21 Vicky Pl	321	G	W	63	60	64	61	63	59	63	60	54	52	55	53	no	no	no	yes	no	no	no
1 Will Cl	317	G	W	63	60	64	61	63	60	63	60	55	53	56	54	no	no	no	yes	no	no	no
2 Will Cl	426	G	W	62	58	63	59	62	59	63	59	59	56	59	56	no	no	no	yes	no	no	no
3 Will Cl	316	G	E	62	59	63	60	63	60	64	61	62	59	63	60	no	no	no	yes	no	yes	yes
4 Will Cl	423	G	E	65	62	65	62	65	62	65	62	62	59	63	60	no	no	no	yes	no	yes	yes
5 Will Cl	312	G	E	64	60	64	61	65	61	65	62	64	60	65	61	no	no	no	yes	yes	yes	yes
6 Will Cl	419	G	E	71	67	72	68	72	69	73	69	70	67	71	68	no	no	yes	yes	yes	yes	yes

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				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
6 Will Cl	418	G	N	72	68	72	69	73	69	74	70	73	69	74	70	no	no	yes	yes	yes	yes	yes
6 Will Cl	417	G	W	65	62	66	63	66	63	67	64	65	62	66	63	no	no	yes	yes	yes	yes	yes
7 Will Cl	308	G	E	65	61	66	62	66	63	67	63	65	62	66	63	no	no	yes	yes	yes	yes	yes
9 Will Cl	298	G	E	70	66	70	67	71	68	72	68	71	68	72	68	no	no	yes	yes	yes	yes	yes
9 Will Cl	297	G	N	73	70	74	71	74	70	75	71	74	70	75	71	no	no	yes	yes	yes	yes	yes
9 Will Cl	299	G	W	67	63	68	64	66	64	67	64	65	63	66	63	no	no	yes	yes	yes	yes	yes
11 Will Cl	302	G	NE	73	69	74	70	74	71	75	71	74	70	75	71	no	no	yes	yes	yes	yes	yes
11 Will Cl	301	G	NW	72	69	73	69	73	69	74	70	73	69	73	70	no	no	yes	yes	yes	yes	yes
11 Will Cl	303	G	SE	69	65	70	66	71	67	71	68	70	67	71	67	no	no	yes	yes	yes	yes	yes
7 Woodburn St	2490	G	S	55	51	56	53	55	51	56	52	53	50	55	51	no	no	no	no	no	no	no
9 Woodburn St	2500	G	N	53	51	54	52	53	51	54	52	50	46	52	48	no	no	no	no	no	no	no
9 Woodburn St	2501	F2	W	59	56	60	56	59	56	60	57	57	53	58	54	no	no	no	no	no	no	no
11 Woodburn St	2509	G	W	54	52	55	53	54	52	55	53	51	47	52	49	no	no	no	no	no	no	no
13 Woodburn St	2513	G	W	53	51	54	52	53	51	54	52	50	46	51	48	no	no	no	no	no	no	no
14 Woodburn St	2199	G	W	55	51	56	52	55	51	56	52	53	49	54	51	no	no	no	no	no	no	no
15 Woodburn St	2525	G	N	53	51	54	52	53	51	54	52	50	46	52	48	no	no	no	no	no	no	no
17 Woodburn St	3112	G	N	52	51	53	51	53	51	53	51	49	45	50	46	no	no	no	no	no	no	no
17 Woodburn St	3112	F2	N	56	54	57	54	56	54	57	54	52	48	54	50	no	no	no	no	no	no	no
19 Woodburn St	3113	G	N	53	51	54	52	53	51	54	52	49	45	51	47	no	no	no	no	no	no	no
21 Woodburn St	3116	G	N	53	52	54	52	53	52	54	52	49	46	51	47	no	no	no	no	no	no	no
23 Woodburn St	3118	G	N	53	50	54	51	53	51	54	51	50	46	51	47	no	no	no	no	no	no	no
25 Woodburn St	3119	G	N	53	50	54	50	53	50	54	51	49	45	51	47	no	no	no	no	no	no	no
25 Woodburn St	3119	F2	N	56	53	57	53	56	53	57	54	52	49	54	50	no	no	no	no	no	no	no
27 Woodburn St	3121	G	N	53	50	54	51	53	50	54	51	50	46	52	48	no	no	no	no	no	no	no
29 Woodburn St	3124	G	N	53	51	54	52	53	51	54	52	49	46	51	47	no	no	no	no	no	no	no
31 Woodburn St	3125	G	N	53	51	53	52	53	51	54	52	49	45	50	47	no	no	no	no	no	no	no
33 Woodburn St	3127	G	N	52	51	53	51	52	51	53	51	48	45	50	46	no	no	no	no	no	no	no
35 Woodburn St	3129	G	N	52	50	53	51	53	50	54	51	49	46	51	47	no	no	no	no	no	no	no
37 Woodburn St	3131	G	N	52	49	53	50	52	49	53	50	48	45	50	46	no	no	no	no	no	no	no

Address	Object number	Floor	Façade Direction	No build Year of opening		No build Design year		Build Year of opening		Build Design year		Build Project road contribution Year of opening		Build Project road contribution Design year		Does the project cause a >2dBA increase?		Is the cumulative limit exceeded?		Is it acute due to the project		Consider further additional noise mitigation?
				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
100 Yarramundi Dr	2402	G	SW	58	54	59	55	57	54	58	55	52	50	53	51	no	no	no	no	no	no	no
102 Yarramundi Dr	2397	G	NW	57	53	58	54	57	54	57	54	51	49	52	50	no	no	no	no	no	no	no
104 Yarramundi Dr	2380	G	NW	58	54	59	55	57	54	58	54	51	48	52	49	no	no	no	no	no	no	no
106 Yarramundi Dr	2374	G	NW	58	54	59	55	58	54	58	54	52	48	52	49	no	no	no	no	no	no	no
108 Yarramundi Dr	2372	G	SW	58	54	59	55	58	54	58	54	51	48	52	49	no	no	no	no	no	no	no
110 Yarramundi Dr	2298	G	SW	58	54	59	55	58	55	59	55	50	48	51	49	no	no	no	no	no	no	no
112 Yarramundi Dr	482	G	SE	59	55	59	56	59	55	59	56	45	43	46	44	no	no	no	no	no	no	no
114 Yarramundi Dr	478	G	SW	61	58	62	58	61	58	62	58	51	49	52	49	no	no	no	yes	no	no	no
116 Yarramundi Dr	293	G	SW	71	67	71	67	71	67	71	67	54	54	55	54	no	no	yes	yes	no	no	no
12 Yorklea Rd	2942	G	N	49	45	50	46	49	45	50	46	48	44	50	46	no	no	no	no	no	no	no
12 Yorklea Rd	2942	F2	N	53	49	55	51	53	49	55	51	53	49	54	51	no	no	no	no	no	no	no
13 Yorklea Rd	2991	G	N	51	47	52	49	51	47	53	49	51	47	52	48	no	no	no	no	no	no	no
13 Yorklea Rd	2991	F2	N	54	50	55	51	54	50	56	52	53	50	55	51	no	no	no	no	no	no	no
14 Yorklea Rd	2945	G	W	51	47	52	48	51	47	52	48	50	46	51	48	no	no	no	no	no	no	no
15 Yorklea Rd	2989	G	N	50	47	52	48	51	47	52	48	50	46	52	48	no	no	no	no	no	no	no
15 Yorklea Rd	2989	F2	N	53	49	55	51	54	50	55	51	53	49	55	51	no	no	no	no	no	no	no
17 Yorklea Rd	2987	G	N	50	47	52	48	51	47	52	48	50	47	52	48	no	no	no	no	no	no	no
17 Yorklea Rd	2987	F2	N	53	49	55	51	54	50	55	51	53	49	55	51	no	no	no	no	no	no	no
18 Yorklea Rd	2969	G	N	49	46	51	47	50	46	51	47	49	45	50	47	no	no	no	no	no	no	no
18 Yorklea Rd	2970	G	W	50	46	51	47	50	46	51	47	49	45	50	47	no	no	no	no	no	no	no
18 Yorklea Rd	2970	F2	W	54	50	55	52	54	50	56	52	53	50	55	51	no	no	no	no	no	no	no
19 Yorklea Rd	2984	G	N	50	46	52	48	51	47	52	48	50	46	52	48	no	no	no	no	no	no	no
19 Yorklea Rd	2984	F2	N	53	49	55	51	54	50	55	51	53	50	55	51	no	no	no	no	no	no	no
20 Yorklea Rd	2966	G	S	50	46	51	47	50	46	51	47	49	45	50	47	no	no	no	no	no	no	no
20 Yorklea Rd	2967	F2	N	52	48	53	49	52	48	54	50	51	47	53	49	no	no	no	no	no	no	no
21 Yorklea Rd	2982	G	N	49	45	51	47	50	46	51	47	49	45	51	47	no	no	no	no	no	no	no
21 Yorklea Rd	2982	F2	N	53	49	54	51	53	49	55	51	53	49	54	51	no	no	no	no	no	no	no
22 Yorklea Rd	2964	G	S	51	47	52	48	51	47	52	48	50	46	51	48	no	no	no	no	no	no	no
22 Yorklea Rd	2965	F2	N	52	48	54	50	52	49	54	50	52	48	53	50	no	no	no	no	no	no	no

Address	Object number	Floor	Façade Direction	No build Year of opening		No build Design year		Build Year of opening		Build Design year		Build Project road contribution Year of opening		Build Project road contribution Design year		Does the project cause a >2dBA increase?		Is the cumulative limit exceeded?		Is it acute due to the project		Consider further additional noise mitigation?
				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
23 Yorklea Rd	2980	G	N	50	47	52	48	51	47	52	49	50	47	52	48	no	no	no	no	no	no	no
23 Yorklea Rd	2980	F2	N	53	50	55	51	54	50	55	52	53	50	55	51	no	no	no	no	no	no	no
24 Yorklea Rd	2963	G	S	52	47	53	49	52	47	53	49	50	47	52	48	no	no	no	no	no	no	no
25 Yorklea Rd	2978	G	N	51	47	53	49	52	48	53	49	51	47	53	49	no	no	no	no	no	no	no
25 Yorklea Rd	2978	F2	N	54	50	56	52	54	50	56	52	54	50	55	52	no	no	no	no	no	no	no
26 Yorklea Rd	2958	G	S	52	47	53	48	51	47	52	48	49	45	50	47	no	no	no	no	no	no	no
27 Yorklea Rd	2976	G	N	52	48	54	50	52	49	54	50	52	48	54	50	no	no	no	no	no	no	no
27 Yorklea Rd	2976	F2	N	54	50	56	52	54	50	56	52	54	50	55	52	no	no	no	no	no	no	no
29 Yorklea Rd	2973	G	W	54	50	56	52	55	51	56	52	54	50	56	52	no	no	no	no	no	no	no
29 Yorklea Rd	2973	F2	W	56	52	57	53	56	52	58	54	56	52	57	54	no	no	no	no	no	no	no
674 Richmond Rd, Busy Bees	3133	G	NE	68	65	69	66	68	65	69	66	56	55	57	56	no	no	yes	yes	no	no	no
674 Richmond Rd, Busy Bees	3133	F2	NE	69	66	70	66	69	66	70	67	61	58	61	59	no	no	yes	yes	no	no	no
Childcare-5 Woodburn St	2105	G	N	66	61	66	61	66	61	66	61	54	50	55	52	no	no	yes	yes	no	no	no
Childcare-5 Woodburn St	2106	G	S	55	52	56	53	55	52	56	53	53	50	55	51	no	no	yes	yes	no	no	yes
St Francis of Assisi Primary School	3137	F2	N	62	59	63	59	62	59	62	59	49	46	50	46	no	no	yes	yes	no	no	no
45 Hollinsworth Rd, Mosque	2480	G	E	64	61	66	62	64	60	65	62	64	60	65	62	no	no	yes	yes	yes	yes	yes
45 Hollinsworth Rd, Mosque	2480	F2	E	65	62	67	63	65	61	66	63	65	61	66	63	no	no	yes	yes	yes	yes	yes
45 Hollinsworth Rd, Mosque	2482	G	N	63	59	64	61	63	59	64	61	63	59	64	61	no	no	yes	yes	no	yes	yes
45 Hollinsworth Rd, Mosque	2482	F2	N	64	60	65	62	64	60	65	62	64	60	65	62	no	no	yes	yes	yes	yes	yes
45 Hollinsworth Rd, Mosque Hall	2477	G	E	68	64	69	66	67	64	69	65	67	64	69	65	no	no	yes	yes	yes	yes	yes
45 Hollinsworth Rd, Mosque Hall	2477	F2	E	69	65	70	67	69	65	70	66	68	65	70	66	no	no	yes	yes	yes	yes	yes
45 Hollinsworth Rd, Mosque Hall	2478	G	N	64	60	65	62	64	60	65	62	64	60	65	62	no	no	yes	yes	yes	yes	yes
45 Hollinsworth Rd, Mosque Hall	2478	F2	N	65	62	67	63	65	62	67	63	65	62	67	63	no	no	yes	yes	yes	yes	yes
45 Hollinsworth Rd, Mosque Hall	2479	G	S	63	59	64	61	62	59	64	60	62	59	63	60	no	no	yes	yes	no	yes	yes

Address	Object number	Floor	Façade Direction	No build Year of opening		No build Design year		Build Year of opening		Build Design year		Build Project road contribution Year of opening		Build Project road contribution Design year		Does the project cause a >2dBA increase?		Is the cumulative limit exceeded?		Is it acute due to the project		Consider further additional noise mitigation?
				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
45 Hollinsworth Rd, Mosque Hall	2479	F2	S	64	60	65	62	64	60	65	61	64	60	65	61	no	no	yes	yes	yes	yes	yes

Table B-3: Rating background levels and construction noise management levels

NCA ID	Representative noise logger	Rating background level $L_{Aeq(15min)}$ (dBA)				Noise management level $L_{Aeq(15min)}$ (dBA)			
		Day	Day OOHW	Evening	Night	Day	Day OOHW	Evening	Night
NCA 2	10	46	46	45	44	56	51	50	49
NCA 3	6	42	42	42	41	52	47	47	46
NCA 4	9	47	47	45	42	57	52	50	47
NCA 5	4	46	46	48	42	56	51	53	47
NCA 6	5	53	53	53	44	63	58	58	49
NCA 7	8	49	49	46	43	59	54	51	48
NCA 8	8	49	49	46	43	59	54	51	48

Appendix C: Noise Contour Maps – Operational Noise

Figure C-1: Predicted road traffic noise impacts – No Build 2038 – Day time (north)

Figure C-2: Predicted road traffic noise impacts – No Build 2038 – Day time (south)

Figure C-3: Predicted road traffic noise impacts – No Build 2038 – Nighttime (north)

Figure C-4: Predicted road traffic noise impacts – No Build 2038 – Nighttime (south)

Figure C-5: Predicted road traffic noise impacts – Build (no mitigation): Design Year 2038 – Day time (north)

Figure C-6: Predicted road traffic noise impacts – Build (no mitigation): Design Year 2038 – Day time (south)

Figure C-7: Predicted road traffic noise impacts – Build (no mitigation): Design Year 2038 – Nighttime (north)

Figure C-8: Predicted road traffic noise impacts – Build (no mitigation): Design Year 2038 – Nighttime (south)

Appendix D: Noise Contour Maps – Construction Noise

Figure D-1: Predicted construction noise impacts – Scenario 1: Mobilisation and site establishment – North

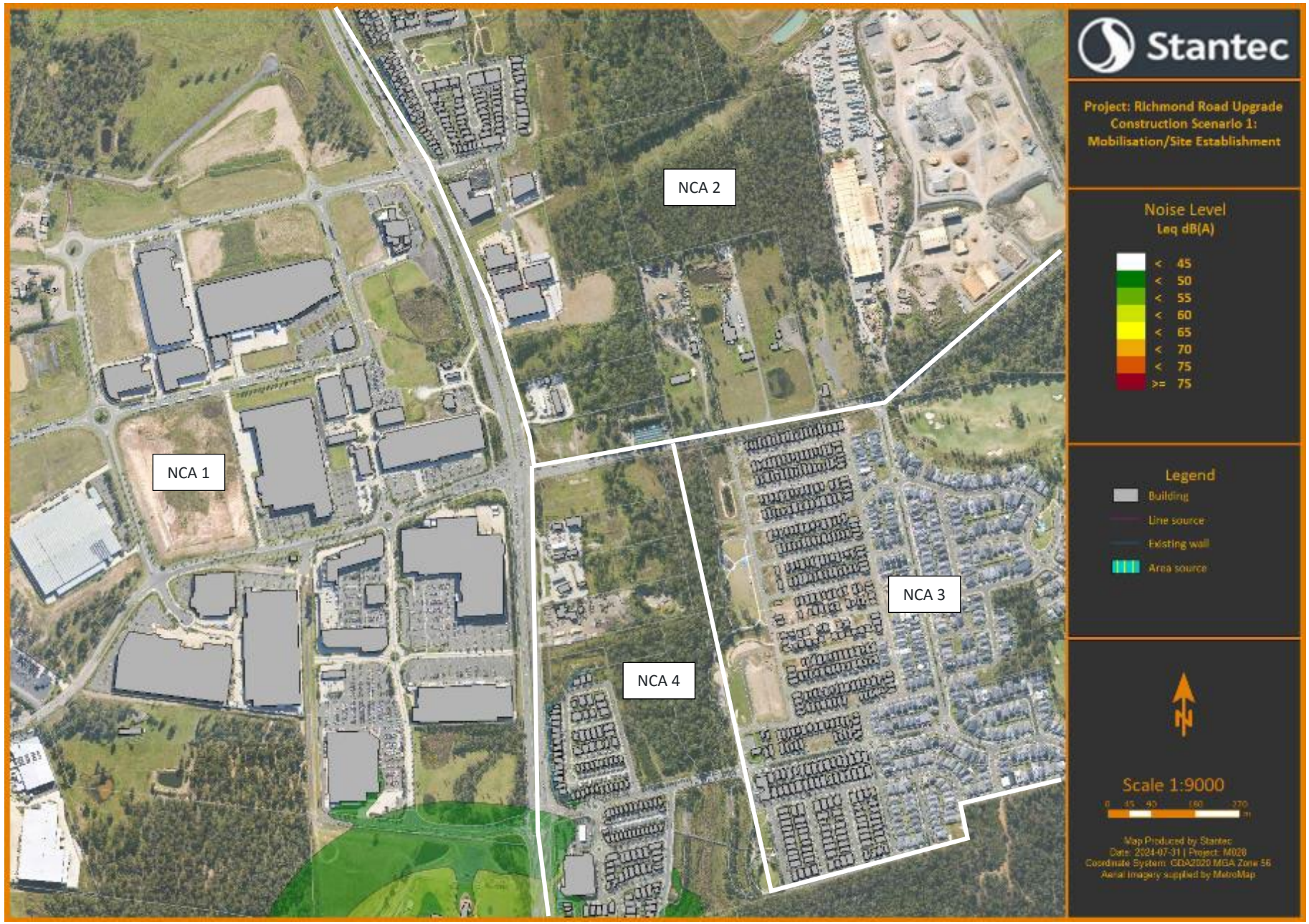


Figure D-2: Predicted construction noise impacts – Scenario 1: Mobilisation and site establishment – South

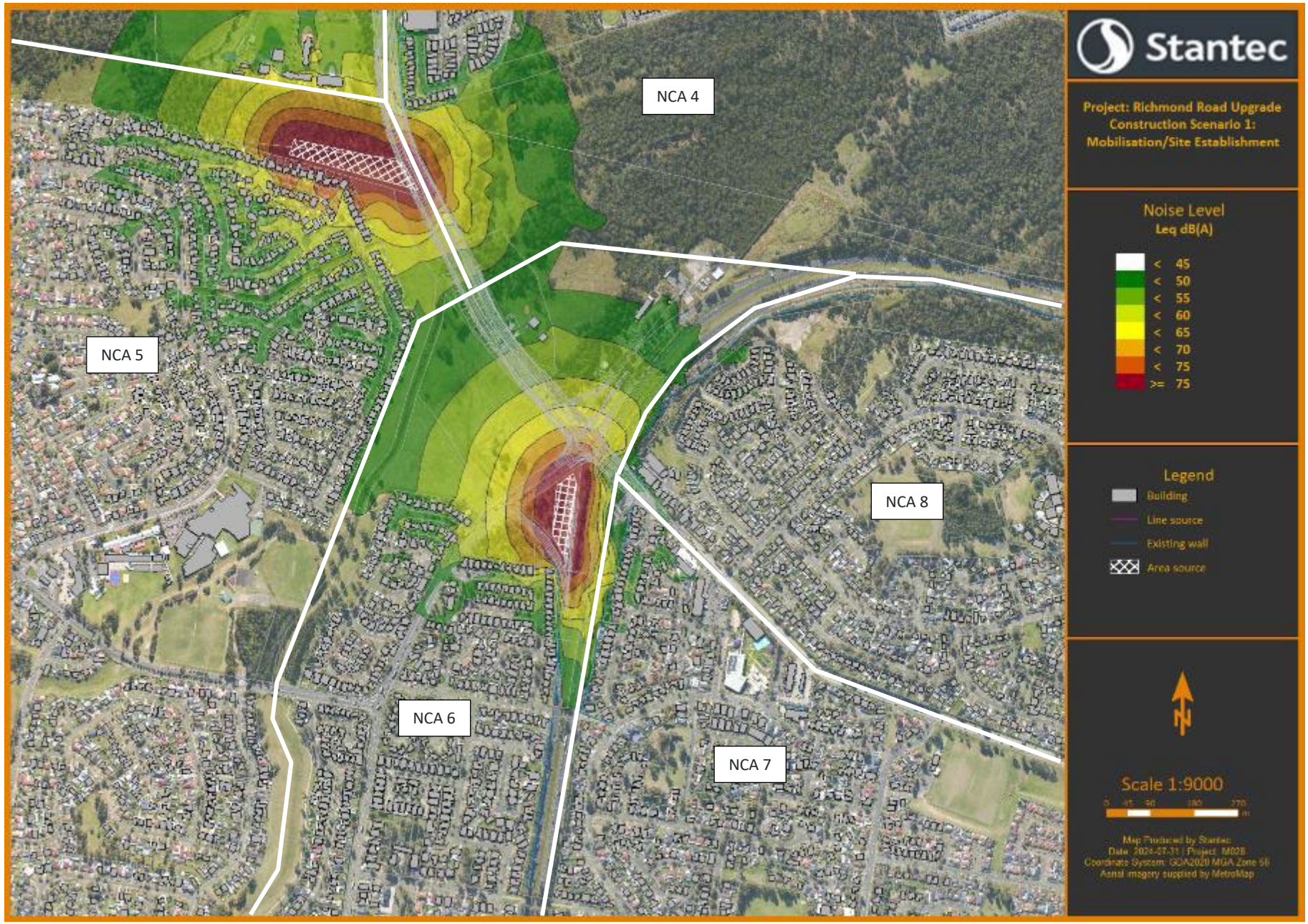


Figure D-3: Predicted construction noise impacts – Scenario 2: Installation of erosion and sediment controls – North

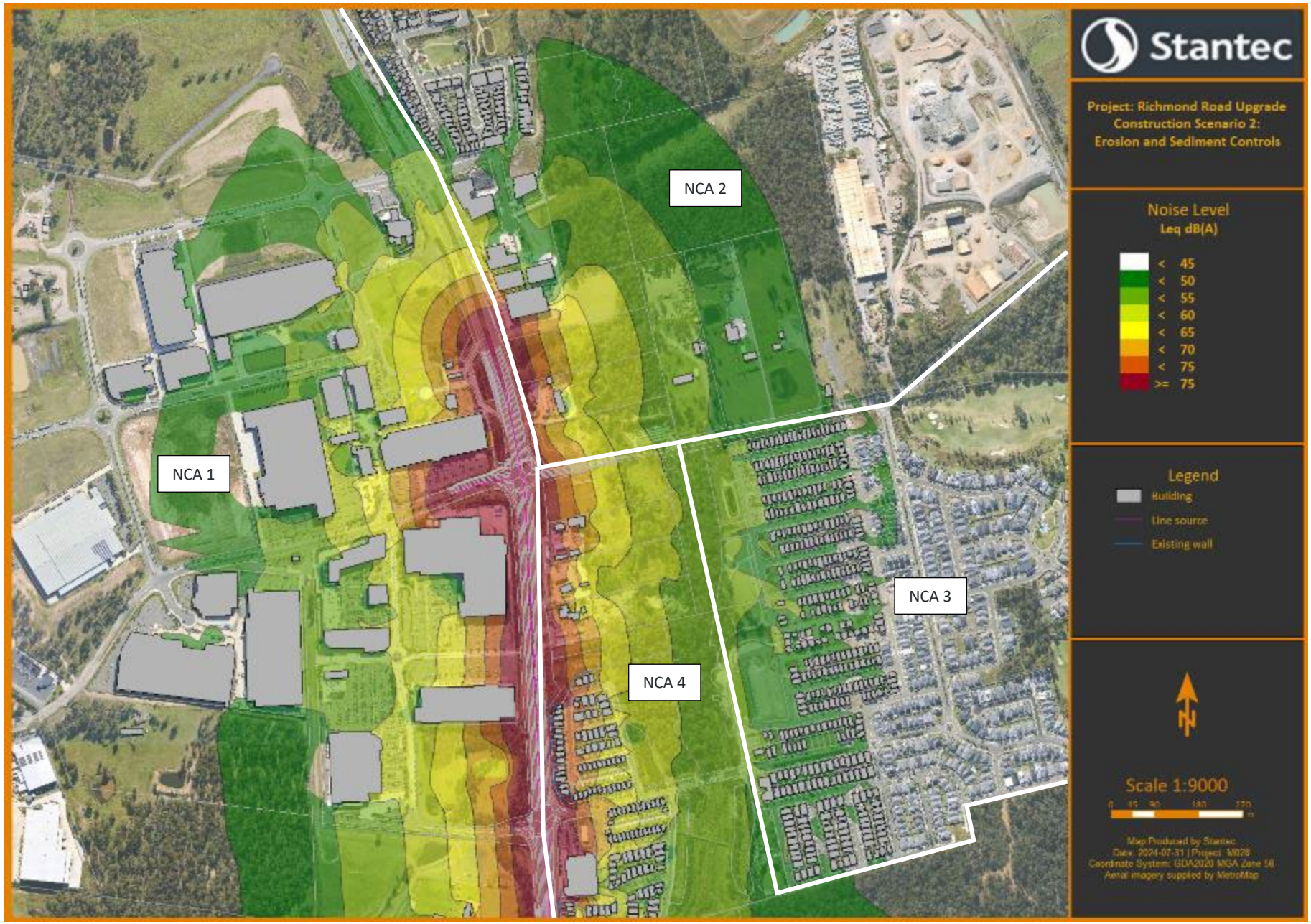


Figure D-4: Predicted construction noise impacts – Scenario 2: Installation of erosion and sediment controls – South

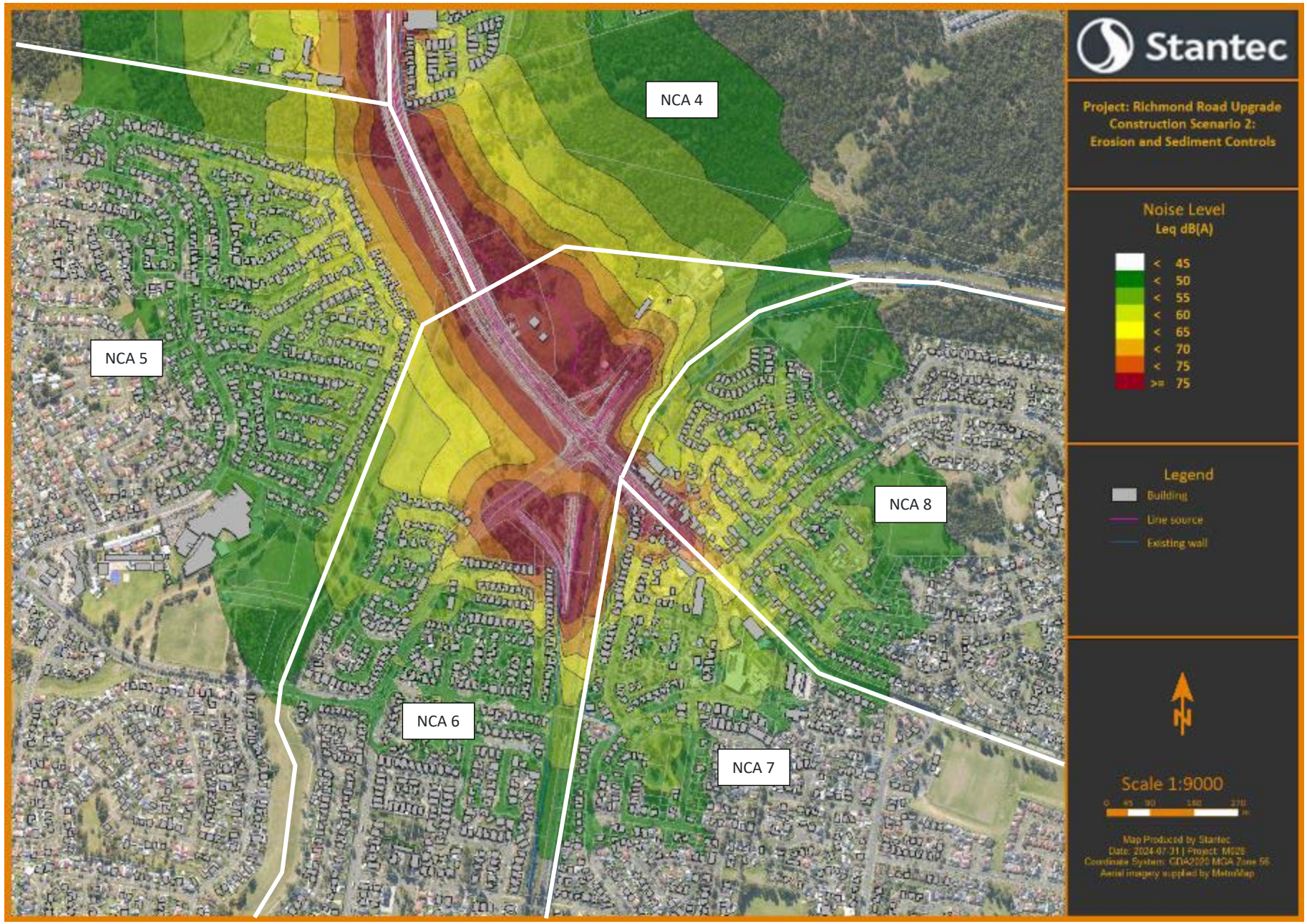


Figure D-5: Predicted construction noise impacts – Scenario 3: Relocation and protection of existing services – North

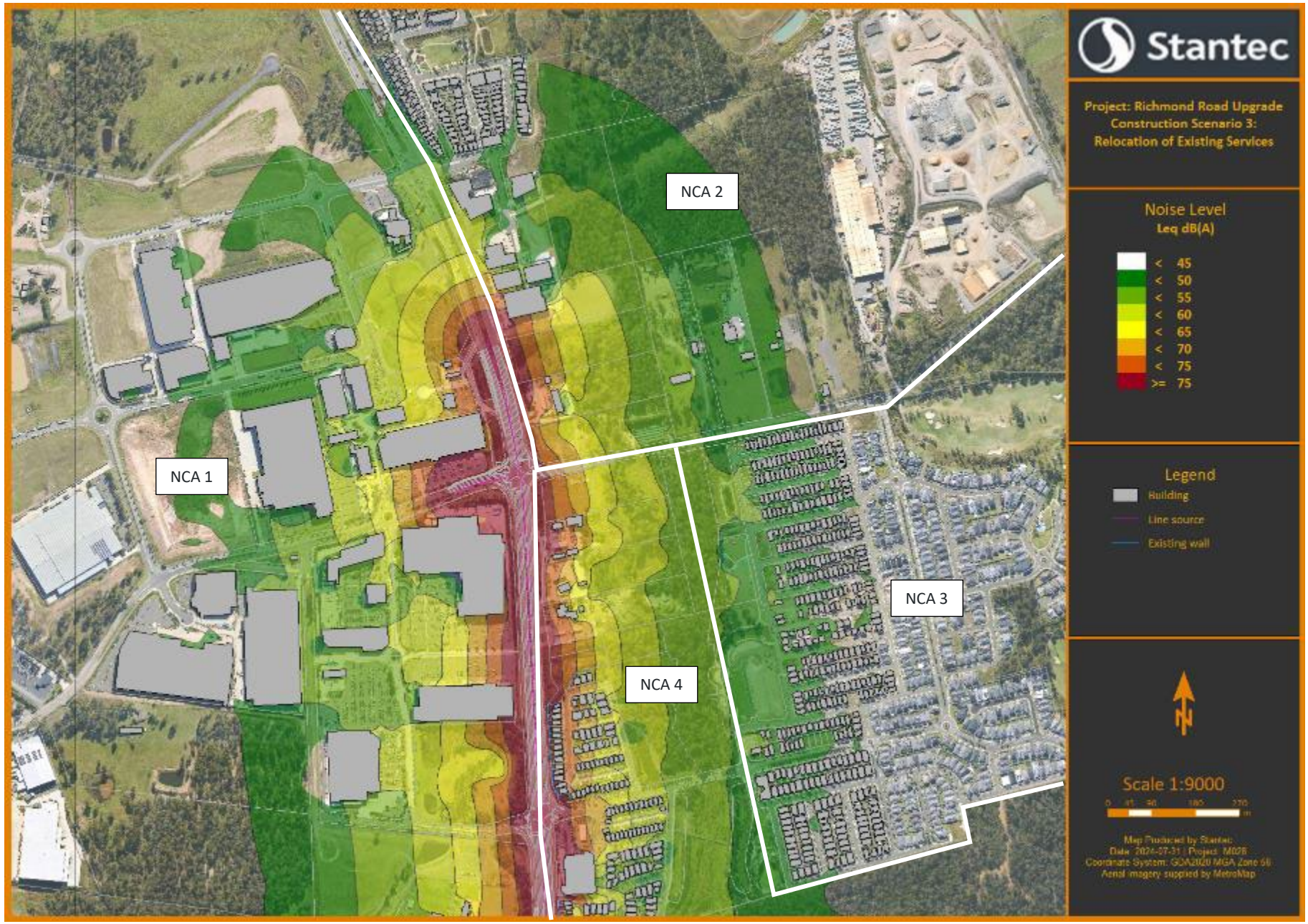


Figure D-6: Predicted construction noise impacts – Scenario 3: Relocation and protection of existing services – South

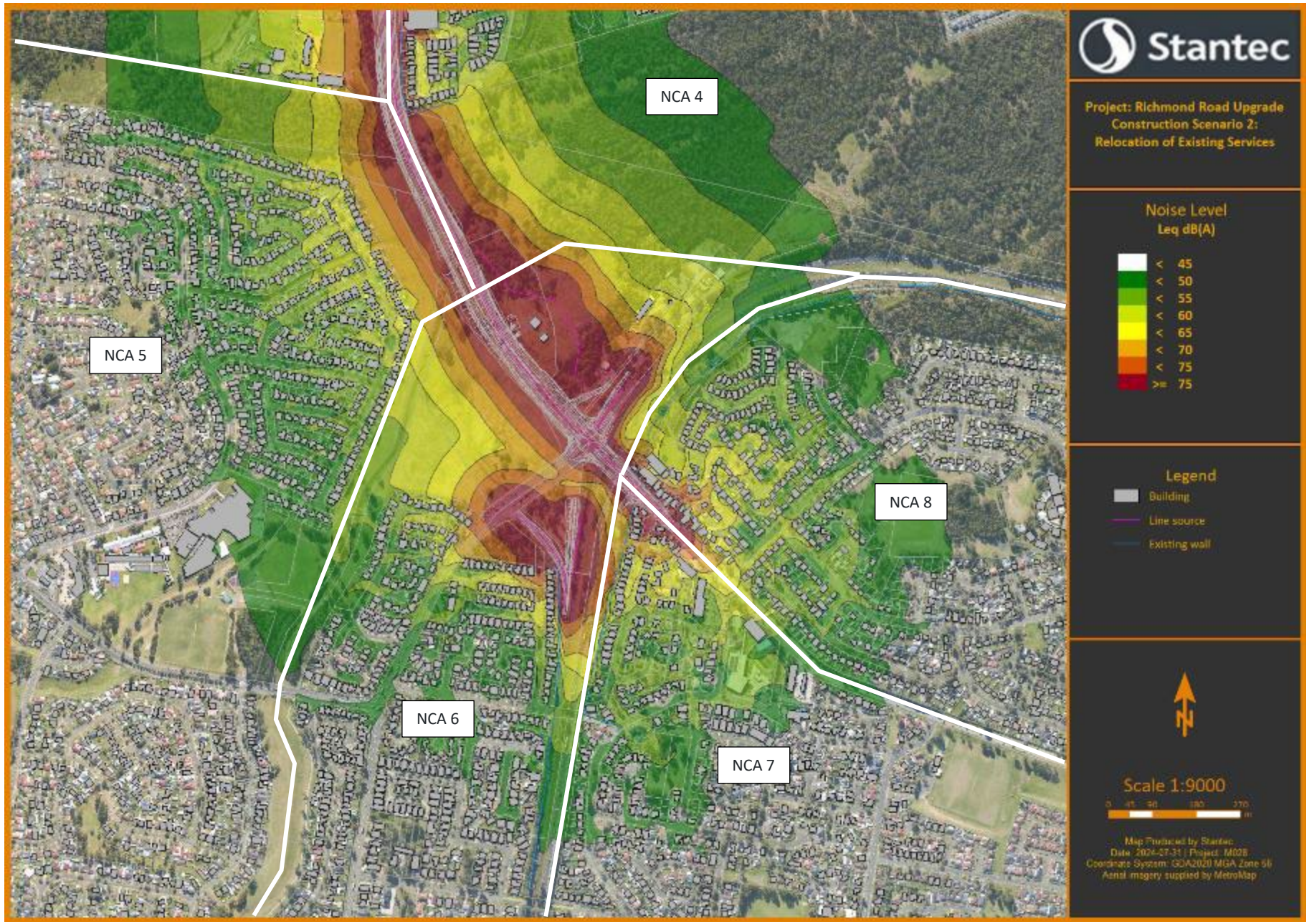


Figure D-7: Predicted construction noise impacts – Scenario 4: Bulk earthworks and materials haulage – North

Figure D-8: Predicted construction noise impacts – Scenario 4: Bulk earthworks and materials haulage – South

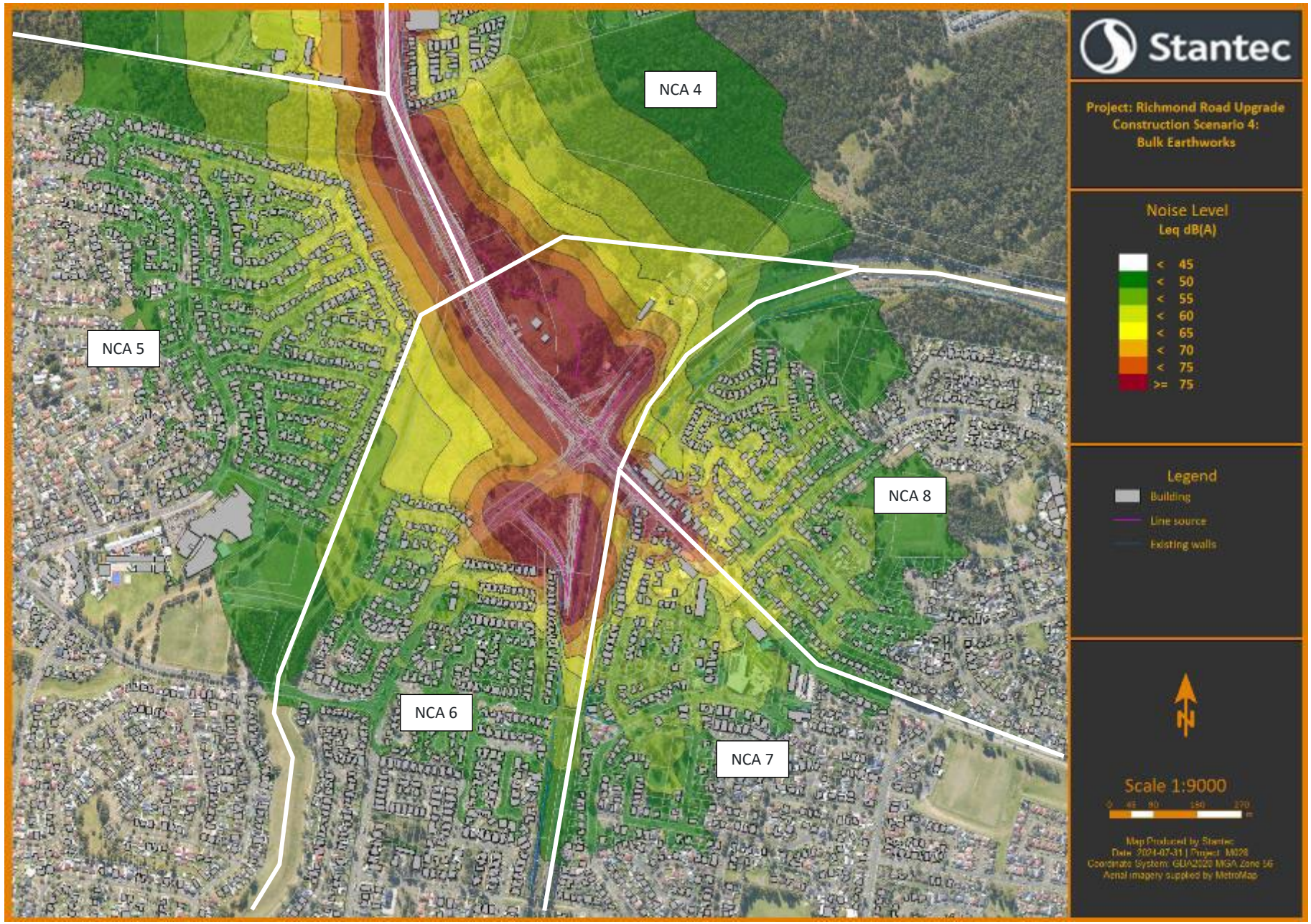


Figure D-9: Predicted construction noise impacts – Scenario 5: Road pavement construction – North

Figure D-10: Predicted construction noise impacts – Scenario 5: Road pavement construction – South

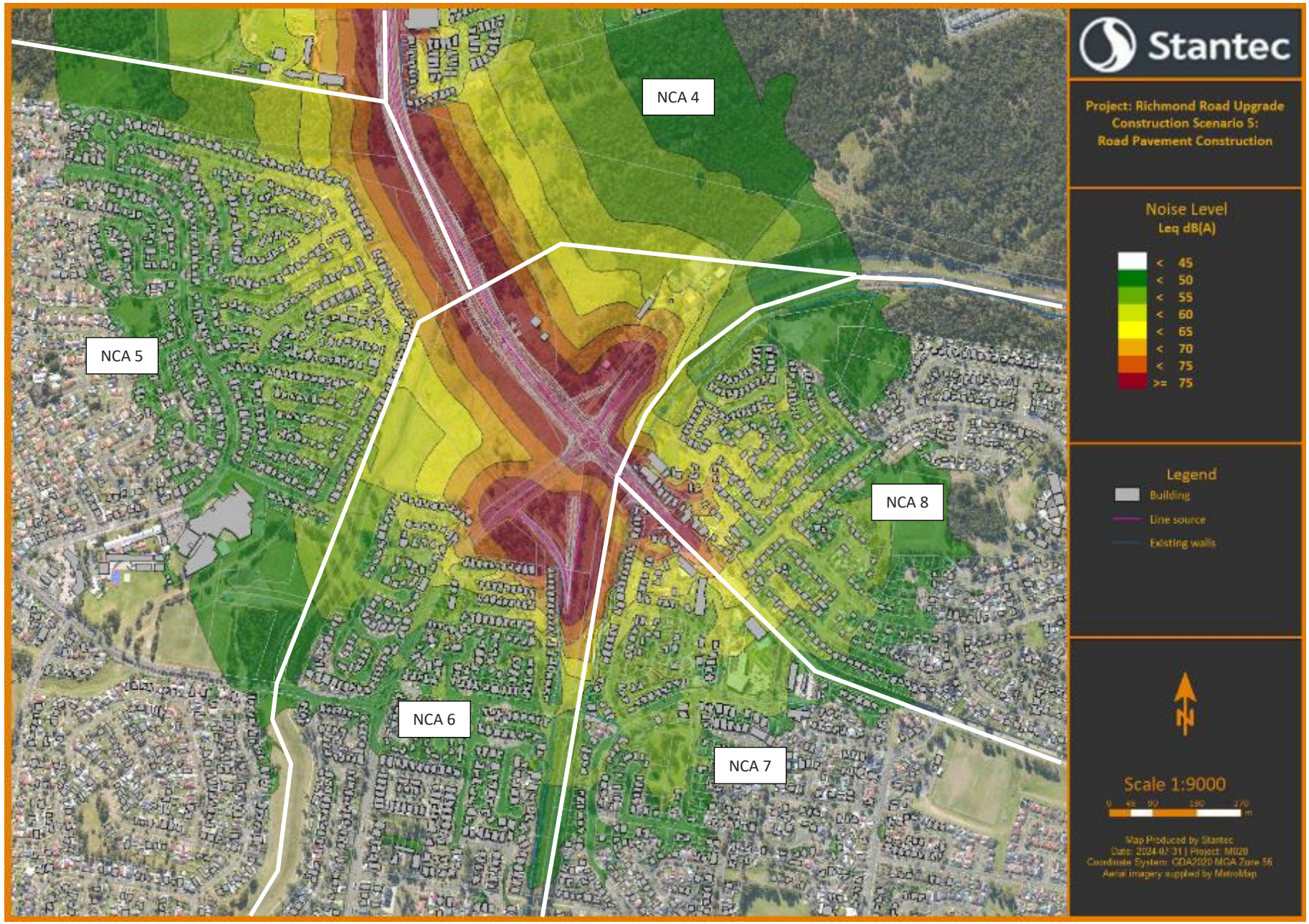


Figure D-11: Predicted construction noise impacts – Scenario 6: Bridge construction – North

Figure D-12: Predicted construction noise impacts – Scenario 6: Bridge construction – South

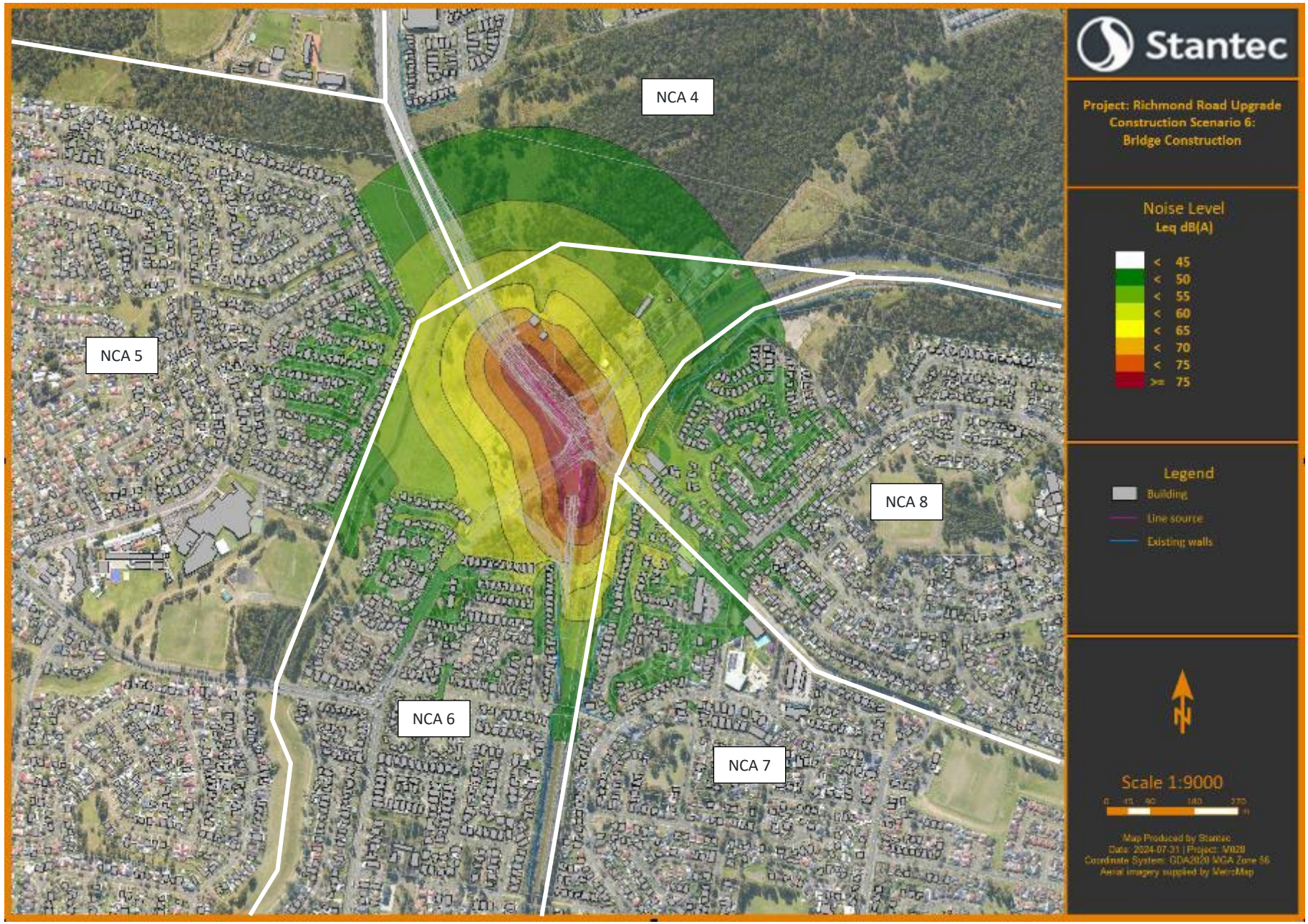


Figure D-13: Predicted construction noise impacts – Scenario 7: Finishing works, signposting, lighting and roadside furniture installation – North

Figure D-14: Predicted construction noise impacts – Scenario 7: Finishing works, signposting, lighting and roadside furniture installation – South

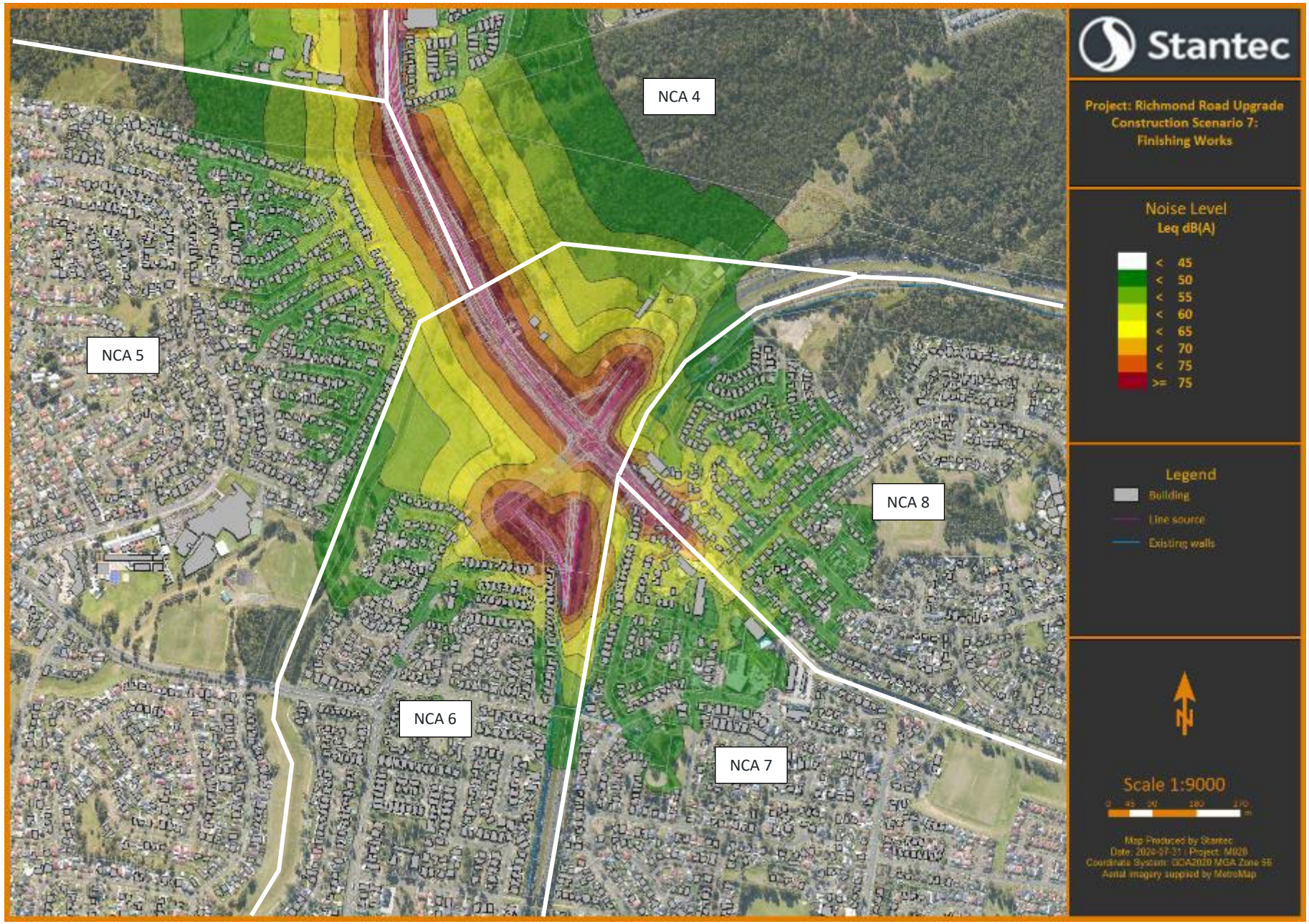


Figure D-15: Predicted construction noise impacts – Out of Hours Works Period 2 (OOHW2) – Nighttime – Worst Case Scenario (Scenario 5) for NCA 2

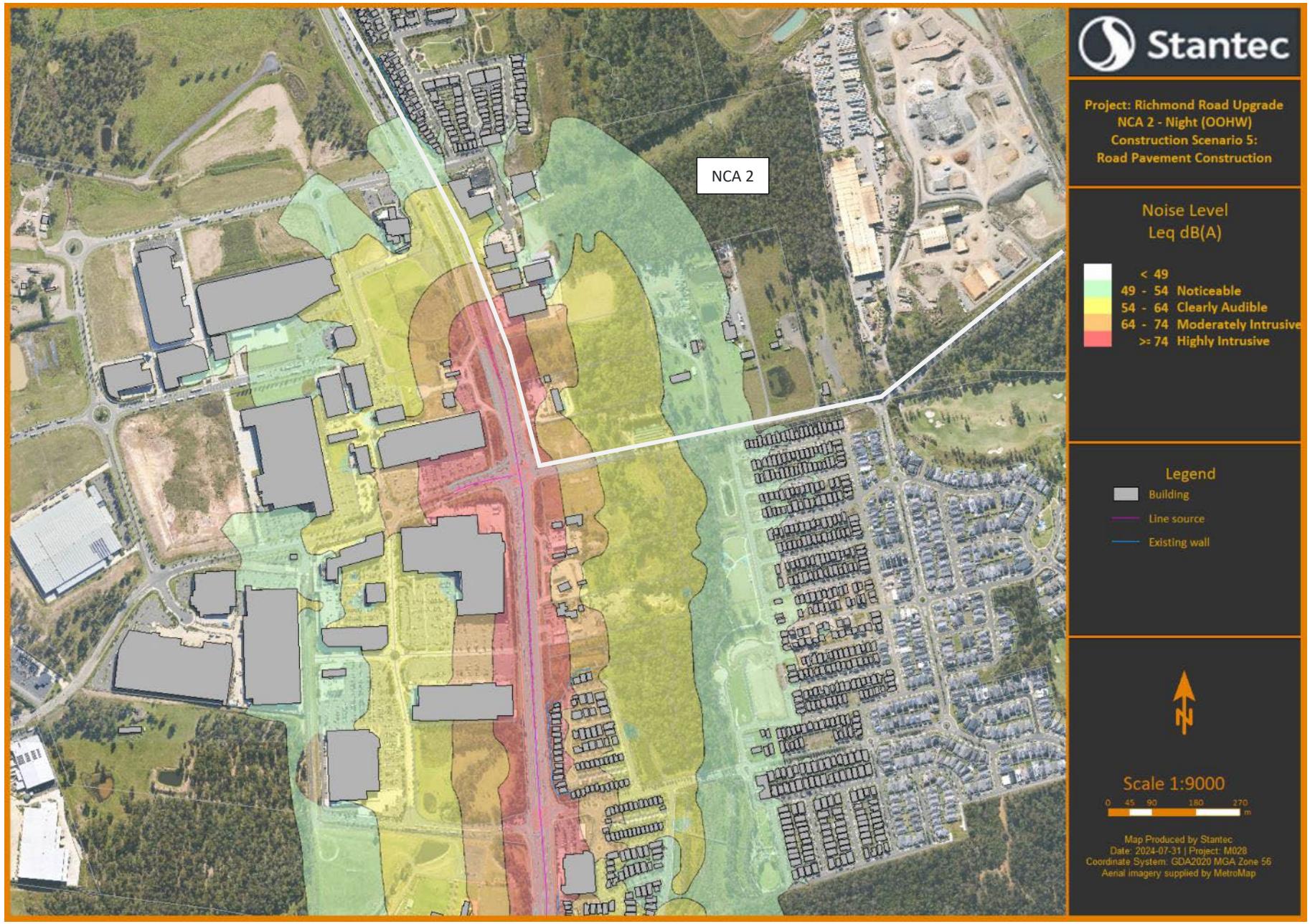


Figure D-16: Predicted construction noise impacts – Out of Hours Works Period 2 (OOHW2) – Nighttime – Worst Case Scenario (Scenario 5) for NCA 3

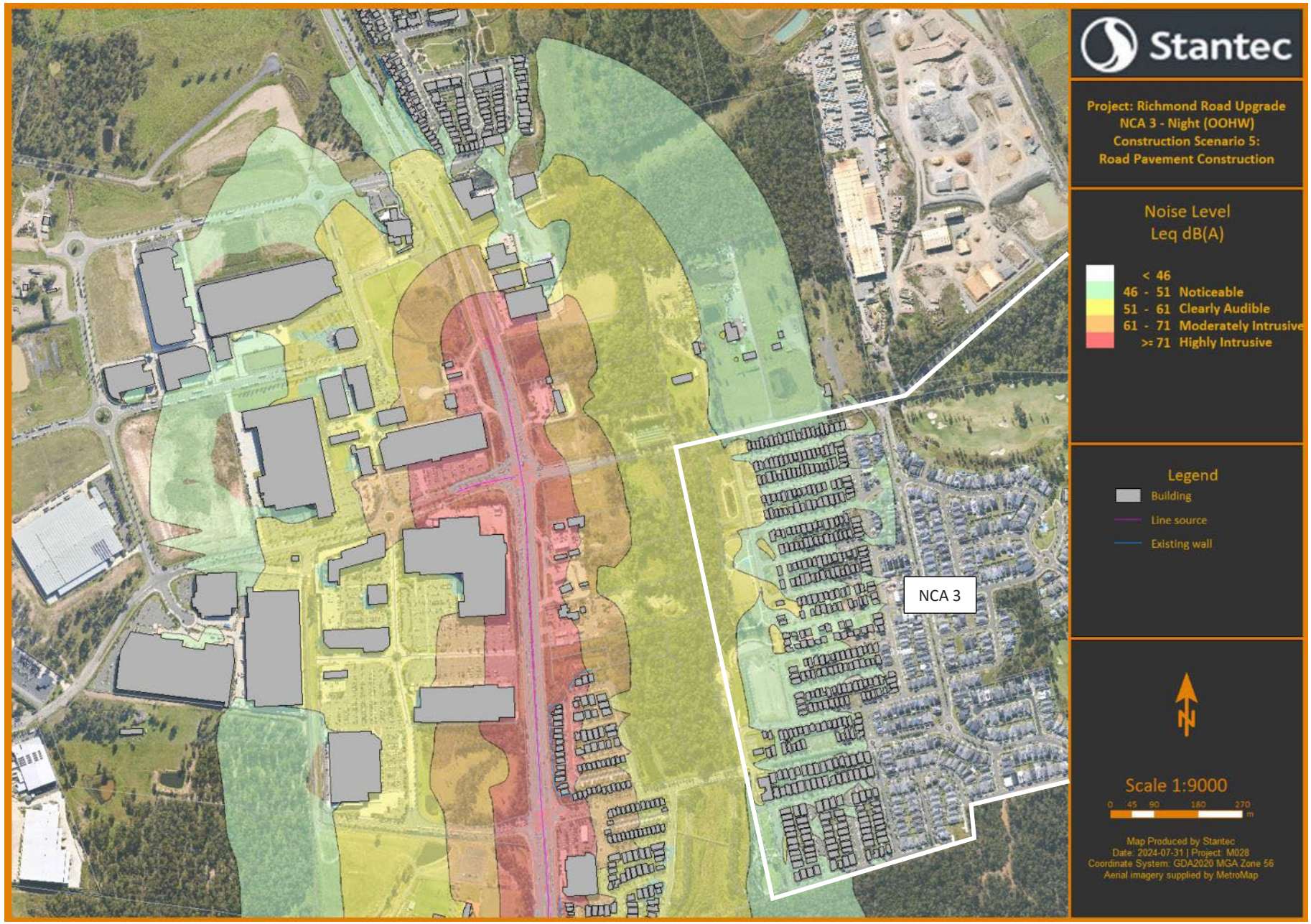


Figure D-17: Predicted construction noise impacts – Out of Hours Works Period 2 (OOHW2) – Nighttime – Worst Case Scenario (Scenario 5) for NCA 4

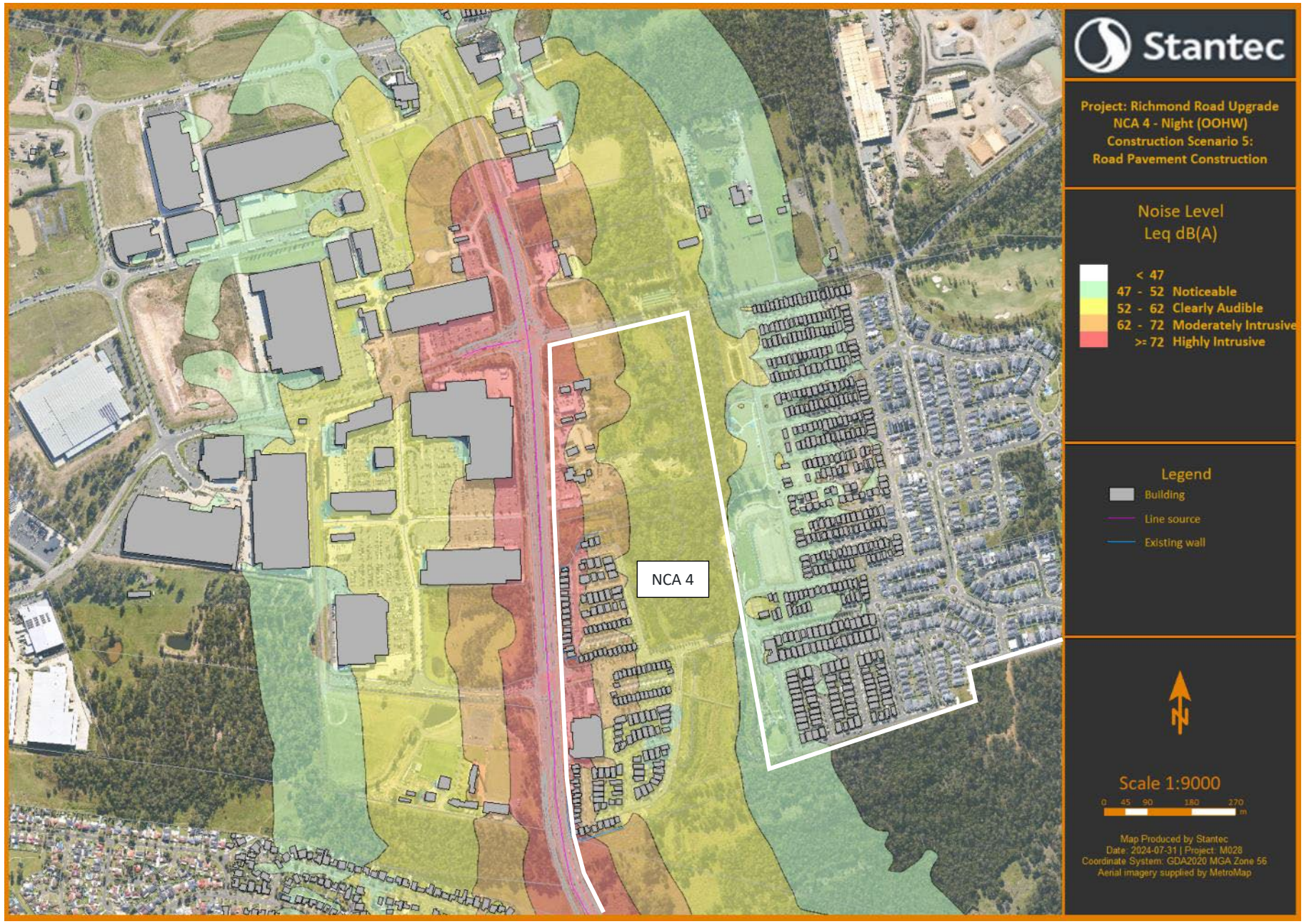


Figure D-18: Predicted construction noise impacts – Out of Hours Works Period 2 (OOHW2) – Nighttime – Worst Case Scenario (Scenario 1) for NCA 5

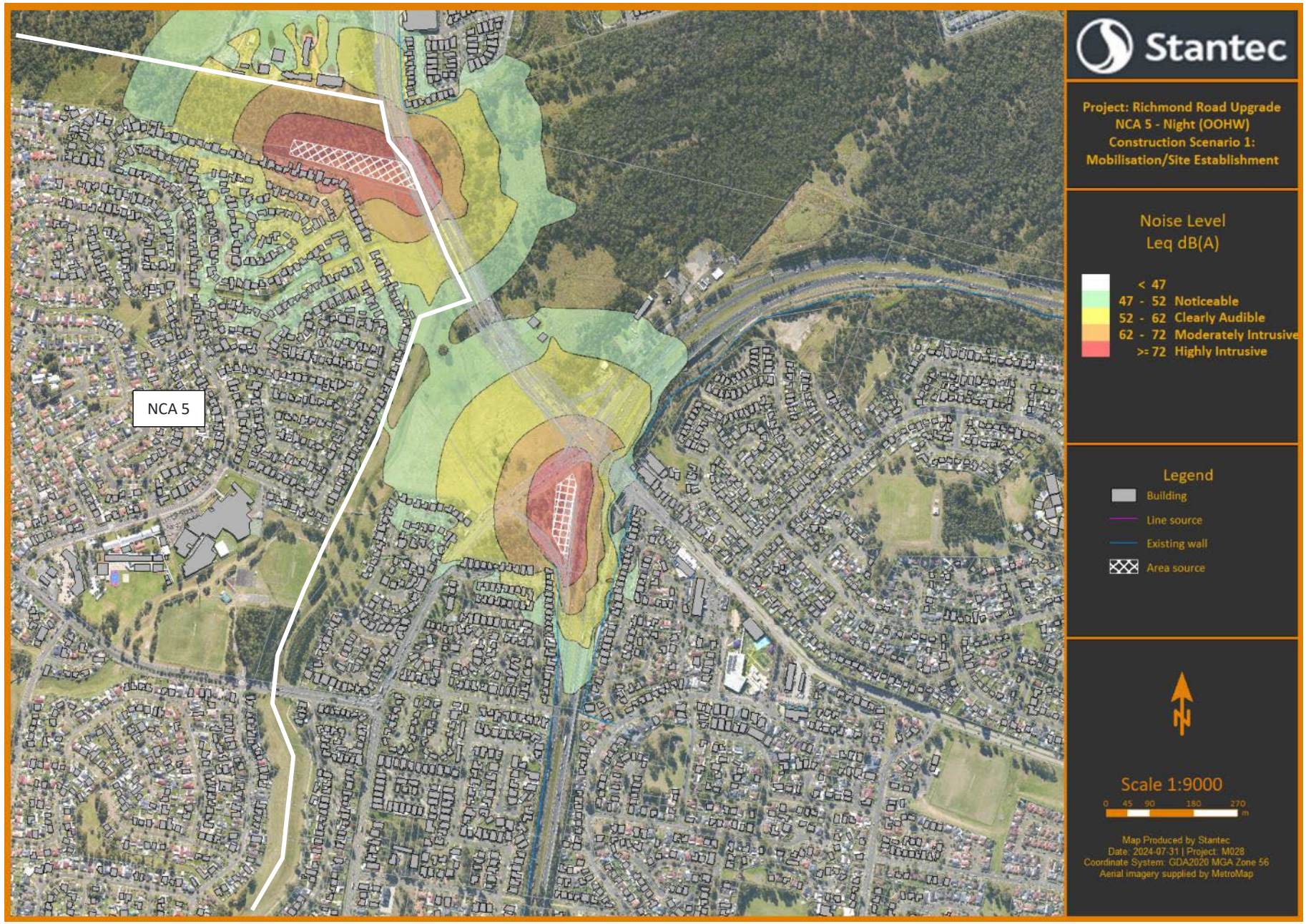


Figure D-19: Predicted construction noise impacts – Out of Hours Works Period 2 (OOHW2) – Nighttime – Worst Case Scenario (Scenario 5) for NCA 5

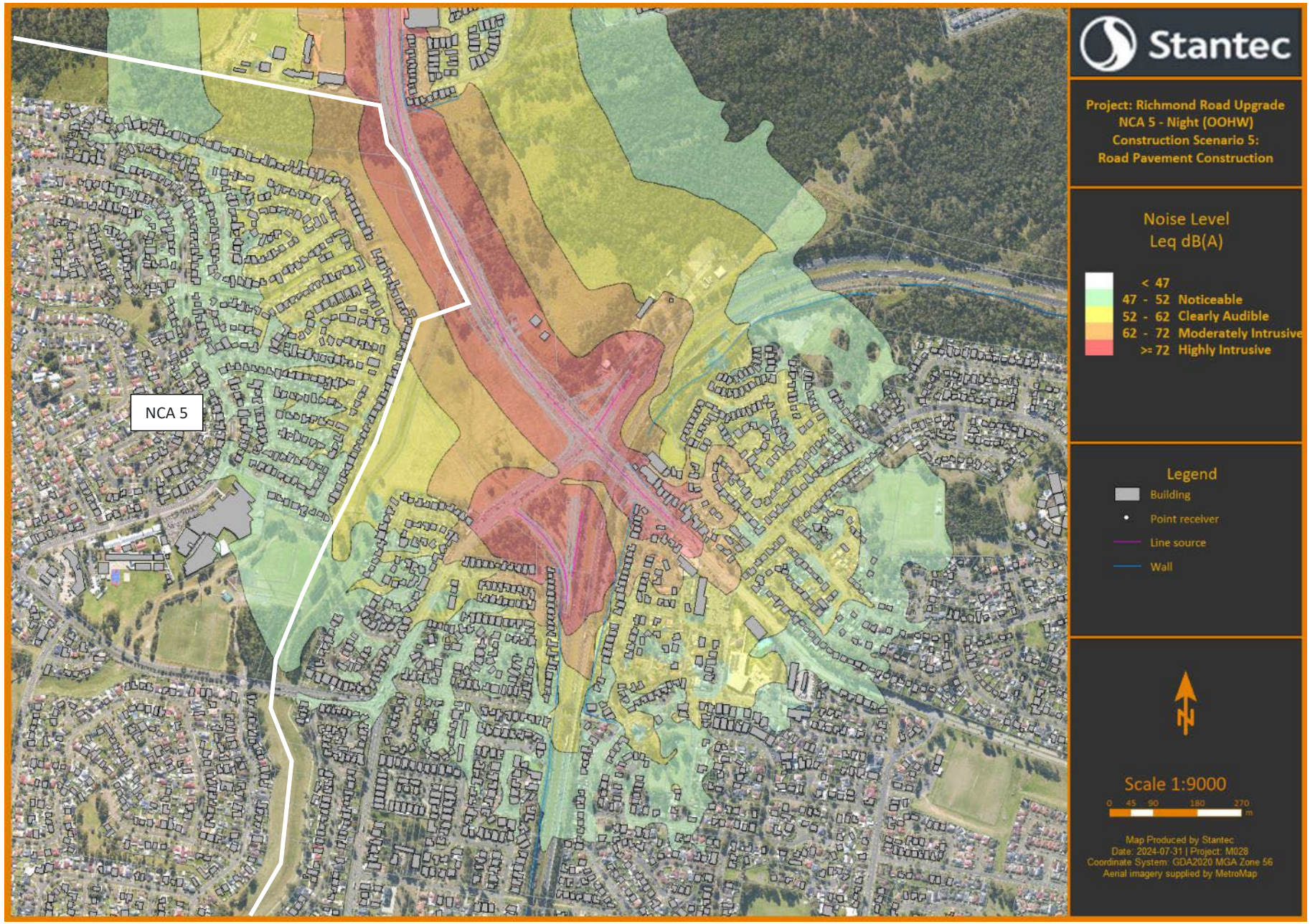


Figure D-20: Predicted construction noise impacts – Out of Hours Works Period 2 (OOHW2) – Nighttime – Worst Case Scenario (Scenario 4) for NCA 6

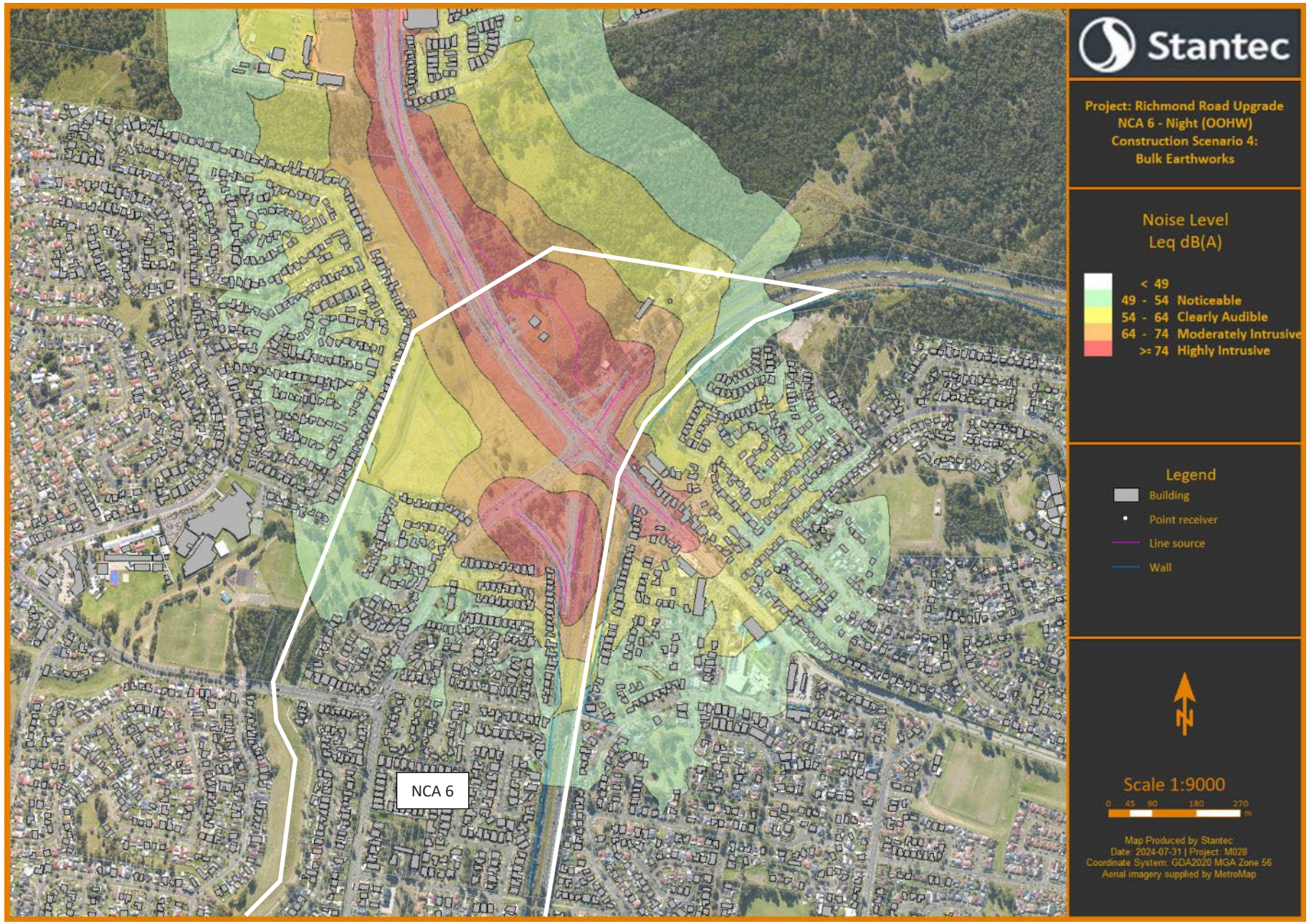
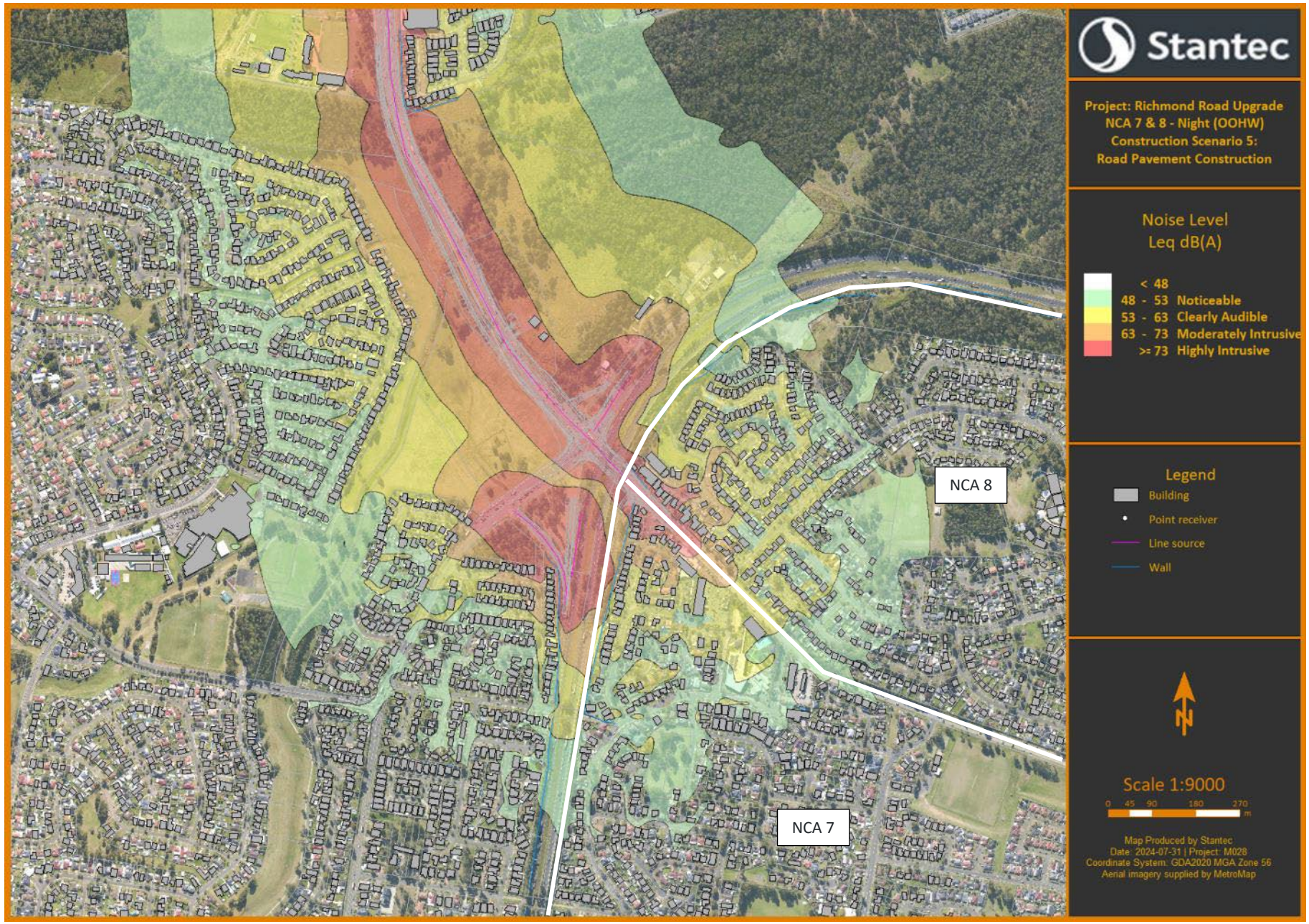


Figure D-21: Predicted construction noise impacts – Out of Hours Works Period 2 (OOHW2) – Nighttime – Worst Case Scenario (Scenario 5) for NCA 7 & 8



Appendix E: Vibration Contour Maps

Figure E-1: Predicted construction vibration impacts – Minimum work distance for cosmetic damage – Large plant/equipment – Northern section

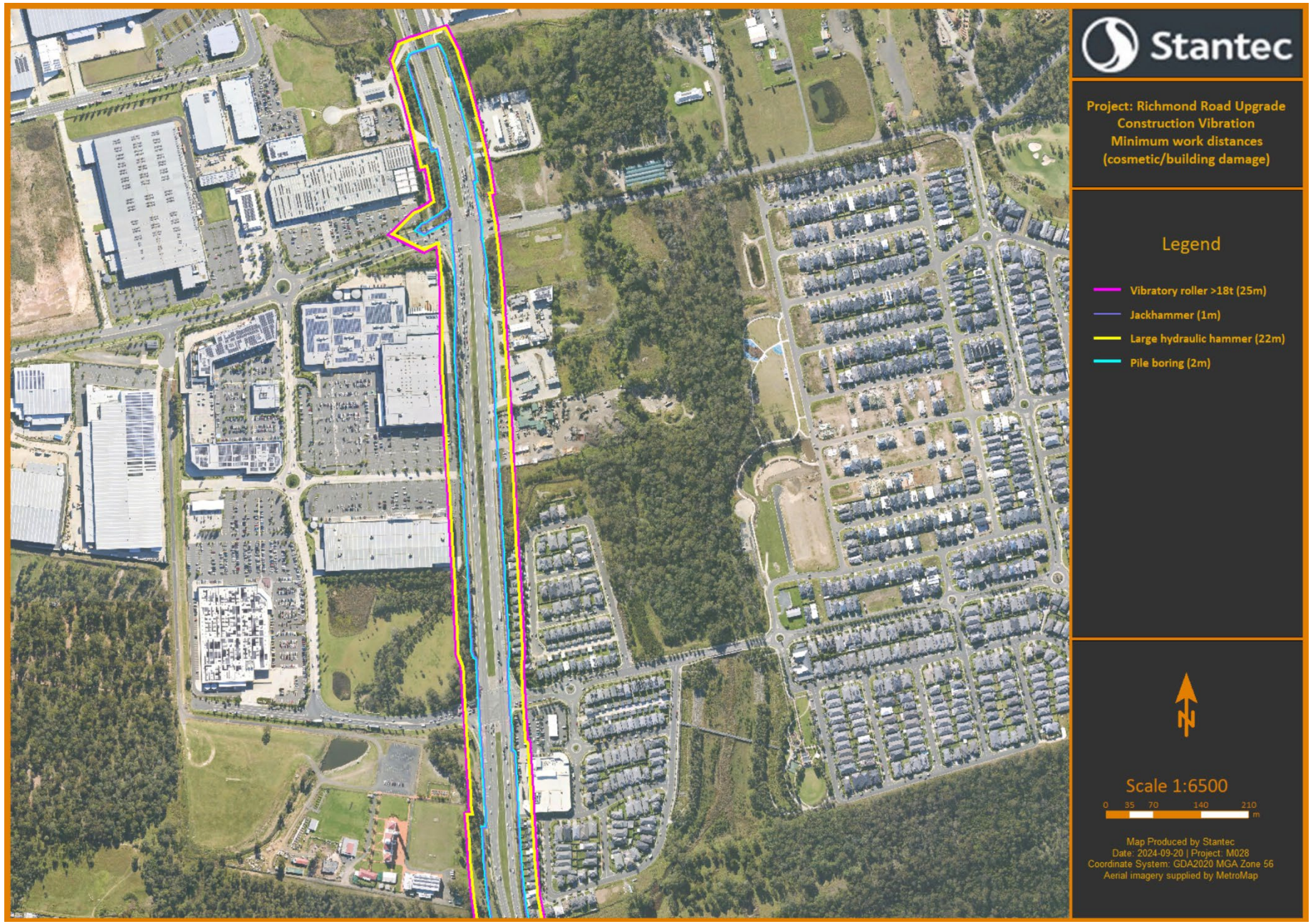
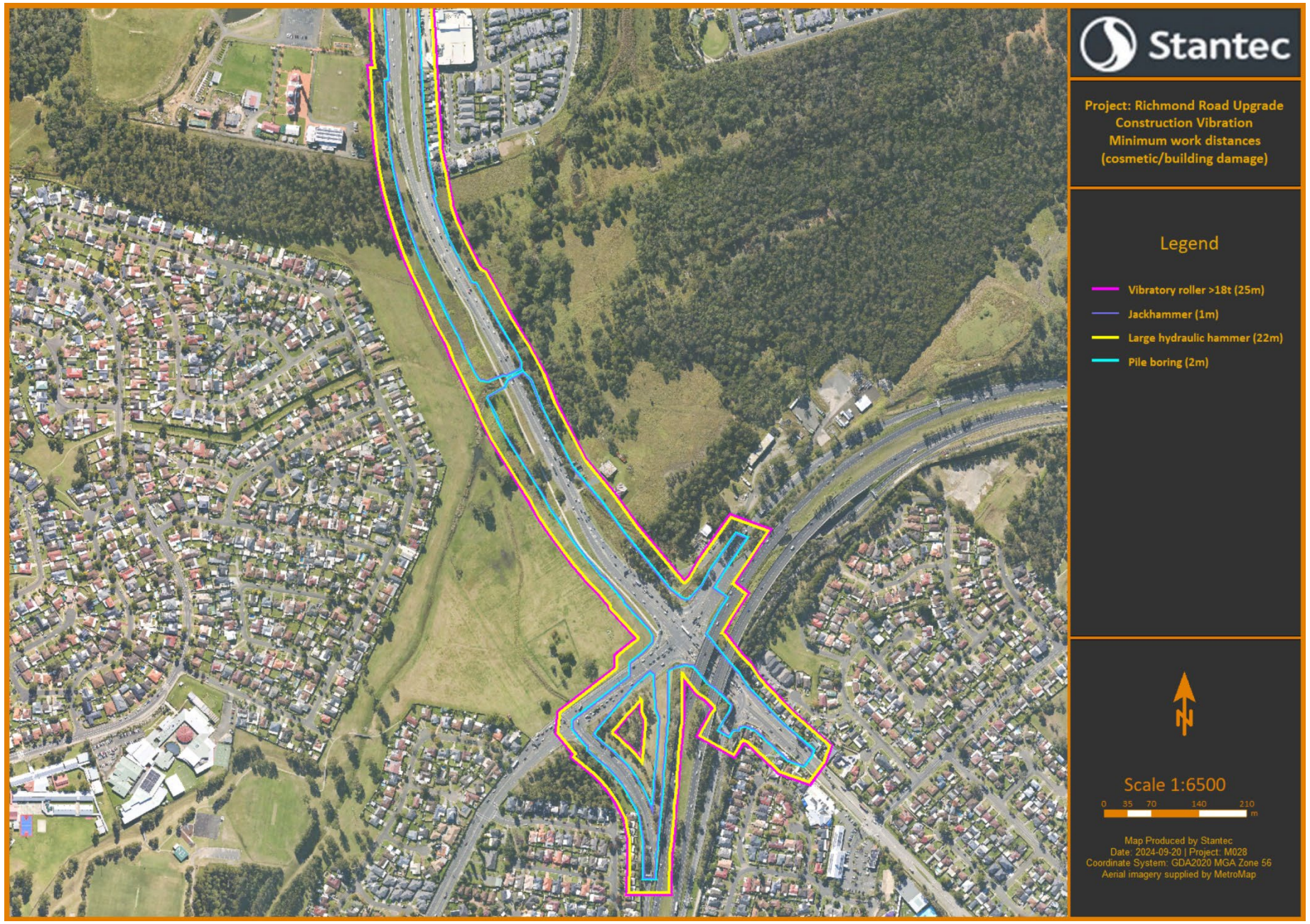


Figure E-2: Predicted construction vibration impacts – Minimum work distance for cosmetic damage – Large plant/equipment – Southern section



Appendix F: CNVG-R Standard Mitigation Measures

The following standard actions and mitigation measures should be implemented on all construction projects. Assistance from Transport Communication and Stakeholder Engagement is available to coordinate and deliver community consultation and notification. The team also has the latest noise fact sheets and letter templates.

Action required	Applies to	Details
Management measures		
Implementation of any project specific mitigation measures required.	Airborne noise	Implementation of any project specific mitigation measures required.
Implement community consultation or notification measures (refer to Appendix C [of CNVG] for further details of each measure).	Airborne noise Ground-borne noise and vibration	Notification detailing 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 seven calendar days prior to the start of works. For projects other than maintenance works, more advanced consultation or notification may be required. Contact Transport Communication and Stakeholder Engagement for guidance. Website (If required) Contact telephone number for community. Email distribution list (if required). Community drop-in session (if required by approval conditions).
Site inductions	Airborne noise Ground-borne noise and vibration	All employees, contractors and subcontractors are to receive an environmental induction. The induction must 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.
Behavioural practices	Airborne noise	No swearing or unnecessary shouting or loud stereos/radios on site. No dropping of materials from height, throwing of metal items and slamming of doors.
Verification	Airborne noise Ground-borne noise and vibration	Where specified under *Appendix C [of CNVG]*, a noise verification program is to be carried out for the duration of the works in accordance with the *Construction Noise and Vibration Management Plan* and any approval and licence conditions.
Attended vibration measurements	Ground-borne vibration	Where required attended vibration measurements should be undertaken at the commencement of vibration generating activities to confirm that vibration levels are within the acceptable range to prevent cosmetic building damage.
Update Construction Environmental Management Plans	Airborne noise Ground-borne noise and vibration	The CEMP must be regularly updated to account for changes in noise and vibration management issues and strategies.

Action required	Applies to	Details
Building condition surveys	Vibration Blasting	Undertake building dilapidation surveys on all buildings located within the buffer zone prior to commencement of activities with the potential to cause property damage.
Source controls		
Construction hours and scheduling	Airborne noise Ground-borne noise and vibration	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.
Construction respite period during normal hours and out-of-hours work	Ground-borne noise and vibration Airborne noise	Please refer to *Appendix C [of CNVG]* for more details on the following respite measures: • Respite Offers (RO) • Respite Period 1 (R1) • Respite Period 2 (R2) • Duration Respite (DR)
Equipment selection	Airborne noise Ground-borne noise and vibration	Use quieter and less vibration emitting construction methods where feasible and reasonable. For example, when piling is required, bored piles rather than impact-driven piles will minimise noise and vibration impacts. Similarly, diaphragm wall construction techniques, in lieu of sheet piling, will have significant noise and vibration benefits. Ensure plant including the silencer is well maintained.
Plant noise levels	Airborne-noise	The noise levels of plant and equipment must have operating sound power or sound pressure levels compliant with the criteria in *Appendix H [of CNVG].* Implement a noise monitoring audit program to ensure equipment remains within the more stringent of the manufacturer's specifications or *Appendix H [of CNVG*].
Rental plant and equipment	Airborne-noise	The noise levels of plant and equipment items are to be considered in rental decisions and in any case cannot be used on site unless compliant with the criteria in *Table 2 [of CNVG]*.
Use and siting of plant	Airborne-noise	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. Only have necessary equipment on site.
Plan worksites and activities to minimise noise and vibration	Airborne noise Ground-borne 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 cannot 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

Action required	Applies to	Details
		such as before or during Higher School Certificate and at the end of higher education semesters. If programmed night work is postponed the work should be re-programmed and the approaches in this guideline apply again.
Reduced equipment power	Airborne noise Ground-borne vibration	Use only the necessary size and power.
Non-tonal and ambient sensitive reversing alarms	Airborne-noise	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. Consider the use of ambient sensitive alarms that adjust output relative to the ambient noise level.
Minimise disturbance arising from delivery of goods to construction sites	Airborne-noise	Loading and unloading of materials/deliveries is to occur as far as possible from sensitive receivers. Select site access points and roads as far as possible away from sensitive receivers. Dedicated loading/unloading areas to be shielded if close to sensitive receivers. Delivery vehicles to be fitted with straps rather than chains for unloading, wherever possible. Avoid or minimise these out-of-hours movements where possible.
Blasting regime	Airborne noise Ground-borne vibration	The noise and vibration impacts from blasting operations can be minimised by: • choosing the appropriate blast charge configurations • ensuring appropriate blast-hole preparation • optimising blast design, location, orientation and spacing • selecting appropriate blast times • utilising knowledge of prevailing meteorological conditions. *Australian Standard™ AS 2187.2-2006 Explosives -Storage and use, Part 2: Use of Explosives* provides more detailed advice on ground vibration and air blast overpressure impact minimisation options.
Engine compression brakes	Construction vehicles	Limit the use of engine compression brakes at night and in residential areas. Ensure vehicles are fitted with a maintained original equipment manufacturer exhaust silencer or a silencer that complies with the National Transport Commission's National Stationary Exhaust Noise Test Procedures for In-service Motor Vehicles and any relevant reference standards.
Path controls		
Shield stationary noise sources such as pumps, compressors, fans etc.	Airborne-noise	Stationary noise sources should be enclosed or shielded where feasible and reasonable whilst ensuring that the occupational health and safety of workers is maintained. *Appendix D* of *AS 2436:2010* lists materials suitable for shielding.
Shield sensitive receivers from noisy activities	Airborne-noise	Use structures to shield residential receivers from noise such as site shed placement, earth bunds, fencing, erection of operational stage noise barriers (where practicable), and consideration of site topography when situating plant.

Action required	Applies to	Details
Receptor controls		
Structural surveys and vibration monitoring	Ground-borne vibration	Pre-construction surveys of the structural integrity of vibration sensitive buildings may be warranted. At locations where there are high-risk receptors, vibration monitoring should be conducted during the activities causing vibration.
See Appendix C [of CNVG-R] for additional measures	Airborne noise Ground-borne vibration	In some instances, additional mitigation measures may be required.

NSW GOVERNMENT