

VOLUME 4

Airport to Botany – Assessment of Traffic Noise Effects

December 2022

Version 1

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Appendix A – Predicted noise levels at all PPFs

Appendix B – Noise level contours and NZS6806 Categories

Glossary of Defined Terms and Acronyms

Acronym/Term	Description
AC	Asphaltic Concrete
AEE	Assessment of Effects on the Environment report
AUP:OP	Auckland Unitary Plan: Operative in Part
BRT	Bus Rapid Transit
CVA	Cultural Values Assessments
FUZ	Future Urban Zone
HANA	High Aircraft Noise Area
HCV	Heavy commercial vehicles
MANA	Moderate Aircraft Noise Area
N/A	Not Applicable
NIMT	North Island Main Trunk railway
NoR	Notice of Requirement
NoR 1	Notice of Requirement 1: Airport to Botany Bus Rapid Transit (Botany Town Centre to Rongomai Park)
NoR 2	Notice of Requirement 2: Airport to Botany Bus Rapid Transit (Rongomai Park to Puhinui Station, in the vicinity of Plunket Avenue)
NoR 3	Notice of Requirement 3: Airport to Botany Bus Rapid Transit (Puhinui Station, in the vicinity of Plunket Avenue to SH20/20B Interchange)
NoR 4a	Notice of Requirement 4a: Airport to Botany Bus Rapid Transit (SH20/20B Interchange to Orrs Road)
NoR 4b	Notice of Requirement 4b: Alteration to NZ Transport Agency Designation 6717 – State Highway 20B
NPS:UD	National Policy Statement for Urban Development 2020
PPF	Protected Premise and Facility
Programme partners	Te Ākitai Waiohū, Auckland Airport, Auckland Transport and Waka Kotahi
RCA	Road Controlling Authority
RMA	Resource Management Act 1991
RP	Regional Plan
RPS	Regional Policy Statement
SEA	Significant Ecological Area
SH1	State Highway 1
SH20	State Highway 20
SH20B	State Highway 20B
SWGPP	Southwest Gateway Programme
Te Tupu Ngātahi	Te Tupu Ngātahi Supporting Growth
Waka Kotahi	Waka Kotahi NZ Transport Agency

Executive summary

This report provides an assessment of traffic noise effects for the Airport to Botany Bus Rapid Transit project (**the Project**) to inform the Assessment of Effects on the Environment (**AEE**) for five Notices of Requirement (**NoR**) being sought by Waka Kotahi NZ Transport Agency (**Waka Kotahi**) and Auckland Transport.

Methodology

The following methodology has been used for the traffic noise assessment for all NoRs:

- The noise criteria categories of NZS6806 Acoustics – Road-traffic noise – New and altered roads (**NZS6806**); and
- Noise effects (both positive and adverse) through determining the noise level changes due to the Project.

The NoRs provide for various transport modes which have different noise effects as discussed below:

- **Bus Rapid Transit (BRT):** We understand that only electric buses will use the bus lanes. Electric buses generate a small to moderate level of noise. For speeds above 40 km/h the road tyre interaction is the main noise source of traffic, and buses are expected to travel at speeds at or above 40 km/h. Nevertheless, electric buses are quieter than diesel buses, particularly at stations, and can be quieter than petrol and diesel passenger vehicles. Where the rapid transit lanes are located in the centre of the road, which is the case for most of the Project corridor, buses may contribute to the overall traffic levels at all (e.g. for majority of the Project corridor, where the lanes are in the middle of the general traffic lanes) or may contribute slightly. We have assessed the rapid transit traffic noise against the noise criteria of NZS6806.
- **Walking and Cycling:** Walking and cycling improvements will not result in noticeable changes to the traffic noise level and are not discussed in detail.
- **Road traffic on ‘Altered roads’:** The existing traffic lanes will be changed to enable rapid transit to be implemented. In addition, intersection upgrades will be required. We have therefore assessed the NoRs against the provisions of NZS6806.

We have assessed the bus rapid transit corridor and existing road upgrades together as they are intrinsically linked to each other. We assumed that the same or a similar road surface material (currently PA10 on SH20B and generally Asphaltic Concrete (**AC**) on all other roads) would be retained in the future, based on information provided by Auckland Transport and Waka Kotahi.

We used computer noise modelling to predict existing, and future traffic noise levels (both without and with the Project in place). Noise levels were predicted for each individual Protected Premise and Facility (**PPF**) and also noise level contours over a wider area.

The National Policy Statement on Urban Development (**NPS:UD**) enables higher density dwellings for sites adjacent to the BRT corridor. We anticipate that apart from areas within the High Aircraft Noise Area (**HANA**):

- Zoning within a walkable catchment of BRT stations along the corridor will enable at a minimum, apartment buildings of six storeys; and

- Beyond walkable catchments, residential zoning will provide for three dwelling up to three storeys in height (subject to meeting the relevant development standards).

While we have not assessed the potential noise levels received by possible future dwellings, we have commented on the likelihood of any potential changes to the mitigation options if more intensive development were to eventuate.

Mitigation recommendations

We have assessed all existing PPFs within 100m of the Project edge. A small number may benefit from improved boundary fences (potentially in NoR 1 where no site access from the Project road is required). In NoRs 2 and 3, sites have driveway access to the road. Therefore, fences are unlikely to be effective given the gaps required to retain access.

Overall, we recommend the implementation of low noise road surface, in this instance the retention of existing road surface materials, across all NoRs. This mitigation will also benefit any future sensitive receivers, e.g. where the NPS:UD enables higher density dwellings along the alignment.

Generally, no new noise sensitive activities are permitted in the HANA. In the Medium Aircraft Noise Area (**MANA**) any new noise sensitive activities will need to insulate appropriately against aircraft noise, which in turn will also provide mitigation against traffic noise. Given the likelihood of multi storey dwellings in an urban or suburban environment, barriers are unlikely to be a practicable mitigation measure. Low noise road surface is already proposed, and buildings will need to include improved building insulation and ventilation within the MANA. Outside the MANA, we consider that responsible developers would take account of the high noise levels from the existing major roads in the vicinity and ensure that dwellings are appropriately insulated and ventilated to ensure a suitable indoor noise environment for future residents.

Effects analysis

We compared the result of the individual traffic noise level predictions with the noise criteria categories A, B and C of NZS6806, and calculated the anticipated noise level change due to the Project.

The aim is to achieve the lowest practicable traffic noise level where the Project would otherwise result in an adverse effect on the noise level experienced by sensitive receivers (PPFs).

Overall, the change in noise level is predicted to be minimal due to the traffic generation itself. However, many dwellings are intended to be removed to make space for the Project. The removal of the first row of houses will result in noticeable to significant noise level changes to PPFs behind. Mostly, those PPFs would still receive noise levels within Category A (the preferred noise criteria category), however, a small number of PPFs would receive a noticeable noise level increase and noise levels within Category B or C.

For the vast majority of PPFs (1,536 of the total of 1,781 PPFs assessed across all NoRs), the noise level changes due to the Project will be insignificant (ranging from +2 to -2 dB).

Should more intensive housing be developed adjacent to the Project, the design would need to take account of the anticipated noise environment. That would be assisted by the fact that much of the Project is within the MANA and HANA, where sound insulation is a requirement of the AUP:OP, and

by the recommended low noise road surface to be used both on the BRT and the surrounding traffic lanes.

Summary of assessment of effects and recommendations

Effect	Assessment	Recommendation
Traffic noise – all NoRs	<p>NoRs 1, 2 and 3 traverse well established residential and commercial areas, with buildings in close proximity to construction works.</p> <p>NoR 4a and 4b traverses currently generally greenfield sites (some zoned FUZ), which will likely be developed as commercial areas.</p> <p>PPFs include dwellings, schools, childcare centres and other educational facilities. Only existing PPFs have been assessed in detail.</p> <p>The largest effects are anticipated from the removal of the first row of house in NoR 2 and 3, and parts of NoR 1. This will leave PPFs behind exposed to traffic noise.</p> <p>Other effects are likely from traffic lanes moving closer to some houses.</p>	<p>Mitigation is already assumed in the form of low noise road surface, by retaining the existing surface in the future.</p> <p>Some individual boundary fences may be effective in NoR 1, 2 and 3.</p> <p>Fencing in NoR 2 and 3 is unlikely to be suitable due to driveway access requirements.</p>

1 Introduction

1.1 Purpose and scope of this Report

This Assessment of Traffic Noise and Vibration Effects report (**Report**) has been prepared to inform the AEE for five NoRs being sought by Waka Kotahi and Auckland Transport for the Project under the Resource Management Act 1991 (**RMA**). Specifically, this report considers the actual and potential effects associated with operation of the project on the existing and likely future environment as it relates to traffic noise and vibration effects and recommends measures that may be implemented to avoid, remedy and/or mitigate these effects.

This Report should be read alongside the AEE, which contains further details on the history and context of the Project. The AEE also contains a detailed description of works to be authorised within each NoR, and the typical construction methodology that is anticipated to be used to implement this work. These have been reviewed by the author of this report and have been considered as part of this assessment of construction noise and vibration effects. As such, they are not repeated here. Where a description of an activity is necessary to understand the potential effects, it has been included in this report for clarity.

1.2 Report structure

In order to provide a clear assessment of each NoR, this Report follows the structure set out in the AEE. That is, each notice has been separated out into its own section, and each section contains an assessment of the actual and potential effects for the specific NoR. Where appropriate, measures to avoid, remedy or mitigate effects are recommended in a subsequent section.

Each section is arranged in geographical order, starting from the northernmost point of the Project to the southernmost point. Table 1 below describes the extent of each section, and where the description of effects can be found in this report.

Table 1 Report structure

Sections	Section number
Description of the Project	2
Overview of the methodology used to undertake the assessment and identification of the assessment criteria and any relevant standards or guidelines	4
Identification and description of the existing and likely receiving noise environment;	6.1, 7.1, 8.1, 9.1
Assessment of specific traffic noise matters for Airport to Botany Bus Rapid Transit NoR 1	6
Assessment of specific traffic noise matters for Airport to Botany Bus Rapid Transit NoR 2	7
Assessment of specific traffic noise matters for Airport to Botany Bus Rapid Transit NoR 3	8
Assessment of specific traffic noise matters for Airport to Botany Bus Rapid Transit NoR 4a and 4b	9
Overall conclusion of the level of potential adverse traffic noise effects of the Airport to Botany Bus Rapid Transit Project	10

1.3 Preparation for this Report

Work undertaken for this Report commenced in January 2022. In summary, the preparation for this report has included:

- Information from other experts, namely traffic, construction, design and planning amongst others;
- A site visit of all NoRs on 2 March 2022;
- Ambient noise level surveys in the Project area;
- Computer noise modelling of traffic noise levels from the BRT and general road traffic; and
- A review of findings from a workshop with the Project technical specialists on 8 March 2022.

Where information we rely on was provided by other experts, this is noted in the report.

2 Project description

2.1 Overview of the Project

The overall Project is proposed to be an 18 km fast, high capacity, reliable, and frequent Bus Rapid Transit (**BRT**) connection with twelve stations. It is part of Auckland's wider Rapid Transit Network (**RTN**) connecting Auckland Airport and its employment areas with major urban centres including Manukau and Botany.

As set out in the AEE, this Report specifically relates to a portion of the overall Project (approximately 14.9 km) which extends from the Botany Town Centre in the vicinity of Leixlep Lane to Orrs Road in the Puhinui peninsula, off SH20B. The Project primarily involves the upgrade and widening of existing transport corridors to provide for a dedicated BRT corridor and high-quality walking and cycling facilities.

Nine BRT stations are proposed as part of the Project. These stations are generally located at signalised intersections and will be staggered on either side of the intersection.

These stations are situated in the following locations:

- Smales Road;
- Accent Drive;
- Ormiston Road – Botany Junction Shopping Centre;
- Dawson Road;
- Diorella Drive;
- Ronwood Avenue (Manukau Central);
- Manukau Station;
- Puhinui Road/Lambie Drive; and
- Puhinui Station.

As part of the Project, two new structures are proposed:

- A BRT bridge crossing the North Island Main Trunk (**NIMT**) and connecting to the concourse level of the Puhinui Station; and
- A southbound ramp from SH20B to SH20.

Upgrades to existing structures are proposed at the:

- Bridge over Otara Creek (NoR 1);
- Bridge over SH1 (NoR 2);
- Bridge over NIMT (NoR 3); and
- Bridge over Waokauri Creek (NoR 4a).



Figure 1: Overview of the Project and NoR extents

Table 2: Overview of NoRs

Notice	Description	Requiring Authority
NoR 1	Bus Rapid Transit corridor and high quality walking and cycling facilities from Botany Town Centre to Rongomai Park	Auckland Transport
NoR 2	Bus Rapid Transit corridor and high quality walking and cycling facilities from Rongomai Park to Puhinui Interchange, in the vicinity of Plunket Avenue	Auckland Transport
NoR 3	Bus Rapid Transit corridor and high quality walking and cycling facilities from Puhinui Interchange, in the vicinity of Plunket Avenue to SH20/SH20B Interchange	Auckland Transport
NoR 4a	Bus Rapid Transit corridor and high quality walking and cycling facilities from SH20B/20 Interchange to Orrs Road	Auckland Transport
NoR 4b	Alteration to designation 6717 to provide for the widening of SH20B, including a southbound on-ramp onto SH20, high quality walking and cycling facilities and enable a Bus Rapid Transit corridor	NZ Transport Agency

2.2 Overview and description of each NoR

The following sections provide an overview of the NoRs that make up the Project, in relation to traffic noise generation. For more detail, refer to the AEE.

2.2.1 NoR 1

As set out in Table 3 below, the proposed works in NoR 1 include the widening of existing Te Irirangi Drive to accommodate a centre-running BRT corridor, two vehicle lanes in each direction and high quality walking and cycling facilities.

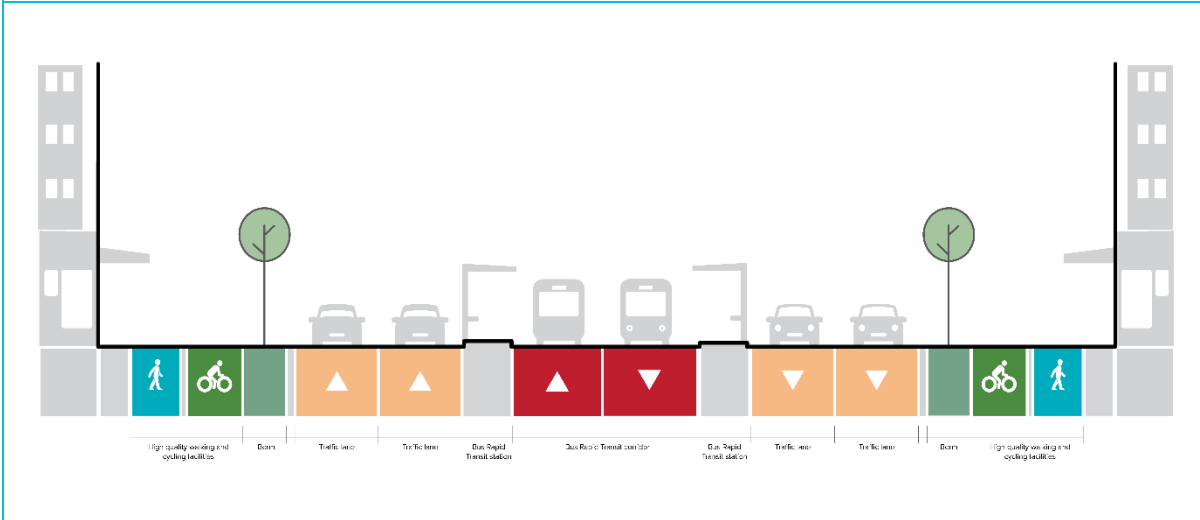
Table 3: Overview of NoR 1

NoR 1 – Botany Town Centre to Rongomai Park	
<p>The map shows the proposed BRT corridor along Te Irirangi Drive, extending from Ormiston in the west to East Tāmaiki in the east. Key roads shown include Springs Road, Ormiston Road, Accent Drive, and Smales Road. The corridor is marked with a blue line, and stations are indicated by blue circles. A red dashed line represents the proposed designation boundary. A key map in the top left shows the project's location within the wider region. A scale bar at the bottom right indicates distances up to 1000 metres.</p>	
Key features	
BRT Corridor	Centre-running along Te Irirangi Drive
BRT Stations	<ul style="list-style-type: none"> • Smales Road Station; • Accent Drive Station; and • Ormiston Road Station.
Walking and cycling facilities	Walking and cycling facilities on both sides of the corridor
General traffic	Two lanes in each direction (existing)
Access	There is an existing central median along the majority of Te Irirangi Drive which restricts right-turn access
Speed environment	50km/h

Signalised intersections

- Te Iirangi Drive and Smales Road;
- Te Iirangi Drive and Accent Drive;
- Te Iirangi Drive and Bishop Dunn Avenue; and
- Te Iirangi Drive and Ormiston Road.

NoR 1 typical cross section



2.2.2 NoR 2

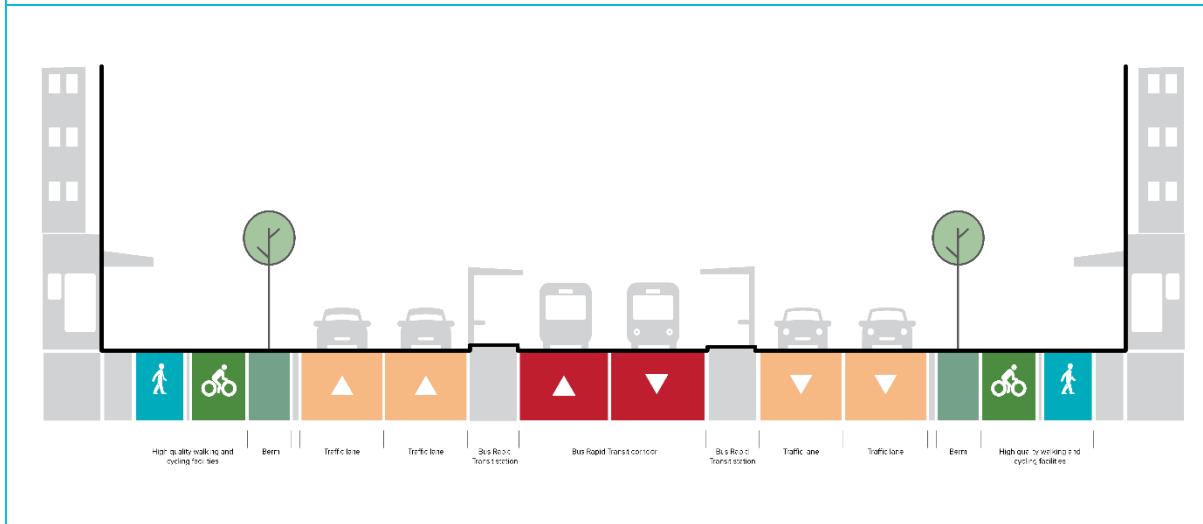
As set out in Table 4 below, the proposed works in NoR 2 include the widening of several existing roads to accommodate a centre-running BRT corridor, vehicle lanes and high quality walking and cycling facilities.

Table 4: Overview of NoR 2

NoR 2 – Rongomai Park to Puhinui Station, in the vicinity of Plunket Avenue	
Key features	
BRT Corridor	<p>Centre-running for the majority of the corridor along Te Irirangi Drive, Great South Road, Ronwood Avenue, Manukau Station Road, Lambie Drive, and Puhinui Road</p> <p>West-running on Davies Avenue along the edge of Hayman Park</p>
BRT stations	<ul style="list-style-type: none"> • Dawson Road Station; • Diorella Drive Station; • Ronwood Avenue Station; • Manukau Station; and • Corner of Lambie Drive and Puhinui Road Station.
Walking and cycling facilities	Walking and cycling facilities on both sides of the corridor
General traffic	<ul style="list-style-type: none"> • Two lanes in each direction along Te Irirangi Drive, Great South Road, Ronwood Avenue, Manukau Station Road, and Lambie Drive; • One-way single lane along Davies Avenue; and

	<ul style="list-style-type: none"> One lane in each direction along Puhinui Road.
Access	<p>Existing central medians limit right turn access on Te Irirangi Drive, Great South Road, Ronwood Avenue, and Lambie Drive.</p> <p>New signalised intersection at Mitre 10 and Bunnings Warehouse on Lambie Drive.</p> <p>Priority access for fire engine movements across the BRT corridor at Papatoetoe Fire Station.</p>
Speed environment	<ul style="list-style-type: none"> 30 km/h on Ronwood Avenue and Davies Avenue; and 50 km/h on Te Irirangi Drive, Great South Road, Manukau Station Road, Lambie Drive and Puhinui Road.
Signalised intersections (new intersections in bold)	<ul style="list-style-type: none"> Te Irirangi Drive and Dawson Road; Te Irirangi Drive, Boundary Road and Hollyford Drive; Te Irirangi Drive and Diorella Drive; Te Irirangi Drive, Great South Road and Cavendish Drive; Great South Road and Ronwood Avenue; Ronwood Avenue and Davies Avenue; Davies Avenue, Wiri Station Road and Manukau Station Road; Manukau Station Road and Lambie Drive; Mitre 10 and Bunnings Warehouse; Lambie Drive and Ronwood Avenue; Lambie Drive and Cavendish Drive; Lambie Drive and Puhinui Road; and Puhinui Road and Plunket Avenue.

NoR 2 typical cross section



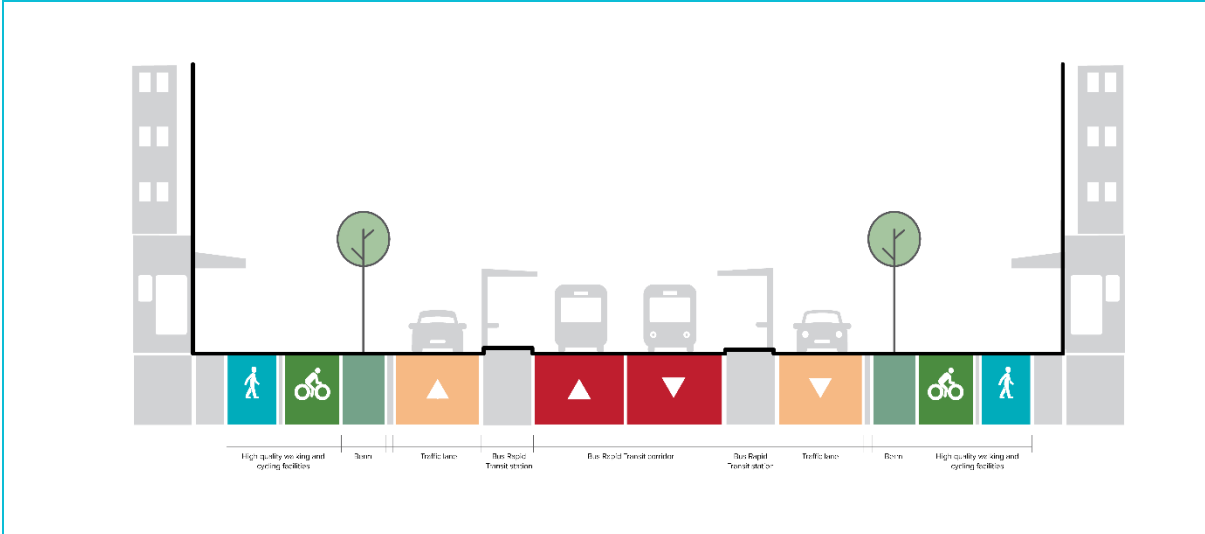
2.2.3 NoR 3

As set out in Table 5 below, the proposed works in NoR 3 include the widening of the existing Puhinui Road to accommodate a centre-running BRT corridor, vehicle lanes and high quality walking and cycling facilities. As part of the proposed works, a BRT bridge over the NIMT is proposed to connect to the Puhinui Station.

Table 5: Overview of NoR 3

NoR 3 – Puhinui Station, in the vicinity of Plunket Avenue to SH20/20B Interchange	
<p>The map shows an aerial view of the Puhinui Station area. A blue line represents the proposed BRT corridor along Puhinui Road. A blue bridge structure is shown crossing the NIMT. A red dashed line indicates the NoR 3 proposed designation boundary. A blue circle with a white center marks the proposed BRT station. Other streets shown include Plunket Avenue and Cavendish Drive. A key map in the top left shows the location within the larger project area. A legend at the bottom left explains the symbols. A scale bar at the bottom right shows 0, 250, and 500 metres.</p>	
Key features	
BRT Corridor	Centre-running along Puhinui Road connecting to the Puhinui Station concourse via a new BRT bridge structure
BRT Stations	Puhinui Station
Walking and cycling facilities	<ul style="list-style-type: none"> Walking and cycling facilities on both sides of the corridor; and Walking and cycling facilities will be provided along Cambridge Terrace, Bridge Street and Kenderdine Road.
General traffic	One lane in each direction on Puhinui Road
Access	Limited right turn access
Speed environment	50 km/h
Signalised intersections	<ul style="list-style-type: none"> Puhinui Road and Noel Burnside Road; and Puhinui Road and Wyllie Road.

NoR 3 typical cross section



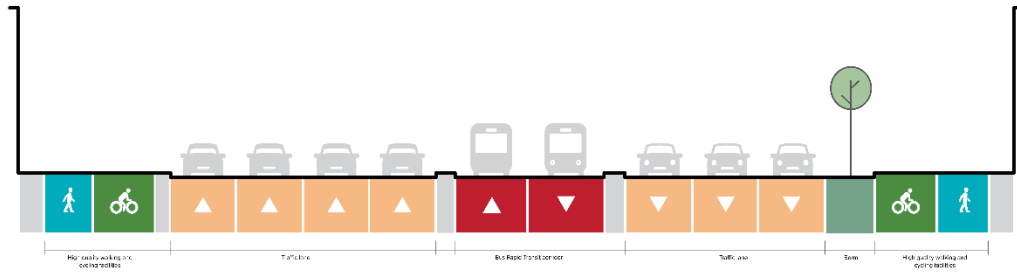
2.2.4 NoRs 4a and 4b

As set out in Table 6 below, the proposed works in NoRs 4a and 4b include the widening of SH20B to accommodate a centre-running BRT corridor until the Manukau Memorial Gardens. From this point, the BRT corridor shifts south of SH20B until Orrs Road. Proposed works also include high quality walking and cycling facilities, eastbound lanes to Auckland Airport and a ramp from SH20B onto SH20 for southbound traffic.

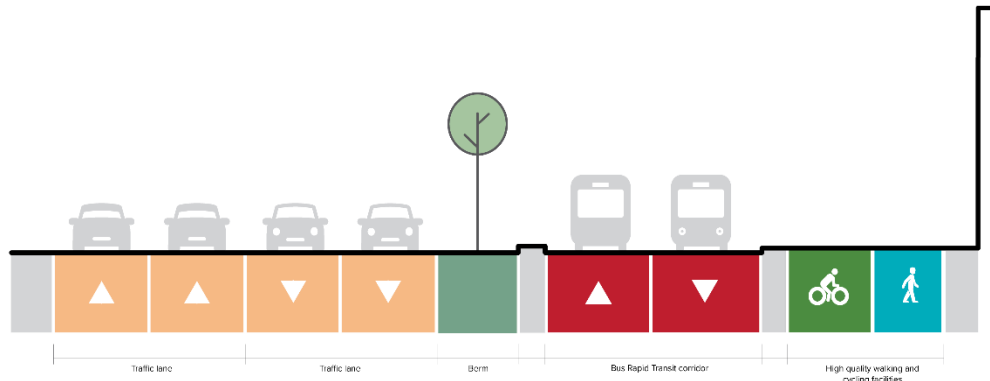
Table 6: Overview of NoR 4a and 4b

NoRs 4a and 4b – SH20/20B Interchange to Orrs Road	
Key features	
BRT corridor	Centre-running on Puhinui Road through to the Manukau Memorial Gardens intersection (approx. 600 m west of SH20/20B Interchange); and South running to Orrs Road.
Walking and cycling facilities	Walking and cycling facilities on southern side of the corridor
General traffic	Two lanes in each direction; and New southbound ramp from SH20B onto SH20.
Access	Limited access; and Access maintained via signals at Manukau Memorial Gardens and Campana Road.
Speed environment	60 km/h
Signalised intersections	SH20/SH20B Interchange; Puhinui Road and Manukau Memorial Gardens; and Puhinui Road and Campana Road.

NoR 4b typical cross section



NoR 4a typical cross section



3 Performance standards

New designations are sought for the Project for NoR 1, NoR 2, NoR 3 and NoR 4a and an alteration to an existing designation (NoR 4b) to enable the construction and operation of the Project. Therefore, we have reviewed a variety of criteria and standards and have recommended noise and vibration performance standards that in our opinion should apply to the relevant NoRs depending on the Requiring Authority.

3.1 Noise

3.1.1 Guidelines and standards reviewed

We reviewed the following guidelines and standards for the assessment construction noise:

- Auckland Unitary Plan Operative in Part (**AUP:OP**), specifically rule E25.6.33 relating to transport noise and referencing New Zealand Standard NZS6806:2010 (**NZS6806**);
- NZS6806:2010 Acoustics – Road-traffic Noise – New and altered roads; and
- Waka Kotahi’s “Guide to assessing road-traffic noise using NZS 6806 for state highway asset improvement projects” (**Guide**), V1.1, August 2016.

We recommend applying the requirements of NZS6806, within the relevant framework of both Waka Kotahi and Auckland Transport depending on the Requiring Authority for each NoR.

Waka Kotahi’s Guide provides further guidance on how NZS6806 should be implemented. It describes some Waka Kotahi specific processes, such as the use of a Waka Kotahi internal matrix of project discipline feedback when determining the best practicable option (**BPO**) for noise mitigation. Overall, the Guide provides background on how to implement NZS6806, and is therefore a useful complimentary document to NZS6806. We recommend that it is used for the assessment of NoR 4b.

3.1.2 NZS6806

NZS6806 has been adopted as the appropriate standard for the assessment of traffic noise by Waka Kotahi and is also required to be implemented by the AUP:OP and therefore has been adopted by Auckland Transport.

We consider the intent of NZS6806 is to provide a pragmatic approach to the use of noise mitigation. This approach includes the requirement that a roading project needs to have a noticeable noise effect before mitigation is considered, and that any mitigation needs to achieve a noticeable reduction in noise level.

NZS6806 applies to traffic noise assessments where a project falls within its thresholds, which are briefly explained below.

- **Assessment Positions** are described as “Protected Premises and Facilities”. PPFs include dwellings (including those that have building consent but are not built yet), educational facilities and their playgrounds within 20m of any school building, boarding houses, retirement villages, Marae, hospitals with in-patient facilities and motels/hotels in residential zones. Areas earmarked for future residential development are not PPFs as the location and specific type of the receiving buildings is not known. However, to provide information for the future developers, we have

provided noise level predictions over vacant land also. Businesses are not PPFs as they are not considered noise sensitive and are often noise generators in their own right.

- **Assessment Extent** is 100m from the edge of the carriageway (i.e. the kerb) for urban areas. The entire Project corridor is within an existing urban area in accordance with Statistics New Zealand, as required by NZS6806.
- **Assessment Areas** are areas which combine PPFs that would benefit from the same mitigation (e.g. noise barriers). For this Project, given the longer implementation period, we have prepared an overview of proposed mitigation for each of the NoRs rather than dividing the areas further.
- **Design Year** is a year 10 to 20 years after opening of the Project. Since there are a number of NoRs assessed, without a defined implementation year, we chose a scenario where all NoRs are implemented, and the area is developed to its fullest potential. The design year for this scenario is 2048.
- **Noise Criteria Categories** are set out in the Standard for ‘new’ and ‘altered’ roads. This Project consist of altered roads only. The Noise Criteria Categories are set out in Table 7 below.

Table 7: Noise criteria categories

Category	Altered Road dB $L_{Aeq(24h)}$
A (primary external noise category)	≤ 64
B (secondary external noise category)	64 – 67
C (internal noise category)	40 (provided the external noise level is > 67)

The applicable category at any PPF depends on the BPO test, by progressively applying the noise criteria categories to determine which can practicably be achieved. NZS6806 is clear that preference is to be given to structural mitigation over building modification mitigation. NZS 6806 also requires achievement of the lowest external noise level with practicable structural mitigation, before considering building modification to mitigate internal noise levels.

- **Applicability of the Standard:** There are two steps that must be followed to determine whether an assessment is required to be carried out in accordance with NZS6806. The first step in this process is to determine if the proposal includes roads defined in the Standard as a ‘new road’ or as an ‘altered road’. For this Project, all roads may be considered “altered roads”.

The second step is then to determine whether the standard would further apply to the Project with respect to clause 1.5.2 for altered roads. In summary, the standard applies only when the Do–minimum noise environment is compared to the Do–nothing noise environment, and certain criteria are met. These are:

- the do–minimum noise environment is greater than or equal to 64 dB $L_{Aeq(24h)}$ and noise levels are predicted to increase by 3 dB, or;
- the do minimum noise environment is greater than or equal to 68 dB $L_{Aeq(24h)}$ and noise levels are predicted to increase by 1 dB.

- **Assessment Scenarios** are the various operational scenarios that we assess and compare. The Standard includes the following scenarios:
 - Existing noise environment: consists of the current road layout and traffic volume (for this Project we sourced traffic data to be as current as practical while excluding data that was significantly affected by COVID-19 restrictions, ranging from 2015 to 2021).

- b. **Future Do-nothing scenario:** This scenario consists of the existing roads as for the existing noise environment, with traffic volume at the Design Year (2048). This scenario assumes that the full development of all surrounding areas has occurred, and traffic volumes have increased because of that development.
 - c. **Future Do-minimum scenario:** consists of the proposed Project at the Design Year (2048), without any specific noise mitigation. This scenario means that the only barriers included are solid safety barriers, which are required for reasons other than noise mitigation. Where a low noise road surface such as AC14 or PA10 30mm is proposed as the “base” road surface (as is the case for all NoRs), this is also included in the Do-minimum scenario. Local roads that are not proposed to be altered by the Project are not included in the assessment.
 - d. **Future Project with mitigation:** consists of the proposed Project roads at the Design Year, and includes mitigation that is designed specifically to reduce noise levels
- **Mitigation Requirements** are set out in the Standard based on the BPO. Mitigation is split into structural (road surface, barriers, bunds) and building modification mitigation (improvement of building façades and ventilation, subsequent to the implementation of the structural mitigation, generally only considered for PPFs receiving noise levels within Category C). Any mitigation should achieve a noticeable noise level reduction of an average of 3 decibels within each assessment area.

3.1.3 Subjective perception of noise level changes

The subjective impression of changes in noise can generally be correlated with the numerical change in noise level. While every person reacts differently to noise level changes, research shows a general correlation between noise level changes and subjective responses.¹ Table 8 shows indicative subjective responses to explain the noise level changes discussed in this report.

The perception of these noise level changes generally applies to immediate changes in noise level, as would be the case for a new road. This is not the case for this Project as an existing road is proposed to be modified in a minor way. However, people may subjectively have an annoyance reaction to a greater or lesser degree, depending on their perception of the Project.

Table 8: Noise level change compared with general subjective perception

Noise level change	General subjective perception ²
1–2 decibels	Insignificant/imperceptible change
3–4 decibels	Just perceptible change
5–8 decibels	Appreciable to clearly noticeable change
9–11 decibels	Halving/doubling of loudness
>11 decibels	More than halving/doubling of loudness

Noise is measured on a logarithmic scale, meaning that a doubling in traffic volume (e.g. from 10,000 vehicles per day (vpd) to 20,000 vpd) results in a noise level increase of 3 decibels, a just-perceptible

¹ For instance, LTNZ Research Report No. 292: Road traffic noise: determining the influence of New Zealand Road surfaces on noise levels and community annoyance, Table 18.

² Based on research by Zwicker & Scharf (1965); and Stevens (1957, 1972).

change. A tenfold increase in traffic volume (e.g. from 10,000 to 100,000 vpd) would result in a noise level increase of 10 decibels, which would sound twice as loud.

3.1.4 Annoyance effects

People’s responses to a particular level of road traffic noise can vary greatly. Many studies have been carried out overseas in an attempt to determine a general relationship of response to noise of a residential community as a whole.

The most notable studies include that of Schultz³ and those of Miedema and Oudshoorn⁴, as shown in Figure 2. These studies combined the results of several different studies to produce a ‘curve’ of the percentage of people highly annoyed (%HA) versus external noise level (L_{dn})⁵. The studies were for different transportation noise sources including trains, road traffic and aircraft. Only the curve for road traffic noise is shown in the figure below.

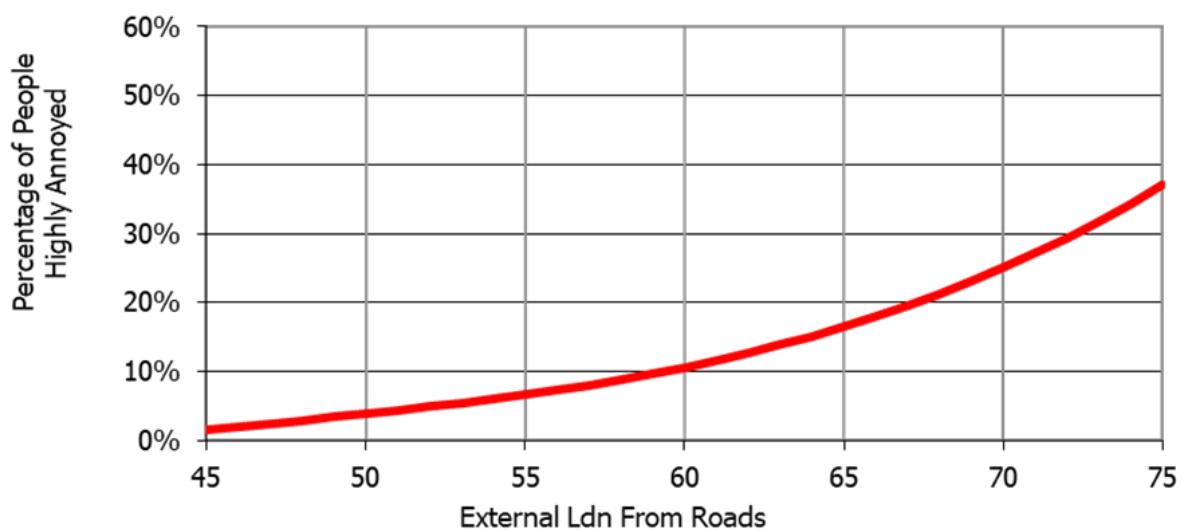


Figure 2: Miedema and Oudtshoorn Dose-Response Relationship

The curve shows that about 10% of people may be highly annoyed at an external road traffic noise level of 57 dB LAeq(24h) (equivalent to 59 dB L_{dn}), which is the upper end of the NZS 6806 Category A for new roads. For an external noise level of 64 dB LAeq(24h) (equivalent to 66 dB L_{dn}), the upper end of Category B for new roads and Category A for altered roads, 18% of people may be highly annoyed. At 67 dB LAeq(24h) (equivalent to 69 dB L_{dn}), the upper end of Category B for altered roads, 23% of people may be highly annoyed.

Using BPO mitigation to achieve the lowest practicable noise levels will ensure better amenity for people and that a smaller number of people will be annoyed by road traffic noise.

Using the descriptor of the number of people highly annoyed allows a comparison of population responses over a wider area. We have used this measure to represent a comparison from the existing situation to the proposed Project situation over the area affected by the change in traffic flows not just in the directly affected roads but also the surrounding ones.

³ Schultz T J (1978) “Synthesis of social surveys on noise annoyance” J.Acoust. Soc. Am. 64, 2, 337-405.

⁴ Miedema, H M E and Oudshoorn, G M (2001) “Annoyance from transportation noise: relationships with exposure metrics DNL and DENL and their confidence intervals.” Environmental Health Perspectives 109 (4) 409 – 416.

⁵ L_{dn} levels can be converted into L_{Aeq(24h)} by subtracting 2.5 dB.

Our assessment is based on Statistics New Zealand information,⁶ which shows that for the Howick Local Board there are approximately 3.1 people per household and the Otara-Papatoetoe Local Board there are approximately 3.6 people per household. These numbers do not include any allowance for future intensification.

3.2 Vibration

The AUP:OP does not contain applicable vibration criteria for transport infrastructure. However, Waka Kotahi does reference the Norwegian Standard NS 8176.E:2005 in its reverse sensitivity guidelines.

3.2.1 Norwegian Standard NS 8176.E:2005

The Norwegian Standard NS 8176.E:2005 specifically addresses transportation vibration, both in relation to road and rail. The Standard's criteria (shown in Table 9 below) are based on studies of vibration annoyance in residences, and it provides guideline values for four vibration "classes".

The appropriate class for new infrastructure is considered to be Class C, which is the "*recommended limit value ... in connection with the planning and building of new transport infrastructures*".⁷ According to the Section B.3.3 of the Standard, at this level of vibration "about 15% of the affected persons in Class C dwellings can be expected to be disturbed by vibration" and this is deemed by the Standard to be acceptable.

Table 9: Human response criteria for transport sources in NS 8176.E:2005

Type of vibration value	Class A	Class B	Class C	Class D
Statistical maximum value for weighted velocity, $V_{w,95}$ (mm/s)*	0.1	0.15	0.3	0.6

* $V_{w,95}$ = value exceeded for 5% of events (equivalent to L_{05} centile level in noise terminology)

3.2.2 Road traffic

Traffic vibration is usually only generated when heavy commercial vehicles (**HCV**) drive over bumps or dips in the road. We have determined the road traffic vibration risk by reviewing data of HCVs travelling on existing roads with a range of surface conditions. Assessing this data against the recommended traffic vibration criterion (Class C of the Norwegian Standard NS 8176.E:2005) indicates that compliance with the criteria can be achieved at 25 metres from the road edge, even for roads in a degraded state.

For a newly sealed pavement, the risk contour is less than 2 metres from the road edge. There will be no receivers this close to any traffic lane edge. Therefore, we do not consider that traffic vibration needs to be assessed for this Project.

⁶ <https://www.stats.govt.nz/information-releases/2018-census-population-and-dwelling-counts/>

⁷ From NS 8176.E:2005, Annex B.3.

4 Assessment methodology

We have assessed the traffic noise effects on people based on:

- The noise criteria categories of NZS6806; and
- Noise effects (both positive and adverse) through determining the noise level changes due to the Project.

The reason for the two-pronged approach is that in some circumstances, the effects of a noise level increase can be small (e.g. a noise level increase of less than 3 decibels). At the same time, the resulting noise environment can be very high, particularly adjacent to existing major roads, and cause (potentially further) adverse effects for residential use.

The NoRs provide for various transport modes which, based on our experience, have different noise effects as discussed below:

- **Bus Rapid Transit:** using electric buses generates a small to moderate level of noise. For speeds above 40 km/h the road tyre interaction is the main noise source of traffic, and buses are expected to travel at speeds at or above 40 km/h. Nevertheless, electric buses are quieter than diesel buses, particularly at stations, and can be quieter than petrol and diesel passenger vehicles. Depending on the location of the rapid transit lanes, buses may not contribute to the overall traffic levels at all (e.g. for majority of the Project corridor, where the lanes are in the middle of the general traffic lanes) or may contribute slightly to the overall traffic noise level. We have assessed the rapid transit traffic noise against the noise criteria of NZS6806.
- **Walking and Cycling:** Walking and cycling improvements will not result in noticeable changes to the traffic noise level and are not discussed in detail.
- **Road traffic on Altered roads:** The existing traffic lanes will be changed to enable rapid transit to be implemented. In addition, intersection upgrades will be required. We have therefore assessed the NoRs against the provisions of NZS6806.

We have assessed the bus rapid transit corridor and existing road upgrades together as they are intrinsically linked to each other.

4.1 Assumptions

We have assumed that buses used on the Project are all electric, in line with the Auckland Transport “Low Emission Bus Roadmap”⁸. Electric buses emit significantly lower noise levels than diesel buses at common city speeds and would not generate noticeable noise levels at stations given that the stations are all located in busy high noise environments. Nevertheless, to be conservative, all buses have been modelled as diesel buses and therefore represent a worst case scenario that is unlikely to occur.

Our modelling assumes that the design year is 2048, in line with other Te Tupu Ngātahi Supporting Growth projects. That year allows for the most extensive development of neighbouring zones, which we understand is incorporated in the traffic modelling.

We have assumed that the existing road surface materials (AC14 on all roads, except SH20B in NoR 4a, which is surfaced in PA10 30mm) will be retained in the future. Should a higher noise road surface

⁸ <https://at.govt.nz/media/1985010/aucklands-low-emission-bus-roadmap-version-2-october-2020.pdf>

be chosen (e.g. chip seal), then predicted future noise levels would be higher and additional mitigation may need to be investigated.

The modelling is based on traffic data received from the transportation specialist.

Our discussion of potential future higher density and multi storey housing adjacent to the corridor is based on the provisions of the NPS:UD. However, we have assumed that any new dwellings in the MANA will be appropriately designed to mitigate against aircraft (and traffic) noise, and that no new noise sensitive buildings are constructed in the HANA.

4.2 Existing noise environment

The existing noise environment provides a baseline for assessing noise effects. Effects can be assessed by quantifying the noise levels and noise level changes that people would experience due to the implementation of a project. The change in noise environment can be interpreted in relation to subjective responses of people and possible annoyance. In addition, measured noise levels are used to verify the computer noise model.

The existing noise environment for all NoRs are controlled by traffic on the existing major roads and for NoRs 2, 3, and 4a and 4b, the aircraft noise from Auckland Airport as set out in the AUP:OP as MANA and HANA.

4.2.1 Surveys

We undertook short duration (15 minute) attended noise level surveys on 7 June 2022 between 10 am and 4 pm, in the vicinity of the Projects. As traffic distribution over the day is known, the short duration survey results can be used to derive a 24-hour traffic noise level.

The location of the surveys is shown in Figure 3.



Figure 3: Noise survey locations

All noise level survey results are shown in Table 10. Note that while the measured noise levels are presented with the decimal point, for the derived 24-hour noise level this would imply an excessive accuracy. Therefore, the derived levels are reported only to the full decibel level.

Table 10: Noise survey results

Meas. Position	Location	NoR	Measured noise level	Derived noise level
			dB LAeq(T)	dB LAeq(24h)
MP1	485A Puhinui Road, Wiri	4a	64.8	63
MP2	Manukau Memorial Gardens (Manukau Cemetery)	4a/4b	61.9	60
MP3	14 Sabi Place, Papatoetoe	3	64.5	63
MP4	269 Puhinui Road, Papatoetoe	3	63.8	62
MP5	Puhinui Station	3	53.8	52
MP6	26 Cambridge Terrace, Papatoetoe	3	68.3	66
MP7	1A Bledisloe Street, Papatoetoe	2	49.0	47
MP8	Puhinui School	2	64.5	63

MP9	19 Lambie Drive, Papatoetoe	2	66.2	64
MP10	2 Davies Avenue, Manukau City Centre	2	62.4	60
MP11	627 Great South Road, Manukau City Centre	2	77.1	75
MP12	63 Te Irirangi Drive, Clover Park	2	71.3	69
MP13	65A Othello Drive, Clover Park	2	61.9	60
MP14	104 Boundary Road, Clover Park	2	65.4	63
MP15	5 Mika Court, Flat Bush	1	66.9	65
MP16	15 Brittas Place, East Tāmaki	1	62.6	61
MP17	Dannemora Gardens - Metlifecare Retirement Village	1	71.0	69
MP18	12 Shingleton Lane, Flat Bush	1	65.1	63

4.2.2 Modelling

In addition to measuring the noise levels at a few locations along the projects, computer noise modelling enables the prediction of existing noise levels at all PPFs. The model of the existing situation reflects the roads as they currently are, including the current posted speed limits.

The PPFs for each project have been assessed separately. Where a PPF would be affected by more than one NoR, this is noted in the report. For each NoR, we have calculated the noise levels received by all PPFs.

The number of PPFs for each NoR are shown in Table 11.

Table 11: Number of PPFs in each NoR

NoR	Number of PPFs
1	628
2	768
3	380
4a and 4b	5

4.3 Computer noise modelling

The propagation of traffic noise is affected by multiple factors, such as:

- Terrain elevations, including shielding from intervening terrain and exposure due to elevation;
- Ground condition, including absorptive ground such as meadows or hard reflective ground;
- Atmospheric conditions, including wind or temperature inversions; and
- Road parameters, including road surface, traffic speed, vehicle types and gradient.

Because of the multiple factors and their interaction, computer noise modelling is a vital tool in predicting traffic noise impacts in the vicinity of major roads and for the determination of mitigation measures. Modelling enables a comprehensive and overall picture of noise impacts to be produced, taking into consideration all factors potentially affecting noise propagation.

We used the software SoundPLAN, which is an internationally recognised computer noise modelling programme. In summary, SoundPLAN uses a three-dimensional digital topographical terrain map of the area as its base. In addition, we entered data into the model for existing buildings, proposed earthworks edges and ground absorption within the assessment area. We digitised road traffic noise sources, with road lanes located on the terrain file, for the existing/Do-nothing scenarios and the Do-minimum scenario (refer Section 3.1.2).

The SoundPLAN model implements the calculation algorithms of the “Calculation of Road Traffic Noise” methodology which is referenced in NZS6806 in Section 3.1.2.

The calculation algorithms take account of the factors set out above, including relevant atmospheric and ground conditions within appropriate parameters.

We have used the adjustments for New Zealand road conditions, specifically road surface types, as set out in the Waka Kotahi “Guide to state highway road surface noise”, V1.0, January 2014, Table 2.1. Therefore, modelling results can be compared with the relevant criteria without further adjustment.

To verify the accuracy of the computer model, we used the measurement results from the noise level surveys set out in Section 4.2.1 to verify that the computer model operates within satisfactory tolerances.

Table 12: Computer noise model verification

Position	Location	NoR	Derived Level	Predicted Level	Difference
			dB $L_{Aeq}(24h)$	dB $L_{Aeq}(24h)$	decibels
MP1	485A Puhinui Road, Wiri	4a	63	62	-1
MP2	Manukau Memorial Gardens	4a/4b	60	62	+2
MP3	14 Sabi Place, Papatoetoe	3	63	66	+3
MP4	269 Puhinui Road, Papatoetoe	3	62	68	+6*
MP5	Puhinui Station	3	52	54	+2
MP6	26 Cambridge Tce, Papatoetoe	3	66	68	+2
MP7	1A Bledisloe Street, Papatoetoe	2	47	52	+5*
MP8	Puhinui School	2	63	62	-1
MP9	19 Lambie Drive, Papatoetoe	2	64	66	+2
MP10	2 Davies Ave, Manukau	2	60	61	+1
MP11	627 Great South Road, Manukau	2	75	73	-2
MP12	63 Te Irirangi Drive, Clover Park	2	69	69	±0
MP13	65A Othello Drive, Clover Park	2	60	62	+2
MP14	104 Boundary Road, Clover Park	2	63	65	+2

Position	Location	NoR	Derived Level	Predicted Level	Difference
MP15	5 Mika Court, Flat Bush	1	65	67	+2
MP16	15 Brittas Place, East Tāmaki	1	61	63	+2
MP17	Dannemora Gardens - Metlifecare Retirement Village	1	69	71	+2
MP18	12 Shingleton Lane, Flat Bush	1	63	66	+3

* Traffic volumes during the survey were lower than the modelled AADT

A comparison of the measured and predicted levels shows that there is good agreement between measured and predicted levels for most of the positions, with a difference of no more than 2 decibels. This accuracy fulfils the requirements of NZS 6806 which states in Section 5.3.4.2: “*The difference between measured and predicted levels should not exceed ± 2 dB.*”

Where the difference is greater, the reason was generally that during the brief survey period less traffic passed than would be expected based on the daily traffic volume modelled. Overall, we consider that the computer noise model performs within reasonable standards and is suitable to predict current and future traffic noise levels.

4.3.1 Individual receiver noise levels

We have assessed noise effects at all PPFs. We have included predicted noise levels for all PPFs, for all scenarios, in the tables in **Appendix A**. The locations of these dwellings are shown in the drawings in **Appendix B**.

Noise criteria categories for the PPFs are shown as a graphic representation by colouring the buildings with a colour scale, showing buildings receiving noise levels within NZS6806 Category A in green, Category B in orange and Category C in red. Any buildings not shown in these three colours on the figures are outside the assessment area, or are not PPFs, e.g. garages, sheds or business premises, or buildings to be removed for the Project.

4.3.2 Noise contour plans

Noise contour plans are a useful tool to obtain a graphical overview of a project area including currently vacant land that may be developed in the future. The contours are calculated by SoundPLAN by interpolating a large number of individual points. Therefore, noise contour maps should not be used to “read” noise levels for specific locations. For individual noise levels specific for each PPF, the receiver noise levels in the tables should be used (refer **Appendix A**).

Noise contour plans are contained in drawings in **Appendix B**. These plans show interpolated noise level bands at 5 decibel intervals from 55 dB to 70 dB $L_{Aeq(24h)}$.

5 Potential options to mitigate traffic noise effects

There are broadly three mitigation options that can be applied to manage road traffic noise, and are discussed in NZS6806:

- The choice of road surface material, a mitigation option that reduces noise at the source (especially for roads with speeds above 40-50 km/h where the road-tyre interaction is the controlling noise source rather than engine noise);
- The installation of noise barriers either on the roadside or on the property boundary; and
- The inclusion (for new builds) or retrofitting (for existing buildings) of Building Modification Mitigation (e.g., alternative ventilation to enable windows and doors to remain closed, improved joinery and/or glazing, or, in rare cases, the installation of additional wall and ceiling lining).

NZS6806 states:

The noise criteria are intended to address the adverse effects of road-traffic noise on people. Land-use planning is the preferred method of avoiding these effects. Where this is impracticable, the Standard sets out procedures and methods of the prediction, measurement and assessment, and guidelines for mitigation of road-traffic noise in accordance with the duty to adopt the best practicable option⁹

This indicates that NZS6806 deals with the residual noise effects after land-use planning has been implemented (or where it has been omitted in the planning stage).

Generally, mitigation is implemented from source to receiver. This means that the road surface is the first choice of mitigation measure as it protects the largest extent of receivers. Second are barriers placed either on the road edge or the property boundary. Barriers protect the area behind them, so are not suitable to shield upper floors of multi storey buildings, however, they are suitable to protect ground floors and outdoor living areas where these are facing a road. Lastly, building modification can be implemented to existing PPFs where these are not sufficiently designed to reduce internal noise levels. Building modification is the last choice as it only protects individual living areas and has no benefit to the wider community.

Where future developments are not yet implemented, the road controlling authorities and developers have a shared responsibility to implement reasonable and appropriate mitigation.

Overall, for this Project, the choice of road surface material both for the rapid transit lanes and for the (changed and upgraded) traffic lanes is the most important and effective noise mitigation measure. All existing roads to be altered currently already have low noise road surface; SH20B Puhinui Road PA10 30mm, Puhinui Road AC14, and Te Irirangi Drive AC14. This should be maintained (or upgraded to a lower noise road surface if necessary). Any change to a higher noise generating road surface would result in noise level increases above existing levels irrespective of the Project and would result in an adverse noise effect.

Barriers are unlikely to be generally practicable, particularly in NoR 2 and 3 where access to many individual residential sites will need to be maintained. However, NoR 1 may make use of barriers if practicable, as dwellings are set back from the road. Notwithstanding this, we understand that there are opportunities identified through the Airport to Botany: Urban Design Evaluation to repurpose the

⁹ NZS 6806:2010, Section 1.1.1

design of the current slip lanes to provide for an integrated active mode and stormwater infrastructure design. Therefore, barriers may not be BPO in this context.

The recommended low noise road surface will benefit not only the existing PPFs, but also any new noise sensitive development that may be established through the NPS:UD. Should intensification occur adjacent to the Project, as is envisaged, then other road noise mitigation would be limited. Barriers are unlikely to be BPO in an urban/suburban context and would only protect the ground floor. Higher floors would overlook any barrier. Therefore, it would be most appropriate to design any future sensitive buildings with the road noise environment in mind. This would include appropriate façade materials to reduce noise transmission into rooms and providing alternative ventilation for the closest houses to ensure that a suitable internal noise environment can be achieved while having fresh air intake and cooling available.

Such design solution can be aided by providing noise level contours for the design year that enable future development design to be appropriately managed. Since this Project traverses largely well established and developed residential areas, we consider that the location of the PPFs is a good proxy for any future development. It is unlikely that houses would move closer to the road. Therefore, we consider the assessment to also cover the noise level likely received at any future buildings.

6 Airport to Botany Bus Rapid Transit – NoR 1

This section assesses specific traffic noise matters relating to NoR 1 – the Project corridor between the Botany Town Centre and Rongomai Park.

6.1 Existing and likely future noise environment

The alignment follows Te Irirangi Drive, with the BRT corridor proposed in the central median. The road was already constructed with rapid transit in mind, and therefore the existing road width will remain largely unchanged as the median can accommodate the BRT corridor.

Neighbouring sites contain a mix of established (relatively new) residential development, generally single storey, established (relatively new) commercial premises and currently vacant or developing commercial areas. There are a school (Sancta Maria College, well set back from the road edge) and two retirement villages adjacent to the road. In addition, there are a number of early childhood education centres which have all been assessed as PPFs.

Te Irirangi Drive is an 80 km/h limited access road, with driveways of dwellings connecting with slip roads before entering the main road at specific points. Traffic noise levels for houses in the first row range from mid-60 to about 70 dB L_{Aeq} , which shows that the area is impacted by high traffic noise levels.

The NPS:UD enables higher density dwellings for all sites adjacent to Te Irirangi Drive. We anticipate that:

- Zoning within a walkable catchment of BRT stations along the corridor will enable at a minimum, apartment buildings of six storeys; and
- Beyond walkable catchments, residential zoning will provide for three dwellings up to three storeys in height (subject to meeting the relevant development standards).

Should higher density housing have been established, this would not have an effect on the assessment of traffic noise mitigation, given that mitigation options are limited to low noise road surface. Any potential new dwellings constructed should take account of the fact that they are next to an existing high flow road with existing high noise levels and incorporate appropriate façade design and ventilation provisions into any such dwellings.

6.2 Buildings within proposed designation

The following Table 13 shows the buildings that are within the proposed designation. We have not assessed these buildings further as the assumption is that the relevant requiring authority will acquire the parcels of land that these buildings are located on. We only note the addresses where the main building is inside designation.

Table 13: Buildings within designation (not assessed)

Address	Address
25 Aclare Place, East Tāmaki	14 Moravale Lane, Flat Bush

Address	Address
1, 3 Belinda Avenue, Flat Bush	23 Place Road, East Tamaki Heights
15 Brittas Place, East Tamaki Heights	14, 15 Riechelmann Court, Flat Bush
20 Leixle Lane, East Tamaki Heights	13 Tonu'U Court, Flat Bush
6 Mika Court, Flat Bush	11 Whetstone Road, Flat Bush

6.3 Assessment of traffic noise effects

The alignment traverses established residential areas and established and developing commercial areas. There is a low likelihood of change within the residential areas. Nevertheless, if higher density dwellings are constructed in the future, the mitigation options remain similar to those for the existing houses. The commercial areas do not contain PPFs, and therefore any changes will not affect this assessment.

The BRT corridor will be accommodated in the middle of the road where space had already been provided for a rapid transport facility. The road edges will not move materially closer to the dwellings.

The road currently has a posted speed of 80 km/h, however, we understand this will be reduced to 50 km/h irrespective of the Project implementation, which will result in a small noise level reduction.

The road is currently surfaced with Asphaltic concrete. Based on information from Auckland Transport, we have assumed that similar road surface will be used for future works on the road.

This NoR accommodates three stations Smales Road, Accent Drive and Ormiston Road stations. All are located in the centre of the road, in close proximity to busy urban intersections.

6.3.1 NZS6806

As set out in 2.2.1, Te Irirangi Drive is an existing road, that will be upgraded. There are currently 628 PPFs within 100m of the road edge.

Existing noise levels range from 43 dB $L_{Aeq(24h)}$ for those houses well shielded by the first row of dwellings, to 73 dB $L_{Aeq(24h)}$ for houses close to and fronting Te Irirangi Drive.

We understand from the transport specialists that the speed limit will be reduced irrespective of the Project, i.e. the Do-nothing scenario already includes a speed reduction from 80 km/h to 50 km/h. In addition, we understand that a reduction in traffic volume is anticipated, which also affects the noise levels received at the PPFs.

Based on our predictions, NoR 1 fulfils the trigger levels of NZS 6806 (refer Section 3.1.2), as the noise level for at least one PPF is predicted to increase by 1 dB or more where the Do-minimum noise level is 68 dB $L_{Aeq(24h)}$ or higher.

Overall, the reduction in traffic speed and volume is predicted to result in a noticeable reduction in traffic noise for those dwellings fronting Te Irirangi Drive, shown in the significant reduction in PPFs receiving noise levels within Category C (reducing from 169 PPFs in the existing situation to 1 and 8 PPFs in the Do-nothing and Do-minimum scenarios respectively).

A small number of PPFs are predicted to still receive noise levels within Category C.¹⁰ All of these PPFs are single storey, with the exception of the retirement village at 30 Matarangi Road. We recommend that acoustic boundary fences are investigated for the single storey dwellings. Access to Te Irirangi Drive is not required, which means that a continuous barrier can be provided that will effectively reduce noise levels. We consider that a boundary fence would achieve a noise level reduction of at least 3 dB, and potentially more, which would reduce noise levels for all PPFs to be within Category B or A.

The number of PPFs is summarised in Table 14, shown in detail in **Appendix A**, and figures showing the location of the PPFs are included in **Appendix B**.

Table 14: Summary of NZS 6806 assessment

Scenario	Number of PPFs		
	NZS 6806 Categories		
	Category A	Category B	Category C
Existing	441	18	169
Do-nothing	506	121	1
Do-minimum (incl. bus rapid transit)	466	154	8

6.3.2 Change in noise levels

Noise effects can be described based on the change in noise level with and without the Project. For the comparison of noise levels, we have included the Project and other local roads in the area that would have an effect on the overall noise levels.

The reduction in traffic speed and volume between the Existing and Do-nothing scenarios is predicted to lead to a noticeable reduction in traffic noise of between 2 and 6 dB, with an average of 4 dB noise level reduction.

With the implementation of the bus lanes in the centre of Te Irirangi Drive, slight changes in level are predicted, ranging from -2 dB to +4 dB, with an average less than 1 dB increase. The exception is a small number of dwellings where the front row dwellings are removed, leaving houses behind exposed to traffic noise. For those, noise level increases of between 5 and 9 dB are predicted. However, all of these dwellings are predicted to receive noise levels within Category A.

Figure 4 shows the number of PPFs in each of the change in noise level bands discussed in Table 8. This shows that the vast majority (603 of the total 628 PPFs assessed) will have no noticeable change in noise level.

¹⁰ 30 Matarangi Road, 15 Brittas Place, 12 Boderg Way, 15 Riechelmann Court, 13 Tonu'u Court, 6 and 9 Mika Court, 11 Whetstone Road

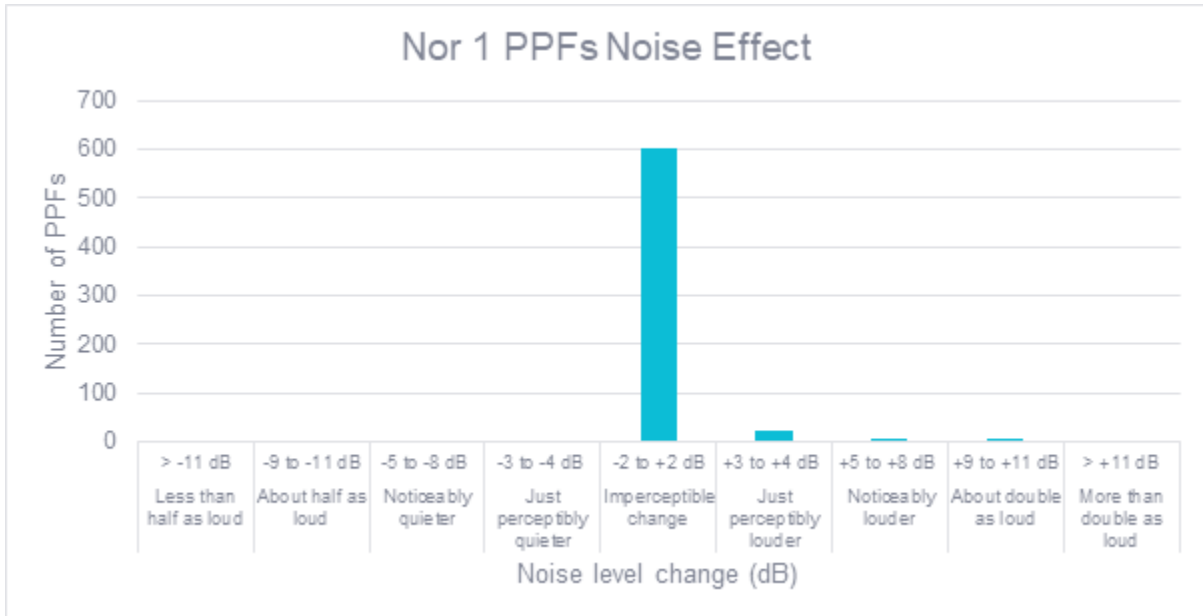


Figure 4: Change in noise level

6.3.3 Annoyance effects

As described in Section 3.1.4, we have determined the number of people potentially “highly annoyed” by the noise effects of the Project, by comparing the results of the existing and Do-nothing scenarios with the results of the Do-minimum scenario. For all scenarios, we have included local roads that have an effect on the noise level to represent the noise level that is likely to be experienced.

In addition, we have provided a figure showing the number of PPFs in each noise level band (in 2dB steps) and the number of people potentially highly annoyed.

Our results are summarised in Table 15 below.

Table 15: Number of people highly annoyed

Scenario	Number of people highly annoyed
Existing	276
Do-nothing	191
Do-minimum	204

Table 15 shows that the number of people highly annoyed by road traffic noise would remain generally similar with or without the Project.

Figure 5 shows the number of PPFs and the number of people potentially highly annoyed in a combined graph. It can be seen that the largest number of people highly annoyed occurs at noise levels 68 dB $L_{Aeq(24h)}$ and above for the existing situation and at 64 to 66 dB $L_{Aeq(24h)}$ for the future situations.

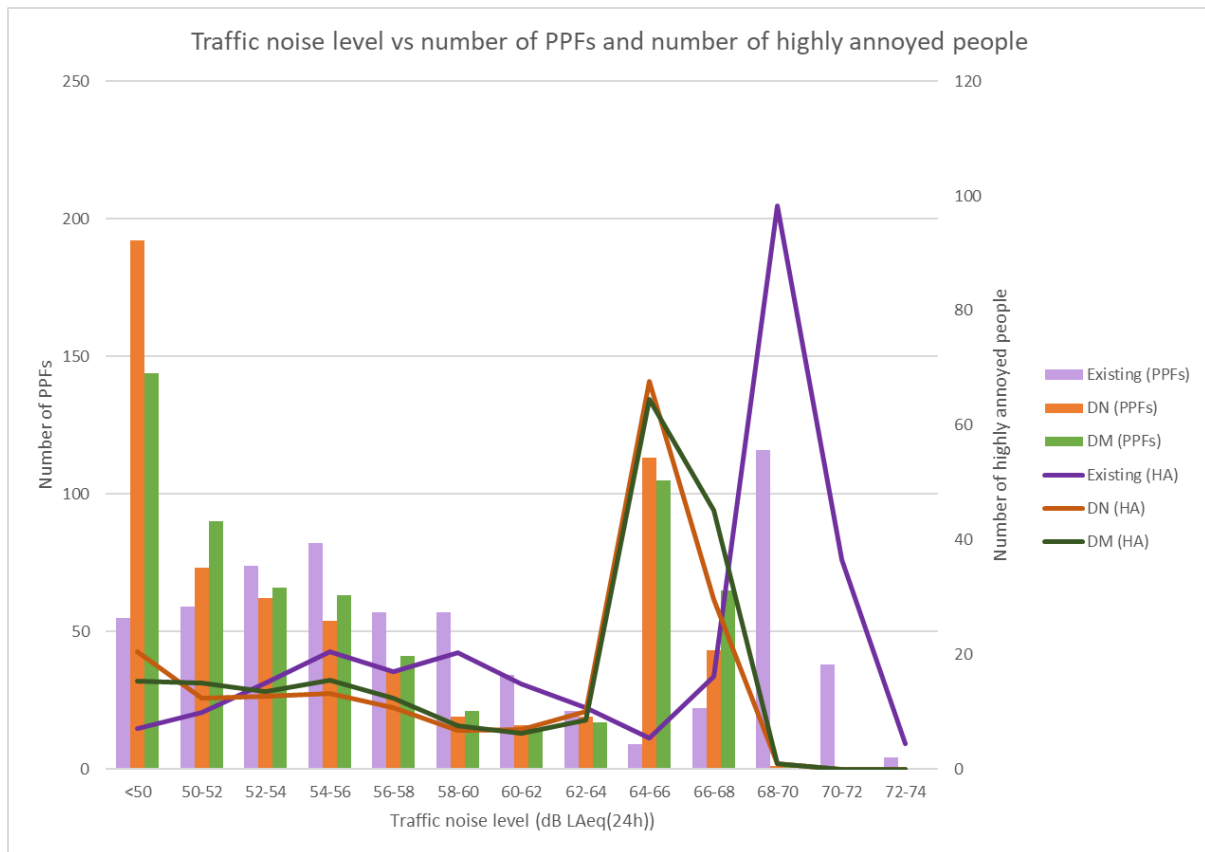


Figure 5: Number of PPFs and number of people highly annoyed by noise band

6.4 Recommended measures to avoid, remedy or mitigate traffic noise effects

As noted above, there is a small number of PPFs where noise levels are predicted to be within Category C. For those dwellings that are single storey (all except 30 Matarangi Road, which is a retirement village), an acoustic boundary fence would reduce noise levels to be within Category A or B. However, such fences may not be practicable if the slip lanes are repurposed into integrated active mode and stormwater infrastructure lanes as discussed in Section 5. For those areas the use of barriers should be reassessed at the time of construction, to confirm if a boundary fence represents the BPO.

The most appropriate (and already included) mitigation option is the use of low noise road surface, in this instance AC14.

7 Airport to Botany Bus Rapid Transit – NoR 2

This section assesses specific traffic noise matters relating to NoR 2 – the Project corridor between Rongomai Park and the Puhinui Interchange in the vicinity of Plunket Avenue. For assessment purposes, NoR 2 has been split into three sections as shown in Figure 6 below:

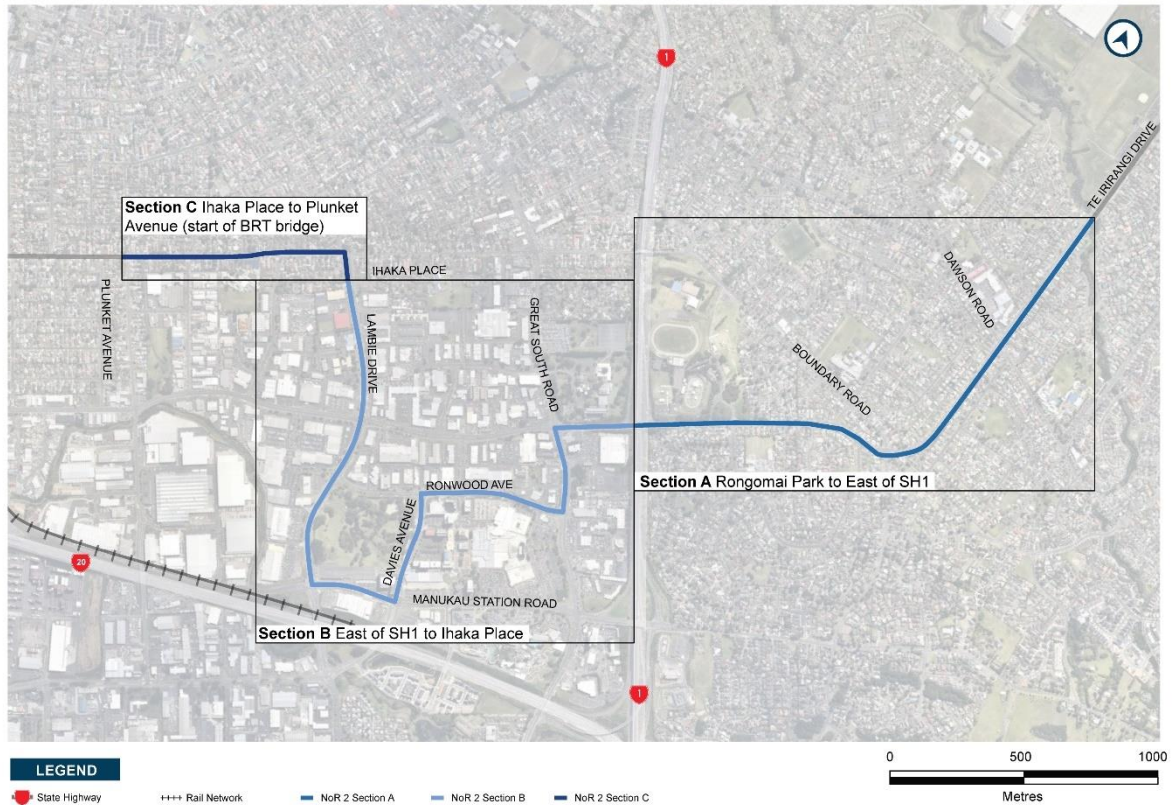


Figure 6: Sections of NoR 2

7.1 Existing and likely future noise environment

This NoR encompasses three distinct sections as shown in Figure 6 above. Section A and C are residential in character, with generally established older housing stock and infill housing. Houses are mostly single and double storey. Section B traverses the Manukau City Centre and is largely commercial in nature.

The southern side of Section C and part of Section B are within the HANA, which means that no new noise sensitive activities will be established. The remainder of Section C, and most of Sections A and B are within the MANA, which means that any new noise sensitive activities would need to be constructed to be insulated against aircraft noise. Such improved building façades and ventilation also assist in mitigating traffic noise. The northernmost part of Section A is outside the aircraft noise areas.

A number of sensitive sites such as Puhinui School, AUT South Campus, MIT and several childcare centres are adjacent to the Project.

The presence of the HANA and MANA indicate elevated noise levels from aircraft noise. In addition, the BRT corridor will follow established major roads which also have a clear influence on the noise

levels of neighbouring buildings. Measured noise levels show a range of mid-60 to low-70 dB L_{Aeq} for houses fronting the road, generally controlled by road traffic.

The NPS:UD enables higher density dwellings for sites adjacent to the BRT corridor. We anticipate that:

- Zoning within a walkable catchment of BRT stations along the corridor will enable, at minimum, apartment buildings of six storeys; and
- Beyond walkable catchments, residential zoning will provide for three dwelling up to three storeys in height (subject to meeting the relevant development standards).

Based on the above, we expect significant redevelopment along this NoR in the near to medium future, where sites are outside the HANA.

The existing Puhinui Road is surfaced with AC14 and based on Auckland Transport information we have assumed that this surface will continue to be used for future surfacing.

7.2 Buildings within proposed designation

The following Table 16 shows the buildings that are within the proposed designation. We have not assessed these buildings further as the assumption is that that the relevant requiring authority will acquire the parcels of land that these buildings are located on.

Note that all buildings that are fully within the proposed designation footprint of the three sections of NoR 2, are combined in the table below.

Table 16: Buildings within designation (not assessed)

Address	Address
1, 3 Belinda Avenue, Flat Bush	66 Othello Drive, Clover Park
19R, 104B, 104C, 131 Boundary Road, Clover Park	2, 4A, 6 Plunket Avenue, Papatoetoe
139, 141, 154 Carruth Road, Papatoetoe	67 – 77, 79 (odd), 80, 81 – 97 (odd), 101 – 107 (odd), 122 – 162 (even) Puhinui Road, Papatoetoe
1 and 2/89 Charntay Avenue, Clover Park	2 Sandrine Avenue, Clover Park
1 and 2/141, 2/.148 Dawson Road, Flat Bush	18, 19 Tavistock Street, Papatoetoe
1 – 7 (odd), 9A, 11, 13, 15A Dissmeyer Drive, Flat Bush (uneven numbers only)	44 – 50 (even), 55 – 61 (odd), 56, 60, 62, 1/667, 1/68, 69, 71, 72, 74, 76, 1/80, 82, 83, 3/86, 88, 90, 97, 100, 2/102, 106, 108, 110, 3/112, 118, 120, 124, 126, 130, 132, 134, 140, 142, 146, 147, 148, 149A and B, 152, 154, 157A and B, 158, 159, 160, 161, 164, 166, 170, 174 – 180 (even), 190, 194, 199, 210, 214, 218, 220 Te Irirangi Drive, Flat Bush/Clover Park
72C Hollyford Drive, Clover Park	11 Whetstone Road, Flat Bush

7.3 Section A: Rongomai Park to east of SH1

7.3.1 Overview and noise environment

This section of NoR 2 traverses an established residential area. As set out in Section 7.1 above, the NPS:UD enables higher density dwellings for all residential sites adjacent to the corridor. As such, we expect significant redevelopment along this NoR in the near to medium future, where sites are outside the HANA.

Most sites are generally within the MANA, which will require aircraft noise mitigation as part of the new construction, which would similarly work to mitigate traffic noise.

Houses facing Te Irirangi Drive have existing traffic noise levels in the high 60 dB $L_{Aeq(24h)}$ while houses in the second row have noise levels at and below 50 dB $L_{Aeq(24h)}$.

7.3.2 Assessment of traffic noise effects

This is an established residential area with older housing stock. It is likely that in the future this area will be redeveloped with higher density and multi storey dwellings. While we have not assessed traffic noise at potential for future houses, we provide noise level contours over the area to identify potential façade noise levels, should new houses move closer to the road edge (refer **Appendix B**).

Some small areas generally around intersections will have some houses facing the road removed to provide the space required to construct the Project. This means that a small number of houses will be newly exposed to traffic noise from Te Irirangi Drive and the BRT corridor. This results in a significant increase in noise levels for these houses. The change in noise level falls within the trigger levels of NZS6806 (refer Section 3.1.2) and therefore we have undertaken an assessment of traffic noise effects in accordance with NZS6806.

Section A of NoR 2 accommodates two stations: Dawson Road and Diorella Drive stations. All are located in the centre of the road, in close proximity to busy urban roads and intersections.

7.3.2.1 NZS6806

Te Irirangi Drive is an existing road. The proposed changes will move the road outside the current road corridor in parts, and the removal of some dwellings currently fronting the road will result in significant noise level increases for houses behind.

We have identified 481 PPFs currently in the vicinity of the road. A large number of PPFs (66 of the 481) are predicted to currently receive noise levels within Category C (> 67 dB $L_{Aeq(24h)}$) as they are close to a major road. While this number will reduce significantly in the future, based on reduced traffic numbers as provided by the transport experts, there will still be 14 and 15 PPFs receiving noise levels in Category C, for the Do-nothing and Do-minimum scenarios respectively.

Most PPFs in this area are single storey; however, many are located elevated above the road and access to the road will need to be maintained. Therefore, boundary fences are unlikely to be a suitable mitigation option.

Should higher density housing be developed adjacent to the Project, we would expect any future houses to take account of the major road close by and incorporate sound insulation and ventilation as appropriate to ensure that any future residents have a suitable internal noise environment.

The number of PPFs is summarised in Table 17, individual traffic noise levels for all PPFs provided in the table in **Appendix A**, and figures showing the location of the PPFs are included in **Appendix B**.

Table 17: Summary of NZS 6806 assessment

Scenario	Number of PPFs		
	NZS 6806 Categories		
	Category A	Category B	Category C
Existing	393	24	66
Do-nothing	417	52	14
Do-minimum (incl. bus rapid transit)	407	61	15

7.3.2.2 Change in Noise Levels

Noise effects can be described based on the change in noise level with and without the Project. For the comparison of noise levels, we have included the Project and other local roads in the area that would have an effect on the overall noise levels.

We predict a slight noise level reduction of 1 dB on average from the existing to Do-nothing scenario due to the projected reduction in traffic volume.

With the Project in place, noise levels are predicted to increase on average by 1 dB compared with the Do-nothing scenario. A small number of PPFs (49 of the 481 assessed) is predicted to receive noticeable to significant noise level increases of between 5 and 12 dB. This is generally the case where front row houses are removed.

Figure 7 shows the number of PPFs in each of the change in noise level bands discussed in Table 8. This shows that the vast majority (392 of the 483 PPFs assessed) would have no noticeable change to their noise environment.

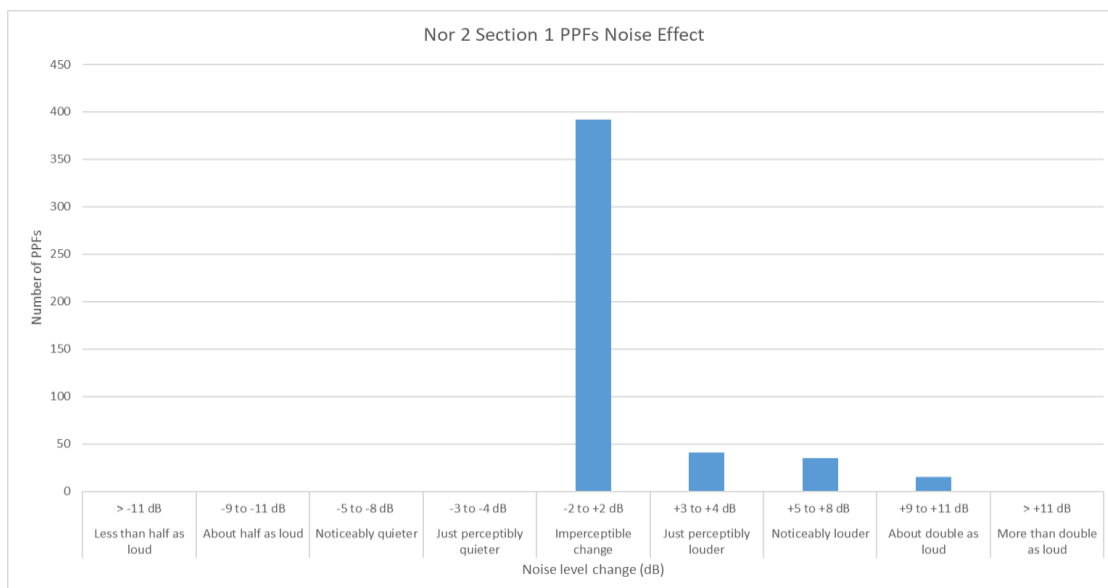


Figure 7: Change in noise level

7.3.2.3 Annoyance effects

As described in Section 3.1.4, we have determined the number of people potentially “highly annoyed” by the noise effects of the Project, by comparing the results of the existing and Do-nothing scenarios with the results of the Do-minimum scenario. For all scenarios, we have included local roads that have an effect on the noise level to represent the noise level that is likely to be experienced.

In addition, we have provided a figure showing the number of PPFs in each noise level band (in 2dB steps) and the number of people potentially highly annoyed.

Our results are summarised in Table 18 below.

Table 18: Number of people highly annoyed

Scenario	Number of people highly annoyed
Existing	210
Do-nothing	190
Do-minimum	214

Table 18 shows that the number of people highly annoyed by road traffic noise would increase slightly with the Project.

Figure 8 shows the number of PPFs and the number of people potentially highly annoyed in a combined graph. It can be seen that the largest number of people highly annoyed occurs at noise levels 66 dB $L_{Aeq(24h)}$ and above for all situations, with a downward shift from the existing situation where the main contributor are noise levels above 68 dB $L_{Aeq(24h)}$.

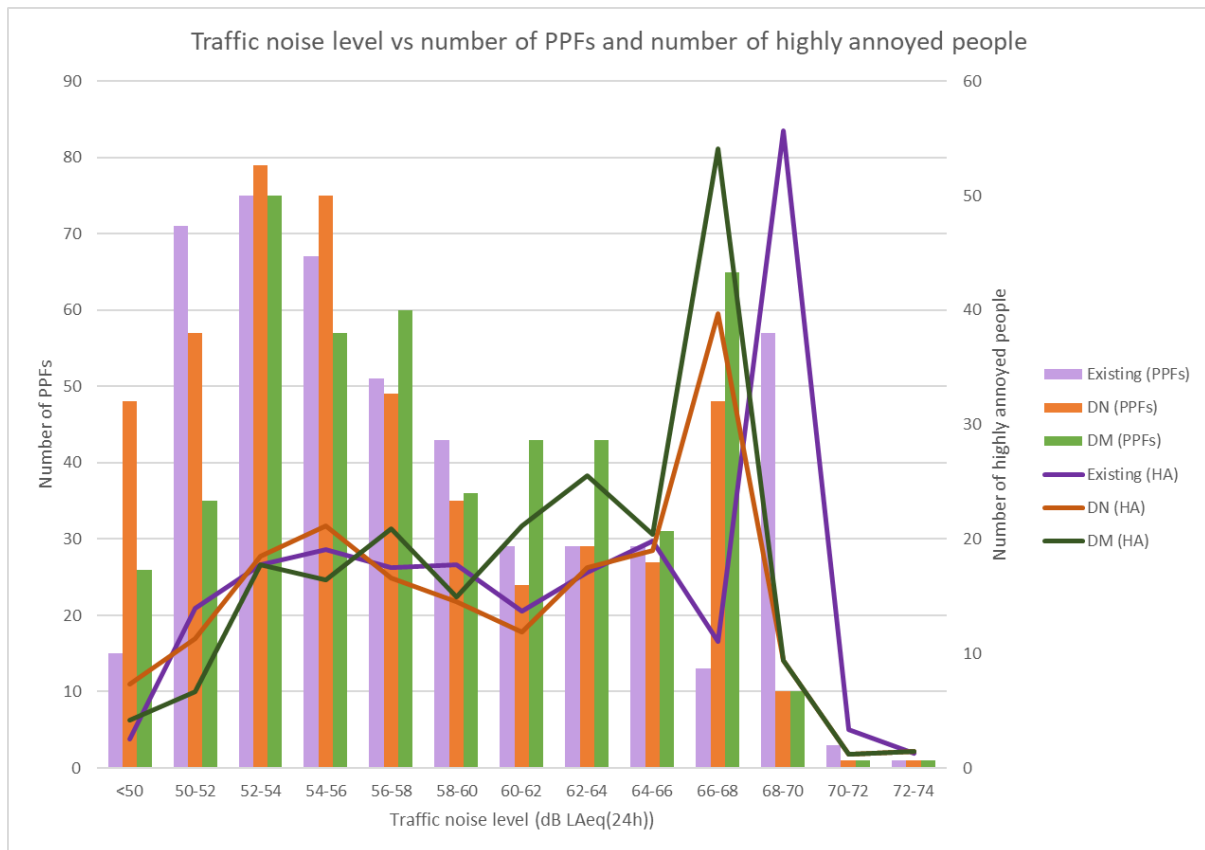


Figure 8: Number of PPFs and number of people highly annoyed by noise band

7.3.3 Recommended measures to avoid, remedy or mitigate tragic noise effects

As noted above, there is a small number of PPFs where noise levels are predicted to be within Category C. However, it is unlikely that boundary fences are practicable given that some houses are elevated above the road, and that site access has to be maintained.

The most appropriate (and already included) mitigation option is the use of low noise road surface, in this instance AC14.

7.4 Section 2: East of SH1 to Ihaka Place

7.4.1 Overview and noise environment

NoR 2 Section B traverses through the Manukau City Centre where we expect no significant changes to the receiving environment. In any event, should additional buildings be completed, these are expected to be generally of commercial nature and therefore not constitute PPFs.

This section of NoR 2 is within a town centre and commercial area. Therefore, there are only few PPFs in this area. Educational facilities such as MIT, AUT South Campus and residential uses such as The Renaissance and MCentral apartment buildings have been assessed as PPFs.

Parts of the alignment are in the HANA, with the remainder generally in the MANA. Therefore, noise sensitive uses are expected to already be insulated against aircraft noise.

Of the 11 identified PPFs, AUT South Campus is located in the HANA, while the MANA incorporates all apartment buildings. The MIT campus is outside the MANA and may therefore not include specific sound insulation provisions

Existing traffic noise levels range from high-50s to high 60s dB $L_{Aeq(24h)}$. In addition, commercial and aircraft noise would add to the ambient sound environment.

7.4.2 Assessment of traffic noise effects

The alignment traverses established commercial areas interspersed with educational facilities and apartment buildings. The road is currently surfaced with Asphaltic concrete. Based on information from Auckland Transport, we have assumed that similar road surface will be used for future works on the road.

The NPS:UD enables significantly higher density for parts of the Manukau Metropolitan Centre, at a minimum of six storeys (outside the HANA). Should higher density housing be established, this would not have an effect on the assessment of traffic noise mitigation, given that mitigation options are limited to low noise road surface. Any potential new dwellings constructed should take account of the fact that they are next to an existing high flow road with existing high noise levels, and in the MANA, and incorporate appropriate façade design and ventilation provisions into any such dwellings.

Section B of NoR 2 accommodates two stations: Ronwood Avenue and Manukau Central. These are located in close proximity to busy urban roads and intersections, and generally in the Manukau City Centre.

7.4.2.1 NZS6806

The Project involves the upgrade of existing (generally major) roads. There are currently 11 PPFs identified within 100m of the road edge.

Existing noise levels range from 54 dB $L_{Aeq(24h)}$ for a building away from main roads, to 70 dB $L_{Aeq(24h)}$ for buildings fronting Great South Road and SH1.

Based on our predictions, NoR 2 Section B does not fall under the trigger levels of NZS 6806 (refer Section 3.1.2), as the noise levels are not predicted to increase by 3 dB or more where the Do-minimum noise level is 64 dB $L_{Aeq(24h)}$ or higher, or increase by 1 dB or more where the Do-minimum noise level is 68 dB $L_{Aeq(24h)}$ or higher. Nevertheless, for completeness, we have included an assessment in accordance with NZS6806 below.

The number of PPFs is summarised in Table 19, shown in detail in **Appendix A**, and figures showing the location of the PPFs are included in **Appendix B**.

Overall, the Project is predicted to result in no PPFs receiving noise levels in Category C, and a larger number is predicted to receive noise levels in Category A.

Table 19: Summary of NZS 6806 assessment

Scenario	Number of PPFs		
	NZS 6806 Categories		
	Category A	Category B	Category C
Existing	3	4	4
Do-nothing	6	4	1
Do-minimum (incl. bus rapid transit)	7	4	0

7.4.2.2 Change in noise levels

Noise effects can be described based on the change in noise level with and without the Project. For the comparison of noise levels, we have included the Project road and other local roads in the area that would have an effect on the overall noise levels.

We predict no significant traffic noise level change for the PPFs when comparing the existing and Do-nothing scenarios. With the Project in place (Do-minimum scenario), noise levels are predicted to remain largely unchanged compared with the Do-nothing scenario.

Figure 9 shows the number of PPFs in each of the change in noise level bands discussed in Table 8.

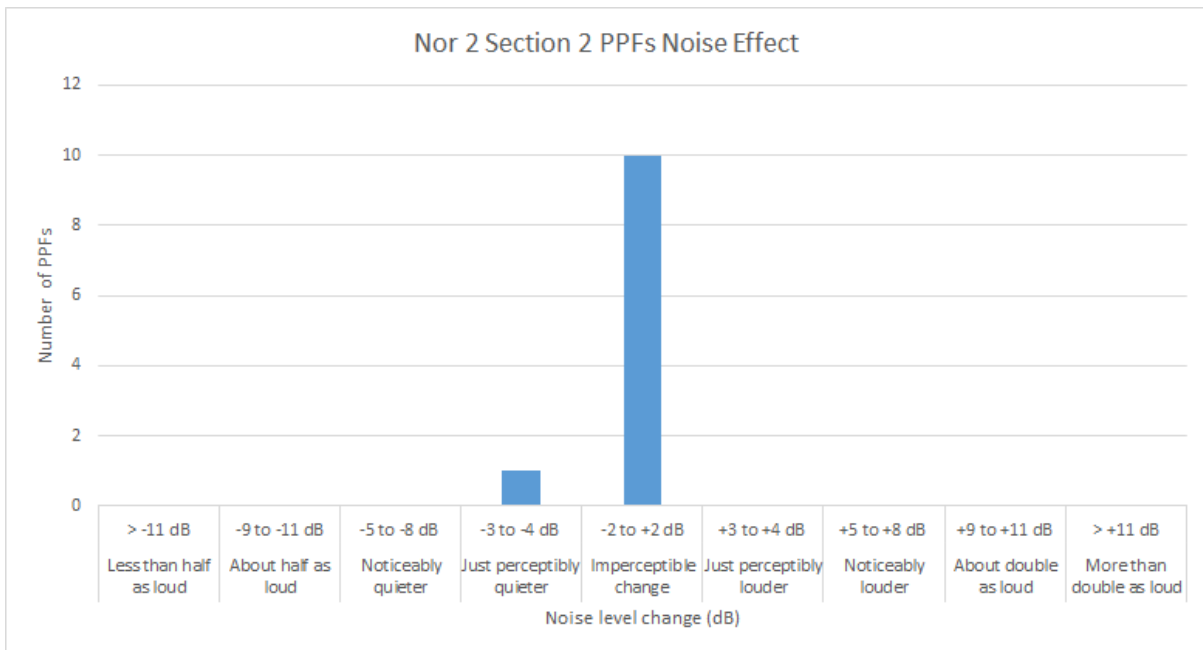


Figure 9: Change in noise level

7.4.2.3 Annoyance effects

As described in Section 3.1.4, we have determined the number of people potentially “highly annoyed” by the noise effects of the Project, by comparing the results of the existing and Do-nothing scenarios with the results of the Do-minimum scenario. For all scenarios, we have included local roads that have an effect on the noise level to represent the noise level that is likely to be experienced.

In addition, we have provided a figure showing the number of PPFs in each noise level band (in 2dB steps) and the number of people potentially highly annoyed.

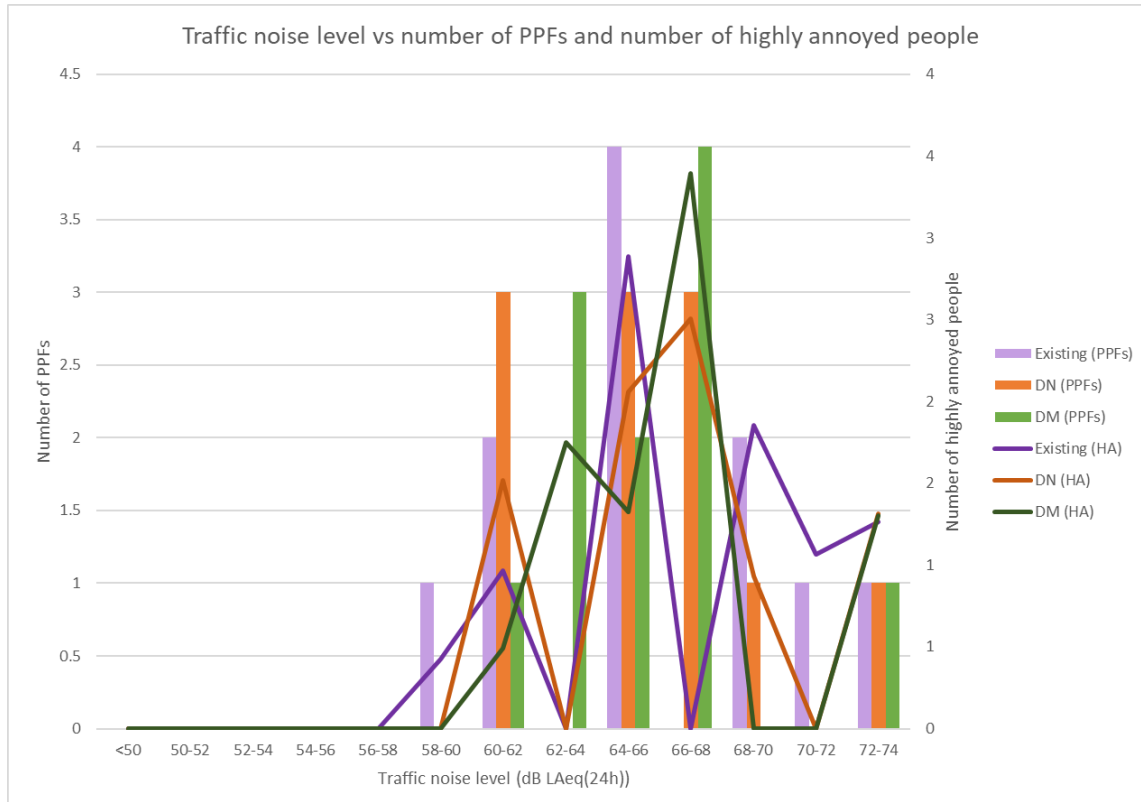
We note that the PPFs in Manukau Central are multi storey apartment buildings for which we do not have an accurate number of residents. Therefore, for comparison reasons, we have retained the value of 3.6 persons¹¹ per PPF, which will underpredict the actual effects, but provides a trend in terms of effects. It is also important to note that the buildings are located in the MANA and therefore already include noise reduction measures. Our results are summarised in Table 20Table 18 below.

Table 20: Number of people highly annoyed

Scenario	Number of people highly annoyed
Existing	8
Do-nothing	8
Do-minimum	8

Table 20 shows that the number of people highly annoyed by road traffic noise would remain the same for all scenarios. If more residents are counted in the apartment buildings, the number may increase, but the relationship between the scenarios will remain similar.

Figure 10 shows the number of PPFs and the number of people potentially highly annoyed in a combined graph. It can be seen that the largest number of people highly annoyed occurs at noise levels between 64 and 70 dB LAeq(24h) for all situations.



¹¹ Based on the people per household for the Otara-Papatoetoe Local Board

Figure 10: Number of PPFs and number of people highly annoyed by noise band

7.4.3 Recommended measures to avoid, remedy or mitigate traffic noise effects

Since the change in traffic noise level is generally imperceptible, and all PPFs will receive noise levels within the same Noise Criteria Category as without the Project, no noise mitigation is recommended. The most appropriate and effective noise mitigation is the use of low noise road surface, which is already proposed for this area (i.e. AC14).

7.5 Section 3: Ihaka Place to Plunket Avenue

7.5.1 Overview and noise environment

Some sites south of Puhinui Road is within the HANA. This means that existing houses would already have been upgraded with improved sound insulation and ventilation to protect residents from aircraft noise. Such improvements would also benefit the mitigation of traffic noise. In the HANA, no new noise sensitive uses can be established. As such, it is assumed that existing housing stock would remain largely unchanged between now and the implementation of the Project.

The northern side of Puhinui Road is in the MANA, where some houses may already have been upgraded, with the help of Auckland International Airport. New noise sensitive development is permitted in the MANA where new houses are appropriately insulated and ventilated. Therefore, we have assumed that any future potentially higher density and multi storey houses would be appropriately designed to mitigate environmental noise from aircraft and road traffic.

Houses facing Puhinui Road have existing traffic noise levels in the mid to high 60 dB $L_{Aeq(24h)}$ while houses in the second row have noise levels at and below 50 dB $L_{Aeq(24h)}$.

Puhinui School is located immediately beside Puhinui Road, with the sport field abutting the footpath. The school buildings are somewhat set back from the road and not particularly affected by road traffic noise. We have recommended engaging with the school during the construction phase. If the school would like to retain a barrier between the road and the sports fields, additional benefit can be achieved for the fields and buildings behind.

7.5.2 Assessment of traffic noise effects

The Project will result in the first row of houses adjacent to the road being removed to provide the space required to construct the Project. The widening is proposed to occur on the southern side of Puhinui Road from approximately Plunket Avenue to the western end of Puhinui School. From there, the widening moves to the north of Puhinui Road up to the corner with Lambie Drive. The removal of the first row of houses will result in the second row of houses being exposed to traffic noise from Puhinui Road and the rapid transit lanes. This results in a noticeable increase in noise levels for these houses. The change in noise level falls within the trigger levels of NZS6806 (refer Section 3.1.2) and therefore we have undertaken an assessment of traffic noise effects in accordance with NZS6806.

Section C of NoR 2 accommodates one station at the intersection of Lambie Drive and Puhinui Road

7.5.2.1 NZS6806

Puhinui Road is an existing road that will be altered. The proposed Project will move the road well outside the current road corridor in parts, and the removal of dwellings currently fronting the road will result in significant noise level increases for houses behind. For some houses, the widening will move traffic further away, resulting in a noise level reduction. No changes are proposed to the road surface or posted speed.

There are currently 276 PPFs in the vicinity of the road in Section C of NoR 2.

The anticipated increase in traffic volume from the existing to the Do-nothing scenario means that on average PPFs would receive a slight noise level increase. This is reflected in the one additional PPF receiving noise levels in Category B (refer to Table 21). The Do-minimum scenario includes the removal of dwellings, and the move of the traffic lanes into the widened areas. This results in an adjustment of traffic noise levels with an overall positive outcome, with no PPFs receiving noise levels in Category C.

For 11 PPFs (4 Plunket Ave, 2/73, 77A, 83, 85A, 93B, 2/101, 124B, 128A, 142A, 148A Puhinui Rd), we predict a significant noise level increase between 5 and 13 dB, and a shift in noise level from Category A to Category B. All of these houses are in the MANA, so may already incorporate some sound insulation provisions. In order to mitigate traffic noise levels further, it may be possible to install a boundary fence on a case-by-case basis. However, access to the site will need to be maintained, and the urban design specialists in a suburban environment may not consider such measures appropriate. The use of barriers for these PPFs should be reassessed at the time of construction, to confirm if a boundary fence represents the BPO.

Should these houses be replaced with higher density housing in the future, these new houses would need to incorporate sound insulation due to the buildings being located in the MANA, which would also result in reduced internal traffic noise levels. For multi storey high density housing, barriers are not a suitable mitigation option given that they would only protect the ground floor, Access to the site would need to be retained, making barriers a generally impracticable choice of mitigation.

If that is the case, we would not recommend any additional mitigation at this stage.

The number of PPFs is summarised in Table 21, individual traffic noise levels in **Appendix A** and figures showing the location of the PPFs are included in **Appendix B**.

Table 21: Summary of NZS 6806 assessment

Scenario	Number of PPFs		
	NZS 6806 Categories		
	Category A	Category B	Category C
Existing	245	26	5
Do-nothing	244	28	4
Do-minimum (incl. bus rapid transit)	249	27	0

7.5.2.2 Changes in noise levels

Noise effects can be described based on the change in noise level with and without the Project. For the comparison of noise levels, we have included the Project and other local roads in the area that would have an effect on the overall noise levels.

There are no significant changes between the Existing and Do-nothing scenarios, which is reflected in the overall similar noise levels and an average noise level increase of less than 1 dB due to traffic volume increase.

The Project will shift the traffic lanes outside the existing roading corridor, from Plunket Ave to approximately 107 Puhinui Road to the south of Puhinui Road, and from 107 Puhinui Road to Ihaka Place to the north of Puhinui Road.

With the removal of the first row houses, and shift of the traffic lanes, noise levels increase for those houses that are newly exposed to traffic noise by up to 13 dB, perceived as more than a doubling in noise level.

On the other side, where the road moves further away from houses, a slight noise level reduction of 2 dB is experienced by some dwellings. For the majority of these PPFs, the resultant noise level remains in Category A irrespective of the increase. For 45 PPFs, we predict a noticeable to significant noise level increase between 5 and 13 dB. Of those 45 PPFs, all but 11 will receive noise levels within Category A.

Figure 11 shows the number of PPFs in each of the change in noise level bands discussed in Table 8. This shows that the vast majority (215 of the total 276 PPFs assessed in Section C of NoR 2) will have no noticeable change in noise level.

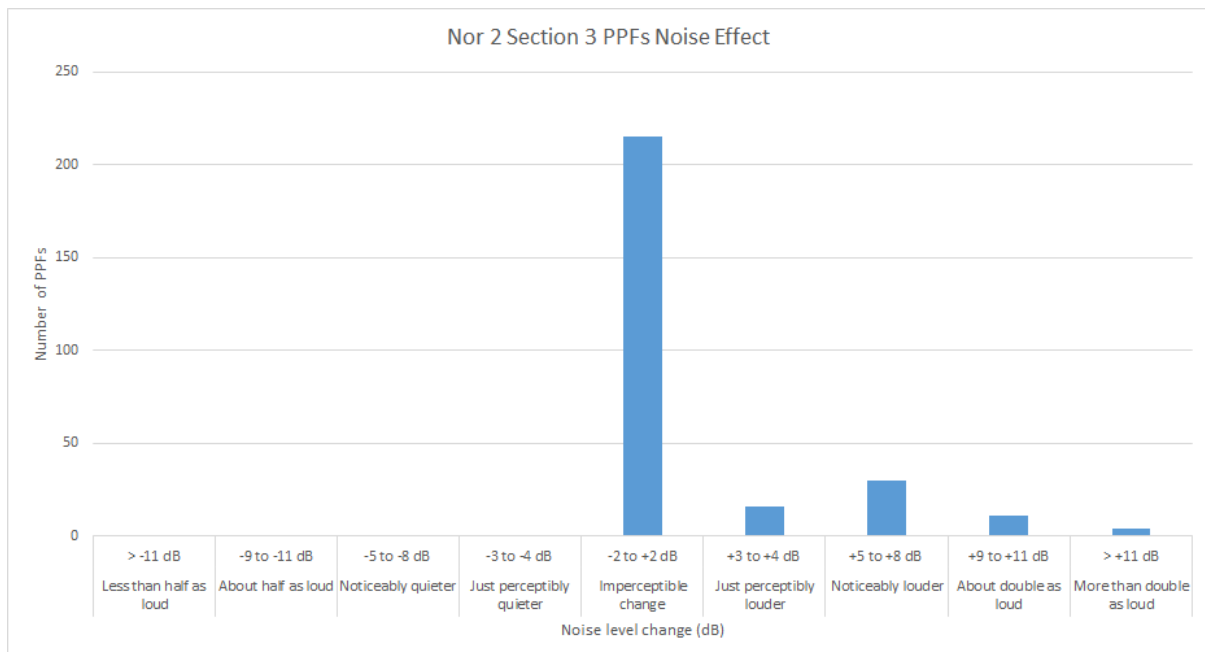


Figure 11: Change in noise level

7.5.2.3 Annoyance effects

As described in Section 3.1.4, we have determined the number of people potentially “highly annoyed” by the noise effects of the Project, by comparing the results of the existing and Do-nothing scenarios

with the results of the Do-minimum scenario. For all scenarios, we have included local roads that have an effect on the noise level to represent the noise level that is likely to be experienced.

In addition, we have provided a figure showing the number of PPFs in each noise level band (in 2dB steps) and the number of people potentially highly annoyed.

Our results are summarised in Table 22 below.

Table 22: Number of people highly annoyed

Scenario	Number of people highly annoyed
Existing	87
Do-nothing	91
Do-minimum	102

Table 22 shows that the number of people highly annoyed by road traffic noise would increase slightly with the Project.

Figure 12 shows the number of PPFs and the number of people potentially highly annoyed in a combined graph. It can be seen that for the existing and Do-nothing scenarios there are two peaks of annoyance, at the relatively low level of 52 to 56 dB $L_{Aeq(24h)}$ and at 64 to 68 dB $L_{Aeq(24h)}$. With the Project in place, the pronounced peak is at 64 to 66 dB $L_{Aeq(24h)}$ with a larger number of PPFs located in this band. We note that the PPFs are located generally in the MANA and would therefore already include noise reduction provision, which means that the effect may be less pronounced than would otherwise be the case.

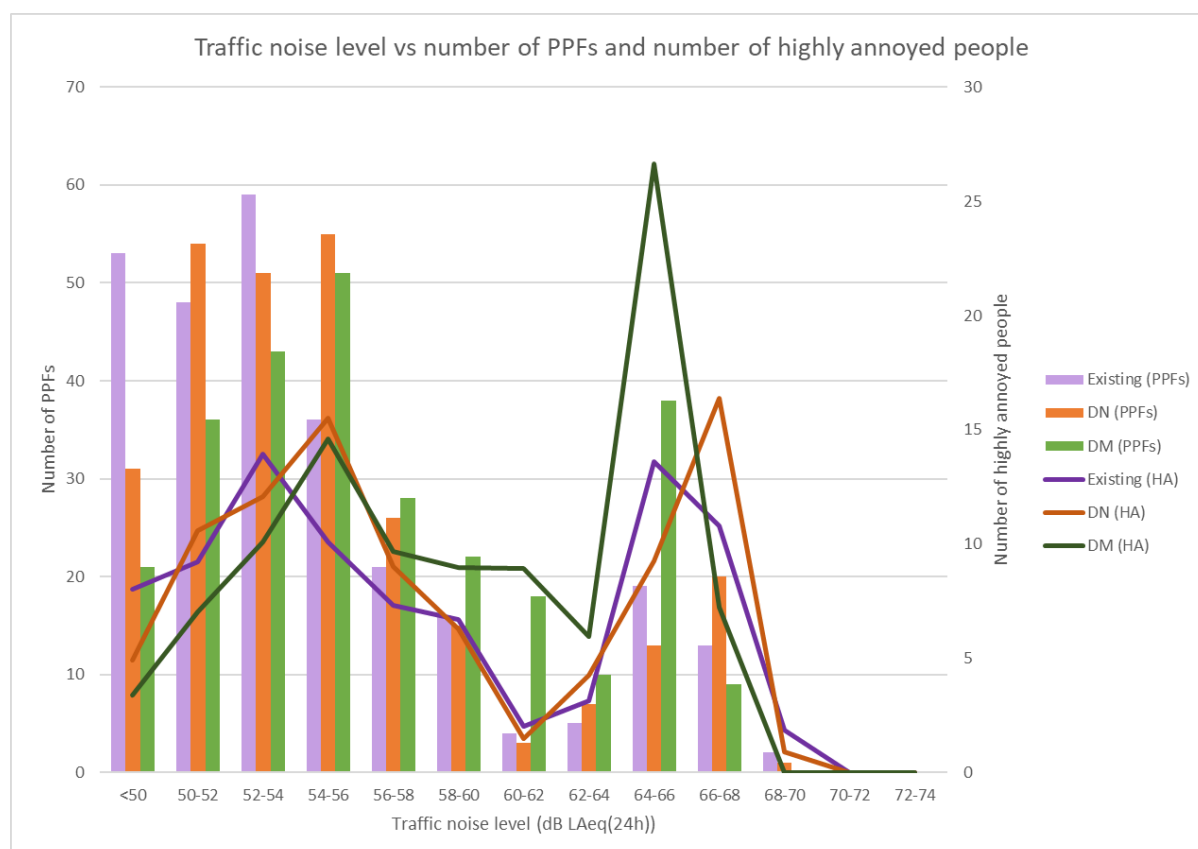


Figure 12: Number of PPFs and number of people highly annoyed by noise band

7.5.3 Recommended measures to avoid, remedy or mitigate construction effects

As noted above, it is unlikely that additional mitigation will be practicable for this section of road. Only a small number of PPFs are predicted to receive a significant noise level increase and would receive noise levels within Category B. Since these houses are located in the MANA, some may already include upgrades to their sound insulation and ventilation.

Should additional mitigation be required, barriers could be investigated. They would be in the form of a 2m high boundary fence, but would need to make allowance for site access, which reduces the fences' effectiveness for noise mitigation.

The most appropriate (and already included) mitigation option is the use of low noise road surface, in this instance AC14.

8 Airport to Botany Bus Rapid Transit – NoR 3

This section assesses specific traffic noise matters relating to NoR 3 – the Project corridor between Puhinui Station, in the vicinity of Plunket Avenue and the SH20/20B Interchange.

8.1 Existing and likely future noise environment

NoR 3 traverses through established residential areas. We anticipate some changes to the environment, in particular an increase in density of residential areas to the north of the Project where the sites are outside the HANA, however we do not anticipate that these changes will impact this assessment. The NPS:UD enables higher density dwellings for all sites adjacent to Puhinui Road outside the HANA.

Houses to the south of Puhinui Road are in the HANA. Most of them will be removed as part of the project. It is assumed that the remaining dwellings will have been insulated and provided with fresh air intake as part of the Auckland Airport noise mitigation packages. No new noise sensitive activities are anticipated in this area.

Houses to the north of Puhinui Road are in the MANA. These may also have been upgraded as part of the Auckland Airport noise mitigation package. Where new houses are built in the MANA, they will need to incorporate sound insulation and ventilation to mitigate against aircraft noise. Such mitigation will also be effective against road traffic noise.

Existing traffic noise levels in this area range up to 72 dB $L_{Aeq(24h)}$ for houses fronting Puhinui Road, to less than 50 dB $L_{Aeq(24h)}$ where houses are well shielded by intervening dwellings (some of which will be removed as part of the Project). Aircraft and commercial noise sources will add to the overall noise environment experienced by residents in the area.

8.2 Buildings within proposed designation

The following Table 23 shows the buildings that are within the proposed designation. We have not assessed them further as the assumption is that the relevant requiring authority will acquire the parcels of land that these buildings are located on.

Table 23: Buildings inside designation (not assessed)

Address	Address
3, 5, 7 – 10 Bridge Street, Papatoetoe	2, 4A Plunket Avenue, Papatoetoe
6, 8, 18, 20, 22, 26 Cambridge Terrace, Papatoetoe	146 – 150 (even), 156, 166 – 202 (even), 199, 203, 230, 232, 252, 262 – 266 (even), 2702 – 280 (even), 281, 284, 286, 290 – 294 (even), 298, 300 – 306 (even), 310, 312 Puhinui Road, Papatoetoe
4, 6, 8 Noel Burnside Road, Papatoetoe	1, 2, 2/3, 5 Ranfurly Avenue, Papatoetoe
98, 104 Kenderdine Road, Papatoetoe	

8.3 Assessment of traffic noise effects

The Project will result in the first row of houses adjacent to the road being removed to provide the space required to construct the Project. The widening is proposed to occur on the southern side of Puhinui Road. The removal of the first row of houses will result in the second row of houses being exposed to traffic noise from Puhinui Road and the BRT corridor. This results in a noticeable noise level change for those houses. In addition, the new bus bridge will cross over Puhinui Station, exposing PPFs to traffic noise that are currently somewhat removed from traffic. The change in noise level falls within the trigger levels of NZS6806 (refer Section 3.1.2) and therefore we have undertaken an assessment of traffic noise effects in accordance with NZS6806.

One station is proposed at the existing Puhinui Station. This station would be located above the rail station and rail line, allowing direct access from the bus to the rail.

8.3.1 NZS6806

As set out in 2.2.3, Puhinui Road is an existing road. The proposed changes will move the road well outside the current road corridor in parts, and the removal of dwellings currently fronting the road will result in significant noise level increases for houses behind.

There are currently 380 PPFs in the vicinity of the road. The road is surfaced with AC14, and based on information from Auckland Transport, we have assumed that this road surface will be retained.

The majority of PPFs (326 of 380) currently receive noise levels within Category A. This will remain similar in the Do-nothing and Do-minimum scenarios, with 335 and 338 PPFs respectively. The number of PPFs receiving noise levels within Category C is predicted to reduce from 11 to 5 when comparing the Do-nothing and Do-minimum scenarios.

Eight PPFs¹² are predicted to have a noticeable to significant noise level increase between 7 and 13 dB and would receive noise levels within Category B or C due to the project. These PPFs are generally in areas where the road will move significantly closer and intervening buildings have been removed. Since most of these dwellings are single storey, a boundary fence may be an appropriate mitigation option. However, site access will need to be maintained and therefore the fence may have reduced effectiveness. With a boundary fence in place, we consider that noise levels can be reduced to be within Category A or B.

The number of PPFs is summarised in Table 24, individual predicted noise levels at all PPFs are shown in the table in **Appendix A**, and figures showing the location of the PPFs are included in **Appendix B**.

Table 24: Summary of NZS 6806 assessment

Scenario	Number of PPFs		
	NZS 6806 Categories		
	Category A	Category B	Category C
Existing	326	45	9
Do-nothing	335	34	11

¹² 148A, 186A, 290, 292B, 294A, and 3/298 Puhinui Road, 4 Plunket Avenue,

Scenario	Number of PPFs		
	NZS 6806 Categories		
	Category A	Category B	Category C
Do-minimum (incl. bus rapid transit)	338	37	5

8.3.2 Change in noise levels

Noise effects can be described based on the change in noise level with and without the Project. For the comparison of noise levels, we have included the Project road and other local roads in the area that would have an effect on the overall noise levels.

We predict a slight noise level increase of an average of 1 dB from the existing to Do-nothing scenario. With the Project in place, noise levels are predicted to on average increase by less than 1 dB compared with the Do-nothing scenario. Individual PPFs are predicted to receive significant noise level increases where the road moves closer or where the first row dwelling is removed. For those PPFs, noise levels may increase up to 13 dB. However, only 34 of the assessed 380 PPFs are predicted to receive a noticeable to significant increase, with most of these PPFs receiving noise levels within Category A.

Figure 13 shows the number of PPFs in each of the change in noise level bands discussed in Table 8. This shows that the vast majority (311 of the 380 PPFs assessed) would not receive a noticeable noise level change.

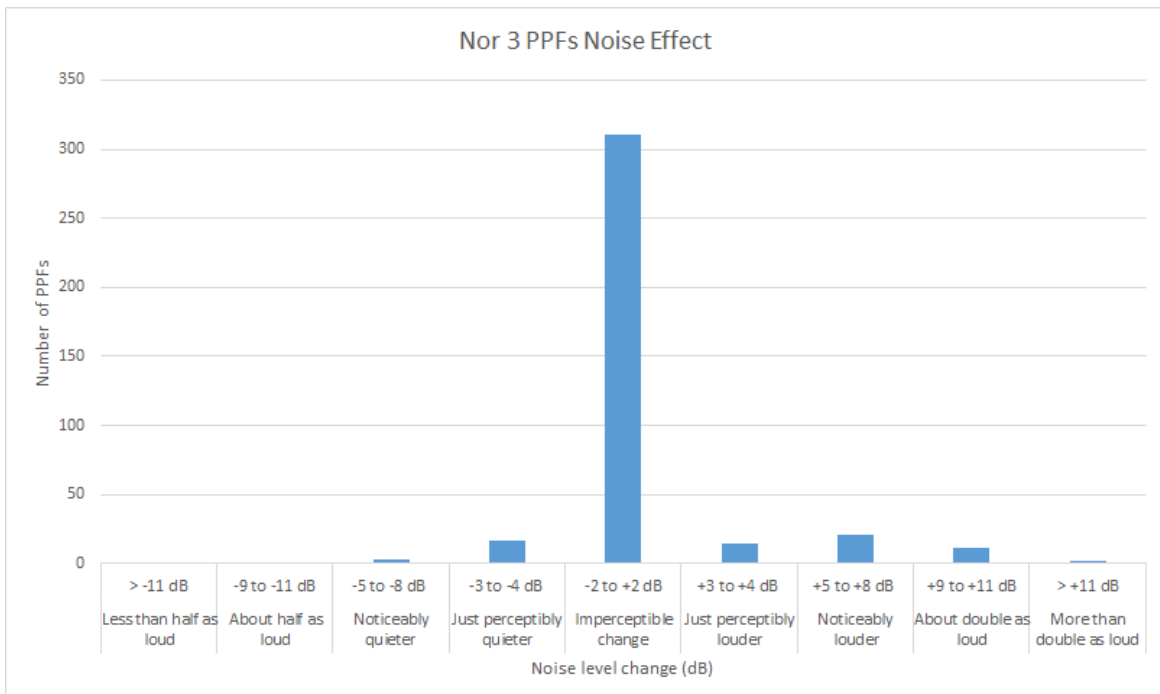


Figure 13: Change in noise level

8.3.3 Annoyance effects

As described in Section 3.1.4, we have determined the number of people potentially “highly annoyed” by the noise effects of the Project, by comparing the results of the existing and Do-nothing scenarios with the results of the Do-minimum scenario. For all scenarios, we have included local roads that have an effect on the noise level to represent the noise level that is likely to be experienced.

In addition, we have provided a figure showing the number of PPFs in each noise level band (in 2dB steps) and the number of people potentially highly annoyed.

Our results are summarised in Table 25 below.

Table 25: Number of people highly annoyed

Scenario	Number of people highly annoyed
Existing	133
Do-nothing	141
Do-minimum	149

Table 25 shows that the number of people highly annoyed by road traffic noise would remain generally similar with or without the Project.

Figure 14 shows the number of PPFs and the number of people potentially highly annoyed in a combined graph. The distribution of annoyance remains largely unchanged, with peaks at 54 to 58 dB LAeq(24h) and 64 to 68 dB LAeq(24h) representing the number of PPFs one row removed from the road and fronting the road respectively.

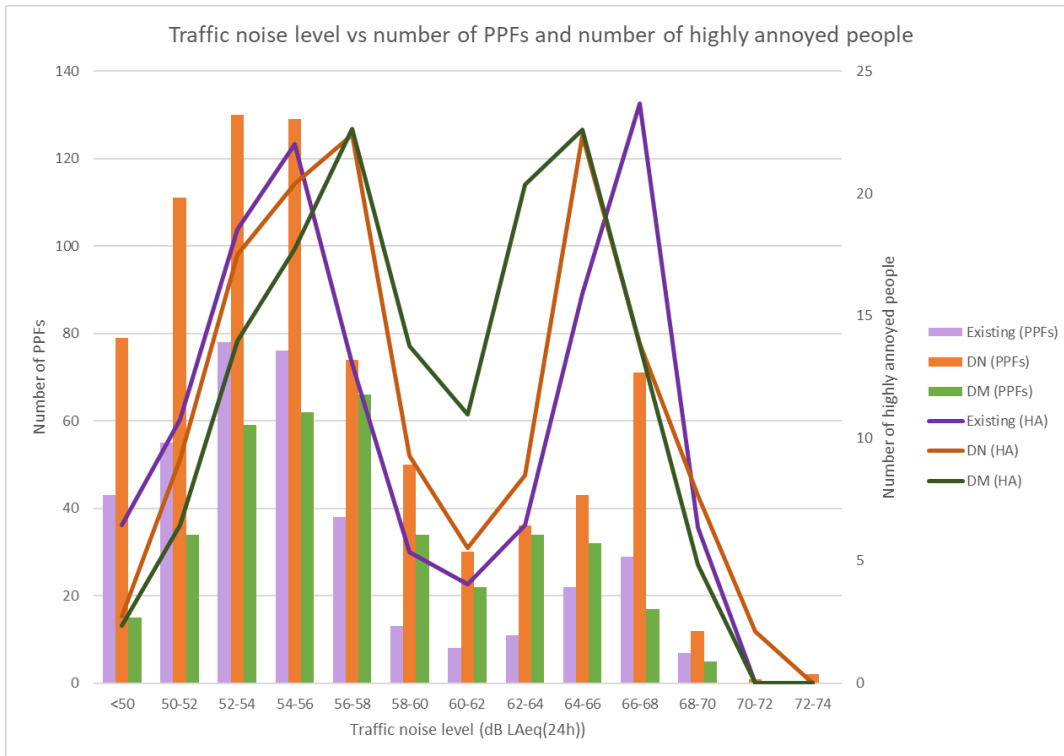


Figure 14: Number of PPFs and number of people highly annoyed by noise band

8.4 Recommended measures to avoid, remedy or mitigate traffic noise effects

As noted above, there is a small number of PPFs where noise levels are predicted to increase noticeably and be within Category B or C. Boundary fences may be practicable given that most of the PPFs are single storey, however, site access will need to be maintained.

The most appropriate (and already included) mitigation option is the use of low noise road surface, in this instance AC14.

9 Airport to Botany Bus Rapid Transit – NoRs 4a and 4b

This section assesses specific traffic noise matters relating to NoRs 4a and 4b – the Project corridor between the SH20/20B Interchange and Orrs Road.

9.1 Existing and likely future noise environment

NoRs 4a and 4b extends along the boundary of two zones, the FUZ to the north and Business to the south. We understand that the FUZ will eventually be rezoned to a commercial zone, not least because the area is within the MANA, which somewhat restricts residential use due to the elevated aircraft noise levels. Neither area is currently developed. Therefore, the receiving environment may be different to the current environment as the future business areas are developed. However, due to the receiving environment being businesses, we do not anticipate any additional PPFs to be created. In fact, the few existing dwellings may be removed during the redevelopment of the sites.

Only a small number of dwellings are within 100m of the alignment. We consider that these dwellings may not remain when the sites are developed, however, in the interim we have assessed them as PPFs as required by NZS6806.

The current SH20B is surfaced in PA10 30mm. We have assumed that this road surface is retained in the future.

The existing noise environment is mostly affected by traffic on SH20B and aircraft noise. Levels range from 52 dB $L_{Aeq(24h)}$ for houses further away, to 68 dB $L_{Aeq(24h)}$ for houses close to the road. Aircraft noise would add to that noise level.

9.2 Buildings within proposed designation

The following Table 26 shows the buildings that are within the proposed designation. We have not assessed them further as the assumption is that the relevant requiring authority will acquire the parcels of land that these buildings are located on. We only note the addresses where the main building is inside designation, and not those where auxiliary buildings such as sheds, or garages may be removed. For some addresses, several buildings are on the site, however, the address is only shown once.

In addition, auxiliary buildings are not generally occupied, so are not considered to be relevant receivers in relation to this assessment.

Table 26: Buildings inside designation (not assessed)

Address	Address
402 Puhinui Road	440 Puhinui Road
408 Puhinui Road	

9.3 Assessment of traffic noise effects

9.3.1 NZS6806

As set out in Section 2.2.4, SH20B is an existing road with an existing designation (designation 6717). The proposed works in this section will take the alignment outside its designation in parts. Therefore, we have assessed the project against NZS6806 for the entirety of the alignment within NoR 4a and 4b.

Auckland Transport is the Requiring Authority for NoR 4a which extends from the SH20/20B interchange to Orrs Road. Waka Kotahi is the Requiring Authority for NoR 4b which is an alteration of the existing designation 6717 which incorporates the new ramp across and connecting with SH20 and the walking and cycling facility.

We anticipate that both projects will be constructed and operated in conjunction and have therefore assessed both together as their traffic noise effects cannot be separated.

The predicted change in noise level is below the threshold of NZS6806 (refer Section 3.1.2). Therefore, an assessment in accordance with NZS6806 is not required as the effects are insignificant. However for completeness, we have included an NZS 6806 assessment.

There are currently five PPFs in the vicinity of the road that would remain in place. The anticipated increase in traffic volume is predicted to result in two PPFs receiving noise levels within Category C for both the Do-nothing and Do-minimum scenarios. However, as there is no change predicted due to the Project, no additional mitigation is proposed.

The number of PPFs is summarised in Table 27, individual noise level results for all PPFs are shown tables in **Appendix A**, and figures showing the location of the PPFs are included in **Appendix B**.

Table 27: Summary of NZS 6806 assessment

Scenario	Number of PPFs		
	NZS 6806 Categories		
	Category A	Category B	Category C
Existing	2	2	1
Do-nothing	3	0	2
Do-minimum (incl. bus rapid transit)	3	0	2

9.3.2 Change in noise levels

Noise effects can be described based on the change in noise level with and without the Project. For the comparison of noise levels, we have included the Project road and other local roads in the area that would have an effect on the overall noise levels.

We predict noise level increases from the existing to Do-nothing scenario of up to 3 dB, and an average noise level increase of 2.5 dB across all PPFs.

With the Project in place (with low noise road surface PA10 30mm as discussed above), noise levels are predicted to remain unchanged compared with the Do-nothing scenario.

Figure 15 shows the number of PPFs in each of the change in noise level bands discussed in Table 8.

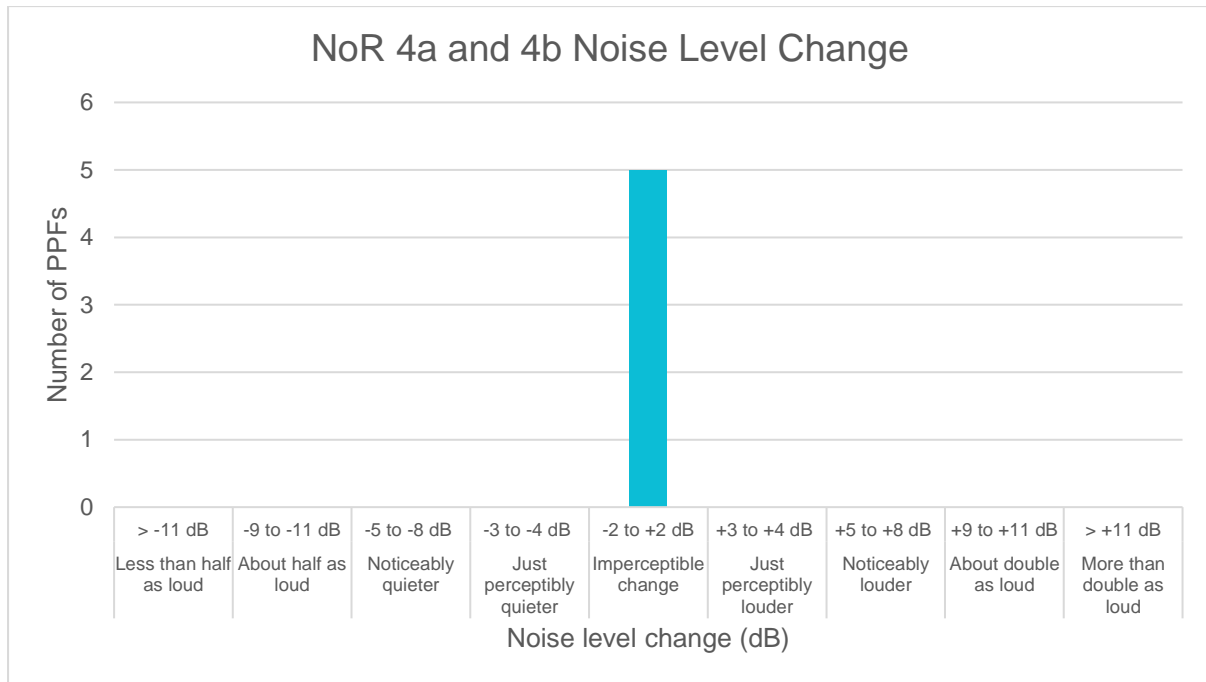


Figure 15: Change in noise level

9.3.3 Annoyance effects

As described in Section 3.1.4, we have determined the number of people potentially “highly annoyed” by the noise effects of the Project, by comparing the results of the existing and Do-nothing scenarios with the results of the Do-minimum scenario. For all scenarios, we have included local roads that have an effect on the noise level to represent the noise level that is likely to be experienced.

In addition, we have provided a figure showing the number of PPFs in each noise level band (in 2dB steps) and the number of people potentially highly annoyed.

Our results are summarised in Table 28 below.

Table 28: Number of people highly annoyed

Scenario	Number of people highly annoyed
Existing	4
Do-nothing	4
Do-minimum	4

Table 28 shows that the number of people highly annoyed by road traffic noise would remain the same with or without the Project.

Figure 16 shows the number of PPFs and the number of people potentially highly annoyed in a combined graph. The peak number of people highly annoyed (albeit low as there are very few

dwellings in the area) moved slightly up from the 66-68 dB $L_{Aeq(24h)}$ band to the 70 to 72 dB $L_{Aeq(24h)}$ band.

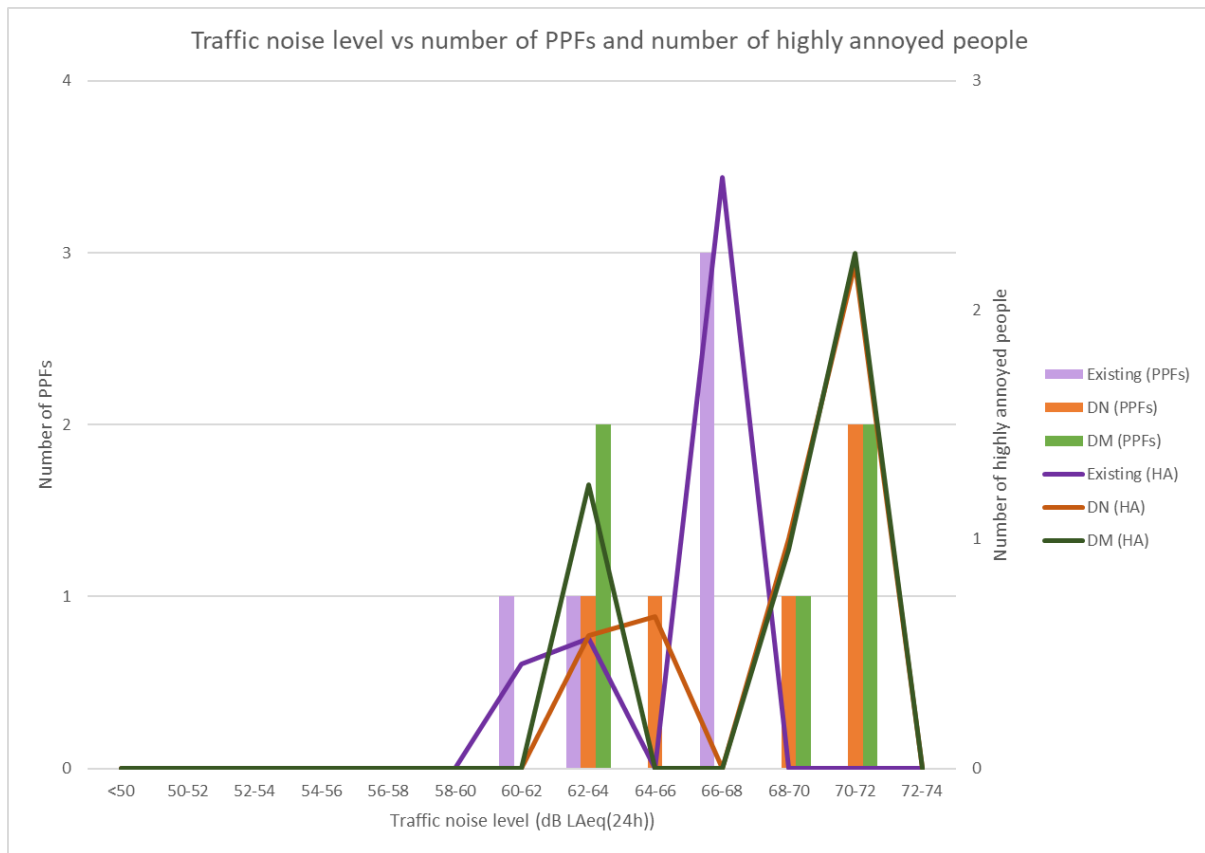


Figure 16: Number of PPFs and number of people highly annoyed by noise band

9.4 Recommended measures to avoid, remedy or mitigate traffic noise effects

We do not recommend any mitigation for the PPFs in this area given that the changes due to the Project will be unnoticeable.

The most appropriate (and already included) mitigation option is the use of low noise road surface.

10 Conclusions

An assessment of traffic noise effects has been carried out for the Project based on NZS6806, in relation to the change in noise level and the potential annoyance effects from the resulting noise levels.

All existing PPFs within 100m of the Project corridor have been considered in the assessment. Buildings that are within the proposed designation have not been assessed as it is assumed that these buildings will not remain once the Project has been implemented.

A comparison of the predicted traffic noise levels in the Do-nothing scenario (design year without the Project) and the Do-minimum scenario (with the Project). The table below provides a summary of the assessment of traffic noise effects across the NoRs and mitigation measures to manage potential effects.

Table 29: Assessment of traffic noise effects – Project wide

Effect	Assessment	Recommendation
Traffic noise – all NoRs	<p>NoRs 1, 2 and 3 traverse well established residential and commercial areas, with buildings in close proximity to construction works. NoR 4a and 4b traverses currently generally greenfield sites (some zoned FUZ), which will likely be developed as commercial areas.</p> <p>PPFs include dwellings, schools, childcare centres and other educational facilities. Only existing PPFs have been assessed in detail.</p> <p>The largest effects are anticipated from the removal of the first row of house in NoR 2 and 3, and parts of NoR 1. This will leave PPFs behind exposed to traffic noise.</p> <p>Other effects are likely from traffic lanes moving closer to some houses.</p> <p>The traffic noise effects are generally slight in areas where no houses are demolished. Where the first row of houses is demolished, effects are noticeable to significant. However, overall, noise levels are predicted to be generally in Category A for most of those houses.</p> <p>For the vast majority of PPFs, any noise level changes will be insignificant ranging from -2 to + 2 dB.</p>	<p>Mitigation is already assumed in the form of low noise road surface, by retaining the existing surface in the future.</p> <p>Some individual boundary fences may be effective, particularly in NoR 1.</p> <p>Fencing in NoR 2 and 3 is unlikely to be suitable due to driveway access requirements.</p> <p>Since no new houses are permitted in the HANA, and new houses in the MANA will need to incorporate sound insulation and ventilation, effects from traffic noise on future dwellings will likely be limited.</p> <p>In addition, developers of any new dwelling outside the MANA would likely take account of the existing high noise roads and design the dwellings accordingly.</p>

Appendix A

Predicted noise levels at all PPFs

Appendix A – Predicted noise levels at all PPFs

NoR 1

PPF Address (NoR 1)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, traffic 2048)	Do-Minimum (Project, traffic 2048)
dB LAeq(24h)				
4 Aaronville Way	1	69.2	66.2	66.6
6 Aaronville Way	1	69.2	66.2	66.5
8 Aaronville Way	1	56.6	53.7	54.4
8 Aaronville Way	2	69.8	66.8	67
10 Aaronville Way	1	69.1	66.1	66.3
12 Aaronville Way	1	69.7	66.7	66.9
28 Accent Drive	2	69.8	64.4	64.4
28 Accent Drive	2	61.5	55.9	55.6
28 Accent Drive	2	60.9	55.4	54.7
28 Accent Drive	2	59.9	54.4	54.2
28 Accent Drive	2	59.4	53.9	53.8
36 Accent Drive	2	58.5	53.1	52.1
12 Aclare Place	1	50.5	47.5	51.2
14 Aclare Place	2	53.7	50.7	53.3
15 Aclare Place	1	51.8	48.8	51.9
16 Aclare Place	1	54.7	51.5	55
17 Aclare Place	2	54.6	51.6	53.4
17 Aclare Place	1	48.3	45.3	45.8
19 Aclare Place	1	54.7	51.8	54.5
21 Aclare Place	1	60.3	57.4	62.8
23 Aclare Place	1	71.6	68.5	68.8
25 Aclare Place	1	71.2	68.3	68.5
2 Adrigole Place	1	50.8	46	46.8
3 Ardkeen Place	1	49.9	45.6	46.6
5 Ardkeen Place	1	53.4	49.1	50.6
6 Ardkeen Place	1	49.6	45.3	45.9
7 Ardkeen Place	1	52.9	48.4	48.9
8 Ardkeen Place	1	51.1	46.7	47.4
9 Ardkeen Place	1	55.2	50.7	51.7

PPF Address (NoR 1)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, traffic 2048)	Do-Minimum (Project, traffic 2048)
		dB LAeq(24h)		
10 Ardkeen Place	1	54.3	49.7	52.5
11 Ardkeen Place	1	50.4	46.3	46.8
12 Ardkeen Place	1	57	52.4	54.4
13 Ardkeen Place	1	56.3	51.6	52.1
14 Ardkeen Place	1	71.1	66.2	66.4
15 Ardkeen Place	1	53.5	49.3	51.1
16 Ardkeen Place	1	70.5	65.6	65.9
17 Ardkeen Place	1	54	50.9	51.1
18 Ardkeen Place	1	70.1	65.2	65.5
19 Ardkeen Place	1	56.5	53.2	53.5
20 Ardkeen Place	1	70.2	65.4	65.5
22 Ardkeen Place	1	70.2	65.4	65.5
24 Ardkeen Place	1	69.2	64.4	64.7
26 Ardkeen Place	1	70.6	65.8	66
28 Ardkeen Place	1	71.1	66.4	66.6
30 Ardkeen Place	1	60.8	57.3	57.7
6 Ballydonegan Rise	1	49.5	44.5	45.2
7 Balrath Road	1	56.3	51.5	52.4
8 Balrath Road	1	57	52.2	53.5
9 Balrath Road	1	58.9	54	54.9
10 Balrath Road	1	59.8	55	55.8
11 Balrath Road	1	61.3	56.6	57.7
12 Balrath Road	1	69.2	64.3	64.8
1 Banville Road	1	69.3	64.2	63.8
2 Banville Road	1	69.4	64.3	64.7
3 Banville Road	1	60.8	55.6	55.4
5 Banville Road	1	57	52	51.7
7 Banville Road	1	55.2	50.1	50.3
2 Belinda Avenue	1	68.1	65.6	66.6
5 Belinda Avenue	1	61	57.5	62.3
6 Belinda Avenue	1	61.9	58.8	60.9
6 Belinda Avenue	2	62.5	59.3	61
7 Belinda Avenue	1	59.6	55.9	57.7
8 Belinda Avenue	1	58.2	54.6	57

PPF Address (NoR 1)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, traffic 2048)	Do-Minimum (Project, traffic 2048)
		dB LAeq(24h)		
9 Belinda Avenue	1	58.6	55.1	56.2
11 Belinda Avenue	1	58.1	54.6	57.1
5 Beragh Place	1	49.1	46.1	46.6
6 Beragh Place	1	49	46	46.5
7 Beragh Place	1	49.5	46.5	47
8 Beragh Place	1	50.6	47.7	48.2
9 Beragh Place	1	52	49.1	49.6
10 Beragh Place	1	52.2	49.3	49.7
11 Beragh Place	1	52.1	49.2	49.6
12 Beragh Place	1	52.6	49.7	50.6
2 Blowers Place	1	56.1	51.4	52.6
3 Blowers Place	1	54.8	50.4	51
4 Blowers Place	1	51.7	47.3	48.3
5 Blowers Place	1	54.5	50	50.3
6 Blowers Place	1	52.3	48	49.3
7 Blowers Place	1	56.7	52.4	53
8 Blowers Place	1	51.8	47.5	48.5
9 Blowers Place	1	55.6	51.2	52
10 Blowers Place	1	52	47.7	48.6
11 Blowers Place	1	56.4	51.9	52.7
13 Blowers Place	1	53.5	49.2	50
3 Boderg Way	1	49.7	46.7	47.2
4 Boderg Way	1	54.4	51.3	51.9
5 Boderg Way	1	52	49	49.8
6 Boderg Way	1	57.4	54.2	55
7 Boderg Way	1	52.5	49.3	49.9
8 Boderg Way	1	59.1	56.1	56.6
9 Boderg Way	1	49.3	46.3	46.7
10 Boderg Way	1	63.4	60.3	61.1
11 Boderg Way	1	51.4	48.4	48.9
12 Boderg Way	1	72.2	69.4	69.3
13 Boderg Way	1	53	50.1	51.7
15 Boderg Way	1	52.3	49.3	50
17 Boderg Way	1	55.6	52.6	53.4

PPF Address (NoR 1)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, traffic 2048)	Do-Minimum (Project, traffic 2048)
		dB LAeq(24h)		
19 Boderg Way	1	59	55.9	56.3
21 Boderg Way	2	67.6	64.7	65
3 Borris Close	1	52.5	49.5	51.1
5 Borris Close	1	55.2	52.3	55
6 Borris Close	1	50.7	47.8	49.9
7 Borris Close	1	58.3	55.3	57
8 Borris Close	1	54.8	51.9	53.5
9 Borris Close	1	61.6	58.6	59.9
10 Borris Close	1	61.3	58.3	59.5
11 Borris Close	1	67.6	64.6	66.1
5 Brinlack Drive	1	55.4	52.5	52.8
6 Brinlack Drive	1	56.8	53.9	53.4
7 Brinlack Drive	1	52.3	49.3	50.6
8 Brinlack Drive	1	59.3	56.4	56
9 Brinlack Drive	1	59.6	56.7	57.1
10 Brinlack Drive	1	61.6	58.6	58.4
11 Brinlack Drive	1	60.7	57.8	59.5
13 Brinlack Drive	1	62.9	59.9	60.1
15 Brinlack Drive	1	70.3	67.4	67.5
7 Brittas Place	1	50.4	47.3	48.1
9 Brittas Place	1	63.3	60.4	60.1
10 Brittas Place	1	54.4	51.2	51.9
11 Brittas Place	1	63.7	60.8	60.9
12 Brittas Place	1	55.7	52.7	53.5
13 Brittas Place	1	64.4	61.4	64.8
14 Brittas Place	1	57	53.9	55.5
16 Brittas Place	1	58.4	55.3	57.4
18 Brittas Place	1	69.2	66.1	66.6
7A Brittas Place	1	55.8	52.7	53.5
5 Brosna Place	1	50.4	45.9	46.7
7 Brosna Place	1	50.4	45.8	46.6
8 Brosna Place	1	52.5	47.8	48.5
9 Brosna Place	1	53.9	49.4	50.8
10 Brosna Place	1	50.2	45.8	46.5

PPF Address (NoR 1)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, traffic 2048)	Do-Minimum (Project, traffic 2048)
		dB LAeq(24h)		
11 Brosna Place	1	52.9	48.4	49
12 Brosna Place	1	51.8	47	47.8
14 Brosna Place	1	52.5	47.8	48.4
16 Brosna Place	1	55.2	50.5	51.1
14 Caltra Place	1	57.2	54	54.9
16 Caltra Place	1	56.9	53.8	54.7
17 Caltra Place	1	51.5	48.5	48.9
18 Caltra Place	1	55.4	52.3	53.1
19 Caltra Place	1	53	49.9	51.1
20 Caltra Place	1	57	53.4	54.8
21 Caltra Place	1	52.3	49.2	49.6
22 Caltra Place	1	61.3	57.2	57.8
23 Caltra Place	1	57.3	54.3	54.9
24 Caltra Place	1	69.8	66.6	66.8
26 Caltra Place	1	69.9	66.8	66.8
1 Cashmore Place	1	51.2	47.3	48.3
2 Cashmore Place	1	51.6	47.3	48.3
7 Chapletown Drive	1	53.5	50.6	50.9
9 Chapletown Drive	1	51.6	48.6	50
10 Chapletown Drive	2	56.3	53.5	54
11 Chapletown Drive	1	57	54.1	54.4
12 Chapletown Drive	2	57.7	54.8	55.1
13 Chapletown Drive	1	56.8	54	53.8
14 Chapletown Drive	1	52.1	49.1	49.4
15 Chapletown Drive	1	62.2	59.3	59.8
16 Chapletown Drive	1	60.5	57.7	58.3
17 Chapletown Drive	1	68.6	65.6	65.9
3 Clavoy Place	1	50.4	45.8	46.5
5 Clavoy Place	1	55.6	50.8	51.5
6 Clavoy Place	1	49.9	45.3	46
7 Clavoy Place	1	54.2	49.5	50.6
9 Clavoy Place	1	53.5	48.7	50.4
11 Clavoy Place	1	54.7	50	51.5
13 Clavoy Place	1	50.9	46.2	46.9

PPF Address (NoR 1)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, traffic 2048)	Do-Minimum (Project, traffic 2048)
		dB LAeq(24h)		
15 Clavoy Place	1	56.7	51.9	52.8
17 Clavoy Place	2	53.9	49.4	50.3
19 Clavoy Place	2	59	54.3	55
21 Clavoy Place	2	59	54.3	55.1
23 Clavoy Place	2	56.4	51.7	53.2
25 Clavoy Place	2	56.4	51.7	53.2
27 Clavoy Place	2	57.2	52.4	53.2
29 Clavoy Place	2	59.8	55	55.5
31 Clavoy Place	2	59.2	54.3	55.2
33 Clavoy Place	1	62.3	57.3	57.1
7 Coleraine Place	1	49.4	46.4	46.9
9 Coleraine Place	1	51.6	48.6	49.1
10 Coleraine Place	1	49.8	46.8	47.7
11 Coleraine Place	1	54.1	51.1	51.9
12 Coleraine Place	1	55.8	52.6	53.1
13 Coleraine Place	1	57.1	53.9	54.6
14 Coleraine Place	1	55.7	52.6	53.3
10A Coleraine Place	2	55.9	52.8	53.5
10 Corrofin Drive	1	50.5	45.7	46.3
12 Corrofin Drive	1	51.6	46.9	47.6
14 Corrofin Drive	1	54.3	49.3	50
16 Corrofin Drive	1	53.5	48.6	49.3
18 Corrofin Drive	1	52.2	47.3	48
20 Corrofin Drive	1	51.4	46.6	47.3
22 Corrofin Drive	1	58.7	53.9	54.4
24 Corrofin Drive	1	51.4	46.6	47.7
26 Corrofin Drive	1	58.1	53.2	54.8
28 Corrofin Drive	1	51.3	46.5	47.2
30 Corrofin Drive	1	51.6	46.7	48
32 Corrofin Drive	1	54.5	49.5	50.1
34 Corrofin Drive	1	54.7	49.9	50.5
36 Corrofin Drive	1	53.2	48.4	49.1
31 Craigavon Drive	1	50.5	45.7	46.5
32 Craigavon Drive	1	54.5	49.7	50.4

PPF Address (NoR 1)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, traffic 2048)	Do-Minimum (Project, traffic 2048)
		dB LAeq(24h)		
33 Craigavon Drive	1	52.6	47.6	48.5
34 Craigavon Drive	1	63	58.1	58.3
35 Craigavon Drive	1	56.9	51.9	52.6
8 Cratloe Lane	1	68.3	65.3	65.9
8 Cratloe Lane	1	68.3	65.3	65.9
424 East Tamaki Road	1	54.5	49.3	51.3
426 East Tamaki Road	1	54.8	49.7	51.3
2 Franco Lane	1	68.7	65.8	66.3
4 Franco Lane	1	67.9	64.9	66
6 Franco Lane	1	67.5	64.6	66.3
8 Franco Lane	1	67.4	64.4	66.3
10 Franco Lane	1	67.9	65	66.3
12 Franco Lane	1	67.2	64.3	65.7
8A Franco Lane	1	67.5	64.6	66.3
9 Gordal Place	2	50	44.8	45.9
10 Gordal Place	1	47.9	42.7	43.5
12 Gordal Place	1	48.8	43.6	44.5
13 Gordal Place	2	53.7	48.5	49
13 Gordal Place	2	51.8	46.7	47.4
15 Gordal Place	2	56.3	51.1	52
16 Gordal Place	1	49.4	44.1	46.5
18 Gordal Place	1	51.1	45.7	49.4
20 Gordal Place	1	57.8	52.5	52.2
8 Gransna Lane	1	68.1	63.5	64.1
10 Gransna Lane	1	68.4	63.8	64.3
12 Gransna Lane	1	69	64.4	64.9
14 Gransna Lane	1	68	63.4	63.9
16 Gransna Lane	1	69	64.5	65
18 Gransna Lane	1	68.9	64.3	64.8
20 Gransna Lane	1	68.9	64.3	64.9
22 Gransna Lane	2	61.7	57.1	57.6
24 Gransna Lane	2	69.6	65.2	65.8
40 Haven Drive	3	55.6	51.6	50.3
42 Haven Drive	3	55.8	52	50.8

PPF Address (NoR 1)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, traffic 2048)	Do-Minimum (Project, traffic 2048)
		dB LAeq(24h)		
44 Haven Drive	3	43.1	39.8	39.7
46 Haven Drive	3	55.6	51.7	50.8
48 Haven Drive	3	55.3	51.7	50.8
50 Haven Drive	3	55.3	51.6	50.8
52 Haven Drive	3	55.4	51.8	50.9
54 Haven Drive	3	55.5	51.8	50.9
4/29 Haven Drive	3	49	46	47.9
43-47 Haven Drive	3	66.8	63.2	62.6
8 Kalmore Place	1	48	42.8	43.7
9 Kalmore Place	2	51.4	46.2	47.5
10 Kalmore Place	1	48	42.9	43.7
11 Kalmore Place	2	53.1	47.9	49.7
12 Kalmore Place	1	48.5	43.2	44
13 Kalmore Place	2	53.7	48.5	50.2
14 Kalmore Place	2	54.6	49.4	50.2
15 Kalmore Place	2	59.2	53.8	54.7
16 Kalmore Place	1	55.6	50.4	52.2
2 Kanturk Close	1	58.3	55.4	56.1
3 Kanturk Close	1	68.9	65.9	66.2
4 Kanturk Close	1	68.1	65.1	65.7
1 Kellaway Drive	1	55.7	51.6	52
7 Kellaway Drive	1	51.8	48.8	49.5
11 Kellaway Drive	1	57.5	54.6	54.9
13 Kellaway Drive	1	53.1	50.2	51.1
15 Kellaway Drive	2	58.9	55.9	56.4
17 Kellaway Drive	1	58.9	55.9	56.4
21 Kellaway Drive	1	55.5	52.6	52.8
23 Kellaway Drive	1	53.6	50.7	51.8
33 Kellaway Drive	1	68.9	65.9	66
35 Kellaway Drive	1	69.2	66.2	66.3
41 Kellaway Drive	2	69.1	66.1	66.2
43 Kellaway Drive	1	68.4	65.5	66.1
45 Kellaway Drive	2	68.8	65.8	65.9
1/25 Kellaway Drive	2	54.5	51.6	52.3

PPF Address (NoR 1)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, traffic 2048)	Do-Minimum (Project, traffic 2048)
		dB LAeq(24h)		
2/25 Kellaway Drive	2	52.7	49.8	50.3
3/25 Kellaway Drive	2	53.7	50.8	51.1
1/27 Kellaway Drive	2	56	53	53.3
2/27 Kellaway Drive	2	58.4	55.4	55.2
3/27 Kellaway Drive	2	61	57.9	57.7
29-31 Kellaway Drive	2	69.3	66.3	66.5
2 Kilbaha Close	2	53.1	49.8	50.4
3 Kilbaha Close	1	50.4	47.2	47.6
4 Kilbaha Close	1	51.9	48.7	49.2
5 Kilbaha Close	1	58.1	54.1	54.6
6 Kilbaha Close	1	57.6	54.4	55.3
7 Kilbaha Close	1	58.9	54.8	55.3
8 Kilbaha Close	1	69.6	66.5	66.6
9 Kilbaha Close	1	59.4	55.3	55.9
10 Kilbaha Close	1	69.5	66.5	66.6
11 Kilbaha Close	1	63.3	59.3	59.8
12 Kilbaha Close	1	70.1	66.9	67.1
13 Kilbaha Close	1	68.4	65	65.4
2A Kilbaha Close	1	48.6	45.6	45.9
2 Kippure Close	1	59.8	56.8	57.1
3 Kippure Close	1	56.6	53.7	54
4 Kippure Close	1	68.9	65.9	66.1
4 Kippure Close	2	63.9	60.9	61.2
5 Kippure Close	1	59.7	56.7	56.9
7 Kippure Close	1	69.1	66.1	66.3
4 Leixlep Lane	2	67.9	65	65.4
4 Leixlep Lane	2	69	66	66.3
4 Leixlep Lane	2	57.3	54.4	55.6
6 Leixlep Lane	2	68.5	65.5	65.9
8 Leixlep Lane	2	68.5	65.5	66
10 Leixlep Lane	2	68.5	65.5	66.1
12 Leixlep Lane	2	68.5	65.6	66.1
14 Leixlep Lane	2	68.4	65.4	66
16 Leixlep Lane	1	68.1	65	65.6

PPF Address (NoR 1)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, traffic 2048)	Do-Minimum (Project, traffic 2048)
		dB LAeq(24h)		
18 Leixlep Lane	1	68.1	65.1	65.4
20 Leixlep Lane	1	68.9	65.6	65.7
2 Leneford Drive	2	68.2	65.3	65.7
4 Leneford Drive	2	68.3	65.3	65.7
6 Leneford Drive	2	68.3	65.3	65.7
8 Leneford Drive	2	68.3	65.4	65.7
10 Leneford Drive	2	68.3	65.3	65.7
12 Leneford Drive	2	68.3	65.3	65.6
14 Leneford Drive	2	68.3	65.3	65.6
16 Leneford Drive	2	68.3	65.3	65.6
18 Leneford Drive	2	59.3	56.3	56.9
20 Leneford Drive	2	54.4	51.4	51.7
22 Leneford Drive	2	50	47.1	47.5
24 Leneford Drive	2	50	47.1	47.5
26 Leneford Drive	2	50.1	47.2	47.5
28 Leneford Drive	2	50.2	47.2	47.6
30 Leneford Drive	2	52.4	49.5	50
32 Leneford Drive	2	57.9	55	55.7
2 Marlon Lane	1	69.2	66.2	66.6
4 Marlon Lane	1	69.3	66.3	66.6
6 Marlon Lane	1	69	66	66.4
8 Marlon Lane	1	69.1	66.2	66.6
4A Marlon Lane	1	69.2	66.2	66.6
8 Matarangi Road	1	51.2	45.5	45.7
9 Matarangi Road	1	46.8	43.5	43.9
10 Matarangi Road	1	52.8	49.8	51.6
11 Matarangi Road	1	47.4	44.4	44.7
12 Matarangi Road	1	51.4	48.4	48.6
13 Matarangi Road	1	47.4	44.4	44.7
14 Matarangi Road	2	54.3	51.2	51.4
15 Matarangi Road	2	48	44.9	45.3
16 Matarangi Road	1	50.9	47.9	48.2
17 Matarangi Road	2	48.2	45.2	45.6
18 Matarangi Road	1	49.4	46.4	46.7

PPF Address (NoR 1)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, traffic 2048)	Do-Minimum (Project, traffic 2048)
		dB LAeq(24h)		
19 Matarangi Road	2	48.1	45.1	45.5
20 Matarangi Road	1	49.1	46.2	48.2
21 Matarangi Road	2	48.1	45.1	45.6
23 Matarangi Road	2	51.4	48.4	49.8
25 Matarangi Road	2	52.7	49.8	51.7
27 Matarangi Road	1	51.8	48.9	51.5
29 Matarangi Road	1	47.1	44.1	45.5
30 Matarangi Road	3	70.4	67.4	67.6
8A Matarangi Road	1	54	48.3	57.7
35 Medvale Avenue	1	52.1	49.4	50.4
37 Medvale Avenue	1	57.8	55.1	55.9
39 Medvale Avenue	1	58.7	55.9	56.9
41 Medvale Avenue	1	64.9	61.9	62.1
42 Michael Jones Drive	1	54.4	49.7	50.7
48 Michael Jones Drive	1	52.2	47.8	50.1
50 Michael Jones Drive	1	51	46.7	47.7
52 Michael Jones Drive	1	51.7	47.3	49.7
54 Michael Jones Drive	1	50.4	46	47.1
56 Michael Jones Drive	1	57.3	52.7	51.4
58 Michael Jones Drive	1	62.5	57.8	63.1
60 Michael Jones Drive	1	60.6	56.2	60.3
62 Michael Jones Drive	1	53.8	49.3	50.4
64 Michael Jones Drive	1	50.3	45.9	47.2
66 Michael Jones Drive	1	50.7	46.3	47.2
68 Michael Jones Drive	1	49.9	45.5	46.4
72 Michael Jones Drive	1	51.8	47.5	48.7
76 Michael Jones Drive	1	52.9	48.5	49.9
1 Mika Court	1	59.4	54.9	57.5
2 Mika Court	1	62.4	58	58.8
3 Mika Court	1	68.7	64.2	65
4 Mika Court	1	64.8	60.3	64.7
5 Mika Court	1	67.5	63	63.9
7 Mika Court	1	65.2	60.7	61.9
9 Mika Court	1	71.6	67.2	67.8

PPF Address (NoR 1)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, traffic 2048)	Do-Minimum (Project, traffic 2048)
		dB LAeq(24h)		
8 Monash Place	2	49.7	44.6	45.5
9 Monash Place	1	49.6	44.4	46.3
10 Monash Place	1	48.6	43.4	44.3
11 Monash Place	1	48.3	43.1	44
12 Monash Place	1	49.2	44.1	45
13 Monash Place	1	48.3	43.1	43.9
14 Monash Place	1	57.6	52.4	53.8
15 Monash Place	2	60.2	55	55.7
16 Monash Place	1	62.3	57.1	58.2
2 Moravale Lane	1	69.6	64.2	65.1
3 Moravale Lane	2	70	64.7	65.3
4 Moravale Lane	1	69.2	63.8	64
5 Moravale Lane	2	69.9	64.5	65.2
6 Moravale Lane	1	69.7	64.4	65.1
7 Moravale Lane	2	69.6	64.3	65
8 Moravale Lane	2	69.6	64.3	65.2
10 Moravale Lane	2	69.4	64.1	65.2
12 Moravale Lane	2	69.2	63.9	65
3 Opito Way	3	48.4	43.6	42.3
5 Opito Way	3	48.1	43.9	42.7
1/1 Opito Way	3	48.4	43.2	42.1
4 Redcastle Drive	1	61.7	57	57.5
5 Redcastle Drive	2	60.1	55.4	55.9
6 Redcastle Drive	1	58.5	53.8	54.2
8 Redcastle Drive	1	56.7	52.1	52.5
10 Redcastle Drive	1	55	50.3	50.7
86 Redcastle Drive	1	48.5	44.2	44.8
87 Redcastle Drive	1	50.3	45.8	46.5
88 Redcastle Drive	1	49.6	45.3	45.8
89 Redcastle Drive	1	50	45.5	46.2
90 Redcastle Drive	1	50	45.6	48
92 Redcastle Drive	1	55.1	50.5	51
94 Redcastle Drive	1	55.9	51.4	51.8
96 Redcastle Drive	1	54.1	49.5	51.5

PPF Address (NoR 1)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, traffic 2048)	Do-Minimum (Project, traffic 2048)
		dB LAeq(24h)		
98 Redcastle Drive	1	55.5	51	53.9
100 Redcastle Drive	1	52.4	47.8	48.4
102 Redcastle Drive	1	55.6	50.8	52
104 Redcastle Drive	2	56.6	51.9	52.7
106 Redcastle Drive	2	56.6	51.9	52.8
108 Redcastle Drive	2	57	52.3	53
5A Redcastle Drive	1	56.4	51.6	52.1
81A Redcastle Drive	1	50.6	46.2	46.9
1 Reinheimer Place	1	53.3	47.9	49
2 Reinheimer Place	2	53.4	47.9	49
3 Reinheimer Place	1	52.9	47.3	48.1
4 Reinheimer Place	1	53	47.5	48.1
5 Reinheimer Place	1	54.9	49.3	49.5
6 Reinheimer Place	1	55.5	49.9	50.1
7 Reinheimer Place	2	60	54.6	53.4
8 Reinheimer Place	1	70.9	65.2	65.8
9 Reinheimer Place	1	61.5	56.1	53.7
10 Reinheimer Place	1	72.1	66.4	66.8
11 Reinheimer Place	1	66.9	61.3	60.7
13 Reinheimer Place	1	67.1	61.5	60.5
3 Riechelmann Court	1	53	48.6	49.9
4 Riechelmann Court	1	52.3	47.9	48.9
5 Riechelmann Court	1	55	50.6	51.1
6 Riechelmann Court	1	55.6	51.2	51.3
7 Riechelmann Court	1	56	51.3	51.9
8 Riechelmann Court	1	68.6	64.1	64.4
9 Riechelmann Court	1	59.9	55.4	59.4
10 Riechelmann Court	1	69.5	65	65.9
11 Riechelmann Court	1	61.8	57.3	59.1
12 Riechelmann Court	1	66.6	62.1	64.1
13 Riechelmann Court	1	70.9	66.4	67.4
15 Robin Brooke Drive	1	56.5	52.1	53.1
17 Robin Brooke Drive	1	52.7	48.4	49.3
19 Robin Brooke Drive	1	57.5	52.9	53.8

PPF Address (NoR 1)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, traffic 2048)	Do-Minimum (Project, traffic 2048)
		dB LAeq(24h)		
20 Robin Brooke Drive	1	54.1	50.1	52.3
21 Robin Brooke Drive	1	62.9	58.4	59.6
22 Robin Brooke Drive	1	56.4	52.1	53.9
23 Robin Brooke Drive	1	54.5	50.1	51.1
24 Robin Brooke Drive	1	56.3	52	53
25 Robin Brooke Drive	1	57	52.5	53.4
27 Robin Brooke Drive	1	58.1	53.8	54.6
29 Robin Brooke Drive	1	54.3	50	50.8
30 Robin Brooke Drive	1	53.4	49.7	50.8
32 Robin Brooke Drive	1	53.5	49.9	51
34 Robin Brooke Drive	1	53.4	50	51.1
35 Robin Brooke Drive	1	57.1	52.8	53.5
36 Robin Brooke Drive	1	53.2	49.8	50.9
37 Robin Brooke Drive	1	58.5	54.4	57.1
38 Robin Brooke Drive	1	53.1	49.6	50.7
39 Robin Brooke Drive	1	57.9	53.8	55
40 Robin Brooke Drive	1	52.4	48.9	50
41 Robin Brooke Drive	1	58.9	54.7	55.7
42 Robin Brooke Drive	1	51.6	48.3	49.3
43 Robin Brooke Drive	1	58	53.9	54.8
45 Robin Brooke Drive	1	58	53.7	54.5
47 Robin Brooke Drive	1	61.9	57.7	58.4
49 Robin Brooke Drive	1	59.1	55.2	57.6
51 Robin Brooke Drive	1	60	56.2	60.5
53 Robin Brooke Drive	1	55.6	52.1	53.8
55 Robin Brooke Drive	1	53.5	50	51.7
1 Sheddings Lane	1	69.4	64.6	65.2
3 Sheddings Lane	1	68.9	64.1	64.5
4 Sheddings Lane	2	69.7	64.9	65.2
5 Sheddings Lane	1	69.5	64.7	65.1
6 Sheddings Lane	2	69.5	64.7	65.1
7 Sheddings Lane	1	69.4	64.6	65
8 Sheddings Lane	1	69.4	64.6	65.2
9 Sheddings Lane	1	68.6	63.7	64.5

PPF Address (NoR 1)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, traffic 2048)	Do-Minimum (Project, traffic 2048)
		dB LAeq(24h)		
10 Sheddings Lane	1	69.6	64.7	65.2
11 Sheddings Lane	1	69.1	64.2	64.7
12 Sheddings Lane	1	69.6	64.7	65.2
14 Sheddings Lane	1	69.6	64.7	65.2
16 Sheddings Lane	1	69.7	64.8	65.2
18 Sheddings Lane	1	69.5	64.6	65.2
20 Sheddings Lane	1	69.7	64.8	65.2
22 Sheddings Lane	2	69.9	65	65.4
24 Sheddings Lane	2	69.7	64.9	65.4
26 Sheddings Lane	2	69.7	64.8	65.3
28 Sheddings Lane	2	69.6	64.7	65.2
30 Sheddings Lane	1	71.7	66.7	66.9
4 Shingleton Lane	2	69.6	64.3	65
6 Shingleton Lane	2	69.6	64.3	65
7 Shingleton Lane	2	68.9	63.6	64.2
8 Shingleton Lane	2	69.6	64.2	64.9
10 Shingleton Lane	2	70.1	64.7	65.3
12 Shingleton Lane	2	70.1	64.7	65.3
14 Shingleton Lane	2	70	64.6	65.2
16 Shingleton Lane	2	70	64.6	65.2
5 Siedeberg Drive	1	52.3	46.8	46.7
13 Siedeberg Drive	2	59.9	54.2	54.6
13 Siedeberg Drive	1	59	53.3	54.2
15 Siedeberg Drive	1	67.3	61.6	62.4
150 Smales Road	1	54	50	50.9
11 Speyside Crescent	2	49.3	44.1	45.5
12 Speyside Crescent	1	47.6	42.4	43.2
13 Speyside Crescent	2	50.5	45.3	46.1
14 Speyside Crescent	1	48.5	43.3	44.1
15 Speyside Crescent	1	48.4	43.1	44
16 Speyside Crescent	1	56.3	51	50.6
17 Speyside Crescent	2	53.8	48.7	56.5
18 Speyside Crescent	2	52.5	47.3	48
19 Speyside Crescent	2	70	64.6	66.2

PPF Address (NoR 1)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, traffic 2048)	Do-Minimum (Project, traffic 2048)
		dB LAeq(24h)		
20 Speyside Crescent	2	51.4	46.2	47
21 Speyside Crescent	2	69.7	64.4	65.1
22 Speyside Crescent	2	49	43.8	44.7
23 Speyside Crescent	2	69.8	64.4	64.9
24 Speyside Crescent	2	48.7	43.5	44.4
25 Speyside Crescent	2	70.3	65	65.4
27 Speyside Crescent	2	70	64.7	65
37 Speyside Crescent	2	54.2	48.6	49.1
3 Srah Place	1	50	46	47.1
5 Srah Place	2	55	50.8	51.7
7 Srah Place	1	52.3	48.1	50
9 Srah Place	1	52.4	48.2	50.3
11 Srah Place	1	53.9	49.5	52.1
12 Srah Place	1	55.4	52.3	52.8
13 Srah Place	1	57.2	52.5	54.1
14 Srah Place	1	59.5	56	56.3
15 Srah Place	2	70	65.6	66.4
16 Srah Place	1	61.5	58.1	58.5
18 Srah Place	1	66.9	62.9	63.8
20 Srah Place	1	69.3	65	65.6
22 Srah Place	1	68.8	64.4	65.4
24 Srah Place	1	68.3	63.9	65
26 Srah Place	1	67.9	63.5	64.5
6 Strundeen Close	2	54.4	49.1	50.3
8 Strundeen Close	1	54.5	49.2	50.1
9 Strundeen Close	2	54.7	49.3	50.7
10 Strundeen Close	1	55.7	50.5	51.2
11 Strundeen Close	2	57.2	51.8	52.9
12 Strundeen Close	1	58.9	53.6	55
13 Strundeen Close	2	59.4	54.1	55.1
15 Strundeen Close	2	62.2	56.8	57.9
17 Strundeen Close	2	69.9	64.6	65.2
203 Te Irirangi Drive	1	70.9	66.6	67.5
205 Te Irirangi Drive	1	70.4	66	66.7

PPF Address (NoR 1)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, traffic 2048)	Do-Minimum (Project, traffic 2048)
		dB LAeq(24h)		
207 Te Irirangi Drive	1	70.7	66.4	67.1
209 Te Irirangi Drive	1	70.7	66.3	67.1
211 Te Irirangi Drive	1	70.8	66.3	67.1
213 Te Irirangi Drive	1	71.1	66.6	67.6
226 Te Irirangi Drive	1	57.6	55	57.6
228 Te Irirangi Drive	1	67.7	65.2	66
311 Te Irirangi Drive	1	61.2	55.7	56.8
311 Te Irirangi Drive	1	61.6	56.2	57.7
311 Te Irirangi Drive	2	64.2	58.5	59.6
487 Te Irirangi Drive	1	72.3	67	67.3
491 Te Irirangi Drive	2	72.5	67.2	67.5
1 Tonu'U Court	1	51.8	47.4	48.1
3 Tonu'U Court	1	55.6	51.2	49.6
5 Tonu'U Court	1	59.3	54.6	54.3
7 Tonu'U Court	1	68.9	64.3	64.8
8 Tonu'U Court	1	61.7	57	56.9
9 Tonu'U Court	1	69.1	64.5	62.4
10 Tonu'U Court	1	68.5	63.9	64.9
11 Tonu'U Court	1	65.3	60.8	62.9
12 Tonu'U Court	1	67.3	62.7	63.6
14 Tonu'U Court	1	64.9	60.3	61.2
16 Tonu'U Court	1	71.1	66.6	67
4 Treneary Lane	1	69.6	63.9	64.6
15 Treneary Lane	1	71.5	65.8	66.6
17 Treneary Lane	1	65.6	59.8	60.9
2 Vidiri Court	1	55.2	50.8	51.6
3 Vidiri Court	1	56.7	52	53
4 Vidiri Court	1	57.9	53.5	54.2
5 Vidiri Court	1	58.1	53.6	54.6
6 Vidiri Court	1	61.5	57	57.8
7 Vidiri Court	1	58.5	54	54.8
8 Vidiri Court	1	63.9	59.3	60.1
9 Vidiri Court	1	61.6	57	58
10 Vidiri Court	1	69.8	65.2	66

PPF Address (NoR 1)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, traffic 2048)	Do-Minimum (Project, traffic 2048)
		dB LAeq(24h)		
11 Vidiri Court	1	69.6	65.1	65.8
12 Vidiri Court	1	65.6	61	61.9
13 Vidiri Court	1	68.2	63.7	64.4
14 Vidiri Court	1	71.1	66.6	67.3
15 Vidiri Court	1	66.3	61.7	62.4
17 Vidiri Court	1	61.9	57.3	58
19 Vidiri Court	1	71.7	67.1	67.5
9 Walter Haddrell Crescent	1	47.6	42.5	43.4
10 Walter Haddrell Crescent	1	48.7	43.6	44.5
11 Walter Haddrell Crescent	1	49.4	44.2	45.5
12 Walter Haddrell Crescent	1	52.2	47	49.3
13 Walter Haddrell Crescent	1	58.8	53.4	54.3
14 Walter Haddrell Crescent	2	54.8	49.6	51.6
15 Walter Haddrell Crescent	1	58.5	53.2	54.8
16 Walter Haddrell Crescent	2	51.8	46.6	47.8
17 Walter Haddrell Crescent	1	58.2	53	54.4
19 Walter Haddrell Crescent	1	59.1	53.7	56.3
21 Walter Haddrell Crescent	1	48.8	43.6	44.4
23 Walter Haddrell Crescent	1	53.1	48	49.8
25 Walter Haddrell Crescent	1	48.4	43.3	44.2
27 Walter Haddrell Crescent	1	47.7	42.6	43.5
2 Wando Lane	1	67.7	62.9	63.5
4 Wando Lane	1	69.2	64.4	65
6 Wando Lane	2	69.1	64.3	64.9
8 Wando Lane	2	69.1	64.3	64.9
10 Wando Lane	2	69	64.3	64.8
12 Wando Lane	1	68.9	64	65.1
14 Wando Lane	1	69.1	64.3	64.9
16 Wando Lane	1	69.2	64.4	65
18 Wando Lane	2	68.9	64.1	64.7
20 Wando Lane	2	68.7	63.9	64.5
22 Wando Lane	2	61.4	56.6	57.2
24 Wando Lane	2	70	65.3	65.8
1 Wayne Francis Drive	1	54.4	51.2	50.4

PPF Address (NoR 1)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, traffic 2048)	Do-Minimum (Project, traffic 2048)
dB LAeq(24h)				
3 Wayne Francis Drive	1	51.3	47.2	49.2
5 Wayne Francis Drive	1	50.2	46	46.8
3 Whetstone Road	1	55.7	52.1	53
4 Whetstone Road	1	54.8	52.1	53.7
5 Whetstone Road	1	58.3	54.8	55.6
6 Whetstone Road	1	55.4	52.6	53.6
7 Whetstone Road	1	60.8	57.2	58.3
8 Whetstone Road	1	62.7	59.9	60.8
9 Whetstone Road	1	63	59.5	62.1
10 Whetstone Road	1	67.1	63.7	64.8
7A Whetstone Road	1	55.3	52.2	53.2
9 William Woods Court	2	51.6	47	47.8
10 William Woods Court	1	49.7	44.7	45.5
11 William Woods Court	2	55.9	51	52
12 William Woods Court	2	54.4	49.1	50
13 William Woods Court	2	57.7	52.8	53.6
14 William Woods Court	2	57.8	52.5	53.4
15 William Woods Court	2	63.2	58.3	59
16 William Woods Court	1	70.6	65.3	65.8
17 William Woods Court	1	71	65.9	66.6
18 William Woods Court	2	71.3	66.1	66.5
19 William Woods Court	2	60.9	55.9	56.9
20 William Woods Court	2	63.3	58.3	59
21 William Woods Court	1	71.1	66	66.3

NoR 2

PPF Address (NoR 2)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
dB LAeq(24h)				
17 Amersham Way	16	54.0	53.9	55.9
2 Astral Place	1	49.9	48.4	49.7
2 Belinda Avenue	1	68.1	65.6	66.6
5 Belinda Avenue	1	61.0	57.5	62.3

PPF Address (NoR 2)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
6 Belinda Avenue	1	61.9	58.8	60.9
6 Belinda Avenue	2	62.5	59.3	61.0
7 Belinda Avenue	1	59.6	55.9	57.7
8 Belinda Avenue	1	58.2	54.6	57.0
9 Belinda Avenue	1	58.6	55.1	56.2
11 Belinda Avenue	1	58.1	54.6	57.1
1 Bledisloe Street	1	61.7	62.0	61.1
2 Bledisloe Street	1	67.1	67.4	65.5
5 Bledisloe Street	1	52.9	53.2	53.0
6 Bledisloe Street	1	51.5	51.8	50.4
7 Bledisloe Street	1	51.6	52.0	51.0
8 Bledisloe Street	1	51.6	51.8	48.9
10 Bledisloe Street	1	50.1	50.3	47.7
1A Bledisloe Street	1	56.1	56.3	55.8
5A Bledisloe Street	2	51.0	51.5	51.7
6A Bledisloe Street	2	51.7	52.1	52.2
7A Bledisloe Street	2	48.7	48.8	48.9
8A Bledisloe Street	2	50.3	50.6	51.0
1 Boundary Road	1	61.0	59.3	63.0
77 Boundary Road	1	47.3	45.8	46.6
81 Boundary Road	1	51.2	49.8	49.5
86 Boundary Road	1	50.1	48.4	50.0
88 Boundary Road	1	51.0	49.3	51.4
90 Boundary Road	1	51.1	49.3	51.9
92 Boundary Road	1	52.2	50.4	51.7
94 Boundary Road	1	54.3	52.4	52.6
96 Boundary Road	1	56.0	54.0	53.9
98 Boundary Road	1	59.6	57.7	56.1
100 Boundary Road	1	61.9	59.9	58.3
102 Boundary Road	1	63.7	61.7	59.8
104 Boundary Road	1	65.5	63.6	61.1
104 Boundary Road	1	62.5	60.6	59.5
113 Boundary Road	1	54.3	52.4	52.5
127 Boundary Road	2	58.5	56.5	61.1

PPF Address (NoR 2)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
129 Boundary Road	1	58.4	56.5	59.8
133 Boundary Road	1	55.7	53.8	54.9
1/75 Boundary Road	1	47.3	45.8	46.5
3/75 Boundary Road	1	47.4	45.8	46.6
2/79 Boundary Road	1	47.7	45.8	46.8
3/79 Boundary Road	1	48.3	46.6	49.2
1/82 Boundary Road	1	51.2	49.8	50.7
2/82 Boundary Road	1	49.4	47.5	49.3
1/84 Boundary Road	1	48.8	47.2	48.1
2/84 Boundary Road	1	49.5	47.8	49.4
1/104C Boundary Road	1	65.8	64.0	66.8
1/115 Boundary Road	1	49.1	47.3	53.8
1/119 Boundary Road	1	52.7	50.9	58.3
104A Boundary Road	1	53.8	52.0	54.1
115A Boundary Road	1	52.3	50.5	51.4
115C Boundary Road	1	52.4	50.6	56.7
131A Boundary Road	2	65.1	63.3	64.9
2/104C Boundary Road	1	64.2	62.4	64.7
2/119 Boundary Road	1	50.7	48.8	55.8
3/119 Boundary Road	1	52.5	50.7	56.1
92A Boundary Road	1	48.1	46.3	47.4
94A Boundary Road	1	48.5	46.7	47.9
3 Brooks Way	1	45.4	44.7	49.2
4 Brooks Way	1	47.3	46.8	57.1
5 Brooks Way	2	50.1	49.5	55.3
7 Brooks Way	1	45.2	44.7	50.2
8 Brooks Way	1	45.6	45.2	45.7
10 Brooks Way	2	48.9	48.3	49.8
11 Brooks Way	1	45.7	45.2	46.3
6A Brooks Way	1	47.4	47.0	51.8
6B Brooks Way	1	48.5	48.3	59.1
6C Brooks Way	1	46.3	46.1	58.2
3 Caldecote Place	1	49.2	46.5	48.2
5 Caldecote Place	1	49.4	47.0	48.5

PPF Address (NoR 2)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
6 Caldecote Place	1	48.7	46.2	47.7
7 Caldecote Place	1	48.9	46.4	48.3
8 Caldecote Place	1	49.0	46.4	47.4
129 Carruth Road	1	44.8	44.5	46.4
129 Carruth Road	1	44.8	44.6	46.7
131 Carruth Road	1	48.7	48.3	48.1
131 Carruth Road	1	45.2	44.9	49.3
133 Carruth Road	1	45.8	45.4	46.6
135 Carruth Road	1	51.6	51.3	51.1
135 Carruth Road	1	47.6	47.4	48.9
135 Carruth Road	2	52.3	52.2	57.2
137 Carruth Road	1	50.7	50.6	62.3
137 Carruth Road	1	52.3	52.0	61.4
137 Carruth Road	1	54.3	54.4	62.3
138 Carruth Road	1	53.6	53.1	53.0
140 Carruth Road	1	55.5	54.8	55.0
142 Carruth Road	1	56.4	55.7	55.7
146 Carruth Road	1	44.5	44.4	45.7
146 Carruth Road	1	45.8	45.4	47.2
148 Carruth Road	1	46.5	46.2	55.0
148 Carruth Road	1	58.3	57.8	58.3
150 Carruth Road	1	59.5	59.1	60.1
152 Carruth Road	1	61.6	61.1	62.7
133A Carruth Road	2	47.2	46.8	49.9
79 Charntay Avenue	1	53.5	51.6	52.0
81 Charntay Avenue	1	54.1	52.3	52.7
83 Charntay Avenue	1	54.2	51.9	55.3
85 Charntay Avenue	1	57.8	55.6	60.5
87 Charntay Avenue	1	58.6	56.7	63.8
1/68 Charntay Avenue	1	49.4	47.4	48.6
2/68 Charntay Avenue	1	51.7	49.9	50.6
1/70 Charntay Avenue	1	59.9	57.8	59.5
2/70 Charntay Avenue	1	57.3	55.2	57.3
3/70 Charntay Avenue	1	56.9	54.7	57.2

PPF Address (NoR 2)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
1/74 Charntay Avenue	1	60.0	57.9	57.6
2/74 Charntay Avenue	1	67.8	65.9	65.6
3/74 Charntay Avenue	1	64.2	62.2	62.4
4 Constance Place	1	48.6	47.1	47.6
6 Constance Place	1	53.8	52.0	52.5
8 Constance Place	1	54.2	52.5	52.8
10 Constance Place	1	56.6	54.8	55.2
12 Constance Place	1	50.9	49.2	49.5
13 Constance Place	1	51.5	49.7	50.3
13 Constance Place	1	50.4	48.7	49.5
4A Constance Place	2	55.5	54.0	54.5
37 Darnell Crescent	1	49.3	47.5	48.6
54 Darnell Crescent	1	51.0	49.2	50.4
159 Dawson Road	1	54.3	51.7	50.9
161 Dawson Road	1	57.3	54.8	53.4
163 Dawson Road	1	59.7	57.3	58.0
163 Dawson Road	1	53.2	51.2	55.9
165 Dawson Road	1	51.5	49.6	55.7
165 Dawson Road	1	52.8	50.8	55.3
169 Dawson Road	1	56.4	54.1	58.2
171 Dawson Road	1	52.6	49.9	52.0
173A Dawson Road	1	49.6	47.8	49.1
1 Dillon Crescent	1	51.6	49.9	51.9
3 Dillon Crescent	1	49.1	47.3	48.7
4 Dillon Crescent	1	48.6	46.8	48.2
53 Diorella Drive	1	49.1	47.6	49.8
55 Diorella Drive	1	55.4	54.0	54.7
57 Diorella Drive	1	57.1	55.7	56.3
59 Diorella Drive	1	57.7	56.2	62.3
66 Diorella Drive	1	60.0	58.4	60.0
68 Diorella Drive	1	69.3	67.7	68.5
1/64 Diorella Drive	1	54.6	52.9	54.9
2/64 Diorella Drive	1	53.4	51.8	53.7
3 Dissmeyer Drive	1	64.4	62.6	67.1

PPF Address (NoR 2)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
4 Dissmeyer Drive	1	55.2	53.1	57.1
5 Dissmeyer Drive	1	59.6	57.8	68.2
6 Dissmeyer Drive	1	53.5	51.7	54.8
7 Dissmeyer Drive	1	59.4	57.8	67.0
8 Dissmeyer Drive	1	52.3	50.5	53.5
9 Dissmeyer Drive	1	57.8	56.1	66.0
10 Dissmeyer Drive	1	51.0	49.3	51.7
11 Dissmeyer Drive	1	62.0	60.4	66.4
13 Dissmeyer Drive	1	55.8	54.1	58.8
14 Dissmeyer Drive	1	51.9	50.2	51.6
15 Dissmeyer Drive	1	52.6	51.0	63.8
16 Dissmeyer Drive	1	50.9	49.3	50.5
16 Dissmeyer Drive	1	47.5	45.7	46.5
17 Dissmeyer Drive	1	58.4	56.7	57.7
19 Dissmeyer Drive	1	57.9	56.3	57.1
20 Dissmeyer Drive	1	52.2	50.5	51.6
21 Dissmeyer Drive	1	58.5	56.8	57.8
23 Dissmeyer Drive	1	60.6	59.0	59.7
24 Dissmeyer Drive	1	51.9	50.2	52.1
25 Dissmeyer Drive	1	61.3	59.6	60.3
26 Dissmeyer Drive	1	51.4	49.7	51.6
27 Dissmeyer Drive	1	62.4	60.8	61.2
28 Dissmeyer Drive	1	51.6	49.9	51.6
29 Dissmeyer Drive	1	61.7	60.0	60.4
31 Dissmeyer Drive	1	60.0	58.3	60.4
31 Dissmeyer Drive	1	69.8	68.0	67.3
33 Dissmeyer Drive	1	62.9	61.1	61.2
34 Dissmeyer Drive	1	51.7	50.0	52.2
35 Dissmeyer Drive	1	64.3	62.6	62.7
36 Dissmeyer Drive	1	51.6	49.7	51.2
37 Dissmeyer Drive	1	64.2	62.5	62.6
38 Dissmeyer Drive	1	51.4	49.7	50.9
39 Dissmeyer Drive	1	62.9	61.2	61.4
39 Dissmeyer Drive	1	68.1	66.4	66.1

PPF Address (NoR 2)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
dB LAeq(24h)				
41 Dissmeyer Drive	1	63.0	61.3	61.7
41 Dissmeyer Drive	1	68.6	66.8	66.6
43 Dissmeyer Drive	1	61.0	59.3	59.8
45 Dissmeyer Drive	1	62.4	60.6	61.3
47 Dissmeyer Drive	1	60.4	58.5	58.0
47 Dissmeyer Drive	1	67.9	66.1	66.7
49 Dissmeyer Drive	1	67.4	65.6	66.1
49 Dissmeyer Drive	1	61.9	60.0	59.8
51 Dissmeyer Drive	1	62.0	60.1	60.8
51 Dissmeyer Drive	1	63.1	61.2	62.2
53 Dissmeyer Drive	1	53.3	51.6	53.3
55 Dissmeyer Drive	1	56.0	54.3	56.1
57 Dissmeyer Drive	1	56.8	54.9	56.1
29 Fitzroy Street	2	45.5	46.8	46.9
31 Fitzroy Street	2	46.3	46.6	46.9
33 Fitzroy Street	1	45.5	46.9	46.8
35 Fitzroy Street	1	44.3	45.0	45.1
37 Fitzroy Street	1	44.2	45.0	45.1
41 Fitzroy Street	1	50.5	50.8	49.8
43 Fitzroy Street	2	47.3	47.6	48.5
61 Fitzroy Street	1	49.5	49.8	50.6
63 Fitzroy Street	1	44.6	44.5	45.4
65 Fitzroy Street	1	45.3	45.3	46.1
67 Fitzroy Street	1	46.0	45.9	45.6
69 Fitzroy Street	1	43.3	43.3	46.2
71 Fitzroy Street	1	42.6	42.6	44.1
73 Fitzroy Street	1	46.2	46.0	47.1
75 Fitzroy Street	1	44.9	44.7	46.4
79 Fitzroy Street	1	50.7	50.5	54.5
87 Fitzroy Street	2	46.3	46.3	48.8
89 Fitzroy Street	1	43.5	43.4	47.8
91 Fitzroy Street	2	45.6	45.3	48.5
99 Fitzroy Street	1	48.7	48.7	52.2
99 Fitzroy Street	1	48.8	48.8	53.0

PPF Address (NoR 2)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
103 Fitzroy Street	1	49.2	49.3	52.7
105 Fitzroy Street	2	48.0	47.9	52.7
107 Fitzroy Street	1	45.1	44.9	46.4
2/77 Fitzroy Street	1	45.4	45.3	46.9
2/85 Fitzroy Street	1	51.2	51.0	53.8
1/95 Fitzroy Street	1	45.1	45.0	45.8
2/95 Fitzroy Street	1	45.3	45.3	49.5
3/95 Fitzroy Street	1	48.9	49.0	54.3
1/97 Fitzroy Street	1	46.1	46.0	47.8
2/97 Fitzroy Street	1	46.1	46.2	46.4
3/97 Fitzroy Street	1	46.6	46.7	48.4
4/97 Fitzroy Street	1	47.5	47.5	51.1
29A Fitzroy Street	1	45.3	46.5	46.5
31A Fitzroy Street	2	48.4	48.9	49.0
33A Fitzroy Street	2	48.9	50.6	50.2
35A Fitzroy Street	1	47.0	47.6	47.6
37A Fitzroy Street	1	45.5	46.2	46.3
45A Fitzroy Street	1	45.5	45.6	46.3
45B Fitzroy Street	1	45.6	45.7	46.4
45C Fitzroy Street	1	49.8	49.8	50.5
65B Fitzroy Street	1	44.3	44.3	44.9
65C Fitzroy Street	1	46.9	46.9	47.8
67A Fitzroy Street	2	50.9	50.9	52.8
69A Fitzroy Street	2	50.4	50.3	55.1
71A Fitzroy Street	2	45.3	45.1	46.2
71B Fitzroy Street	2	51.0	51.0	55.8
73A Fitzroy Street	2	47.6	47.4	48.5
73B Fitzroy Street	2	49.7	49.6	52.8
75A Fitzroy Street	1	47.4	47.3	51.3
77A Fitzroy Street	2	49.2	49.0	52.9
87A Fitzroy Street	2	47.5	47.3	49.7
87B Fitzroy Street	2	52.6	52.5	60.3
89A Fitzroy Street	2	48.0	47.9	55.7
91A Fitzroy Street	2	46.6	46.4	50.7

PPF Address (NoR 2)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
91B Fitzroy Street	2	50.5	50.4	57.9
93A Fitzroy Street	1	46.0	45.9	48.3
93B Fitzroy Street	1	46.5	46.3	56.3
1 Grayson Avenue	1	56.0	56.1	61.5
621 Great South Road	2	68.3	65.0	66.3
631 Great South Road	2	69.8	65.2	66.9
640 Great South Road	2	59.4	58.6	57.5
640 Great South Road	3	64.1	64.2	63.8
640 Great South Road	1	68.1	68.2	63.7
53 Hollyford Drive	1	53.2	51.2	51.9
53 Hollyford Drive	1	53.0	51.0	54.4
55 Hollyford Drive	1	53.2	51.0	52.4
55 Hollyford Drive	1	54.4	52.3	55.1
57 Hollyford Drive	1	58.2	56.1	57.6
57 Hollyford Drive	1	55.0	53.0	55.8
59 Hollyford Drive	1	62.5	60.5	63.3
64 Hollyford Drive	1	54.3	52.2	52.8
66 Hollyford Drive	1	57.5	55.6	57.2
66 Hollyford Drive	1	51.2	49.5	52.2
68 Hollyford Drive	1	58.3	56.4	57.4
70 Hollyford Drive	1	61.2	59.2	59.8
72A Hollyford Drive	1	64.3	62.3	65.3
72B Hollyford Drive	1	60.5	58.6	63.8
1 Ihaka Place	2	67.4	66.8	65.8
3 Ihaka Place	1	56.5	55.7	55.3
4 Ihaka Place	1	55.9	55.2	54.2
5 Ihaka Place	1	52.2	51.5	51.5
6 Ihaka Place	1	53.8	53.0	52.3
7 Ihaka Place	2	51.2	50.3	49.9
8 Ihaka Place	1	52.4	51.6	51.2
1/2 Ihaka Place	1	67.1	66.5	65.5
2/2 Ihaka Place	1	65.9	65.3	64.3
3/2 Ihaka Place	1	57.1	56.3	55.4
4/2 Ihaka Place	1	59.3	58.6	57.5

PPF Address (NoR 2)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
3 Jontue Place	1	53.3	52.1	52.0
5 Jontue Place	1	53.5	52.2	51.7
7 Jontue Place	2	68.6	67.0	66.6
7 Jontue Place	1	56.6	55.1	55.3
9 Jontue Place	1	63.1	61.6	60.1
10 Jontue Place	1	54.7	53.4	52.7
11 Jontue Place	1	55.9	54.4	53.7
11 Jontue Place	2	63.3	61.8	60.9
11 Jontue Place	1	61.7	60.1	58.3
12 Jontue Place	1	54.3	53.3	52.1
13 Jontue Place	1	58.1	56.6	55.4
14 Jontue Place	1	52.0	51.0	50.8
15 Jontue Place	1	57.1	55.6	54.4
16 Jontue Place	1	55.8	54.6	53.5
5A Jontue Place	1	56.2	54.7	55.3
2 Lambie Drive	1	68.3	67.8	66.9
5 Lambie Drive	2	67.7	66.7	65.7
19 Lambie Drive	1	65.0	64.1	63.6
1/7 Lambie Drive	1	63.7	62.7	61.9
2/7 Lambie Drive	1	57.9	56.9	56.0
3/7 Lambie Drive	1	55.9	55.1	54.3
1 Leila Place	1	68.8	67.5	67.2
2 Leila Place	1	54.4	53.1	53.3
2 Leila Place	1	67.2	65.9	65.6
4 Leila Place	1	54.8	53.5	53.5
6 Leila Place	1	55.6	54.1	54.2
9 Leila Place	1	49.9	48.5	48.8
1/3 Leila Place	1	54.7	53.3	53.4
2/3 Leila Place	1	58.9	57.4	57.5
1/7 Leila Place	1	50.5	49.1	50.5
2/7 Leila Place	1	49.3	47.9	48.5
4 Leith Court	1	46.6	46.6	46.5
6 Leith Court	1	47.2	47.1	47.4
6 Leith Court	1	46.2	46.1	46.5

PPF Address (NoR 2)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
8 Leith Court	1	47.1	47.1	47.6
10 Leith Court	1	50.0	50.0	50.6
14 Leith Court	1	48.2	48.1	48.2
16 Leith Court	1	50.4	50.4	50.6
18 Leith Court	1	48.7	48.6	49.2
19 Leith Court	1	46.6	46.3	46.7
20 Leith Court	1	49.1	48.7	49.1
21 Leith Court	2	53.3	52.5	51.8
22 Leith Court	2	49.6	49.2	50.7
1/12 Leith Court	1	46.4	46.2	46.3
2/12 Leith Court	1	46.4	46.2	46.5
16A Leith Court	1	46.4	46.0	46.0
4A Leith Court	1	50.1	50.1	50.8
58 Manukau Station Road	6	64.9	67.1	66.9
58 Manukau Station Road	2	64.0	66.3	65.2
35 Medvale Avenue	1	52.1	49.4	50.4
37 Medvale Avenue	1	57.8	55.1	55.9
39 Medvale Avenue	1	58.7	55.9	56.9
41 Medvale Avenue	1	64.9	61.9	62.1
1 Norman Spencer Drive	1	57.4	57.5	57.7
3 Norman Spencer Drive	1	53.5	53.6	53.8
5 Norman Spencer Drive	1	47.8	47.7	48.5
1/4 Norman Spencer Drive	1	49.1	49.0	49.8
2/4 Norman Spencer Drive	1	50.3	50.2	51.2
39 Nuneaton Drive	1	48.8	46.3	47.9
41 Nuneaton Drive	1	49.0	46.6	48.4
45 Nuneaton Drive	1	51.6	49.3	50.8
62 Othello Drive	2	57.5	56.0	57.1
63 Othello Drive	1	56.2	54.6	53.8
64 Othello Drive	1	60.6	59.1	60.1
65A Othello Drive	1	59.0	57.3	58.6
65B Othello Drive	1	57.1	55.5	57.4
67A Othello Drive	1	53.5	51.8	56.1
67B Othello Drive	1	53.8	52.2	60.3

PPF Address (NoR 2)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
1 Penion Drive	1	69.4	66.8	67.8
2 Penion Drive	1	60.1	57.6	63.0
4 Penion Drive	1	59.7	57.2	56.8
11 Penion Drive	1	53.7	50.9	52.0
15 Penion Drive	1	50.9	48.3	49.3
17 Penion Drive	1	50.4	47.8	48.8
19 Penion Drive	1	48.6	46.0	46.9
25 Penion Drive	1	50.7	48.0	49.0
25 Penion Drive	1	48.7	46.1	47.1
27 Penion Drive	1	49.8	46.9	48.1
29 Penion Drive	1	50.9	48.0	49.3
31 Penion Drive	1	57.6	54.5	60.9
35 Penion Drive	1	50.6	47.8	50.0
37 Penion Drive	1	51.4	48.4	49.4
39 Penion Drive	1	50.8	47.6	48.5
41 Penion Drive	1	51.1	48.0	49.0
43 Penion Drive	1	58.3	54.8	56.8
1/33 Penion Drive	1	57.3	54.3	61.0
2/33 Penion Drive	1	55.3	52.7	60.1
1/21 Penion Drive	1	58.6	55.7	59.5
2/21 Penion Drive	1	57.5	54.8	56.5
1/6 Penion Drive	1	53.9	51.4	51.9
2/6 Penion Drive	1	57.7	55.2	55.6
1/7 Penion Drive	1	49.6	47.0	48.0
2/7 Penion Drive	1	51.2	48.5	49.9
1/8 Penion Drive	1	53.0	50.4	51.3
2/8 Penion Drive	1	52.4	50.0	50.9
1/9 Penion Drive	1	53.7	51.2	52.2
1/10 Penion Drive	1	56.4	53.8	53.6
2/10 Penion Drive	1	54.7	52.1	52.2
3/10 Penion Drive	1	53.6	51.1	52.1
1/23 Penion Drive	1	57.8	54.8	60.0
2/23 Penion Drive	1	57.6	55.0	59.6
19A Penion Drive	1	51.4	48.7	50.9

PPF Address (NoR 2)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
27A Penion Drive	1	51.5	48.5	49.5
39A Penion Drive	1	53.6	50.6	52.8
3A Penion Drive	1	54.9	52.4	54.9
3B Penion Drive	1	53.2	50.6	51.6
5A Penion Drive	1	50.5	48.0	49.7
5B Penion Drive	1	51.4	48.8	50.0
9B Penion Drive	1	55.7	53.1	54.1
4 Plunket Avenue	1	57.6	59.2	66.7
7 Plunket Avenue	1	53.5	54.8	57.9
8 Plunket Avenue	1	48.2	48.6	57.2
9 Plunket Avenue	1	48.8	50.5	52.6
10 Plunket Avenue	1	50.7	52.5	55.6
12 Plunket Avenue	1	50.0	51.6	54.7
14 Plunket Avenue	1	49.0	50.6	53.2
11A Plunket Avenue	2	50.0	51.3	54.7
14A Plunket Avenue	1	45.4	46.4	49.2
6A Plunket Avenue	1	55.1	56.7	59.6
7A Plunket Avenue	1	48.1	49.5	59.0
8A Plunket Avenue	1	52.2	53.9	56.8
63 Puhinui Road	1	44.8	44.3	47.5
65 Puhinui Road	1	54.5	54.2	55.9
68 Puhinui Road	1	52.6	52.5	52.7
70 Puhinui Road	1	57.7	57.6	57.4
70 Puhinui Road	1	54.5	54.4	54.2
74 Puhinui Road	1	68.4	67.9	67.4
80 Puhinui Road	1	56.2	55.5	62.8
82 Puhinui Road	1	65.3	65.3	64.4
82 Puhinui Road	2	58.7	58.0	61.3
83 Puhinui Road	2	51.1	51.2	56.2
83 Puhinui Road	2	51.6	51.7	57.4
83 Puhinui Road	2	51.5	51.5	56.8
83 Puhinui Road	2	52.0	52.2	57.8
83 Puhinui Road	2	52.9	53.0	59.8
83 Puhinui Road	2	55.8	55.9	65.6

PPF Address (NoR 2)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
84 Puhinui Road	1	64.8	64.9	64.4
86 Puhinui Road	1	64.2	64.4	63.9
88 Puhinui Road	2	53.1	53.1	53.3
92 Puhinui Road	1	52.7	52.7	51.6
94 Puhinui Road	2	67.1	67.3	66.0
96 Puhinui Road	1	63.4	63.6	61.8
96 Puhinui Road	1	50.1	50.2	49.7
98 Puhinui Road	1	63.7	63.8	63.2
100 Puhinui Road	1	58.5	58.6	57.0
100 Puhinui Road	1	49.2	49.3	49.6
109 Puhinui Road	1	65.5	65.4	64.8
110 Puhinui Road	1	64.2	64.2	64.0
111 Puhinui Road	1	65.7	65.6	64.1
112 Puhinui Road	1	67.7	67.6	66.3
113 Puhinui Road	1	65.7	65.6	65.4
114 Puhinui Road	1	63.9	63.8	63.4
115 Puhinui Road	1	66.4	66.4	65.6
116 Puhinui Road	1	59.3	59.1	59.6
116 Puhinui Road	1	59.9	59.8	60.1
116 Puhinui Road	1	58.8	58.7	59.1
116 Puhinui Road	1	49.1	48.9	49.9
116 Puhinui Road	1	58.4	58.3	59.0
116 Puhinui Road	1	46.6	46.5	48.6
116 Puhinui Road	1	44.8	44.6	46.4
120 Puhinui Road	1	64.9	64.8	64.5
120 Puhinui Road	1	50.6	50.5	50.3
121 Puhinui Road	1	66.5	66.7	65.4
123 Puhinui Road	1	66.3	66.5	64.9
126 Puhinui Road	1	49.6	49.4	58.1
133 Puhinui Road	1	65.6	66.0	64.4
135 Puhinui Road	1	63.5	63.8	62.9
137 Puhinui Road	1	66.9	67.3	65.5
139 Puhinui Road	1	65.4	66.0	64.8
141 Puhinui Road	1	65.8	66.7	65.2

PPF Address (NoR 2)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
143 Puhinui Road	1	58.5	60.5	59.9
145 Puhinui Road	2	64.1	65.9	64.2
147 Puhinui Road	1	64.7	66.5	64.3
151 Puhinui Road	2	60.1	61.9	60.6
2/73 Puhinui Road	2	59.3	59.4	66.0
1/90 Puhinui Road	1	58.6	58.8	56.4
2/90 Puhinui Road	1	57.0	57.1	54.6
3/90 Puhinui Road	1	55.3	55.5	54.3
1/104 Puhinui Road	1	65.9	66.0	65.4
1/118 Puhinui Road	1	65.6	65.5	64.5
1/119 Puhinui Road	1	65.7	65.9	64.9
105A Puhinui Road	1	51.3	51.2	60.2
109A Puhinui Road	1	52.8	52.7	53.0
112A Puhinui Road	1	53.0	52.8	52.6
113A Puhinui Road	1	53.6	53.5	53.8
114A Puhinui Road	2	58.2	58.1	58.2
122A Puhinui Road	1	53.8	53.7	59.9
123A Puhinui Road	2	56.1	56.3	55.9
124B Puhinui Road	2	56.9	56.8	66.4
124C Puhinui Road	1	47.4	47.3	54.3
125A Puhinui Road	1	66.2	66.4	65.0
125B Puhinui Road	1	54.6	54.9	53.0
127A Puhinui Road	2	67.3	67.6	65.7
127B Puhinui Road	1	53.5	53.7	51.9
128A Puhinui Road	2	51.9	51.8	64.5
135A Puhinui Road	2	53.8	54.4	54.8
139A Puhinui Road	2	54.4	55.4	55.5
141A Puhinui Road	2	52.7	54.1	54.1
142A Puhinui Road	1	50.5	50.8	64.7
143A Puhinui Road	2	53.8	54.9	55.1
147A Puhinui Road	2	51.9	54.0	53.4
148A Puhinui Road	1	51.0	51.3	65.8
148B Puhinui Road	1	50.0	50.2	59.9
2/101 Puhinui Road	1	53.6	53.4	65.2

PPF Address (NoR 2)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
2/102 Puhinui Road	1	64.7	64.8	64.5
2/102 Puhinui Road	1	51.9	52.0	52.0
2/103 Puhinui Road	2	53.1	53.0	63.4
2/104 Puhinui Road	2	59.1	59.1	59.3
2/111 Puhinui Road	1	54.2	54.1	53.9
2/118 Puhinui Road	1	58.6	58.4	58.1
3/101 Puhinui Road	1	51.2	51.1	56.5
3/118 Puhinui Road	1	57.7	57.6	57.7
3/150 Puhinui Road	1	48.3	48.7	58.7
3/150 Puhinui Road	1	50.0	50.4	64.3
63A Puhinui Road	2	53.4	53.0	52.2
66A Puhinui Road	1	51.6	51.5	51.5
66B Puhinui Road	1	46.8	46.1	45.8
66C Puhinui Road	1	47.3	46.6	46.3
75B Puhinui Road	1	53.8	53.9	61.0
77A Puhinui Road	2	56.8	56.9	66.5
77B Puhinui Road	2	52.6	52.8	59.9
85A Puhinui Road	2	53.3	53.4	64.6
86A Puhinui Road	2	53.1	52.6	52.8
87A Puhinui Road	1	53.5	53.7	63.9
88A Puhinui Road	2	64.7	64.8	64.4
93B Puhinui Road	2	56.7	56.6	66.0
93C Puhinui Road	2	53.9	53.7	61.1
94A Puhinui Road	2	57.1	57.2	56.2
17 Putney Way	10	58.5	58.8	60.6
3/10 Ranfurly Road	1	48.8	50.5	55.1
13 Rito Place	1	44.4	43.7	44.1
51 Robin Brooke Drive	1	60.0	56.2	60.5
53 Robin Brooke Drive	1	55.6	52.1	53.8
18 Ronwood Avenue	17	65.1	64.1	64.3
16 Sambrooke Crescent	1	51.4	48.1	49.4
18 Sambrooke Crescent	1	52.7	49.1	50.4
20 Sambrooke Crescent	1	51.1	48.4	49.3
22 Sambrooke Crescent	1	54.2	51.3	52.7

PPF Address (NoR 2)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
24 Sambrooke Crescent	1	51.9	49.3	50.2
26 Sambrooke Crescent	1	54.7	51.1	53.0
1 Sandrine Avenue	1	68.6	67.1	68.2
3 Sandrine Avenue	1	58.7	57.1	57.6
3 Sandrine Avenue	1	59.6	58.0	58.9
4 Sandrine Avenue	1	59.7	58.1	58.9
6 Sandrine Avenue	1	56.9	55.4	56.2
8 Sandrine Avenue	1	53.7	52.1	53.0
10 Sandrine Avenue	1	53.6	52.2	53.0
2 Shalimar Place	1	69.2	67.9	67.4
3 Shalimar Place	1	58.4	57.1	56.9
4 Shalimar Place	2	60.7	59.3	59.3
5 Shalimar Place	1	57.2	55.8	56.3
6 Shalimar Place	1	57.0	55.7	55.4
7 Shalimar Place	1	53.1	51.6	51.8
8 Shalimar Place	1	50.3	48.9	49.2
9 Shalimar Place	1	52.0	50.6	52.6
10 Shalimar Place	1	52.6	51.2	51.2
1A Shalimar Place	1	69.6	68.3	67.9
1B Shalimar Place	1	60.0	58.6	58.4
35 Sidey Avenue	1	51.5	49.7	50.5
65 Sikkim Crescent	1	49.6	48.1	48.8
67 Sikkim Crescent	2	51.9	50.4	51.5
68 Sikkim Crescent	1	53.0	51.9	51.3
70 Sikkim Crescent	2	56.6	55.4	55.4
70 Sikkim Crescent	1	53.4	52.0	52.4
71 Sikkim Crescent	1	50.0	48.5	50.6
72 Sikkim Crescent	1	54.4	52.9	53.1
73 Sikkim Crescent	1	50.3	48.8	52.0
74 Sikkim Crescent	1	54.8	53.4	53.5
75 Sikkim Crescent	1	50.7	49.2	52.4
76 Sikkim Crescent	1	55.0	53.6	54.0
78 Sikkim Crescent	1	56.3	54.9	57.0
80 Sikkim Crescent	1	54.4	52.9	55.8

PPF Address (NoR 2)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
82 Sikkim Crescent	2	56.2	54.7	61.5
84 Sikkim Crescent	1	53.3	51.7	58.3
86 Sikkim Crescent	1	54.7	53.1	59.6
88 Sikkim Crescent	2	56.8	55.3	59.4
88 Sikkim Crescent	1	54.7	53.3	53.7
14 Tavistock Street	1	51.8	51.7	55.0
15 Tavistock Street	1	53.2	53.0	57.7
16 Tavistock Street	1	53.5	53.4	60.8
17 Tavistock Road	2	57.4	57.3	63.4
47 Te Irirangi Drive	1	68.5	67.0	66.6
49 Te Irirangi Drive	1	69.3	67.8	67.3
51 Te Irirangi Drive	1	67.8	66.2	66.1
52 Te Irirangi Drive	1	52.2	50.9	54.0
53 Te Irirangi Drive	1	69.4	67.8	67.8
54 Te Irirangi Drive	1	52.9	51.6	54.9
58 Te Irirangi Drive	1	54.1	52.8	55.8
63 Te Irirangi Drive	1	69.3	67.7	68.3
73 Te Irirangi Drive	1	68.8	67.3	67.8
75 Te Irirangi Drive	1	69.1	67.7	68.1
77 Te Irirangi Drive	1	69.0	67.6	67.7
79 Te Irirangi Drive	1	68.8	67.4	67.3
83 Te Irirangi Drive	2	68.7	67.4	67.0
85 Te Irirangi Drive	1	67.9	66.5	66.1
87 Te Irirangi Drive	1	68.2	66.9	66.6
93 Te Irirangi Drive	1	68.9	67.6	67.3
143 Te Irirangi Drive	1	57.4	54.9	64.2
163 Te Irirangi Drive	1	68.9	66.3	67.3
165 Te Irirangi Drive	1	68.9	66.3	67.2
167 Te Irirangi Drive	1	69.0	66.4	67.3
169 Te Irirangi Drive	1	67.4	64.7	65.6
171 Te Irirangi Drive	1	68.9	66.3	67.2
173 Te Irirangi Drive	1	69.0	66.4	67.4
175 Te Irirangi Drive	1	69.4	66.7	67.8
177 Te Irirangi Drive	1	69.0	66.4	67.5

PPF Address (NoR 2)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
179 Te Irirangi Drive	1	69.1	66.5	67.5
181 Te Irirangi Drive	1	69.0	66.3	67.5
183 Te Irirangi Drive	1	69.6	67.0	67.9
185 Te Irirangi Drive	1	69.2	66.5	67.4
187 Te Irirangi Drive	1	69.4	66.7	67.6
189 Te Irirangi Drive	1	69.3	66.7	67.5
191 Te Irirangi Drive	1	69.3	66.6	67.5
193 Te Irirangi Drive	1	69.4	66.8	67.8
195 Te Irirangi Drive	1	69.4	66.7	67.8
197 Te Irirangi Drive	1	69.5	66.7	67.8
198 Te Irirangi Drive	1	68.4	65.9	67.0
200 Te Irirangi Drive	1	68.4	65.8	66.9
202 Te Irirangi Drive	1	68.1	65.5	66.8
203 Te Irirangi Drive	1	70.9	66.6	67.5
204 Te Irirangi Drive	1	68.4	65.8	67.0
205 Te Irirangi Drive	1	70.4	66.0	66.7
206 Te Irirangi Drive	1	68.5	66.0	67.0
208 Te Irirangi Drive	1	68.4	65.9	67.1
212 Te Irirangi Drive	1	68.3	65.8	67.2
216 Te Irirangi Drive	1	68.4	65.8	67.1
222 Te Irirangi Drive	1	68.8	66.2	67.0
224 Te Irirangi Drive	1	59.2	55.9	59.3
226 Te Irirangi Drive	1	57.6	55.0	57.6
228 Te Irirangi Drive	1	67.7	65.2	66.0
1/64 Te Irirangi Drive	1	56.1	54.6	57.1
2/64 Te Irirangi Drive	1	57.2	55.7	58.7
2/66 Te Irirangi Drive	1	56.7	55.1	56.5
2/68 Te Irirangi Drive	1	59.1	57.6	56.1
1/70 Te Irirangi Drive	1	60.3	58.9	60.4
2/70 Te Irirangi Drive	1	58.4	56.9	59.2
2/80 Te Irirangi Drive	1	60.3	58.4	61.9
2/86 Te Irirangi Drive	1	59.0	57.2	62.0
1/97 Te Irirangi Drive	1	69.3	67.9	67.5
1/101 Te Irirangi Drive	1	69.3	67.6	67.3

PPF Address (NoR 2)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
1/102 Te Irirangi Drive	1	59.6	57.8	61.4
1/104 Te Irirangi Drive	1	53.9	52.1	57.0
1/105 Te Irirangi Drive	1	69.0	67.3	67.0
1/116 Te Irirangi Drive	1	54.1	52.4	60.5
1/122 Te Irirangi Drive	1	54.2	52.3	57.2
1/128 Te Irirangi Drive	1	55.5	53.6	56.2
1/136 Te Irirangi Drive	1	53.4	51.8	59.0
1/138 Te Irirangi Drive	1	55.5	53.8	63.3
1/144 Te Irirangi Drive	1	56.3	54.6	64.1
1/145 Te Irirangi Drive	1	54.3	51.7	63.7
1/150 Te Irirangi Drive	1	57.2	55.5	63.2
1/156 Te Irirangi Drive	1	56.1	54.3	64.2
1/162 Te Irirangi Drive	1	57.2	55.4	64.3
1/168 Te Irirangi Drive	1	56.1	54.4	63.0
1/190 Te Irirangi Drive	1	69.6	67.1	67.8
1/192 Te Irirangi Drive	1	65.6	63.0	64.3
114A Te Irirangi Drive	1	53.7	52.1	56.8
114A Te Irirangi Drive	1	53.4	51.5	56.3
143A Te Irirangi Drive	1	51.3	49.0	55.4
190B Te Irirangi Drive	1	65.7	63.2	65.4
2/101 Te Irirangi Drive	1	56.7	54.9	55.0
2/104 Te Irirangi Drive	1	56.1	54.4	59.2
2/105 Te Irirangi Drive	1	59.2	57.5	57.5
2/116 Te Irirangi Drive	1	51.3	49.6	54.1
2/122 Te Irirangi Drive	1	54.5	52.9	57.1
2/128 Te Irirangi Drive	1	53.6	51.7	57.6
2/136 Te Irirangi Drive	1	53.1	51.3	60.0
2/138 Te Irirangi Drive	1	53.6	51.9	62.7
2/144 Te Irirangi Drive	1	56.2	54.5	63.0
2/145 Te Irirangi Drive	1	53.8	51.3	53.6
2/147 Te Irirangi Drive	1	60.0	57.4	65.9
2/150 Te Irirangi Drive	1	58.0	56.3	63.5
2/151 Te Irirangi Drive	1	54.5	52.0	60.3
2/151 Te Irirangi Drive	1	52.5	50.0	60.7

PPF Address (NoR 2)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
2/155 Te Irirangi Drive	1	56.8	54.2	65.6
2/156 Te Irirangi Drive	1	57.0	55.3	64.1
2/162 Te Irirangi Drive	1	58.1	56.2	63.5
2/168 Te Irirangi Drive	1	54.8	53.0	63.0
2/192 Te Irirangi Drive	1	67.4	64.9	66.2
3/101 Te Irirangi Drive	1	68.6	67.0	66.8
3/105 Te Irirangi Drive	1	69.4	67.6	67.3
46A Te Irirangi Drive	1	58.2	56.7	63.6
50A Te Irirangi Drive	1	56.8	55.5	60.7
58B Te Irirangi Drive	1	49.9	48.5	49.9
76C Te Irirangi Drive	1	57.8	56.0	61.4
95A Te Irirangi Drive	1	54.6	53.3	53.4
95B Te Irirangi Drive	1	53.6	51.9	53.0
97B Te Irirangi Drive	1	57.3	55.8	61.1
97C Te Irirangi Drive	1	68.3	66.7	66.5
7 Titchmarsh Crescent	1	50.1	47.4	48.7
8 Titchmarsh Crescent	1	50.6	47.9	49.5
9 Titchmarsh Crescent	1	49.8	47.1	48.4
10 Titchmarsh Crescent	1	50.5	47.7	49.7
11 Titchmarsh Crescent	1	49.9	47.1	48.4
12 Titchmarsh Crescent	1	49.8	47.4	50.0
13 Titchmarsh Crescent	1	49.4	46.7	47.8
14 Titchmarsh Crescent	1	50.7	47.8	51.5
16 Titchmarsh Crescent	1	50.4	47.8	50.9
18 Titchmarsh Crescent	1	53.6	51.1	60.9
20 Titchmarsh Crescent	1	51.5	49.0	59.0
21 Titchmarsh Crescent	1	48.7	46.1	47.1
22 Titchmarsh Crescent	1	52.6	50.1	58.4
23 Titchmarsh Crescent	1	48.8	46.2	47.2
24 Titchmarsh Crescent	1	51.7	49.2	53.4
25 Titchmarsh Crescent	1	50.1	47.6	48.6
26 Titchmarsh Crescent	1	53.0	50.5	55.2
27 Titchmarsh Crescent	1	50.2	47.6	48.5
29 Titchmarsh Crescent	1	49.6	46.8	47.7

PPF Address (NoR 2)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
31 Titchmarsh Crescent	1	51.0	48.1	49.1
33 Titchmarsh Crescent	1	48.8	46.2	47.3
35 Titchmarsh Crescent	1	49.4	46.9	47.9
37 Titchmarsh Crescent	1	49.2	46.7	47.6
39 Titchmarsh Crescent	1	50.8	48.0	49.6
41 Titchmarsh Crescent	1	50.0	47.4	49.7
43 Titchmarsh Crescent	1	50.7	48.1	53.2
11 Townley Place	1	49.1	47.8	48.6
1/13 Townley Place	1	49.5	48.1	50.2
2/13 Townley Place	1	51.5	50.1	54.3
1/14 Townley Place	1	48.7	47.3	48.6
2/14 Townley Place	1	52.9	51.5	53.6
2/4 Townley Place	1	48.4	47.0	47.9
1/6 Townley Place	1	48.6	47.2	48.0
2/6 Townley Place	1	48.8	47.3	49.9
1/8 Townley Place	1	48.5	47.1	48.1
2/8 Townley Place	1	53.9	52.3	56.4
1/10 Townley Place	1	50.5	49.1	49.6
2/10 Townley Place	1	52.5	51.1	50.9
1/12 Townley Place	1	49.5	48.0	48.6
2/12 Townley Place	1	53.5	51.9	52.5
2 Ulay Place	1	54.0	52.5	53.7
3 Ulay Place	1	51.5	50.1	54.7
5 Ulay Place	1	52.3	50.8	54.6
7 Ulay Place	1	50.3	48.9	50.4
9 Ulay Place	1	49.4	48.0	49.7
11 Ulay Place	1	49.5	48.1	49.7
13 Ulay Place	1	48.8	47.5	49.2
4A Ulay Place	1	51.0	49.5	51.2
3 Whetstone Road	1	55.7	52.1	53.0
4 Whetstone Road	1	54.8	52.1	53.7
5 Whetstone Road	1	58.3	54.8	55.6
6 Whetstone Road	1	55.4	52.6	53.6
7 Whetstone Road	1	60.8	57.2	58.3

PPF Address (NoR 2)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
8 Whetstone Road	1	62.7	59.9	60.8
9 Whetstone Road	1	63.0	59.5	62.1
10 Whetstone Road	1	67.1	63.7	64.8
7A Whetstone Road	1	55.3	52.2	53.2
33 York Road	1	51.3	51.3	52.1
35 York Road	1	50.7	50.6	51.2
36 York Road	1	48.8	49.1	49.7
37 York Road	1	45.5	45.6	46.1
37 York Road	1	49.3	49.5	49.9
37 York Road	1	49.3	49.5	49.9
37 York Road	1	48.5	48.6	49.1
39 York Road	1	59.2	59.2	57.9
40 York Road	1	65.5	65.5	63.9
1/36 York Road	1	50.8	51.1	50.9
2/36 York Road	1	48.3	48.3	49.2
40A York Road	1	53.3	53.6	53.3
24 Zelda Avenue	1	48.9	47.0	48.3
26 Zelda Avenue	1	48.8	46.8	49.0
28 Zelda Avenue	1	49.2	47.3	50.8
28 Zelda Avenue	1	50.0	48.1	52.7
30 Zelda Avenue	1	51.7	49.9	55.6
32 Zelda Avenue	1	49.1	47.2	48.6
34 Zelda Avenue	1	50.0	48.1	50.7
36 Zelda Avenue	1	51.3	49.5	52.1
38 Zelda Avenue	1	51.4	49.7	51.2
40 Zelda Avenue	1	51.7	50.0	52.4
42 Zelda Avenue	1	49.6	47.8	49.4
44 Zelda Avenue	1	49.5	47.8	49.8
46 Zelda Avenue	1	48.3	46.5	47.4
46 Zelda Avenue	1	50.0	48.2	51.6
48 Zelda Avenue	1	48.7	47.0	48.3
50 Zelda Avenue	1	49.0	47.2	48.3
52 Zelda Avenue	1	51.0	49.3	52.5
52 Zelda Avenue	1	48.5	46.7	48.2

PPF Address (NoR 2)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
54 Zelda Avenue	1	49.6	47.8	49.8
54 Zelda Avenue	1	52.2	50.5	54.2
56 Zelda Avenue	1	50.2	48.5	50.9
58 Zelda Avenue	1	50.1	48.3	52.1
60 Zelda Avenue	1	50.8	49.1	52.7
62 Zelda Avenue	1	50.1	48.4	50.9
62 Zelda Avenue	1	50.4	48.7	53.1
64 Zelda Avenue	1	50.1	48.4	50.1
66 Zelda Avenue	1	50.8	49.1	50.4
68 Zelda Avenue	1	50.6	48.9	50.6
70 Zelda Avenue	1	49.5	47.8	49.7
74 Zelda Avenue	1	52.5	50.7	52.2
76 Zelda Avenue	1	52.8	51.1	52.0
82 Zelda Avenue	1	51.6	49.8	52.8
84 Zelda Avenue	1	49.7	47.9	48.9
84 Zelda Avenue	1	51.0	49.2	51.4
26A Zelda Avenue	1	48.9	47.0	49.9
84A Zelda Avenue	1	49.6	47.8	48.9

NoR 3

PPF Address (NoR 3)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
2 Bledisloe Street	1	67.1	67.4	65.5
6 Bledisloe Street	1	51.5	51.8	50.4
6A Bledisloe Street	2	51.7	52.1	52.2
8A Bledisloe Street	2	50.3	50.6	51
4 Bridge Street	2	65	66	65.8
6A Bridge Street	2	56.2	56.8	61.3
1 Burrell Avenue	1	49.6	48.2	56
4 Burrell Avenue	1	49.5	47.7	61.5
4 Burrell Avenue	1	47.2	45.6	49.8
6 Burrell Avenue	1	47.2	46.1	49.3

PPF Address (NoR 3)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
8 Burrell Avenue	1	46	45	46.9
8 Burrell Avenue	2	50.7	49.5	53.8
10 Burrell Avenue	1	47.1	45.5	47.5
12 Burrell Avenue	1	50.7	48.8	52.6
12 Burrell Avenue	1	48.3	46.4	50.7
12 Burrell Avenue	1	48.5	46.8	49.7
12 Burrell Avenue	1	46.9	45.5	48.6
12 Burrell Avenue	1	44.8	44	47.4
12 Burrell Avenue	1	46.1	45.1	48.1
2A Burrell Avenue	1	52.3	50.5	58.8
3A Burrell Avenue	2	47.4	46.7	53.1
9 Cambridge Terrace	1	63.9	61.6	64.4
17 Cambridge Terrace	1	65.2	63.1	65.6
19 Cambridge Terrace	1	65.6	63.8	65.9
21 Cambridge Terrace	1	65.7	64.2	65.9
21 Cambridge Terrace	1	52.2	51.4	54.1
23 Cambridge Terrace	1	65.3	64.5	64.8
25 Cambridge Terrace	1	63.1	62.8	62.7
27 Cambridge Terrace	1	52.7	53.2	53.4
28 Cambridge Terrace	1	58.3	58.1	60.9
29 Cambridge Terrace	1	55.2	55.5	56.3
30 Cambridge Terrace	1	55.2	54.6	54.5
32 Cambridge Terrace	2	51.1	51.6	53.8
33 Cambridge Terrace	1	43.9	44.2	44.8
34 Cambridge Terrace	1	48.5	48.1	49.5
1/30 Cambridge Terrace	1	55.5	55.7	56.5
1/31 Cambridge Terrace	1	52.6	52.1	54.6
2/34 Cambridge Terrace	1	45.2	45.8	49.3
2/19 Cambridge Terrace	1	51.8	50.6	52.9
17A Cambridge Terrace	1	53.5	52.9	55.2
23A Cambridge Terrace	1	47.8	48.1	49.1
25B Cambridge Terrace	2	57.5	57.9	57.5
27A Cambridge Terrace	1	59.5	59.2	60.1
31B Cambridge Terrace	1	45	45.4	46.2

PPF Address (NoR 3)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
32A Cambridge Terrace	1	52.1	51.5	52.1
33A Cambridge Terrace	1	47.1	47.4	48.7
9A Cambridge Terrace	1	55.1	56.2	57.1
4 Clendon Avenue	1	56.8	55.7	64.2
5 Clendon Avenue	1	56.6	55.9	59.2
7 Clendon Avenue	1	54.7	53.8	56.5
8 Clendon Avenue	2	55.2	54.2	56.5
9 Clendon Avenue	1	50.8	49.4	52
9 Clendon Avenue	1	48.1	49.1	51.3
11 Clendon Avenue	2	52.7	51.7	54.1
11A Clendon Avenue	2	49.6	48.8	50.7
8A Clendon Avenue	2	53.4	52.5	54.7
1 Fitzroy Street	1	44.5	45.4	46
7 Fitzroy Street	2	45.2	46.6	46.4
7 Fitzroy Street	2	44.8	46	46.2
7 Fitzroy Street	2	46.2	48.1	47.1
7 Fitzroy Street	2	46.7	48.6	47.6
7 Fitzroy Street	2	50.6	52.5	51.2
7 Fitzroy Street	2	45.9	47.7	46.7
9 Fitzroy Street	2	45.1	46.4	46.5
9 Fitzroy Street	2	48.4	50.1	49
9 Fitzroy Street	2	48.1	49.9	48.9
9 Fitzroy Street	2	48.4	50.4	49.4
9 Fitzroy Street	2	47.9	49.7	48.8
13 Fitzroy Street	1	46.1	47.9	47.2
13 Fitzroy Street	1	44.9	46.5	46
15 Fitzroy Street	1	44	45.5	45.1
17 Fitzroy Street	1	48.2	50.1	47.7
19 Fitzroy Street	1	43.6	45.2	44.8
21 Fitzroy Street	1	43.2	44.8	44.4
23 Fitzroy Street	1	42.5	43.8	43.5
25 Fitzroy Street	1	44.7	46.3	45.8
27 Fitzroy Street	1	44.5	45.9	45.7
29 Fitzroy Street	2	45.5	46.8	46.9

PPF Address (NoR 3)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
31 Fitzroy Street	2	46.3	46.6	46.9
33 Fitzroy Street	1	45.5	46.9	46.8
35 Fitzroy Street	1	44.3	45	45.1
37 Fitzroy Street	1	44.2	45	45.1
2/19 Fitzroy Street	1	44.4	46.3	45.6
1/21 Fitzroy Street	1	43.2	44.8	44.3
15A Fitzroy Street	2	50.8	52.8	50.7
17A Fitzroy Street	2	49.8	51.9	49.1
1A Fitzroy Street	1	44.4	45.4	45.7
23A Fitzroy Street	2	45.2	46.7	46.2
29A Fitzroy Street	1	45.3	46.5	46.5
31A Fitzroy Street	2	48.4	48.9	49
33A Fitzroy Street	2	48.9	50.6	50.2
35A Fitzroy Street	1	47	47.6	47.6
37A Fitzroy Street	1	45.5	46.2	46.3
4 Freyberg Avenue	1	44.2	44.8	45.9
6 Freyberg Avenue	1	45.1	46.2	50.4
8 Freyberg Avenue	1	47.5	48.6	55.2
10 Freyberg Avenue	1	45.6	46.4	50.7
12 Freyberg Avenue	1	44.2	44.9	46.4
14 Freyberg Avenue	1	43.5	44.7	47.8
18 Freyberg Avenue	1	47.4	49.2	52.7
20 Freyberg Avenue	1	45.9	47.6	48.9
22 Freyberg Avenue	1	45.1	46.9	47.7
24 Freyberg Avenue	1	46.2	47.9	52.1
26 Freyberg Avenue	1	46.9	48.6	53.6
26 Freyberg Avenue	1	45.2	46.8	50.8
28 Freyberg Avenue	1	46.6	48.4	52.3
30 Freyberg Avenue	1	46.1	47.8	50.9
32 Freyberg Avenue	1	45	46.8	47.4
10A Freyberg Avenue	1	50.2	51.2	55.4
12A Freyberg Avenue	2	49.5	50.5	58.3
14A Freyberg Avenue	2	49	50	57
16A Freyberg Avenue	2	48.2	49.8	53.3

PPF Address (NoR 3)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
16A Freyberg Avenue	1	44.8	46.4	46.6
20A Freyberg Avenue	1	46.7	48.6	57.2
22A Freyberg Avenue	1	48.1	49.9	58.2
32A Freyberg Avenue	2	51.3	53.2	60.2
6A Freyberg Avenue	2	50.5	51.5	58.5
81 Kenderdine Road	1	44.2	44.4	45.5
83 Kenderdine Road	1	48.7	50.3	51.3
85 Kenderdine Road	1	49.8	51.3	52.6
87 Kenderdine Road	1	55.6	56.6	56.8
89 Kenderdine Road	1	50.5	51	51.6
90 Kenderdine Road	2	47.4	47.7	50.6
90 Kenderdine Road	2	48.2	48.5	51.6
90 Kenderdine Road	2	47.7	48	50.8
90 Kenderdine Road	2	47.1	47.4	50.2
90 Kenderdine Road	2	47.6	48.3	49.9
91 Kenderdine Road	1	59.1	60.7	60.5
92 Kenderdine Road	1	50.3	50.4	56
92 Kenderdine Road	1	52.2	52.3	56.9
92 Kenderdine Road	1	49.7	50	49.9
94 Kenderdine Road	2	48.6	49	52.4
98 Kenderdine Road	1	60.6	61.5	63.2
106 Kenderdine Road	2	61	65	65.7
107 Kenderdine Road	1	57.3	61.4	62.8
109 Kenderdine Road	1	60.7	64.4	65.2
111 Kenderdine Road	1	67.9	66	64.9
1/93 Kenderdine Road	1	62.3	64.4	63.3
2/93 Kenderdine Road	1	62.5	65.1	64.9
1/98 Kenderdine Road	1	49.8	51.9	51.6
2/98 Kenderdine Road	1	50.4	52.4	52.1
1/109 Kenderdine Road	1	57.8	55.7	55.1
81A Kenderdine Road	1	43.4	43.7	44.4
83A Kenderdine Road	1	44.7	44.9	45.7
85A Kenderdine Road	1	45.8	46	47.1
3 Milan Road	1	52.8	51.1	54.1

PPF Address (NoR 3)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
4 Milan Road	1	49.9	48	49.2
5 Milan Road	1	51.2	50.1	52.8
6 Milan Road	1	49.1	47.4	48.8
7 Milan Road	1	51	49.9	52.7
49 Milan Road	1	48	46.4	47.5
51 Milan Road	1	46	44.2	45.6
53 Milan Road	2	48.5	48.1	49.9
55 Milan Road	1	48.5	49.9	52
57 Milan Road	1	49.7	48.5	49.2
59 Milan Road	1	50.6	49.3	50.3
59 Milan Road	1	51.1	52.7	53.9
60 Milan Road	1	47.2	48.3	50.2
61 Milan Road	1	54.6	56.5	56.4
62 Milan Road	1	47.8	49.1	50.9
62 Milan Road	1	45.7	45.9	47.3
63 Milan Road	1	54.4	58.5	59.8
63 Milan Road	1	61.7	65.7	66.5
64 Milan Road	1	49.1	51.4	54.1
66 Milan Road	1	51.2	54.6	56.3
3/47 Milan Road	1	46	47.3	49.1
3/47 Milan Road	1	48.6	47	46.5
1/2 Milan Road	1	53.9	51.8	53.5
2A Milan Road	1	50.2	49.2	51.8
53A Milan Road	1	48.8	48	49.5
58A Milan Road	1	44.1	44.2	45.2
58A Milan Road	1	48	48.4	50
58A Milan Road	1	44.9	45.2	46.2
58A Milan Road	1	45.3	45	47.1
5A Milan Road	2	51.2	50.2	52.7
64A Milan Road	1	49.6	52.3	54.2
10 Noel Burnside Road	1	49.8	48.4	61.7
4 Plunket Avenue	1	57.6	59.2	66.7
7 Plunket Avenue	1	53.5	54.8	57.9
8 Plunket Avenue	1	48.2	48.6	57.2

PPF Address (NoR 3)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
9 Plunket Avenue	1	48.8	50.5	52.6
10 Plunket Avenue	1	50.7	52.5	55.6
11 Plunket Avenue	2	49.1	50.5	53.9
12 Plunket Avenue	1	50	51.6	54.7
14 Plunket Avenue	1	49	50.6	53.2
11A Plunket Avenue	2	50	51.3	54.7
6A Plunket Avenue	1	55.1	56.7	59.6
7A Plunket Avenue	1	48.1	49.5	59
8A Plunket Avenue	1	52.2	53.9	56.8
2 Puhinui Road	1	55.8	57	56.2
2 Puhinui Road	1	63.5	64.8	62.8
133 Puhinui Road	1	65.6	66	64.4
135 Puhinui Road	1	63.5	63.8	62.9
137 Puhinui Road	1	66.9	67.3	65.5
139 Puhinui Road	1	65.4	66	64.8
141 Puhinui Road	1	65.8	66.7	65.2
143 Puhinui Road	1	58.5	60.5	59.9
145 Puhinui Road	2	64.1	65.9	64.2
147 Puhinui Road	1	64.7	66.5	64.3
151 Puhinui Road	2	60.1	61.9	60.6
159 Puhinui Road	1	49.7	51.7	48.8
159 Puhinui Road	2	50.5	52.3	51.8
165 Puhinui Road	2	49.2	51.1	51.2
169 Puhinui Road	1	58.1	60.3	55.6
175 Puhinui Road	2	66	68.1	64.7
177 Puhinui Road	1	54.7	56.8	52.7
179 Puhinui Road	1	62.9	65.1	59.2
179 Puhinui Road	1	53.2	55.3	52.4
180 Puhinui Road	1	51.5	53.5	62.5
181 Puhinui Road	1	52.2	54.3	51.5
183 Puhinui Road	2	66.1	68.2	63.7
185 Puhinui Road	1	65.9	68	64.2
191 Puhinui Road	1	65.6	66.9	63
195 Puhinui Road	1	54.7	55.9	55.2

PPF Address (NoR 3)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
195 Puhinui Road	1	61.1	62.2	60.9
197 Puhinui Road	1	49.2	49.7	50.2
197 Puhinui Road	1	49.5	49.4	50.4
197 Puhinui Road	1	48	48.5	49.4
205 Puhinui Road	2	52.9	53.3	56.8
207 Puhinui Road	1	56.8	55	56.4
209 Puhinui Road	1	57.8	56.4	57.9
211 Puhinui Road	1	61.1	64.9	65.7
211 Puhinui Road	1	60.9	63.8	64.7
213 Puhinui Road	1	67.3	65.1	63.5
215 Puhinui Road	1	65.9	63.7	62.2
217 Puhinui Road	1	65.6	63.4	62.1
218 Puhinui Road	1	53.8	53	53.7
219 Puhinui Road	2	53.4	52.3	53.3
219 Puhinui Road	1	65.8	63.7	62.2
221 Puhinui Road	1	65.5	63.3	61.8
223 Puhinui Road	1	50.7	48.6	48.3
223 Puhinui Road	1	66.8	64.6	62.3
224 Puhinui Road	1	52.4	52.8	54
225 Puhinui Road	1	68.3	66.1	63.4
226 Puhinui Road	1	56.3	55.1	56.2
226 Puhinui Road	1	53.6	51.7	56.2
226 Puhinui Road	1	64.3	62.4	64.2
227 Puhinui Road	1	67.8	65.6	63
228 Puhinui Road	1	49.2	47.8	53.7
228 Puhinui Road	1	45.8	44.3	45.4
229 Puhinui Road	1	66.3	64.1	61.5
231 Puhinui Road	1	65.7	63.5	61.1
232 Puhinui Road	1	54.2	52.4	59.9
233 Puhinui Road	1	62.5	60.3	57.7
235 Puhinui Road	1	67.9	65.7	62.4
237 Puhinui Road	1	66.1	64	60.9
239 Puhinui Road	1	66.6	64.5	63.2
241 Puhinui Road	1	66.5	64.3	63.3

PPF Address (NoR 3)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
243 Puhinui Road	1	65.1	62.9	62.2
245 Puhinui Road	1	65.7	63.5	62.8
249 Puhinui Road	1	48.3	46.7	47.9
253 Puhinui Road	1	63.1	60.9	60.4
255 Puhinui Road	1	66.1	63.9	63.1
257 Puhinui Road	2	67.3	65.3	64.2
259 Puhinui Road	1	66.9	64.9	64.2
261 Puhinui Road	1	51.2	50	51.3
263 Puhinui Road	1	49.3	48	49.2
267 Puhinui Road	1	65.9	63.7	63.4
269 Puhinui Road	1	67.3	65.3	64.8
271 Puhinui Road	1	66.2	64.3	64.5
272 Puhinui Road	2	50.7	49.7	55.8
272 Puhinui Road	2	55.7	54.1	62.2
273 Puhinui Road	1	66.8	64.9	66.3
274 Puhinui Road	1	49.7	48	52.7
275 Puhinui Road	1	66.5	64.6	65.9
277 Puhinui Road	1	66.9	65.3	67.1
281 Puhinui Road	1	64.8	66.8	66.5
283 Puhinui Road	1	60.6	62.6	62.6
283 Puhinui Road	1	66.3	68.2	67.4
308 Puhinui Road	1	63.7	65.7	66.7
314 Puhinui Road	1	65.5	67.5	68.6
1/187 Puhinui Road	1	67.9	69.9	66
1/251 Puhinui Road	1	68	65.9	64.6
1/279 Puhinui Road	1	66.2	64.6	66.6
135A Puhinui Road	2	53.8	54.4	54.8
139A Puhinui Road	2	54.4	55.4	55.5
141A Puhinui Road	2	52.7	54.1	54.1
143A Puhinui Road	2	53.8	54.9	55.1
147A Puhinui Road	2	51.9	54	53.4
148A Puhinui Road	1	51	51.3	65.8
148B Puhinui Road	1	50	50.2	59.9
175A Puhinui Road	2	54	56.1	52.7

PPF Address (NoR 3)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
176A Puhinui Road	2	53.4	55.4	63.2
177A Puhinui Road	2	67.4	69.5	65.4
181A Puhinui Road	2	67.1	69.2	64.5
185A Puhinui Road	1	54.6	56.8	54
186A Puhinui Road	2	55.5	57.5	65.4
188A Puhinui Road	2	53.4	54.6	63.8
190A Puhinui Road	2	55.2	56.5	63
2/187 Puhinui Road	1	67.9	70	65.8
2/199 Puhinui Road	1	67.2	68.3	65.4
2/249 Puhinui Road	1	48.2	46.2	48.5
2/251 Puhinui Road	1	53.6	51.4	51.3
2/257 Puhinui Road	2	56.4	54.5	54.8
2/270 Puhinui Road	1	51.6	49.8	60.9
2/270 Puhinui Road	1	51.7	49.6	54.3
200A Puhinui Road	2	52.7	53.5	64.3
205A Puhinui Road	1	52.5	49.8	56.5
209A Puhinui Road	2	51.4	52.7	55.4
221A Puhinui Road	1	52.6	50.5	50.5
225A Puhinui Road	2	55.7	53.6	54.6
227A Puhinui Road	1	54.6	52.5	51.5
229A Puhinui Road	2	55.5	53.4	54.3
233A Puhinui Road	2	54.9	52.8	53.4
243A Puhinui Road	2	55.2	53.1	53.8
255A Puhinui Road	1	49.3	47.5	48.5
264A Puhinui Road	2	56.4	54.5	61.6
275A Puhinui Road	2	55.9	54.8	57.7
276A Puhinui Road	1	53.3	51.5	62.3
278A Puhinui Road	1	52.4	50.7	61.4
283A Puhinui Road	1	54.2	56.2	56.9
290B Puhinui Road	2	57.4	57.1	68.5
292B Puhinui Road	2	54.7	54.7	68.3
294A Puhinui Road	1	56	57.9	69.4
3/150 Puhinui Road	1	48.3	48.7	58.7
3/150 Puhinui Road	1	50	50.4	64.3

PPF Address (NoR 3)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
3/251 Puhinui Road	2	61.9	59.7	59.2
3/298 Puhinui Road	1	54.6	56.4	67.8
300A Puhinui Road	1	56.8	58.7	66
312A Puhinui Road	2	55.5	57.4	62.5
314A Puhinui Road	1	51	53	55.7
4/298 Puhinui Road	1	52.5	54.3	57.5
5/298 Puhinui Road	1	50.9	52.5	55.9
7 Ranfurly Road	1	52.4	54.4	60.5
8 Ranfurly Road	1	49.4	51.4	60.3
12 Ranfurly Road	2	49.4	51.4	53.7
1/10 Ranfurly Road	1	50.4	52.5	54
2/10 Ranfurly Road	1	47.3	48.7	54.7
3/10 Ranfurly Road	1	48.8	50.5	55.1
12A Ranfurly Road	2	48.6	50	53.3
3 Raymond Road	2	57.5	55.3	55.2
4 Raymond Road	1	55.5	53.3	52.3
5 Raymond Road	1	46.4	44.4	45.3
6 Raymond Road	2	50.4	48.4	48.9
7 Raymond Road	1	48.3	46.3	47
8 Raymond Road	2	50.3	48.6	49.9
8 Raymond Road	2	53.7	51.8	52.8
8 Raymond Road	2	52.1	50.3	50
4A Raymond Road	2	53.8	51.8	51.8
5A Raymond Road	2	50.7	48.7	48.9
6A Raymond Road	2	49.3	47.3	47.6
7A Raymond Road	2	47.5	46	47.3
16 Sabi Place	1	54.1	55.6	57
17 Sabi Place	1	52.6	53.9	55
113 Wallace Road	1	44.3	44.6	45.5
118 Wallace Road	2	51.8	53.7	52.2
121 Wallace Road	1	45	45.9	46.4
135 Wallace Road	1	52	53.3	51.5
135 Wallace Road	1	66	67.4	62.7
1/116 Wallace Road	1	51.3	52.7	52.3

PPF Address (NoR 3)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB LAeq(24h)		
1/116 Wallace Road	1	53.2	54.6	53.4
1/119 Wallace Road	1	45.2	45.6	46.7
1/129 Wallace Road	1	50.8	52.6	50.9
121A Wallace Road	1	49.5	50.7	50.7
121B Wallace Road	1	48	47.4	49.3
130A Wallace Road	2	58.7	60.3	58.5
130B Wallace Road	2	58.5	60.6	57.6
2/119 Wallace Road	1	45.1	45.4	46.4
2/129 Wallace Road	1	51.5	53.3	51.9
3/119 Wallace Road	1	45.2	45.7	46.5
3/129 Wallace Road	1	54.1	55.8	54.4
4/119 Wallace Road	1	44.4	44.6	45.7
6/127 Wallace Road	1	45.6	46.6	47
6/127 Wallace Road	1	47.3	48.9	48.3
6/127 Wallace Road	1	46.5	47.2	47.9
6/127 Wallace Road	1	46.4	46.5	47.8
6/127 Wallace Road	1	51	52.9	51.6
6/127 Wallace Road	1	48.1	48.9	49.9
144 Wyllie Road	1	46.7	45.2	47.9
145 Wyllie Road	1	53.2	54.2	53.9
146 Wyllie Road	1	53.3	55.1	55.5
148 Wyllie Road	1	53.4	55.2	55.4
149 Wyllie Road	1	48.1	48.4	49.7
150 Wyllie Road	1	55.6	57.5	57.1
151 Wyllie Road	1	57.2	58.2	56.9
152 Wyllie Road	1	55.7	57.6	56.3
154 Wyllie Road	1	68	67.6	67.1
1/147 Wyllie Road	1	47.2	49	50.2
146A Wyllie Road	2	51	50.6	53.4
148A Wyllie Road	1	51.2	49.9	52.9

NoRs 4a and 4b

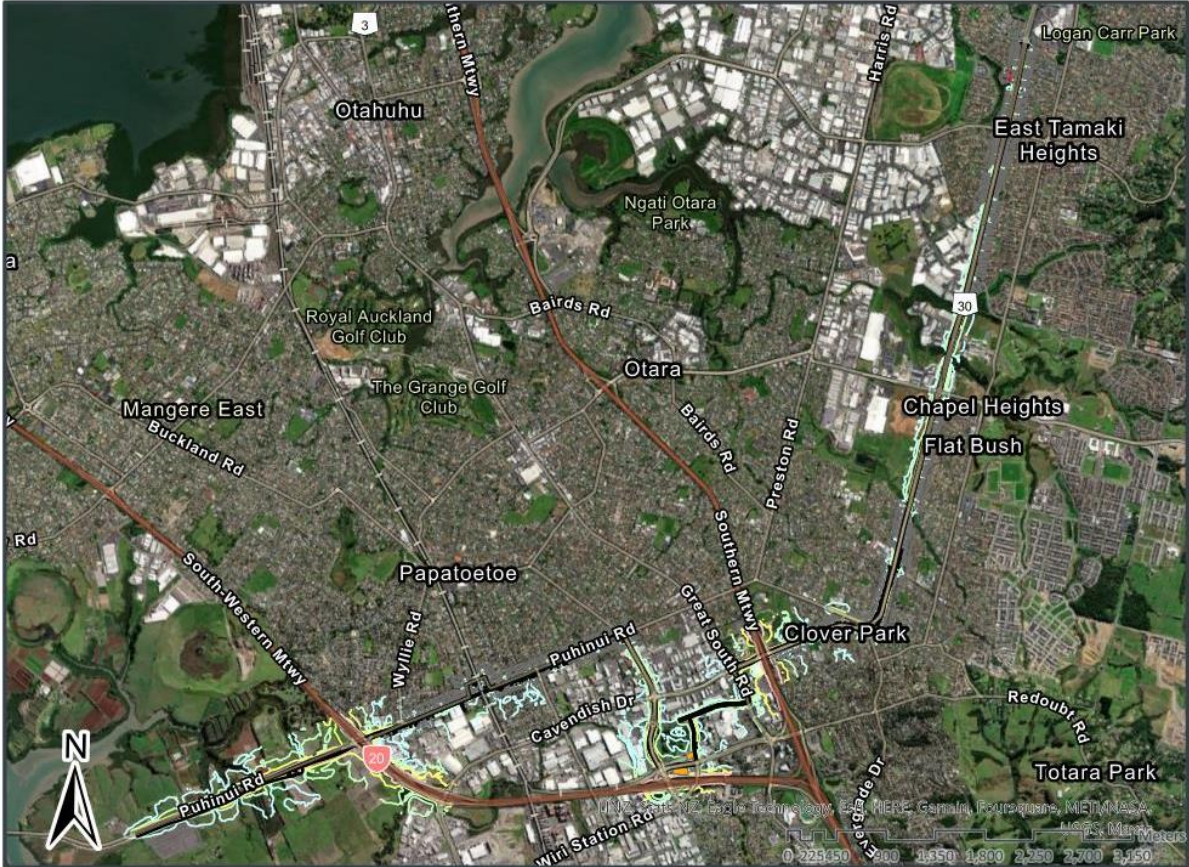
PPF Address (NoRs 4a and 4b)	Floor	Existing (Existing roads, existing traffic)	Do-Nothing (Existing roads, 2048 traffic)	Do-Minimum (Project, 2048 traffic)
		dB L_{Aeq}(24h)		
485 Puhinui Road	1	59.9	62.5	63
485 Puhinui Road	1	67.7	70.7	71
485 Puhinui Road	1	67.1	70.2	70.4
16 Sabi Place	1	54.1	55.6	57
17 Sabi Place	1	52.6	53.9	55

Appendix B

Noise level contours and NZS6806 categories

Appendix B – Noise level contours and NZS6806 Categories

Overview Map



Map Legend

Dwellings (dB L _{Aeq} (24h))		Contours dB L _{Aeq} (24h)	
■	< 64 Category A	—	55
■	64 - 67 Category B	—	60
■	> 67 Category C	—	65
■	Buildings to be removed	—	70
		—	Project Roads

NoR 1

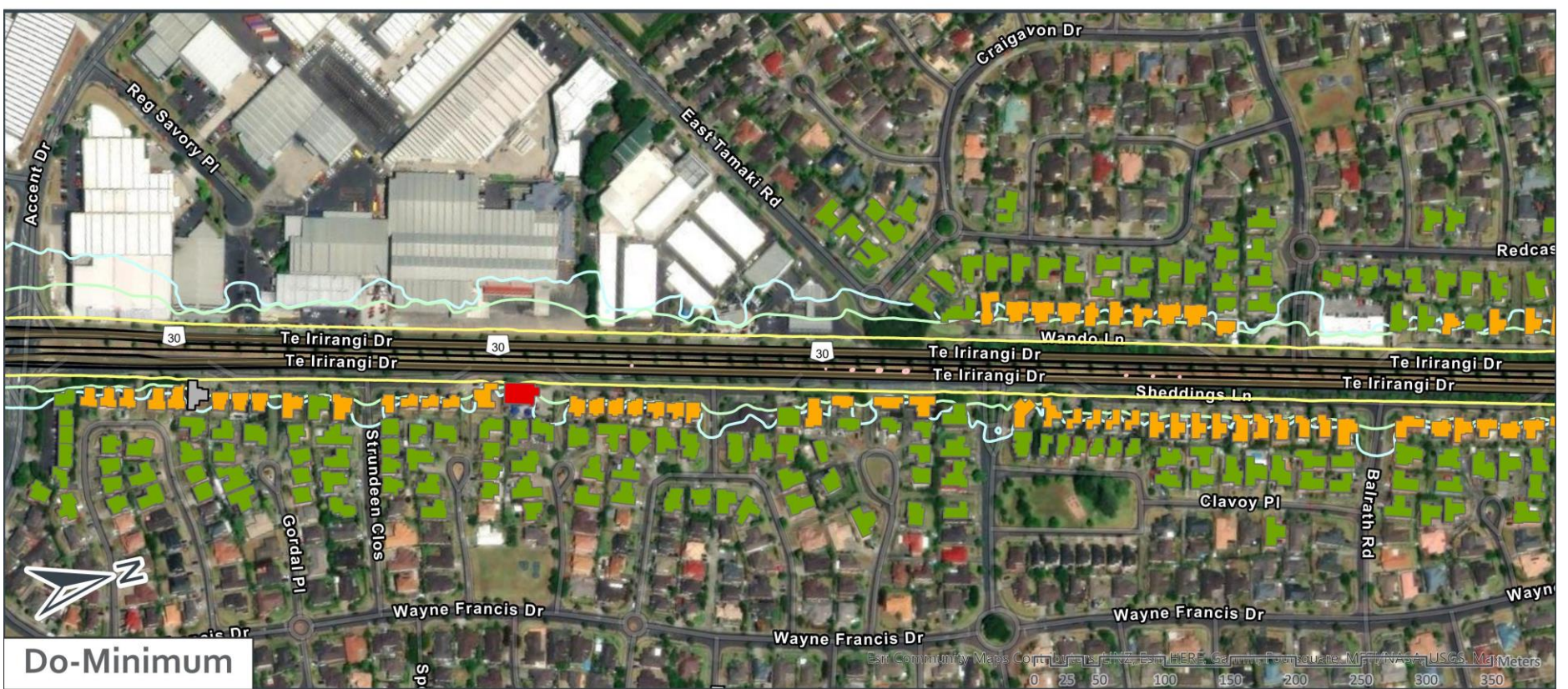


A2B NOR1



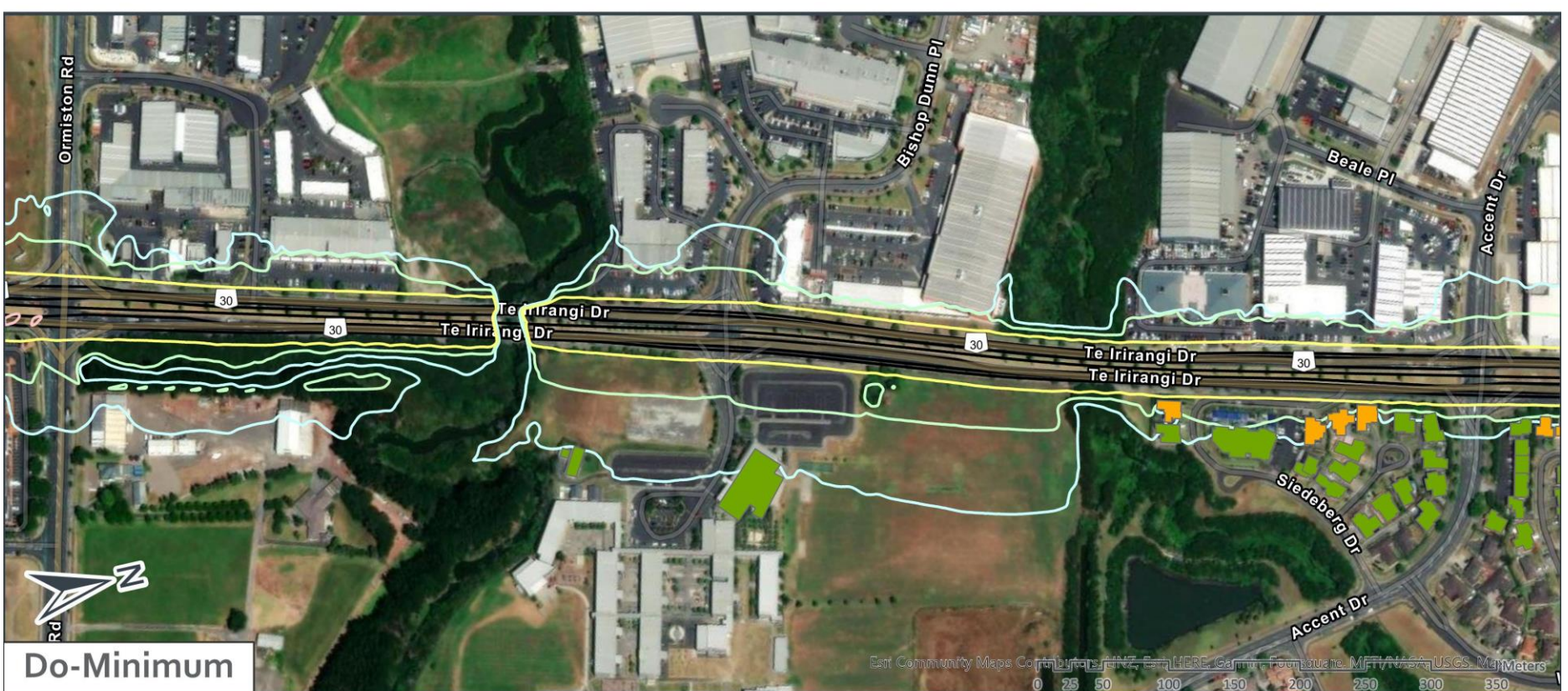
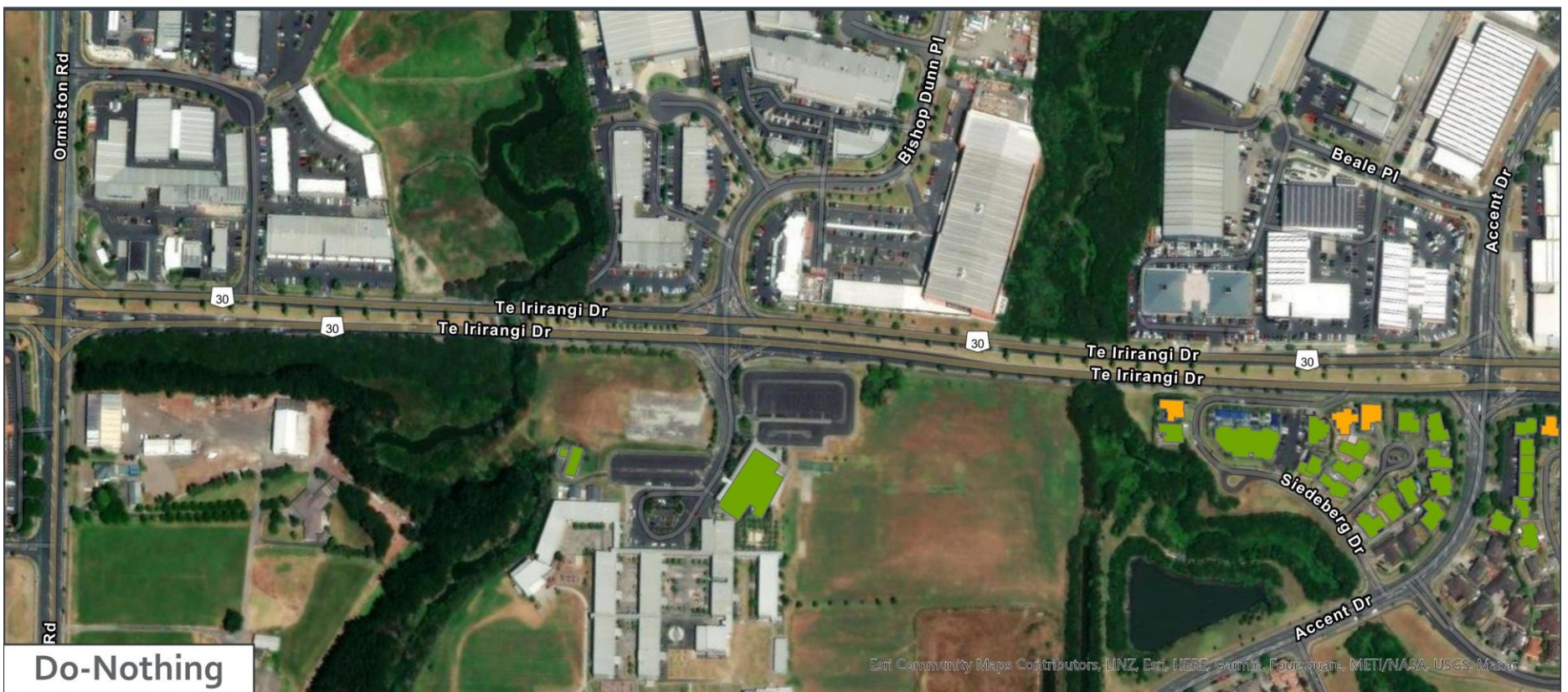
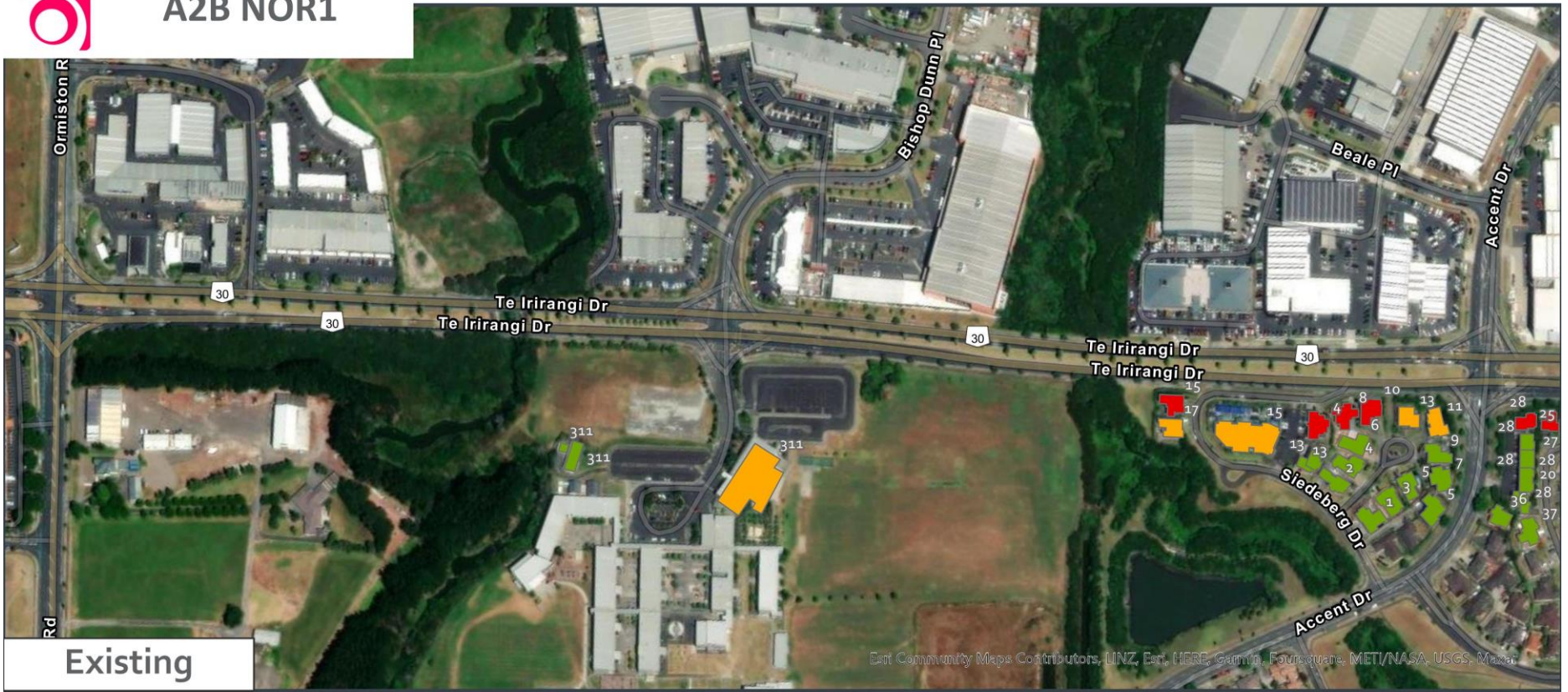


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A2B NOR1

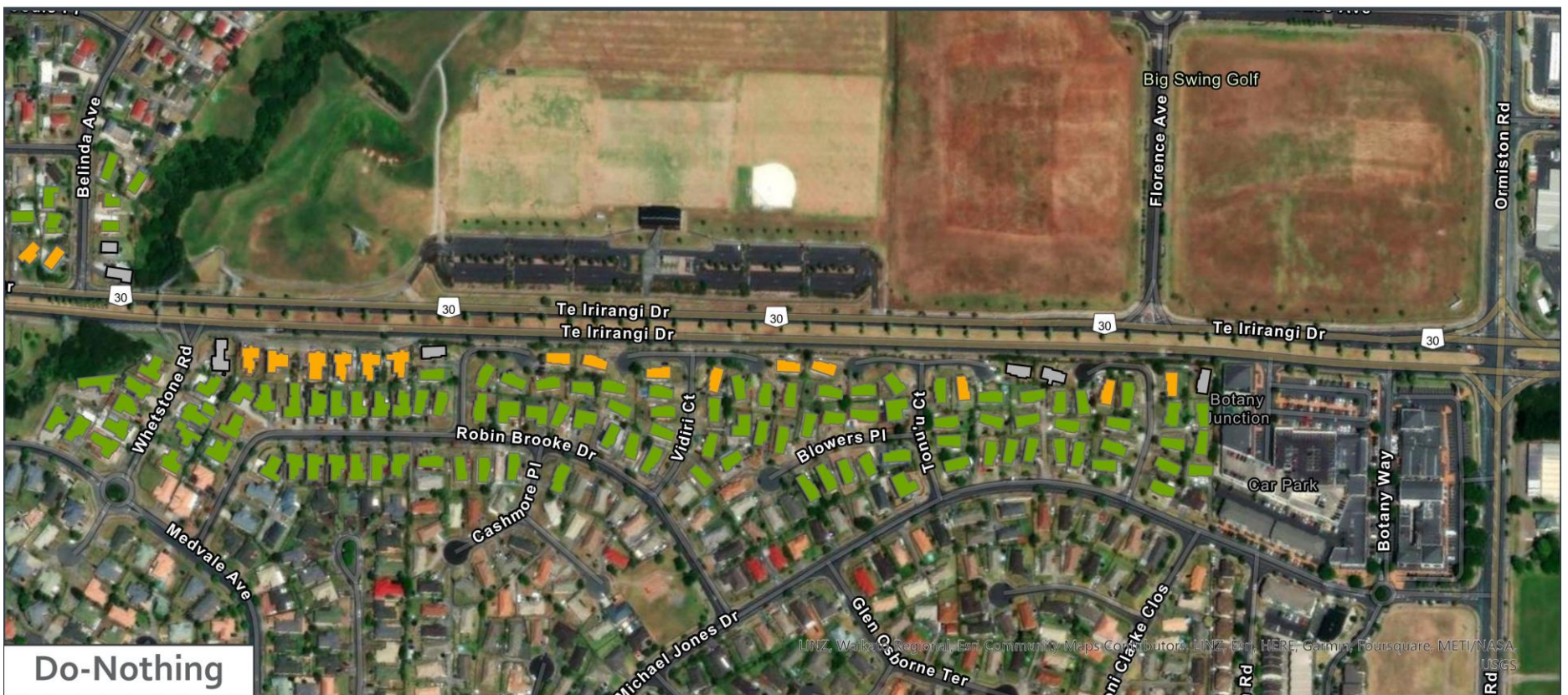




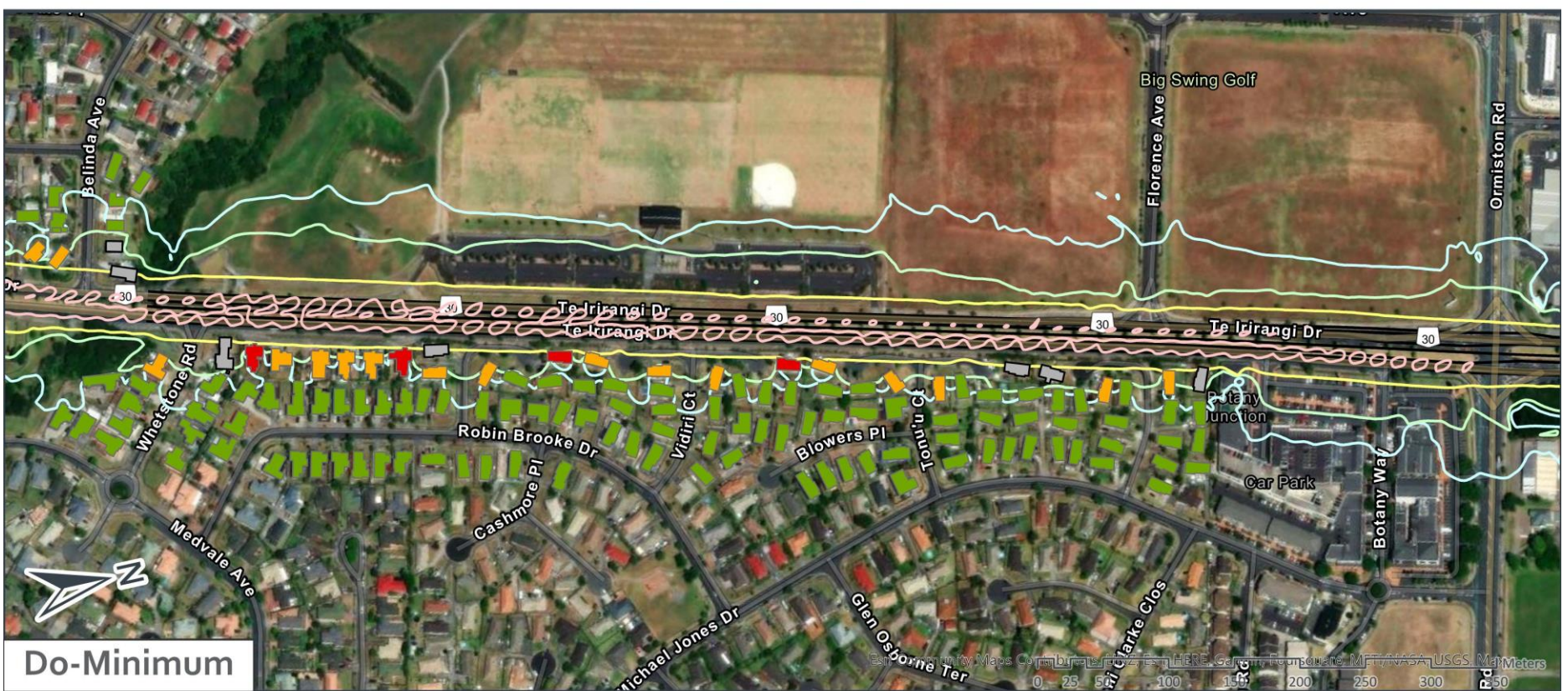
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Existing



Do-Nothing



Do-Minimum

NoR 2

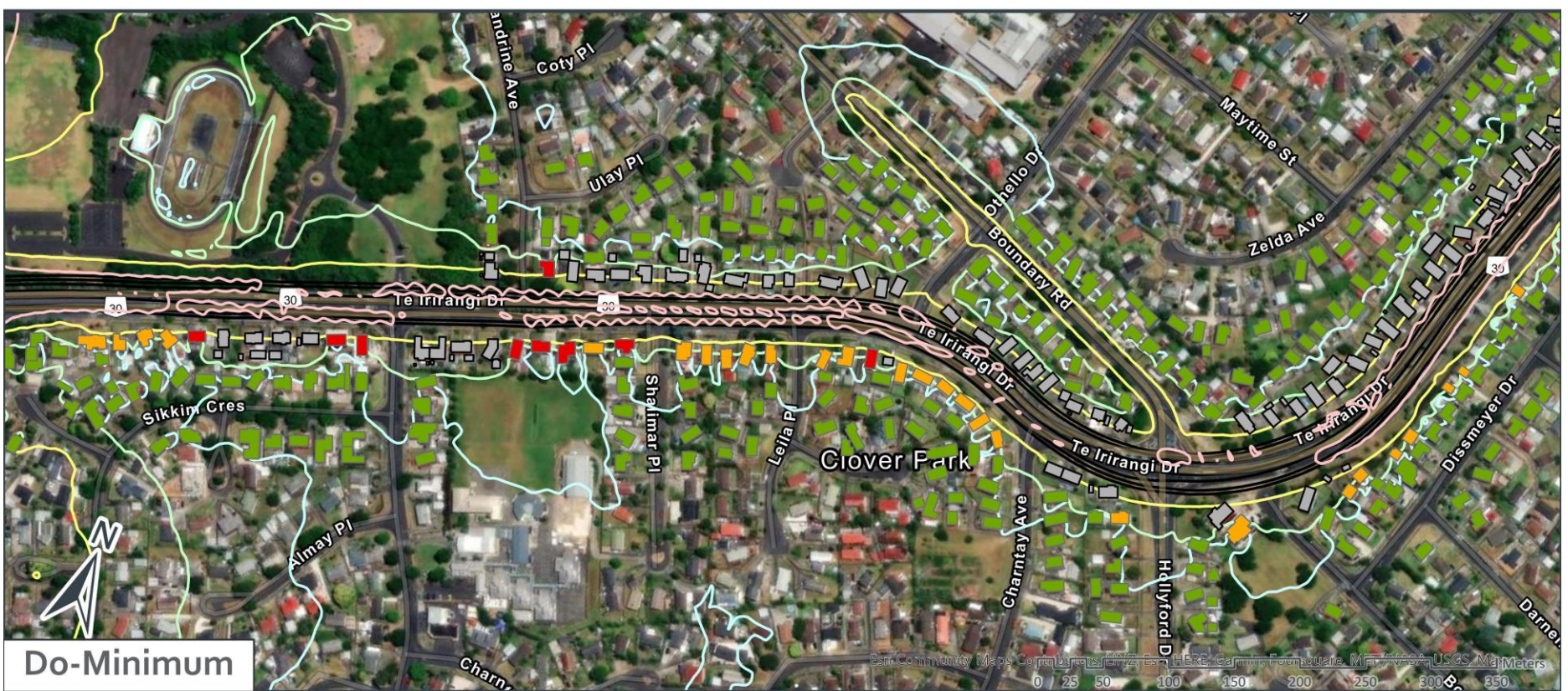


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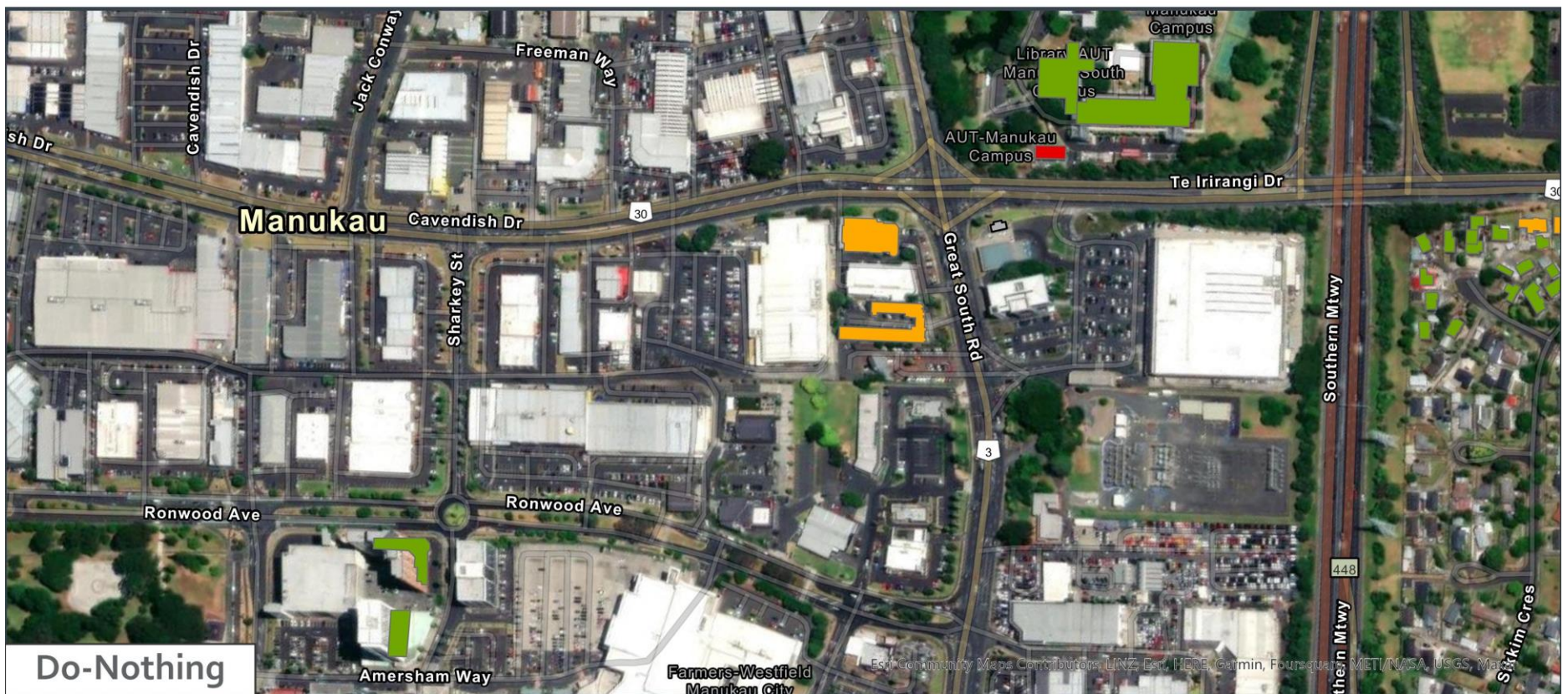
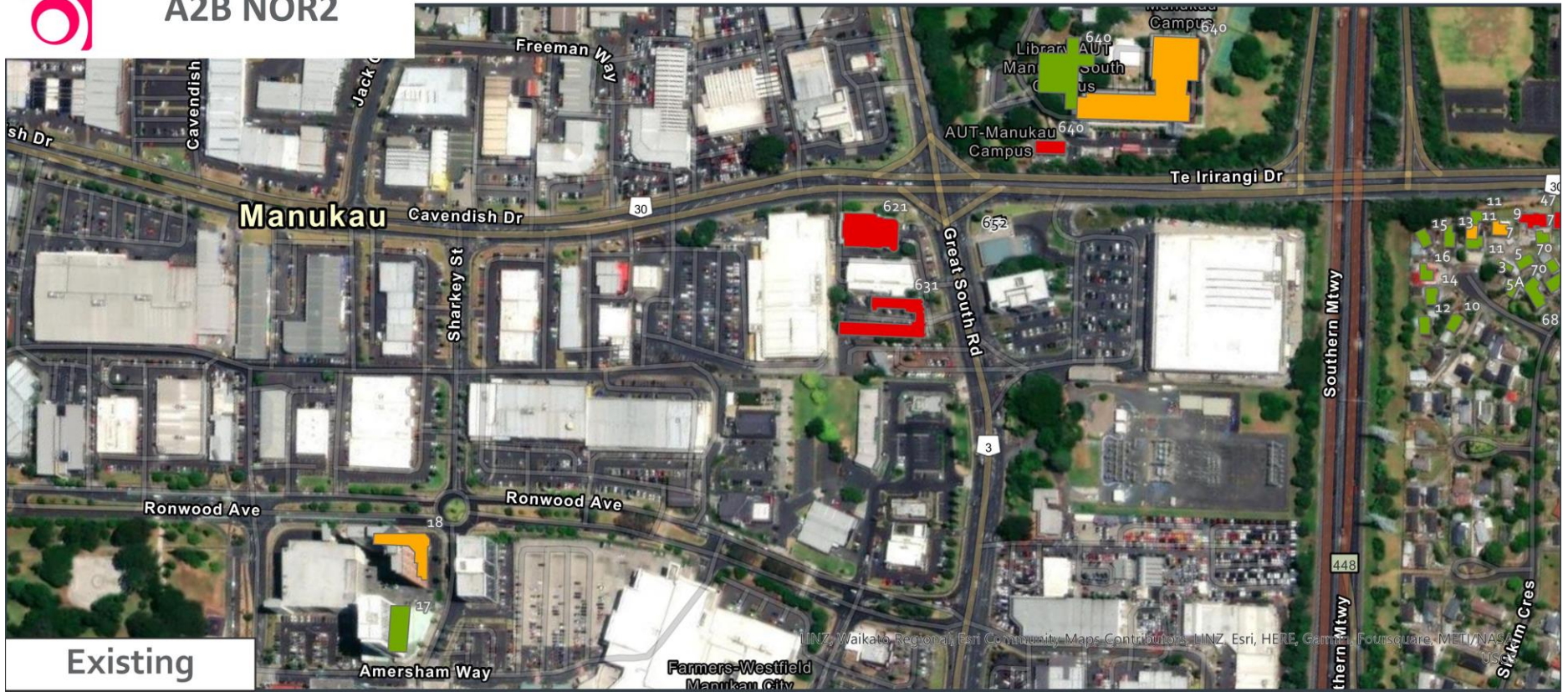


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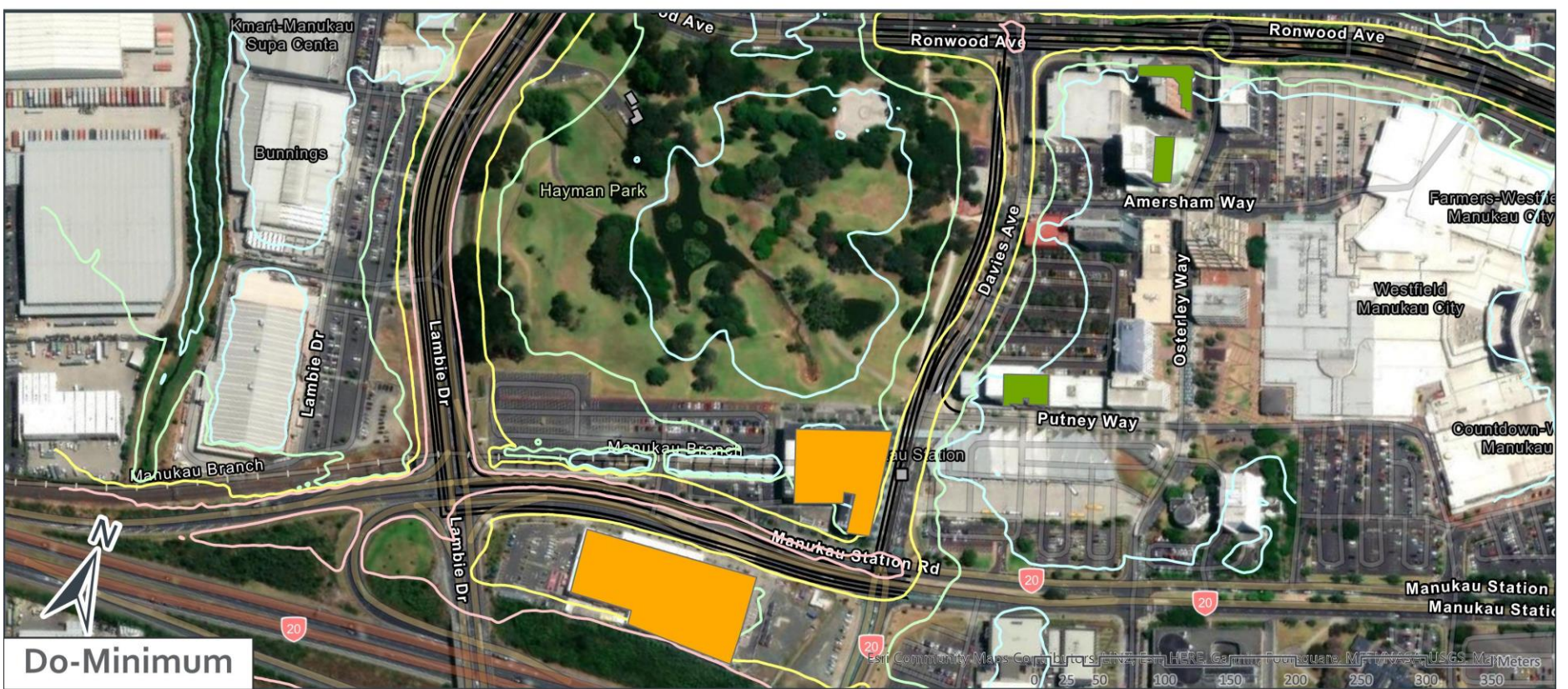
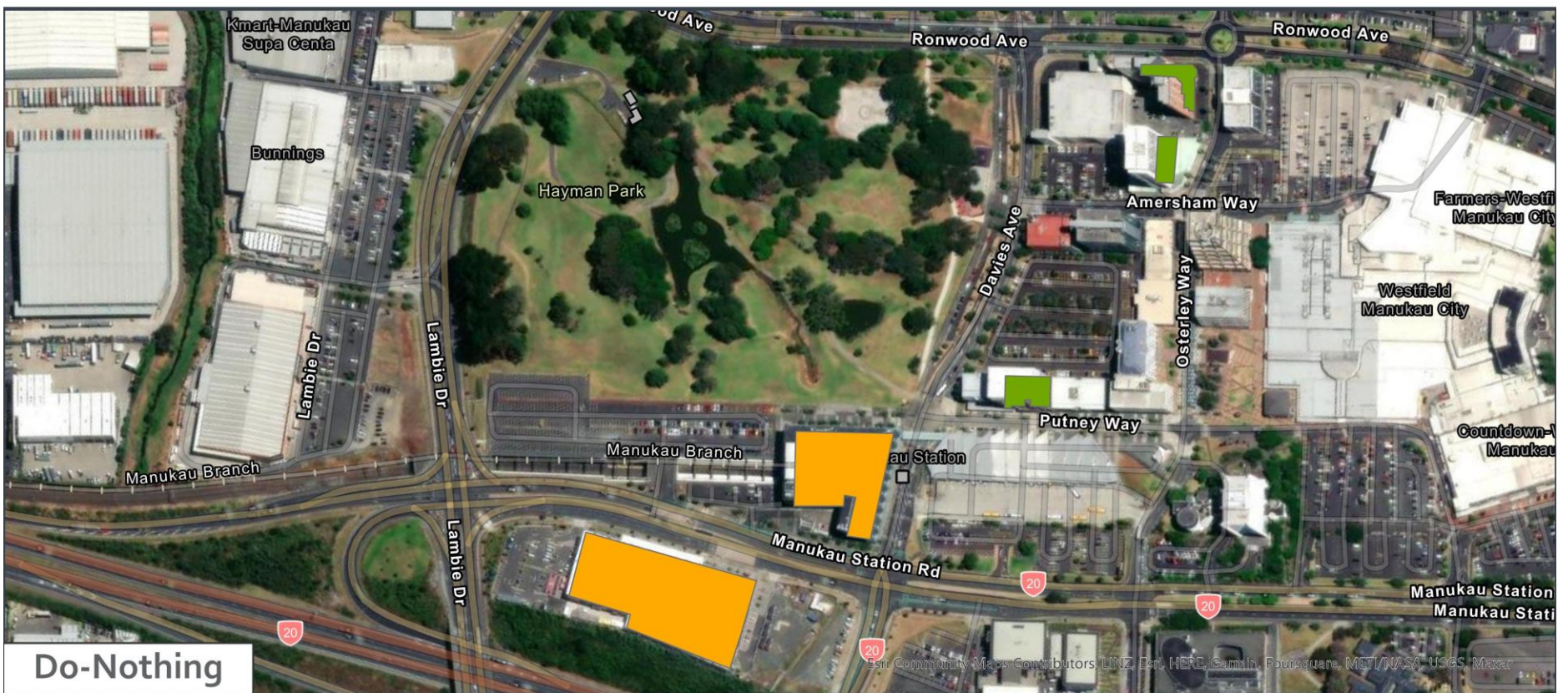
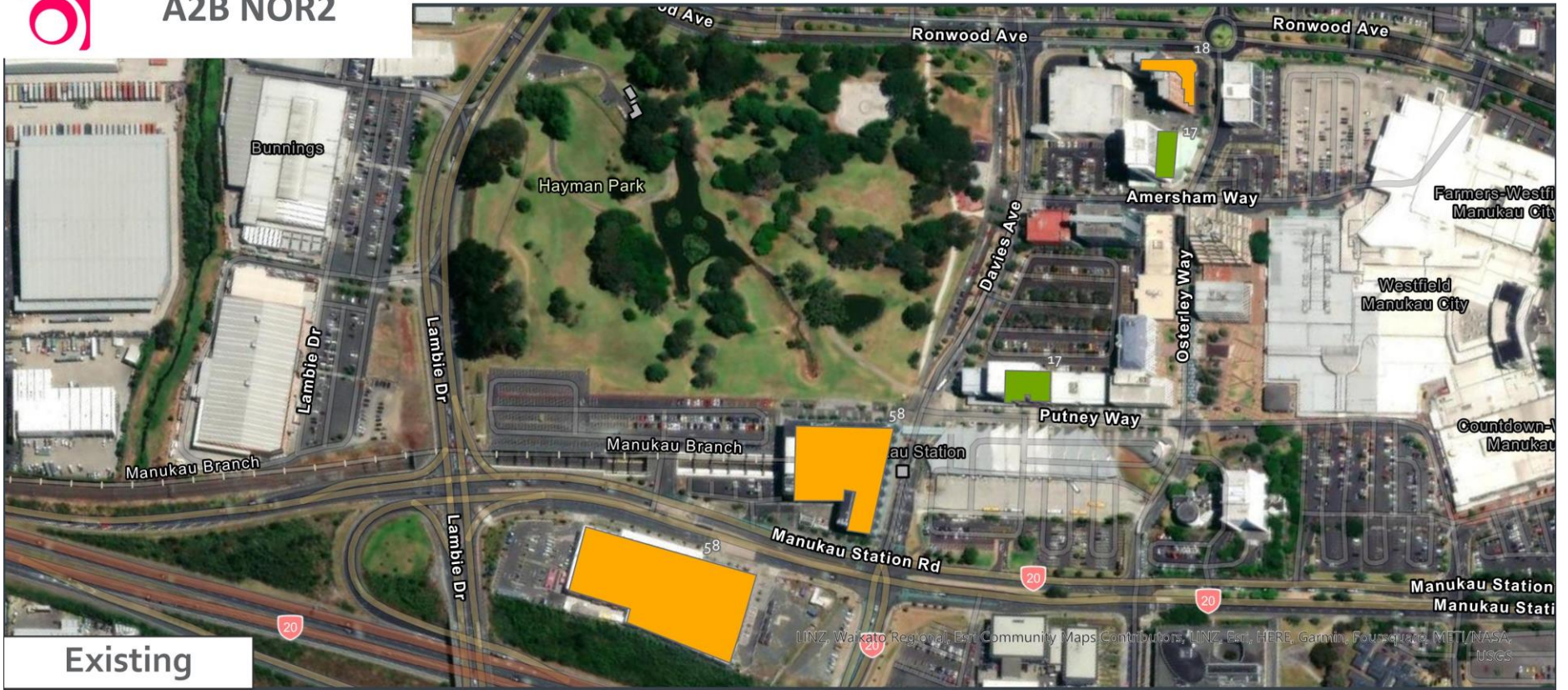


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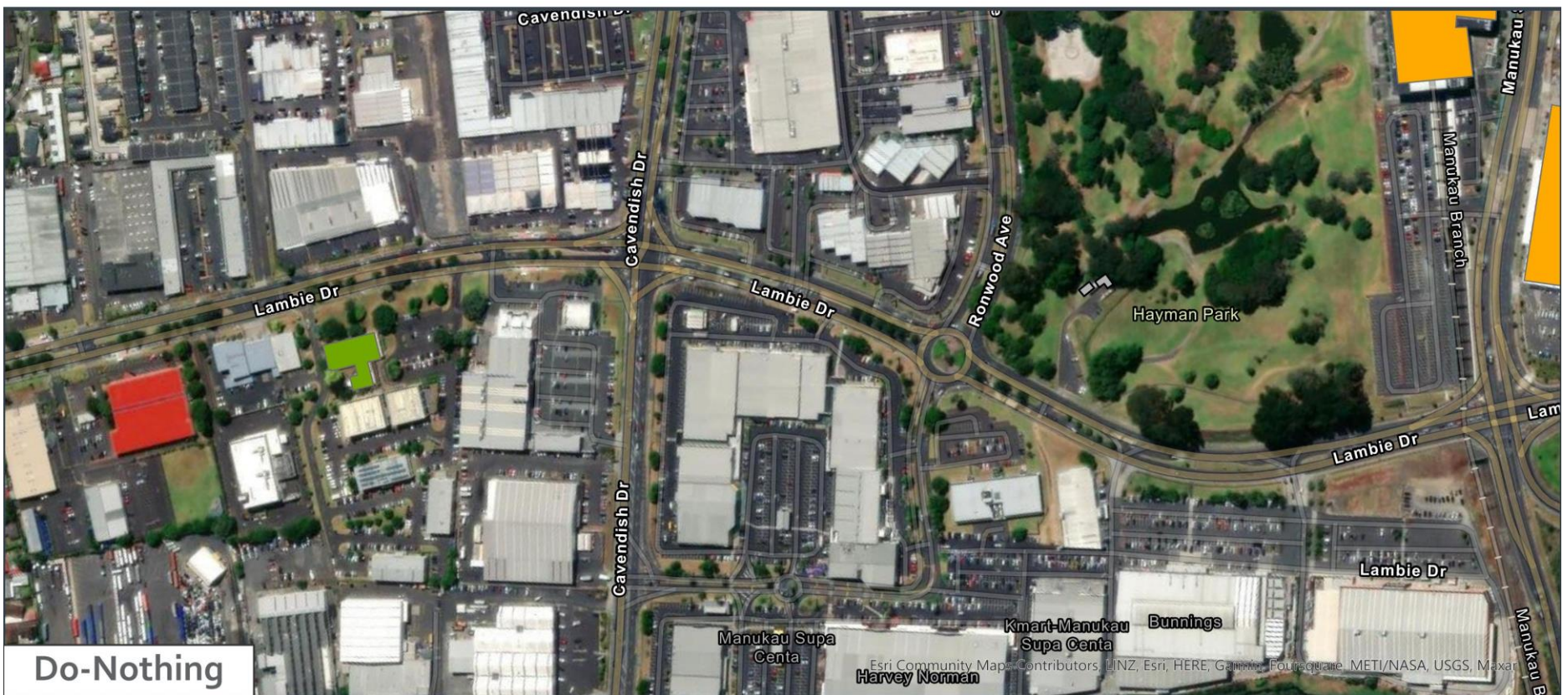


A2B NOR2





A2B NOR2





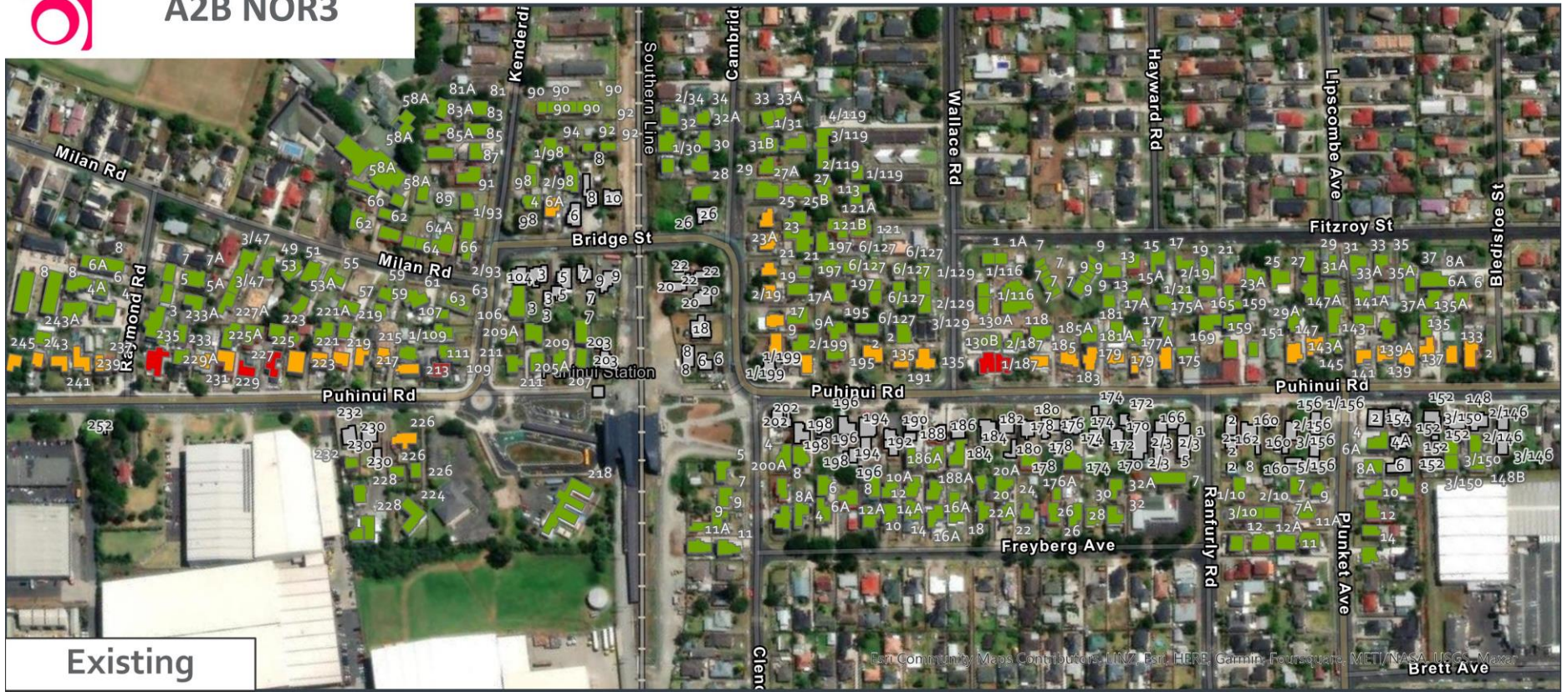
A2B NOR2



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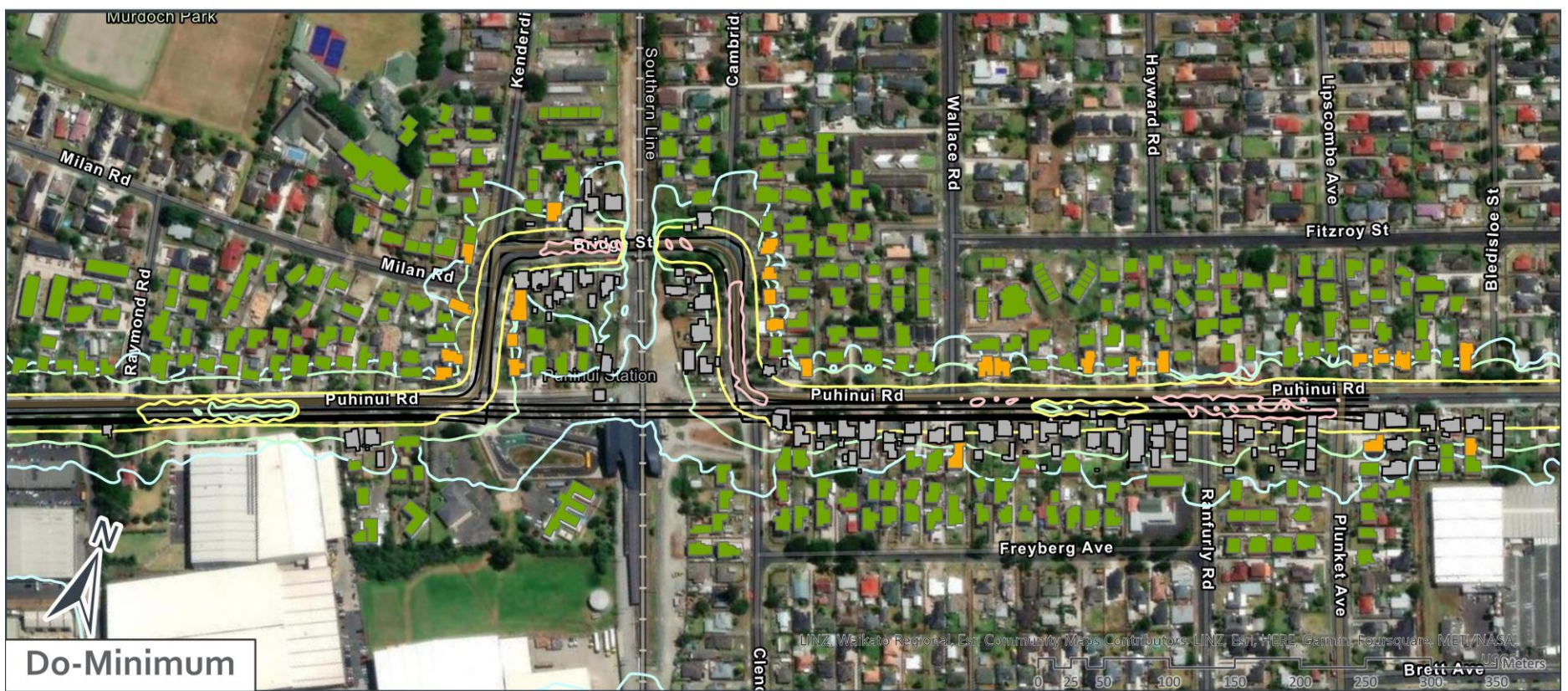
A2B NOR3



Existing



Do-Nothing



Do-Minimum



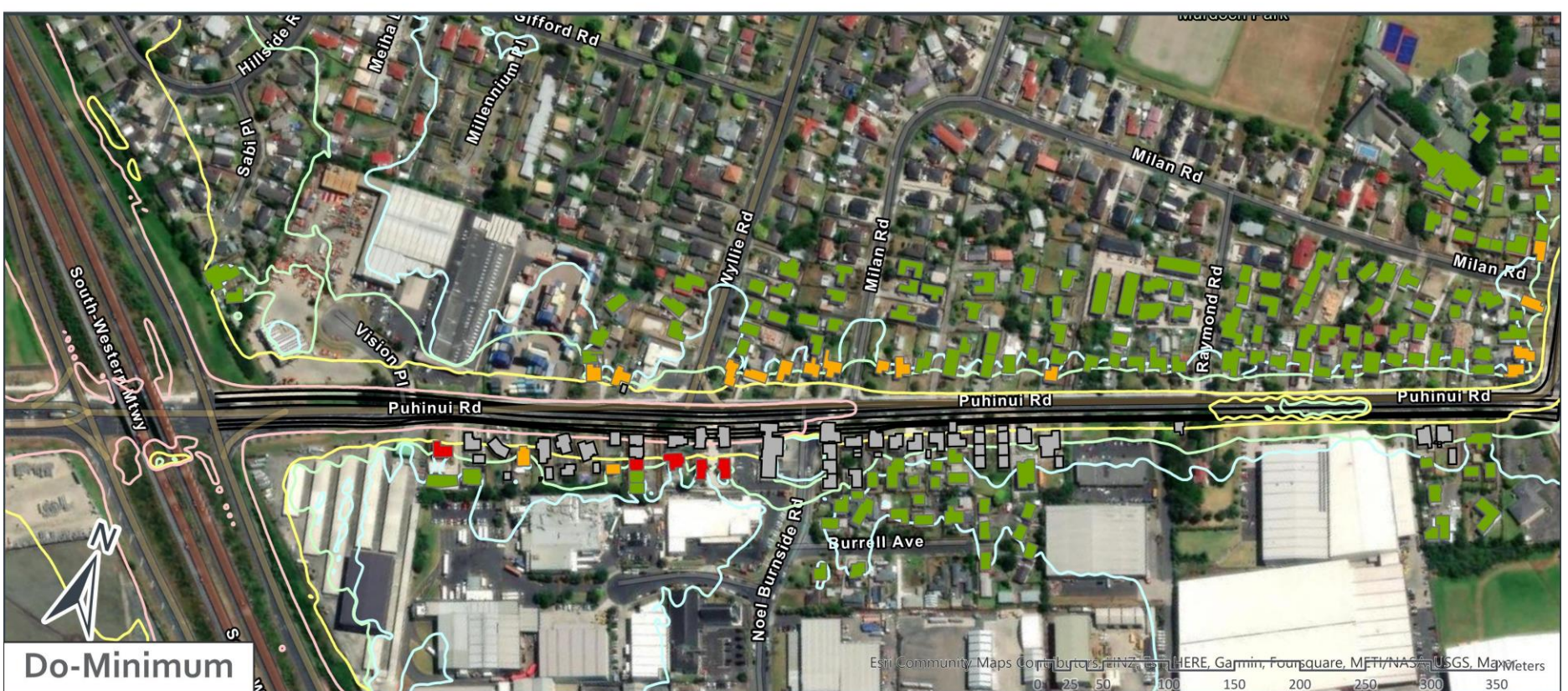
A2B NOR3



Existing



Do-Nothing



Do-Minimum

NoRs 4a and 4b

 A2B NOR 4A & 4B



 A2B NOR 4A & 4B

