BLANK PAGE

Hillsborough Road Upgrade

Submissions report

Transport for NSW | August 2023

BLANK PAGE

Hillsborough Road Upgrade

Submissions report

Transport for NSW | August 2023

Document controls

Approval and authorisation

Title	Hillsborough Road Upgrade Response to Submissions Report
Accepted on behalf of Transport for NSW by:	Andrew Thompson Project Development Manager
Signed:	
Dated:	04.05.2023

Executive summary

The proposal

Transport for NSW ('Transport') proposes to upgrade Hillsborough Road, in the Lake Macquarie suburb of Hillsborough NSW (the proposal). Transport proposes to duplicate Hillsborough Road between the Newcastle Inner City Bypass (NICB) in the east, to west of the Crockett Street intersection, Warners Bay.

Key features of the proposal include:

- Duplication of approximately 1.8 kilometres of Hillsborough Road from the NICB roundabout west to a tie in point about 300 metres west of Crockett Street
- Two lanes in each direction separated by a raised median with a posted speed limit of 60 km/h
- New traffic lights at Chadwick Street, Barker Avenue and Crockett Street intersections including pedestrian crossings
- Modification of the Higham Road intersection to left out only
- Closure of the right turn in and out of the businesses east of the Combined Newcastle Canine Club Showground (CNCC Showground)
- New separated left in only entry and left out only exit for the CNCC Showgrounds located east (entry) and west (exit) of Chadwick Street intersection
- U-turn bay on Barker Avenue
- Provision for on road cyclists within shoulder in both directions
- Off road concrete shared path on the northern side tying into existing footpath
- Upgraded bus stop facilities on Hillsborough Road at Crockett Street intersection, Chadwick Street intersection and on Crockett Street
- Culvert widening at Winding Creek and full replacement of existing culvert between Crockett Street and Barker Avenue
- Minor property acquisition and adjustments including fencing, access and driveway adjustments

Construction of the proposal is planned to be delivered in stages. The NSW Government has announced $35 million to deliver the first stage of the Hillsborough Road Upgrade. Stage 1 involves upgrading Crockett Street intersection, including installation of traffic lights. Stage 1 is expected to commence construction in 2025 and take about 18 months to complete depending on final staging arrangements. Timing for construction of the remaining stages is subject to the proposal approvals and funding.

Display of the Review of Environmental Factors

Transport prepared a Review of Environmental Factors (REF) for the Hillsborough Road Upgrade. The REF was publicly displayed between 14 November 2022 and 12 December 2022. During this time, Transport invited the public to provide feedback on the proposal via the Transport project website, within the online interactive portal, via the project's 1800 phone number and by email. Hard copies of the REF were not displayed but were available on request.

The website link was advertised in the Newcastle Herald newspaper and on Facebook. A community update was distributed to about 2000 residents and businesses in the Hillsborough, Cardiff South and Warners Bay suburbs. The update included information on the proposal, an overview of the REF and a link to the proposal website.

During the REF display, Transport met with Lake Macquarie City Council to provide an overview of the project and summary of the REF. Transport also met with residents and businesses who would be directly affected by the proposal.

Summary of issues and responses

A total of fifty (50) submissions were received. Forty-five (45) of the submissions were from the general community, two (2) submissions from local members of parliament and one (1) group submission from the Combined Northern Canine Committee (CNCC) showgrounds. Additionally, one (1) submission from Lake Macquarie City Council (LMCC), and one (1) from a state government agency (Environmental Protection Agency).

Of these submissions, 32% were in support of the proposal. The remaining 68% of submissions offered no position on whether they supported or objected to the proposal.

The submissions raised have been grouped into categories, with each category and responses to each responded to in detail in Section 2 of this report.

The key issues raised (by number of submissions relating to the issue) are outlined below.

Support

The comments supporting the proposal generally highlighted the need for the proposal to provide safer roads.

Timing

Concerns were raised over the timing of the delivery of the project along with the proposed staging of construction.

Transport are carrying out a range of complex works along one of Newcastle's busiest roads which means detailed studies and planning, involving a number of stakeholders is required. This includes optimising the design to improve safety and capacity, improve accessibility to neighbouring suburbs and reducing impacts to adjacent receivers and the environment.

The stages of construction are designed to have minimal impact on road users. The proposed timing is aligned with Government commitments to funding and State infrastructure priorities, thus ensures projects are delivered on time where they are needed.

Stage 1 is expected to commence construction in 2025 and take approximately 18 months to complete, pending final staging arrangements. Timing for construction of the remaining stages is subject to the proposal approvals and funding.

Footpaths, cyclists and bus stops

Comments and questions were raised over facilities and connectivity for pedestrians and cyclists along the length of the proposal as well as to and from bus stops during construction.

Temporary provisions would be made for active transport users prior to and during construction. These would be detailed in a Construction Traffic Management Plan and communicated prior to construction.

During operation, the proposal would include shared pathways with a two-way off-road facility to ensure better connectivity and improve safety for pedestrians and cyclist (refer to Section 2.3.3 of the REF, Urban design objectives). The proposal also includes provision for on road cyclists via the two-meter (2m) road shoulder (Appendix C of the REF Concept plans). Cyclist head start areas have been refined in the design to increase cyclist safety as outlined in Table 2.1: Design refinements in the REF.

The proposal retains and upgrades the three existing bus stops on Hillsborough Road and adds one new bus stop west of Crockett Street. The current bus stop locations would be retained in operation and new shelters included in the design for the three existing bus stops as well as the proposed new stop (Section 3.2.3.10 of the REF).

Traffic lights

Concerns were raised about the effectiveness of installing the three traffic signals on a short section of Hillsborough Road along with minor comments on the layout of the signalised intersections.

Traffic modelling for the Traffic and Transport assessment demonstrated the proposal would reduce journey time on Hillsborough Road by about five (5) minutes during the morning peak and one minute in the afternoon peak even with the inclusion of the signalised intersections. This is primarily due to additional capacity gained by the duplication of Hillsborough Road and the current saturation of the corridor.

The location, configuration and placement of traffic lights at Chadwick and Crockett Street aim to improve road safety and provide local residents with improved accessibility to neighbouring suburbs. The proposal includes the installation of traffic lights as opposed to roundabouts based on the outcomes of traffic modelling and improved safety for pedestrians.

The proposed traffic lights at the Barker Ave intersection are required to cater for traffic leaving the business opposite Hillsborough and the CNCC showground wanting to travel east. These road users would be able to utilise the proposed U-turn Bay.

Road and pedestrian safety

Concerns were raised over the safety for road users and pedestrians with the current congested road conditions. The comments were generally raised in the context of the project timing, which is addressed above.

A summary of recent crashes which have occurred in the proposal area is detailed in the Traffic Impact Assessment contained in Appendix H to the REF. A key project objective of the proposal is to improve road safety for all road users along Hillsborough Road.

The proposal would result in improved pedestrian safety through the introduction of shared path facilities for the entire length of the proposal. The proposal will provide an improved ability for pedestrians to cross Hillsborough Road safely using dedicated pedestrian crossings located at the traffic lights which would be installed as part of the proposed intersection upgrades. Furthermore, the proposed upgrades would provide a solid median barrier which would reduce potential cross lane crashes.

King Street roundabout

Comments were received regarding the performance and safety of the intersection of Hillsborough Road, King Street, Medcalf Street and Macquarie Road.

The roundabout at King Street and Hillsborough Road is located beyond the scope of the proposal. Transport has recently completed an Integrated Transport Planning (ITP) exercise for North-West Lake Macquarie. The ITP identified a number of key priorities to enable a safe, connected and efficient transport network in the area. This included the roundabout at King Street and Hillsborough Road.

Transport will continue to investigate solutions for the King Street and Hillsborough Road roundabout in order to seek funding for improvements to this intersection. Funding to develop future projects is allocated based on multiple factors, and all transport projects compete for funding across the Regional NSW.

Additional studies

Additional Microbat Survey

Following the outcomes of the Biodiversity Assessment Report for the REF, an additional microbat survey was conducted over two nights on 19 and 20 December 2022 to assess the presence and potential impacts of the proposal on threatened microbats during breeding season. An ultrasonic survey, roost inspection and exit count were conducted which concluded that there was no evidence of roosting bats observed. The results of the microbat assessment are summarised in Section 3.0 and attached in Appendix A.

Revised Noise and Vibration Impact Assessment

The Noise and Vibration Impact Assessment has been revised to respond to minor comments provided by NSW Environment Protection Authority however has not resulted in any changes to or additional safeguards.

Next steps

Transport as the determining authority will consider the information in the REF and this submissions report and make a decision whether or not to proceed with the proposal.

Transport will inform the community and stakeholders of this decision and where a decision is made to proceed will continue to consult with the community and stakeholders prior to and during the construction phase.

Contents

Tables

Figures

Appendices

1. Introduction and background

1.1 The proposal

Transport for NSW ('Transport') proposes to upgrade Hillsborough Road, in the Lake Macquarie suburb of Hillsborough NSW (the proposal). Transport proposes to duplicate Hillsborough Road between the Newcastle Inner City Bypass (NICB) in the east, to west of the Crockett Street intersection, Warners Bay.

Key features of the proposal include:

- Duplication of about 1.8 kilometres of Hillsborough Road from the NICB roundabout west to a tie in point about 300 metres west of Crockett Street
- Two lanes each a minimum 3.3 metre wide each way with a solid central median barrier
- Posted speed of 60 km/h
- New traffic lights at the Chadwick Street intersection including pedestrian crossings
- Modification of the Higham Road intersection
- New traffic lights at the Barker Avenue intersection including pedestrian crossing
- U-turn facility on Barker Avenue
- Access gates to be relocated beyond U-turn facility
- New traffic lights at the Crockett Street intersection including pedestrian crossings
- Provision for on-road cyclists within shoulder in both directions
- Off-road concrete shared path on the northern side tying into existing path
- Upgraded bus stop facilities on Hillsborough Road at Crockett Street intersection, Chadwick Street intersection and on Crockett Street. All bus stops are to have shelters except for the southbound bus lay over on Crockett Street
- Culvert widening on Winding Creek both up stream and down stream of existing culvert structure
- Culvert widening and full replacement of existing culvert between Crockett Street and Barker Avenue
- New separated left in only entry and left out only exit for the Combined Newcastle Canine Club Showground (CNCC) Showgrounds located east (entry) and west (exit) of Chadwick Street intersection
- Maintained access to the Hillsborough Road fire trail opposite Crockett Street
- Left in / left out only access from existing businesses fronting Hillsborough Road, east of the CNCC Showgrounds
- Left in / left out only access to residences on Hillsborough Road, east of CNCC Showgrounds
- Relocation of utilities including, telecommunications, water, power, street lighting and minor adjustments to sewer infrastructure
- New as well as upgraded street lighting on Hillsborough Road
- Reinforced concrete retaining walls including facing panels
- Site investigations, including but not limited to geotechnical investigations
- Installation of fauna connectivity structures, such as rope crossings
- Minor property acquisition and adjustments including fencing, access and driveway adjustments

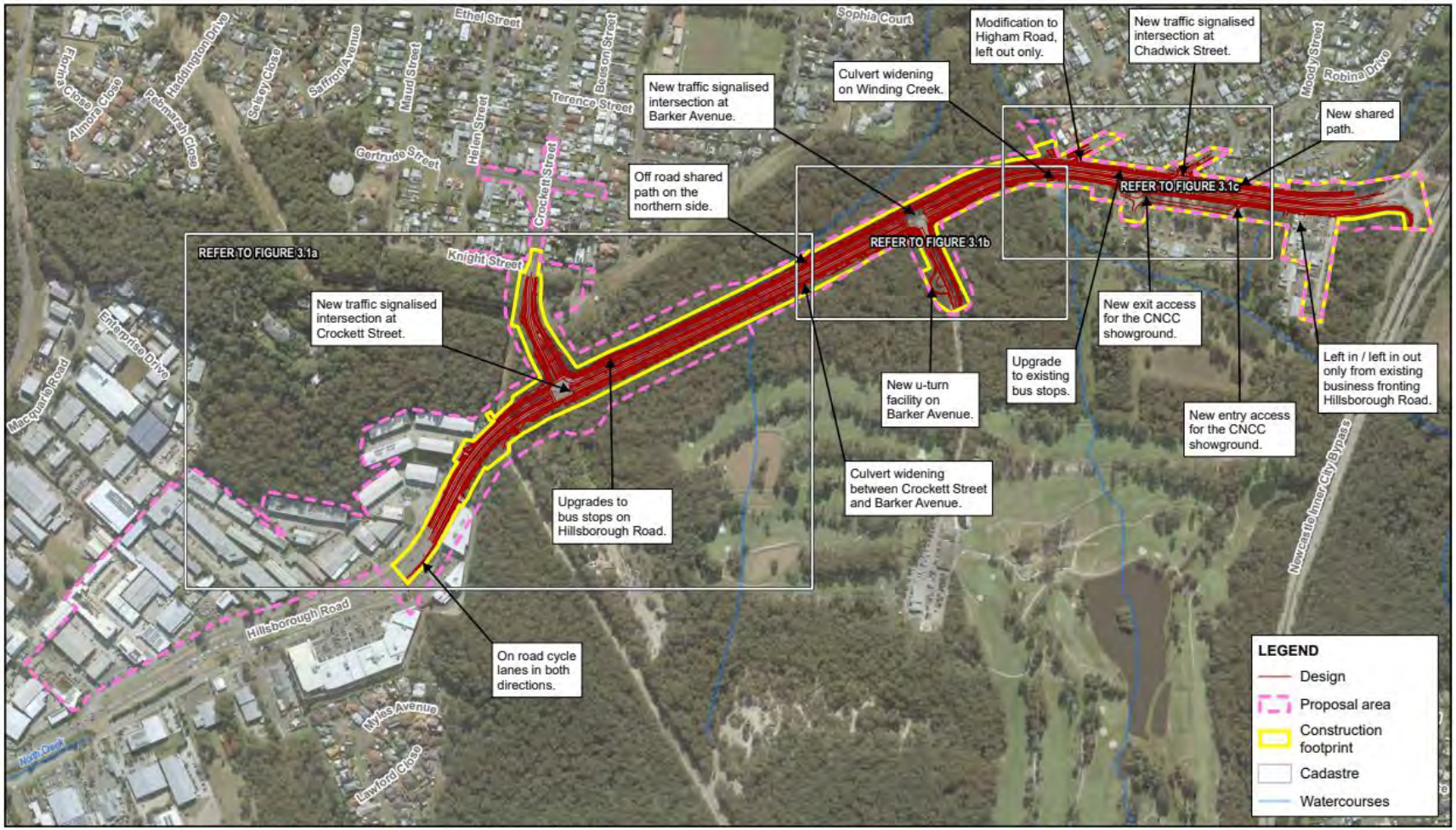
- Site preparation works, including establishing ancillary facilities, vegetation clearing, site fencing, temporary drainage measures, and implementation of environmental management measures
- Temporary construction facilities, including site compounds and stockpile sites at the Whalan's Nurseries site– Hillsborough Road, and at vacant commercial buildings within the Warners Bay Commercial Centre – Accessed by northern commercial access road of Hillsborough Road.

The location of the proposal is shown in Figure 1.1 and an overview of the key features of the proposal is shown in Figure 1.2.

Construction of the proposal is planned to be delivered in stages. The NSW Government has announced $35 million to deliver the first stage of the Hillsborough Road Upgrade. Stage 1 involves upgrading Crockett Street intersection, including installation of traffic lights. Stage 1 is expected to commence construction in 2025 and take about 18 months to complete depending on final staging arrangements. Transport will progress with the detail design following environmental approval and continue to explore opportunities to accelerate construction. Timing for construction of the remaining stages is subject to the proposal approvals and funding.

A detailed description of the proposal is available in Section 3.0 of the Hillsborough Road Upgrade Review of Environmental factors (REF) prepared by Transport in November 2022.

Figure 1.1: The proposal



Paper Size ISO A4

0 50 100 150 200

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Review of Environmental Factors

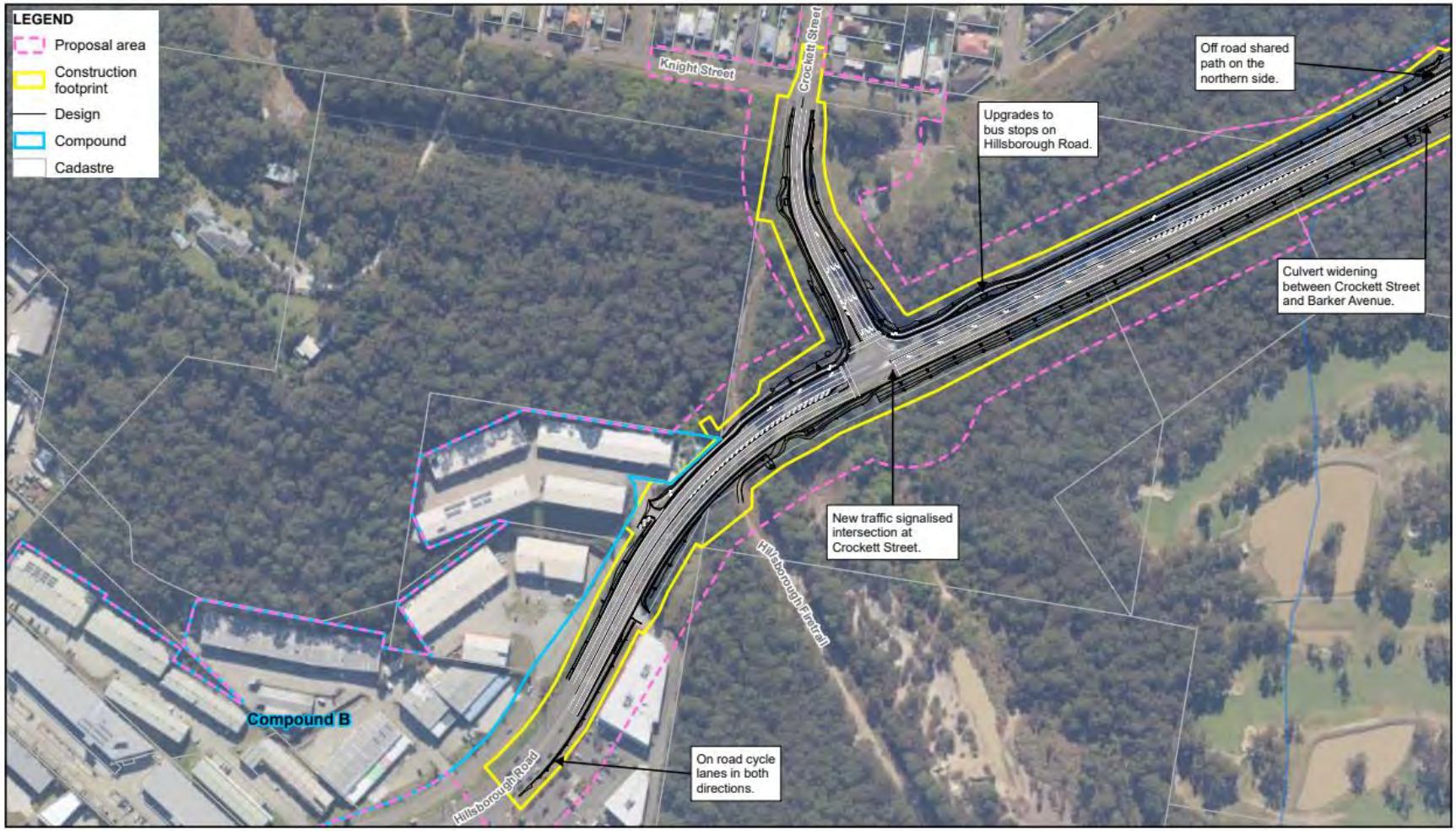
Project No. 12544418
Revision No. 0
Date 11/10/2022

Key features of the proposal

FIGURE 3.1

G:\22\12544418\GIS\Maps\REF_0.aprx
Print date: 11 Oct 2022 - 13:24

Data source: Metromap Tile Service - Imagery (Date extracted: 11/10/2022); Roads, Cadastre, Watercourses - LPI, 2017; Created by: tmorton



Paper Size ISO A4

0 25 50 75 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Review of Environmental Factors

Key features of the proposal
Crockett Street

Project No. **12544418**
Revision No. **0**
Date **11/10/2022**

FIGURE 3.1a

G:\22\12544418\GIS\Maps\REF_0.aprx
Print date: 11 Oct 2022 - 13:20

Data source: sixmaps/LPI_Imagery_Best: © Department of Customer Service 2020
Metromap Tile Service: - Imagery (Date extracted: 11/10/2022), Roads, Cadastre - LPI, 2017, Created by: tmorton

Paper Size ISO A4

0 10 20 30 40

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Review of Environmental Factors

Key features of the proposal
Barker Avenue

Project No. 12544418
Revision No. 0
Date 11/10/2022

FIGURE 3.1b

G:\22\12544418\GIS\Maps\REF_0.aprx
Print date: 11 Oct 2022 - 13:20

Data source: sixmaps/LPI_Imagery_Best: © Department of Customer Service 2020
Metromap Tile Service: - Imagery (Date extracted: 11/10/2022); Roads, Cadastre - LPI, 2017; Created by: tmorton

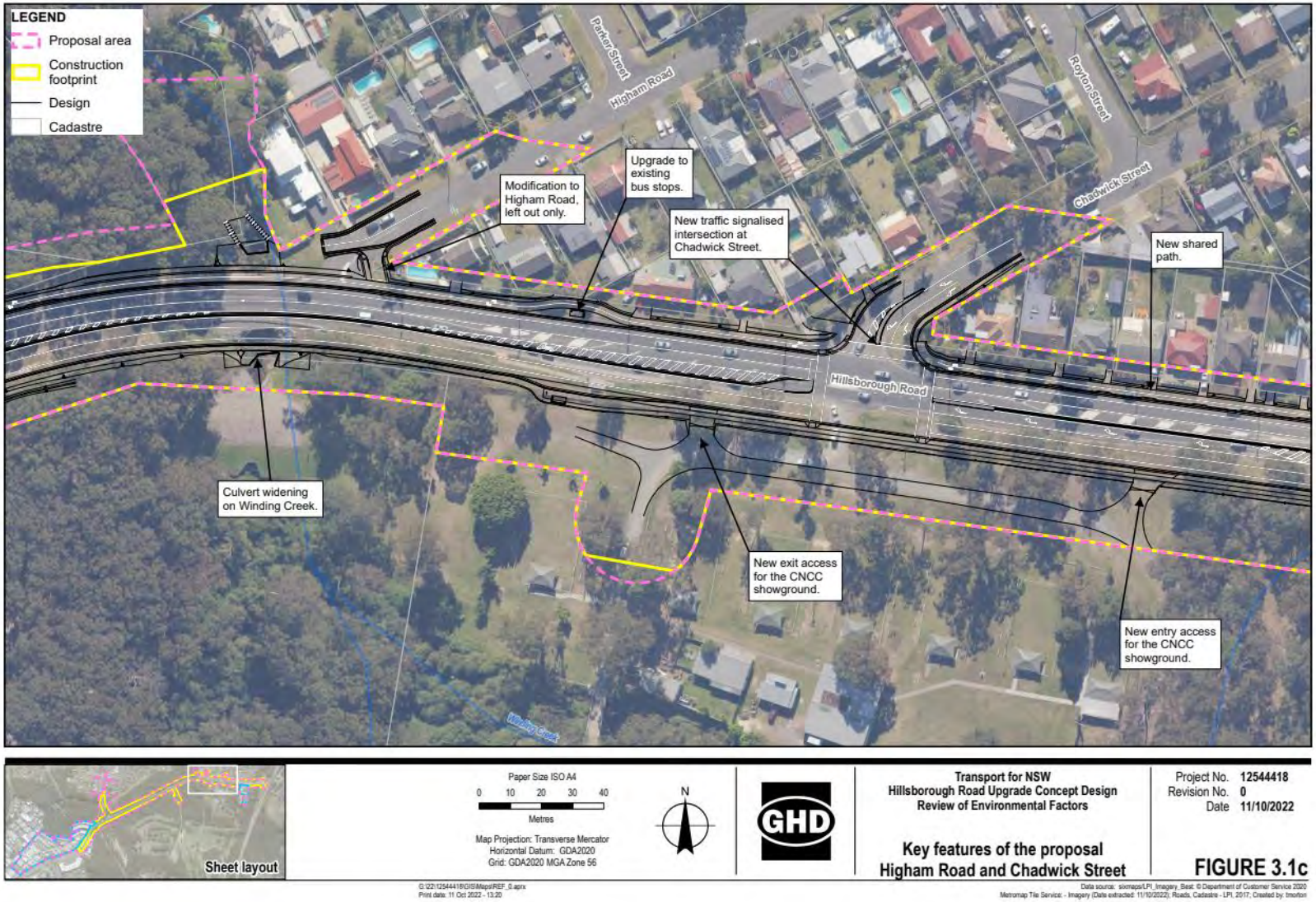


Figure 1.2: Key features of the proposal

1.2 REF display

Transport prepared a review of environmental factors (REF) for the Hillsborough Road Upgrade. The REF was publicly displayed between 14 November 2022 and 12 December 2022. During this time, Transport invited the public to provide feedback on the proposal via the Transport project website, within the online interactive portal, via the project's 1800 phone number and by email. Hard copies of the REF were not displayed but were available on request.

The website link was advertised in the Newcastle Herald newspaper and on Facebook. A community update was distributed to about 2000 residents and businesses in the Hillsborough, Cardiff South and Warners Bay suburbs. The update included information on the proposal, an overview of the REF and a link to the proposal website.

During the REF display, Transport met with Lake Macquarie City Council to provide an overview of the project and summary of the REF. Transport also met with residents and businesses who would be directly affected by the proposal.

1.3 Purpose of the report

This submissions report relates to the REF prepared for the Hillsborough Road Upgrade and should be read in conjunction with that document.

The REF was placed on public display and submissions relating to the proposal and the REF were received by Transport. This submissions report summarises the issues raised and provides responses to each issue (Chapter 2). It details investigations carried out since finalisation of the REF (Chapter 3), describes, and assesses the environmental impact and outlines new or revised environmental management measures (Chapter 4).

No changes are proposed that would require the preparation of a preferred infrastructure report. No revisions have been made to the assessment or environmental management measures as described in the REF.

2. Response to issues

Public display of the REF and the supporting consultation resulted in a total of 50 submissions, of which 48 were from the general community, one was from Lake Macquarie City Council (LMCC), and one was from a state government agency. Included in the submissions from the general community were two submissions from local members of parliament and one community group submission from the CNCC showgrounds.

Of these submissions, 32% were in support of the proposal. The remaining 68% submissions offered no position on whether they supported or objected to the proposal.

Each submission has been examined individually to understand the issues being raised. The issues raised in each submission have been extracted and collated, and corresponding responses to the issues have been provided. Where similar issues have been raised in different submissions, only one response has been provided. The issues raised and Transport response to these issues forms the basis of this chapter.

Table 2-1 lists the respondents and each respondent's allocated submission number. Table 2-1 also indicates where the issues from each submission have been addressed in this report.

Table 2-1: Respondents

Respondent	Submission No.	Section number where issues are addressed
Individual	1	2.7.3,
Individual	2	2.2.2, 2.7.1,
Individual	3	2.2.1
Individual	4	2.2.5, 2.6.1
Individual	5	2.2.6
Individual	6	2.2.2, 2.2.5, 2.6.3
Individual	7	2.2.3
Individual	8	2.1, 2.2.6, 2.2.9, 2.6.1
Organisation (CNCC Showground)	9	2.10
Individual	10	2.2.3
Individual	11	2.1, 2.7.1,
Individual	12	2.2.6,
Individual	13	2.1, 2.2.2, 2.6.3
Individual	14	2.7.2
Individual	15	2.7.1,
Individual	16	2.7.1,
Individual	17	2.2.3, 2.2.5
Individual	18	2.7.1,
Individual	19	2.7.4

Respondent	Submission No.	Section number where issues are addressed
Individual	20	2.1
Individual	21	2.2.5, 2.2.8
Individual	22	2.2.2
Individual	23	2.2.4
Individual	24	2.2.9
Individual	25	2.2.2,
Individual	26	2.2.2
Individual	27	2.2.2
Individual	28	2.1, 2.2.6
Individual	29	2.4.1
Individual	30	2.1, 2.2.2, 2.6.3
Individual	31	2.1, 2.2.2, 2.2.3
Individual	32	2.1, 2.7.3
Individual (Jodie Harrison MP)	33	2.1, 2.2.2, 2.2.7, 2.2.8, 2.7.1, 2.7.3,
Individual	34	2.2.4, 2.2.5
Individual (Greg Piper MP)	35	2.1, 2.2.2, 2.6.3
Individual	36	2.2.7
Individual	37	2.2.3, 2.6.3
Individual	38	2.1, 2.2.7
Individual	39	2.1, 2.2.3, 2.4.1
Individual	40	2.1, 2.2.2
Individual	41	2.2.3, 2.2.7
Lake Macquarie City Council	42	2.1, 2.8
Individual	43	2.1, 2.2.5
Individual	44	2.7.3,
Individual	45	2.2.2, 2.5.1
Individual	46	2.1, 2.2.2, 2.6.3
Individual (from Munibung Hill Conservation Society)	47	2.4.1
Individual	48	2.2.5
Individual	49	2.2.3, 2.3.1, 2.4.1, 2.5.2, 2.6.2, 2.6.4
EPA	50	2.3.1, 2.9

Each issue raised has been categorised in the following sections with responses provided. The relevant submission numbers have also been identified for each category.

The submissions categories discussed in this section include:

- Support
- The proposal design
- Construction impacts
- Biodiversity impacts
- Socio-economic impacts
- Traffic and transport impacts
- Out of scope
- Lake Macquarie City Council
- EPA
- CNCC Showground

2.1 Support

Submission number(s)

8, 11, 13, 20, 28, 30, 31, 32, 33, 35, 38, 39, 40, 42, 43, 46

Issue description

- Support of the proposal. Highlighted the need for the proposal to provide safer roads.

Response

Support for the proposal is noted.

2.2 The proposal design

2.2.1 General design

Submission number(s)

3

Issue description

- Suggests project should be two lanes each direction for the full length

Response

This proposal includes the duplication (two lanes in both directions) for the length of the proposal. The proposal is designed to improve traffic flow, reduce travel times, and improve safety through the corridor, which would meet the proposal objectives outlined in Section 2.3 of the REF.

The concept design has been completed in accordance with relevant Transport guidelines and current design standards.

2.2.2 Timing

Submission number(s)

2, 6, 13, 22, 25, 26, 27, 30, 31, 33, 35, 40, 45, 46.

Issue description

- Concern over the length of the proposals proposed timeframe
- Suggests the proposal should be completed sooner
- Suggestions for alternate staged timeframe approaches.

Response

Transport are carrying out a range of complex works along one of Newcastle's busiest roads which means detailed studies and planning involving a number of stakeholders is required. This includes optimising the design to improve safety and capacity, improve accessibility to neighbouring suburbs and reducing impacts to adjacent receivers and the environment.

The NSW Government has announced $35 million to deliver the first stage of the Hillsborough Road Upgrade. Stage 1 involves upgrading Crockett Street intersection, including installation of traffic lights. Stage 1 is expected to commence construction in 2025 and take about 18 months to complete depending on final staging arrangements. Timing for construction of the remaining stages is subject to the proposal approvals and funding.

Each stage of construction is designed to have the least possible impact on the 36,000 motorists using the corridor each day. The proposed timing of the proposal is aligned with Government commitments to funding and State infrastructure priorities, ensuring all projects are delivered on time where they are needed.

2.2.3 Footpaths, cyclists and bus stops

Submission number(s)

7, 10, 17, 31, 37, 39, 41, 49

Issue description

- Seeking clarification on the purpose of shared pathways and cyclist use of pathways
- Concern over accessibility for cyclists during construction. Suggests temporary cycleway be installed
- Suggests more bike lanes
- Suggests shared pathway be located a safe distance from road
- Request to prioritise construction of the shared pathway due to road safety concerns at the Crockett Street Intersection
- Clarification of bus shelter design
- Suggests maintaining current bus stop locations

Response

Temporary provisions would be made for active transport users prior to and during construction. These would be detailed in a Construction Traffic Management Plan and communicated prior to construction.

During operation, the proposal would include shared pathways with a two-way off-road facility to ensure better connectivity and improve safety for pedestrians and cyclist (refer to Section 2.3.3 of the REF, Urban design objectives). The proposal also includes provision for on road cyclists via the two-meter (2m) road shoulder (Appendix C of the REF Concept plans). Cyclist head start areas have been refined in the design to increase cyclist safety as outlined in Table 2.1: Design refinements in the REF.

The proposal retains and upgrades the three existing bus stops on Hillsborough Road and adds one new bus stop west of Crockett Street. The current bus stop locations would be retained in operation and new shelters included in the design for the three existing bus stops as well as the proposed new stop (Section 3.2.3.10 of the REF).

2.2.4 Speed limits

Submission number(s)

23, 34

Issue description

- Concern the speed limit of 60km/h would not be followed
- Speed limits around residential areas is 50km but resident indicates speeding is common, leading to safety concerns
- Suggestion the 60km/h proposed posted speed limit should be increased to 70km an hour.

Response

The proposed speed limits align with the 2026 Road Safety Action Plan which aims to improve road safety by providing safer speed limits. This is provided in Section 2.1.3 of the REF: 2026 Road Safety Action Plan. Traffic modelling undertaken as part of the concept design has shown that even with the reduction in the posted speed limit, it is expected that up to 5 minutes of travel time savings would be made during peak times as a result of the proposal upon opening. The proposed design includes an additional lane in either direction to increase traffic flow which achieves faster travel time regardless of the change in speed limits.

Hillsborough Road is one of the main arterial roads into Newcastle and a speed limit of 60km/h would be implemented by the proposal. The management of speeding on Hillsborough Road is the responsibility of the NSW police, this is the same for local roads surrounding the proposal

2.2.5 Traffic lights

Submission number(s)

4, 6, 17, 21, 34, 43, 48Issue description

- Concern that the installation of traffic lights would cause congestion
- Request that intersections remain traffic signals rather than roundabouts

- Suggests installation of seagull intersection traffic light arrangement at Crockett Street and Chadwick Street to allow westbound traffic on Hillsborough Road to flow unimpeded
- Suggests removing traffic lights at Barker Avenue from the proposed development
- Concern the proposed traffic lights near CNCC showgrounds would create delays and congestion impacting accessibility to members. Suggests roundabout at the exit area of the showground.

Response

The location, configuration and placement of traffic lights along the proposed upgrade aims to improve road safety and provide local residents with improved accessibility to safely enter and exit their properties, as well as suburban streets in Cardiff South and Hillsborough. The proposed design includes the installation of traffic lights instead of roundabouts based on the outcomes of traffic modelling and improves safety for pedestrians.

Traffic modelling for the Traffic and Transport assessment demonstrated the proposal would reduce journey time on Hillsborough Road by about five minutes during the morning peak and one minute in the afternoon peak upon opening. In 2037, travel time savings by the proposal are estimated to be approximately seven minutes during the morning peak and three minutes in the afternoon peak.

The proposal design would increase lane capacity and improve intersection operation for vehicles traveling east-west along Hillsborough Road. The proposed upgrade would address capacity issues along a key strategic network including intersections and improve local community accessibilities. The upgrade would improve access to local communities of Hillsborough and Cardiff.

The traffic lights at Chadwick Street aim to improve access to the suburb of Hillsborough as well as allow safe pedestrian movement across Hillsborough Road to access bus stops and the shared path. As an additional benefit, the breaks in traffic flow as a result of the operation of the traffic lights may improve opportunities for traffic exiting the CNCC showground. The design for the entry and exit from the CNCC Showground has been developed in consultation with the CNCC Showground.

The proposed traffic lights at the Barker Avenue intersection are required to cater for traffic leaving the businesses opposite Hillsborough and the CNCC showground wanting to travel east. These road users would be able to utilise the proposed U-turn bay within Barker Avenue and travel east. The signals also improve safety for vehicles exiting from Barker Avenue onto Hillsborough Road.

The proposed traffic lights at Crockett Street would improve safety and reliability at this intersection. The installation of traffic lights proposed in the concept design would aid in the break-up of continuous traffic flow and generally improve the ability for movements to occur more reliably and safely across the proposal area. The traffic lights, in the current configuration, would allow better traffic flow and provide safer road infrastructure enabling better accessibility to residents to align with the strategic needs of the proposal and with the 2026 Road Safety Action Plan discussed in Section 2.1.3 of the REF.

2.2.6 Crockett Street

Submission number(s)

5, 8, 12, 28

Issue description

- Concern over the removal of a merging lane from Crockett Street approaching Hillsborough Road and the installation of traffic lights increasing wait times

- Concerns of increased congestion due to the left turn at the lights onto Hillsborough Road
- Suggests two right hand turning lanes from Crockett Street onto Hillsborough Road and one left turning lane would be a better layout.

Response

A Traffic and Transport assessment was completed as part of the REF (refer to Section 6.5). Dual left hand turn lanes from the Crockett Street intersection with traffic lights would improve safety and reliability at this intersection and cater for future traffic growth which would see the current merge become less suitable over time if the proposal was not undertaken.

The length of the left turn lane into Crockett Street is constrained by the geometry of the road and existing properties. The traffic modelling undertaken on the proposed concept design indicates that the proposal would have a positive impact on current delay times and that queuing on Crockett Street for the left turn movement was contained within the turn bay for opening year and ten years after. There may be opportunity during detailed design to investigate improvements on the concept design.

The proposed intersection layouts for the new intersections with traffic lights along Hillsborough Road including Crockett Street, have been designed to meet the requirements of all road users along the corridor and the required level of service for each leg. This considers accessibility, efficiency and capacity. Traffic modelling has shown traffic flow would be improved for the overall intersection through the implementation of the proposal, refer to REF Section 6.5.

2.2.7 Higham Road

Submission number(s)

33, 36, 38, 41.

Issue description

- Suggests Higham Road intersection be changed to left in and left out of Higham Road for better accessibility
- Concern over the ‘no left turn’ into Higham Road resulting in a single entry point to Hillsborough, suggests a second access for emergency vehicles and a give way sign posted at the intersection
- Suggests Higham Road intersection should provide traffic movements in all directions.

Response

A left turn into Higham Road would introduce safety concerns for slow vehicles wanting to turn left due to the road alignment around Winding Creek once two lanes in each direction is provided. Based on this, and the ability of Chadwick Street to cater for the volumes of traffic making this movement, it has not been included in the proposal. Based on traffic modelling, one access point in and out of Hillsborough is adequate to cater for the current and future traffic volumes. Chadwick Street is the safest and most effective option for a signalised intersection in and out of Hillsborough. The left turn out of Higham Road is primarily to provide access to the small number of residents on Hillsborough Rd between Higham Road and Chadwick Street, which is why the shared path has right of way over the vehicle movement.

In the event of an emergency, emergency services with sirens sounding or lights flashing, would be able to access in and out of Hillsborough via the Higham Road intersection. This may involve partially mounting the kerb when entering into Higham Road as the road geometry is designed to cater for vehicles exiting Higham Road.

Flood modelling has shown that the proposal would improve localised flooding for private properties around Higham Road.

2.2.8 Barker Avenue

Submission number(s)

21, 33

Issue description

- The accessibility of the Charlestown Golf Course via Barker Avenue, during and after construction
- Suggests installation of a roundabout at Barker Avenue

Response

Access to and from Charlestown Golf Club would be maintained throughout the construction of the proposal. The accessibility of the Charlestown Golf Club via Barker Avenue would be addressed in the Traffic Management Plan (TMP) that would be prepared and implemented as part of the Construction Environment Management Plan (CEMP). The TMP would be prepared in accordance with the RMS Traffic Control at Worksites Manual and the Work Sites Manual and the RMS specification G10. (Refer to Section 7.2 of the REF). Requirements for any changes to local access arrangements would be confirmed during detailed design in consultation with the local road authority and any affected landowner.

Access to and from Charlestown Golf Club following construction would be via the traffic signals at the intersection of Barker Avenue and Hillsborough Road. Traffic modelling has indicated that traffic signals would be more effective than a roundabout as it will have less of an impact on through traffic on Hillsborough Road and reduce the impact on the adjacent biodiversity due to the smaller footprint.

2.2.9 Chadwick Street

Submission number(s)

8, 24,

Issue description

- Suggested that a left turn deceleration lane for the new traffic lights at Chadwick Street be considered
- Concerns that the median near the CNCC Showgrounds would not be effective at preventing vehicles traversing it, leading to dangerous traffic movements at Chadwick Street.

Response

The Hillsborough Road upgrade design, including the design of intersections has been undertaken in accordance with relevant Transport guidelines and current design standards. The design takes into consideration the number and frequency of movements at each intersection as well as impacts on adjacent private properties. The current design includes a solid concrete median barrier separating the travel lanes. This would remove the ability for vehicles to turn right (eastbound) into the CNCC showground. In addition, the design results in the relocation of the entry and exit points to the CNCC Showground away from the Chadwick Street intersection to position them adjacent to the raised median barrier.

2.3 Construction

2.3.1 Noise and vibration

Submission number(s)

49, 50

Issue description

- Clarification on mitigation measures that would be utilised during construction to minimise noise impacts
- Concern that vibration from construction may cause damage to property and requests for further clarification on mitigation measures.

Response

Construction noise and vibration impacts have been modelled and described in Section 6.7 of the REF, the Noise and Vibration Impact Assessment has been prepared to meet standard Transport guidelines. No significant noise and vibration impacts are anticipated. The mitigation measures in Section 6.7.5 of the REF would be undertaken, including the preparation and implementation of a Noise and Vibration Management Plan prior to the commencement of construction. Additional information regarding potential construction noise impacts and clarification regarding concerns of construction works outside of standard hours would be reviewed and communicated as appropriate through final detailed design.

2.4 Biodiversity

2.4.1 Flora and fauna

Submission number(s)

29, 39, 47, 49

Issue description

- Concern regarding fragmentation of habitat corridors
- Concern regarding animals crossing Hillsborough Road
- Suggestion of a vegetated wildlife overpass

Response

As part of the REF, a Biodiversity Assessment Report (BAR) has been completed in accordance with relevant legislation and guidelines. The BAR was prepared from a review of information available on ecological databases and the results of field surveys. Field surveys included vegetation and habitat assessment, targeted species surveys and aquatic habitat surveys.

The proposal would require the removal of approximately 4.1 hectares of native vegetation. This would increase local habitat fragmentation by up to 20 metres increasing the tree canopy gap to up to 50 metres in some locations. The BAR determined that this increase is likely to be a barrier to the movement of arboreal fauna, particularly for Squirrel Gliders. To mitigate this impact, a number of measures where recommended (refer Table 4-1). This includes further minimising clearing where practicable during detailed design.

A fauna connectivity strategy would be developed during the detailed design stage in accordance with draft Roads and Maritime Wildlife Connectivity Guidelines (Roads and Maritime 2011c or relevant updated version) and best practice connectivity mitigation. The fauna connectivity strategy would include, but is not limited to:

- The provision of fauna crossings and locations, particularly where canopy gaps are greater than 50 metres
- Identification of trees suitable for retention
- Consideration of construction footprint requirements
- Consideration of traffic noise and artificial lighting impacts at crossing points

The fauna connectivity strategy is to consider recommendations and impacts from the proposal to threatened species identified in the BAR and provide further detail regarding the type, location and installation of these features and would be confirmed in the detailed design phase.

2.5 Socio-economic

2.5.1 Community consultation

Submission number(s)

45

Issue description

- Clarification on the desired outcome for the latest round of community consultation.

Response

Transport has displayed the REF to consult with the community on environmental impacts and proposed concept design for the proposal.

Transport has considered all feedback received and included a summary within this submissions report. Transport will continue to consult with the community as the project progresses.

2.5.2 Land acquisition and property value

Submission number(s)

49

Issue description

- Clarification on the extent of private property acquisition required to accommodate the proposal.
- Concerned that proposal could require further property acquisitions, which may impact future property value

Response

All landowners impacted by acquisition due to the current concept design have been contacted by Transport during the development of the concept design. The extent of property acquisition may vary from the concept phase as a result of feedback from this consultation process. Communication and consultation have been a key aspect of the proposal to ensure landowners and business owners are aware of the proposal and their concerns have been considered throughout the development process. Transport will continue to consult with landowners as the project moves into the detail design phase.

Many aspects influence property values such as location, supply and demand, property age, size and features, views, and the local market, amongst other factors.

Transport acknowledges the proposal will directly impact some landowners through partial acquisition and may indirectly impact on neighbouring or nearby properties.

Compensation associated with property impacts would be undertaken in accordance with the provisions of the NSW *Land Acquisition (Just Terms Compensation) Act 1991* and the Land Acquisition Reform 2016 process (https://www.propertyacquisition.nsw.gov.au/). The Act provides the basis for an appropriate valuation process and the fair assessment of compensation. Directly affected landowners are being consulted where property acquisition is required. Appropriate compensation would be negotiated in line with the Land Acquisition Information Guide (Roads and Maritime 2014b) and the NSW *Land Acquisition (Just Terms Compensation) Act 1991*.

In addition, there are some temporary changes in amenity proposed (i.e. air quality, noise and vibration and traffic) during construction of the proposal, however these will be temporary and mitigation measures will be put in place to manage them appropriately.

Transport understands there are many issues which may be of concern to residents regarding the proposal, including property acquisition and that these can impact on the emotional health of those affected. Communication and consultation have and will continue to be a key aspect of the proposal to ensure landowners and business owners are aware of the proposal and their concerns have been considered throughout the development process.

2.6 Traffic and transport

2.6.1 Access to CNCC showground

Submission number(s)

4, 8

Issue description

- Concerns that congestion may occur on Hillsborough Road due to access arrangements at CNCC Showground
- Suggests that traffic signals are not required to access the CNCC Showground.

Response

Traffic lights at the Chadwick Street intersection service the suburb of Hillsborough and would not provide direct access to the CNCC Showground.

Access to CNCC Showground would be via left in and left out driveway access separate to the Chadwick Street intersection, as per the proposal described in the REF Section 3.1. This is the same as the current arrangement for the CNCC Showground however the implementation of the proposal will result in Hillsborough Road being two lanes in each direction. The added capacity provided by two lanes will mean traffic leaving the CNCC Showground will have greater opportunities to exit the CNNC Showground, whilst queuing to enter the showground will have less impact on the traffic on Hillsborough Road. Traffic movements in and out of the showground will not trigger the traffic signals at Chadwick Street

2.6.2 Access to properties

Submission number(s)

49

Issue description

- Access into and out of private properties on Hillsborough Road and Chadwick Street

Response

The Hillsborough Road upgrade design, including the design of intersections has been undertaken in accordance with Transport guidelines and current design standards. Access to private property on Hillsborough Road via driveways would be maintained throughout construction and operation. Any changes to access during the construction phase would be made known to the impacted resident and alternate options made available.

2.6.3 Road and pedestrian safety

Submission number(s)

6, 13, 30, 35, 37, 46

Issue description

- Concern over current road safety and highlight the importance of the proposal completion to improve road conditions
- Concern regarding pedestrian safety and current refuge island utilised to cross Hillsborough Road
- Current traffic conditions and increases in future traffic may result in drivers making unsafe decisions

Response:

Current road safety along the proposal area is recognised as an issue. A summary of crash data from 2016 to 2021 is presented in the Traffic Impact Assessment contained in Appendix H to the REF. The crash data identified that 15 accidents occurred along Hillsborough Road from the intersection with the Newcastle Inner City Bypass and Crockett Street. 33% of the crashes over this time resulted in serious injury. Transport acknowledges the need to address crashes as outlined by one of the specific objectives of the proposal being to improve road safety for all road users.

The proposal will result in improved pedestrian safety through the introduction of shared path facilities for the entire length of the proposal. The proposal would provide an improved ability for pedestrians to cross Hillsborough Road safely through the use of dedicated pedestrian crossing located at the traffic lights. In total, there will be three new pedestrian crossings to cross Hillsborough Road as part of the full length upgrades.

As detailed in Section 6.5.3 of the REF, the proposal addresses Levels of Service (LoS) at each of the impacted intersections has been modelled to be a LoS of A or B during the year of opening (2027) and also within 10 years of opening. This represents a significant improvement over the current day LoS, which in the F for all intersections, except for the Barker Avenue / Hillsborough Avenue intersection which is LoS B in the AM peak.

2.6.4 Parking

Submission number(s)

49

Issue description

- Concern due to removal of on street parking for properties on Hillsborough Road and Chadwick Street.

Response

The Hillsborough Road upgrade design, including the design of intersections has been undertaken in accordance with Transport guidelines and current design standards.

The proposal would removed existing on-road public parking along Hillsborough Road to minimise impacts to private property and reduce the amount of acquisition. All properties adjoining Hillsborough Road within the proposal area have off street parking. Due to the nature of the proposal, widening of an existing road through an existing suburb means a number of constraints must be considered such as impacts on private property, the environment and public utilities. As the proposal aims to cater for several stakeholders, space needs to be allocated for road users, active transport as well as public transport services. The development of the concept design has considered all these aspects to arrive at the proposed solution.

The proposal would remove a small amount of on road parking from Chadwick Street to allow for operation of the traffic lights and pedestrian crossing. Alternative parking is available on Chadwick Street and in the adjacent local roads within the suburb of Hillsborough itself.

2.7 Out of scope

2.7.1 King Street roundabout

Submission number(s)

2, 11, 15, 16, 18, 33

Issue description

- Requests to continue the upgrades west to include King Street roundabout.
- Requests to upgrade the Hillsborough Road and King Street intersection to aid congestion and improve safety.

Response

The roundabout at King Street and Hillsborough Road is located beyond the scope of the proposal. Transport has recently completed an Integrated Transport Planning (ITP) exercise for North-West Lake Macquarie. The ITP identified a number of key priorities to enable a safe, connected and efficient transport network in the area. This included the roundabout at King Street and Hillsborough Road.

Transport will continue to investigate solutions for the King Street and Hillsborough Road roundabout in order to seek funding for improvements to this intersection. Funding to develop future projects is allocated based on multiple factors, and all transport projects compete for funding across the Regional NSW.

2.7.2 NICB roundabout

Submission number(s)

14

Issue description

- Suggestion to add traffic lights at the northbound exit of the Newcastle Inner City Bypass (NICB) / Hillsborough Road intersection roundabout due to potential congestion.

Response

The NICB roundabout beneath the NICB is outside the current scope of the design proposal.

Traffic modelling for the concept design has shown this intersection performs at an acceptable level of service. If warranted by future traffic growth or intersection performance, the current concept design would not preclude future upgrades to the NICB interchange.

The design proposal has been completed in accordance with Transport guidelines and current design standards. There may be opportunity during detailed design to investigate improvements of the concept design.

2.7.3 Cardiff South local roads

Submission number(s)

1, 32, 33, 44

Issue description

- Suggestion to extend the upgrade to include Gertrude Street / Crockett Street intersection due to safety concerns regarding the entry of Northbound traffic on Crockett Street.
- Crockett Street speed limit is 50 km but a resident indicate speeding is common, leading to safety concerns. Request for installation of signage at the bend at Gertrude Street to increase safety.
- Suggestion to extend the upgrade to include First Street over concerns of increased traffic.

Response

Transport maintains responsibility for all State classified roads such as Hillsborough Road. All local roads are the responsibility of the local Council for that area. The matters raised with respect to local road improvements are outside the scope and project objectives of this proposal. Transport will consult with LMCC to share the concerns raised by residents of Cardiff South through this consultation process.

The objectives for the proposal can be seen in Section 1.1. The major design features of the proposal are shown in Section 3.2.3 of the REF.

The proposal would increase lane capacity and improve intersection operation for vehicles traveling east-west along Hillsborough Road. The proposed upgrade would address capacity issues along a key strategic network including intersections and improve local community accessibilities. The upgrade would improve access to the local communities of Hillsborough and Cardiff.

Transport for NSW will consult with LMCC regarding these local roads concerns in the LMCC LGA.

2.7.4 Alternate use for funding

Submission number(s)

19

Issue description

- Alternative use suggested for the funding of the proposal to be directed towards other projects in Lake Macquarie such as improvements to parking at the Warner's Bay Town Centre.

Response

The need for the upgrade of Hillsborough Road is driven by a number of existing access and congestion issues and provides several benefits including improving road safety, improving traffic congestion and connections as well as providing pathway and cycle routes for the community. Public parking and local roads are the responsibility of Council and are outside the scope of the proposal.

2.8 Lake Macquarie City Council

Submission number(s)

42

Issue description

- General support for the proposal, submission provided predominantly contains suggestions for design refinements.

Response

The LMCC submission predominantly provides suggestions for design refinements. Transport will continue to discuss these refinements in specific consultation with LMCC. Agreed outcomes resulting in additional design refinements would be incorporated into detailed design.

2.9 EPA

Submission number(s)

50

Issue description

- Noise: The noise and vibration impact assessment (NVIA) requires further information for potential construction noise impacts. The NVIA is not clear on whether the proposal includes construction works outside of standard hours. Requests specific amendments be made to the NVIA report.
- Acid sulphate soils (ASS) require further assessment to characterise and identify all potential acid sulphate material on site and how this would be managed and treated.
- If construction stage stormwater discharges are unavoidable, a water pollution impact assessment commensurate with the potential risk and consistent with the national water quality guidelines is required.
- An intrusive contamination investigation be undertaken to quantify the potential moderate risk AEIs.

Response

The NVIA was prepared in accordance with relevant construction assessment guidelines including the:

- *Interim Construction Noise Guideline* (DECC, 2009)
- *Construction Noise and Vibration Strategy* (TfNSW, 2020)
- *Road Noise Policy* (DECCW, 2011)
- *Assessing Vibration: a technical guideline* (EPA, 2006).

Additional information regarding potential construction noise impacts and clarification regarding concerns of construction works outside of standard hours would be included in detailed design. As detailed in Section 3.3.2 of the REF, to minimise disruption to daily traffic it would be necessary to undertake some works outside of standard hours. Out of hour works may include:

- Delivery of construction materials such as precast culvert sections for Winding Creek

- Installation and adjustment of barriers and signage for construction zones during each construction stage
- Intersection and tie-in activities to the existing road network
- Activities that may impact access to businesses during business hours
- Operation of construction compounds to support the above work.

Specific clarifications and amendments to the NVIA report have been addressed and the updated report is attached as Appendix B.

Acid Sulphate Soils (ASS) would be managed in accordance with mitigation measures provided in Section 6.4.4 of the REF. Acid Sulphate Materials Management Plan will be prepared and implemented as part of the CEMP, if greater than 1000 tonnes of potential acid sulphate soil material is to be disturbed. The Plan will be prepared in accordance with the RTA Guidelines for the Management of Acid Sulphate Materials

The proposal would include dewatering to be conducted as part of construction during culvert widening and to lesser extent utility relocation where needed. A detailed Environmental Work Method Statement (EWMS) will be prepared and implemented as part of the SWMP for all dewatering activities. The EWMS will detail measures to avoid or minimise risks from potential offsite water quality impacts and be undertaken in accordance with the RTA Technical Guideline: Environmental management of construction site dewatering in a manner that prevents pollution of waters.

Section 6.2.1 of the REF states the potential for the concentration of pollutants to increase substantially from the existing conditions is considered low. The proposal would undertake pre-condition soil sampling for the investigation of potential area of contamination prior to commencement construction.

An unexpected finds protocol would be developed and implemented to manage contamination risk during construction. Pre and Post Land Condition Assessments (PCLCAs) would be completed as part of pre-construction activities This includes precondition soil sampling that would be undertaken during detailed design to confirm any moderate risk for contamination. Refer to Table 7.2 of the REF for the summary of safeguards and management measures.

2.10 CNCC Showground

Submission number(s)

9

Issue description

- Acquisition of land from the front of the CNCC showground would result in the loss of informal parking from within the boundary of the showgrounds
- Based on the loss of informal parking, additional upgrades within the showground are requested

Response

As part of the proposal, the access for the CNCC showgrounds would be upgraded to include two new access connections to Hillsborough Road that have been designed in consultation with the CNCC Showground and the surrounding community with the aim to improve the safety of the access for all road users.

During the development, the proposal has considered minimising impacts to property, including the CNCC showground and residents adjacent to Hillsborough Road. The proposal requires strip acquisition from the

front of the CNCC showground property and would not have any impacts on the internal layout of the showground. Currently maintenance of internal infrastructure is a matter for the tenant and lessee.

Transport would continue to consult with the CNCC showgrounds management in the development of the future stages of the project.

3. Environmental assessment

3.1 Additional biodiversity assessment: bat survey

The BAR (Biosis 2022) that formed Appendix D to the REF included an assessment of the proposals potential impacts on microbats in accordance with the Biodiversity Assessment Method (BAM). Despite this, the timing of the assessment undertaken in the BAR was outside of the roosting period for certain microbat species with the potential to utilise the proposal area specifically the Winding Creek culvert. As a result Biosis was engaged to undertake further targeted assessment for microbats as part of this report. The results of the *Hillsborough Road Duplication Project Warners Bay, Bat call analysis report* (Biosis, 2023) are summarised below and the full report is attached at Appendix A.

3.1.1 Methodology

Biosis was engaged by GHD on behalf of Transport to prepare a BAR to support a Review of Environmental Factors (REF) being prepared for the proposal in accordance with Division 5.1 of the *Environmental Planning and Assessment Act 1979*. Following the completion of the BAR, Biosis completed a microbat assessment to assess the presence and potential impacts of the proposal on threatened microbats (refer to Appendix A). The microbat assessment was completed in accordance with the relevant biodiversity survey guidelines, with survey completed during appropriate seasons for identification.

Roost inspections and exit counts were undertaken to support the acoustic assessment, an inspection of potential roosting habitat associated with the culvert at Unit 2 was undertaken. An exit count survey was conducted over two nights (19/12/2022 and 20/12/2022) by an experienced fauna ecologist. A subset of calls for each species identified was sent to an independent bat expert for verification. Positive identifications were presented in the report and were verified by an expert.

The study area included monitoring in relatively dense Smooth Barked Apple – Turpentine – Sydney Peppermint heathy woodland and a location adjacent to the Hillsborough Road roadside and a culvert. Monitoring was undertaken in the direction of the culvert, which was surrounded by an open grassed area and bordered by Smooth Barked Apple – Turpentine – Sydney Peppermint heathy woodland. These locations were chosen as they provided good coverage of the entrances to the culvert.

3.1.2 Description of existing environment

The main land uses surrounding the proposal include the residential area of Hillsborough, CNCC, Charlestown Golf Club, and Charlestown Recreation Reserve.

3.1.3 Potential impacts

Ultrasonic analysis identified the presence of the following threatened bat species to a probable to almost certain likelihood of occurrence:

- Eastern Coastal Free-tailed Bat
- Little Bent-winged Bat
- Eastern Bent-winged Bat
- Southern Myotis
- Greater Broad-nosed Bat

Three of the threatened species recorded in the ultrasonic analysis, Little Bent-winged Bat, Eastern Bent-winged Bat and Southern Myotis, are known to use man-made structures such as culverts for roosting. Field inspection of the culvert for potential roosts of microbats were hampered due to water being in the culvert. During the field survey, one microbat was seen flying around the culvert during both surveys, however, was not seen to be entering or exiting the culvert itself. Previous inspections undertaken for the BAR had noted that the culvert had no obvious gaps or crevices. No evidence of roosting was observed.

The microbat assessment concluded that given the limited activity, and suitability of the culvert for roosting, it is unlikely that the culvert may represent suitable roosting habitat for these species currently but may occur in future.

3.1.4 Revised safeguards and management measures

Based on this assessment, the mitigation measures identified in the BAR to mitigate impacts to fauna including managing fauna in accordance with *Guide 9: Fauna handling* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011) are likely to be suitable to minimise any impacts to microbats.

3.2 Revised Noise and Vibration assessment

The Noise and Vibration Impact Assessment (Appendix J of the REF) has been revised to address minor comments provided by NSW Environment Protection Authority however has not resulted in any changes to or additional safeguards.

4. Environmental management

The REF for the Hillsborough Road Upgrade identified the framework for environmental management, including safeguards and management measures that would be adopted to avoid or reduce environmental impacts (Section 7 of the REF).

After consideration of the issues raised in the public submissions and changes to the proposal, the safeguard and management measures have not needed to be revised.

Should the design proposal proceed, environmental management would be guided by the framework and measures outlined below.

4.1 Environmental management plans (or system)

A number of safeguards and management measures have been identified in order to minimise adverse environmental impacts, including social impacts, which could potentially arise as a result of the design proposal. Should the proposal proceed, these management measures would be incorporated into the detailed design and applied during the construction and operation of the proposal.

The proposal Environmental Management Plan (PEMP) and a Construction Environmental Management Plan (CEMP) would be prepared to describe safeguards and management measures identified. The PEMP and CEMP would provide a framework for establishing how these measures would be implemented and who would be responsible for their implementation.

The PEMP and CEMP would be prepared prior to construction of the proposal and must be reviewed and certified by environment staff, Northern region, prior to the commencement of any on-site works. The CEMP would be a working document, subject to ongoing change and updated as necessary to respond to specific requirements. The PEMP and CEMP would be developed in accordance with the specifications set out in the:

- QA Specification G36 – Environmental Protection (Management System)
- QA Specification G38 – Soil and Water Management (Soil and Water Plan)
- QA Specification G40 – Clearing and Grubbing and
- QA Specification G10 – Traffic Management

4.2 Summary of safeguards and management measures

The REF for the Hillsborough Road Upgrade identified a range of environmental outcomes and management measures that would be required to avoid or reduce the environmental impacts.

After consideration of the issues raised in the public submissions, the environmental management measures for the proposal (refer to Chapter 7 of the REF) have not been revised. Should the proposal proceed, the environmental management measures in Table 4-1 would guide the subsequent phases of the proposal.

Table 4-1: Summary of environmental safeguards and management measures

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing	Reference
Biodiversity					
1	Impacts to native flora and fauna	A Flora and Fauna Management Plan will be prepared and implemented as part of the Construction Environmental Management Plan (CEMP). It will address impacts to flora and fauna and include, but not necessarily be limited to: • (a) plans for the construction site and adjoining area showing native vegetation, flora and fauna habitat, threatened species and ecological communities • (b) plans showing areas to be cleared and areas to be protected, including exclusion zones and protected habitat features (e.g. Hollow-bearing trees), and areas for rehabilitation or re-establishment of native vegetation • (c) requirements set out in the RTA Landscape Guideline (d) procedures addressing relevant matters specified in the Biodiversity Guidelines - Protecting and managing biodiversity on RTA the proposals.	Transport/Contractor	Prior to construction	B1
2	Impacts to native flora and fauna	Development and implementation of a Biodiversity Offset Strategy to facilitate offsetting of impacts that exceed the thresholds within the No Net Loss Guidelines (Transport, 2022b).	Transport	Prior to construction	B6
3	Impacts to native flora and fauna	Prepare a Tree and Hollow Replacement Plan including the calculation of replacement trees and hollows in accordance with the Tree and Hollow Replacement Guidelines (Transport 2022c). The Tree and Hollow replacement Plan will outline requirements for onsite replacement and/or equivalent payment to the Transport Conservation Fund.	Transport	Prior to construction	B6

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing	Reference
4	Removal of native vegetation	Impacts to biodiversity will be minimised through detailed design, where practical and demonstrated within the Detailed Design report.	Transport	Detailed design	B3
5	Fragmentation of identified habitat corridors	A fauna connectivity strategy would be developed during the detailed design stage in accordance with the draft Roads and Maritime Wildlife Connectivity Guidelines (Roads and Maritime 2011c) ***or relevant updated Transport guideline.*** The strategy is to focus on maintaining connectivity through the proposal and is to include, but not be limited to: • Provision of fauna crossings and locations, particularly where canopy gaps are greater than 50 metres • Identification of trees suitable for retention • Consideration of construction footprint requirements • Consideration of traffic noise and artificial lighting impacts at crossing points.	Transport/Contractor	Detailed design, during construction and post construction	B7
6	Edge effects on adjacent native vegetation and habitat	Exclusion zones will be set up at the limit of clearing in accordance with *Guide 2: Exclusion zones* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA the proposals* (RTA 2011).	Transport/Contractor	During construction	B9
7	Injury and mortality of fauna	Fauna will be managed in accordance with Guide 9: Fauna handling of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA the proposals (RTA 2011).	Transport/Contractor	During construction	B11
Hydrology and flooding					
8	Flood Mitigation	Detailed design of Winding Creek culvert extensions to further minimise flooding impacts to flood depths on the west bound travel lane, where practical.	Transport	Detailed design, Construction, Operation	Additional Mitigation Measure from Surface and Groundwater Assessment

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing	Reference
9	Flood Management Plan	A Construction Flood Management Plan (FMP) to be prepared as part of the CEMP. The FMP will address but not necessarily be limited to: • Processes for monitoring and mitigating flood risk during construction • Monitoring of weather and rainfall conditions • Steps to be taken in the event of a flood warning/ very high rainfall including stop work periods.	Transport, construction contractor	Detailed design, Construction, Operation	Additional Mitigation Measure from Surface and Groundwater Assessment
10	Construction methodology	Construction methodology is to be developed which maintains the existing capacity of drainage within the proposal area.	Transport	Detailed design, Construction, Operation	Additional Mitigation Measure
Surface and groundwater					
11	Soil & Water	A Soil and Water Management Plan (SWMP) will be prepared and implemented as part of the CEMP. The SWMP will identify all reasonably foreseeable risks relating to soil erosion and water pollution and describe how these risks will be addressed during construction. The SWMP will include monitoring required for the proposal.	Contractor	Detailed design / pre-construction	Section 2.1 of QA G38 *Soil and Water Management*
12	Soil & Water	A site-specific Progressive Erosion and Sediment Control Plan/s will be prepared and implemented as part of the Soil and Water Management Plan. Erosion and sediment control measures are to be designed, implemented and maintained in accordance with the Blue Book (DECC 2008). • The Plan will include arrangements for managing wet weather events, including monitoring of potential high-risk events (such as storms) and specific controls and follow-up measures to be applied in the event of wet weather.	Contractor	Detailed design / pre-construction	Section 2.2 of QA G38 *Soil and Water Management*

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing	Reference
13	Disturbance of creek beds and banks	A detailed Environmental Work Method Statement (EWMS) will be prepared and implemented as part of the SWMP for all works undertaken within waterways. The EWMS will detail measures to avoid or minimise risks from erosion and sedimentation to water quality and biodiversity. It will be prepared in accordance with relevant guidelines including, but not limited to: • RMS Biodiversity Guidelines – Protecting and managing biodiversity on RTA the proposals • Construction staging and consideration of temporary drainage and diversions to maintain capacity. • The EWMS will consider any temporary access points required to be installed for construction access to waterways for construction works.	Contractor	Pre-construction	SW13
	Disturbance of creek beds and banks	Batters will be designed and constructed to minimise risk or exposure, instability and erosion, and to support long-term, on-going best practice management, in accordance with the RMS Guideline for Batter Stabilisation Using Vegetation (April 2015).	Contractor	Pre-construction, Construction	SW15
14	Chemical or hydrocarbon spills	Prepare a spill emergency management plan that would be included in the SWMP. Including: • Storage of hazardous goods and refuelling activities to take place in bunded areas. • Parking of vehicles and storage of plant/equipment is to occur on existing paved areas. Where this is not possible, vehicles and plant/equipment are to be kept away from environmentally sensitive areas and outside the dripline of trees.	Contractor	Pre-construction, Construction	QA G38 Soil and Water Management SW3

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing	Reference
		• Open drainage channels provided through construction areas will be protected by appropriate spill management measures such as bunding to prevent any spills and leaks to stormwater drainage networks. • Monitor spill management measures at specified intervals during the construction period. These include checks of the location of stored materials and of the condition of containers and bunding.			
15	Dewatering	A detailed Environmental Work Method Statement (EWMS) will be prepared and implemented as part of the SWMP for all dewatering activities. The EWMS will detail measures to avoid or minimise risks from potential offsite water quality impacts. • Any dewatering activities will be undertaken in accordance with the RTA Technical Guideline: Environmental management of construction site dewatering in a manner that prevents pollution of waters.	Contractor	Pre-construction, Construction	G38 3.4 SW10
16	Dewatering	If groundwater is encountered during excavations potential adverse impacts would be minimized through the implementation of the measures identified in the RTA Technical Guideline: Environmental management of construction site dewatering, where applicable.	Contractor	Pre-construction, Construction	Additional measure
17	Soil stabilisation and restoration	The rehabilitation of disturbed areas will be undertaken progressively as construction stages are completed, and in accordance with: • Landcom's Managing Urban Stormwater: Soils and Construction series • RTA Landscape Guideline • RMS Guideline for Batter Stabilisation Using Vegetation (draft June 2014).	Contractor	Construction	SW15

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing	Reference
Soils, geology and contamination					
18	Stockpiles	Stockpiles will be designed, established, operated and decommissioned in accordance with the RTA Stockpile Site Management Guideline 2011.	Contractor	Construction	SW9
19	Topsoil Management	Topsoil will be stockpiled in cleared in existing disturbed areas and managed in accordance with the RTA Stockpile Site Management Guideline until: • If not suitable or not required for use in future rehabilitation or revegetation works – it is removed from the construction site and disposed of an appropriately licensed facility, OR • If suitable and required for future use – it is re-used • Beneficial re-use under waste exemption or DA.	Contractor	Construction	SW14
20	ASSMP	Acid Sulphate Materials Management Plan will be prepared and implemented as part of the CEMP, if greater than 1000 tonnes of potential acid sulphate soil material is to be disturbed. The Plan will be prepared in accordance with the RTA Guidelines for the Management of Acid Sulphate Materials.	Contractor	Pre-construction, Construction	SW4
21	Rehabilitation	A rehabilitation plan will be prepared covering all areas disturbed as part of the proposal and will include the following: • Progressive stabilisation and rehabilitation of construction areas back to the original condition or re-vegetated with appropriate native species, as soon as practicable. • Rehabilitation of riparian areas (i.e. within 40 m from the highest bank on relevant waterways) and meets the requirements of Guidelines for Controlled Activities on Waterfront Land; Guidelines for Riparian Corridors on Waterfront Land. This may include fencing of riparian areas being rehabilitated.	Contractor	Pre-construction, construction and post-construction	Additional measure

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing	Reference
		• Monitoring to meet clear targets in relation to vegetation establishment and stabilisation of disturbed areas.			
22	Pre / Post Construction Land Condition Assessment	Land condition assessments will be completed for each compound area intended to be leased.	Transport	Pre-construction, construction and post-construction	G36 4.15.2
Traffic and transport					
23	Construction traffic	A Traffic Management Plan (TMP) will be prepared and implemented as part of the CEMP. The TMP will be prepared in accordance with the RMS Traffic Control at Work Sites Manual and the worksite manual RMS Specification G10. The TMP will include but is not limited to: • Community notification in accordance with the RTA's Community Involvement and Communications Resource Manual • Confirmation of haulage routes • Measures to maintain access to local roads and properties • Site specific traffic control measures (including signage) to manage and regulate traffic movement • Measures to maintain pedestrian and cyclist access • Requirements and methods to consult and inform the local community of impacts on the local road network • Access to construction sites including entry and exit locations and measures to prevent construction vehicles queuing on public roads • A response plan for any construction traffic incident • Consideration of other developments that may be under construction to minimise traffic conflict and congestion that may occur due to the cumulative increase in construction vehicle traffic • Monitoring, review and amendment mechanisms.	Transport / Contractor	Preconstruction, Construction	TT2

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing	Reference
24	Property Access	Requirements for any changes to local access arrangements will be confirmed during detailed design in consultation with the local road authority and any affected landowners.	Transport	Pre construction	TT3
25	Impacts to bus services	Consult with bus companies regarding the relocation and temporary closure of bus stops and temporary access arrangements.	Transport	Detailed design	Additional measure
26	Impacts on Emergency Services	Undertake consultation with emergency services prior to and during construction to confirm any diversions during construction and any operational road network changes	Transport	Pre construction, Construction	Additional measure
27	Pedestrian and cyclist access	Safe pedestrian access to bus stops and cyclist access through Hillsborough Road will be maintained throughout construction.	Transport	Pre construction, Construction	Additional measure
28	Access to properties	Disruptions to property access and traffic will be notified to landowners prior to changes to access in accordance with the proposal Construction community consultation processes outlined in Manager the Traffic Management Plan (TMP).	Contractor	Construction	Additional measure
Air Quality					
29	General air quality impacts	An Air Quality Management Plan will be prepared and implemented as part of the CEMP. The Plan will identify: • Potential sources of air pollution (such as dust, vehicles transporting waste, plant and equipment) during construction • Air quality management objectives consistent with any relevant published EPA and/or OEH guidelines • Mitigation and suppression measures to be implemented, such as spraying or covering exposed surfaces, provision of vehicle clean down areas, covering of loads, street cleaning, use of dust screens, maintenance of plant in accordance with manufacturer's instructions	Contractor	Pre-Construction	Section 4.4 of QA G36 Environment Protection AIR1

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing	Reference
		• Methods to manage works during strong winds or other adverse weather conditions • A progressive rehabilitation strategy for exposed surfaces • When the air quality, suppression and management measures need to be applied, who is responsible, and how effectives will be assessed • A monitoring program to record whether the air quality mitigation, suppression and management measures have been applied; and assess the effectiveness of the applied measures • Community notification and complaint handling procedures.			
Noise and Vibration					
30	Noise and vibration	A Noise and Vibration Management Plan (NVMP) will be prepared and implemented as part of the CEMP. The NVMP will generally follow the approach in *the Interim Construction Noise Guideline (ICNG) (DECC, 2009*) and identify: • All potential significant noise and vibration generating activities associated with the activity • Feasible and reasonable mitigation measures to be implemented, taking into account **Beyond the Pavement***: urban design policy, process and principles* (Transport, 2014) • A monitoring program to assess performance against relevant noise and vibration criteria • Arrangements for consultation with affected neighbours and sensitive receivers, including notification and complaint handling procedures • Contingency measures to be implemented in the event of non-compliance with noise and vibration criteria.	Contractor	Detailed design/ Pre-construction	Section 4.6 of QA *G36 Environment Protection* NOISE1

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing	Reference
31	Noise and vibration	All sensitive receivers (e.g. schools, local residents) likely to be affected will be notified at least 7 days prior to commencement of any work associated with the activity that may have an adverse noise or vibration impact. The notification will provide details of: • The proposal • The construction period and construction hours • Contact information for the proposal management staff • Complaint and incident reporting • How to obtain further information.	Contractor	Detailed design/ Pre-construction	NOISE3
32	Site Inductions	All personnel working on site will receive awareness training as part of the site induction package for their requirements within the Noise and Vibration Management Plan. The site induction will include reasonable and feasible behavioural practices as identified in the ICNG.	Contractor	Pre-Construction / Construction	Additional measure
33	Plant and equipment noise	Use quieter and less vibration emitting construction methods where feasible and reasonable.	Contractor	Pre-Construction / Construction	Additional measure
34	Operational noise	The proposal will consider noise attenuation measures (such as: architectural treatments) for all eligible properties identified as being impacted by operational traffic noise.	Transport	Detailed design	Additional measure
35	Vibration impacts to buildings	Prior to commencing the activity, a detailed inspection will be undertaken and a written and photographic report prepared to document the condition of buildings and structures where required. A copy of the report will be provided to the relevant landowner or land manager.	Transport/Contractor	Pre-Construction / Construction	Additional measure

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing	Reference
36	Operational noise	Within the first year of operation, monitoring of operational noise levels would be compared to predicted noise levels to verify the predictions and to determine the effectiveness of the noise mitigation measures. Additional feasible and reasonable mitigation will be considered at eligible receivers where measured noise levels are found to be significantly different from the predictions.	Transport/Contractor	Operation	Additional measure
Aboriginal Heritage					
37	Aboriginal heritage	An Aboriginal Heritage Management Plan (AHMP) will be prepared in accordance with the Procedure for Aboriginal cultural heritage consultation and investigation (Transport, 2012) and implemented as part of the CEMP. It will provide specific drafting guidance on measures and controls to be implemented for managing and avoiding impacts on Aboriginal heritage.	Contractor	Detailed design / Pre-construction	Section 4.9 of QA *G36 Environment Protection*
38	Aboriginal heritage	The AHMP must include measures to identify nearby PADs and registered site and/or conserve with high visibility fencing during works for the following; • Hillsborough Rd IA 01 (AHIMS ID 38-4-2007) • Hillsborough Rd PAD 2021-01 (AHIMS ID 38-4-2132) • Hillsborough Rd PAD 2021-02 (AHIMS ID 38-4-2131).	Contractor	Pre-construction	Additional measure
39	Site induction	All personnel working on site will receive training to ensure awareness of requirements of the Aboriginal Heritage Management Plan and relevant statutory responsibilities. Site-specific training will be given to personnel when working in the vicinity of identified Aboriginal heritage items.	Contractor	Pre-construction	GEN3

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing	Reference
40	Unexpected finds	The Standard Management Procedure - Unexpected Heritage Items will be followed if a known or potential Aboriginal object(s), including skeletal remains, is found during construction. This applies where RMS does not have approval to disturb the object(s) or where a specific safeguard for managing the disturbance (apart from the Procedure) is not in place. Work will only re-commence once the requirements of that Procedure have been satisfied.	Contractor	Pre-construction	Section 4.9 of QA *G36 Environment Protection*
Non-Aboriginal Heritage					
41	Non-Aboriginal heritage	Should any heritage items, archaeological remains or potential relics of Non-Aboriginal origin be encountered, then construction work that might affect or damage the material will cease and notification provided to the relevant Transport officer identified in the RMS Standard Management Procedure - Unexpected Archaeological Finds. Work will only re-commence once the requirements of that Procedure have been satisfied.	Contactor	Detailed design/pre-construction	Section 4.10 of QA *G36 Environment Protection*
Landscape Character and Visual impact					
42	Best Practice Urban Design	An Urban Design Plan will be prepared to support the final detailed the proposal design and implemented as part of the CEMP. • The Plan will present an integrated urban design for the proposal, providing practical detail on the application of design principles and objectives identified in the environmental assessment. The Plan will include design treatments for: • Location and identification of existing vegetation and proposed landscaped areas, including species to be used (cross-referencing any relevant specified biodiversity safeguards) • Design and location of replacement trees • Built elements including retaining walls	Contractor	Pre construction	UD1

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing	Reference
		• Pedestrian and cyclist elements including footpath location, paving types and pedestrian crossings • Street furniture • Details of the staging of landscape works • Procedures for monitoring and maintaining landscaped or rehabilitated areas. • The Plan will be prepared in accordance with relevant guidelines, including: • RMS Beyond the Pavement urban design policy, process and principles • RMS Landscape Guideline, Bridge Aesthetics, Noise Wall Design Guidelines and Shotcrete Design Guideline.			
43	Construction work sites	The proposal work sites, including construction areas and supporting facilities (such as storage compounds and offices) will be managed to minimise visual impacts, including appropriate storage of equipment, parking, stockpile screening and arrangements for the storage and removal of rubbish and waste materials.	Contractor	Pre construction, construction	UD2
Property and land use					
44	Property acquisition	Transport will complete property adjustments including fencing, driveways/accesses and other property infrastructure impacted by the proposal in consultation with affected property owners.	Transport	Detailed design	Additional measure
45	Property acquisition	All property acquisition will be carried out in accordance with the Land Acquisition Information Guide (Roads and Maritime, 2012) and the Land Acquisition (Just Terms Compensation) Act 1991.	Transport	Pre-construction and construction	Additional measure

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing	Reference
46	Utility relocations	Prior to the commencement of works: • The location of existing utilities and relocation details will be confirmed following consultation with the affected utility owners. • If the scope or location of proposed utility relocation works falls outside of the assessed proposal scope and footprint, further assessment will be undertaken.	Transport	Pre-construction and construction	UT1
Socio-economic					
47	Pre-construction and construction	A Construction Communication Plan (CCP) will be prepared and implemented as part of the CEMP to ensure provision of timely and accurate information to the community during construction. The CCP will include (as a minimum): • Mechanisms to provide details and timing of proposed activities to affected residents, including changed traffic and access conditions • Out of hours works (OOHW) Protocol • Contact name and number for complaints. • The CCP will be prepared in accordance with the RMS Community Involvement and Communications Resource Manual.	Transport, Contactor	Detailed design/ pre-construction	SE1
48	Emergency Vehicle Access	Access for emergency vehicles will be maintained at all times during construction. Any site-specific requirements will be determined in consultation with the relevant emergency services agency.	Contractor	Construction	SE2
49	Impacts to local residents and businesses	A C&SES will be prepared and continue to be updated during the proposal to ensure the following: • Community and stakeholders have a high level of awareness of all processes and activities • Accurate and accessible information is made available	Transport, Contractor	Pre-construction, Construction	Additional measure

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing	Reference
		• A timely response is given to issues and concerns raised by the community. Feedback from the community is encouraged • Opportunities for input are provided.			
50	Engagement	Ongoing engagement with affected business owners and employees should be undertaken to: • Understand and address specific business impacts • Identify potential changes to customer behaviours resulting from the proposal • Manage potential vehicle access changes. • The C&SES would continue to align with the focus area to partner with communities as set out in the Transport Sustainability Plan.	Transport, Contractor	Pre-construction, Construction	Additional measure
51	Property acquisition plan	Consultation will be carried out with each landowner and resident throughout the acquisition process, in accordance with Transport policy and the *Land Acquisition (Just Terms Compensation) Act 1991*.	Transport, Contractor	Pre-construction, Construction	Additional measure
52	Local and Indigenous employment and procurement	Aligned with Transport's Aboriginal Participation Strategy and Transport's Transport Sustainability Plan Transport has committed to prioritising opportunities for Indigenous workers and procurement in its proposals in line with the NSW's Governments Aboriginal Procurement Policy.	Transport, Contractor	Pre-construction, Construction	Additional measure
Other Impacts					
53	Waste	A Waste Management Plan (WMP) will be prepared and implemented as part of the CEMP. The WMP will include but not be limited to: • Measures to avoid and minimise waste associated with the proposal • Classification of wastes and management options (re-use, recycle, stockpile, disposal)	Contractor	Detailed design/ pre-construction	Section 4.2 of QA *G36 Environment Protection*

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing	Reference
		• Statutory approvals required for managing both on and off-site waste, or application of any relevant resource recovery exemptions • Procedures for storage, transport and disposal • Monitoring, record keeping and reporting. • The WMP will be prepared considering the Environmental Procedure - Management of Wastes on Roads and Maritime Services Land (Roads and Maritime, 2014) and relevant Roads and Maritime Waste Fact Sheets.			
54	Hazards and risk management	A Hazard and Risk Management Plan (HRMP) will be prepared and implemented as part of the CEMP. The HRMP will include, but not be limited to: • Details of hazards and risks associated with the activity • Measures to be implemented during construction to minimise these risks • Record keeping arrangements, including information on the materials present on the site, material safety data sheets, and personnel trained and authorised to use such materials • A monitoring program to assess performance in managing the identified risks • Contingency measures to be implemented in the event of unexpected hazards or risks arising, including emergency situations • No hot work during periods of total fire ban (TOBAN). • The HRMP will be prepared in accordance with relevant guidelines and standards, including relevant Safe Work Australia Codes of Practice, and EPA or Office of Environment and Heritage publications.	Contractor	Detailed design/ pre-construction	Additional measure

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing	Reference
55	Hazards and risk management	Emergency response plans will be incorporated into the construction environmental management plan (CEMP).	Contractor	Pre-construction, construction	Additional measure

4.3 Licensing and approvals

Table 5-2 provides a summary of the notifications, licences and approvals required by the proposal prior to the start of construction or start of certain activities. These should be reviewed during and following the completion of detailed design to confirm is they are still applicable.

Table 4-2: Summary of licensing and approval required

Instrument	Requirement	Timing
Crown Lands Act 1989 (s6)	Licence to occupy areas of Crown Land	Prior to start of the activity.
Fisheries Management Act 1994 (s199)	Notification to the Minister for Agriculture and Western NSW prior to any dredging or reclamation works. [Note exemption under s263A of the Fisheries Management (General) Regulation 2010]	A minimum of 28 days prior to the start of work.
Mine Subsidence Compensation Act 1961	Approval to alter or erect improvements or to subdivide land within a mine subsidence district from the Mine Subsidence Board.	Prior to start of the activity
Roads Act 1993	Requirement for a Road Occupancy Licence under section 139	Prior to start of the activity

5. References

Biosis 2023. Hillsborough Road duplication the proposal Warners Bay bat call analysis report. Report for GHD Pty Ltd. Williams, F. Biosis Pty Ltd. Newcastle, NSW. The proposal no. 36135

Transport for NSW, 2022 Hillsborough Road Upgrade Review of Environmental Factors. November 2022.

Appendix A

Microbat survey

Hillsborough Road duplication project
Warners Bay
Bat call analysis report

FINAL

Prepared for GHD Pty Ltd

1 February 2023

Biosis offices

NEW SOUTH WALES

Albury

Phone: (02) 6069 9200

Email: albury@biosis.com.au

Newcastle

Phone: (02) 4911 4040
Email: newcastle@biosis.com.au

Sydney

Phone: (02) 9101 8700
Email: sydney@biosis.com.au

Western Sydney

Phone: (02) 9101 8700
Email: sydney@biosis.com.au

Wollongong

Phone: (02) 4201 1090
Email: wollongong@biosis.com.au

VICTORIA

Ballarat

Phone: (03) 5304 4250
Email: ballarat@biosis.com.au

Melbourne

Phone: (03) 8686 4800
Email: melbourne@biosis.com.au

Wangaratta

Phone: (03) 5718 6900
Email: wangaratta@biosis.com.au

Document information

Report to:	GHD Pty Ltd
Prepared by:	Felicity Williams
Biosis project no.:	36135
File name:	36135.Hilssborough.Bats.FIN.20230201
Citation:	Biosis 2023. Hillsborough Road duplication project Warners Bay bat call analysis report. Report for GHD Pty Ltd. Williams, F. Biosis Pty Ltd. Newcastle, NSW. Project no. 36135

Document control

Version	Internal reviewer	Date issue
DFT01	Mitch Palmer	25/01/223
FIN01	Mitch Palmer	01/02/2023

Acknowledgements

Biosis gratefully acknowledges the contributions of the following people and organisations in preparing this bat call analysis report:

- Australasian Bat Society for access to resources
- Dr Lisa Cawthen for QA of bat calls

Contents

Tables

Figures

1. Introduction

Transport for NSW (Transport) proposes to duplicate a 1.8 kilometre section of Hillsborough Road between the Newcastle Inner City Bypass in the east and the duplicated section of Hillsborough Road about 300 metres west of the intersection with Crocket Street in Warners Bay. The proposal is located within the Lake Macquarie City Council (LMCC) Local Government Area (LGA).

The main land uses surrounding the proposal include the residential area of Hillsborough, Combined Northern Canine Committee Showgrounds (CNCC), Charlestown Golf Club, and Charlestown Recreation Reserve.

Biosis Pty Ltd (Biosis) was engaged by GHD Pty Ltd (Ltd) on behalf of Transport to prepare a Biodiversity Assessment Report (BAR) to support a Review of Environmental Factors (REF) being prepared for the proposal in accordance with Division 5.1 of the Environmental Planning and Assessment Act 1979. As part of the BAR, Biosis completed this microbat assessment to assess the presence and potential impacts of the proposal on threatened microbats.

2. Methods

2.1. Ultrasonic survey method and effort

Survey was undertaken with reference to the following guidelines:

- *'Species credit' threatened bats and their habitats: NSW survey guide for the Biodiversity Assessment Method* (NSW Office of Environment and Heritage, 2018).
- *Survey guidelines for Australia's threatened bats* (Department of the Environment, Water, Heritage and the Arts, 2010).

Data was collected over five nights from 19/12/2022 to 23/12/2022 for a total of ten detector nights. Calls were recorded from dusk until dawn using two Titley Scientific Anabat Express passive bat detectors (full spectrum) fitted with omnidirectional microphones. Table 1 shows the settings that were used on both units:

Survey was conducted during December, when bat activity is likely to be high, to maximise the chance of detection of threatened species. Weather details are provided in Table 1 below.

Table 1 Weather data (Station: Williamtown RAAF, Bureau of Meteorology)

Date	Maximum temperature (°C)	Minimum temperature (°C)	Rainfall (mm)
19/12/2022	**19.3**	**13.1**	**3**
20/12/2022	**19.9**	**14.1**	**0**
21/12/2022	**20.9**	**12.2**	**2**
22/12/2022	**22.4**	**9.5**	**0**
23/12/2022	**27.2**	**16.8**	**0**

Units were deployed at two locations within the study area (Figure 1).

Unit one (660062) was mounted to a tree in relatively dense Smooth Barked Apple – Turpentine – Sydney Peppermint heathy woodland.

Unit two (660064) was mounted to a tree adjacent to a roadside and a culvert. The detector was facing the culvert, which was surrounded by an open grassed area and bordered by Smooth Barked Apple – Turpentine – Sydney Peppermint heathy woodland.

Table 2 Anabat Express FS settings

	Anabat Express FS settings
Sample rate	320,000
Sensitivity	18
Trigger Frequencies	15-250 kilohertz
Minimum event window	2 seconds
Mode	Night
File format	.wav (full spectrum)

Legend

- Study area
- Bat detector
- Culvert

Figure 1 Bat survey locations

0 50 100 150 200

Metres

Scale: 1:5,500 @ A3

Coordinate System: GDA 1994 MGA Zone 56

N

biosis

Matter: 36135, Date: 25 January 2023,
Prepared for: FW, Prepared by: JB, Last edited by: jbeckius
Layout: 36135_F1_BatSurvey
Project: P:\36100s\36135\Mapping\
36135_MR674_HillsboroughRd_REF_FFA.aprx

Acknowledgements: Basemap © Land and Property Information 2016; NSW Public Imagery: © Department of Customer Service 2020

Plate 1 Habitat surrounding unit 1 (left) and unit 2 (right)

2.1.1. Reference library

No reference calls were collected during the survey. Call identification was assisted by the following resources:

- *Bat calls of NSW* (Pennay, Law, & Reinhold 2004) including sample call files downloaded from https://www.environment.nsw.gov.au/topics/animals-and-plants/surveys-monitoring-and-records/bat-calls-of-nsw
- *Key to the bat calls of south-east Queensland and north-east New South Wales* (Reinhold et al. 2001)
- *The ecology of the east-coast free-tailed bat (Mormopterus norfolkensis) in the Hunter region* (McConville 2013)

Species nomenclature used in this report follows the *Australian Faunal Directory* (ABRS 2022) unless otherwise stated.

2.1.2. Call identification

Data was viewed using Anabat Insight (version 2.0.6, licensed, Titley Scientific).

Species identification was first refined by using known species geographic distributions (Churchill 2008, Australasian Bat Society 2022) to generate a list of species with potential to occur at the site.

Files not containing bat calls (noise files) were first filtered out using a standard "allbats" filter in Anabat Insight. A custom decision tree was then used to sort files into likely species.

Calls were identified by visually comparing the spectrogram and call characteristics (e.g. characteristic frequency and call shape) with reference calls and descriptions from available reference materials (Reinhold et al. 2001, Pennay, Law, & Reinhold 2004). A call (pass) was defined as a sequence of three or more consecutive pulses of similar frequency and shape. Sequences with less than three defined consecutive pulses were not identified to species and marked as 'unknown'. Similarly, sequences containing multiple bats or pulses with irregular frequency and / or shape (non search-phase calls) were not identified to species.

The focus of call analysis was to generate a list of species present, with a focus on threatened species, rather than analyse species activity. Once a species was positively identified, it was recorded as present. Species identification was therefore not attempted for all files recorded. Where a threatened species was not detected, additional checks were used to improve confidence that a false negative was not recorded including target frequency filters and manual review of 'noise' files.

Due to variability in the quality of calls and difficulty in distinguishing some species a conservative approach was taken when analyzing calls and assigning an identification. The identification of each call was assigned a confidence rating (Duffy et al. 2000) as summarized in the table below.

Table 3 Confidence rating

Identification	Description
C – Almost certain	Call characteristics diagnostic, matching those described in reference material, including species reference calls.
PR - Probable	Call most likely to represent a particular species, but there exists a low probability of confusion with species of similar call type or frequency, or call lacks sufficient detail (e.g call quality) to be definite.
SG – Species Group	Call characteristics (e.g frequency, shape) overlap with other species or call lacks sufficient detail (e.g. call quality) making it too difficult to distinguish between species.
X – Not Detected	Of the data analysed, no calls were attributable to this species.

2.1.3. Limitations and assumptions

Ultrasonic sampling is associated with a number of limitations. Detectability of bats relates to the intensity of their calls, their flight characteristics and the structure of the surrounding vegetation, all of which influence the distance over which a bat can be detected. Differences in the probability of detection may result in reduced likelihood of recording and therefore positively identifying some species as present within a site.

Manual call analysis is also associated with limitations including the sometimes arbitrary selection of useable calls and subjectivity of the observer. Definitions as to which calls are assigned to each species have been provided to improve the consistency at which calls were attributed to a species.

It was assumed that individuals would have access to a site for foraging even if they could not roost there.

2.1.4. Qualifications

Call analysis was undertaken by Felicity Williams. Felicity is experienced in ultrasonic call analysis having used it to complete her Honours thesis titled "The influence of fire on the foraging activity of insectivorous bats in the Victorian Mallee" in 2009 under the supervision of Lindy Lumsden (Arthur Rylah Institute for Environmental Research, Victorian Government Department of Land, Environment, Water and Planning). Felicity has since used skills in ultrasonic call detection and analysis for impact assessments on microbats in both Victoria and NSW.

Felicity has completed the following training courses with regard to ultrasonic call recording and analysis:

- Anabat system training course (December 2010) – Titley Scientific.
- Bats of Gluepot Reserve (2011) – Survey techniques and identification.
- Micro-workshop: Basics of Bat Calls (February 2022) – Titley Scientific
- Micro-workshop: Deployment Techniques for Bat Detectors (March 2022) – Titley Scientific
- Anabat Insight Advanced Skills Workshop (March 2022) – Titley Scientific

2.1.5. Quality Assurance

A subset of calls for each species identified was sent to an independent bat expert for verification. Positive identifications presented in this report were confirmed by Dr Lisa Cawthen.

2.2. Roost inspection and exit count

To support the acoustic assessment, an inspection of potential roosting habitat associated with a box culvert at Unit 2 was undertaken. An exit count survey was conducted over two nights (19/12/2022 and /12/2022) by an experienced fauna ecologist. Survey was conducted approximately 1 hour before sunset at 20:00 to 1 hour after sunset.

3. Results

3.1. Summary of ultrasonic results and survey effort

A total of 1,274 sequences were recorded at the two sites over five nights (ten detector nights).

Of these, 624 were confirmed as noise (not bat calls), and 69 were removed from identification as they contained less than five pulses and were therefore not suitable for identification. Bat activity at the site was relatively low, with a maximum activity per night of 264 calls and a minimum of 8 calls per night. Average bat activity was markedly different between the units, with an average of 15 calls per night at one unit and 103 calls per night at the other.

Nine species were positively identified (Almost Certain or Probable) of the 21 species that are known to occur within 10 km of Charlestown (Australasian Bat Society 2022). Up to six additional species may also have been recorded however reliable identification to species level was not possible due to poor data quality and/or similarity of call characteristics between species. Six species known or predicted to occur in the locality were not detected by ultrasonic analysis.

Table 2 provides a list of all species known or predicted to occur in the study area, their conservation status, and identification following call analysis.

Table 4 Bat call analysis results

Species name	Common name	BC Act status	EPBC Act status	Identification
Austronomus australis	White-striped Free-tailed Bat	-	-	X
Chalinolobus dwyeri	Large-eared Pied Bat	V	V	X
Chalinolobus gouldii	Gould's Wattled Bat	-	-	C
Chalinolobus morio	Chocolate Wattled Bat	-	-	SG
Falsistrellus tasmaniensis	Eastern Falsistrelle	V	-	SG
Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	V	-	PR
Miniopterus australis	Little Bent-winged Bat	V	-	C
Miniopterus orianae oceanensis	Eastern Bent-winged Bat	V	-	C
Myotis macropus	Southern Myotis	V	-	PR
Nyctophilus geoffroyi	Lesser Long-eared Bat	-	-	SG
Nyctophilus gouldi	Gould's Long-eared Bat	-	-	SG
Ozimops ridei	Ride's Free-tailed Bat	-	-	C
Phoniscus papuensis	Golden-tipped Bat	V	-	X
Rhinolophus megaphyllus	Eastern Horseshoe Bat	-	-	X
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V	-	X
Scoteanax rueppellii	Greater Broad-nosed Bat	V	-	C
Scotorepens orion	South-eastern Broad-nosed Bat	-	-	SG

Species name	Common name	BC Act status	EPBC Act status	Identification
Scotorepens sp.	Parnaby's Broad-nosed Bat	-	-	X
Vespadelus pumilus	Eastern Forest Bat	-	-	PR
Vespadelus troughtoni	Eastern Cave Bat	V	-	SG
Vespadelus vulturnus	Little Forest Bat	-	-	PR

3.1.1. Threatened species summary

Threatened species identified to species level (probable or almost certain) included:

- Eastern Coastal Free-tailed Bat
- Little Bent-winged Bat
- Eastern Bent-winged Bat
- Southern Myotis
- Greater Broad-nosed Bat

Reliable identification to species level of a further two species could not be achieved based on the data collected. These species include:

- Eastern Falsistrelle
- Eastern Cave Bat

These species were identified as part of a species group and identification to species level cannot be confirmed from the ultrasonic analysis.

3.1.2. Call characteristics used to differentiate overlapping species

The calls of Little Bent-winged Bat were distinguished from Eastern Forest Bat in good quality sequences above 59 kHz by the presence of a down-sweeping tail.

Calls from Eastern Forest Bat, Eastern Cave Bat and Little Forest Bat could not be reliably separated based on call characteristics from potential calls recorded. These species were combined in a species group. Two calls with an end frequency higher than 54.5 kHz were cautiously attributed as 'probable' Eastern Forest Bat.

Chocolate Wattled Bat was assigned to a species group as calls within the correct frequency range were recorded but no characteristic features (such as down-sweeping tails) could be observed in the data set to allow identification to species level and separation from the Little Forest Bat.

Eastern Bent-winged Bat calls did not overlap with other species at this location. Calls between 44 – 48 kHz were assigned to Eastern Bent-winged Bat. Diagnostic features such as open pulses, down-sweeping tails and single amplitude trajectories were also observed.

Free-tailed Bat calls were identified by the presence of mostly flat pulses. Ride's Free-tailed Bat was differentiated from Eastern Coastal Free-tailed Bat using long sequences with few alternating pulses as well as characteristic frequency less than 32kHz. Where alternation and characteristic tails were observed, these were assigned to Eastern Coastal Free-tailed Bat.

Gould's Wattled Bat *Chalinolobus gouldii* was differentiated from other species by the presence of curved pulses showing alternation in longer sequences.

Southern Myotis was separated from Lesser Long-eared Bat and Gould's Long-eared Bat *Nyctophilus* spp and assessed as 'probable' due to the length of sequence recorded, initial slope of greater than 400 octaves per second (OPS) and the characteristic loud call. All call sequences likely to be Southern Myotis were recorded on Unit 1, located in suitable foraging habitat next to Winding Creek, further suggesting these sequences are likely to be Southern Myotis rather than *Nyctophilus* spp.

Greater Broad-nosed Bat *Scoteanax rueppellii* was differentiated from South-eastern Broad-nosed Bat *Scotorepens orion* in frequencies of 32-35kHz. Calls were observed to have characteristic features such as a long and gently curved pre-characteristic section and a knee frequency of >37kHz. Where these features were absent, calls were attributed to a species group.

3.1.3. Example time versus frequency graphs for species identification

All time versus frequency graphs are shown in F7 (10 ms) , compressed mode, unless otherwise stated. Sequences are shown in both full spectrum and zero crossing formats on a scale of 10 – 80 kHz.

Plate 2 Gould's Wattled Bat

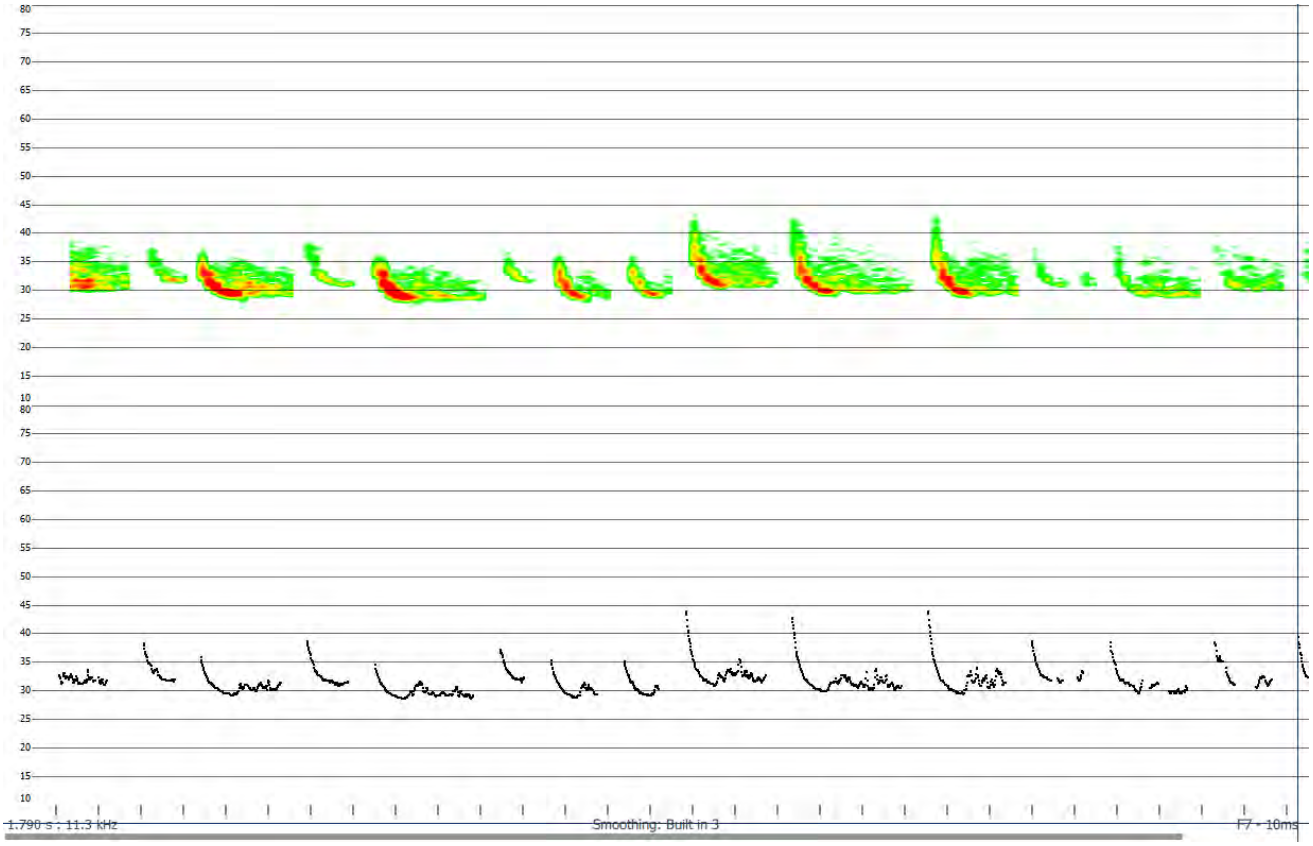


Plate 3 Eastern Coastal Free-tailed Bat

Plate 4 Little Bent-winged Bat

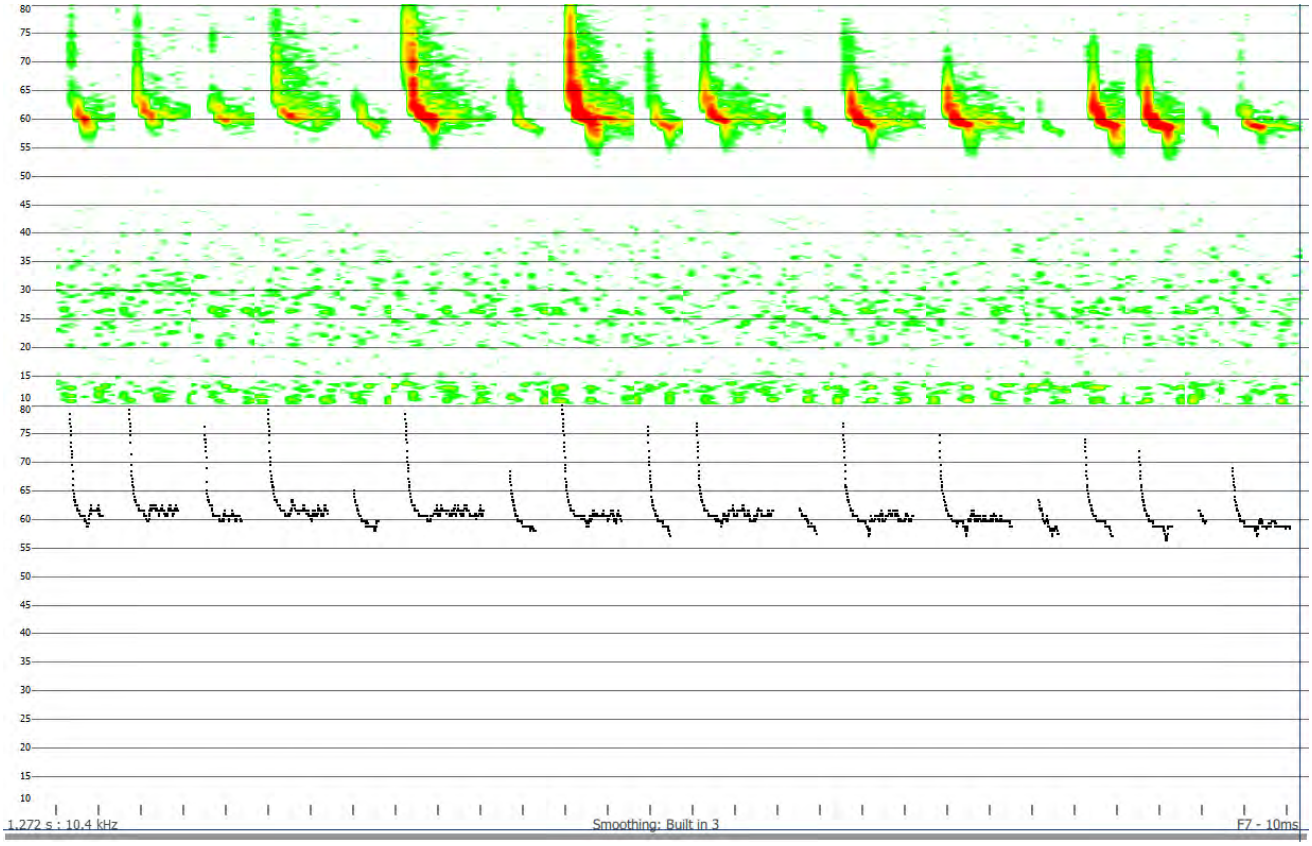


Plate 5 Eastern Bent-winged Bat *Miniopterus orianae oceanensis*

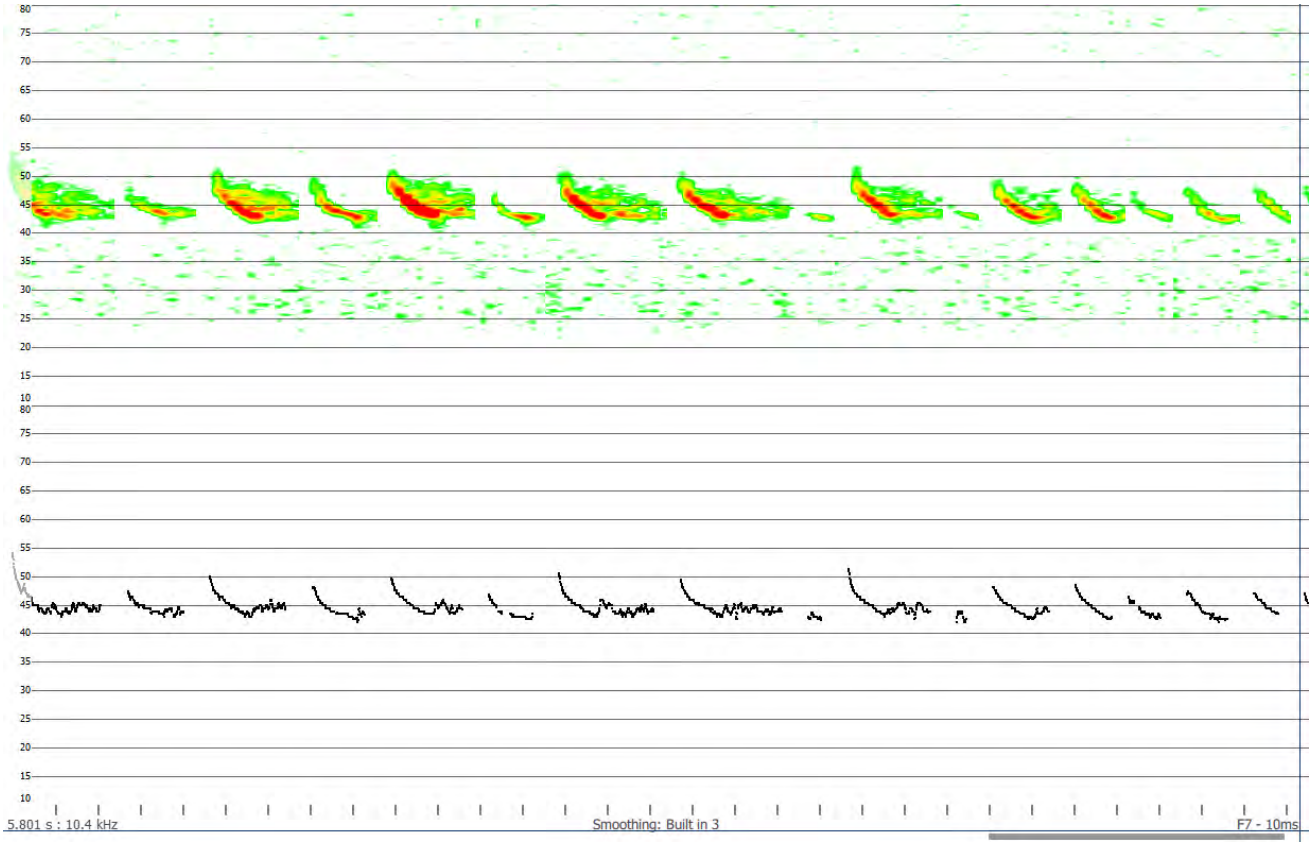


Plate 6 Southern Myotis

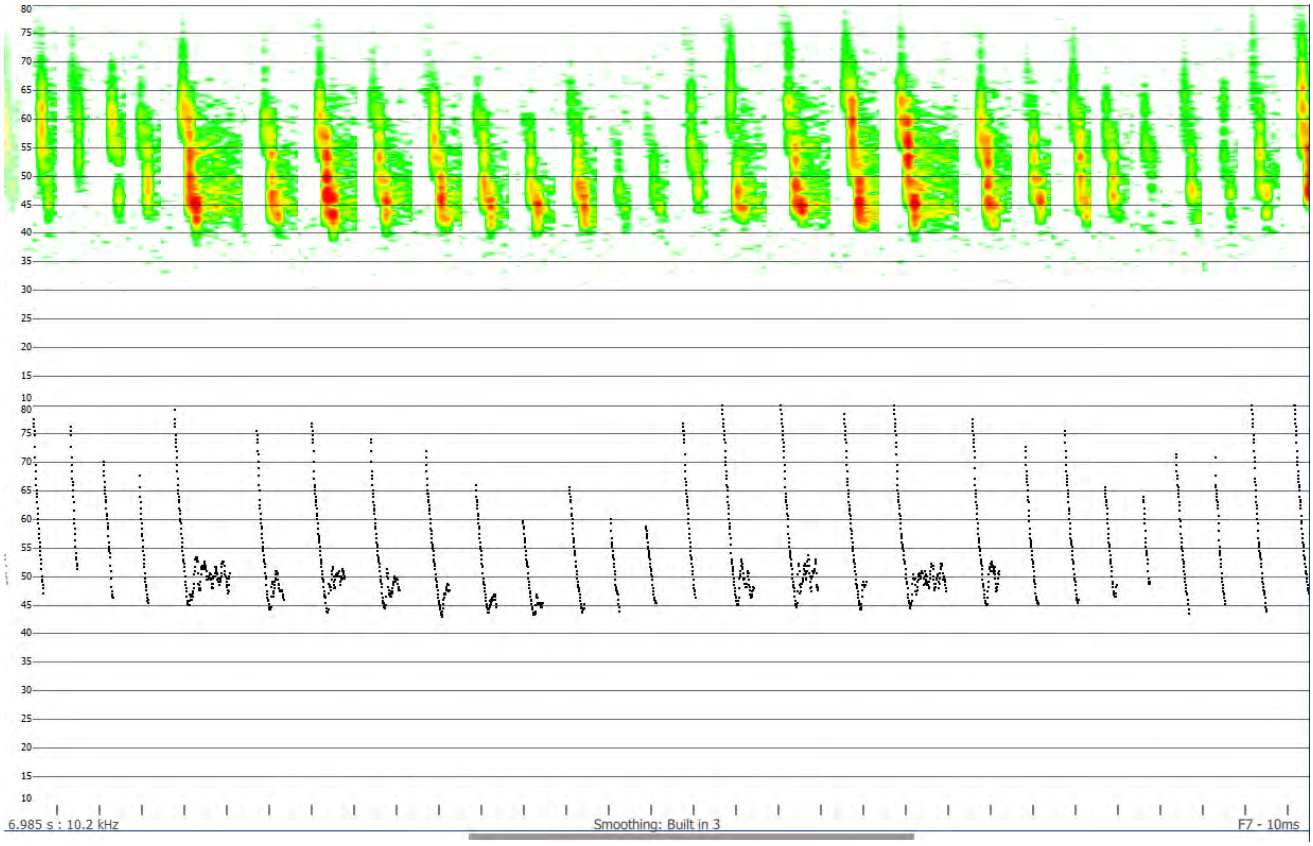


Plate 7 Greater Broad-nosed Bat

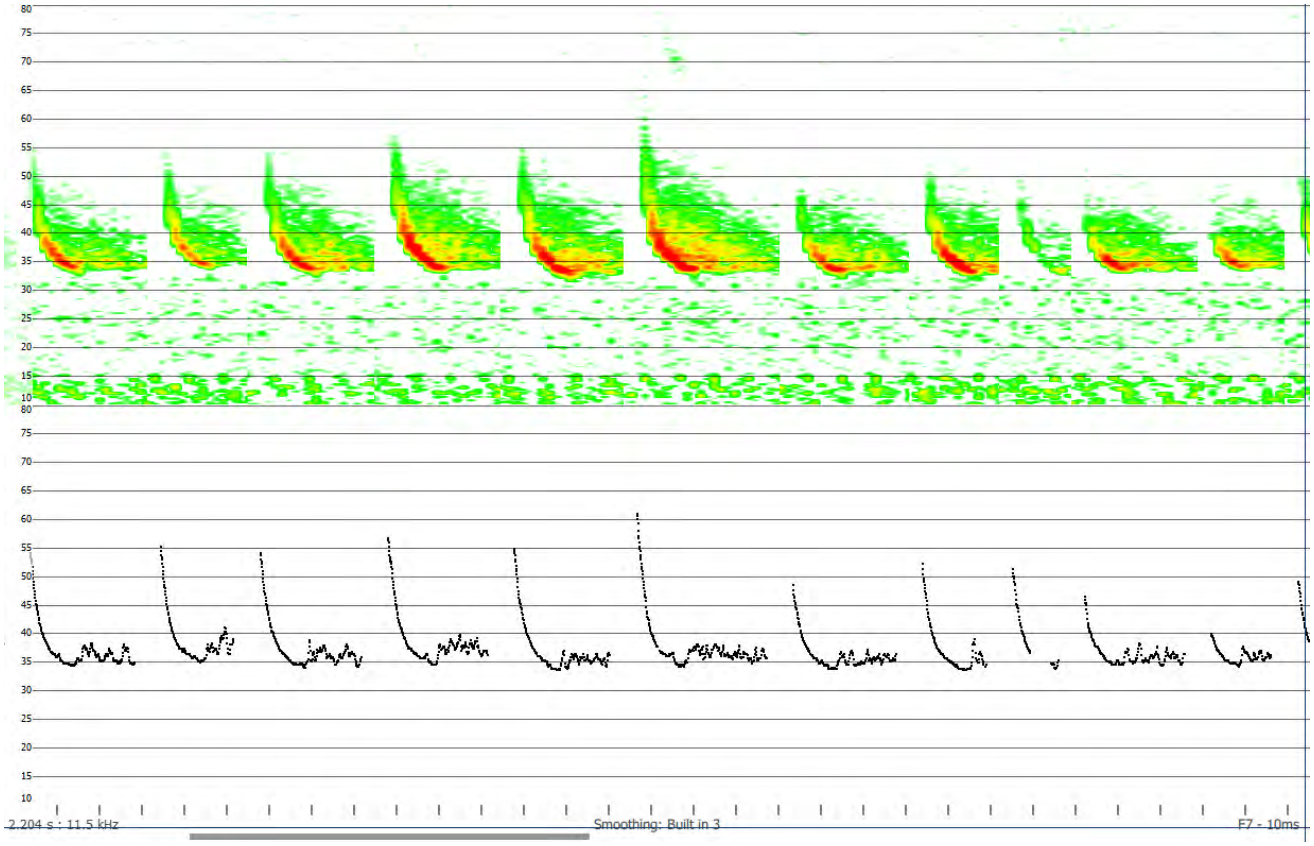


Plate 8 Eastern Forest Bat

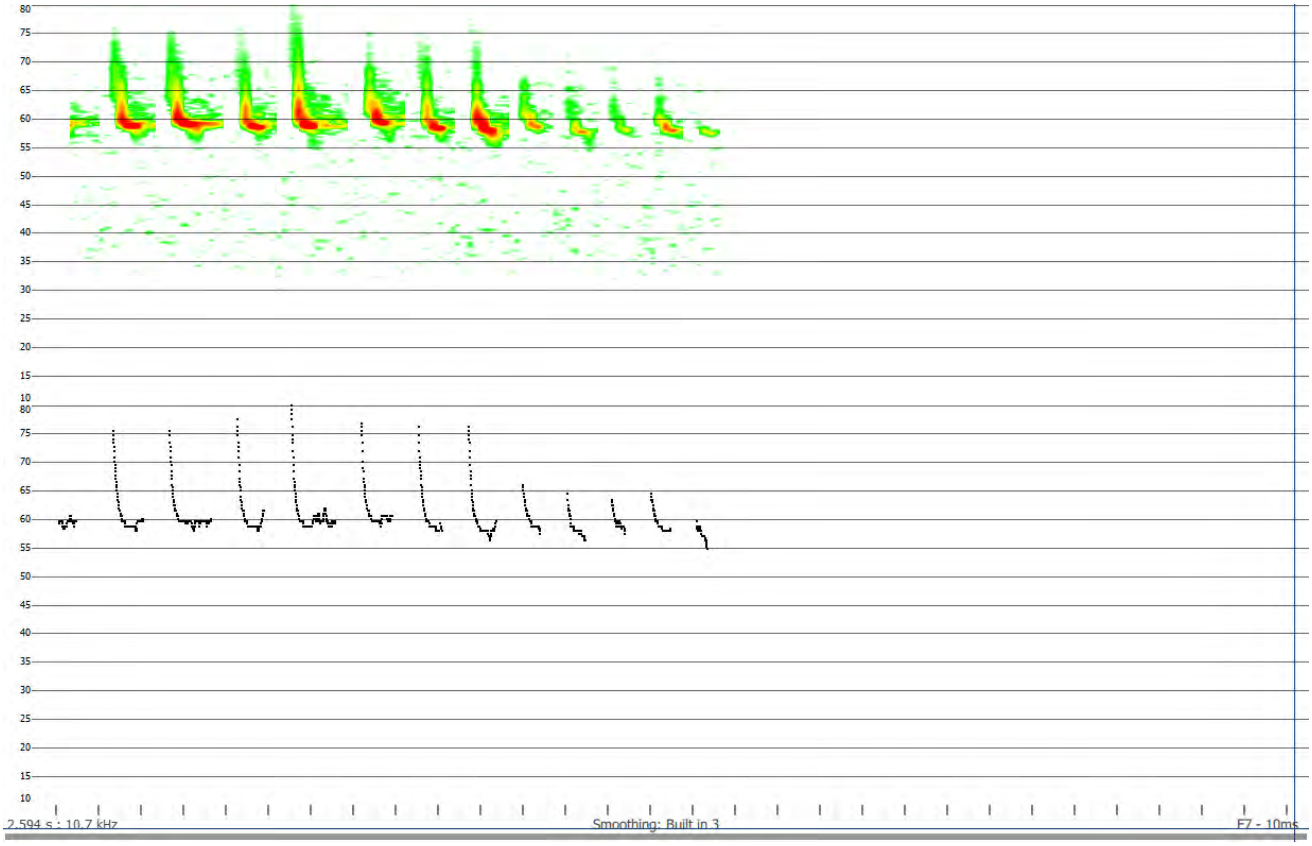
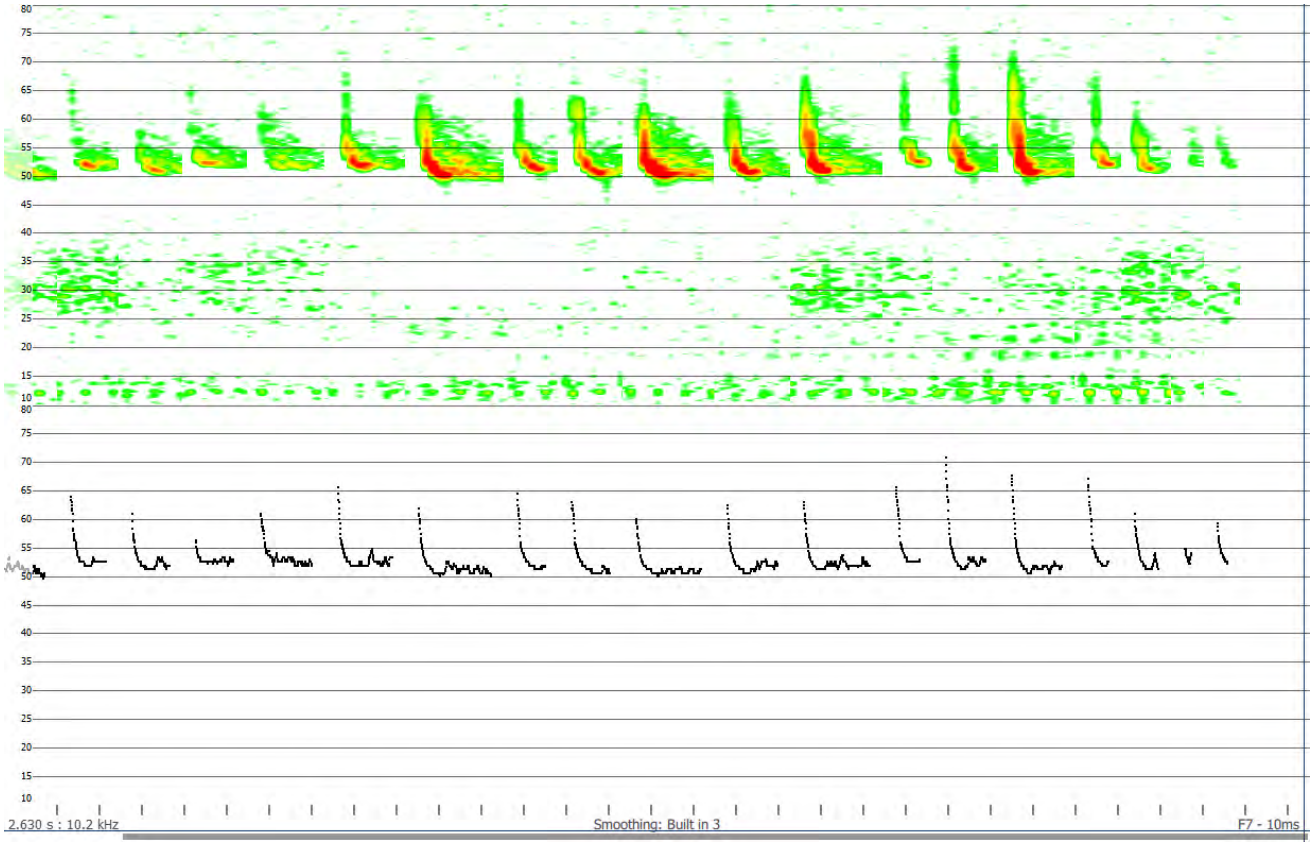


Plate 9 Little Forest Bat



3.2. Results of roost inspection and exit count

Due to water within the box culvert during this survey period, it was not possible to gain entry to observe whether any microbats were roosting or whether any signs of roosting (scats, urine staining) could be seen. However, pervious culvert inspection in Winter where entry was possible had noted that the culvert was of modern construction with a central seam and no obvious gaps or crevices (Plate 10). Spaces and cracking within the culvert was largely absent and there was no evidence of roosting bats observed.

One microbat was seen flying around near the culvert on both survey nights but was not seen to be entering or emerging to or from the culvert itself.

Three of the threatened species recorded in the ultrasonic analysis, Little Bent-winged Bat, Eastern Bent-winged Bat and Southern Myotis, are known to use man-made structures such as culverts for roosting. Based on these results and limited activity, and suitability of the culvert for roosting, it is unlikely that the culvert may represent suitable roosting habitat for these species currently, but may occur in future.

Plate 10 Example of culvert condition at Winding Creek

4. Conclusion

Ultrasonic analysis confirmed the presence of the following threatened bat species:

- Eastern Coastal Free-tailed Bat
- Little Bent-winged Bat
- Eastern Bent-winged Bat
- Southern Myotis
- Greater Broad-nosed Bat

Potential roosting habitat in the form of a box culvert at the site was inspected, and no evidence of roosting bats was identified. Given that opportunities for bat roosts are limited within the box culvert, it is unlikely to represent suitable roosting habitat for threatened bats species recorded by ultrasonic analysis. The proximity of the site to known roosting sites and foraging habitat for these species, suggest it is most likely that these species are using the site as foraging or commuting habitat, rather than roosting.

Based on this assessment, the mitigation measures identified in the BAR to mitigate impacts to fauna including managing fauna in accordance with *Guide 9: Fauna handling* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011) are likely to be suitable to minimise any impacts to microbats.

References

ABRS 2022. *Australian Faunal Directory*, accessed 29 March 2022, https://biodiversity.org.au/afd/home.

Australasian Bat Society 2022. *BatMap*, accessed 16 January 2022, http://ausbats.org.au/batmap.

Biosis 2022. *21 Sparke Street Hexham Biodiversity Development Assessment Report*, Report prepared for RES Pty Ltd. Authors: Heenan. C, Corrigan. B, Biosis Pty Ltd, Newcastle, NSW. Project no.36390.

Churchill S 2008. *Australian Bats*, 2nd edn, Allen & Unwin, Sydney, NSW.

Duffy AM, Lumsden LF, Caddle CR, Chick RR, & Newell GR 2000. 'The efficacy of Anabat ultrasonic detectors and harp traps for surveying microchiropterans in south-eastern Australia', *Acta Chiropterologica*, 2: 127–144.

McConville A 2013., *The ecology of the east-coast free-tailed bat (Mormopterus norfolkensis) in the Hunter region*, The University of Newcastle, Australia.

Pennay M, Law B, & Reinhold L 2004. *Bat calls of New South Wales*, NSW Department of Environment and Conservation, NSW Department of Environment and Conservation, Hurstville.

Reinhold L, Law B, Ford G, & Pennay M 2001. Key to the bat calls of south-east Queensland and north-east New South Wales.

Appendix B

Revised Noise and Vibration Impact Assessment

Hillsborough Road Upgrade

Noise and Vibration Impact Assessment

Transport for NSW

4 April 2023

→ The Power of Commitment

Limitations

This report has been prepared by GHD for Transport for New South Wales and may only be used and relied on by Transport for New South Wales for the purpose agreed between GHD and Transport for New South Wales as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Transport for New South Wales arising in connection with this report.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on assumptions made and described throughout in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

To the maximum extent permitted by law, all implied warranties and conditions in relation to the services provided by GHD and the report are excluded unless these are expressly stated to apply in the report.

This report has been prepared on the basis of information provided by Transport for New South Wales and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, existing surrounding industries, services and vegetation, etc. As a result, not all relevant site features and conditions may have been identified in this report.

Site conditions may change after the date of this report. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

It is not the intention of the assessment to cover every element of the acoustic environment, but rather to conduct the assessment with consideration to the prescribed scope of work.

Project name		TfNSW - Hillsborough Road CD and REF					
Document title		Hillsborough Road Upgrade | Noise and Vibration Impact Assessment					
Project number		12544418					
File name		12544418-REP_Hillsborough Rd - NVIA_Rev_B.docx					
Status Code	**Revision**	**Author**	**Reviewer**		**Approved for issue**		
			Name	**Signature**	**Name**	**Signature**	**Date**
S4	0	B Elder	V Lau		G Wood		01/11/22
S4	1	B Elder	V Lau	On file.	G Wood		04/04/23

GHD Pty Ltd | ABN 39 008 488 373

GHD Tower, Level 3, 24 Honeysuckle Drive

Newcastle, New South Wales 2300, Australia

T +61 2 4979 9999 | **F** +61 2 9475 0725 | **E** ntlmail@ghd.com | **ghd.com**

Glossary

Term	Description
AHD	Australian Height Datum
AS	Australian Standard
Ambient Noise Level	The ambient noise level at a particular location is the overall environmental noise level caused by all noise sources in the area, both near and far, including all forms of traffic, industry, lawnmowers, wind in foliage, insects, animals, etc. Usually assessed as an energy average over a set time period 'T' (L_{Aeq}, T).
Background Noise Level	The Background Noise Level is the minimum repeatable level of noise measured in the absence of the noise under investigation and any other short-term noises such as those caused by all forms of traffic, industry, lawnmowers, wind in foliage, insects, animals, etc. It is quantified by the noise level that is exceeded for 90% of the measurement period 'T' (L_{A90},T). Background Noise Levels are often determined for the day, evening and night time periods where relevant. This is done by statistically analysing the range of time period (typically 15 minute) measurements over multiple days (often 7 days).
dB	Decibel is the unit used for expressing the sound pressure level (SPL) or sound power level (SWL) in acoustics.
dBA	Frequency weighting filter used to measure 'A-weighted' sound pressure levels, which conforms approximately to the human ear response, as our hearing is less sensitive at very low and very high frequencies.
DECC	Department of Environment and Climate Change (NSW Government), later known as the Department of Environment Climate Change and Water, and now known as the Office of Environment and Heritage (OEH).
EPA	Environment Protection Authority
$L_{Aeq(period)}$	Equivalent sound pressure 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.
$L_{A1(period)}$	The sound pressure level that is exceeded for 1 % of the measurement period.
$L_{A10(period)}$	The sound pressure level that is exceeded for 10 % of the measurement period.
$L_{A90(period)}$	The sound pressure level that is exceeded for 90 % of the measurement period.
L_{Amax}	The maximum sound level recorded during the measurement period.
L_{Amin}	The minimum sound level recorded during the measurement period.
Mitigation	Reduction in severity
Noise Sensitive Receiver	Noise sensitive land use that may be impacts by noise from the development
NPI	Noise Policy for Industry
PSNG	Project Specific Noise Goals
Rating Background Level (RBL)	The overall single-figure background level representing each assessment period (day/evening/night) over the whole monitoring period.
Sound Pressure Level (SPL or Lp)	The level of sound measured on a sound level meter and expressed in decibels (dB). Where LP = $10\log_{10}\left(\frac{\mathrm{Pa}}{\mathrm{Po}}\right)^2$ dB (or $20\log_{10}(\frac{P_a}{P_o})$ dB) where Pa is the rms sound pressure in Pascals and Po is a reference sound pressure conventionally chosen is 20 µPa (20 x 10-6 Pa) for airborne sound. SPL varies with distance from a noise source.
Sound Power Level (SWL or L_W)	The sound power level of a noise source is the inherent noise of the device. Therefore, sound power level does not vary with distance from the noise source or with a different acoustic environment.
Sound transmission loss	The amount in decibels by which a random sound is reduced as it passes through a sound barrier.
Tonality	Noise containing a prominent frequency or frequencies characterised by definite pitch.

Contents

Table index

Figure index

Appendices

1. Introduction

1.1 Overview

Transport for NSW (TfNSW) has engaged GHD Pty Ltd (GHD) to prepare a noise and vibration impact assessment as part of the Review of Environmental Factors (REF) for the duplication of Hillsborough Road between the Newcastle Inner City Bypass (NICB) and 300m west of Crockett Street (the proposal). Hillsborough Road passes through the suburbs of Warners Bay, Cardiff South, and Hillsborough, about 10.5 kilometres south-west of Newcastle. The proposal would improve traffic congestion.

The objectives of the proposal include:

– Improve corridor efficiency and reliability for all modes of transport
– Improve road safety for all road users including vulnerable road users
– Improve access to/from the suburbs of Hillsborough and Cardiff South

1.2 Purpose of this report

The purpose of this report is to document the assessment of potential noise and vibration impacts from operation and construction of the proposal. This report supports the REF for the proposal. The scope of this assessment was:

– Identifying existing noise levels in the proposal area
– Assessing the potential construction noise and vibration impacts of the proposal and site compound based on the proposal description
– Outlining suitable construction mitigation measures in order to meet the proposal noise and vibration criteria
– Assessing the potential operational noise impacts of the proposal
– Recommend mitigation measures to reduce these impacts.
– Preparing a report summarising the findings of the study.

1.3 Report structure

The report is comprised of the following sections:

– **Section 2 – Description of the proposal**: summarises the key features of the proposal as outlined in the tender documentation.
– **Section 3 – Existing Environment:** summarises the site location, proposal boundary, noise monitoring methodology and results.
– **Section 4 – Compliance Criteria:** outlines the relevant construction noise and vibration criteria, road traffic noise criteria and road traffic noise mitigation process.
– **Section 5 –Construction Impact Assessment:** details the construction noise modelling methodology, predicted construction noise impacts, construction traffic methodology and assessment, construction vibration assessment and construction mitigation measures.
– **Section 6 – Operational Noise Impact Assessment:** assesses the operational noise impacts and outlines the methodology, scenarios, modelling inputs, operational noise model validation and operational mitigation measures.
– **Section 7 – Conclusion:** provides a summary of the construction and operational noise and vibration assessments.

2. Description of the proposal

2.1 Overview

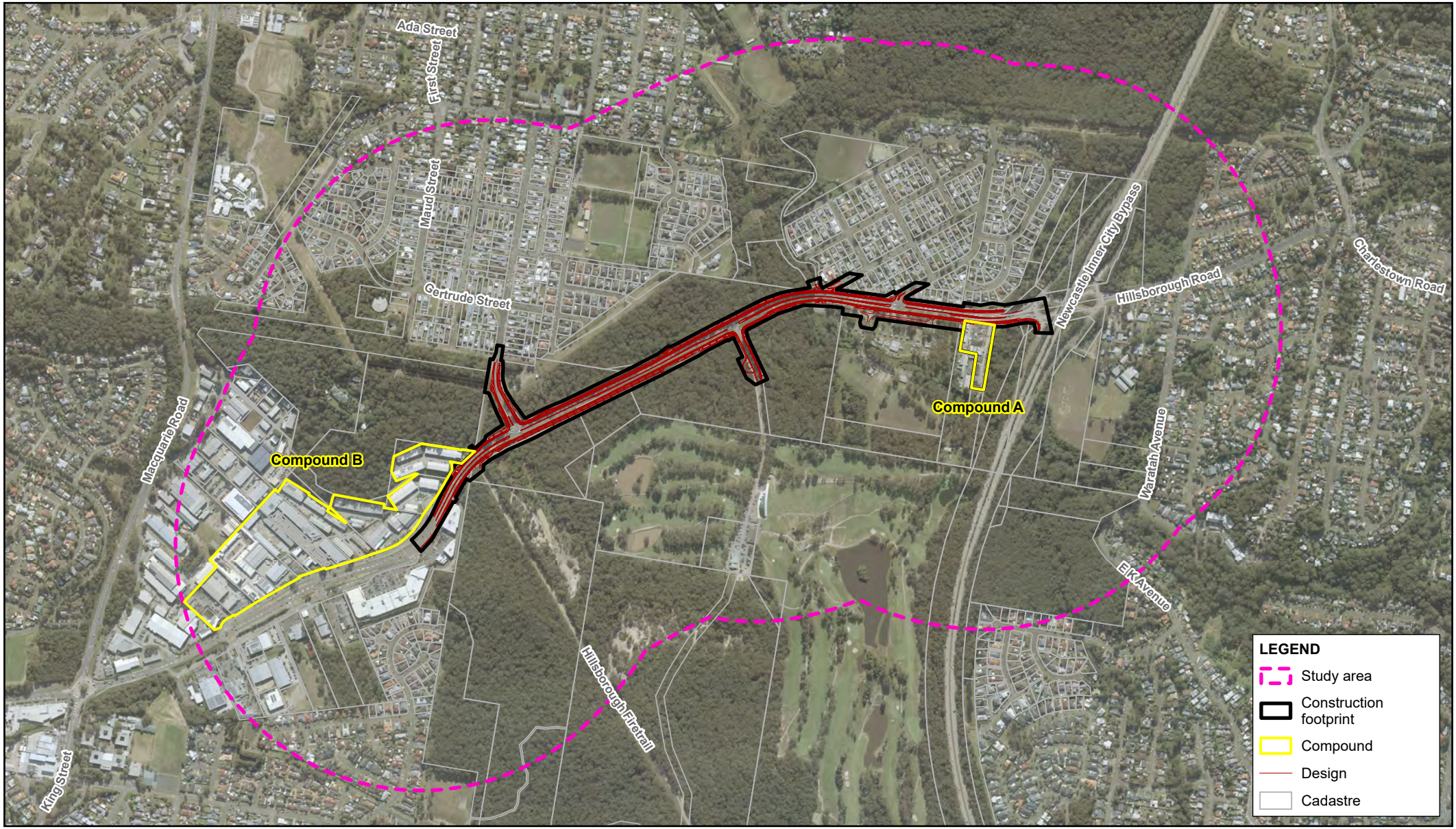
Transport for NSW (Transport) proposes to construct an upgrade to Hillsborough Road, in the Lake Macquarie suburb of Hillsborough NSW (the proposal). TfNSW proposes to duplicate Hillsborough Road between the Newcastle Inner City Bypass in the east, to west of the Crockett Street intersection.

Key features of the proposal include:

- Duplication of about 1.8 kilometres of Hillsborough Road from the NICB roundabout west to a tie in point about 300 metres west of Crockett Street.
- Two lanes each a minimum 3.3 metre wide each way with a solid central median barrier.
- Posted speed of 60 kilometres per hour.
- New traffic lights at the Chadwick Street intersection including pedestrian crossings.
- Modification of Higham Road intersection.
- New traffic lights at the Baker Avenue intersection including pedestrian crossing.
- U-turn bay on Barker Avenue.
- Access gates to be relocated beyond u turn facility.
- New traffic lights at the Crockett Street intersection including pedestrian crossings.
- Provision for on road cyclists within shoulder in both directions.
- Off road concrete shared path on the northern side tying into existing path.
- Upgraded bus stop facilities on Hillsborough Road at Crockett Street intersection, Chadwick Street intersection and on Crockett Street. All bus stops are to have shelters with the exception of the southbound bus lay over on Crockett Street.
- Culvert widening on Winding Creek both up stream and down stream of existing culvert structure.
- Culvert widening and full replacement of existing culvert between Crockett Street and Baker Avenue.
- New separated left in only entry and left out only exit for the CNCC Showgrounds located east (entry) and west (exit) of Chadwick Street intersection.
- Maintained access to the Hillsborough Road fire trail opposite Crockett Street.
- Left in / left out only access from existing business fronting Hillsborough Road, east of the CNCC Showgrounds.
- Left in / left out only access to residences on Hillsborough Road, east of CNCC Showgrounds.
- Relocation of utilities including, telecommunications, water, power, street lighting and minor adjustments to sewer infrastructure.
- New as well as upgraded street lighting on Hillsborough Road.
- Reinforced concrete retaining walls including facing panels.
- Site investigations, including but not limited to geotechnical investigations.
- Installation of fauna connectivity structures, such as rope crossings.
- Minor property acquisition and adjustments including fencing, access and driveway adjustments.
- Site preparation works, including establishing ancillary facilities, vegetation clearing, site fencing, temporary drainage measures, and implementation of environmental management measures.
- Temporary construction facilities, including site compounds and stockpile sites at the former Whalan's Nursery site– Hillsborough Road, and at vacant commercial buildings within the Warners Bay Commercial Centre – Accessed by northern commercial access road of Hillsborough Road.

Construction of the proposal is planned to be delivered in stages. The NSW Government has announced $35 million to deliver the first stage of the Hillsborough Road upgrade. Stage 1 involves upgrading Crockett Street intersection, including installation of traffic lights. Stage 1 is expected to commence construction in 2025 and take about 18 months to complete depending on final staging arrangements. Timing for construction of the remaining stages is subject to project approvals and funding.

Potential compound locations and key features of the proposal are displayed in Figure 2.1.



Paper Size ISO A4

0 100 200 300 400

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

Proposal key features and site compounds

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

FIGURE 2.1

G:\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 30 Nov 2022 - 12:45

Data source: Metromap Tile Service: - Imagery (Date extracted: 30/11/2022); Roads, Cadastre - LPI, 2017; Created by: tmorton

3. Existing environment

3.1 Sensitive land uses

3.1.1 Noise catchment areas

Proposal specific noise catchment areas (NCAs) have been identified as:

– NCA01 is all sensitive receivers east of Barker Avenue where the dominant road traffic noise source is Hillsborough Road and rating background levels are not impacted by the NICB.
– NCA02 is all sensitive receivers west of Barker Avenue where the road traffic noise is a mixture of Hillsborough Road and the NICB. Rating background levels are impacted by both Hillsborough Road and the NICB.

The NCAs are shown on Figure 3.1.

3.1.2 Noise sensitive receivers within the study area

The operational noise study area is 600 metres from the centre line of the outermost traffic lane either side of the Hillsborough Road (the proposal) as per the NSW Road Noise Policy (RNP) (DECCW, 2011). The study area is presented graphically in Figure 3.1. Sensitive land uses with the potential to be affected by noise from the operation of the proposal include residential land uses and non-residential land uses.

Existing residential land uses are located mostly to the north of the proposal. Receivers included in this assessment are based on building data obtained from Geoscape Australia on 16 December 2021.

Sensitive non-residential receivers including schools, places of worship (churches) and outdoor recreation areas have specific noise criteria for construction and operational noise. Sensitive non-residential receivers identified in the study area for the purposes of construction and operational noise include Charlestown Golf Club, Hillsborough Public School and Newcastle Junior School. These receivers are in close proximity to the proposal area and have the potential to be noise impacted by operational road traffic or construction noise. These receivers can be found in Figure 3.1.

Commercial/industrial receivers have specific noise criteria for construction noise, however do not have a specific operational noise criteria. Commercial/industrial receivers located in the study area for the purposes of construction noise include those located within the Warners Bay Industrial Estate as well as ShedQuarters and Whalan's Nurseries.

An overview of the number of modelled receivers is provided in Table 3.1 and shown in Figure 3.1.

Table 3.1 Number of modelled noise sensitive receivers

Receiver type	Number of modelled receivers		Total
	NCA01	NCA02	
Active recreation	11	12	23
Commercial	105	14	119
Educational institute	12	14	26
Place of worship	1	0	1
Residential	922	787	1709
Total	**1051**	**827**	**1878**

3.2 Noise monitoring

3.2.1 Methodology

An ambient noise survey was conducted to characterise and quantify the existing acoustical environment in the area surrounding the site. Long term noise monitoring and attended monitoring was undertaken at four (4) locations (M1 to M4) which were considered representative of the nearest potentially-affected noise-sensitive receivers to the proposal site.

The ambient noise monitoring consisted of continuous, unattended noise logging and operator attended noise surveys. The operator attended noise surveys help to define noise sources and the character of noise in the area and are, therefore, used to qualify unattended noise logging results. Monitoring was undertaken from Monday 29 November 2021 to Wednesday 15 December 2021 at the locations presented in Figure 3.1 and Table 3.2. The RNP states that at least seven consecutive days of unattended monitoring data is preferred. GHD undertook unattended monitoring for eight consecutive days, meeting the preference of at least seven days in accordance with the RNP.

Unattended noise measurements were undertaken using SVAN 977 Type 1 sound level meters (serial numbers 36820, 36821, 45746 and 45751). These instruments are capable of measuring continuous A-weighted 1/3 octave sound pressure levels and are able to record L_{Amin}, L_{A90}, L_{A10}, L_{A1}, L_{Amax} and L_{Aeq} noise descriptors.

Field calibrations were checked by GHD immediately before and after each set of measurements using SVAN SV36 and Brüel & Kjær 4231 sound level calibrators (serial numbers 106878 and 2542101). In all cases, pre and post calibration checks were within the acceptable range of 94 dB +/- 1.0 dB.

All instrumentation used during noise measurements comply with the requirements of AS IEC 61672.1-2013 Electroacoustics - Sound Level Meters – Specifications, AS IEC 61672.2-2013, AS IEC 61672.3-2013 and carry current NATA or manufacturer calibration certificates. Calibration certificates for the sound level meters during the monitoring have been attached in Appendix A.

Table 3.2 Noise monitoring locations

Monitoring Location	Equipment Type / Serial No.	Location		Photo
		Easting	Northing	
M1 – 13 Leroy Close, Hillsborough	SVAN 977 (45751)	376362	6352598	
M2 – 16 Higham Road, Hillsborough	SVAN 977 (36821)	376145	6352753	

Monitoring Location	Equipment Type / Serial No.	Location		Photo
		Easting	Northing	
M3 – 117 Hillsborough Road, Hillsborough	SVAN 977 (45746)	376057	6352583	
M4 – 7 Coolum Place, Cardiff South	SVAN 977 (36820)	375343	6352525	

3.2.2 Noise monitoring results

Noise levels were monitored for minimum 7 days in the period from Monday 29 November 2021 to Wednesday 15 December 2021. The noise loggers were programmed to record statistical noise level indices continuously in 15-minute intervals, including L_{Amax}, L_{A1}, L_{A50}, L_{A90}, L_{A99}, L_{Amin} and L_{Aeq}. Precautions were taken to minimise influences from extraneous noise sources and unwanted reflections from adjacent buildings.

Weather data for the survey period was obtained from the Bureau of Meteorology (BOM) weather station located at the Newcastle Nobby's Signal Station AWS. Noise data corresponding to periods of rainfall and/or wind speeds in excess of 7 m/s were discarded in accordance with NPI data exclusion methodology.

Rating background levels and ambient noise levels recorded at each location are summarised in Table 3.3 to Table 3.6 .

Daily noise monitoring charts for the entire monitoring period at each location are presented in Appendix B.

Table 3.3 Summary of noise monitoring results – M1 (45751) dBA

Date	Rating background level 90th percentile $L_{A90(15min)}$			Road traffic noise descriptors			
	Day[1]	Evening[1]	Night[1]	$L_{Aeq(15hr)}$[2]	$L_{Aeq(9hr)}$[2]	$L_{Aeq(1hr)}$ Day[2]	$L_{Aeq(1hr)}$ Night[2]
Tuesday-7-Dec-21	52	49	37	59	52	59	56
Wednesday-8-Dec-21	56	-	33	60	53	60	56
Thursday-9-Dec-21	55	52	38	58	53	59	56
Friday-10-Dec-21	55	51	39	59	52	60	55
Saturday-11-Dec-21	55	51	38	59	51	60	53
Sunday-12-Dec-21	53	49	35	58	52	60	56
Monday-13-Dec-21	55	48	35	58	52	59	55
Tuesday-14-Dec-21	54	47	33	57	52	58	55
Wednesday-15-Dec-21	52	52	-	57	-	58	-
RBL and Overall L_{eq}	**55**	**50**	**36**	**58**	**52**	**59**	**56**

Note:

1. Daytime 7:00 am to 6:00 pm, Evening 6:00 pm to 10:00 pm, Night-time 10:00 pm to 7:00 am.
   On Sundays and Public Holidays.
   Daytime 8:00 am to 6:00 pm, Evening 6:00 pm to 10:00 pm, Night-time 10:00 pm to 8:00 am.
2. Daytime: 7:00 am to 10 pm, Night 10:00 pm to 7:00 am

Table 3.4 Summary of noise monitoring results – M2 (36821) dBA

Date	Rating background level 90th percentile $L_{A90(15min)}$			Road traffic noise descriptors			
	Day[1]	Evening[1]	Night[1]	$L_{Aeq(15hr)}$[2]	$L_{Aeq(9hr)}$[2]	$L_{Aeq(1hr)}$ Day[2]	$L_{Aeq(1hr)}$ Night[2]
Monday-29-Nov-21	43	41	27	52	43	54	49
Tuesday-30-Nov-21	43	41	30	53	45	55	50
Wednesday-1-Dec-21	44	41	26	53	44	55	47
Thursday-2-Dec-21	43	43	30	52	49	54	51
Friday-3-Dec-21	39	40	27	53	42	56	46
Saturday-4-Dec-21	43	43	32	52	45	54	49
Sunday-5-Dec-21	43	38	25	52	43	55	47
Monday-6-Dec-21	45	39	30	54	44	55	48
Tuesday-7-Dec-21	42	-	-	51	-	52	-
RBL and Overall L_{eq}	**43**	**41**	**28**	**53**	**45**	**55**	**48**

Note:

1. Daytime 7:00 am to 6:00 pm, Evening 6:00 pm to 10:00 pm, Night-time 10:00 pm to 7:00 am.
   On Sundays and Public Holidays.
   Daytime 8:00 am to 6:00 pm, Evening 6:00 pm to 10:00 pm, Night-time 10:00 pm to 8:00 am.
2. Daytime: 7:00 am to 10 pm, Night 10:00 pm to 7:00 am

Table 3.5 Summary of noise monitoring results – M3 (45746) dBA

Date	Rating background level 90th percentile $L_{A90(15min)}$			Road traffic noise descriptors			
	Day[1]	Evening[1]	Night[1]	$L_{Aeq(15hr)}$[2]	$L_{Aeq(9hr)}$[2]	$L_{Aeq(1hr)}$ Day[2]	$L_{Aeq(1hr)}$ Night[2]
Monday-29-Nov-21	66	53	31	71	65	72	68
Tuesday-30-Nov-21	66	54	32	73	66	74	69
Wednesday-1-Dec-21	66	55	32	71	66	72	69
Thursday-2-Dec-21	65	57	32	71	65	72	68
Friday-3-Dec-21	65	55	33	71	65	72	68
Saturday-4-Dec-21	62	54	36	72	62	71	65
Sunday-5-Dec-21	59	49	29	70	65	72	68
Monday-6-Dec-21	64	49	31	71	65	72	68
Tuesday-7-Dec-21	66	-	-	72	-	73	-
RBL and Overall L_{eq}	**65**	**54**	**32**	**71**	**65**	**72**	**68**

Note:

1. Daytime 7:00 am to 6:00 pm, Evening 6:00 pm to 10:00 pm, Night-time 10:00 pm to 7:00 am.
   On Sundays and Public Holidays.
   Daytime 8:00 am to 6:00 pm, Evening 6:00 pm to 10:00 pm, Night-time 10:00 pm to 8:00 am.
2. Daytime: 7:00 am to 10 pm, Night 10:00 pm to 7:00 am

Table 3.6 Summary of noise monitoring results – M4 (36820) dBA

Date	Rating background level 90th percentile $L_{A90(15min)}$			Road traffic noise descriptors			
	Day[1]	Evening[1]	Night[1]	$L_{Aeq(15hr)}$[2]	$L_{Aeq(9hr)}$[2]	$L_{Aeq(1hr)}$ Day[2]	$L_{Aeq(1hr)}$ Night[2]
Monday-29-Nov-21	48	48	36	54	51	56	53
Tuesday-30-Nov-21	48	45	34	53	47	55	50
Wednesday-1-Dec-21	48	48	40	56	49	58	51
Thursday-2-Dec-21	48	49	38	58	47	57	50
Friday-3-Dec-21	45	47	37	55	45	58	48
Saturday-4-Dec-21	48	47	39	67	46	69	48
Sunday-5-Dec-21	47	43	35	52	46	55	49
Monday-6-Dec-21	48	43	34	53	46	55	50
Tuesday-7-Dec-21	46	-	-	51	-	53	-
RBL and Overall L_{eq}	**48**	**47**	**37**	**59**	**48**	**56**	**50**

Note:

1. Daytime 7:00 am to 6:00 pm, Evening 6:00 pm to 10:00 pm, Night-time 10:00 pm to 7:00 am.
   On Sundays and Public Holidays.
   Daytime 8:00 am to 6:00 pm, Evening 6:00 pm to 10:00 pm, Night-time 10:00 pm to 8:00 am.
2. Daytime: 7:00 am to 10 pm, Night 10:00 pm to 7:00 am

A summary of noise monitoring results at each location is presented in Table 3.7 below.

Table 3.7 Summary of noise monitoring results

Location	Background noise descriptors $L_{A90(Period)}$			Ambient noise descriptors $L_{Aeq(period)}$		
	Day	Evening	Night	Day	Evening	Night
M1 – 13 Leroy Close	55	50	36	66	57	52
M2 – 16 Higham Road	43	41	28	53	50	45
M3 – 117 Hillsborough Road	65	54	32	72	69	65
M4 – 7 Coolum Place	48	47	37	60	55	48

LEGEND

- Study area
- Cadastre
- Sensitive receivers
- NCA1

Sheet layout

Paper Size ISO A4

0 20 40 60 80 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

Modelled noise sensitive receivers and noise monitoring locations

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

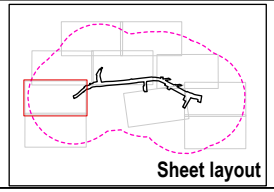
FIGURE 3.1

\\ghdnet\ghd\AU\Newcastle\Projects\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 04 Apr 2023 - 14:45

Data source: Metromap Tile Service: - Imagery (Date extracted: 4/04/2023); Roads, Cadastre - LPI, 2017; Created by: dschmidt

LEGEND

- Study area
- Construction footprint
- Compound
- Cadastre
- Sensitive receivers
- NCA1



Paper Size ISO A4

0 20 40 60 80 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

Modelled noise sensitive receivers and noise monitoring locations

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

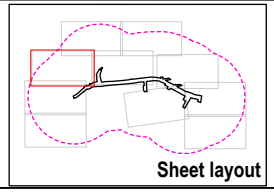
FIGURE 3.1

\\ghdnet\ghd\AU\Newcastle\Projects\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 04 Apr 2023 - 14:45

Data source: Metromap Tile Service: - Imagery (Date extracted: 4/04/2023); Roads, Cadastre - LPI, 2017; Created by: dschmidt

LEGEND

- Study area
- Construction footprint
- Compound
- Cadastre
- Sensitive receivers
- NCA1



Paper Size ISO A4

0 20 40 60 80 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

Modelled noise sensitive receivers and noise monitoring locations

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

FIGURE 3.1

\\ghdnet\ghd\AU\Newcastle\Projects\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 04 Apr 2023 - 14:45

Data source: Metromap Tile Service: - Imagery (Date extracted: 4/04/2023); Roads, Cadastre - LPI, 2017; Created by: dschmidt

LEGEND

- Study area
- Cadastre
- Sensitive receivers
- NCA1

Sheet layout

Paper Size ISO A4

0 20 40 60 80 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

Modelled noise sensitive receivers and noise monitoring locations

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

FIGURE 3.1

\\ghdnet\ghd\AU\Newcastle\Projects\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 04 Apr 2023 - 14:46

Data source: Metromap Tile Service: - Imagery (Date extracted: 4/04/2023); Roads, Cadastre - LPI, 2017; Created by: dschmidt

LEGEND

- Study area
- Construction footprint
- Cadastre
- Sensitive receivers
- Monitoring locations
- NCA1

Sheet layout

Paper Size ISO A4

0 20 40 60 80 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

Modelled noise sensitive receivers and noise monitoring locations

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

FIGURE 3.1

\\ghdnet\ghd\AU\Newcastle\Projects\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 04 Apr 2023 - 14:46

Data source: Metromap Tile Service: - Imagery (Date extracted: 4/04/2023); Roads, Cadastre - LPI, 2017; Created by: dschmidt

LEGEND

- Study area
- Cadastre
- Sensitive receivers
- NCA1
- NCA2

Sheet layout

Paper Size ISO A4

0 20 40 60 80 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

Modelled noise sensitive receivers and noise monitoring locations

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

FIGURE 3.1

\\ghdnet\ghd\AU\Newcastle\Projects\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 04 Apr 2023 - 14:46

Data source: Metromap Tile Service: - Imagery (Date extracted: 4/04/2023); Roads, Cadastre - LPI, 2017; Created by: dschmidt

LEGEND

- Study area
- Construction footprint
- Cadastre
- Sensitive receivers
- Monitoring locations
- NCA1

Sheet layout

Paper Size ISO A4

0 20 40 60 80 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

Modelled noise sensitive receivers and noise monitoring locations

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

FIGURE 3.1

\\ghdnet\ghd\AU\Newcastle\Projects\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 04 Apr 2023 - 14:46

Data source: Metromap Tile Service: - Imagery (Date extracted: 4/04/2023); Roads, Cadastre - LPI, 2017; Created by: dschmidt

LEGEND

- Study area
- Construction footprint
- Compound
- Cadastre
- Sensitive receivers
- NCA1
- NCA2

Sheet layout

Paper Size ISO A4

0 20 40 60 80 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

Modelled noise sensitive receivers and noise monitoring locations

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

FIGURE 3.1

\\ghdnet\ghd\AU\Newcastle\Projects\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 04 Apr 2023 - 14:47

Data source: Metromap Tile Service: - Imagery (Date extracted: 4/04/2023); Roads, Cadastre - LPI, 2017; Created by: dschmidt

LEGEND

- Study area
- Construction footprint
- Compound
- Cadastre
- Sensitive receivers
- Monitoring locations

Sheet layout

Paper Size ISO A4

0 20 40 60 80 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

Modelled noise sensitive receivers and noise monitoring locations

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

FIGURE 3.1

\\ghdnet\ghd\AU\Newcastle\Projects\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 04 Apr 2023 - 14:47

Data source: Metromap Tile Service: - Imagery (Date extracted: 4/04/2023); Roads, Cadastre - LPI, 2017; Created by: dschmidt

LEGEND

- Study area
- Cadastre
- Sensitive receivers
- NCA2

Sheet layout

Paper Size ISO A4

0 20 40 60 80 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

Modelled noise sensitive receivers and noise monitoring locations

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

FIGURE 3.1

\\ghdnet\ghd\AU\Newcastle\Projects\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 04 Apr 2023 - 14:47

Data source: Metromap Tile Service: - Imagery (Date extracted: 4/04/2023); Roads, Cadastre - LPI, 2017; Created by: dschmidt

3.3 Traffic monitoring

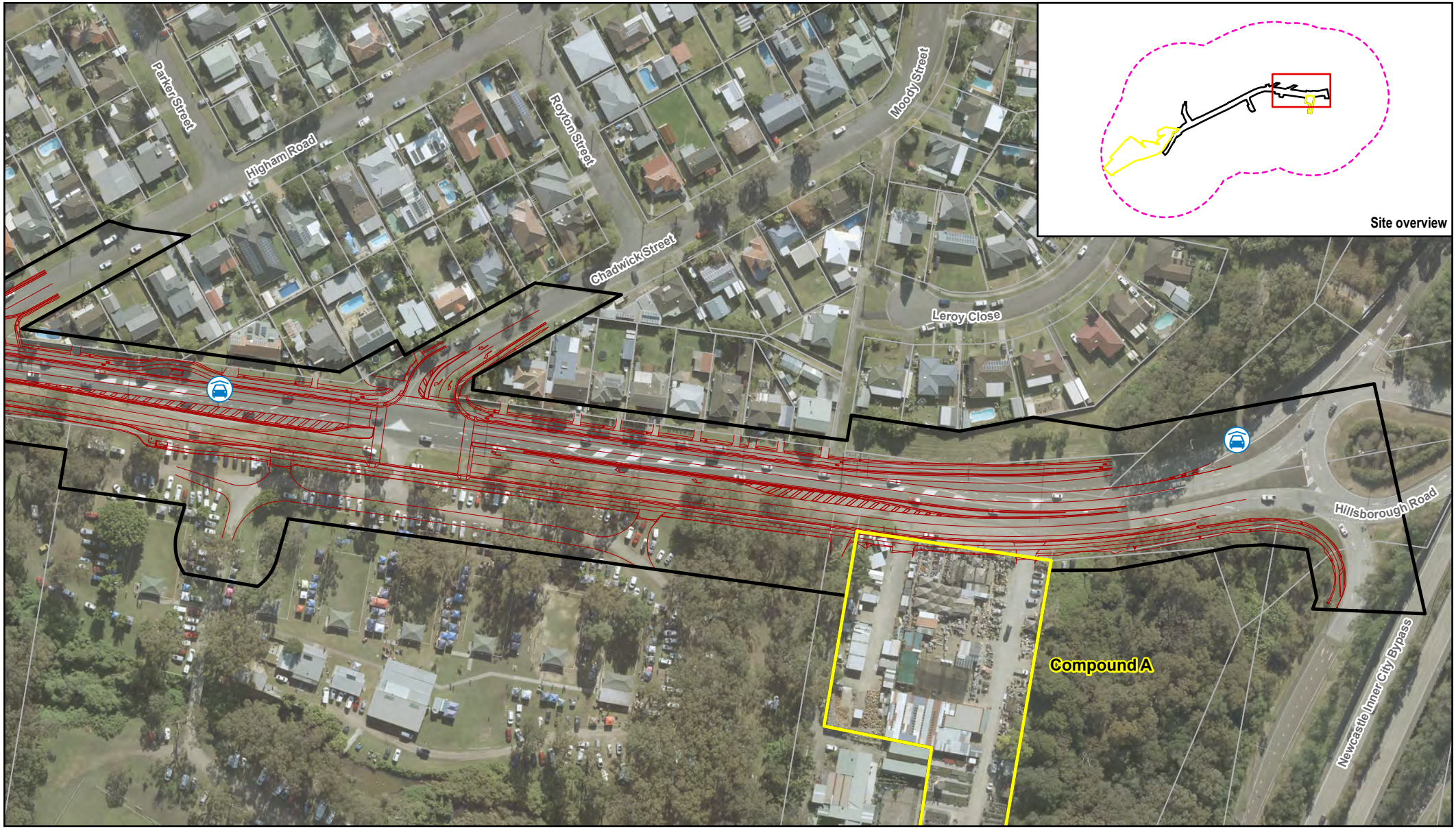
Road traffic volumes were logged using tube counters between Tuesday 30 November and Tuesday 7 December 2021. Tube count data were used to indicate speeds and heavy vehicle percentages.

Tube counts were placed by Matrix Traffic Consultants at the following locations:

– ATC1: Hillsborough Road – between Chadwick Street and Higham Road
– ATC2: Newcastle Inner City Bypass (NICB) Northbound On Ramp

Figure 3.2 shows the locations of the traffic counters. The traffic volumes applied in the 2021 noise validation model are presented in Table 3.8. These volumes, speeds and heavy vehicle percentages are used to validate the noise model against the 2021 noise logging undertaken concurrently with the traffic volume counts. These concurrent traffic counts recognise and account for potential variations in short term traffic flows compared to annual averages.

Traffic volumes for all surrounding roads including the exit and entry ramps were obtained from Arcadis and were used for the baseline and forecast year noise models, outlined in Table 3.9. Traffic volumes for the NICB were obtained from the Transport for New South Wales Traffic Volume viewer.



LEGEND

- Study area
- Construction footprint
- Compound
- Design
- Traffic counter
- Cadastre

Paper Size ISO A4

0 10 20 30 40

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

Traffic count locations

FIGURE 3.2

G:\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 30 Nov 2022 - 12:43

Data source: Metromap Tile Service: - Imagery (Date extracted: 30/11/2022); Roads, Cadastre - LPI, 2017; Created by: tmorton

Table 3.8 2021 traffic volumes (GHD traffic survey for model validation)

Location	Location description	Direction	Average weekday traffic volumes											
			24 hour				Day time (15 hour)				Night time (9 hour)			
			Total	LV	HV	Average speed (km/h)	Total	LV	HV	Average speed (km/h)	Total	LV	HV	Average speed (km/h)
Site 1	Hillsborough Road	Eastbound	18110	17355	755	58	16442	15774	668	58	1668	1581	87	58
		Westbound	17715	16244	1471	62	16158	14853	1305	62	1557	1391	166	62
		Combined	35826	33599	2226	61	32601	30627	1974	61	3225	2972	253	61
Site 2	NICB Northbound On Ramp	Northbound	8141	7446	695	79	7280	6674	606	79	861	772	89	79

Table 3.9 2021 traffic volumes base year (traffic model) (source: Arcadis)

ID	Location	Time of Day	All Vehicle	Light vehicles Austroads class 1 & 2	Heavy 1 Austroads class 3	Heavy 2 Austroads class 4&5	Heavy 3 Austroads class 6-8	Heavy 4 Austroads class 9	Heavy 5 Austroads class 10
1	Hillsborough Road – West of Newcastle Inner City Bypass	Daytime – 15hr	28,390	26,680	1,410	209	64	22	4
		Night-time – 9hr	2,809	2,589	168	39	9	3	1
		Daily -24hr	31,198	29,270	1,578	247	72	25	5
2	Hillsborough Road – West of Newcastle Inner City Bypass	Daytime – 15hr	32,948	30,964	1,637	242	74	26	4
		Night-time – 9hr	3,260	3,005	195	45	10	3	1
		Daily -24hr	36,207	33,969	1,832	287	84	29	6
3	Hillsborough Road – East of Newcastle Inner City Bypass	Daytime – 15hr	22,236	20,897	1,105	163	50	17	3
		Night-time – 9hr	2,200	2,028	132	30	7	2	1
		Daily -24hr	24,436	22,925	1,236	194	57	20	4
4	Crocket Street	Daytime – 15hr	7,888	7,809	79	0	0	0	0
		Night-time – 9hr	780	780	0	0	0	0	0
		Daily -24hr	8,669	8,590	79	0	0	0	0
5	Higham Road	Daytime – 15hr	560	560	0	0	0	0	0
		Night-time – 9hr	55	55	0	0	0	0	0
		Daily -24hr	616	616	0	0	0	0	0
6	Chadwick Street	Daytime – 15hr	1,463	1,463	0	0	0	0	0
		Night-time – 9hr	145	145	0	0	0	0	0
		Daily -24hr	1,608	1,608	0	0	0	0	0
7	Barker Avenue	Daytime – 15hr	667	667	0	0	0	0	0
		Night-time – 9hr	66	66	0	0	0	0	0
		Daily -24hr	733	733	0	0	0	0	0
8	Northbound on ramp	Daytime – 15hr	6,896	6,434	295	130	25	11	1
		Night-time – 9hr	816	741	55	16	3	1	0
		Daily -24hr	7,712	7,174	350	146	29	11	1
9	Southbound off ramp	Daytime – 15hr	6,610	6,167	283	125	24	10	1
		Night-time – 9hr	782	710	53	15	3	1	0
		Daily -24hr	7,392	6,877	336	140	27	11	1
10	Northbound off ramp	Daytime – 15hr	3,769	3,516	161	71	14	6	1
		Night-time – 9hr	446	405	30	9	2	0	0
		Daily -24hr	4,215	3,921	191	80	16	6	1
11	Southbound on ramp	Daytime – 15hr	4,699	4,384	201	89	17	7	1
		Night-time – 9hr	556	505	38	11	2	0	0
		Daily -24hr	5,255	4,889	239	99	19	8	1

We note this survey, undertaken to coincide with noise monitoring, shows traffic volumes around 10% higher than that recorded for Traffic and Transport Assessment. These observations are considered generally consistent and reflective of daily variations in traffic volumes.

4. Compliance Criteria

4.1 Construction noise criteria

4.1.1 Proposed construction hours

Construction noise management levels for the proposal are based on the *Interim Construction Noise Guideline* (ICNG) (DECC, 2009) and the *Construction Noise and Vibration Strategy* (CNVS) (TfNSW, 2020).

All construction works are expected to be conducted during ICNG recommended standard construction hours. The work periods defined in the CNVS for construction activities are provided in Table 4.1.

Table 4.1 TfNSW construction hours

Hour	12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM
Mon																								
Tue																								
Wed																								
Thu																								
Fri																								
Sat																								
Sun																								
Public Holiday																								

OOHW Period 2

Standard Hours

OOHW Period 1

Day

OOHW Period 1

Evening

OOHW Period 2

OOHW

4.1.2 Construction noise management levels

Construction noise management levels for residential premises and other sensitive land uses are provided in the CNVS and are based on the ICNG.

4.1.2.1 Residential noise objectives

The residential noise criteria for general construction activities are provided in Table 4.2.

Table 4.2 Airborne noise objectives at sensitive land uses (residential)

Time of day	Noise Management Level $L_{Aeq\ (15\ minute)}$	How to apply
Recommended standard hours: Monday to Friday 7 am to 6 pm Saturday 8 am to 1 pm No work on Sundays or public holidays	Noise affected RBL + 10 dBA	The noise affected level represents the point above which there may be some community reaction to noise. Where the predicted or measured $L_{Aeq\ (15\ minute)}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to minimise noise. The proponent should also inform all potentially impacted residents and stakeholders of the nature of work to be carried out, the expected noise levels and duration, as well as contact details.
	Highly noise affected 75 dBA	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 proponent should consider very carefully if there is any other feasible and reasonable way to reduce noise to below this level. If no quieter work method is feasible and reasonable, and the works proceed, the proponent should communicate with the impacted residents by clearly explaining the duration and noise levels of the works, and by describing any respite periods that will be provided.
Outside recommended standard hours:	Noise affected RBL + 5 dBA	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 the noise is more than 5 dBA above the noise affected level, the proponent should consult with the community.

The CNVS acknowledges that the following activities can be justified to be conducted outside the recommended construction hours:

– Any works which do not cause noise emission to be more than 5 dBA higher than the Rating Background Level (RBL) at any nearby residential property and/or do not exceed the noise objective of other noise sensitive receivers, and subject to approval under the OOHW Protocol (OOHWP).
– Out of hours work identified and assessed in the EIA or the approved out of hours work protocol (OOHWP).
– The delivery of plant, equipment and materials which is required outside these as hours as requested by police or other authorities for safety reasons and with suitable notification to stakeholders as agreed by the Senior Manager Environment (SME) or Associate Director Environmental Management (ADEM)/ Department of Planning and Environment (whichever is applicable).

– Emergency work to avoid loss of life, damage to external property, damage to utilities and infrastructure, prevent immediate harm to environment, prevent contamination of land or damage to a heritage (indigenous or non-indigenous) item.
– Any other work as agreed by the SME/Department of Planning & Environment and considered essential to the proposal, or as approved by EPA (where an EPL is in effect) subject to:
  - Works which include works with special audible characteristics including sheet piling, pile driving, rock hammering/breaking must be agreed to by the Associate Director Environmental Management / Department of Planning & Environment (whichever is applicable) or as approved by EPA (where relevant to the issuing of an EPL).
  - Notification of stakeholders no less than 7 days prior to such activities being undertaken or other period as agreed to by the Director Community Engagement (or nominated delegate) or as approved by EPA (where relevant to the issuing of an EPL). The notification shall include likely times and duration works.
  - Implementation of the Additional Management Measure: Duration Reduction for extended hours request for the sole purpose of reducing the duration of construction on public infrastructure projects.

4.1.2.2 Other sensitive receiver noise objectives

Internal noise criteria are provided for non-residential sensitive receivers in Table 4.3. These criteria apply when the land is in use. External noise levels have been determined by assuming a 10 dBA reduction through a partially open window.

Table 4.3 Airborne noise objectives at sensitive land uses (other than residential)

Type of occupancy / activity	Management level, L_{Aeq} dBA (applies when land use is being utilised)	
	Internal	External
Classrooms at schools and other educational institutions	45	55
Places of worship	45	55
Active recreation (characterised by sporting activities and activities which generate their own noise or focus of participants, making them less sensitive to external noise intrusion).	-	65
Offices, retail outlets	-	70

4.1.3 Proposal specific noise management levels

A summary of the proposal construction noise management levels for each identified residential receiver noise catchment area is provided in Table 4.4. All construction works are expected to be conducted during ICNG recommended standard construction hours however management levels for out of hours work periods have been provided should works be required to be undertaken in those periods.

Table 4.4 Proposal specific residential receiver noise management levels

Residential receiver NCA	Time of day	Management level, dBA
NCA01 M4 – 7 Coolum Place	Recommended standard hours	58
	OOHW – Day	53
	OOHW – Evening	52
	OOHW – Night	41
NCA02 M2 – 16 Higham Road	Recommended standard hours	53
	OOHW – Day	48
	OOHW – Evening	46
	OOHW – Night	35[1]

Notes:

1. Minimum RBL of 30 dBA has been adopted as the measured RBL is below 30 dBA.

4.2 Construction traffic noise criteria

The *Road Noise Policy* (RNP) (DECCW, 2011) provides road traffic noise criteria for residential land uses affected by construction traffic on the public road network.

The *Road Noise Policy application notes* state that any increase in the total noise level at existing residences and other sensitive land uses affected by traffic generation on existing roads should be limited to 2 dBA above current levels. This limit only applies when the noise level without the development is within 2 dBA or exceeds the road traffic noise criterion provided in the *Road Noise Policy*.

This has been used to identify potential impacts as a result of noise produced by construction traffic. If road traffic noise increases as a result of construction works within 2 dBA of current levels, then the objectives of the RNP are considered to be met and no specific mitigation measures would be required.

Where construction traffic increases the existing road traffic noise levels by more than 2 dBA then further assessment against the road traffic noise criteria in Table 4.5 is required.

Table 4.5 Road traffic noise criteria, dBA

Type of development	Day 7 am to 10 pm	Night 10 pm to 7 am
Existing residence affected by additional traffic on freeway/arterial/sub-arterial roads	$L_{Aeq(15\ hour)}$ 60	$L_{Aeq(9\ hour)}$ 55
Existing residence affected by additional traffic on local roads	$L_{Aeq(1\ hour)}$ 55	$L_{Aeq(1\ hour)}$ 50

4.3 Construction vibration criteria

4.3.1 Human comfort vibration objectives

Guidance in relation to acceptable vibration levels for human comfort are provided in EPA's *Assessing Vibration: a technical guideline* (AVTG) (2006). The document is based on the guidelines contained in British Standard *BS 6472-1:1992 Evaluation of human exposure to vibration in buildings (1–80 Hz)*.

Typically, construction works generate ground vibration of an intermittent nature. In accordance with BS 6472-1:1992, intermittent vibration is assessed using the Vibration Dose Value (VDV). Acceptable VDVs, as outlined in *Assessing Vibration: A Technical Guideline*, are listed in Table 4.6. Preferred and maximum values for continuous and impulsive vibration is also outlined in Table 4.7.

There is a low probability of adverse comment or disturbance to building occupants at vibration values below the preferred values. Adverse comment or complaints may be expected if vibration values approach the maximum values. Activities should be designed to meet the preferred values where an area is not already exposed to vibration. Where all feasible and reasonable measures have been applied, values up to the maximum range may be used if they can be justified. For values beyond the maximum value, the proponent should negotiate with the affected community.

Table 4.6 Acceptable vibration dose values for intermittent vibration

Location	Daytime [1] ($m/s^{1.75}$)		Night-time [1] ($m/s^{1.75}$)	
	Preferred value	Maximum value	Preferred value	Maximum value
Residences	0.20	0.40	0.13	0.26
Offices, schools, educational institutions, and places of worship	0.40	0.80	0.40	0.80
Workshops	0.80	1.60	0.80	1.60

Notes:

1. Daytime is 7 am to 10 pm and night-time is 10 pm to 7 am.

Table 4.7 Preferred and maximum weighted RMS values for continuous and impulsive vibration acceleration (m/s2) 1-80 Hz (Table 2.2 of Assessing Vibration)

Location	Assessment period	Continuous vibration acceleration (m/s^2) – z-axis		Impulsive vibration acceleration (m/s^2) – z-axis	
		Preferred value	Maximum value	Preferred value	Maximum value
Residences	Day (7 am to 10 pm)	0.01	0.02	0.30	0.60
	Night (10 pm to 7 am)	0.007	0.014	0.10	0.20

While the assessment of response to vibration in BS 6472-1:1992 is based on VDV and weighted acceleration, for construction-related vibration, it is considered more appropriate to provide guidance in terms of Peak Particle Velocity (PPV), since this parameter is more likely to be routinely measured based on the more usual concern over potential building damage.

Humans are capable of detecting vibration at levels well below those that risk causing damage to a building. The degrees of perception for humans are suggested by the vibration level categories given in British Standard *BS 5228-2:2009 Code of practice for noise and vibration on construction and open sites – Part 2: Vibration* as listed in Table 4.8.

Table 4.8 Guidance on the effects of vibration levels

Approximate vibration level	Degree of perception
0.14 mm/s	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.
0.30 mm/s	Vibration might be just perceptible in residential environments.
1.00 mm/s	It is likely that vibration of this level in residential environments will cause complaint but can be tolerated if prior warning and explanation has been given to residents.
10.00 mm/s	Vibration is likely to be intolerable for any more than a very brief exposure to this level.

4.3.2 Structural damage due to vibration

Currently, there is no Australian Standard that sets criteria for the assessment of building damage caused by vibration. Australian Standard AS 2187: Part 2-2006 *Explosives – Storage and Use – Part 2: Use of Explosives* contains the most relevant vibration damage objectives and recommends the frequency dependent guidelines values and assessment methods given in British Standard BS 7385-2:1993 *Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground-borne vibration for building damage criteria* as they "are applicable to Australian conditions".

The vibration levels adopted are related to transient vibration which does not give rise to resonant responses in structures and low-rise buildings. Dynamic loading caused by continuous vibration (e.g. vibratory piling, rock breaking, rock hammering) may give rise to dynamic magnification due to resonance. In these cases, BS 7385 recommends a reduction of the transient vibration levels.

The standard states that the guide values relate predominately to transient vibration which does not give rise to resonant responses in structures, and to low rise buildings. Where the dynamic loading caused by continuous vibration give rise to dynamic magnification due to resonance, especially at the lower frequencies, where lower guide values apply then the guide values may need to be reduced by up to 50%. A conservative level of continuous "minimal risk of cosmetic damage" criteria has been adopted and is presented in Table 4.9.

Table 4.9 Transient vibration guide values–minimal risk of cosmetic damage

Line	Type of Building	Peak Component Particle Velocity in Frequency Range of Predominant Pulse	
		4 Hz to 15 Hz	15 Hz and above
1	Reinforced or framed structures Industrial and heavy commercial buildings	25 mm/s at 4 Hz and above	
2	Unreinforced or light framed structures residential or light commercial type buildings	7.5 mm/s at 4 Hz increasing to 10 mm/s at 15 Hz	10 mm/s at 15 Hz increasing to 25 mm/s at 40 Hz and above

The CNVS (TfNSW 2019) references German Standard DIN 4150-3:2016 *Structural Vibration – Part 3: Effects of vibration on structures for the assessment of damage to structures that are of intrinsic value*. The DIN 4150-3 criteria are presented in Table 4.10 below.

Table 4.10 Guideline values for short term vibration on structures – DIN 4150-3

Line	Type of structure	Guideline values for velocity, vi(t) [1] [mm/s]		
		1 Hz to 10 Hz	10 Hz to 50 Hz	50 Hz to 100 Hz
1	Buildings used for commercial purposes, industrial buildings, and buildings of similar design	20	20-40	40-50
2	Dwellings and buildings of similar design and/or occupancy	5	5-15	15-20
3	Structures that, because of their particular sensitivity to vibration, cannot be classified under lines 1 and 2 and are of great intrinsic value (for example listed buildings under preservation order)	3	3-8	8-10

Source: *German Standard DIN 4150-3: 2016-02 Structural Vibration – Part 3: Effects of vibration on structures*

Notes:

1. The term v_i refers to vibration levels in any of the x, y or z axes
2. At frequencies above 100 Hz the values given in this column may be used as minimum values

For this NVIA, the BS criteria in Table 4.9 has been adopted for structural damage to all buildings and the DIN criteria in Table 4.10 has been adopted for structural to heritage buildings.

4.3.3 Vibration damage to utilities

The British Standard BS 5228-2:2009 *Code of Practice for noise and vibration control on construction and open sites* and the German Standard 4150-3: 2016-12 *Structural Vibration – Part 3: Effects of vibration on structures*, provide information on the vulnerability of ground-related services and structures to vibration. Table 4.11 and Table 4.12 present the vibration guideline values in the British Standard (BS) and German Standard (DIN), respectively.

For this assessment, the BS criteria (the more conservative criteria) has been adopted for damage to underground services due to vibration and can be summarised as 30 mm/s for intermittent or transient vibrations (excavators, pile driving, trucks etc.) and 15 mm/s for continuous vibrations (compactors and rollers).

Table 4.11 Vibration guide values for underground services – BS 5228

Type of Utility	Guideline maximum values for velocity measured on the pipe (mm/s)	
	Intermittent or transient vibrations	Continuous vibrations
Underground services	30	15

Table 4.12 Guideline values for vibration on buried pipework – DIN 4150-3

Line	Type of Utility	Guideline values for velocity measured on the pipe (mm/s)
1	Steel (including welded pipes)	100
2	Clay, concrete, reinforced concrete, pre-stressed concrete, metal (with and without flange)	80
3	Masonry, plastic	50

The criteria shown in Table 4.13 for underground assets has been developed based on discussions GHD has had with underground asset owners.

Table 4.13 Guideline values for underground assets

Type of Utility	Guideline values for velocity measured on the pipe (mm/s)
Telstra (and other comms agencies by proxy)	50[1]
Energex (other electricity providers by proxy)	25
APA (gas pipelines)	20[2]

Notes:

1. Telstra generally anticipate that when construction activities comply with a minimum vibration limit / peak particle velocity of 50 mm/s there would be no damage or disruption to telecommunication assets (in particular, light transmitting in the fibre networks).
2. Vibration levels shall be monitored during the installation of the pile/pile sleeve if installed by way of a vibration driver or by impact hammer. The ground vibration at the pipeline shall be monitored and the vibration levels controlled to less than 20 mm/s. Works shall cease if levels exceed 20 mm/s and new method of installation sought.

4.4 Road traffic noise criteria

4.4.1 Road Noise Policy

The *Road Noise Policy* (RNP) (DECCW, 2011) outlines the methodology for the assessment of road traffic noise from public roads on noise sensitive receivers. The RNP criteria are target road traffic noise levels that should aim to be achieved 10 years after proposal opening. For residential receivers the RNP criteria are applicable at one metre from the most affected building façade.

4.4.1.1 Study area

The assessment study area has been selected in accordance with the guidance provided in the RNP and *the Noise Criteria Guideline* (NCG) (Roads and Maritime, 2015).

All sensitive receiver buildings and open areas located within 600 m from the centreline of the outermost lane of traffic on each side of the road have been included in this assessment. This noise study area is shown in Figure 3.1.

4.4.1.2 Assessment timeframe

Road traffic noise levels are typically assessed at both the opening year of the proposal and ten years after the proposal road opening. For this assessment, the design year has been assumed to be 2037. Noise levels are determined for the following scenarios:

– Year 2027 'no build option' (traffic flow on the existing alignment for the opening year).
– Year 2037 'no build option' (traffic flow on the existing alignment 10 years after opening).
– Year 2027 'build option' (traffic flow on the constructed alignment for the opening year).
– Year 2037 'build option' (traffic flow on the constructed alignment 10 years after opening).

4.4.1.3 Road functional class and type

The RNP criteria also considers road type, whether a road is existing, a redevelopment or a new road. Road types and functional classes are presented below in Table 4.14.

Table 4.14 Road functional class and type

Road name	Road Functional class / category	Type
Hillsborough Road	Sub-arterial	Redeveloped[1]

Note 1 – This project is defined as redeveloped as it involves a duplication of a carriageway without substantial realignment of the existing road with duplicated road located within six times existing total lane width.

4.4.1.4 Residential receivers

Residential receiver noise criteria are presented in Table 4.15.

Table 4.15 Road traffic noise criteria for existing residential land uses

Road category	Type of proposal / land use	Assessment criteria - dBA	
		Day (7 am to 10 pm)	Night (10 pm to 7 am)
Freeway / arterial / sub-arterial roads	2. Existing residences affected by noise from redevelopment of existing freeway/arterial/sub-arterial roads.	$L_{Aeq\ (15hr)}$ 60 (external)	$L_{Aeq\ (9hr)}$ 55 (external)

4.4.1.5 Non-residential receivers

Non-residential receiver noise criteria are presented in Table 4.16.

Table 4.16 Road traffic noise criteria for non-residential land uses

Existing sensitive land use	Assessment criteria - dBA		Additional considerations
	Day (7 am to 10 pm)	Night (10 pm to 7 am)	
1. School classrooms	$L_{Aeq\ (1hr)}$ 40 (internal) When in use	-	In the case of buildings used for education or health care, noise level criteria for spaces other than classrooms and wards may be obtained by interpolation from the 'maximum' levels shown in Australian/New Zealand Standard 2107:2000 Acoustics – Recommended design sound levels and reverberation times for building interiors.

Existing sensitive land use	Assessment criteria - dBA		Additional considerations
	Day (7 am to 10 pm)	Night (10 pm to 7 am)	
2. Places of worship	$L_{Aeq\ (1hr)}$ 40 (internal) When in use	$L_{Aeq\ (1hr)}$ 40 (internal) When in use	The criteria are internal. Areas outside the place of worship, such as a churchyard or cemetery may also be a place of worship. Compliance with internal criteria inside the church may be sufficient; however for external areas passive recreation criteria (see item 5) may also be applied.
3. Open space (active use)	$L_{Aeq\ (15hr)}$ 60 (external) When in use	-	Active recreation is characterised by sporting activities and activities which generate their own noise or focus for participants making them less sensitive to external noise intrusion.
4. Aged care facilities	-	-	Assessed as residential receivers.

4.4.1.6 Sleep disturbance, traffic noise

The RNP provides a literature review for the assessment of sleep arousal due to traffic noise however does not set a sleep disturbance assessment criterion. Sleep disturbance impacts are likely to be dependent on the following:

– Maximum noise level of an event
– Number of occurrences
– Duration of the event
– Level above background or ambient noise levels

For continuous rather than intermittent traffic flow, the *Environmental Noise Management Manual* (RTA,2001) recommends L_{Amax} noise pass-by events should not exceed $L_{Aeq\ (1hr)}$ noise levels by more than 15 dBA. The Environmental Noise Management Manual (RTA, 2001) advises that maximum noise levels can be used as a tool to prioritise and rank mitigation strategies but should not be applied as a decisive criterion in itself.

At locations where road traffic is continuous rather than intermittent, the $L_{Aeq(9hour)}$ criteria for operational noise assessment should sufficiently account for sleep disturbance impacts. However, where the emergence of L_{Amax} over the ambient $L_{Aeq(1hr)}$ is equal to or greater than 15 dBA, the $L_{Aeq(9hour)}$ criteria may not sufficiently account for sleep disturbance impacts and a detailed assessment may be required.

The NSW Road Noise Policy (RNP 2011) concludes that:

– Maximum internal noise levels below 50 – 55 dBA 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.

4.4.2 Proposal specific operational noise criteria

A summary of the proposal specific operational criteria is presented in Table 4.17 and Table 4.18.

Table 4.17 Proposal specific operational noise criteria – residential land uses

Road category	Type of proposal / land use	Assessment criteria - dBA	
		Day (7 am to 10 pm)	Night (10 pm to 7 am)
Freeway / arterial / sub-arterial roads	2. Existing residences affected by noise from redevelopment of existing freeway/arterial/sub-arterial roads. 3. Existing residences affected by additional traffic on existing freeways/arterial/sub-arterial roads generated by land use developments.	$L_{Aeq\ (15hr)}$ 60 (external)	$L_{Aeq\ (9hr)}$ 55 (external)

Table 4.18 Proposal specific operational noise criteria – non-residential land uses

Existing sensitive land use	Assessment criteria - dBA		Additional considerations
	Day (7 am to 10 pm)	Night (10 pm to 7 am)	
5. School classrooms	$L_{Aeq\ (1hr)}$ 40 (internal) When in use	-	In the case of buildings used for education or health care, noise level criteria for spaces other than classrooms and wards may be obtained by interpolation from the 'maximum' levels shown in Australian/New Zealand Standard 2107:2000 Acoustics – Recommended design sound levels and reverberation times for building interiors.
6. Open space (active use)	$L_{Aeq\ (15hr)}$ 60 (external) When in use	-	Active recreation is characterised by sporting activities and activities which generate their own noise or focus for participants making them less sensitive to external noise intrusion.
7. Open space (passive use)	$L_{Aeq\ (15hr)}$ 55 (external) When in use	-	Passive recreation is characterised by contemplative activities that generate little noise and where benefits are compromised by external noise intrusion e.g. playing chess, reading.

4.5 Noise Mitigation Guideline (NMG)

The NMG has been adopted for this assessment, as it provides an approach to determine feasible and reasonable noise mitigation for road traffic noise to implement the objectives of the RNP. The NMG provides principles and recommendations that should be considered when assessing whether noise mitigation is feasible and reasonable. These include:

– Noise mitigation should be designed to reduce noise levels to the criteria at qualifying receivers
– Following corridor and road design, residual exceedances of the noise criteria may be addressed at qualifying receivers using, in order of preference (RNP section 3.4.1), quieter road surfaces, barriers and at-property treatments
– Noise barrier evaluation processes must:
  - Give preference to reducing outdoor noise levels and the number of at-property treatments, and
  - Provide efficient barrier heights and extents without disregarding lengths of effective noise barrier in front of eligible groups of receivers
– Noise mitigation shall be evaluated and installed where feasible and reasonable

An overview of the noise mitigation assessment process that is applied following corridor planning and road design is provided in the following section. This section would apply to all receivers that are predicted to have residual exceedances above the NCG criteria to determine whether they qualify for noise mitigation.

4.5.1 Assessment process

The NMG 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 NCG controlling criterion and the noise level increase due to the proposal (i.e. the noise predictions for the Build minus the No Build) is greater than 2 dBA.
– The predicted Build noise level is 5 dBA or more above the criteria (exceeds the cumulative limit) and the receiver is significantly influenced by proposal road noise, regardless of the incremental impact of the proposal.
– Where the cumulative limit does not apply (i.e. most of the noise causing the cumulative limit to be exceeded comes from a road that is not assessed as part of the proposal), if the noise level contribution from the road proposal is acute (daytime $L_{Aeq(15\ hour)}$ 65 dB or higher, or night-time $L_{Aeq(9\ hour)}$ 60 dB or higher) then it qualifies for consideration of noise mitigation even if noise levels are dominated by another road.

The NMG assessment process is presented in Figure 4.1.

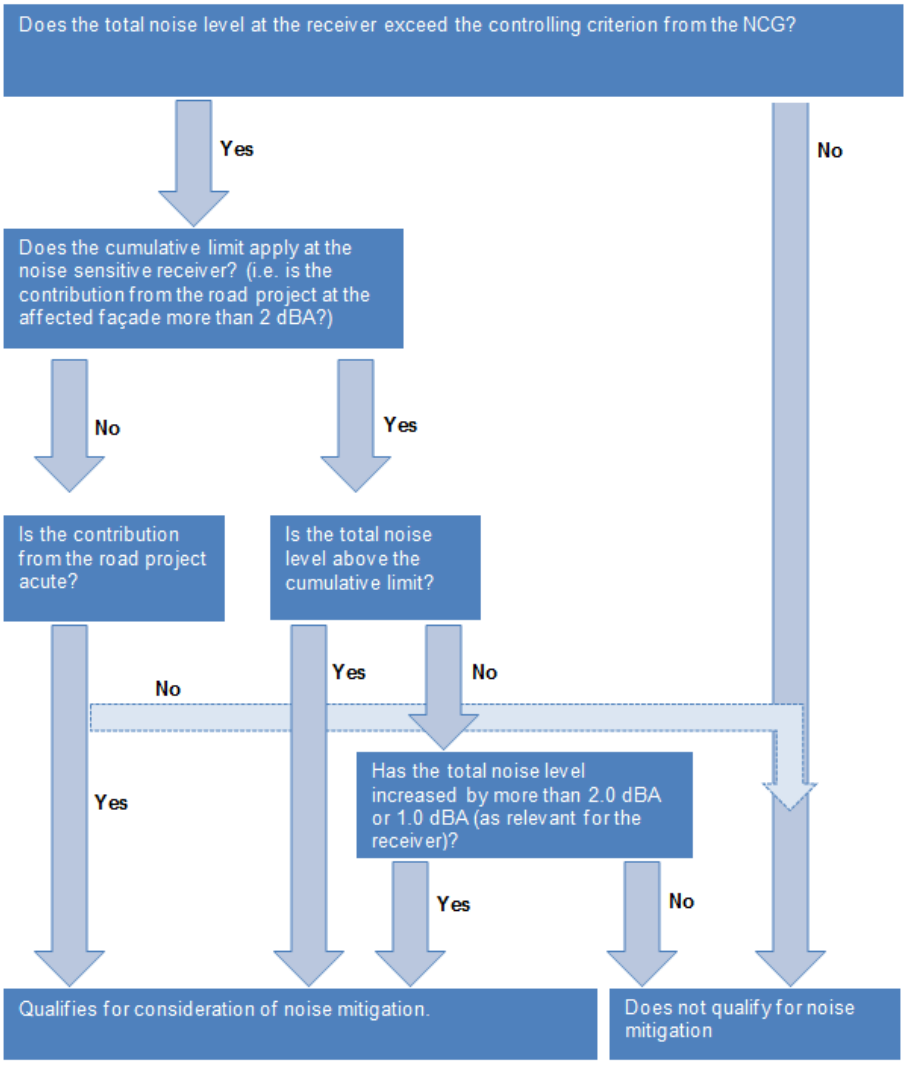


Figure 4.1 Noise mitigation flowchart (derived from the NMG)

4.5.2 Noise mitigation measures

The NMG provides a staged approach to the determination of noise mitigation noting that preference is given to reducing noise during corridor planning and road design rather than through use of specific noise mitigation measures. The staged approach is based on the *Road Noise Policy* (DECCW, 2011) which provides the following options in order of preference for application:

1. **Source controls:** quieter road surfaces
2. **Path control:** noise mounds
3. **Path control:** noise barriers
4. **Receiver controls:** at-property treatments

Section 7 of the NMG provides further details on each mitigation measure. At-property treatments would only be investigated where source and path controls are not considered equitable. The NMG considers source and path controls reasonable where there are four or more closely spaced receivers that would receive a benefit from implementation of these mitigation measures.

Where the possibility of a noise mound or noise barrier arises, further assessment would be required in accordance with Section 8 of the NMG. This section details the barrier assessment process and specifies the number of residences that should receive an adequate noise benefit for a path control measure to be considered reasonable.

5. Construction impact assessment

5.1 Construction noise

5.1.1 Construction methodology

5.1.1.1 Construction staging

Construction scenarios have been created based on construction equipment likely to be operating simultaneously at any given time and located in the location creating the maximum received noise level. Although this is unlikely to occur, the modelling assumes the 'worst-case' scenario to identify where noise impacts could be a concern and require mitigation.

The construction scenarios used for this assessment are outlined in Table 5.1. The scenarios have been developed based on the proposed construction staging provided by TfNSW. All construction works are expected to be conducted during the ICNG recommended standard construction hours however construction stages that have the potential to be undertaken during out of hours work periods have also been modelled to provide guidance to future detailed construction staging should it be required. Clear justification for work outside standard hours, for reasons other than convenicance, is provided.

Table 5.1 Construction Scenarios

Scenario ID	Phase	Area	Std. hours	Out-of-standard hours		
				Day	Eve	Night
CS01	Mobilisation and site establishment	Existing road corridor	✓	✓	✓	✓
CS02	Utility, property, services adjustment	Existing road corridor	✓	✓	✓	✓
CS03	Corridor clearing	Existing road corridor	✓	-	-	-
CS04	Bulk earthworks	Existing road corridor	✓	-	-	-
CS05	Drainage infrastructure	Existing road corridor	✓	-	-	-
CS06	Paving / Asphalting	Existing road corridor	✓	✓	✓	✓
CS07	Concrete Saw	Existing road corridor	✓	-	-	-
CS08	Road furniture installation	Existing road corridor	✓	✓	✓	✓
CS09	Site clean up	Existing road corridor	✓	-	-	-
CS10	Compounds	Whalan's Nursery Crockett and Knight St	✓	-	-	-

5.1.1.2 Noise generating equipment

The proposed construction equipment that would be used during each construction work phase and the activity sound power levels are provided in Table 5.2. Equipment sound power levels are sourced from the following:

– *Construction Noise and Vibration Strategy* (TfNSW, 2020)
– *Construction Noise and Vibration Guideline* (Roads and Maritime, 2016).

Other equipment may be used; however, it is anticipated that they would produce similar net noise emissions when used concurrently with the equipment listed. The activity sound power levels are based on the loudest two items of equipment operating simultaneously. The operation for each equipment has been corrected based on the expected operation during a worst-case 15-minute period.

The activity sound power levels have been used to determine likely worst-case noise impacts during construction and assumes that equipment would operate at full power. In reality, construction equipment would move around the construction footprint which would change the level of noise impact as construction progresses.

Table 5.2 Construction equipment and sound power levels , dBA

Equipment	SWL[1]	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10
Activity sound power level		**101**	**114**	**118**	**115**	**116**	**115**	**118**	**108**	**101**	**114**
Air compressor	109										1
Asphalt truck and sprayer	106						1				
Backhoe	111		1			1					
Compactor	106				1						
Concrete agitator truck	109					4	1				
Crane - Franna	98	1	1			1			1	1	
EWP - scissor lift	98	1							1	1	
Concrete saw	118[2,3]							1			
Excavator - 30 tonne	110		1	1	1	1					1
Grader	113				1						
Generator - diesel/petrol	103		1								1
Front end loader	112										1
Pavement laying machine	114						1				
Roller - smooth drum	107						1				
Roller - large pad foot	109				1						
Roller - Vibratory	114[2]					1					
Jack hammer	108		1								
Line marking plant	108								1		
Truck - dump	110		4	4	8		4				
Truck - vacuum (NDD)	109		1								
Water cart	107				1						
Chainsaw	114[2,3]			1							
Concrete truck	109					1					
Scraper	110				1						
Truck - medium rigid	103	4								4	
Truck - road truck	108	4				4			4	4	4
Truck compressor	75					1					
Tub grinder/mulcher	116			1							
Welding equipment	105										1
Utility vehicle (ute)	103										12

Notes:

1. Equipment sound power levels listed are unadjusted values from the *Construction Noise and Vibration Strategy* (TfNSW, 2020).
2. 5 dBA penalty applied to SWL due to special audible characteristics as per the *Construction Noise and Vibration Strategy* (TfNSW, 2020).
3. SWL adjusted for usage frequency of 5 minutes over total 15 min period.

5.1.2 Construction noise modelling

Noise modelling was undertaken using SoundPLAN 8.2. SoundPLAN is a computer program for the calculation, assessment, and prognosis of noise exposure. SoundPLAN calculates environmental noise propagation according to *ISO 9613-2 'Acoustics – Attenuation of sound during propagation outdoors'*.

The noise model inputs and assumptions for this assessment are provided in Table 5.3.

Table 5.3 Construction noise modelling parameters

Modelling component	Assumption
Noise model	SoundPLAN version 8.2
Prediction algorithm	*ISO 9613 – 2 Acoustics – Attenuation of sound during propagation outdoors*
Terrain	*NSW Spatial Services 1m Digital Elevation Model*
Modelling period	Typical worst case 15-minute period of operation where each item of equipment is running at full power
Meteorology	ISO 9613 considers the presence of a well-developed moderate ground-based temperature inversion, such as commonly occurs on clear, calm nights or 'downwind' conditions which are favourable to sound propagation
Ground absorption coefficient	G = 0 for water. G = 0.75 for land.
Atmospheric absorption	Based on an average temperature of 10°C and an average humidity of 70%
Receiver heights	1.5 m above building ground level (ground floor)
Shielding	Modelled scenarios consider the shielding effect from surrounding buildings and structures on and adjacent to the site
Source locations	Noise sources for each scenario are in some cases modelled at different locations. As such the noise modelling assesses the noise source at multiple locations and takes the maximum L_{Aeq} received noise level.

5.1.3 Predicted construction noise levels

Predicted noise levels for all modelled construction scenarios are presented in Appendix C. Noise contour plots for the worst-case scenario (CS03 – corridor clearing and CS07 – Concrete Saw) are provided in Appendix D.

The predicted levels are based on construction works occurring at the worst-case location relative to each receiver. The actual exceedance during construction would generally be lower and the maximum predicted noise levels would only be experienced for limited periods where equipment is operating at their maximum capacity and located adjacent the impacted receivers. The predicted noise levels would decrease as construction progresses across the alignment.

A summary of the predicted noise level range within each noise catchment area are presented in Table 5.4.

Table 5.4 Predicted no-mitigation construction noise level range, dBA L_{Aeq},15min

Noise catchment area	Construction scenario and noise levels, dBA L_{Aeq},15min									
	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10
NCA01	12-66	25-79	29-83	26-80	25-81	26-80	29-83	19-73	12-66	24-79
NCA02	22-85	35-98	39-102	36-99	35-99	36-99	39-102	29-92	22-85	35-98
Non-residential	24-79	37-92	41-96	38-93	37-92	38-93	41-96	31-86	24-79	29-94

The highest predicted noise levels are located at receivers located in NCA02 during corridor cleaning works and use of concrete saws. These receivers are predicted to experience exceedances of the highly noise affected level of 75 dBA with levels up to 102 dBA predicted.

5.1.4 Construction noise impacts

5.1.4.1 Overview of noise impacts

The magnitude of noise impacts associated with construction is dependent upon a number of factors:

– The intensity and location of construction activities
– The type of equipment used
– Existing background noise levels
– Intervening terrain and structures
– Weather conditions during construction works.

Construction noise and vibration management measures are discussed in Section 5.4.2.

5.1.4.2 Predicted number of exceedances

The predicted number of receivers with exceedances for each construction scenario during standard construction hours are presented in . Each receiver is representative of a single building, with multiple buildings and associated receivers being able to exist on the same address. In the event that out of hours work is undertaken, although not anticipated, the number of exceedances for outside of standard hours are outlined in Table 5.6 through Table 5.8.

Table 5.5 Number of residential exceedances during standard construction hours

Noise catchment area	Construction scenario and number of predicted exceedances									
	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10
NCA01	6	56	118	78	86	78	118	16	6	56
NCA02	49	225	266	243	256	243	266	109	49	225

Table 5.6 Number of residential exceedances outside of standard construction hours (day)

Noise catchment area	Construction scenario and number of predicted exceedances			
	CS01	CS02	CS06	CS08
NCA01	14	128	142	44
NCA02	87	303	360	203

Table 5.7 Number of residential exceedances outside of standard construction hours (evening)

Noise catchment area	Construction scenario and number of predicted exceedances			
	CS01	CS02	CS06	CS08
NCA01	15	142	151	56
NCA02	109	418	523	243

Table 5.8 Number of residential exceedances outside of standard construction hours (night)

Noise catchment area	Construction scenario and number of predicted exceedances			
	CS01	CS02	CS06	CS08
NCA01	118	710	734	293
NCA02	303	793	793	781

Table 5.9 Number of non-residential exceedances

Noise catchment area	Construction scenario and number of predicted exceedances			
	CS01	CS02	CS06	CS08
Commercial	2	12	15	7
Educational	0	0	0	0
Active recreation	0	4	4	0

5.1.4.3 Sleep disturbance

In the event that night works are required, there is high likelihood that sleep disturbance impacts will occur in close proximity to the construction works. The CNVG outlines sleep disturbance distances for operation of individual plant items as well as typical construction scenarios. Tables E.1 and E.2 of the CNVG are duplicated below. Sleep disturbance impacts will need to be managed using the standard mitigation measures outlined in Table 5.19 as well as the additional mitigation measures outlined Table 5.20 which are detailed in the CNVG.

Table 5.10 Sleep disturbance distance for the operation of individual plant items (Table E.1 of CNVG)

Plant Item	Affected Distance (m)	
	Open window	
	L_{Amax} 65 dB(A) external	
	Rural	Urban
Power generator / Concrete pump	50	55
Vibratory roller / Concrete truck	95	105
Chainsaw / CMI SF400 Paver	120	135
Jack hammer / Bored piling rig	175	200
Concrete saw / Asphalt profiler	160	185
CAT D10	235	280
Airtrack drill / Diamond grinding	270	335

Table 5.11 Sleep disturbance distance for construction scenarios (Table E.2 of CNVG)

Plant Item	Affected Distance (m)	
	Open window	
	L_{Amax} 65 dB(A) external	
	Rural	Urban
Site establishment / utility, property, service adjustment / drainage infrastructure / compound operation / road furniture installation	85	95
Compound site establishment	115	130
Re-surfacing works	155	180
Structural demolition / crushing plant / bridge works	170	200
Corridor cleaning / bulk earthworks / local road works	230	280
Retaining walls / noise walls / paving / asphalting	270	330

5.1.4.4 Discussion on predicted impacts

The construction scenarios with the greatest predicted impacts are scenario three and seven, which involve the clearing of vegetation to widen the road corridor and using concrete saws. Construction equipment expected to be used includes a petrol chainsaw, 30-ton excavator, tub grinder, dump trucks and concrete saws. The equipment is modelled to produce an adjusted sound power level of 118 dB and a total of 418 residential exceedances of NMLs are expected.

The detailed construction noise results presented in Appendix C indicate that several receivers are predicted to exceed the highly noise affected level of 75 dBA during all construction scenarios modelled. These receivers are primarily those located on or close to Hillsborough Road.

The predicted noise levels are considered conservative as they assume worst-case operations relative to each receiver. The construction will not be occurring along the entire length of the corridor simultaneously and will instead move along the corridor. This means that the number of exceedances provided for each construction scenario is greater than what would occur during any one time and is best considered a cumulative total value.

There are several non-residential exceedances predicted, located at the CNCC Showgrounds and Hillsborough Public School. Exceedances of up to 6 dBA at the Public School and 8 dBA at the Showground during the vegetation clearing construction and concrete sawing construction scenarios are predicted at these receivers. Given the frequency of use of the showground (as a campground), a community hotline should be set up to inform potential campers of planned works during a specified period as construction noise may impact on campground amenity. As night works are not anticipated, sleep disturbance impacts as a result of construction are not likely.

5.2 Construction traffic

The RNP recommends that “any increase in the total traffic noise level should be limited to 2 dB above that of the corresponding ‘without construction’ scenario.” Construction would generate heavy vehicle movements associated with the transportation of construction machinery, equipment, and materials to the site. Light vehicle movements would be associated with employees and smaller deliveries.

All construction traffic is expected to access site via the existing road network. To increase the road traffic noise of these roads by 2 dB, traffic would have to increase significantly. The TfNSW Construction and Maintenance Noise Estimator Road Traffic Noise Estimator worksheet has been used to calculate additional vehicles required to achieve a 2 dB increase. This is listed below in Table 5.12.

Table 5.12 Construction traffic recommendations

Road	Existing light vehicles per day	Existing heavy vehicles per day	Additional vehicles required for a 2 dB increase	Change in noise level (dB)
Hillsborough Road – East of NICB	20,897[1]	1,338[1]	10,000 LV + 1,000 HV	+ 2.0
Hillsborough Road – West of NICB	26,680[1]	1,709[1]	12,000 LV + 1,400 HV	+ 2.0

Notes:

1. Sourced from Arcadis traffic data to inform Hillsborough Road Duplication Concept Design and REF 2022.

Although actual construction traffic movements are not known, there is no reasonable possibility that there would be enough additional traffic as a result of the construction activities to exceed the Road Noise Policy recommendation of a maximum of a 2 dB increase to total road traffic noise.

Therefore, construction traffic noise impacts are not anticipated.

5.3 Construction vibration

5.3.1 Vibration prediction

Energy from equipment is transmitted into the ground and transformed into vibration, which attenuates with distance. The magnitude and attenuation of ground vibration is dependent on the following:

- The efficiency of the energy transfer mechanism of the equipment (i.e. impulsive, reciprocating, rolling or rotating equipment)
- The frequency content
- The impact medium stiffness
- The type of wave (surface or body)
- The ground type and topography

The construction vibration assessment is based on methods and information presented in:

- *Environmental Noise Management Manual* (Roads and Traffic Authority 2001)
- *British Standard BS 5228-2:2009 Code of practice for noise and vibration on construction and open sites – Part 2: Vibration*
- *British Standard BS 6472:1992 Evaluation of human exposure to vibration in buildings (1–80 Hz)*
- *Construction Noise and Vibration Strategy ST-157/4.1* (Transport for NSW, 20120)
- *Assessing Vibration: A Technical Guideline* (DEC, 2006)

The assessment of vibration levels from intermittent construction sources is described in *Assessing Vibration: A Technical Guideline* (DEC 2006), which is based on BS 6472:1992. The assessment evaluates vibration dose value, which incorporates the magnitude of vibration and the length of time the source of the vibration operates. For construction, the vibration impact on a receiver can be predicted and compared to the *Assessing Vibration: A Technical Guideline* vibration dose value criteria at various receiver types for day and night periods.

BS 6472:1992 provides a method to calculate the estimated vibration dose value using root-mean-square (r.m.s.) vibration velocity. The estimated vibration dose value (eVDV) is calculated as:

$$eVDV = 0.07 \times V_{rms} \times t^{0.25} \ (m/s^{1.75})$$

Where t= duration of the event.

The eVDV from construction equipment has been estimated, with assumptions discussed in this section.

With regards to frequency the *Assessing Vibration: A Technical Guideline* states the following:

> *'Over the frequency range of 8 to 80 Hz, z-axis velocity requires no frequency weighting in order to determine annoyance or disturbance response (no weighting over frequency range 2–80 Hz for x- and y-axis vibration). At frequencies below 8 Hz, the use of unweighted velocity is more strict than the requirements of BS 6472.'*

Furthermore, to estimate r.m.s. vibration velocity from available PPV values for given plant items, a sinusoidal waveform has been assumed. This PPV is also based on the conservative propagation relationship of $d^{-0.8}$ with typical ranges for this value being $d^{-0.8}$ to $d^{-1.6}$. Considering these assumptions, the assessment of human comfort vibration impacts using eVDV calculated from velocity is conservative in nature.

An additional assumption of operating time of vibration generating equipment is required to calculate the eVDV. The construction methodology is not known to this level of detail at this stage. The nature of the works would typically result in intermittent vibration levels at any given location as equipment moves within the site (e.g. an excavator passing up and down the work area). Therefore, a cumulative duration of one hour for a given plant item during the 15-hour day period has been assumed. The 15-hour day period is as per that provided in the *Assessing Vibration: A Technical Guideline*, where daytime is defined as 7 am to 10 pm and night time is defined as 10 pm to 7 am. No significant vibration generating activities are proposed for the night time period.

The exact details of the construction methodology for the proposal, such as the operating duration of vibration generating equipment, are not yet known. This information would be determined during construction planning. As a result, estimating the vibration dose values from construction sources requires a broad range of assumptions described above. *Assessing Vibration: A Technical Guideline* notes that velocity values can be used as a screening method. In addition, velocity values are widely available for typical construction equipment, and are more likely to be routinely measured in relation to potential building damage. Therefore, PPV is presented alongside VDV as a screening method to assess human comfort impacts from construction vibration, with consideration given to the guidance in BS 5228-2.2009, which provides level categories that relate to human perception of vibration.

5.3.2 Potential impacts of individual equipment

Table 5.13 outlines typical vibration levels for different plant activities sourced from the *Environmental Noise Management Manual* (RTA 2001), *British Standard BS 5228-2: 2009 Code of Practice for noise and vibration control on construction and open sites: Part 2 Vibration* and the *Construction Noise and Vibration Strategy ST-157/4.1* (Transport for NSW, 2019).

As stated in the *Environmental Noise Management Manual*, it can be assumed that the vibration level of a source is inversely proportional to the distance source-receiver. Field variations show that the distance relationship generally varies between $d^{-0.8}$ and $d^{-1.6}$, rather than d^{-1}. The figures below are based on the conservative assumption of $d^{-0.8}$ unless otherwise stated.

The potential vibration levels due to the construction works at various distances are shown in Table 5.13.

Table 5.13 Predicted construction vibration levels

Vibration source	Distance to Source/Peak Particle Velocity (mm/s)			
	10 m	20 m	50 m	100 m
Roller	6.0	3.4	1.7	1.0
Vibratory roller	8.0	4.6	2.2	1.3
7 tonne compactor	6.0	3.4	1.7	1.0
Dozer	4.0	2.3	1.1	0.6
Backhoe	1.0	0.6	0.3	0.2
Excavator	2.1	1.2	0.6	0.3

5.3.3 Potential for structural damage

Predicted safe working buffer distances to comply with the cosmetic damage, standard dwelling and heritage building structural damage criteria were calculated for typical vibration values and listed in Table 5.14. This table is based on advice given in *BS 7385-2:1993 Evaluation and measurement for vibration in buildings.*

While vibration may be amplified in multi-level buildings through the structure to the upper floors, the buffer distances provided in Table 5.14 are based on *German Standard DIN 4150 (2016) Part 3: Structural Vibration in Buildings: Effects on Structures* and are applicable at a building's foundation where "if these values are complied with, damage that reduces the serviceability of the building will not occur". DIN 4150-3 (2016) specifies higher acceptable values for upper floors by a multiple of three to four compared to the base value for standard dwellings used in this assessment, therefore these buffers are considered appropriate for multi-level buildings of typical construction.

Table 5.14 Vibration buffer distances – structural damage

Activity	Structural damage		
	Heritage building/structure DIN 4150-3 criteria (2.5 mm/s) – long term vibration	Heritage building/structure DIN 4150-3 criteria (3.0 mm/s) – short term vibration	Standard dwellings DIN 4150-3 criteria (5.0 mm/s)
Roller	30 m	24 m	13 m
Vibratory roller	42 m	35 m	18 m
7 tonne compactor	30 m	24 m	13 m
Dozer	18 m	15 m	9 m
Backhoe	6 m	5 m	4 m
Excavator	8 m	7 m	6 m

Using the *DIN 4150-3:1999-02 Structural Vibration – Part 3: Effects of vibration on structures* criteria, structural vibration impacts are summarised as follows:

For worst case vibration generating works within the construction footprint (vibratory roller activities):

– Heritage structures or buildings of similar construction may be affected by vibration within a maximum of 42 metres of the works. 42 residential receivers have been identified within this distance. NB there are no heritage structures in close proximity to the proposal.
– Standard dwellings or buildings of similar construction may be affected by vibration within a maximum of 18 metres of the works. 21 residential receivers have been identified within this distance.

Construction would progress along the construction area and vibration impacts would be experienced for short times at most locations. Graphical presentation of the construction vibration safe working distances for structural damage are provided in Appendix E.

5.3.4 Potential for human comfort and perception

Predicted safe working buffer distances to comply with the human comfort, and human perception were calculated for typical vibration values and listed in Table 5.15 and Table 5.16 for residential receivers and non-residential receivers respectively. These are based on advice given in *BS 5228-2:2009 Code of practice for noise and vibration on construction and open sites – Part 2: Vibration* and the *Assessing Vibration: A Technical Guideline* (DEC 2006). The various criteria buffers are interpreted as follows:

– The BS 5228-2.2009 criteria represents a level at which "*It is likely that vibration of this level in residential environments will cause complaint, but can be tolerated if prior warning and explanation has been given to residents*"
– The 'preferred' *Assessing Vibration: A Technical Guideline* vibration dose values represent a goal at which there is low probability of adverse comment or disturbance to building occupants.
– For 'maximum values' the *Assessing Vibration: A Technical Guideline* states: "*Where all feasible and reasonable measures have been applied, values up to the maximum value may be used if they can be justified. For values beyond the maximum value, the operator should negotiate directly with the affected community*."

Vibration is typically attenuated through multi-levels building to upper floors, however in some cases it may be amplified in the upper floors due to structural resonances and other factors. Locations of multi-level buildings are not known at this stage and therefore should be reviewed on a case-by case basis when identified. As a guide for multi-level receivers, adoption of the preferred value buffers in Table 5.15 and Table 5.16 is anticipated to typically protect against exceedances of the acceptable maximum human comfort values.

Table 5.15 Vibration buffer distances – human comfort and perception, residential receivers

Equipment	Human comfort criteria based on BS 5228-2.2009 (1.0 mm/s)	Human comfort based on AVTG vibration dose value (m/s$^{1.75}$)			
		Day preferred value 0.2 m/s$^{1.75}$	Day maximum value 0.4 m/s$^{1.75}$	Night preferred value 0.13 m/s$^{1.75}$	Night maximum value 0.26 m/s$^{1.75}$
Roller	90 m	212 m	89 m	156 m	65 m
Vibratory roller	140 m	303 m	128 m	223 m	94 m
7 tonne compactor	90 m	212 m	89 m	156 m	65 m
Dozer	60 m	128 m	54 m	94 m	39 m
Backhoe	10 m	23 m	9 m	17 m	7 m
Excavator	25 m	57 m	24 m	42 m	18 m

Table 5.16 Vibration buffer distances – human comfort and perception, non-residential receivers

Equipment	Human comfort criteria based on BS 5228-2.2009 (1.0 mm/s)	Human comfort based on AVTG vibration dose value (m/s$^{1.75}$)			
		Day preferred value 0.4 m/s$^{1.75}$	Day maximum value 0.8 m/s$^{1.75}$	Night preferred value 0.4 m/s$^{1.75}$	Night maximum value 0.8 m/s$^{1.75}$
Roller	90 m	89 m	37 m	38 m	16 m
Vibratory roller	140 m	128 m	54 m	55 m	23 m
7 tonne compactor	90 m	89 m	37 m	38 m	16 m
Dozer	60 m	54 m	23 m	23 m	10 m
Backhoe	10 m	9 m	4 m	4 m	2 m
Excavator	25 m	24 m	10 m	10 m	4 m

Using the AVTG criteria, human comfort impacts are summarised as follows:

– For vibration generating works within the construction footprint (vibratory roller activities) residential receivers may be affected by vibration within a maximum of 128 metres of the work. 141 residential receivers were identified within this distance. Nine commercial premises may be affected within 54 metres of the works. No other non-residential sensitive receivers were identified within this buffer distance.

Using the BS 5228-2.2009 criteria:

– For vibration generating works within the construction footprint (vibratory roller activities) receivers may be affected by vibration within a maximum of 140 metres of the work. 156 residential receivers were identified within this distance. 23 commercial premises and 4 active recreation buildings may be affected within 54 metres of the works. No other non-residential sensitive receivers were identified within this buffer distance.

Construction would progress along the construction area and vibration impacts would be experienced for relatively short times at most locations. Graphical presentation of the construction vibration safe working distances for human comfort are provided in Appendix E.

5.3.5 Vibration damage to utilities

Safe working buffer distances to comply with vibration criteria for underground assets are presented Table 5.17. Buffers are based on the identified vibration intensive construction equipment.

Table 5.17 Vibration buffer distances – underground assets

Equipment	Peak particle velocity, mm/s			
Vibration limit	15[1]	20[2]	25[3]	50[4]
Roller	6	5	5	3

Equipment	Peak particle velocity, mm/s			
Vibratory roller	7	6	5	4
7 tonne compactor	6	5	5	3
Dozer[5]	-	4	4	3
Backhoe[5]	-	2	2	1
Excavator[5]	-	3	2	2

Notes:
1. British Standard BS 5228 continuous vibration criterion for underground services.
2. APA criterion for underground gas pipelines.
3. Energex criterion for underground assets. British Standard BS 5228 intermittent vibration criterion for underground services.
4. Telstra criterion for underground assets.
5. Plant items are intermittent vibration sources. Buffers have not been calculated for continuous vibration criteria.

Contours illustrating the worst case construction vibration impact zones are presented graphically in Appendix E.

Care should still be taken to avoid the use of vibration intensive equipment within the buffer areas. Less vibration intensive equipment should also be sourced prior to commencing work.

5.4 Construction noise and vibration management

The CNVG (RMS 2016) provides practical guidance on how to minimise, to the fullest extent practicable, the impacts on the community from noise and vibration generated during the construction of transportation proposals (and related infrastructure) through the application of all feasible and reasonable management measures.

The guideline includes a standard suite of noise and vibration management measures that are to be applied on all proposals, together with additional mitigation measures which are applicable when construction noise or vibration is predicted to exceed the proposal's construction noise and vibration objectives.

The standard suite of mitigation measures includes management measures such as community consultation, site inductions (with guidance on how to minimise noise and vibration) and the preparation of site specific Construction Noise and Vibration Management Plans. The guideline also includes several recommendations for reducing the source noise levels of construction equipment via good planning and equipment selection.

5.4.1 In-principal noise and vibration control

In principle, there are three approaches to controlling construction noise and vibration:

– Control at the source
– Control on the source-to-receiver pathway
– Control at the receiver

5.4.1.1 Control at the source

Control at the source is considered the most cost-effective in the reduction of noise and vibration levels and as such should be given highest priority when considering mitigation options. The solutions available include:

– Substitution of equipment:
  - Substitution involves where reasonably practicable the use of less noisy or vibration-generating equipment. This should be considered at the beginning of the construction phase, prior to any work being carried out. Equipment should be selected to meet the needs of the proposal or process it is required for and not be excessive.
– Modification of existing equipment:
  - Modification of equipment involves the addition of acoustic treatments to parts of the machinery. These include but are not limited to improved mufflers, stiffening of panels and surface coating of resonance dampening material. These options would often require discussion with the supplier and manufacturer of the equipment.

– Use and siting of equipment:
  - Plant should always be used in accordance with the manufacturer's instructions. Where possible the location of equipment should be away from noise-sensitive areas. This includes taking into consideration the emission direction of equipment and directing this away from noise sensitive receivers. Plant used intermittently should be shut down during the intervening periods or throttled down to a minimum. Dropping of material from height should be limited where possible, particularly the loading and unloading of scaffolding.
– Regular and effective maintenance:
  - Maintenance should be carried out to ensure equipment is running at optimal conditions.

5.4.1.2 Control along the path

There are two ways of mitigating noise along the transmission path:

– Increasing the distance between the source and receiver.
– Where distance is limited, screening of noise may be considered. In some circumstances it may also be possible to enclose the equipment during the operation.

Table 5.18 provides typical noise attenuation provided by noise control methods.

Table 5.18 Typical attenuations for source to receiver noise control methods

Control by	Nominal noise reduction possible, in total A-weighted sound pressure level dBA
Distance	Approximately 6 for each doubling of distance
Screening	Normally 5 to 10, maximum of 15
Enclosure	Normally 15 to 25, maximum of 50

5.4.1.3 Control of noise at the receiver

Reasonable and feasible mitigation measures at the receivers for this proposal are limited to effective community consultation.

5.4.2 Standard mitigation and management measures

The following reasonable and practical noise and vibration mitigation measures in Table 5.19 have been sourced from the CNVS (TfNSW, 2020) and are recommended for consideration by the construction contractor to reduce potential construction noise and vibration impacts. Particular attention needs to be paid to compaction, community consultation, notification, and complaints sections.

Table 5.19 Construction noise and vibration management measures

Action required	Applies to	Details
Management measures		
Implement stakeholder consultation measures	Airborne noise Ground-borne noise & vibration	Periodic notification (monthly letterbox drop and website notification) detailing all upcoming construction activities delivered to sensitive receivers at least 7 days prior to commencement of relevant works. In addition to Periodic Notification, the following strategies may be adopted on a case by case basis: – Proposal specific website – Proposal Infoline – Construction response line – Email distribution list – Web-based surveys – Social media – Community and stakeholder meetings and – Community based forums (if required by approval conditions)

Action required	Applies to	Details
Register of noise and vibration sensitive receivers	Airborne noise Ground-borne noise & vibration	A register of most affected noise and vibration sensitive receivers (NVSRs) would be kept on site. The register would include the following details for each NVSR: – The address of receiver – Category of receiver (e.g., Residential, Commercial etc.) – Contact name and phone number The register may be included as part of the Proposal's Community Liaison Plan or similar document and maintained in accordance with the requirements of this plan.
Construction hours and scheduling	Airborne noise Ground-borne noise & vibration	Where feasible and reasonable, construction should be carried out during the standard daytime working hours. Work generating noise with special audible characteristics and/or vibration levels should be scheduled during less sensitive time periods.
Construction respite period	Ground-borne noise & vibration Airborne noise	Noise with special audible characteristics and vibration generating activities (including jack and rock hammering, sheet and pile driving, rock breaking and vibratory rolling) may only be carried out in continuous blocks, not exceeding 3 hours each, with a minimum respite period of one hour between each block (or any variation of this management measure should be approved by the project manager). 'Continuous' includes any period during which there is less than 1 hour respite between ceasing and recommencing any of the work. No more than two consecutive nights of noise with special audible characteristics and/or vibration generating work may be undertaken in the same NCA over any 7-day period, unless otherwise approved by the relevant authority.
Site inductions	Airborne noise Ground-borne noise & vibration	All employees, contractors and subcontractors are to receive an environmental induction. The induction must at least include: – All relevant proposal specific and standard noise and vibration mitigation measures – Relevant license and approval conditions – Permissible hours of work – Any limitations on noise generating activities with special audible characteristics – 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 of unnecessary shouting or loud stereo/radios on site. No dropping of materials from height, throwing of metal items and slamming of doors. No excessive revving of plant and vehicle engines. Controlled release of compressed air.
Update Construction Environmental Management Plans	Airborne noise Ground-borne noise & vibration	The CEMP must be regularly updated to account for changes in noise and vibration management issues and strategies.
Building condition surveys	Vibration Blasting	Undertake building dilapidation surveys on all buildings located within the buffer zone prior to major project construction activities with the potential to cause property damage. Refer to Section 5.3.3 for buffer distances associated to
Source measures		
Plan worksites and activities to minimise noise and vibration	Airborne noise Ground-borne vibration	Plan traffic flow, parking, and loading/ unloading areas to minimise reversing movements within the site.

Action required	Applies to	Details
Equipment selection	Airborne noise Ground-borne noise & vibration	Use quieter and less vibration emitting construction methods where feasible and reasonable. For example, where 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.
Maximum noise levels	Airborne noise	The noise levels of plant and equipment must have operating Sound Power or Sound pressure levels compliant with the allowable noise levels in Appendix C of CNVG (RMS 2016).
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 onsite unless compliant with the allowable noise levels in Appendix C of CNVG (RMS 2016).
Use and siting of plant	Airborne noise	Simultaneous operation of noise plant within discernible range of a sensitive receiver is to be avoided. The offset distance between noise 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.
Non-tonal reversing alarms	Airborne noise	Non-tonal reversing beepers (or an equivalent mechanism) must be fitted and used on all vehicles and mobile plant regularly used on site and for any out of hours work, including delivery vehicles.
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 would be fitted with straps rather than chains for unloading, wherever possible.
Construction related traffic	Airborne noise	Schedule and route vehicle movements away from sensitive receivers and during less sensitive times. Limit the speed of vehicles and avoid the use of engine compression brakes. Maximise on-site storage capacity to reduce the need for truck movements during sensitive times.
Silencers on mobile plant	Airborne noise	Where possible reduce noise from mobile plant through additional fittings including: – Residential grade mufflers – Damped hammers such as “City” Model Rammer Hammers – Air Parking brake engagement is silenced.
Prefabrication of materials off-site	Airborne noise	Where practicable, pre-fabricate and/or prepare materials off-site to reduce noise with special audible characteristics occurring on site. Materials can then be delivered to site for installation.
Engine compression brakes	Airborne noise	Limit the use of engine compression brakes at night and in residential areas. Ensure vehicles are fitted with and maintained original equipment manufacturer exhaust silencer or a silencer that complies with the National Transport Commission’s ‘Inservice test procedure’ and standard.

Action required	Applies to	Details
Path controls		
Shield stationary noise sources such as pumps, compressors, generators, fans etc.	Airborne noise	Stationary noise sources would be enclosed or shielded whilst ensuring that the occupational health and safety of workers is maintained. Appendix F of AS 2436: 1981 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.

5.4.3 Additional mitigation measures

5.4.3.1 Noise

In many instances, impacts from construction noise are unavoidable and it is not feasible to achieve the construction noise objectives. Therefore, the CNVG (RMS, 2016) includes a list of additional noise mitigation measures which aim to minimise the potential noise impacts. These include measures ranging from letter box drops and phone calls to offers of alternative accommodation (should noise intensive night-time works be required). A summary of the additional noise mitigation measures matrix is provided in Table 5.20.

Table 5.20 Triggers for additional mitigation measures – Airborne Noise

Construction hours	Receiver perception	dBA above RBL[1]	dBA above NML	Additional mitigation measures type	Mitigation levels
All hours	75 dBA or greater	N/A	N/A	N, V, PC, RO	HA
Standard Hours Monday – Friday (7 am – 6 pm) Saturday (8 am – 1 pm)	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 Monday – Friday (6 pm – 10 pm) Saturday (7 am – 8 am, 1 pm – 10 pm) Sunday / PH (8 am – 6 pm)	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 Monday – Saturday (12 am – 7 am, 10 pm – 12 am) Sunday / PH (12 am – 8 am, 6 pm – 12 am)	Noticeable	0 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

Notes:
AA = Alternative accommodation
V = Verification
IB = Individual briefings
N = Notification
R2 = Respite Period 2
DR = Duration Respite
R1 = Respite period 1
PC = Phone calls
SN = Specific notification
RO = Respite Offer
Perception = relates to level above RBL
NML = Noise Management Level
HA = Highly Affected (> 75 dBA – applies to residences only)

Descriptions of the additional mitigation measures recommended in the CNVG are provided in Appendix C.

5.4.3.2 Vibration

Table 5.21 shows additional measured to be implemented for each receiver depending on whether the predicted vibration exceeds maximum levels.

Table 5.21 Triggers for additional mitigation measures – Vibration

Construction hours	Vibration level	Additional mitigation measures type	Applies to
Standard Hours Monday – Friday (7 am – 6 pm) Saturday (8 am – 1 pm)	Predicted vibration exceeds maximum levels	V, N, RP	All
OOHW Period 1 Monday – Friday (6 pm – 10 pm) Saturday (7 am – 8 am, 1 pm – 10 pm) Sunday / PH (8 am – 6 pm)	Predicted vibration exceeds maximum levels	V, IB, N, RO, PC, RP, SN	All
OOHW Period 2 Monday – Saturday (12 am – 7 am, 10 pm – 12 am) Sunday / PH (12 am – 8 am, 6 pm – 12 am)	Predicted vibration exceeds maximum levels	AA, V, IB, N, PC, RP, SN	All

Notes:
AA = Alternative accommodation
V = Verification
IB = Individual briefings
N = Notification
DR = Duration Respite
PC = Phone calls
SN = Specific notification
RO = Proposal specific respite offer
RP = respite period

5.4.4 Proposal specific construction noise and vibration mitigation measures

Proposal specific mitigation measures are recommended in the following sections.

5.4.4.1 Noise

Standard mitigation and management measures listed in Table 5.19 shall be implemented.

Impacts from construction noise are predicted to exceed the construction noise objectives and additional noise mitigation measures which aim to minimise the potential noise impacts shall be implemented. Additional noise mitigation measures proposed for each residence are detailed in Appendix C . A summary of the proposed measures are presented in Table 5.22 below.

Table 5.22 Summary of proposal specific additional noise mitigation measures

Additional mitigation measures
Standard Hours
– Notification – Verification

5.4.4.2 Vibration

Standard mitigation and management measures listed in Table 5.19 shall be implemented.

Construction vibration is predicted to exceed maximum levels at several residential receivers (refer Appendix E). In accordance with the Roads and Maritime CNVG the exceedances would require additional mitigation measures during standard hours should vibration intensive work be required to undertaken. Additional vibration mitigation measures proposed for each residence are detailed in Appendix F. A summary of the proposed measures for each work period is presented in Table 5.23 below.

Table 5.23 Summary of proposal specific additional vibration mitigation measures

Additional mitigation measures
Standard Hours
– Verification – Notification – Respite Period

The following management measures should also be considered:

– Tests to determine site specific ground propagation conditions should be undertaken to refine working buffer distances prior to vibration intensive works occurring onsite.
– The use of vibration intensive equipment during out of hours work periods should be avoided.
– Organise work to be undertaken during the standard hours where reasonable and practical and safe to do so.

6. Operational noise impact assessment

6.1 Methodology

The proposal is primarily aimed at improving traffic congestion, reliability and safety along Hillsborough Road and connected local roads.

The methodology for the road traffic noise assessment included the following:

– The assessment study area was established in accordance with the *Noise Criteria Guideline* (Roads and Maritime, 2015)
– Proposal roads and associated side roads were identified
– The road proposal development type was identified
– A traffic noise model was prepared to predict the existing level of road traffic noise for the current year (2021). The current year noise model was used for the operational noise model validation process
– Noise predictions were undertaken for the following cases:
  - Year 2027 ‘no build option’ (traffic flow on the existing alignment for the opening year)
  - Year 2037 ‘no build option’ (traffic flow on the existing alignment 10 years after opening)
  - Year 2027 ‘build option’ (traffic flow on the constructed alignment for the opening year)
  - Year 2037 ‘build option’ (traffic flow on the constructed alignment 10 years after opening)
– Potential noise impacts were determined by assessing the modelled noise levels against the road traffic noise assessment criteria
– Potential noise mitigation measures were reviewed to minimise road traffic noise impacts where impacts were identified

6.2 Study area and noise sensitive receivers

The study area was established as per Section 3.1.2.

6.3 Assessment scenarios

The scenarios provided in Table 6.1 have been modelled to determine the potential road traffic noise impacts on land uses identified within the assessment study area. Noise mitigation is based on the predicted noise impacts for the “design year 2037 build” scenario.

Table 6.1 Assessment scenarios for road traffic noise

Timeframe	Year	Scenario	Description
Current year	2021	Existing	Traffic flow on existing alignment.
Opening year	2027	No build	Traffic flow on the existing alignment for the opening year
Opening year	2027	Build	Traffic flow on the redeveloped alignment for the opening year
Design year	2037	No build	Traffic flow on the existing alignment 10 years after opening
Design year	2037	Build	Traffic flow on the redeveloped alignment 10 years after opening

6.4 Identified roads

Proposal and non-proposal roads were identified for the operational road traffic noise assessment. A road is considered a proposal road when a segment of the road fits the description for a new or redeveloped road. Details on new and redeveloped roads are provided in Section 5 of the *Noise Criteria Guideline* (Roads and Maritime, 2015).

6.4.1 Proposal roads

For this assessment, the proposal roads and road classifications in Table 6.2 have been adopted.

Table 6.2 Proposal roads and classification

Road name	Functional class of road		Substantially realigned	Type of road proposal (as per NCG)
	Before proposal	After proposal		
Hillsborough Road	Sub-arterial	Sub-arterial	No	Redeveloped

Hillsborough road has been determined to be “redeveloped” as per the NCG as it is a road widening and would increase the traffic carrying capacity of the road.

6.4.2 Non-proposal roads

Significant side roads that link with the proposal road have been included for the assessment. These roads are considered non-proposal roads and have been provided in Table 6.3.

Non-proposal roads have been included in the assessment to assist in determining the applicable assessment criteria in addition to determining the appropriate noise mitigation where relevant.

Table 6.3 Non-proposal roads and classifications

Road name	Functional class of road	
	Before proposal	After proposal
Newcastle Inner City Bypass (NICB)	Arterial Road	Arterial Road
Hillsborough Road outside of study area	Sub-arterial Road	Sub-arterial Road
Chadwick Street	Collector Road	Collector Road
Higham Road	Collector Road	Local Road
Crockett Street	Collector Road	Collector Road
Barker Avenue	Local Road	Local Road

6.5 Noise modelling methodology and assumptions

6.5.1 Overview

Noise predictions were undertaken using the SoundPLAN (Version 8.2) noise modelling software implementing the Calculation of Road Traffic Noise (CoRTN) algorithm, developed by the United Kingdom Department of Environment. The CoRTN algorithm is a mathematical model that has been specifically validated under Australian conditions and is accepted as the industry standard by the NSW Government. The CoRTN algorithm models road traffic noise as a broadband noise source, which is considered most appropriate for road traffic noise. Results are calculated using the A-weighted noise scale. The A-weighting scale is used to best simulate the response of the human ear. For continuous high volume traffic, the L_{Aeq} descriptor has been assessed.

Noise modelling is based on the following key parameters:

– Three-dimensional road design that reflects the final height of the road, surrounding terrain, buildings and sensitive receiver locations
– Traffic speeds and volumes
– Proportion of light and heavy vehicles
– Type of road surface
– Height and location of vehicle noise sources (tyre, engine and truck exhaust noise)

Noise modelling inputs and assumptions are discussed further in the following section.

6.5.2 Modelling input data

The noise modelling inputs and assumptions used for the verification model predictions are summarised in Table 6.4.

Table 6.4 Noise model inputs and assumptions

Inputs and assumptions	Data incorporated into the noise model
Noise model	SoundPLAN (Version 8.2)
Prediction algorithm	United Kingdom Department of Transport, Calculation of Road Traffic Noise, 1988 (CoRTN) adjusted for NSW conditions
Traffic Speeds	Refer Table 6.6 to Table 6.10
Traffic Distribution	Refer Table 6.6 to Table 6.10
Traffic volumes	Refer Table 6.6 to Table 6.10
Road gradient	Considered based on the road design and terrain contours of existing roads. Elevations based on NSW Government Spatial Services 1m Digital Elevation Model sourced from the Elvis Elevation and Depth system.
Terrain resolution	Terrain contours: 1 m
Existing barriers	Existing barriers were included in model. These include: – 1.8 m high fence from 9 to 21 Leroy Close. – 3.0 m high noise wall on the western side of the NICB Northbound On Ramp – 3.0 m high noise walls on the Eastern and Western sides of the NICB between Northbound and Southbound on ramps and off ramps.
Buildings	Building data has been obtained from Geoscape Australia. Modelled buildings heights are based on the eave height.
Façade receiver positions	Ground floor: – 1.5 m receiver height – 1 m from building façade First floor: – 4.5 m receiver height – 1 m from the building façade
Road surface adjustments	0 dB for DGA pavement

Inputs and assumptions	Data incorporated into the noise model
CoRTN conversion factors	CoRTN conversion factor of -3 dB was applied to convert L_{10} to L_{eq}
Australian Road Research Board corrections	-1.7 dBA for 'façade' -0.7 dBA for 'free-field'
Source height and corrections (above ground level)	Cars: 0.5 m Truck wheels: 0.5 m, -5.4 dB Truck engines: 1.5 m, -2.4 dB Truck exhausts: 3.6 m, -8.4 dB
Ground absorption	A ground absorption value of G = 0.5 was applied across the model. In accordance with Transport for New South Wales Model Validation Guideline ground absorption value for residential areas.
Atmospheric conditions	10°C and 70 % humidity

6.6 Traffic data

6.6.1 Existing traffic volumes

Existing traffic volumes were measured as part of the noise model validation process using automatic traffic counters (ATC) at the two locations listed in Table 6.5. These traffic counts were undertaken alongside the noise monitoring undertaken for the proposal.

The hourly data collected as part of the traffic counts included:

– Traffic volumes in each direction
– Vehicle speeds in each direction
– Classification of vehicle types (light vehicle and heavy vehicles).

Table 6.5 Traffic count locations

Location ID	Location	Closest noise monitoring location
ATC 1	Hillsborough Road - west of Chadwick Street	M3 – 117 Hillsborough Road
ATC 2	Newcastle Inner City Bypass NB on Ramp	M1 – 13 Leroy Close

Measured existing traffic volumes are summarised in Section 3.3.

6.6.2 Design traffic volumes

Design traffic volumes for the years 2027 and 2037 were provided to GHD in Technical Advice documents prepared by Arcadis.

The technical advice included the following traffic data and assumptions:

– Midblock traffic counts collected in November 2021 on Hillsborough Road west of Chadwick Street and Newcastle Inner City Bypass (NICB) northbound on ramp. The 2021 mid-block counts were undertaken by GHD as part of the noise modelling assessment in order to validate the noise model.
– Consistent with traffic modelling assumptions, background traffic growth on Hillsborough Road is assumed to be 1.5 per cent per annum between 2021 and 2037.

GHD has made the following assumptions and calculations:

– Traffic data for non-proposal roads provided to GHD by Arcadis in the form of 15-hour and 9-hour light vehicle and heavy vehicle volumes.
– Eastbound/westbound traffic was calculated based on traffic directional split percentages supplied by Arcadis. Eastbound/westbound was generally a 50/50 split for all roads.
– AADT for the NICB was collected in 2008. A growth rate of 1.5 per cent was applied to approximate 2021, 2027 and 2037 traffic volumes.

The design traffic volumes used to assess road traffic noise are provided in Table 6.6 to Table 6.10. These tables are taken straight from the Technical Advice document prepared by Arcadis and include build and no build volumes for 2027 as well as build and no build volumes for 2037. The locations referenced in the Arcadis volume tables correspond to the numbered locations shown in Figure 6.1.

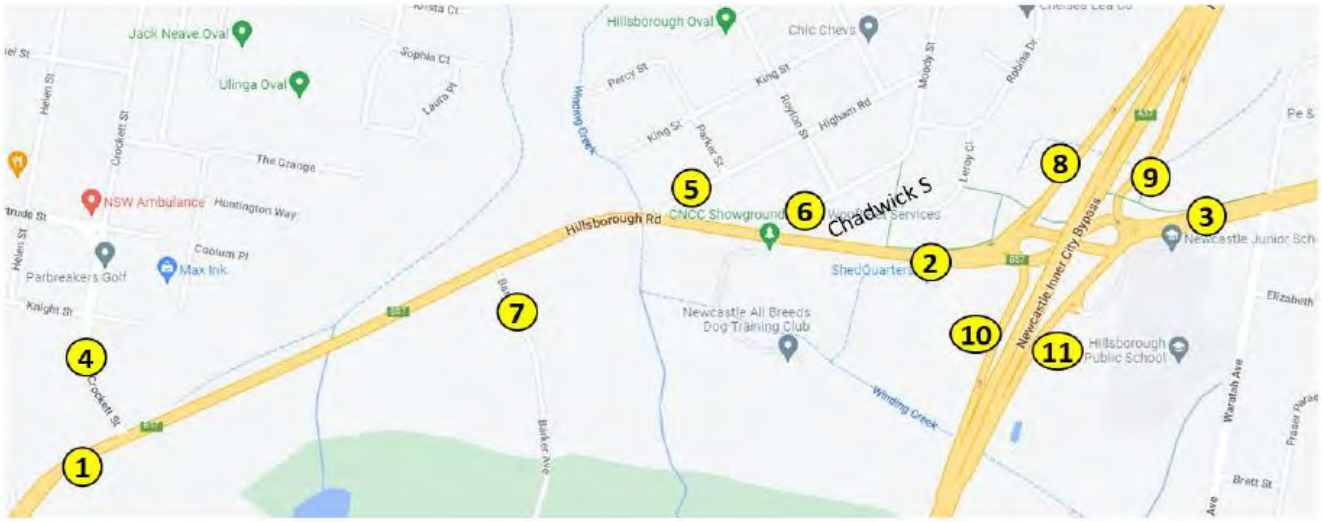


Figure 6.1 Arcadis volume locations

Table 6.6 Traffic volumes – Hillsborough Road (Proposal Road) between NICB and western extent of project

Scenario	Year	Direction	Speed (km/h)	Average traffic volumes								
				24 hour			Day time (15 hour)			Night time (9 hour)		
				Total	LV	HV	Total	LV	HV	Total	LV	HV
No Build	2027	Eastbound	60	19735	18513	1222	17894	16816	1078	1842	1697	145
		Westbound	60	19594	18383	1211	17894	16816	1078	1700	1567	133
		Combined	60	39329	36896	2433	35787	33632	2155	3542	3264	278
	2037	Eastbound	60	22281	20903	1378	20203	18987	1216	2078	1916	162
		Westbound	60	22122	20756	1366	20203	18987	1216	1919	1769	150
		Combined	60	44402	41659	2743	40405	37974	2431	3997	3685	312
Build	2027	Eastbound	60	20279	19024	1255	18387	17280	1107	1892	1744	148
		Westbound	60	20133	18889	1244	18387	17280	1107	1747	1610	137
		Combined	60	40412	37913	2499	36773	34559	2214	3639	3354	285
	2037	Eastbound	60	22923	21505	1418	20785	19534	1252	2138	1971	167
		Westbound	60	22759	21353	1406	20785	19534	1252	1974	1820	154
		Combined	60	45682	42858	2824	41570	39067	2503	4112	3791	321

Table 6.7 2027 traffic volumes – No Build (source: Arcadis)

ID	Location	Time of Day	All Vehicle	Light vehicles Austroads class 1 & 2	Heavy 1 Austroads class 3	Heavy 2 Austroads class 4&5	Heavy 3 Austroads class 6-8	Heavy 4 Austroads class 9	Heavy 5 Austroads class 10
1	Hillsborough Road – West of Newcastle Inner City Bypass	Daytime – 15hr	30,800	28,946	1,530	226	69	24	4
		Night-time – 9hr	3,047	2,809	182	42	9	3	1
		Daily -24hr	33,847	31,755	1,712	268	79	27	5
2	Hillsborough Road – West of Newcastle Inner City Bypass	Daytime – 15hr	35,787	33,632	1,778	263	81	28	5
		Night-time – 9hr	3,540	3,264	212	49	11	4	2
		Daily -24hr	39,327	36,896	1,990	312	91	32	6
3	Hillsborough Road – East of Newcastle Inner City Bypass	Daytime – 15hr	24,125	22,672	1,198	177	54	19	3
		Night-time – 9hr	2,387	2,200	143	33	7	3	1
		Daily -24hr	26,512	24,873	1,341	210	62	21	4
4	Crocket Street	Daytime – 15hr	8,558	8,472	86	0	0	0	0
		Night-time – 9hr	847	847	0	0	0	0	0
		Daily -24hr	9,405	9,319	86	0	0	0	0
5	Higham Road	Daytime – 15hr	610	610	0	0	0	0	0
		Night-time – 9hr	60	60	0	0	0	0	0
		Daily -24hr	670	670	0	0	0	0	0
6	Chadwick Street	Daytime – 15hr	1,588	1,588	0	0	0	0	0
		Night-time – 9hr	157	157	0	0	0	0	0
		Daily -24hr	1,745	1,745	0	0	0	0	0
7	Barker Avenue	Daytime – 15hr	728	728	0	0	0	0	0
		Night-time – 9hr	72	72	0	0	0	0	0
		Daily -24hr	800	800	0	0	0	0	0
8	Northbound on ramp	Daytime – 15hr	7,482	6,980	320	141	27	12	1
		Night-time – 9hr	885	803	60	17	4	1	0
		Daily -24hr	8,367	7,784	380	158	31	12	1
9	Southbound off ramp	Daytime – 15hr	7,171	6,691	307	135	26	11	1
		Night-time – 9hr	849	770	58	16	4	1	0
		Daily -24hr	8,020	7,461	364	152	30	12	1
10	Northbound off ramp	Daytime – 15hr	4,089	3,815	175	77	15	6	1
		Night-time – 9hr	484	439	33	9	2	0	0
		Daily -24hr	4,573	4,254	208	86	17	7	1
11	Southbound on ramp	Daytime – 15hr	5,098	4,756	218	96	19	8	1
		Night-time – 9hr	603	547	41	12	3	0	0
		Daily -24hr	5,701	5,304	259	108	21	8	1

Table 6.8 2037 traffic volumes – No Build (Source: Arcadis)

ID	Location	Time of Day	All Vehicle	Light vehicles Austroads class 1 & 2	Heavy 1 Austroads class 3	Heavy 2 Austroads class 4&5	Heavy 3 Austroads class 6-8	Heavy 4 Austroads class 9	Heavy 5 Austroads class 10
1	Hillsborough Road – West of Newcastle Inner City Bypass	Daytime – 15hr	34,818	32,721	1,729	256	78	27	5
		Night-time – 9hr	3,445	3,176	206	47	10	4	1
		Daily -24hr	38,262	35,897	1,936	303	89	31	6
2	Hillsborough Road – West of Newcastle Inner City Bypass	Daytime – 15hr	40,407	37,974	2,007	297	91	31	5
		Night-time – 9hr	3,998	3,685	239	55	12	4	2
		Daily -24hr	44,405	41,660	2,246	352	103	36	7
3	Hillsborough Road – East of Newcastle Inner City Bypass	Daytime – 15hr	27,271	25,629	1,355	201	61	21	4
		Night-time – 9hr	2,698	2,487	161	37	8	3	1
		Daily -24hr	29,969	28,116	1,516	237	70	24	5
4	Crocket Street	Daytime – 15hr	9,674	9,578	97	0	0	0	0
		Night-time – 9hr	957	957	0	0	0	0	0
		Daily -24hr	10,631	10,535	97	0	0	0	0
5	Higham Road	Daytime – 15hr	687	687	0	0	0	0	0
		Night-time – 9hr	68	68	0	0	0	0	0
		Daily -24hr	755	755	0	0	0	0	0
6	Chadwick Street	Daytime – 15hr	1,795	1,795	0	0	0	0	0
		Night-time – 9hr	178	178	0	0	0	0	0
		Daily -24hr	1,972	1,972	0	0	0	0	0
7	Barker Avenue	Daytime – 15hr	819	819	0	0	0	0	0
		Night-time – 9hr	81	81	0	0	0	0	0
		Daily -24hr	900	900	0	0	0	0	0
8	Northbound on ramp	Daytime – 15hr	8,457	7,890	362	160	31	13	1
		Night-time – 9hr	1,001	908	68	19	4	1	0
		Daily -24hr	9,458	8,799	430	179	35	14	1
9	Southbound off ramp	Daytime – 15hr	8,107	7,564	347	153	29	12	1
		Night-time – 9hr	959	871	65	18	4	1	0
		Daily -24hr	9,066	8,434	412	171	34	13	1
10	Northbound off ramp	Daytime – 15hr	4,622	4,313	198	87	17	7	1
		Night-time – 9hr	547	496	37	11	2	0	0
		Daily -24hr	5,169	4,809	235	98	19	7	1
11	Southbound on ramp	Daytime – 15hr	5,763	5,377	246	109	21	9	1
		Night-time – 9hr	682	619	46	13	3	0	0
		Daily -24hr	6,445	5,996	293	122	24	9	1

Table 6.9 2027 traffic volumes – Build (Source: Arcadis)

ID	Location	Time of Day	All Vehicle	Light vehicles Austroads class 1 & 2	Heavy 1 Austroads class 3	Heavy 2 Austroads class 4&5	Heavy 3 Austroads class 6-8	Heavy 4 Austroads class 9	Heavy 5 Austroads class 10
1	Hillsborough Road – West of Newcastle Inner City Bypass	Daytime – 15hr	30,800	28,946	1,530	226	69	24	4
		Night-time – 9hr	3,047	2,809	182	42	9	3	1
		Daily -24hr	33,847	31,755	1,712	268	79	27	5
2	Hillsborough Road – West of Newcastle Inner City Bypass	Daytime – 15hr	36,773	34,559	1,827	270	83	29	5
		Night-time – 9hr	3,638	3,354	218	50	11	4	2
		Daily -24hr	40,411	37,913	2,044	320	94	32	7
3	Hillsborough Road – East of Newcastle Inner City Bypass	Daytime – 15hr	24,128	22,675	1,198	177	54	19	3
		Night-time – 9hr	2,387	2,201	143	33	7	3	1
		Daily -24hr	26,515	24,876	1,341	210	62	21	4
4	Crocket Street	Daytime – 15hr	8,558	8,472	86	0	0	0	0
		Night-time – 9hr	847	847	0	0	0	0	0
		Daily -24hr	9,405	9,319	86	0	0	0	0
5	Higham Road	Daytime – 15hr	384	384	0	0	0	0	0
		Night-time – 9hr	38	38	0	0	0	0	0
		Daily -24hr	422	422	0	0	0	0	0
6	Chadwick Street	Daytime – 15hr	1,812	1,812	0	0	0	0	0
		Night-time – 9hr	179	179	0	0	0	0	0
		Daily -24hr	1,991	1,991	0	0	0	0	0
7	Barker Avenue	Daytime – 15hr	1,092	1,092	0	0	0	0	0
		Night-time – 9hr	108	108	0	0	0	0	0
		Daily -24hr	1,200	1,200	0	0	0	0	0
8	Northbound on ramp	Daytime – 15hr	7,482	6,980	320	141	27	12	1
		Night-time – 9hr	885	803	60	17	4	1	0
		Daily -24hr	8,367	7,784	380	158	31	12	1
9	Southbound off ramp	Daytime – 15hr	7,171	6,691	307	135	26	11	1
		Night-time – 9hr	849	770	58	16	4	1	0
		Daily -24hr	8,020	7,461	364	152	30	12	1
10	Northbound off ramp	Daytime – 15hr	4,089	3,815	175	77	15	6	1
		Night-time – 9hr	484	439	33	9	2	0	0
		Daily -24hr	4,573	4,254	208	86	17	7	1
11	Southbound on ramp	Daytime – 15hr	5,098	4,756	218	96	19	8	1
		Night-time – 9hr	603	547	41	12	3	0	0
		Daily -24hr	5,701	5,304	259	108	21	8	1

Table 6.10 2037 traffic volumes – Build (Source: Arcadis)

ID	Location	Time of Day	All Vehicle	Light vehicles Austroads class 1 & 2	Heavy 1 Austroads class 3	Heavy 2 Austroads class 4&5	Heavy 3 Austroads class 6-8	Heavy 4 Austroads class 9	Heavy 5 Austroads class 10
1	Hillsborough Road – West of Newcastle Inner City Bypass	Daytime – 15hr	34,818	32,721	1,729	256	78	27	5
		Night-time – 9hr	3,445	3,176	206	47	10	4	1
		Daily -24hr	38,262	35,897	1,936	303	89	31	6
2	Hillsborough Road – West of Newcastle Inner City Bypass	Daytime – 15hr	41,570	39,067	2,065	306	94	32	6
		Night-time – 9hr	4,113	3,791	246	56	13	4	2
		Daily -24hr	45,682	42,858	2,311	362	106	37	7
3	Hillsborough Road – East of Newcastle Inner City Bypass	Daytime – 15hr	27,275	25,633	1,355	201	61	21	4
		Night-time – 9hr	2,698	2,488	162	37	8	3	1
		Daily -24hr	29,973	28,120	1,516	238	70	24	5
4	Crocket Street	Daytime – 15hr	9,674	9,578	97	0	0	0	0
		Night-time – 9hr	957	957	0	0	0	0	0
		Daily -24hr	10,631	10,535	97	0	0	0	0
5	Higham Road	Daytime – 15hr	434	434	0	0	0	0	0
		Night-time – 9hr	43	43	0	0	0	0	0
		Daily -24hr	477	477	0	0	0	0	0
6	Chadwick Street	Daytime – 15hr	2,048	2,048	0	0	0	0	0
		Night-time – 9hr	203	203	0	0	0	0	0
		Daily -24hr	2,251	2,251	0	0	0	0	0
7	Barker Avenue	Daytime – 15hr	1,234	1,234	0	0	0	0	0
		Night-time – 9hr	122	122	0	0	0	0	0
		Daily -24hr	1,356	1,356	0	0	0	0	0
8	Northbound on ramp	Daytime – 15hr	8,457	7,890	362	160	31	13	1
		Night-time – 9hr	1,001	908	68	19	4	1	0
		Daily -24hr	9,458	8,799	430	179	35	14	1
9	Southbound off ramp	Daytime – 15hr	8,107	7,564	347	153	29	12	1
		Night-time – 9hr	959	871	65	18	4	1	0
		Daily -24hr	9,066	8,434	412	171	34	13	1
10	Northbound off ramp	Daytime – 15hr	4,622	4,313	198	87	17	7	1
		Night-time – 9hr	547	496	37	11	2	0	0
		Daily -24hr	5,169	4,809	235	98	19	7	1
11	Southbound on ramp	Daytime – 15hr	5,763	5,377	246	109	21	9	1
		Night-time – 9hr	682	619	46	13	3	0	0
		Daily -24hr	6,445	5,996	293	122	24	9	1

6.7 Noise model validation

The purpose of model validation is to demonstrate that the noise model produced for the existing situation, using the CoRTN algorithm adjusted for Australian conditions, is an accurate representation of the real world within the limitations of the prediction algorithm and to identify potential errors associated with the geospatial data and modelling approach.

GHD undertook a systematic approach as per the MVG (RMS, 2018) in the analysis and exclusion of measured data to create a robust noise model that is an accurate representation of the real world.

A comparison of the modelled and monitored results at the long-term monitoring locations are shown in Table 6.11 for the day-time (15 hour) and night-time (9 hour) time periods.

Table 6.11 Noise model validation results, dBA

Location	$L_{Aeq(15\ hour)}$ (Day)			$L_{Aeq(9\ hour)}$ (Night)		
	(7:00 am to 10:00 pm)			(10:00 pm to 7:00 am)		
	Meas.	Model	Diff.	Meas.	Model	Diff.
M1	57.4	59.4	2.0	52.0	52.4	0.4
M2	52.1	53.8	1.7	44.7	46.7	2.0
M3	71.0	71.7	0.7	64.9	64.6	-0.3
M4	54.1	55.8	1.7	48.1	48.7	0.6
Median			**1.7**			**0.5**
Standard deviation			**0.6**			**1.0**

Notes:

1. Location M1 evaluated with façade reflection. All other locations evaluated at free field.

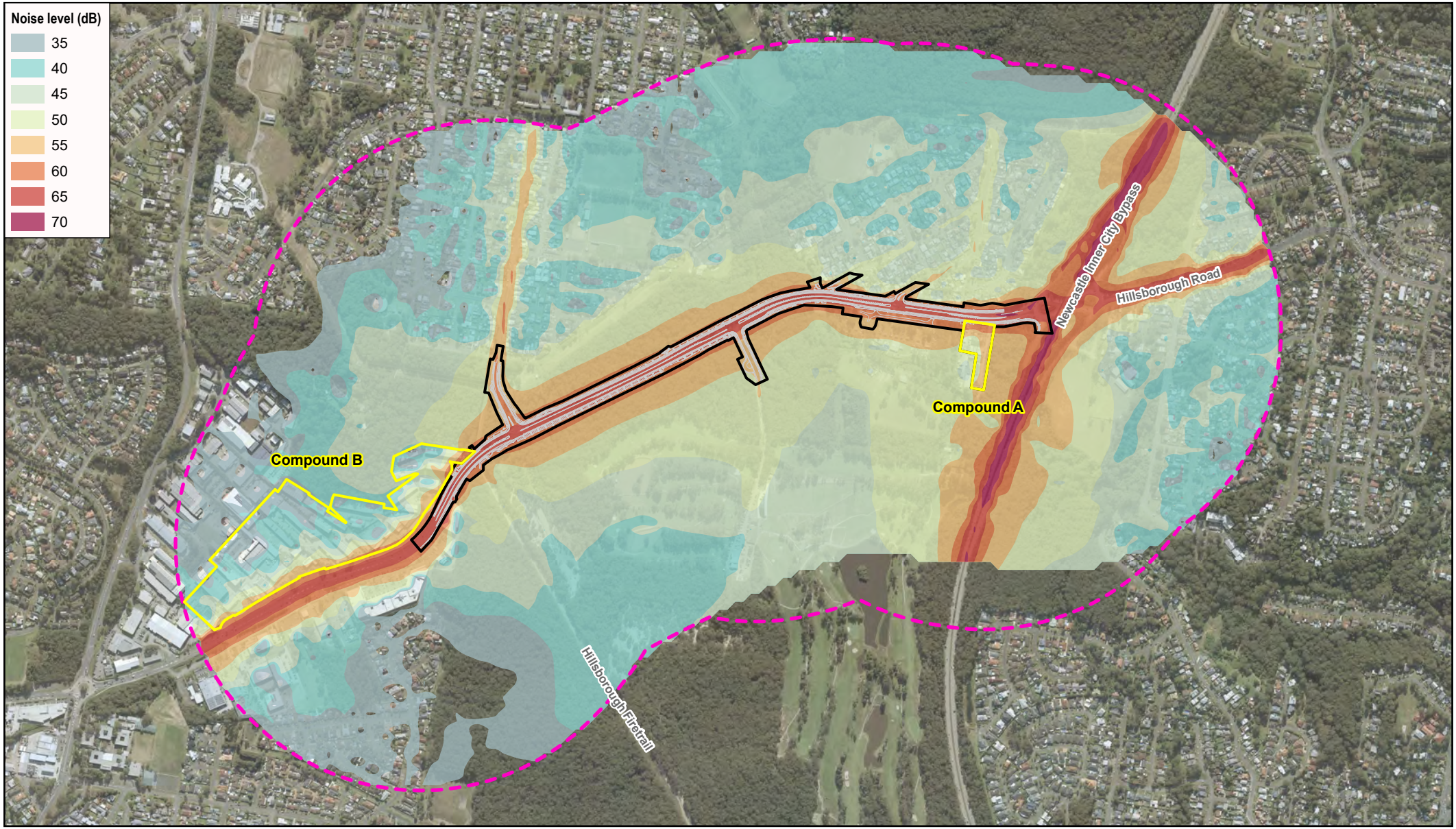
The median error for the noise model during the daytime ($L_{Aeq\ 15\ hour}$) and night time ($L_{Aeq\ 9\ hour}$) periods are within ± 2 dBA and the scatter is within ± 2.0 dBA of the median value at all monitoring locations. The validation results indicate that the modelled predictions correlate well with the measured results and the model is validated for assessment purposes. In general the validation results indicate that the model predicts slightly higher than the daytime measurements and is in line with the night time. This maintains a level of conservatism in the results and minimises the risk of under predicting when assessing noise levels at other receivers within the study area.

6.8 Operational noise impacts

Noise modelling results indicated that road traffic noise criteria may be exceeded at several residential receivers. The results for receivers eligible for consideration of mitigation are presented in Appendix G. Predicted noise levels for the years 2027 and 2037 are presented graphically in Appendix H. The noise modelling results indicated:

– 17 individual residential receivers are identified to be considered for noise mitigation.
– The cumulative limit is exceeded at each of the 17 residential receivers during the day and at 13 during the night.
– Noise levels are predicted to be acute at 16 residential receivers during the day and at 13 during the night.
– Overall operational noise levels are predicted to decrease at most properties due to the duplication being on the southern side of Hillsborough Road and thus overall traffic moving further away from residential receivers.

Operational noise contours for the night-time 2037 build scenario are presented in Figure 6.2. Receivers that have been identified to be considered for noise mitigation are presented in Table G.1 and shown graphically in Figure 6.3.



LEGEND

- Study area
- Construction footprint
- Compound
- Design

Paper Size ISO A4

0 100 200 300 400

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

2037 – Build – Night

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

FIGURE 6.2

G:\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 30 Nov 2022 - 12:41

Data source: Metromap Tile Service: - Imagery (Date extracted: 30/11/2022); Roads, Cadastre - LPI, 2017; Created by: tmorton

LEGEND

- Study area
- Construction footprint
- Compound
- Design
- Sensitive receivers
- Cadastre

Paper Size ISO A4

0 10 20 30 40

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

Receivers eligible for consideration of additional mitigation

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

FIGURE 6.3

G:\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 30 Nov 2022 - 12:43

Data source: Metromap Tile Service: - Imagery (Date extracted: 30/11/2022); Roads, Cadastre - LPI, 2017; Created by: tmorton

6.9 Maximum road traffic noise levels

6.9.1 Existing maximum noise levels

Existing maximum noise levels were measured during the unattended noise logging. A summary of the data is presented below in Table 6.12.

Table 6.12 Existing maximum noise level events

Monitoring location	No. of events	Measured maximum noise levels (dBA L_{Amax})	
		Range	Median
M1 – 13 Leroy Close	100	65 – 80	68
M2 – 16 Highham Road	85	65 – 87	70
M3 – 117 Hillsborough Road	2662	65 – 89	72
M4 – 7 Coolum Place	30	65 – 73	67

Table 6.12 indicated that maximum noise level events are a regular feature at location M1 to M3 and range from 65 to 89 dBA. The significantly higher number of measured events at M3 is due to the proximity of the location to Hillsborough Road.

Maximum noise level events at the high end of the range are most likely due to heavy vehicles passing by the noise monitor while light vehicles passing by will be at the lower end of the range.

6.9.2 Future maximum noise levels

The duplication of Hillsborough Road and the addition of a signalised intersection at Chadwick Street has the potential to change maximum noise level events in the area. A summary of the predicted changes is presented in Table 6.13.

Table 6.13 Future maximum noise levels

Monitoring location	Worst case change (dB)	Discussion
M1 – 13 Leroy Close	0	Due to proximity to NICB as well as Hillsborough Road it is not anticipated that maximum noise levels will change at this location.
M2 – 16 Higham Road	0	Traffic flows are predicted to decrease on Higham Road because of the proposal. Maximum noise levels are not predicted to decrease however the number of events has the potential to decrease.
M3 – 117 Hillsborough Road	+2	Maximum noise levels have the potential to increase at residences along Hillsborough road due to the introduction of a signalised intersection at Chadwick Street.
M4 – 7 Coolum Place	0	Maximum noise level events associated with road traffic noise are not a significant feature at this location. An increase in maximum noise levels is not predicted.

Although maximum noise levels are not used as a criterion to determine the consideration of additional noise mitigation it is highly recommended that they be considered when feasible and reasonable mitigation measured are considered.

This is especially true for residences that are adjacent to the Hillsborough Road and Chadwick Street intersection where a signalised intersection is to be introduced. The decision to mitigate operational road traffic noise impacts should consider the potential impacts the intersection would have on maximum noise levels, most notably the impact of stop-start traffic.

Operational mitigation measures are discussed further in section 6.10.

6.10 Operational mitigation measures

6.10.1 Overview

The operational noise mitigation assessment procedure described in section 4.5 is based on the NMG.

The NMG recommends that mitigation measures should be implemented where they are considered reasonable. Noise barriers, noise mounds and quieter pavement surfaces would only be considered reasonable in locations where there are four or more closely spaced receivers that exceed the road traffic noise criteria. Receivers are considered closely spaced where the facades are separated by less than 20 metres.

At-property treatments should be considered where other noise mitigation measures are not reasonable or feasible. Residences are considered an isolated group of closely spaced residences where the façades are separated by between 20 and 100 metres.

Potential noise mitigation treatments have been assessed in the following order in accordance with the RNP: quieter pavement surfaces, noise barriers and architectural treatments.

The inclusion of noise barriers for residences front-facing onto Hillsborough Road is not considered feasible as the acoustic performance would be compromised by gaps required to maintain driveway access.

The operational road traffic noise assessment concluded that 17 noise sensitive receivers are eligible for consideration of at-receiver noise treatment. These mitigation recommendations would be re-evaluated at the detailed design phase and are subject to change. This may result in more or less sensitive receivers qualifying for consideration of at-receiver noise mitigation. This will take into account any changes to the design and would involve consultation with affected residents.

Where properties have been identified for at-receiver noise treatment and would be impacted by noise from construction works, Transport would consult with those property owners about bringing forward the installation of treatments to provide noise mitigation during the construction of the proposal, where feasible.

6.10.2 Quieter pavement surfaces

Quieter pavement surfaces are the preferred form of noise mitigation as it reduces source noise levels and has a low visual impact. This provides noise benefits to outdoor recreational areas in addition to reducing internal road traffic noise levels.

In general, quieter pavements may provide noise benefits to receivers at greater distances than noise barriers. This may occur where receivers at greater distances already have shielding from rows of houses near road or topography.

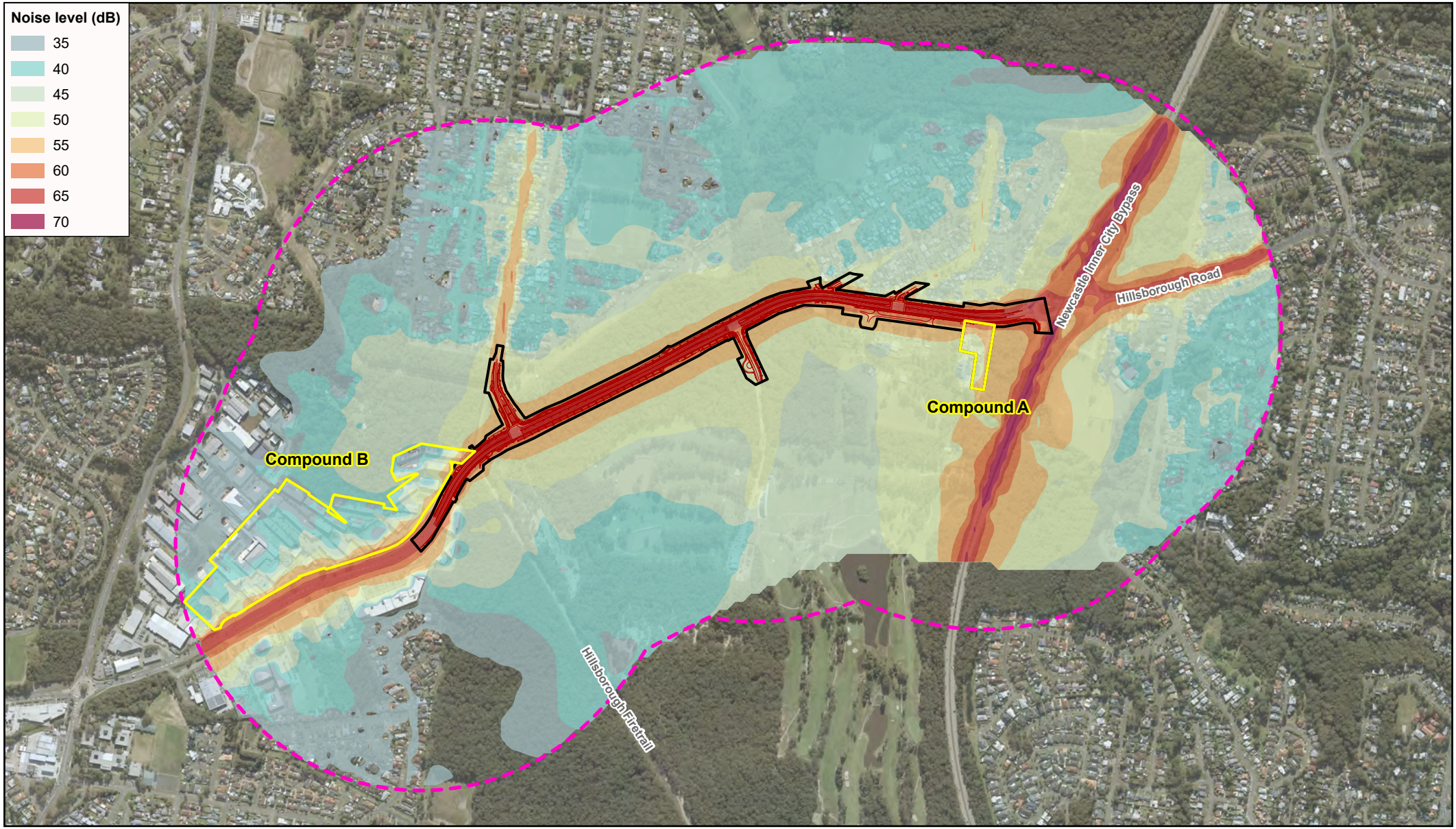
Quieter pavement surfaces were modelled on proposal roads where a road surface correction of -2 dBA was applied. This would be representative of Open Grade Asphalt (OGA) or a crumb rubber asphalt according to TfNSW Noise Model Validation Guideline.

Noise modelling results indicated that road traffic noise criteria would still be exceeded at 14 residential receiver floors. The noise modelling results indicate:

– 15 residential receiver floors (14 individual receivers) are identified to be considered for noise mitigation.
– The cumulative limit is exceeded at each of the 15 residential receiver floors during the day and at 11 during the night.
– Noise levels are predicted to be acute at 14 residential receiver floors during the day and at 11 during the night.

The use of low noise pavement benefits only three sensitive receivers. For this reason, the use of low noise pavement is not considered reasonable.

Operational noise contours for the night-time 2037 build scenario with low noise pavement are presented in Figure 6.4. Receivers that have been identified to be considered for noise mitigation are presented in Table G.2 and shown graphically in Figure 6.5.



LEGEND

- Study area
- Construction footprint
- Compound
- Design

Paper Size ISO A4

0 100 200 300 400

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

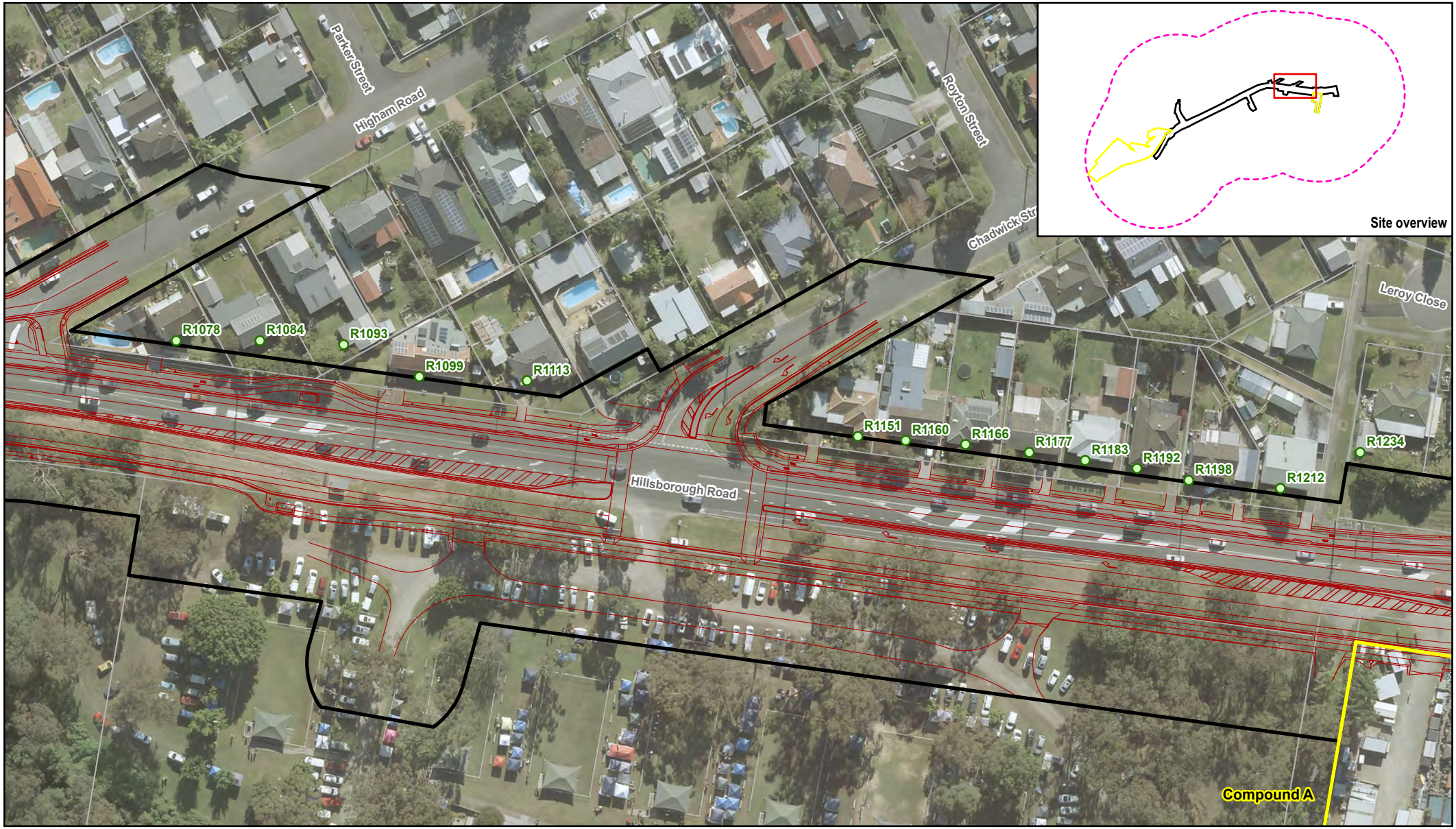
2037 – Build – Night
(Low Noise Pavement)

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

FIGURE 6.4

G:\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 30 Nov 2022 - 12:43

Data source: Metromap Tile Service: - Imagery (Date extracted: 30/11/2022); Roads, Cadastre - LPI, 2017; Created by: tmorton



LEGEND

- Study area
- Construction footprint
- Compound
- Design
- Sensitive receivers
- Cadastre

Paper Size ISO A4

0 10 20 30 40

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

Receivers eligible for consideration of additional mitigation (Low Noise Pavement)

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

FIGURE 6.5

\\ghdnet\ghd\AU\Newcastle\Projects\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 27 Feb 2023 - 15:43

Data source: Metromap Tile Service: - Imagery (Date extracted: 27/02/2023); Roads, Cadastre - LPI, 2017; Created by: dschmidt

6.10.3 Architectural treatments

Where residual impacts remain after the investigation of at-source and in-corridor mitigation, the final approach is to use at-property mitigation. This typically involves using architectural treatments such as thicker window glazing and doors or upgraded facade constructions to achieve appropriate internal noise levels. At-property mitigation can potentially be used in place of at-source and in-corridor mitigation, such as where receivers are not grouped together or where there is community preference. These treatments are generally limited to architectural upgrades to building elements and the installation of acoustic screen walls close to the receiver where they also protect outdoor living spaces. Architectural treatments are more effective when they are applied to masonry buildings compared to lightly clad timber framed structures, and caution should be taken before providing treatments to buildings in a poor state as they may not be effective. The architectural treatments provided may include but are not typically limited to:

– Fresh air ventilation systems that meet the National Construction Code of Australia requirements with the windows and doors shut.
– Upgraded windows and glazing and solid core doors on the exposed facades of the substantial structures only (e.g., masonry or insulated weather board cladding with sealed underfloor). These techniques would be unlikely to produce any noticeable benefit for light frame structures with no acoustic insulation in the walls.
– Upgrading window or door seals and appropriately treating sub-floor ventilation.
– The sealing of wall vents.
– The sealing of the underfloor below the bearers.
– The sealing of eaves.

The final operational noise mitigation strategy would be determined by TfNSW during the detailed design phase and prior to construction. Low noise pavements and noise barriers have been found to be unfeasible meaning architectural treatment is likely to be preferred option for mitigating the predicted exceedances. All triggered residential receivers are adjacent to Hillsborough Road and would be assessed on a case by case basis to determine the appropriate scope of treatment.

7. Conclusion

7.1 Construction noise and vibration

7.1.1 Construction noise

The construction scenarios with the greatest predicted noise impacts are scenarios three and seven, which involve the clearing of vegetation to widen the road corridor and using concrete saws. Construction equipment expected to be used includes petrol chainsaws, 30-ton excavator, tub grinder, dump trucks and concrete saws. A total of 418 exceedances are expected.

Noise levels at several receivers are predicted to exceed the highly noise affected level of 75 dBA during all modelled construction scenarios. These receivers are generally located on or close to Hillsborough Road.

It is important to note, that the model will find the worst-case scenario for each receiver by placing the noise source anywhere along the construction road corridor. Construction will move along the road corridor only effecting a fraction of the total receivers at a time. Therefore, the number of exceedances provided should be considered a cumulative total of exceedances due to each construction scenario and associated activities.

7.1.2 Construction traffic

Although exact construction traffic movements are not known, there is no reasonable possibility that there would be enough additional traffic associated with construction activities to exceed the Road Noise Policy recommendation of a maximum of a 2 dB increase to total road traffic noise. The required additional vehicle movements to achieve this are shown in Table 5.12.

7.1.3 Construction vibration

It is important to note that construction would progress along the construction area and vibration impacts would be experienced for relatively short times at most locations.

7.1.3.1 Structural damage

Using the *DIN 4150-3:1999-02 Structural Vibration – Part 3: Effects of vibration on structures* criteria, structural vibration impacts are summarised as follows for worst case vibration generating works within the construction footprint (vibratory roller activities):

– Heritage structures or buildings of similar construction may be affected by vibration within a maximum of 42 metres of the works. 42 residential receivers have been identified within this distance.
– Standard dwellings or buildings of similar construction may be affected by vibration within a maximum of 18 metres of the works. 21 residential receivers have been identified within this distance.

7.1.3.2 Human comfort

Using the AVTG criteria, human comfort impacts are summarised as follows:

– For vibration generating works within the construction footprint (vibratory roller activities) receivers may be affected by vibration within a maximum of 128 metres of the work. 141 residential receivers were identified within this distance. 9 commercial premises may be affected within 54 metres of the works. No other non-residential sensitive receivers were identified within this buffer distance.

Using the BS 5228-2.2009 criteria:

– For vibration generating works within the construction footprint (vibratory roller activities) receivers may be affected by vibration within a maximum of 140 metres of the work. 156 residential receivers were identified within this distance. 23 commercial premises and 4 active recreation buildings may be affected within 54 metres of the works. No other non-residential sensitive receivers were identified within this buffer distance.

7.1.4 Construction noise and vibration mitigation

7.1.4.1 Noise

Standard mitigation and management measures listed in Table 5.19 shall be implemented.

Impacts from construction noise are predicted to exceed the construction noise objectives and additional noise mitigation measures which aim to minimise the potential noise impacts shall be implemented. Additional noise mitigation measures proposed for each residence are detailed in Appendix C . Proposed measures include:

– Notification
– Verification

7.1.4.2 Vibration

Standard mitigation and management measures listed in Table 5.19 shall be implemented.

Construction vibration is predicted to exceed maximum levels at several residential receivers (refer Appendix E). In accordance with the Transport for New South Wales CNVG the exceedances would require additional mitigation measures during standard hours should vibration intensive work be required to undertaken. Proposed measures include:

– Notification
– Verification
– Respite periods

The following management measures should also be considered:

– Tests to determine site specific ground propagation conditions should be undertaken to refine working buffer distances prior to vibration intensive works occurring onsite.
– The use of vibration intensive equipment during out of hours work periods should be avoided.
– Organise work to be undertaken during standard hours where reasonable and practical and safe to do so.

7.2 Operational noise

Road traffic noise levels in the year 2037 have been considered in this assessment to determine the noise mitigation requirements for the proposal.

The nearest affected receivers are adjacent to Hillsborough Road and are subject to relatively high existing road traffic noise levels. No sensitive receivers in the study area are predicted to experience an increase in road traffic noise greater than 2.0 dB. However, exceedances of the proposal criteria are predicted at these residences due to cumulative limit exceedances as well as acute noise levels from the proposal. It is noted that road traffic noise levels at these receivers are predicted to reduce as a result of the proposal being constructed.

A total of 17 individual sensitive receivers are predicted to exceed the operational road traffic noise criteria and have been identified as being eligible for consideration of at-receiver noise mitigation. At-receiver treatments may include, but are not limited to, ventilation, glazing, window and door seals, sealing of vents and underfloor areas.

These mitigation recommendations would be re-evaluated at the detailed design phase and are subject to change. This may result in more or less sensitive receivers qualifying for consideration of at-receiver noise mitigation. This will take into account any changes to the design and would involve consultation with affected residents.

The final operational noise mitigation strategy would be determined by TfNSW prior to construction. Low noise pavements and noise barriers have been found to be unfeasible for front facing residences along Hillsborough Road meaning architectural treatment is likely to be preferred option for mitigating the predicted exceedances.

8. References

Australian Standard AS 2187.2 (2006), *Explosives – Storage and use Part 2: Use of explosives*

Australian Standard AS 2436 (2010), *Guide to Noise Control on Construction, Maintenance and Demolition Site*

British Standard BS 5228-2 (2009), *Code of practice for noise and vibration control on construction and open sites*

British Standard BS 6472 (1992), *Guide to Evaluation of Human Exposure to Vibration in Buildings*

British Standard BS 7385-2 (1993), *Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels*

Department of Environment and Conservation NSW (2006), *Assessing vibration: a technical guideline*

Department of Environment, Climate Change and Water (2011), *New South Wales Road Noise Policy*

Department of Transport Welsh Office (1988), *Calculation of Road Traffic Noise* (CoRTN)

Environmental Protection Agency (2009), *Interim Construction Noise Guideline*

Environmental Protection Agency (2017), *New South Wales Noise Policy for Industry*

German Standard DIN 4150-3 (2016), *Vibrations in buildings – Part 3: Effects on structures*

ISO 9613-2 (1996), *Acoustics – Attenuation of sound propagation outdoors – Part 2: General method of calculation*

Roads and Traffic Authority (2001), *Environmental Noise Management Manual*

Roads and Maritime Services (2015), *Noise Criteria Guideline*

Roads and Maritime Services (2015), *Noise Mitigation Guideline*

Roads and Maritime Services (2016), *Construction Noise and Vibration Guideline*.

Transport for New South Wales (2019), *Construction Noise and Vibration Strategy*

Appendices

Appendix A

Calibration certificates

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: C33306

EQUIPMENT TESTED : Sound Level Calibrator

Manufacturer: B & K
Type No: 4231 **Serial No:** 2542101
Owner: GHD Pty Ltd
Level 3, 24 Honeysuckle Drive
Newcastle, NSW 2300
Tests Performed: Measured Output Pressure level, Frequency & Distortion
Comments: See Details overleaf. All Test Passed.

Parameter	Pre-Adj	Adj Y/N	Output: (dB re 20 µPa)	Frequency (Hz)	THD&N (%)
Level1:	NA	N	93.86 dB	999.99 Hz	1.12 %
Level2:	NA	N	113.88 dB	999.99 Hz	0.20 %
Uncertainty			±0.11 dB	±0.05%	±0.20 %
Uncertainty (at 95% c.l.) k=2					

CONDITION OF TEST:

Ambient Pressure	1015	hPa ±1 hPa	**Date of Receipt :**	22/07/2022
Temperature	23	°C ±1° C	**Date of Calibration :**	22/07/2022
Relative Humidity	48	% ±5%	**Date of Issue :**	23/07/2022

Acu-Vib Test Procedure: AVP02 (Calibrators)
Test Method: AS IEC 60942 - 2017

CHECKED BY: ..... **AUTHORISED SIGNATURE:** .....

Jack Kielt

Accredited for compliance with ISO/IEC 17025 - Calibration
Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

This report applies only to the item identified in the report and may not be reproduced in part.

The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.

NATA
WORLD RECOGNISED ACCREDITATION
Accredited Lab No. 9262
Acoustic and Vibration Measurements

Acu-Vib Electronics
CALIBRATIONS SALES RENTALS REPAIRS

Head Office & Calibration Laboratory
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154
(02) 9680 8133
www.acu-vib.com.au

The Calibrator described in this report has been tested to the requirements of the standard IEC 60942-[Ed 4]:2017-11.
The tests described in Annex B of the standard (Periodic tests) were carried out under the environmental conditions listed above to the following clauses:

Clause	**Test description**
B4.6	Sound Pressure Level (By comparison with a reference calibrator).
B4.7	Frequency (By measurement with a calibrated frequency meter).
B4.8	Total distortion and noise. (By measurement with a calibrated Noise and Distortion meter).

Notes:

1. The calibrator was calibrated with the main axis vertical and facing down.
2. No corrections have been made for atmospheric pressure, temperature, or humidity.

Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.

----oooo0oooo----

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: C35186

EQUIPMENT TESTED : Sound Level Calibrator

Manufacturer: Svantek
Type No: SV-36 **Serial No:** 106878
Owner: GHD Pty Ltd
Level 3, 24 Honeysuckle Drive
Newcastle, NSW 2300
Tests Performed: Measured Output Pressure level, Frequency & Distortion
Comments: See Details overleaf. All Test Passed.

Parameter	Pre-Adj	Adj Y/N	Output: (dB re 20 µPa)	Frequency (Hz)	THD&N (%)
Level1:	NA	N	93.99 dB	1000.00 Hz	0.79 %
Level2:	NA	N	114.00 dB	1000.00 Hz	0.32 %
Uncertainty			±0.11 dB	±0.05%	±0.20 %
Uncertainty (at 95% c.l.) k=2					

CONDITION OF TEST:

Ambient Pressure 1003 hPa ±1 hPa
Temperature 22 °C ±1° C
Relative Humidity 50 % ±5%

Date of Receipt : 17/02/2023
Date of Calibration : 20/02/2023
Date of Issue : 21/02/2023

Acu-Vib Test Procedure: AVP02 (Calibrators)
Test Method: AS IEC 60942 - 2017

CHECKED BY: .....

AUTHORISED SIGNATURE: .....

Bruce Meldrum

Accredited for compliance with ISO/IEC 17025 - Calibration
Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

This report applies only to the item identified in the report and may not be reproduced in part.

The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.

NATA
WORLD RECOGNISED ACCREDITATION
Accredited Lab No. 9262
Acoustic and Vibration Measurements

Acu-Vib Electronics
CALIBRATIONS SALES RENTALS REPAIRS

Head Office & Calibration Laboratory
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154
(02) 9680 8133
www.acu-vib.com.au

The Calibrator described in this report has been tested to the requirements of the standard IEC 60942-[Ed 4]:2017-11.
The tests described in Annex B of the standard (Periodic tests) were carried out under the environmental conditions listed above to the following clauses:

Clause	Test description
B4.6	Sound Pressure Level (By comparison with a reference calibrator).
B4.7	Frequency (By measurement with a calibrated frequency meter).
B4.8	Total distortion and noise. (By measurement with a calibrated Noise and Distortion meter).

Notes:

1. The calibrator was calibrated with the main axis vertical and facing down.
2. No corrections have been made for atmospheric pressure, temperature, or humidity.

Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.

.

----ooooOoooo----

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: SLM32487

EQUIPMENT TESTED: Sound & Vibration Analyser

Manufacturer:	Svantek		
Type No:	Svan-977	**Serial No:**	36820
Mic. Type:	7052E	**Serial No:**	52114
Pre-Amp. Type:	SV12L	**Serial No:**	30276

Owner: GHD Pty Ltd
Level 3, 24 Honeysuckle Drive
Newcastle, NSW 2300

Tests Performed: IEC 61672-3:2013

Comments: All Tests passed for Class 1. (See overleaf for details)

CONDITIONS OF TEST:

Ambient Pressure	998	hPa ±1 hPa	**Date of Receipt :**	03/05/2022
Temperature	24	°C ±1° C	**Date of Calibration :**	05/05/2022
Relative Humidity	52	% ±5%	**Date of Issue :**	06/05/2022

Acu-Vib Test Procedure: AVP10 (SLM) based on IEC 61672-3.

CHECKED BY: ..... **AUTHORISED SIGNATURE:** .....

Jack Kielt

Accredited for compliance with ISO/IEC 17025 - Calibration

Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

This report applies only to the item identified in the report and may not be reproduced in part.

The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.

NATA
WORLD RECOGNISED ACCREDITATION
Accredited Lab No. 9262
Acoustic and Vibration Measurements

Acu-Vib Electronics
CALIBRATIONS SALES RENTALS REPAIRS

Head Office & Calibration Laboratory
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154
(02) 9680 8133
www.acu-vib.com.au

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: SLM30304

EQUIPMENT TESTED: Sound & Vibration Analyser

Manufacturer:	Svantek		
Type No:	Svan-977	**Serial No:**	36821
Mic. Type:	7052E	**Serial No:**	77132
Pre-Amp. Type:	SV12L	**Serial No:**	95126
Filter Type:	1/3 Octave	**Test No:**	6623

Owner: GHD Pty Ltd
Level 3, 24 Honeysuckle Drive
Newcastle, NSW 2300

Tests Performed: IEC 61672-3:2013,
IEC 1260:1995, & AS/NZS 4476:1997

Comments: All Test passed for Class 1. (See overleaf for details)

CONDITIONS OF TEST:

Ambient Pressure	1011	hPa ±1 hPa	**Date of Receipt :**	09/06/2021
Temperature	23	°C ±1° C	**Date of Calibration :**	12/08/2021
Relative Humidity	41	% ±5%	**Date of Issue :**	12/08/2021

Acu-Vib Test Procedure: AVP10 (SLM) & AVP06 (Filters)

CHECKED BY: ..... **AUTHORISED SIGNATURE:** .....

Hein Soe

Accredited for compliance with ISO/IEC 17025 - Calibration

Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

This report applies only to the item identified in the report and may not be reproduced in part.

The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.

NATA
WORLD RECOGNISED ACCREDITATION
Accredited Lab No. 9262
Acoustic and Vibration Measurements

Acu-Vib Electronics
CALIBRATIONS SALES RENTALS REPAIRS

Head Office & Calibration Laboratory
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154
(02) 9680 8133
www.acu-vib.com.au

The performance characteristics listed below were tested. The tests are based on the relevant clauses of IEC 61672-3:2013

Tests Performed:	*Clause*	*Result*
Absolute Calibration	10	Pass
Acoustical Frequency Weighting	12	Pass
Self-Generated Noise	11.1	Observed
Electrical Noise	11.2	Observed
Long Term Stability	15	Pass
Electrical Frequency Weightings	13	Pass
Frequency and Time Weightings	14	Pass
Reference Level Linearity	16	Pass
Range Level Linearity	17	Pass
Toneburst	18	Pass
Peak C Sound Level	19	Pass
Overload Indicator	20	Pass
High Level Stability	21	Pass

Statement of Compliance: The sound level meter submitted for testing successfully completed the periodic tests of IEC 61672-3:-2013, for the environmental conditions under which the tests were performed. However, no general statement or conclusion can be made about conformance of the sound level meter to the full specifications of IEC 61672-1:-2013 because evidence was not publically available, from an independent testing organization responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:-2013 and because the periodic tests of IEC 61672-3:-2013 cover only a limited subset of the specifications in IEC 61672-1:-2013.

This Sound Level Meter included an Octave Filter Set. Tests were based on IEC 1260: 1995 and AS/NZS 4476 - 1997 and were conducted to test the following performance characteristics:

1. Relative attenuation clause 5.3

A full technical report is available on request.

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: SLM29926

EQUIPMENT TESTED: Sound Level Meter

Manufacturer:	Svantek		
Type No:	SVAN-977B	**Serial No:**	45746
Mic. Type:	7052E	**Serial No:**	64178
Pre-Amp. Type:	SV12L	**Serial No:**	57938
Filter Type:	1/3 Octave	**Test No:**	FILT 6541

Owner: GHD Pty Ltd
Level 3, 24 Honeysuckle Drive
Newcastle, NSW 2300

Tests Performed: IEC 61672-3:2013,
IEC 1260:1995, & AS/NZS 4476:1997

Comments: All Test passed for Class 1. (See overleaf for details)

CONDITIONS OF TEST:

Ambient Pressure	1008	hPa ±1 hPa	**Date of Receipt :**	01/07/2021
Temperature	24	°C ±1° C	**Date of Calibration :**	01/07/2021
Relative Humidity	50	% ±5%	**Date of Issue :**	01/07/2021

Acu-Vib Test Procedure: AVP10 (SLM) & AVP06 (Filters)

CHECKED BY: ..... **AUTHORISED SIGNATURE:** .....

Hein Soe

Accredited for compliance with ISO/IEC 17025 - Calibration

Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

This report applies only to the item identified in the report and may not be reproduced in part.

The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.

NATA
WORLD RECOGNISED ACCREDITATION
Accredited Lab No. 9262
Acoustic and Vibration Measurements

Acu-Vib Electronics
CALIBRATIONS SALES RENTALS REPAIRS

Head Office & Calibration Laboratory
Unit 14, 22 Hudson Ave, Castle Hill NSW 2154
(02) 9680 8133
www.acu-vib.com.au

The performance characteristics listed below were tested. The tests are based on the relevant clauses of IEC 61672-3:2013

Tests Performed:	*Clause*	*Result*
Absolute Calibration	10	Pass
Acoustical Frequency Weighting	12	Pass
Self-Generated Noise	11.1	Observed
Electrical Noise	11.2	Observed
Long Term Stability	15	Pass
Electrical Frequency Weightings	13	Pass
Frequency and Time Weightings	14	Pass
Reference Level Linearity	16	Pass
Range Level Linearity	17	Pass
Toneburst	18	Pass
Peak C Sound Level	19	Pass
Overload Indicator	20	Pass
High Level Stability	21	Pass

Statement of Compliance: The sound level meter submitted for testing successfully completed the periodic tests of IEC 61672-3:-2013, for the environmental conditions under which the tests were performed. However, no general statement or conclusion can be made about conformance of the sound level meter to the full specifications of IEC 61672-1:-2013 because evidence was not publically available, from an independent testing organization responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:-2013 and because the periodic tests of IEC 61672-3:-2013 cover only a limited subset of the specifications in IEC 61672-1:-2013.

This Sound Level Meter included an Octave Filter Set. Tests were based on IEC 1260: 1995 and AS/NZS 4476 - 1997 and were conducted to test the following performance characteristics:

1. Relative attenuation clause 5.3

A full technical report is available on request.

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: SLM29927

EQUIPMENT TESTED: Sound Level Meter

Manufacturer:	Svantek		
Type No:	SVAN-977B	**Serial No:**	45751
Mic. Type:	7052E	**Serial No:**	62242
Pre-Amp. Type:	SV12L	**Serial No:**	30274
Filter Type:	1/3 Octave	**Test No:**	FILT 6542

Owner: GHD Pty Ltd
Level 3, 24 Honeysuckle Drive
Newcastle, NSW 2300

Tests Performed: IEC 61672-3:2013,
IEC 1260:1995, & AS/NZS 4476:1997

Comments: All Test passed for Class 1. (See overleaf for details)

CONDITIONS OF TEST:

Ambient Pressure	1008	hPa ±1 hPa	**Date of Receipt :**	01/07/2021
Temperature	24	°C ±1° C	**Date of Calibration :**	01/07/2021
Relative Humidity	48	% ±5%	**Date of Issue :**	01/07/2021

Acu-Vib Test Procedure: AVP10 (SLM) & AVP06 (Filters)

CHECKED BY: ..... **AUTHORISED SIGNATURE:** .....

Hein Soe

Accredited for compliance with ISO/IEC 17025 - Calibration

Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

This report applies only to the item identified in the report and may not be reproduced in part.

The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.

NATA
WORLD RECOGNISED ACCREDITATION
Accredited Lab No. 9262
Acoustic and Vibration Measurements

Acu-Vib Electronics
CALIBRATIONS SALES RENTALS REPAIRS

Head Office & Calibration Laboratory
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154
(02) 9680 8133
www.acu-vib.com.au

The performance characteristics listed below were tested. The tests are based on the relevant clauses of IEC 61672-3:2013

Tests Performed:	*Clause*	*Result*
Absolute Calibration	10	Pass
Acoustical Frequency Weighting	12	Pass
Self-Generated Noise	11.1	Observed
Electrical Noise	11.2	Observed
Long Term Stability	15	Pass
Electrical Frequency Weightings	13	Pass
Frequency and Time Weightings	14	Pass
Reference Level Linearity	16	Pass
Range Level Linearity	17	Pass
Toneburst	18	Pass
Peak C Sound Level	19	Pass
Overload Indicator	20	Pass
High Level Stability	21	Pass

Statement of Compliance: The sound level meter submitted for testing successfully completed the periodic tests of IEC 61672-3:-2013, for the environmental conditions under which the tests were performed. However, no general statement or conclusion can be made about conformance of the sound level meter to the full specifications of IEC 61672-1:-2013 because evidence was not publically available, from an independent testing organization responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:-2013 and because the periodic tests of IEC 61672-3:-2013 cover only a limited subset of the specifications in IEC 61672-1:-2013.

This Sound Level Meter included an Octave Filter Set. Tests were based on IEC 1260: 1995 and AS/NZS 4476 - 1997 and were conducted to test the following performance characteristics:

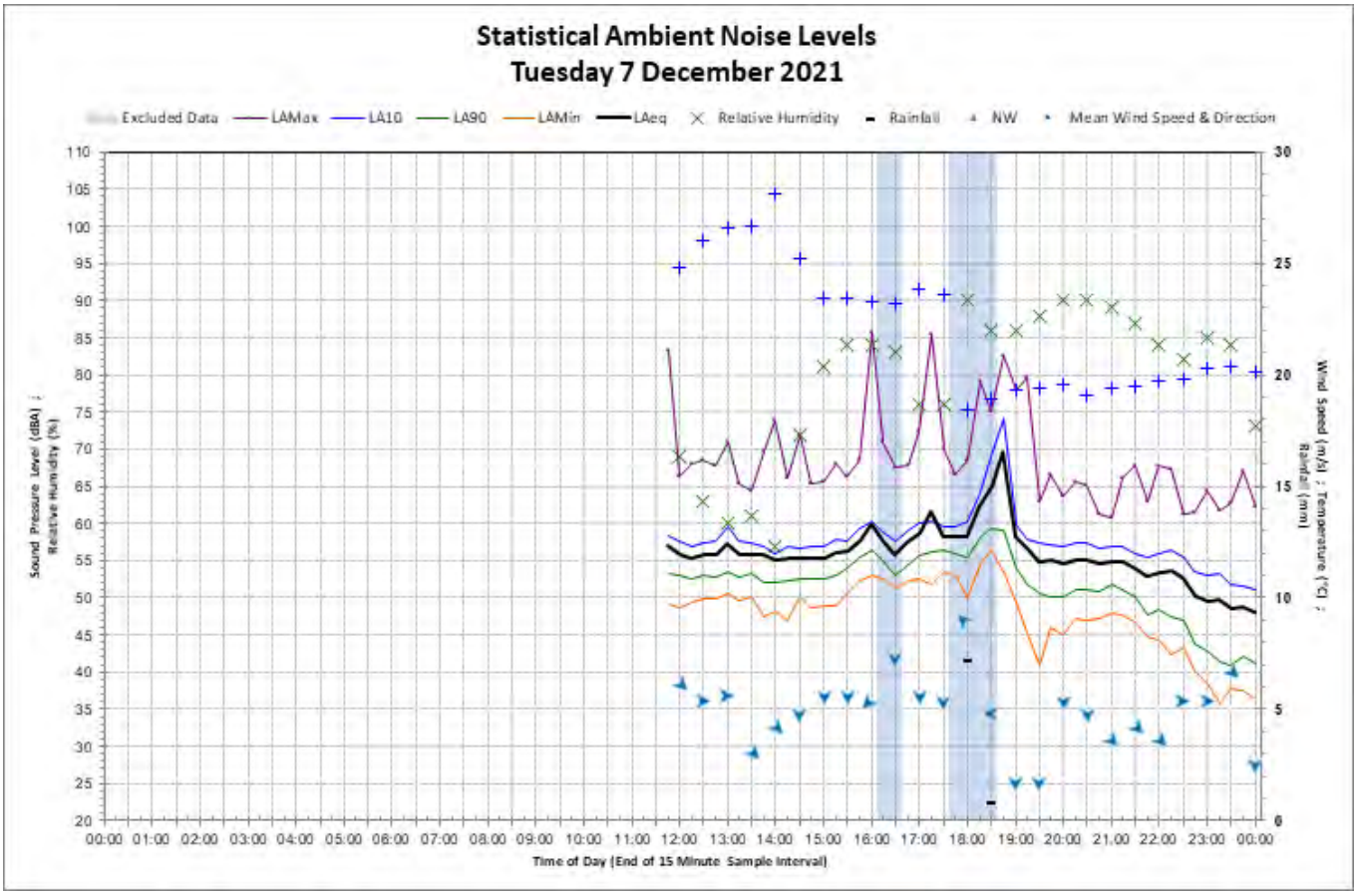
1. Relative attenuation clause 5.3

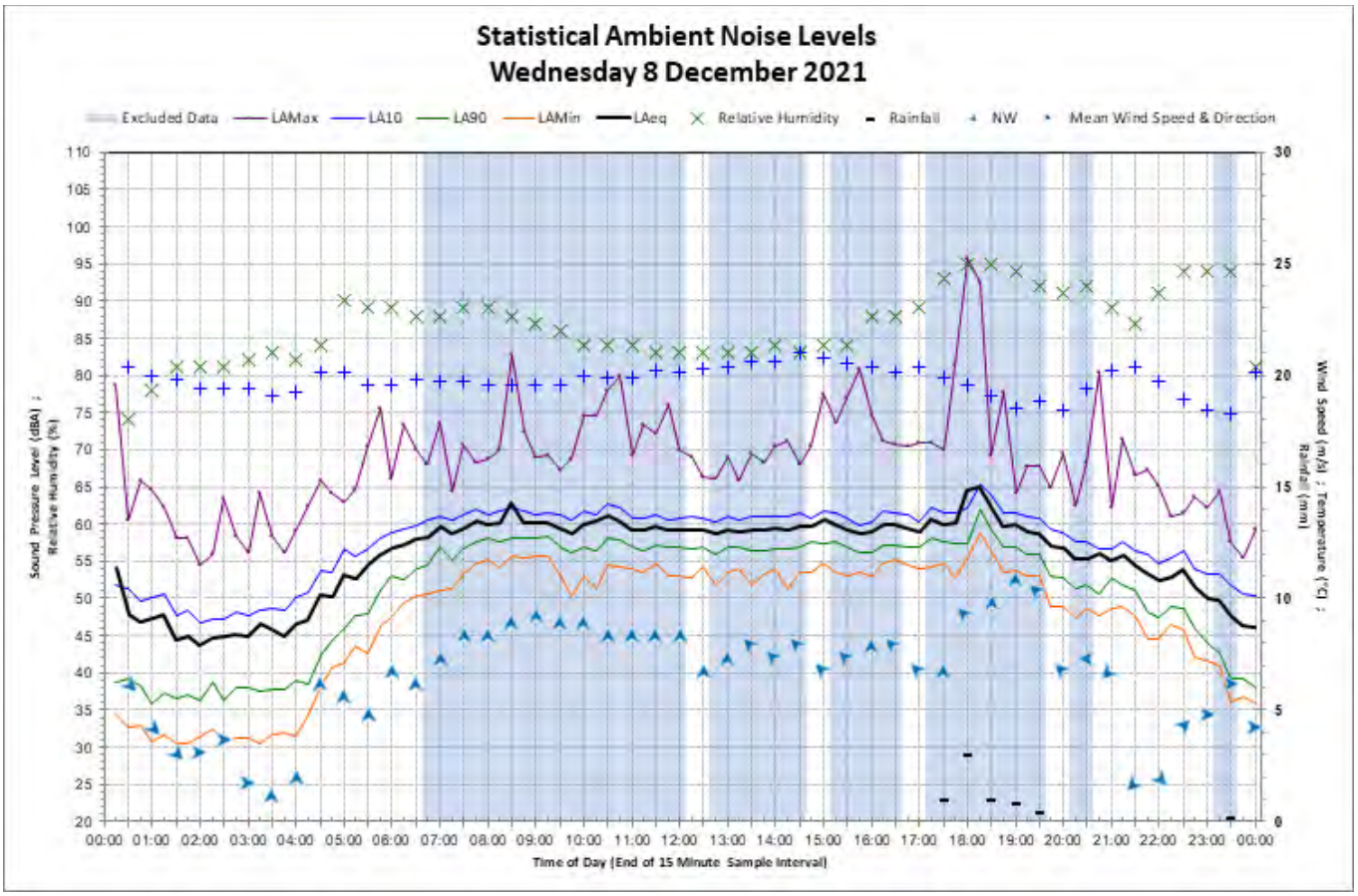
A full technical report is available on request.

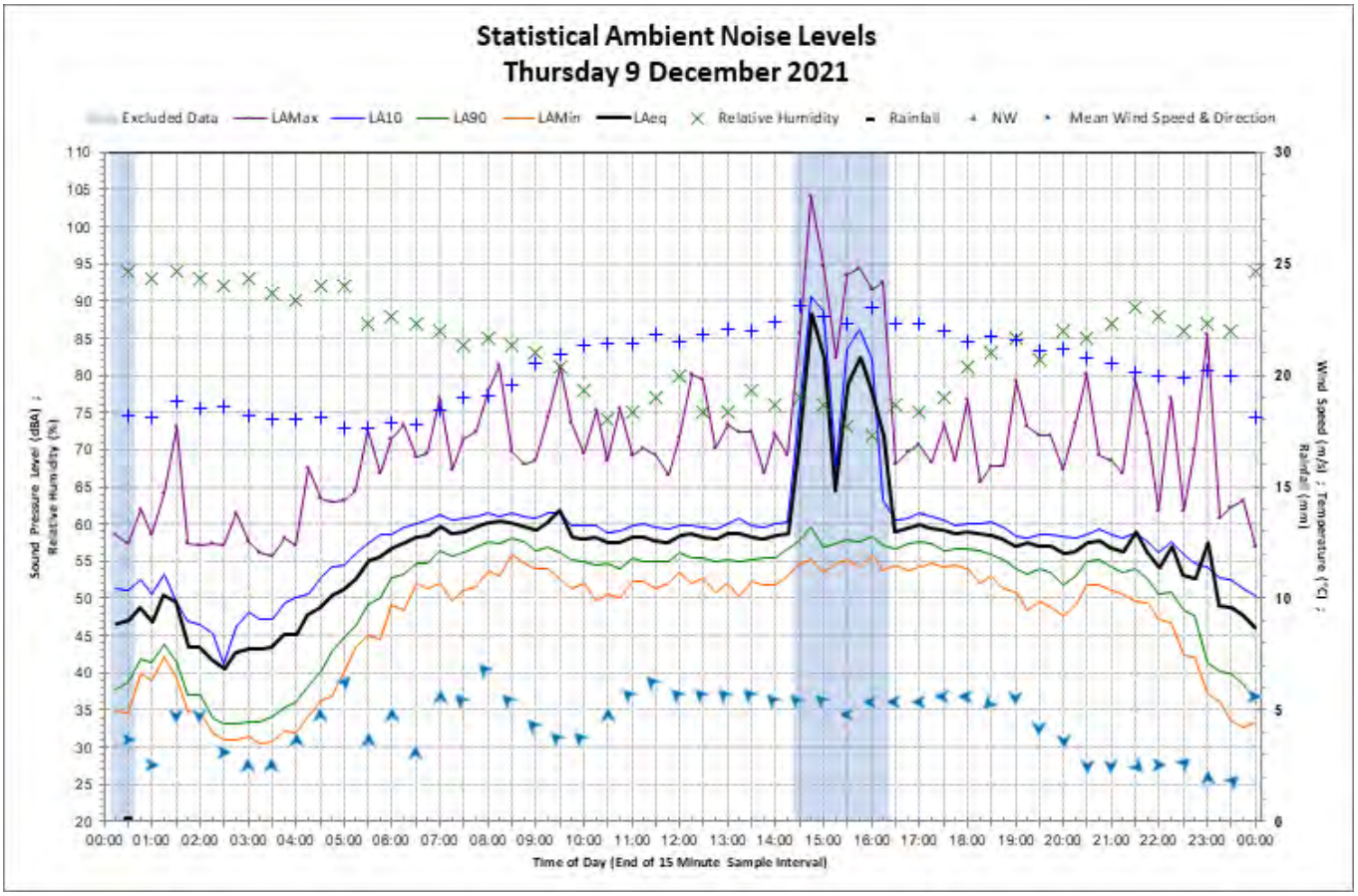
Appendix B

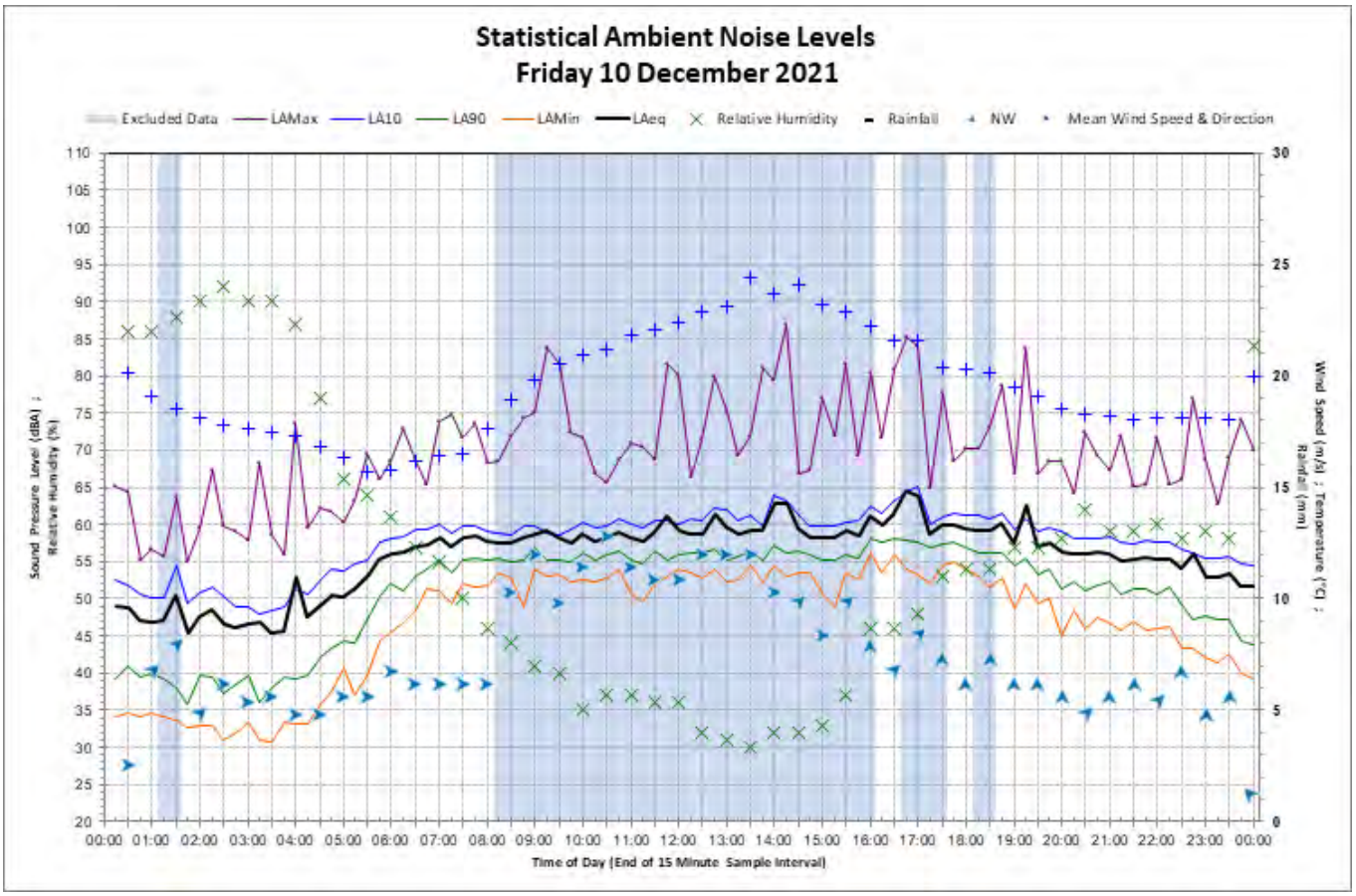
Unattended noise monitoring charts

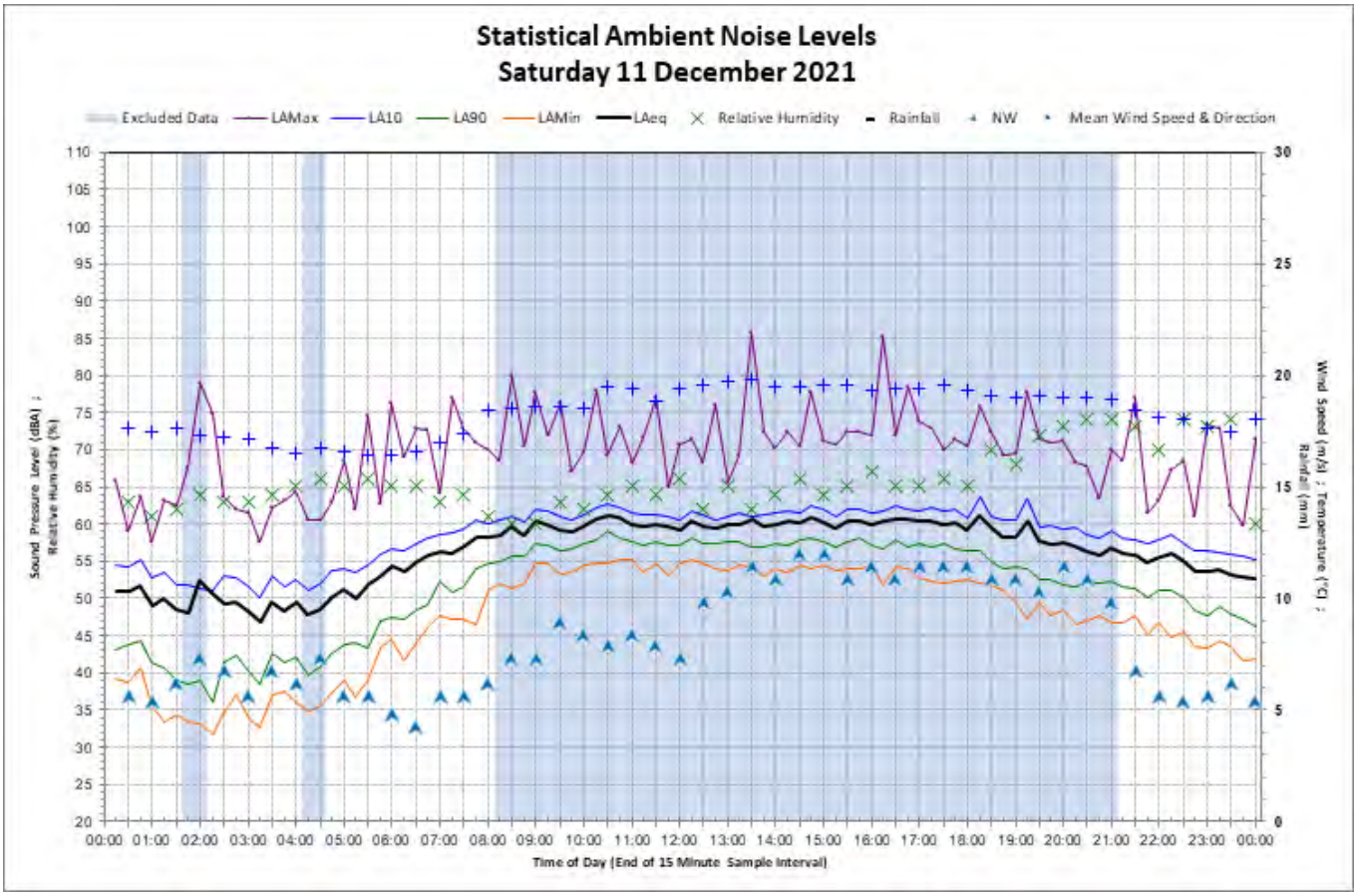
B-1 Location M1 – 13 Leroy Close

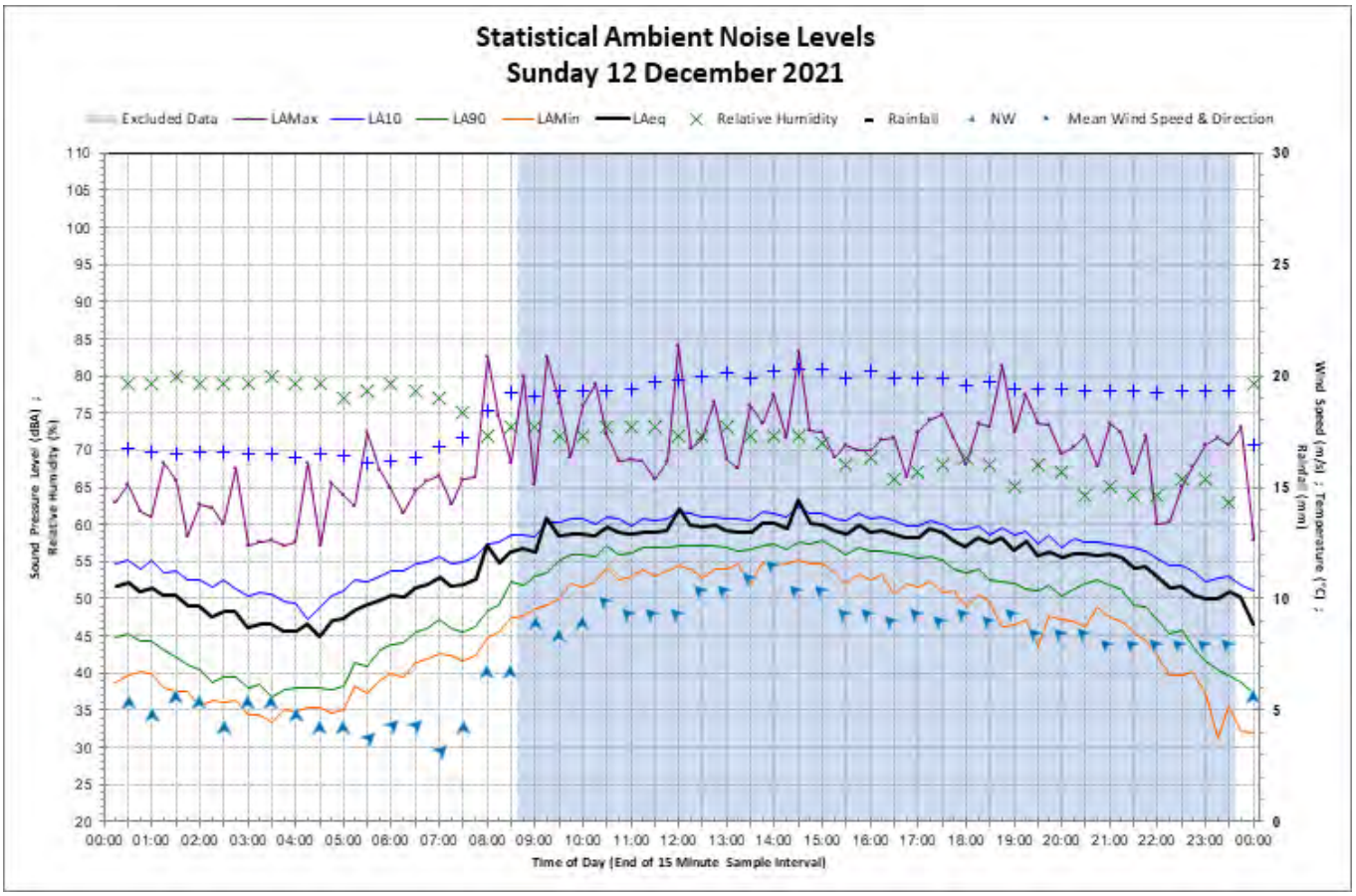


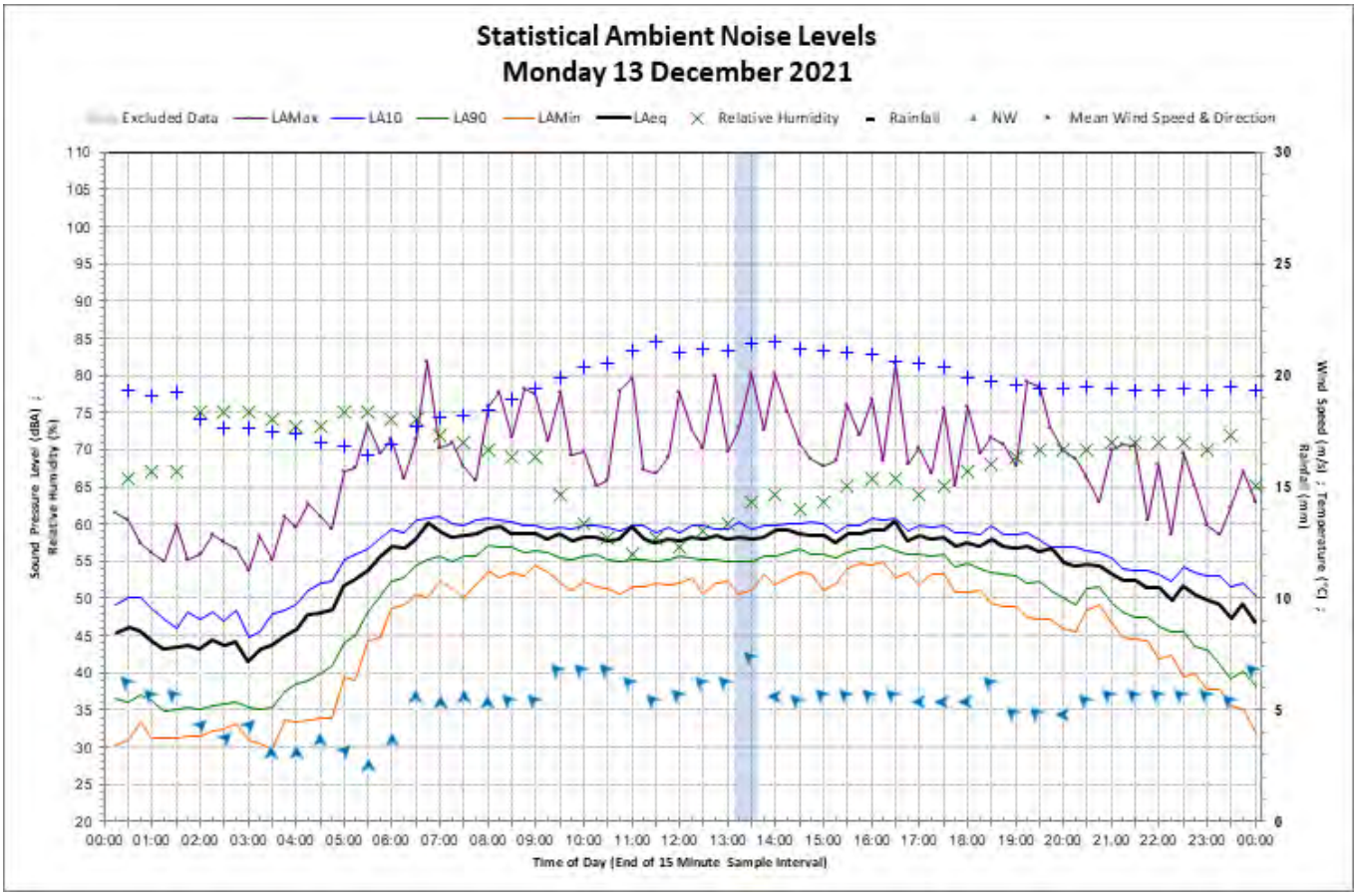


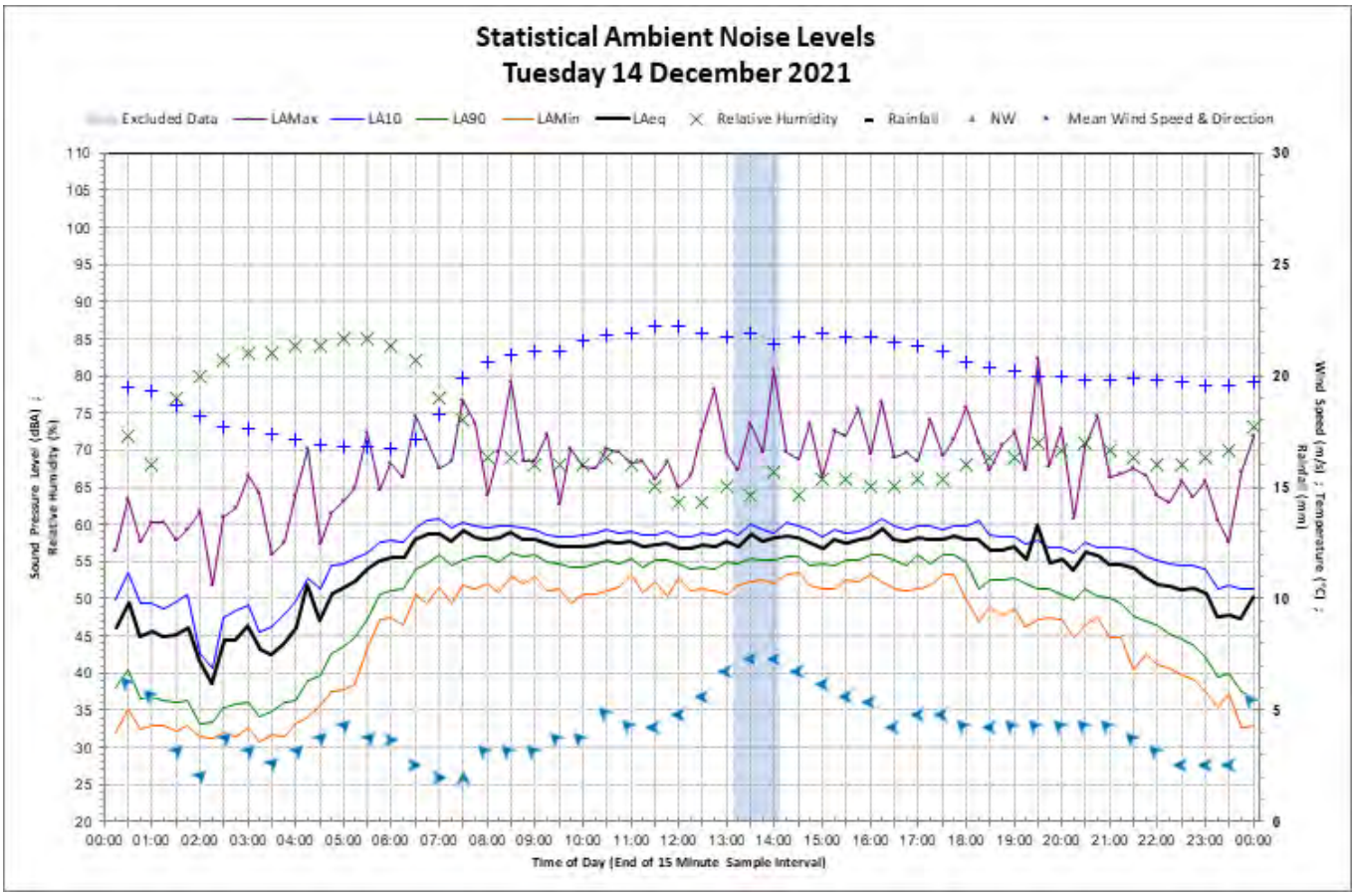

Statistical Ambient Noise Levels
Thursday 9 December 2021
Excluded Data
LAMax
LA10
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level (dBA) ; Relative Humidity (%)
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)

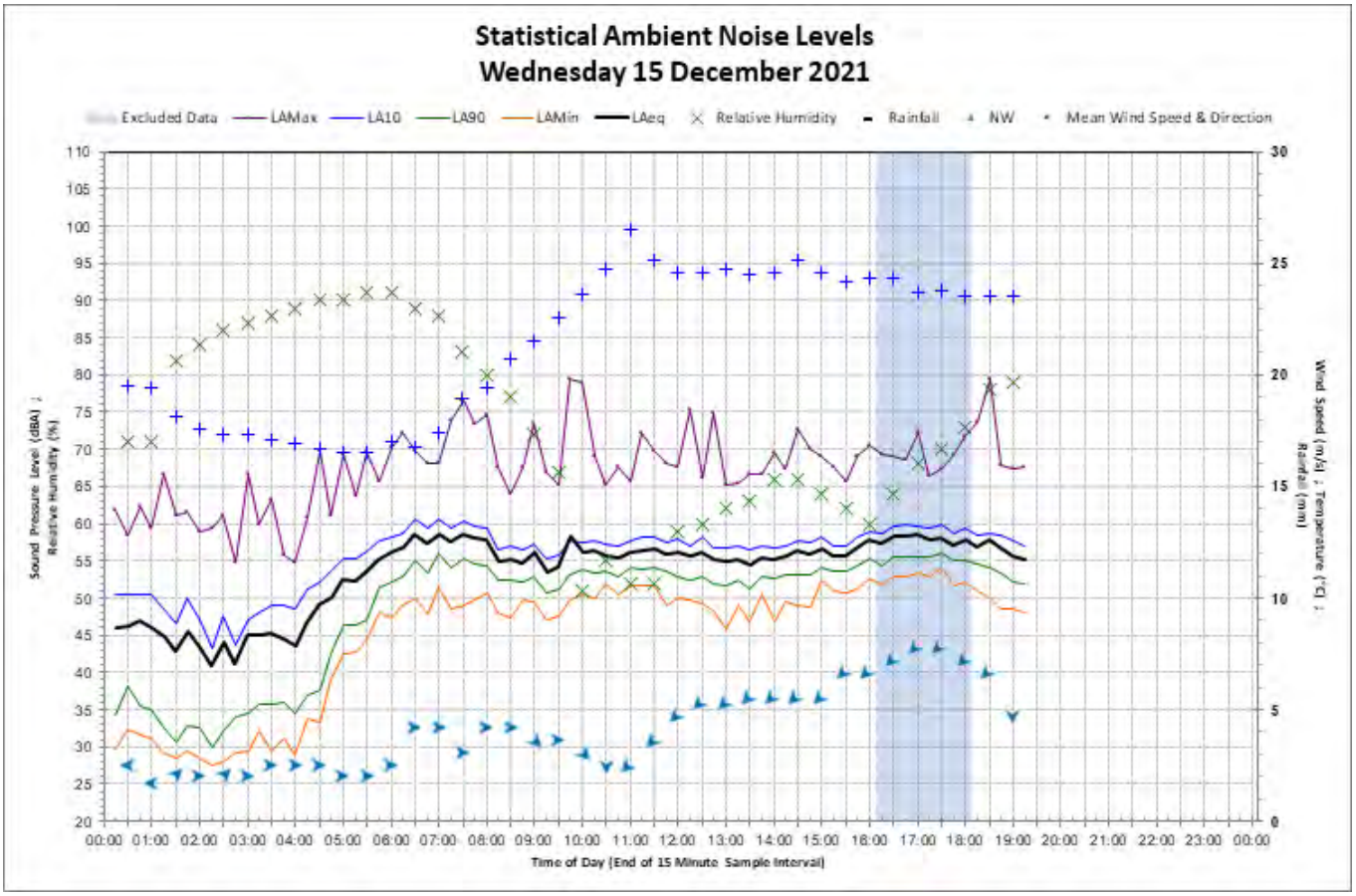

Statistical Ambient Noise Levels
Friday 10 December 2021
Excluded Data
LAMax
LA10
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level (dBA) ; Relative Humidity (%)
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)


Statistical Ambient Noise Levels
Saturday 11 December 2021
Excluded Data
LAMax
LA10
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level (dBA) ; Relative Humidity (%)
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)

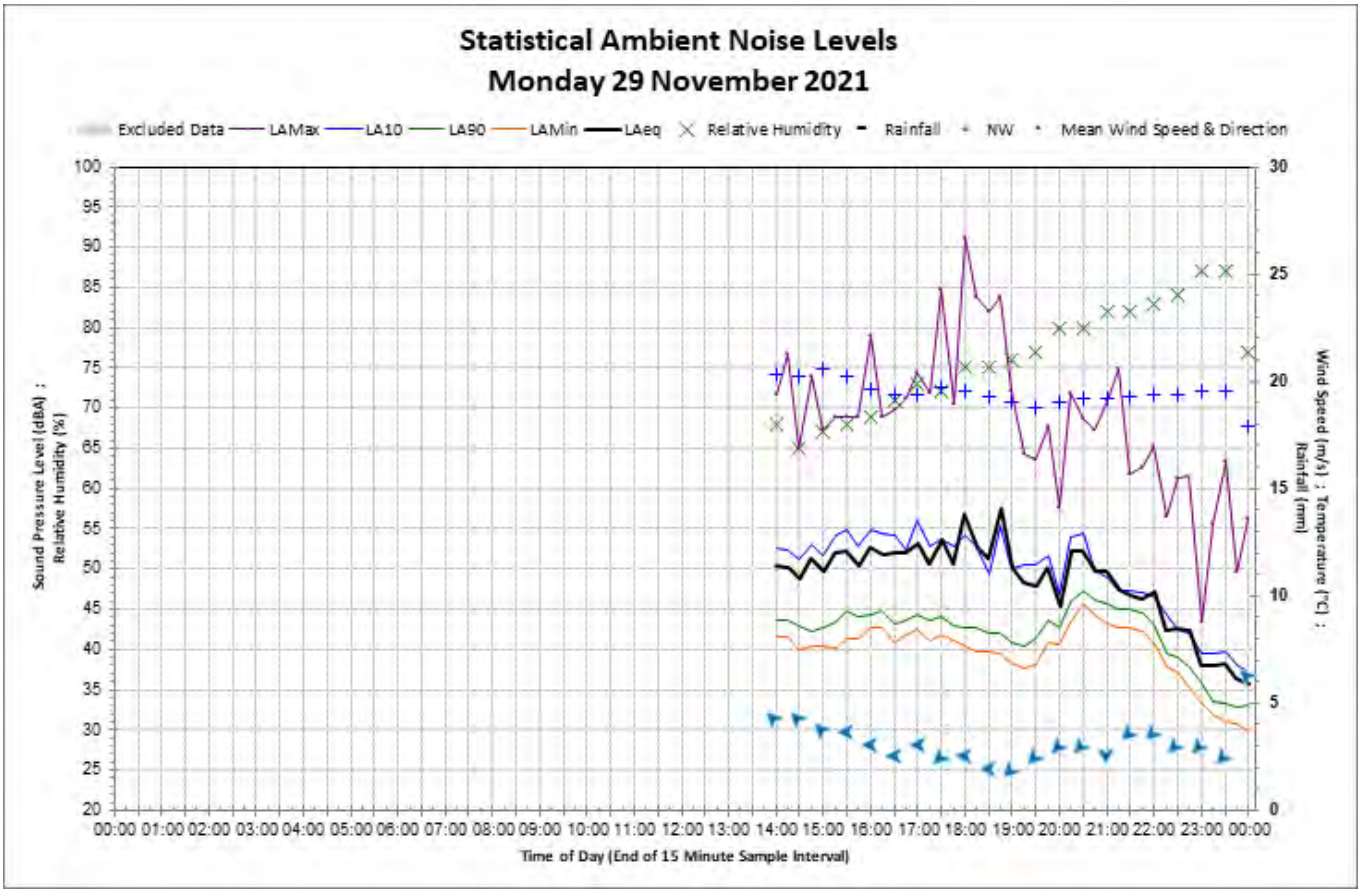

Statistical Ambient Noise Levels
Sunday 12 December 2021
Excluded Data
LAMax
LA10
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level (dBA) ; Relative Humidity (%)
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)

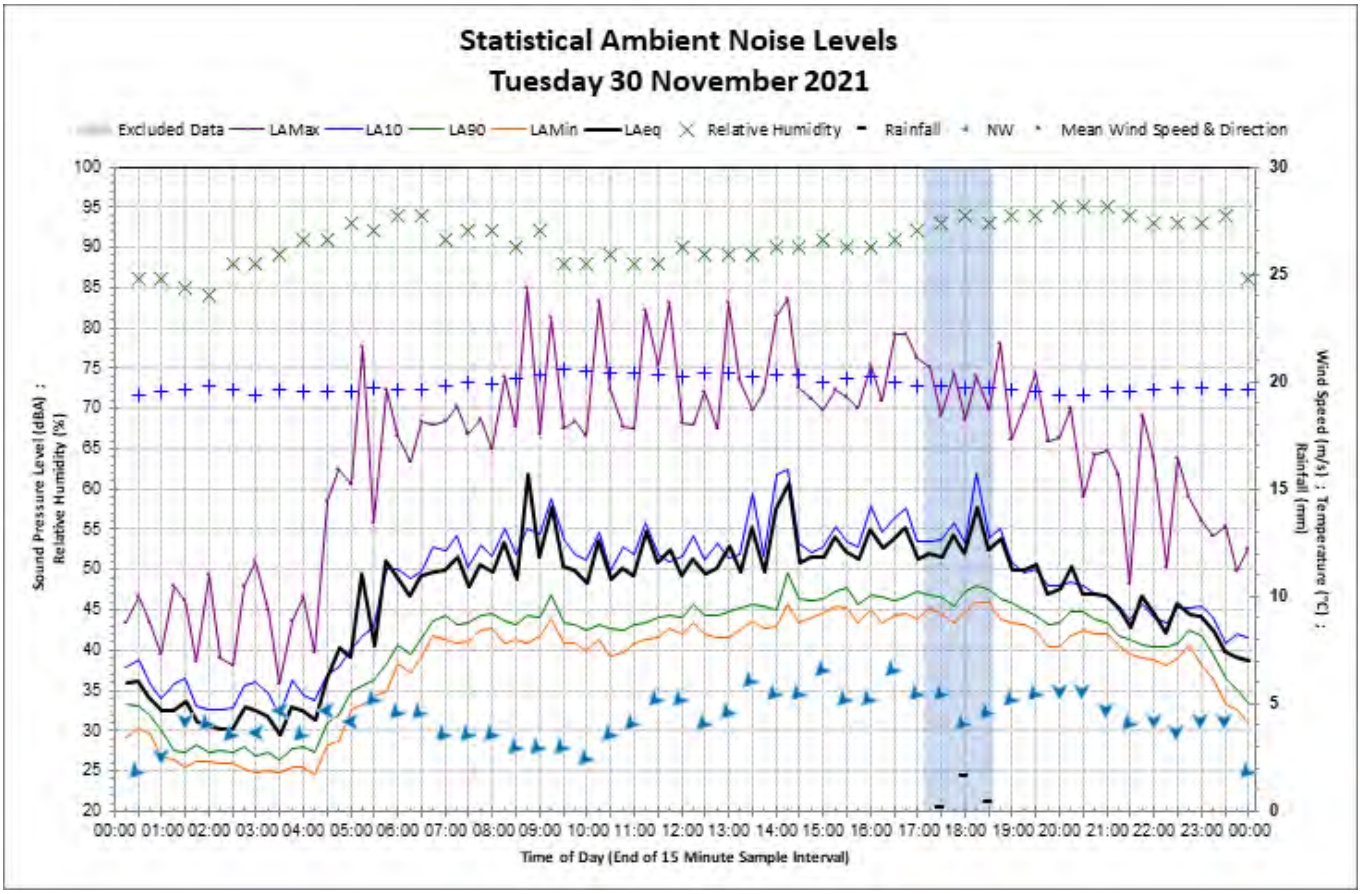

Statistical Ambient Noise Levels
Monday 13 December 2021
Excluded Data
LAMax
LA10
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level (dBA) ; Relative Humidity (%)
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)

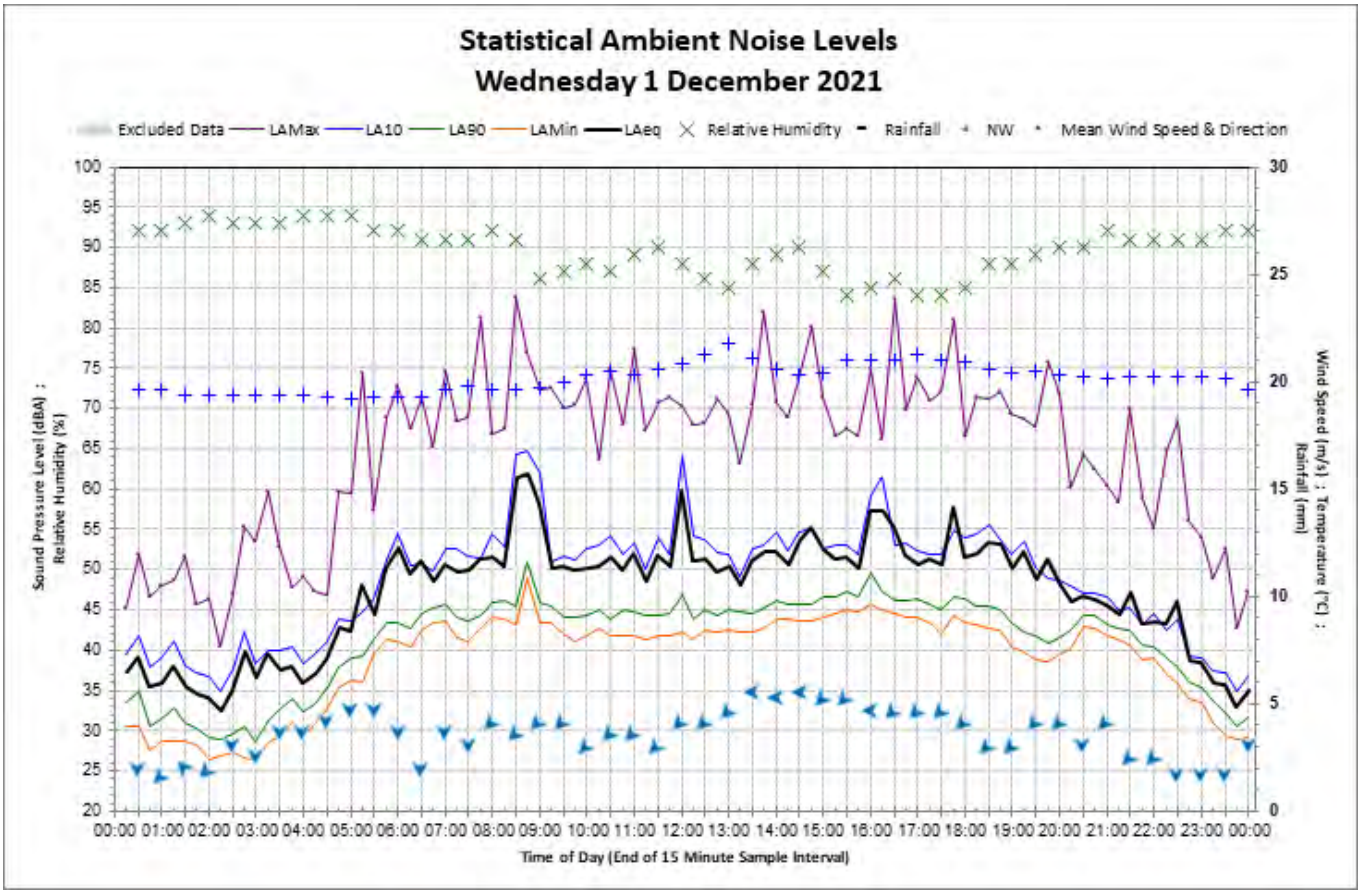

Statistical Ambient Noise Levels
Tuesday 14 December 2021
Excluded Data
LAMax
LA10
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level (dBA) ; Relative Humidity (%)
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)

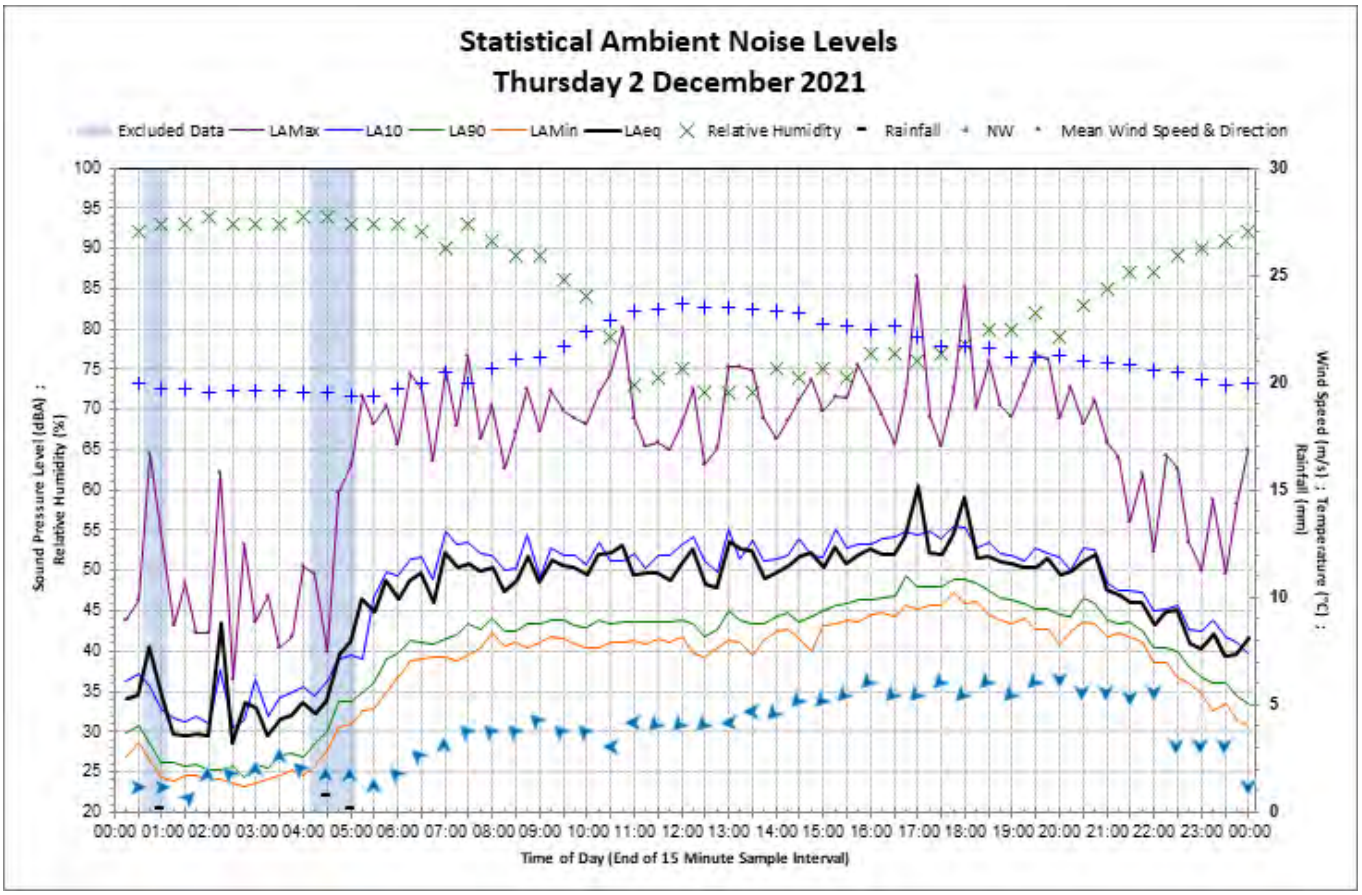

Statistical Ambient Noise Levels
Wednesday 15 December 2021
Excluded Data
LAMax
LA10
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level (dBA) & Relative Humidity (%)
Wind Speed (m/s) & Temperature (°C) & Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)

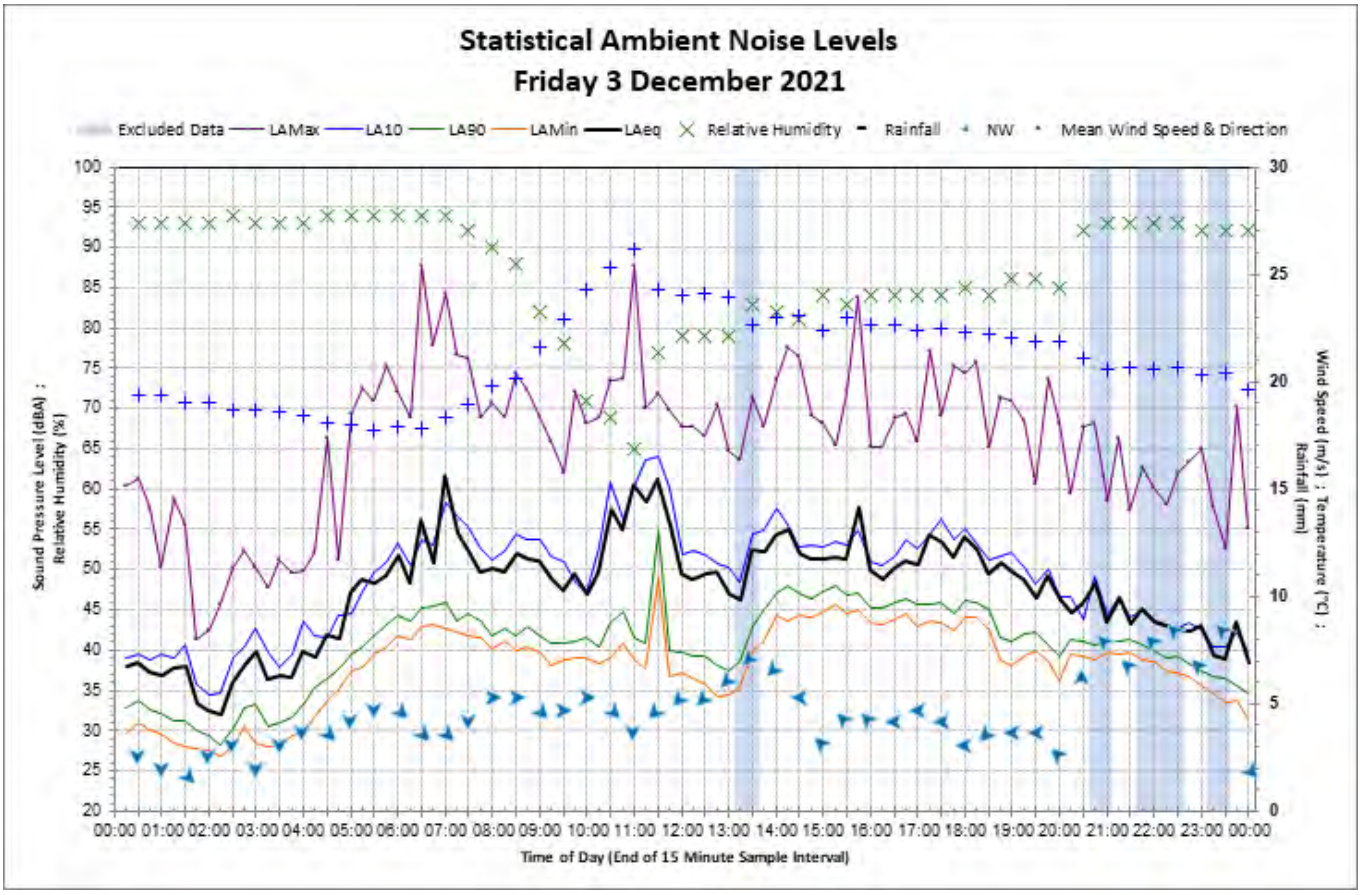
B-2 Location M2 – 16 Highham Road

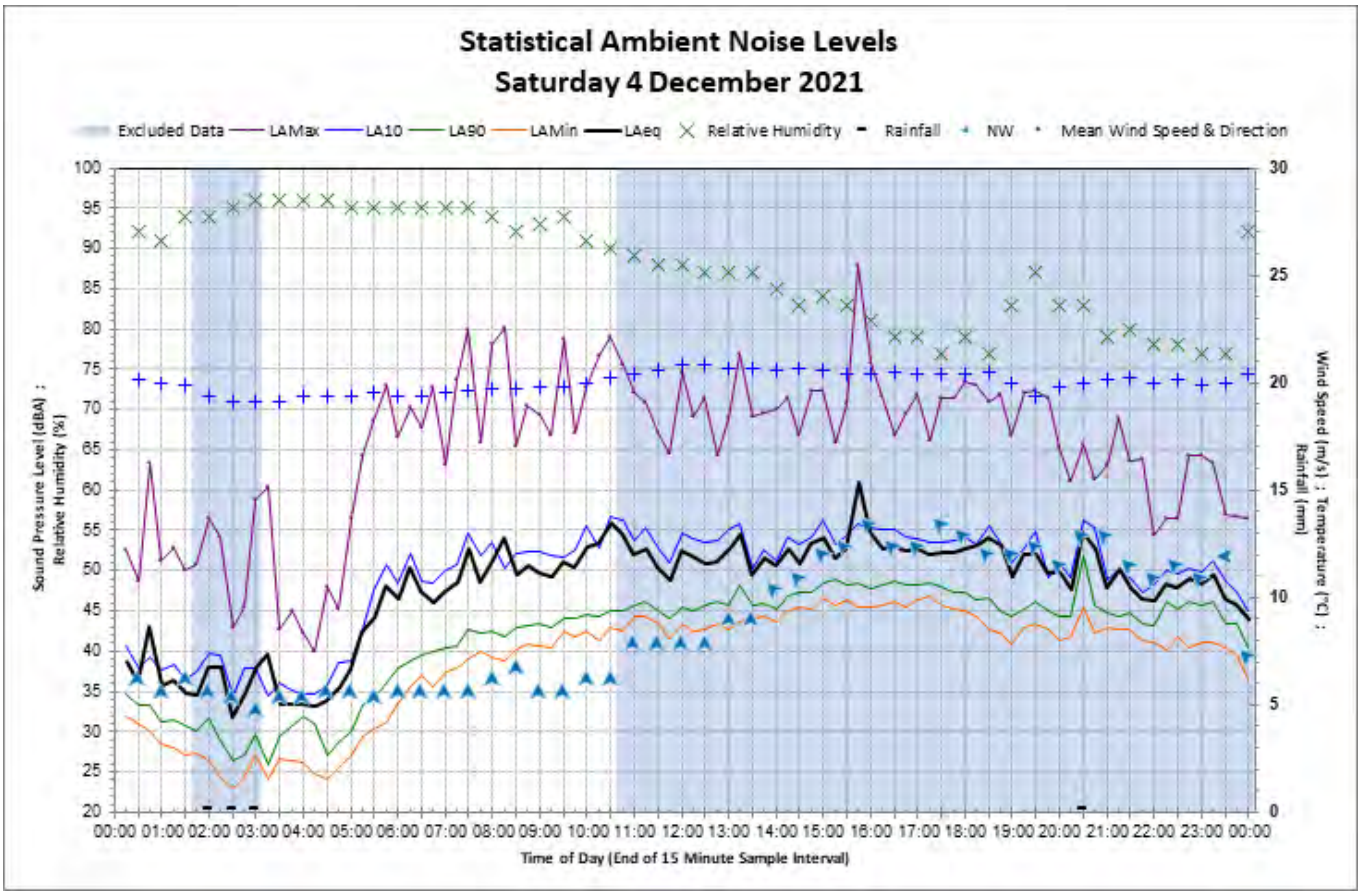


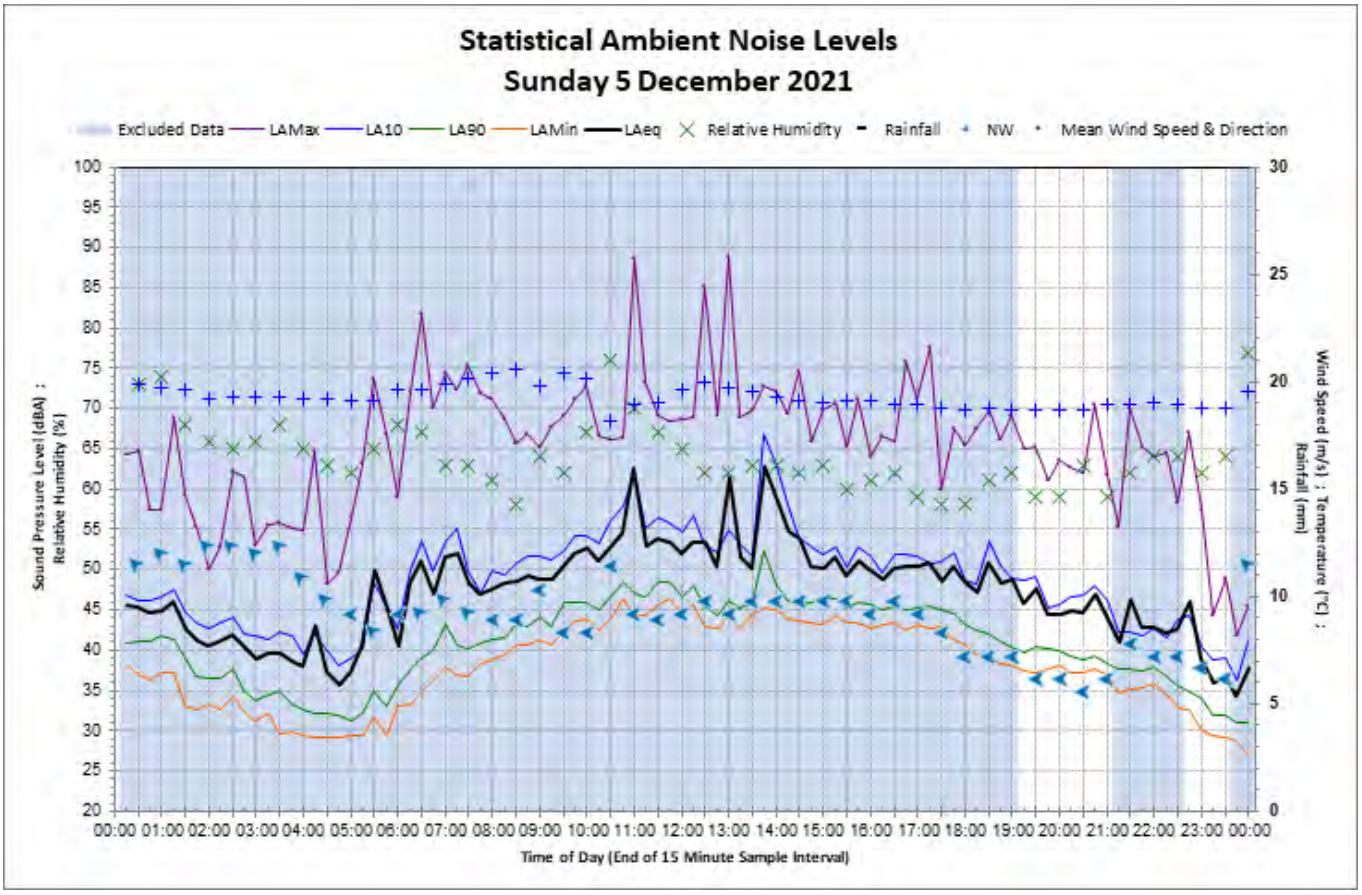


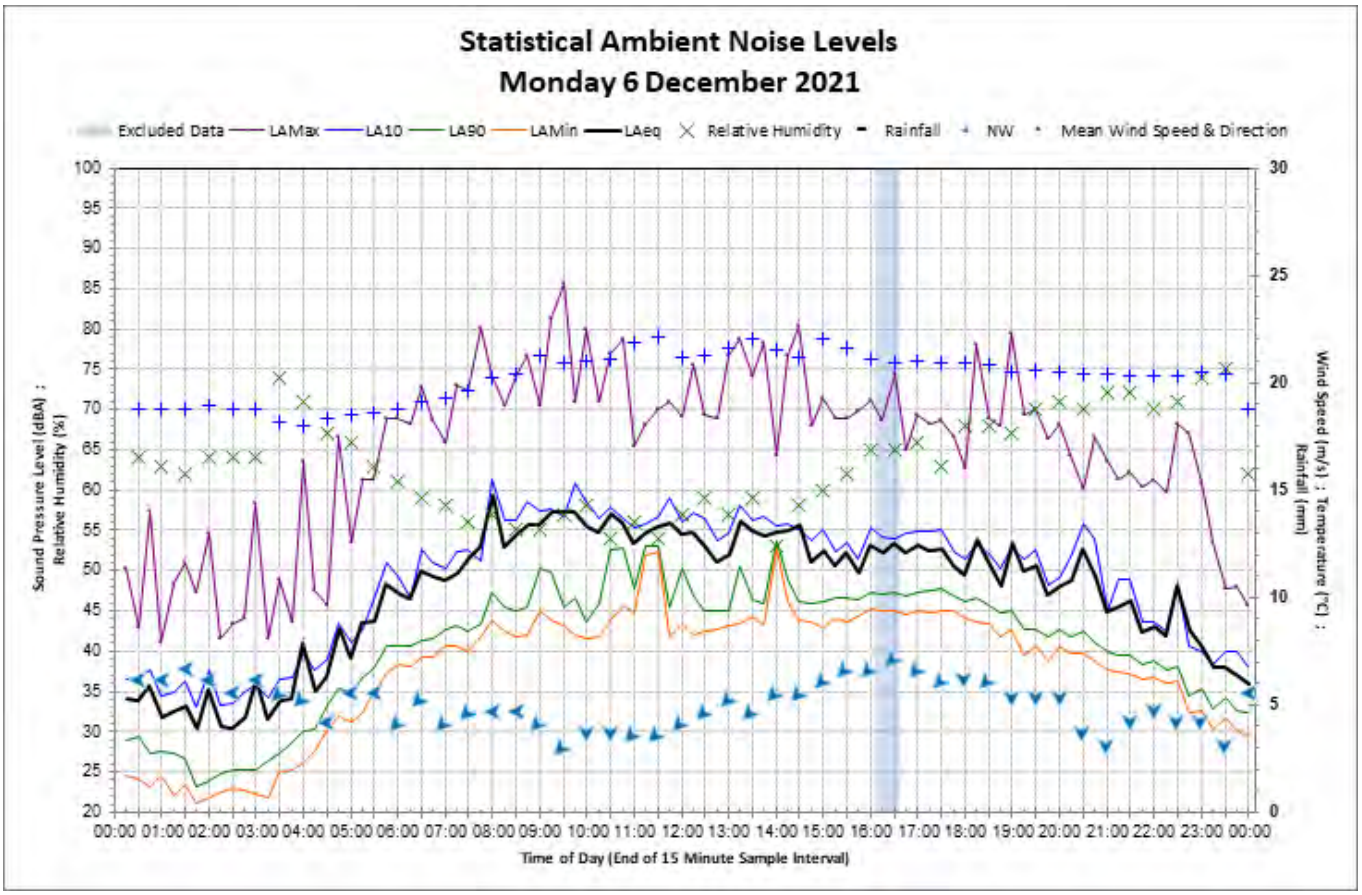

Statistical Ambient Noise Levels
Wednesday 1 December 2021
Excluded Data
LAMax
LA10
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level (dBA) ; Relative Humidity (%)
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)

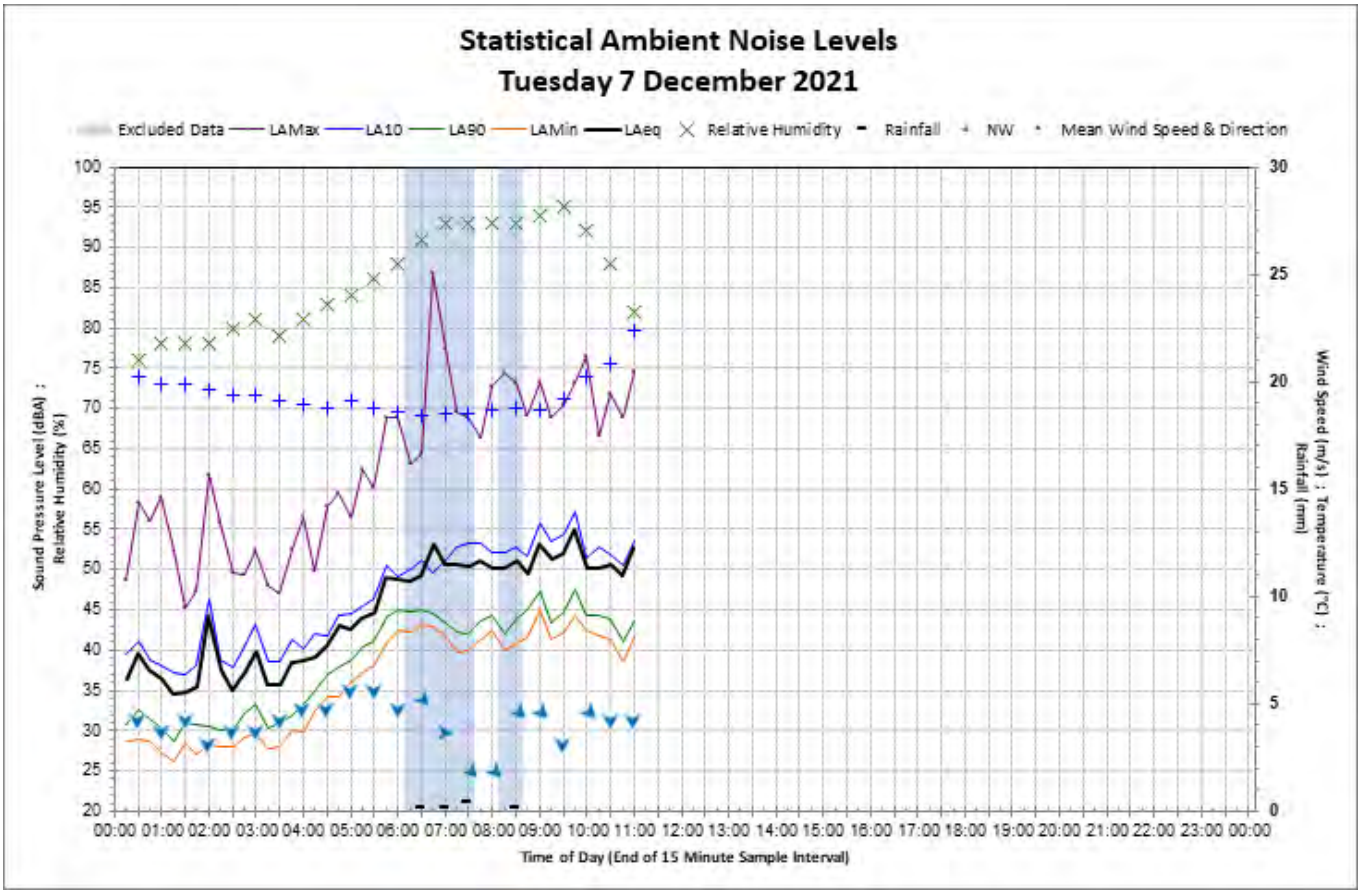

Statistical Ambient Noise Levels
Thursday 2 December 2021
Excluded Data
LAMax
LA10
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level (dBA) ; Relative Humidity (%)
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)


Statistical Ambient Noise Levels
Friday 3 December 2021
Excluded Data
LAMax
LA10
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level (dBA) ; Relative Humidity (%)
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)

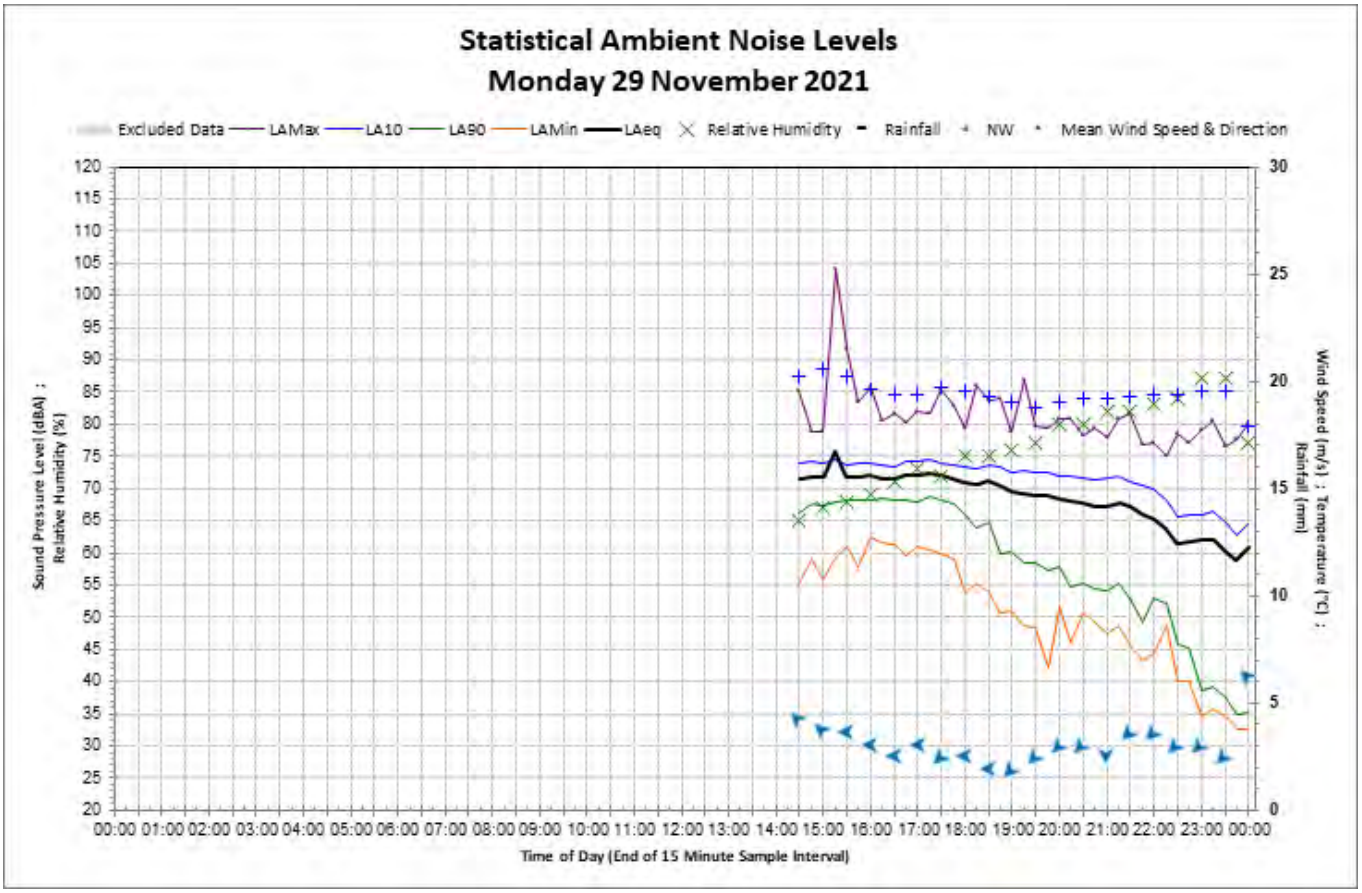

Statistical Ambient Noise Levels
Saturday 4 December 2021
Excluded Data
LAMax
LA10
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level (dBA) ; Relative Humidity (%)
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)

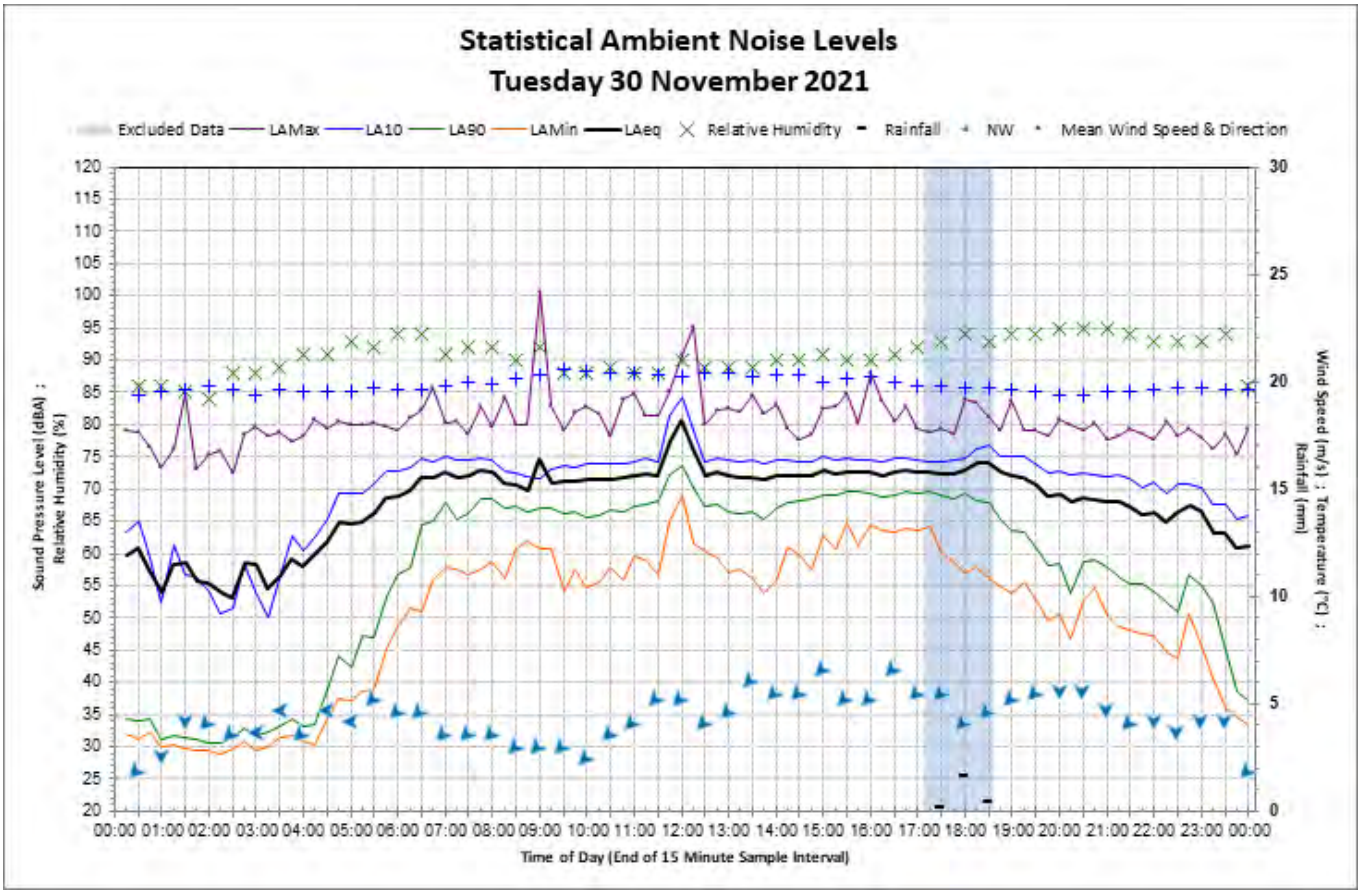

Statistical Ambient Noise Levels
Sunday 5 December 2021
Excluded Data
LAMax
LA10
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level (dBA) ; Relative Humidity (%)
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)

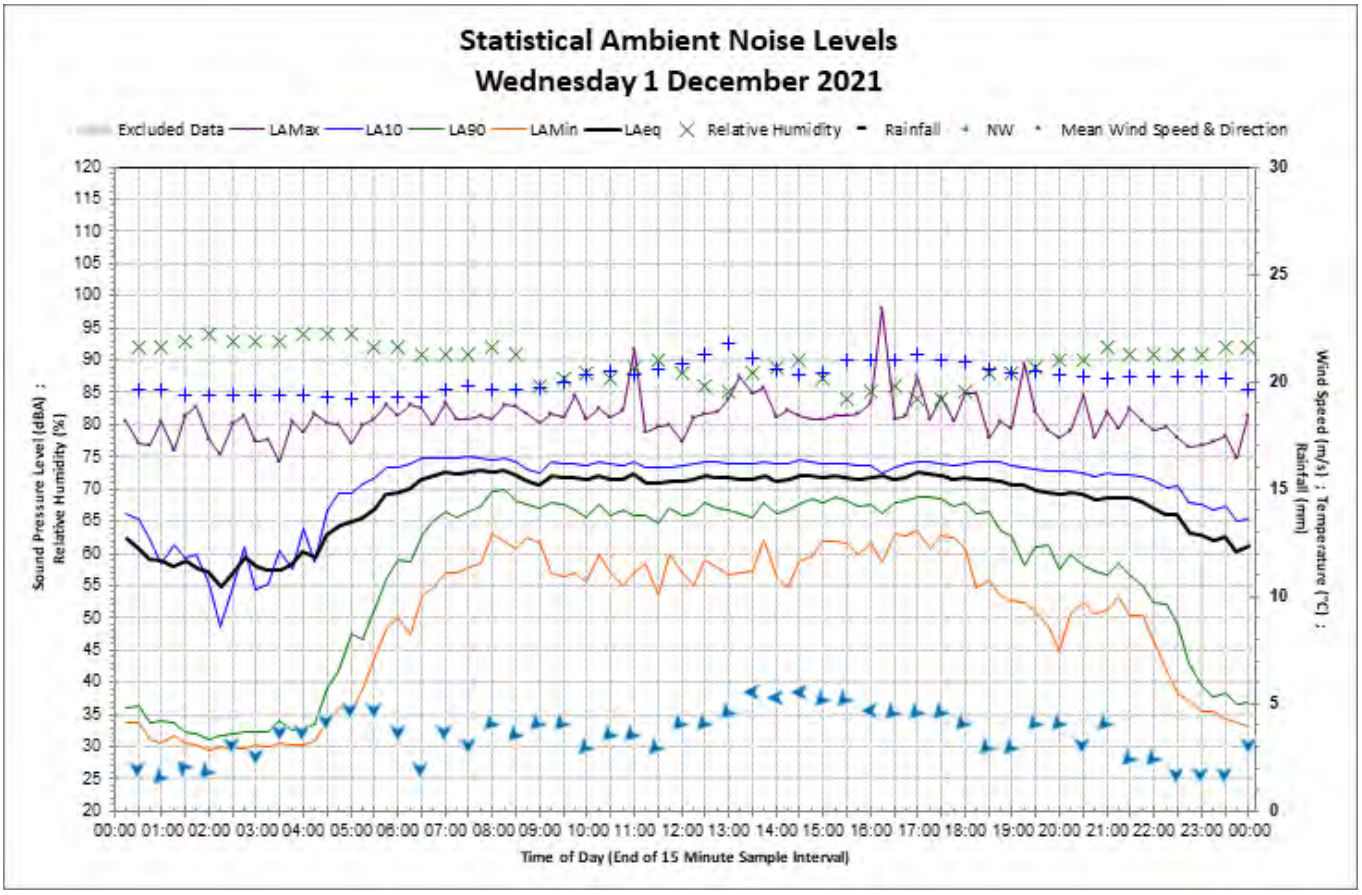

Statistical Ambient Noise Levels
Monday 6 December 2021
Excluded Data
LAMax
LA10
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level (dBA) ; Relative Humidity (%)
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)

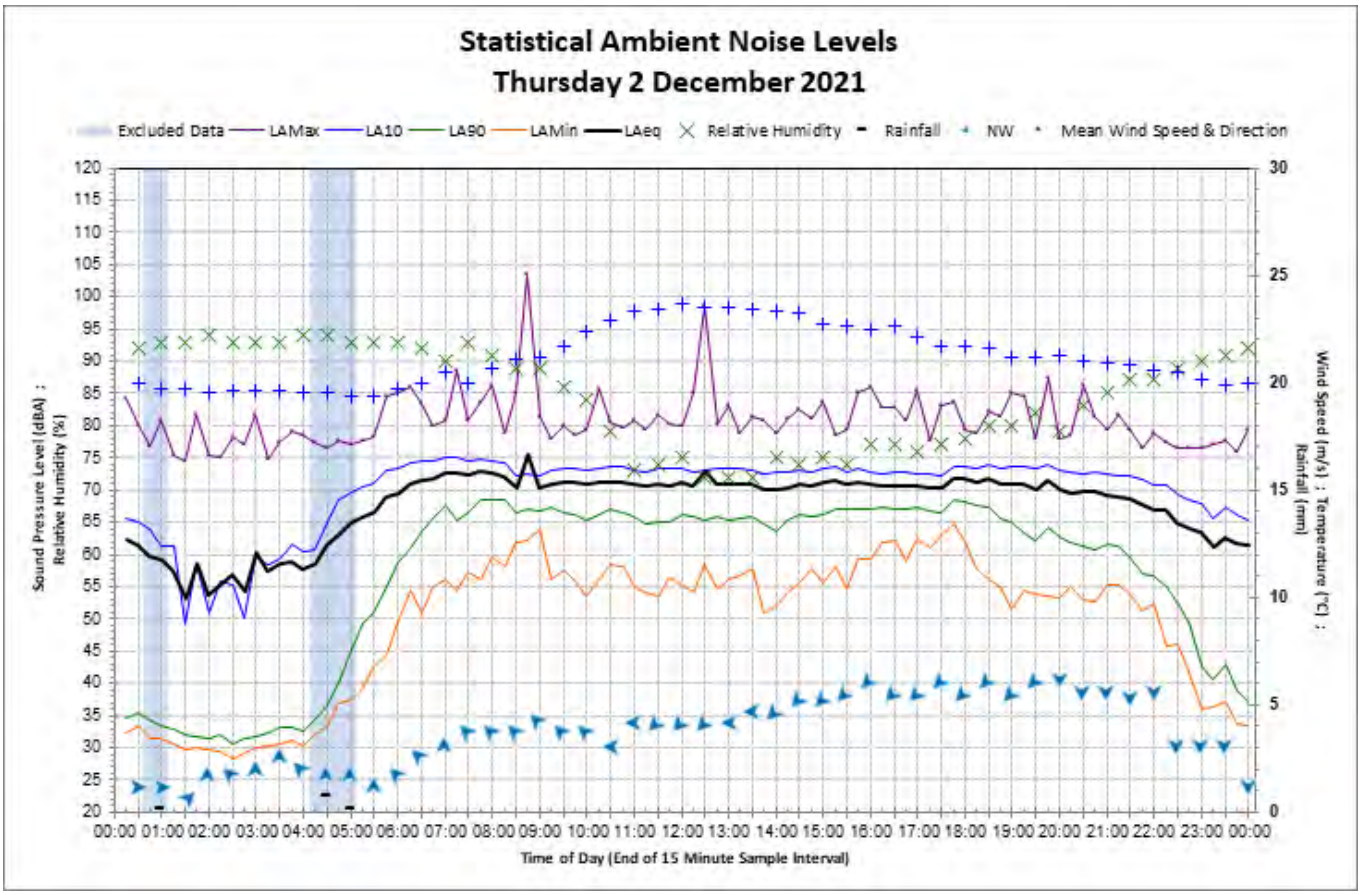

Statistical Ambient Noise Levels
Tuesday 7 December 2021
Excluded Data
LAMax
LA10
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level (dBA) ; Relative Humidity (%)
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)

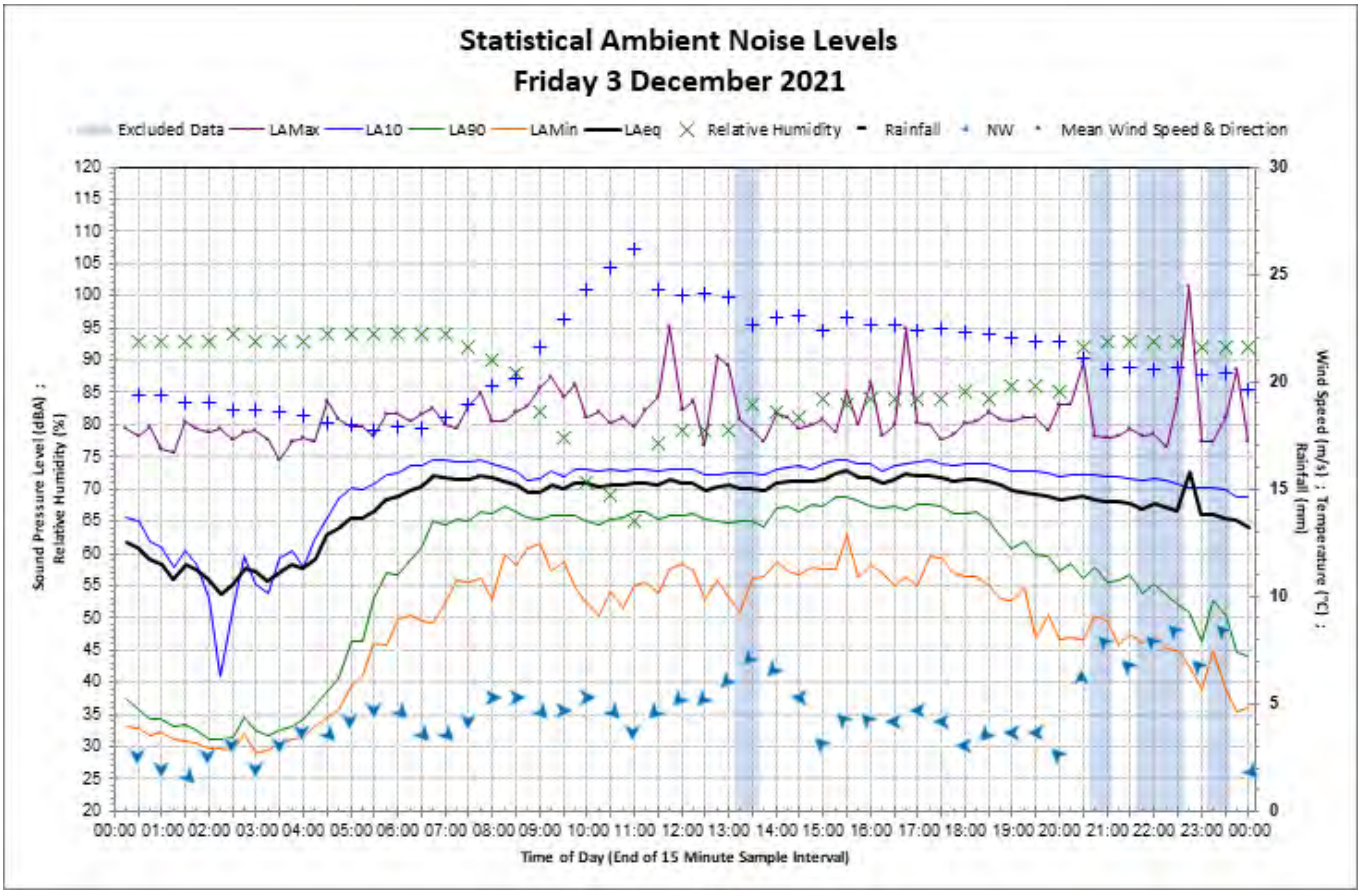
B-3 Location M3 – 117 Hillsborough Road

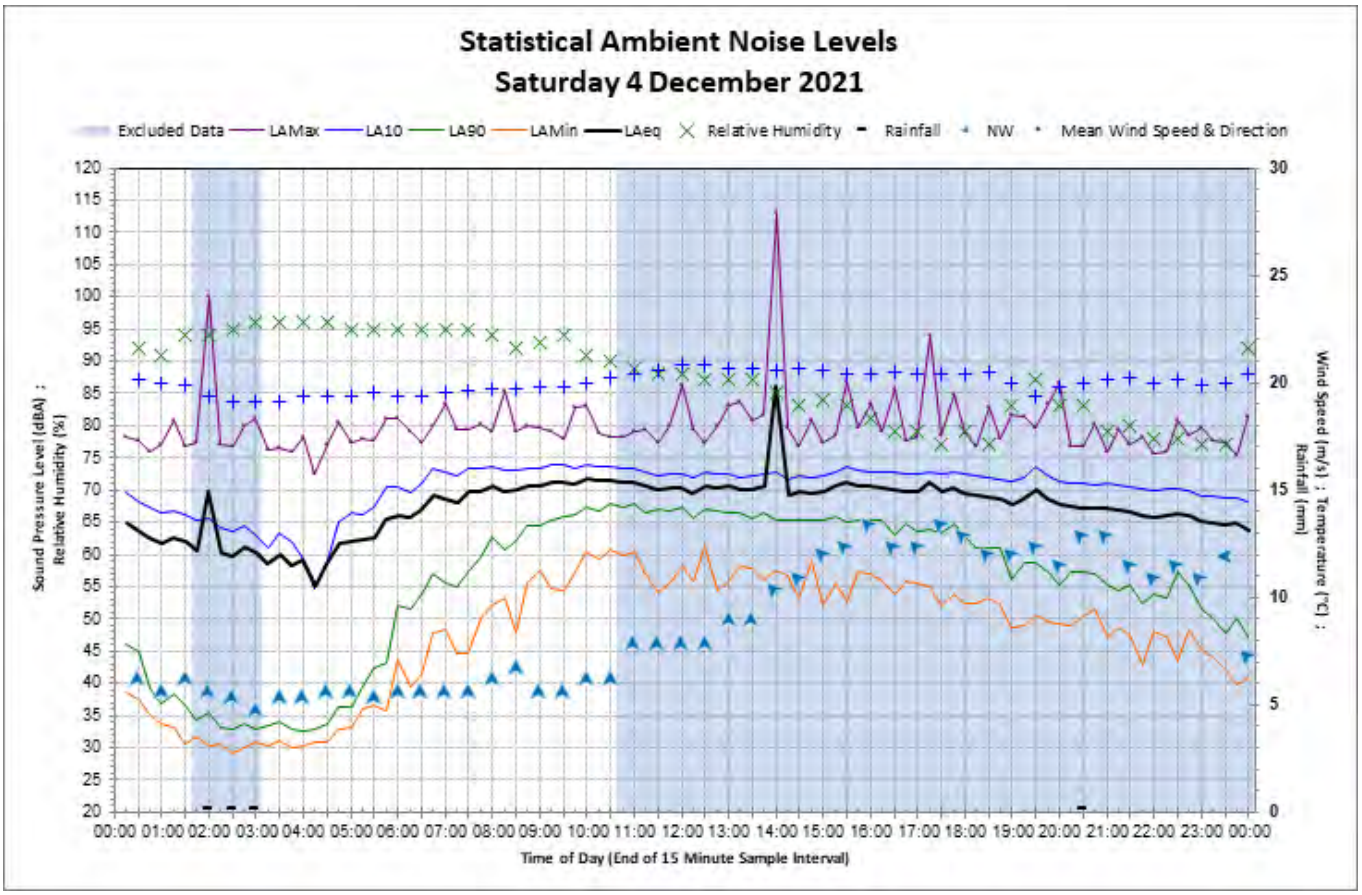


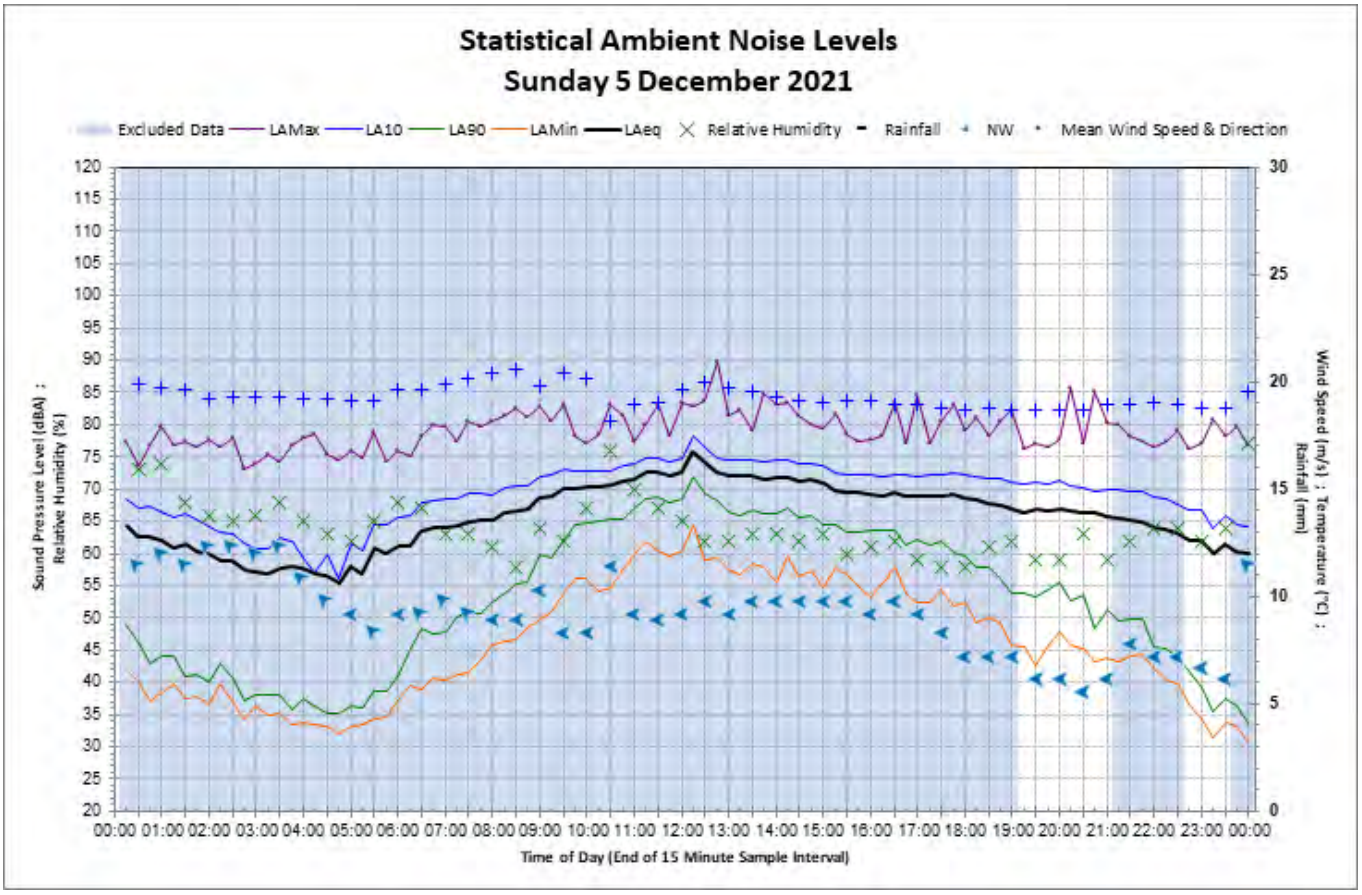


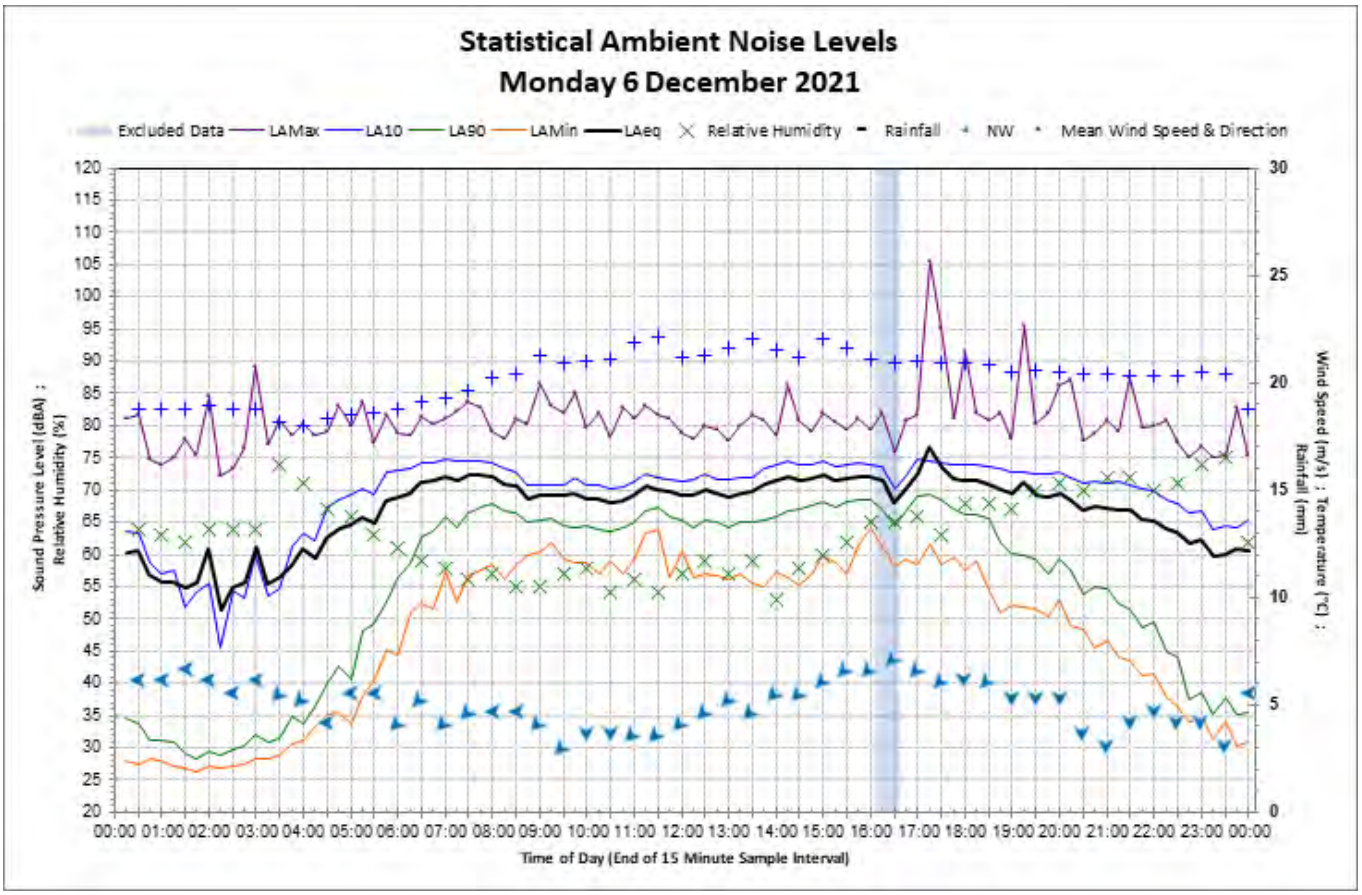

Statistical Ambient Noise Levels
Wednesday 1 December 2021
Excluded Data
LAMax
LA10
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level [dBA) ; Relative Humidity (%)
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)

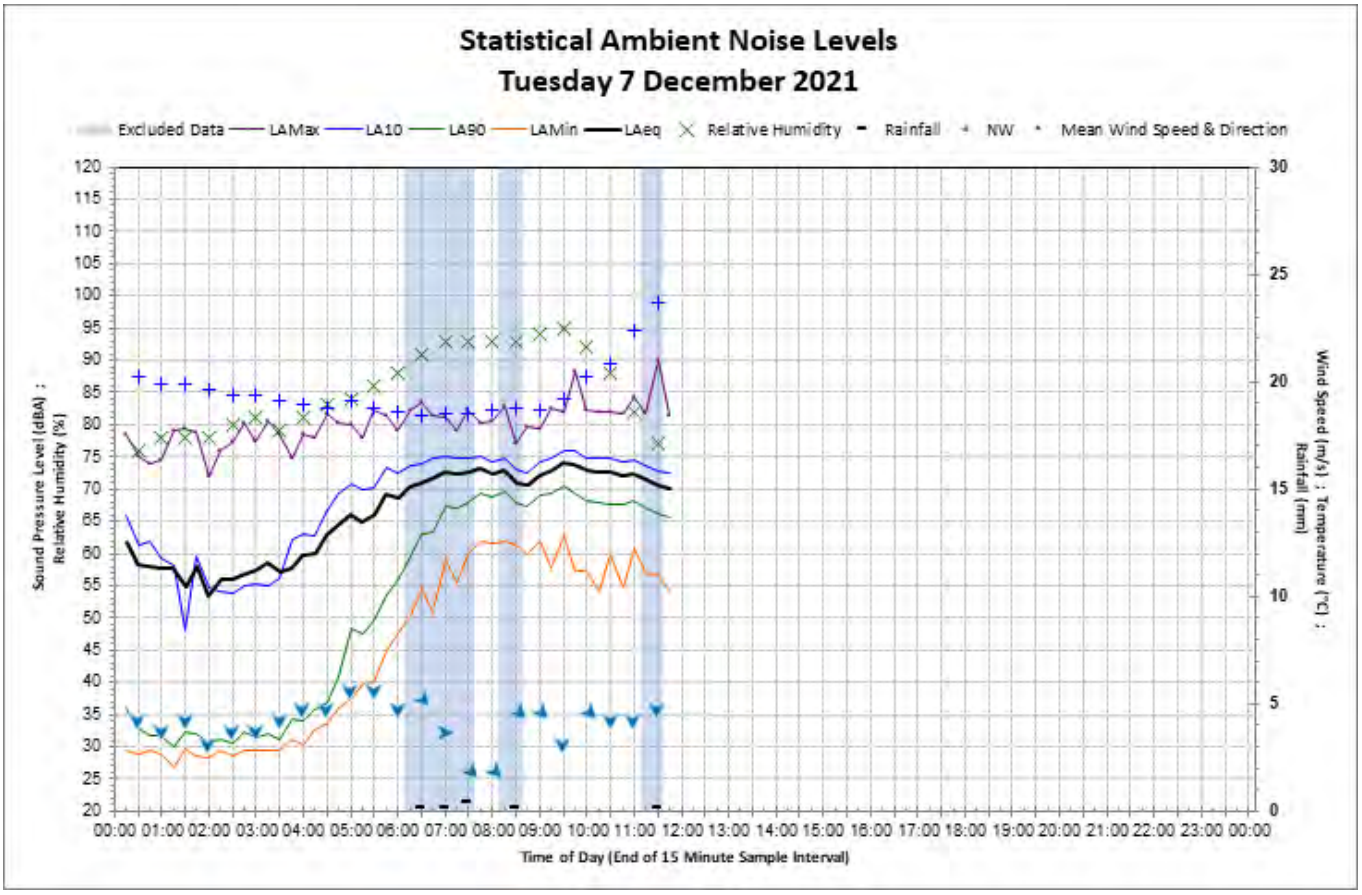

Statistical Ambient Noise Levels
Thursday 2 December 2021
Excluded Data
LAMax
LA10
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level [dBA) ; Relative Humidity (%)
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)


Statistical Ambient Noise Levels
Friday 3 December 2021
Excluded Data
LAMax
LA10
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level (dBA) ; Relative Humidity (%)
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)

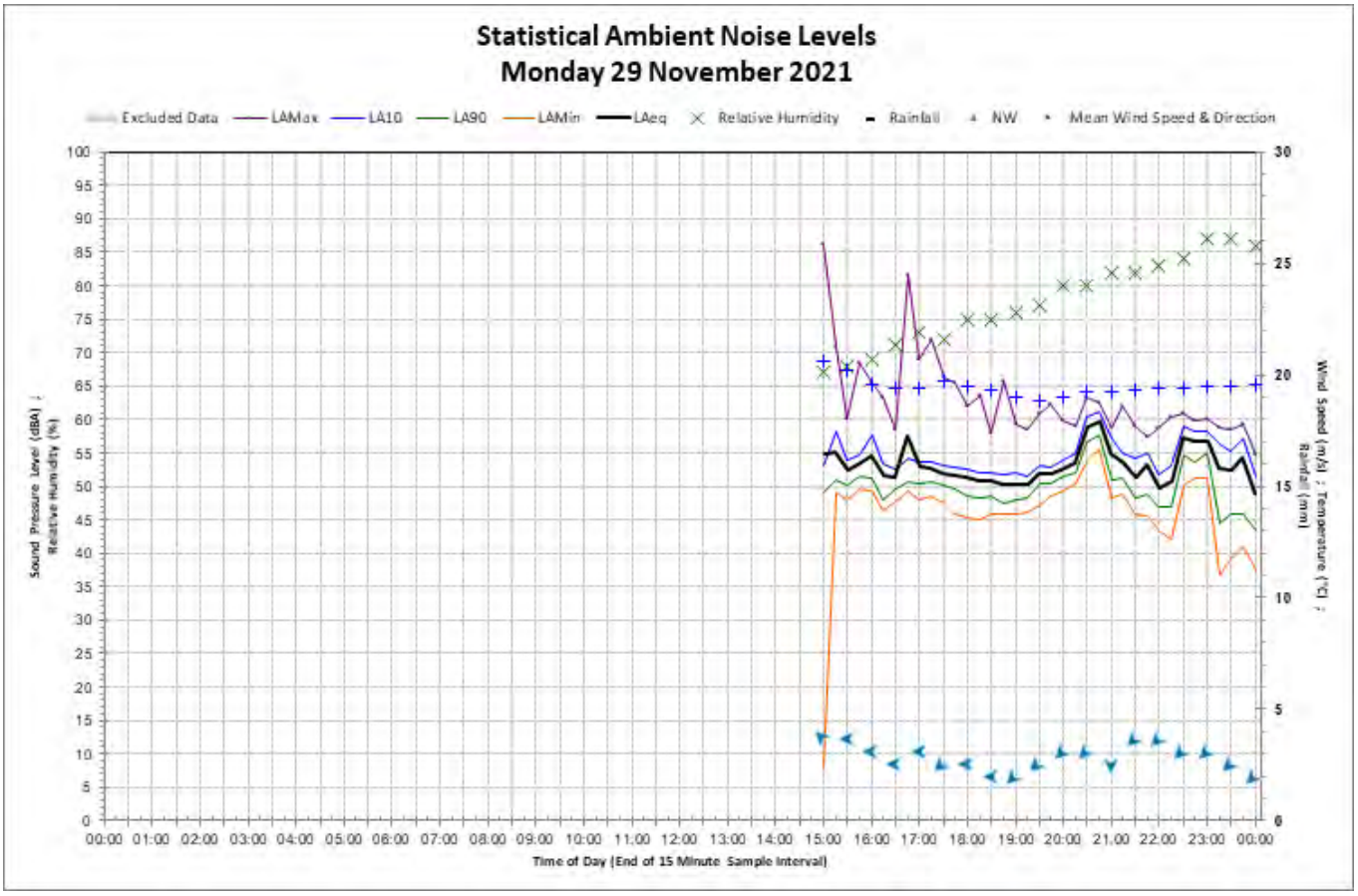

Statistical Ambient Noise Levels
Saturday 4 December 2021
Excluded Data
LAMax
LA10
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level (dBA) ; Relative Humidity (%)
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)

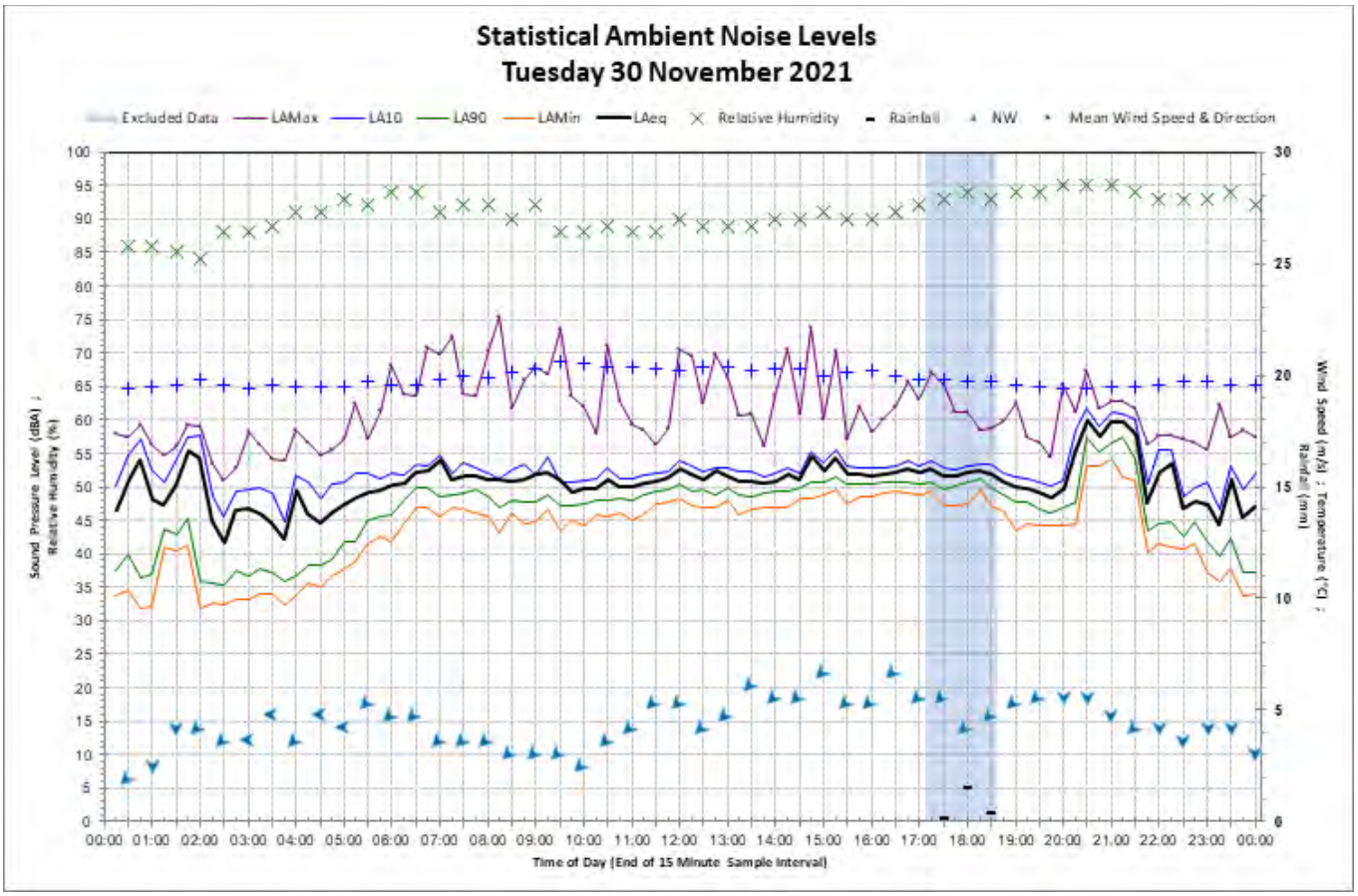

Statistical Ambient Noise Levels
Sunday 5 December 2021
Excluded Data
LAMax
LA10
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level (dBA) ; Relative Humidity (%)
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)

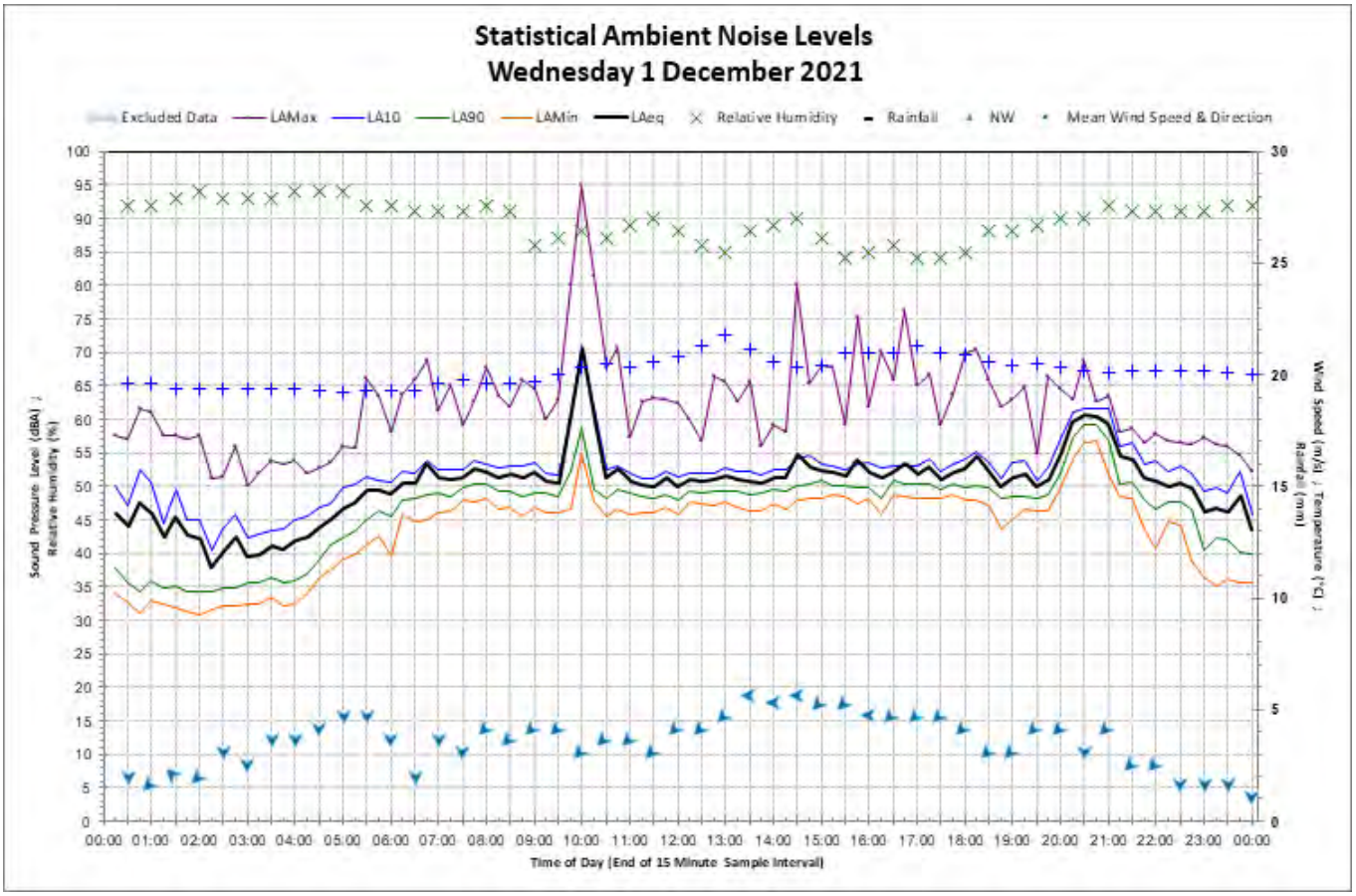

Statistical Ambient Noise Levels
Monday 6 December 2021
Excluded Data
LAMax
LA10
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level (dBA) ; Relative Humidity (%)
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)

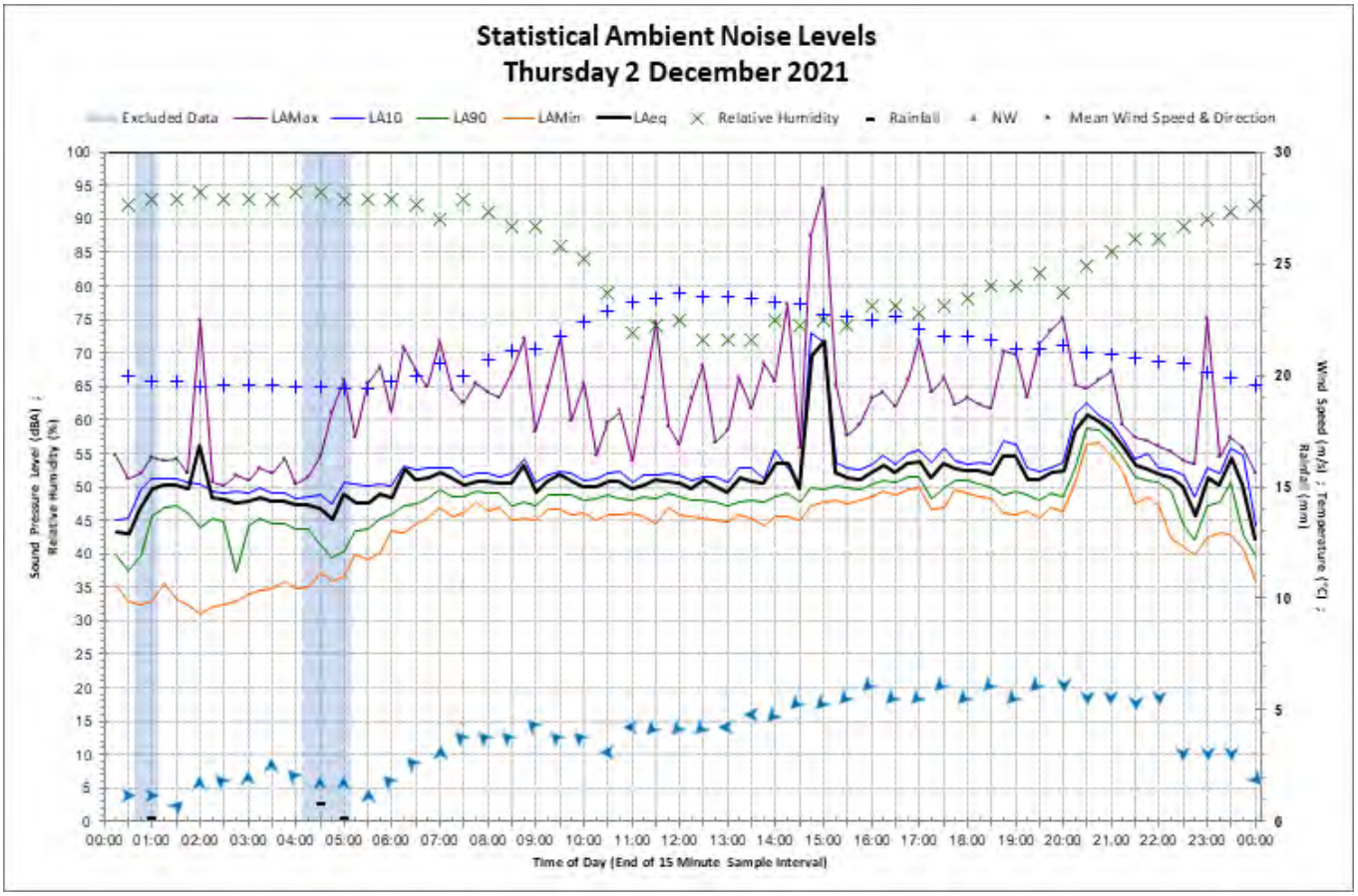

Statistical Ambient Noise Levels
Tuesday 7 December 2021
Excluded Data
LAMax
LA10
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level (dBA) ; Relative Humidity (%)
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)

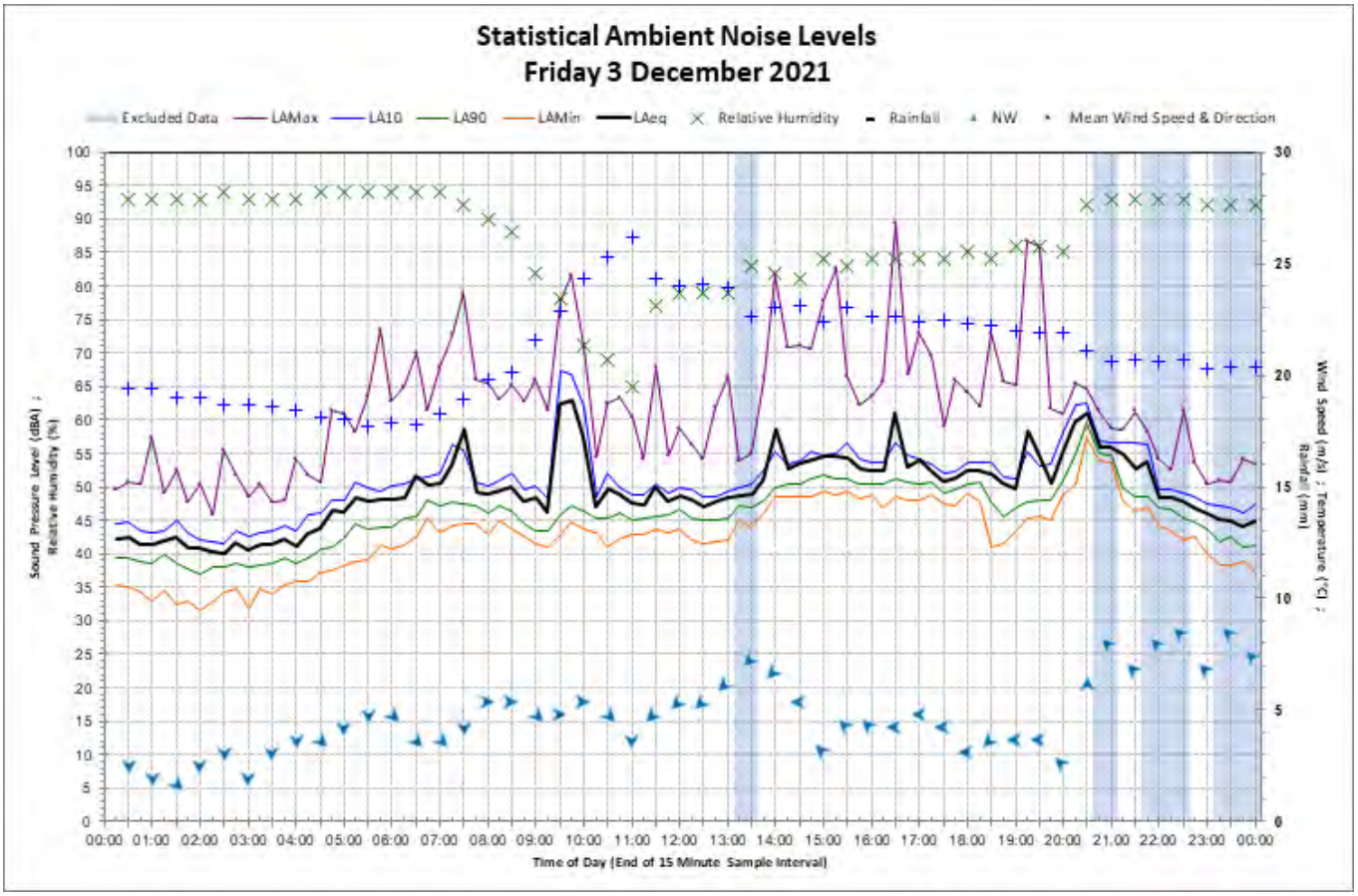
B-4 Location M4 – 7 Coolum Place

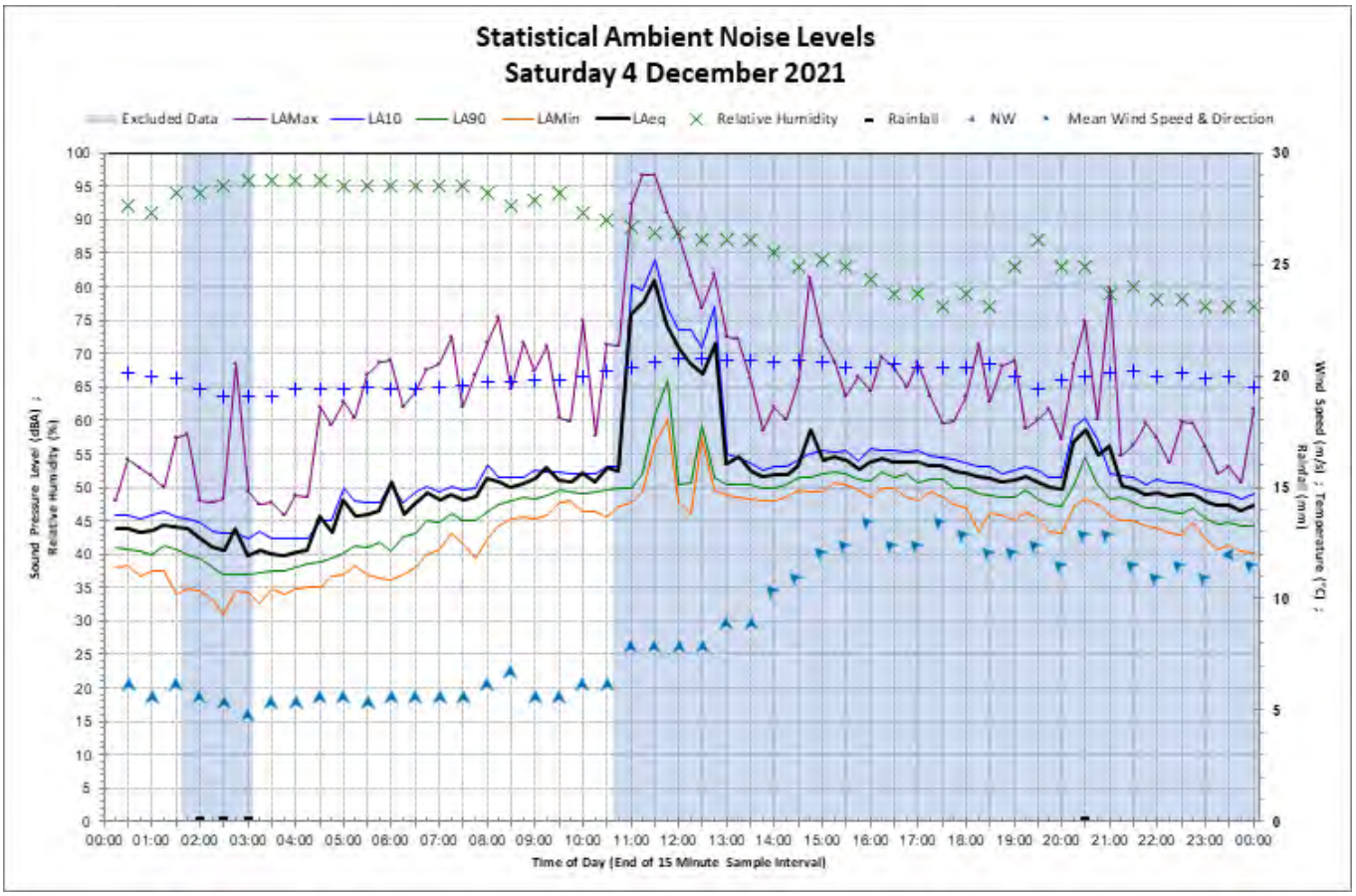


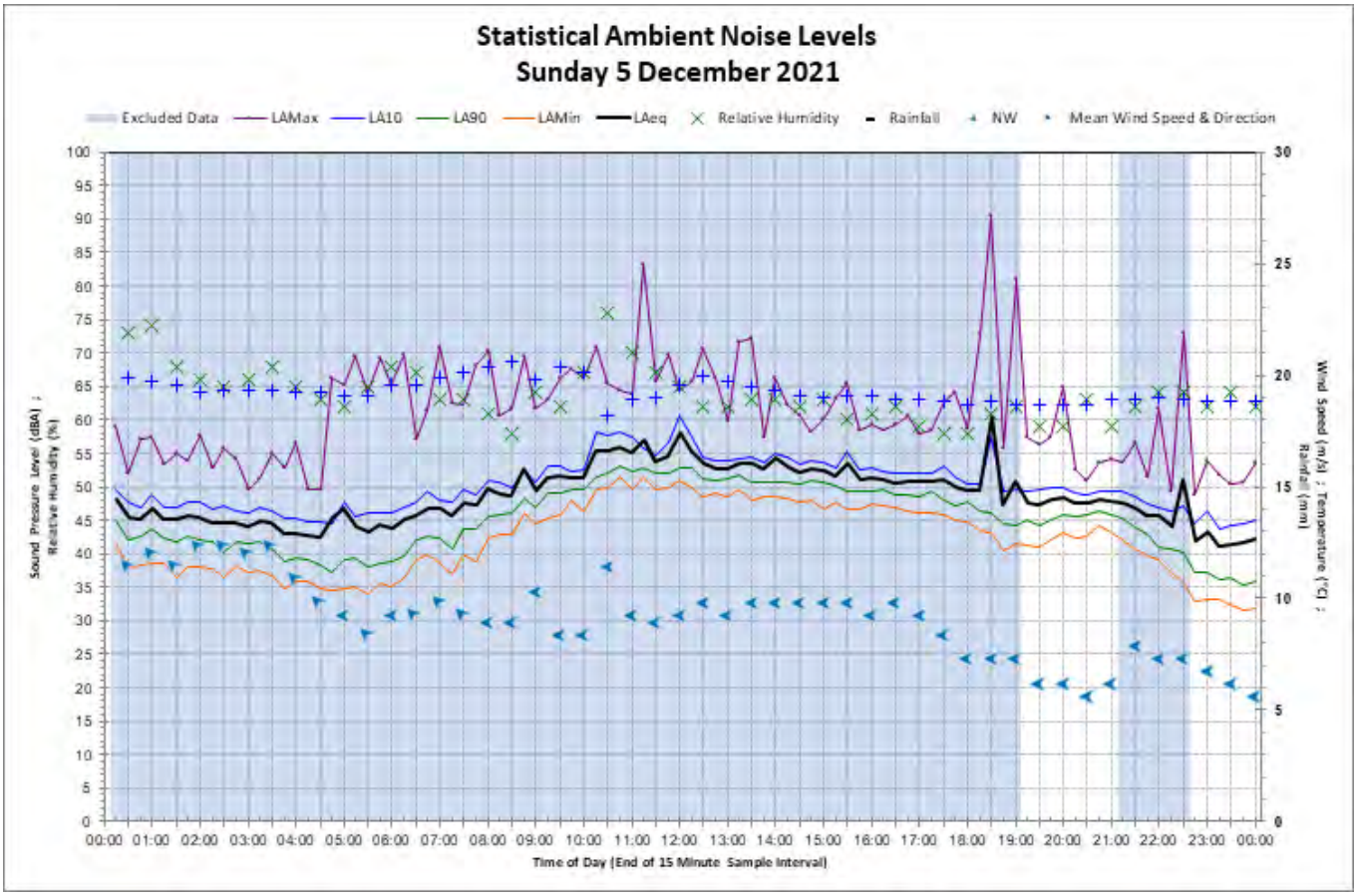


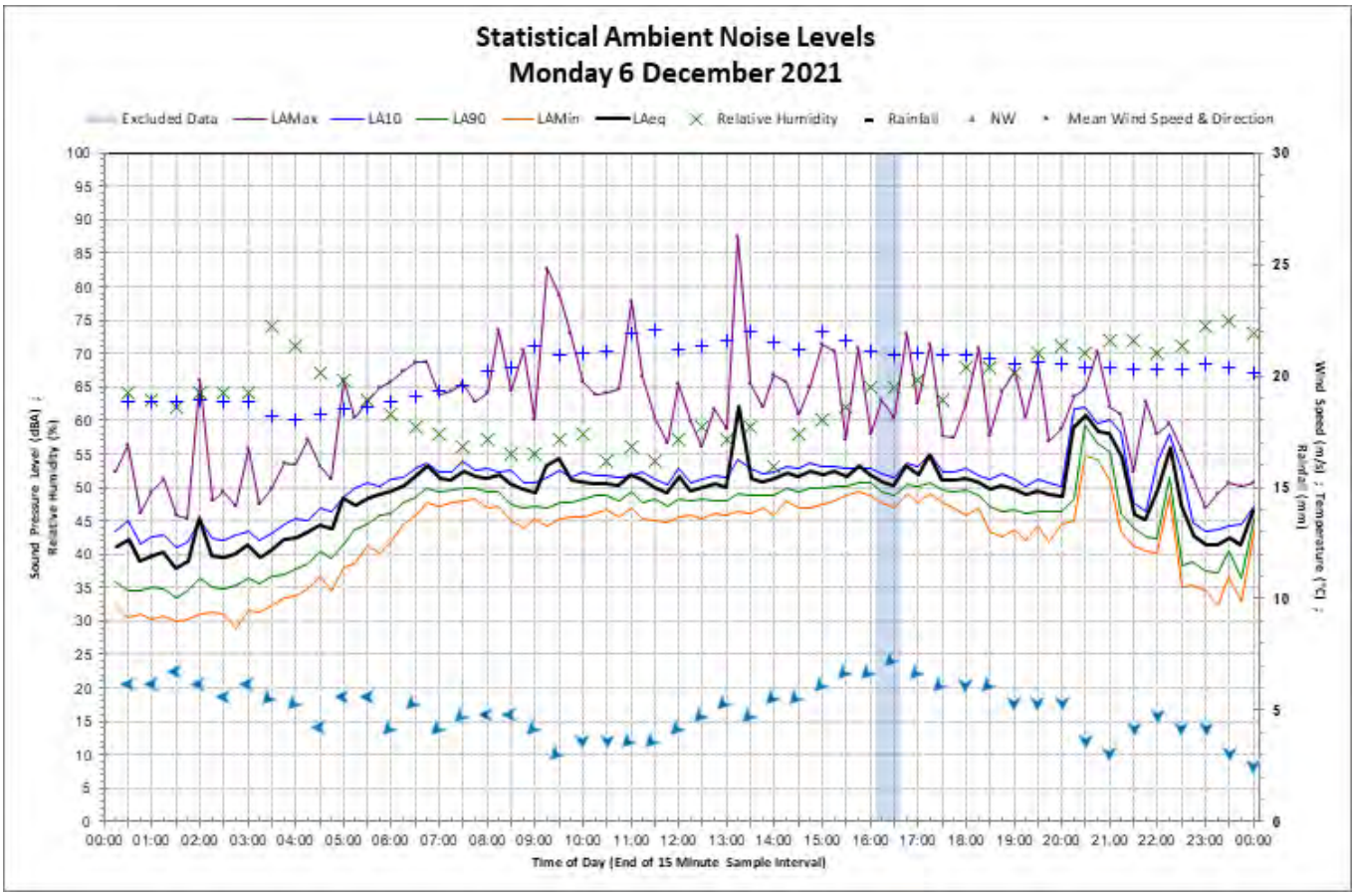

Statistical Ambient Noise Levels
Wednesday 1 December 2021
Excluded Data
LAMax
LA10
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level (dBA) ; Relative Humidity (%)
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)

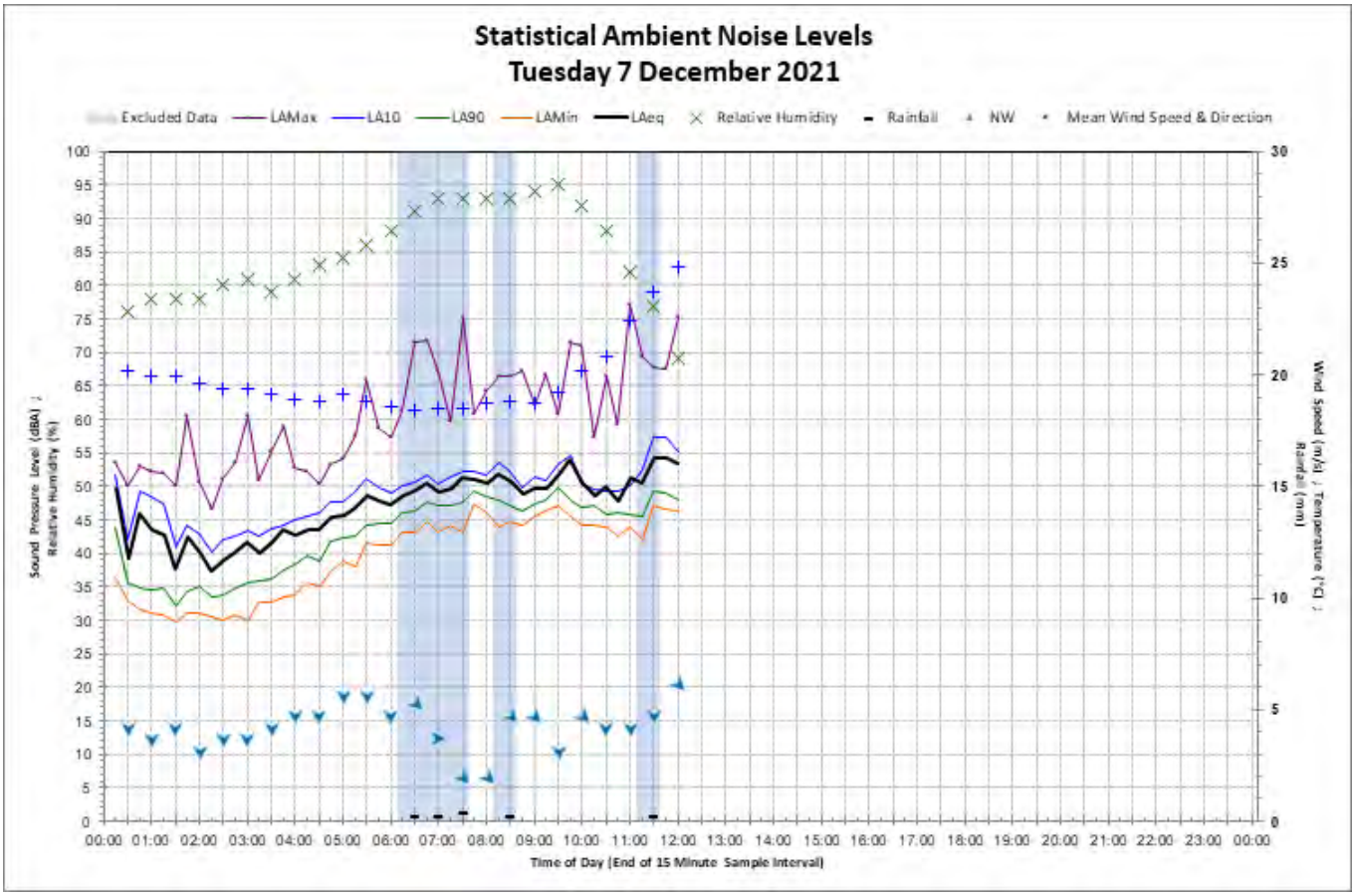

Statistical Ambient Noise Levels
Thursday 2 December 2021
Excluded Data
LAMax
LA10
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level (dBA) ; Relative Humidity (%)
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)


Statistical Ambient Noise Levels
Friday 3 December 2021
Excluded Data
LAMax
LA10
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level (dBA) ; Relative Humidity (%)
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)


Statistical Ambient Noise Levels
Saturday 4 December 2021
Excluded Data
LAMax
LA10
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level (dBA) ; Relative Humidity (%)
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)


Statistical Ambient Noise Levels
Sunday 5 December 2021
Excluded Data
LAMax
LA10
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level (dBA) ; Relative Humidity (%)
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)


Statistical Ambient Noise Levels
Monday 6 December 2021
Excluded Data
LAMax
LA10
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level (dBA) ; Relative Humidity (%)
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)


Statistical Ambient Noise Levels
Tuesday 7 December 2021
Excluded Data
LAMax
LA10
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level (dBA) / Relative Humidity (%)
Wind Speed (m/s) / Temperature (°C) / Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)

Appendix C

Construction Noise – Detailed results

Table C.1 Overview of additional mitigation measures

Mitigation measure	Overview
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 5 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 Notification (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 relevant Additional Mitigation Measures (Tables C1 to C3 of CNVG). 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 made 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. For night work these periods of work should be separated by not less than one week and no more than 6 evenings per month.
Respite Period 2 (R2)	Night time 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 11 pm.
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 (Tables C1-C3 of the CNVG). 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)	See Appendix F of CNVG 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 this is not required for projects less than three weeks unless to assist in managing complaints.

Table C.2 Predicted construction noise results (Standard Hours)

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0001	254 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0002	268 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0003	391A HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0004	236 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	37	50	54	51	52	51	54	44	37	50	-
R0005	274D MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0006	1/246 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0007	15 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	29	42	46	43	44	43	46	36	29	42	-
R0008	7 SADLIER CL, WARNERS BAY NSW 2282	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0009	228 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0010	8 SADLIER CL, WARNERS BAY NSW 2282	Residential	NCA01	24	37	41	38	39	38	41	31	24	37	-
R0011	5 SADLIER CL, WARNERS BAY NSW 2282	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0012	4/387 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0013	17 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	29	42	46	43	44	43	46	36	29	42	-
R0014	5 MILLOBA CL, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0015	342 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Place of worship	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0016	7 MILLOBA CL, WARNERS BAY NSW 2282	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0017	228 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0018	6 SADLIER CL, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0019	228 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	35	48	52	49	50	49	52	42	35	48	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0020	228 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0021	3 SADLIER CL, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0022	19 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0023	3/183 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0024	6 MILLOBA CL, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0025	268 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	36	49	53	50	50	50	53	43	36	49	-
R0026	3 MILLOBA CL, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0027	183 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0028	236 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0029	4 SADLIER CL, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0030	381 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	37	50	54	51	52	51	54	44	37	50	-
R0031	3/387 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0032	183 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0033	181 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0034	226 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0035	1 SADLIER CL, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0036	326 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	35	48	52	49	49	49	52	42	35	48	-
R0037	4 MILLOBA CL, WARNERS BAY NSW 2282	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0038	29/218 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0039	2 SADLIER CL, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0040	3 ALMORA CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	26	39	43	40	41	40	43	33	26	39	-
R0041	371 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	37	50	54	51	52	51	54	44	37	50	-
R0042	1 MILLOBA CL, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0043	236 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0044	UNIT 2 19 ALMORA CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	23	36	40	37	38	37	40	30	23	36	-
R0045	1/8 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	23	36	40	37	38	37	40	30	23	36	-
R0046	2/4 FLORINA CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	23	36	40	37	38	37	40	30	23	36	-
R0047	2 MILLOBA CL, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0048	381 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0049	17/363 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	38	51	55	52	53	52	55	45	38	51	-
R0050	158 MACQUARIE RD, CARDIFF NSW 2285	Residential	NCA01	22	35	39	36	37	36	39	29	22	35	-
R0051	1 FLORINA CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	18	31	35	32	33	32	35	25	18	31	-
R0052	10 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	24	37	41	38	39	38	41	31	24	37	-
R0053	2 BIDDABAH AV, WARNERS BAY NSW 2282	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0054	1/6 FLORINA CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	16	29	33	30	31	30	33	23	16	29	-
R0055	4 FLORINA CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	16	29	33	30	31	30	33	23	16	29	-
R0056	4 BIDDABAH AV, WARNERS BAY NSW 2282	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0057	2 FLORINA CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	16	29	33	30	31	30	33	23	16	29	-
R0058	158 MACQUARIE RD, CARDIFF NSW 2285	Residential	NCA01	23	36	40	37	37	37	40	30	23	36	-
R0059	158 MACQUARIE RD, CARDIFF NSW 2285	Residential	NCA01	16	29	33	30	31	30	33	23	16	29	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0060	6 BIDDABAH AV, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	46	46	49	39	32	45	-
R0061	8 BIDDABAH AV, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0062	10 BIDDABAH AV, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0063	12 BIDDABAH AV, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0064	2/218 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	37	50	54	51	52	51	54	44	37	50	-
R0065	158 MACQUARIE RD, CARDIFF NSW 2285	Residential	NCA01	25	38	42	39	40	39	42	32	25	38	-
R0066	206-216 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	38	51	55	52	53	52	55	45	38	51	-
R0067	158 MACQUARIE RD, CARDIFF NSW 2285	Residential	NCA01	24	37	41	38	39	38	41	31	24	37	-
R0068	236 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	37	50	54	51	52	51	54	44	37	50	-
R0069	212 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	37	50	54	51	52	51	54	44	37	50	-
R0070	14 BIDDABAH AV, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0071	2/2 ALMORA CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	16	29	33	30	31	30	33	23	16	29	-
R0072	236 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	37	50	54	51	52	51	54	44	37	50	-
R0073	12 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	24	37	41	38	39	38	41	31	24	37	-
R0074	371 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	38	51	55	52	53	52	55	45	38	51	-
R0075	2 FLORINA CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	16	29	33	30	31	30	33	23	16	29	-
R0076	320 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0077	158 MACQUARIE RD, CARDIFF NSW 2285	Residential	NCA01	20	33	37	34	34	34	37	27	20	33	-
R0078	230 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	38	51	55	52	53	52	55	45	38	51	-
R0079	24 ALMORA CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	20	33	37	34	35	34	37	27	20	33	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0080	27 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0081	22 ALMORA CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	20	33	37	34	35	34	37	27	20	33	-
R0082	9 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	19	32	36	33	34	33	36	26	19	32	-
R0083	26 ALMORA CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	14	27	31	28	29	28	31	21	14	27	-
R0084	7 PALM CT, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	47	47	50	40	33	46	-
R0085	12/363 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	37	50	54	51	52	51	54	44	37	50	-
R0086	9 PALM CT, WARNERS BAY NSW 2282	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0087	212-214 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	26	39	43	40	41	40	43	33	26	39	-
R0088	11 PALM CT, WARNERS BAY NSW 2282	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0089	14 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	22	35	39	36	37	36	39	29	22	35	-
R0090	17 PALM CT, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0091	4 ALMORA CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	16	29	33	30	31	30	33	23	16	29	-
R0092	17 PALM CT, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0093	20A ALMORA CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	19	32	36	33	34	33	36	26	19	32	-
R0094	371 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	37	50	54	51	52	51	54	44	37	50	-
R0095	158 MACQUARIE RD, CARDIFF NSW 2285	Residential	NCA01	26	39	43	40	41	40	43	33	26	39	-
R0096	23/363 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	39	52	56	53	54	53	56	46	39	52	-
R0097	320 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0098	158 MACQUARIE RD, CARDIFF NSW 2285	Residential	NCA01	26	39	43	40	41	40	43	33	26	39	-
R0099	6 ALMORA CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	16	29	33	30	31	30	33	23	16	29	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0100	9/218 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	38	51	55	52	53	52	55	45	38	51	-
R0101	194 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0102	3/363 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	39	52	56	53	54	53	56	46	39	52	-
R0103	11 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	21	34	38	35	36	35	38	28	21	34	-
R0104	16 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	22	35	39	36	36	36	39	29	22	35	-
R0105	8 PALM CT, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0106	1/8 ALMORA CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	18	31	35	32	33	32	35	25	18	31	-
R0107	3 PALM CT, WARNERS BAY NSW 2282	Residential	NCA01	25	38	42	39	40	39	42	32	25	38	-
R0108	31 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0109	192 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0110	18 ALMORA CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	24	37	41	38	38	38	41	31	24	37	-
R0111	7/363 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0112	3 PALM CT, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	47	47	50	40	33	46	-
R0113	20/363 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	39	52	56	53	54	53	56	46	39	52	-
R0114	10 ALMORA CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	24	37	41	38	39	38	41	31	24	37	-
R0115	6 PALM CT, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0116	13 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	19	32	36	33	34	33	36	26	19	32	-
R0117	5/339 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	38	51	55	52	53	52	55	45	38	51	-
R0118	18 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	21	34	38	35	36	35	38	28	21	34	-
R0119	15 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	18	31	35	32	33	32	35	25	18	31	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0120	3 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0121	206-216 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	39	52	56	53	54	53	56	46	39	52	-
R0122	16 ALMORA CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	21	34	38	35	36	35	38	28	21	34	-
R0123	314 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	37	50	54	51	52	51	54	44	37	50	-
R0124	194 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0125	355 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	39	52	56	53	54	53	56	46	39	52	-
R0126	17 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	22	35	39	36	37	36	39	29	22	35	-
R0127	158 MACQUARIE RD, CARDIFF NSW 2285	Residential	NCA01	28	41	45	42	43	42	45	35	28	41	-
R0128	316 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0129	1/208 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	38	51	55	52	54	52	55	45	38	51	-
R0130	14/218 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	40	53	57	54	55	54	57	47	40	53	-
R0131	4 PALM CT, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0132	20 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	21	34	38	35	36	35	38	28	21	34	-
R0133	12 ALMORA CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	17	30	34	31	30	31	34	24	17	30	-
R0134	19 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	21	34	38	35	36	35	38	28	21	34	-
R0135	5 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	47	47	50	40	33	46	-
R0136	8/339 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	39	52	56	53	54	53	56	46	39	52	-
R0137	22 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	19	32	36	33	34	33	36	26	19	32	-
R0138	40 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0139	310 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	37	50	54	51	52	51	54	44	37	50	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0140	7 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0141	14 ALMORA CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	12	25	29	26	27	26	29	19	12	25	-
R0142	2/37 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	46	46	49	39	32	45	-
R0143	11/198 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0144	14 ALMORA CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	24	37	41	38	39	38	41	31	24	37	-
R0145	21 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	20	33	37	34	35	34	37	27	20	33	-
R0146	24 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	17	30	34	31	32	31	34	24	17	30	-
R0147	196 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0148	1/2 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	31	44	48	45	45	45	48	38	31	44	-
R0149	5/363 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	39	52	56	53	54	53	56	46	39	52	-
R0150	2/208 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	38	51	55	52	53	52	55	45	38	51	-
R0151	4 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	46	46	49	39	32	45	-
R0152	206-216 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0153	BUILDING 2 12/335 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	44	57	61	58	59	58	61	51	44	57	-
R0154	13 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0155	23 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	25	38	42	39	40	39	42	32	25	38	-
R0156	9 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	25	38	42	39	40	39	42	32	25	38	-
R0157	158 MACQUARIE RD, CARDIFF NSW 2285	Active recreation	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0158	196 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0159	1/198 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	28	41	45	42	43	42	45	35	28	41	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0160	3/339 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	40	53	57	54	55	54	57	47	40	53	-
R0161	8 PEBMARSH CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	17	30	34	31	32	31	34	24	17	30	-
R0162	26 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	23	36	40	37	38	37	40	30	23	36	-
R0163	355 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	40	53	57	54	55	54	57	47	40	53	-
R0164	10 PEBMARSH CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	24	37	41	38	39	38	41	31	24	37	-
R0165	206-216 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	39	52	56	53	54	53	56	46	39	52	-
R0166	318 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0167	6 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	46	46	49	39	32	45	-
R0168	1/38 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0169	35 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0170	27 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	25	38	42	39	40	39	42	32	25	38	-
R0171	25 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	25	38	42	39	40	39	42	32	25	38	-
R0172	35 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0173	2/200 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0174	28 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	20	33	37	34	35	34	37	27	20	33	-
R0175	6/198 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	34	47	51	48	48	48	51	41	34	47	-
R0176	206-216 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	39	52	56	53	54	53	56	46	39	52	-
R0177	12 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0178	4 PEBMARSH CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	19	32	36	33	34	33	36	26	19	32	-
R0179	308 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	35	48	52	49	50	49	52	42	35	48	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0180	206-216 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	37	50	54	51	52	51	54	44	37	50	-
R0181	19 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	24	37	41	38	39	38	41	31	24	37	-
R0182	6 PEBMARSH CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	21	34	38	35	36	35	38	28	21	34	-
R0183	17 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0184	36 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0185	12 PEBMARSH CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	25	38	42	39	40	39	42	32	25	38	-
R0186	41 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	31	44	48	45	45	45	48	38	31	44	-
R0187	33 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0188	1 PEBMARSH CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	24	37	41	38	39	38	41	31	24	37	-
R0189	204 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	39	52	56	53	54	53	56	46	39	52	-
R0190	25 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	29	42	46	43	44	43	46	36	29	42	-
R0191	25 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0192	2/200 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	38	51	55	52	53	52	55	45	38	51	-
R0193	21 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0194	202 MACQUARIE RD, WARNERS BAY NSW 2282	Commercial	NCA01	40	53	57	54	55	54	57	47	40	53	-
R0195	341 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	39	52	56	53	53	53	56	46	39	52	-
R0196	34 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0197	34 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	23	36	40	37	38	37	40	30	23	36	-
R0198	7/321 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	40	53	57	54	55	54	57	47	40	53	-
R0199	31 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0200	14 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	46	46	49	39	32	45	-
R0201	3 PEBMARSH CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	23	36	40	37	37	37	40	30	23	36	-
R0202	14 PEBMARSH CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	25	38	42	39	40	39	42	32	25	38	-
R0203	14 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0204	43 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0205	22 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0206	5 PEBMARSH CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0207	29 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	28	41	45	42	43	42	45	35	28	41	-
R0208	4 COLORADO CL, WARNERS BAY NSW 2282	Residential	NCA01	29	42	46	43	44	43	46	36	29	42	-
R0209	298 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	39	52	56	53	53	53	56	46	39	52	-
R0210	29 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0211	32 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0212	7 PEBMARSH CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	25	38	42	39	40	39	42	32	25	38	-
R0213	27 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0214	3/337 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	41	54	58	55	56	55	58	48	41	54	-
R0215	9 PEBMARSH CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0216	31 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0217	15 PEBMARSH CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	24	37	41	38	39	38	41	31	24	37	-
R0218	2/2 COLORADO CL, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0219	13 PEBMARSH CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0220	22 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0221	11 PEBMARSH CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	29	42	46	43	44	43	46	36	29	42	-
R0222	33 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	23	36	40	37	38	37	40	30	23	36	-
R0223	33 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	24	37	41	38	39	38	41	31	24	37	-
R0224	35 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0225	30 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0226	47 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0227	6 COLORADO CL, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0228	50 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0229	24 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0230	35 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	41	41	44	34	27	40	-
R0231	41 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0232	30 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0233	2/337 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	43	56	60	57	58	57	60	50	43	56	-
R0234	321 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	42	55	59	56	57	56	59	49	42	55	-
R0235	48 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0236	37 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	26	39	43	40	41	40	43	33	26	39	-
R0237	7 COLORADO CL, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	47	47	50	40	33	46	-
R0238	28 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0239	49 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0240	298 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	27	40	44	41	41	41	44	34	27	40	-
R0241	1 COLORADO CL, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0242	45 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0243	5/321 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	43	56	60	57	58	57	60	50	43	56	-
R0244	1/51 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0245	10 CAMILLE CR, CARDIFF SOUTH NSW 2285	Residential	NCA01	25	38	42	39	40	39	42	32	25	38	-
R0246	46 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	24	37	41	38	39	38	41	31	24	37	-
R0247	6 SELSEY CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0248	12 CAMILLE CR, CARDIFF SOUTH NSW 2285	Residential	NCA01	24	37	41	38	39	38	41	31	24	37	-
R0249	26 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0250	47 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	24	37	41	38	39	38	41	31	24	37	-
R0251	2 BRESSAY CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0252	39 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	25	38	42	39	40	39	42	32	25	38	-
R0253	5 COLORADO CL, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0254	8 SELSEY CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	25	38	42	39	40	39	42	32	25	38	-
R0255	32 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0256	47 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0257	3 COLORADO CL, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0258	4 SELSEY CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	26	39	43	40	42	40	43	33	26	39	-
R0259	23 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0260	290 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	39	52	56	53	53	53	56	46	39	52	-
R0261	14 CAMILLE CR, CARDIFF SOUTH NSW 2285	Residential	NCA01	20	33	37	34	35	34	37	27	20	33	-
R0262	49 AURORA CT, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0263	24 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0264	21A MINNESOTA WAY, WARNERS BAY NSW 2282	Residential	NCA01	28	41	45	42	41	42	45	35	28	41	-
R0265	2/55 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0266	45 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0267	8 CAMILLE CR, CARDIFF SOUTH NSW 2285	Residential	NCA01	24	37	41	38	39	38	41	31	24	37	-
R0268	1/335 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	47	60	64	61	62	61	64	54	47	60	-
R0269	44 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0270	UNIT 2 23 MINNESOTA WAY, WARNERS BAY NSW 2282	Residential	NCA01	29	42	46	43	43	43	46	36	29	42	-
R0271	21 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0272	4 BRESSAY CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	21	34	38	35	36	35	38	28	21	34	-
R0273	7 SELSEY CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0274	1 BRESSAY CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	20	33	37	34	35	34	37	27	20	33	-
R0275	3A INDIANA CL, WARNERS BAY NSW 2282	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0276	5 INDIANA CL, WARNERS BAY NSW 2282	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0277	6/321 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	45	58	62	59	60	59	62	52	45	58	-
R0278	9 INDIANA CL, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0279	22 MINNESOTA WAY, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0280	21 MINNESOTA WAY, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0281	43 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	24	37	41	38	39	38	41	31	24	37	-
R0282	43 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0283	6 BRESSAY CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	23	36	40	37	38	37	40	30	23	36	-
R0284	22 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0285	16 CAMILLE CR, CARDIFF SOUTH NSW 2285	Residential	NCA01	24	37	41	38	39	38	41	31	24	37	-
R0286	7 INDIANA CL, WARNERS BAY NSW 2282	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0287	6 CAMILLE CR, CARDIFF SOUTH NSW 2285	Residential	NCA01	22	35	39	36	37	36	39	29	22	35	-
R0288	9 INDIANA CL, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0289	19 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0290	44 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	21	34	38	35	36	35	38	28	21	34	-
R0291	47 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	22	35	39	36	37	36	39	29	22	35	-
R0292	12 KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	41	54	58	55	56	55	58	48	41	54	-
R0293	5 SELSEY CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	48	46	49	39	32	45	-
R0294	8 BRESSAY CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0295	41 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	25	38	42	39	40	39	42	32	25	38	-
R0296	19 MINNESOTA WAY, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0297	45 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	22	35	39	36	37	36	39	29	22	35	-
R0298	18 CAMILLE CR, CARDIFF SOUTH NSW 2285	Residential	NCA01	25	38	42	39	40	39	42	32	25	38	-
R0299	323 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	47	60	64	61	62	61	64	54	47	60	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0300	3 BRESSAY CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	24	37	41	38	37	38	41	31	24	37	-
R0301	2/20 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0302	46 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	18	31	35	32	33	32	35	25	18	31	-
R0303	4/311 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	50	63	67	64	65	64	67	57	50	63	-
R0304	4 CAMILLE CR, CARDIFF SOUTH NSW 2285	Residential	NCA01	24	37	41	38	39	38	41	31	24	37	-
R0305	17 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	35	48	52	49	49	49	52	42	35	48	-
R0306	17 MINNESOTA WAY, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0307	20 MINNESOTA WAY, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0308	CHILD CARE CENTRE 2/270 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0309	270 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	24	37	41	38	39	38	41	31	24	37	-
R0310	3 SELSEY CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	26	39	43	40	41	40	43	33	26	39	-
R0311	1 SELSEY CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	28	41	45	42	43	42	45	35	28	41	-
R0312	48 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	23	36	40	37	37	37	40	30	23	36	-
R0313	49 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	24	37	41	38	39	38	41	31	24	37	-
R0314	5 BRESSAY CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	23	36	40	37	37	37	40	30	23	36	-
R0315	39 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0316	48 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	26	39	43	40	41	40	43	33	26	39	-
R0317	16 BANCKS AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	23	36	40	37	38	37	40	30	23	36	-
R0318	10 BRESSAY CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	26	39	43	40	41	40	43	33	26	39	-
R0319	2/18 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0320	57 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0321	15 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0322	9A CORWEN CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	24	37	41	38	39	38	41	31	24	37	-
R0323	50 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	26	39	43	40	41	40	43	33	26	39	-
R0324	2 CAMILLE CR, CARDIFF SOUTH NSW 2285	Residential	NCA01	26	39	43	40	41	40	43	33	26	39	-
R0325	51 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	21	34	38	35	36	35	38	28	21	34	-
R0326	15 MINNESOTA WAY, WARNERS BAY NSW 2282	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0327	7 BRESSAY CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	22	35	39	36	37	36	39	29	22	35	-
R0328	4 INDIANA CL, WARNERS BAY NSW 2282	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0329	319 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	50	63	67	64	65	64	67	57	50	63	-
R0330	18 MINNESOTA WAY, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0331	40 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	29	42	46	43	44	43	46	36	29	42	-
R0332	6 INDIANA CL, WARNERS BAY NSW 2282	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0333	37 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0334	12 BRESSAY CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	25	38	42	39	39	39	42	32	25	38	-
R0335	57A MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0336	52 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	20	33	37	34	35	34	37	27	20	33	-
R0337	16 MINNESOTA WAY, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0338	16 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0339	11 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0340	2/311 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	50	63	67	64	65	64	67	57	50	63	-
R0341	1/11 MINNESOTA WAY, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0342	53 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	21	34	38	35	35	35	38	28	21	34	-
R0343	38 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	49	47	50	40	33	46	-
R0344	240-260 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	61	74	78	75	76	75	78	68	61	74	N
R0345	54 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	24	37	41	38	39	38	41	31	24	37	-
R0346	9 BRESSAY CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	21	34	38	35	36	35	38	28	21	34	-
R0347	8 INDIANA CL, WARNERS BAY NSW 2282	Residential	NCA01	29	42	46	43	44	43	46	36	29	42	-
R0348	14 MINNESOTA WAY, WARNERS BAY NSW 2282	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0349	36 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	49	47	50	40	33	46	-
R0350	35 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	28	41	45	42	42	42	45	35	28	41	-
R0351	10 CORWEN CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	23	36	40	37	38	37	40	30	23	36	-
R0352	14 BRESSAY CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	21	34	38	35	36	35	38	28	21	34	-
R0353	14 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0354	59A MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0355	9 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0356	55 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	28	41	45	42	42	42	45	35	28	41	-
R0357	56 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	24	37	41	38	39	38	41	31	24	37	-
R0358	1/9 MINNESOTA WAY, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0359	9 CORWEN CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	22	35	39	36	38	36	39	29	22	35	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0360	61A MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0361	4 NEBRASKA CL, WARNERS BAY NSW 2282	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0362	1 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0363	8 CORWEN CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	25	38	42	39	40	39	42	32	25	38	-
R0364	7 CORWEN CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	24	37	41	38	39	38	41	31	24	37	-
R0365	6 NEBRASKA CL, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0366	12 MINNESOTA WAY, WARNERS BAY NSW 2282	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0367	12 KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	45	58	**62**	**59**	**60**	**59**	**62**	52	45	58	-
R0368	1/1 CAMILLE CR, CARDIFF SOUTH NSW 2285	Residential	NCA01	24	37	41	38	39	38	41	31	24	37	-
R0369	12B NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0370	2/7 CROYDON PL, WARNERS BAY NSW 2282	Residential	NCA01	23	36	40	37	38	37	40	30	23	36	-
R0371	63 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0372	57 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	25	38	42	39	40	39	42	32	25	38	-
R0373	2 MANUKA CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0374	16 BRESSAY CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	20	33	37	34	35	34	37	27	20	33	-
R0375	7A MINNESOTA WAY, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	46	46	49	39	32	45	-
R0376	2/8 NEBRASKA CL, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0377	58 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	28	41	45	42	43	42	45	35	28	41	-
R0378	11 BRESSAY CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	20	33	37	34	36	34	37	27	20	33	-
R0379	5 CROYDON PL, WARNERS BAY NSW 2282	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0380	3 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0381	12A NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0382	10 MINNESOTA WAY, WARNERS BAY NSW 2282	Residential	NCA01	31	44	48	45	45	45	48	38	31	44	-
R0383	13 BRESSAY CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	41	41	44	34	27	40	-
R0384	3 CAMILLE CR, CARDIFF SOUTH NSW 2285	Residential	NCA01	23	36	40	37	38	37	40	30	23	36	-
R0385	2 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0386	6 CORWEN CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	25	38	42	39	40	39	42	32	25	38	-
R0387	1/311 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	54	67	71	68	69	68	71	61	54	67	N
R0388	5 CROYDON PL, WARNERS BAY NSW 2282	Residential	NCA01	29	42	46	43	43	43	46	36	29	42	-
R0389	60 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	29	42	46	43	44	43	46	36	29	42	-
R0390	5 CORWEN CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	23	36	40	37	38	37	40	30	23	36	-
R0391	59 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	25	38	42	39	39	39	42	32	25	38	-
R0392	1/10 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0393	5 MINNESOTA WAY, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	46	46	49	39	32	45	-
R0394	4 MANUKA CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	22	35	39	36	37	36	39	29	22	35	-
R0395	5 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	29	42	46	43	44	43	46	36	29	42	-
R0396	3 CROYDON PL, WARNERS BAY NSW 2282	Residential	NCA01	29	42	46	43	44	43	46	36	29	42	-
R0397	8 MINNESOTA WAY, WARNERS BAY NSW 2282	Residential	NCA01	30	43	47	44	44	44	47	37	30	43	-
R0398	60 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	47	47	50	40	33	46	-
R0399	6 CROYDON PL, WARNERS BAY NSW 2282	Residential	NCA01	25	38	42	39	40	39	42	32	25	38	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0400	29 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0401	7 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	29	42	46	43	44	43	46	36	29	42	-
R0402	5 CAMILLE CR, CARDIFF SOUTH NSW 2285	Residential	NCA01	24	37	41	38	39	38	41	31	24	37	-
R0403	1/10 NEBRASKA CL, WARNERS BAY NSW 2282	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0404	3 CORWEN CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	25	38	42	39	40	39	42	32	25	38	-
R0405	62 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	21	34	38	35	36	35	38	28	21	34	-
R0406	97 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0407	7 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0408	6 MANUKA CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0409	9 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	26	39	43	40	41	40	43	33	26	39	-
R0410	61 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	25	38	42	39	39	39	42	32	25	38	-
R0411	7 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0412	8 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0413	13 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	26	39	43	40	41	40	43	33	26	39	-
R0414	4 CORWEN CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	25	38	42	39	39	39	42	32	25	38	-
R0415	3 MINNESOTA WAY, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0416	11 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	41	41	44	34	27	40	-
R0417	6 MINNESOTA WAY, WARNERS BAY NSW 2282	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0418	95 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0419	1 CROYDON PL, WARNERS BAY NSW 2282	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0420	15 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	26	39	43	40	41	40	43	33	26	39	-
R0421	1 NEBRASKA CL, WARNERS BAY NSW 2282	Residential	NCA01	30	43	47	44	44	44	47	37	30	43	-
R0422	1 CROYDON PL, WARNERS BAY NSW 2282	Residential	NCA01	30	43	47	44	44	44	47	37	30	43	-
R0423	4 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0424	1/1 MINNESOTA WAY, WARNERS BAY NSW 2282	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0425	64 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	24	37	41	38	39	38	41	31	24	37	-
R0426	2 CORWEN CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0427	17 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	28	41	45	42	43	42	45	35	28	41	-
R0428	1/4 MINNESOTA WAY, WARNERS BAY NSW 2282	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0429	93 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	30	43	47	44	44	44	47	37	30	43	-
R0430	4 CROYDON PL, WARNERS BAY NSW 2282	Residential	NCA01	26	39	43	40	40	40	43	33	26	39	-
R0431	7 CAMILLE CR, CARDIFF SOUTH NSW 2285	Residential	NCA01	26	39	43	40	41	40	43	33	26	39	-
R0432	63 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0433	91 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0434	1 CORWEN CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	24	37	41	38	39	38	41	31	24	37	-
R0435	6 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0436	9 NEBRASKA CL, WARNERS BAY NSW 2282	Residential	NCA01	28	41	45	42	43	42	45	35	28	41	-
R0437	23 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	28	41	45	42	43	42	45	35	28	41	-
R0438	5 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0439	19/311 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	50	63	67	64	66	64	67	57	50	63	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0440	6 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	30	43	47	44	44	44	47	37	30	43	-
R0441	8 MANUKA CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	17	30	34	31	32	31	34	24	17	30	-
R0442	89 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	34	47	51	48	50	48	51	41	34	47	-
R0443	25 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0444	1/4 VERMONT PL, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	47	47	50	40	33	46	-
R0445	5 NEBRASKA CL, WARNERS BAY NSW 2282	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0446	7 NEBRASKA CL, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0447	9 CAMILLE CR, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0448	8 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0449	11 CAMILLE CR, CARDIFF SOUTH NSW 2285	Residential	NCA01	26	39	43	40	41	40	43	33	26	39	-
R0450	2 CROYDON PL, WARNERS BAY NSW 2282	Residential	NCA01	24	37	41	38	39	38	41	31	24	37	-
R0451	2 MINNESOTA WAY, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0452	10 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0453	65 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	25	38	42	39	40	39	42	32	25	38	-
R0454	12 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0455	1/305 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	57	70	74	71	71	71	74	64	57	70	N
R0456	4/311 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	63	76	80	77	78	77	80	70	63	76	N
R0457	101 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	26	39	43	40	40	40	43	33	26	39	-
R0458	10 MANUKA CL, CARDIFF SOUTH NSW 2285	Residential	NCA01	28	41	45	42	43	42	45	35	28	41	-
R0459	71 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0460	1/4 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	28	41	45	42	42	42	45	35	28	41	-
R0461	1/73 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0462	75 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0463	14 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	29	42	46	43	43	43	46	36	29	42	-
R0464	2/301 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	56	69	73	70	70	70	73	63	56	69	N
R0465	UNIT 2 3 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0466	87 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	34	47	51	48	50	48	51	41	34	47	-
R0467	103A MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	34	47	51	48	48	48	51	41	34	47	-
R0468	16 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0469	6 VERMONT PL, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0470	81 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0471	18 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0472	106 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	26	39	43	40	41	40	43	33	26	39	-
R0473	20 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0474	77 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0475	66 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	29	42	46	43	44	43	46	36	29	42	-
R0476	8/301 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	51	64	68	65	66	65	68	58	51	64	-
R0477	51A MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	39	52	56	53	54	53	56	46	39	52	-
R0478	67 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	25	38	42	39	40	39	42	32	25	38	-
R0479	108 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0480	79 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0481	3/66 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0482	1 LAWFORD CL, WARNERS BAY NSW 2282	Residential	NCA01	26	39	43	40	41	40	43	33	26	39	-
R0483	2 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	34	47	51	48	50	48	51	41	34	47	-
R0484	24 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	29	42	46	43	43	43	46	36	29	42	-
R0485	36 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	29	42	46	43	44	43	46	36	29	42	-
R0486	22 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0487	110 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	46	46	49	39	32	45	-
R0488	105A MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	29	42	46	43	43	43	46	36	29	42	-
R0489	26 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0490	55 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0491	1 NEW YORK AV, WARNERS BAY NSW 2282	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0492	53 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0493	28 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0494	35 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0495	2/68 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0496	30 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0497	3/66 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	46	46	49	39	32	45	-
R0498	43 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0499	83 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0500	69 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0501	32 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0502	34 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0503	47 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	38	51	55	52	53	52	55	45	38	51	-
R0504	8 VERMONT PL, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0505	3/305 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	64	77	81	78	79	78	81	71	64	77	N
R0506	70 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0507	49 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0508	3 LAWFORD CL, WARNERS BAY NSW 2282	Residential	NCA01	26	39	43	40	41	40	43	33	26	39	-
R0509	45A MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	38	51	55	52	53	52	55	45	38	51	-
R0510	41 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0511	102 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	30	43	47	44	44	44	47	37	30	43	-
R0512	112 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	38	51	55	52	52	52	55	45	38	51	-
R0513	23 ETHEL ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0514	71 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	23	36	40	37	38	37	40	30	23	36	-
R0515	68 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	29	42	46	43	44	43	46	36	29	42	-
R0516	107 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0517	11 FIRST ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0518	32 SAFFRON AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	25	38	42	39	39	39	42	32	25	38	-
R0519	19 FIRST ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	29	42	46	43	44	43	46	36	29	42	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0520	37 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0521	39 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0522	23 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	41	41	44	34	27	40	-
R0523	72 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0524	1/74 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	47	47	50	40	33	46	-
R0525	33 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0526	31 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0527	35 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0528	29 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0529	1/76 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0530	1/100 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0531	71 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0532	2 LAWFORD CL, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0533	71 HADDINGTON DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	29	42	46	43	43	43	46	36	29	42	-
R0534	42 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	44	57	**61**	58	**59**	58	**61**	51	44	57	-
R0535	1/78 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	47	47	50	40	33	46	-
R0536	5 LAWFORD CL, WARNERS BAY NSW 2282	Residential	NCA01	34	47	51	48	50	48	51	41	34	47	-
R0537	13 FIRST ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	28	41	45	42	43	42	45	35	28	41	-
R0538	80 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	47	47	50	40	33	46	-
R0539	13 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0540	15A MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	28	41	45	42	42	42	45	35	28	41	-
R0541	98 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0542	27 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0543	17 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0544	82 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	47	47	50	40	33	46	-
R0545	109A MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	45	58	**62**	**59**	**59**	**59**	**62**	52	45	58	-
R0546	114 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	38	51	55	52	54	52	55	45	38	51	-
R0547	96 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0548	40 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	38	51	55	52	53	52	55	45	38	51	-
R0549	84 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0550	17 FIRST ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	29	42	46	43	44	43	46	36	29	42	-
R0551	15 FIRST ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	29	42	46	43	44	43	46	36	29	42	-
R0552	86 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0553	94 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	30	43	47	44	43	44	47	37	30	43	-
R0554	9 FIRST ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	28	41	45	42	43	42	45	35	28	41	-
R0555	26 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0556	21 ETHEL ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0557	92 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	46	46	49	39	32	45	-
R0558	29 KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	45	58	**62**	**59**	**60**	**59**	**62**	52	45	58	-
R0559	2/6 LAWFORD CL, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0560	90 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	28	41	45	42	43	42	45	35	28	41	-
R0561	2/88 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	46	46	49	39	32	45	-
R0562	23 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0563	21 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0564	6/305 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	69	82	86	83	84	83	86	76	69	82	N
R0565	19 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0566	17 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	49	47	50	40	33	46	-
R0567	7 FIRST ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0568	13 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	28	41	45	42	42	42	45	35	28	41	-
R0569	2/7 LAWFORD CL, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	46	47	50	40	33	46	-
R0570	24 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	37	50	54	51	52	51	54	44	37	50	-
R0571	9 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0572	2/15 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0573	24 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	39	52	56	53	54	53	56	46	39	52	-
R0574	1 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	29	42	46	43	44	43	46	36	29	42	-
R0575	27 KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	42	55	**59**	56	57	56	**59**	49	42	55	-
R0576	111 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	46	**59**	**63**	**60**	**61**	**60**	**63**	53	46	**59**	-
R0577	5 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	29	42	46	43	44	43	46	36	29	42	-
R0578	8 LAWFORD CL, WARNERS BAY NSW 2282	Residential	NCA01	28	41	45	42	43	42	45	35	28	41	-
R0579	116 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	41	54	58	55	55	55	58	48	41	54	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0580	34 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0581	13 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0582	4/301 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	70	83	87	84	85	84	87	77	70	83	N
R0583	32 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0584	36 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0585	23 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0586	6/301 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	70	83	87	84	85	84	87	77	70	83	N
R0587	3 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	29	42	46	43	44	43	46	36	29	42	-
R0588	30 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0589	4 LAWFORD CL, WARNERS BAY NSW 2282	Residential	NCA01	28	41	45	42	43	42	45	35	28	41	-
R0590	7 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	29	42	46	43	44	43	46	36	29	42	-
R0591	28 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	37	50	54	51	52	51	54	44	37	50	-
R0592	1/9 LAWFORD CL, WARNERS BAY NSW 2282	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0593	26 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0594	25 KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	45	58	**62**	**59**	**61**	**59**	**62**	52	45	58	-
R0595	25 KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	42	55	**59**	56	57	56	**59**	49	42	55	-
R0596	24 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0597	22 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	49	47	50	40	33	46	-
R0598	22A MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0599	1/113 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	45	58	**62**	**59**	**60**	**59**	**62**	52	45	58	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0600	21 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0601	12 LAWFORD CL, WARNERS BAY NSW 2282	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0602	10 LAWFORD CL, WARNERS BAY NSW 2282	Residential	NCA01	27	40	44	41	42	41	44	34	27	40	-
R0603	118 MYLES AV, WARNERS BAY NSW 2282	Residential	NCA01	39	52	56	53	54	53	56	46	39	52	-
R0604	23 KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	48	**61**	**65**	**62**	**63**	**62**	**65**	55	48	**61**	-
R0605	28 ETHEL ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0606	1/9 LAWFORD CL, WARNERS BAY NSW 2282	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0607	41 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	39	52	56	53	54	53	56	46	39	52	-
R0608	20A MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0609	240-260 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	62	75	79	76	76	76	79	69	62	75	N
R0610	19 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0611	26 ETHEL ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0612	64 FIRST ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	28	41	45	42	43	42	45	35	28	41	-
R0613	66 FIRST ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	27	40	44	41	41	41	44	34	27	40	-
R0614	60 FIRST ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	28	41	45	42	43	42	45	35	28	41	-
R0615	20 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	50	48	51	41	34	47	-
R0616	68 FIRST ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	29	42	46	43	44	43	46	36	29	42	-
R0617	18 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0618	20 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	40	53	57	54	55	54	57	47	40	53	-
R0619	58 FIRST ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	28	41	45	42	43	42	45	35	28	41	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0620	21 KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	38	51	55	52	53	52	55	45	38	51	-
R0621	17 ETHEL ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0622	14 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0623	16 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0624	17 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0625	62 FIRST ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	29	42	46	43	44	43	46	36	29	42	-
R0626	24 ETHEL ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0627	20 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0628	12 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0629	41 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	45	58	**62**	**59**	**60**	**59**	**62**	52	45	58	-
R0630	19 KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	49	**62**	**66**	**63**	**64**	**63**	**66**	56	49	**62**	-
R0631	10 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0632	18 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	40	53	57	54	55	54	57	47	40	53	-
R0633	8 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0634	19 KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	46	**59**	**63**	**60**	**62**	**60**	**63**	53	46	**59**	-
R0635	15 ETHEL ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0636	33 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0637	CARDIFF BUSY BEE PRE SHCOOL 4 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0638	SHOP 5 15 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	39	52	56	53	54	53	56	46	39	52	-
R0639	240-260 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	62	75	79	76	77	76	79	69	62	75	N

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0640	2 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0641	60 FIRST ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	28	41	45	42	43	42	45	35	28	41	-
R0642	24 LAKE AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0643	240-260 HILLSBOROUGH RD, WARNERS BAY NSW 2282	Commercial	NCA01	79	92	96	93	92	93	96	86	79	92	N
R0644	6 MAUD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0645	22 ETHEL ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0646	16 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	40	53	57	54	55	54	57	47	40	53	-
R0647	13 ETHEL ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0648	29 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0649	33 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0650	63 SECOND ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0651	27 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0652	61 SECOND ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0653	20 ETHEL ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0654	27A HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0655	31 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0656	25 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0657	57 SECOND ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	29	42	46	43	44	43	46	36	29	42	-
R0658	11 ETHEL ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0659	23A HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0660	59 SECOND ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0661	51 SECOND ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	29	42	46	43	44	43	46	36	29	42	-
R0662	53 SECOND ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0663	55 SECOND ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	29	42	46	43	44	43	46	36	29	42	-
R0664	18 ETHEL ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0665	42 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	44	57	**61**	58	**59**	58	**61**	51	44	57	-
R0666	9 ETHEL ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0667	15 KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	53	**66**	**70**	**67**	**68**	**67**	**70**	**60**	53	**66**	N, V
R0668	40 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0669	23 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0670	11 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0671	15 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0672	19 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0673	14A GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	44	57	**61**	58	58	58	**61**	51	44	57	-
R0674	13 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0675	21 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0676	17 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0677	13 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0678	13 KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	54	**67**	**71**	**68**	**69**	**68**	**71**	**61**	54	**67**	N, V
R0679	9 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0680	38A HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0681	38 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0682	11 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0683	1 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0684	36 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0685	34 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0686	20 LAKE AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0687	12 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	43	56	**60**	57	58	57	**60**	50	43	56	-
R0688	11 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	48	46	49	39	32	45	-
R0689	11 KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	57	**70**	**74**	**71**	**72**	**71**	**74**	**64**	57	**70**	N, V
R0690	7 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	48	48	51	41	34	47	-
R0691	12 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	38	51	55	52	53	52	55	45	38	51	-
R0692	58 SECOND ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0693	5 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0694	32 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0695	30 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0696	3 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	47	47	50	40	33	46	-
R0697	56 SECOND ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0698	9 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0699	26 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0700	24 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0701	24A-24B HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	50	48	51	41	34	47	-
R0702	UNIT 2 54 SECOND ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0703	52 SECOND ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0704	10 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	40	53	57	54	55	54	57	47	40	53	-
R0705	28 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0706	9 KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	**59**	**72**	**76**	**73**	**74**	**73**	**76**	**66**	**59**	**72**	N, V
R0707	50 SECOND ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	26	39	43	40	41	40	43	33	26	39	-
R0708	UNIT 2 60 SECOND ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0709	7 ETHEL ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0710	7 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	38	51	55	52	53	52	55	45	38	51	-
R0711	12 ETHEL ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0712	22A HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0713	8 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	40	53	57	54	55	54	57	47	40	53	-
R0714	20 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0715	50A SECOND ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0716	22 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	51	49	52	42	35	48	-
R0717	7 KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	**61**	**74**	**78**	**75**	**76**	**75**	**78**	**68**	**61**	**74**	N, V
R0718	18 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0719	16 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0720	5 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	42	55	**59**	56	57	56	**59**	49	42	55	-
R0721	5 ETHEL ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0722	47A CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	51	**64**	**68**	**65**	**66**	**65**	**68**	58	51	**64**	-
R0723	14 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0724	UNIT 1 43 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0725	6A GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	40	53	57	54	55	54	57	47	40	53	-
R0726	10 ETHEL ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0727	UNIT 1 41 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0728	12 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0729	47 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	54	**67**	**71**	**68**	**69**	**68**	**71**	**61**	54	**67**	N, V
R0730	5 KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	**64**	**77**	**81**	**78**	**79**	**78**	**81**	**71**	**64**	**77**	N, V
R0731	10 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0732	8 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	50	48	51	41	34	47	-
R0733	27 THIRD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0734	3 ETHEL ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0735	18 LAKE AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0736	4 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	29	42	46	43	44	43	46	36	29	42	-
R0737	45 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	45	58	**62**	**59**	**60**	**59**	**62**	52	45	58	-
R0738	23 THIRD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	28	41	45	42	43	42	45	35	28	41	-
R0739	8 ETHEL ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0740	6 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0741	25 THIRD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0742	45 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	46	**59**	**63**	**60**	**61**	**60**	**63**	53	46	**59**	-
R0743	37 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	50	50	53	43	36	49	-
R0744	UNIT 1 41 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0745	UNIT 2 43 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	37	50	54	51	52	51	54	44	37	50	-
R0746	21 THIRD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0747	1A ETHEL ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	49	47	50	40	33	46	-
R0748	6 ETHEL ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0749	39 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	38	51	55	52	53	52	55	45	38	51	-
R0750	23 THIRD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0751	33 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0752	17 THIRD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0753	4 ETHEL ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0754	15 THIRD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0755	27 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0756	31 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0757	23 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0758	35 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0759	29 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0760	3B KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	**66**	**79**	**83**	**80**	**81**	**80**	**83**	**73**	**66**	**79**	N, V
R0761	64 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	58	**71**	**75**	**72**	**73**	**72**	**75**	**65**	58	**71**	N, V
R0762	62 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	54	**67**	**71**	**68**	**69**	**68**	**71**	**61**	54	**67**	N, V
R0763	60 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	56	**69**	**73**	**70**	**70**	**70**	**73**	**63**	56	**69**	N, V
R0764	58 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	50	**63**	**67**	**64**	**65**	**64**	**67**	57	50	**63**	-
R0765	3B KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	**63**	**76**	**80**	**77**	**78**	**77**	**80**	**70**	**63**	**76**	N, V
R0766	56 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	48	**61**	**65**	**62**	**63**	**62**	**65**	55	48	**61**	-
R0767	29A CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0768	25 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0769	54 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	47	**60**	**64**	**61**	**62**	**61**	**64**	54	47	**60**	-
R0770	52 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	46	**59**	**63**	**60**	**61**	**60**	**63**	53	46	**59**	-
R0771	27 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0772	19 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0773	48 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	43	56	**60**	57	58	57	**60**	50	43	56	-
R0774	21 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0775	50 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	46	**59**	**63**	**60**	**61**	**60**	**63**	53	46	**59**	-
R0776	46 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	42	55	**59**	56	57	56	**59**	49	42	55	-
R0777	44 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	40	53	57	54	55	54	57	47	40	53	-
R0778	17 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0779	7 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0780	11 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0781	9 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0782	3B KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	**59**	**72**	**76**	**73**	**74**	**73**	**76**	**66**	**59**	**72**	N, V
R0783	9 LAKE AV, CARDIFF SOUTH NSW 2285	Educational institute	NCA01	31	44	48	45	47	45	48	38	31	44	-
R0784	42 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	37	50	54	51	52	51	54	44	37	50	-
R0785	3 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0786	40 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	37	50	54	51	52	51	54	44	37	50	-
R0787	15 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0788	38 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0789	36 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	38	51	55	52	53	52	55	45	38	51	-
R0790	13 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0791	9 LAKE AV, CARDIFF SOUTH NSW 2285	Educational institute	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0792	18 THIRD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	29	42	46	43	45	43	46	36	29	42	-
R0793	4A GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	47	**60**	**64**	**61**	**61**	**61**	**64**	54	47	**60**	-
R0794	34 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0795	16 THIRD ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	29	42	46	43	44	43	46	36	29	42	-
R0796	14 LAKE AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0797	5 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0798	3A GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	43	56	**60**	57	58	57	**60**	50	43	56	-
R0799	34A CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0800	9 LAKE AV, CARDIFF SOUTH NSW 2285	Educational institute	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0801	3 KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	57	**70**	**74**	**71**	**72**	**71**	**74**	**64**	57	**70**	N, V
R0802	32 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	50	48	51	41	34	47	-
R0803	4 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	49	**62**	**66**	**63**	**64**	**63**	**66**	56	49	**62**	-
R0804	30 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	50	48	51	41	34	47	-
R0805	34A CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0806	26 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0807	42 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	37	50	54	51	52	51	54	44	37	50	-
R0808	40A CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	38	51	55	52	53	52	55	45	38	51	-
R0809	4 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	48	**61**	**65**	**62**	**63**	**62**	**65**	55	48	**61**	-
R0810	39 BEESON ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	48	46	49	39	32	45	-
R0811	28 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0812	22 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0813	31 BEESON ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0814	24 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0815	43 BEESON ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	37	50	54	51	52	51	54	44	37	50	-
R0816	1 KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	55	**68**	**72**	**69**	**69**	**69**	**72**	**62**	55	**68**	N, V
R0817	4 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	43	56	**60**	57	58	57	**60**	50	43	56	-
R0818	3 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	42	55	**59**	56	57	56	**59**	49	42	55	-
R0819	20 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0820	19 BEESON ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0821	3 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	42	55	**59**	56	57	56	**59**	49	42	55	-
R0822	16 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0823	29 BEESON ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0824	34A CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0825	3 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	42	55	**59**	56	57	56	**59**	49	42	55	-
R0826	15 BEESON ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0827	12 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0828	10 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0829	8 TERENCE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	39	52	56	53	54	53	56	46	39	52	-
R0830	26 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0831	2 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	47	**60**	**64**	**61**	**62**	**61**	**64**	54	47	**60**	-
R0832	6 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0833	8 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0834	4 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0835	22 KILLARA DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	52	**65**	**69**	**66**	**67**	**66**	**69**	**59**	52	**65**	N, V
R0836	4 TERENCE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	37	50	54	51	52	51	54	44	37	50	-
R0837	12A LAKE AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0838	20 KILLARA DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	49	**62**	**66**	**63**	**64**	**63**	**66**	56	49	**62**	N, V
R0839	2 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0840	1 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	42	55	**59**	56	57	56	**59**	49	42	55	-
R0841	18 KILLARA DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	48	**61**	**65**	**62**	**63**	**62**	**65**	55	48	**61**	-
R0842	39 FOURTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0843	9 LAKE AV, CARDIFF SOUTH NSW 2285	Educational institute	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0844	10 LAKE AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0845	16 KILLARA DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	47	**60**	**64**	**61**	**62**	**61**	**64**	54	47	**60**	-
R0846	14 KILLARA DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	45	58	**62**	**59**	**60**	**59**	**62**	52	45	58	-
R0847	9 LAKE AV, CARDIFF SOUTH NSW 2285	Educational institute	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0848	14 TERENCE ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	38	51	55	52	53	52	55	45	38	51	-
R0849	10 KILLARA DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	43	56	**60**	57	58	57	**60**	50	43	56	-
R0850	36 BEESON ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	38	51	55	52	53	52	55	45	38	51	-
R0851	12 KILLARA DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	44	57	**61**	58	58	58	**61**	51	44	57	-
R0852	8 KILLARA DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	44	57	**61**	58	**59**	58	**61**	51	44	57	-
R0853	32 BEESON ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0854	34 BEESON ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	37	50	54	51	52	51	54	44	37	50	-
R0855	30 BEESON ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	37	50	54	51	52	51	54	44	37	50	-
R0856	6 KILLARA DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	42	55	**59**	56	57	56	**59**	49	42	55	-
R0857	28 BEESON ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	37	50	54	51	52	51	54	44	37	50	-
R0858	8 LAKE AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0859	26 BEESON ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	47	47	50	40	33	46	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0860	4 KILLARA DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	42	55	**59**	56	58	56	**59**	49	42	55	-
R0861	26A BEESON ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0862	28A BEESON ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0863	2 KILLARA DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	40	53	57	54	55	54	57	47	40	53	-
R0864	24 BEESON ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0865	22 BEESON ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	50	48	51	41	34	47	-
R0866	34 BEESON ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	38	51	55	52	53	52	55	45	38	51	-
R0867	20 BEESON ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0868	9 LAKE AV, CARDIFF SOUTH NSW 2285	Educational institute	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0869	18 BEESON ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0870	9 LAKE AV, CARDIFF SOUTH NSW 2285	Educational institute	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0871	16 BEESON ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0872	10 BEESON ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0873	17 KILLARA DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	48	**61**	**65**	**62**	**63**	**62**	**65**	55	48	**61**	-
R0874	15 KILLARA DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	48	**61**	**65**	**62**	**63**	**62**	**65**	55	48	**61**	-
R0875	8 BEESON ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	50	48	51	41	34	47	-
R0876	6 BEESON ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0877	14 BEESON ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0878	11 KILLARA DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	47	**60**	**64**	**61**	**62**	**61**	**64**	54	47	**60**	-
R0879	9 LAKE AV, CARDIFF SOUTH NSW 2285	Educational institute	NCA01	32	45	49	46	47	46	49	39	32	45	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0880	4 BEESON ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0881	2 BEESON ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0882	6 LAKE AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0883	1 COOLUM PL, CARDIFF SOUTH NSW 2285	Residential	NCA01	45	58	**62**	**59**	**60**	**59**	**62**	52	45	58	-
R0884	9 LAKE AV, CARDIFF SOUTH NSW 2285	Educational institute	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0885	7 KILLARA DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	41	54	58	55	56	55	58	48	41	54	-
R0886	5 KILLARA DR, CARDIFF SOUTH NSW 2285	Residential	NCA01	40	53	57	54	55	54	57	47	40	53	-
R0887	9 LAKE AV, CARDIFF SOUTH NSW 2285	Educational institute	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0888	12 BEESON ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	50	48	51	41	34	47	-
R0889	1 HUNTINGTON WAY, CARDIFF SOUTH NSW 2285	Residential	NCA01	41	54	58	55	56	55	58	48	41	54	-
R0890	9 LAKE AV, CARDIFF SOUTH NSW 2285	Educational institute	NCA01	32	45	49	46	47	46	49	39	32	45	-
R0891	4 LAKE AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	30	43	47	44	45	44	47	37	30	43	-
R0892	2 THE GRANGE, CARDIFF SOUTH NSW 2285	Residential	NCA01	39	52	56	53	54	53	56	46	39	52	-
R0893	4 COOLUM PL, CARDIFF SOUTH NSW 2285	Residential	NCA01	49	**62**	**66**	**63**	**64**	**63**	**66**	56	49	**62**	-
R0894	SHOP 3 2 LAKE AV, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0895	3 COOLUM PL, CARDIFF SOUTH NSW 2285	Residential	NCA01	46	**59**	**63**	**60**	**61**	**60**	**63**	53	46	**59**	-
R0896	3 HUNTINGTON WAY, CARDIFF SOUTH NSW 2285	Residential	NCA01	42	55	**59**	56	57	56	**59**	49	42	55	-
R0897	4 HUNTINGTON WAY, CARDIFF SOUTH NSW 2285	Residential	NCA01	45	58	**62**	**59**	**60**	**59**	**62**	52	45	58	-
R0898	4 THE GRANGE, CARDIFF SOUTH NSW 2285	Residential	NCA01	40	53	57	54	55	54	57	47	40	53	-
R0899	1A BENJAMIN ST, CARDIFF SOUTH NSW 2285	Active recreation	NCA01	38	51	55	52	53	52	55	45	38	51	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0900	9 LAKE AV, CARDIFF SOUTH NSW 2285	Educational institute	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0901	5 COOLUM PL, CARDIFF SOUTH NSW 2285	Residential	NCA01	46	**59**	**63**	**60**	**61**	**60**	**63**	53	46	**59**	-
R0902	5 HUNTINGTON WAY, CARDIFF SOUTH NSW 2285	Residential	NCA01	42	55	**59**	56	57	56	**59**	49	42	55	-
R0903	1A BENJAMIN ST, CARDIFF SOUTH NSW 2285	Active recreation	NCA01	38	51	55	52	53	52	55	45	38	51	-
R0904	1A BENJAMIN ST, CARDIFF SOUTH NSW 2285	Active recreation	NCA01	38	51	55	52	53	52	55	45	38	51	-
R0905	6 THE GRANGE, CARDIFF SOUTH NSW 2285	Residential	NCA01	40	53	57	54	55	54	57	47	40	53	-
R0906	6 HUNTINGTON WAY, CARDIFF SOUTH NSW 2285	Residential	NCA01	44	57	**61**	58	58	58	**61**	51	44	57	-
R0907	7 HUNTINGTON WAY, CARDIFF SOUTH NSW 2285	Residential	NCA01	43	56	**60**	57	58	57	**60**	50	43	56	-
R0908	1A BENJAMIN ST, CARDIFF SOUTH NSW 2285	Active recreation	NCA01	40	53	57	54	55	54	57	47	40	53	-
R0909	7 COOLUM PL, CARDIFF SOUTH NSW 2285	Residential	NCA01	47	**60**	**64**	**61**	**62**	**61**	**64**	54	47	**60**	-
R0910	60 FIFTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0911	8 HUNTINGTON WAY, CARDIFF SOUTH NSW 2285	Residential	NCA01	47	**60**	**64**	**61**	**62**	**61**	**64**	54	47	**60**	-
R0912	58 FIFTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0913	8 THE GRANGE, CARDIFF SOUTH NSW 2285	Residential	NCA01	41	54	58	55	56	55	58	48	41	54	-
R0914	56 FIFTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0915	54 FIFTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0916	52 FIFTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-
R0917	9 HUNTINGTON WAY, CARDIFF SOUTH NSW 2285	Residential	NCA01	45	58	**62**	**59**	**59**	**59**	**62**	52	45	58	-
R0918	48 FIFTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0919	58 FIFTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0920	10 THE GRANGE, CARDIFF SOUTH NSW 2285	Residential	NCA01	45	58	**62**	**59**	**60**	**59**	**62**	52	45	58	-
R0921	46 FIFTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0922	7 COOLUM PL, CARDIFF SOUTH NSW 2285	Residential	NCA01	49	**62**	**66**	**63**	**64**	**63**	**66**	56	49	**62**	-
R0923	10 HUNTINGTON WAY, CARDIFF SOUTH NSW 2285	Residential	NCA01	42	55	**59**	56	57	56	**59**	49	42	55	-
R0924	2 LEWIS ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0925	44 FIFTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	49	47	50	40	33	46	-
R0926	11 HUNTINGTON WAY, CARDIFF SOUTH NSW 2285	Residential	NCA01	46	**59**	**63**	**60**	**61**	**60**	**63**	53	46	**59**	-
R0927	41 SIXTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0928	12 HUNTINGTON WAY, CARDIFF SOUTH NSW 2285	Residential	NCA01	49	**62**	**66**	**63**	**64**	**63**	**66**	56	49	**62**	-
R0929	12 THE GRANGE, CARDIFF SOUTH NSW 2285	Residential	NCA01	44	57	**61**	58	**59**	58	**61**	51	44	57	-
R0930	33 SIXTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0931	3 LEWIS ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0932	37 SIXTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0933	15 HUNTINGTON WAY, CARDIFF SOUTH NSW 2285	Residential	NCA01	45	58	**62**	**59**	**60**	**59**	**62**	52	45	58	-
R0934	27A SIXTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0935	31 SIXTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0936	35 SIXTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0937	39 SIXTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0938	25 SIXTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0939	14 THE GRANGE, CARDIFF SOUTH NSW 2285	Residential	NCA01	43	56	**60**	57	58	57	**60**	50	43	56	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0940	17 HUNTINGTON WAY, CARDIFF SOUTH NSW 2285	Residential	NCA01	46	**59**	**63**	**60**	**62**	**60**	**63**	53	46	**59**	-
R0941	27 SIXTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0942	3 LEWIS ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0943	23 SIXTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0944	21 SIXTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0945	16 THE GRANGE, CARDIFF SOUTH NSW 2285	Residential	NCA01	45	58	**62**	**59**	**60**	**59**	**62**	52	45	58	-
R0946	19 HUNTINGTON WAY, CARDIFF SOUTH NSW 2285	Residential	NCA01	48	**61**	**65**	**62**	**63**	**62**	**65**	55	48	**61**	-
R0947	30 SIXTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	37	50	54	51	52	51	54	44	37	50	-
R0948	28 SIXTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	37	50	54	51	52	51	54	44	37	50	-
R0949	26 SIXTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0950	18 THE GRANGE, CARDIFF SOUTH NSW 2285	Residential	NCA01	46	**59**	**63**	**60**	**61**	**60**	**63**	53	46	**59**	-
R0951	24 SIXTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0952	22 SIXTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0953	20 SIXTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0954	18 SIXTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0955	16 SIXTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0956	14 SIXTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	48	47	50	40	33	46	-
R0957	20 THE GRANGE, CARDIFF SOUTH NSW 2285	Residential	NCA01	48	**61**	**65**	**62**	**63**	**62**	**65**	55	48	**61**	-
R0958	12 SIXTH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0959	2A LEWIS ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0960	5 LEANDA PL, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0961	3A LEWIS ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0962	4 LEANDA PL, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0963	23 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0964	21 THE GRANGE, CARDIFF SOUTH NSW 2285	Residential	NCA01	46	**59**	**63**	**60**	**61**	**60**	**63**	53	46	**59**	-
R0965	29 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0966	21 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0967	47 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	43	56	**60**	57	58	57	**60**	50	43	56	-
R0968	41 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	38	51	55	52	53	52	55	45	38	51	-
R0969	31 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0970	27 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0971	25 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	37	50	54	51	52	51	54	44	37	50	-
R0972	23 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0973	39 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	38	51	55	52	53	52	55	45	38	51	-
R0974	23 THE GRANGE, CARDIFF SOUTH NSW 2285	Residential	NCA01	47	**60**	**64**	**61**	**62**	**61**	**64**	54	47	**60**	-
R0975	21 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0976	17 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0977	49 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	45	58	**62**	**59**	**60**	**59**	**62**	52	45	58	-
R0978	19 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0979	35 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	31	44	48	45	46	45	48	38	31	44	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R0980	13 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R0981	46 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	44	57	**61**	58	**59**	58	**61**	51	44	57	-
R0982	11 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0983	9 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0984	15 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-
R0985	44 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	42	55	**59**	56	57	56	**59**	49	42	55	-
R0986	42 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	40	53	57	54	55	54	57	47	40	53	-
R0987	2 LEANDA PL, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0988	30 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0989	51 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	47	**60**	**64**	**61**	**62**	**61**	**64**	54	47	**60**	-
R0990	30 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0991	28 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	52	50	53	43	36	49	-
R0992	40 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	41	54	58	55	56	55	58	48	41	54	-
R0993	26A ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	37	50	54	51	52	51	54	44	37	50	-
R0994	38 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	41	54	58	55	56	55	58	48	41	54	-
R0995	26 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0996	24 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R0997	10 LAURA PL, CARDIFF SOUTH NSW 2285	Residential	NCA01	45	58	**62**	**59**	**60**	**59**	**62**	52	45	58	-
R0998	53 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	47	**60**	**64**	**61**	**62**	**61**	**64**	54	47	**60**	-
R0999	22 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	37	50	54	51	52	51	54	44	37	50	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1000	32 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	47	47	50	40	33	46	-
R1001	8 LAURA PL, CARDIFF SOUTH NSW 2285	Residential	NCA01	45	58	**62**	**59**	**60**	**59**	**62**	52	45	58	-
R1002	20 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R1003	18 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R1004	1 SOPHIA CT, CARDIFF SOUTH NSW 2285	Residential	NCA01	39	52	56	53	54	53	56	46	39	52	-
R1005	6 LAURA PL, CARDIFF SOUTH NSW 2285	Residential	NCA01	42	55	**59**	56	57	56	**59**	49	42	55	-
R1006	16 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R1007	2 KRISTA CT, CARDIFF SOUTH NSW 2285	Residential	NCA01	33	46	50	47	47	47	50	40	33	46	-
R1008	14 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R1009	12 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R1010	4 LEWIS ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R1011	4 SOPHIA CT, CARDIFF SOUTH NSW 2285	Residential	NCA01	42	55	**59**	56	57	56	**59**	49	42	55	-
R1012	3 KRISTA CT, CARDIFF SOUTH NSW 2285	Residential	NCA01	32	45	49	46	47	46	49	39	32	45	-
R1013	3 SOPHIA CT, CARDIFF SOUTH NSW 2285	Residential	NCA01	38	51	55	52	53	52	55	45	38	51	-
R1014	4 LAURA PL, CARDIFF SOUTH NSW 2285	Residential	NCA01	45	58	**62**	**59**	**60**	**59**	**62**	52	45	58	-
R1015	6 LEWIS ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	37	50	54	51	52	51	54	44	37	50	-
R1016	4 KRISTA CT, CARDIFF SOUTH NSW 2285	Residential	NCA01	40	53	57	54	55	54	57	47	40	53	-
R1017	5A LEWIS ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	37	50	54	51	52	51	54	44	37	50	-
R1018	6 SOPHIA CT, CARDIFF SOUTH NSW 2285	Residential	NCA01	42	55	**59**	56	57	56	**59**	49	42	55	-
R1019	5 KRISTA CT, CARDIFF SOUTH NSW 2285	Residential	NCA01	34	47	51	48	49	48	51	41	34	47	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1020	11 LAURA PL, CARDIFF SOUTH NSW 2285	Residential	NCA01	45	58	**62**	**59**	**60**	**59**	**62**	52	45	58	-
R1021	8 LEWIS ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	38	51	55	52	53	52	55	45	38	51	-
R1022	5 LEWIS ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	50	49	52	42	35	48	-
R1023	4 LAURA PL, CARDIFF SOUTH NSW 2285	Residential	NCA01	45	58	**62**	**59**	**60**	**59**	**62**	52	45	58	-
R1024	5 SOPHIA CT, CARDIFF SOUTH NSW 2285	Residential	NCA01	41	54	58	55	56	55	58	48	41	54	-
R1025	57 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	49	**62**	**66**	**63**	**64**	**63**	**66**	56	49	**62**	-
R1026	6 KRISTA CT, CARDIFF SOUTH NSW 2285	Residential	NCA01	35	48	52	49	51	49	52	42	35	48	-
R1027	8 SOPHIA CT, CARDIFF SOUTH NSW 2285	Residential	NCA01	44	57	**61**	58	**59**	58	**61**	51	44	57	-
R1028	7 KRISTA CT, CARDIFF SOUTH NSW 2285	Residential	NCA01	37	50	54	51	52	51	54	44	37	50	-
R1029	9 LAURA PL, CARDIFF SOUTH NSW 2285	Residential	NCA01	45	58	**62**	**59**	**60**	**59**	**62**	52	45	58	-
R1030	7 SOPHIA CT, CARDIFF SOUTH NSW 2285	Residential	NCA01	42	55	**59**	56	57	56	**59**	49	42	55	-
R1031	10 LEWIS ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	38	51	55	52	53	52	55	45	38	51	-
R1032	9 LEWIS ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	38	51	55	52	53	52	55	45	38	51	-
R1033	8 KRISTA CT, CARDIFF SOUTH NSW 2285	Residential	NCA01	39	52	56	53	54	53	56	46	39	52	-
R1034	7 LEWIS ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	36	49	53	50	51	50	53	43	36	49	-
R1035	7 LAURA PL, CARDIFF SOUTH NSW 2285	Residential	NCA01	45	58	**62**	**59**	**60**	**59**	**62**	52	45	58	-
R1036	57 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	NCA01	50	**63**	**67**	**64**	**65**	**64**	**67**	57	50	**63**	-
R1037	9 KRISTA CT, CARDIFF SOUTH NSW 2285	Residential	NCA01	40	53	57	54	55	54	57	47	40	53	-
R1038	5 LAURA PL, CARDIFF SOUTH NSW 2285	Residential	NCA01	46	**59**	**63**	**60**	**61**	**60**	**63**	53	46	**59**	-
R1039	9 SOPHIA CT, CARDIFF SOUTH NSW 2285	Residential	NCA01	42	55	**59**	56	57	56	**59**	49	42	55	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1040	10 KRISTA CT, CARDIFF SOUTH NSW 2285	Residential	NCA01	41	54	58	55	56	55	58	48	41	54	-
R1041	12 KRISTA CT, CARDIFF SOUTH NSW 2285	Residential	NCA01	42	55	**59**	56	57	56	**59**	49	42	55	-
R1042	10 SOPHIA CT, CARDIFF SOUTH NSW 2285	Residential	NCA01	43	56	**60**	57	58	57	**60**	50	43	56	-
R1043	3 LAURA PL, CARDIFF SOUTH NSW 2285	Residential	NCA01	44	57	**61**	58	**59**	58	**61**	51	44	57	-
R1044	11 KRISTA CT, CARDIFF SOUTH NSW 2285	Residential	NCA01	41	54	58	55	56	55	58	48	41	54	-
R1045	RESERVE 91094 25-25A PERCY ST, CARDIFF NSW 2285	Active recreation	NCA01	35	48	52	49	50	49	52	42	35	48	-
R1046	12 SOPHIA CT, CARDIFF SOUTH NSW 2285	Residential	NCA01	44	57	**61**	58	**59**	58	**61**	51	44	57	-
R1047	1A BARKER AV, HILLSBOROUGH NSW 2290	Active recreation	NCA01	37	50	54	51	52	51	54	44	37	50	-
R1048	1A BARKER AV, HILLSBOROUGH NSW 2290	Active recreation	NCA01	38	51	55	52	53	52	55	45	38	51	-
R1049	1A BARKER AV, HILLSBOROUGH NSW 2290	Active recreation	NCA01	38	51	55	52	53	52	55	45	38	51	-
R1050	1A BARKER AV, HILLSBOROUGH NSW 2290	Active recreation	NCA01	38	51	55	52	53	52	55	45	38	51	-
R1051	RESERVE 88601 10 BARKER AV, HILLSBOROUGH NSW 2290	Active recreation	NCA01	39	52	56	53	54	53	56	46	39	52	-
R1052	36 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	50	**63**	**67**	**64**	**65**	**64**	**67**	**57**	50	**63**	N, V
R1053	34 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	47	**60**	**64**	**61**	**62**	**61**	**64**	**54**	47	**60**	N, V
R1054	43 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	52	**65**	**69**	**66**	**67**	**66**	**69**	**59**	52	**65**	N, V
R1055	32A PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	47	**60**	**64**	**61**	**62**	**61**	**64**	**54**	47	**60**	N, V
R1056	41 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	51	**64**	**68**	**65**	**66**	**65**	**68**	**58**	51	**64**	N, V
R1057	30 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	45	**58**	**62**	**59**	**60**	**59**	**62**	52	45	**58**	-
R1058	39 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	52	**65**	**69**	**66**	**67**	**66**	**69**	**59**	52	**65**	N, V

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1059	28 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	45	**58**	**62**	**59**	**60**	**59**	**62**	52	45	**58**	-
R1060	37 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	50	**63**	**67**	**64**	**65**	**64**	**67**	**57**	50	**63**	N, V
R1061	46 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	**56**	**69**	**73**	**70**	**71**	**70**	**73**	**63**	**56**	**69**	N, V
R1062	26 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	46	**59**	**63**	**60**	**61**	**60**	**63**	53	46	**59**	-
R1063	41 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	**73**	**86**	**90**	**87**	**88**	**87**	**90**	**80**	**73**	**86**	N, V
R1064	35 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	48	**61**	**65**	**62**	**63**	**62**	**65**	**55**	48	**61**	N, V
R1065	39 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	**74**	**87**	**91**	**88**	**89**	**88**	**91**	**81**	**74**	**87**	N, V
R1066	33 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	48	**61**	**65**	**62**	**63**	**62**	**65**	**55**	48	**61**	N, V
R1067	24 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	44	**57**	**61**	**58**	**59**	**58**	**61**	51	44	**57**	-
R1068	44 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	51	**64**	**68**	**65**	**66**	**65**	**68**	**58**	51	**64**	N, V
R1069	42 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	52	**65**	**69**	**66**	**67**	**66**	**69**	**59**	52	**65**	N, V
R1070	5 PARKER ST, HILLSBOROUGH NSW 2290	Residential	NCA02	42	**55**	**59**	**56**	**57**	**56**	**59**	49	42	**55**	-
R1071	37 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	**74**	**87**	**91**	**88**	**89**	**88**	**91**	**81**	**74**	**87**	N, V
R1072	31 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	46	**59**	**63**	**60**	**61**	**60**	**63**	53	46	**59**	-
R1073	40 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	51	**64**	**68**	**65**	**66**	**65**	**68**	**58**	51	**64**	N, V
R1074	2 PARKER ST, HILLSBOROUGH NSW 2290	Residential	NCA02	44	**57**	**61**	**58**	**59**	**58**	**61**	51	44	**57**	-
R1075	35 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	**68**	**81**	**85**	**82**	**83**	**82**	**85**	**75**	**68**	**81**	N, V
R1076	4 PARKER ST, HILLSBOROUGH NSW 2290	Residential	NCA02	46	**59**	**63**	**60**	**61**	**60**	**63**	53	46	**59**	-
R1077	38 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	48	**61**	**65**	**62**	**63**	**62**	**65**	**55**	48	**61**	N, V
R1078	121 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Residential	NCA02	**78**	**91**	**95**	**92**	**93**	**92**	**95**	**85**	**78**	**91**	N, V

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1079	6 PARKER ST, HILLSBOROUGH NSW 2290	Residential	NCA02	45	**58**	**62**	**59**	**60**	**59**	**62**	52	45	**58**	-
R1080	33 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	**61**	**74**	**78**	**75**	**76**	**75**	**78**	**68**	**61**	**74**	N, V
R1081	38 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	51	**64**	**68**	**65**	**66**	**65**	**68**	**58**	51	**64**	N, V
R1082	15 PARKER ST, HILLSBOROUGH NSW 2290	Residential	NCA02	49	**62**	**66**	**63**	**64**	**63**	**66**	**56**	49	**62**	N, V
R1083	8 PARKER ST, HILLSBOROUGH NSW 2290	Residential	NCA02	45	**58**	**62**	**59**	**61**	**59**	**62**	52	45	**58**	-
R1084	119 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Residential	NCA02	**76**	**89**	**93**	**90**	**91**	**90**	**93**	**83**	**76**	**89**	N, V
R1085	20 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	43	**56**	**60**	**57**	**58**	**57**	**60**	50	43	**56**	-
R1086	31 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	**59**	**72**	**76**	**73**	**73**	**73**	**76**	**66**	**59**	**72**	N, V
R1087	34 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	**71**	**84**	**88**	**85**	**86**	**85**	**88**	**78**	**71**	**84**	N, V
R1088	10 PARKER ST, HILLSBOROUGH NSW 2290	Residential	NCA02	48	**61**	**65**	**62**	**63**	**62**	**65**	**55**	48	**61**	N, V
R1089	18 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	43	**56**	**60**	**57**	**58**	**57**	**60**	50	43	**56**	-
R1090	25 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	45	**58**	**62**	**59**	**60**	**59**	**62**	52	45	**58**	-
R1091	12 PARKER ST, HILLSBOROUGH NSW 2290	Residential	NCA02	48	**61**	**65**	**62**	**63**	**62**	**65**	**55**	48	**61**	N, V
R1092	32 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	**60**	**73**	**77**	**74**	**74**	**74**	**77**	**67**	**60**	**73**	N, V
R1093	34 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	**77**	**90**	**94**	**91**	**92**	**91**	**94**	**84**	**77**	**90**	N, V
R1094	34 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	45	**58**	**62**	**59**	**60**	**59**	**62**	52	45	**58**	-
R1095	16 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	44	**57**	**61**	**58**	**59**	**58**	**61**	51	44	**57**	-
R1096	14 PARKER ST, HILLSBOROUGH NSW 2290	Residential	NCA02	49	**62**	**66**	**63**	**64**	**63**	**66**	**56**	49	**62**	N, V
R1097	RESERVE 91094 25-25A PERCY ST, CARDIFF NSW 2285	Active recreation	NCA02	42	55	59	56	57	56	59	49	42	55	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1098	RESERVE 86839 80 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Active recreation	NCA02	54	67	71	68	69	68	71	61	54	67	N
R1099	117 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Residential	NCA02	**78**	**91**	**95**	**92**	**92**	**92**	**95**	**85**	**78**	**91**	N, V
R1100	23 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	43	**56**	**60**	**57**	**58**	**57**	**60**	50	43	**56**	-
R1101	RESERVE 86839 80 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Active recreation	NCA02	48	61	65	62	63	62	65	55	48	61	-
R1102	16 PARKER ST, HILLSBOROUGH NSW 2290	Residential	NCA02	52	**65**	**69**	**66**	**67**	**66**	**69**	**59**	52	**65**	N, V
R1103	30 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	**62**	**75**	**79**	**76**	**77**	**76**	**79**	**69**	**62**	**75**	N, V
R1104	14 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	42	**55**	**59**	**56**	**57**	**56**	**59**	49	42	**55**	-
R1105	27 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	49	**62**	**66**	**63**	**64**	**63**	**66**	**56**	49	**62**	N, V
R1106	21 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	44	**57**	**61**	**58**	**59**	**58**	**61**	51	44	**57**	-
R1107	32 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	47	**60**	**64**	**61**	**62**	**61**	**64**	**54**	47	**60**	N, V
R1108	RESERVE 91094 25-25A PERCY ST, CARDIFF NSW 2285	Active recreation	NCA02	42	55	59	56	57	56	59	49	42	55	-
R1109	RESERVE 86839 80 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Active recreation	NCA02	56	69	73	70	70	70	73	63	56	69	N
R1110	7 ROYTON ST, HILLSBOROUGH NSW 2290	Residential	NCA02	43	**56**	**60**	**57**	**59**	**57**	**60**	50	43	**56**	-
R1111	30 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	46	**59**	**63**	**60**	**61**	**60**	**63**	53	46	**59**	-
R1112	28 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	**56**	**69**	**73**	**70**	**71**	**70**	**73**	**63**	**56**	**69**	N, V
R1113	115 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Residential	NCA02	**77**	**90**	**94**	**91**	**92**	**91**	**94**	**84**	**77**	**90**	N, V
R1114	25 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	49	**62**	**66**	**63**	**64**	**63**	**66**	**56**	49	**62**	N, V
R1115	19 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	44	**57**	**61**	**58**	**59**	**58**	**61**	51	44	**57**	-
R1116	28 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	44	**57**	**61**	**58**	**59**	**58**	**61**	51	44	**57**	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1117	2 ROYTON ST, HILLSBOROUGH NSW 2290	Residential	NCA02	42	**55**	**59**	**56**	**57**	**56**	**59**	49	42	**55**	-
R1118	RESERVE 86839 80 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Active recreation	NCA02	54	67	71	68	69	68	71	61	54	67	N
R1119	26 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	**59**	**72**	**76**	**73**	**73**	**73**	**76**	**66**	**59**	**72**	N, V
R1120	2 ROYTON ST, HILLSBOROUGH NSW 2290	Residential	NCA02	43	**56**	**60**	**57**	**58**	**57**	**60**	50	43	**56**	-
R1121	23 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	48	**61**	**65**	**62**	**63**	**62**	**65**	**55**	48	**61**	N, V
R1122	23 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	NCA02	**72**	**85**	**89**	**86**	**87**	**86**	**89**	**79**	**72**	**85**	N, V
R1123	26 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	44	**57**	**61**	**58**	**59**	**58**	**61**	51	44	**57**	-
R1124	24 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	**58**	**71**	**75**	**72**	**72**	**72**	**75**	**65**	**58**	**71**	N, V
R1125	RESERVE 86839 80 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Active recreation	NCA02	55	68	72	69	70	69	72	62	55	68	N
R1126	10 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	43	**56**	**60**	**57**	**57**	**57**	**60**	50	43	**56**	-
R1127	26 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	46	**59**	**63**	**60**	**61**	**60**	**63**	53	46	**59**	-
R1128	21 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	47	**60**	**64**	**61**	**62**	**61**	**64**	**54**	47	**60**	N, V
R1129	17 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	45	**58**	**62**	**59**	**60**	**59**	**62**	52	45	**58**	-
R1130	21 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	NCA02	**78**	**91**	**95**	**92**	**91**	**92**	**95**	**85**	**78**	**91**	N, V
R1131	22 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	**55**	**68**	**72**	**69**	**69**	**69**	**72**	**62**	**55**	**68**	N, V
R1132	8 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	43	**56**	**60**	**57**	**58**	**57**	**60**	50	43	**56**	-
R1133	19 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	44	**57**	**61**	**58**	**59**	**58**	**61**	51	44	**57**	-
R1134	RESERVE 86839 80 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Active recreation	NCA02	47	60	64	61	62	61	64	54	47	60	-
R1135	19 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	48	**61**	**65**	**62**	**63**	**62**	**65**	**55**	48	**61**	N, V

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1136	19 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	NCA02	**75**	**88**	**92**	**89**	**90**	**89**	**92**	**82**	**75**	**88**	N, V
R1137	15 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	44	**57**	**61**	**58**	**59**	**58**	**61**	51	44	**57**	-
R1138	24 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	47	**60**	**64**	**61**	**60**	**61**	**64**	**54**	47	**60**	N, V
R1139	20 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	53	**66**	**70**	**67**	**68**	**67**	**70**	**60**	53	**66**	N, V
R1140	6 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	43	**56**	**60**	**57**	**58**	**57**	**60**	50	43	**56**	-
R1141	17 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	NCA02	**71**	**84**	**88**	**85**	**86**	**85**	**88**	**78**	**71**	**84**	N, V
R1142	19 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	36	49	53	50	51	50	53	43	36	49	-
R1143	13 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	43	**56**	**60**	**57**	**57**	**57**	**60**	50	43	**56**	-
R1144	6 ROYTON ST, HILLSBOROUGH NSW 2290	Residential	NCA02	46	**59**	**63**	**60**	**60**	**60**	**63**	53	46	**59**	-
R1145	23 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	40	53	**57**	**54**	**55**	**54**	**57**	47	40	53	-
R1146	22 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	43	**56**	**60**	**57**	**58**	**57**	**60**	50	43	**56**	-
R1147	15 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	NCA02	**68**	**81**	**85**	**82**	**82**	**82**	**85**	**75**	**68**	**81**	N, V
R1148	9 ROYTON ST, HILLSBOROUGH NSW 2290	Residential	NCA02	53	**66**	**70**	**67**	**68**	**67**	**70**	**60**	53	**66**	N, V
R1149	8 ROYTON ST, HILLSBOROUGH NSW 2290	Residential	NCA02	47	**60**	**64**	**61**	**62**	**61**	**64**	**54**	47	**60**	N, V
R1150	4 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	42	**55**	**59**	**56**	**58**	**56**	**59**	49	42	**55**	-
R1151	113 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Residential	NCA02	**85**	**98**	**102**	**99**	**99**	**99**	**102**	**92**	**85**	**98**	N, V
R1152	4 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	41	**54**	**58**	**55**	**57**	**55**	**58**	48	41	**54**	-
R1153	11 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	43	**56**	**60**	**57**	**59**	**57**	**60**	50	43	**56**	-
R1154	21 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	40	53	**57**	**54**	**55**	**54**	**57**	47	40	53	-
R1155	11 ROYTON ST, HILLSBOROUGH NSW 2290	Residential	NCA02	**56**	**69**	**73**	**70**	**71**	**70**	**73**	**63**	**56**	**69**	N, V

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1156	20 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	44	**57**	**61**	**58**	**59**	**58**	**61**	51	44	**57**	-
R1157	17 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	49	**62**	**66**	**63**	**64**	**63**	**66**	**56**	49	**62**	N, V
R1158	1 SYDNEY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	43	**56**	**60**	**57**	**58**	**57**	**60**	50	43	**56**	-
R1159	13 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	NCA02	**65**	**78**	**82**	**79**	**80**	**79**	**82**	**72**	**65**	**78**	N, V
R1160	111 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Residential	NCA02	**79**	**92**	**96**	**93**	**94**	**93**	**96**	**86**	**79**	**92**	N, V
R1161	15 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	45	**58**	**62**	**59**	**60**	**59**	**62**	52	45	**58**	-
R1162	18 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	44	**57**	**61**	**58**	**59**	**58**	**61**	51	44	**57**	-
R1163	9 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	43	**56**	**60**	**57**	**58**	**57**	**60**	50	43	**56**	-
R1164	16 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	49	**62**	**66**	**63**	**64**	**63**	**66**	**56**	49	**62**	N, V
R1165	17 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	40	53	**57**	**54**	**55**	**54**	**57**	47	40	53	-
R1166	109 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Residential	NCA02	**76**	**89**	**93**	**90**	**91**	**90**	**93**	**83**	**76**	**89**	N, V
R1167	10 ROYTON ST, HILLSBOROUGH NSW 2290	Residential	NCA02	53	**66**	**70**	**67**	**68**	**67**	**70**	**60**	53	**66**	N, V
R1168	16 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	44	**57**	**61**	**58**	**59**	**58**	**61**	51	44	**57**	-
R1169	10 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	NCA02	**71**	**84**	**88**	**85**	**86**	**85**	**88**	**78**	**71**	**84**	N, V
R1170	3 SYDNEY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	43	**56**	**60**	**57**	**58**	**57**	**60**	50	43	**56**	-
R1171	14 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	45	**58**	**62**	**59**	**60**	**59**	**62**	52	45	**58**	-
R1172	13A HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	46	**59**	**63**	**60**	**61**	**60**	**63**	53	46	**59**	-
R1173	1 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	41	**54**	**58**	**55**	**56**	**55**	**58**	48	41	**54**	-
R1174	11A HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	45	**58**	**62**	**59**	**60**	**59**	**62**	52	45	**58**	-
R1175	15 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	39	52	**56**	53	**54**	53	**56**	46	39	52	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1176	14 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	43	**56**	**60**	**57**	**58**	**57**	**60**	50	43	**56**	-
R1177	107 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Residential	NCA02	**76**	**89**	**93**	**90**	**91**	**90**	**93**	**83**	**76**	**89**	N, V
R1178	11 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	NCA02	**56**	**69**	**73**	**70**	**71**	**70**	**73**	**63**	**56**	**69**	N, V
R1179	11 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	47	**60**	**64**	**61**	**62**	**61**	**64**	**54**	47	**60**	N, V
R1180	12 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	49	**62**	**66**	**63**	**64**	**63**	**66**	**56**	49	**62**	N, V
R1181	5 SYDNEY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	44	**57**	**61**	**58**	**59**	**58**	**61**	51	44	**57**	-
R1182	2 SYDNEY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	41	**54**	**58**	**55**	**56**	**55**	**58**	48	41	**54**	-
R1183	105 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Residential	NCA02	**76**	**89**	**93**	**90**	**91**	**90**	**93**	**83**	**76**	**89**	N, V
R1184	4 SYDNEY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	43	**56**	**60**	**57**	**58**	**57**	**60**	50	43	**56**	-
R1185	13 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	39	52	**56**	53	**54**	53	**56**	46	39	52	-
R1186	9 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	NCA02	**54**	**67**	**71**	**68**	**69**	**68**	**71**	**61**	**54**	**67**	N, V
R1187	9 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	46	**59**	**63**	**60**	**61**	**60**	**63**	53	46	**59**	-
R1188	3 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	41	**54**	**58**	**55**	**56**	**55**	**58**	48	41	**54**	-
R1189	10 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	50	**63**	**67**	**64**	**64**	**64**	**67**	**57**	50	**63**	N, V
R1190	5 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	42	**55**	**59**	**56**	**57**	**56**	**59**	49	42	**55**	-
R1191	8 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	NCA02	**54**	**67**	**71**	**68**	**69**	**68**	**71**	**61**	**54**	**67**	N, V
R1192	103 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Residential	NCA02	**76**	**89**	**93**	**90**	**91**	**90**	**93**	**83**	**76**	**89**	N, V
R1193	7 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	NCA02	53	**66**	**70**	**67**	**68**	**67**	**70**	**60**	53	**66**	N, V
R1194	7 SYDNEY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	46	**59**	**63**	**60**	**61**	**60**	**63**	53	46	**59**	-
R1195	11 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	39	52	**56**	53	**54**	53	**56**	46	39	52	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1196	8 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	49	**62**	**66**	**63**	**64**	**63**	**66**	**56**	49	**62**	N, V
R1197	6 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	NCA02	**55**	**68**	**72**	**69**	**70**	**69**	**72**	**62**	**55**	**68**	N, V
R1198	101 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Residential	NCA02	**78**	**91**	**95**	**92**	**93**	**92**	**95**	**85**	**78**	**91**	N, V
R1199	3A KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	43	**56**	**60**	**57**	**58**	**57**	**60**	50	43	**56**	-
R1200	8 SYDNEY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	43	**56**	**60**	**57**	**58**	**57**	**60**	50	43	**56**	-
R1201	5 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	41	**54**	**58**	**55**	**56**	**55**	**58**	48	41	**54**	-
R1202	3A KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	42	**55**	**59**	**56**	**57**	**56**	**59**	49	42	**55**	-
R1203	5 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	NCA02	51	**64**	**68**	**65**	**66**	**65**	**68**	**58**	51	**64**	N, V
R1204	8 SYDNEY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	44	**57**	**61**	**58**	**59**	**58**	**61**	51	44	**57**	-
R1205	4 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	NCA02	**55**	**68**	**72**	**69**	**70**	**69**	**72**	**62**	**55**	**68**	N, V
R1206	70 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Commercial	NCA02	47	60	64	61	62	61	64	54	47	60	N
R1207	6 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	48	**61**	**65**	**62**	**63**	**62**	**65**	**55**	48	**61**	N, V
R1208	11 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	40	53	**57**	**54**	**54**	**54**	**57**	47	40	53	-
R1209	3 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	41	**54**	**58**	**55**	**56**	**55**	**58**	48	41	**54**	-
R1210	10 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	41	**54**	**58**	**55**	**55**	**55**	**58**	48	41	**54**	-
R1211	5 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	41	**54**	**58**	**55**	**56**	**55**	**58**	48	41	**54**	-
R1212	99 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Residential	NCA02	**76**	**89**	**93**	**90**	**91**	**90**	**93**	**83**	**76**	**89**	N, V
R1213	18 LEROY CL, HILLSBOROUGH NSW 2290	Residential	NCA02	**58**	**71**	**75**	**72**	**73**	**72**	**75**	**65**	**58**	**71**	N, V
R1214	3 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	NCA02	50	**63**	**67**	**64**	**65**	**64**	**67**	**57**	50	**63**	N, V
R1215	70 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Commercial	NCA02	51	64	68	65	66	65	68	58	51	64	N

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1216	9 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	39	52	**56**	53	**54**	53	**56**	46	39	52	-
R1217	70 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Commercial	NCA02	54	67	71	68	69	68	71	61	54	67	N
R1218	5 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	46	**59**	**63**	**60**	**61**	**60**	**63**	53	46	**59**	-
R1219	1A KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	39	52	**56**	53	**55**	53	**56**	46	39	52	-
R1220	9 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	36	49	53	50	52	50	53	43	36	49	-
R1221	68 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Commercial	NCA02	41	54	58	55	55	55	58	48	41	54	-
R1222	4 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	46	**59**	**63**	**60**	**61**	**60**	**63**	53	46	**59**	-
R1223	16 LEROY CL, HILLSBOROUGH NSW 2290	Residential	NCA02	**55**	**68**	**72**	**69**	**70**	**69**	**72**	**62**	**55**	**68**	N, V
R1224	70 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Commercial	NCA02	47	60	64	61	62	61	64	54	47	60	N
R1225	7 PERCY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	40	53	**57**	**54**	**55**	**54**	**57**	47	40	53	-
R1226	8 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	44	**57**	**61**	**58**	**59**	**58**	**61**	51	44	**57**	-
R1227	2 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	NCA02	50	**63**	**67**	**64**	**65**	**64**	**67**	**57**	50	**63**	N, V
R1228	1 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	NCA02	47	**60**	**64**	**61**	**62**	**61**	**64**	**54**	47	**60**	N, V
R1229	68 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Commercial	NCA02	64	77	81	78	78	78	81	71	64	77	N
R1230	3 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	45	**58**	**62**	**59**	**60**	**59**	**62**	52	45	**58**	-
R1231	1A KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	41	**54**	**58**	**55**	**56**	**55**	**58**	48	41	**54**	-
R1232	68 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Commercial	NCA02	57	70	74	71	72	71	74	64	57	70	N
R1233	70 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Commercial	NCA02	47	60	64	61	62	61	64	54	47	60	N
R1234	21 LEROY CL, HILLSBOROUGH NSW 2290	Residential	NCA02	**67**	**80**	**84**	**81**	**82**	**81**	**84**	**74**	**67**	**80**	N, V
R1235	2 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	44	**57**	**61**	**58**	**59**	**58**	**61**	51	44	**57**	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1236	9 MOODY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	47	**60**	**64**	**61**	**62**	**61**	**64**	**54**	47	**60**	N, V
R1237	6 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	42	**55**	**59**	**56**	**57**	**56**	**59**	49	42	**55**	-
R1238	70 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Commercial	NCA02	49	62	66	63	64	63	66	56	49	62	N
R1239	11 MOODY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	46	**59**	**63**	**60**	**61**	**60**	**63**	53	46	**59**	-
R1240	1 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	41	**54**	**58**	**55**	**56**	**55**	**58**	48	41	**54**	-
R1241	14 LEROY CL, HILLSBOROUGH NSW 2290	Residential	NCA02	53	**66**	**70**	**67**	**68**	**67**	**70**	**60**	53	**66**	N, V
R1242	1 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	NCA02	43	**56**	**60**	**57**	**58**	**57**	**60**	50	43	**56**	-
R1243	27 MOODY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	39	52	**56**	53	**54**	53	**56**	46	39	52	-
R1244	70 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Commercial	NCA02	53	66	70	67	68	67	70	60	53	66	N
R1245	68 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Commercial	NCA02	63	76	80	77	78	77	80	70	63	76	N
R1246	23 MOODY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	37	50	**54**	51	52	51	**54**	44	37	50	-
R1247	25 MOODY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	39	52	**56**	53	**54**	53	**56**	46	39	52	-
R1248	4 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	42	**55**	**59**	**56**	**57**	**56**	**59**	49	42	**55**	-
R1249	17 MOODY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	40	53	**57**	**54**	**55**	**54**	**57**	47	40	53	-
R1250	19 LEROY CL, HILLSBOROUGH NSW 2290	Residential	NCA02	**63**	**76**	**80**	**77**	**78**	**77**	**80**	**70**	**63**	**76**	N, V
R1251	6 MOODY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	50	**63**	**67**	**64**	**65**	**64**	**67**	**57**	50	**63**	N, V
R1252	68 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Commercial	NCA02	73	86	90	87	87	87	90	80	73	86	N
R1253	25 MOODY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	39	52	**56**	53	**54**	53	**56**	46	39	52	-
R1254	34 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1255	12 LEROY CL, HILLSBOROUGH NSW 2290	Residential	NCA02	53	**66**	**70**	**67**	**68**	**67**	**70**	**60**	53	**66**	N, V

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1256	22 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1257	32 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1258	12A LEROY CL, HILLSBOROUGH NSW 2290	Residential	NCA02	51	**64**	**68**	**65**	**66**	**65**	**68**	**58**	51	**64**	N, V
R1259	68 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Commercial	NCA02	51	64	68	65	66	65	68	58	51	64	N
R1260	16 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1261	36 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1262	27 MOODY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	38	51	**55**	52	53	52	**55**	45	38	51	-
R1263	38 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1264	68 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Commercial	NCA02	57	70	74	71	71	71	74	64	57	70	N
R1265	8 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1266	23 MOODY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	41	**54**	**58**	**55**	**57**	**55**	**58**	48	41	**54**	-
R1267	43 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1268	2 KING ST, HILLSBOROUGH NSW 2290	Residential	NCA02	41	**54**	**58**	**55**	**56**	**55**	**58**	48	41	**54**	-
R1269	14 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1270	33 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	44	44	47	37	30	43	-
R1271	6 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1272	8 MOODY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	49	**62**	**66**	**63**	**65**	**63**	**66**	**56**	49	**62**	N, V
R1273	50 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1274	17 LEROY CL, HILLSBOROUGH NSW 2290	Residential	NCA02	**63**	**76**	**80**	**77**	**78**	**77**	**80**	**70**	**63**	**76**	N, V
R1275	2 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	47	**60**	**64**	**61**	**62**	**61**	**64**	**54**	47	**60**	N, V

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1276	29 TALLOWOOD CCT, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1277	10 LEROY CL, HILLSBOROUGH NSW 2290	Residential	NCA02	53	**66**	**70**	**67**	**68**	**67**	**70**	**60**	53	**66**	N, V
R1278	1 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	46	**59**	**63**	**60**	**61**	**60**	**63**	53	46	**59**	-
R1279	31 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1280	41 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1281	30 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1282	2/10 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	47	47	50	40	33	46	-
R1283	20 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1284	4 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	47	**60**	**64**	**61**	**62**	**61**	**64**	**54**	47	**60**	N, V
R1285	12 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1286	8 LEROY CL, HILLSBOROUGH NSW 2290	Residential	NCA02	53	**66**	**70**	**67**	**68**	**67**	**70**	**60**	53	**66**	N, V
R1287	15 LEROY CL, HILLSBOROUGH NSW 2290	Residential	NCA02	**61**	**74**	**78**	**75**	**76**	**75**	**78**	**68**	**61**	**74**	N, V
R1288	31 TALLOWOOD CCT, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1289	14 MOODY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	44	**57**	**61**	**58**	**59**	**58**	**61**	51	44	**57**	-
R1290	18 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1291	16 MOODY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	43	**56**	**60**	**57**	**58**	**57**	**60**	50	43	**56**	-
R1292	4 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1293	6 LEROY CL, HILLSBOROUGH NSW 2290	Residential	NCA02	51	**64**	**68**	**65**	**65**	**65**	**68**	**58**	51	**64**	N, V
R1294	18 MOODY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	44	**57**	**61**	**58**	**59**	**58**	**61**	51	44	**57**	-
R1295	20 MOODY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	42	**55**	**59**	**56**	**57**	**56**	**59**	49	42	**55**	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1296	3 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	46	**59**	**63**	**60**	**61**	**60**	**63**	53	46	**59**	-
R1297	33 TALLOWOOD CCT, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1298	28 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1299	29 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1300	48 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1301	22 MOODY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	41	**54**	**58**	**55**	**56**	**55**	**58**	48	41	**54**	-
R1302	4 LEROY CL, HILLSBOROUGH NSW 2290	Residential	NCA02	49	**62**	**66**	**63**	**63**	**63**	**66**	**56**	49	**62**	N, V
R1303	24 MOODY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	41	**54**	**58**	**55**	**56**	**55**	**58**	48	41	**54**	-
R1304	39 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1305	26 MOODY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	42	**55**	**59**	**56**	**57**	**56**	**59**	49	42	**55**	-
R1306	33 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	42	**55**	**59**	**56**	**56**	**56**	**59**	49	42	**55**	-
R1307	27 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1308	2 LEROY CL, HILLSBOROUGH NSW 2290	Residential	NCA02	47	**60**	**64**	**61**	**62**	**61**	**64**	**54**	47	**60**	N, V
R1309	16 MOODY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	43	**56**	**60**	**57**	**58**	**57**	**60**	50	43	**56**	-
R1310	24 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	46	46	49	39	32	45	-
R1311	28 MOODY ST, HILLSBOROUGH NSW 2290	Residential	NCA02	41	**54**	**58**	**55**	**56**	**55**	**58**	48	41	**54**	-
R1312	26 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1313	5 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	45	**58**	**62**	**59**	**60**	**59**	**62**	52	45	**58**	-
R1314	13 LEROY CL, HILLSBOROUGH NSW 2290	Residential	NCA02	**60**	**73**	**77**	**74**	**75**	**74**	**77**	**67**	**60**	**73**	N, V
R1315	48 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	40	53	**57**	**54**	**55**	**54**	**57**	47	40	53	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1316	3 AVON CL, HILLSBOROUGH NSW 2290	Residential	NCA02	44	**57**	**61**	**58**	**59**	**58**	**61**	51	44	**57**	-
R1317	46 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	47	47	50	40	33	46	-
R1318	5 AVON CL, HILLSBOROUGH NSW 2290	Residential	NCA02	43	**56**	**60**	**57**	**58**	**57**	**60**	50	43	**56**	-
R1319	25 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1320	31 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	39	52	**56**	53	**54**	53	**56**	46	39	52	-
R1321	11 LEROY CL, HILLSBOROUGH NSW 2290	Residential	NCA02	**56**	**69**	**73**	**70**	**71**	**70**	**73**	**63**	**56**	**69**	N, V
R1322	8 AVON CL, HILLSBOROUGH NSW 2290	Residential	NCA02	41	**54**	**58**	**55**	**56**	**55**	**58**	48	41	**54**	-
R1323	46 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	39	52	**56**	53	**54**	53	**56**	46	39	52	-
R1324	8 AVON CL, HILLSBOROUGH NSW 2290	Residential	NCA02	41	**54**	**58**	**55**	**55**	**55**	**58**	48	41	**54**	-
R1325	23 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1326	7 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	46	**59**	**63**	**60**	**61**	**60**	**63**	53	46	**59**	-
R1327	3 AVON CL, HILLSBOROUGH NSW 2290	Residential	NCA02	43	**56**	**60**	**57**	**58**	**57**	**60**	50	43	**56**	-
R1328	9 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1329	7 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	47	47	50	40	33	46	-
R1330	9 LEROY CL, HILLSBOROUGH NSW 2290	Residential	NCA02	52	**65**	**69**	**66**	**67**	**66**	**69**	**59**	52	**65**	N, V
R1331	44 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1332	5 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1333	7 LEROY CL, HILLSBOROUGH NSW 2290	Residential	NCA02	52	**65**	**69**	**66**	**67**	**66**	**69**	**59**	52	**65**	N, V
R1334	11 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	45	45	48	38	31	44	-
R1335	29 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	40	53	**57**	**54**	**55**	**54**	**57**	47	40	53	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1336	9 LEROY CL, HILLSBOROUGH NSW 2290	Residential	NCA02	**54**	**67**	**71**	**68**	**69**	**68**	**71**	**61**	**54**	**67**	N, V
R1337	9 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	45	**58**	**62**	**59**	**60**	**59**	**62**	52	45	**58**	-
R1338	3 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1339	5 LEROY CL, HILLSBOROUGH NSW 2290	Residential	NCA02	48	**61**	**65**	**62**	**63**	**62**	**65**	**55**	48	**61**	N, V
R1340	21 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1341	6 AVON CL, HILLSBOROUGH NSW 2290	Residential	NCA02	40	53	**57**	**54**	**55**	**54**	**57**	47	40	53	-
R1342	37 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1343	13 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1344	1 LEROY CL, HILLSBOROUGH NSW 2290	Residential	NCA02	48	**61**	**65**	**62**	**63**	**62**	**65**	**55**	48	**61**	N, V
R1345	3 LEROY CL, HILLSBOROUGH NSW 2290	Residential	NCA02	49	**62**	**66**	**63**	**63**	**63**	**66**	**56**	49	**62**	N, V
R1346	11 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	43	**56**	**60**	**57**	**58**	**57**	**60**	50	43	**56**	-
R1347	15 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	45	45	48	38	31	44	-
R1348	29 TIMBERCREST CH, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1349	1 AVON CL, HILLSBOROUGH NSW 2290	Residential	NCA02	43	**56**	**60**	**57**	**58**	**57**	**60**	50	43	**56**	-
R1350	42 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	48	48	51	41	34	47	-
R1351	44 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	39	52	**56**	53	**54**	53	**56**	46	39	52	-
R1352	27 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	40	53	**57**	**54**	**55**	**54**	**57**	47	40	53	-
R1353	19 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1354	4 BIANCA CL, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1355	10 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	46	**59**	**63**	**60**	**61**	**60**	**63**	53	46	**59**	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1356	4 AVON CL, HILLSBOROUGH NSW 2290	Residential	NCA02	40	53	**57**	**54**	**55**	**54**	**57**	47	40	53	-
R1357	2 BIANCA CL, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1358	31 TIMBERCREST CH, CHARLESTOWN NSW 2290	Residential	NCA02	29	42	46	43	44	43	46	36	29	42	-
R1359	40 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	47	47	50	40	33	46	-
R1360	2 AVON CL, HILLSBOROUGH NSW 2290	Residential	NCA02	41	**54**	**58**	**55**	**56**	**55**	**58**	48	41	**54**	-
R1361	42 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	38	51	**55**	52	53	52	**55**	45	38	51	-
R1362	6 BIANCA CL, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1363	25 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	39	52	**56**	53	**54**	53	**56**	46	39	52	-
R1364	17 JERGI CL, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1365	12 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	46	**59**	**63**	**60**	**61**	**60**	**63**	53	46	**59**	-
R1366	8 BIANCA CL, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1367	2 AVON CL, HILLSBOROUGH NSW 2290	Residential	NCA02	42	**55**	**59**	**56**	**57**	**56**	**59**	49	42	**55**	-
R1368	17 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	40	53	**57**	**54**	**55**	**54**	**57**	47	40	53	-
R1369	14 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	45	**58**	**62**	**59**	**60**	**59**	**62**	52	45	**58**	-
R1370	33 TIMBERCREST CH, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1371	10 BIANCA CL, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1372	38 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	48	48	51	41	34	47	-
R1373	23 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	40	53	**57**	**54**	**55**	**54**	**57**	47	40	53	-
R1374	17 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	41	**54**	**58**	**55**	**56**	**55**	**58**	48	41	**54**	-
R1375	40 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	39	52	**56**	53	**54**	53	**56**	46	39	52	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1376	12 BIANCA CL, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1377	16 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	44	**57**	**61**	**58**	**59**	**58**	**61**	51	44	**57**	-
R1378	19 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	41	**54**	**58**	**55**	**56**	**55**	**58**	48	41	**54**	-
R1379	14 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	45	**58**	**62**	**59**	**60**	**59**	**62**	52	45	**58**	-
R1380	18 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	44	**57**	**61**	**58**	**59**	**58**	**61**	51	44	**57**	-
R1381	21 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	40	53	**57**	**54**	**55**	**54**	**57**	47	40	53	-
R1382	35 TIMBERCREST CH, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1383	1 BIANCA CL, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1384	36 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1385	20 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	43	**56**	**60**	**57**	**58**	**57**	**60**	50	43	**56**	-
R1386	14 BIANCA CL, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1387	38 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	38	51	**55**	52	53	52	**55**	45	38	51	-
R1388	22 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	43	**56**	**60**	**57**	**58**	**57**	**60**	50	43	**56**	-
R1389	3 BIANCA CL, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1390	31 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	46	46	49	39	32	45	-
R1391	37 TIMBERCREST CH, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1392	36 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	40	53	**57**	**54**	**55**	**54**	**57**	47	40	53	-
R1393	24 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	42	**55**	**59**	**56**	**57**	**56**	**59**	49	42	**55**	-
R1394	34 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1395	5 BIANCA CL, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1396	2/16 BIANCA CL, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1397	29 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	46	46	49	39	32	45	-
R1398	26 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	42	**55**	**59**	**56**	**57**	**56**	**59**	49	42	**55**	-
R1399	39 TIMBERCREST CH, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1400	34 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	41	**54**	**58**	**55**	**56**	**55**	**58**	48	41	**54**	-
R1401	28 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	40	53	**57**	**54**	**55**	**54**	**57**	47	40	53	-
R1402	32 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	40	53	**57**	**54**	**55**	**54**	**57**	47	40	53	-
R1403	2/32 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1404	30 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	40	53	**57**	**54**	**55**	**54**	**57**	47	40	53	-
R1405	18 BIANCA CL, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1406	7 BIANCA CL, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	45	45	48	38	31	44	-
R1407	27 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1408	28 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	41	**54**	**58**	**55**	**56**	**55**	**58**	48	41	**54**	-
R1409	41 TIMBERCREST CH, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1410	34 ROBINA DR, HILLSBOROUGH NSW 2290	Residential	NCA02	38	51	**55**	52	53	52	**55**	45	38	51	-
R1411	30 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1412	20 BIANCA CL, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1413	9 BIANCA CL, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1414	25 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1415	43 TIMBERCREST CH, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1416	22 BIANCA CL, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1417	11 BIANCA CL, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1418	45 TIMBERCREST CH, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	44	44	47	37	30	43	-
R1419	23 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1420	24 BIANCA CL, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1421	13 BIANCA CL, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1422	28 BIANCA CL, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1423	26 BIANCA CL, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	45	45	48	38	31	44	-
R1424	1/22 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1425	HILLSBOROUGH PUBLIC SCHOOL 83 WARATAH AV, CHARLESTOWN NSW 2290	Educational institute	NCA02	36	49	53	50	51	50	53	43	36	49	N
R1426	20 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1427	HILLSBOROUGH PUBLIC SCHOOL 83 WARATAH AV, CHARLESTOWN NSW 2290	Educational institute	NCA02	35	48	52	49	50	49	52	42	35	48	N
R1428	20A ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1429	HILLSBOROUGH PUBLIC SCHOOL 83 WARATAH AV, CHARLESTOWN NSW 2290	Educational institute	NCA02	39	52	56	53	53	53	56	46	39	52	N
R1430	NEWCASTLE JUNIOR 64 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Educational institute	NCA02	36	49	53	50	51	50	53	43	36	49	-
R1431	HILLSBOROUGH PUBLIC SCHOOL 83 WARATAH AV, CHARLESTOWN NSW 2290	Educational institute	NCA02	37	50	54	51	52	51	54	44	37	50	N
R1432	17 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1433	NEWCASTLE JUNIOR 64 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Educational institute	NCA02	36	49	53	50	51	50	53	43	36	49	N

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1434	18 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1435	NEWCASTLE JUNIOR 64 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Educational institute	NCA02	35	48	52	49	49	49	52	42	35	48	-
R1436	NEWCASTLE JUNIOR 64 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Educational institute	NCA02	35	48	52	49	50	49	52	42	35	48	N
R1437	111 E K AV, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1438	HILLSBOROUGH PUBLIC SCHOOL 83 WARATAH AV, CHARLESTOWN NSW 2290	Educational institute	NCA02	40	53	57	54	54	54	57	47	40	53	N
R1439	NEWCASTLE JUNIOR 64 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Educational institute	NCA02	35	48	52	49	49	49	52	42	35	48	N
R1440	109 E K AV, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1441	15 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1442	NEWCASTLE JUNIOR 64 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Educational institute	NCA02	38	51	55	52	51	52	55	45	38	51	N
R1443	16 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1444	107 E K AV, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1445	113 E K AV, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1446	13 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1447	1 LARA CL, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1448	115 E K AV, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1449	14 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1450	11 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1451	2 LARA CL, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	48	48	51	41	34	47	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1452	3/100 E K AV, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1453	3 LARA CL, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1454	1/100 E K AV, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1455	12 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1456	NEWCASTLE JUNIOR 64 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Educational institute	NCA02	36	49	53	50	51	50	53	43	36	49	N
R1457	105 E K AV, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1458	104 E K AV, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1459	4/100 E K AV, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1460	9 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1461	4 LARA CL, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1462	2/100 E K AV, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1463	10 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1464	HILLSBOROUGH PUBLIC SCHOOL 83 WARATAH AV, CHARLESTOWN NSW 2290	Educational institute	NCA02	37	50	54	51	52	51	54	44	37	50	N
R1465	102 E K AV, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	46	44	47	37	30	43	-
R1466	102 E K AV, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1467	103 E K AV, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1468	5/100 E K AV, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1469	NEWCASTLE JUNIOR 64 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Educational institute	NCA02	36	49	53	50	49	50	53	43	36	49	N
R1470	6 LARA CL, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1471	8 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	45	45	48	38	31	44	-
R1472	101 E K AV, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1473	58 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	36	49	53	50	50	50	53	43	36	49	-
R1474	109 WARATAH AV, CHARLESTOWN NSW 2290	Active recreation	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1475	6/100 E K AV, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	45	45	48	38	31	44	-
R1476	8 LARA CL, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1477	98 E K AV, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1478	99 E K AV, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	47	47	50	40	33	46	-
R1479	6 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1480	81 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1481	10 LARA CL, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1482	56 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1483	4 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1484	96 E K AV, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1485	67 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	36	49	53	50	50	50	53	43	36	49	-
R1486	12 LARA CL, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1487	81 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	36	49	53	50	51	50	53	43	36	49	-
R1488	UNIT 15 31 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	36	49	53	50	51	50	53	43	36	49	-
R1489	97 E K AV, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1490	77 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	36	49	53	50	49	50	53	43	36	49	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1491	73 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	37	50	**54**	51	51	51	**54**	44	37	50	-
R1492	54 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1493	2/94 E K AV, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1494	3 REDBUD CL, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1495	UNIT 7 31 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	49	49	52	42	35	48	-
R1496	2 BRETT ST, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1497	92 E K AV, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1498	95 E K AV, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1499	79 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1500	UNIT 12 31 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	46	46	49	39	32	45	-
R1501	71 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	37	50	**54**	51	51	51	**54**	44	37	50	-
R1502	14 LARA CL, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1503	UNIT 11 31 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1504	67 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1505	UNIT 7 31 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1506	75 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1507	5 REDBUD CL, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	46	44	47	37	30	43	-
R1508	UNIT 1 31 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	28	41	45	42	43	42	45	35	28	41	-
R1509	52 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1510	69 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	37	50	**54**	51	50	51	**54**	44	37	50	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1511	3 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1512	102 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	36	49	53	50	51	50	53	43	36	49	-
R1513	100 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	36	49	53	50	50	50	53	43	36	49	-
R1514	96 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	37	50	**54**	51	52	51	**54**	44	37	50	-
R1515	98 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	36	49	53	50	50	50	53	43	36	49	-
R1516	16 LARA CL, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	49	47	50	40	33	46	-
R1517	4 BRETT ST, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1518	67 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	49	49	52	42	35	48	-
R1519	93A E K AV, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1520	UNIT 16 31 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1521	92 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1522	94 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	36	49	53	50	50	50	53	43	36	49	-
R1523	7 REDBUD CL, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1524	90 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1525	86 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1526	50 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1527	1 ARMSTRONG RD, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1528	88 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1529	6 BRETT ST, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1530	93 E K AV, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1531	UNIT 4 31 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	47	45	48	38	31	44	-
R1532	6 BRETT ST, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1533	84 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	36	49	53	50	49	50	53	43	36	49	-
R1534	UNIT 10 31 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1535	UNIT 11 31 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1536	9 REDBUD CL, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1537	90 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1538	UNIT 7 31 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1539	45 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1540	UNIT 9 31 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1541	UNIT 14 31 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	28	41	45	42	43	42	45	35	28	41	-
R1542	82 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1543	80 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1544	78 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	49	49	52	42	35	48	-
R1545	91A E K AV, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1546	27 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	36	49	53	50	50	50	53	43	36	49	-
R1547	76 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	36	49	53	50	50	50	53	43	36	49	-
R1548	29 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1549	25 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	36	49	53	50	51	50	53	43	36	49	-
R1550	11 REDBUD CL, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1551	74 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1552	91 E K AV, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1553	70 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1554	72 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1555	21 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	36	49	53	50	52	50	53	43	36	49	-
R1556	23 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	36	49	53	50	50	50	53	43	36	49	-
R1557	89 E K AV, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1558	48 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1559	68 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1560	19 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	36	49	53	50	50	50	53	43	36	49	-
R1561	17 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	36	49	53	50	50	50	53	43	36	49	-
R1562	53 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1563	76 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1564	15 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	36	49	53	50	50	50	53	43	36	49	-
R1565	74 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1566	78 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1567	13 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	49	49	52	42	35	48	-
R1568	46 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	36	49	53	50	50	50	53	43	36	49	-
R1569	39 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	36	49	53	50	50	50	53	43	36	49	-
R1570	62 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	36	49	53	50	50	50	53	43	36	49	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1571	2 COURTNEY CL, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1572	60 WARATAH AV, CHARLESTOWN NSW 2290	Residential	NCA02	36	49	53	50	51	50	53	43	36	49	-
R1573	29 ELIZABETH PDE, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	46	46	49	39	32	45	-
R1574	18 FAIRVIEW AV, CHARLESTOWN NSW 2290	Residential	NCA02	36	49	53	50	51	50	53	43	36	49	-
R1575	1 COURTNEY CL, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1576	1 COURTNEY CL, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1577	26 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1578	44 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1579	23 FAIRVIEW AV, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1580	31 MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1581	23 FAIRVIEW AV, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1582	20 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1583	12 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	36	49	53	50	51	50	53	43	36	49	-
R1584	37 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1585	3 COURTNEY CL, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1586	27 ELIZABETH PDE, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1587	14 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	49	49	52	42	35	48	-
R1588	1/2 MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1589	1 WALL CL, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1590	42 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	36	49	53	50	50	50	53	43	36	49	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1591	21 FAIRVIEW AV, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1592	18 FAIRVIEW AV, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	44	44	47	37	30	43	-
R1593	3 WALL CL, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1594	8 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	49	49	52	42	35	48	-
R1595	10 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	49	49	52	42	35	48	-
R1596	4 COURTNEY CL, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1597	6 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1598	29 MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1599	28 FRASER PDE, CHARLESTOWN NSW 2290	Active recreation	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1600	16 FAIRVIEW AV, CHARLESTOWN NSW 2290	Residential	NCA02	36	49	53	50	50	50	53	43	36	49	-
R1601	18 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1602	35 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1603	5A WALL CL, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1604	4 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1605	11 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1606	2/7 WALL CL, CHARLESTOWN NSW 2290	Residential	NCA02	36	49	53	50	51	50	53	43	36	49	-
R1607	4A MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1608	19 FAIRVIEW AV, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1609	5 COURTNEY CL, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1610	40 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1611	9 WALL CL, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1612	16 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	47	48	51	41	34	47	-
R1613	14 FAIRVIEW AV, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1614	6 COURTNEY CL, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1615	9 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1616	33 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1617	2 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	49	49	52	42	35	48	-
R1618	27 MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	25	38	42	39	40	39	42	32	25	38	-
R1619	17 FAIRVIEW AV, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1620	7 COURTNEY CL, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1621	18 ELIZABETH PDE, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	49	49	52	42	35	48	-
R1622	38 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	47	47	50	40	33	46	-
R1623	6 MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1624	2/11 WALL CL, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1625	8 COURTNEY CL, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1626	12 FAIRVIEW AV, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1627	7 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1628	1/3 MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1629	31 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1630	15 FAIRVIEW AV, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1631	25 MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	29	42	46	43	45	43	46	36	29	42	-
R1632	36 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1633	16 ELIZABETH PDE, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1634	17 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1635	13 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1636	4 WALL CL, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1637	28 FRASER PDE, CHARLESTOWN NSW 2290	Active recreation	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1638	15 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1639	9 COURTNEY CL, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1640	8 MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1641	11 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	46	47	50	40	33	46	-
R1642	27A ELIZABETH PDE, CHARLESTOWN NSW 2290	Residential	NCA02	36	49	53	50	50	50	53	43	36	49	-
R1643	2A FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1644	10 FAIRVIEW AV, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1645	5 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	26	39	43	40	41	40	43	33	26	39	-
R1646	14 ELIZABETH PDE, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	49	49	52	42	35	48	-
R1647	16 MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	47	47	50	40	33	46	-
R1648	6 WALL CL, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1649	29 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1650	10 COURTNEY CL, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1651	10 WALL CL, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1652	19 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1653	34A HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	49	46	49	39	32	45	-
R1654	13 FAIRVIEW AV, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1655	23 MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1656	25 ELIZABETH PDE, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	48	48	51	41	34	47	-
R1657	1/10 MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1658	11 COURTNEY CL, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	48	48	51	41	34	47	-
R1659	8 WALL CL, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1660	8 FAIRVIEW AV, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1661	5 MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1662	3 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1663	12 ELIZABETH PDE, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	48	49	52	42	35	48	-
R1664	27 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	47	47	50	40	33	46	-
R1665	23 ELIZABETH PDE, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1666	32 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1667	12 COURTNEY CL, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1668	11 FAIRVIEW AV, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1669	21 MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	26	39	43	40	42	40	43	33	26	39	-
R1670	28 FRASER PDE, CHARLESTOWN NSW 2290	Active recreation	NCA02	33	46	50	47	47	47	50	40	33	46	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1671	21 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	28	41	45	42	44	42	45	35	28	41	-
R1672	6 FAIRVIEW AV, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1673	14 MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	48	49	52	42	35	48	-
R1674	1 FRASER PDE, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1675	13 COURTNEY CL, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	47	47	50	40	33	46	-
R1676	2/12 MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	28	41	45	42	43	42	45	35	28	41	-
R1677	24 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1678	10 ELIZABETH PDE, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	46	47	50	40	33	46	-
R1679	25 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1680	30 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	46	46	49	39	32	45	-
R1681	9 FAIRVIEW AV, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1682	3 DOWNING ST, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1683	7 DOWNING ST, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1684	1 DOWNING ST, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1685	14 COURTNEY CL, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1686	19 MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	29	42	46	43	45	43	46	36	29	42	-
R1687	30 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1688	21 ELIZABETH PDE, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1689	23 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1690	1 DOWNING ST, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1691	22 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1692	26 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1693	4 FAIRVIEW AV, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1694	5 DOWNING ST, CHARLESTOWN NSW 2290	Residential	NCA02	36	49	53	50	51	50	53	43	36	49	-
R1695	23 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1696	14 MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1697	15 COURTNEY CL, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1698	67A JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1699	12 MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1700	7 FAIRVIEW AV, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1701	28 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1702	71 JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1703	8 ELIZABETH PDE, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	46	46	49	39	32	45	-
R1704	17 MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1705	20 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	48	48	51	41	34	47	-
R1706	67A JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1707	7 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	48	48	51	41	34	47	-
R1708	16 COURTNEY CL, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	47	47	50	40	33	46	-
R1709	25 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1710	9 DOWNING ST, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1711	28 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	45	46	49	39	32	45	-
R1712	2 FAIRVIEW AV, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1713	19 ELIZABETH PDE, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1714	21 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1715	26 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1716	UNIT 2 9 DOWNING ST, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1717	73 JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1718	10 MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1719	15 MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	29	42	46	43	43	43	46	36	29	42	-
R1720	1/16 MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	46	47	50	40	33	46	-
R1721	18 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1722	67 JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1723	6 ELIZABETH PDE, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	47	48	51	41	34	47	-
R1724	17 COURTNEY CL, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	47	47	50	40	33	46	-
R1725	2 DOWNING ST, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	48	48	51	41	34	47	-
R1726	17 ELIZABETH PDE, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1727	18 COURTNEY CL, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1728	19 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1729	30 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1730	24 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1731	5 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1732	27 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1733	13 MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1734	7 DEA PL, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1735	8 MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1736	4 DOWNING ST, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1737	16 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	48	48	51	41	34	47	-
R1738	20 COURTNEY CL, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	47	48	51	41	34	47	-
R1739	15 ELIZABETH PDE, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1740	2/18 MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1741	3 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	49	49	52	42	35	48	-
R1742	92 JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	29	42	46	43	44	43	46	36	29	42	-
R1743	6A ELIZABETH PDE, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	48	48	51	41	34	47	-
R1744	65 JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1745	22 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1746	13 ELIZABETH PDE, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1747	2/6 DOWNING ST, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1748	29 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	47	47	50	40	33	46	-
R1749	6 MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	35	48	52	49	50	49	52	42	35	48	-
R1750	5 FAIRVIEW AV, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1751	11 MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	46	46	49	39	32	45	-
R1752	14 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1753	3 FAIRVIEW AV, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1754	11 ELIZABETH PDE, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1755	11 MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1756	90 JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1757	1 FAIRVIEW AV, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1758	31 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1759	20A MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1760	63 JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	47	47	50	40	33	46	-
R1761	9 ELIZABETH PDE, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1762	4 MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1763	17 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1764	12 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1765	20 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1766	8 DOWNING ST, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1767	2/11 MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1768	5 DEA PL, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1769	9A MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1770	4/15 MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1771	2 MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	24	37	41	38	39	38	41	31	24	37	-
R1772	9 MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	45	45	48	38	31	44	-
R1773	88 JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	29	42	46	43	44	43	46	36	29	42	-
R1774	33 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1775	32 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	46	47	50	40	33	46	-
R1776	20A HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1777	15 MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1778	6/15 MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1779	4 MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	45	46	49	39	32	45	-
R1780	1 DEA PL, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1781	3 DEA PL, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1782	61 JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	29	42	46	43	44	43	46	36	29	42	-
R1783	59 JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	46	46	49	39	32	45	-
R1784	10 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1785	15 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1786	1/20A HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1787	18 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1788	9B MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1789	86 JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1790	6 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1791	2 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1792	4 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1793	35 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	46	46	49	39	32	45	-
R1794	2/22 MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1795	4 MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1796	1/15 MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1797	8 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1798	13 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1799	5/15 MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1800	57 JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	45	46	49	39	32	45	-
R1801	18A HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1802	4/194 CHARLESTOWN RD, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1803	2/10 DOWNING ST, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1804	84A JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	25	38	42	39	40	39	42	32	25	38	-
R1805	16 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1806	4 ELIZABETH PDE, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1807	3/15 MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1808	51 JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1809	55 JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	29	42	46	43	44	43	46	36	29	42	-
R1810	8/10 DOWNING ST, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1811	6/24 MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1812	34 MCDONALD CR, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1813	11 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1814	8/15 MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1815	7/24 MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1816	7 ELIZABETH PDE, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1817	7 MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1818	1/194 CHARLESTOWN RD, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1819	5/24 MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1820	45 JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1821	2 ELIZABETH PDE, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1822	47 JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	46	46	49	39	32	45	-
R1823	6/15 MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1824	43 JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1825	1 MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1826	14 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-
R1827	3 MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1828	5 MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1829	9 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1830	39 JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-

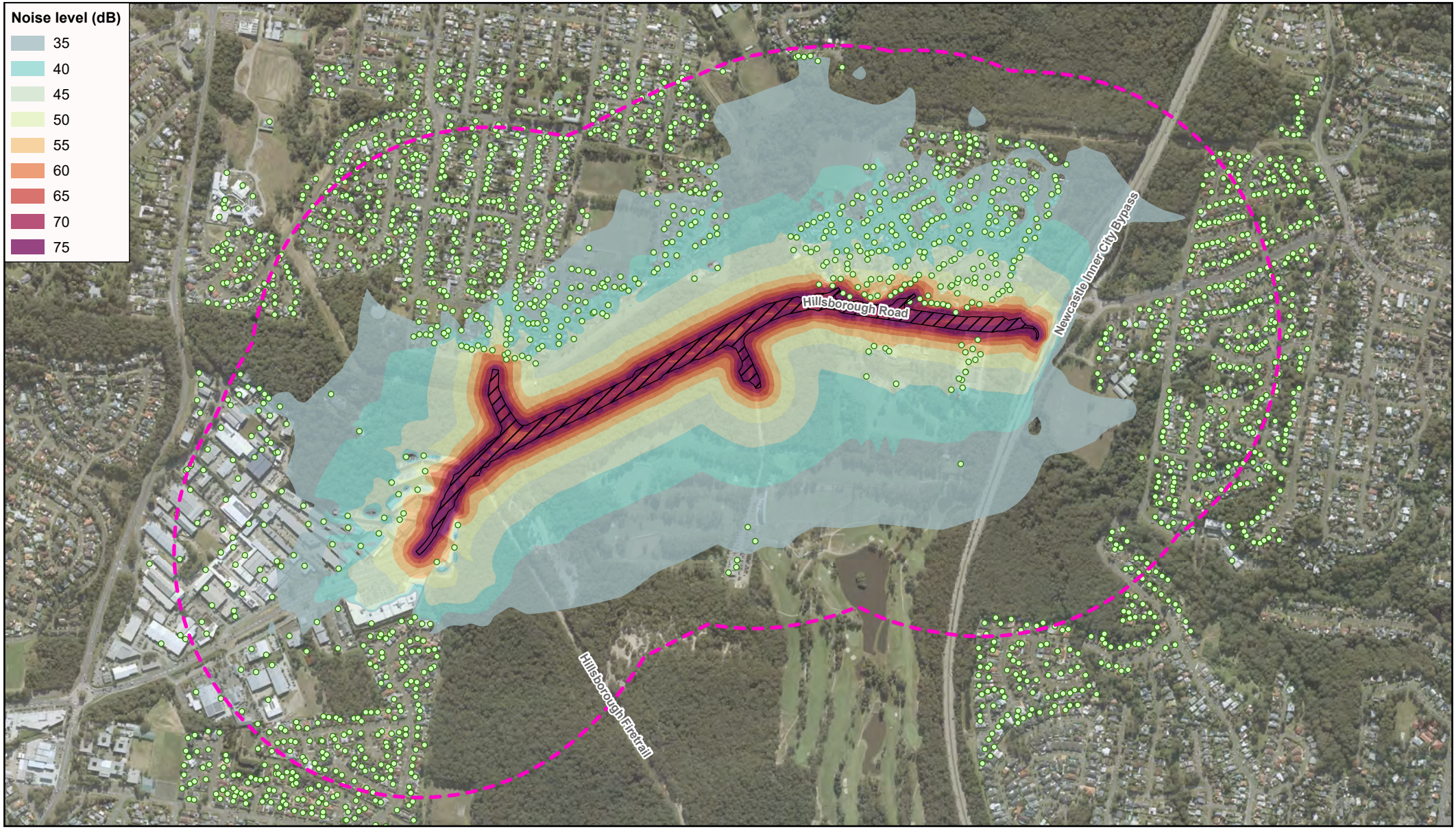
Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1831	4/10 DOWNING ST, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1832	41 JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1833	5A MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1834	37 JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1835	2/194 CHARLESTOWN RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1836	5 MAURENE CR, CHARLESTOWN NSW 2290	Residential	NCA02	34	47	51	48	49	48	51	41	34	47	-
R1837	1/24 MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1838	5 ELIZABETH PDE, CHARLESTOWN NSW 2290	Residential	NCA02	27	40	44	41	42	41	44	34	27	40	-
R1839	33 JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1840	9/10 DOWNING ST, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1841	35 JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1842	UNIT 2 192 CHARLESTOWN RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1843	12 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	47	47	50	40	33	46	-
R1844	7 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1845	5/10 DOWNING ST, CHARLESTOWN NSW 2290	Residential	NCA02	25	38	42	39	40	39	42	32	25	38	-
R1846	29 JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1847	10 DOWNING ST, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1848	190 CHARLESTOWN RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1849	1/12 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1850	21 JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1851	184 CHARLESTOWN RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1852	4/24 MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1853	186 CHARLESTOWN RD, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1854	1/194 CHARLESTOWN RD, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1855	25 JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1856	3 ELIZABETH PDE, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1857	5 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	46	46	49	39	32	45	-
R1858	27 JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1859	10 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1860	23 JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1861	7/24 MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	47	45	48	38	31	44	-
R1862	UNIT 3 192 CHARLESTOWN RD, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1863	188 CHARLESTOWN RD, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1864	4/12 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	46	46	49	39	32	45	-
R1865	10 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	21	34	38	35	36	35	38	28	21	34	-
R1866	11 JENNIFER ST, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1867	24 MADELEINE AV, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1868	3 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1869	3/1 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1870	8 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	33	46	50	47	48	47	50	40	33	46	-

Receiver ID	Address	Receiver Type	NCA	CS01	CS02	CS03	CS04	CS05	CS06	CS07	CS08	CS09	CS10	Additional management measures
Residential: Noticeable / Clearly audible Moderately intrusive Highly intrusive **Bold** Highly noise affected														
Non-residential: Exceeds noise management level														
R1871	1 HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1872	182 CHARLESTOWN RD, CHARLESTOWN NSW 2290	Residential	NCA02	30	43	47	44	45	44	47	37	30	43	-
R1873	1B HILLSBOROUGH RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1874	204 CHARLESTOWN RD, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1875	180 CHARLESTOWN RD, CHARLESTOWN NSW 2290	Residential	NCA02	29	42	46	43	44	43	46	36	29	42	-
R1876	178 CHARLESTOWN RD, CHARLESTOWN NSW 2290	Residential	NCA02	28	41	45	42	43	42	45	35	28	41	-
R1877	206 CHARLESTOWN RD, CHARLESTOWN NSW 2290	Residential	NCA02	31	44	48	45	46	45	48	38	31	44	-
R1878	211 CHARLESTOWN RD, CHARLESTOWN NSW 2290	Residential	NCA02	32	45	49	46	47	46	49	39	32	45	-
R1879	13 GILLIAN CRESCENT, CARDIFF NSW 2285	Residential	NCA02	36	49	53	50	51	50	53	43	36	49	-
R1880	15 GILLIAN CRESCENT, CARDIFF NSW 2285	Residential	NCA02	36	49	53	50	51	50	53	43	36	49	-
R1881	17 GILLIAN CRESCENT, CARDIFF NSW 2285	Residential	NCA02	36	49	53	50	51	50	53	43	36	49	-
R1882	19 GILLIAN CRESCENT, CARDIFF NSW 2285	Residential	NCA02	36	49	53	50	51	50	53	43	36	49	-
R1883	21 GILLIAN CRESCENT, CARDIFF NSW 2285	Residential	NCA02	36	49	53	50	51	50	53	43	36	49	-
R1884	23 GILLIAN CRESCENT, CARDIFF NSW 2285	Residential	NCA02	36	49	53	50	51	50	53	43	36	49	-
R1885	25 GILLIAN CRESCENT, CARDIFF NSW 2285	Residential	NCA02	37	50	**54**	51	51	51	**54**	44	37	50	-

Appendix D

Construction Noise - Contours



LEGEND

- Sensitive receivers
- Construction area

Paper Size ISO A4

0 100 200 300 400

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

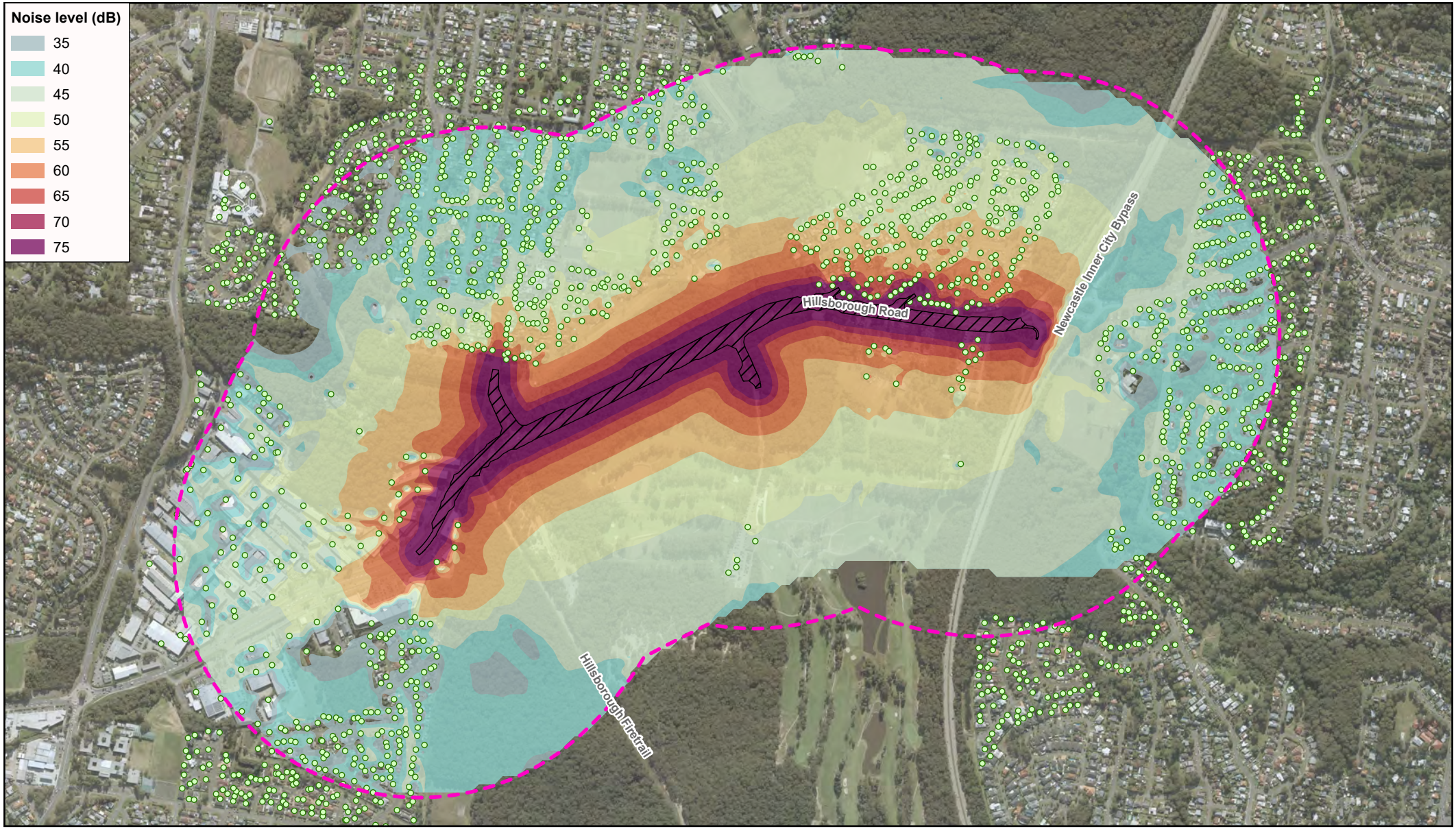
Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

Mobilisation & site establishment

APPENDIX D.1

\\ghdnet\ghd\AU\Newcastle\Projects\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 27 Feb 2023 - 15:12

Data source: Metromap Tile Service: - Imagery (Date extracted: 27/02/2023); Roads, Cadastre - LPI, 2017; Created by: dschmidt



LEGEND

- Sensitive receivers
- Construction area

Paper Size ISO A4

0 100 200 300 400

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

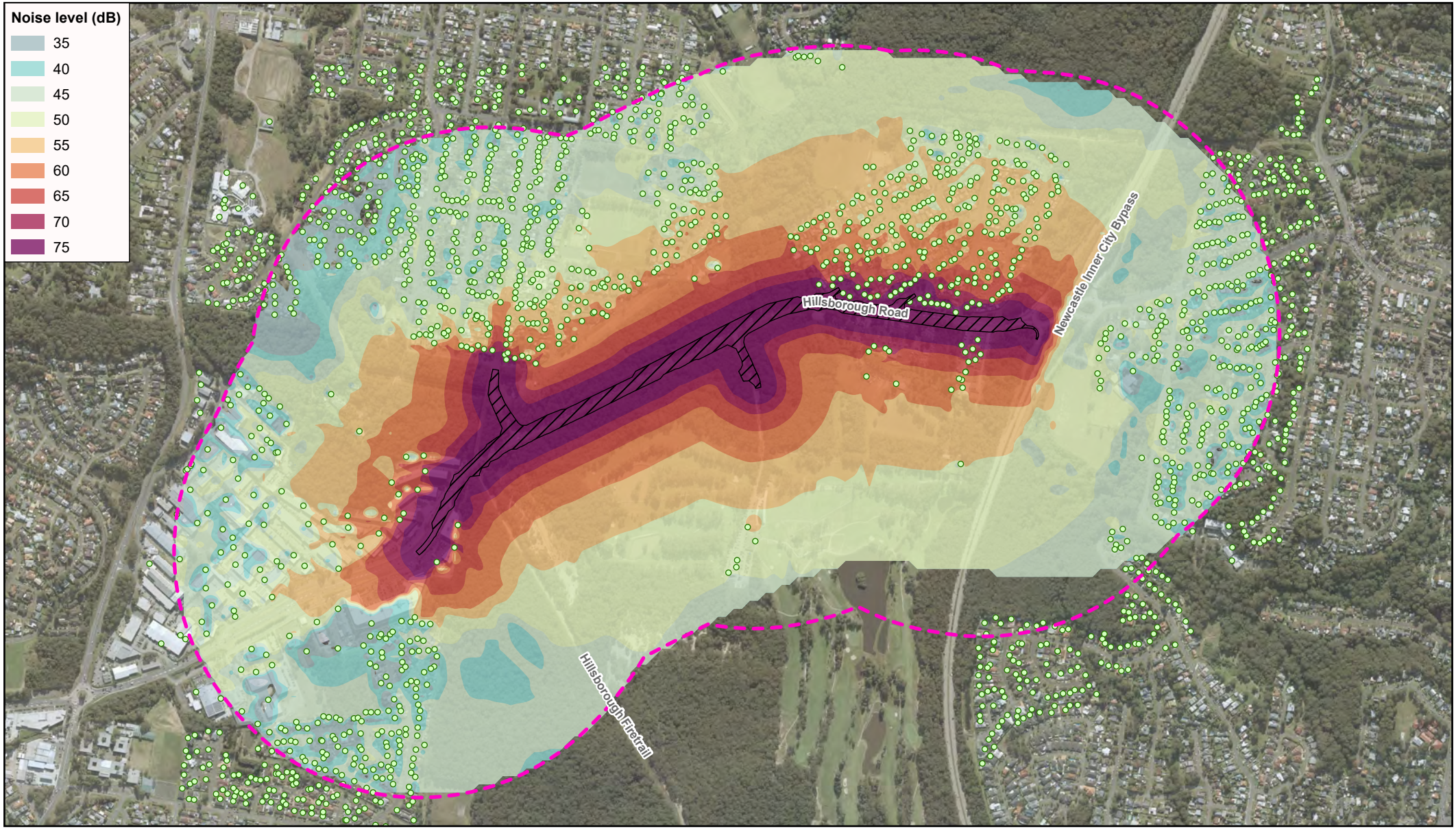
Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

Utility, property, services adjustment

APPENDIX D.2

\\ghdnet\ghd\AU\Newcastle\Projects\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 27 Feb 2023 - 15:12

Data source: Metromap Tile Service: - Imagery (Date extracted: 27/02/2023); Roads, Cadastre - LPI, 2017; Created by: dschmidt



LEGEND

- Sensitive receivers
- Construction area

Paper Size ISO A4

0 100 200 300 400

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

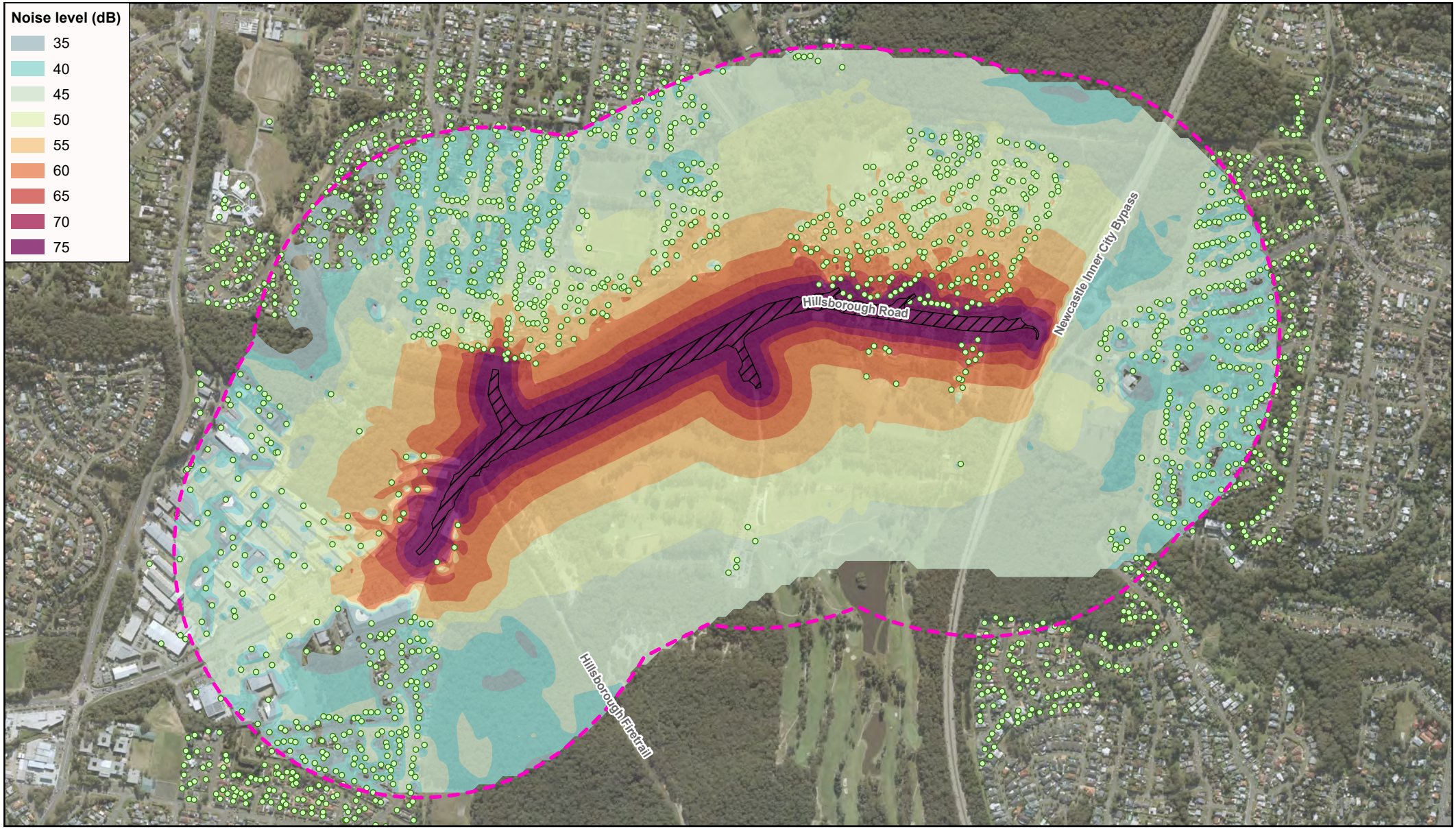
Corridor clearing

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

APPENDIX D.3

\\ghdnet\ghd\AU\Newcastle\Projects\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 27 Feb 2023 - 15:12

Data source: Metromap Tile Service: - Imagery (Date extracted: 27/02/2023); Roads, Cadastre - LPI, 2017; Created by: dschmidt



LEGEND

- Sensitive receivers
- Construction area

Paper Size ISO A4

0 100 200 300 400

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

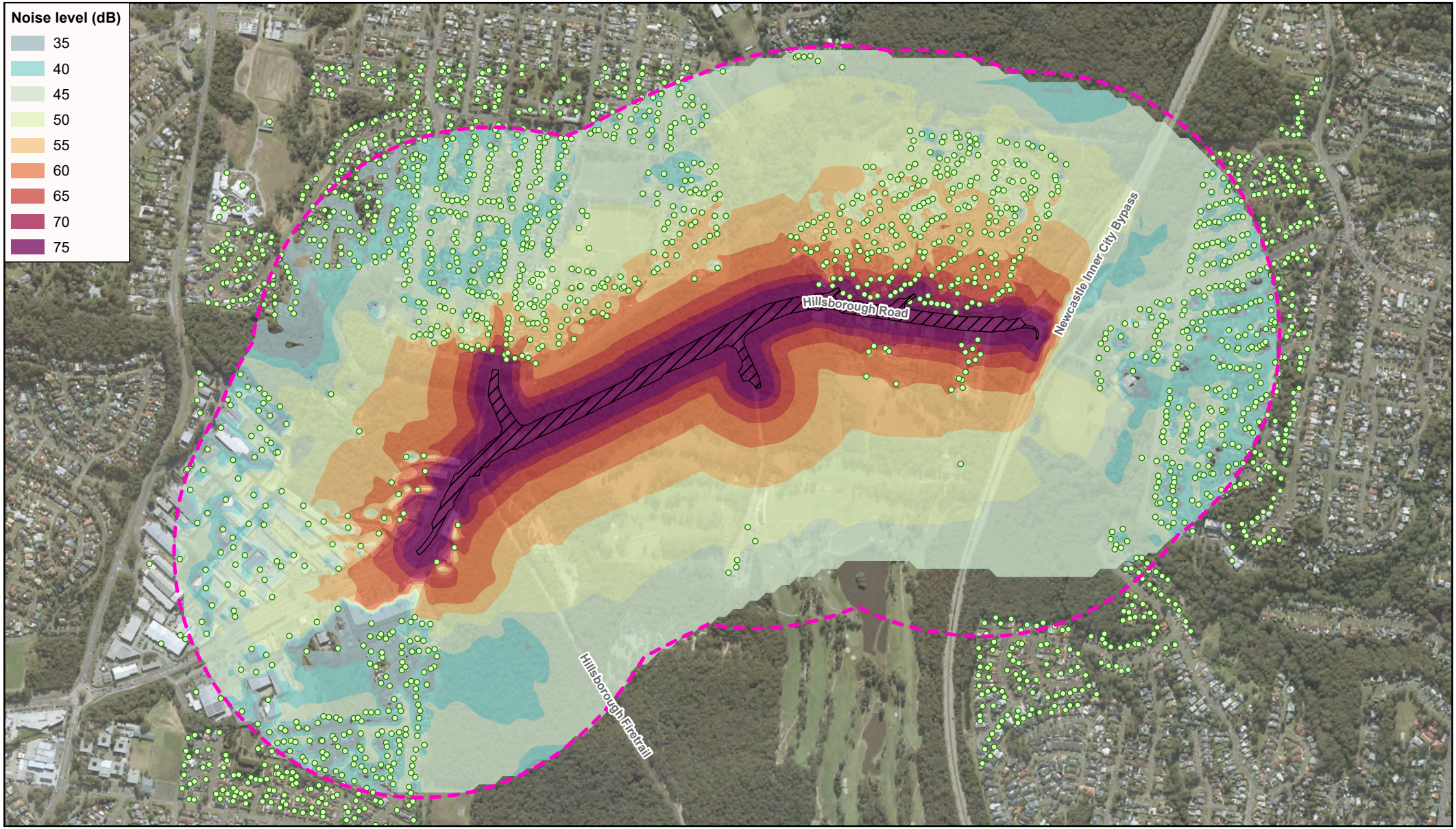
Bulk earthworks

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

APPENDIX D.4

\\ghdnet\ghd\AU\Newcastle\Projects\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 27 Feb 2023 - 15:13

Data source: Metromap Tile Service: - Imagery (Date extracted: 27/02/2023); Roads, Cadastre - LPI, 2017; Created by: dschmidt



LEGEND

- Sensitive receivers
- Construction area

Paper Size ISO A4

0 100 200 300 400

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

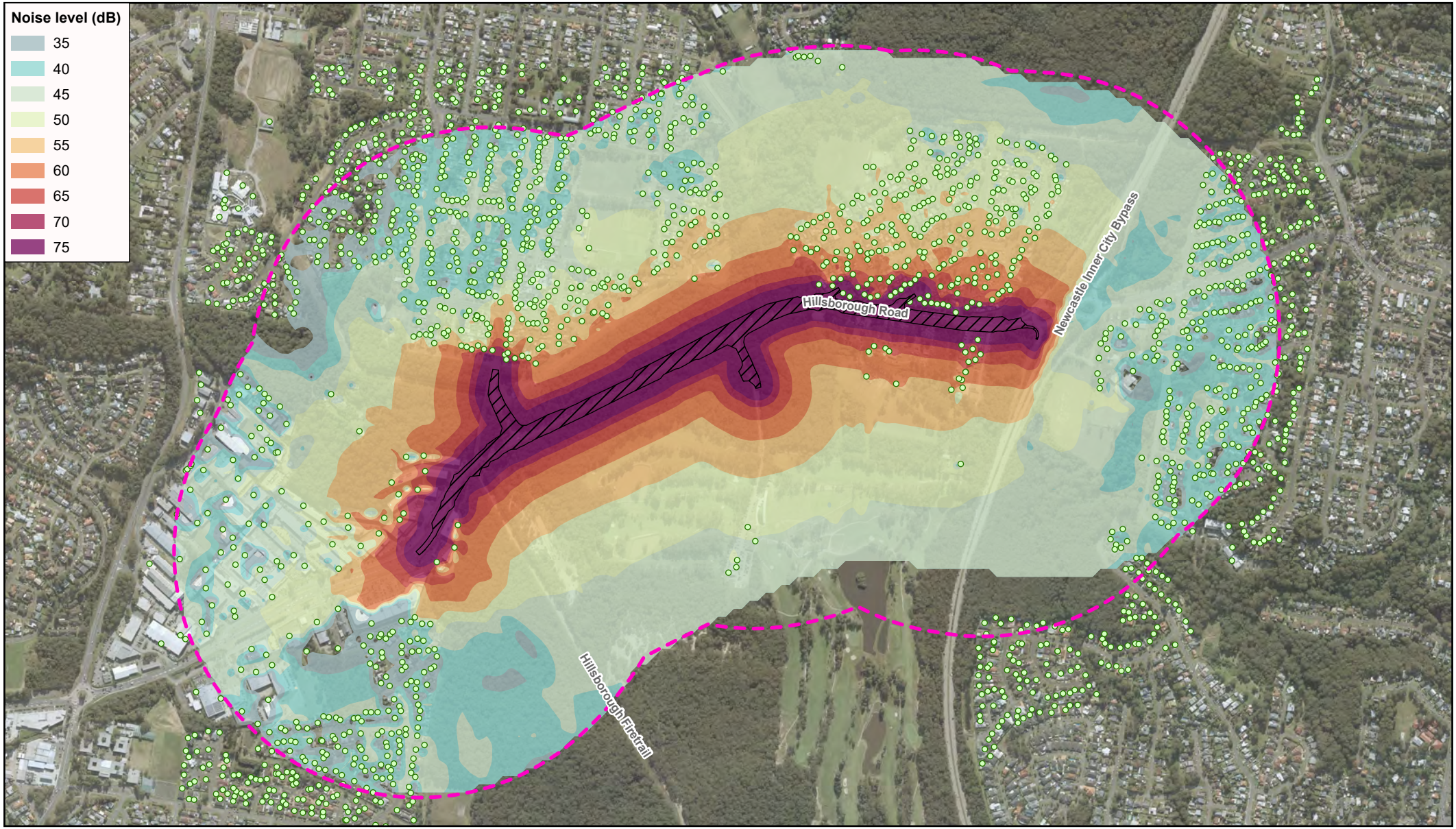
Drainage infrastructure

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

APPENDIX D.5

\\ghdnet\ghd\AU\Newcastle\Projects\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 27 Feb 2023 - 15:13

Data source: Metromap Tile Service: - Imagery (Date extracted: 27/02/2023); Roads, Cadastre - LPI, 2017; Created by: dschmidt



LEGEND

- Sensitive receivers
- Construction area

Paper Size ISO A4

0 100 200 300 400

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

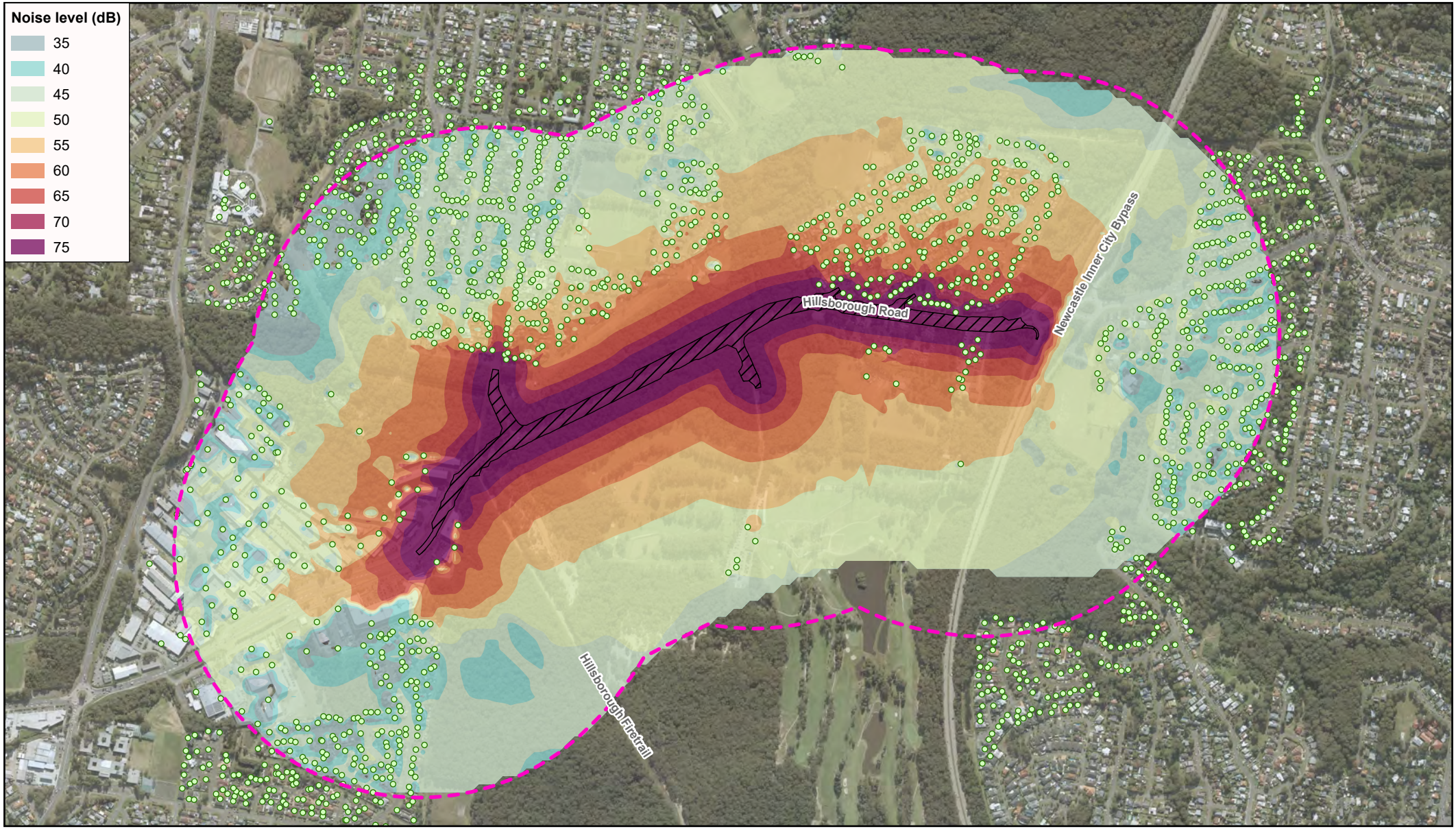
Paving / Asphalting

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

APPENDIX D.6

\\ghdnet\ghd\AU\Newcastle\Projects\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 27 Feb 2023 - 15:13

Data source: Metromap Tile Service: - Imagery (Date extracted: 27/02/2023); Roads, Cadastre - LPI, 2017; Created by: dschmidt



LEGEND

- Sensitive receivers
- Construction area

Paper Size ISO A4

0 100 200 300 400

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

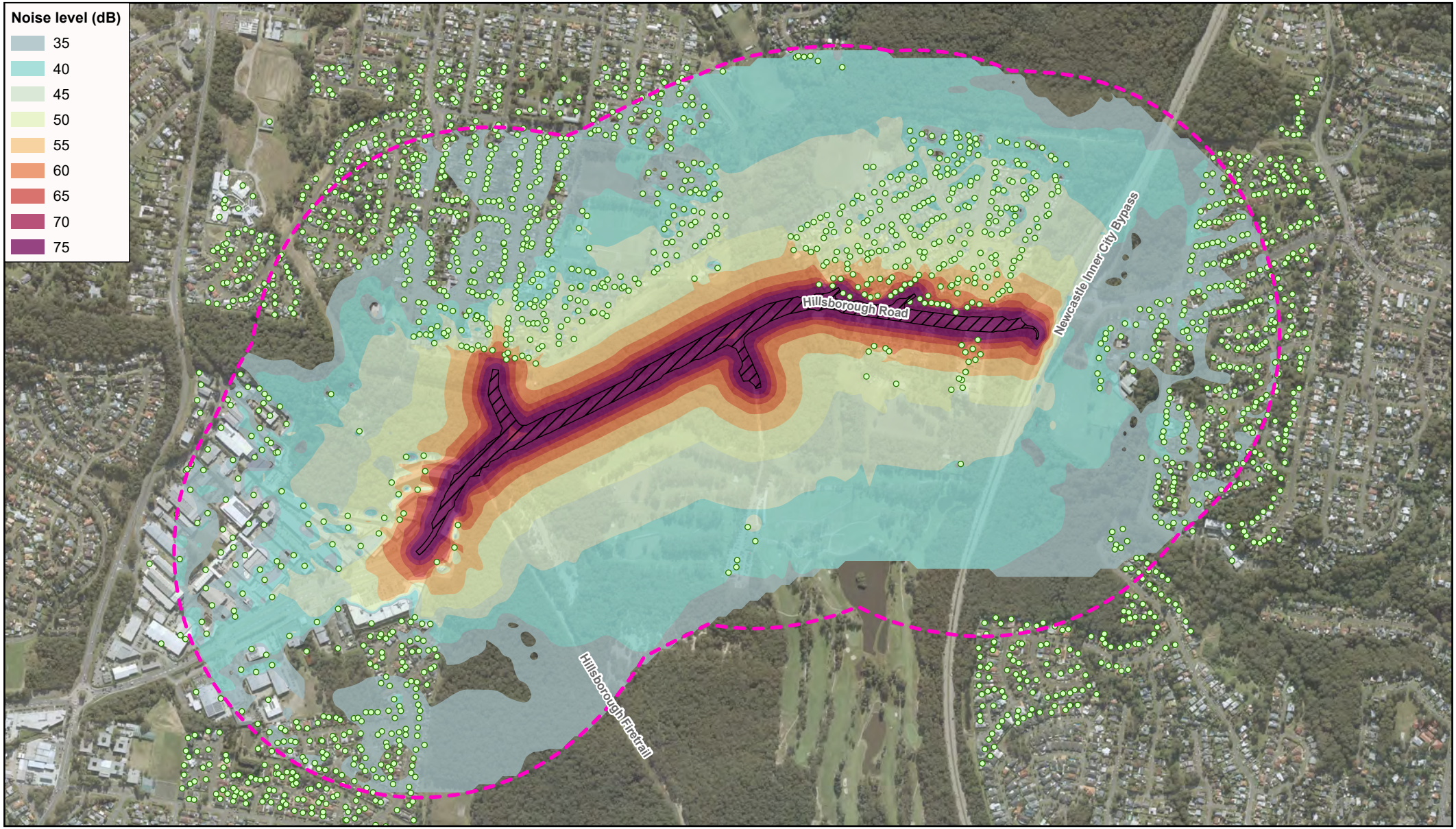
Concrete Saw

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

APPENDIX D.7

\\ghdnet\ghd\AU\Newcastle\Projects\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 27 Feb 2023 - 15:13

Data source: Metromap Tile Service: - Imagery (Date extracted: 27/02/2023); Roads, Cadastre - LPI, 2017; Created by: dschmidt



LEGEND

- Sensitive receivers
- Construction area

Paper Size ISO A4

0 100 200 300 400

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

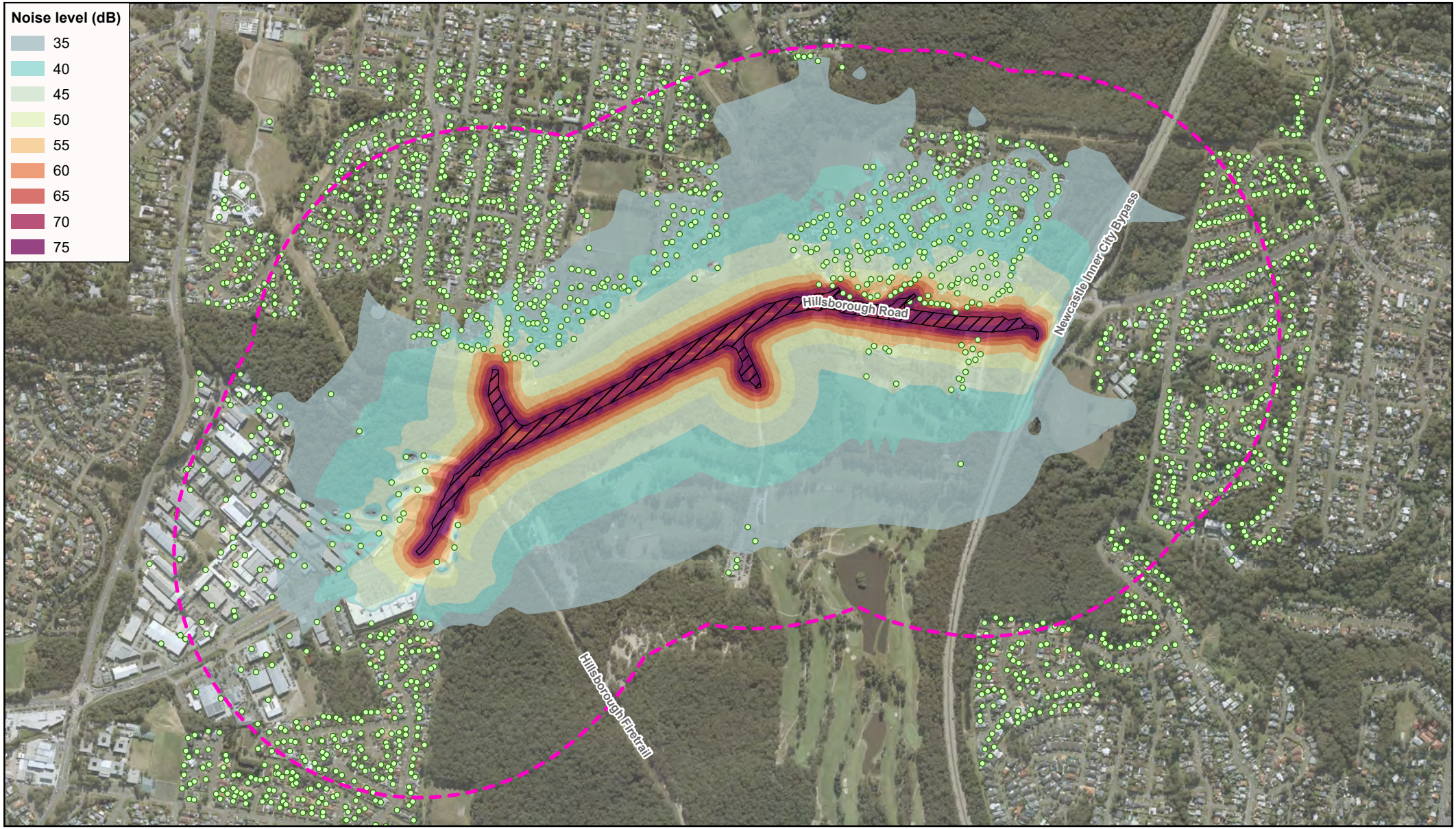
Road furniture installation

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

APPENDIX D.8

\\ghdnet\ghd\AU\Newcastle\Projects\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 27 Feb 2023 - 15:13

Data source: Metromap Tile Service: - Imagery (Date extracted: 27/02/2023); Roads, Cadastre - LPI, 2017; Created by: dschmidt



LEGEND

- Sensitive receivers
- Construction area

Paper Size ISO A4

0 100 200 300 400

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

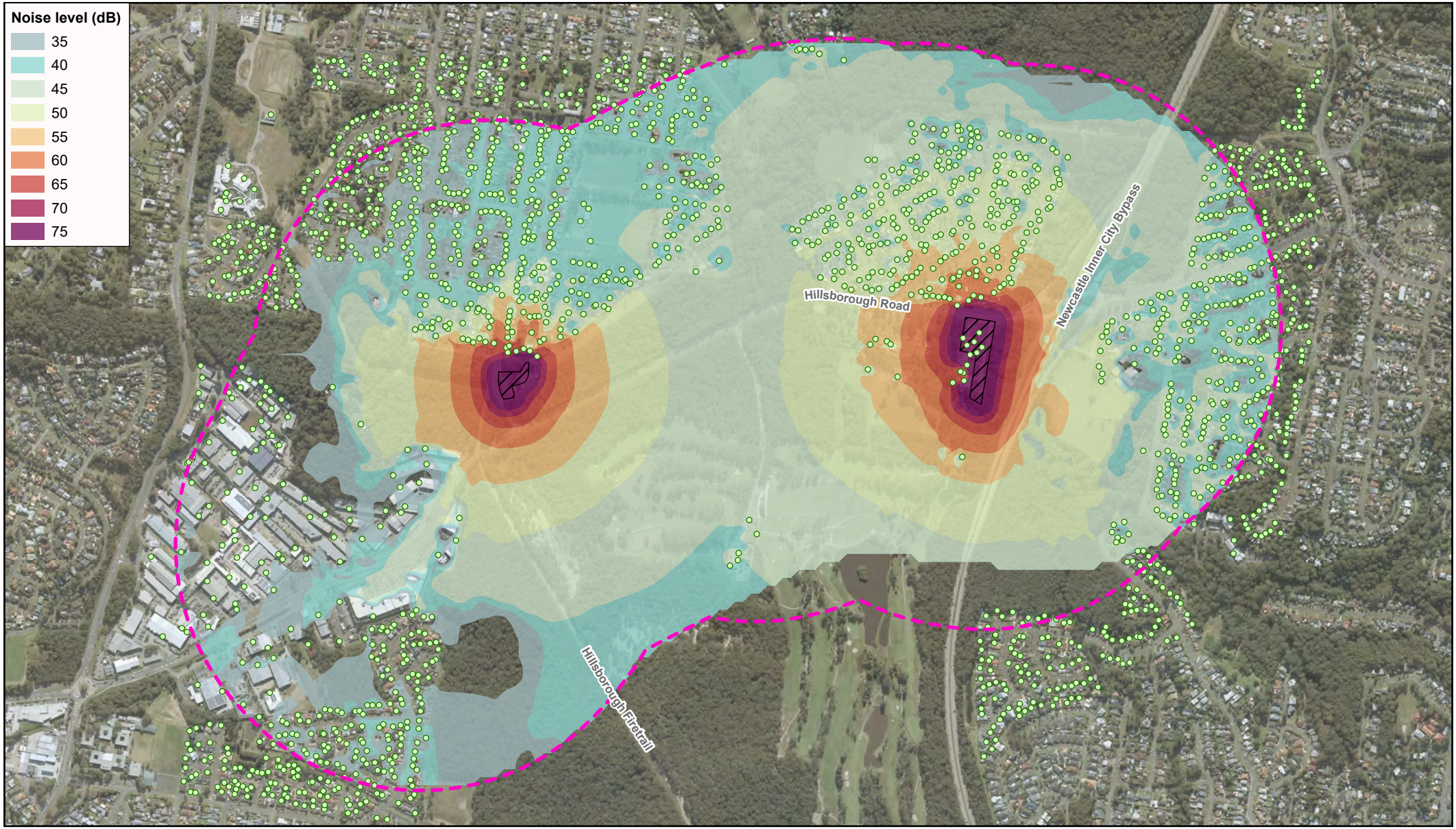
Site clean up

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

APPENDIX D.9

\\ghdnet\ghd\AU\Newcastle\Projects\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 27 Feb 2023 - 15:13

Data source: Metromap Tile Service: - Imagery (Date extracted: 27/02/2023); Roads, Cadastre - LPI, 2017; Created by: dschmidt



LEGEND

- Sensitive receivers
- Construction area

Paper Size ISO A4

0 100 200 300 400

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

Compounds

APPENDIX D.10

\\ghdnet\ghd\AU\Newcastle\Projects\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 27 Feb 2023 - 15:13

Data source: Metromap Tile Service: - Imagery (Date extracted: 27/02/2023); Roads, Cadastre - LPI, 2017; Created by: dschmidt

Appendix E

Construction Vibration - Buffer distances

LEGEND

Structural Damage

- 2.5 mm/s
- 3.0 mm/s
- 5.0 mm/s

Construction area

Paper Size ISO A4

0 100 200

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

Vibratory roller – Structural Damage

APPENDIX E.1

G:\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 30 Nov 2022 - 12:44

Data source: Metromap Tile Service: - Imagery (Date extracted: 30/11/2022); Roads, Cadastre - LPI, 2017; Created by: tmorton

LEGEND

Structural Damage

- 2.5 mm/s
- 3.0 mm/s
- 5.0 mm/s

Construction area

Paper Size ISO A4

0 100 200

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

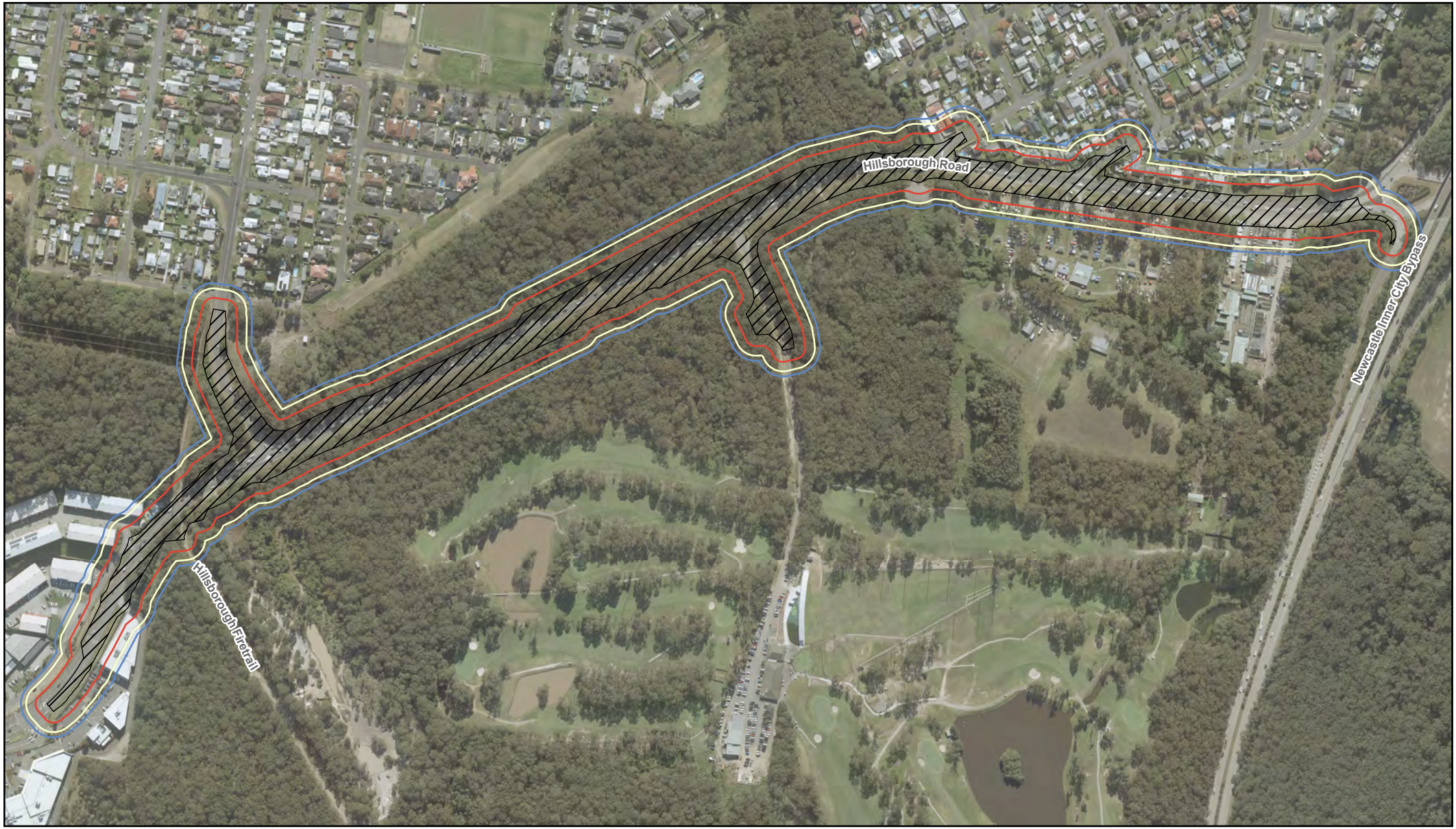
Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

Excavator – Structural Damage

APPENDIX E.2

G:\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 30 Nov 2022 - 12:44

Data source: Metromap Tile Service: - Imagery (Date extracted: 30/11/2022); Roads, Cadastre - LPI, 2017; Created by: tmorton



LEGEND

Structural Damage

- 2.5 mm/s
- 3.0 mm/s
- 5.0 mm/s

Construction area

Paper Size ISO A4

0 100 200

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

Compactor – Structural Damage

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

APPENDIX E.3

G:\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 30 Nov 2022 - 12:44

Data source: Metromap Tile Service: - Imagery (Date extracted: 30/11/2022); Roads, Cadastre - LPI, 2017; Created by: tmorton

LEGEND

Human Comfort

- BS 5228-2 (1.0 mm/s)
- Day Maximum (0.8 mm/s)
- Day Preferred (0.4 mm/s)
- Night Maximum (0.8 mm/s)
- Night Preferred (0.4 mm/s)
- Construction area

Paper Size ISO A4

0 100 200 300

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

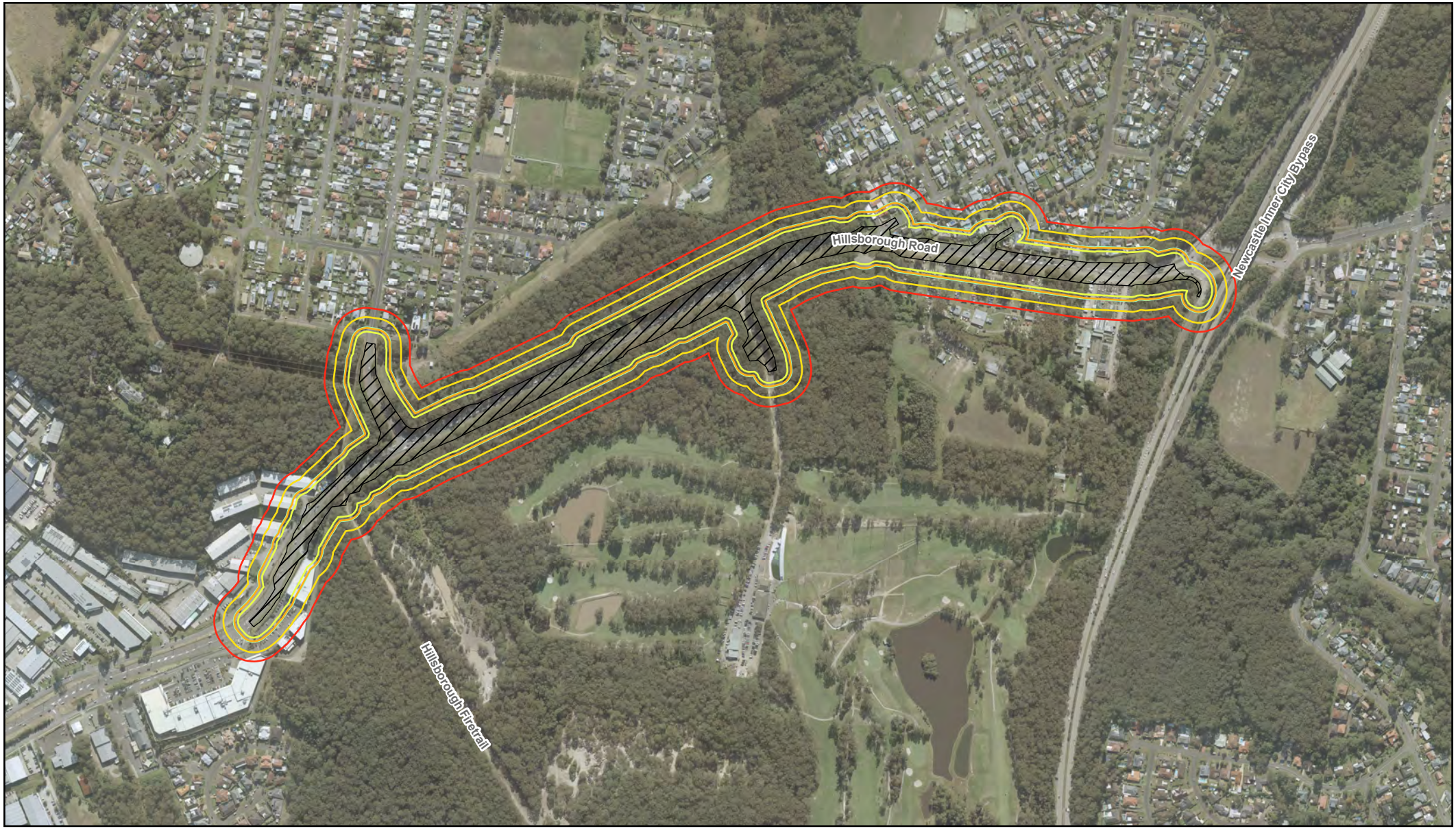
Vibratory roller – Human Comfort – residential receivers

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

APPENDIX E.4

G:\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 30 Nov 2022 - 12:44

Data source: Metromap Tile Service: - Imagery (Date extracted: 30/11/2022); Roads, Cadastre - LPI, 2017; Created by: tmorton



LEGEND

Human Comfort

- BS 5228-2 (1.0 mm/s)
- Day Maximum (0.8 mm/s)
- Day Preferred (0.4 mm/s)
- Night Maximum (0.8 mm/s)
- Night Preferred (0.4 mm/s)
- Construction area

Paper Size ISO A4

0 100 200 300

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

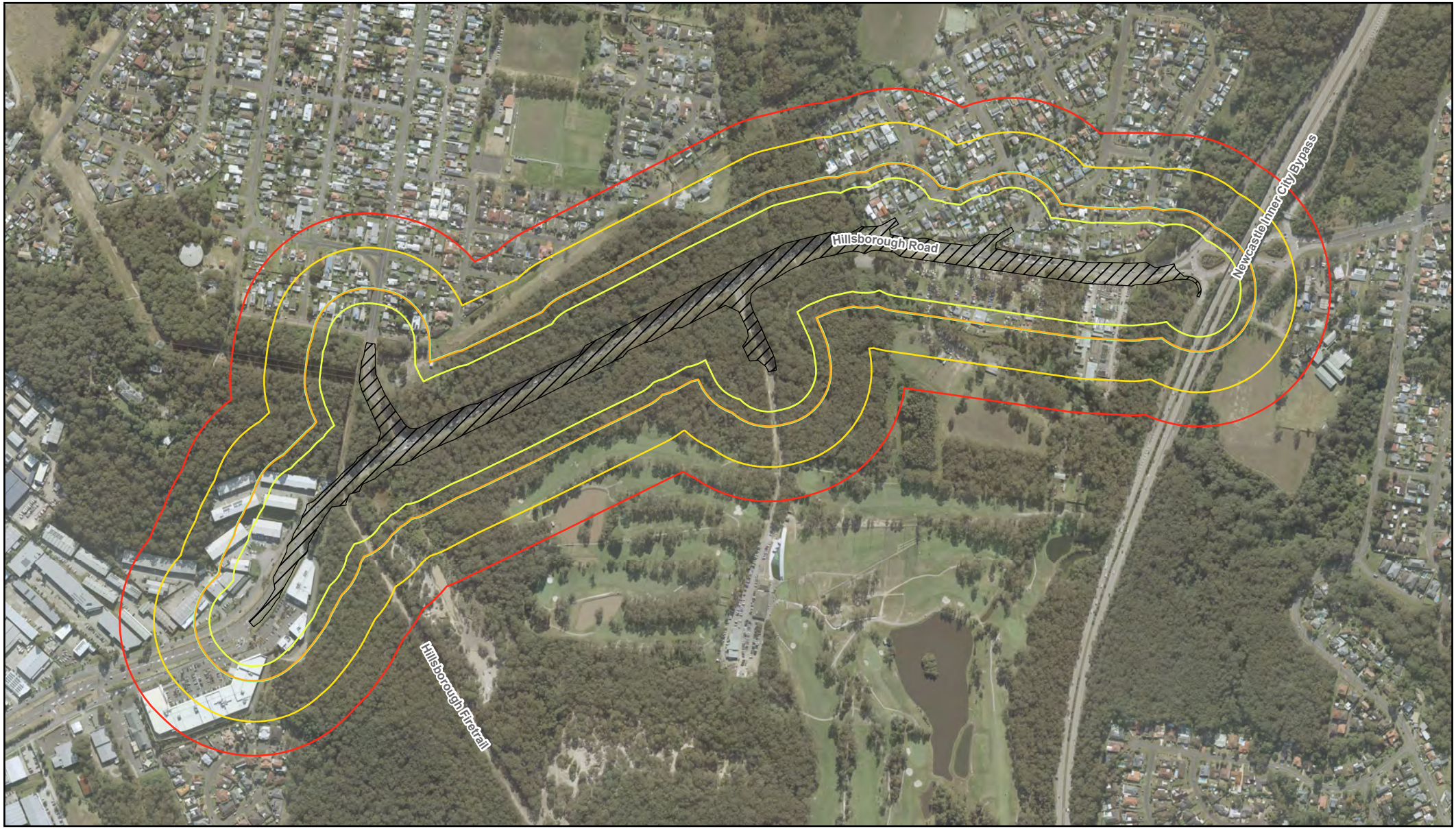
Excavator – Human Comfort – residential receivers

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

APPENDIX E.5

G:\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 30 Nov 2022 - 12:44

Data source: Metromap Tile Service: - Imagery (Date extracted: 30/11/2022); Roads, Cadastre - LPI, 2017; Created by: tmorton



LEGEND

Human Comfort

- BS 5228-2 (1.0 mm/s)
- Day Maximum (0.8 mm/s)
- Day Preferred (0.4 mm/s)
- Night Maximum (0.8 mm/s)
- Night Preferred (0.4 mm/s)
- Construction area

Paper Size ISO A4

0 100 200 300

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

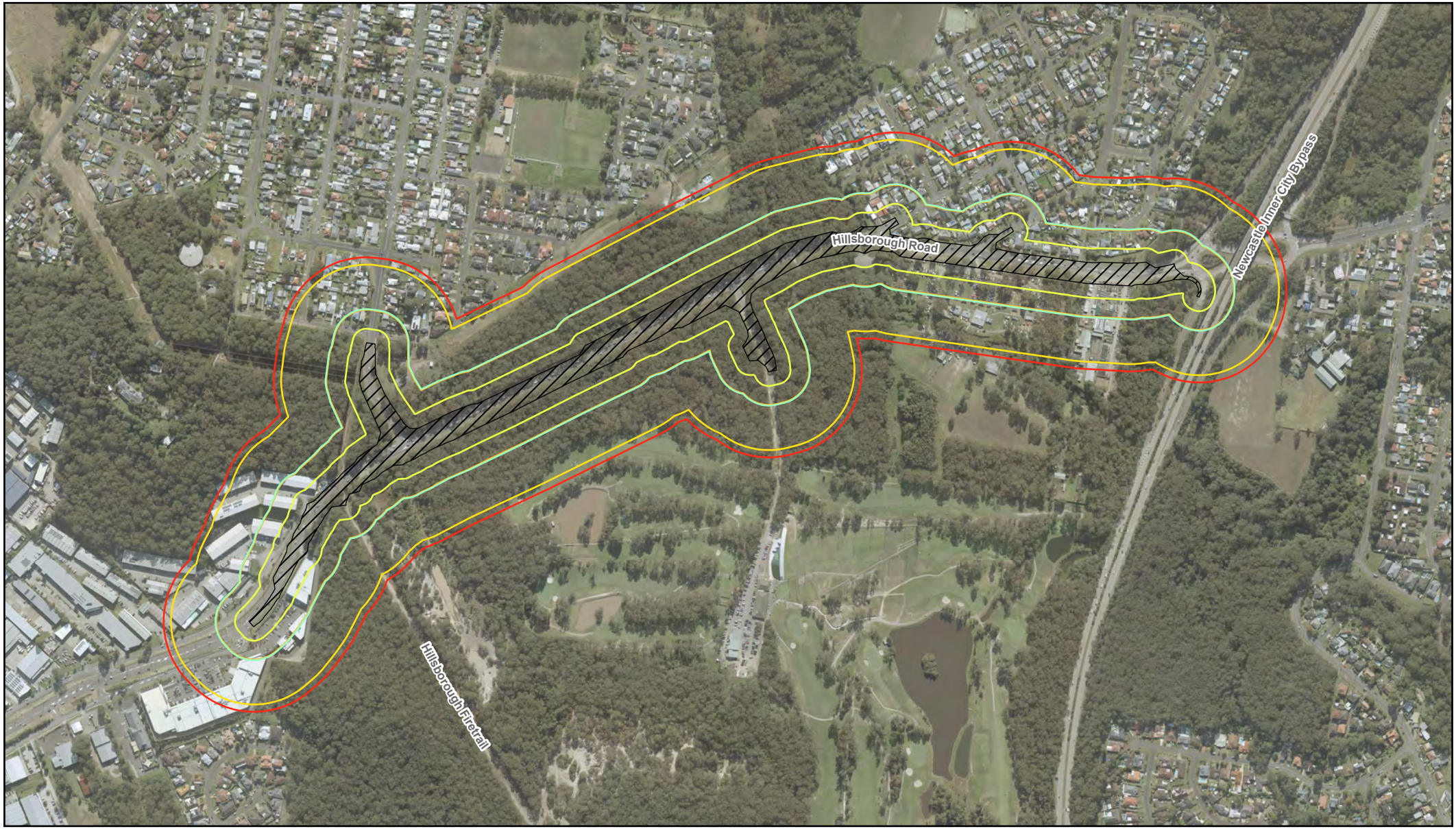
Compactor – Human Comfort – residential receivers

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

APPENDIX E.6

G:\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 30 Nov 2022 - 12:44

Data source: Metromap Tile Service: - Imagery (Date extracted: 30/11/2022); Roads, Cadastre - LPI, 2017; Created by: tmorton



LEGEND

Human Comfort

- BS 5228-2 (1.0 mm/s)
- Day Maximum (0.8 mm/s)
- Day Preferred (0.4 mm/s)
- Night Maximum (0.8 mm/s)
- Night Preferred (0.4 mm/s)
- Construction area

Paper Size ISO A4

0 100 200 300

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

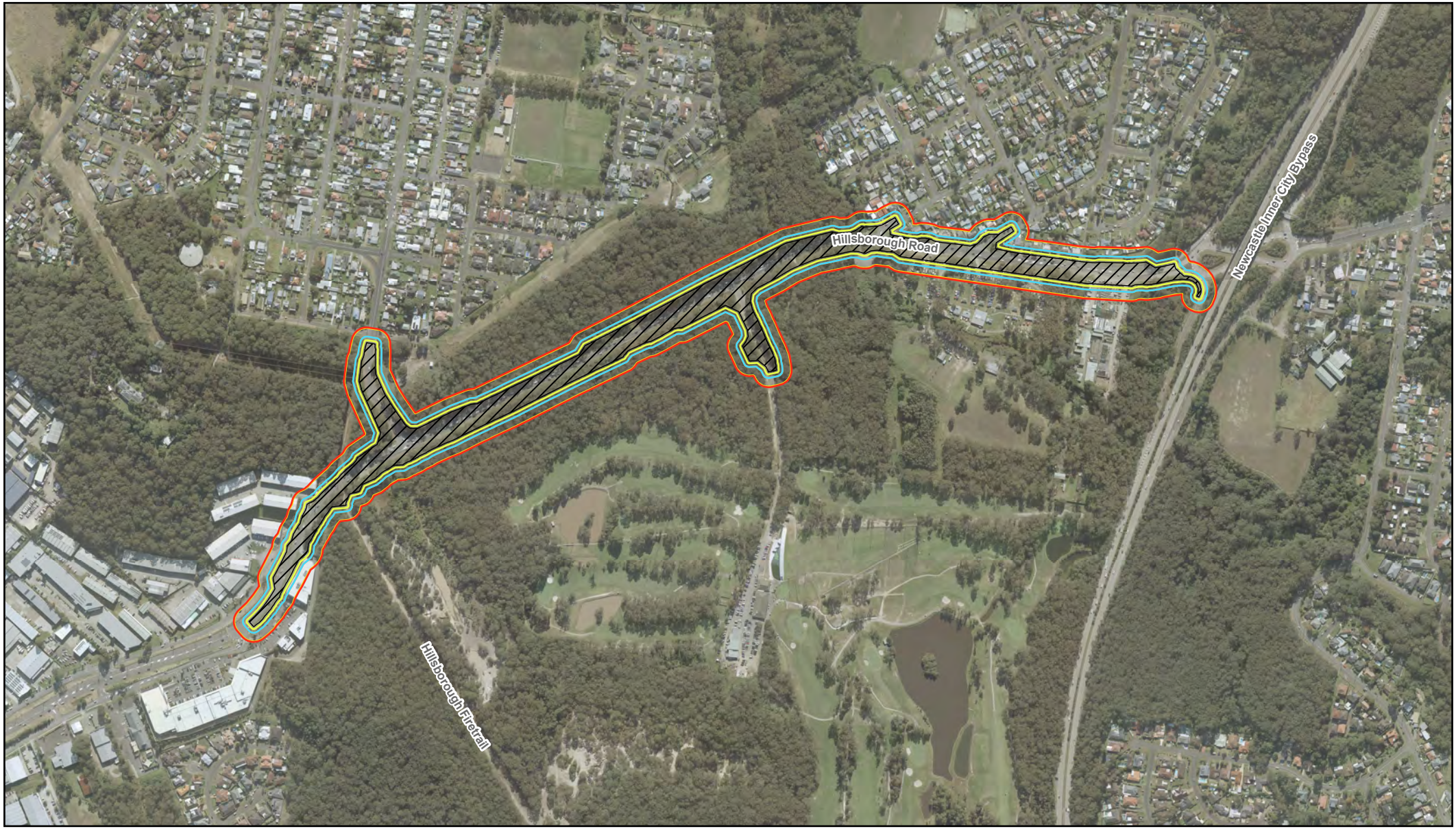
Vibratory roller – Human Comfort – non-residential receivers

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

APPENDIX E.7

G:\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 30 Nov 2022 - 12:44

Data source: Metromap Tile Service: - Imagery (Date extracted: 30/11/2022); Roads, Cadastre - LPI, 2017; Created by: tmorton



LEGEND

Human Comfort

- BS 5228-2 (1.0 mm/s)
- Day Maximum (0.8 mm/s)
- Day Preferred (0.4 mm/s)
- Night Maximum (0.8 mm/s)
- Night Preferred (0.4 mm/s)
- Construction area

Paper Size ISO A4

0 100 200 300

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

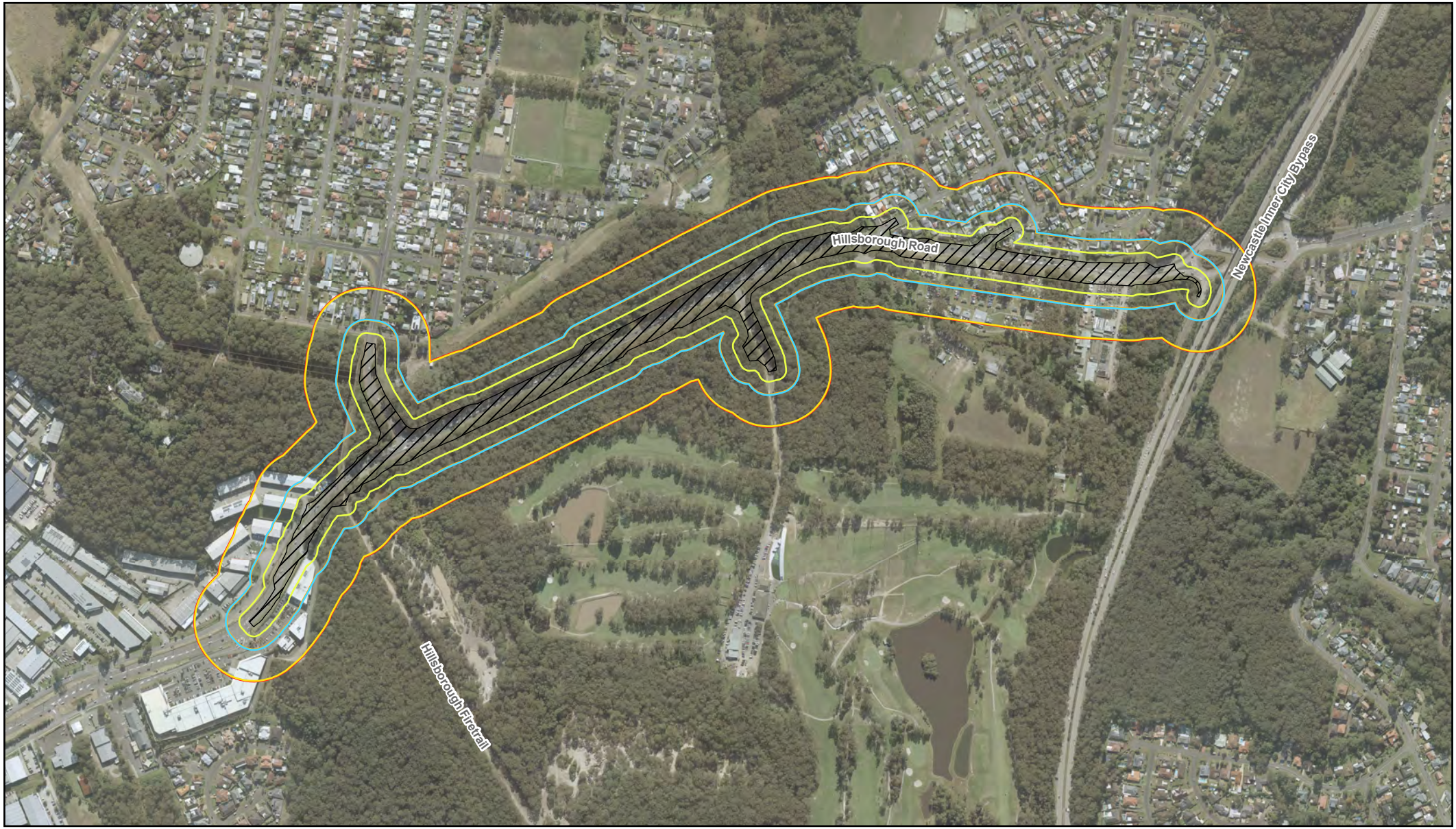
Excavator – Human Comfort – non-residential receivers

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

APPENDIX E.8

G:\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 30 Nov 2022 - 12:44

Data source: Metromap Tile Service: - Imagery (Date extracted: 30/11/2022); Roads, Cadastre - LPI, 2017; Created by: tmorton



LEGEND

Human Comfort

- BS 5228-2 (1.0 mm/s)
- Day Maximum (0.8 mm/s)
- Day Preferred (0.4 mm/s)
- Night Maximum (0.8 mm/s)
- Night Preferred (0.4 mm/s)
- Construction area

Paper Size ISO A4

0 100 200 300

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

Compactor – Human Comfort – non-residential receivers

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

APPENDIX E.9

G:\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 30 Nov 2022 - 12:44

Data source: Metromap Tile Service: - Imagery (Date extracted: 30/11/2022); Roads, Cadastre - LPI, 2017; Created by: tmorton

Appendix F

Construction Vibration – Additional management measures

Table F.1 Additional vibration management measures (standard hours)

Receiver ID	Address	Type	Additional management measures
R0629	41 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0630	19 KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0634	19 KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0646	16 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0665	42 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0667	15 KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0668	40 HELEN ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0673	14A GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0678	13 KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0687	12 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0689	11 KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0691	12 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0704	10 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0706	9 KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0713	8 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0717	7 KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0722	47A CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0725	6A GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0729	47 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0730	5 KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0760	3B KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0761	64 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0762	62 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0763	60 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0764	58 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0765	3B KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0766	56 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0769	54 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0770	52 CROCKETT ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0782	3B KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0793	4A GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0801	3 KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0803	4 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0809	4 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0816	1 KNIGHT ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0817	4 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0831	2 GERTRUDE ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0835	22 KILLARA DR, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0838	20 KILLARA DR, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0841	18 KILLARA DR, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0845	16 KILLARA DR, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R0846	14 KILLARA DR, CARDIFF SOUTH NSW 2285	Residential	V, N, RP

Receiver ID	Address	Type	Additional management measures
R0873	17 KILLARA DR, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R1025	57 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R1036	57 ELIZABETH ST, CARDIFF SOUTH NSW 2285	Residential	V, N, RP
R1052	36 PERCY ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1053	34 PERCY ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1054	43 KING ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1056	41 KING ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1058	39 KING ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1060	37 KING ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1061	46 KING ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1063	41 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1064	35 KING ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1065	39 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1066	33 KING ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1068	44 KING ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1069	42 KING ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1070	5 PARKER ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1071	37 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1072	31 KING ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1073	40 KING ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1075	35 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1077	38 KING ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1078	121 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1079	6 PARKER ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1080	33 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1081	38 KING ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1082	15 PARKER ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1083	8 PARKER ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1084	119 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1086	31 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1087	34 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1088	10 PARKER ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1091	12 PARKER ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1092	32 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1093	34 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1094	34 KING ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1096	14 PARKER ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1099	117 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1102	16 PARKER ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1103	30 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1105	27 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1107	32 KING ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1112	28 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP

Receiver ID	Address	Type	Additional management measures
R1113	115 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1114	25 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1119	26 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1121	23 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1122	23 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1124	24 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1128	21 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1130	21 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1131	22 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1133	19 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1135	19 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1136	19 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1139	20 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1141	17 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1147	15 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1148	9 ROYTON ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1149	8 ROYTON ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1151	113 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1155	11 ROYTON ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1157	17 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1159	13 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1160	111 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1161	15 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1164	16 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1166	109 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1167	10 ROYTON ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1169	10 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1171	14 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1172	13A HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1174	11A HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1177	107 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1178	11 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1179	11 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1180	12 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1183	105 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1186	9 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1187	9 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1189	10 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1191	8 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1192	103 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1193	7 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1196	8 HIGHAM RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1197	6 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP

Receiver ID	Address	Type	Additional management measures
R1198	101 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1203	5 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1205	4 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1212	99 HILLSBOROUGH RD, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1213	18 LEROY CL, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1214	3 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1223	16 LEROY CL, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1227	2 CHADWICK ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1234	21 LEROY CL, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1241	14 LEROY CL, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1250	19 LEROY CL, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1251	6 MOODY ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1255	12 LEROY CL, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1258	12A LEROY CL, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1272	8 MOODY ST, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1274	17 LEROY CL, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1277	10 LEROY CL, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1286	8 LEROY CL, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1287	15 LEROY CL, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1293	6 LEROY CL, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1302	4 LEROY CL, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1314	13 LEROY CL, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1321	11 LEROY CL, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1330	9 LEROY CL, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1333	7 LEROY CL, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1336	9 LEROY CL, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1339	5 LEROY CL, HILLSBOROUGH NSW 2290	Residential	V, N, RP
R1345	3 LEROY CL, HILLSBOROUGH NSW 2290	Residential	V, N, RP

Appendix G

Operational noise levels

Table G.1 Predicted operational noise level comparison, residential receivers considered for noise mitigation

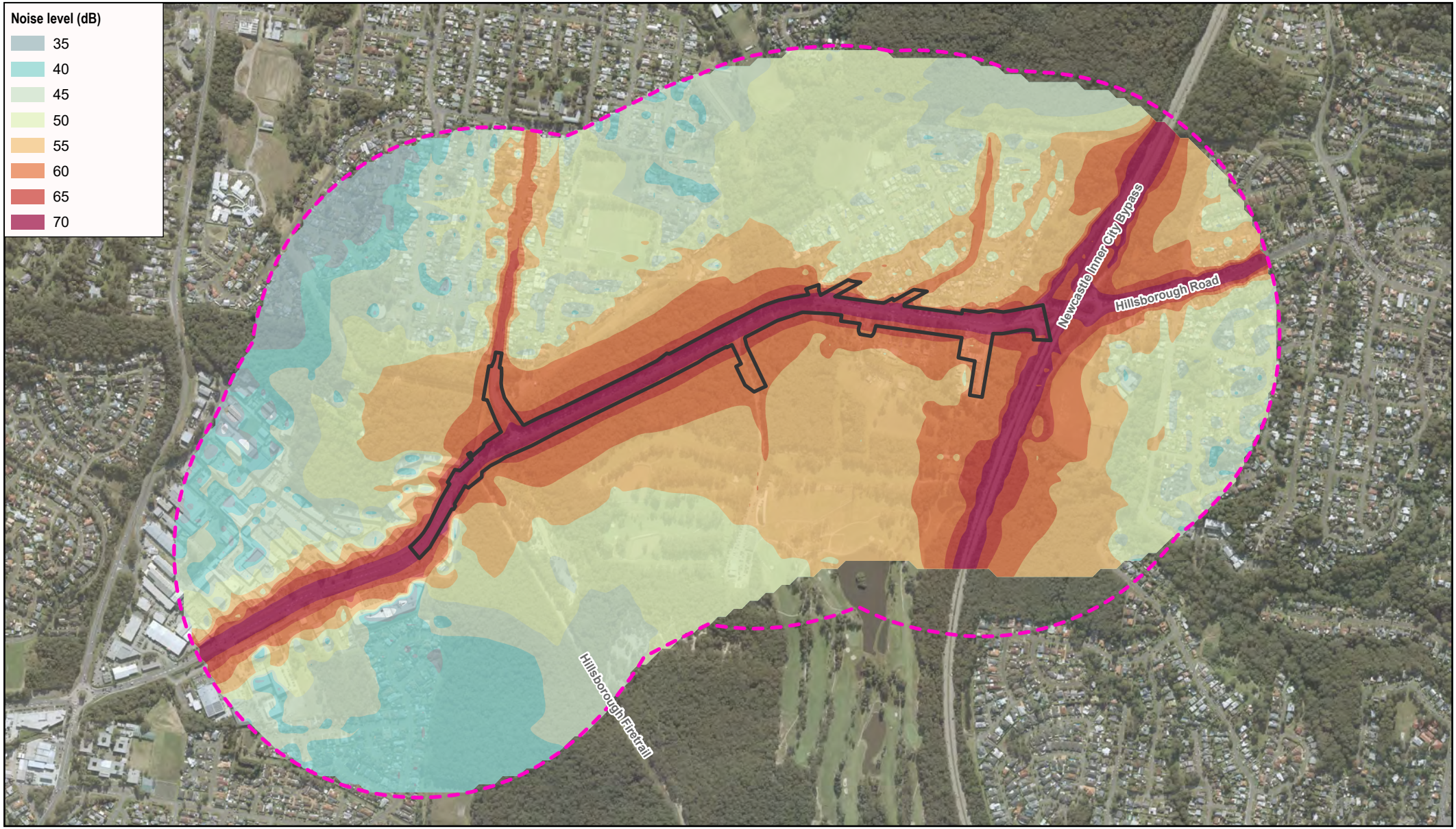
ID	Floor Level	Facade	X	Y	Predicted noise level Design Year 2037				Change in noise level		NCG Proposal Road Noise Criteria		Noise levels increase by more than 2.0 dBA		Exceed the cumulative limit? Proposal roads add ≥2dB to the total noise levels?		Is the contribution from the road proposal Acute?		Consider for treatment
					No Build		Build		Design Year 2037										
					Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1063	GF	SE	375926	6352623	67	59	65	58	-1.6	-1.5	60	55	No	No	Yes	No	Yes	No	Yes
R1078	GF	SE	375980	6352600	70	63	69	61	-1.5	-1.4	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1078	F 1	SE	375980	6352600	71	64	70	63	-1.2	-1.0	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1084	GF	SE	376001	6352600	69	62	68	61	-1.1	-1.1	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1093	GF	SW	376022	6352599	69	61	68	60	-1.0	-1.0	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1099	GF	S	376041	6352591	71	63	69	62	-1.3	-1.2	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1113	GF	SE	376068	6352590	70	62	68	61	-1.5	-1.4	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1122	GF	SE	376090	6352594	67	60	66	59	-1.1	-1.0	60	55	No	No	Yes	No	Yes	No	Yes
R1130	GF	SE	376107	6352600	66	58	65	57	-0.9	-0.9	60	55	No	No	Yes	No	No	No	Yes
R1151	GF	S	376151	6352576	71	63	69	62	-1.4	-1.3	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1160	GF	S	376163	6352575	70	63	69	62	-1.3	-1.2	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1166	GF	S	376178	6352574	70	63	69	61	-1.1	-1.1	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1177	GF	S	376194	6352572	70	63	69	62	-1.0	-1.0	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1183	GF	S	376208	6352570	70	63	69	62	-1.1	-1.0	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1192	GF	S	376221	6352568	70	63	69	62	-1.1	-1.0	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1198	GF	S	376234	6352565	71	63	69	62	-1.3	-1.2	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1212	GF	S	376257	6352563	70	63	69	62	-1.3	-1.2	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1234	GF	S	376277	6352572	66	58	65	58	-0.5	-0.5	60	55	No	No	Yes	No	Yes	No	Yes

Table G.2 Predicted operational noise level comparison, residential receivers considered for noise mitigation – Low Noise Pavement

ID	Floor Level	Facade	X	Y	Predicted noise level Design Year 2037				Change in noise level		NCG Proposal Road Noise Criteria		Exceed the NCG relative increase criteria?		Exceed the cumulative limit? Proposal roads add ≥2dB to the total noise levels?		Is the contribution from the road proposal Acute?		Consider for treatment ?
					No Build		Build		Design Year 2037										
					Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1078	GF	SE	375980	6352600	70	63	67	60	-3.3	-3.2	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1078	F 1	SE	375980	6352600	71	64	68	61	-3	-3	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1084	GF	SE	376001	6352600	69	62	66	59	-3	-3	60	55	No	No	Yes	No	Yes	No	Yes
R1093	GF	SW	376022	6352599	69	62	66	59	-3	-2.9	60	55	No	No	Yes	No	Yes	No	Yes
R1099	GF	S	376041	6352591	71	63	68	60	-3.2	-3.1	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1113	GF	SE	376068	6352590	70	62	66	59	-3.3	-3.2	60	55	No	No	Yes	No	Yes	No	Yes
R1122	GF	SE	376090	6352594	67	60	65	57	-2.9	-2.8	60	55	No	No	Yes	No	No	No	Yes
R1151	GF	S	376151	6352576	71	63	68	60	-3.2	-3.1	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1160	GF	S	376163	6352575	70	63	67	60	-3.2	-3.1	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1166	GF	S	376178	6352574	70	63	67	60	-3	-2.9	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1177	GF	S	376194	6352572	70	63	67	60	-2.9	-2.9	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1183	GF	S	376208	6352570	70	63	67	60	-2.9	-2.8	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1192	GF	S	376221	6352568	70	63	67	60	-3	-2.9	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1198	GF	S	376234	6352565	71	64	68	61	-3.1	-3	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1212	GF	S	376257	6352563	71	63	68	60	-3.1	-3	60	55	No	No	Yes	Yes	Yes	Yes	Yes

Appendix H

Operational noise contours



LEGEND

- Study area
- Construction footprint

Paper Size ISO A4

0 100 200 300 400

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

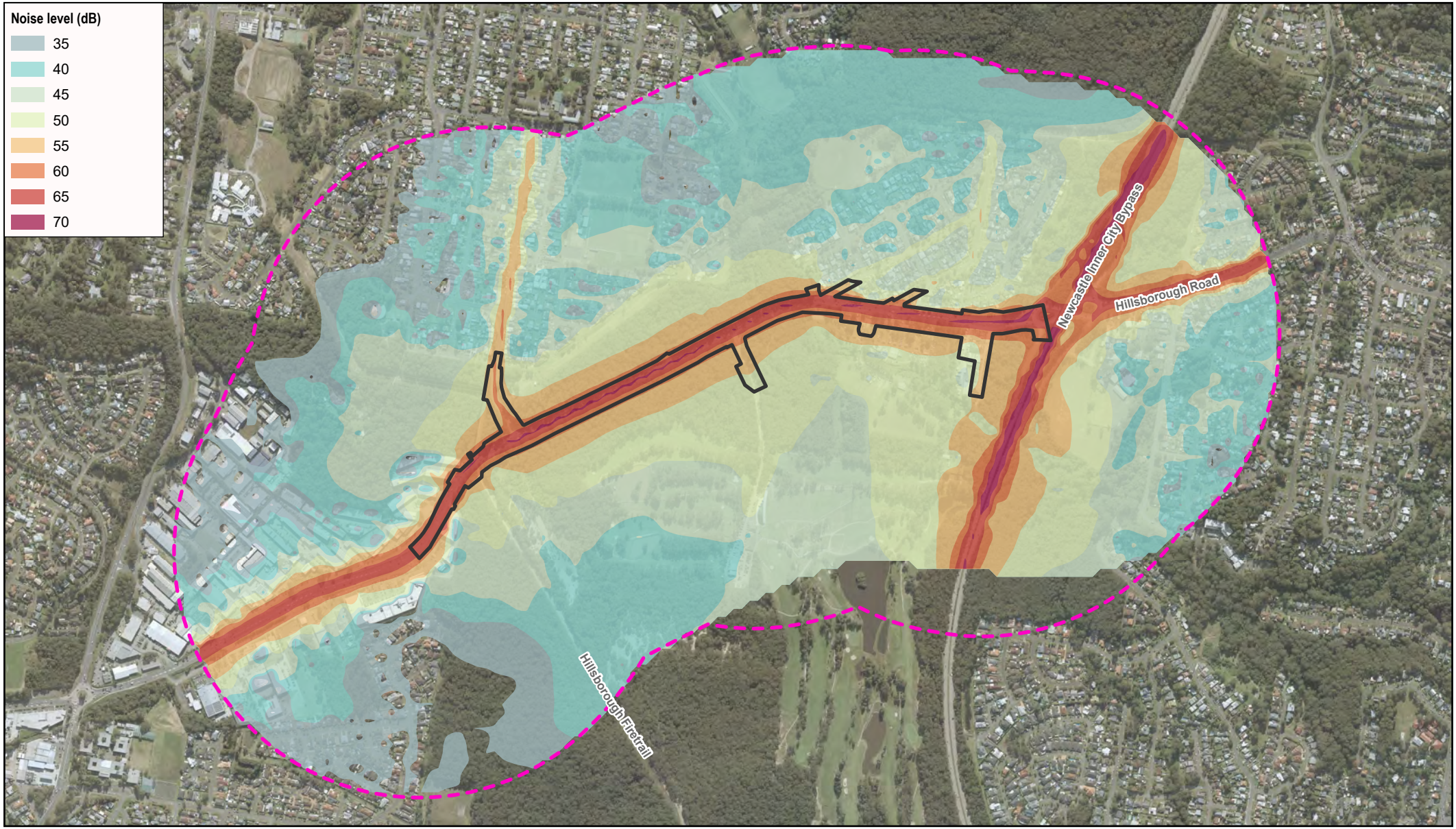
No Build 2037 - Day

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

APPENDIX H.1

G:\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 30 Nov 2022 - 12:45

Data source: Metromap Tile Service: - Imagery (Date extracted: 30/11/2022); Roads, Cadastre - LPI, 2017; Created by: tmorton



LEGEND

- Study area
- Construction footprint

Paper Size ISO A4

0 100 200 300 400

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

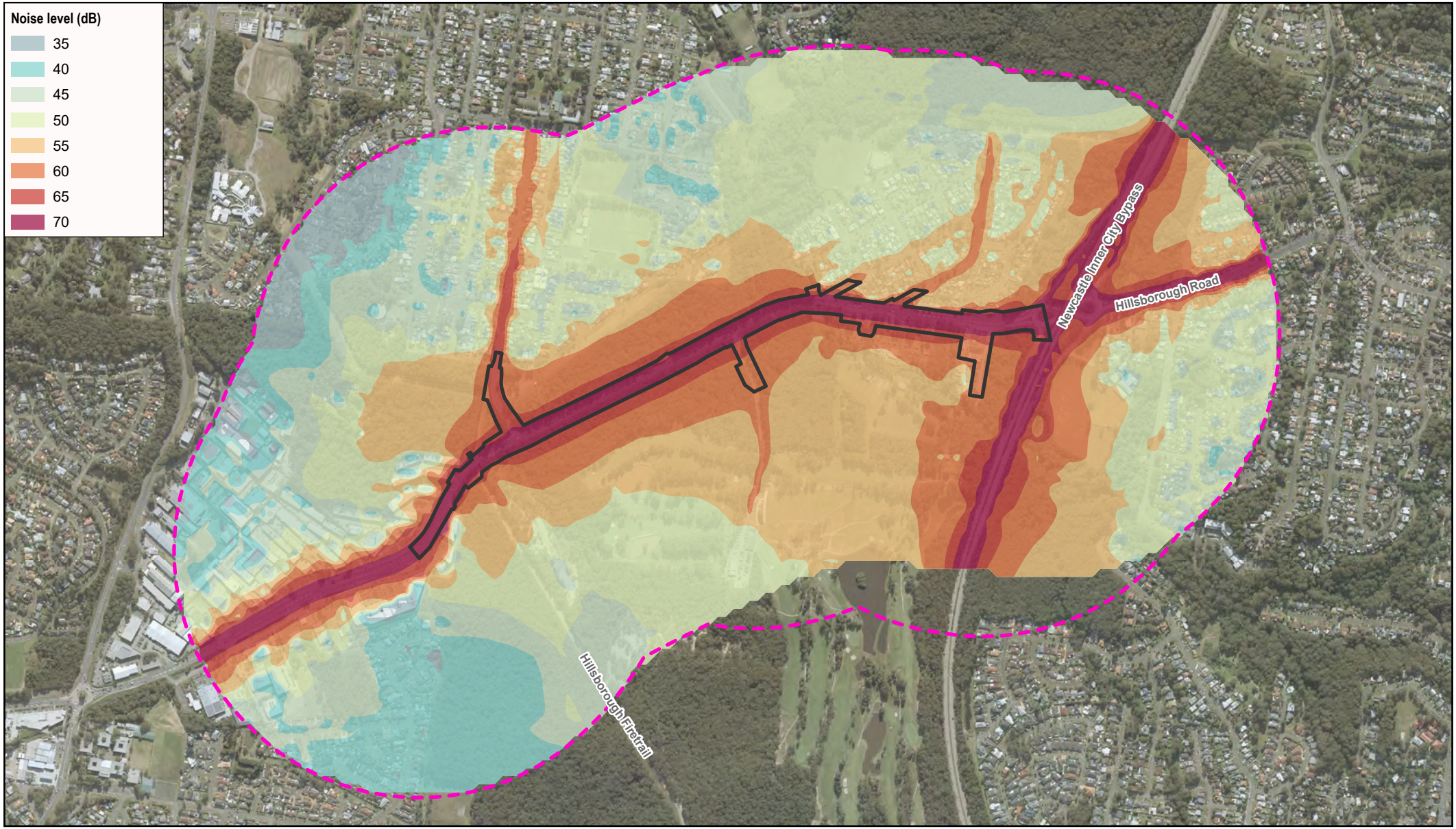
No Build 2037 - Night

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

APPENDIX H.2

G:\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 30 Nov 2022 - 12:45

Data source: Metromap Tile Service: - Imagery (Date extracted: 30/11/2022); Roads, Cadastre - LPI, 2017; Created by: tmorton



LEGEND

- Study area
- Construction footprint

Paper Size ISO A4

0 100 200 300 400

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

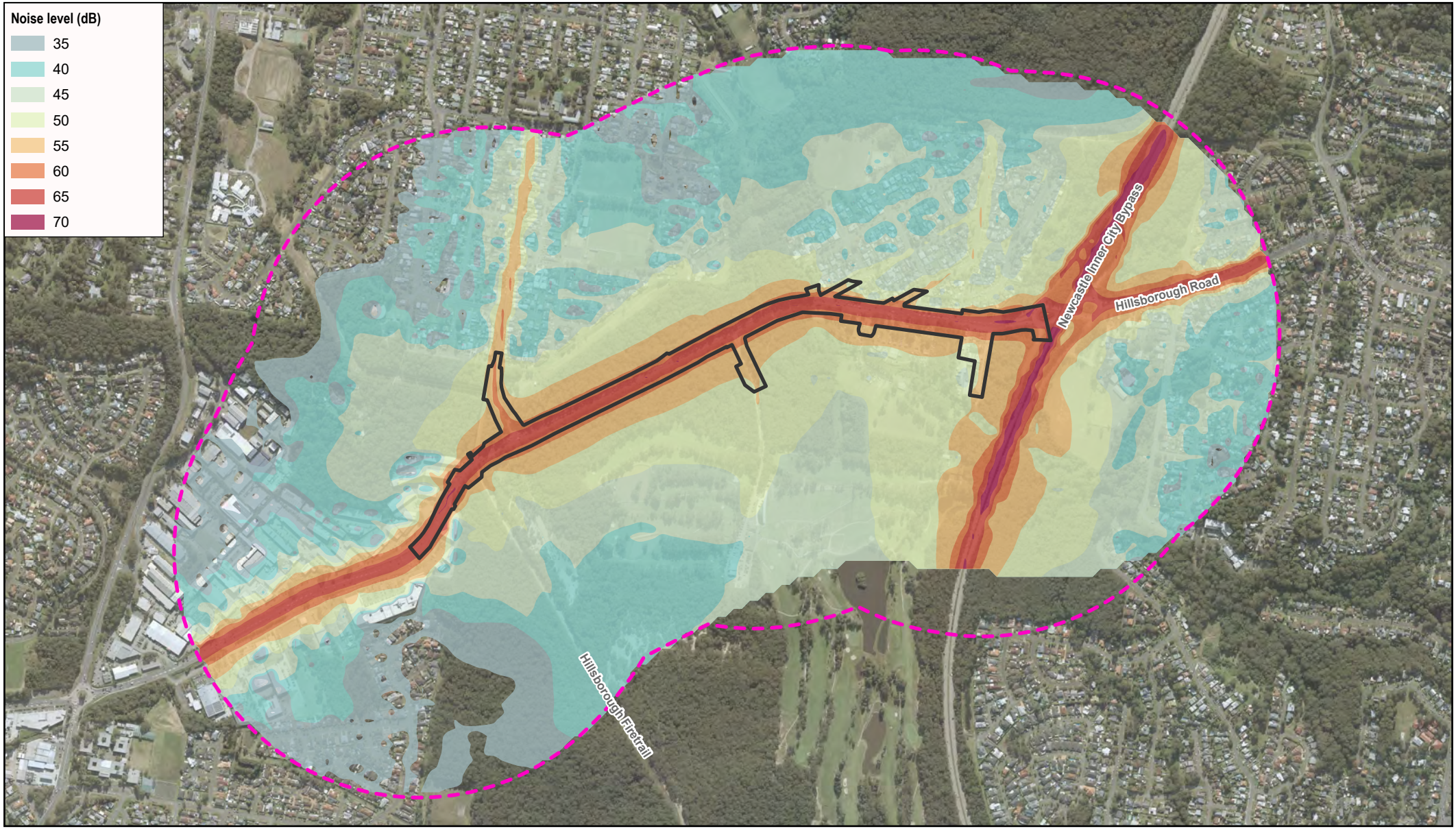
Build 2037 - Day

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

APPENDIX H.3

G:\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 30 Nov 2022 - 12:45

Data source: Metromap Tile Service: - Imagery (Date extracted: 30/11/2022); Roads, Cadastre - LPI, 2017; Created by: tmorton



LEGEND

- Study area
- Construction footprint

Paper Size ISO A4

0 100 200 300 400

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

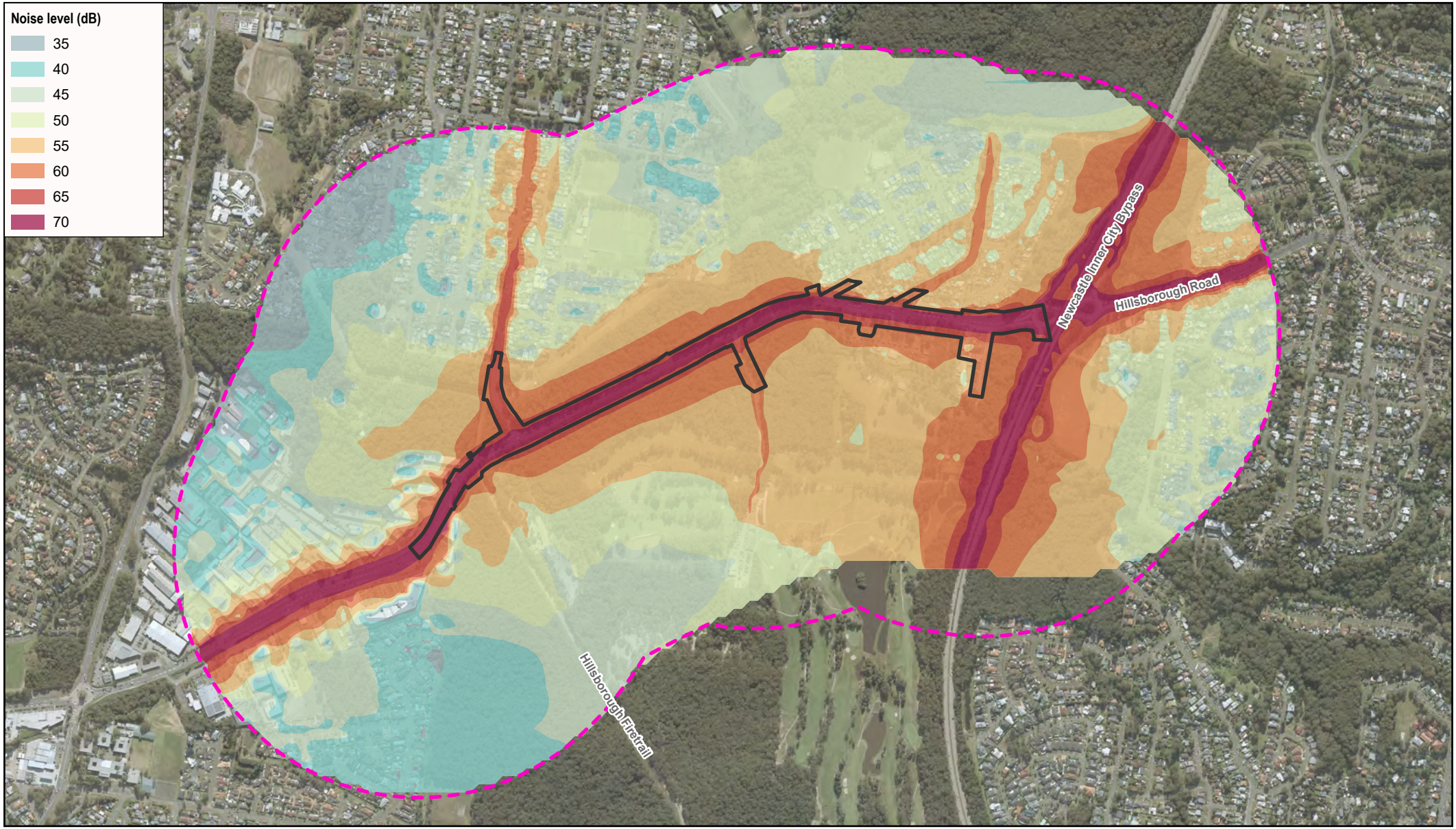
Build 2037 - Night

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

APPENDIX H.4

G:\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 30 Nov 2022 - 12:45

Data source: Metromap Tile Service: - Imagery (Date extracted: 30/11/2022); Roads, Cadastre - LPI, 2017; Created by: tmorton



LEGEND

- Study area
- Construction footprint

Paper Size ISO A4

0 100 200 300 400

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

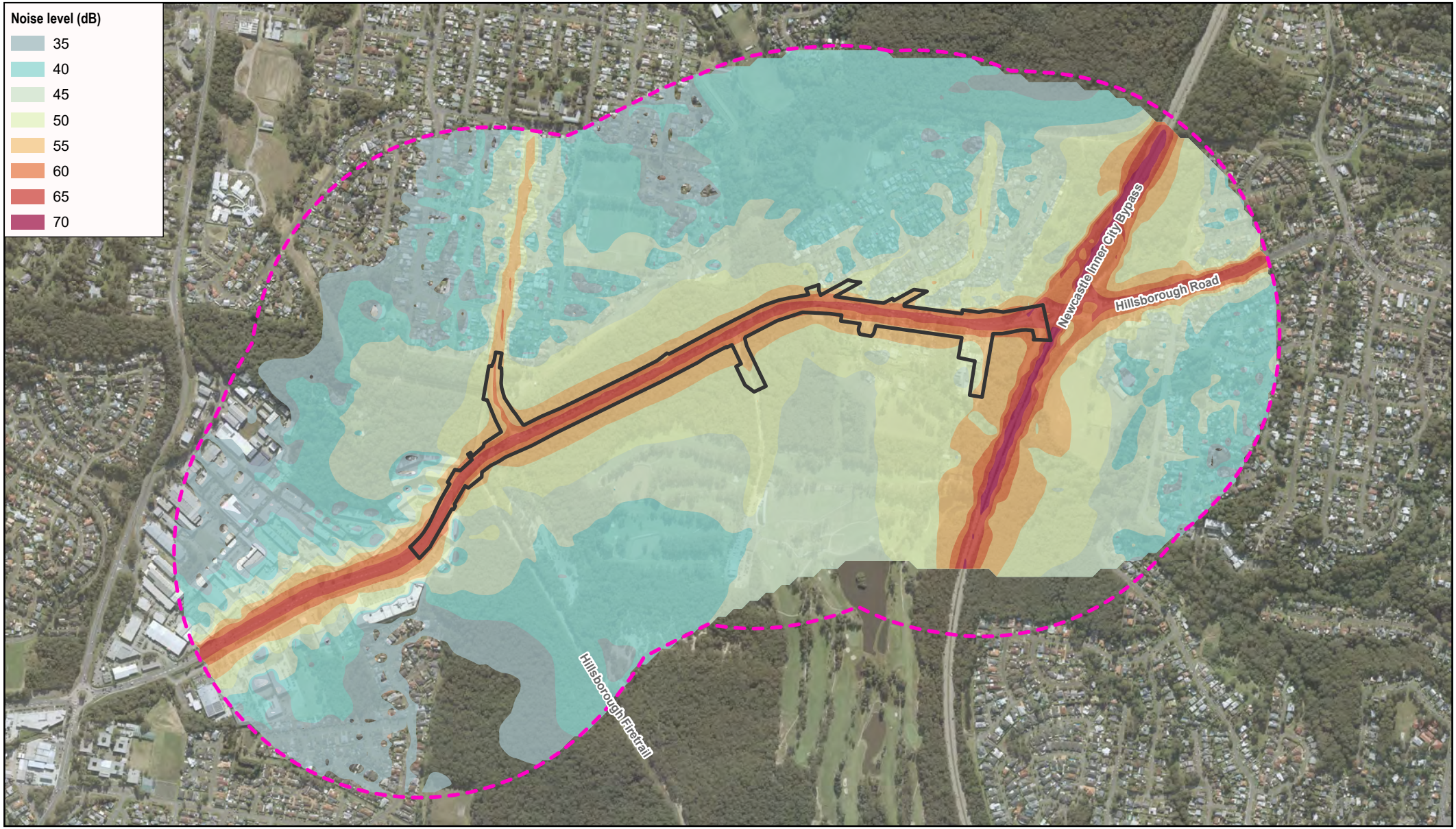
Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

Build 2037 – Day (Low Noise Pavement)

APPENDIX H.5

G:\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 30 Nov 2022 - 12:45

Data source: Metromap Tile Service: - Imagery (Date extracted: 30/11/2022); Roads, Cadastre - LPI, 2017; Created by: tmorton



LEGEND

- Study area
- Construction footprint

Paper Size ISO A4

0 100 200 300 400

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Transport for NSW
Hillsborough Road Upgrade Concept Design
Noise and Vibration Impact Assessment

Build 2037 – Night (Low Noise Pavement)

Project No. **12544418**
Revision No. **0**
Date **30/11/2022**

APPENDIX H.6

G:\22\12544418\GIS\Maps\NVIA_0.aprx
Print date: 30 Nov 2022 - 12:45

Data source: Metromap Tile Service: - Imagery (Date extracted: 30/11/2022); Roads, Cadastre - LPI, 2017; Created by: tmorton

Appendix I

Operational noise levels

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0001	GF	SE	46	39	46	39	0.1	0	60	55	No	No	-	-	-	-	No
R0001	F 1	SE	48	40	48	40	0.1	0.1	60	55	No	No	-	-	-	-	No
R0002	GF	SE	51	44	51	44	0	0	60	55	No	No	-	-	-	-	No
R0002	F 2	NE	55	47	55	47	0.1	0	60	55	No	No	-	-	-	-	No
R0002	F 1	SE	53	45	53	45	0	0	60	55	No	No	-	-	-	-	No
R0004	GF	SE	44	37	44	37	0.1	0	60	55	No	No	-	-	-	-	No
R0004	F 2	SE	49	41	49	41	0.1	0.1	60	55	No	No	-	-	-	-	No
R0004	F 1	SW	47	40	47	40	0	0	60	55	No	No	-	-	-	-	No
R0005	GF	SE	51	44	51	44	0	0	60	55	No	No	-	-	-	-	No
R0005	F 1	SE	56	49	56	49	0	0	60	55	No	No	-	-	-	-	No
R0006	GF	SE	45	37	45	37	0	0	60	55	No	No	-	-	-	-	No
R0006	F 2	SE	48	40	48	40	0	0	60	55	No	No	-	-	-	-	No
R0006	F 1	SE	46	39	46	39	0	0	60	55	No	No	-	-	-	-	No
R0009	GF	SE	44	37	44	37	0	0	60	55	No	No	-	-	-	-	No
R0009	F 2	SE	47	40	47	40	0.1	0.1	60	55	No	No	-	-	-	-	No
R0009	F 1	SE	46	38	46	38	0.1	0.1	60	55	No	No	-	-	-	-	No
R0012	GF	SE	54	46	54	46	0	0	60	55	No	No	-	-	-	-	No
R0012	F 1	SE	58	51	58	51	0	0	60	55	No	No	-	-	-	-	No
R0017	GF	SE	44	36	44	36	0	0.1	60	55	No	No	-	-	-	-	No
R0017	F 1	SE	46	38	46	38	0	0	60	55	No	No	-	-	-	-	No
R0019	GF	SE	43	36	43	36	0.1	0.1	60	55	No	No	-	-	-	-	No
R0019	F 1	SE	46	38	46	38	0	0	60	55	No	No	-	-	-	-	No
R0020	GF	SE	43	36	43	36	0.1	0	60	55	No	No	-	-	-	-	No
R0020	F 1	SE	46	38	46	38	0.1	0.1	60	55	No	No	-	-	-	-	No
R0025	GF	SW	49	42	49	42	0	0	60	55	No	No	-	-	-	-	No
R0025	F 2	SW	53	45	53	45	0	0	60	55	No	No	-	-	-	-	No
R0025	F 1	SW	51	43	51	43	0	0	60	55	No	No	-	-	-	-	No
R0028	GF	SE	45	38	45	38	0.1	0	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0028	F 1	SE	47	39	47	39	0	0.1	60	55	No	No	-	-	-	-	No
R0030	GF	S	69	62	69	62	-0.1	0	60	55	No	No	-	-	No	No	No
R0031	GF	SE	70	63	70	63	0	0	60	55	No	No	-	-	No	No	No
R0031	F 1	SE	71	63	71	63	0	0	60	55	No	No	-	-	No	No	No
R0034	GF	SE	45	38	45	38	0	0	60	55	No	No	-	-	-	-	No
R0034	F 1	SE	47	39	47	39	0.1	0.1	60	55	No	No	-	-	-	-	No
R0038	GF	SE	45	37	45	37	0	0	60	55	No	No	-	-	-	-	No
R0038	F 1	SE	47	39	47	40	0.1	0.1	60	55	No	No	-	-	-	-	No
R0041	GF	SE	51	43	51	43	0	0	60	55	No	No	-	-	-	-	No
R0041	F 2	SE	58	51	58	51	0	0	60	55	No	No	-	-	-	-	No
R0041	F 1	SE	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R0043	GF	SE	44	37	44	37	0	0	60	55	No	No	-	-	-	-	No
R0048	GF	SE	57	50	57	50	0	0	60	55	No	No	-	-	-	-	No
R0049	GF	NE	51	43	51	43	0	0	60	55	No	No	-	-	-	-	No
R0049	F 1	SE	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R0064	GF	SE	46	38	46	39	0.1	0.1	60	55	No	No	-	-	-	-	No
R0064	F 1	SE	48	41	48	41	0	0	60	55	No	No	-	-	-	-	No
R0066	GF	SE	45	38	45	38	0	0	60	55	No	No	-	-	-	-	No
R0066	F 2	SE	48	41	48	41	0.1	0.1	60	55	No	No	-	-	-	-	No
R0066	F 1	SE	47	40	47	40	0	0	60	55	No	No	-	-	-	-	No
R0068	GF	SW	43	36	43	36	0	0	60	55	No	No	-	-	-	-	No
R0068	F 2	SE	51	44	51	44	0	0.1	60	55	No	No	-	-	-	-	No
R0068	F 1	SE	47	39	47	39	0.1	0	60	55	No	No	-	-	-	-	No
R0069	GF	SE	44	37	44	37	0	0.1	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0069	F 3	SE	49	42	49	42	0	0	60	55	No	No	-	-	-	-	No
R0069	F 2	SE	48	41	48	41	0	0	60	55	No	No	-	-	-	-	No
R0069	F 1	SE	46	39	47	39	0.1	0.1	60	55	No	No	-	-	-	-	No
R0072	GF	NE	43	35	43	35	0	0.1	60	55	No	No	-	-	-	-	No
R0072	F 1	SE	48	40	48	40	0	0	60	55	No	No	-	-	-	-	No
R0074	GF	SE	61	54	61	54	0	0	60	55	No	No	-	-	No	-	No
R0074	F 1	SE	63	56	63	56	0	0	60	55	No	No	-	-	No	No	No
R0076	GF	N	58	50	58	50	0	0	60	55	No	No	-	-	-	-	No
R0078	GF	SE	49	41	49	41	0.1	0.1	60	55	No	No	-	-	-	-	No
R0078	F 1	SE	51	44	51	44	0.1	0.1	60	55	No	No	-	-	-	-	No
R0085	GF	SW	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R0085	F 1	SW	55	48	55	48	0.1	0	60	55	No	No	-	-	-	-	No
R0087	GF	NW	35	30	35	30	0	0	60	55	No	No	-	-	-	-	No
R0087	F 1	NW	38	30	38	30	0.1	0.4	60	55	No	No	-	-	-	-	No
R0094	GF	SE	67	60	67	60	0	0	60	55	No	No	-	-	No	No	No
R0096	GF	SE	48	40	48	40	0	0.1	60	55	No	No	-	-	-	-	No
R0096	F 1	SE	52	44	52	44	0	0	60	55	No	No	-	-	-	-	No
R0097	GF	NW	63	55	63	55	0	0	60	55	No	No	-	-	No	-	No
R0100	GF	SE	48	40	48	40	0.1	0.1	60	55	No	No	-	-	-	-	No
R0100	F 1	SE	50	42	50	42	0.1	0.1	60	55	No	No	-	-	-	-	No
R0101	GF	SE	42	35	42	35	0	0.1	60	55	No	No	-	-	-	-	No
R0101	F 2	SE	45	38	45	38	0.1	0.1	60	55	No	No	-	-	-	-	No
R0101	F 1	SE	44	36	44	36	0.1	0.1	60	55	No	No	-	-	-	-	No
R0102	GF	SE	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0102	F 1	SE	57	50	57	50	0	0	60	55	No	No	-	-	-	-	No
R0109	GF	SE	40	33	41	33	0.1	0	60	55	No	No	-	-	-	-	No
R0109	F 1	SE	43	36	43	36	0.1	0	60	55	No	No	-	-	-	-	No
R0111	GF	NW	42	35	43	35	0.1	0	60	55	No	No	-	-	-	-	No
R0111	F 1	NW	49	41	49	41	0.1	0	60	55	No	No	-	-	-	-	No
R0113	GF	SE	66	59	66	59	0	0.1	60	55	No	No	-	-	No	No	No
R0113	F 1	SE	67	60	67	60	0	0	60	55	No	No	-	-	No	No	No
R0117	GF	SE	48	41	48	41	0	0	60	55	No	No	-	-	-	-	No
R0117	F 1	SE	50	43	50	43	0.1	0.1	60	55	No	No	-	-	-	-	No
R0121	GF	SE	49	42	49	42	0.1	0.1	60	55	No	No	-	-	-	-	No
R0121	F 2	SE	51	44	51	44	0.1	0.1	60	55	No	No	-	-	-	-	No
R0121	F 1	SE	50	43	50	43	0.1	0.1	60	55	No	No	-	-	-	-	No
R0123	GF	N	64	56	64	56	0	0	60	55	No	No	-	-	No	No	No
R0123	F 2	N	66	58	66	58	0	0	60	55	No	No	-	-	No	No	No
R0123	F 1	N	65	57	65	57	0	0	60	55	No	No	-	-	No	No	No
R0124	GF	SW	42	35	42	35	0.1	0	60	55	No	No	-	-	-	-	No
R0124	F 1	SW	44	37	44	37	0	0	60	55	No	No	-	-	-	-	No
R0125	GF	SE	51	44	51	44	0	0	60	55	No	No	-	-	-	-	No
R0125	F 1	SE	56	49	56	49	0	0	60	55	No	No	-	-	-	-	No
R0128	GF	N	55	47	55	47	0	0	60	55	No	No	-	-	-	-	No
R0128	F 1	N	57	49	57	49	0	0	60	55	No	No	-	-	-	-	No
R0129	GF	SE	43	36	43	36	0.1	0	60	55	No	No	-	-	-	-	No
R0129	F 2	SE	48	40	48	40	0.1	0.1	60	55	No	No	-	-	-	-	No
R0129	F 1	SE	46	38	46	38	0.1	0.1	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0130	GF	SE	47	40	47	40	0	0.1	60	55	No	No	-	-	-	-	No
R0130	F 1	SE	50	43	50	43	0.1	0	60	55	No	No	-	-	-	-	No
R0136	GF	SE	53	45	53	45	0	0	60	55	No	No	-	-	-	-	No
R0136	F 1	SE	57	49	57	49	0	0	60	55	No	No	-	-	-	-	No
R0138	GF	N	48	40	48	40	0	0	60	52	No	No	-	-	-	-	No
R0138	F 1	N	50	42	50	42	0	0	60	54	No	No	-	-	-	-	No
R0139	GF	N	65	58	65	58	0	0	60	55	No	No	-	-	No	No	No
R0139	F 1	N	66	59	66	59	0	0	60	55	No	No	-	-	No	No	No
R0143	GF	SW	44	37	44	37	0	0	60	55	No	No	-	-	-	-	No
R0143	F 2	SW	48	40	48	40	0	0	60	55	No	No	-	-	-	-	No
R0143	F 1	SW	46	39	46	39	0	0	60	55	No	No	-	-	-	-	No
R0147	GF	SW	43	36	43	36	0	0	60	55	No	No	-	-	-	-	No
R0147	F 1	SW	45	37	45	37	0	0	60	55	No	No	-	-	-	-	No
R0149	GF	SE	67	59	67	59	0	0	60	55	No	No	-	-	No	No	No
R0150	GF	SE	44	37	45	37	0.1	0	60	55	No	No	-	-	-	-	No
R0150	F 1	SE	47	40	47	40	0	0	60	55	No	No	-	-	-	-	No
R0152	GF	SW	43	36	43	36	0.1	0.1	60	55	No	No	-	-	-	-	No
R0153	GF	S	56	48	56	48	0	0	60	55	No	No	-	-	-	-	No
R0153	F 1	S	57	49	57	49	0.1	0	60	55	No	No	-	-	-	-	No
R0158	GF	SW	43	35	43	35	0.1	0.1	60	55	No	No	-	-	-	-	No
R0158	F 1	SW	44	37	44	37	0.1	0.1	60	55	No	No	-	-	-	-	No
R0159	GF	SW	38	31	38	31	0.1	0.1	60	55	No	No	-	-	-	-	No
R0160	GF	SW	51	43	51	43	0	0	60	55	No	No	-	-	-	-	No
R0160	F 1	SW	52	45	52	45	0	0	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0161	GF	SW	36	30	36	30	0	0	48	42	No	No	-	-	-	-	No
R0163	GF	SE	64	56	64	56	0	0	60	55	No	No	-	-	No	No	No
R0163	F 1	SE	65	57	65	57	0	0	60	55	No	No	-	-	No	No	No
R0164	GF	S	37	30	37	30	0.1	0	49	42	No	No	-	-	-	-	No
R0164	F 1	W	39	31	39	31	0.1	0	51	43	No	No	-	-	-	-	No
R0165	GF	SW	45	37	45	37	0.1	0	60	55	No	No	-	-	-	-	No
R0166	GF	N	48	40	48	40	0	0	60	55	No	No	-	-	-	-	No
R0166	F 1	N	49	42	49	42	0	0	60	55	No	No	-	-	-	-	No
R0168	GF	N	47	40	47	40	0	0	59	52	No	No	-	-	-	-	No
R0173	GF	SW	47	40	47	40	0	0	60	55	No	No	-	-	-	-	No
R0173	F 2	SW	49	42	49	42	0.1	0.1	60	55	No	No	-	-	-	-	No
R0173	F 1	SW	48	41	48	41	0	0.1	60	55	No	No	-	-	-	-	No
R0175	GF	SW	41	34	41	34	0.1	0.1	60	55	No	No	-	-	-	-	No
R0176	GF	SE	44	36	44	37	0.1	0.1	60	55	No	No	-	-	-	-	No
R0176	F 1	SE	48	40	48	40	0	0	60	55	No	No	-	-	-	-	No
R0178	GF	SW	37	30	37	30	0	0	49	42	No	No	-	-	-	-	No
R0179	GF	NW	55	48	55	48	0	0	60	55	No	No	-	-	-	-	No
R0179	F 2	NW	58	51	58	51	0	0	60	55	No	No	-	-	-	-	No
R0179	F 1	NW	57	49	57	49	0	0	60	55	No	No	-	-	-	-	No
R0180	GF	SW	46	39	46	39	0.1	0.1	60	55	No	No	-	-	-	-	No
R0180	F 1	SW	48	41	48	41	0	0	60	55	No	No	-	-	-	-	No
R0182	GF	NW	37	30	38	30	0.1	0	49	42	No	No	-	-	-	-	No
R0184	GF	N	46	39	46	39	0	0	58	51	No	No	-	-	-	-	No
R0185	GF	SW	37	30	37	30	0	0	49	42	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0185	F 1	SW	39	31	39	31	0	0	51	43	No	No	-	-	-	-	No
R0187	GF	N	47	39	47	39	0	0	59	51	No	No	-	-	-	-	No
R0188	GF	SE	37	30	37	30	0.1	0	49	42	No	No	-	-	-	-	No
R0189	GF	E	47	39	47	40	0.1	0.1	60	55	No	No	-	-	-	-	No
R0189	F 1	S	49	41	49	41	0.1	0.1	60	55	No	No	-	-	-	-	No
R0192	GF	SW	43	36	43	36	0.1	0.1	60	55	No	No	-	-	-	-	No
R0192	F 1	SW	45	37	45	38	0.1	0.1	60	55	No	No	-	-	-	-	No
R0194	GF	S	49	42	49	42	0.1	0	60	55	No	No	-	-	-	-	No
R0194	F 2	S	51	43	51	43	0	0	60	55	No	No	-	-	-	-	No
R0194	F 1	E	50	42	50	42	0.1	0.1	60	55	No	No	-	-	-	-	No
R0195	GF	SE	59	52	59	52	0	0	60	55	No	No	-	-	-	-	No
R0196	GF	N	46	38	46	38	0	0	58	50	No	No	-	-	-	-	No
R0197	GF	NE	37	30	37	30	0.1	0	49	42	No	No	-	-	-	-	No
R0198	GF	SW	47	40	47	40	0.1	0	60	55	No	No	-	-	-	-	No
R0198	F 1	SW	49	42	49	42	0	0	60	55	No	No	-	-	-	-	No
R0199	GF	N	47	39	47	39	0	0	59	51	No	No	-	-	-	-	No
R0201	GF	NE	37	30	37	30	0	0.1	49	42	No	No	-	-	-	-	No
R0202	GF	S	39	31	39	31	0.1	0	51	43	No	No	-	-	-	-	No
R0206	GF	NE	38	31	38	31	0.1	0.1	50	43	No	No	-	-	-	-	No
R0206	F 1	NE	40	32	40	32	0	0.1	52	44	No	No	-	-	-	-	No
R0208	GF	N	44	37	44	37	0	0	56	49	No	No	-	-	-	-	No
R0209	GF	N	62	55	62	55	0	0	60	55	No	No	-	-	No	-	No
R0209	F 1	N	63	56	63	56	0	-0.1	60	55	No	No	-	-	No	No	No
R0210	GF	N	46	38	46	38	0	0	58	50	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0211	GF	N	47	39	47	39	0	0	59	51	No	No	-	-	-	-	No
R0212	GF	NE	39	31	39	31	0	0.1	51	43	No	No	-	-	-	-	No
R0214	GF	SW	58	50	58	50	0	0	60	55	No	No	-	-	-	-	No
R0214	F 1	SW	59	51	59	51	0	0	60	55	No	No	-	-	-	-	No
R0215	GF	NE	39	31	39	31	0	0.1	51	43	No	No	-	-	-	-	No
R0215	F 1	NE	41	34	41	34	0.1	0.1	53	46	No	No	-	-	-	-	No
R0217	GF	S	39	32	39	32	0	0.1	51	44	No	No	-	-	-	-	No
R0218	GF	N	45	38	45	38	0	0	57	50	No	No	-	-	-	-	No
R0219	GF	E	40	32	40	32	0	0	52	44	No	No	-	-	-	-	No
R0219	F 1	E	41	34	41	34	0.1	0	53	46	No	No	-	-	-	-	No
R0221	GF	NE	39	32	39	32	0	0.1	51	44	No	No	-	-	-	-	No
R0221	F 1	NE	41	34	41	34	0.1	0	53	46	No	No	-	-	-	-	No
R0225	GF	N	48	40	48	40	0	0	60	52	No	No	-	-	-	-	No
R0227	GF	N	45	38	45	38	0	0	57	50	No	No	-	-	-	-	No
R0228	GF	NE	38	31	38	31	0.1	0.1	50	43	No	No	-	-	-	-	No
R0233	GF	SE	64	57	64	57	0	0	60	55	No	No	-	-	No	No	No
R0233	F 1	SE	65	58	65	58	0	0	60	55	No	No	-	-	No	No	No
R0234	GF	SW	48	40	48	40	0	0	60	55	No	No	-	-	-	-	No
R0234	F 1	SW	50	42	50	42	0	0.1	60	55	No	No	-	-	-	-	No
R0235	GF	NE	39	32	39	32	0	0	51	44	No	No	-	-	-	-	No
R0237	GF	N	45	37	45	37	0	0	57	49	No	No	-	-	-	-	No
R0238	GF	N	48	41	48	41	0	0	60	53	No	No	-	-	-	-	No
R0239	GF	SE	38	31	38	31	0.1	0.1	50	43	No	No	-	-	-	-	No
R0240	GF	N	50	43	50	43	0	0	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0241	GF	N	46	38	46	38	0	0	58	50	No	No	-	-	-	-	No
R0243	GF	SE	52	45	52	45	0	0	60	55	No	No	-	-	-	-	No
R0243	F 2	SE	56	49	56	49	0	0	60	55	No	No	-	-	-	-	No
R0243	F 1	SE	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R0246	GF	NE	40	32	40	32	0	0.1	52	44	No	No	-	-	-	-	No
R0247	GF	E	40	32	40	33	0	0.1	52	44	No	No	-	-	-	-	No
R0249	GF	N	48	40	48	40	0	0	60	52	No	No	-	-	-	-	No
R0250	GF	NE	39	31	39	31	0.1	0.1	51	43	No	No	-	-	-	-	No
R0251	GF	NE	38	30	38	31	0	0.1	50	42	No	No	-	-	-	-	No
R0253	GF	SW	44	37	44	37	0	0	56	49	No	No	-	-	-	-	No
R0254	GF	NE	40	33	40	33	0.1	0.1	52	45	No	No	-	-	-	-	No
R0257	GF	N	44	37	44	37	0	0	56	49	No	No	-	-	-	-	No
R0258	GF	N	40	33	40	33	0	0.1	52	45	No	No	-	-	-	-	No
R0259	GF	N	46	38	46	38	0	0	58	50	No	No	-	-	-	-	No
R0260	GF	NW	62	54	62	54	0	0	60	55	No	No	-	-	No	-	No
R0260	F 1	NW	63	55	63	55	0	0	60	55	No	No	-	-	No	-	No
R0263	GF	N	48	40	48	40	0	0	60	52	No	No	-	-	-	-	No
R0264	GF	W	43	36	43	36	0	0	55	48	No	No	-	-	-	-	No
R0266	GF	N	39	31	39	31	0.1	0.1	51	43	No	No	-	-	-	-	No
R0268	GF	SE	68	60	68	60	0	0	60	55	No	No	-	-	No	No	No
R0268	F 1	SE	68	61	68	61	0	0	60	55	No	No	-	-	No	No	No
R0269	GF	N	40	32	40	32	0.1	0	52	44	No	No	-	-	-	-	No
R0270	GF	W	45	37	45	37	0	0	57	49	No	No	-	-	-	-	No
R0271	GF	N	46	38	46	38	0	0	58	50	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0272	GF	N	38	30	38	31	0	0.1	50	42	No	No	-	-	-	-	No
R0273	GF	S	41	34	41	34	0.1	0.1	53	46	No	No	-	-	-	-	No
R0277	GF	SW	50	42	50	42	0	0	60	55	No	No	-	-	-	-	No
R0277	F 1	SW	52	44	52	44	0	0	60	55	No	No	-	-	-	-	No
R0279	GF	NW	45	37	45	37	0	0	57	49	No	No	-	-	-	-	No
R0280	GF	NE	43	36	43	36	0	0	55	48	No	No	-	-	-	-	No
R0282	GF	N	39	31	39	31	0.1	0	51	43	No	No	-	-	-	-	No
R0283	GF	N	38	30	38	30	0.1	0.1	50	42	No	No	-	-	-	-	No
R0284	GF	N	48	40	48	40	0	0	60	52	No	No	-	-	-	-	No
R0289	GF	N	45	38	45	38	0	0	57	50	No	No	-	-	-	-	No
R0292	GF	SE	53	45	53	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R0292	F 1	SE	55	47	55	47	0	0	60	55	No	No	-	-	-	-	No
R0293	GF	S	43	36	43	36	0.1	0.1	55	48	No	No	-	-	-	-	No
R0293	F 1	E	45	38	46	38	0.1	0.1	57	50	No	No	-	-	-	-	No
R0294	GF	S	38	30	38	30	0	0.1	50	42	No	No	-	-	-	-	No
R0294	F 1	E	39	32	39	32	0.1	0.1	51	44	No	No	-	-	-	-	No
R0295	GF	N	39	32	39	32	0	0.1	51	44	No	No	-	-	-	-	No
R0296	GF	NE	44	37	44	37	0	0	56	49	No	No	-	-	-	-	No
R0299	GF	SE	65	58	65	58	0.1	0.1	60	55	No	No	-	-	No	No	No
R0299	F 1	SE	66	59	66	59	0.1	0	60	55	No	No	-	-	No	No	No
R0300	GF	N	37	30	37	30	0	0	49	42	No	No	-	-	-	-	No
R0301	GF	N	47	40	47	40	0	0	59	52	No	No	-	-	-	-	No
R0303	GF	S	53	46	53	46	0	0	60	55	No	No	-	-	-	-	No
R0303	F 1	S	55	48	55	48	0	0	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0305	GF	N	45	38	45	38	0	0	57	50	No	No	-	-	-	-	No
R0306	GF	NE	44	36	44	36	0	0	56	48	No	No	-	-	-	-	No
R0307	GF	W	44	37	45	37	0.1	0	56	49	No	No	-	-	-	-	No
R0308	GF	NW	61	53	61	53	0	0	55	1000	No	No	-	-	No	-	No
R0309	GF	NW	52	44	52	44	0	0	60	55	No	No	-	-	-	-	No
R0310	GF	N	41	34	41	34	0.1	0	53	46	No	No	-	-	-	-	No
R0311	GF	N	40	33	40	33	0	0.1	52	45	No	No	-	-	-	-	No
R0311	F 1	N	42	35	42	35	0	0.1	54	47	No	No	-	-	-	-	No
R0314	GF	N	37	30	37	30	0.1	0	49	42	No	No	-	-	-	-	No
R0315	GF	NE	39	32	39	32	0	0.1	51	44	No	No	-	-	-	-	No
R0318	GF	E	38	30	38	30	0.1	0	50	42	No	No	-	-	-	-	No
R0319	GF	N	47	40	47	40	0	0	59	52	No	No	-	-	-	-	No
R0321	GF	N	45	38	45	38	0	0	57	50	No	No	-	-	-	-	No
R0322	GF	NE	37	30	37	30	0	0	49	42	No	No	-	-	-	-	No
R0326	GF	NE	44	36	44	36	0	0	56	48	No	No	-	-	-	-	No
R0327	GF	E	37	30	37	30	0.1	0	49	42	No	No	-	-	-	-	No
R0329	GF	SE	66	58	66	58	0	0.1	60	55	No	No	-	-	No	No	No
R0329	F 1	SE	67	59	67	59	0	0.1	60	55	No	No	-	-	No	No	No
R0330	GF	W	44	37	44	37	0.1	0	56	49	No	No	-	-	-	-	No
R0331	GF	NE	42	34	42	34	0.1	0.1	54	46	No	No	-	-	-	-	No
R0333	GF	E	40	32	40	32	0.1	0.1	52	44	No	No	-	-	-	-	No
R0334	GF	E	38	30	38	30	0.1	0.1	50	42	No	No	-	-	-	-	No
R0337	GF	NW	44	37	44	37	0	0	56	49	No	No	-	-	-	-	No
R0338	GF	N	47	40	47	40	0	0	59	52	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0339	GF	N	45	38	45	38	0	0	57	50	No	No	-	-	-	-	No
R0340	GF	S	52	45	52	45	0	0	60	55	No	No	-	-	-	-	No
R0340	F 2	S	59	52	59	52	0	0	60	55	No	No	-	-	-	-	No
R0340	F 1	S	56	48	56	49	0	0.1	60	55	No	No	-	-	-	-	No
R0341	GF	NE	43	36	43	36	0.1	0	55	48	No	No	-	-	-	-	No
R0343	GF	NE	42	35	43	35	0.1	0.1	54	47	No	No	-	-	-	-	No
R0343	F 1	SE	45	38	46	38	0.1	0	57	50	No	No	-	-	-	-	No
R0344	GF	N	68	60	68	60	0	0	60	55	No	No	-	-	No	No	No
R0344	F 3	N	67	60	67	60	0	0	60	55	No	No	-	-	No	No	No
R0344	F 2	N	68	60	68	60	0	0	60	55	No	No	-	-	No	No	No
R0344	F 1	N	68	60	68	60	0	0	60	55	No	No	-	-	No	No	No
R0346	GF	N	37	30	37	30	0	-0.2	49	42	No	No	-	-	-	-	No
R0348	GF	NE	44	36	44	36	0.1	0	56	48	No	No	-	-	-	-	No
R0349	GF	SE	45	38	45	38	0.1	0.1	57	50	No	No	-	-	-	-	No
R0350	GF	NE	40	33	40	33	0.1	0.1	52	45	No	No	-	-	-	-	No
R0351	GF	SW	37	30	37	30	0	0.1	49	42	No	No	-	-	-	-	No
R0352	GF	N	38	30	38	30	0.1	0	50	42	No	No	-	-	-	-	No
R0353	GF	N	47	39	47	39	0	0	59	51	No	No	-	-	-	-	No
R0355	GF	N	45	37	45	37	0	0	57	49	No	No	-	-	-	-	No
R0358	GF	NE	43	36	43	36	0	0	55	48	No	No	-	-	-	-	No
R0359	GF	E	37	30	37	30	0	0.1	49	42	No	No	-	-	-	-	No
R0361	GF	N	44	36	44	36	0	0	56	48	No	No	-	-	-	-	No
R0362	GF	NE	41	34	41	34	0.1	0	53	46	No	No	-	-	-	-	No
R0362	F 1	NE	43	36	43	36	0.1	0.1	55	48	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0364	GF	NE	38	30	38	30	0	0.1	50	42	No	No	-	-	-	-	No
R0365	GF	W	44	37	44	37	0	0	56	49	No	No	-	-	-	-	No
R0366	GF	NW	43	36	43	36	0	0	55	48	No	No	-	-	-	-	No
R0367	GF	SE	56	49	56	49	0.1	0.1	60	55	No	No	-	-	-	-	No
R0367	F 1	SE	57	49	57	49	0.1	0.1	60	55	No	No	-	-	-	-	No
R0369	GF	N	46	39	46	39	0	0	58	51	No	No	-	-	-	-	No
R0370	GF	NW	50	42	50	42	0	0	60	54	No	No	-	-	-	-	No
R0374	GF	NE	37	30	37	30	0.1	0	49	42	No	No	-	-	-	-	No
R0375	GF	NE	43	36	43	36	0	0	55	48	No	No	-	-	-	-	No
R0376	GF	NE	44	36	44	36	0	0.1	56	48	No	No	-	-	-	-	No
R0378	GF	NE	38	30	38	30	0	0.1	50	42	No	No	-	-	-	-	No
R0379	GF	SW	47	40	47	40	0	0	59	52	No	No	-	-	-	-	No
R0380	GF	SE	40	33	40	33	0.1	0	52	45	No	No	-	-	-	-	No
R0381	GF	N	46	39	46	39	0	0	58	51	No	No	-	-	-	-	No
R0382	GF	NE	42	35	42	35	0	0	54	47	No	No	-	-	-	-	No
R0383	GF	S	38	31	38	31	0	0.1	50	43	No	No	-	-	-	-	No
R0385	GF	NE	43	36	43	36	0.1	0.1	55	48	No	No	-	-	-	-	No
R0385	F 1	SE	48	40	48	40	0.1	0.1	60	52	No	No	-	-	-	-	No
R0386	GF	S	38	30	38	30	0.1	0.1	50	42	No	No	-	-	-	-	No
R0387	GF	SE	65	57	65	57	0	0	60	55	No	No	-	-	No	No	No
R0387	F 1	SE	65	58	65	58	0	0	60	55	No	No	-	-	No	No	No
R0388	GF	SW	46	39	46	39	0	0	58	51	No	No	-	-	-	-	No
R0390	GF	NW	38	31	38	31	0.1	0.1	50	43	No	No	-	-	-	-	No
R0392	GF	N	46	38	46	38	0	0	58	50	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0395	GF	SE	40	32	40	33	0.1	0.1	52	44	No	No	-	-	-	-	No
R0395	F 1	NW	43	35	43	35	0.1	0.1	55	47	No	No	-	-	-	-	No
R0396	GF	SW	46	38	46	38	0	0	58	50	No	No	-	-	-	-	No
R0397	GF	NW	43	36	43	36	0	0.1	55	48	No	No	-	-	-	-	No
R0399	GF	W	45	38	45	38	0	0	57	50	No	No	-	-	-	-	No
R0400	GF	SE	47	39	47	39	0	0	59	51	No	No	-	-	-	-	No
R0401	GF	SE	40	33	40	33	0.1	0.1	52	45	No	No	-	-	-	-	No
R0401	F 1	NE	43	35	43	35	0.1	0	55	47	No	No	-	-	-	-	No
R0403	GF	N	44	37	44	37	0	0	56	49	No	No	-	-	-	-	No
R0404	GF	S	39	31	39	31	0.1	0.1	51	43	No	No	-	-	-	-	No
R0406	GF	W	45	38	45	38	0	0	57	50	No	No	-	-	-	-	No
R0407	GF	W	45	37	45	37	0	0	57	49	No	No	-	-	-	-	No
R0409	GF	E	40	33	40	33	0	0.1	52	45	No	No	-	-	-	-	No
R0411	GF	W	45	37	45	37	0	0	57	49	No	No	-	-	-	-	No
R0412	GF	N	45	38	45	38	0	0	57	50	No	No	-	-	-	-	No
R0413	GF	S	39	32	39	32	0.1	0.1	51	44	No	No	-	-	-	-	No
R0414	GF	S	38	30	38	30	0.1	0.1	50	42	No	No	-	-	-	-	No
R0416	GF	N	40	32	40	32	0.1	0.1	52	44	No	No	-	-	-	-	No
R0417	GF	NE	43	35	43	35	0.1	0	55	47	No	No	-	-	-	-	No
R0418	GF	SW	45	38	45	38	0	0	57	50	No	No	-	-	-	-	No
R0419	GF	W	45	37	45	37	0	0	57	49	No	No	-	-	-	-	No
R0420	GF	E	40	32	40	32	0.1	0	52	44	No	No	-	-	-	-	No
R0421	GF	W	43	35	43	35	0	0	55	47	No	No	-	-	-	-	No
R0422	GF	W	45	37	45	37	0	0	57	49	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0423	GF	NE	46	39	47	39	0.2	0.3	58	51	No	No	-	-	-	-	No
R0426	GF	S	39	32	39	32	0	0.1	51	44	No	No	-	-	-	-	No
R0426	F 1	N	41	34	41	34	0.1	0.1	53	46	No	No	-	-	-	-	No
R0427	GF	E	40	32	40	33	0.1	0.1	52	44	No	No	-	-	-	-	No
R0428	GF	N	43	35	43	36	0	0.1	55	47	No	No	-	-	-	-	No
R0429	GF	SW	45	38	45	38	0	0	57	50	No	No	-	-	-	-	No
R0430	GF	S	43	36	43	36	0.1	0	55	48	No	No	-	-	-	-	No
R0433	GF	W	45	38	45	38	0	0.1	57	50	No	No	-	-	-	-	No
R0434	GF	W	39	31	39	32	0.1	0.1	51	43	No	No	-	-	-	-	No
R0435	GF	NE	45	38	46	38	0.5	0.4	57	50	No	No	-	-	-	-	No
R0436	GF	N	44	37	44	37	0	0.1	56	49	No	No	-	-	-	-	No
R0437	GF	N	39	32	39	32	0	0.1	51	44	No	No	-	-	-	-	No
R0438	GF	N	45	37	45	37	0	0	57	49	No	No	-	-	-	-	No
R0439	GF	SW	53	46	53	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R0439	F 1	SW	56	49	56	49	0.1	0	60	55	No	No	-	-	-	-	No
R0440	GF	N	45	37	45	37	0	0	57	49	No	No	-	-	-	-	No
R0442	GF	SW	45	38	45	38	0	0	57	50	No	No	-	-	-	-	No
R0445	GF	W	43	36	43	36	0	0	55	48	No	No	-	-	-	-	No
R0446	GF	W	44	37	44	37	0	0	56	49	No	No	-	-	-	-	No
R0448	GF	SE	45	37	45	37	0	0	57	49	No	No	-	-	-	-	No
R0450	GF	SW	45	38	45	38	0	0	57	50	No	No	-	-	-	-	No
R0451	GF	N	42	35	42	35	0.1	0.1	54	47	No	No	-	-	-	-	No
R0452	GF	SE	44	37	45	37	0.1	0.1	56	49	No	No	-	-	-	-	No
R0454	GF	E	44	37	45	37	0.1	0.1	56	49	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0454	F 1	E	48	41	49	41	0.2	0.2	60	53	No	No	-	-	-	-	No
R0455	GF	SE	57	50	57	50	-0.1	0	60	55	No	No	-	-	-	-	No
R0455	F 1	SE	59	51	59	51	-0.1	0.1	60	55	No	No	-	-	-	-	No
R0456	GF	SE	65	58	65	58	0	0.1	60	55	No	No	-	-	No	No	No
R0456	F 2	SE	67	59	67	59	0.1	0.1	60	55	No	No	Yes	No	No	No	Yes
R0456	F 1	SE	66	59	66	59	0.1	0.1	60	55	No	No	Yes	No	No	No	Yes
R0457	GF	SW	43	36	43	36	0	0	55	48	No	No	-	-	-	-	No
R0459	GF	W	43	35	43	35	0	0	55	47	No	No	-	-	-	-	No
R0460	GF	N	43	36	43	36	0	0	55	48	No	No	-	-	-	-	No
R0461	GF	W	42	35	42	35	0	0	54	47	No	No	-	-	-	-	No
R0462	GF	N	43	36	43	36	0	0	55	48	No	No	-	-	-	-	No
R0463	GF	E	43	35	43	35	0.1	0.1	55	47	No	No	-	-	-	-	No
R0464	GF	S	59	52	60	52	0.5	0.5	60	55	No	No	-	-	-	-	No
R0464	F 2	S	61	53	61	54	0.4	0.5	60	55	No	No	No	-	No	-	No
R0464	F 1	S	60	53	61	53	0.5	0.5	60	55	No	No	No	-	No	-	No
R0465	GF	N	44	36	44	36	0	0	56	48	No	No	-	-	-	-	No
R0466	GF	W	42	35	43	35	0.1	0	54	47	No	No	-	-	-	-	No
R0467	GF	SW	44	37	44	37	0.1	0	56	49	No	No	-	-	-	-	No
R0468	GF	S	43	36	43	36	0.1	0.1	55	48	No	No	-	-	-	-	No
R0470	GF	N	43	35	43	35	0.1	0	55	47	No	No	-	-	-	-	No
R0471	GF	E	43	35	43	35	0.1	0	55	47	No	No	-	-	-	-	No
R0471	F 1	E	46	38	46	38	0	0.1	58	50	No	No	-	-	-	-	No
R0472	GF	W	44	37	44	37	0	0	56	49	No	No	-	-	-	-	No
R0473	GF	E	41	34	41	34	0	0.1	53	46	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0473	F 1	E	44	37	44	37	0	0.1	56	49	No	No	-	-	-	-	No
R0474	GF	W	43	36	43	36	0	0.1	55	48	No	No	-	-	-	-	No
R0476	GF	S	48	40	48	41	0.4	0.4	60	55	No	No	-	-	-	-	No
R0476	F 1	S	49	42	50	42	0.5	0.5	60	55	No	No	-	-	-	-	No
R0477	GF	E	49	41	49	41	0.1	0.1	60	53	No	No	-	-	-	-	No
R0477	F 1	E	50	43	50	43	0.1	0.1	60	55	No	No	-	-	-	-	No
R0479	GF	SW	44	37	44	37	0	0	56	49	No	No	-	-	-	-	No
R0480	GF	W	43	35	43	35	0.1	0	55	47	No	No	-	-	-	-	No
R0482	GF	SW	43	36	43	36	0	0	55	48	No	No	-	-	-	-	No
R0483	GF	N	42	35	42	35	0	0	54	47	No	No	-	-	-	-	No
R0484	GF	E	41	33	41	33	0	0	53	45	No	No	-	-	-	-	No
R0486	GF	S	42	35	42	35	0.1	0.1	54	47	No	No	-	-	-	-	No
R0487	GF	NW	45	37	45	37	0	0	57	49	No	No	-	-	-	-	No
R0488	GF	W	44	37	44	37	0	0	56	49	No	No	-	-	-	-	No
R0489	GF	E	41	34	41	34	0.1	0.1	53	46	No	No	-	-	-	-	No
R0489	F 1	S	44	37	44	37	0	0.1	56	49	No	No	-	-	-	-	No
R0490	GF	E	47	40	47	40	0.1	0	59	52	No	No	-	-	-	-	No
R0491	GF	N	43	36	43	36	0	0	55	48	No	No	-	-	-	-	No
R0492	GF	E	47	40	47	40	0	0.1	59	52	No	No	-	-	-	-	No
R0493	GF	E	42	34	42	34	0	0.1	54	46	No	No	-	-	-	-	No
R0493	F 1	E	44	37	44	37	0.1	0.1	56	49	No	No	-	-	-	-	No
R0494	GF	S	45	37	45	37	0.1	0.1	57	49	No	No	-	-	-	-	No
R0496	GF	E	41	33	41	33	0.1	0.1	53	45	No	No	-	-	-	-	No
R0496	F 1	E	43	36	43	36	0.1	0.1	55	48	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0498	GF	E	49	41	49	41	0.1	0.1	60	53	No	No	-	-	-	-	No
R0499	GF	W	42	34	42	34	0	0	54	46	No	No	-	-	-	-	No
R0501	GF	N	40	33	40	33	0.1	0	52	45	No	No	-	-	-	-	No
R0502	GF	E	42	34	42	34	0	0	54	46	No	No	-	-	-	-	No
R0503	GF	E	48	41	48	41	0.1	0	60	53	No	No	-	-	-	-	No
R0503	F 1	E	50	42	50	42	0	0.1	60	54	No	No	-	-	-	-	No
R0505	GF	E	64	56	64	57	0.1	0.2	60	55	No	No	No	No	No	No	No
R0505	F 1	E	65	58	65	58	0.1	0.2	60	55	No	No	Yes	No	No	No	Yes
R0507	GF	E	48	40	48	40	0	0	60	52	No	No	-	-	-	-	No
R0508	GF	SW	41	34	41	34	0.1	0	53	46	No	No	-	-	-	-	No
R0509	GF	E	49	41	49	41	0.1	0.1	60	53	No	No	-	-	-	-	No
R0509	F 1	E	50	43	50	43	0.1	0.1	60	55	No	No	-	-	-	-	No
R0510	GF	E	49	42	49	42	-0.1	-0.1	60	54	No	No	-	-	-	-	No
R0511	GF	SW	43	35	43	35	0.1	0.1	55	47	No	No	-	-	-	-	No
R0512	GF	N	44	36	44	36	0.1	0.1	56	48	No	No	-	-	-	-	No
R0512	F 1	N	47	39	47	39	0	0	59	51	No	No	-	-	-	-	No
R0513	GF	S	47	40	47	40	0.1	0.1	59	52	No	No	-	-	-	-	No
R0516	GF	N	41	33	41	34	0.1	0.1	53	45	No	No	-	-	-	-	No
R0518	GF	E	41	34	41	34	0	0.1	53	46	No	No	-	-	-	-	No
R0520	GF	E	48	41	48	41	0.1	0.1	60	53	No	No	-	-	-	-	No
R0521	GF	E	49	41	49	41	-0.1	-0.1	60	53	No	No	-	-	-	-	No
R0522	GF	N	43	35	43	35	0	0	55	47	No	No	-	-	-	-	No
R0523	GF	W	43	35	43	35	0	0	55	47	No	No	-	-	-	-	No
R0524	GF	W	43	35	43	35	0	0	55	47	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0525	GF	N	48	40	48	40	0.1	0.1	60	52	No	No	-	-	-	-	No
R0526	GF	E	49	41	49	41	0.1	0.1	60	53	No	No	-	-	-	-	No
R0527	GF	N	48	40	47	40	-0.2	-0.2	60	52	No	No	-	-	-	-	No
R0528	GF	E	45	38	45	38	0.1	0.1	57	50	No	No	-	-	-	-	No
R0529	GF	N	43	36	43	36	0	0	55	48	No	No	-	-	-	-	No
R0530	GF	W	43	35	43	35	0	0	55	47	No	No	-	-	-	-	No
R0532	GF	NW	42	35	42	35	0	0.1	54	47	No	No	-	-	-	-	No
R0534	GF	S	53	46	53	46	0	0.1	60	55	No	No	-	-	-	-	No
R0535	GF	W	43	35	43	35	0	0	55	47	No	No	-	-	-	-	No
R0536	GF	SW	43	36	43	36	0.1	0	55	48	No	No	-	-	-	-	No
R0536	F 1	SW	45	37	45	37	0.1	0.1	57	49	No	No	-	-	-	-	No
R0538	GF	W	43	35	43	35	0	0	55	47	No	No	-	-	-	-	No
R0539	GF	S	42	34	42	34	0	0.1	54	46	No	No	-	-	-	-	No
R0540	GF	N	43	36	43	36	0.1	0.1	55	48	No	No	-	-	-	-	No
R0541	GF	W	42	35	43	35	0.1	0.1	54	47	No	No	-	-	-	-	No
R0542	GF	E	47	39	47	39	0	0.1	59	51	No	No	-	-	-	-	No
R0543	GF	S	43	35	43	35	0.1	0	55	47	No	No	-	-	-	-	No
R0544	GF	W	43	35	43	35	0	0	55	47	No	No	-	-	-	-	No
R0545	GF	N	47	40	46	39	-0.4	-0.3	59	52	No	No	-	-	-	-	No
R0545	F 1	E	48	40	48	40	0.2	0.2	60	52	No	No	-	-	-	-	No
R0546	GF	N	45	38	45	38	0	0	57	50	No	No	-	-	-	-	No
R0546	F 1	N	47	39	47	39	0	0	59	51	No	No	-	-	-	-	No
R0547	GF	W	43	35	43	35	0	0	55	47	No	No	-	-	-	-	No
R0548	GF	E	49	42	49	42	0.1	0	60	54	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0549	GF	W	43	35	43	35	0	0	55	47	No	No	-	-	-	-	No
R0552	GF	N	42	35	43	35	0.1	0.1	54	47	No	No	-	-	-	-	No
R0553	GF	W	43	35	43	35	0.1	0.1	55	47	No	No	-	-	-	-	No
R0555	GF	N	47	39	47	39	0	0	59	51	No	No	-	-	-	-	No
R0556	GF	S	49	41	49	42	0.1	0.1	60	53	No	No	-	-	-	-	No
R0557	GF	W	43	35	43	35	0	0	55	47	No	No	-	-	-	-	No
R0558	GF	S	53	46	53	46	0	0	60	55	No	No	-	-	-	-	No
R0559	GF	SW	42	35	42	35	0	0.1	54	47	No	No	-	-	-	-	No
R0560	GF	W	43	35	43	35	0	0	55	47	No	No	-	-	-	-	No
R0561	GF	W	43	35	43	35	0.1	0.1	55	47	No	No	-	-	-	-	No
R0562	GF	E	47	39	47	39	0.1	0	59	51	No	No	-	-	-	-	No
R0563	GF	E	48	41	48	41	0.1	0.1	60	53	No	No	-	-	-	-	No
R0564	GF	E	63	56	63	56	-0.7	-0.5	60	55	No	No	No	No	No	No	No
R0564	F 1	E	66	59	66	59	-0.4	-0.2	60	55	No	No	Yes	No	Yes	No	Yes
R0565	GF	E	46	39	46	39	0.1	0.1	58	51	No	No	-	-	-	-	No
R0566	GF	E	46	38	46	38	0	0	58	50	No	No	-	-	-	-	No
R0566	F 1	E	49	42	49	42	0.1	0	60	54	No	No	-	-	-	-	No
R0568	GF	E	42	35	42	35	0	0.1	54	47	No	No	-	-	-	-	No
R0569	GF	W	42	34	42	35	0.1	0.1	54	46	No	No	-	-	-	-	No
R0570	GF	E	48	41	48	41	0	0	60	53	No	No	-	-	-	-	No
R0571	GF	E	44	36	44	36	0	0.1	56	48	No	No	-	-	-	-	No
R0572	GF	E	45	38	45	38	0.1	0	57	50	No	No	-	-	-	-	No
R0573	GF	E	48	40	48	40	0	0.1	60	52	No	No	-	-	-	-	No
R0573	F 1	E	50	43	50	43	0.1	0.1	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0575	GF	E	48	41	48	41	0.1	0.1	60	53	No	No	-	-	-	-	No
R0576	GF	W	45	38	45	38	0.2	0.2	57	50	No	No	-	-	-	-	No
R0576	F 1	W	48	41	48	41	0.2	0.2	60	53	No	No	-	-	-	-	No
R0578	GF	SW	42	34	42	35	0.1	0.1	54	46	No	No	-	-	-	-	No
R0579	GF	W	44	36	44	36	0.1	0	56	48	No	No	-	-	-	-	No
R0579	F 1	W	46	39	47	39	0.1	0.1	58	51	No	No	-	-	-	-	No
R0580	GF	E	49	41	49	41	0.1	0	60	53	No	No	-	-	-	-	No
R0580	F 1	E	50	42	50	42	0.1	0	60	54	No	No	-	-	-	-	No
R0581	GF	E	45	38	46	38	0.1	0	57	50	No	No	-	-	-	-	No
R0582	GF	E	68	61	68	60	-0.7	-0.6	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R0582	F 1	E	69	62	68	61	-0.6	-0.5	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R0583	GF	E	49	42	49	42	0	0.1	60	54	No	No	-	-	-	-	No
R0583	F 1	E	50	43	51	43	0.1	0.1	60	55	No	No	-	-	-	-	No
R0584	GF	E	49	41	49	41	0	0	60	53	No	No	-	-	-	-	No
R0585	GF	N	47	39	47	39	0	0	59	51	No	No	-	-	-	-	No
R0586	GF	E	67	60	68	60	0.1	0.1	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R0586	F 2	E	68	61	69	61	0.1	0.1	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R0586	F 1	E	68	61	68	61	0.1	0.1	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R0588	GF	E	50	42	50	42	0	0	60	54	No	No	-	-	-	-	No
R0589	GF	SW	42	35	42	35	0	0	54	47	No	No	-	-	-	-	No
R0590	GF	S	43	35	43	35	0	0	55	47	No	No	-	-	-	-	No
R0591	GF	E	51	43	50	43	-0.1	-0.1	60	55	No	No	-	-	-	-	No
R0591	F 1	E	51	43	51	44	0.1	0.1	60	55	No	No	-	-	-	-	No
R0592	GF	S	42	35	42	35	0.1	0	54	47	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0592	F 1	S	45	37	45	37	0.1	0.1	57	49	No	No	-	-	-	-	No
R0593	GF	E	51	43	51	43	0.1	0.2	60	55	No	No	-	-	-	-	No
R0594	GF	S	50	42	49	42	-0.2	-0.2	60	54	No	No	-	-	-	-	No
R0595	GF	E	49	41	49	41	0.1	0	60	53	No	No	-	-	-	-	No
R0596	GF	E	51	44	51	44	0.2	0.2	60	55	No	No	-	-	-	-	No
R0597	GF	E	51	44	51	44	0.1	0.1	60	55	No	No	-	-	-	-	No
R0598	GF	E	51	43	51	43	0.2	0.1	60	55	No	No	-	-	-	-	No
R0599	GF	S	46	38	46	38	0	0.1	58	50	No	No	-	-	-	-	No
R0600	GF	E	47	39	47	39	0	0	59	51	No	No	-	-	-	-	No
R0601	GF	S	42	34	42	34	0.1	0.1	54	46	No	No	-	-	-	-	No
R0602	GF	W	42	34	42	34	0	0	54	46	No	No	-	-	-	-	No
R0603	GF	S	44	36	44	36	0	0	56	48	No	No	-	-	-	-	No
R0603	F 1	W	46	39	46	39	0	0	58	51	No	No	-	-	-	-	No
R0604	GF	S	54	46	54	46	0	-0.1	60	55	No	No	-	-	-	-	No
R0604	F 1	E	55	48	55	48	0	0	60	55	No	No	-	-	-	-	No
R0605	GF	N	46	38	46	38	0	0	58	50	No	No	-	-	-	-	No
R0605	F 1	E	52	44	52	44	0.1	0.1	60	55	No	No	-	-	-	-	No
R0606	GF	SW	42	34	42	34	0	0	54	46	No	No	-	-	-	-	No
R0607	GF	E	48	41	48	41	0.1	0.1	60	53	No	No	-	-	-	-	No
R0608	GF	S	50	43	51	43	0.1	0.1	60	55	No	No	-	-	-	-	No
R0609	GF	NW	63	55	63	55	0	0.1	60	55	No	No	-	-	No	-	No
R0609	F 1	NW	64	57	64	57	0.1	0.1	60	55	No	No	-	-	No	No	No
R0610	GF	N	46	38	46	38	0	0	58	50	No	No	-	-	-	-	No
R0611	GF	E	49	41	49	42	0.1	0.1	60	53	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0615	GF	E	51	44	51	44	0	0.1	60	55	No	No	-	-	-	-	No
R0617	GF	E	51	43	51	43	0.1	0.1	60	55	No	No	-	-	-	-	No
R0618	GF	N	48	40	48	40	0.1	0.1	60	52	No	No	-	-	-	-	No
R0620	GF	S	47	39	47	40	0.1	0.1	59	51	No	No	-	-	-	-	No
R0621	GF	S	49	41	49	41	0.1	0.1	60	53	No	No	-	-	-	-	No
R0622	GF	E	48	41	48	41	0.1	0.1	60	53	No	No	-	-	-	-	No
R0623	GF	E	51	43	51	43	0.1	0.1	60	55	No	No	-	-	-	-	No
R0624	GF	S	43	35	43	35	0.1	0.1	55	47	No	No	-	-	-	-	No
R0624	F 1	N	46	38	46	38	0	0	58	50	No	No	-	-	-	-	No
R0626	GF	E	50	42	50	42	0	0	60	54	No	No	-	-	-	-	No
R0627	GF	E	52	44	52	44	0.1	0	60	55	No	No	-	-	-	-	No
R0628	GF	E	49	41	49	41	0	0	60	53	No	No	-	-	-	-	No
R0629	GF	E	51	43	51	43	0	0	60	55	No	No	-	-	-	-	No
R0630	GF	S	55	47	55	47	0	0	60	55	No	No	-	-	-	-	No
R0630	F 1	S	56	48	56	48	0	0	60	55	No	No	-	-	-	-	No
R0631	GF	E	49	42	49	42	0.1	0.1	60	54	No	No	-	-	-	-	No
R0631	F 1	E	51	43	51	43	0.1	0.1	60	55	No	No	-	-	-	-	No
R0632	GF	N	48	40	48	40	0	0	60	52	No	No	-	-	-	-	No
R0633	GF	E	48	40	48	40	0	0	60	52	No	No	-	-	-	-	No
R0634	GF	E	52	44	52	44	0	0	60	55	No	No	-	-	-	-	No
R0635	GF	S	51	43	51	43	0.1	0	60	55	No	No	-	-	-	-	No
R0636	GF	N	46	39	46	39	0.1	0	58	51	No	No	-	-	-	-	No
R0638	GF	E	51	43	51	43	0	0	60	55	No	No	-	-	-	-	No
R0638	F 1	E	52	44	52	44	0	0.1	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0639	GF	NW	61	54	61	54	0.1	0.1	60	55	No	No	-	-	No	-	No
R0639	F 2	NW	64	56	64	56	0.1	0.1	60	55	No	No	-	-	No	No	No
R0639	F 1	NW	63	55	63	56	0.2	0.1	60	55	No	No	-	-	No	No	No
R0643	GF	NW	71	64	72	64	0.5	0.6	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R0643	F 2	NW	71	64	71	64	0.4	0.4	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R0643	F 1	NW	71	64	72	64	0.5	0.5	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R0644	GF	E	49	41	49	41	0.1	0.1	60	53	No	No	-	-	-	-	No
R0645	GF	N	48	41	49	41	0.1	0	60	53	No	No	-	-	-	-	No
R0646	GF	E	50	42	50	42	0.1	0	60	54	No	No	-	-	-	-	No
R0647	GF	S	51	43	51	43	0.1	0.1	60	55	No	No	-	-	-	-	No
R0648	GF	E	51	43	51	43	0.1	0	60	55	No	No	-	-	-	-	No
R0649	GF	E	49	41	49	41	0	0	60	53	No	No	-	-	-	-	No
R0651	GF	E	52	44	52	44	0.1	0.1	60	55	No	No	-	-	-	-	No
R0653	GF	S	51	43	51	43	0.1	0.1	60	55	No	No	-	-	-	-	No
R0653	F 1	E	53	45	53	45	0.1	0.1	60	55	No	No	-	-	-	-	No
R0654	GF	E	51	43	51	43	0.1	0	60	55	No	No	-	-	-	-	No
R0655	GF	N	50	42	50	42	0	0	60	54	No	No	-	-	-	-	No
R0656	GF	E	52	44	52	44	0	0	60	55	No	No	-	-	-	-	No
R0658	GF	S	51	44	51	44	0	0.1	60	55	No	No	-	-	-	-	No
R0658	F 1	E	53	45	53	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R0659	GF	E	52	44	52	44	0.1	0.1	60	55	No	No	-	-	-	-	No
R0664	GF	N	50	43	51	43	0.1	0.1	60	55	No	No	-	-	-	-	No
R0664	F 1	N	52	44	52	44	0.1	0.1	60	55	No	No	-	-	-	-	No
R0665	GF	E	49	42	49	42	0	0	60	54	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0666	GF	S	52	44	52	44	0.1	0.1	60	55	No	No	-	-	-	-	No
R0667	GF	S	54	46	54	46	-0.1	0	60	55	No	No	-	-	-	-	No
R0667	F 1	S	56	49	56	49	0	0	60	55	No	No	-	-	-	-	No
R0668	GF	N	47	39	47	39	0	0	59	51	No	No	-	-	-	-	No
R0669	GF	E	53	45	53	45	0.1	0	60	55	No	No	-	-	-	-	No
R0669	F 1	E	54	46	54	46	0	0.1	60	55	No	No	-	-	-	-	No
R0670	GF	E	52	44	52	44	0	0.1	60	55	No	No	-	-	-	-	No
R0671	GF	E	53	45	53	45	0.1	0.1	60	55	No	No	-	-	-	-	No
R0672	GF	E	53	45	53	45	0	0.1	60	55	No	No	-	-	-	-	No
R0673	GF	N	50	42	50	42	0	0	60	54	No	No	-	-	-	-	No
R0674	GF	N	49	41	49	41	0	0.1	60	53	No	No	-	-	-	-	No
R0675	GF	E	53	45	53	45	0.1	0.1	60	55	No	No	-	-	-	-	No
R0675	F 1	E	54	46	54	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R0676	GF	E	53	45	53	45	0.1	0	60	55	No	No	-	-	-	-	No
R0677	GF	E	52	44	52	44	0	0.1	60	55	No	No	-	-	-	-	No
R0678	GF	S	55	47	55	47	0.1	0	60	55	No	No	-	-	-	-	No
R0678	F 1	S	57	49	57	49	0	0.1	60	55	No	No	-	-	-	-	No
R0679	GF	E	52	44	52	44	0.1	0	60	55	No	No	-	-	-	-	No
R0680	GF	N	46	39	46	39	0	0.1	58	51	No	No	-	-	-	-	No
R0681	GF	E	51	43	51	43	0	0	60	55	No	No	-	-	-	-	No
R0682	GF	E	51	43	51	43	0	0.1	60	55	No	No	-	-	-	-	No
R0683	GF	S	50	42	50	42	0.1	0	60	54	No	No	-	-	-	-	No
R0683	F 1	S	52	44	52	44	0	0.1	60	55	No	No	-	-	-	-	No
R0684	GF	E	52	44	52	44	0.1	0	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0685	GF	E	48	40	48	40	0	0	60	52	No	No	-	-	-	-	No
R0687	GF	S	49	41	49	41	0.1	0.1	60	53	No	No	-	-	-	-	No
R0688	GF	E	51	43	51	43	0	0	60	55	No	No	-	-	-	-	No
R0689	GF	S	58	50	57	50	-0.1	-0.1	60	55	No	No	-	-	-	-	No
R0690	GF	E	51	44	52	44	0.1	0.1	60	55	No	No	-	-	-	-	No
R0691	GF	N	51	43	51	43	0	0	60	55	No	No	-	-	-	-	No
R0693	GF	E	51	43	51	43	0	0	60	55	No	No	-	-	-	-	No
R0694	GF	E	54	46	54	46	0	0.1	60	55	No	No	-	-	-	-	No
R0695	GF	E	54	46	54	46	0.1	0	60	55	No	No	-	-	-	-	No
R0696	GF	E	51	43	51	43	0	0.1	60	55	No	No	-	-	-	-	No
R0698	GF	S	49	42	50	42	0.1	0.1	60	54	No	No	-	-	-	-	No
R0699	GF	E	53	45	53	45	0.1	0	60	55	No	No	-	-	-	-	No
R0700	GF	E	55	46	55	46	0	0	60	55	No	No	-	-	-	-	No
R0701	GF	E	52	44	52	44	0.1	0	60	55	No	No	-	-	-	-	No
R0704	GF	N	53	45	53	45	0.1	0	60	55	No	No	-	-	-	-	No
R0705	GF	E	51	43	51	43	0	0	60	55	No	No	-	-	-	-	No
R0706	GF	S	58	50	58	50	-0.2	-0.2	60	55	No	No	-	-	-	-	No
R0709	GF	S	53	45	53	45	0	0.1	60	55	No	No	-	-	-	-	No
R0709	F 1	E	56	48	56	48	0.1	0.1	60	55	No	No	-	-	-	-	No
R0710	GF	S	51	43	51	43	0	0	60	55	No	No	-	-	-	-	No
R0711	GF	S	53	45	53	45	0.1	0	60	55	No	No	-	-	-	-	No
R0711	F 1	E	56	48	56	48	0	0	60	55	No	No	-	-	-	-	No
R0712	GF	E	54	46	54	46	0	0	60	55	No	No	-	-	-	-	No
R0713	GF	E	56	48	56	48	0.1	0	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0714	GF	E	54	46	54	46	0	0	60	55	No	No	-	-	-	-	No
R0716	GF	E	57	49	57	49	0	0	60	55	No	No	-	-	-	-	No
R0716	F 1	E	57	49	57	49	0.1	0	60	55	No	No	-	-	-	-	No
R0717	GF	S	59	52	59	51	-0.1	-0.1	60	55	No	No	-	-	-	-	No
R0718	GF	E	55	47	55	47	0	0	60	55	No	No	-	-	-	-	No
R0718	F 1	E	56	48	56	48	0	0.1	60	55	No	No	-	-	-	-	No
R0719	GF	E	56	48	56	48	0.1	0	60	55	No	No	-	-	-	-	No
R0719	F 1	E	56	48	56	48	0.1	0.1	60	55	No	No	-	-	-	-	No
R0720	GF	N	52	44	52	44	0.1	0	60	55	No	No	-	-	-	-	No
R0721	GF	E	54	46	54	46	0	0.1	60	55	No	No	-	-	-	-	No
R0722	GF	E	63	55	63	55	-0.1	0	60	55	No	No	-	-	No	-	No
R0723	GF	E	56	48	56	48	0	0	60	55	No	No	-	-	-	-	No
R0723	F 1	E	56	48	56	48	0.1	0	60	55	No	No	-	-	-	-	No
R0724	GF	N	52	44	52	44	0.1	0	60	55	No	No	-	-	-	-	No
R0725	GF	N	56	48	56	48	0.1	0.1	60	55	No	No	-	-	-	-	No
R0726	GF	E	56	47	56	47	0.1	0	60	55	No	No	-	-	-	-	No
R0726	F 1	E	57	49	57	49	0	0.1	60	55	No	No	-	-	-	-	No
R0727	GF	N	54	46	54	46	0	0.1	60	55	No	No	-	-	-	-	No
R0728	GF	E	56	47	56	48	0.1	0.1	60	55	No	No	-	-	-	-	No
R0729	GF	E	63	55	63	55	0	0	60	55	No	No	-	-	No	-	No
R0729	F 1	E	64	56	64	56	0	0	60	55	No	No	-	-	No	No	No
R0730	GF	E	66	57	66	57	0	0.1	60	55	No	No	-	-	No	No	No
R0730	F 1	E	66	58	66	58	0	0	60	55	No	No	-	-	No	No	No
R0731	GF	E	55	47	55	47	0	0.1	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0732	GF	E	55	47	55	47	0.1	0	60	55	No	No	-	-	-	-	No
R0734	GF	E	55	47	55	47	0	0.1	60	55	No	No	-	-	-	-	No
R0736	GF	E	50	42	50	43	0	0.1	60	54	No	No	-	-	-	-	No
R0737	GF	E	63	55	63	55	0	0	60	55	No	No	-	-	No	-	No
R0737	F 1	E	64	56	64	56	0.1	0	60	55	No	No	-	-	No	No	No
R0739	GF	N	55	47	55	47	0	0	60	55	No	No	-	-	-	-	No
R0740	GF	E	56	48	56	48	0	0	60	55	No	No	-	-	-	-	No
R0742	GF	E	64	56	64	56	0	0.1	60	55	No	No	-	-	No	No	No
R0743	GF	E	64	55	64	55	0	0	60	55	No	No	-	-	No	-	No
R0744	GF	E	63	55	63	55	0	0	60	55	No	No	-	-	No	-	No
R0745	GF	E	63	55	63	55	0	0	60	55	No	No	-	-	No	-	No
R0747	GF	S	55	46	55	46	0	0	60	55	No	No	-	-	-	-	No
R0748	GF	E	57	49	57	49	0.1	0	60	55	No	No	-	-	-	-	No
R0749	GF	E	63	55	63	55	0	0	60	55	No	No	-	-	No	-	No
R0749	F 1	E	63	55	63	55	0	0.1	60	55	No	No	-	-	No	-	No
R0751	GF	E	63	55	63	55	0.1	0	60	55	No	No	-	-	No	-	No
R0753	GF	E	60	52	60	52	0	0	60	55	No	No	-	-	-	-	No
R0755	GF	E	59	51	59	51	0	0	60	55	No	No	-	-	-	-	No
R0756	GF	E	63	55	63	55	0	0	60	55	No	No	-	-	No	-	No
R0757	GF	E	63	55	63	55	0	0	60	55	No	No	-	-	No	-	No
R0757	F 1	E	64	56	64	56	0	0.1	60	55	No	No	-	-	No	No	No
R0758	GF	E	64	55	64	55	0	0	60	55	No	No	-	-	No	-	No
R0759	GF	E	63	55	63	55	0.1	0.1	60	55	No	No	-	-	No	-	No
R0760	GF	W	64	56	64	56	0.1	0	60	55	No	No	-	-	No	No	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0761	GF	W	65	56	65	56	0.1	0.1	60	55	No	No	-	-	No	No	No
R0762	GF	W	64	55	64	55	0	0.1	60	55	No	No	-	-	No	-	No
R0763	GF	W	65	56	65	56	0.1	0	60	55	No	No	-	-	No	No	No
R0763	F 1	W	65	57	65	57	0.1	0.1	60	55	No	No	-	-	No	No	No
R0764	GF	W	65	57	65	57	0.1	0.1	60	55	No	No	-	-	No	No	No
R0765	GF	S	60	52	60	52	0	0.1	60	55	No	No	-	-	-	-	No
R0766	GF	W	65	57	65	57	0.1	0	60	55	No	No	-	-	No	No	No
R0767	GF	E	63	55	63	55	0.1	0.1	60	55	No	No	-	-	No	-	No
R0768	GF	E	61	53	61	53	0	0	60	55	No	No	-	-	No	-	No
R0769	GF	W	65	57	65	57	0	0	60	55	No	No	-	-	No	No	No
R0770	GF	W	65	57	65	57	0.1	0	60	55	No	No	-	-	No	No	No
R0771	GF	E	62	54	62	54	0	0	60	55	No	No	-	-	No	-	No
R0772	GF	E	63	54	63	55	0.1	0.1	60	55	No	No	-	-	No	-	No
R0772	F 1	E	63	55	63	55	0	0	60	55	No	No	-	-	No	-	No
R0773	GF	W	65	57	65	57	0.1	0.1	60	55	No	No	-	-	No	No	No
R0774	GF	E	62	53	62	53	0.1	0	60	55	No	No	-	-	No	-	No
R0775	GF	W	63	55	63	55	0	0.1	60	55	No	No	-	-	No	-	No
R0776	GF	W	65	57	65	57	0.1	0.1	60	55	No	No	-	-	No	No	No
R0777	GF	W	65	57	65	57	0	0	60	55	No	No	-	-	No	No	No
R0778	GF	E	63	55	63	55	0	0	60	55	No	No	-	-	No	-	No
R0779	GF	E	63	55	63	55	0.1	0.1	60	55	No	No	-	-	No	-	No
R0779	F 1	E	64	55	64	55	0	0	60	55	No	No	-	-	No	-	No
R0780	GF	E	63	55	63	55	0	0.1	60	55	No	No	-	-	No	-	No
R0781	GF	E	63	55	63	55	0	0	60	55	No	No	-	-	No	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0782	GF	S	58	51	58	51	0	0	60	55	No	No	-	-	-	-	No
R0782	F 1	S	59	52	59	52	0	0	60	55	No	No	-	-	-	-	No
R0784	GF	W	64	56	65	56	0.1	0.1	60	55	No	No	-	-	No	No	No
R0785	GF	E	61	53	61	53	0	0	60	55	No	No	-	-	No	-	No
R0786	GF	W	65	56	65	56	0	0.1	60	55	No	No	-	-	No	No	No
R0787	GF	E	63	55	63	55	0	0	60	55	No	No	-	-	No	-	No
R0788	GF	W	65	56	65	57	0.1	0.1	60	55	No	No	-	-	No	No	No
R0789	GF	W	65	57	65	57	0	0	60	55	No	No	-	-	No	No	No
R0789	F 1	W	65	57	65	57	0.1	0.1	60	55	No	No	-	-	No	No	No
R0790	GF	E	63	55	63	55	0.1	0	60	55	No	No	-	-	No	-	No
R0793	GF	N	53	45	53	45	0.1	0	60	55	No	No	-	-	-	-	No
R0794	GF	W	64	56	64	56	0	0	60	55	No	No	-	-	No	No	No
R0794	F 1	W	65	57	65	57	0.1	0.1	60	55	No	No	-	-	No	No	No
R0796	GF	S	56	48	56	48	0.1	0	60	55	No	No	-	-	-	-	No
R0797	GF	E	63	54	63	55	0	0.1	60	55	No	No	-	-	No	-	No
R0798	GF	S	54	46	54	46	0.2	0.2	60	55	No	No	-	-	-	-	No
R0799	GF	W	64	55	64	56	0.1	0.1	60	55	No	No	-	-	No	No	No
R0801	GF	S	58	51	58	51	0	0	60	55	No	No	-	-	-	-	No
R0801	F 1	S	59	52	59	52	0	0	60	55	No	No	-	-	-	-	No
R0802	GF	W	63	55	63	55	0.1	0.1	60	55	No	No	-	-	No	-	No
R0802	F 1	W	64	55	64	56	0.1	0.1	60	55	No	No	-	-	No	No	No
R0803	GF	E	54	47	54	47	0.1	0.2	60	55	No	No	-	-	-	-	No
R0804	GF	W	61	53	61	53	0	0	60	55	No	No	-	-	No	-	No
R0805	GF	W	55	47	55	47	0	0	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0806	GF	W	63	55	63	55	0	0	60	55	No	No	-	-	No	-	No
R0807	GF	W	52	43	52	43	0	0	60	55	No	No	-	-	-	-	No
R0808	GF	N	55	46	55	46	0	0	60	55	No	No	-	-	-	-	No
R0809	GF	S	52	45	52	45	0.3	0.2	60	55	No	No	-	-	-	-	No
R0810	GF	W	57	49	57	49	0	0	60	55	No	No	-	-	-	-	No
R0811	GF	W	61	53	61	53	0	0	60	55	No	No	-	-	No	-	No
R0812	GF	W	63	55	63	55	0	0	60	55	No	No	-	-	No	-	No
R0813	GF	W	61	53	61	53	0	0	60	55	No	No	-	-	No	-	No
R0814	GF	W	62	54	62	54	0.1	0	60	55	No	No	-	-	No	-	No
R0815	GF	W	58	49	58	49	0	0	60	55	No	No	-	-	-	-	No
R0815	F 1	W	59	51	59	51	0	0	60	55	No	No	-	-	-	-	No
R0816	GF	S	59	51	59	51	-0.1	-0.1	60	55	No	No	-	-	-	-	No
R0817	GF	N	50	43	50	43	-0.1	-0.1	60	55	No	No	-	-	-	-	No
R0818	GF	S	51	44	51	44	0.1	0.1	60	55	No	No	-	-	-	-	No
R0819	GF	W	63	55	63	55	0	0	60	55	No	No	-	-	No	-	No
R0820	GF	W	63	55	63	55	0	0.1	60	55	No	No	-	-	No	-	No
R0821	GF	E	50	43	50	43	0.1	0.1	60	55	No	No	-	-	-	-	No
R0822	GF	W	63	55	63	55	0	0	60	55	No	No	-	-	No	-	No
R0823	GF	W	58	50	59	50	0.1	0	60	55	No	No	-	-	-	-	No
R0824	GF	N	53	44	53	44	0	0.1	60	55	No	No	-	-	-	-	No
R0825	GF	E	52	45	52	45	0.2	0.2	60	55	No	No	-	-	-	-	No
R0826	GF	W	63	54	63	55	0.1	0.1	60	55	No	No	-	-	No	-	No
R0827	GF	W	63	54	63	54	0	0	60	55	No	No	-	-	No	-	No
R0828	GF	W	63	55	63	55	0	0	60	55	No	No	-	-	No	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0829	GF	N	53	45	52	45	-0.1	-0.2	60	55	No	No	-	-	-	-	No
R0830	GF	W	58	50	58	50	0	0	60	55	No	No	-	-	-	-	No
R0831	GF	S	52	44	52	44	0.2	0.1	60	55	No	No	-	-	-	-	No
R0831	F 1	S	57	49	57	49	0.1	0.1	60	55	No	No	-	-	-	-	No
R0832	GF	W	63	54	63	54	0	0	60	55	No	No	-	-	No	-	No
R0832	F 1	W	63	55	63	55	0.1	0.1	60	55	No	No	-	-	No	-	No
R0833	GF	W	62	54	62	54	0.1	0.1	60	55	No	No	-	-	No	-	No
R0833	F 1	W	63	55	63	55	0	0	60	55	No	No	-	-	No	-	No
R0834	GF	W	63	54	63	54	0.1	0.1	60	55	No	No	-	-	No	-	No
R0835	GF	SE	59	52	59	52	0	0	60	55	No	No	-	-	-	-	No
R0836	GF	N	55	47	55	46	0	-0.1	60	55	No	No	-	-	-	-	No
R0837	GF	S	60	52	60	52	0	0	60	55	No	No	-	-	-	-	No
R0838	GF	E	58	50	58	50	0.1	0.1	60	55	No	No	-	-	-	-	No
R0839	GF	W	62	53	62	53	0	0	60	55	No	No	-	-	No	-	No
R0840	GF	S	50	43	51	43	0.2	0.1	60	55	No	No	-	-	-	-	No
R0841	GF	E	56	49	56	49	0.1	0.2	60	55	No	No	-	-	-	-	No
R0844	GF	W	59	51	59	51	0	0	60	55	No	No	-	-	-	-	No
R0845	GF	E	55	48	56	48	0.2	0.2	60	55	No	No	-	-	-	-	No
R0846	GF	E	55	48	56	48	0.1	0.1	60	55	No	No	-	-	-	-	No
R0848	GF	N	52	44	52	44	0.1	0	60	55	No	No	-	-	-	-	No
R0849	GF	E	53	46	53	46	0.2	0.2	60	55	No	No	-	-	-	-	No
R0850	GF	W	54	46	54	46	0	0	60	55	No	No	-	-	-	-	No
R0851	GF	E	55	47	55	47	0.2	0.2	60	55	No	No	-	-	-	-	No
R0852	GF	E	54	46	54	46	0.2	0.2	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0853	GF	W	55	46	55	46	0	0	60	55	No	No	-	-	-	-	No
R0854	GF	W	54	46	54	46	0	0	60	55	No	No	-	-	-	-	No
R0855	GF	W	55	47	55	47	0	0	60	55	No	No	-	-	-	-	No
R0856	GF	E	53	46	53	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R0857	GF	W	55	47	55	47	0	0.1	60	55	No	No	-	-	-	-	No
R0858	GF	S	53	45	53	45	0	0	60	55	No	No	-	-	-	-	No
R0859	GF	W	56	48	56	48	0	0	60	55	No	No	-	-	-	-	No
R0860	GF	E	52	44	52	44	0.1	0.1	60	55	No	No	-	-	-	-	No
R0860	F 1	E	54	47	55	47	0.1	0.1	60	55	No	No	-	-	-	-	No
R0861	GF	W	55	47	55	47	0	0	60	55	No	No	-	-	-	-	No
R0862	GF	W	55	47	55	47	0	0	60	55	No	No	-	-	-	-	No
R0863	GF	N	53	45	53	45	0	0	60	55	No	No	-	-	-	-	No
R0864	GF	W	55	47	55	47	0	0	60	55	No	No	-	-	-	-	No
R0865	GF	W	56	47	56	47	0	0	60	55	No	No	-	-	-	-	No
R0866	GF	S	51	44	52	44	0.3	0.3	60	55	No	No	-	-	-	-	No
R0867	GF	W	56	47	56	47	0.1	0.1	60	55	No	No	-	-	-	-	No
R0869	GF	W	56	48	56	48	0	0	60	55	No	No	-	-	-	-	No
R0871	GF	W	55	47	55	47	0	0	60	55	No	No	-	-	-	-	No
R0872	GF	W	55	47	55	47	0	0	60	55	No	No	-	-	-	-	No
R0873	GF	SE	59	51	59	51	0.1	0.1	60	55	No	No	-	-	-	-	No
R0874	GF	E	58	50	58	50	0.1	0.1	60	55	No	No	-	-	-	-	No
R0875	GF	W	55	47	55	47	0	0	60	55	No	No	-	-	-	-	No
R0876	GF	W	55	47	55	47	0	0	60	55	No	No	-	-	-	-	No
R0877	GF	W	55	46	55	46	0	0.1	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0878	GF	E	55	48	55	48	0	0.1	60	55	No	No	-	-	-	-	No
R0880	GF	W	54	46	54	46	0	0	60	55	No	No	-	-	-	-	No
R0881	GF	W	54	46	54	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R0882	GF	S	54	46	54	46	0	0.1	60	55	No	No	-	-	-	-	No
R0883	GF	S	55	47	55	47	0.1	0.2	60	55	No	No	-	-	-	-	No
R0885	GF	E	52	45	52	45	0.1	0.1	60	55	No	No	-	-	-	-	No
R0886	GF	N	52	45	52	45	-0.1	0	60	55	No	No	-	-	-	-	No
R0888	GF	W	53	45	53	45	0.1	0	60	55	No	No	-	-	-	-	No
R0889	GF	S	51	44	52	44	0.2	0.1	60	55	No	No	-	-	-	-	No
R0891	GF	S	51	43	51	43	0.1	0.1	60	55	No	No	-	-	-	-	No
R0892	GF	N	52	45	52	45	0	0	60	55	No	No	-	-	-	-	No
R0893	GF	S	58	51	59	51	0.1	0.1	60	55	No	No	-	-	-	-	No
R0894	GF	S	50	42	50	43	0.1	0.1	60	54	No	No	-	-	-	-	No
R0895	GF	S	55	48	55	48	0.1	0.1	60	55	No	No	-	-	-	-	No
R0896	GF	S	52	44	52	44	0.2	0.1	60	55	No	No	-	-	-	-	No
R0897	GF	E	53	46	53	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R0898	GF	N	52	45	52	45	0.1	0.1	60	55	No	No	-	-	-	-	No
R0899	GF	W	52	44	52	44	0	0	60	1000	No	No	-	-	-	-	No
R0901	GF	S	56	49	57	49	0.2	0.2	60	55	No	No	-	-	-	-	No
R0902	GF	S	52	44	52	45	0.1	0.2	60	55	No	No	-	-	-	-	No
R0903	GF	W	51	43	51	43	0	0.1	60	1000	No	No	-	-	-	-	No
R0904	GF	S	51	44	51	44	0.1	0.1	60	1000	No	No	-	-	-	-	No
R0905	GF	N	52	45	52	45	0.1	0.1	60	55	No	No	-	-	-	-	No
R0906	GF	N	52	44	52	44	-0.3	-0.2	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0907	GF	S	52	45	52	45	0.2	0.1	60	55	No	No	-	-	-	-	No
R0908	GF	S	52	45	52	45	0.2	0.2	60	1000	No	No	-	-	-	-	No
R0909	GF	E	57	50	58	50	0.1	0.1	60	55	No	No	-	-	-	-	No
R0910	GF	S	51	43	51	43	0	0.1	60	55	No	No	-	-	-	-	No
R0911	GF	S	53	45	53	46	0.1	0.2	60	55	No	No	-	-	-	-	No
R0912	GF	W	49	41	49	41	0	0.1	60	53	No	No	-	-	-	-	No
R0912	F 1	S	51	43	51	44	0.1	0.1	60	55	No	No	-	-	-	-	No
R0913	GF	N	52	45	52	44	-0.2	-0.2	60	55	No	No	-	-	-	-	No
R0914	GF	E	46	39	46	39	0.1	0.1	58	51	No	No	-	-	-	-	No
R0917	GF	S	53	45	53	45	0.2	0.2	60	55	No	No	-	-	-	-	No
R0919	GF	S	49	41	49	42	0	0.1	60	53	No	No	-	-	-	-	No
R0920	GF	E	53	46	53	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R0922	GF	SE	58	51	58	51	0	0.1	60	55	No	No	-	-	-	-	No
R0923	GF	S	49	42	49	42	0	0	60	54	No	No	-	-	-	-	No
R0926	GF	S	53	46	53	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R0926	F 1	E	56	49	56	49	0.2	0.1	60	55	No	No	-	-	-	-	No
R0927	GF	S	50	42	50	42	0	0.1	60	54	No	No	-	-	-	-	No
R0928	GF	S	58	50	58	51	0.2	0.1	60	55	No	No	-	-	-	-	No
R0928	F 1	S	58	51	59	51	0.1	0.1	60	55	No	No	-	-	-	-	No
R0929	GF	S	52	45	52	45	0.1	0.1	60	55	No	No	-	-	-	-	No
R0930	GF	S	48	40	48	40	0.1	0.1	60	52	No	No	-	-	-	-	No
R0930	F 1	S	51	43	51	43	0.1	0.1	60	55	No	No	-	-	-	-	No
R0932	GF	S	49	41	49	41	0.1	0.1	60	53	No	No	-	-	-	-	No
R0933	GF	S	54	47	54	47	0.2	0.1	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0935	GF	E	47	40	47	40	0.1	0.1	59	52	No	No	-	-	-	-	No
R0936	GF	S	48	40	48	40	0.1	0.1	60	52	No	No	-	-	-	-	No
R0937	GF	S	49	42	49	42	0.1	0	60	54	No	No	-	-	-	-	No
R0939	GF	S	53	46	53	46	0.2	0.2	60	55	No	No	-	-	-	-	No
R0940	GF	S	55	48	55	48	0.2	0.1	60	55	No	No	-	-	-	-	No
R0945	GF	S	54	47	55	47	0.2	0.2	60	55	No	No	-	-	-	-	No
R0946	GF	E	57	50	58	50	0.2	0.2	60	55	No	No	-	-	-	-	No
R0947	GF	S	49	42	49	42	0	0.1	60	54	No	No	-	-	-	-	No
R0947	F 1	S	50	42	50	43	0.1	0.1	60	54	No	No	-	-	-	-	No
R0948	GF	E	47	40	47	40	0.1	0.1	59	52	No	No	-	-	-	-	No
R0948	F 1	S	51	43	51	43	0.2	0.1	60	55	No	No	-	-	-	-	No
R0949	GF	E	48	40	48	40	0.1	0.1	60	52	No	No	-	-	-	-	No
R0950	GF	S	55	48	55	48	0.2	0.2	60	55	No	No	-	-	-	-	No
R0951	GF	S	48	41	48	41	0.1	0.1	60	53	No	No	-	-	-	-	No
R0952	GF	S	48	41	48	41	0.1	0.1	60	53	No	No	-	-	-	-	No
R0953	GF	S	49	42	49	42	0.1	0.1	60	54	No	No	-	-	-	-	No
R0957	GF	S	57	50	57	50	0.2	0.2	60	55	No	No	-	-	-	-	No
R0959	GF	E	48	41	49	41	0.2	0.2	60	53	No	No	-	-	-	-	No
R0960	GF	S	48	40	48	40	0	0.1	60	52	No	No	-	-	-	-	No
R0961	GF	S	49	42	49	42	0.1	0.2	60	54	No	No	-	-	-	-	No
R0962	GF	S	45	38	45	38	0	0	57	50	No	No	-	-	-	-	No
R0963	GF	E	48	41	48	41	0.1	0.1	60	53	No	No	-	-	-	-	No
R0964	GF	S	57	49	57	50	0.3	0.3	60	55	No	No	-	-	-	-	No
R0965	GF	E	48	41	49	41	0.2	0.1	60	53	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0965	F 1	S	50	43	51	43	0.2	0.1	60	55	No	No	-	-	-	-	No
R0966	GF	S	49	42	49	42	0.1	0.2	60	54	No	No	-	-	-	-	No
R0967	GF	S	55	48	55	48	0	0	60	55	No	No	-	-	-	-	No
R0968	GF	S	48	41	48	41	0.1	0.1	60	53	No	No	-	-	-	-	No
R0969	GF	S	49	41	49	41	0	0.1	60	53	No	No	-	-	-	-	No
R0969	F 1	S	50	42	50	42	0	0.1	60	54	No	No	-	-	-	-	No
R0970	GF	E	48	41	49	41	0.1	0.1	60	53	No	No	-	-	-	-	No
R0971	GF	E	49	42	49	42	0.1	0.2	60	54	No	No	-	-	-	-	No
R0972	GF	E	49	42	49	42	0.1	0.2	60	54	No	No	-	-	-	-	No
R0973	GF	E	47	40	47	40	0	0	59	52	No	No	-	-	-	-	No
R0973	F 1	E	49	42	49	42	0.1	0.1	60	54	No	No	-	-	-	-	No
R0974	GF	S	58	50	58	51	0.1	0.2	60	55	No	No	-	-	-	-	No
R0975	GF	E	49	42	49	42	0.2	0.2	60	54	No	No	-	-	-	-	No
R0976	GF	E	47	40	48	40	0.2	0.1	59	52	No	No	-	-	-	-	No
R0977	GF	S	53	46	53	46	0.2	0.1	60	55	No	No	-	-	-	-	No
R0978	GF	E	48	41	48	41	0.1	0.1	60	53	No	No	-	-	-	-	No
R0979	GF	N	44	37	44	37	0.1	0	56	49	No	No	-	-	-	-	No
R0981	GF	S	55	47	55	48	0.1	0.2	60	55	No	No	-	-	-	-	No
R0985	GF	E	50	43	51	43	0.2	0.1	60	55	No	No	-	-	-	-	No
R0986	GF	E	51	43	51	43	0.1	0.1	60	55	No	No	-	-	-	-	No
R0987	GF	S	45	37	45	37	0.1	0	57	49	No	No	-	-	-	-	No
R0987	F 1	S	47	39	47	39	0.1	0	59	51	No	No	-	-	-	-	No
R0988	GF	S	47	40	47	40	0	0.1	59	52	No	No	-	-	-	-	No
R0989	GF	S	57	50	57	50	0	0.1	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R0990	GF	E	47	39	47	40	0.1	0.1	59	51	No	No	-	-	-	-	No
R0990	F 1	S	49	41	49	41	0.1	0.1	60	53	No	No	-	-	-	-	No
R0991	GF	E	48	41	48	41	0.1	0.1	60	53	No	No	-	-	-	-	No
R0991	F 1	E	49	42	49	42	0.1	0.1	60	54	No	No	-	-	-	-	No
R0992	GF	E	51	44	51	44	0.2	0.1	60	55	No	No	-	-	-	-	No
R0993	GF	E	49	42	49	42	0.1	0.1	60	54	No	No	-	-	-	-	No
R0994	GF	E	46	38	46	38	0.1	0.1	58	50	No	No	-	-	-	-	No
R0994	F 1	E	53	46	54	46	0.1	0.2	60	55	No	No	-	-	-	-	No
R0995	GF	E	49	41	49	42	0.2	0.1	60	53	No	No	-	-	-	-	No
R0996	GF	E	49	42	49	42	0.2	0.1	60	54	No	No	-	-	-	-	No
R0997	GF	E	56	49	56	49	0.1	0.1	60	55	No	No	-	-	-	-	No
R0998	GF	S	58	50	58	50	0	0.1	60	55	No	No	-	-	-	-	No
R0999	GF	S	49	42	49	42	0.1	0.1	60	54	No	No	-	-	-	-	No
R0999	F 1	S	50	42	50	42	0.1	0.1	60	54	No	No	-	-	-	-	No
R1000	GF	S	45	38	45	38	0	0	57	50	No	No	-	-	-	-	No
R1001	GF	E	56	48	56	48	0.2	0.2	60	55	No	No	-	-	-	-	No
R1002	GF	E	48	40	48	40	0.1	0.2	60	52	No	No	-	-	-	-	No
R1002	F 1	E	49	41	49	42	0.1	0.1	60	53	No	No	-	-	-	-	No
R1003	GF	E	48	41	48	41	0.1	0.2	60	53	No	No	-	-	-	-	No
R1004	GF	S	47	40	48	40	0.2	0.2	59	52	No	No	-	-	-	-	No
R1004	F 1	E	51	44	52	44	0.2	0.2	60	55	No	No	-	-	-	-	No
R1005	GF	S	53	45	53	45	0.1	0.2	60	55	No	No	-	-	-	-	No
R1006	GF	E	48	41	48	41	0.1	0.1	60	53	No	No	-	-	-	-	No
R1006	F 1	E	49	41	49	42	0.1	0.1	60	53	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1007	GF	N	44	36	44	36	0	0	56	48	No	No	-	-	-	-	No
R1010	GF	S	48	41	48	41	0.1	0.1	60	53	No	No	-	-	-	-	No
R1011	GF	S	50	43	50	43	0.1	0.1	60	55	No	No	-	-	-	-	No
R1012	GF	S	46	39	46	39	0	0.1	58	51	No	No	-	-	-	-	No
R1013	GF	S	50	42	50	43	0.2	0.2	60	54	No	No	-	-	-	-	No
R1014	GF	E	53	46	53	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R1014	F 1	E	56	49	56	49	0.2	0.1	60	55	No	No	-	-	-	-	No
R1015	GF	S	47	40	47	40	0	0.1	59	52	No	No	-	-	-	-	No
R1016	GF	S	44	37	44	37	0	0	56	49	No	No	-	-	-	-	No
R1016	F 1	E	48	41	49	41	0.1	0	60	53	No	No	-	-	-	-	No
R1017	GF	S	48	41	48	41	0.1	0.1	60	53	No	No	-	-	-	-	No
R1018	GF	E	51	43	51	43	0	0	60	55	No	No	-	-	-	-	No
R1019	GF	S	46	39	46	39	0	0	58	51	No	No	-	-	-	-	No
R1020	GF	SE	57	49	57	49	0.1	0.1	60	55	No	No	-	-	-	-	No
R1021	GF	S	49	42	49	42	0.1	0.1	60	54	No	No	-	-	-	-	No
R1021	F 1	E	50	42	50	43	0.1	0.1	60	54	No	No	-	-	-	-	No
R1022	GF	S	47	39	47	40	0.1	0.1	59	51	No	No	-	-	-	-	No
R1023	GF	E	53	46	54	46	0.2	0.2	60	55	No	No	-	-	-	-	No
R1023	F 1	E	55	48	56	48	0.2	0.1	60	55	No	No	-	-	-	-	No
R1024	GF	S	51	44	51	44	0.2	0.1	60	55	No	No	-	-	-	-	No
R1025	GF	S	59	52	59	52	0.1	0.1	60	55	No	No	-	-	-	-	No
R1026	GF	E	46	38	46	39	0.1	0.1	58	50	No	No	-	-	-	-	No
R1027	GF	E	53	46	54	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R1027	F 1	E	55	48	55	48	0.1	0.1	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1028	GF	S	48	41	48	41	0.1	0.2	60	53	No	No	-	-	-	-	No
R1029	GF	SE	56	49	56	49	0.1	0.1	60	55	No	No	-	-	-	-	No
R1030	GF	S	52	44	52	44	0.1	0.1	60	55	No	No	-	-	-	-	No
R1031	GF	E	49	42	49	42	0.1	0	60	54	No	No	-	-	-	-	No
R1031	F 1	E	50	42	50	42	0.1	0.1	60	54	No	No	-	-	-	-	No
R1032	GF	E	49	42	49	42	0	0.1	60	54	No	No	-	-	-	-	No
R1032	F 1	E	49	42	50	42	0.1	0.1	60	54	No	No	-	-	-	-	No
R1033	GF	S	45	38	45	38	0	0	57	50	No	No	-	-	-	-	No
R1034	GF	E	49	41	49	41	0.1	0.1	60	53	No	No	-	-	-	-	No
R1035	GF	SE	56	49	56	49	0.1	0.1	60	55	No	No	-	-	-	-	No
R1035	F 1	SE	57	50	57	50	0.1	0.1	60	55	No	No	-	-	-	-	No
R1036	GF	SE	59	52	59	52	-0.1	-0.1	60	55	No	No	-	-	-	-	No
R1037	GF	S	50	43	50	43	0.1	0.1	60	55	No	No	-	-	-	-	No
R1038	GF	S	55	48	55	48	0	0	60	55	No	No	-	-	-	-	No
R1039	GF	E	53	46	53	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R1039	F 1	E	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R1040	GF	E	52	44	52	44	0.1	0.1	60	55	No	No	-	-	-	-	No
R1040	F 1	E	52	45	52	45	0	0.1	60	55	No	No	-	-	-	-	No
R1041	GF	E	53	46	53	46	0	0	60	55	No	No	-	-	-	-	No
R1041	F 1	E	54	46	54	46	0	0	60	55	No	No	-	-	-	-	No
R1042	GF	E	53	46	53	46	0	0	60	55	No	No	-	-	-	-	No
R1043	GF	E	55	47	55	47	-0.1	-0.1	60	55	No	No	-	-	-	-	No
R1044	GF	E	51	44	51	44	0.1	0.1	60	55	No	No	-	-	-	-	No
R1045	GF	S	48	41	48	41	0.1	0.1	60	1000	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1046	GF	S	54	47	54	47	0.1	0.1	60	55	No	No	-	-	-	-	No
R1047	GF	E	51	44	51	44	0.1	0	60	1000	No	No	-	-	-	-	No
R1048	GF	E	51	44	51	44	0	0	60	1000	No	No	-	-	-	-	No
R1048	F 1	E	54	46	54	46	0.1	0	60	1000	No	No	-	-	-	-	No
R1049	GF	N	52	44	52	44	0.1	0	60	1000	No	No	-	-	-	-	No
R1050	GF	E	54	47	54	47	0	0.1	60	1000	No	No	-	-	-	-	No
R1051	GF	N	56	49	56	49	0.2	0.2	60	1000	No	No	-	-	-	-	No
R1052	GF	SE	56	48	56	48	-0.1	-0.1	60	55	No	No	-	-	-	-	No
R1053	GF	SE	52	45	52	45	0	0	60	55	No	No	-	-	-	-	No
R1054	GF	SE	59	51	58	51	-0.4	-0.4	60	55	No	No	-	-	-	-	No
R1055	GF	SE	52	44	52	44	0	0	60	55	No	No	-	-	-	-	No
R1056	GF	SE	58	51	58	51	-0.4	-0.3	60	55	No	No	-	-	-	-	No
R1057	GF	SE	52	45	52	45	0.1	0.1	60	55	No	No	-	-	-	-	No
R1058	GF	SE	57	50	57	50	-0.4	-0.3	60	55	No	No	-	-	-	-	No
R1059	GF	SE	52	45	52	45	0.1	0.1	60	55	No	No	-	-	-	-	No
R1060	GF	SE	55	48	55	48	-0.2	-0.2	60	55	No	No	-	-	-	-	No
R1061	GF	SW	59	51	58	51	-0.8	-0.6	60	55	No	No	-	-	-	-	No
R1062	GF	SE	52	45	52	45	0	0	60	55	No	No	-	-	-	-	No
R1063	GF	SE	67	59	65	58	-1.5	-1.4	60	55	No	No	Yes	No	Yes	No	Yes
R1064	GF	SE	55	48	55	48	-0.2	-0.2	60	55	No	No	-	-	-	-	No
R1065	GF	SE	66	58	64	57	-1.3	-1.2	60	55	No	No	No	No	No	No	No
R1066	GF	SE	55	48	55	48	-0.1	-0.1	60	55	No	No	-	-	-	-	No
R1067	GF	SE	52	45	52	45	0.1	0	60	55	No	No	-	-	-	-	No
R1068	GF	SE	53	46	53	46	0	0	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1069	GF	SE	55	48	55	48	0	0	60	55	No	No	-	-	-	-	No
R1070	GF	NE	51	44	51	44	0	0.1	60	55	No	No	-	-	-	-	No
R1071	GF	SE	63	56	62	55	-0.7	-0.6	60	55	No	No	No	-	No	-	No
R1072	GF	SE	55	48	55	48	0	0	60	55	No	No	-	-	-	-	No
R1073	GF	SE	53	46	53	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R1074	GF	SW	51	44	51	44	0.2	0.2	60	55	No	No	-	-	-	-	No
R1075	GF	SE	61	53	60	53	-0.6	-0.5	60	55	No	No	-	-	-	-	No
R1076	GF	SW	51	44	51	44	0.1	0.1	60	55	No	No	-	-	-	-	No
R1077	GF	SE	53	46	53	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R1078	GF	SE	70	63	69	62	-1.3	-1.3	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1078	F 1	SE	71	64	70	63	-1	-1	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1079	GF	SW	51	43	51	43	0.2	0.1	60	55	No	No	-	-	-	-	No
R1080	GF	SE	59	52	59	52	-0.4	-0.5	60	55	No	No	-	-	-	-	No
R1081	GF	NE	53	46	53	46	0.1	0	60	55	No	No	-	-	-	-	No
R1082	GF	NE	53	46	53	46	0	0	60	55	No	No	-	-	-	-	No
R1083	GF	SE	54	46	54	46	0.1	0	60	55	No	No	-	-	-	-	No
R1084	GF	SE	69	62	68	61	-1.1	-1	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1085	GF	SE	52	44	52	45	0.1	0.1	60	55	No	No	-	-	-	-	No
R1086	GF	SE	59	51	58	51	-0.4	-0.4	60	55	No	No	-	-	-	-	No
R1087	GF	SE	64	56	63	56	-0.9	-0.8	60	55	No	No	No	No	No	No	No
R1088	GF	SE	52	45	52	45	0	0	60	55	No	No	-	-	-	-	No
R1089	GF	SE	52	44	52	45	0.1	0.1	60	55	No	No	-	-	-	-	No
R1090	GF	SE	53	46	53	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R1091	GF	SW	52	45	52	45	0.1	0	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1092	GF	NW	59	51	58	51	-0.8	-0.8	60	55	No	No	-	-	-	-	No
R1093	GF	SW	69	62	68	61	-1	-0.9	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1094	GF	NE	51	44	51	44	0.1	0.1	60	55	No	No	-	-	-	-	No
R1095	GF	SW	51	44	51	44	0.1	0.2	60	55	No	No	-	-	-	-	No
R1096	GF	SW	53	45	53	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R1097	GF	SE	53	45	53	46	0.2	0.1	60	1000	No	No	-	-	-	-	No
R1098	GF	N	61	54	61	54	0.2	0.2	60	1000	No	No	No	-	No	-	No
R1099	GF	S	71	63	70	62	-1.2	-1.2	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1100	GF	SE	53	45	53	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R1101	GF	NE	58	50	58	50	0	0.1	60	1000	No	No	-	-	-	-	No
R1102	GF	SE	57	49	56	49	-0.4	-0.4	60	55	No	No	-	-	-	-	No
R1103	GF	SE	58	51	58	51	-0.3	-0.2	60	55	No	No	-	-	-	-	No
R1104	GF	SE	52	44	52	45	0.1	0.1	60	55	No	No	-	-	-	-	No
R1105	GF	SE	54	47	54	47	-0.1	-0.2	60	55	No	No	-	-	-	-	No
R1106	GF	SE	53	46	53	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R1107	GF	SE	53	46	53	45	-0.1	-0.1	60	55	No	No	-	-	-	-	No
R1108	GF	S	53	46	53	46	0.1	0.2	60	1000	No	No	-	-	-	-	No
R1109	GF	N	62	54	62	55	0.2	0.3	60	1000	No	No	No	-	No	-	No
R1110	GF	SE	52	44	52	45	0.1	0.1	60	55	No	No	-	-	-	-	No
R1111	GF	SE	52	45	53	45	0.2	0.1	60	55	No	No	-	-	-	-	No
R1112	GF	NW	58	50	57	50	-0.7	-0.8	60	55	No	No	-	-	-	-	No
R1113	GF	SE	70	62	68	61	-1.3	-1.2	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1114	GF	SE	57	49	56	49	-0.4	-0.5	60	55	No	No	-	-	-	-	No
R1115	GF	SE	53	46	53	46	0.1	0.1	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1116	GF	SE	52	45	52	45	0.1	0.1	60	55	No	No	-	-	-	-	No
R1117	GF	SW	51	44	51	44	0.1	0.2	60	55	No	No	-	-	-	-	No
R1118	GF	N	61	53	61	54	0.2	0.2	60	1000	No	No	No	-	No	-	No
R1119	GF	SE	57	50	57	50	0	0	60	55	No	No	-	-	-	-	No
R1120	GF	SW	52	44	52	45	0.2	0.2	60	55	No	No	-	-	-	-	No
R1121	GF	SE	56	48	55	48	-0.4	-0.5	60	55	No	No	-	-	-	-	No
R1122	GF	SE	67	60	66	59	-1	-0.9	60	55	No	No	Yes	No	Yes	No	Yes
R1123	GF	SE	52	45	52	45	0.1	0	60	55	No	No	-	-	-	-	No
R1124	GF	NW	57	50	57	49	-0.7	-0.8	60	55	No	No	-	-	-	-	No
R1125	GF	N	62	55	62	55	0.3	0.2	60	1000	No	No	No	-	No	-	No
R1126	GF	SE	51	44	51	44	0.1	0.2	60	55	No	No	-	-	-	-	No
R1127	GF	SE	53	45	53	45	0	0	60	55	No	No	-	-	-	-	No
R1128	GF	SE	55	48	55	48	-0.4	-0.5	60	55	No	No	-	-	-	-	No
R1129	GF	SE	53	46	53	46	0.2	0.1	60	55	No	No	-	-	-	-	No
R1130	GF	SE	66	58	65	57	-0.9	-0.9	60	55	No	No	Yes	No	No	No	Yes
R1131	GF	SE	55	48	55	48	0.1	0.1	60	55	No	No	-	-	-	-	No
R1132	GF	SE	52	44	52	45	0.2	0.1	60	55	No	No	-	-	-	-	No
R1133	GF	SE	52	45	52	45	0	0	60	55	No	No	-	-	-	-	No
R1134	GF	NE	58	51	58	51	0	0.1	60	1000	No	No	-	-	-	-	No
R1135	GF	SE	57	50	57	49	-0.4	-0.6	60	55	No	No	-	-	-	-	No
R1136	GF	SE	64	56	63	56	-0.6	-0.5	60	55	No	No	No	No	No	No	No
R1137	GF	SE	52	45	52	45	0.1	0.1	60	55	No	No	-	-	-	-	No
R1138	GF	SW	52	45	52	45	0.1	0.1	60	55	No	No	-	-	-	-	No
R1139	GF	SE	55	47	55	48	0.1	0.1	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1140	GF	SE	52	45	52	45	0.1	0.1	60	55	No	No	-	-	-	-	No
R1141	GF	SE	62	54	62	54	-0.1	-0.1	60	55	No	No	No	-	No	-	No
R1142	GF	W	50	43	51	43	0.2	0.1	60	55	No	No	-	-	-	-	No
R1143	GF	SE	53	45	53	45	0.1	0.1	60	55	No	No	-	-	-	-	No
R1144	GF	SW	52	45	52	45	0.1	0.1	60	55	No	No	-	-	-	-	No
R1145	GF	S	53	46	53	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R1146	GF	SE	53	45	53	45	0.2	0.1	60	55	No	No	-	-	-	-	No
R1147	GF	SE	59	52	59	52	0.2	0.1	60	55	No	No	-	-	-	-	No
R1148	GF	SE	55	48	55	48	0.2	0.2	60	55	No	No	-	-	-	-	No
R1149	GF	SW	53	46	53	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R1150	GF	SW	51	44	51	44	0.1	0.2	60	55	No	No	-	-	-	-	No
R1151	GF	S	71	63	70	62	-1.2	-1.2	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1152	GF	SW	52	45	52	45	0.1	0.1	60	55	No	No	-	-	-	-	No
R1153	GF	SE	53	45	53	45	0.2	0.2	60	55	No	No	-	-	-	-	No
R1154	GF	S	53	46	53	46	0.1	0.2	60	55	No	No	-	-	-	-	No
R1155	GF	NE	55	48	55	48	0.1	0.1	60	55	No	No	-	-	-	-	No
R1156	GF	SE	52	45	52	45	0.1	0.1	60	55	No	No	-	-	-	-	No
R1157	GF	SE	55	48	55	47	-0.5	-0.6	60	55	No	No	-	-	-	-	No
R1157	F 1	SE	58	51	58	51	-0.2	-0.3	60	55	No	No	-	-	-	-	No
R1158	GF	SW	52	45	52	45	0.1	0.2	60	55	No	No	-	-	-	-	No
R1159	GF	SE	60	53	61	53	0.3	0.2	60	55	No	No	No	-	No	-	No
R1160	GF	S	70	63	69	62	-1.2	-1.2	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1161	GF	SE	55	47	54	47	-0.4	-0.6	60	55	No	No	-	-	-	-	No
R1162	GF	SE	52	44	52	45	0.1	0.1	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1163	GF	SE	53	46	53	46	0.2	0.1	60	55	No	No	-	-	-	-	No
R1164	GF	NW	56	49	55	48	-0.8	-1	60	55	No	No	-	-	-	-	No
R1165	GF	S	52	45	52	45	0.1	0.1	60	55	No	No	-	-	-	-	No
R1166	GF	S	70	63	69	62	-1.1	-0.9	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1167	GF	SE	56	48	56	48	0.2	0.1	60	55	No	No	-	-	-	-	No
R1168	GF	SE	51	44	51	44	0.1	0.1	60	55	No	No	-	-	-	-	No
R1169	GF	W	61	53	61	53	0.2	0.1	60	55	No	No	No	-	No	-	No
R1170	GF	SE	53	46	53	46	0.2	0.2	60	55	No	No	-	-	-	-	No
R1171	GF	NW	56	49	55	48	-0.9	-1.1	60	55	No	No	-	-	-	-	No
R1172	GF	SE	57	49	56	48	-0.8	-1	60	55	No	No	-	-	-	-	No
R1173	GF	W	53	45	53	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R1174	GF	SE	54	47	54	46	-0.5	-0.7	60	55	No	No	-	-	-	-	No
R1175	GF	S	52	45	52	45	0.2	0.2	60	55	No	No	-	-	-	-	No
R1176	GF	SE	53	46	53	46	0.2	0.1	60	55	No	No	-	-	-	-	No
R1177	GF	S	70	63	69	62	-1	-0.9	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1178	GF	SE	59	52	60	52	0.3	0.3	60	55	No	No	-	-	-	-	No
R1179	GF	SE	55	48	55	47	-0.3	-0.5	60	55	No	No	-	-	-	-	No
R1180	GF	NW	56	49	55	48	-0.7	-0.9	60	55	No	No	-	-	-	-	No
R1181	GF	SW	54	46	54	47	0.1	0.1	60	55	No	No	-	-	-	-	No
R1182	GF	SW	53	46	53	46	0.2	0.2	60	55	No	No	-	-	-	-	No
R1183	GF	S	70	63	69	62	-0.9	-0.9	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1184	GF	SW	53	46	54	46	0.2	0.2	60	55	No	No	-	-	-	-	No
R1185	GF	S	52	44	52	44	0.2	0.1	60	55	No	No	-	-	-	-	No
R1186	GF	SE	59	51	59	52	0.4	0.2	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1187	GF	SE	55	48	55	48	-0.3	-0.4	60	55	No	No	-	-	-	-	No
R1188	GF	W	52	45	52	45	0.1	0.1	60	55	No	No	-	-	-	-	No
R1189	GF	NW	56	48	55	47	-0.6	-0.9	60	55	No	No	-	-	-	-	No
R1190	GF	SE	54	47	54	47	0.1	0.1	60	55	No	No	-	-	-	-	No
R1191	GF	NW	57	49	57	50	0.4	0.3	60	55	No	No	-	-	-	-	No
R1192	GF	S	70	63	69	62	-1.1	-1	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1193	GF	SE	59	51	59	52	0.3	0.3	60	55	No	No	-	-	-	-	No
R1194	GF	SE	57	50	57	49	-0.6	-0.8	60	55	No	No	-	-	-	-	No
R1195	GF	S	52	44	52	44	0.2	0.1	60	55	No	No	-	-	-	-	No
R1196	GF	SE	56	48	56	49	0.2	0.2	60	55	No	No	-	-	-	-	No
R1197	GF	NW	59	51	59	51	0.3	0.3	60	55	No	No	-	-	-	-	No
R1198	GF	S	71	64	70	63	-1.2	-1.1	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1199	GF	SW	52	44	52	45	0.1	0.1	60	55	No	No	-	-	-	-	No
R1200	GF	SW	55	47	55	47	0.1	0.1	60	55	No	No	-	-	-	-	No
R1200	F 1	SW	56	49	56	49	0.1	0.1	60	55	No	No	-	-	-	-	No
R1201	GF	W	51	44	51	44	0.2	0.1	60	55	No	No	-	-	-	-	No
R1202	GF	SE	53	46	53	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R1203	GF	SE	59	51	59	51	0.3	0.2	60	55	No	No	-	-	-	-	No
R1204	GF	SW	55	48	55	48	0.1	0.1	60	55	No	No	-	-	-	-	No
R1204	F 1	SE	57	49	57	49	0.1	0.1	60	55	No	No	-	-	-	-	No
R1205	GF	NW	58	51	59	51	0.4	0.2	60	55	No	No	-	-	-	-	No
R1206	GF	E	58	51	58	51	0	0	60	55	No	No	-	-	-	-	No
R1207	GF	NW	55	48	55	47	-0.5	-0.8	60	55	No	No	-	-	-	-	No
R1208	GF	SW	51	43	51	43	0.2	0.2	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1209	GF	SE	53	46	53	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R1210	GF	SE	51	43	51	43	0.1	0	60	55	No	No	-	-	-	-	No
R1211	GF	SW	51	44	52	44	0.2	0.1	60	55	No	No	-	-	-	-	No
R1212	GF	S	71	63	69	62	-1.2	-1.1	60	55	No	No	Yes	Yes	Yes	Yes	Yes
R1213	GF	S	57	50	57	50	0.1	0	60	55	No	No	-	-	-	-	No
R1214	GF	SE	59	51	59	51	0.2	0.2	60	55	No	No	-	-	-	-	No
R1215	GF	N	58	51	58	51	0.1	0.1	60	55	No	No	-	-	-	-	No
R1216	GF	SW	52	44	52	44	0.1	0.1	60	55	No	No	-	-	-	-	No
R1217	GF	N	60	53	61	53	0.2	0.2	60	55	No	No	No	-	No	-	No
R1218	GF	SE	56	48	55	48	-0.3	-0.4	60	55	No	No	-	-	-	-	No
R1219	GF	NW	52	44	52	45	0.1	0.1	60	55	No	No	-	-	-	-	No
R1220	GF	SW	50	42	50	42	0.1	0.2	60	54	No	No	-	-	-	-	No
R1221	GF	E	64	57	64	57	0	0	60	55	No	No	-	-	No	No	No
R1222	GF	NW	56	48	55	47	-0.7	-1	60	55	No	No	-	-	-	-	No
R1223	GF	S	58	51	58	51	0.1	0.1	60	55	No	No	-	-	-	-	No
R1224	GF	W	55	48	55	48	0.1	0.1	60	55	No	No	-	-	-	-	No
R1225	GF	W	52	44	52	44	0.2	0.1	60	55	No	No	-	-	-	-	No
R1226	GF	SE	51	44	51	44	0.1	0.1	60	55	No	No	-	-	-	-	No
R1226	F 1	SW	56	49	56	49	0.1	0.2	60	55	No	No	-	-	-	-	No
R1227	GF	NW	58	51	59	51	0.4	0.3	60	55	No	No	-	-	-	-	No
R1228	GF	SE	59	51	59	51	0.3	0.2	60	55	No	No	-	-	-	-	No
R1229	GF	N	64	56	65	57	0.7	0.7	60	55	No	No	Yes	No	No	No	Yes
R1230	GF	SE	57	50	57	49	-0.1	-0.2	60	55	No	No	-	-	-	-	No
R1230	F 1	SE	59	51	59	51	0	-0.1	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1231	GF	SW	52	45	53	45	0.2	0.2	60	55	No	No	-	-	-	-	No
R1231	F 1	SW	55	48	55	48	0.2	0.2	60	55	No	No	-	-	-	-	No
R1232	GF	W	60	52	60	53	0.3	0.4	60	55	No	No	-	-	-	-	No
R1233	GF	E	61	54	61	54	0	0	60	55	No	No	-	-	No	-	No
R1234	GF	S	66	59	65	58	-0.5	-0.5	60	55	No	No	Yes	No	Yes	No	Yes
R1235	GF	NE	57	49	57	49	0.1	0	60	55	No	No	-	-	-	-	No
R1236	GF	SE	58	50	58	50	0.3	0.1	60	55	No	No	-	-	-	-	No
R1237	GF	SE	52	45	53	45	0.2	0.1	60	55	No	No	-	-	-	-	No
R1237	F 1	SE	57	50	57	50	0.2	0.2	60	55	No	No	-	-	-	-	No
R1238	GF	E	61	54	61	54	0.1	0	60	55	No	No	-	-	No	-	No
R1239	GF	SE	59	51	59	52	0.4	0.2	60	55	No	No	-	-	-	-	No
R1240	GF	SE	52	44	52	45	0.3	0.2	60	55	No	No	-	-	-	-	No
R1241	GF	S	58	51	58	51	0.1	0.1	60	55	No	No	-	-	-	-	No
R1242	GF	SE	58	50	58	50	0.1	-0.1	60	55	No	No	-	-	-	-	No
R1243	GF	W	51	44	51	44	0.1	0.1	60	55	No	No	-	-	-	-	No
R1244	GF	E	60	53	60	53	0.1	0	60	55	No	No	-	-	-	-	No
R1245	GF	N	61	53	61	54	0.8	0.7	60	55	No	No	No	-	No	-	No
R1246	GF	SW	51	43	51	43	0.1	0	60	55	No	No	-	-	-	-	No
R1247	GF	S	49	42	50	42	0.2	0.2	60	54	No	No	-	-	-	-	No
R1248	GF	SE	56	49	56	49	0.3	0.2	60	55	No	No	-	-	-	-	No
R1249	GF	SW	54	47	54	47	0.1	0.1	60	55	No	No	-	-	-	-	No
R1250	GF	S	63	56	63	56	-0.1	-0.1	60	55	No	No	No	No	No	No	No
R1251	GF	W	57	50	58	50	0.4	0.3	60	55	No	No	-	-	-	-	No
R1252	GF	N	67	60	68	61	0.9	0.8	60	55	No	No	Yes	Yes	Yes	Yes	Yes

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1253	GF	E	54	47	55	47	0.4	0.2	60	55	No	No	-	-	-	-	No
R1255	GF	S	58	51	58	51	0.2	0.2	60	55	No	No	-	-	-	-	No
R1258	GF	E	56	49	56	49	0.1	0.1	60	55	No	No	-	-	-	-	No
R1259	GF	E	60	53	60	53	0	0	60	55	No	No	-	-	-	-	No
R1262	GF	E	52	44	52	45	0.3	0.2	60	55	No	No	-	-	-	-	No
R1264	GF	E	62	55	62	55	0	0.1	60	55	No	No	No	-	No	-	No
R1266	GF	E	55	48	56	48	0.4	0.3	60	55	No	No	-	-	-	-	No
R1268	GF	SE	57	50	57	50	0.4	0.3	60	55	No	No	-	-	-	-	No
R1272	GF	W	57	50	58	50	0.3	0.3	60	55	No	No	-	-	-	-	No
R1274	GF	S	63	56	63	56	0	-0.1	60	55	No	No	No	No	No	No	No
R1275	GF	NW	58	50	58	50	0.4	0.3	60	55	No	No	-	-	-	-	No
R1277	GF	S	59	51	59	52	0.1	0.1	60	55	No	No	-	-	-	-	No
R1278	GF	S	58	51	59	51	0.2	0.2	60	55	No	No	-	-	-	-	No
R1284	GF	S	57	50	57	50	0.1	0.1	60	55	No	No	-	-	-	-	No
R1286	GF	SE	58	51	58	51	0	0	60	55	No	No	-	-	-	-	No
R1287	GF	S	62	55	62	55	0.1	0.1	60	55	No	No	No	-	No	-	No
R1289	GF	W	57	49	57	49	0.3	0.3	60	55	No	No	-	-	-	-	No
R1291	GF	W	57	49	57	49	0.3	0.3	60	55	No	No	-	-	-	-	No
R1293	GF	E	58	51	58	51	0	0.1	60	55	No	No	-	-	-	-	No
R1294	GF	W	57	50	58	50	0.3	0.2	60	55	No	No	-	-	-	-	No
R1295	GF	W	57	50	57	50	0.1	0.1	60	55	No	No	-	-	-	-	No
R1296	GF	S	58	51	59	51	0.2	0.1	60	55	No	No	-	-	-	-	No
R1301	GF	W	57	49	57	50	0.4	0.3	60	55	No	No	-	-	-	-	No
R1302	GF	E	57	50	57	50	0	0.1	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1303	GF	W	57	49	57	49	0.4	0.4	60	55	No	No	-	-	-	-	No
R1305	GF	W	57	49	57	50	0.4	0.3	60	55	No	No	-	-	-	-	No
R1306	GF	W	58	51	59	51	0.5	0.3	60	55	No	No	-	-	-	-	No
R1306	F 1	W	58	51	59	51	0.4	0.3	60	55	No	No	-	-	-	-	No
R1308	GF	S	57	50	57	50	0.1	0.1	60	55	No	No	-	-	-	-	No
R1309	GF	E	54	47	54	47	0.1	0	60	55	No	No	-	-	-	-	No
R1311	GF	W	56	49	57	49	0.4	0.2	60	55	No	No	-	-	-	-	No
R1313	GF	S	58	51	58	51	0.1	0.1	60	55	No	No	-	-	-	-	No
R1313	F 1	S	59	52	59	52	0.1	0.1	60	55	No	No	-	-	-	-	No
R1314	GF	SE	61	54	61	54	0.1	0	60	55	No	No	No	-	No	-	No
R1315	GF	W	56	49	57	49	0.5	0.4	60	55	No	No	-	-	-	-	No
R1316	GF	SW	56	49	56	49	0.1	0.1	60	55	No	No	-	-	-	-	No
R1318	GF	SW	55	47	55	48	0.2	0.2	60	55	No	No	-	-	-	-	No
R1318	F 1	SW	58	51	58	51	0.1	0.1	60	55	No	No	-	-	-	-	No
R1320	GF	S	53	45	53	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R1321	GF	SE	61	53	61	53	0.1	0	60	55	No	No	No	-	No	-	No
R1322	GF	SE	53	46	53	46	0	0	60	55	No	No	-	-	-	-	No
R1323	GF	S	54	46	54	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R1323	F 1	S	56	48	56	49	0.1	0.1	60	55	No	No	-	-	-	-	No
R1324	GF	S	56	49	56	49	0.1	0	60	55	No	No	-	-	-	-	No
R1326	GF	SE	57	50	57	50	0.1	0.1	60	55	No	No	-	-	-	-	No
R1326	F 1	SW	59	52	59	52	0.1	0.1	60	55	No	No	-	-	-	-	No
R1327	GF	SW	57	50	57	50	0.2	0.1	60	55	No	No	-	-	-	-	No
R1330	GF	E	58	51	58	51	0	0.1	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1333	GF	E	59	52	59	52	0	0	60	55	No	No	-	-	-	-	No
R1335	GF	S	55	48	55	48	0.2	0.1	60	55	No	No	-	-	-	-	No
R1336	GF	SW	59	52	59	52	0	0	60	55	No	No	-	-	-	-	No
R1337	GF	SE	57	50	57	50	0.1	0	60	55	No	No	-	-	-	-	No
R1339	GF	E	56	49	56	49	0	0.1	60	55	No	No	-	-	-	-	No
R1341	GF	S	57	50	57	50	0.1	0.1	60	55	No	No	-	-	-	-	No
R1344	GF	S	57	50	57	50	0.1	0	60	55	No	No	-	-	-	-	No
R1345	GF	E	57	50	57	50	0	0	60	55	No	No	-	-	-	-	No
R1346	GF	SE	57	50	57	50	0.1	0	60	55	No	No	-	-	-	-	No
R1349	GF	SE	57	50	57	50	0.1	0	60	55	No	No	-	-	-	-	No
R1351	GF	S	54	47	54	47	0.1	0.2	60	55	No	No	-	-	-	-	No
R1351	F 1	S	56	49	57	49	0.2	0.1	60	55	No	No	-	-	-	-	No
R1352	GF	S	56	49	56	49	0.1	0.1	60	55	No	No	-	-	-	-	No
R1355	GF	SE	56	49	56	49	0	0	60	55	No	No	-	-	-	-	No
R1356	GF	S	57	50	57	50	0	0.1	60	55	No	No	-	-	-	-	No
R1360	GF	SW	56	49	56	49	0.1	0.1	60	55	No	No	-	-	-	-	No
R1361	GF	S	55	48	55	48	0.2	0.1	60	55	No	No	-	-	-	-	No
R1363	GF	S	57	49	57	49	0.1	0	60	55	No	No	-	-	-	-	No
R1365	GF	SW	57	50	57	50	0	0	60	55	No	No	-	-	-	-	No
R1367	GF	SW	57	50	57	50	0.2	0.2	60	55	No	No	-	-	-	-	No
R1368	GF	SW	54	47	54	47	0	0.1	60	55	No	No	-	-	-	-	No
R1369	GF	SE	57	50	57	50	0	0	60	55	No	No	-	-	-	-	No
R1373	GF	SW	57	50	57	50	0.1	0.1	60	55	No	No	-	-	-	-	No
R1374	GF	SE	56	49	56	49	0.1	0	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1375	GF	SW	56	49	56	49	0.1	0.1	60	55	No	No	-	-	-	-	No
R1375	F 1	SW	57	50	57	50	0.1	0.1	60	55	No	No	-	-	-	-	No
R1377	GF	SE	57	50	57	50	0	0	60	55	No	No	-	-	-	-	No
R1378	GF	SE	57	50	57	50	0	0.1	60	55	No	No	-	-	-	-	No
R1378	F 1	SW	59	51	59	51	0.1	0.1	60	55	No	No	-	-	-	-	No
R1379	GF	SE	58	51	58	51	0	0	60	55	No	No	-	-	-	-	No
R1380	GF	SE	57	50	57	50	0	0	60	55	No	No	-	-	-	-	No
R1381	GF	E	55	48	55	48	0.1	0	60	55	No	No	-	-	-	-	No
R1385	GF	SE	56	49	56	49	0	0	60	55	No	No	-	-	-	-	No
R1387	GF	SW	57	49	57	49	0	0.1	60	55	No	No	-	-	-	-	No
R1388	GF	SE	58	51	58	51	0	0.1	60	55	No	No	-	-	-	-	No
R1388	F 1	SE	59	52	59	52	0.1	0	60	55	No	No	-	-	-	-	No
R1392	GF	SE	57	50	57	50	0.1	0	60	55	No	No	-	-	-	-	No
R1392	F 1	SE	59	52	59	52	0.1	0.1	60	55	No	No	-	-	-	-	No
R1393	GF	SE	57	50	57	50	0	0	60	55	No	No	-	-	-	-	No
R1398	GF	SE	57	50	57	50	0	0.1	60	55	No	No	-	-	-	-	No
R1400	GF	SE	57	49	57	49	0.1	0	60	55	No	No	-	-	-	-	No
R1401	GF	S	57	50	57	50	0	0	60	55	No	No	-	-	-	-	No
R1402	GF	S	57	50	57	50	0.1	0.1	60	55	No	No	-	-	-	-	No
R1404	GF	E	59	52	59	52	0	0	60	55	No	No	-	-	-	-	No
R1408	GF	SE	59	51	59	51	0	0	60	55	No	No	-	-	-	-	No
R1410	GF	E	58	51	58	51	0	0	60	55	No	No	-	-	-	-	No
R1425	GF	W	58	51	58	51	0	0	50	1000	No	No	-	-	No	-	No
R1427	GF	W	59	52	59	52	0	0	50	1000	No	No	-	-	No	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1429	GF	NW	58	51	58	51	0	0	50	1000	No	No	-	-	No	-	No
R1430	GF	W	60	53	60	53	0	0	50	1000	No	No	-	-	No	-	No
R1431	GF	NW	58	50	58	50	0	0	50	1000	No	No	-	-	No	-	No
R1433	GF	W	57	50	57	50	0	0	50	1000	No	No	-	-	No	-	No
R1435	GF	W	59	52	59	52	0	0	50	1000	No	No	-	-	No	-	No
R1436	GF	W	61	54	61	54	0	0.1	50	1000	No	No	-	-	No	-	No
R1437	GF	W	56	49	56	49	0	0	60	55	No	No	-	-	-	-	No
R1437	F 1	W	56	49	56	49	0	0	60	55	No	No	-	-	-	-	No
R1438	GF	W	58	51	58	51	0	0	50	1000	No	No	-	-	No	-	No
R1438	F 1	W	61	54	61	54	0.1	0	50	1000	No	No	-	-	No	-	No
R1439	GF	N	64	57	64	57	0	0	50	1000	No	No	-	-	No	-	No
R1440	GF	NW	56	48	56	48	0	0	60	55	No	No	-	-	-	-	No
R1442	GF	W	59	52	59	52	0	0	50	1000	No	No	-	-	No	-	No
R1444	GF	NW	55	47	55	47	0	0	60	55	No	No	-	-	-	-	No
R1445	GF	NW	56	49	56	49	0	0	60	55	No	No	-	-	-	-	No
R1445	F 1	NW	56	49	56	49	0	0	60	55	No	No	-	-	-	-	No
R1447	GF	NW	53	46	53	46	0	0	60	55	No	No	-	-	-	-	No
R1448	GF	NW	55	48	55	48	0	0	60	55	No	No	-	-	-	-	No
R1448	F 1	NW	56	48	56	48	0	0	60	55	No	No	-	-	-	-	No
R1453	GF	NW	52	45	52	45	0	0	60	55	No	No	-	-	-	-	No
R1456	GF	N	65	58	65	58	0	0	50	1000	No	No	-	-	No	-	No
R1461	GF	N	54	47	54	47	0	0.1	60	55	No	No	-	-	-	-	No
R1461	F 1	N	55	48	55	48	0	0	60	55	No	No	-	-	-	-	No
R1464	GF	W	55	48	55	48	0	0	50	1000	No	No	-	-	No	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1464	F 1	W	58	51	58	51	0.1	0.1	50	1000	No	No	-	-	No	-	No
R1469	GF	W	62	55	62	55	0	0	50	1000	No	No	-	-	No	-	No
R1473	GF	N	69	62	69	62	0	0	60	55	No	No	-	-	No	No	No
R1474	GF	W	54	47	54	47	0	0	60	1000	No	No	-	-	-	-	No
R1480	GF	N	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R1482	GF	N	69	61	69	61	0	0	60	55	No	No	-	-	No	No	No
R1485	GF	W	59	51	59	51	0	0	60	55	No	No	-	-	-	-	No
R1487	GF	W	54	46	54	46	0	0.1	60	55	No	No	-	-	-	-	No
R1487	F 1	W	57	50	57	50	0.1	0.1	60	55	No	No	-	-	-	-	No
R1488	GF	W	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R1490	GF	W	56	49	56	49	0	0	60	55	No	No	-	-	-	-	No
R1491	GF	W	57	50	57	50	0	0	60	55	No	No	-	-	-	-	No
R1492	GF	N	69	62	69	62	0	0	60	55	No	No	-	-	No	No	No
R1494	GF	NW	54	46	54	46	0	0	60	55	No	No	-	-	-	-	No
R1495	GF	W	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R1495	F 1	W	55	48	55	48	0	0	60	55	No	No	-	-	-	-	No
R1496	GF	W	55	48	55	48	0	0	60	55	No	No	-	-	-	-	No
R1496	F 1	W	56	49	56	49	0	0	60	55	No	No	-	-	-	-	No
R1499	GF	W	53	46	53	46	0	0	60	55	No	No	-	-	-	-	No
R1500	GF	S	51	44	51	44	0	0	60	55	No	No	-	-	-	-	No
R1501	GF	W	57	50	57	50	0	0	60	55	No	No	-	-	-	-	No
R1503	GF	W	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R1504	GF	W	56	49	56	49	0	0	60	55	No	No	-	-	-	-	No
R1505	GF	W	54	47	54	47	0.1	0.1	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1506	GF	W	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R1507	GF	SW	53	45	53	45	0	0	60	55	No	No	-	-	-	-	No
R1508	GF	S	51	44	51	44	0	0	60	55	No	No	-	-	-	-	No
R1509	GF	N	68	61	68	61	0	0	60	55	No	No	-	-	No	No	No
R1510	GF	W	56	49	56	49	0.1	0	60	55	No	No	-	-	-	-	No
R1512	GF	W	55	48	55	48	0	0	60	55	No	No	-	-	-	-	No
R1512	F 1	W	56	49	56	49	0	0	60	55	No	No	-	-	-	-	No
R1513	GF	W	55	48	55	48	0	0	60	55	No	No	-	-	-	-	No
R1514	GF	W	55	48	55	48	0	0	60	55	No	No	-	-	-	-	No
R1514	F 1	W	56	49	56	49	0	0	60	55	No	No	-	-	-	-	No
R1515	GF	W	55	48	55	48	0	0.1	60	55	No	No	-	-	-	-	No
R1515	F 1	W	56	49	56	49	0	0	60	55	No	No	-	-	-	-	No
R1517	GF	S	53	46	53	46	0	0	60	55	No	No	-	-	-	-	No
R1518	GF	N	57	50	57	50	0	0	60	55	No	No	-	-	-	-	No
R1520	GF	S	51	43	51	43	0	0	60	55	No	No	-	-	-	-	No
R1521	GF	W	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R1521	F 1	W	56	48	56	48	0	0.1	60	55	No	No	-	-	-	-	No
R1522	GF	W	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R1523	GF	SW	52	44	52	44	0.1	0.1	60	55	No	No	-	-	-	-	No
R1524	GF	W	54	46	54	46	0	0	60	55	No	No	-	-	-	-	No
R1525	GF	W	52	45	52	45	0	0	60	55	No	No	-	-	-	-	No
R1525	F 1	W	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R1526	GF	N	69	61	69	61	0	0	60	55	No	No	-	-	No	No	No
R1528	GF	W	52	45	52	45	0	0	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1529	GF	W	54	46	54	46	0	0	60	55	No	No	-	-	-	-	No
R1531	GF	S	50	43	50	43	0	0	60	55	No	No	-	-	-	-	No
R1532	GF	N	51	44	51	44	0	0	60	55	No	No	-	-	-	-	No
R1533	GF	W	53	46	53	46	0	0	60	55	No	No	-	-	-	-	No
R1533	F 1	W	55	48	55	48	0.1	0.1	60	55	No	No	-	-	-	-	No
R1534	GF	W	50	42	50	42	0.1	0	60	54	No	No	-	-	-	-	No
R1535	GF	W	51	44	51	44	0	0	60	55	No	No	-	-	-	-	No
R1536	GF	SW	51	44	51	44	0	0	60	55	No	No	-	-	-	-	No
R1536	F 1	NW	53	46	53	46	0	0	60	55	No	No	-	-	-	-	No
R1537	GF	N	51	43	51	43	0	0	60	55	No	No	-	-	-	-	No
R1538	GF	W	51	44	51	44	0	0	60	55	No	No	-	-	-	-	No
R1539	GF	W	53	46	53	46	0	0	60	55	No	No	-	-	-	-	No
R1540	GF	W	50	43	50	43	0	0	60	55	No	No	-	-	-	-	No
R1541	GF	S	50	43	50	43	0	0	60	55	No	No	-	-	-	-	No
R1542	GF	W	54	46	54	46	0	0	60	55	No	No	-	-	-	-	No
R1543	GF	W	54	47	54	47	0	0.1	60	55	No	No	-	-	-	-	No
R1544	GF	W	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R1546	GF	W	55	48	55	48	0	0	60	55	No	No	-	-	-	-	No
R1547	GF	W	55	48	55	48	0	0	60	55	No	No	-	-	-	-	No
R1548	GF	N	51	44	51	44	0.1	0.1	60	55	No	No	-	-	-	-	No
R1548	F 1	W	55	47	55	47	0	0	60	55	No	No	-	-	-	-	No
R1549	GF	W	55	48	55	48	0.1	0.1	60	55	No	No	-	-	-	-	No
R1549	F 1	W	56	49	56	49	0	0	60	55	No	No	-	-	-	-	No
R1550	GF	NE	49	41	49	41	0	0	60	53	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1551	GF	W	56	49	56	49	0	0	60	55	No	No	-	-	-	-	No
R1553	GF	W	59	52	59	52	0	0	60	55	No	No	-	-	-	-	No
R1554	GF	W	57	50	57	50	0	0	60	55	No	No	-	-	-	-	No
R1555	GF	W	55	48	55	48	0.1	0.1	60	55	No	No	-	-	-	-	No
R1555	F 1	W	56	49	56	49	0	0.1	60	55	No	No	-	-	-	-	No
R1556	GF	W	55	48	55	48	0.1	0.1	60	55	No	No	-	-	-	-	No
R1556	F 1	W	56	49	56	49	0	0	60	55	No	No	-	-	-	-	No
R1558	GF	N	67	59	67	59	0	0	60	55	No	No	-	-	No	No	No
R1559	GF	W	60	52	60	52	0	0	60	55	No	No	-	-	-	-	No
R1560	GF	W	54	47	54	47	0.1	0.1	60	55	No	No	-	-	-	-	No
R1561	GF	W	55	47	55	47	0	0	60	55	No	No	-	-	-	-	No
R1563	GF	S	51	44	51	44	0	0	60	55	No	No	-	-	-	-	No
R1564	GF	W	55	48	55	48	0	0	60	55	No	No	-	-	-	-	No
R1564	F 1	W	56	48	56	48	0	0	60	55	No	No	-	-	-	-	No
R1565	GF	N	51	44	51	44	0	0	60	55	No	No	-	-	-	-	No
R1566	GF	N	52	44	52	44	0	0	60	55	No	No	-	-	-	-	No
R1567	GF	W	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R1568	GF	N	69	62	69	62	0	0	60	55	No	No	-	-	No	No	No
R1569	GF	S	68	61	68	61	0	0	60	55	No	No	-	-	No	No	No
R1570	GF	W	62	54	62	54	0	0	60	55	No	No	-	-	No	-	No
R1571	GF	NW	52	45	52	45	0.1	0	60	55	No	No	-	-	-	-	No
R1571	F 1	NW	53	46	53	46	0.1	0	60	55	No	No	-	-	-	-	No
R1572	GF	W	60	53	60	53	0	0	60	55	No	No	-	-	-	-	No
R1572	F 1	W	61	54	61	54	0	0	60	55	No	No	-	-	No	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1573	GF	N	52	44	52	44	0	0	60	55	No	No	-	-	-	-	No
R1574	GF	NW	60	53	60	53	0	0	60	55	No	No	-	-	-	-	No
R1574	F 1	NW	61	54	61	54	0	0	60	55	No	No	-	-	No	-	No
R1575	GF	W	51	44	51	44	0	0	60	55	No	No	-	-	-	-	No
R1576	GF	W	51	44	51	44	0	0	60	55	No	No	-	-	-	-	No
R1577	GF	W	51	44	51	44	0	0	60	55	No	No	-	-	-	-	No
R1578	GF	N	69	61	69	61	0	0	60	55	No	No	-	-	No	No	No
R1579	GF	W	59	52	59	52	0	0	60	55	No	No	-	-	-	-	No
R1580	GF	W	53	46	53	46	0	0	60	55	No	No	-	-	-	-	No
R1581	GF	W	58	51	58	51	0	0	60	55	No	No	-	-	-	-	No
R1582	GF	SW	51	44	51	44	0	0	60	55	No	No	-	-	-	-	No
R1582	F 1	SW	54	46	54	46	0	0.1	60	55	No	No	-	-	-	-	No
R1583	GF	W	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R1583	F 1	W	56	48	56	49	0.1	0.1	60	55	No	No	-	-	-	-	No
R1584	GF	S	70	63	70	63	0	0	60	55	No	No	-	-	No	No	No
R1585	GF	W	50	42	50	42	0.1	0	60	54	No	No	-	-	-	-	No
R1586	GF	N	51	43	51	43	0	0	60	55	No	No	-	-	-	-	No
R1586	F 1	S	55	47	55	47	0	0	60	55	No	No	-	-	-	-	No
R1587	GF	W	53	46	53	46	0	0	60	55	No	No	-	-	-	-	No
R1587	F 2	W	56	48	56	48	0	0.1	60	55	No	No	-	-	-	-	No
R1587	F 1	W	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R1588	GF	SW	57	50	57	50	0	0	60	55	No	No	-	-	-	-	No
R1588	F 1	SW	59	51	59	51	0	0	60	55	No	No	-	-	-	-	No
R1589	GF	W	57	50	57	50	0	0	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1590	GF	N	69	62	69	62	0	0	60	55	No	No	-	-	No	No	No
R1591	GF	N	56	49	56	49	0	0	60	55	No	No	-	-	-	-	No
R1592	GF	N	56	49	56	49	0	0	60	55	No	No	-	-	-	-	No
R1593	GF	W	57	50	57	50	0	0	60	55	No	No	-	-	-	-	No
R1594	GF	W	54	47	54	47	0.1	0.1	60	55	No	No	-	-	-	-	No
R1595	GF	W	53	46	53	46	0	0	60	55	No	No	-	-	-	-	No
R1596	GF	N	51	44	51	44	0	0	60	55	No	No	-	-	-	-	No
R1597	GF	W	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R1597	F 1	W	55	48	55	48	0	0	60	55	No	No	-	-	-	-	No
R1598	GF	N	54	47	54	47	0.1	0	60	55	No	No	-	-	-	-	No
R1600	GF	N	56	49	56	49	0	0	60	55	No	No	-	-	-	-	No
R1600	F 1	W	59	52	59	52	0	0	60	55	No	No	-	-	-	-	No
R1601	GF	NW	52	45	52	45	0.1	0.1	60	55	No	No	-	-	-	-	No
R1601	F 1	NW	54	46	54	46	0	0.1	60	55	No	No	-	-	-	-	No
R1602	GF	S	69	62	69	62	0	0	60	55	No	No	-	-	No	No	No
R1603	GF	W	57	50	57	50	0.1	0	60	55	No	No	-	-	-	-	No
R1604	GF	N	54	46	54	46	0	0	60	55	No	No	-	-	-	-	No
R1604	F 1	W	55	48	55	48	0	0	60	55	No	No	-	-	-	-	No
R1605	GF	W	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R1605	F 1	W	55	48	55	48	0	0	60	55	No	No	-	-	-	-	No
R1606	GF	S	57	50	57	50	0	0	60	55	No	No	-	-	-	-	No
R1607	GF	N	55	48	55	48	0	0	60	55	No	No	-	-	-	-	No
R1608	GF	W	56	48	56	48	0	0	60	55	No	No	-	-	-	-	No
R1609	GF	W	51	44	52	44	0.1	0	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1610	GF	N	69	62	69	62	0	0	60	55	No	No	-	-	No	No	No
R1612	GF	W	52	45	52	45	0.1	0	60	55	No	No	-	-	-	-	No
R1613	GF	N	56	49	56	49	0	0	60	55	No	No	-	-	-	-	No
R1613	F 1	W	60	53	60	53	0.1	0.1	60	55	No	No	-	-	-	-	No
R1614	GF	N	52	45	52	45	0	0	60	55	No	No	-	-	-	-	No
R1615	GF	N	52	45	52	45	0	0	60	55	No	No	-	-	-	-	No
R1615	F 1	N	53	46	53	46	0	0	60	55	No	No	-	-	-	-	No
R1616	GF	SE	68	61	68	61	0	0	60	55	No	No	-	-	No	No	No
R1617	GF	N	53	46	53	46	0	0	60	55	No	No	-	-	-	-	No
R1617	F 1	N	55	47	55	47	0	0	60	55	No	No	-	-	-	-	No
R1618	GF	N	52	45	52	45	0	0	60	55	No	No	-	-	-	-	No
R1619	GF	N	56	49	56	49	0	0	60	55	No	No	-	-	-	-	No
R1619	F 1	W	58	51	58	51	0	0	60	55	No	No	-	-	-	-	No
R1620	GF	W	50	43	50	43	0	0	60	55	No	No	-	-	-	-	No
R1620	F 1	W	53	46	53	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R1621	GF	W	52	45	52	45	0	0	60	55	No	No	-	-	-	-	No
R1621	F 1	W	54	47	54	47	0	-0.1	60	55	No	No	-	-	-	-	No
R1622	GF	N	69	62	69	62	0	0	60	55	No	No	-	-	No	No	No
R1623	GF	N	55	48	55	48	0	0	60	55	No	No	-	-	-	-	No
R1625	GF	N	52	45	52	45	0.1	0.1	60	55	No	No	-	-	-	-	No
R1625	F 1	W	53	46	53	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R1626	GF	N	56	49	56	49	0	0	60	55	No	No	-	-	-	-	No
R1626	F 1	W	59	52	59	52	0.1	0	60	55	No	No	-	-	-	-	No
R1627	GF	N	53	45	53	45	0	0	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1627	F 1	N	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R1628	GF	W	56	49	56	49	0	0.1	60	55	No	No	-	-	-	-	No
R1629	GF	SE	70	63	70	63	0	0	60	55	No	No	-	-	No	No	No
R1630	GF	N	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R1631	GF	N	52	45	52	45	0	0	60	55	No	No	-	-	-	-	No
R1632	GF	N	68	60	68	60	0	0	60	55	No	No	-	-	No	No	No
R1633	GF	N	51	43	51	44	0	0.1	60	55	No	No	-	-	-	-	No
R1634	GF	NW	53	46	53	46	0	0.1	60	55	No	No	-	-	-	-	No
R1634	F 1	NW	55	48	55	48	0	0	60	55	No	No	-	-	-	-	No
R1635	GF	W	54	46	54	46	0	0.1	60	55	No	No	-	-	-	-	No
R1636	GF	W	56	49	56	49	0	0	60	55	No	No	-	-	-	-	No
R1638	GF	W	52	45	53	45	0.1	0	60	55	No	No	-	-	-	-	No
R1639	GF	N	49	42	49	42	0	0	60	54	No	No	-	-	-	-	No
R1639	F 1	W	53	46	53	46	0	0	60	55	No	No	-	-	-	-	No
R1640	GF	N	54	47	54	47	0.1	0	60	55	No	No	-	-	-	-	No
R1641	GF	W	53	45	53	45	0	0	60	55	No	No	-	-	-	-	No
R1642	GF	NW	52	44	52	44	0	0	60	55	No	No	-	-	-	-	No
R1642	F 1	NW	54	46	54	46	0	0	60	55	No	No	-	-	-	-	No
R1643	GF	N	53	46	53	46	0	0	60	55	No	No	-	-	-	-	No
R1644	GF	N	56	49	56	49	0	0	60	55	No	No	-	-	-	-	No
R1645	GF	N	52	45	52	45	0	0	60	55	No	No	-	-	-	-	No
R1646	GF	N	52	44	52	44	0	0	60	55	No	No	-	-	-	-	No
R1646	F 1	W	55	48	55	48	0.1	0	60	55	No	No	-	-	-	-	No
R1647	GF	W	51	44	51	44	0	0	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1647	F 1	W	54	46	54	46	0	0	60	55	No	No	-	-	-	-	No
R1649	GF	SE	70	62	70	62	0	0	60	55	No	No	-	-	No	No	No
R1652	GF	SW	51	43	51	43	0	0	60	55	No	No	-	-	-	-	No
R1652	F 1	SW	54	46	54	46	0	0.1	60	55	No	No	-	-	-	-	No
R1653	GF	N	69	62	69	62	0	0	60	55	No	No	-	-	No	No	No
R1654	GF	W	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R1655	GF	N	52	44	52	44	0	0	60	55	No	No	-	-	-	-	No
R1656	GF	SW	51	43	51	43	0	0	60	55	No	No	-	-	-	-	No
R1657	GF	W	55	48	55	48	0	0	60	55	No	No	-	-	-	-	No
R1658	GF	N	51	44	51	44	0.1	0	60	55	No	No	-	-	-	-	No
R1658	F 1	W	53	46	53	46	0	0	60	55	No	No	-	-	-	-	No
R1660	GF	N	55	48	55	48	0	0.1	60	55	No	No	-	-	-	-	No
R1660	F 1	W	59	52	59	52	0	0	60	55	No	No	-	-	-	-	No
R1661	GF	S	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R1662	GF	N	52	45	52	45	0.1	0.1	60	55	No	No	-	-	-	-	No
R1663	GF	N	52	44	52	44	0	0	60	55	No	No	-	-	-	-	No
R1663	F 1	W	55	48	55	48	0.1	0.1	60	55	No	No	-	-	-	-	No
R1664	GF	SE	71	63	71	63	0	0	60	55	No	No	-	-	No	No	No
R1665	GF	NW	53	45	53	45	0	0	60	55	No	No	-	-	-	-	No
R1666	GF	N	68	60	68	60	0	0	60	55	No	No	-	-	No	No	No
R1668	GF	N	53	45	53	45	0	0	60	55	No	No	-	-	-	-	No
R1669	GF	N	51	43	51	43	0	0	60	55	No	No	-	-	-	-	No
R1671	GF	NE	50	43	50	43	0	0	60	55	No	No	-	-	-	-	No
R1672	GF	N	55	48	55	48	0	0	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1672	F 1	W	59	52	59	52	0	0.1	60	55	No	No	-	-	-	-	No
R1673	GF	NW	51	44	51	44	0	0	60	55	No	No	-	-	-	-	No
R1673	F 1	NW	54	47	54	47	0.1	0	60	55	No	No	-	-	-	-	No
R1674	GF	N	50	43	50	43	0	0	60	55	No	No	-	-	-	-	No
R1674	F 1	N	53	46	53	46	0	0	60	55	No	No	-	-	-	-	No
R1675	GF	N	51	44	51	44	0	0.1	60	55	No	No	-	-	-	-	No
R1675	F 1	N	53	46	53	46	0.1	0	60	55	No	No	-	-	-	-	No
R1676	GF	S	51	43	51	43	0	0	60	55	No	No	-	-	-	-	No
R1677	GF	W	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R1677	F 1	W	55	48	55	48	0	0	60	55	No	No	-	-	-	-	No
R1678	GF	N	52	45	52	45	0	0	60	55	No	No	-	-	-	-	No
R1678	F 1	W	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R1679	GF	SE	70	63	70	63	0	0	60	55	No	No	-	-	No	No	No
R1680	GF	N	68	60	68	60	0	0	60	55	No	No	-	-	No	No	No
R1681	GF	N	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R1686	GF	W	51	44	51	44	0	0	60	55	No	No	-	-	-	-	No
R1687	GF	W	52	45	52	45	0	0	60	55	No	No	-	-	-	-	No
R1687	F 1	W	58	51	58	51	0	0	60	55	No	No	-	-	-	-	No
R1688	GF	NW	52	45	52	45	0	0	60	55	No	No	-	-	-	-	No
R1688	F 1	NW	55	48	55	48	0	0	60	55	No	No	-	-	-	-	No
R1689	GF	S	50	43	50	43	0	0	60	55	No	No	-	-	-	-	No
R1691	GF	NW	53	46	53	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R1692	GF	NW	52	45	52	45	0.1	0	60	55	No	No	-	-	-	-	No
R1692	F 1	NW	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1693	GF	N	55	48	55	48	0.1	0.1	60	55	No	No	-	-	-	-	No
R1693	F 1	W	58	51	58	51	0	0	60	55	No	No	-	-	-	-	No
R1695	GF	SE	69	62	69	62	0	0	60	55	No	No	-	-	No	No	No
R1699	GF	N	52	45	52	45	0.1	0	60	55	No	No	-	-	-	-	No
R1699	F 1	W	55	48	55	48	0	0	60	55	No	No	-	-	-	-	No
R1700	GF	W	55	48	55	48	0	0	60	55	No	No	-	-	-	-	No
R1700	F 1	W	57	50	57	50	0.1	0	60	55	No	No	-	-	-	-	No
R1701	GF	NW	66	59	66	59	0	0	60	55	No	No	-	-	No	No	No
R1703	GF	N	51	44	51	44	0.2	0.1	60	55	No	No	-	-	-	-	No
R1704	GF	N	51	44	51	44	0	0	60	55	No	No	-	-	-	-	No
R1705	GF	NW	53	46	53	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R1705	F 1	NW	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R1707	GF	N	51	43	51	43	0	0	60	55	No	No	-	-	-	-	No
R1707	F 1	N	53	45	53	45	0	0.1	60	55	No	No	-	-	-	-	No
R1709	GF	N	50	42	50	42	0	0	60	54	No	No	-	-	-	-	No
R1709	F 1	W	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R1711	GF	NE	51	44	51	44	0	0	60	55	No	No	-	-	-	-	No
R1712	GF	N	54	47	54	47	0.1	0	60	55	No	No	-	-	-	-	No
R1712	F 1	S	57	50	57	50	0	0	60	55	No	No	-	-	-	-	No
R1713	GF	NW	53	46	53	46	0	0	60	55	No	No	-	-	-	-	No
R1714	GF	SE	69	62	69	62	0	0	60	55	No	No	-	-	No	No	No
R1715	GF	NW	69	62	69	62	0	0	60	55	No	No	-	-	No	No	No
R1718	GF	N	52	45	52	45	0	0	60	55	No	No	-	-	-	-	No
R1718	F 1	N	54	47	54	47	0	0.1	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1719	GF	N	51	44	51	44	0	0	60	55	No	No	-	-	-	-	No
R1721	GF	NW	53	46	53	46	0	0	60	55	No	No	-	-	-	-	No
R1721	F 1	NW	54	46	54	47	0.1	0.1	60	55	No	No	-	-	-	-	No
R1723	GF	N	51	44	51	44	0	0	60	55	No	No	-	-	-	-	No
R1726	GF	NW	53	46	53	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R1728	GF	SE	69	62	69	62	0	0	60	55	No	No	-	-	No	No	No
R1729	GF	N	51	44	51	44	0	0	60	55	No	No	-	-	-	-	No
R1730	GF	NW	68	61	68	61	0	0	60	55	No	No	-	-	No	No	No
R1731	GF	NW	50	43	50	43	0	0	60	55	No	No	-	-	-	-	No
R1733	GF	W	51	44	51	44	0	0	60	55	No	No	-	-	-	-	No
R1734	GF	NW	53	46	53	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R1734	F 1	NW	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R1735	GF	N	52	45	52	45	0	0.1	60	55	No	No	-	-	-	-	No
R1735	F 1	N	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R1737	GF	NW	53	46	53	46	0	0	60	55	No	No	-	-	-	-	No
R1737	F 1	NW	54	46	54	46	0	0	60	55	No	No	-	-	-	-	No
R1739	GF	NW	52	45	52	45	0	0	60	55	No	No	-	-	-	-	No
R1741	GF	W	51	44	51	44	0	0.1	60	55	No	No	-	-	-	-	No
R1743	GF	NW	52	45	52	45	0.2	0.2	60	55	No	No	-	-	-	-	No
R1745	GF	NW	69	62	69	62	0	0	60	55	No	No	-	-	No	No	No
R1746	GF	NW	53	46	53	46	0.1	0	60	55	No	No	-	-	-	-	No
R1749	GF	N	53	46	53	46	0	0.1	60	55	No	No	-	-	-	-	No
R1749	F 1	N	55	48	55	48	0.1	0.1	60	55	No	No	-	-	-	-	No
R1751	GF	W	52	45	52	45	0.1	0	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1752	GF	NW	53	46	53	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R1752	F 1	NW	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R1754	GF	NW	53	45	53	45	0.1	0	60	55	No	No	-	-	-	-	No
R1761	GF	NW	53	45	53	45	0	0	60	55	No	No	-	-	-	-	No
R1761	F 1	NW	55	47	55	47	0	0	60	55	No	No	-	-	-	-	No
R1762	GF	N	52	44	52	45	0	0.1	60	55	No	No	-	-	-	-	No
R1762	F 1	N	53	46	53	46	0	0.1	60	55	No	No	-	-	-	-	No
R1764	GF	NW	53	46	53	46	0	0	60	55	No	No	-	-	-	-	No
R1764	F 1	NW	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R1765	GF	NW	68	60	68	60	0	0	60	55	No	No	-	-	No	No	No
R1769	GF	SW	52	45	52	45	0	0.1	60	55	No	No	-	-	-	-	No
R1771	GF	W	48	41	48	41	0	0	60	53	No	No	-	-	-	-	No
R1772	GF	W	51	44	51	44	0	0	60	55	No	No	-	-	-	-	No
R1776	GF	SW	57	50	57	50	0	0	60	55	No	No	-	-	-	-	No
R1779	GF	N	51	44	51	44	0	0	60	55	No	No	-	-	-	-	No
R1786	GF	SW	54	46	54	46	0	0	60	55	No	No	-	-	-	-	No
R1788	GF	SW	53	46	54	46	0.1	0	60	55	No	No	-	-	-	-	No
R1791	GF	W	54	46	54	46	0	0	60	55	No	No	-	-	-	-	No
R1791	F 1	W	54	47	54	47	0	0	60	55	No	No	-	-	-	-	No
R1792	GF	W	54	46	54	46	0.1	0.1	60	55	No	No	-	-	-	-	No
R1792	F 1	W	54	47	54	47	0.1	0.1	60	55	No	No	-	-	-	-	No
R1795	GF	NW	51	44	51	44	0	0.1	60	55	No	No	-	-	-	-	No
R1880	GF	SW	50	43	51	43	0.2	0.2	60	55	No	No	-	-	-	-	No
R1881	GF	S	51	43	51	43	0.1	0.1	60	55	No	No	-	-	-	-	No

Receiver ID	Façade		Predicted noise level Design Year 2037				Change in noise level (Build – no build)		NCG Project road noise criteria		Do noise levels exceed the NCG relative increase criteria?		Do noise levels equal or exceed the cumulative limit with project roads adding ≥2dB to the total noise levels?		Is the contribution from the road project Acute?		Is the property considered for further treatment?
	Floor level	Direction	No Build		Build		Design Year 2037										
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
R1882	GF	S	50	43	51	43	0.2	0.1	60	55	No	No	-	-	-	-	No
R1883	GF	S	50	43	50	43	0.2	0.1	60	55	No	No	-	-	-	-	No
R1884	GF	S	50	43	50	43	0.1	0.1	60	55	No	No	-	-	-	-	No
R1885	GF	S	51	43	51	43	0.1	0.1	60	55	No	No	-	-	-	-	No

ghd.com

→ The Power of Commitment

August 2023
TfNSW 23.106
ISBN: 978-1-922875-86-0