I hereby give notice that a hearing by commissioners will be held on:

Date:	**Mondays through Thursdays from 18 September until 12 October 2023**
Time:	**9:30am**
Meeting Room:	**Council Chambers**
Venue:	**Level 2, Henderson Civic, 3 Smythe Road, Henderson, Auckland 0612**

NOTIFICATION MATERIAL

VOLUME 09

NORTH-WEST HOUSING INFRASTRUCTURE FUND (HIF): PROJECTS IN REDHILLS

TE TUPU NGĀTAHI SUPPORTING GROWTH

AUCKLAND TRANSPORT & WAKA KOTAHI NZ TRANSPORT AGENCY

COMMISSIONERS

Chairperson	**Richard Blakey (Chairperson)**
Commissioners	**Mark Farnsworth**
	Vaughan Smith

Patrice Baillargeon
Kaitohutohu Mataamua Whakawā /
Senior Hearings Advisor

Telephone: 09 890 4692 or 027 338 5383
Email: patrice.baillargeon@@aucklandcouncil.govt.nz
Website: www.aucklandcouncil.govt.nz

Note: The reports contained within this agenda are for consideration and should not be construed as a decision of Council. Should Commissioners require further information relating to any reports, please contact the Team Leader Hearings.

VOLUME 09 HIFRED-PT 1 **TABLE OF CONTENTS** **PAGE NO.**

North-West Housing Infrastructure: Redhills – Part 1

ATTACHMENT 01

NoR1 – PUBLIC NOTICE

Auckland Unitary Plan

Notice of Requirement for a new designation for Redhills North South Arterial Transport Corridor, being a new urban arterial transport corridor and upgrade of the Don Buck and Royal Road intersections

Notice of Requirement (NOR 1 Redhills North-South Arterial Transport Corridor)
Auckland Council has received a notice of a requirement for a designation from Auckland Transport as the Requiring Authority, for public work.

The requirement is for the construction, operation and maintenance of a transport corridor to enable the Requiring Authority to:

- Provide a new north-south urban arterial transport corridor from Royal Road/Don Buck Road to the future east-west arterial corridor to support and integrate with planned urban growth in Redhills.
- Provide arterial transport corridors that are safe for all transport users.
- Contribute to mode shift by providing a choice of transport options including walking, cycling and public transport.
- Provide for the identification and protection of the future Redhills arterial transport network and key connections which enables growth.

The site to which the requirement applies is as follows: Don Buck and Royal Road intersections.

Viewing the notice of requirement

The explanation of the notice of requirement can be found on our web site https://www.aucklandcouncil.govt.nz/nor. If you don't have access to a computer, please visit your local library or service centre and they will help you view the notice of requirement on our website.

If you have any questions about the notice of requirement, please contact: Unitary Plan, on 09 365 3786 or at unitaryplan@aucklandcouncil.govt.nz

Making a submission on the notice of requirement

Any person or organisation may make a submission on the notice of requirement, but a person who is a trade competitor or the requiring authority may do so only if that person is directly affected by an effect of the activity to which the requirement relates that –

(a) Adversely affects the environment; and
(b) Does not relate to trade competition or the effects of trade competition.

You may make a submission by sending a written or electronic form to Auckland Council at:

- Auckland Council, Unitary Plan Private Bag 92300, Auckland 1142, Attention: Planning Technician, or
- By using the online form on the Auckland Council website at https://www.aucklandcouncil.govt.nz/nor, or
- By email to: unitaryplan@aucklandcouncil.govt.nz ;or
- Lodging your submission in person at Auckland Council, Libraries or offices.

Submissions close on 24 April 2023

You must serve a copy of your submission on Auckland Transport, whose address for service is, Auckland Transport, Level 5, 203 Queen Street, Auckland 1010, as soon as reasonably practicable after serving your submission on Auckland Council.

John Duguid
Manager – Plans & Places

Notification date: 23/03/2023

ATTACHMENT 02

NoR1 – LODGEMENT COVER LETTER

TE TUPU NGĀTAHI
SUPPORTING GROWTH

19 December 2022

Te Tupu Ngātahi
Supporting Growth
PO Box 105218
Auckland 1143

Auckland Council
C/o Todd Elder
Planning North/West – Plans and Places

Dear Todd

Re: NORTH WEST HOUSING INFRASTRUCTURE FUND NOTICES OF REQUIREMENT

This letter is to advise that Auckland Transport gives notices of requirement for five new designations as part of the North West Housing Infrastructure Fund (HIF) Project.

The lodgment documents have been prepared as two packages:

- Redhills Arterial Transport Network; and
- Trig Road Corridor Upgrade

Each package comprises four volumes as follows:

- Volume 1: Form 18 for each of the notices
- Volume 2: Assessment of Effects on the Environment
- Volume 3: General Arrangement Layout Plans
- Volume 4: Supporting Technical Assessments

These have been emailed to you via file transfer links.

Please contact me in the first instance if there are any queries.

Yours sincerely,

Bridget O'Leary
North West HIF – AEE Lead
info@supportinggrowth.nz
0800 4769 255

ATTACHMENT 03

NoR1 – FORM 18

20 Viaduct Harbour Avenue, Auckland 1010
Private Bag 92250, Auckland 1142, New Zealand
Phone 09 355 3553 **Website** www.AT.govt.nz

NOTICE OF REQUIREMENT FOR DESIGNATION OF LAND UNDER s168(2) OF THE RESOURCE MANAGEMENT ACT 1991

TO: Auckland Council

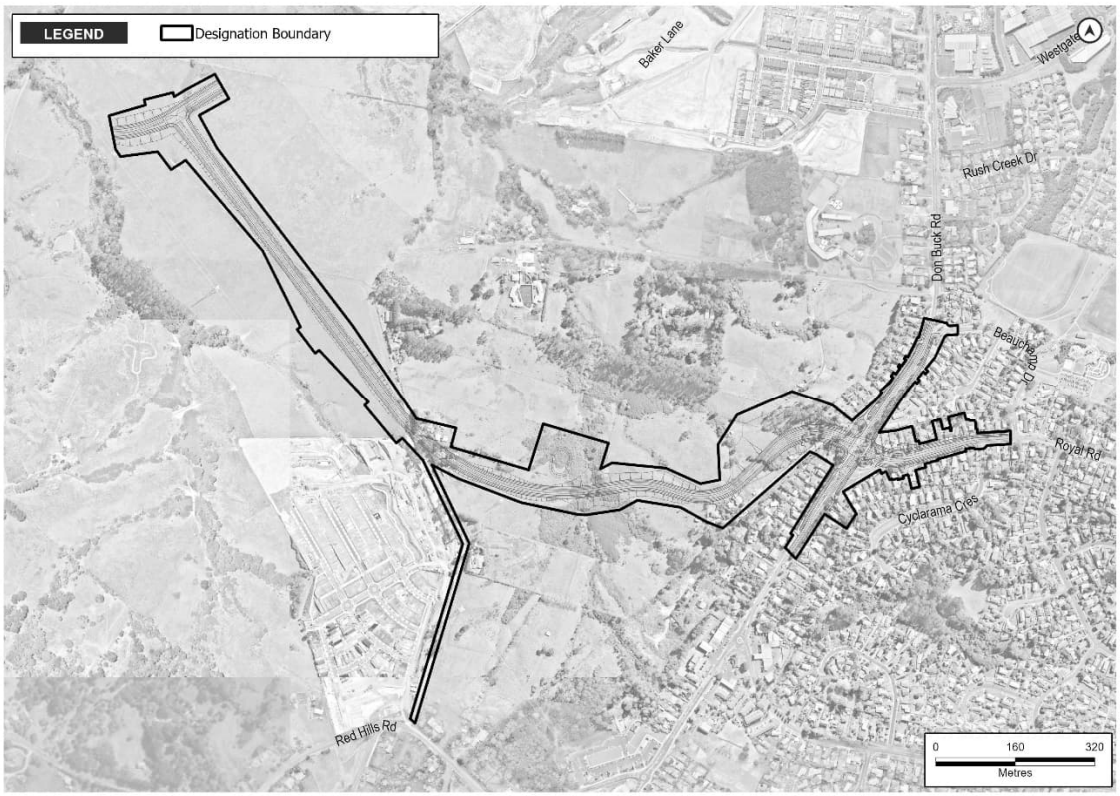
FROM: Auckland Transport

Auckland Transport (AT) (an Auckland Council Controlled Organisation) as a Requiring Authority under section 167 of the Resource Management Act 1991 (RMA) gives notice of requirement (NOR) for a designation in the Auckland Unitary Plan for a public work, being the construction, operation and maintenance of an arterial transport corridor in Redhills.

1 SUMMARY

AT is proposing to construct two arterial transport corridors in Redhills over the next 15 years. These two arterial transport corridors form the Redhills Arterial Transport Network (RATN), under the Te Tupu Ngātahi Supporting Growth Programme.

This form is for NOR 1, which is for the construction, operation and maintenance of the Redhills North-South arterial transport corridor. The extent of the project, designation and boundary of NOR 1 is outlined below and shown in detail on the Designation Plans contained in Attachment A.



The purpose of the designation is for the construction, operation and maintenance of a transport corridor. The activities to be enabled by the designation include environmental mitigation, temporary construction areas, ancillary structure and other activities required for the Project.

The Project Objectives for NOR 1 are to:

- **Project Objective 1:** Provide a new north-south urban arterial transport corridor from Royal Road to the future east-west arterial corridor to support and integrate with planned urban growth in Redhills.
- **Project Objective 2:** Provide arterial transport corridors that are safe for all transport users.
- **Project Objective 3:** Contribute to mode shift by providing a choice of transport options including walking, cycling and public transport.
- **Project Objective 4:** Provide for the identification and protection of the future Redhills arterial transport network and key connections which enables growth.

As an approved Requiring Authority under section 176 of the RMA via section 47(1) of the Local Government (Auckland Council) Act 2009, Auckland Transport may designate to construct, operate and maintain a road and undertake ancillary activities.

2 THE SITE TO WHICH THE REQUIREMENT APPLIES IS AS FOLLOWS:

The area of the proposed NOR 1 designation is shown on the Designation Plans included in Attachment A of this Notice. NOR 1 applies to an area of land of approximately 192235 square metres (not including legal roads) located in Redhills. The requirement applies to 75 land parcels (not including legal roads). The land directly affected by NOR 1 is identified in the Schedule of Directly Affected Property included in Attachment B of this Notice.

3 THE NATURE OF THE PROPOSED WORKS IS:

The proposed work is the construction, operation and maintenance of a north-south arterial transport corridor and associated activities in Redhills (hereafter referred to as “NOR 1”). The nature of the proposed work is described in Section 3.1: Redhills North-South Arterial Transport Corridor and Section 7.1: Construction Works of the accompanying Assessment of Effects on the Environment (AEE) Report.

In summary, the proposed work includes:

- The construction of a two-lane, 24m wide urban arterial transport corridor extending from the Don Buck Road and Royal Road intersection in the south, and connecting with the Redhills East-West arterial corridor (part of the RATN – NORs 2a and 2c) in the north. Separated footpaths and cycle lanes will be provided on both sides of the corridor.
- The construction of new signalised intersection approximately 50m north of the existing Don Buck Road and Royal Road roundabout, with localised widening around the roundabout. Royal Road will be straightened, connecting to Don Buck Road at a less acute angle.
- Retaining wall structures in land adjacent to the Don Buck Road and Royal Road intersection.
- Provision for public transport at the new intersection of Don Buck Road and Royal Road to improve bus travel time and reliability. This includes a dedicated bus approach lane on Royal Road and providing for ‘bus only’ through movements in the left-turn lanes.
- Provision of stormwater infrastructure.
- Bulk earthworks.

- Removal and relocation of existing utilities.
- Other construction related activities required outside the permanent corridor including re-grading of driveways, construction traffic manoeuvring and construction laydown areas.

4 THE NATURE OF THE PROPOSED CONDITIONS THAT WOULD APPLY ARE:

The proposed conditions that will apply to the work are included in **Attachment C** of this Notice.

5 THE EFFECTS THAT THE PROPOSED WORK WILL HAVE ON THE ENVIRONMENT, AND THE WAYS IN WHICH ANY ADVERSE EFFECTS WILL BE MITIGATED ARE:

The AEE Report contains a description of the existing and likely future environment (Section 6), an assessment of the effects on the environment from the Project (Section 7.3), and the proposed measures to avoid, remedy or mitigate the adverse effects of the Project (Section 9).

Positive Effects

The Project will generate a range of positive effects. The nature and degree of these positive effects are outlined in the AEE, in particular Section 7.3.1. However, they are summarised as follows:

- The Project will support the ongoing and proposed urbanisation of the area, by providing an arterial transport corridor that connects to the existing surrounding strategic transport network through new and upgraded intersections.
- The Project will include pedestrian, cycle and public transport facilities along the transport corridor which will enable greater choice of mode and provide improved safety outcomes for transport users.
- The Project will improve transport network functions and contribute to a high-quality urban environment for local residents, businesses and road users.

Adverse Effects

There will be a range of potential adverse effects during the construction and operational phases of the Project, which are assessed in the following sections of the AEE Report:

- Transportation Effects (Section 7.3.2)
- Noise and Vibration Effects (Section 7.3.3)
- Archaeology and Heritage Effects (Section 7.3.4)
- Cultural Effects (Section 7.3.5)
- Landscape and Visual Effects (Section 7.3.6)
- Ecological Effects (Section 7.3.7)
- Natural Hazards (Section 7.3.8)
- Property, Land Use and Business Effects (Section 7.3.9)

The AEE Report draws on information provided in the supporting technical documents (contained in Volume 4).

6 ALTERNATIVE SITES, ROUTES, AND METHODS HAVE BEEN CONSIDERED TO THE FOLLOWING EXTENT:

A wide range of alternatives have been investigated for addressing the future transport needs in Redhills. Alternatives were assessed at all stages of Project development. In summary, once problems, issues and objectives had been established, a list of corridor options were developed to achieve the outcomes. These were refined into a range of alignment options with the preferred options further refined to develop the indicative alignment.

The process by which AT considered alternative sites, routes and methods of NOR 1 is detailed in Appendix A of the AEE: Assessment of Alternatives Report. Development of NOR 1 was based on a comprehensive and robust optioneering process taking into account Mana Whenua, stakeholder and landowner feedback and specialist assessment inputs.

7 THE PROPOSED WORK AND DESIGNATION ARE REASONABLY NECESSARY FOR ACHIEVING THE OBJECTIVES OF THE REQUIRING AUTHORITY BECAUSE:

The works and designation are reasonably necessary to meet the objectives of AT, refer to Section 11.2 of the AEE.

AT's purpose under section 39 of the Local Government (Auckland Council) Act 2009 (LGA) is “to contribute to an effective, efficient, and safe Auckland land transport system in the public interest”. The Project will assist AT in meeting this objective.

The AT objectives for the Project are to:

- **Project Objective 1:** Provide a new north-south urban arterial transport corridor from Royal Road to the future east-west arterial corridor to support and integrate with planned urban growth in Redhills.
- **Project Objective 2:** Provide arterial transport corridors that are safe for all transport users.
- **Project Objective 3:** Contribute to mode shift by providing a choice of transport options including walking, cycling and public transport.
- **Project Objective 4:** Provide for the identification and protection of the future Redhills arterial transport network and key connections which enables growth.

The Project achieves these objectives by:

- The proposed works will assist in the efficient operation of the local transport network.
- The proposed works identify and protect an urban arterial transport corridor in Redhills and key connections to the existing transport network. No transport network currently exists in Redhills, and the arterial corridor will provide access to and support the planned urban growth in Redhills.
- Sufficient space and facilities will be provided to ensure that the proposed transport corridor is safe for all transport users, including vehicles, public transport, walking and cycling.
- The proposed works contribute to mode shift by providing a choice of transport options through the provision of separated and protected walking and cycling facilities, including signalised pedestrian / cycle crossing facilities, and public transport measures to improve bus travel time and reliability.

- The proposed designation will allow AT and / or its authorised agents to undertake the works for the construction, operation and maintenance of the transport corridor and associated ancillary components / activities.
- The proposed designation will enable works to be undertaken in a comprehensive and integrated manner.
- The proposed designation will add protection to the route from future incompatible development which may preclude or put at risk the construction and / or operation and maintenance of the corridor.
- The proposed designation will be included in the Auckland Unitary Plan providing certainty to the public as to the intended use of the land and nature of the activity authorised.

The proposed designation is reasonably necessary as a planning tool, as it identifies and protects land required for the Project and will enable AT to carry out the proposed work.

8 THE FOLLOWING RESOURCE CONSENTS ARE NEEDED FOR THE PROPOSED ACTIVITY AND HAVE NOT BEEN APPLIED FOR:

The NOR will require resource consents for a number of activities to enable the proposed works. The resource consents are not sought at this time as the date for construction is unknown and could be a number of years away. The resource consents will be sought when detailed design of the Project is complete and nearer to the proposed construction start date. The future resource consents likely to be required are summarised below.

- Resource consents for the disturbance of contaminated, or potentially contaminated land under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011.
- Resource consents for specified infrastructure works within rivers, streams and natural wetlands under the Resource Management (National Environmental Standards for Freshwater) Regulations 2020.
- Resource consents for the following activities under the Auckland Unitary Plan:
    - Bulk earthworks and associated discharge of sediment
    - Vegetation removal
    - Stormwater discharge to land or water
    - Discharge of contaminants to land
    - Activities (including structures and associated works) in, on, under or over the bed of rivers, streams, wetlands
    - Water take, use and diversion.

9 THE FOLLOWING CONSULTATION HAS BEEN UNDERTAKEN WITH PARTIES THAT ARE LIKELY TO BE AFFECTED:

Consultation and engagement is ongoing with various parties who are directly affected by or have an interest in the Project including Mana Whenua, property owners and occupiers, Auckland Council, Waka Kotahi, network utility operators, business and community representative groups and the wider community.

Engagement activities include online video meetings, phone calls, face to face meetings, workshops, hui, newsletters and online information.

The consultation and engagement undertaken is detailed in Section 10 of the AEE Report.

10 EXTENDED LAPSE PERIOD PROPOSED:

Under section 184(1) of the RMA a designation lapses on the expiry of 5 years after the date on which it is included in the district plan unless it is given effect to, substantial progress or effort has been made to give effect to, or a different period is specified when incorporated into the plan. There is a need for long term route protection to protect the corridor from inappropriate development until such time as the transport corridor is required to support and facilitate the planned urban growth and funding is allocated. Therefore, pursuant to section 184(1)(c) of the RMA, AT proposes an extended lapse period of 15 years for implementation of the proposed designation.

11 INFORMATION REQUIRED TO BE INCLUDED IN THIS NOTICE BY THE AUCKLAND UNITARY PLAN OR ANY REGULATION MADE UNDER THE RESOURCE MANAGEMENT ACT 1991:

AT attaches the following information required to be included in this notice by the Auckland Unitary Plan, or any regulations made under the Resource Management Act 1991.

- Volume 2: Assessment of Effects on the Environment
- Volume 3: Indicative Design and Designation Drawings
- Volume 4: Supporting Technical Assessment Reports

Signed on behalf of AT

Jane Small
Group Manager PMO, Strategic Programmes & Property pursuant to authority delegated by Auckland Transport

13 December 2022

Attachment A – Designation Plans

Attachment B – Schedule of Directly Affected Property

Attachment C – Proposed Conditions for the Designation

Attachment A – Designation Plans

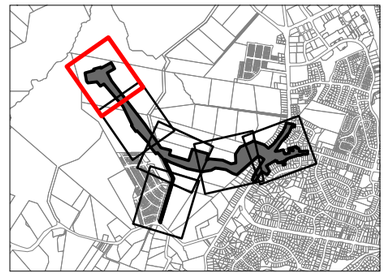
801373

Designation Plan

Land to be Designated
North-South Arterial Corridor

Legend

- Proposed Designation
- Parcel Boundary
- 507729 Property ID



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Revision	Author	Verified	Approved	Date
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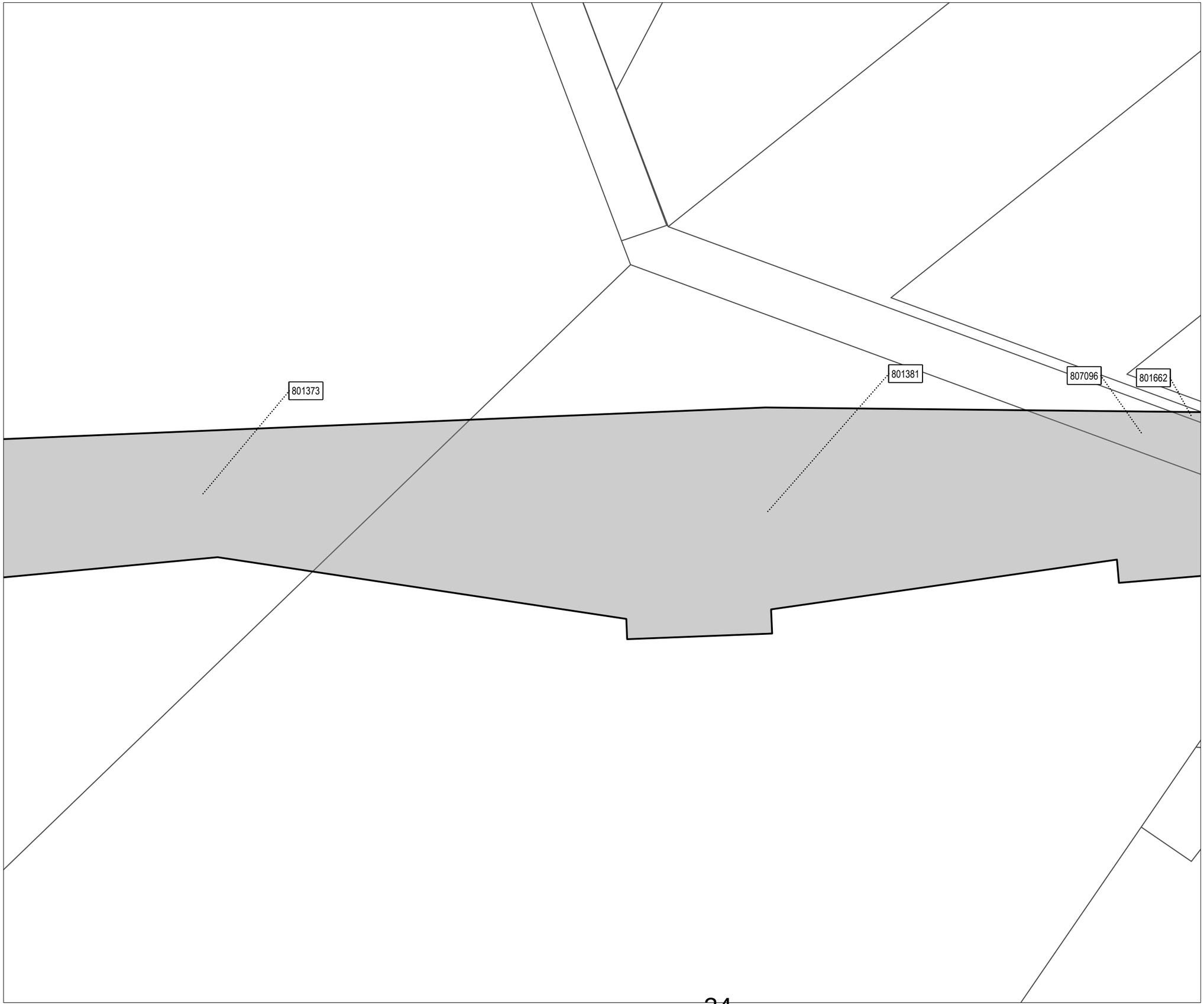
Client: **Auckland Transport / Waka Kotahi**

Discipline: **GIS**

Project: **Redhills Arterial Transport Network**

Drawing No: **SGA-PA-NW-037**
Sheet No : 1 of 6



Designation Plan

Land to be Designated
North-South Arterial Corridor

Legend

- Proposed Designation
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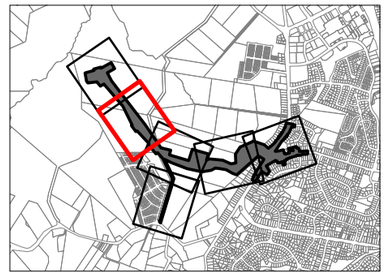

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Client: **Auckland Transport / Waka Kotahi**	Discipline: **GIS**
Project: **Redhills Arterial Transport Network**	Drawing No: **SGA-PA-NW-037** Sheet No : 2 of 6

807096
801664
801666
801667
801381
807102
807107
807105
801662

Designation Plan

Land to be Designated
North-South Arterial Corridor

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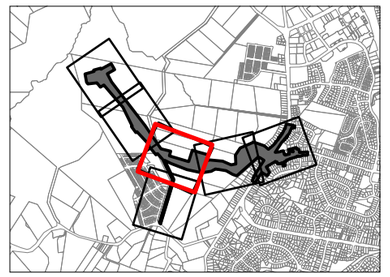

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Revision	Author	Verified	Approved	Date
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N

Client: **Auckland Transport / Waka Kotahi**

Discipline: **GIS**

Project: **Redhills Arterial Transport Network**

Drawing No: **SGA-PA-NW-037**
Sheet No : 3 of 6

Date Exported: 29/11/2022 3:47

Name of Map: SGA-PA-NW-37-NOR1-Redhills

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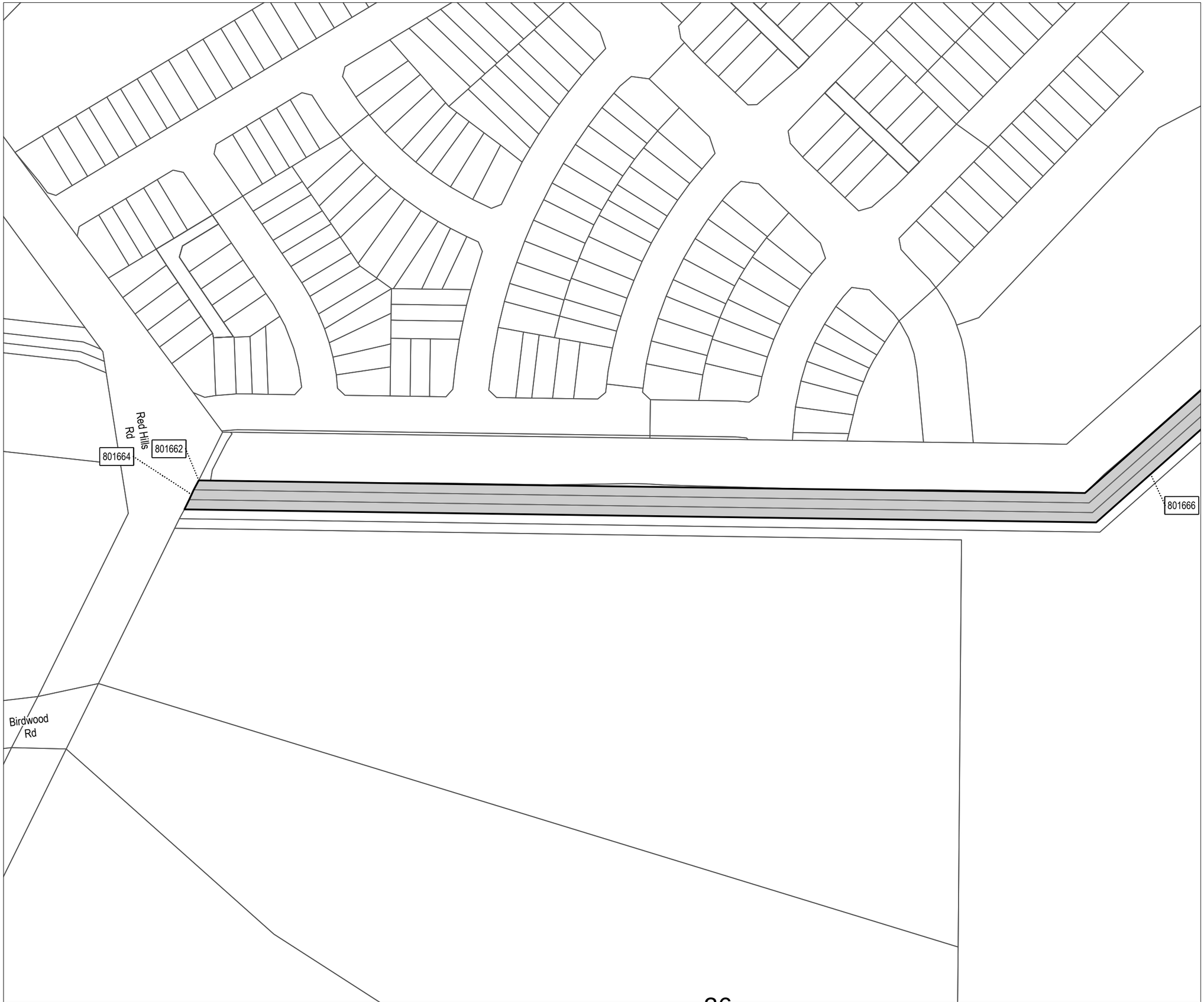

Designation Plan

Land to be Designated
North-South Arterial Corridor

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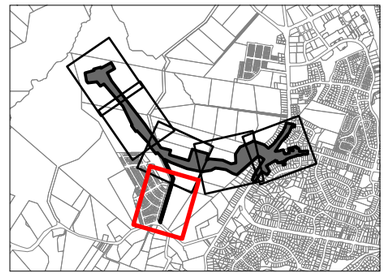

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Revision	Author	Verified	Approved	Date
1	BAP	RJL	RE	27/11/2022

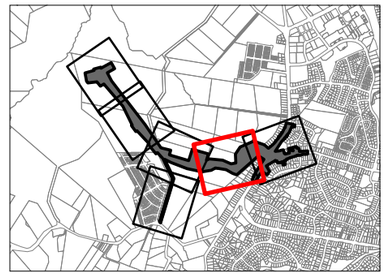
Client:	Discipline:
Auckland Transport / Waka Kotahi	GIS
Project: Redhills Arterial Transport Network	**Drawing No:** SGA-PA-NW-037 Sheet No : 4 of 6

Designation Plan

Land to be Designated
North-South Arterial Corridor

Legend

- Proposed Designation
- Parcel Boundary
- 507729 Property ID



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1	BAP	RJL	RE	27/11/2022

N

Client: **Auckland Transport / Waka Kotahi**	Discipline: **GIS**
Project: **Redhills Arterial Transport Network**	Drawing No: **SGA-PA-NW-037** Sheet No : 5 of 6

Designation Plan

Land to be Designated
North-South Arterial Corridor

Legend

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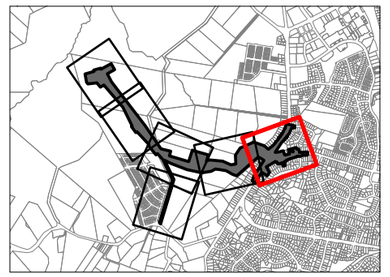
- 507729 Property ID



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Client: **Auckland Transport / Waka Kotahi**

Discipline: **GIS**

Project: **Redhills Arterial Transport Network**

Drawing No: **SGA-PA-NW-037**
Sheet No : 6 of 6

WAKA KOTAHI NZ TRANSPORT AGENCY

New Zealand Government

Attachment B – Schedule of Directly Affected Property

Property ID	Address	Title Number	Legal Description	Approx. land to be designated (m^2)	Sheet Number
801373	Red Hills Road	NA38A/1234	Lot 4 DP 6627	42467	2
801381	Red Hills Road	NA38A/1233	Lot 3 DP 6627	26522	3
801662	29 Red Hills Road	NA26B/1378	Lot 9 DP 65390	2824	3
801664	27 Red Hills Road	NA26B/1377	Lot 8 DP 65390	2753	3
801666	25 Red Hills Road	NA26B/1376	Lot 7 DP 65390	19178	5
801667	23 Red Hills Road	NA26B/1373	Lot 4 DP 65390	20489	5
801764	456A Don Buck Road	NA26B/1374	Lot 5 DP 65390	13783	6
801794	458 Don Buck Road	NA26B/1375	Lot 6 DP 65390	20774	6
801806	458A Don Buck Road	NA78D/125	Lot 10 DP 65390	17234	6
801836	436 Don Buck Road	NA8A/228	Lot 11 DP 41037	24	5
801840	488B Don Buck Road	NA19D/54	Lot 9 DP 62338	416	6
801849	438 Don Buck Road	NA3D/477	Lot 10 DP 41037	25	5
801850	434 Don Buck Road	NA1841/31	Lot 12 DP 41037	43	5
801857	440 Don Buck Road	NA68A/409	Lot 1 DP 118372	122	6
801857	1/440 Don Buck Road	NA80A/637	Lot 1 DP 118372	122	6
801861	442 Don Buck Road	NA3A/967	Lot 8 DP 41037	128	6
801869	446 Don Buck Road	NA11A/250	Lot 6 DP 41037	140	6
801871	444 Don Buck Road	NA98C/123	Lot 1 DP 163337	110	6
801873	444 Don Buck Road	NA98C/123	Lot 3 DP 163337	25	6
801873	444A Don Buck Road	NA98C/124	Lot 3 DP 163337	25	6
801875	450A Don Buck Road	91493	Lot 2 DP 322871	24	6
801877	448 Don Buck Road	391980	Lot 1 DP 398210	118	6
801881	448 Don Buck Road	391980	Lot 3 DP 398210	27	6
801881	448A Don Buck Road	391981	Lot 3 DP 398210	27	6
801882	450 Don Buck Road	91492	Lot 1 DP 322871	115	6
801883	1/452 Don Buck Road	NA114D/1	Lot 3 DP 41037	106	6
801883	452 Don Buck Road	NA87B/118	Lot 3 DP 41037	106	6
801892	454 Don Buck Road	NA3D/476	Lot 2 DP 41037	46	6
801895	456 Don Buck Road	NA1631/50	Lot 1 DP 41037	1212	6
801901	460 Don Buck Road	NA13A/839	Lot 25 DP 44480	1530	6
801905	443 Don Buck Road	NA4D/1360	Lot 11 DP 48682	891	6
801908	445 Don Buck Road	NA5D/456	Lot 12 DP 48682	817	6
801910	1 Royal Road	NA8A/91	Lot 13 DP 48014	809	6
801914	488A Don Buck Road	NA19D/55	Lot 10 DP 62338	3386	6
801927	2 Royal Road	NA9A/181	Lot 1 DP 47947	797	6
801931	468 Don Buck Road	NA13A/838	Lot 21 DP 44480	37	6
801939	4 Royal Road	NA9A/182	Lot 2 DP 47947	810	6
801941	470 Don Buck Road	NA13D/1233	Lot 20 DP 44480	211	6
801944	472 Don Buck Road	NA13A/837	Lot 19 DP 44480	168	6
801948	6 Royal Road	NA3C/512	Lot 3 DP 47947	810	6
801949	13 Royal Road	NA16D/1340	Lot 19 DP 48014	248	6
801954	474 Don Buck Road	NA13A/836	Lot 18 DP 44480	121	6
801958	8 Royal Road	NA1C/870	Lot 4 DP 47947	810	6
801959	15 Royal Road	NA16D/762	Lot 20 DP 48014	454	6
801965	478 Don Buck Road	NA13A/834	Lot 16 DP 44480	39	6
801966	476 Don Buck Road	NA128A/558	Lot 1 DP 199524	98	6

801967	10 Royal Road	NA24D/472	Lot 5 DP 47947	810	6
801970	17 Royal Road	NA12B/970	Lot 21 DP 48014	433	6
801974	480 Don Buck Road	NA9A/201	Lot 15 DP 44480	62	6
801977	449 Don Buck Road	NA55B/569	Lot 1 DP 84282	102	6
801981	12 Royal Road	NA35C/1087	Lot 6 DP 47947	810	6
801988	19 Royal Road	NA17D/393	Lot 22 DP 48014	890	6
802004	453 Don Buck Road	NA50C/1360	Lot 8 DP 84282	17	6
802005	21 Royal Road	NA5D/713	Lot 23 DP 48014	314	6
802009	16 Royal Road	NA26A/1258	Lot 7 DP 47947	197	6
802012	455 Don Buck Road	NA51D/1056	Lot 9 DP 84282	29	6
802014	23 Royal Road	NA57C/930	Lot 24 DP 48014	223	6
802014	1/23 Royal Road	NA57C/931	Lot 24 DP 48014	223	6
802019	18 Royal Road	NA7A/234	Lot 8 DP 47947	178	6
802025	25 Royal Road	NA119D/593	Lot 25 DP 48014	179	6
802032	20 Royal Road	NA8D/1341	Lot 9 DP 47947	810	6
802035	27 Royal Road	NA22D/913	Lot 1 DP 67032	153	6
802047	22A Royal Road	793404	Lot 2 DP 513444	58	6
802048	27A Royal Road	NA22D/914	Lot 2 DP 67032	30	6
802050	22 Royal Road	793403	Lot 1 DP 513444	380	6
802069	29 Royal Road	NA1A/371	Lot 26 DP 48014	143	6
802072	24 Royal Road	NA9A/184	Lot 11 DP 47947	810	6
802089	26 Royal Road	NA9A/185	Lot 12 DP 47947	811	6
802091	31 Royal Road	NA18B/326	Lot 27 DP 48014	125	6
802109	33 Royal Road	NA18B/327	Lot 41 DP 48682	48	6
802110	1/28 Royal Road	NA70C/985	Lot 13 DP 47947	528	6
802110	2/28 Royal Road	NA73A/575	Lot 13 DP 47947	528	6
802137	30 Royal Road	NA9A/187	Lot 14 DP 47947	101	6
802151	32 Royal Road	NA9A/188	Lot 15 DP 47947	102	6
802162	34 Royal Road	NA4A/961	Lot 16 DP 47947	102	6
802177	2 Beauchamp Drive	NA9A/189	Lot 17 DP 47947	87	6
807096	Red Hills Road	946094	Lot 8 DP 543024	2242	3
807102	120 Puwha Street	1045550	Lot 504 DP 571357	152	3
807105	Red Hills Road	946095	Lot 9 DP 543024	595	3
807107			Part DP 2088	5	3
807165	457 Don Buck Road	NA50B/967	Lot 10 DP 84282	47	6

Attachment C – Proposed Conditions for the Designation

Abbreviations and definitions

Acronym/Term	Definition
Activity sensitive to noise	Any dwelling, visitor accommodation, boarding house, marae, papakāinga, integrated residential development, retirement village, supported residential care, care centre, lecture theatre in a tertiary education facility, classroom in an education facility and healthcare facility with an overnight stay facility.
ARI	Annual Recurrence Interval
Average increase in flood hazard	Flow depth times velocity.
AUP	Auckland Unitary Plan.
BPO or Best Practicable Option	Has the same meaning as in section 2 of the RMA 1991.
CEMP	Construction Environmental Management Plan
Certification	Confirmation from the Manager that a plan or material change to a plan or CNVMP Schedule plan has been prepared in accordance with the condition to which it relates. A management plan shall be deemed certified: (a) where the Requiring Authority has received written confirmation from Council that a management plan is certified; or (b) five working days from the submission of a management plan where no written confirmation of certification has been received. A material change to a management plan or CNVMP Schedule shall be deemed certified: (a) where the Requiring Authority has received written confirmation from Council that the material change to the management plan is certified; or (b) ten working days from the submission of the material change to the management plan where no written confirmation of certification has been received. (c) five working days from the submission of the material change to a CNVMP Schedule where no written confirmation of certification has been received.
CNVMP	Construction Noise and Vibration Management Plan
CNVMP Schedule or Schedule	A schedule to the CNVMP
Completion of Construction	When construction of the Project (or part of the Project) is complete and it is available for use.
Confirmed Biodiversity Areas	Areas recorded in the Identified Biodiversity Area Schedule where the ecological values and effects have been confirmed through the ecological survey under Condition 20**Error! Reference source not found.**.
Construction Works	Activities undertaken to construct the Project excluding Enabling Works.
Council	Auckland Council
CTMP	Construction Traffic Management Plan
EMP	Ecological Management Plan
EIANZ Guidelines	Ecological Impact Assessment: EIANZ guidelines for use in New Zealand: terrestrial and freshwater ecosystems, second edition, dated May 2018.
Enabling works	Includes, but is not limited to, the following and similar activities: • geotechnical investigations (including trial embankments) • archaeological site investigations • formation of access for geotechnical investigations

Acronym/Term	Definition
	• establishment of site yards, site entrances and fencing • constructing and sealing site access roads • demolition or removal of buildings and structures • relocation of services • establishment of mitigation measures (such as erosion and sediment control measures, temporary noise walls, earth bunds and planting)
Existing authorised habitable floor	The floor level of any room (floor) in a residential building which is authorised by building consent and exists at the time the outline plan is submitted, excluding a laundry, bathroom, toilet or any room used solely as an entrance hall, passageway or garage.
Flood prone area	A potential ponding area that relies on a single culvert for drainage and does not have an overland flow path.
HNZPT	Heritage New Zealand Pouhere Taonga.
HNZPTA	Heritage New Zealand Pouhere Taonga Act 2014
Identified Biodiversity Area	Means an area or areas of ecological value where the Project ecologist has identified that the project will potentially have a moderate or greater level of ecological effect, prior to implementation of impact management measures, as determined in accordance with the EIANZ guidelines.
Mana whenua	Mana Whenua as referred to in the conditions is considered to be (as a minimum but not limited to) the following (in no particular order), who at the time of Notice of Requirement expressed a desire to be involved in the Project: • Te Kawerau a Maki • Ngāti Whātua o Kaipara • Te Ākitai Waiohua • Ngāti Whanaunga **Note**: Other iwi and hapu not identified above may have an interest in the Project and should be consulted.
Manager	The Manager – Resource Consents of the Auckland Council, or authorised delegate.
Maximum Probable Development	Design case for consideration of future flows allowing for development within a catchment that takes into account the maximum impervious surface limits of the current zone or, if the land is zoned Future Urban in the Auckland Unitary Plan, the probable level of development arising from zone changes.
Network Utility Operator	Has the same meaning as set out in section 166 of the RMA.
NOR	Notice of Requirement
NZAA	New Zealand Archaeological Association
Outline Plan	An outline plan prepared in accordance with section 176A of the RMA.
Pre-Project development	Existing site condition prior to the Project (including existing buildings and roadways).
Post-Project development	Site condition after the Project has been completed (including existing and new buildings and roadways).

Acronym/Term	Definition
Project Liaison Person	The person or persons appointed for the duration of the Project's Construction Works to be the main point of contact for persons wanting information about the Project or affected by the Construction Works.
Protected Premises and Facilities (PPF)	Protected Premises and Facilities as defined in New Zealand Standard NZS 6806:2010: *Acoustics – Road-traffic noise – New and altered roads.*
Requiring Authority	Has the same meaning as section 166 of the RMA and, for this Designation is Auckland Transport.
RMA	Resource Management Act (1991)
SCEMP	Stakeholder Communication and Engagement Management Plan
Stage of Work	Any physical works that require the development of an Outline Plan.
Start of Construction	The time when Construction Works (excluding Enabling Works) start.
Suitably Qualified Person	A person (or persons) person who can provide sufficient evidence to demonstrate their suitability and competence.
ULDMP	Urban and Landscape Design Management Plan

Proposed Conditions for the Designation

No.	Condition
General Conditions	
1.	**Activity in General Accordance with Plans and Information** (a) Except as provided for in the conditions below, and subject to final design and Outline Plan(s), works within the designation shall be undertaken in general accordance with the following plans and information Project description and concept plan in schedule 1: (b) Where there is inconsistency between: (i) the documents listed in condition 1(a) above Project description and concept plan in schedule 1 and the requirements of the following conditions, the conditions shall prevail; (ii) the documents listed in condition 1(a) above Project description and concept plan in schedule 1, and the management plans under the conditions of the designation, the requirements of the management plans shall prevail.
2.	**Project Information** (a) A project website, or equivalent virtual information source, shall be established within 12 months of the date on which this designation is included in the AUP. All directly affected owners and occupiers shall be notified in writing once the website or equivalent information source has been established. The project website or virtual information source shall include these conditions and shall provide information on: (i) the status of the Project; (ii) anticipated construction timeframes; and (iii) contact details for enquiries. (iv) a subscription service to enable receipt of project updates by email; and (v) how to apply for consent for works in the designation under s176(1)(b) of the RMA. (b) At the start of detailed design for a Stage of Work, the project website or virtual information source shall be updated to provide information on the likely date for Start of Construction, and any staging of works.
3.	**Designation Review** (a) The Requiring Authority shall within 6 months of Completion of Construction or A as soon as otherwise practicable following Completion of Construction the Requiring Authority shall:

No.	Condition
	(i) review the extent of the designation to identify any areas of designated land that it no longer requires for the on-going operation, maintenance or mitigation of effects of the Project; and (ii) give notice to Auckland Council in accordance with section 182 of the RMA for the removal of those parts of the designation identified above.
4.	**Lapse** (a) In accordance with section 184(1)(c) of the RMA, this designation shall lapse if not given effect to within 15 years from the date on which it is included in the AUP.
5.	**Network Utility Operators (Section 176 Approval)** (a) Prior to the start of Construction Works, Network Utility Operators with existing infrastructure located within the designation will not require written consent under section 176 of the RMA for the following activities: (i) operation, maintenance and urgent repair works; (ii) minor renewal works to existing network utilities necessary for the on-going provision or security of supply of network utility operations; (iii) minor works such as new service connections; and (iv) the upgrade and replacement of existing network utilities in the same location with the same or similar effects as the existing utility. (b) To the extent that a record of written approval is required for the activities listed above, this condition shall constitute written approval.
Pre-construction Conditions	
6.	**Outline Plan** (a) An Outline Plan (or Plans) shall be prepared in accordance with section 176A of the RMA. (b) Outline Plans (or Plan) may be submitted in parts or in stages to address particular activities (e.g. design or construction aspects), or a Stage of Work of the Project. (c) Outline Plans shall include any management plan or plans that are relevant to the management of effects of those activities or Stage of Work, which may include: (i) Construction Environmental Management Plan; (ii) Construction Traffic Management Plan; (iii) Construction Noise and Vibration Management Plan; (iv) Urban and Landscape Design Management Plan; (v) Ecological Management Plan (vi) Tree Management Plan
7.	**Management Plans** (a) Any management plan shall: (i) Be prepared and implemented in accordance with the relevant management plan condition; (ii) Be prepared by a Suitably Qualified Person(s); (iii) Include sufficient detail relating to the management of effects associated with the relevant activities and/or Stage of Work to which it relates. (iv) Summarise comments received from Mana Whenua and other stakeholders as required by the relevant management plan condition, along with a summary of where comments have: a. Been incorporated; and b. Where not incorporated, the reasons why. (v) Be submitted as part of an Outline Plan pursuant to s176A of the RMA, with the exception of SCEMPs CEMPs, CTMPs and CNVMP Schedules. (vi) Once finalised, uploaded to the Project website or equivalent virtual information source. (b) Any management plan developed in accordance with Condition 7 may: (i) Be submitted in parts or in stages to address particular activities (e.g. design or construction aspects) a Stage of Work of the Project, or to address specific activities authorised by the designation. (ii) Except for material changes, be amended to reflect any changes in design, construction methods or management of effects without further process. (iii) If there is a material change required to a management plan which has been submitted with an Outline Plan, the revised part of the plan shall be submitted to the Council as an update

No.	Condition
	to the Outline Plan or for Certification as soon as practicable following identification of the need for a revision; (c) Any material changes to the SCEMPs, CEMPs or CTMPs are to be submitted to the Council for information.
8.	**Cultural Advisory Report** (a) At least six (6) months prior to the start of detailed design for a Stage of Work, Mana Whenua shall be invited to prepare a Cultural Advisory Report for the Project. (b) The objective of the Cultural Advisory Report is to assist in understanding and identifying Ngā Taonga Tuku Iho ('treasures handed down by our ancestors') affected by the Project, to inform their management and protection. To achieve the objective, the Requiring Authority shall invite Mana Whenua to prepare a Cultural Advisory Report that: (i) Identifies the cultural sites, landscapes and values that have the potential to be affected by the construction and operation of the Project; (ii) Sets out the desired outcomes for management of potential effects on cultural sites, landscapes and values; (iii) Identifies traditional cultural practices within the area that may be impacted by the Project; (iv) Identifies opportunities for restoration and enhancement of identified cultural sites, landscapes and values within the Project area; (v) Taking into account the outcomes of (i) to (iv) above, identify cultural matters and principles that should be considered in the development of the Urban and Landscape Design Management Plan, Stakeholder and Communication and Engagement Management Plan, and the Cultural Monitoring Plan referred to in Condition 14. (vi) Identifies and (if possible) nominates traditional names along the Project alignment. Noting there may be formal statutory processes outside the project required in any decision-making. (c) The desired outcomes for management of potential effects on cultural sites, landscapes and values identified in the Cultural Advisory Report shall be discussed with Mana Whenua and those outcomes reflected in the relevant management plans where practicable. (d) Conditions 8(b) and (c) above will cease to apply if: (i) Mana Whenua have been invited to prepare a Cultural Advisory Report by a date at least 6 months prior to start of Construction Works; and (ii) Mana Whenua have not provided a Cultural Advisory Report within six months prior to start of Construction Works.
9.	**Urban and Landscape Design Management Plan (ULDMP)** (a) A ULDMP shall be prepared prior to the Start of Construction for a Stage of Work. (b) Mana Whenua shall be invited to participate in the development of the ULDMP(s) to provide input into relevant cultural landscape and design matters including how desired outcomes for management of potential effects on cultural sites, landscapes and values identified and discussed in accordance with Condition 8(c) may be reflected in the ULDMP. The objective of the ULDMP(s) is to: (i) Enable integration of the Project's permanent works into the surrounding landscape and urban context; and (ii) Ensure that the Project manages potential adverse landscape and visual effects as far as practicable and contributes to a quality urban environment. (c) The ULDMP shall be prepared in general accordance with: (i) Auckland Transport's Urban Roads and Streets Design Guide; (ii) Waka Kotahi Urban Design Guidelines: Bridging the Gap (2013) or any subsequent updated version; (iii) Waka Kotahi Landscape Guidelines (2013) or any subsequent updated version; (iv) Waka Kotahi P39 Standard Specification for Highway Landscape Treatments (2013) or any subsequent updated version; and (v) Auckland's Urban Ngahere (Forest) Strategy or any subsequent updated version. (d) To achieve the objective, the ULDMP(s) shall provide details of how the project: (i) Is designed to integrate with the adjacent urban (or proposed urban) and landscape context, including the surrounding existing or proposed topography, urban environment (i.e. centres and density of built form), natural environment, landscape character and open space zones;

No.	Condition
	(ii) Provides appropriate walking and cycling connectivity to, and interfaces with, existing or proposed adjacent land uses, public transport infrastructure and walking and cycling connections; (iii) Promotes inclusive access (where appropriate); and (iv) Promotes a sense of personal safety by aligning with best practice guidelines, such as: a. Crime Prevention Through Environmental Design (CPTED) principles; b. Safety in Design (SID) requirements; and c. Maintenance in Design (MID) requirements and anti-vandalism/anti-graffiti measures. (e) The ULDMP(s) shall include: (i) a concept plan – which depicts the overall landscape and urban design concept, and explain the rationale for the landscape and urban design proposals; (ii) developed design concepts, including principles for walking and cycling facilities and public transport; and (iii) landscape and urban design details – that cover the following: a. Road design – elements such as intersection form, carriageway gradient and associated earthworks contouring including cut and fill batters and the interface with adjacent land uses, benching, spoil disposal sites, median width and treatment, roadside width and treatment; b. Roadside elements – such as lighting, fencing, wayfinding and signage; c. architectural and landscape treatment of all major structures, including bridges and retaining walls; d. Architectural and landscape treatment of noise barriers; e. Landscape treatment of permanent stormwater control wetlands and swales; f. Integration of passenger transport; g. Pedestrian and cycle facilities including paths, road crossings and dedicated pedestrian/ cycle bridges or underpasses; h. Re-instatement of construction and site compound areas, driveways, accessways and fences. (f) The ULDMP shall also include the following planting details and maintenance requirements: (i) planting design details including: a. identification of existing trees and vegetation that will be retained with reference to the Tree Management Plan. Where practicable, mature trees and native vegetation should be retained; b. street trees, shrubs and ground cover suitable for berms; c. treatment of fill slopes to integrate with adjacent land use, streams, riparian margins and open space zones; d. planting of stormwater wetlands; e. identification of vegetation to be retained and any planting requirements under Conditions 21 and 22; f. integration of any planting requirements required by conditions of any resource consents for the project; and g. re-instatement planting of construction and site compound areas as appropriate. (ii) a planting programme including the staging of planting in relation to the construction programme which shall, as far as practicable, include provision for planting within each planting season following completion of works in each Stage of Work; and (iii) detailed specifications relating to the following: a. weed control and clearance; b. pest animal management (to support plant establishment); c. ground preparation (top soiling and decompaction); d. mulching; and e. plant sourcing and planting, including hydroseeding and grassing, and use of eco-sourced species.
Advice note	**Advice Note:** *This designation is for the purpose of construction, operation and maintenance of a transport corridor and it is not for the specific purpose of "road widening". Therefore, it is not intended that the front yard definition in the Auckland Unitary Plan which applies a set back from a designation for road widening purposes applies to this designation. A set back is not required to manage effects between the designation boundary and any proposed adjacent sites or lots.*

No.	Condition
Specific Outline Plan Requirements	
10.	**Flood Hazard** (a) The Project shall be designed to achieve the following flood risk outcomes: (i) no increase in flood levels for existing authorised habitable floors that are already subject to flooding; (ii) no more than a 10% reduction in freeboard for existing authorised habitable floors; (iii) no increase of more than 50mm in flood level on land zoned for urban or future urban development where there is no existing habitable dwelling; (iv) no new flood prone areas; and (v) no more than a 10% average increase of flood hazard (defined as flow depth times velocity) for main access to authorised habitable dwellings existing at the time the Outline Plan is submitted. (b) Compliance with this condition shall be demonstrated in the Outline Plan, which shall include flood modelling of the pre-Project and post-Project 100 year ARI flood levels (for Maximum Probable Development land use and including climate change). (c) Where the above outcomes can be achieved through alternative measures outside of the designation such as flood stop banks, flood walls, raising existing authorised habitable floor level and new overland flow paths or varied through agreement with the relevant landowner, the Outline Plan shall include confirmation that any necessary landowner and statutory approvals have been obtained for that work or alternative outcome.
Construction Conditions	
11.	**Construction Environmental Management Plan (CEMP)** (a) A CEMP shall be prepared prior to the Start of Construction for a Stage of Work. (b) The objective of the CEMP is to set out the management procedures and construction methods to be undertaken to, avoid, remedy or mitigate any adverse effects associated with Construction Works as far as practicable. To achieve the objective, the CEMP shall include: (i) the roles and responsibilities of staff and contractors; (ii) details of the site or project manager and the Project Liaison Person, including their contact details (phone and email address); (iii) the Construction Works programmes and the staging approach, and the proposed hours of work; (iv) details of the proposed construction yards including temporary screening when adjacent to residential areas, site layouts (including construction yards), locations of refuelling activities and construction lighting; (v) methods for controlling dust and the removal of debris and demolition of construction materials from public roads or places; (vi) methods for providing for the health and safety of the general public; (vii) procedures for incident management; (viii)procedures for the refuelling and maintenance of plant and equipment to avoid discharges of fuels or lubricants to Watercourses; (ix) measures to address the storage of fuels, lubricants, hazardous and/or dangerous materials, along with contingency procedures to address emergency spill response(s) and clean up; (x) procedures for responding to complaints about Construction Works; and (xi) methods for amending and updating the CEMP as required. (c) Any CEMP prepared for a Stage of Work shall be submitted to Council for information at least ten working days before the Start of Construction for a Stage of Work.
12.	**Stakeholder and Communication and Engagement Management Plan (SCEMP)** (a) A SCEMP shall be prepared prior to the Start of Construction for a Stage of Work. The objective of the SCEMP is to identify how the public and stakeholders (including directly

No.	Condition
	affected and adjacent owners and occupiers of land) will be engaged communicated with throughout the Construction Works. To achieve the objective, the SCEMP shall include: (i) the contact details for the Project Liaison Person. These details shall be on the Project website, or equivalent virtual information source, and prominently displayed at the main entrance(s) to the site(s); (ii) the procedures for ensuring that there is a contact person available for the duration of Construction Works, for public enquiries or complaints about the Construction Works; (iii) methods for engaging with Mana Whenua, to be developed in consultation with Mana Whenua; (iv) a list of stakeholders, organisations (such as community facilities) and businesses and persons who will be engaged communicated with; (v) Identification of the properties whose owners will be engaged with; (vi) methods to communicate key project milestones and the proposed hours of construction activities including outside of normal working hours and on weekends and public holidays, to the parties identified in (iv) and (v) above; and surrounding businesses and residential communities; (vii) linkages and cross-references to communication and engagement methods set out in other conditions and management plans where relevant. (b) Any SCEMP prepared for a Stage of Work shall be submitted to Council for information ten working days prior to the Start of Construction for a Stage of Work.
13.	**Complaints Register** (a) At all times during Construction Works, a record of any complaints received about the Construction Works shall be maintained. The record shall include: (i) The date, time and nature of the complaint; (ii) The name, phone number and address of the complainant (unless the complainant wishes to remain anonymous); (iii) Measures taken to respond to the complaint (including a record of the response provided to the complainant) or confirmation of no action if deemed appropriate; (iv) The outcome of the investigation into the complaint; (v) Any other activities in the area, unrelated to the Project that may have contributed to the complaint, such as non-project construction, fires, traffic accidents or unusually dusty conditions generally. (b) A copy of the Complaints Register required by this condition shall be made available to the Manager upon request as soon as practicable after the request is made.
14.	**Cultural Monitoring Plan** (a) Prior to the start of Construction Works, a Cultural Monitoring Plan shall be prepared by a Suitably Qualified Person(s) identified in collaboration with Mana Whenua. (b) The objective of the Cultural Monitoring Plan is to identify methods for undertaking cultural monitoring to assist with management of any cultural effects during Construction works. (c) The Cultural Monitoring Plan shall include: (i) Requirements for formal dedication or cultural interpretation to be undertaken prior to start of Construction Works in areas identified as having significance to Mana Whenua; (ii) Requirements and protocols for cultural inductions for contractors and subcontractors; (iii) Identification of activities, sites and areas where cultural monitoring is required during particular Construction Works; (iv) Identification of personnel to undertake cultural monitoring, including any geographic definition of their responsibilities; and (v) Details of personnel to assist with management of any cultural effects identified during cultural monitoring, including implementation of the Accidental Discovery Protocol (d) If Enabling Works involving soil disturbance are undertaken prior to the start of Construction Works, an Enabling Works Cultural Monitoring Plan shall be prepared by a Suitably Qualified Person identified in collaboration with Mana Whenua. This plan may be prepared as a standalone Enabling Works Cultural Monitoring Plan or be included in the main Construction Works Cultural Monitoring Plan. **Advice Note:** *Where appropriate, the Cultural Monitoring Plan shall align with the requirements of other conditions of the designation and resource consents for the Project which require monitoring during Construction Works.*
15.	**Construction Traffic Management Plan (CTMP)**

<table>
<tr><th>No.</th><th>Condition</th></tr>
<tr><td></td><td>(a) A CTMP shall be prepared prior to the Start of Construction for a Stage of Work.
(b) The objective of the CTMP is to avoid, remedy or mitigate, as far as practicable, adverse construction traffic effects. To achieve this objective, the CTMP shall include:
(i) methods to manage the effects of temporary traffic management activities on traffic;
(ii) measures to ensure the safety of all transport users;
(iii) the estimated numbers, frequencies, routes and timing of traffic movements, including any specific non-working or non-movement hours to manage vehicular and pedestrian traffic near schools or to manage traffic congestion;
(iv) site access routes and access points for heavy vehicles, the size and location of parking areas for plant, construction vehicles and the vehicles of workers and visitors;
(v) identification of detour routes and other methods to ensure the safe management and maintenance of traffic flows, including pedestrians and cyclists, on existing roads;
(vi) methods to maintain vehicle access to property and/or private roads where practicable, or to provide alternative access arrangements when it will not be;
(vii) the management approach to loads on heavy vehicles, including covering loads of fine material, the use of wheel-wash facilities at site exit points and the timely removal of any material deposited or spilled on public roads;
(viii) methods that will be undertaken to communicate traffic management measures to affected road users (e.g. residents/public/stakeholders/emergency services);
(c) Any CTMP prepared for a Stage of Work shall be submitted to Council for information ten working days prior to the Start of Construction for a Stage of Work.</td></tr>
<tr><td>16.</td><td>Construction Noise Standards
(a) Construction noise shall be measured and assessed in accordance with NZS6803:1999 Acoustics – Construction Noise and shall comply with the noise standards set out in the following table as far as practicable:
Table 17.1: Construction noise standards
<table>
<tr><th>Day of week</th><th>Time period</th><th>$L_{Aeq(15min)}$</th><th>L_{AFmax}</th></tr>
<tr><td colspan="4">Occupied activity sensitive to noise</td></tr>
<tr><td>Weekday</td><td>0630h - 0730h
0730h - 1800h
1800h - 2000h
2000h - 0630h</td><td>55 dB
70 dB
65 dB
45 dB</td><td>75 dB
85 dB
80 dB
75 dB</td></tr>
<tr><td>Saturday</td><td>0630h - 0730h
0730h - 1800h
1800h - 2000h
2000h - 0630h</td><td>55 dB
70 dB
45 dB
45 dB</td><td>75 dB
85 dB
75 dB
75 dB</td></tr>
<tr><td>Sunday and Public Holidays</td><td>0630h - 0730h
0730h - 1800h
1800h - 2000h
2000h - 0630h</td><td>45 dB
55 dB
45 dB
45 dB</td><td>75 dB
85 dB
75 dB
75 dB</td></tr>
<tr><td colspan="4">Other occupied buildings</td></tr>
<tr><td>All</td><td>0730h – 1800h
1800h – 0730h</td><td>70 dB
75 dB</td><td></td></tr>
</table>
(b) Where compliance with the noise standards set out in Table [above] is not practicable, and unless otherwise provided for in the CNVMP as required by Condition 18c)(x), then the methodology in Condition 19 shall apply.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Condition</th></tr>
<tr><td>17.</td><td>
Construction Vibration Standards
(a) Construction vibration shall be measured in accordance with ISO 4866:2010 Mechanical vibration and shock – Vibration of fixed structures – Guidelines for the measurement of vibrations and evaluation of their effects on structures and shall comply with the vibration standards set out in the following table as far as practicable.
Table CNV2 Construction vibration criteria
<table>
<tr><th>Receiver</th><th>Details</th><th>Category A</th><th>Category B</th></tr>
<tr><td rowspan="2">Occupied Activities sensitive to noise</td><td>Night-time 2000h - 0630h</td><td>0.3mm/s ppv</td><td>2mm/s ppv</td></tr>
<tr><td>Daytime 0630h - 2000h</td><td>2mm/s ppv</td><td>5mm/s ppv</td></tr>
<tr><td>Other occupied buildings</td><td>Daytime 0630h - 2000h</td><td>2mm/s ppv</td><td>5mm/s ppv</td></tr>
<tr><td>All other buildings</td><td>At all other times</td><td colspan="2">Tables 1 and 3 of DIN4150-3:1999</td></tr>
</table>
*Category A criteria adopted from Rule E25.6.30.1 of the AUP
**Category B criteria based on DIN 4150-3:1999 building damage criteria for daytime
(b) Where compliance with the vibration standards set out in Table [above] is not practicable, and unless otherwise provided for in the CNVMP as required by Condition 18(c)(x), then the methodology in Condition 19 shall apply
</td></tr>
<tr><td>18.</td><td>
Construction Noise and Vibration Management Plan (CNVMP)
(a) A CNVMP shall be prepared by a Suitably Qualified Person prior to the Start of Construction for a Stage of Work.
(b) A CNVMP shall be implemented during the Stage of Work to which it relates.
(c) The objective of the CNVMP is to provide a framework for the development and implementation of the Best Practicable Option for the management of construction noise and vibration effects to achieve the construction noise and vibration standards set out in Conditions 16 and 17 to the extent practicable. To achieve this objective, the CNVMP shall be prepared in accordance with Annex E2 of the New Zealand Standard NZS6803:1999 'Acoustics – Construction Noise' (NZS6803:1999) and shall as a minimum, address the following:
i. Description of the works and anticipated equipment/processes;
ii. Hours of operation, including times and days when construction activities would occur;
iii. The construction noise and vibration standards for the project;
iv. Identification of receivers where noise and vibration standards apply;
v. A hierarchy of management and mitigation options, including any requirements to limit night works and works during other sensitive times, including Sundays and public holidays as far practicable and identification of the Best Practicable Option;
vi. Methods and frequency for monitoring and reporting on construction noise and vibration;
vii. Procedures for communication and engagement with nearby residents and stakeholders, including notification of proposed construction activities, the period of construction activities, and management of noise and vibration complaints.
viii. Contact details of the Project Liaison Person;
ix. Procedures for the regular training of the operators of construction equipment to minimise noise and vibration as well as expected construction site behaviours for all workers;
x. Identification of areas where compliance with the noise [Condition 16] and/or vibration standards [Condition 17 Category A or Category B] will not be practicable and the specific management controls to be implemented and consultation requirements with owners and occupiers of affected sites.
xi. Procedures and requirements for the preparation of a Schedule to the CNVMP (Schedule) for those areas where compliance with the noise [Condition 16] and/or vibration standards [Condition 17 Category B] will not be practicable and where
</td></tr>
</table>

No.	Condition
	sufficient information is not available at the time of the CNVMP to determine the area specific management controls Condition 18 (c)(x). xii. Procedures for: A. communicating with affected receivers, where measured or predicted vibration from construction activities exceeds the vibration criteria of Condition 17; B. assessing, mitigating and monitoring vibration where measured or predicted vibration from construction activities exceeds the Category AB vibration criteria of Condition 17, including the requirement to undertake building condition surveys before and after works to determine whether any damage has occurred as a result of construction vibration; and xiii. Requirements for review and update of the CNVMP
19.	**Schedule to a CNVMP** (a) An updated Schedule to the CNVMP (Schedule) shall be prepared prior to the start of the construction to which it relates by a Suitably Qualified Person, in consultation with the owners and occupiers of sites subject to the Schedule, when: (i) Construction noise is either predicted or measured to exceed the noise standards in Condition 16, except where the exceedance of the L_{Aeq} criteria is no greater than 5 decibels and does not exceed: A. 0630 – 2000: 2 period of up to 2 consecutive weeks in any 2 months, or B. 2000 - 0630: 1 period of up to 2 consecutive nights in any 10 days. (ii) Construction vibration is either predicted or measured to exceed the Category B standard at the receivers in Condition 17. (b) The objective of the Schedule is to set out the Best Practicable Option measures to manage for the management of noise and/or vibration effects of the construction activity beyond those measures set out in the CNVMP. The Schedule shall include details such as: (i) Construction activity location, start and finish dates; (ii) The nearest neighbours to the construction activity; (iii) The predicted noise and/or vibration level for all receivers where the levels are predicted or measured to exceed the applicable standards and predicted duration of the exceedance; (iv) The proposed mitigation options that have been selected, and the options that have been discounted as being impracticable and the reasons why; (v) The consultation undertaken with owners and occupiers of sites subject to the Schedule, and how consultation has and has not been taken into account; and proposed communications with neighbours. (vi) Location, times and types of monitoring; (c) The Schedule shall be submitted to the Manager Council for certification at least 5 working days (except in unforeseen circumstances) in advance of Construction Works that are covered by the scope of the Schedule and shall form part of the CNVMP. (d) Where material changes are made to a Schedule required by this condition, the Requiring Authority shall consult the owners and/or occupiers of sites subject to the Schedule prior to submitting the amended Schedule to the Manager for certification in accordance with (c) above. The amended Schedule shall document the consultation undertaken with those owners and occupiers, and how consultation outcomes have and have not been taken into account.
Advice note	***Accidental Discoveries*** ***Advice Note:*** *The Requiring Authority is advised of the requirements of Rule E11.6.1 of the AUP for "Accidental Discovery" as they relate to both contaminated soils and heritage items.* *The requirements for accidental discoveries of heritage items are set out in Rule E11.6.1 of the AUP [and in the Waka Kotahi Minimum Standard P45 Accidental Archaeological Discovery Specification, or any subsequent version].*
20.	**Pre-Construction Ecological Survey**

No.	Condition
	(a) At the start of detailed design for a Stage of Work, an updated ecological survey shall be undertaken by a Suitably Qualified Person. The purpose of the survey is to inform the detailed design of ecological management plan by: (i) Confirming whether the species of value within the Identified Biodiversity Areas recorded in the *Identified Biodiversity Area Schedule 2* are still present; (ii) Confirming whether the project will or may have a moderate or greater level of ecological effect on ecological species of value, prior to implementation of impact management measures, as determined in accordance with the EIANZ guidelines. (b) If the ecological survey in (a) above confirms the presence of ecological features of value in accordance with condition 20a)(i) and that effects are likely in accordance with condition 20(a)(ii) then an Ecological Management Plan (or Plans) shall be prepared in accordance with Condition 21 for these areas (Confirmed Biodiversity Areas).
21.	**Ecological Management Plan (EMP)** (a) An EMP shall be prepared for any Confirmed Biodiversity Areas (confirmed through Condition 20) prior to the Start of Construction for a Stage of Work. The objective of the EMP is to minimise effects of the Project on the ecological features of value of Confirmed Biodiversity Areas as far as practicable. The EMP shall set out the methods that will be used to achieve the objective which may include: (i) If an EMP is required in accordance with condition 20(b) for the presence of long tail bats: a. Measures to minimise as far as practicable, disturbance from construction activities within the vicinity of any active long tail bat roosts (including maternity) that are discovered through survey until such roosts are confirmed to be vacant of bats. b. How the timing of any construction work in the vicinity of any maternity long tail bat roosts will be limited to outside the bat maternity period (between December and March) where reasonably practicable; c. Details of areas where vegetation is to be retained where practicable for the purposes of the connectivity of long tail bats; d. Details of how bat connectivity will be provided and maintained (e.g. through the presence of suitable indigenous or exotic trees or artificial alternatives). e. Details of where opportunities for advance restoration / mitigation planting have previously been identified and implemented. f. Where mitigation to minimise effects is not practicable, details of any offsetting proposed. (b) The EMP shall be consistent with any ecological management measures to be undertaken in compliance with conditions of any regional resource consents granted for the Project.
Advice note	***Advice Note:*** *Depending on the potential effects of the Project, the regional consents for the Project may include the following monitoring and management plans:* *(i) Stream and/or wetland restoration plans;* *(ii) Vegetation restoration plans; and* *(iii) Fauna management plans (eg avifauna, herpetofauna, bats).*
22.	**Tree Management Plan** (a) Prior to the Start of Construction for a Stage of Work, a Tree Management Plan shall be prepared. (b) The objective of the Tree Management Plan is to avoid, remedy or mitigate effects of construction activities on trees identified as protected or notable in the Auckland Unitary Plan. (c) The Tree Management Plan shall: (i) confirm the trees that will be affected by the project work and are identified as protected or notable in the Auckland Unitary Plan; and (ii) demonstrate how the design and location of project works has avoided, remedied or mitigated any effects on any tree identified in (i) above. This may include: A. planting to replace trees that require removal (with reference to the ULDMP planting design details in Condition 9); B. tree protection zones and tree protection measures such as protective fencing, ground protection and physical protection of roots, trunks and branches; and

No.	Condition
	C. methods for work within the rootzone of trees that are to be retained in line with accepted arboricultural standards. (iii) demonstrate how the tree management measures (outlined in A – C above) are consistent with conditions of any resource consents granted for the project in relation to managing construction effects on trees.
Operational Conditions	
23.	**Low Noise Road Surface** (a) Asphaltic concrete surfacing (or equivalent low noise road surface) shall be implemented within 12 months of Completion of Construction of the project. (b) Any future resurfacing works of the Project shall be undertaken in accordance with the Auckland Transport Reseal Guidelines, Asset Management and Systems 2013 or any updated version and asphaltic concrete surfacing (or equivalent low noise road surface) shall be implemented where: (i) The volume of traffic exceeds 10,000 vehicles per day; or (ii) The road is subject to high wear and tear (such as cul de sac heads, roundabouts and main road intersections); or (iii) It is in an industrial or commercial area where there is a high concentration of truck traffic; or (iv) It is subject to high usage by pedestrians, such as town centres, hospitals, shopping centres and schools. (c) Prior to commencing any future resurfacing works, the Requiring Authority shall advise the Manager if any of the triggers in Condition 23(b)(i) – (iv) are not met by the road or a section of it and therefore where the application of asphaltic concrete surfacing (or equivalent low noise road surface) is no longer required on the road or a section of it. Such advice shall also indicate when any resealing is to occur.
24.	**Traffic Noise** For the purposes of Conditions 25 to 37: (a) Building-Modification Mitigation – has the same meaning as in NZS 6806; (b) Design year has the same meaning as in NZS 6806; (c) Detailed Mitigation Options – means the fully detailed design of the Selected Mitigation Options, with all practical issues addressed; (d) Habitable Space – has the same meaning as in NZS 6806; (e) Identified Noise Criteria Category – means the Noise Criteria Category for a PPF identified in *Schedule 3: Identified PPFs Noise Criteria Categories*; (f) Mitigation – has the same meaning as in NZS 6806:2010 Acoustics – Road-traffic noise – New and altered roads; (g) Noise Criteria Categories – means the groups of preference for sound levels established in accordance with NZS 6806 when determining the Best Practicable Option for noise mitigation (i.e. Categories A, B and C); (h) NZS 6806 – means New Zealand Standard NZS 6806:2010 Acoustics – Road-traffic noise – New and altered roads; (i) Protected Premises and Facilities (PPFs) – means only the premises and facilities identified in green, orange or red in *Schedule 3: PPFs Noise Criteria Categories*; (j) Selected Mitigation Options – means the preferred mitigation option resulting from a Best Practicable Option assessment undertaken in accordance with NZS 6806; and (k) Structural Mitigation – has the same meaning as in NZS 6806.
25.	The Noise Criteria Categories identified in *Schedule 3: PPFs Noise Criteria Categories* at each of the PPFs shall be achieved where practicable and subject to Conditions 25 to 37 (all traffic noise conditions).

No.	Condition
	Achievement of the Noise Criteria Categories for PPFs shall be by reference to a traffic forecast for a high growth scenario in a design year at least 10 years after the programmed opening of the Project.
26.	As part of the detailed design of the Project, a Suitably Qualified Person shall determine the Selected Mitigation Options for the PPFs identified on *Schedule* 3*: PPFs Noise Criteria Categories.*
27.	Prior to construction of the Project, a Suitably Qualified Person shall develop the Detailed Mitigation Options for the PPFs identified in *Schedule 3: PPFs Noise Criteria Categories*, taking into account the Selected Mitigation Options.
28.	If the Detailed Mitigation Options would result in the Identified Noise Criteria Category changing to a less stringent Category, e.g. from Category A to B or Category B to C, at any relevant PPF, a Suitably Qualified Person shall provide confirmation to the Manager that the Detailed Mitigation Option would be consistent with adopting the Best Practicable Option in accordance with NZS 6806 prior to implementation.
29.	The Detailed Mitigation Options shall be implemented prior to completion of construction of the Project, with the exception of any low-noise road surfaces, which shall be implemented within twelve months of completion of construction.
30.	Prior to the Start of Construction, a Suitably Qualified Person shall identify those PPFs which, following implementation of all the Detailed Mitigation Options, will not be Noise Criteria Categories A or B and where Building-Modification Mitigation might be required to achieve 40 dB $L_{Aeq(24h)}$ inside Habitable Spaces ('Category C Buildings').
31.	Prior to the Start of Construction in the vicinity of each Category C Building, the Requiring Authority shall write to the owner of the Category C Building requesting entry to assess the noise reduction performance of the existing building envelope. If the building owner agrees to entry within three months of the date of the Requiring Authority's letter, the Requiring Authority shall instruct a Suitably Qualified Person to visit the building and assess the noise reduction performance of the existing building envelope.
32.	For each Category C Building identified, the Requiring Authority is deemed to have complied with Condition 31 above if: (a) The Requiring Authority's Suitably Qualified Person has visited the building and assessed the noise reduction performance of the building envelope; or (b) The building owner agreed to entry, but the Requiring Authority could not gain entry for some reason (such as entry denied by a tenant); or (c) The building owner did not agree to entry within three of the date of the Requiring Authority's letter sent in accordance with Condition 31 above (including where the owner did not respond within that period); or (d) The building owner cannot, after reasonable enquiry, be found prior to completion of construction of the Project. If any of (b) to (d) above apply to a Category C Building, the Requiring Authority is not required to implement Building-Modification Mitigation to that building.
33.	Subject to Condition 32 above, within six months of the assessment undertaken in accordance with Conditions 31 and 32, the Requiring Authority shall write to the owner of each Category C Building advising: (a) If Building-Modification Mitigation is required to achieve 40 dB LAeq(24h) inside habitable spaces; and (b) The options available for Building-Modification Mitigation to the building, if required; and (c) That the owner has three months to decide whether to accept Building-Modification Mitigation to the building and to advise which option for Building-Modification Mitigation the owner prefers, if the Requiring Authority has advised that more than one option is available.
34.	Once an agreement on Building-Modification Mitigation is reached between the Requiring Authority and the owner of a Category C Building, the mitigation shall be implemented, including any third

No.	Condition
	party authorisations required, in a reasonable and practical timeframe agreed between the Requiring Authority and the owner.
35.	Subject to Condition 31, where Building-Modification Mitigation is required, the Requiring Authority is deemed to have complied with Condition 33 if: (a) The Requiring Authority has completed Building Modification Mitigation to the building; or (b) An alternative agreement for mitigation is reached between the Requiring Authority and the building owner; or (c) The building owner did not accept the Requiring Authority's offer to implement Building-Modification Mitigation within three months of the date of the Requiring Authority's letter sent in accordance with Condition 33 (including where the owner did not respond within that period); or (d) The building owner cannot, after reasonable enquiry, be found prior to completion of construction of the Project.
36.	The Detailed Mitigation Options shall be maintained so they retain their noise reduction performance as far as practicable
37.	The Noise Criteria Categories at the PPFs identified in *Schedule 3: Identified PPFs Noise Criteria Categories* do not need to be complied with where: (a) the PPF no longer exists; or (b) agreement of the landowner has been obtained confirming that the Noise Criteria Category level does not need to be met.

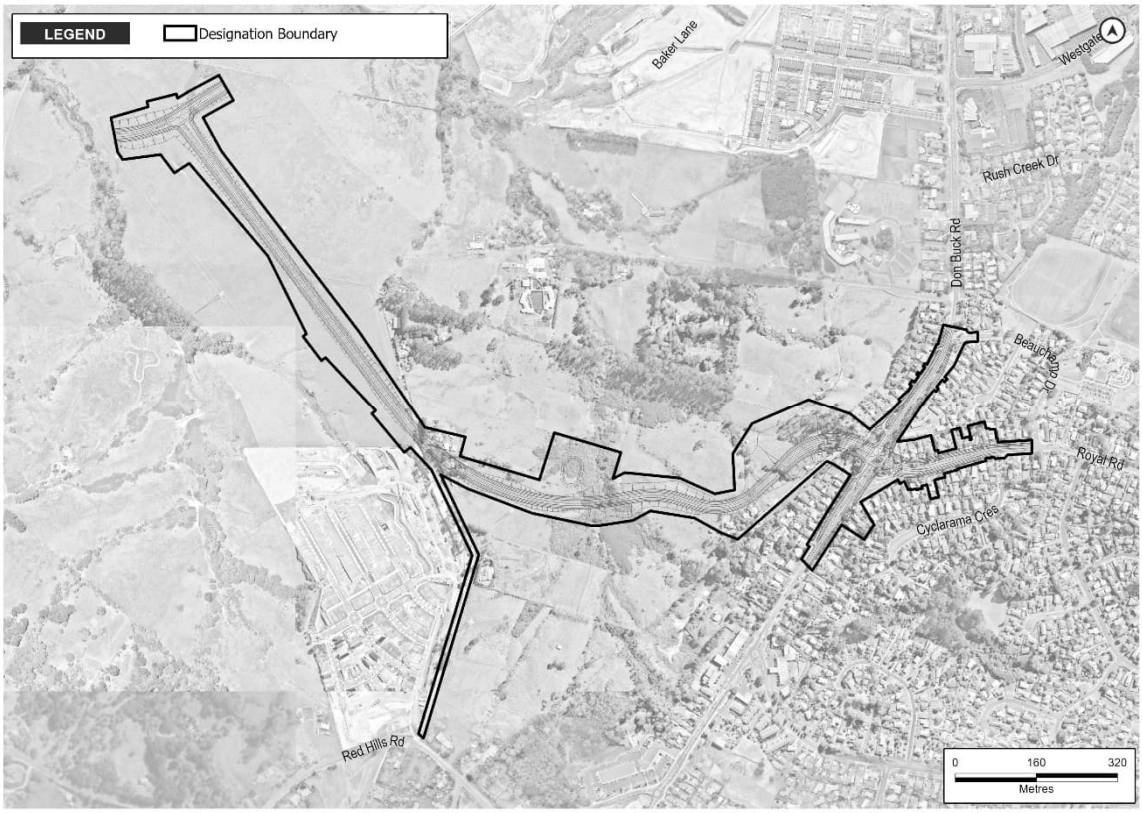
Schedule 1: General Accordance Plans and Information

Project Description – NOR 1 Redhills North-South Arterial Transport Corridor

The proposed work is the construction, operation, and maintenance of a transport corridor in Redhills, from Don Buck Road to the intersection with NORs 2a and 2c, including active transport facilities and associated infrastructure. The proposed work is shown in the following Concept Plan and includes:

(a) An upgraded and new transport corridor, including public transport and active transport facilities;
(b) Associated works including intersections, bridges, embankments, retaining, culverts, stormwater management systems;
(c) Changes to local roads, where the proposed work intersects with local roads; and
(d) Construction activities, including vegetation removal, construction compounds, laydown areas, bridge works area, construction traffic management and the re-grade of driveways.

NOR Concept Plan



Schedule 2: Identified Biodiversity Areas – Long Tailed Bats

Schedule 3: Identified PPFs Noise Criteria Categories

Address	New or Altered Road	Noise Criteria Category
40 Royal Road	Altered	Category A
20A Belleaire Court	Altered	Category A
32 Royal Road	Altered	Category A
432 Don Buck Road	Altered	Category A
428 Don Buck Road	Altered	Category A
434 Don Buck Road	Altered	Category A
492 Don Buck Road	Altered	Category A
38 Royal Road	Altered	Category A
2/47, Royal Road	Altered	Category A
30 Royal Road	Altered	Category A
20 Belleaire Court	Altered	Category A
31 Royal Road	Altered	Category A
36 Royal Road	Altered	Category A
490 Don Buck Road	Altered	Category A
480 Don Buck Road	Altered	Category A
27 Royal Road	Altered	Category A
37 Royal Road	Altered	Category A
29 Royal Road	Altered	Category A
25 Royal Road	Altered	Category A
51 Royal Road	Altered	Category A
461 Don Buck Road	Altered	Category A
459 Don Buck Road	Altered	Category A
34 Royal Road	Altered	Category A
440, Don Buck Road	Altered	Category A
423 Don Buck Road	Altered	Category A
486 Don Buck Road	Altered	Category A
40A Royal Road	Altered	Category A
2/14, Royal Road	Altered	Category A
44 Royal Road	Altered	Category A
463 Don Buck Road	Altered	Category A
16 Royal Road	Altered	Category A
23 Royal Road	Altered	Category A
49 Royal Road	Altered	Category A
131A Hobsonville Road	Altered	Category A
422 Don Buck Road	Altered	Category A
417 Don Buck Road	Altered	Category A
45 Royal Road	Altered	Category A
41 Royal Road	Altered	Category A
39 Royal Road	Altered	Category A
131 Hobsonville Road	Altered	Category A
478 Don Buck Road	Altered	Category A
19 Luckens Road	Altered	Category A
465 Don Buck Road	Altered	Category A
415 Don Buck Road	Altered	Category A
22A Trig Road	Altered	Category A
484 Don Buck Road	Altered	Category A
1, 33 Cyclarama Crescent	Altered	Category A

442 Don Buck Road	Altered	Category A
18 Belleaire Court	Altered	Category A
473 Don Buck Road	Altered	Category A
479 Don Buck Road	Altered	Category A
1, 53 Kemp Road	Altered	Category A
469 Don Buck Road	Altered	Category A
145A Hobsonville Road	Altered	Category A
21 Royal Road	Altered	Category A
34A Trig Road	Altered	Category A
407 Don Buck Road	Altered	Category A
476 Don Buck Road	Altered	Category A
2/14, Royal Road	Altered	Category A
457 Don Buck Road	Altered	Category A
444 Don Buck Road	Altered	Category A
31 Beauchamp Drive	Altered	Category A
147F Hobsonville Road	Altered	Category A
464 Don Buck Road	Altered	Category A
3 Royal Road	Altered	Category A
2 Cyclarama Crescent	Altered	Category A
448A Don Buck Road	Altered	Category A
420 Don Buck Road	Altered	Category A
490 Don Buck Road	Altered	Category A
431 Don Buck Road	Altered	Category A
470 Don Buck Road	Altered	Category A
444A Don Buck Road	Altered	Category A
450A Don Buck Road	Altered	Category A
450 Don Buck Road	Altered	Category A
438 Don Buck Road	Altered	Category A
28 Beauchamp Drive	Altered	Category A
452 Don Buck Road	Altered	Category A
462 Don Buck Road	Altered	Category A
29 Cyril Crescent	Altered	Category A
472 Don Buck Road	Altered	Category A
17 Royal Road	Altered	Category A
5 Royal Road	Altered	Category A
436 Don Buck Road	Altered	Category A
21 Cyclarama Crescent	Altered	Category A
454 Don Buck Road	Altered	Category A
13 Royal Road	Altered	Category A
416 Don Buck Road	Altered	Category A
446 Don Buck Road	Altered	Category A
17 Cyclarama Crescent	Altered	Category A
11 Royal Road	Altered	Category A
15 Royal Road	Altered	Category A
27 Cyclarama Crescent	Altered	Category A
9 Royal Road	Altered	Category A
425 Don Buck Road	Altered	Category A
3A Royal Road	Altered	Category A
1/7, Royal Road	Altered	Category A
426 Don Buck Road	Altered	Category A

2/14, Royal Road	Altered	Category A
13 Cyclarama Crescent	Altered	Category A
474 Don Buck Road	Altered	Category A
21 Royal Road	Altered	Category A
2/28, Royal Road	Altered	Category A
433 Don Buck Road	Altered	Category A
21 Cyclarama Crescent	Altered	Category A
459 Don Buck Road	Altered	Category A
29 Cyclarama Crescent	Altered	Category A
129B Hobsonville Road	Altered	Category A
437 Don Buck Road	Altered	Category A
26 Beauchamp Drive	Altered	Category A
441 Don Buck Road	Altered	Category A
435 Don Buck Road	Altered	Category A
440, Don Buck Road	Altered	Category A
145B Hobsonville Road	Altered	Category A
451 Don Buck Road	Altered	Category A
9A Royal Road	Altered	Category A
23 Royal Road	Altered	Category A
1/7, Royal Road	Altered	Category A
426 Don Buck Road	Altered	Category A
2/14, Royal Road	Altered	Category A
29 Beauchamp Drive	Altered	Category A
1/31, Cyclarama Crescent	Altered	Category A
413 Don Buck Road	Altered	Category A
19 Cyclarama Crescent	Altered	Category A
31 Royal Road	Altered	Category A
475 Don Buck Road	Altered	Category A
2/33, Cyclarama Crescent	Altered	Category A
439 Don Buck Road	Altered	Category A
424 Don Buck Road	Altered	Category A
6 Beauchamp Drive	Altered	Category A
15 Cyclarama Crescent	Altered	Category A
27A Royal Road	Altered	Category A
477 Don Buck Road	Altered	Category A
3A Louise Place	Altered	Category A
3 Beauchamp Drive	Altered	Category A
4 Beauchamp Drive	Altered	Category A
37 Cyclarama Crescent	Altered	Category A
1/31, Cyclarama Crescent	Altered	Category A
3A Louise Place	Altered	Category A
41A, Cyclarama Crescent	Altered	Category A
476A Don Buck Road	Altered	Category A
11 Cyclarama Crescent	Altered	Category A
18 Reverie Place	Altered	Category A
20 Reverie Place	Altered	Category A
16 Reverie Place	Altered	Category A
13 Reverie Place	Altered	Category A
39 Cyclarama Crescent	Altered	Category A
8 Beauchamp Drive	Altered	Category A

3 Cyclarama Crescent	Altered	Category A
25 Beauchamp Drive	Altered	Category A
3/427 Don Buck Road	Altered	Category A
39 Cyclarama Crescent	Altered	Category A
23 Beauchamp Drive	Altered	Category A
11 Reverie Place	Altered	Category A
27 Beauchamp Drive	Altered	Category A
14 Reverie Place	Altered	Category A
43 Royal Road	Altered	Category A
15 Reverie Place	Altered	Category A
9 Cyclarama Crescent	Altered	Category A
7 Reverie Place	Altered	Category A
5 Cyclarama Crescent	Altered	Category A
6 Cyclarama Crescent	Altered	Category A
9 Reverie Place	Altered	Category A
3 Kemp Road	Altered	Category A
7 Cyclarama Crescent	Altered	Category A
3/427 Don Buck Road	Altered	Category A
4 Cyclarama Crescent	Altered	Category A
411 Don Buck Road	Altered	Category A
5 Kemp Road	Altered	Category A
421 Don Buck Road	Altered	Category A
27 Red Hills Road	New	Category A

PPF Location Plans


Legend
NZS 6806 Assessment Area
Protected Premises and Facilities
Royal Rd
Don Buck Rd
Jack Smyth Ln
Beauchamp Dr
Cyclarama Cres
16 Royal Road
18 Belleaire Court
20 Belleaire Court
20A Belleaire Court
15 Reverie Place
14 Reverie Place
16 Reverie Place
18 Reverie Place
8 Beauchamp Drive
6 Beauchamp Drive
4 Beauchamp Drive
3 Beauchamp Drive
2/28, Royal Road
30 Royal Road
32 Royal Road
34 Royal Road
36 Royal Road
38 Royal Road
40 Royal Road
40A Royal Road
2/47, Royal Road
49 Royal Road
51 Royal Road
37 Royal Road
39 Royal Road
41 Royal Road
43 Royal Road
45 Royal Road
27 Royal Road
29 Royal Road
31 Royal Road
32 Royal Road
25 Royal Road
23 Royal Road
22 Royal Road
21 Royal Road
17 Royal Road
15 Royal Road
274 Royal Road
1, 33 Cyclarama Crescent
2 Cyclarama Crescent
3 Cyclarama Crescent
4 Cyclarama Crescent
5 Cyclarama Crescent
6 Cyclarama Crescent
7 Cyclarama Crescent
9 Cyclarama Crescent
11 Cyclarama Crescent
13 Cyclarama Crescent
15 Cyclarama Crescent
17 Cyclarama Crescent
19 Cyclarama Crescent
21 Cyclarama Crescent
27 Cyclarama Crescent
1 Kemp Road
3 Kemp Road
5 Kemp Road
7 Kemp Road
2/14, Royal Road
1298 Hobsonville Road
1314 Hobsonville Road
1458 Hobsonville Road
1454 Hobsonville Road
451 Don Buck Road
464 Don Buck Road
463 Don Buck Road
478 Don Buck Road


Legend
NZS 6806 Assessment Area
Protected Premises and Facilities
Don Buck Rd
Beauchamp Dr
Reverie Pl
19 Luckens Road
486 Don Buck Road
484 Don Buck Road
23A Trig Road
480 Don Buck Road
478 Don Buck Road
476A Don Buck Road
476 Don Buck Road
474 Don Buck Road
472 Don Buck Road
470 Don Buck Road
1458 Hobsonville Road
145A Hobsonville Road
464 Don Buck Road
2/14 Royal Road
129B Hobsonville Road
131A Hobsonville Road
451 Don Buck Road
20 Belleaire Court
20A Belleaire Court
457 Don Buck Road
459 Don Buck Road
461 Don Buck Road
463 Don Buck Road
465 Don Buck Road
469 Don Buck Road
473 Don Buck Road
479 Don Buck Road
34A Trig Road
27 Beauchamp Drive
31 Beauchamp Drive
29 Beauchamp Drive
25 Beauchamp Drive
23 Beauchamp Drive
28 Beauchamp Drive
26 Beauchamp Drive
3A Louise Place
7 Reverie Place
9 Reverie Place
11 Reverie Place
13 Reverie Place
15 Reverie Place
14 Reverie Place
8 Beauchamp Drive
6 Beauchamp Drive
4 Beauchamp Drive


27 Red Hills Road
Legend
NZS 6806 Assessment Area
Protected Premises and Facilities
This map contains data derived in part or wholly from sources other than those party to the Supporting Growth Alliance, and therefore, no representations or warranties are made by those party to the Supporting Growth Alliance as to the accuracy or completeness of this information.
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Legend information can be viewed on Auckland Council unitary plan viewer.
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ATTACHMENT 04

NoR2a – PUBLIC NOTICE

Auckland Unitary Plan

Notice of Requirement for a new designation for Redhills East-West Arterial Transport Corridor – Dunlop Road Extension being a new urban arterial transport corridor that intersects with Fred Taylor Drive and connects to the remaining East-West connection (NoR2c) at the intersection with the Redhills North-South arterial corridor.

Notice of Requirement (NOR2a Redhills East-West Arterial Transport Corridor – Dunlop Road Extension)

Auckland Council has received a notice of a requirement for a designation from Auckland Transport as the Requiring Authority, for public work.

The requirement is for the construction, operation and maintenance of a transport corridor to enable the Requiring Authority to:

- Provide new east-west urban arterial transport corridors from Fred Taylor Drive to Nixon Road to support and integrate with planned urban growth in Redhills.
- Provide arterial transport corridors that are safe for all transport users.
- Contribute to mode shift by providing a choice of transport options including walking, cycling and public transport.
- Provide for the identification and protection of the future Redhills arterial transport network and key connections which enables growth.

The site to which the requirement applies is as follows: Dunlop Road from Fred Taylor Drive in the east to the intersection with the Redhills East-West arterial corridor – Nixon Road Connection and the Redhills North-South arterial corridor.

Viewing the notice of requirement

The explanation of the notice of requirement can be found on our web site https://www.aucklandcouncil.govt.nz/nor. If you don't have access to a computer, please visit your local library or service centre and they will help you view the notice of requirement on our website.

If you have any questions about the notice of requirement, please contact: Unitary Plan, on 09 365 3786 or at unitaryplan@aucklandcouncil.govt.nz.

Making a submission on the notice of requirement

Any person or organisation may make a submission on the notice of requirement, but a person who is a trade competitor or the requiring authority may do so only if that person is directly affected by an effect of the activity to which the requirement relates that –

(a) Adversely affects the environment; and
(b) Does not relate to trade competition or the effects of trade competition.

You may make a submission by sending a written or electronic form to Auckland Council at:

- Auckland Council, Unitary Plan Private Bag 92300, Auckland 1142, Attention: Planning Technician, or
- By using the online form on the Auckland Council website at https://www.aucklandcouncil.govt.nz/nor, or
- By email to: unitaryplan@aucklandcouncil.govt.nz ;or
- Lodging your submission in person at Auckland Council, Libraries or offices.

Submissions close on 24 April 2023

You must serve a copy of your submission on Auckland Transport, whose address for service is, Auckland Transport, Level 5, 203 Queen Street, Auckland 1010, as soon as reasonably practicable after serving your submission on Auckland Council.

John Duguid
Manager – Plans & Places

Notification date: 23/03/2023

ATTACHMENT 05

NoR2a – LODGEMENT COVER LETTER

TE TUPU NGĀTAHI
SUPPORTING GROWTH

19 December 2022

Te Tupu Ngātahi
Supporting Growth
PO Box 105218
Auckland 1143

Auckland Council
C/o Todd Elder
Planning North/West – Plans and Places

Dear Todd

Re: NORTH WEST HOUSING INFRASTRUCTURE FUND NOTICES OF REQUIREMENT

This letter is to advise that Auckland Transport gives notices of requirement for five new designations as part of the North West Housing Infrastructure Fund (HIF) Project.

The lodgment documents have been prepared as two packages:

- Redhills Arterial Transport Network; and
- Trig Road Corridor Upgrade

Each package comprises four volumes as follows:

- Volume 1: Form 18 for each of the notices
- Volume 2: Assessment of Effects on the Environment
- Volume 3: General Arrangement Layout Plans
- Volume 4: Supporting Technical Assessments

These have been emailed to you via file transfer links.

Please contact me in the first instance if there are any queries.

Yours sincerely,

Bridget O'Leary
North West HIF – AEE Lead
info@supportinggrowth.nz
0800 4769 255

ATTACHMENT 06

NoR2a – FORM 18

Auckland Transport
An Auckland Council Organisation

20 Viaduct Harbour Avenue, Auckland 1010
Private Bag 92250, Auckland 1142, New Zealand
Phone 09 355 3553 **Website** www.AT.govt.nz

NOTICE OF REQUIREMENT FOR DESIGNATION OF LAND UNDER s168(2) OF THE RESOURCE MANAGEMENT ACT 1991

TO: Auckland Council

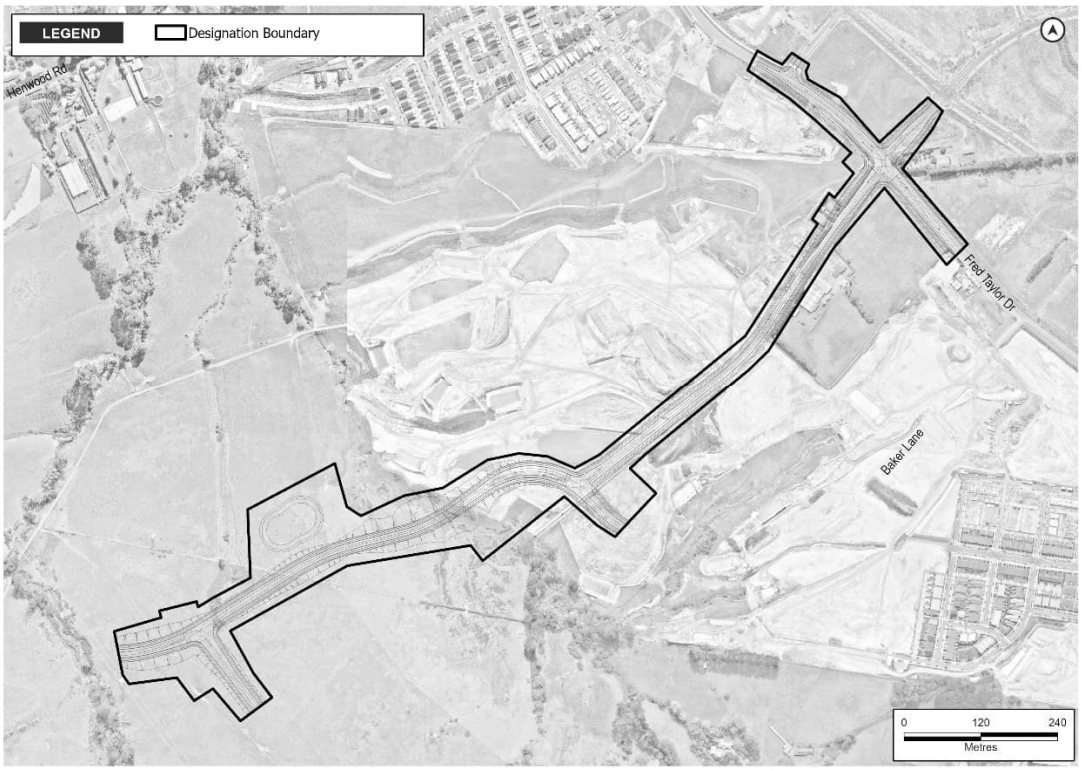
FROM: Auckland Transport

Auckland Transport (AT) (an Auckland Council Controlled Organisation) as a Requiring Authority under section 167 of the Resource Management Act 1991 (RMA) gives notice of requirement (NOR) for a designation in the Auckland Unitary Plan for a public work, being the construction, operation and maintenance of an arterial transport corridor in Redhills.

1 SUMMARY

AT is proposing to construct two arterial transport corridors in Redhills over the next 15 years. These two arterial transport corridors form the Redhills Arterial Transport Network (RATN), under the Te Tupu Ngātahi Supporting Growth Programme.

This form is for NOR 2a, which is for the construction, operation and maintenance of part of the Redhills East-West arterial transport corridor. NOR 2a is referred to as the Redhills East-West Arterial Transport Corridor – Dunlop Road. The extent of the project, designation and boundary of NOR 2a is outlined below and shown in detail on the Designation Plans contained in Attachment A.



The purpose of the designation is for the construction, operation and maintenance of a transport corridor. The activities to be enabled by the designation include environmental mitigation, temporary construction areas, ancillary structure and other activities required for the Project.

The Project Objectives for NOR 2a are to:

- **Project Objective 1:** Provide new east-west urban arterial transport corridors from Fred Taylor Drive to Nixon Road to support and integrate with planned urban growth in Redhills.
- **Project Objective 2:** Provide arterial transport corridors that are safe for all transport users.
- **Project Objective 3:** Contribute to mode shift by providing a choice of transport options including walking, cycling and public transport.
- **Project Objective 4:** Provide for the identification and protection of the future Redhills arterial transport network and key connections which enables growth.

As an approved Requiring Authority under section 176 of the RMA via section 47(1) of the Local Government (Auckland Council) Act 2009, Auckland Transport may designate to construct, operate and maintain a road and undertake ancillary activities.

2 THE SITE TO WHICH THE REQUIREMENT APPLIES IS AS FOLLOWS:

The area of the proposed NOR 2a designation is shown on the Designation Plans included in Attachment A of this Notice. NOR 2a applies to an area of land of approximately 136119 square metres (not including legal roads) located in Redhills. The requirement applies to 16 land parcels (not including legal roads). The land directly affected by NOR 2a is identified in the Schedule of Directly Affected Property included in Attachment B of this Notice.

3 THE NATURE OF THE PROPOSED WORKS IS:

The proposed work is the construction, operation and maintenance of part of the Redhills East-West arterial transport corridor and associated activities (hereafter referred to as “NOR 2a”). The nature of the proposed work is described in Section 3.2: Redhills East-West Arterial Transport Corridor and Section 8.1: Construction Works of the accompanying Assessment of Effects on the Environment (AEE) Report.

In summary, the proposed work includes:

- The construction of a two-lane, 24m wide urban arterial transport corridor extending down Dunlop Road from Fred Taylor Drive in the east to the intersection with the Redhills East-West arterial corridor – Nixon Road Connection and the Redhills North-South arterial corridor (part of the RATN - NORs 1 and 2c). Separated footpaths and cycle lanes will be provided on both sides of the corridor.
- Facilities for direct bus services and bus priority measures providing for ‘bus only’ through movements in the left-turn lanes.
- Widening of Fred Taylor Drive to accommodate four lanes for approximately 800m.
- New signalised intersection at the intersection of Dunlop Road and Fred Taylor Drive.
- Provision of stormwater infrastructure.
- Bulk earthworks.
- Removal and relocation of existing utilities.

- Other construction related activities required outside the permanent corridor including construction traffic manoeuvring and construction laydown areas.

4 THE NATURE OF THE PROPOSED CONDITIONS THAT WOULD APPLY ARE:

The proposed conditions that will apply to the work are included in **Attachment C** of this Notice.

5 THE EFFECTS THAT THE PROPOSED WORK WILL HAVE ON THE ENVIRONMENT, AND THE WAYS IN WHICH ANY ADVERSE EFFECTS WILL BE MITIGATED ARE:

The AEE Report contains a description of the existing and likely future environment (Section 6), an assessment of the effects on the environment from the Project (Section 8.3), and the proposed measures to avoid, remedy or mitigate the adverse effects of the Project (Section 9).

Positive Effects

The Project will generate a range of positive effects. The nature and degree of these positive effects are outlined in the AEE, in particular Section 8.3.1. However, they are summarised as follows:

- The Project will support the ongoing and proposed urbanisation of the area, by providing an arterial transport corridor that connects to the existing surrounding strategic transport network through new and upgraded intersections.
- The Project will include pedestrian, cycle and public transport facilities along the transport corridor which will enable greater choice of mode and provide improved safety outcomes for transport users.
- The Project will improve transport network functions and contribute to a high-quality urban environment for local residents, businesses and road users.

Adverse Effects

There will be a range of potential adverse effects during the construction and operational phases of the Project, which are assessed in the following sections of the AEE Report:

- Transportation Effects (Section 8.3.2)
- Noise and Vibration Effects (Section 8.3.3)
- Archaeology and Heritage Effects (Section 8.3.4)
- Cultural Effects (Section 8.3.5)
- Landscape and Visual Effects (Section 8.3.6)
- Ecological Effects (Section 8.3.7)
- Natural Hazards (Section 8.3.8)
- Property, Land Use and Business Effects (Section 8.3.9)

The AEE Report draws on information provided in the supporting technical documents (contained in Volume 4).

6 ALTERNATIVE SITES, ROUTES, AND METHODS HAVE BEEN CONSIDERED TO THE FOLLOWING EXTENT:

A wide range of alternatives have been investigated for addressing the future transport needs in Redhills. Alternatives were assessed at all stages of Project development. In summary, once problems, issues and objectives had been established, a list of corridor options were developed to achieve the outcomes. These were refined into a range of alignment options with the preferred options further refined to develop the indicative alignment.

The process by which AT considered alternative sites, routes and methods of NOR 2a is detailed in Appendix A of the AEE: Assessment of Alternatives Report. Development of NOR 2a was based on a comprehensive and robust optioneering process taking into account Mana Whenua, stakeholder and landowner feedback and specialist assessment inputs.

7 THE PROPOSED WORK AND DESIGNATION ARE REASONABLY NECESSARY FOR ACHIEVING THE OBJECTIVES OF THE REQUIRING AUTHORITY BECAUSE:

The works and designation are reasonably necessary to meet the objectives of AT, refer to Section 11.2 of the AEE.

AT's purpose under section 39 of the Local Government (Auckland Council) Act 2009 (LGA) is “to contribute to an effective, efficient, and safe Auckland land transport system in the public interest”. The Project will assist AT in meeting this objective.

The AT objectives for the Project are to:

- **Project Objective 1:** Provide new east-west urban arterial transport corridors from Fred Taylor Drive to Nixon Road to support and integrate with planned urban growth in Redhills.
- **Project Objective 2:** Provide arterial transport corridors that are safe for all transport users.
- **Project Objective 3:** Contribute to mode shift by providing a choice of transport options including walking, cycling and public transport.
- **Project Objective 4:** Provide for the identification and protection of the future Redhills arterial transport network and key connections which enables growth.

The Project achieves these objectives by:

- The proposed works will assist in the efficient operation of the local transport network.
- The proposed works identify and protect an urban arterial transport corridor in Redhills and key connections to the existing transport network. No transport network currently exists in Redhills, and the arterial corridor will provide access to and support the planned urban growth in Redhills.
- Sufficient space and facilities will be provided to ensure that the proposed transport corridor is safe for all transport users, including vehicles, public transport, walking and cycling.
- The proposed works contribute to mode shift by providing a choice of transport options through the provision of separated and protected walking and cycling facilities, including signalised pedestrian / cycle crossing facilities, and public transport measures to improve bus travel time and reliability.

- The proposed designation will allow AT and / or its authorised agents to undertake the works for the construction, operation and maintenance of the transport corridor and associated ancillary components / activities.
- The proposed designation will enable works to be undertaken in a comprehensive and integrated manner.
- The proposed designation will add protection to the route from future incompatible development which may preclude or put at risk the construction and / or operation and maintenance of the corridor.
- The proposed designation will be included in the Auckland Unitary Plan providing certainty to the public as to the intended use of the land and nature of the activity authorised.

The proposed designation is reasonably necessary as a planning tool, as it identifies and protects land required for the Project and will enable AT to carry out the proposed work.

8 THE FOLLOWING RESOURCE CONSENTS ARE NEEDED FOR THE PROPOSED ACTIVITY AND HAVE NOT BEEN APPLIED FOR:

The NOR will require resource consents for a number of activities to enable the proposed works. The resource consents are not sought at this time as the date for construction is unknown and could be a number of years away. The resource consents will be sought when detailed design of the Project is complete and nearer to the proposed construction start date. The future resource consents likely to be required are summarised below.

- Resource consents for the disturbance of contaminated, or potentially contaminated land under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011.
- Resource consents for specified infrastructure works within rivers, streams and natural wetlands under the Resource Management (National Environmental Standards for Freshwater) Regulations 2020.
- Resource consents for the following activities under the Auckland Unitary Plan:
    - Bulk earthworks and associated discharge of sediment
    - Vegetation removal
    - Stormwater discharge to land or water
    - Discharge of contaminants to land
    - Activities (including structures and associated works) in, on, under or over the bed of rivers, streams, wetlands
    - Water take, use and diversion.

9 THE FOLLOWING CONSULTATION HAS BEEN UNDERTAKEN WITH PARTIES THAT ARE LIKELY TO BE AFFECTED:

Consultation and engagement is ongoing with various parties who are directly affected by or have an interest in the Project including Mana Whenua, property owners and occupiers, Auckland Council, Waka Kotahi, network utility operators, business and community representative groups and the wider community.

Engagement activities include online video meetings, phone calls, face to face meetings, workshops, hui, newsletters and online information.

The consultation and engagement undertaken is detailed in Section 10 of the AEE Report.

10 EXTENDED LAPSE PERIOD PROPOSED:

Under section 184(1) of the RMA a designation lapses on the expiry of 5 years after the date on which it is included in the district plan unless it is given effect to, substantial progress or effort has been made to give effect to, or a different period is specified when incorporated into the plan. There is a need for long term route protection to protect the corridor from inappropriate development until such time as the transport corridor is required to support and facilitate the planned urban growth and funding is allocated. Therefore, pursuant to section 184(1)(c) of the RMA, AT proposes an extended lapse period of 15 years for implementation of the proposed designation.

11 INFORMATION REQUIRED TO BE INCLUDED IN THIS NOTICE BY THE AUCKLAND UNITARY PLAN OR ANY REGULATION MADE UNDER THE RESOURCE MANAGEMENT ACT 1991:

AT attaches the following information required to be included in this notice by the Auckland Unitary Plan, or any regulations made under the Resource Management Act 1991.

- Volume 2: Assessment of Effects on the Environment
- Volume 3: Indicative Design and Designation Drawings
- Volume 4: Supporting Technical Assessment Reports

Signed on behalf of AT

Jane Small
Group Manager PMO, Strategic Programmes & Property pursuant to authority delegated by Auckland Transport

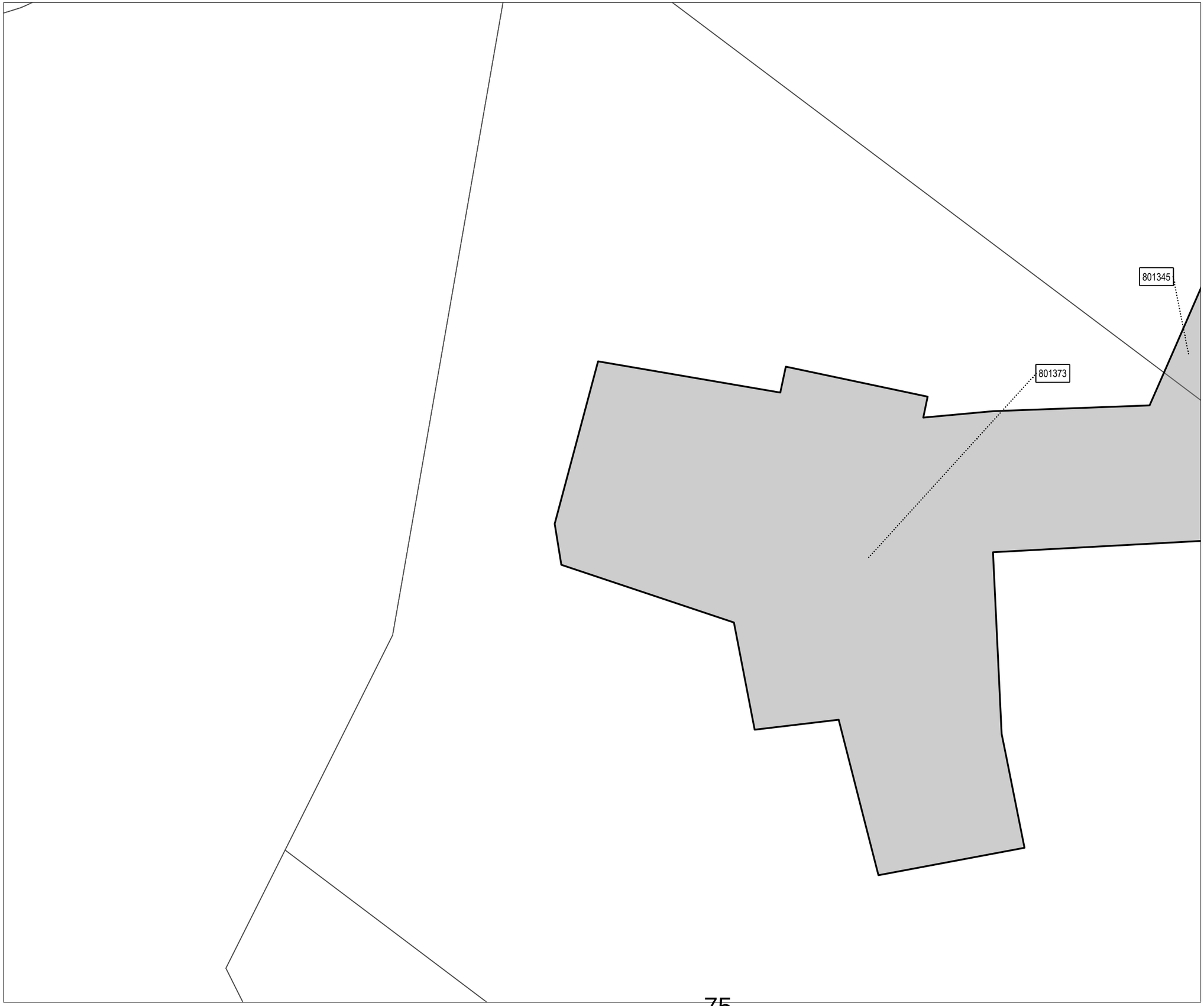
13 December 2022

Attachment A – Designation Plans

Attachment B – Schedule of Directly Affected Property

Attachment C – Proposed Conditions for the Designation

Attachment A – Designation Plans

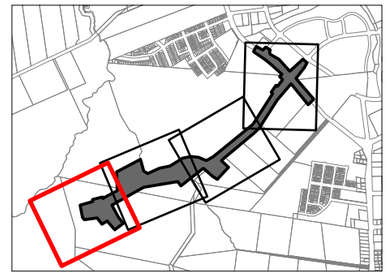


Designation Plan

Land to be Designated
East-West Arterial Corridor
Dunlop Road

Legend

- Proposed Designation
- Parcel Boundary
- 507729 Property ID



This map contains data derived in part or wholly from sources other than those party to the Supporting Growth Alliance, and therefore, no representations or warranties are made by those party to the Supporting Growth Alliance as to the accuracy or completeness of this information.

Map intended for distribution as a PDF document.
Scale may be incorrect when printed.

Map Scale @ A3: 1:1,500

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Metre

Revision	Author	Verified	Approved	Date
1	BAP	RJL	RE	27/11/2022

Client: **Auckland Transport / Waka Kotahi**	Discipline: **GIS**
Project: **Redhills Arterial Transport Network**	Drawing No: **SGA-PA-NW-039** Sheet No : 1 of 4

Date Exported: 29/11/2022 3:51

Name of Map: SGA-PA-NW-39-NOR2A-Redhills

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801345

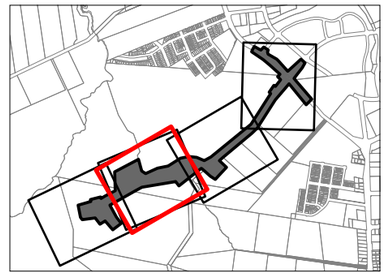
803526

Designation Plan

Land to be Designated
East-West Arterial Corridor
Dunlop Road

Legend

- Proposed Designation
- Parcel Boundary
- 507729 Property ID



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1	BAP	RJL	RE	27/11/2022

Client: **Auckland Transport / Waka Kotahi**	Discipline: **GIS**
Project: **Redhills Arterial Transport Network**	Drawing No: **SGA-PA-NW-039** Sheet No : 2 of 4

Date Exported: 29/11/2022 3:51

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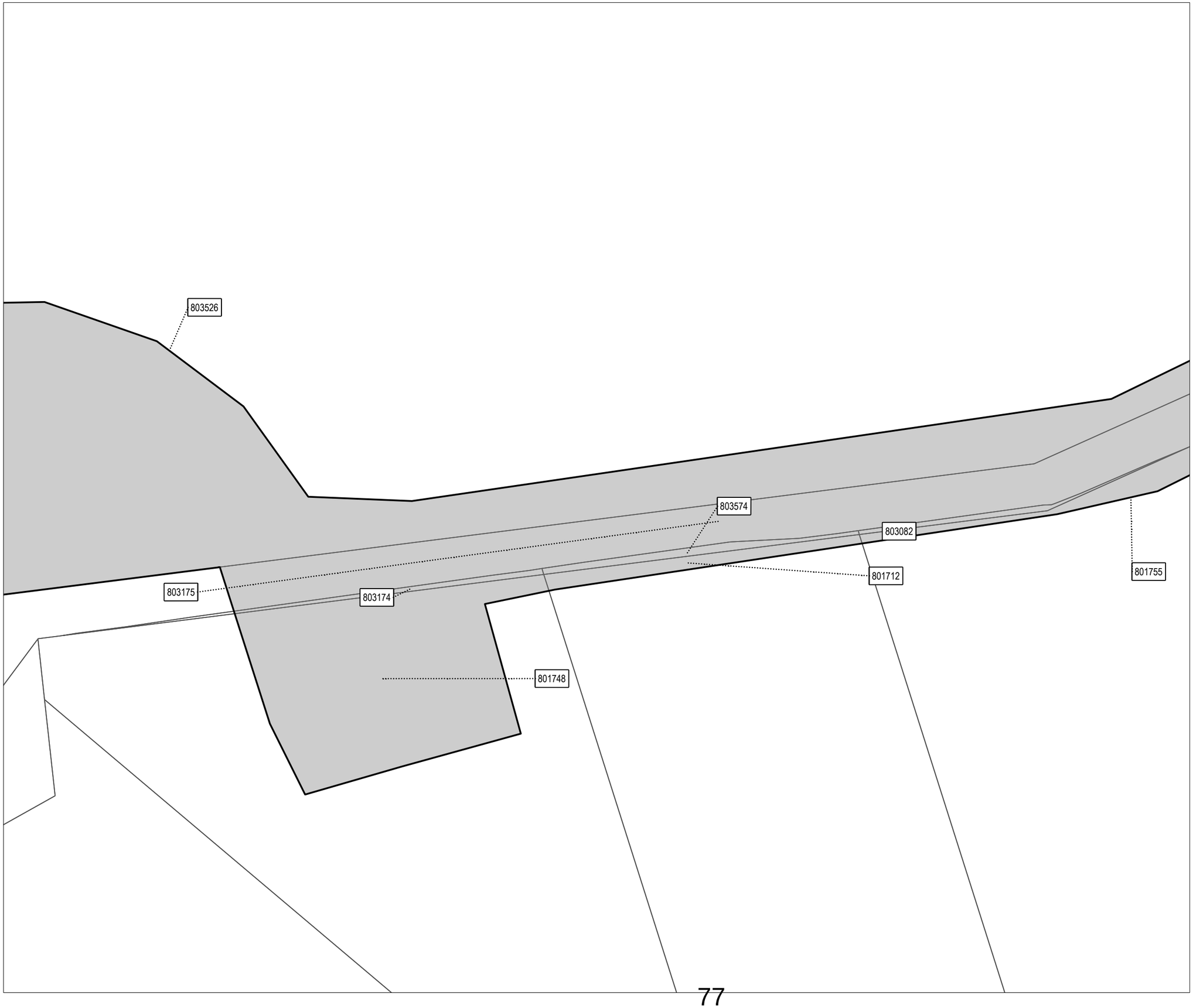
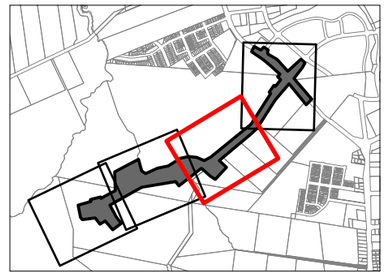


Designation Plan

Land to be Designated
East-West Arterial Corridor
Dunlop Road

Legend

- Proposed Designation
- Parcel Boundary
- 507729 Property ID



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Map Scale @ A3: 1:1,500

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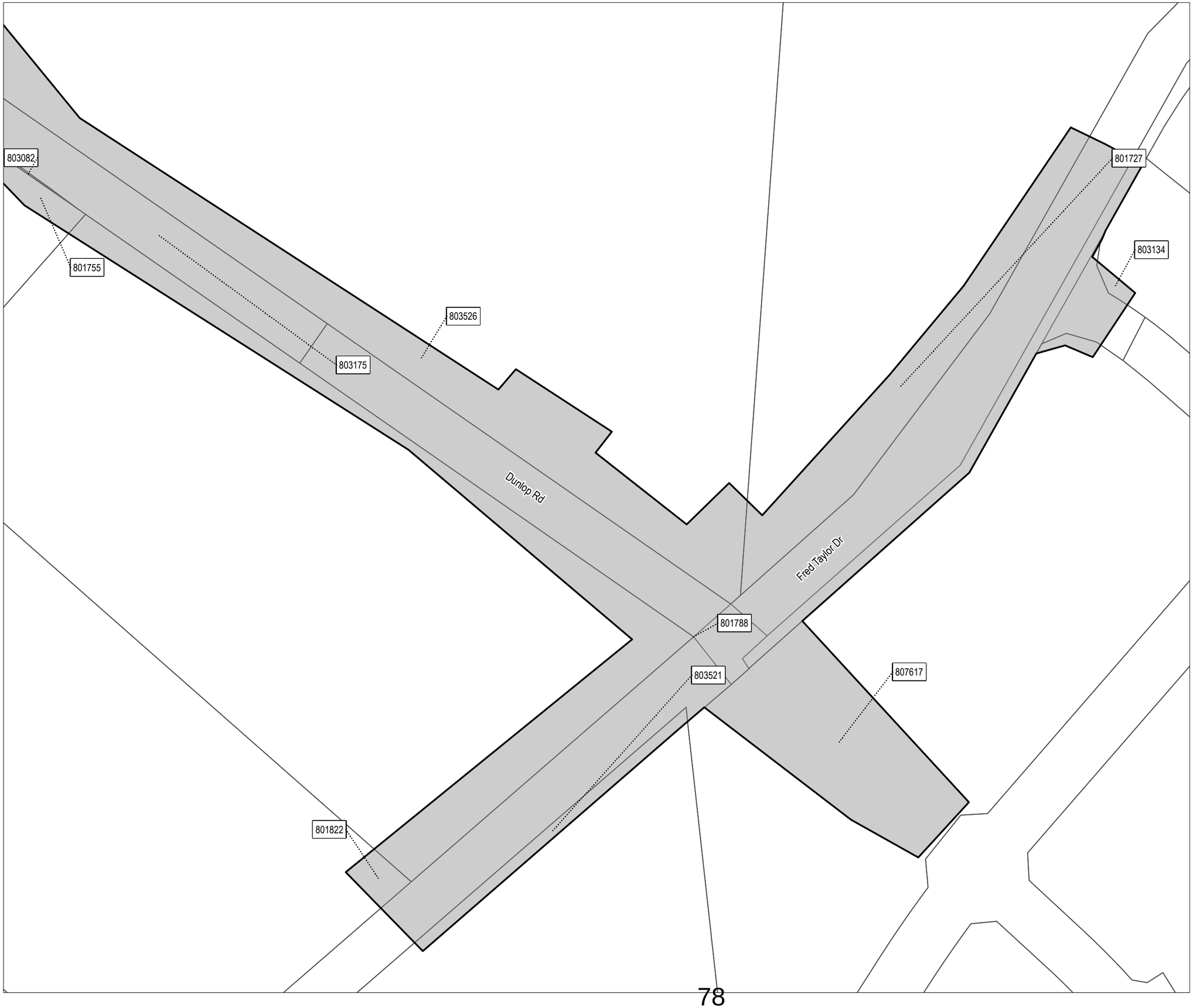
Revision	Author	Verified	Approved	Date
1	BAP	RJL	RE	27/11/2022

Client: **Auckland Transport / Waka Kotahi**

Discipline: **GIS**

Project: **Redhills Arterial Transport Network**

Drawing No: **SGA-PA-NW-039**
Sheet No : 3 of 4



Designation Plan

Land to be Designated
East-West Arterial Corridor
Dunlop Road

Legend

- Proposed Designation
- Parcel Boundary
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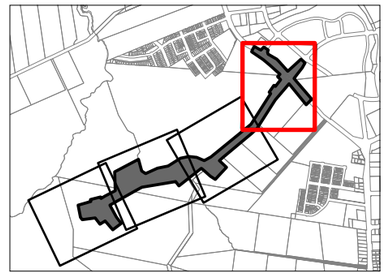

Map Scale @ A3: 1:1,500

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Revision	Author	Verified	Approved	Date
1	BAP	RJL	RE	27/11/2022

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Client: **Auckland Transport / Waka Kotahi**

Discipline: **GIS**

Project: **Redhills Arterial Transport Network**

Drawing No: **SGA-PA-NW-039**
Sheet No : 4 of 4

WAKA KOTAHI NZ TRANSPORT AGENCY

New Zealand Government

Date Exported: 29/11/2022 3:51

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Attachment B – Schedule of Directly Affected Property

Property ID	Address	Title Number	Legal Description	Approx. land to be designated (m^2)	Sheet Number
801345	3 Dunlop Road	790158	Lot 2 DP 512699	30615	2
801373	Red Hills Road	NA38A/1234	Lot 4 DP 6627	31771	2
801712	64 Fred Taylor Drive	NA22B/872	Lot 3 DP 52123	715	3
801727	76-78 Fred Taylor Drive	NA93D/864	Lot 1 DP 44747	3850	4
801748	60 Fred Taylor Drive	NA22B/871	Lot 2 DP 64737	7429	3
801755	66 Fred Taylor Drive	NA22B/873	Lot 4 DP 52123	796	4
801788	2 Dunlop Road	NA31D/554	Lot 5 DP 52123	5201	4
801822	68 Fred Taylor Drive	NA42A/621	Lot 6 DP 52123	332	4
803082	Dunlop Road	774424	Lot 1 DP 502952	216	4
803134	2 Spring Garden Avenue	879307	Lot 2 DP 534036	109	4
803174	Dunlop Road	774426	Lot 3 DP 502952	240	3
803175	Dunlop Road	774427	Lot 4 DP 502952	9586	4
803521	29 Fred Taylor Drive	945848	Section 2 SO 546759	727	4
803526	1 Dunlop Road	895990	Lot 4 DP 537938	39391	4
803574	Dunlop Road	774425	Lot 2 DP 502952	369	3
807617	1 Spring Garden Road	946511	Lot 1 DP 549509	4788	4

Attachment C – Proposed Conditions for the Designation

Abbreviations and definitions

Acronym/Term	Definition
Activity sensitive to noise	Any dwelling, visitor accommodation, boarding house, marae, papakāinga, integrated residential development, retirement village, supported residential care, care centre, lecture theatre in a tertiary education facility, classroom in an education facility and healthcare facility with an overnight stay facility.
ARI	Annual Recurrence Interval
Average increase in flood hazard	Flow depth times velocity.
AUP	Auckland Unitary Plan.
BPO or Best Practicable Option	Has the same meaning as in section 2 of the RMA 1991.
CEMP	Construction Environmental Management Plan
Certification	Confirmation from the Manager that a plan or material change to a plan or CNVMP Schedule plan has been prepared in accordance with the condition to which it relates. A management plan shall be deemed certified: (a) where the Requiring Authority has received written confirmation from Council that a management plan is certified; or (b) five working days from the submission of a management plan where no written confirmation of certification has been received. A material change to a management plan or CNVMP Schedule shall be deemed certified: (a) where the Requiring Authority has received written confirmation from Council that the material change to the management plan is certified; or (b) ten working days from the submission of the material change to the management plan where no written confirmation of certification has been received. (c) five working days from the submission of the material change to a CNVMP Schedule where no written confirmation of certification has been received.
CNVMP	Construction Noise and Vibration Management Plan
CNVMP Schedule or Schedule	A schedule to the CNVMP
Completion of Construction	When construction of the Project (or part of the Project) is complete and it is available for use.
Confirmed Biodiversity Areas	Areas recorded in the Identified Biodiversity Area Schedule where the ecological values and effects have been confirmed through the ecological survey under Condition 20**Error! Reference source not found.**.
Construction Works	Activities undertaken to construct the Project excluding Enabling Works.
Council	Auckland Council
CTMP	Construction Traffic Management Plan
EMP	Ecological Management Plan
EIANZ Guidelines	Ecological Impact Assessment: EIANZ guidelines for use in New Zealand: terrestrial and freshwater ecosystems, second edition, dated May 2018.
Enabling works	Includes, but is not limited to, the following and similar activities: • geotechnical investigations (including trial embankments) • archaeological site investigations • formation of access for geotechnical investigations

Acronym/Term	Definition
	• establishment of site yards, site entrances and fencing • constructing and sealing site access roads • demolition or removal of buildings and structures • relocation of services • establishment of mitigation measures (such as erosion and sediment control measures, temporary noise walls, earth bunds and planting)
Existing authorised habitable floor	The floor level of any room (floor) in a residential building which is authorised by building consent and exists at the time the outline plan is submitted, excluding a laundry, bathroom, toilet or any room used solely as an entrance hall, passageway or garage.
Flood prone area	A potential ponding area that relies on a single culvert for drainage and does not have an overland flow path.
HNZPT	Heritage New Zealand Pouhere Taonga.
HNZPTA	Heritage New Zealand Pouhere Taonga Act 2014
Identified Biodiversity Area	Means an area or areas of ecological value where the Project ecologist has identified that the project will potentially have a moderate or greater level of ecological effect, prior to implementation of impact management measures, as determined in accordance with the EIANZ guidelines.
Mana whenua	Mana Whenua as referred to in the conditions is considered to be (as a minimum but not limited to) the following (in no particular order), who at the time of Notice of Requirement expressed a desire to be involved in the Project: • Te Kawerau a Maki • Ngāti Whātua o Kaipara • Te Ākitai Waiohua • Ngāti Whanaunga **Note**: Other iwi and hapu not identified above may have an interest in the Project and should be consulted.
Manager	The Manager – Resource Consents of the Auckland Council, or authorised delegate.
Maximum Probable Development	Design case for consideration of future flows allowing for development within a catchment that takes into account the maximum impervious surface limits of the current zone or, if the land is zoned Future Urban in the Auckland Unitary Plan, the probable level of development arising from zone changes.
Network Utility Operator	Has the same meaning as set out in section 166 of the RMA.
NOR	Notice of Requirement
NZAA	New Zealand Archaeological Association
Outline Plan	An outline plan prepared in accordance with section 176A of the RMA.
Pre-Project development	Existing site condition prior to the Project (including existing buildings and roadways).
Post-Project development	Site condition after the Project has been completed (including existing and new buildings and roadways).

Acronym/Term	Definition
Project Liaison Person	The person or persons appointed for the duration of the Project's Construction Works to be the main point of contact for persons wanting information about the Project or affected by the Construction Works.
Protected Premises and Facilities (PPF)	Protected Premises and Facilities as defined in New Zealand Standard NZS 6806:2010: *Acoustics – Road-traffic noise – New and altered roads.*
Requiring Authority	Has the same meaning as section 166 of the RMA and, for this Designation is Auckland Transport.
RMA	Resource Management Act (1991)
SCEMP	Stakeholder Communication and Engagement Management Plan
Stage of Work	Any physical works that require the development of an Outline Plan.
Start of Construction	The time when Construction Works (excluding Enabling Works) start.
Suitably Qualified Person	A person (or persons) who can provide sufficient evidence to demonstrate their suitability, experience and competence in the relevant field of expertise.
ULDMP	Urban and Landscape Design Management Plan

Proposed Conditions for the Designation

No.	Condition
General Conditions	
1.	**Activity in General Accordance with Plans and Information** (a) Except as provided for in the conditions below, and subject to final design and Outline Plan(s), works within the designation shall be undertaken in general accordance with the following plans and information Project description and concept plan in schedule 1: (b) Where there is inconsistency between: (i) the documents listed in condition 1(a) above Project description and concept plan in schedule 1 and the requirements of the following conditions, the conditions shall prevail; (ii) the documents listed in condition 1(a) above Project description and concept plan in schedule 1, and the management plans under the conditions of the designation, the requirements of the management plans shall prevail.
2.	**Project Information** (a) A project website, or equivalent virtual information source, shall be established within 12 months of the date on which this designation is included in the AUP. All directly affected owners and occupiers shall be notified in writing once the website or equivalent information source has been established. The project website or virtual information source shall include these conditions and shall provide information on: (i) the status of the Project; (ii) anticipated construction timeframes; and (iii) contact details for enquiries. (iv) a subscription service to enable receipt of project updates by email; and (v) how to apply for consent for works in the designation under s176(1)(b) of the RMA. (b) At the start of detailed design for a Stage of Work, the project website or virtual information source shall be updated to provide information on the likely date for Start of Construction, and any staging of works.
3.	**Designation Review**

No.	Condition
	(a) The Requiring Authority shall within 6 months of Completion of Construction or A as soon as otherwise practicable following Completion of Construction the Requiring Authority shall: (i) review the extent of the designation to identify any areas of designated land that it no longer requires for the on-going operation, maintenance or mitigation of effects of the Project; and (ii) give notice to Auckland Council in accordance with section 182 of the RMA for the removal of those parts of the designation identified above.
4.	**Lapse** (a) In accordance with section 184(1)(c) of the RMA, this designation shall lapse if not given effect to within 15 years from the date on which it is included in the AUP.
5.	**Network Utility Operators (Section 176 Approval)** (a) Prior to the start of Construction Works, Network Utility Operators with existing infrastructure located within the designation will not require written consent under section 176 of the RMA for the following activities: (i) operation, maintenance and urgent repair works; (ii) minor renewal works to existing network utilities necessary for the on-going provision or security of supply of network utility operations; (iii) minor works such as new service connections; and (iv) the upgrade and replacement of existing network utilities in the same location with the same or similar effects as the existing utility. (b) To the extent that a record of written approval is required for the activities listed above, this condition shall constitute written approval.
Pre-construction Conditions	
6.	**Outline Plan** (a) An Outline Plan (or Plans) shall be prepared in accordance with section 176A of the RMA. (b) Outline Plans (or Plan) may be submitted in parts or in stages to address particular activities (e.g. design or construction aspects), or a Stage of Work of the Project. (c) Outline Plans shall include any management plan or plans that are relevant to the management of effects of those activities or Stage of Work, which may include: (i) Construction Environmental Management Plan; (ii) Construction Traffic Management Plan; (iii) Construction Noise and Vibration Management Plan; (iv) Urban and Landscape Design Management Plan; (v) Ecological Management Plan (vi) Tree Management Plan
7.	**Management Plans** (a) Any management plan shall: (i) Be prepared and implemented in accordance with the relevant management plan condition; (ii) Be prepared by a Suitably Qualified Person(s); (iii) Include sufficient detail relating to the management of effects associated with the relevant activities and/or Stage of Work to which it relates. (iv) Summarise comments received from Mana Whenua and other stakeholders as required by the relevant management plan condition, along with a summary of where comments have: a. Been incorporated; and b. Where not incorporated, the reasons why. (v) Be submitted as part of an Outline Plan pursuant to s176A of the RMA, with the exception of SCEMPs CEMPs, CTMPs and CNVMP Schedules. (vi) Once finalised, uploaded to the Project website or equivalent virtual information source. (b) Any management plan developed in accordance with Condition 7 may: (i) Be submitted in parts or in stages to address particular activities (e.g. design or construction aspects) a Stage of Work of the Project, or to address specific activities authorised by the designation. (ii) Except for material changes, be amended to reflect any changes in design, construction methods or management of effects without further process.

No.	Condition
	(iii) If there is a material change required to a management plan which has been submitted with an Outline Plan, the revised part of the plan shall be submitted to the Council as an update to the Outline Plan or for Certification as soon as practicable following identification of the need for a revision; (c) Any material changes to the SCEMPs, CEMPs or CTMPs are to be submitted to the Council for information.
8.	**Cultural Advisory Report** (a) At least six (6) months prior to the start of detailed design for a Stage of Work, Mana Whenua shall be invited to prepare a Cultural Advisory Report for the Project. (b) The objective of the Cultural Advisory Report is to assist in understanding and identifying Ngā Taonga Tuku Iho ('treasures handed down by our ancestors') affected by the Project, to inform their management and protection. To achieve the objective, the Requiring Authority shall invite Mana Whenua to prepare a Cultural Advisory Report that: (i) Identifies the cultural sites, landscapes and values that have the potential to be affected by the construction and operation of the Project; (ii) Sets out the desired outcomes for management of potential effects on cultural sites, landscapes and values; (iii) Identifies traditional cultural practices within the area that may be impacted by the Project; (iv) Identifies opportunities for restoration and enhancement of identified cultural sites, landscapes and values within the Project area; (v) Taking into account the outcomes of (i) to (iv) above, identify cultural matters and principles that should be considered in the development of the Urban and Landscape Design Management Plan, Stakeholder and Communication and Engagement Management Plan, and the Cultural Monitoring Plan referred to in Condition 14. (vi) Identifies and (if possible) nominates traditional names along the Project alignment. Noting there may be formal statutory processes outside the project required in any decision-making. (c) The desired outcomes for management of potential effects on cultural sites, landscapes and values identified in the Cultural Advisory Report shall be discussed with Mana Whenua and those outcomes reflected in the relevant management plans where practicable. (d) Conditions 8(b) and (c) above will cease to apply if: (i) Mana Whenua have been invited to prepare a Cultural Advisory Report by a date at least 6 months prior to start of Construction Works; and (ii) Mana Whenua have not provided a Cultural Advisory Report within six months prior to start of Construction Works.
9.	**Urban and Landscape Design Management Plan (ULDMP)** (a) A ULDMP shall be prepared prior to the Start of Construction for a Stage of Work. (b) Mana Whenua shall be invited to participate in the development of the ULDMP(s) to provide input into relevant cultural landscape and design matters including how desired outcomes for management of potential effects on cultural sites, landscapes and values identified and discussed in accordance with Condition 8(c) may be reflected in the ULDMP. The objective of the ULDMP(s) is to: (i) Enable integration of the Project's permanent works into the surrounding landscape and urban context; and (ii) Ensure that the Project manages potential adverse landscape and visual effects as far as practicable and contributes to a quality urban environment. (c) The ULDMP shall be prepared in general accordance with: (i) Auckland Transport's Urban Roads and Streets Design Guide; (ii) Waka Kotahi Urban Design Guidelines: Bridging the Gap (2013) or any subsequent updated version; (iii) Waka Kotahi Landscape Guidelines (2013) or any subsequent updated version; (iv) Waka Kotahi P39 Standard Specification for Highway Landscape Treatments (2013) or any subsequent updated version; and (v) Auckland's Urban Ngahere (Forest) Strategy or any subsequent updated version. (d) To achieve the objective, the ULDMP(s) shall provide details of how the project: (i) Is designed to integrate with the adjacent urban (or proposed urban) and landscape context, including the surrounding existing or proposed topography, urban environment (i.e. centres and density of built form), natural environment, landscape character and open space zones;

No.	Condition
	(ii) Provides appropriate walking and cycling connectivity to, and interfaces with, existing or proposed adjacent land uses, public transport infrastructure and walking and cycling connections; (iii) Promotes inclusive access (where appropriate); and (iv) Promotes a sense of personal safety by aligning with best practice guidelines, such as: a. Crime Prevention Through Environmental Design (CPTED) principles; b. Safety in Design (SID) requirements; and c. Maintenance in Design (MID) requirements and anti-vandalism/anti-graffiti measures. (e) The ULDMP(s) shall include: (i) a concept plan – which depicts the overall landscape and urban design concept, and explain the rationale for the landscape and urban design proposals; (ii) developed design concepts, including principles for walking and cycling facilities and public transport; and (iii) landscape and urban design details – that cover the following: a. Road design – elements such as intersection form, carriageway gradient and associated earthworks contouring including cut and fill batters and the interface with adjacent land uses, benching, spoil disposal sites, median width and treatment, roadside width and treatment; b. Roadside elements – such as lighting, fencing, wayfinding and signage; c. architectural and landscape treatment of all major structures, including bridges and retaining walls; d. Architectural and landscape treatment of noise barriers; e. Landscape treatment of permanent stormwater control wetlands and swales; f. Integration of passenger transport; g. Pedestrian and cycle facilities including paths, road crossings and dedicated pedestrian/ cycle bridges or underpasses; h. Re-instatement of construction and site compound areas, driveways, accessways and fences. (f) The ULDMP shall also include the following planting details and maintenance requirements: (i) planting design details including: a. identification of existing trees and vegetation that will be retained with reference to the Tree Management Plan. Where practicable, mature trees and native vegetation should be retained; b. street trees, shrubs and ground cover suitable for berms; c. treatment of fill slopes to integrate with adjacent land use, streams, riparian margins and open space zones; d. planting of stormwater wetlands; e. identification of vegetation to be retained and any planting requirements under Conditions 21 and 22; f. integration of any planting requirements required by conditions of any resource consents for the project; and g. re-instatement planting of construction and site compound areas as appropriate. (ii) a planting programme including the staging of planting in relation to the construction programme which shall, as far as practicable, include provision for planting within each planting season following completion of works in each Stage of Work; and (iii) detailed specifications relating to the following: a. weed control and clearance; b. pest animal management (to support plant establishment); c. ground preparation (top soiling and decompaction); d. mulching; and e. plant sourcing and planting, including hydroseeding and grassing, and use of eco-sourced species.
Advice note	**Advice Note:** *This designation is for the purpose of construction, operation and maintenance of a transport corridor and it is not for the specific purpose of "road widening". Therefore, it is not intended that the front yard definition in the Auckland Unitary Plan which applies a set back from a designation for road widening purposes applies to this designation. A set back is not required to manage effects between the designation boundary and any proposed adjacent sites or lots.*

No.	Condition
Specific Outline Plan Requirements	
10.	**Flood Hazard** (a) The Project shall be designed to achieve the following flood risk outcomes: (i) no increase in flood levels for existing authorised habitable floors that are already subject to flooding; (ii) no more than a 10% reduction in freeboard for existing authorised habitable floors; (iii) no increase of more than 50mm in flood level on land zoned for urban or future urban development where there is no existing habitable dwelling; (iv) no new flood prone areas; and (v) no more than a 10% average increase of flood hazard (defined as flow depth times velocity) for main access to authorised habitable dwellings existing at the time the Outline Plan is submitted. (b) Compliance with this condition shall be demonstrated in the Outline Plan, which shall include flood modelling of the pre-Project and post-Project 100 year ARI flood levels (for Maximum Probable Development land use and including climate change). (c) Where the above outcomes can be achieved through alternative measures outside of the designation such as flood stop banks, flood walls, raising existing authorised habitable floor level and new overland flow paths or varied through agreement with the relevant landowner, the Outline Plan shall include confirmation that any necessary landowner and statutory approvals have been obtained for that work or alternative outcome.
Construction Conditions	
11.	**Construction Environmental Management Plan (CEMP)** (a) A CEMP shall be prepared prior to the Start of Construction for a Stage of Work. (b) The objective of the CEMP is to set out the management procedures and construction methods to be undertaken to, avoid, remedy or mitigate any adverse effects associated with Construction Works as far as practicable. To achieve the objective, the CEMP shall include: (i) the roles and responsibilities of staff and contractors; (ii) details of the site or project manager and the Project Liaison Person, including their contact details (phone and email address); (iii) the Construction Works programmes and the staging approach, and the proposed hours of work; (iv) details of the proposed construction yards including temporary screening when adjacent to residential areas, site layouts (including construction yards), locations of refuelling activities and construction lighting; (v) methods for controlling dust and the removal of debris and demolition of construction materials from public roads or places; (vi) methods for providing for the health and safety of the general public; (vii) procedures for incident management; (viii)procedures for the refuelling and maintenance of plant and equipment to avoid discharges of fuels or lubricants to Watercourses; (ix) measures to address the storage of fuels, lubricants, hazardous and/or dangerous materials, along with contingency procedures to address emergency spill response(s) and clean up; (x) procedures for responding to complaints about Construction Works; and (xi) methods for amending and updating the CEMP as required. (c) Any CEMP prepared for a Stage of Work shall be submitted to Council for information at least ten working days before the Start of Construction for a Stage of Work.
12.	**Stakeholder and Communication and Engagement Management Plan (SCEMP)** (a) A SCEMP shall be prepared prior to the Start of Construction for a Stage of Work. The objective of the SCEMP is to identify how the public and stakeholders (including directly

No.	Condition
	affected and adjacent owners and occupiers of land) will be engaged communicated with throughout the Construction Works. To achieve the objective, the SCEMP shall include: (i) the contact details for the Project Liaison Person. These details shall be on the Project website, or equivalent virtual information source, and prominently displayed at the main entrance(s) to the site(s); (ii) the procedures for ensuring that there is a contact person available for the duration of Construction Works, for public enquiries or complaints about the Construction Works; (iii) methods for engaging with Mana Whenua, to be developed in consultation with Mana Whenua; (iv) a list of stakeholders, organisations (such as community facilities) and businesses and persons who will be engaged communicated with; (v) Identification of the properties whose owners will be engaged with; (vi) methods to communicate key project milestones and the proposed hours of construction activities including outside of normal working hours and on weekends and public holidays, to the parties identified in (iv) and (v) above; and surrounding businesses and residential communities; (vii) linkages and cross-references to communication and engagement methods set out in other conditions and management plans where relevant. (b) Any SCEMP prepared for a Stage of Work shall be submitted to Council for information ten working days prior to the Start of Construction for a Stage of Work.
13.	**Complaints Register** (a) At all times during Construction Works, a record of any complaints received about the Construction Works shall be maintained. The record shall include: (i) The date, time and nature of the complaint; (ii) The name, phone number and address of the complainant (unless the complainant wishes to remain anonymous); (iii) Measures taken to respond to the complaint (including a record of the response provided to the complainant) or confirmation of no action if deemed appropriate; (iv) The outcome of the investigation into the complaint; (v) Any other activities in the area, unrelated to the Project that may have contributed to the complaint, such as non-project construction, fires, traffic accidents or unusually dusty conditions generally. (b) A copy of the Complaints Register required by this condition shall be made available to the Manager upon request as soon as practicable after the request is made.
14.	**Cultural Monitoring Plan** (a) Prior to the start of Construction Works, a Cultural Monitoring Plan shall be prepared by a Suitably Qualified Person(s) identified in collaboration with Mana Whenua. (b) The objective of the Cultural Monitoring Plan is to identify methods for undertaking cultural monitoring to assist with management of any cultural effects during Construction works. (c) The Cultural Monitoring Plan shall include: (i) Requirements for formal dedication or cultural interpretation to be undertaken prior to start of Construction Works in areas identified as having significance to Mana Whenua; (ii) Requirements and protocols for cultural inductions for contractors and subcontractors; (iii) Identification of activities, sites and areas where cultural monitoring is required during particular Construction Works; (iv) Identification of personnel to undertake cultural monitoring, including any geographic definition of their responsibilities; and (v) Details of personnel to assist with management of any cultural effects identified during cultural monitoring, including implementation of the Accidental Discovery Protocol (d) If Enabling Works involving soil disturbance are undertaken prior to the start of Construction Works, an Enabling Works Cultural Monitoring Plan shall be prepared by a Suitably Qualified Person identified in collaboration with Mana Whenua. This plan may be prepared as a standalone Enabling Works Cultural Monitoring Plan or be included in the main Construction Works Cultural Monitoring Plan. **Advice Note:** *Where appropriate, the Cultural Monitoring Plan shall align with the requirements of other conditions of the designation and resource consents for the Project which require monitoring during Construction Works.*
15.	**Construction Traffic Management Plan (CTMP)**

<table>
<tr><th>No.</th><th>Condition</th></tr>
<tr><td></td><td>(a) A CTMP shall be prepared prior to the Start of Construction for a Stage of Work.
(b) The objective of the CTMP is to avoid, remedy or mitigate, as far as practicable, adverse construction traffic effects. To achieve this objective, the CTMP shall include:
(i) methods to manage the effects of temporary traffic management activities on traffic;
(ii) measures to ensure the safety of all transport users;
(iii) the estimated numbers, frequencies, routes and timing of traffic movements, including any specific non-working or non-movement hours to manage vehicular and pedestrian traffic near schools or to manage traffic congestion;
(iv) site access routes and access points for heavy vehicles, the size and location of parking areas for plant, construction vehicles and the vehicles of workers and visitors;
(v) identification of detour routes and other methods to ensure the safe management and maintenance of traffic flows, including pedestrians and cyclists, on existing roads;
(vi) methods to maintain vehicle access to property and/or private roads where practicable, or to provide alternative access arrangements when it will not be;
(vii) the management approach to loads on heavy vehicles, including covering loads of fine material, the use of wheel-wash facilities at site exit points and the timely removal of any material deposited or spilled on public roads;
(viii) methods that will be undertaken to communicate traffic management measures to affected road users (e.g. residents/public/stakeholders/emergency services);
(c) Any CTMP prepared for a Stage of Work shall be submitted to Council for information ten working days prior to the Start of Construction for a Stage of Work.</td></tr>
<tr><td>16.</td><td>Construction Noise Standards
(a) Construction noise shall be measured and assessed in accordance with NZS6803:1999 Acoustics – Construction Noise and shall comply with the noise standards set out in the following table as far as practicable:
Table 17.1: Construction noise standards
<table>
<tr><th>Day of week</th><th>Time period</th><th>$L_{Aeq(15min)}$</th><th>L_{AFmax}</th></tr>
<tr><td colspan="4">Occupied activity sensitive to noise</td></tr>
<tr><td>Weekday</td><td>0630h - 0730h
0730h - 1800h
1800h - 2000h
2000h - 0630h</td><td>55 dB
70 dB
65 dB
45 dB</td><td>75 dB
85 dB
80 dB
75 dB</td></tr>
<tr><td>Saturday</td><td>0630h - 0730h
0730h - 1800h
1800h - 2000h
2000h - 0630h</td><td>55 dB
70 dB
45 dB
45 dB</td><td>75 dB
85 dB
75 dB
75 dB</td></tr>
<tr><td>Sunday and Public Holidays</td><td>0630h - 0730h
0730h - 1800h
1800h - 2000h
2000h - 0630h</td><td>45 dB
55 dB
45 dB
45 dB</td><td>75 dB
85 dB
75 dB
75 dB</td></tr>
<tr><td colspan="4">Other occupied buildings</td></tr>
<tr><td>All</td><td>0730h – 1800h
1800h – 0730h</td><td>70 dB
75 dB</td><td></td></tr>
</table>
(b) Where compliance with the noise standards set out in Table [above] is not practicable, and unless otherwise provided for in the CNVMP as required by Condition 18c)(x), then the methodology in Condition 19 shall apply.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Condition</th></tr>
<tr><td>17.</td><td>
Construction Vibration Standards
(a) Construction vibration shall be measured in accordance with ISO 4866:2010 Mechanical vibration and shock – Vibration of fixed structures – Guidelines for the measurement of vibrations and evaluation of their effects on structures and shall comply with the vibration standards set out in the following table as far as practicable.
Table CNV2 Construction vibration criteria
<table>
<tr><th>Receiver</th><th>Details</th><th>Category A</th><th>Category B</th></tr>
<tr><td rowspan="2">Occupied Activities sensitive to noise</td><td>Night-time 2000h - 0630h</td><td>0.3mm/s ppv</td><td>2mm/s ppv</td></tr>
<tr><td>Daytime 0630h - 2000h</td><td>2mm/s ppv</td><td>5mm/s ppv</td></tr>
<tr><td>Other occupied buildings</td><td>Daytime 0630h - 2000h</td><td>2mm/s ppv</td><td>5mm/s ppv</td></tr>
<tr><td>All other buildings</td><td>At all other times</td><td colspan="2">Tables 1 and 3 of DIN4150-3:1999</td></tr>
</table>
*Category A criteria adopted from Rule E25.6.30.1 of the AUP
**Category B criteria based on DIN 4150-3:1999 building damage criteria for daytime
(b) Where compliance with the vibration standards set out in Table [above] is not practicable, and unless otherwise provided for in the CNVMP as required by Condition 18(c)(x), then the methodology in Condition 19 shall apply
</td></tr>
<tr><td>18.</td><td>
Construction Noise and Vibration Management Plan (CNVMP)
(a) A CNVMP shall be prepared by a Suitably Qualified Person prior to the Start of Construction for a Stage of Work.
(b) A CNVMP shall be implemented during the Stage of Work to which it relates.
(c) The objective of the CNVMP is to provide a framework for the development and implementation of the Best Practicable Option for the management of construction noise and vibration effects to achieve the construction noise and vibration standards set out in Conditions 16 and 17 to the extent practicable. To achieve this objective, the CNVMP shall be prepared in accordance with Annex E2 of the New Zealand Standard NZS6803:1999 'Acoustics – Construction Noise' (NZS6803:1999) and shall as a minimum, address the following:
i. Description of the works and anticipated equipment/processes;
ii. Hours of operation, including times and days when construction activities would occur;
iii. The construction noise and vibration standards for the project;
iv. Identification of receivers where noise and vibration standards apply;
v. A hierarchy of management and mitigation options, including any requirements to limit night works and works during other sensitive times, including Sundays and public holidays as far practicable and identification of the Best Practicable Option;
vi. Methods and frequency for monitoring and reporting on construction noise and vibration;
vii. Procedures for communication and engagement with nearby residents and stakeholders, including notification of proposed construction activities, the period of construction activities, and management of noise and vibration complaints.
viii. Contact details of the Project Liaison Person;
ix. Procedures for the regular training of the operators of construction equipment to minimise noise and vibration as well as expected construction site behaviours for all workers;
x. Identification of areas where compliance with the noise [Condition 16] and/or vibration standards [Condition 17 Category A or Category B] will not be practicable and the specific management controls to be implemented and consultation requirements with owners and occupiers of affected sites.
xi. Procedures and requirements for the preparation of a Schedule to the CNVMP (Schedule) for those areas where compliance with the noise [Condition 16] and/or vibration standards [Condition 17 Category B] will not be practicable and where
</td></tr>
</table>

No.	Condition
	sufficient information is not available at the time of the CNVMP to determine the area specific management controls Condition 18 (c)(x). xii. Procedures for: A. communicating with affected receivers, where measured or predicted vibration from construction activities exceeds the vibration criteria of Condition 17; B. assessing, mitigating and monitoring vibration where measured or predicted vibration from construction activities exceeds the Category AB vibration criteria of Condition 17, including the requirement to undertake building condition surveys before and after works to determine whether any damage has occurred as a result of construction vibration; and xiii. Requirements for review and update of the CNVMP
19.	**Schedule to a CNVMP** (a) An updated Schedule to the CNVMP (Schedule) shall be prepared prior to the start of the construction to which it relates by a Suitably Qualified Person, in consultation with the owners and occupiers of sites subject to the Schedule, when: (i) Construction noise is either predicted or measured to exceed the noise standards in Condition 16, except where the exceedance of the L_{Aeq} criteria is no greater than 5 decibels and does not exceed: A. 0630 – 2000: 2 period of up to 2 consecutive weeks in any 2 months, or B. 2000 - 0630: 1 period of up to 2 consecutive nights in any 10 days. (ii) Construction vibration is either predicted or measured to exceed the Category B standard at the receivers in Condition 17. (b) The objective of the Schedule is to set out the Best Practicable Option measures to manage for the management of noise and/or vibration effects of the construction activity beyond those measures set out in the CNVMP. The Schedule shall include details such as: (i) Construction activity location, start and finish dates; (ii) The nearest neighbours to the construction activity; (iii) The predicted noise and/or vibration level for all receivers where the levels are predicted or measured to exceed the applicable standards and predicted duration of the exceedance; (iv) The proposed mitigation options that have been selected, and the options that have been discounted as being impracticable and the reasons why; (v) The consultation undertaken with owners and occupiers of sites subject to the Schedule, and how consultation has and has not been taken into account; and proposed communications with neighbours. (vi) Location, times and types of monitoring; (c) The Schedule shall be submitted to the Manager Council for certification at least 5 working days (except in unforeseen circumstances) in advance of Construction Works that are covered by the scope of the Schedule and shall form part of the CNVMP. (d) Where material changes are made to a Schedule required by this condition, the Requiring Authority shall consult the owners and/or occupiers of sites subject to the Schedule prior to submitting the amended Schedule to the Manager for certification in accordance with (c) above. The amended Schedule shall document the consultation undertaken with those owners and occupiers, and how consultation outcomes have and have not been taken into account.
Advice note	***Accidental Discoveries*** ***Advice Note:*** *The Requiring Authority is advised of the requirements of Rule E11.6.1 of the AUP for "Accidental Discovery" as they relate to both contaminated soils and heritage items.* *The requirements for accidental discoveries of heritage items are set out in Rule E11.6.1 of the AUP [and in the Waka Kotahi Minimum Standard P45 Accidental Archaeological Discovery Specification, or any subsequent version].*
20.	**Pre-Construction Ecological Survey**

No.	Condition
	(a) At the start of detailed design for a Stage of Work, an updated ecological survey shall be undertaken by a Suitably Qualified Person. The purpose of the survey is to inform the detailed design of ecological management plan by: (i) Confirming whether the species of value within the Identified Biodiversity Areas recorded in the *Identified Biodiversity Area Schedule 2* are still present; (ii) Confirming whether the project will or may have a moderate or greater level of ecological effect on ecological species of value, prior to implementation of impact management measures, as determined in accordance with the EIANZ guidelines. (b) If the ecological survey in (a) above confirms the presence of ecological features of value in accordance with condition 20a)(i) and that effects are likely in accordance with condition 20(a)(ii) then an Ecological Management Plan (or Plans) shall be prepared in accordance with Condition 21 for these areas (Confirmed Biodiversity Areas).
21.	**Ecological Management Plan (EMP)** (a) An EMP shall be prepared for any Confirmed Biodiversity Areas (confirmed through Condition 20) prior to the Start of Construction for a Stage of Work. The objective of the EMP is to minimise effects of the Project on the ecological features of value of Confirmed Biodiversity Areas as far as practicable. The EMP shall set out the methods that will be used to achieve the objective which may include: (i) If an EMP is required in accordance with condition 20(b) for the presence of long tail bats: a. Measures to minimise as far as practicable, disturbance from construction activities within the vicinity of any active long tail bat roosts (including maternity) that are discovered through survey until such roosts are confirmed to be vacant of bats. b. How the timing of any construction work in the vicinity of any maternity long tail bat roosts will be limited to outside the bat maternity period (between December and March) where reasonably practicable; c. Details of areas where vegetation is to be retained where practicable for the purposes of the connectivity of long tail bats; d. Details of how bat connectivity will be provided and maintained (e.g. through the presence of suitable indigenous or exotic trees or artificial alternatives). e. Details of where opportunities for advance restoration / mitigation planting have previously been identified and implemented. f. Where mitigation to minimise effects is not practicable, details of any offsetting proposed. (b) The EMP shall be consistent with any ecological management measures to be undertaken in compliance with conditions of any regional resource consents granted for the Project.
Advice note	***Advice Note:*** *Depending on the potential effects of the Project, the regional consents for the Project may include the following monitoring and management plans:* *(i) Stream and/or wetland restoration plans;* *(ii) Vegetation restoration plans; and* *(iii) Fauna management plans (eg avifauna, herpetofauna, bats).*
22.	**Tree Management Plan** (a) Prior to the Start of Construction for a Stage of Work, a Tree Management Plan shall be prepared. (b) The objective of the Tree Management Plan is to avoid, remedy or mitigate effects of construction activities on trees identified as protected or notable in the Auckland Unitary Plan. (c) The Tree Management Plan shall: (i) confirm the trees that will be affected by the project work and are identified as protected or notable in the Auckland Unitary Plan; and (ii) demonstrate how the design and location of project works has avoided, remedied or mitigated any effects on any tree identified in (i) above. This may include: A. planting to replace trees that require removal (with reference to the ULDMP planting design details in Condition 9); B. tree protection zones and tree protection measures such as protective fencing, ground protection and physical protection of roots, trunks and branches; and

No.	Condition
	C. methods for work within the rootzone of trees that are to be retained in line with accepted arboricultural standards. (iii) demonstrate how the tree management measures (outlined in A – C above) are consistent with conditions of any resource consents granted for the project in relation to managing construction effects on trees.
Operational Conditions	
23.	**Low Noise Road Surface** (a) Asphaltic concrete surfacing (or equivalent low noise road surface) shall be implemented within 12 months of Completion of Construction of the project. (b) Any future resurfacing works of the Project shall be undertaken in accordance with the Auckland Transport Reseal Guidelines, Asset Management and Systems 2013 or any updated version and asphaltic concrete surfacing (or equivalent low noise road surface) shall be implemented where: (i) The volume of traffic exceeds 10,000 vehicles per day; or (ii) The road is subject to high wear and tear (such as cul de sac heads, roundabouts and main road intersections); or (iii) It is in an industrial or commercial area where there is a high concentration of truck traffic; or (iv) It is subject to high usage by pedestrians, such as town centres, hospitals, shopping centres and schools. (c) Prior to commencing any future resurfacing works, the Requiring Authority shall advise the Manager if any of the triggers in Condition 23(b)(i) – (iv) are not met by the road or a section of it and therefore where the application of asphaltic concrete surfacing (or equivalent low noise road surface) is no longer required on the road or a section of it. Such advice shall also indicate when any resealing is to occur.

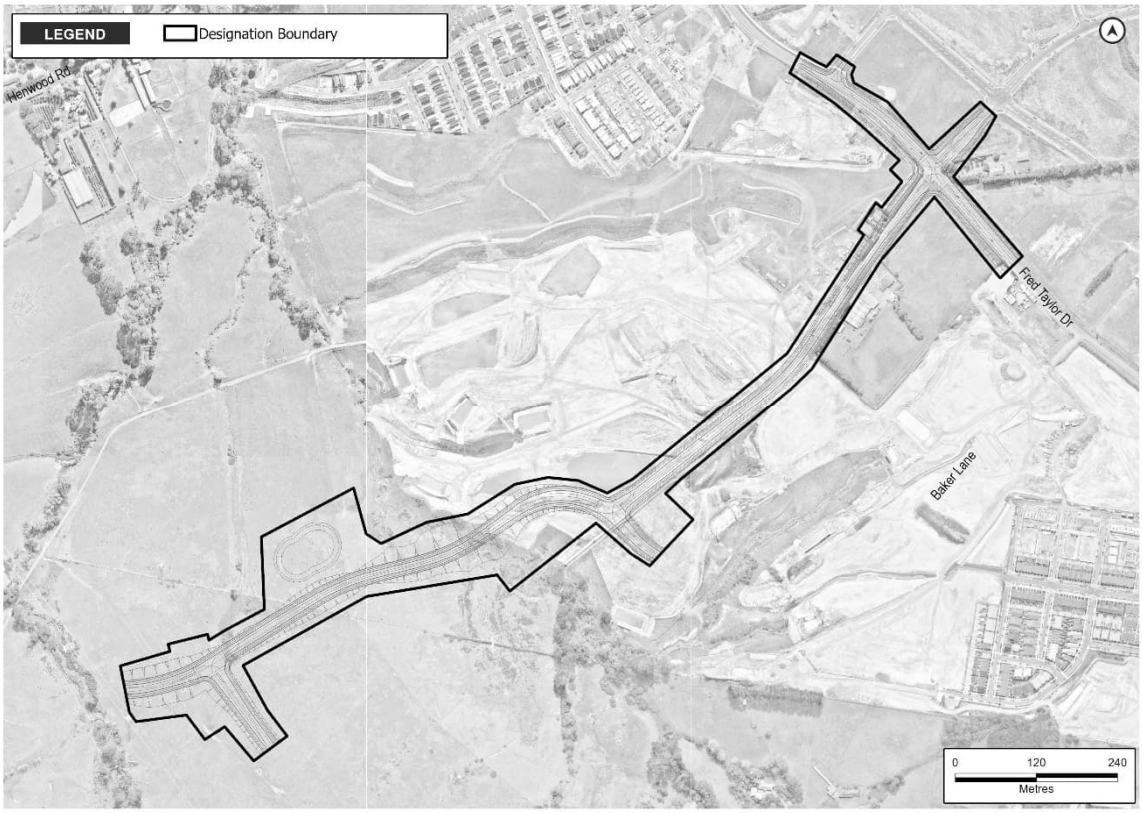
Schedule 1: General Accordance Plans and Information

Project Description – NOR 2a Redhills East-West Arterial Transport Corridor – Dunlop Road

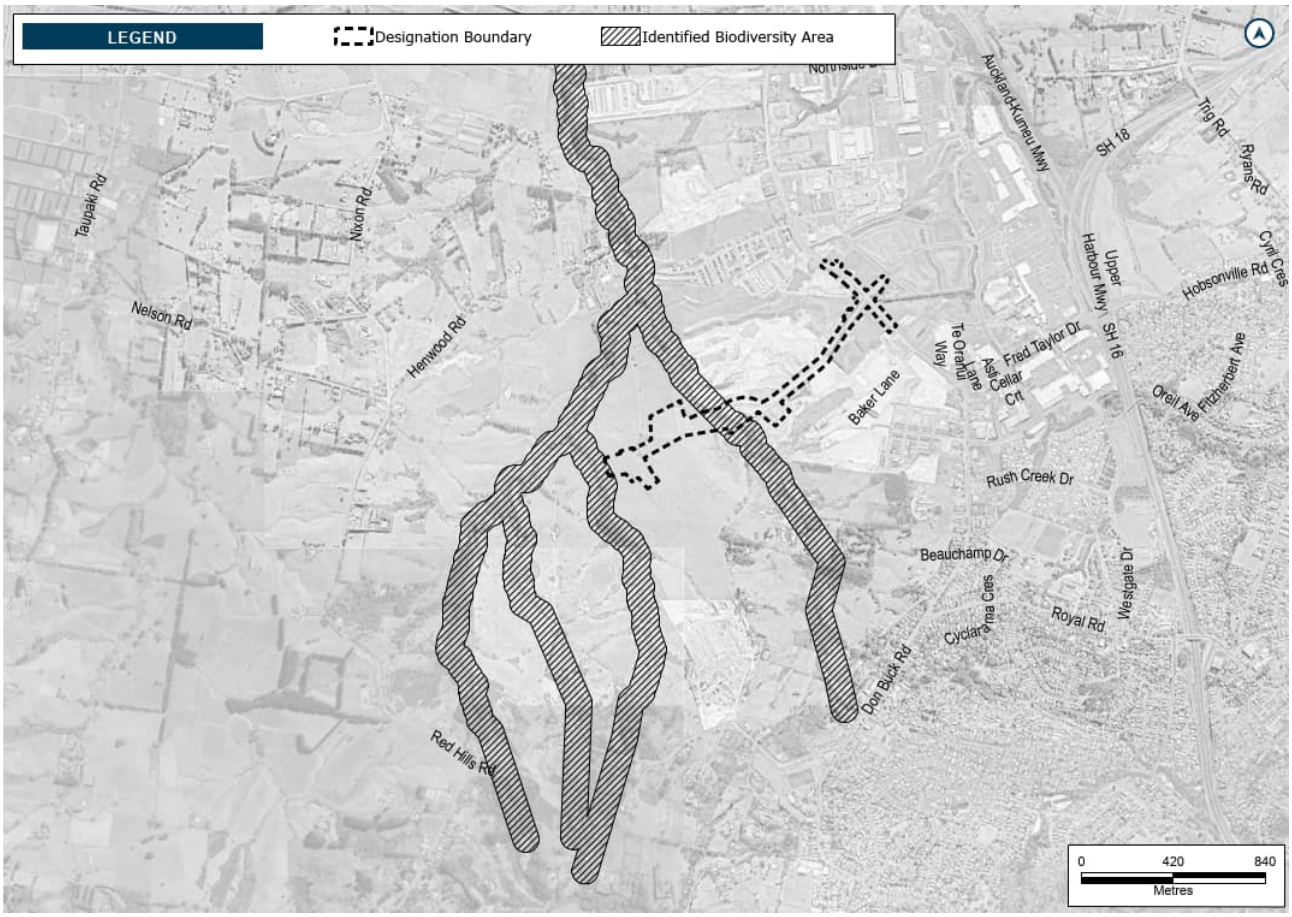
The proposed work is the construction, operation, and maintenance of a transport corridor in Redhills, from Fred Taylor Drive to the intersection with NORs 1 and 2c, including active transport facilities and associated infrastructure. The proposed work is shown in the following Concept Plan and includes:

(a) An upgraded and new transport corridor, including public transport and active transport facilities;
(b) Associated works including intersections, bridges, embankments, retaining, culverts, stormwater management systems;
(c) Changes to local roads, where the proposed work intersects with local roads; and
(d) Construction activities, including vegetation removal, construction compounds, laydown areas, bridge works area, construction traffic management and the re-grade of driveways.

NOR Concept Plan



Schedule 2: Identified Biodiversity Areas – Long Tailed Bats



ATTACHMENT 07

NoR2b – PUBLIC NOTICE

Auckland Unitary Plan

Notice of Requirement for a new designation for Redhills East West Arterial Transport Corridor – Baker Lane, being a new urban arterial transport corridor that intersects with Fred Taylor Drive and connects to the intersection of the remaining East-West connection and Dunlop Road (NoR2a).

Notice of Requirement (NOR2b – Redhills East-West Arterial Transport Corridor – Baker Lane Extension)

Auckland Council has received a notice of a requirement for a designation from Auckland Transport as the Requiring Authority, for public work.

The requirement is for the construction, operation and maintenance of a transport corridor to enable the Requiring Authority to:

- Provide new east-west urban arterial transport corridors from Fred Taylor Drive to Nixon Road to support and integrate with planned urban growth in Redhills
- Provide arterial transport corridors that are safe for all transport users
- Contribute to mode shift by providing a choice of transport options including walking, cycling and public transport.
- Provide for the identification and protection of the future Redhills arterial transport network and key connections which enables growth.

The site to which the requirement applies is as follows: Baker Lane from Fred Taylor Drive in the east to the intersection with the Redhills East-West arterial corridor – Dunlop Road.

Viewing the notice of requirement

The explanation of the notice of requirement can be found on our web site https://www.aucklandcouncil.govt.nz/nor. If you don't have access to a computer, please visit your local library or service centre and they will help you view the notice of requirement on our website.

If you have any questions about the notice of requirement, please contact: Unitary Plan on 09 365 3786 or at unitaryplan@aucklandcouncil.govt.nz

Making a submission on the notice of requirement

Any person or organisation may make a submission on the notice of requirement, but a person who is a trade competitor or the requiring authority may do so only if that person is directly affected by an effect of the activity to which the requirement relates that –

(a) Adversely affects the environment; and
(b) Does not relate to trade competition or the effects of trade competition.

You may make a submission by sending a written or electronic form to Auckland Council at:

- Auckland Council, Unitary Plan Private Bag 92300, Auckland 1142, Attention: Planning Technician, or
- By using the online form on the Auckland Council website at https://www.aucklandcouncil.govt.nz/nor, or
- By email to: unitaryplan@aucklandcouncil.govt.nz ;or
- Lodging your submission in person at Auckland Council, Libraries or offices.

Submissions close on 24 April 2023.

You must serve a copy of your submission on Auckland Transport, whose address for service is, Auckland Transport, Level 5, 203 Queen Street, Auckland 1010, as soon as reasonably practicable after serving your submission on Auckland Council.

John Duguid
Manager – Plans & Places

Notification date: 23/03/2023

ATTACHMENT 08

NoR2b – LODGEMENT COVER LETTER

TE TUPU NGĀTAHI
SUPPORTING GROWTH

19 December 2022

Te Tupu Ngātahi
Supporting Growth
PO Box 105218
Auckland 1143

Auckland Council
C/o Todd Elder
Planning North/West – Plans and Places

Dear Todd

Re: NORTH WEST HOUSING INFRASTRUCTURE FUND NOTICES OF REQUIREMENT

This letter is to advise that Auckland Transport gives notices of requirement for five new designations as part of the North West Housing Infrastructure Fund (HIF) Project.

The lodgment documents have been prepared as two packages:

- Redhills Arterial Transport Network; and
- Trig Road Corridor Upgrade

Each package comprises four volumes as follows:

- Volume 1: Form 18 for each of the notices
- Volume 2: Assessment of Effects on the Environment
- Volume 3: General Arrangement Layout Plans
- Volume 4: Supporting Technical Assessments

These have been emailed to you via file transfer links.

Please contact me in the first instance if there are any queries.

Yours sincerely,

Bridget O'Leary
North West HIF – AEE Lead
info@supportinggrowth.nz
0800 4769 255

ATTACHMENT 09

NoR2b – FORM 18

Auckland Transport
An Auckland Council Organisation

20 Viaduct Harbour Avenue, Auckland 1010
Private Bag 92250, Auckland 1142, New Zealand
Phone 09 355 3553 **Website** www.AT.govt.nz

NOTICE OF REQUIREMENT FOR DESIGNATION OF LAND UNDER s168(2) OF THE RESOURCE MANAGEMENT ACT 1991

TO: Auckland Council

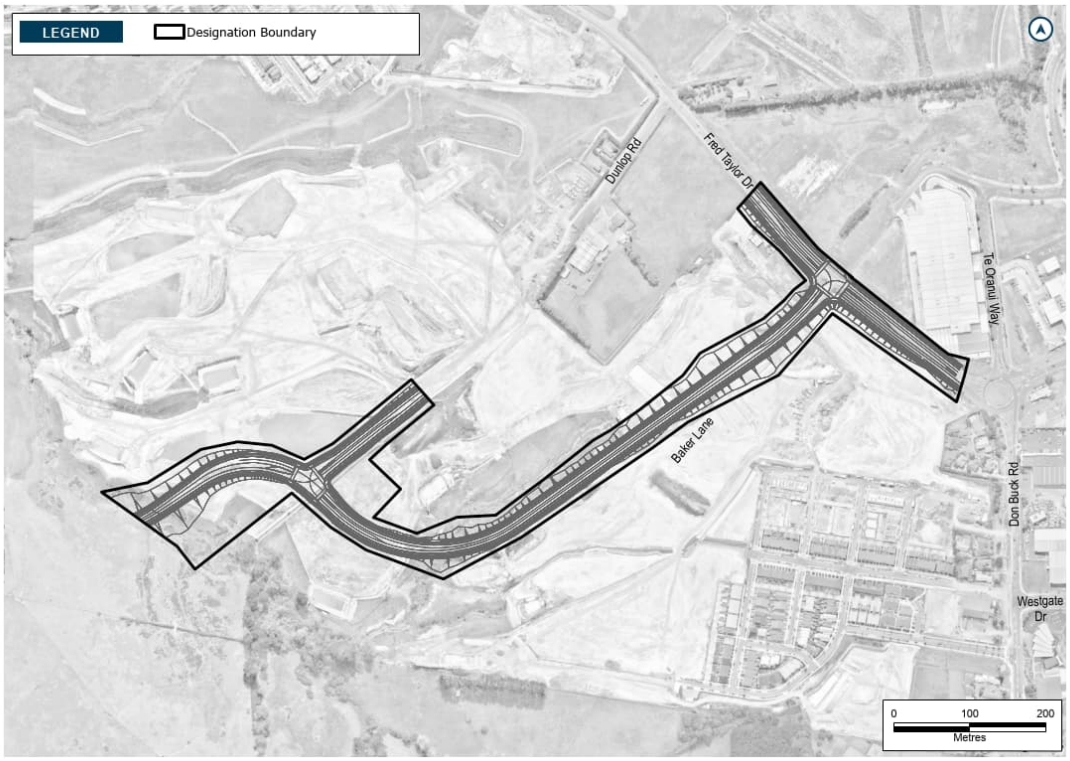
FROM: Auckland Transport

Auckland Transport (AT) (an Auckland Council Controlled Organisation) as a Requiring Authority under section 167 of the Resource Management Act 1991 (RMA) gives notice of requirement (NOR) for a designation in the Auckland Unitary Plan for a public work, being the construction, operation and maintenance of an arterial transport corridor in Redhills.

1 SUMMARY

AT is proposing to construct two arterial transport corridors in Redhills over the next 15 years. These two arterial transport corridors form the Redhills Arterial Transport Network (RATN), under the Te Tupu Ngātahi Supporting Growth Programme.

This form is for NOR 2b, which is for the construction, operation and maintenance of part of the Redhills East-West arterial transport corridor. NOR 2b is referred to as the Redhills East-West Arterial Transport Corridor – Baker Lane. The extent of the project, designation and boundary of NOR 2b is outlined below and shown in detail on the Designation Plans contained in Attachment A.



The purpose of the designation is for the construction, operation and maintenance of a transport corridor. The activities to be enabled by the designation include environmental mitigation, temporary construction areas, ancillary structure and other activities required for the Project.

The Project Objectives for NOR 2b are to:

- **Project Objective 1:** Provide new east-west urban arterial transport corridors from Fred Taylor Drive to Nixon Road to support and integrate with planned urban growth in Redhills.
- **Project Objective 2:** Provide arterial transport corridors that are safe for all transport users.
- **Project Objective 3:** Contribute to mode shift by providing a choice of transport options including walking, cycling and public transport.
- **Project Objective 4:** Provide for the identification and protection of the future Redhills arterial transport network and key connections which enables growth.

As an approved Requiring Authority under section 176 of the RMA via section 47(1) of the Local Government (Auckland Council) Act 2009, Auckland Transport may designate to construct, operate and maintain a road and undertake ancillary activities.

2 THE SITE TO WHICH THE REQUIREMENT APPLIES IS AS FOLLOWS:

The area of the proposed NOR 2b designation is shown on the Designation Plans included in Attachment A of this Notice. NOR 2b applies to an area of land of approximately 87150 square metres (not including legal roads) located in Redhills. The requirement applies to 11 land parcels (not including legal roads). The land directly affected by NOR 2b is identified in the Schedule of Directly Affected Property included in Attachment B of this Notice.

3 THE NATURE OF THE PROPOSED WORKS IS:

The proposed work is the construction, operation and maintenance of part of the Redhills East-West arterial transport corridor and associated activities (hereafter referred to as “NOR 2b”). The nature of the proposed work is described in Section 3.2: Redhills East-West Arterial Transport Corridor and Section 8.1: Construction Works of the accompanying Assessment of Effects on the Environment (AEE) Report.

In summary, the proposed work includes:

- The construction of a two-lane, 24m wide urban arterial transport corridor extending down Baker Lane from Fred Taylor Drive in the east to the intersection with the Redhills East-West arterial corridor – Dunlop Road (part of the RATN – NOR 2a). Separated footpaths and cycle lanes will be provided on both sides of the corridor.
- Widening of Fred Taylor Drive to accommodate four lanes for approximately 800m.
- New signalised intersection at the intersection of Baker Lane and Fred Taylor Drive.
- Bulk earthworks.
- Removal and relocation of existing utilities.
- Other construction related activities required outside the permanent corridor including construction traffic manoeuvring and construction laydown areas.

4 THE NATURE OF THE PROPOSED CONDITIONS THAT WOULD APPLY ARE:

The proposed conditions that will apply to the work are included in **Attachment C** of this Notice.

5 THE EFFECTS THAT THE PROPOSED WORK WILL HAVE ON THE ENVIRONMENT, AND THE WAYS IN WHICH ANY ADVERSE EFFECTS WILL BE MITIGATED ARE:

The AEE Report contains a description of the existing and likely future environment (Section 6), an assessment of the effects on the environment from the Project (Section 8.3), and the proposed measures to avoid, remedy or mitigate the adverse effects of the Project (Section 9).

Positive Effects

The Project will generate a range of positive effects. The nature and degree of these positive effects are outlined in the AEE, in particular Section 8.3.1. However, they are summarised as follows:

- The Project will support the ongoing and proposed urbanisation of the area, by providing an arterial transport corridor that connects to the existing surrounding strategic transport network through new and upgraded intersections.
- The Project will include pedestrian, cycle and public transport facilities along the transport corridor which will enable greater choice of mode and provide improved safety outcomes for transport users.
- The Project will improve transport network functions and contribute to a high-quality urban environment for local residents, businesses and road users.

Adverse Effects

There will be a range of potential adverse effects during the construction and operational phases of the Project, which are assessed in the following sections of the AEE Report:

- Transportation Effects (Section 8.3.2)
- Noise and Vibration Effects (Section 8.3.3)
- Archaeology and Heritage Effects (Section 8.3.4)
- Cultural Effects (Section 8.3.5)
- Landscape and Visual Effects (Section 8.3.6)
- Ecological Effects (Section 8.3.7)
- Natural Hazards (Section 8.3.8)
- Property, Land Use and Business Effects (Section 8.3.9)

The AEE Report draws on information provided in the supporting technical documents (contained in Volume 4).

6 ALTERNATIVE SITES, ROUTES, AND METHODS HAVE BEEN CONSIDERED TO THE FOLLOWING EXTENT:

A wide range of alternatives have been investigated for addressing the future transport needs in Redhills. Alternatives were assessed at all stages of Project development. In summary, once problems, issues and objectives had been established, a list of corridor options were developed to achieve the outcomes. These were refined into a range of alignment options with the preferred options further refined to develop the indicative alignment.

The process by which AT considered alternative sites, routes and methods of NOR 2b is detailed in Appendix A of the AEE: Assessment of Alternatives Report. Development of NOR 2b was based on a

comprehensive and robust optioneering process taking into account Mana Whenua, stakeholder and landowner feedback and specialist assessment inputs.

7 THE PROPOSED WORK AND DESIGNATION ARE REASONABLY NECESSARY FOR ACHIEVING THE OBJECTIVES OF THE REQUIRING AUTHORITY BECAUSE:

The works and designation are reasonably necessary to meet the objectives of AT, refer to Section 11.2 of the AEE.

AT's purpose under section 39 of the Local Government (Auckland Council) Act 2009 (LGA) is "to contribute to an effective, efficient, and safe Auckland land transport system in the public interest". The Project will assist AT in meeting this objective.

The AT objectives for the Project are to:

- **Project Objective 1:** Provide new east-west urban arterial transport corridors from Fred Taylor Drive to Nixon Road to support and integrate with planned urban growth in Redhills.
- **Project Objective 2:** Provide arterial transport corridors that are safe for all transport users.
- **Project Objective 3:** Contribute to mode shift by providing a choice of transport options including walking, cycling and public transport.
- **Project Objective 4:** Provide for the identification and protection of the future Redhills arterial transport network and key connections which enables growth.

The Project achieves these objectives by:

- The proposed works will assist in the efficient operation of the local transport network.
- The proposed works identify and protect an urban arterial transport corridor in Redhills and key connections to the existing transport network. No transport network currently exists in Redhills, and the arterial corridor will provide access to and support the planned urban growth in Redhills.
- Sufficient space and facilities will be provided to ensure that the proposed transport corridor is safe for all transport users, including vehicles, public transport, walking and cycling.
- The proposed works contribute to mode shift by providing a choice of transport options through the provision of separated and protected walking and cycling facilities, including signalised pedestrian / cycle crossing facilities, and public transport measures to improve bus travel time and reliability.
- The proposed designation will allow AT and / or its authorised agents to undertake the works for the construction, operation and maintenance of the transport corridor and associated ancillary components / activities.
- The proposed designation will enable works to be undertaken in a comprehensive and integrated manner.
- The proposed designation will add protection to the route from future incompatible development which may preclude or put at risk the construction and / or operation and maintenance of the corridor.
- The proposed designation will be included in the Auckland Unitary Plan providing certainty to the public as to the intended use of the land and nature of the activity authorised.

The proposed designation is reasonably necessary as a planning tool, as it identifies and protects land required for the Project and will enable AT to carry out the proposed work.

8 THE FOLLOWING RESOURCE CONSENTS ARE NEEDED FOR THE PROPOSED ACTIVITY AND HAVE NOT BEEN APPLIED FOR:

The NOR will require resource consents for a number of activities to enable the proposed works. The resource consents are not sought at this time as the date for construction is unknown and could be a number of years away. The resource consents will be sought when detailed design of the Project is complete and nearer to the proposed construction start date. The future resource consents likely to be required are summarised below.

- Resource consents for the disturbance of contaminated, or potentially contaminated land under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011.
- Resource consents for specified infrastructure works within rivers, streams and natural wetlands under the Resource Management (National Environmental Standards for Freshwater) Regulations 2020.
- Resource consents for the following activities under the Auckland Unitary Plan:
    - Bulk earthworks and associated discharge of sediment
    - Vegetation removal
    - Stormwater discharge to land or water
    - Discharge of contaminants to land
    - Activities (including structures and associated works) in, on, under or over the bed of rivers, streams, wetlands
    - Water take, use and diversion.

9 THE FOLLOWING CONSULTATION HAS BEEN UNDERTAKEN WITH PARTIES THAT ARE LIKELY TO BE AFFECTED:

Consultation and engagement is ongoing with various parties who are directly affected by or have an interest in the Project including Mana Whenua, property owners and occupiers, Auckland Council, Waka Kotahi, network utility operators, business and community representative groups and the wider community. Engagement activities include online video meetings, phone calls, face to face meetings, workshops, hui, newsletters and online information.

The consultation and engagement undertaken is detailed in Section 10 of the AEE Report.

10 EXTENDED LAPSE PERIOD PROPOSED:

Under section 184(1) of the RMA a designation lapses on the expiry of 5 years after the date on which it is included in the district plan unless it is given effect to, substantial progress or effort has been made to give effect to, or a different period is specified when incorporated into the plan. There is a need for long term route protection to protect the corridor from inappropriate development until such time as the transport corridor is required to support and facilitate the planned urban growth and funding is allocated. Therefore, pursuant to section 184(1)(c) of the RMA, AT proposes an extended lapse period of 15 years for implementation of the proposed designation.

11 INFORMATION REQUIRED TO BE INCLUDED IN THIS NOTICE BY THE AUCKLAND UNITARY PLAN OR ANY REGULATION MADE UNDER THE RESOURCE MANAGEMENT ACT 1991:

AT attaches the following information required to be included in this notice by the Auckland Unitary Plan, or any regulations made under the Resource Management Act 1991.

- Volume 2: Assessment of Effects on the Environment
- Volume 3: Indicative Design and Designation Drawings
- Volume 4: Supporting Technical Assessment Reports

Signed on behalf of AT

Jane Small
Group Manager PMO, Strategic Programmes & Property pursuant to authority delegated by Auckland Transport

13 December 2022

Attachment A – Designation Plans

Attachment B – Schedule of Directly Affected Property

Attachment C – Proposed Conditions for the Designation

Attachment A – Designation Plans

Date Exported: 29/11/2022 3:52

Name of Map: SGA-PA-NW-40-NOR2B-Redhills

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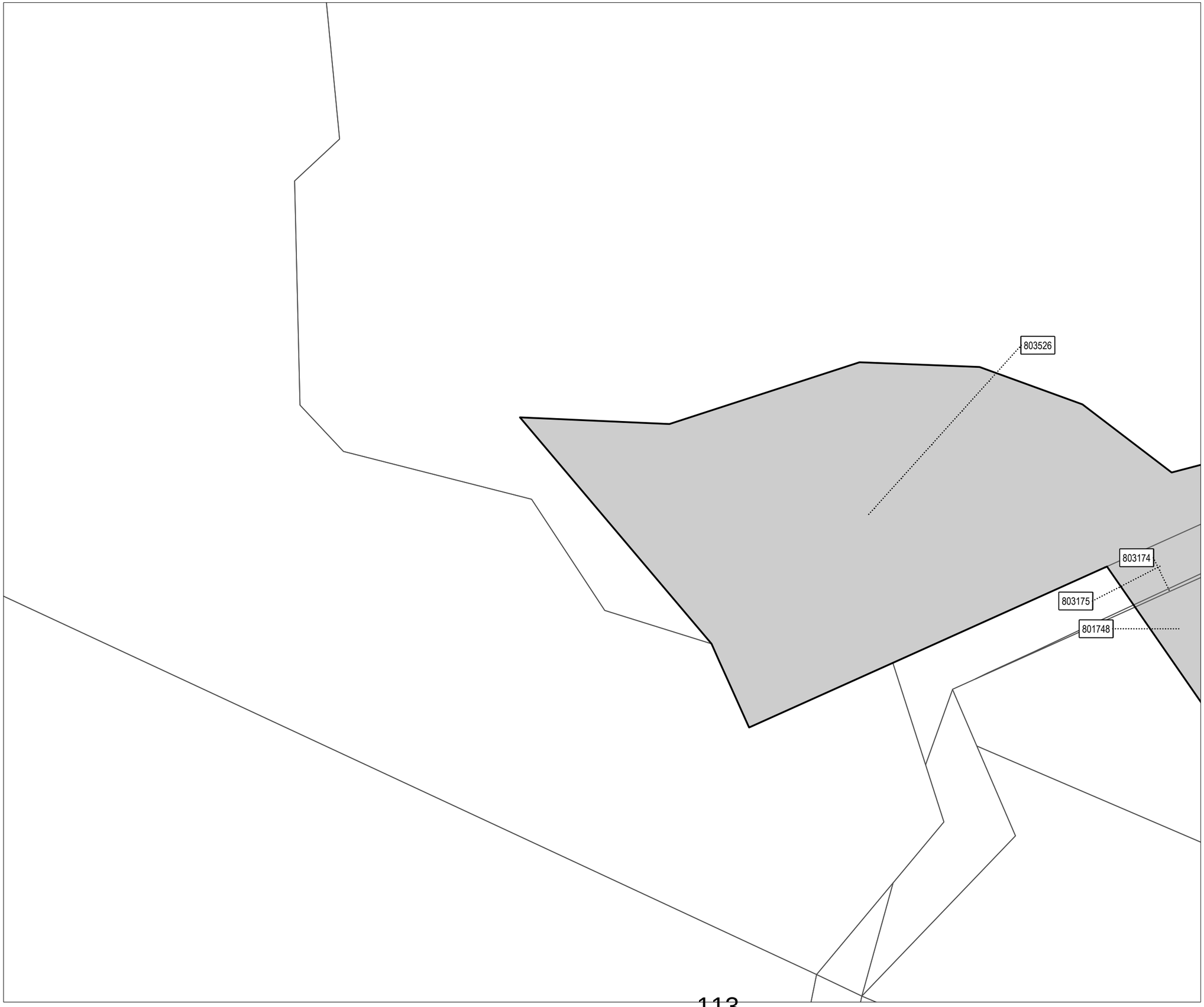
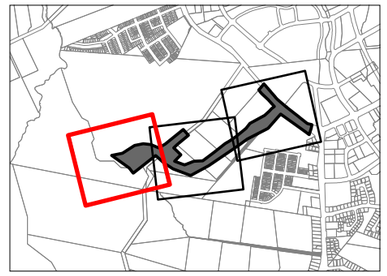


Designation Plan

Land to be Designated
East-West Arterial Corridor
Baker Lane

Legend

- Proposed Designation
- Parcel Boundary
- 507729 Property ID



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Revision	Author	Verified	Approved	Date
1	BAP	RJL	RE	27/11/2022

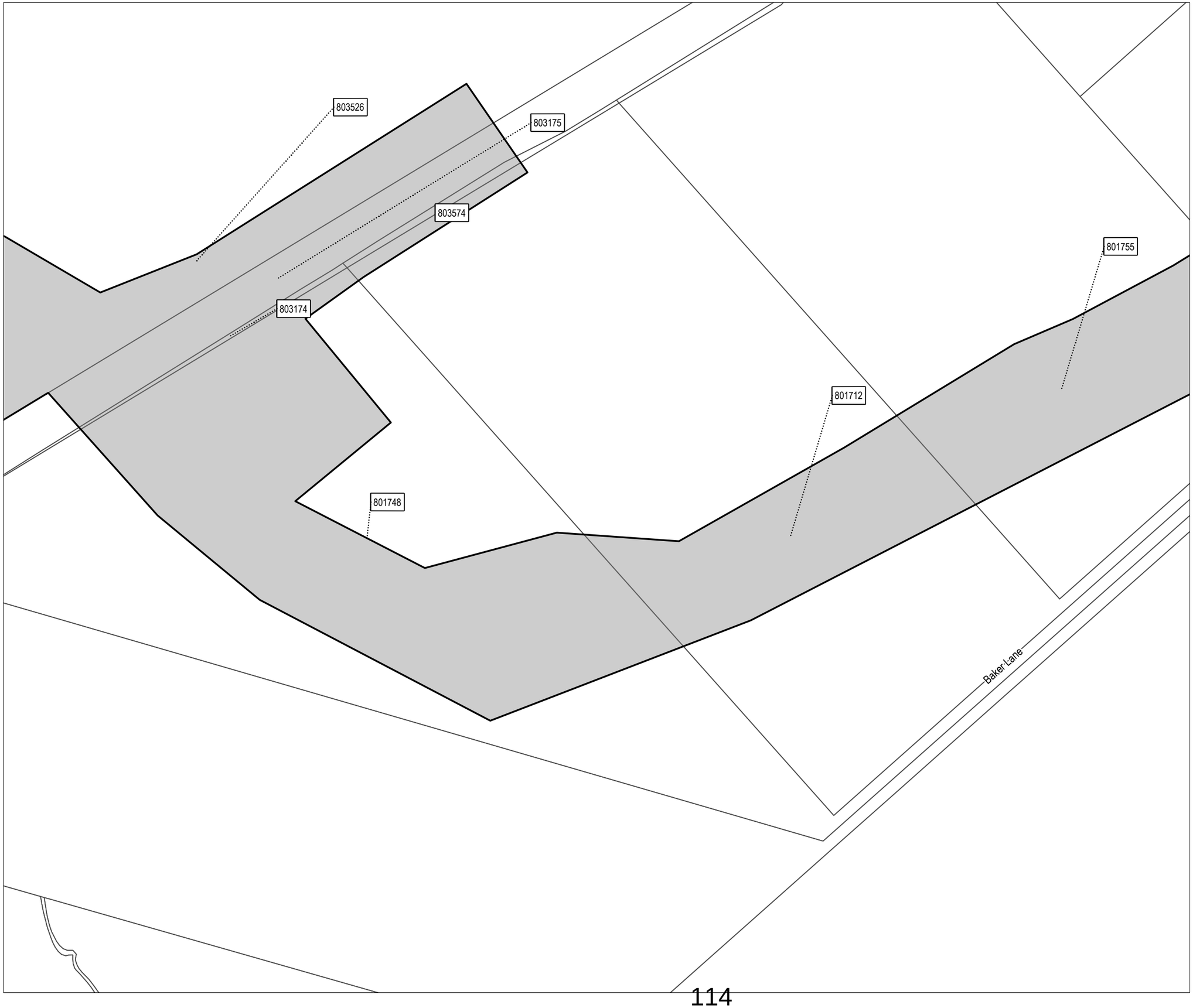
N

Client: **Auckland Transport / Waka Kotahi**

Discipline: **GIS**

Project: **Redhills Arterial Transport Network**

Drawing No: **SGA-PA-NW-040**
Sheet No : 1 of 3

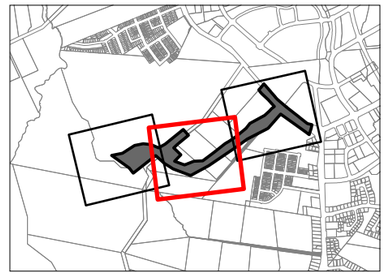


Designation Plan

Land to be Designated
East-West Arterial Corridor
Baker Lane

Legend

- Proposed Designation
- Parcel Boundary
- 507729 Property ID



This map contains data derived in part or wholly from sources other than those party to the Supporting Growth Alliance, and therefore, no representations or warranties are made by those party to the Supporting Growth Alliance as to the accuracy or completeness of this information.

Map intended for distribution as a PDF document.
Scale may be incorrect when printed.

Map Scale @ A3: 1:1,500

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Revision	Author	Verified	Approved	Date
1	BAP	RJL	RE	27/11/2022

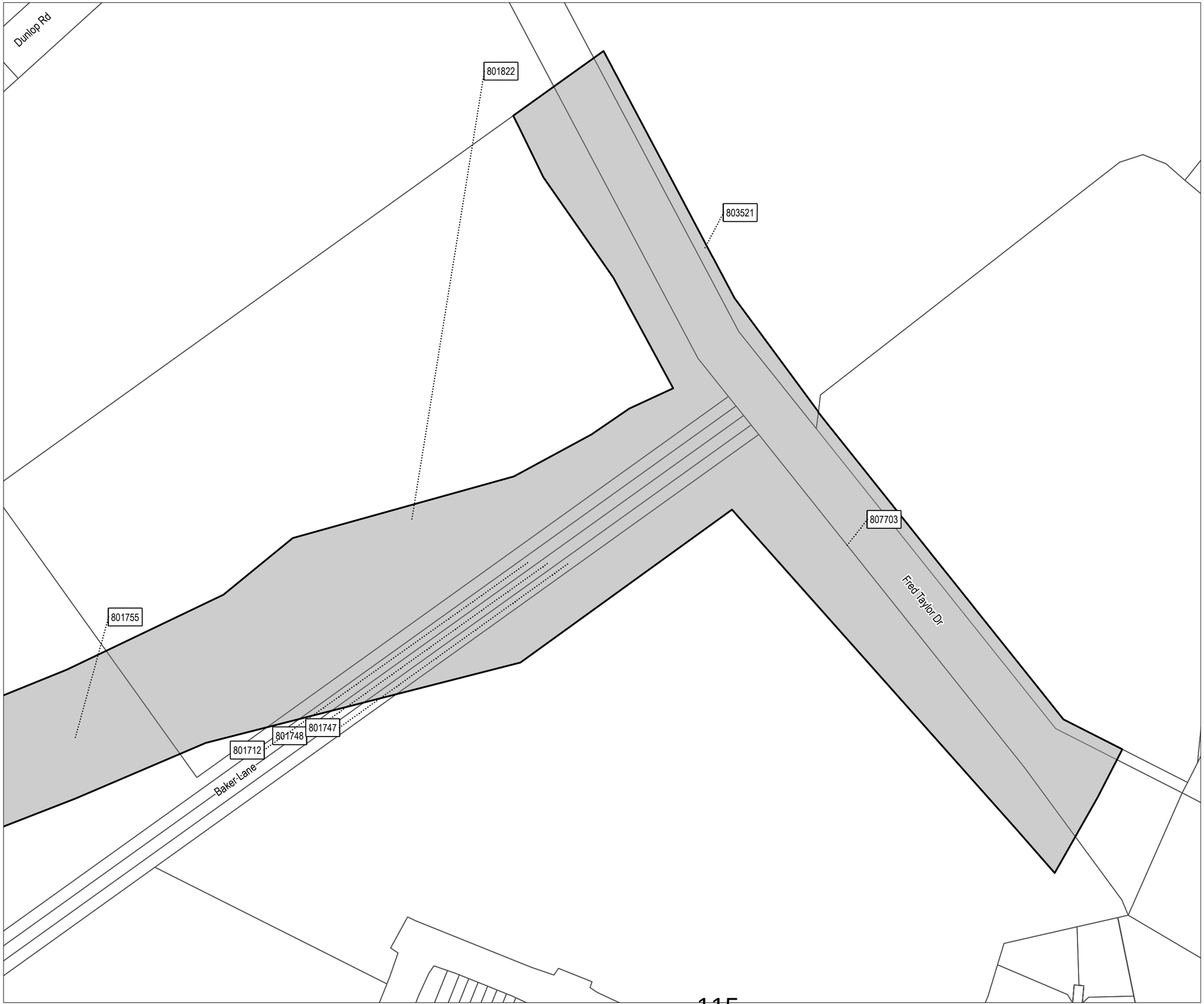
N

Client: **Auckland Transport / Waka Kotahi**

Discipline: **GIS**

Project: **Redhills Arterial Transport Network**

Drawing No: **SGA-PA-NW-040**
Sheet No : 2 of 3

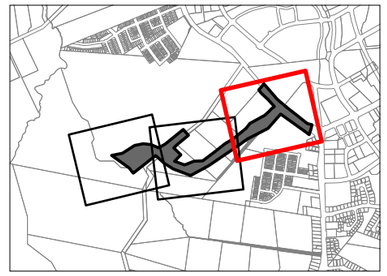


Designation Plan

Land to be Designated
East-West Arterial Corridor
Baker Lane

Legend

- Proposed Designation
- Parcel Boundary
- 507729 Property ID



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Map Scale @ A3: 1:1,500

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Revision	Author	Verified	Approved	Date
1	BAP	RJL	RE	27/11/2022

N

Client: **Auckland Transport / Waka Kotahi**

Discipline: **GIS**

Project: **Redhills Arterial Transport Network**

Drawing No: **SGA-PA-NW-040**
Sheet No : 3 of 3

WAKA KOTAHI NZ TRANSPORT AGENCY

New Zealand Government

Date Exported: 29/11/2022 3:52

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Attachment B – Schedule of Directly Affected Property

Property ID	Address	Title Number	Legal Description	Approx. land to be designated (m^2)	Sheet Number
801712	64 Fred Taylor Drive	NA22B/872	Lot 3 DP 52123	7874	3
801747	62 Fred Taylor Drive	1067780	Lot 1 DP 64737	956	3
801748	60 Fred Taylor Drive	NA22B/871	Lot 2 DP 64737	17550	3
801755	66 Fred Taylor Drive	NA22B/873	Lot 4 DP 52123	8732	3
801822	68 Fred Taylor Drive	NA42A/621	Lot 6 DP 52123	12784	3
803174	Dunlop Road	774426	Lot 3 DP 502952	240	2
803175	Dunlop Road	774427	Lot 4 DP 502952	3825	2
803521	29 Fred Taylor Drive	945848	Section 2 SO 546759	924	3
803526	1 Dunlop Road	895990	Lot 4 DP 537938	26517	2
803574	Dunlop Road	774425	Lot 2 DP 502952	274	2
807703	550 Don Buck Road	1024063	Lot 7708 DP 568880	7485	3

Attachment C – Proposed Conditions for the Designation

Abbreviations and definitions

Acronym/Term	Definition
Activity sensitive to noise	Any dwelling, visitor accommodation, boarding house, marae, papakāinga, integrated residential development, retirement village, supported residential care, care centre, lecture theatre in a tertiary education facility, classroom in an education facility and healthcare facility with an overnight stay facility.
ARI	Annual Recurrence Interval
Average increase in flood hazard	Flow depth times velocity.
AUP	Auckland Unitary Plan.
BPO or Best Practicable Option	Has the same meaning as in section 2 of the RMA 1991.
CEMP	Construction Environmental Management Plan
Certification	Confirmation from the Manager that a plan or material change to a plan or CNVMP Schedule plan has been prepared in accordance with the condition to which it relates. A management plan shall be deemed certified: (a) where the Requiring Authority has received written confirmation from Council that a management plan is certified; or (b) five working days from the submission of a management plan where no written confirmation of certification has been received. A material change to a management plan or CNVMP Schedule shall be deemed certified: (a) where the Requiring Authority has received written confirmation from Council that the material change to the management plan is certified; or (b) ten working days from the submission of the material change to the management plan where no written confirmation of certification has been received. (c) five working days from the submission of the material change to a CNVMP Schedule where no written confirmation of certification has been received.
CNVMP	Construction Noise and Vibration Management Plan
CNVMP Schedule or Schedule	A schedule to the CNVMP
Completion of Construction	When construction of the Project (or part of the Project) is complete and it is available for use.
Confirmed Biodiversity Areas	Areas recorded in the Identified Biodiversity Area Schedule where the ecological values and effects have been confirmed through the ecological survey under Condition 20**Error! Reference source not found.**.
Construction Works	Activities undertaken to construct the Project excluding Enabling Works.
Council	Auckland Council
CTMP	Construction Traffic Management Plan
EMP	Ecological Management Plan
EIANZ Guidelines	Ecological Impact Assessment: EIANZ guidelines for use in New Zealand: terrestrial and freshwater ecosystems, second edition, dated May 2018.
Enabling works	Includes, but is not limited to, the following and similar activities: • geotechnical investigations (including trial embankments) • archaeological site investigations • formation of access for geotechnical investigations

Acronym/Term	Definition
	• establishment of site yards, site entrances and fencing • constructing and sealing site access roads • demolition or removal of buildings and structures • relocation of services • establishment of mitigation measures (such as erosion and sediment control measures, temporary noise walls, earth bunds and planting)
Existing authorised habitable floor	The floor level of any room (floor) in a residential building which is authorised by building consent and exists at the time the outline plan is submitted, excluding a laundry, bathroom, toilet or any room used solely as an entrance hall, passageway or garage.
Flood prone area	A potential ponding area that relies on a single culvert for drainage and does not have an overland flow path.
HNZPT	Heritage New Zealand Pouhere Taonga.
HNZPTA	Heritage New Zealand Pouhere Taonga Act 2014
Identified Biodiversity Area	Means an area or areas of ecological value where the Project ecologist has identified that the project will potentially have a moderate or greater level of ecological effect, prior to implementation of impact management measures, as determined in accordance with the EIANZ guidelines.
Mana whenua	Mana Whenua as referred to in the conditions is considered to be (as a minimum but not limited to) the following (in no particular order), who at the time of Notice of Requirement expressed a desire to be involved in the Project: • Te Kawerau a Maki • Ngāti Whātua o Kaipara • Te Ākitai Waiohua • Ngāti Whanaunga **Note**: Other iwi and hapu not identified above may have an interest in the Project and should be consulted.
Manager	The Manager – Resource Consents of the Auckland Council, or authorised delegate.
Maximum Probable Development	Design case for consideration of future flows allowing for development within a catchment that takes into account the maximum impervious surface limits of the current zone or, if the land is zoned Future Urban in the Auckland Unitary Plan, the probable level of development arising from zone changes.
Network Utility Operator	Has the same meaning as set out in section 166 of the RMA.
NOR	Notice of Requirement
NZAA	New Zealand Archaeological Association
Outline Plan	An outline plan prepared in accordance with section 176A of the RMA.
Pre-Project development	Existing site condition prior to the Project (including existing buildings and roadways).
Post-Project development	Site condition after the Project has been completed (including existing and new buildings and roadways).

Acronym/Term	Definition
Project Liaison Person	The person or persons appointed for the duration of the Project's Construction Works to be the main point of contact for persons wanting information about the Project or affected by the Construction Works.
Protected Premises and Facilities (PPF)	Protected Premises and Facilities as defined in New Zealand Standard NZS 6806:2010: *Acoustics – Road-traffic noise – New and altered roads.*
Requiring Authority	Has the same meaning as section 166 of the RMA and, for this Designation is Auckland Transport.
RMA	Resource Management Act (1991)
SCEMP	Stakeholder Communication and Engagement Management Plan
Stage of Work	Any physical works that require the development of an Outline Plan.
Start of Construction	The time when Construction Works (excluding Enabling Works) start.
Suitably Qualified Person	A person (or persons) who can provide sufficient evidence to demonstrate their suitability, experience and competence in the relevant field of expertise.
ULDMP	Urban and Landscape Design Management Plan

Proposed Conditions for the Designation

No.	Condition
General Conditions	
1.	**Activity in General Accordance with Plans and Information** (a) Except as provided for in the conditions below, and subject to final design and Outline Plan(s), works within the designation shall be undertaken in general accordance with the following plans and information Project description and concept plan in schedule 1: (b) Where there is inconsistency between: (i) the documents listed in condition 1(a) above Project description and concept plan in schedule 1 and the requirements of the following conditions, the conditions shall prevail; (ii) the documents listed in condition 1(a) above Project description and concept plan in schedule 1, and the management plans under the conditions of the designation, the requirements of the management plans shall prevail.
2.	**Project Information** (a) A project website, or equivalent virtual information source, shall be established within 12 months of the date on which this designation is included in the AUP. All directly affected owners and occupiers shall be notified in writing once the website or equivalent information source has been established. The project website or virtual information source shall include these conditions and shall provide information on: (i) the status of the Project; (ii) anticipated construction timeframes; and (iii) contact details for enquiries. (iv) a subscription service to enable receipt of project updates by email; and (v) how to apply for consent for works in the designation under s176(1)(b) of the RMA. (b) At the start of detailed design for a Stage of Work, the project website or virtual information source shall be updated to provide information on the likely date for Start of Construction, and any staging of works.
3.	**Designation Review**

No.	Condition
	(a) The Requiring Authority shall within 6 months of Completion of Construction or A as soon as otherwise practicable following Completion of Construction the Requiring Authority shall: (i) review the extent of the designation to identify any areas of designated land that it no longer requires for the on-going operation, maintenance or mitigation of effects of the Project; and (ii) give notice to Auckland Council in accordance with section 182 of the RMA for the removal of those parts of the designation identified above.
4.	**Lapse** (a) In accordance with section 184(1)(c) of the RMA, this designation shall lapse if not given effect to within 15 years from the date on which it is included in the AUP.
5.	**Network Utility Operators (Section 176 Approval)** (a) Prior to the start of Construction Works, Network Utility Operators with existing infrastructure located within the designation will not require written consent under section 176 of the RMA for the following activities: (i) operation, maintenance and urgent repair works; (ii) minor renewal works to existing network utilities necessary for the on-going provision or security of supply of network utility operations; (iii) minor works such as new service connections; and (iv) the upgrade and replacement of existing network utilities in the same location with the same or similar effects as the existing utility. (b) To the extent that a record of written approval is required for the activities listed above, this condition shall constitute written approval.
Pre-construction Conditions	
6.	**Outline Plan** (a) An Outline Plan (or Plans) shall be prepared in accordance with section 176A of the RMA. (b) Outline Plans (or Plan) may be submitted in parts or in stages to address particular activities (e.g. design or construction aspects), or a Stage of Work of the Project. (c) Outline Plans shall include any management plan or plans that are relevant to the management of effects of those activities or Stage of Work, which may include: (i) Construction Environmental Management Plan; (ii) Construction Traffic Management Plan; (iii) Construction Noise and Vibration Management Plan; (iv) Urban and Landscape Design Management Plan; (v) Ecological Management Plan (vi) Tree Management Plan
7.	**Management Plans** (a) Any management plan shall: (i) Be prepared and implemented in accordance with the relevant management plan condition; (ii) Be prepared by a Suitably Qualified Person(s); (iii) Include sufficient detail relating to the management of effects associated with the relevant activities and/or Stage of Work to which it relates. (iv) Summarise comments received from Mana Whenua and other stakeholders as required by the relevant management plan condition, along with a summary of where comments have: a. Been incorporated; and b. Where not incorporated, the reasons why. (v) Be submitted as part of an Outline Plan pursuant to s176A of the RMA, with the exception of SCEMPs CEMPs, CTMPs and CNVMP Schedules. (vi) Once finalised, uploaded to the Project website or equivalent virtual information source. (b) Any management plan developed in accordance with Condition 7 may: (i) Be submitted in parts or in stages to address particular activities (e.g. design or construction aspects) a Stage of Work of the Project, or to address specific activities authorised by the designation. (ii) Except for material changes, be amended to reflect any changes in design, construction methods or management of effects without further process.

No.	Condition
	(iii) If there is a material change required to a management plan which has been submitted with an Outline Plan, the revised part of the plan shall be submitted to the Council as an update to the Outline Plan or for Certification as soon as practicable following identification of the need for a revision; (c) Any material changes to the SCEMPs, CEMPs or CTMPs are to be submitted to the Council for information.
8.	**Cultural Advisory Report** (a) At least six (6) months prior to the start of detailed design for a Stage of Work, Mana Whenua shall be invited to prepare a Cultural Advisory Report for the Project. (b) The objective of the Cultural Advisory Report is to assist in understanding and identifying Ngā Taonga Tuku Iho ('treasures handed down by our ancestors') affected by the Project, to inform their management and protection. To achieve the objective, the Requiring Authority shall invite Mana Whenua to prepare a Cultural Advisory Report that: (i) Identifies the cultural sites, landscapes and values that have the potential to be affected by the construction and operation of the Project; (ii) Sets out the desired outcomes for management of potential effects on cultural sites, landscapes and values; (iii) Identifies traditional cultural practices within the area that may be impacted by the Project; (iv) Identifies opportunities for restoration and enhancement of identified cultural sites, landscapes and values within the Project area; (v) Taking into account the outcomes of (i) to (iv) above, identify cultural matters and principles that should be considered in the development of the Urban and Landscape Design Management Plan, Stakeholder and Communication and Engagement Management Plan, and the Cultural Monitoring Plan referred to in Condition 14. (vi) Identifies and (if possible) nominates traditional names along the Project alignment. Noting there may be formal statutory processes outside the project required in any decision-making. (c) The desired outcomes for management of potential effects on cultural sites, landscapes and values identified in the Cultural Advisory Report shall be discussed with Mana Whenua and those outcomes reflected in the relevant management plans where practicable. (d) Conditions 8(b) and (c) above will cease to apply if: (i) Mana Whenua have been invited to prepare a Cultural Advisory Report by a date at least 6 months prior to start of Construction Works; and (ii) Mana Whenua have not provided a Cultural Advisory Report within six months prior to start of Construction Works.
9.	**Urban and Landscape Design Management Plan (ULDMP)** (a) A ULDMP shall be prepared prior to the Start of Construction for a Stage of Work. (b) Mana Whenua shall be invited to participate in the development of the ULDMP(s) to provide input into relevant cultural landscape and design matters including how desired outcomes for management of potential effects on cultural sites, landscapes and values identified and discussed in accordance with Condition 8(c) may be reflected in the ULDMP. The objective of the ULDMP(s) is to: (i) Enable integration of the Project's permanent works into the surrounding landscape and urban context; and (ii) Ensure that the Project manages potential adverse landscape and visual effects as far as practicable and contributes to a quality urban environment. (c) The ULDMP shall be prepared in general accordance with: (i) Auckland Transport's Urban Roads and Streets Design Guide; (ii) Waka Kotahi Urban Design Guidelines: Bridging the Gap (2013) or any subsequent updated version; (iii) Waka Kotahi Landscape Guidelines (2013) or any subsequent updated version; (iv) Waka Kotahi P39 Standard Specification for Highway Landscape Treatments (2013) or any subsequent updated version; and (v) Auckland's Urban Ngahere (Forest) Strategy or any subsequent updated version. (d) To achieve the objective, the ULDMP(s) shall provide details of how the project: (i) Is designed to integrate with the adjacent urban (or proposed urban) and landscape context, including the surrounding existing or proposed topography, urban environment (i.e. centres and density of built form), natural environment, landscape character and open space zones;

No.	Condition
	(ii) Provides appropriate walking and cycling connectivity to, and interfaces with, existing or proposed adjacent land uses, public transport infrastructure and walking and cycling connections; (iii) Promotes inclusive access (where appropriate); and (iv) Promotes a sense of personal safety by aligning with best practice guidelines, such as: a. Crime Prevention Through Environmental Design (CPTED) principles; b. Safety in Design (SID) requirements; and c. Maintenance in Design (MID) requirements and anti-vandalism/anti-graffiti measures. (e) The ULDMP(s) shall include: (i) a concept plan – which depicts the overall landscape and urban design concept, and explain the rationale for the landscape and urban design proposals; (ii) developed design concepts, including principles for walking and cycling facilities and public transport; and (iii) landscape and urban design details – that cover the following: a. Road design – elements such as intersection form, carriageway gradient and associated earthworks contouring including cut and fill batters and the interface with adjacent land uses, benching, spoil disposal sites, median width and treatment, roadside width and treatment; b. Roadside elements – such as lighting, fencing, wayfinding and signage; c. architectural and landscape treatment of all major structures, including bridges and retaining walls; d. Architectural and landscape treatment of noise barriers; e. Landscape treatment of permanent stormwater control wetlands and swales; f. Integration of passenger transport; g. Pedestrian and cycle facilities including paths, road crossings and dedicated pedestrian/ cycle bridges or underpasses; h. Re-instatement of construction and site compound areas, driveways, accessways and fences. (f) The ULDMP shall also include the following planting details and maintenance requirements: (i) planting design details including: a. identification of existing trees and vegetation that will be retained with reference to the Tree Management Plan. Where practicable, mature trees and native vegetation should be retained; b. street trees, shrubs and ground cover suitable for berms; c. treatment of fill slopes to integrate with adjacent land use, streams, riparian margins and open space zones; d. planting of stormwater wetlands; e. identification of vegetation to be retained and any planting requirements under Conditions 21 and 22; f. integration of any planting requirements required by conditions of any resource consents for the project; and g. re-instatement planting of construction and site compound areas as appropriate. (ii) a planting programme including the staging of planting in relation to the construction programme which shall, as far as practicable, include provision for planting within each planting season following completion of works in each Stage of Work; and (iii) detailed specifications relating to the following: a. weed control and clearance; b. pest animal management (to support plant establishment); c. ground preparation (top soiling and decompaction); d. mulching; and e. plant sourcing and planting, including hydroseeding and grassing, and use of eco-sourced species.
Advice note	**Advice Note:** *This designation is for the purpose of construction, operation and maintenance of a transport corridor and it is not for the specific purpose of "road widening". Therefore, it is not intended that the front yard definition in the Auckland Unitary Plan which applies a set back from a designation for road widening purposes applies to this designation. A set back is not required to manage effects between the designation boundary and any proposed adjacent sites or lots.*

No.	Condition
Specific Outline Plan Requirements	
10.	**Flood Hazard** (a) The Project shall be designed to achieve the following flood risk outcomes: (i) no increase in flood levels for existing authorised habitable floors that are already subject to flooding; (ii) no more than a 10% reduction in freeboard for existing authorised habitable floors; (iii) no increase of more than 50mm in flood level on land zoned for urban or future urban development where there is no existing habitable dwelling; (iv) no new flood prone areas; and (v) no more than a 10% average increase of flood hazard (defined as flow depth times velocity) for main access to authorised habitable dwellings existing at the time the Outline Plan is submitted. (b) Compliance with this condition shall be demonstrated in the Outline Plan, which shall include flood modelling of the pre-Project and post-Project 100 year ARI flood levels (for Maximum Probable Development land use and including climate change). (c) Where the above outcomes can be achieved through alternative measures outside of the designation such as flood stop banks, flood walls, raising existing authorised habitable floor level and new overland flow paths or varied through agreement with the relevant landowner, the Outline Plan shall include confirmation that any necessary landowner and statutory approvals have been obtained for that work or alternative outcome.
Construction Conditions	
11.	**Construction Environmental Management Plan (CEMP)** (a) A CEMP shall be prepared prior to the Start of Construction for a Stage of Work. (b) The objective of the CEMP is to set out the management procedures and construction methods to be undertaken to, avoid, remedy or mitigate any adverse effects associated with Construction Works as far as practicable. To achieve the objective, the CEMP shall include: (i) the roles and responsibilities of staff and contractors; (ii) details of the site or project manager and the Project Liaison Person, including their contact details (phone and email address); (iii) the Construction Works programmes and the staging approach, and the proposed hours of work; (iv) details of the proposed construction yards including temporary screening when adjacent to residential areas, site layouts (including construction yards), locations of refuelling activities and construction lighting; (v) methods for controlling dust and the removal of debris and demolition of construction materials from public roads or places; (vi) methods for providing for the health and safety of the general public; (vii) procedures for incident management; (viii)procedures for the refuelling and maintenance of plant and equipment to avoid discharges of fuels or lubricants to Watercourses; (ix) measures to address the storage of fuels, lubricants, hazardous and/or dangerous materials, along with contingency procedures to address emergency spill response(s) and clean up; (x) procedures for responding to complaints about Construction Works; and (xi) methods for amending and updating the CEMP as required. (c) Any CEMP prepared for a Stage of Work shall be submitted to Council for information at least ten working days before the Start of Construction for a Stage of Work.
12.	**Stakeholder and Communication and Engagement Management Plan (SCEMP)** (a) A SCEMP shall be prepared prior to the Start of Construction for a Stage of Work. The objective of the SCEMP is to identify how the public and stakeholders (including directly

No.	Condition
	affected and adjacent owners and occupiers of land) will be engaged communicated with throughout the Construction Works. To achieve the objective, the SCEMP shall include: (i) the contact details for the Project Liaison Person. These details shall be on the Project website, or equivalent virtual information source, and prominently displayed at the main entrance(s) to the site(s); (ii) the procedures for ensuring that there is a contact person available for the duration of Construction Works, for public enquiries or complaints about the Construction Works; (iii) methods for engaging with Mana Whenua, to be developed in consultation with Mana Whenua; (iv) a list of stakeholders, organisations (such as community facilities) and businesses and persons who will be engaged communicated with; (v) Identification of the properties whose owners will be engaged with; (vi) methods to communicate key project milestones and the proposed hours of construction activities including outside of normal working hours and on weekends and public holidays, to the parties identified in (iv) and (v) above; and surrounding businesses and residential communities; (vii) linkages and cross-references to communication and engagement methods set out in other conditions and management plans where relevant. (b) Any SCEMP prepared for a Stage of Work shall be submitted to Council for information ten working days prior to the Start of Construction for a Stage of Work.
13.	**Complaints Register** (a) At all times during Construction Works, a record of any complaints received about the Construction Works shall be maintained. The record shall include: (i) The date, time and nature of the complaint; (ii) The name, phone number and address of the complainant (unless the complainant wishes to remain anonymous); (iii) Measures taken to respond to the complaint (including a record of the response provided to the complainant) or confirmation of no action if deemed appropriate; (iv) The outcome of the investigation into the complaint; (v) Any other activities in the area, unrelated to the Project that may have contributed to the complaint, such as non-project construction, fires, traffic accidents or unusually dusty conditions generally. (b) A copy of the Complaints Register required by this condition shall be made available to the Manager upon request as soon as practicable after the request is made.
14.	**Cultural Monitoring Plan** (a) Prior to the start of Construction Works, a Cultural Monitoring Plan shall be prepared by a Suitably Qualified Person(s) identified in collaboration with Mana Whenua. (b) The objective of the Cultural Monitoring Plan is to identify methods for undertaking cultural monitoring to assist with management of any cultural effects during Construction works. (c) The Cultural Monitoring Plan shall include: (i) Requirements for formal dedication or cultural interpretation to be undertaken prior to start of Construction Works in areas identified as having significance to Mana Whenua; (ii) Requirements and protocols for cultural inductions for contractors and subcontractors; (iii) Identification of activities, sites and areas where cultural monitoring is required during particular Construction Works; (iv) Identification of personnel to undertake cultural monitoring, including any geographic definition of their responsibilities; and (v) Details of personnel to assist with management of any cultural effects identified during cultural monitoring, including implementation of the Accidental Discovery Protocol (d) If Enabling Works involving soil disturbance are undertaken prior to the start of Construction Works, an Enabling Works Cultural Monitoring Plan shall be prepared by a Suitably Qualified Person identified in collaboration with Mana Whenua. This plan may be prepared as a standalone Enabling Works Cultural Monitoring Plan or be included in the main Construction Works Cultural Monitoring Plan. **Advice Note:** *Where appropriate, the Cultural Monitoring Plan shall align with the requirements of other conditions of the designation and resource consents for the Project which require monitoring during Construction Works.*
15.	**Construction Traffic Management Plan (CTMP)**

<table>
<tr><th>No.</th><th>Condition</th></tr>
<tr><td></td><td>(a) A CTMP shall be prepared prior to the Start of Construction for a Stage of Work.
(b) The objective of the CTMP is to avoid, remedy or mitigate, as far as practicable, adverse construction traffic effects. To achieve this objective, the CTMP shall include:
(i) methods to manage the effects of temporary traffic management activities on traffic;
(ii) measures to ensure the safety of all transport users;
(iii) the estimated numbers, frequencies, routes and timing of traffic movements, including any specific non-working or non-movement hours to manage vehicular and pedestrian traffic near schools or to manage traffic congestion;
(iv) site access routes and access points for heavy vehicles, the size and location of parking areas for plant, construction vehicles and the vehicles of workers and visitors;
(v) identification of detour routes and other methods to ensure the safe management and maintenance of traffic flows, including pedestrians and cyclists, on existing roads;
(vi) methods to maintain vehicle access to property and/or private roads where practicable, or to provide alternative access arrangements when it will not be;
(vii) the management approach to loads on heavy vehicles, including covering loads of fine material, the use of wheel-wash facilities at site exit points and the timely removal of any material deposited or spilled on public roads;
(viii) methods that will be undertaken to communicate traffic management measures to affected road users (e.g. residents/public/stakeholders/emergency services);
(c) Any CTMP prepared for a Stage of Work shall be submitted to Council for information ten working days prior to the Start of Construction for a Stage of Work.</td></tr>
<tr><td>16.</td><td>Construction Noise Standards
(a) Construction noise shall be measured and assessed in accordance with NZS6803:1999 Acoustics – Construction Noise and shall comply with the noise standards set out in the following table as far as practicable:
Table 17.1: Construction noise standards
<table>
<tr><th>Day of week</th><th>Time period</th><th>$L_{Aeq(15min)}$</th><th>L_{AFmax}</th></tr>
<tr><td colspan="4">Occupied activity sensitive to noise</td></tr>
<tr><td>Weekday</td><td>0630h - 0730h
0730h - 1800h
1800h - 2000h
2000h - 0630h</td><td>55 dB
70 dB
65 dB
45 dB</td><td>75 dB
85 dB
80 dB
75 dB</td></tr>
<tr><td>Saturday</td><td>0630h - 0730h
0730h - 1800h
1800h - 2000h
2000h - 0630h</td><td>55 dB
70 dB
45 dB
45 dB</td><td>75 dB
85 dB
75 dB
75 dB</td></tr>
<tr><td>Sunday and Public Holidays</td><td>0630h - 0730h
0730h - 1800h
1800h - 2000h
2000h - 0630h</td><td>45 dB
55 dB
45 dB
45 dB</td><td>75 dB
85 dB
75 dB
75 dB</td></tr>
<tr><td colspan="4">Other occupied buildings</td></tr>
<tr><td>All</td><td>0730h – 1800h
1800h – 0730h</td><td>70 dB
75 dB</td><td></td></tr>
</table>
(b) Where compliance with the noise standards set out in Table [above] is not practicable, and unless otherwise provided for in the CNVMP as required by Condition 18c)(x), then the methodology in Condition 19 shall apply.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Condition</th></tr>
<tr><td>17.</td><td>
Construction Vibration Standards
(a) Construction vibration shall be measured in accordance with ISO 4866:2010 Mechanical vibration and shock – Vibration of fixed structures – Guidelines for the measurement of vibrations and evaluation of their effects on structures and shall comply with the vibration standards set out in the following table as far as practicable.
Table CNV2 Construction vibration criteria
<table>
<tr><th>Receiver</th><th>Details</th><th>Category A</th><th>Category B</th></tr>
<tr><td rowspan="2">Occupied Activities sensitive to noise</td><td>Night-time 2000h - 0630h</td><td>0.3mm/s ppv</td><td>2mm/s ppv</td></tr>
<tr><td>Daytime 0630h - 2000h</td><td>2mm/s ppv</td><td>5mm/s ppv</td></tr>
<tr><td>Other occupied buildings</td><td>Daytime 0630h - 2000h</td><td>2mm/s ppv</td><td>5mm/s ppv</td></tr>
<tr><td>All other buildings</td><td>At all other times</td><td colspan="2">Tables 1 and 3 of DIN4150-3:1999</td></tr>
</table>
*Category A criteria adopted from Rule E25.6.30.1 of the AUP
**Category B criteria based on DIN 4150-3:1999 building damage criteria for daytime
(b) Where compliance with the vibration standards set out in Table [above] is not practicable, and unless otherwise provided for in the CNVMP as required by Condition 18(c)(x), then the methodology in Condition 19 shall apply
</td></tr>
<tr><td>18.</td><td>
Construction Noise and Vibration Management Plan (CNVMP)
(a) A CNVMP shall be prepared by a Suitably Qualified Person prior to the Start of Construction for a Stage of Work.
(b) A CNVMP shall be implemented during the Stage of Work to which it relates.
(c) The objective of the CNVMP is to provide a framework for the development and implementation of the Best Practicable Option for the management of construction noise and vibration effects to achieve the construction noise and vibration standards set out in Conditions 16 and 17 to the extent practicable. To achieve this objective, the CNVMP shall be prepared in accordance with Annex E2 of the New Zealand Standard NZS6803:1999 'Acoustics – Construction Noise' (NZS6803:1999) and shall as a minimum, address the following:
i. Description of the works and anticipated equipment/processes;
ii. Hours of operation, including times and days when construction activities would occur;
iii. The construction noise and vibration standards for the project;
iv. Identification of receivers where noise and vibration standards apply;
v. A hierarchy of management and mitigation options, including any requirements to limit night works and works during other sensitive times, including Sundays and public holidays as far practicable and identification of the Best Practicable Option;
vi. Methods and frequency for monitoring and reporting on construction noise and vibration;
vii. Procedures for communication and engagement with nearby residents and stakeholders, including notification of proposed construction activities, the period of construction activities, and management of noise and vibration complaints.
viii. Contact details of the Project Liaison Person;
ix. Procedures for the regular training of the operators of construction equipment to minimise noise and vibration as well as expected construction site behaviours for all workers;
x. Identification of areas where compliance with the noise [Condition 16] and/or vibration standards [Condition 17 Category A or Category B] will not be practicable and the specific management controls to be implemented and consultation requirements with owners and occupiers of affected sites.
xi. Procedures and requirements for the preparation of a Schedule to the CNVMP (Schedule) for those areas where compliance with the noise [Condition 16] and/or vibration standards [Condition 17 Category B] will not be practicable and where
</td></tr>
</table>

No.	Condition
	sufficient information is not available at the time of the CNVMP to determine the area specific management controls Condition 18 (c)(x). xii. Procedures for: A. communicating with affected receivers, where measured or predicted vibration from construction activities exceeds the vibration criteria of Condition 17; B. assessing, mitigating and monitoring vibration where measured or predicted vibration from construction activities exceeds the Category AB vibration criteria of Condition 17, including the requirement to undertake building condition surveys before and after works to determine whether any damage has occurred as a result of construction vibration; and xiii. Requirements for review and update of the CNVMP
19.	**Schedule to a CNVMP** (a) An updated Schedule to the CNVMP (Schedule) shall be prepared prior to the start of the construction to which it relates by a Suitably Qualified Person, in consultation with the owners and occupiers of sites subject to the Schedule, when: (i) Construction noise is either predicted or measured to exceed the noise standards in Condition 16, except where the exceedance of the L_{Aeq} criteria is no greater than 5 decibels and does not exceed: A. 0630 – 2000: 2 period of up to 2 consecutive weeks in any 2 months, or B. 2000 - 0630: 1 period of up to 2 consecutive nights in any 10 days. (ii) Construction vibration is either predicted or measured to exceed the Category B standard at the receivers in Condition 17. (b) The objective of the Schedule is to set out the Best Practicable Option measures to manage for the management of noise and/or vibration effects of the construction activity beyond those measures set out in the CNVMP. The Schedule shall include details such as: (i) Construction activity location, start and finish dates; (ii) The nearest neighbours to the construction activity; (iii) The predicted noise and/or vibration level for all receivers where the levels are predicted or measured to exceed the applicable standards and predicted duration of the exceedance; (iv) The proposed mitigation options that have been selected, and the options that have been discounted as being impracticable and the reasons why; (v) The consultation undertaken with owners and occupiers of sites subject to the Schedule, and how consultation has and has not been taken into account; and proposed communications with neighbours. (vi) Location, times and types of monitoring; (c) The Schedule shall be submitted to the Manager Council for certification at least 5 working days (except in unforeseen circumstances) in advance of Construction Works that are covered by the scope of the Schedule and shall form part of the CNVMP. (d) Where material changes are made to a Schedule required by this condition, the Requiring Authority shall consult the owners and/or occupiers of sites subject to the Schedule prior to submitting the amended Schedule to the Manager for certification in accordance with (c) above. The amended Schedule shall document the consultation undertaken with those owners and occupiers, and how consultation outcomes have and have not been taken into account.
Advice note	***Accidental Discoveries*** ***Advice Note:*** *The Requiring Authority is advised of the requirements of Rule E11.6.1 of the AUP for "Accidental Discovery" as they relate to both contaminated soils and heritage items.* *The requirements for accidental discoveries of heritage items are set out in Rule E11.6.1 of the AUP [and in the Waka Kotahi Minimum Standard P45 Accidental Archaeological Discovery Specification, or any subsequent version].*
20.	**Pre-Construction Ecological Survey**

No.	Condition
	(a) At the start of detailed design for a Stage of Work, an updated ecological survey shall be undertaken by a Suitably Qualified Person. The purpose of the survey is to inform the detailed design of ecological management plan by: (i) Confirming whether the species of value within the Identified Biodiversity Areas recorded in the *Identified Biodiversity Area Schedule 2* are still present; (ii) Confirming whether the project will or may have a moderate or greater level of ecological effect on ecological species of value, prior to implementation of impact management measures, as determined in accordance with the EIANZ guidelines. (b) If the ecological survey in (a) above confirms the presence of ecological features of value in accordance with condition 20a)(i) and that effects are likely in accordance with condition 20(a)(ii) then an Ecological Management Plan (or Plans) shall be prepared in accordance with Condition 21 for these areas (Confirmed Biodiversity Areas).
21.	**Ecological Management Plan (EMP)** (a) An EMP shall be prepared for any Confirmed Biodiversity Areas (confirmed through Condition 20) prior to the Start of Construction for a Stage of Work. The objective of the EMP is to minimise effects of the Project on the ecological features of value of Confirmed Biodiversity Areas as far as practicable. The EMP shall set out the methods that will be used to achieve the objective which may include: (i) If an EMP is required in accordance with condition 20(b) for the presence of long tail bats: a. Measures to minimise as far as practicable, disturbance from construction activities within the vicinity of any active long tail bat roosts (including maternity) that are discovered through survey until such roosts are confirmed to be vacant of bats. b. How the timing of any construction work in the vicinity of any maternity long tail bat roosts will be limited to outside the bat maternity period (between December and March) where reasonably practicable; c. Details of areas where vegetation is to be retained where practicable for the purposes of the connectivity of long tail bats; d. Details of how bat connectivity will be provided and maintained (e.g. through the presence of suitable indigenous or exotic trees or artificial alternatives). e. Details of where opportunities for advance restoration / mitigation planting have previously been identified and implemented. f. Where mitigation to minimise effects is not practicable, details of any offsetting proposed. (b) The EMP shall be consistent with any ecological management measures to be undertaken in compliance with conditions of any regional resource consents granted for the Project.
Advice note	***Advice Note:*** *Depending on the potential effects of the Project, the regional consents for the Project may include the following monitoring and management plans:* *(i) Stream and/or wetland restoration plans;* *(ii) Vegetation restoration plans; and* *(iii) Fauna management plans (eg avifauna, herpetofauna, bats).*
22.	**Tree Management Plan** (a) Prior to the Start of Construction for a Stage of Work, a Tree Management Plan shall be prepared. (b) The objective of the Tree Management Plan is to avoid, remedy or mitigate effects of construction activities on trees identified as protected or notable in the Auckland Unitary Plan. (c) The Tree Management Plan shall: (i) confirm the trees that will be affected by the project work and are identified as protected or notable in the Auckland Unitary Plan; and (ii) demonstrate how the design and location of project works has avoided, remedied or mitigated any effects on any tree identified in (i) above. This may include: A. planting to replace trees that require removal (with reference to the ULDMP planting design details in Condition 9); B. tree protection zones and tree protection measures such as protective fencing, ground protection and physical protection of roots, trunks and branches; and

No.	Condition
	C. methods for work within the rootzone of trees that are to be retained in line with accepted arboricultural standards. (iii) demonstrate how the tree management measures (outlined in A – C above) are consistent with conditions of any resource consents granted for the project in relation to managing construction effects on trees.
Operational Conditions	
23.	**Low Noise Road Surface** (a) Asphaltic concrete surfacing (or equivalent low noise road surface) shall be implemented within 12 months of Completion of Construction of the project. (b) Any future resurfacing works of the Project shall be undertaken in accordance with the Auckland Transport Reseal Guidelines, Asset Management and Systems 2013 or any updated version and asphaltic concrete surfacing (or equivalent low noise road surface) shall be implemented where: (i) The volume of traffic exceeds 10,000 vehicles per day; or (ii) The road is subject to high wear and tear (such as cul de sac heads, roundabouts and main road intersections); or (iii) It is in an industrial or commercial area where there is a high concentration of truck traffic; or (iv) It is subject to high usage by pedestrians, such as town centres, hospitals, shopping centres and schools. (c) Prior to commencing any future resurfacing works, the Requiring Authority shall advise the Manager if any of the triggers in Condition 23(b)(i) – (iv) are not met by the road or a section of it and therefore where the application of asphaltic concrete surfacing (or equivalent low noise road surface) is no longer required on the road or a section of it. Such advice shall also indicate when any resealing is to occur.
24.	**Traffic Noise** For the purposes of Conditions 25 to 37: (a) Building-Modification Mitigation – has the same meaning as in NZS 6806; (b) Design year has the same meaning as in NZS 6806; (c) Detailed Mitigation Options – means the fully detailed design of the Selected Mitigation Options, with all practical issues addressed; (d) Habitable Space – has the same meaning as in NZS 6806; (e) Identified Noise Criteria Category – means the Noise Criteria Category for a PPF identified in *Schedule 3: Identified PPFs Noise Criteria Categories*; (f) Mitigation – has the same meaning as in NZS 6806:2010 Acoustics – Road-traffic noise – New and altered roads; (g) Noise Criteria Categories – means the groups of preference for sound levels established in accordance with NZS 6806 when determining the Best Practicable Option for noise mitigation (i.e. Categories A, B and C); (h) NZS 6806 – means New Zealand Standard NZS 6806:2010 Acoustics – Road-traffic noise – New and altered roads; (i) Protected Premises and Facilities (PPFs) – means only the premises and facilities identified in green, orange or red in *Schedule 3: PPFs Noise Criteria Categories*; (j) Selected Mitigation Options – means the preferred mitigation option resulting from a Best Practicable Option assessment undertaken in accordance with NZS 6806; and (k) Structural Mitigation – has the same meaning as in NZS 6806.
25.	The Noise Criteria Categories identified in *Schedule 3: PPFs Noise Criteria Categories* at each of the PPFs shall be achieved where practicable and subject to Conditions 25 to 37 (all traffic noise conditions).

No.	Condition
	Achievement of the Noise Criteria Categories for PPFs shall be by reference to a traffic forecast for a high growth scenario in a design year at least 10 years after the programmed opening of the Project.
26.	As part of the detailed design of the Project, a Suitably Qualified Person shall determine the Selected Mitigation Options for the PPFs identified on *Schedule* 3*: PPFs Noise Criteria Categories.*
27.	Prior to construction of the Project, a Suitably Qualified Person shall develop the Detailed Mitigation Options for the PPFs identified in *Schedule 3: PPFs Noise Criteria Categories*, taking into account the Selected Mitigation Options.
28.	If the Detailed Mitigation Options would result in the Identified Noise Criteria Category changing to a less stringent Category, e.g. from Category A to B or Category B to C, at any relevant PPF, a Suitably Qualified Person shall provide confirmation to the Manager that the Detailed Mitigation Option would be consistent with adopting the Best Practicable Option in accordance with NZS 6806 prior to implementation.
29.	The Detailed Mitigation Options shall be implemented prior to completion of construction of the Project, with the exception of any low-noise road surfaces, which shall be implemented within twelve months of completion of construction.
30.	Prior to the Start of Construction, a Suitably Qualified Person shall identify those PPFs which, following implementation of all the Detailed Mitigation Options, will not be Noise Criteria Categories A or B and where Building-Modification Mitigation might be required to achieve 40 dB $L_{Aeq(24h)}$ inside Habitable Spaces ('Category C Buildings').
31.	Prior to the Start of Construction in the vicinity of each Category C Building, the Requiring Authority shall write to the owner of the Category C Building requesting entry to assess the noise reduction performance of the existing building envelope. If the building owner agrees to entry within three months of the date of the Requiring Authority's letter, the Requiring Authority shall instruct a Suitably Qualified Person to visit the building and assess the noise reduction performance of the existing building envelope.
32.	For each Category C Building identified, the Requiring Authority is deemed to have complied with Condition 31 above if: (a) The Requiring Authority's Suitably Qualified Person has visited the building and assessed the noise reduction performance of the building envelope; or (b) The building owner agreed to entry, but the Requiring Authority could not gain entry for some reason (such as entry denied by a tenant); or (c) The building owner did not agree to entry within three of the date of the Requiring Authority's letter sent in accordance with Condition 31 above (including where the owner did not respond within that period); or (d) The building owner cannot, after reasonable enquiry, be found prior to completion of construction of the Project. If any of (b) to (d) above apply to a Category C Building, the Requiring Authority is not required to implement Building-Modification Mitigation to that building.
33.	Subject to Condition 32 above, within six months of the assessment undertaken in accordance with Conditions 31 and 32, the Requiring Authority shall write to the owner of each Category C Building advising: (a) If Building-Modification Mitigation is required to achieve 40 dB LAeq(24h) inside habitable spaces; and (b) The options available for Building-Modification Mitigation to the building, if required; and (c) That the owner has three months to decide whether to accept Building-Modification Mitigation to the building and to advise which option for Building-Modification Mitigation the owner prefers, if the Requiring Authority has advised that more than one option is available.
34.	Once an agreement on Building-Modification Mitigation is reached between the Requiring Authority and the owner of a Category C Building, the mitigation shall be implemented, including any third

No.	Condition
	party authorisations required, in a reasonable and practical timeframe agreed between the Requiring Authority and the owner.
35.	Subject to Condition 31, where Building-Modification Mitigation is required, the Requiring Authority is deemed to have complied with Condition 33 if: (a) The Requiring Authority has completed Building Modification Mitigation to the building; or (b) An alternative agreement for mitigation is reached between the Requiring Authority and the building owner; or (c) The building owner did not accept the Requiring Authority's offer to implement Building-Modification Mitigation within three months of the date of the Requiring Authority's letter sent in accordance with Condition 33 (including where the owner did not respond within that period); or (d) The building owner cannot, after reasonable enquiry, be found prior to completion of construction of the Project.
36.	The Detailed Mitigation Options shall be maintained so they retain their noise reduction performance as far as practicable
37.	The Noise Criteria Categories at the PPFs identified in *Schedule 3: Identified PPFs Noise Criteria Categories* do not need to be complied with where: (a) the PPF no longer exists; or (b) agreement of the landowner has been obtained confirming that the Noise Criteria Category level does not need to be met.

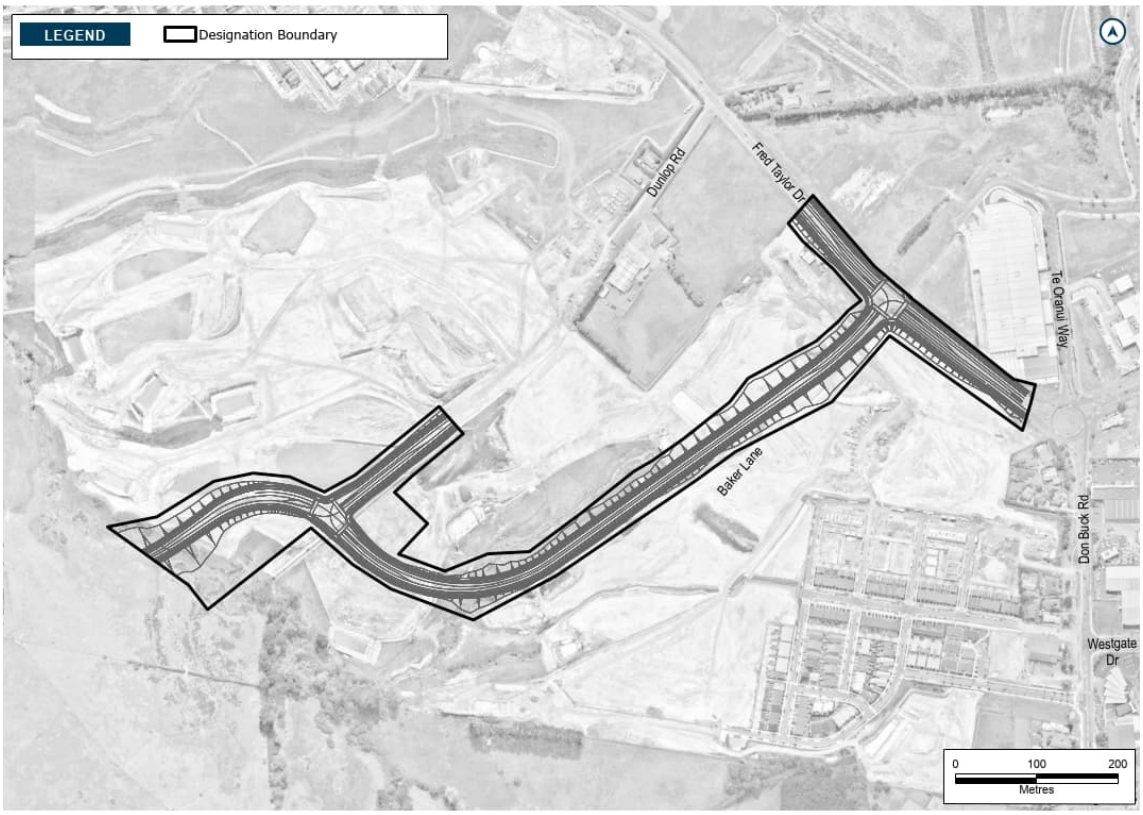
Schedule 1: General Accordance Plans and Information

Project Description – NOR 2b Redhills East-West Arterial Transport Corridor – Baker Lane

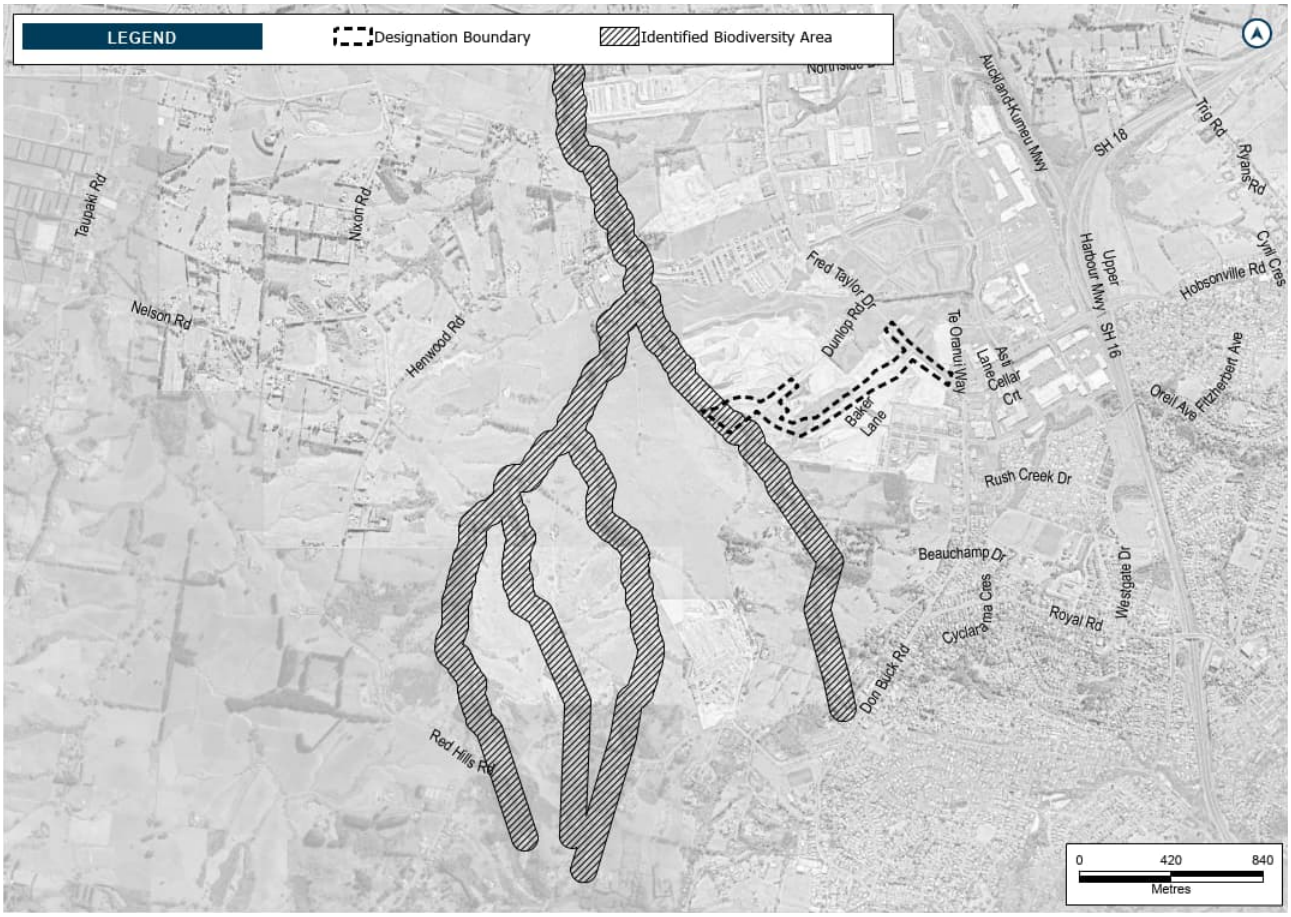
The proposed work is the construction, operation, and maintenance of a transport corridor in Redhills, from Fred Taylor Drive to the intersection with NOR 2a, including active transport facilities and associated infrastructure. The proposed work is shown in the following Concept Plan and includes:

(a) An upgraded and new transport corridor, including public transport and active transport facilities;
(b) Associated works including intersections, bridges, embankments, retaining, culverts, stormwater management systems;
(c) Changes to local roads, where the proposed work intersects with local roads; and
(d) Construction activities, including vegetation removal, construction compounds, laydown areas, bridge works area, construction traffic management and the re-grade of driveways.

NOR Concept Plan



Schedule 2: Identified Biodiversity Areas – Long Tailed Bats



Schedule 3: Identified PPFs Noise Criteria Categories

Address	New or Altered Road	Noise Category
554A Don Buck Road	Altered	Category A
554 Don Buck Road	Altered	Category A
552A Don Buck Road	Altered	Category A
558 Don Buck Road	Altered	Category A
556 Don Buck Road	Altered	Category A
560 Don Buck Road	Altered	Category A
562 Don Buck Road	Altered	Category A
552 Don Buck Road	Altered	Category A
552 Don Buck Road	Altered	Category A
54 Fred Taylor Drive	Altered	Category A

PPF Location Plan

ATTACHMENT 10

NoR2c – PUBLIC NOTICE

Auckland Unitary Plan

Notice of Requirement for a new designation for a new urban arterial transport corridor that intersects with the Redhills East West Arterial Corridor – Dunlop Road. This includes the upgrade of the existing Red Hills Road/Nelson Road/Nixon Road intersection, and the existing Nixon Road/Henwood Road intersection.

Notice of Requirement (NOR2c Redhills East-West Arterial Transport Corridor – Nixon Road Connection)

Auckland Council has received a notice of a requirement for a designation from Auckland Transport as the Requiring Authority, for public work.

The requirement is for the construction, operation and maintenance of a transport corridor to enable the Requiring Authority to:

- Provide new east-west urban arterial transport corridors from Fred Taylor Drive to Nixon Road to support and integrate with planned urban growth in Redhills.
- Provide arterial transport corridors that are safe for all transport users.
- Contribute to mode shift by providing a choice of transport options including walking, cycling and public transport.
- Provide for the identification and protection of the future Redhills arterial transport network and key connections which enables growth.

The site to which the requirement applies is as follows: Dunlop Road from Fred Taylor Drive in the east to the intersection with the Redhills East-West arterial corridor – Nixon Road Connection and the Redhills North-South arterial corridor.

Viewing the notice of requirement

The explanation of the notice of requirement can be found on our web site https://www.aucklandcouncil.govt.nz/nor. If you don't have access to a computer, please visit your local library or service centre and they will help you view the notice of requirement on our website.

If you have any questions about the notice of requirement, please contact: Unitary Plan on 09 365 3786 or at unitaryplan@aucklandcouncil.govt.nz

Making a submission on the notice of requirement

Any person or organisation may make a submission on the notice of requirement, but a person who is a trade competitor or the requiring authority may do so only if that person is directly affected by an effect of the activity to which the requirement relates that –

(a) Adversely affects the environment; and
(b) Does not relate to trade competition or the effects of trade competition.

You may make a submission by sending a written or electronic form to Auckland Council at:

- Auckland Council, Unitary Plan Private Bag 92300, Auckland 1142, Attention: Planning Technician, or
- By using the online form on the Auckland Council website at https://www.aucklandcouncil.govt.nz/nor, or
- By email to: unitaryplan@aucklandcouncil.govt.nz ;or
- Lodging your submission in person at Auckland Council, Libraries or offices.

Submissions close on 24 April 2023

You must serve a copy of your submission on Auckland Transport, whose address for service is, Auckland Transport, Level 5, 203 Queen Street, Auckland 1010, as soon as reasonably practicable after serving your submission on Auckland Council.

John Duguid
Manager – Plans & Places

Notification date: 23/03/2022

ATTACHMENT 11

NoR2c – LODGEMENT COVER LETTER

TE TUPU NGĀTAHI
SUPPORTING GROWTH

19 December 2022

Te Tupu Ngātahi
Supporting Growth
PO Box 105218
Auckland 1143

Auckland Council
C/o Todd Elder
Planning North/West – Plans and Places

Dear Todd

Re: NORTH WEST HOUSING INFRASTRUCTURE FUND NOTICES OF REQUIREMENT

This letter is to advise that Auckland Transport gives notices of requirement for five new designations as part of the North West Housing Infrastructure Fund (HIF) Project.

The lodgment documents have been prepared as two packages:

- Redhills Arterial Transport Network; and
- Trig Road Corridor Upgrade

Each package comprises four volumes as follows:

- Volume 1: Form 18 for each of the notices
- Volume 2: Assessment of Effects on the Environment
- Volume 3: General Arrangement Layout Plans
- Volume 4: Supporting Technical Assessments

These have been emailed to you via file transfer links.

Please contact me in the first instance if there are any queries.

Yours sincerely,

Bridget O'Leary
North West HIF – AEE Lead
info@supportinggrowth.nz
0800 4769 255

ATTACHMENT 12

NoR2c – FORM 18

Auckland Transport
An Auckland Council Organisation

20 Viaduct Harbour Avenue, Auckland 1010
Private Bag 92250, Auckland 1142, New Zealand
Phone 09 355 3553 **Website** www.AT.govt.nz

NOTICE OF REQUIREMENT FOR DESIGNATION OF LAND UNDER s168(2) OF THE RESOURCE MANAGEMENT ACT 1991

TO: Auckland Council

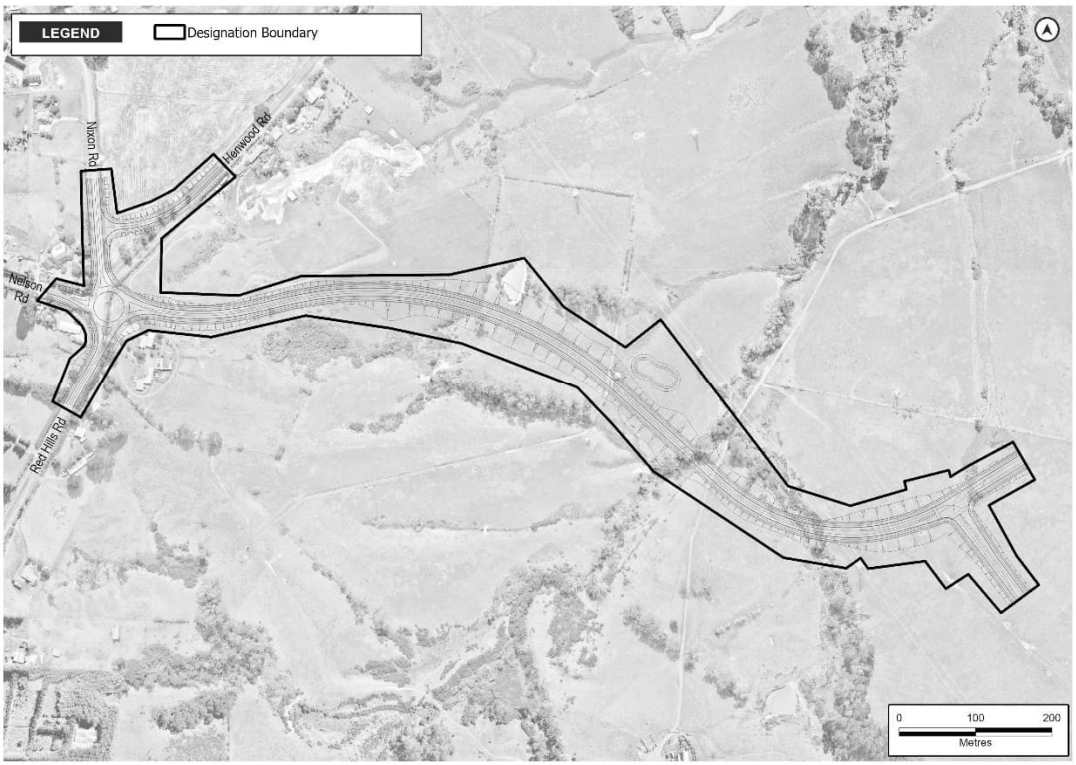
FROM: Auckland Transport

Auckland Transport (AT) (an Auckland Council Controlled Organisation) as a Requiring Authority under section 167 of the Resource Management Act 1991 (RMA) gives notice of requirement (NOR) for a designation in the Auckland Unitary Plan for a public work, being the construction, operation and maintenance of an arterial transport corridor in Redhills.

1 SUMMARY

AT is proposing to construct two arterial transport corridors in Redhills over the next 15 years. These two arterial transport corridors form the Redhills Arterial Transport Network (RATN), under the Te Tupu Ngātahi Supporting Growth Programme.

This form is for NOR 2c, which is for the construction, operation and maintenance of part of the Redhills East-West arterial transport corridor. NOR 2c is referred to as the Redhills East-West Arterial Transport Corridor – Nixon Road Connection. The extent of the project, designation and boundary of NOR 2c is outlined below and shown in detail on the Designation Plans contained in Attachment A.



The purpose of the designation is for the construction, operation and maintenance of a transport corridor. The activities to be enabled by the designation include environmental mitigation, temporary construction areas, ancillary structure and other activities required for the Project.

The Project Objectives for NOR 2c are to:

- **Project Objective 1:** Provide new east-west urban arterial transport corridors from Fred Taylor Drive to Nixon Road to support and integrate with planned urban growth in Redhills.
- **Project Objective 2:** Provide arterial transport corridors that are safe for all transport users.
- **Project Objective 3:** Contribute to mode shift by providing a choice of transport options including walking, cycling and public transport.
- **Project Objective 4:** Provide for the identification and protection of the future Redhills arterial transport network and key connections which enables growth.

As an approved Requiring Authority under section 176 of the RMA via section 47(1) of the Local Government (Auckland Council) Act 2009, Auckland Transport may designate to construct, operate and maintain a road and undertake ancillary activities.

2 THE SITE TO WHICH THE REQUIREMENT APPLIES IS AS FOLLOWS:

The area of the proposed NOR 2c designation is shown on the Designation Plans included in Attachment A of this Notice. NOR 2c applies to an area of land of approximately 134926 square metres (not including legal roads) located in Redhills. The requirement applies to 11 land parcels (not including legal roads). The land directly affected by NOR 2c is identified in the Schedule of Directly Affected Property included in Attachment B of this Notice.

3 THE NATURE OF THE PROPOSED WORKS IS:

The proposed work is the construction, operation and maintenance of part of the Redhills East-West arterial transport corridor and associated activities (hereafter referred to as “NOR 2c”). The nature of the proposed work is described in Section 3.2: Redhills East-West Arterial Transport Corridor and Section 8.1: Construction Works of the accompanying Assessment of Effects on the Environment (AEE) Report.

In summary, the proposed work includes:

- The construction of a two-lane, 24m wide urban arterial transport corridor extending from the intersection of Nelson Road, Nixon Road and Red Hills Road in the west, to the intersection with the Redhills East-West arterial corridor – Dunlop Road and the Redhills North-South arterial corridor (part of the RATN - NORs 1 and 2a). Separated footpaths and cycle lanes will be provided on both sides of the corridor.
- The upgrading of the Redhills Road / Nixon Road / Nelson Road intersection to a new single lane roundabout, and the realignment of approximately 120m of Henwood Road to connect to Nixon Road 100m north of the new roundabout.
- Bulk earthworks.
- Removal and relocation of existing utilities.
- Other construction related activities required outside the permanent corridor including construction traffic manoeuvring and construction laydown areas.

4 THE NATURE OF THE PROPOSED CONDITIONS THAT WOULD APPLY ARE:

The proposed conditions that will apply to the work are included in **Attachment C** of this Notice.

5 THE EFFECTS THAT THE PROPOSED WORK WILL HAVE ON THE ENVIRONMENT, AND THE WAYS IN WHICH ANY ADVERSE EFFECTS WILL BE MITIGATED ARE:

The AEE Report contains a description of the existing and likely future environment (Section 6), an assessment of the effects on the environment from the Project (Section 8.3), and the proposed measures to avoid, remedy or mitigate the adverse effects of the Project (Section 9).

Positive Effects

The Project will generate a range of positive effects. The nature and degree of these positive effects are outlined in the AEE, in particular Section 8.3.1. However, they are summarised as follows:

- The Project will support the ongoing and proposed urbanisation of the area, by providing an arterial transport corridor that connects to the existing surrounding strategic transport network through new and upgraded intersections.
- The Project will include pedestrian, cycle and public transport facilities along the transport corridor which will enable greater choice of mode and provide improved safety outcomes for transport users.
- The Project will improve transport network functions and contribute to a high-quality urban environment for local residents, businesses and road users.

Adverse Effects

There will be a range of potential adverse effects during the construction and operational phases of the Project, which are assessed in the following sections of the AEE Report:

- Transportation Effects (Section 8.3.2)
- Noise and Vibration Effects (Section 8.3.3)
- Archaeology and Heritage Effects (Section 8.3.4)
- Cultural Effects (Section 8.3.5)
- Landscape and Visual Effects (Section 8.3.6)
- Ecological Effects (Section 8.3.7)
- Natural Hazards (Section 8.3.8)
- Property, Land Use and Business Effects (Section 8.3.9)

The AEE Report draws on information provided in the supporting technical documents (contained in Volume 4).

6 ALTERNATIVE SITES, ROUTES, AND METHODS HAVE BEEN CONSIDERED TO THE FOLLOWING EXTENT:

A wide range of alternatives have been investigated for addressing the future transport needs in Redhills. Alternatives were assessed at all stages of Project development. In summary, once problems, issues and objectives had been established, a list of corridor options were developed to achieve the outcomes. These

were refined into a range of alignment options with the preferred options further refined to develop the indicative alignment.

The process by which AT considered alternative sites, routes and methods of NOR 2c is detailed in Appendix A of the AEE: Assessment of Alternatives Report. Development of NOR 2c was based on a comprehensive and robust optioneering process taking into account Mana Whenua, stakeholder and landowner feedback and specialist assessment inputs.

7 THE PROPOSED WORK AND DESIGNATION ARE REASONABLY NECESSARY FOR ACHIEVING THE OBJECTIVES OF THE REQUIRING AUTHORITY BECAUSE:

The works and designation are reasonably necessary to meet the objectives of AT, refer to Section 11.2 of the AEE.

AT's purpose under section 39 of the Local Government (Auckland Council) Act 2009 (LGA) is “to contribute to an effective, efficient, and safe Auckland land transport system in the public interest”. The Project will assist AT in meeting this objective.

The AT objectives for the Project are to:

- **Project Objective 1:** Provide new east-west urban arterial transport corridors from Fred Taylor Drive to Nixon Road to support and integrate with planned urban growth in Redhills.
- **Project Objective 2:** Provide arterial transport corridors that are safe for all transport users.
- **Project Objective 3:** Contribute to mode shift by providing a choice of transport options including walking, cycling and public transport.
- **Project Objective 4:** Provide for the identification and protection of the future Redhills arterial transport network and key connections which enables growth.

The Project achieves these objectives by:

- The proposed works will assist in the efficient operation of the local transport network.
- The proposed works identify and protect an urban arterial transport corridor in Redhills and key connections to the existing transport network. No transport network currently exists in Redhills, and the arterial corridor will provide access to and support the planned urban growth in Redhills.
- Sufficient space and facilities will be provided to ensure that the proposed transport corridor is safe for all transport users, including vehicles, public transport, walking and cycling.
- The proposed works contribute to mode shift by providing a choice of transport options through the provision of separated and protected walking and cycling facilities, including signalised pedestrian / cycle crossing facilities, and public transport measures to improve bus travel time and reliability.
- The proposed designation will allow AT and / or its authorised agents to undertake the works for the construction, operation and maintenance of the transport corridor and associated ancillary components / activities.
- The proposed designation will enable works to be undertaken in a comprehensive and integrated manner.

- The proposed designation will add protection to the route from future incompatible development which may preclude or put at risk the construction and / or operation and maintenance of the corridor.
- The proposed designation will be included in the Auckland Unitary Plan providing certainty to the public as to the intended use of the land and nature of the activity authorised.

The proposed designation is reasonably necessary as a planning tool, as it identifies and protects land required for the Project and will enable AT to carry out the proposed work.

8 THE FOLLOWING RESOURCE CONSENTS ARE NEEDED FOR THE PROPOSED ACTIVITY AND HAVE NOT BEEN APPLIED FOR:

The NOR will require resource consents for a number of activities to enable the proposed works. The resource consents are not sought at this time as the date for construction is unknown and could be a number of years away. The resource consents will be sought when detailed design of the Project is complete and nearer to the proposed construction start date. The future resource consents likely to be required are summarised below.

- Resource consents for the disturbance of contaminated, or potentially contaminated land under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011.
- Resource consents for specified infrastructure works within rivers, streams and natural wetlands under the Resource Management (National Environmental Standards for Freshwater) Regulations 2020.
- Resource consents for the following activities under the Auckland Unitary Plan:
    - Bulk earthworks and associated discharge of sediment
    - Vegetation removal
    - Stormwater discharge to land or water
    - Discharge of contaminants to land
    - Activities (including structures and associated works) in, on, under or over the bed of rivers, streams, wetlands
    - Water take, use and diversion.

9 THE FOLLOWING CONSULTATION HAS BEEN UNDERTAKEN WITH PARTIES THAT ARE LIKELY TO BE AFFECTED:

Consultation and engagement is ongoing with various parties who are directly affected by or have an interest in the Project including Mana Whenua, property owners and occupiers, Auckland Council, Waka Kotahi, network utility operators, business and community representative groups and the wider community. Engagement activities include online video meetings, phone calls, face to face meetings, workshops, hui, newsletters and online information.

The consultation and engagement undertaken is detailed in Section 10 of the AEE Report.

10 EXTENDED LAPSE PERIOD PROPOSED:

Under section 184(1) of the RMA a designation lapses on the expiry of 5 years after the date on which it is included in the district plan unless it is given effect to, substantial progress or effort has been made to give effect to, or a different period is specified when incorporated into the plan. There is a need for long term route protection to protect the corridor from inappropriate development until such time as the transport corridor is required to support and facilitate the planned urban growth and funding is allocated. Therefore, pursuant to section 184(1)(c) of the RMA, AT proposes an extended lapse period of 15 years for implementation of the proposed designation.

11 INFORMATION REQUIRED TO BE INCLUDED IN THIS NOTICE BY THE AUCKLAND UNITARY PLAN OR ANY REGULATION MADE UNDER THE RESOURCE MANAGEMENT ACT 1991:

AT attaches the following information required to be included in this notice by the Auckland Unitary Plan, or any regulations made under the Resource Management Act 1991.

- Volume 2: Assessment of Effects on the Environment
- Volume 3: Indicative Design and Designation Drawings
- Volume 4: Supporting Technical Assessment Reports

Signed on behalf of AT

Jane Small
Group Manager PMO, Strategic Programmes & Property pursuant to authority delegated by Auckland Transport

13 December 2022

Attachment A – Designation Plans

Attachment B – Schedule of Directly Affected Property

Attachment C – Proposed Conditions for the Designation

801028
801093
801125
801100
801034
801215
801026
801048
Nixon Rd
Henwood Rd
Nelson Rd
Red Hills Rd

Designation Plan

Land to be Designated
East-West Arterial Corridor
Nixon Road Connection

Legend

- Proposed Designation
- Parcel Boundary
- 507729 Property ID

Map Scale @ A3: 1:1,500

0 25 50
Metre

Revision	Author	Verified	Approved	Date
1	BAP	RJL	RE	27/11/2022

N

Client: **Auckland Transport / Waka Kotahi**

Discipline: **GIS**

Project: **Redhills Arterial Transport Network**

Drawing No: **SGA-PA-NW-038**
Sheet No : 1 of 3

801215
801147
801221
801125

Designation Plan

Land to be Designated
East-West Arterial Corridor
Nixon Road Connection

Legend

- Proposed Designation
- Parcel Boundary
- 507729 Property ID

This map contains data derived in part or wholly from sources other than those party to the Supporting Growth Alliance, and therefore, no representations or warranties are made by those party to the Supporting Growth Alliance as to the accuracy or completeness of this information.

Map intended for distribution as a PDF document.
Scale may be incorrect when printed.

Map Scale @ A3: 1:1,500

0 25 50
Metre

Revision	Author	Verified	Approved	Date
1	BAP	RJL	RE	27/11/2022

Client: **Auckland Transport / Waka Kotahi**

Discipline: **GIS**

Project: **Redhills Arterial Transport Network**

Drawing No: **SGA-PA-NW-038**
Sheet No : 2 of 3

801215

801221

801373

Designation Plan

Land to be Designated
East-West Arterial Corridor
Nixon Road Connection

Legend

- Proposed Designation
- Parcel Boundary
- 507729 Property ID

Map Scale @ A3: 1:1,500

0 25 50
Metre

Revision	Author	Verified	Approved	Date
1	BAP	RJL	RE	27/11/2022

N

Client: **Auckland Transport / Waka Kotahi**

Discipline: **GIS**

Project: **Redhills Arterial Transport Network**

Drawing No: **SGA-PA-NW-038**
Sheet No : 3 of 3

Attachment B – Schedule of Directly Affected Property

Property ID	Address	Title Number	Legal Description	Approx. land to be designated (m^2)	Sheet Number
801026	298 Red Hills Road	NA95B/474	Lot 2 DP 158924	210	1
801028	8 Nelson Road	NA31D/630	Lot 7 DP 63754	1477	1
801034	318 Red Hills Road	NA95B/473	Lot 1 DP 158924	1969	1
801048	285 Red Hills Road	NA1091/192	Part Lot 1 DP 41056	137	1
801093	38 Nixon Road	NA1954/17	Part Allot SW95 PSH OF Waipareira	4913	1
801100	319 Red Hills Road	NA51B/407	Lot 6 DP 63277	17522	1
801125	18 Henwood Road	NA51B/406	Lot 5 DP 63277	12543	2
801147	32 Henwood Road	NA26D/613	Lot 4 DP 63277	3063	2
801215	315 Red Hills Road	182804	Part Lot 3 DP 4782	39524	3
801221	69-73 Red Hills Road	NA64D/802	Lot 2 DP 95919	19490	3
801373	Red Hills Road	NA38A/1234	Lot 4 DP 6627	34088	4

Attachment C – Proposed Conditions for the Designation

Abbreviations and definitions

Acronym/Term	Definition
Activity sensitive to noise	Any dwelling, visitor accommodation, boarding house, marae, papakāinga, integrated residential development, retirement village, supported residential care, care centre, lecture theatre in a tertiary education facility, classroom in an education facility and healthcare facility with an overnight stay facility.
ARI	Annual Recurrence Interval
Average increase in flood hazard	Flow depth times velocity.
AUP	Auckland Unitary Plan.
BPO or Best Practicable Option	Has the same meaning as in section 2 of the RMA 1991.
CEMP	Construction Environmental Management Plan
Certification	Confirmation from the Manager that a plan or material change to a plan or CNVMP Schedule plan has been prepared in accordance with the condition to which it relates. A management plan shall be deemed certified: (a) where the Requiring Authority has received written confirmation from Council that a management plan is certified; or (b) five working days from the submission of a management plan where no written confirmation of certification has been received. A material change to a management plan or CNVMP Schedule shall be deemed certified: (a) where the Requiring Authority has received written confirmation from Council that the material change to the management plan is certified; or (b) ten working days from the submission of the material change to the management plan where no written confirmation of certification has been received. (c) five working days from the submission of the material change to a CNVMP Schedule where no written confirmation of certification has been received.
CNVMP	Construction Noise and Vibration Management Plan
CNVMP Schedule or Schedule	A schedule to the CNVMP
Completion of Construction	When construction of the Project (or part of the Project) is complete and it is available for use.
Confirmed Biodiversity Areas	Areas recorded in the Identified Biodiversity Area Schedule where the ecological values and effects have been confirmed through the ecological survey under Condition 20**Error! Reference source not found.**.
Construction Works	Activities undertaken to construct the Project excluding Enabling Works.
Council	Auckland Council
CTMP	Construction Traffic Management Plan
EMP	Ecological Management Plan
EIANZ Guidelines	Ecological Impact Assessment: EIANZ guidelines for use in New Zealand: terrestrial and freshwater ecosystems, second edition, dated May 2018.
Enabling works	Includes, but is not limited to, the following and similar activities: • geotechnical investigations (including trial embankments) • archaeological site investigations • formation of access for geotechnical investigations

Acronym/Term	Definition
	• establishment of site yards, site entrances and fencing • constructing and sealing site access roads • demolition or removal of buildings and structures • relocation of services • establishment of mitigation measures (such as erosion and sediment control measures, temporary noise walls, earth bunds and planting)
Existing authorised habitable floor	The floor level of any room (floor) in a residential building which is authorised by building consent and exists at the time the outline plan is submitted, excluding a laundry, bathroom, toilet or any room used solely as an entrance hall, passageway or garage.
Flood prone area	A potential ponding area that relies on a single culvert for drainage and does not have an overland flow path.
HNZPT	Heritage New Zealand Pouhere Taonga.
HNZPTA	Heritage New Zealand Pouhere Taonga Act 2014
Identified Biodiversity Area	Means an area or areas of ecological value where the Project ecologist has identified that the project will potentially have a moderate or greater level of ecological effect, prior to implementation of impact management measures, as determined in accordance with the EIANZ guidelines.
Mana whenua	Mana Whenua as referred to in the conditions is considered to be (as a minimum but not limited to) the following (in no particular order), who at the time of Notice of Requirement expressed a desire to be involved in the Project: • Te Kawerau a Maki • Ngāti Whātua o Kaipara • Te Ākitai Waiohua • Ngāti Whanaunga **Note**: Other iwi and hapu not identified above may have an interest in the Project and should be consulted.
Manager	The Manager – Resource Consents of the Auckland Council, or authorised delegate.
Maximum Probable Development	Design case for consideration of future flows allowing for development within a catchment that takes into account the maximum impervious surface limits of the current zone or, if the land is zoned Future Urban in the Auckland Unitary Plan, the probable level of development arising from zone changes.
Network Utility Operator	Has the same meaning as set out in section 166 of the RMA.
NOR	Notice of Requirement
NZAA	New Zealand Archaeological Association
Outline Plan	An outline plan prepared in accordance with section 176A of the RMA.
Pre-Project development	Existing site condition prior to the Project (including existing buildings and roadways).
Post-Project development	Site condition after the Project has been completed (including existing and new buildings and roadways).

Acronym/Term	Definition
Project Liaison Person	The person or persons appointed for the duration of the Project's Construction Works to be the main point of contact for persons wanting information about the Project or affected by the Construction Works.
Protected Premises and Facilities (PPF)	Protected Premises and Facilities as defined in New Zealand Standard NZS 6806:2010: *Acoustics – Road-traffic noise – New and altered roads.*
Requiring Authority	Has the same meaning as section 166 of the RMA and, for this Designation is Auckland Transport.
RMA	Resource Management Act (1991)
SCEMP	Stakeholder Communication and Engagement Management Plan
Stage of Work	Any physical works that require the development of an Outline Plan.
Start of Construction	The time when Construction Works (excluding Enabling Works) start.
Suitably Qualified Person	A person (or persons) person who can provide sufficient evidence to demonstrate their suitability and competence.
ULDMP	Urban and Landscape Design Management Plan

Proposed Conditions for the Designation

No.	Condition
General Conditions	
1.	**Activity in General Accordance with Plans and Information** (a) Except as provided for in the conditions below, and subject to final design and Outline Plan(s), works within the designation shall be undertaken in general accordance with the following plans and information Project description and concept plan in schedule 1: (b) Where there is inconsistency between: (i) the documents listed in condition 1(a) above Project description and concept plan in schedule 1 and the requirements of the following conditions, the conditions shall prevail; (ii) the documents listed in condition 1(a) above Project description and concept plan in schedule 1, and the management plans under the conditions of the designation, the requirements of the management plans shall prevail.
2.	**Project Information** (a) A project website, or equivalent virtual information source, shall be established within 12 months of the date on which this designation is included in the AUP. All directly affected owners and occupiers shall be notified in writing once the website or equivalent information source has been established. The project website or virtual information source shall include these conditions and shall provide information on: (i) the status of the Project; (ii) anticipated construction timeframes; and (iii) contact details for enquiries. (iv) a subscription service to enable receipt of project updates by email; and (v) how to apply for consent for works in the designation under s176(1)(b) of the RMA. (b) At the start of detailed design for a Stage of Work, the project website or virtual information source shall be updated to provide information on the likely date for Start of Construction, and any staging of works.
3.	**Designation Review** (a) The Requiring Authority shall within 6 months of Completion of Construction or A as soon as otherwise practicable following Completion of Construction the Requiring Authority shall:

No.	Condition
	(i) review the extent of the designation to identify any areas of designated land that it no longer requires for the on-going operation, maintenance or mitigation of effects of the Project; and (ii) give notice to Auckland Council in accordance with section 182 of the RMA for the removal of those parts of the designation identified above.
4.	**Lapse** (a) In accordance with section 184(1)(c) of the RMA, this designation shall lapse if not given effect to within 15 years from the date on which it is included in the AUP.
5.	**Network Utility Operators (Section 176 Approval)** (a) Prior to the start of Construction Works, Network Utility Operators with existing infrastructure located within the designation will not require written consent under section 176 of the RMA for the following activities: (i) operation, maintenance and urgent repair works; (ii) minor renewal works to existing network utilities necessary for the on-going provision or security of supply of network utility operations; (iii) minor works such as new service connections; and (iv) the upgrade and replacement of existing network utilities in the same location with the same or similar effects as the existing utility. (b) To the extent that a record of written approval is required for the activities listed above, this condition shall constitute written approval.
Pre-construction Conditions	
6.	**Outline Plan** (a) An Outline Plan (or Plans) shall be prepared in accordance with section 176A of the RMA. (b) Outline Plans (or Plan) may be submitted in parts or in stages to address particular activities (e.g. design or construction aspects), or a Stage of Work of the Project. (c) Outline Plans shall include any management plan or plans that are relevant to the management of effects of those activities or Stage of Work, which may include: (i) Construction Environmental Management Plan; (ii) Construction Traffic Management Plan; (iii) Construction Noise and Vibration Management Plan; (iv) Urban and Landscape Design Management Plan; (v) Ecological Management Plan (vi) Tree Management Plan
7.	**Management Plans** (a) Any management plan shall: (i) Be prepared and implemented in accordance with the relevant management plan condition; (ii) Be prepared by a Suitably Qualified Person(s); (iii) Include sufficient detail relating to the management of effects associated with the relevant activities and/or Stage of Work to which it relates. (iv) Summarise comments received from Mana Whenua and other stakeholders as required by the relevant management plan condition, along with a summary of where comments have: a. Been incorporated; and b. Where not incorporated, the reasons why. (v) Be submitted as part of an Outline Plan pursuant to s176A of the RMA, with the exception of SCEMPs CEMPs, CTMPs and CNVMP Schedules. (vi) Once finalised, uploaded to the Project website or equivalent virtual information source. (b) Any management plan developed in accordance with Condition 7 may: (i) Be submitted in parts or in stages to address particular activities (e.g. design or construction aspects) a Stage of Work of the Project, or to address specific activities authorised by the designation. (ii) Except for material changes, be amended to reflect any changes in design, construction methods or management of effects without further process. (iii) If there is a material change required to a management plan which has been submitted with an Outline Plan, the revised part of the plan shall be submitted to the Council as an update

No.	Condition
	to the Outline Plan or for Certification as soon as practicable following identification of the need for a revision; (c) Any material changes to the SCEMPs, CEMPs or CTMPs are to be submitted to the Council for information.
8.	**Cultural Advisory Report** (a) At least six (6) months prior to the start of detailed design for a Stage of Work, Mana Whenua shall be invited to prepare a Cultural Advisory Report for the Project. (b) The objective of the Cultural Advisory Report is to assist in understanding and identifying Ngā Taonga Tuku Iho ('treasures handed down by our ancestors') affected by the Project, to inform their management and protection. To achieve the objective, the Requiring Authority shall invite Mana Whenua to prepare a Cultural Advisory Report that: (i) Identifies the cultural sites, landscapes and values that have the potential to be affected by the construction and operation of the Project; (ii) Sets out the desired outcomes for management of potential effects on cultural sites, landscapes and values; (iii) Identifies traditional cultural practices within the area that may be impacted by the Project; (iv) Identifies opportunities for restoration and enhancement of identified cultural sites, landscapes and values within the Project area; (v) Taking into account the outcomes of (i) to (iv) above, identify cultural matters and principles that should be considered in the development of the Urban and Landscape Design Management Plan, Stakeholder and Communication and Engagement Management Plan, and the Cultural Monitoring Plan referred to in Condition 14. (vi) Identifies and (if possible) nominates traditional names along the Project alignment. Noting there may be formal statutory processes outside the project required in any decision-making. (c) The desired outcomes for management of potential effects on cultural sites, landscapes and values identified in the Cultural Advisory Report shall be discussed with Mana Whenua and those outcomes reflected in the relevant management plans where practicable. (d) Conditions 8(b) and (c) above will cease to apply if: (i) Mana Whenua have been invited to prepare a Cultural Advisory Report by a date at least 6 months prior to start of Construction Works; and (ii) Mana Whenua have not provided a Cultural Advisory Report within six months prior to start of Construction Works.
9.	**Urban and Landscape Design Management Plan (ULDMP)** (a) A ULDMP shall be prepared prior to the Start of Construction for a Stage of Work. (b) Mana Whenua shall be invited to participate in the development of the ULDMP(s) to provide input into relevant cultural landscape and design matters including how desired outcomes for management of potential effects on cultural sites, landscapes and values identified and discussed in accordance with Condition 8(c) may be reflected in the ULDMP. The objective of the ULDMP(s) is to: (i) Enable integration of the Project's permanent works into the surrounding landscape and urban context; and (ii) Ensure that the Project manages potential adverse landscape and visual effects as far as practicable and contributes to a quality urban environment. (c) The ULDMP shall be prepared in general accordance with: (i) Auckland Transport's Urban Roads and Streets Design Guide; (ii) Waka Kotahi Urban Design Guidelines: Bridging the Gap (2013) or any subsequent updated version; (iii) Waka Kotahi Landscape Guidelines (2013) or any subsequent updated version; (iv) Waka Kotahi P39 Standard Specification for Highway Landscape Treatments (2013) or any subsequent updated version; and (v) Auckland's Urban Ngahere (Forest) Strategy or any subsequent updated version. (d) To achieve the objective, the ULDMP(s) shall provide details of how the project: (i) Is designed to integrate with the adjacent urban (or proposed urban) and landscape context, including the surrounding existing or proposed topography, urban environment (i.e. centres and density of built form), natural environment, landscape character and open space zones;

No.	Condition
	(ii) Provides appropriate walking and cycling connectivity to, and interfaces with, existing or proposed adjacent land uses, public transport infrastructure and walking and cycling connections; (iii) Promotes inclusive access (where appropriate); and (iv) Promotes a sense of personal safety by aligning with best practice guidelines, such as: a. Crime Prevention Through Environmental Design (CPTED) principles; b. Safety in Design (SID) requirements; and c. Maintenance in Design (MID) requirements and anti-vandalism/anti-graffiti measures. (e) The ULDMP(s) shall include: (i) a concept plan – which depicts the overall landscape and urban design concept, and explain the rationale for the landscape and urban design proposals; (ii) developed design concepts, including principles for walking and cycling facilities and public transport; and (iii) landscape and urban design details – that cover the following: a. Road design – elements such as intersection form, carriageway gradient and associated earthworks contouring including cut and fill batters and the interface with adjacent land uses, benching, spoil disposal sites, median width and treatment, roadside width and treatment; b. Roadside elements – such as lighting, fencing, wayfinding and signage; c. architectural and landscape treatment of all major structures, including bridges and retaining walls; d. Architectural and landscape treatment of noise barriers; e. Landscape treatment of permanent stormwater control wetlands and swales; f. Integration of passenger transport; g. Pedestrian and cycle facilities including paths, road crossings and dedicated pedestrian/ cycle bridges or underpasses; h. Re-instatement of construction and site compound areas, driveways, accessways and fences. (f) The ULDMP shall also include the following planting details and maintenance requirements: (i) planting design details including: a. identification of existing trees and vegetation that will be retained with reference to the Tree Management Plan. Where practicable, mature trees and native vegetation should be retained; b. street trees, shrubs and ground cover suitable for berms; c. treatment of fill slopes to integrate with adjacent land use, streams, riparian margins and open space zones; d. planting of stormwater wetlands; e. identification of vegetation to be retained and any planting requirements under Conditions 21 and 22; f. integration of any planting requirements required by conditions of any resource consents for the project; and g. re-instatement planting of construction and site compound areas as appropriate. (ii) a planting programme including the staging of planting in relation to the construction programme which shall, as far as practicable, include provision for planting within each planting season following completion of works in each Stage of Work; and (iii) detailed specifications relating to the following: a. weed control and clearance; b. pest animal management (to support plant establishment); c. ground preparation (top soiling and decompaction); d. mulching; and e. plant sourcing and planting, including hydroseeding and grassing, and use of eco-sourced species.
Advice note	**Advice Note:** *This designation is for the purpose of construction, operation and maintenance of a transport corridor and it is not for the specific purpose of "road widening". Therefore, it is not intended that the front yard definition in the Auckland Unitary Plan which applies a set back from a designation for road widening purposes applies to this designation. A set back is not required to manage effects between the designation boundary and any proposed adjacent sites or lots.*

No.	Condition
Specific Outline Plan Requirements	
10.	**Flood Hazard** (a) The Project shall be designed to achieve the following flood risk outcomes: (i) no increase in flood levels for existing authorised habitable floors that are already subject to flooding; (ii) no more than a 10% reduction in freeboard for existing authorised habitable floors; (iii) no increase of more than 50mm in flood level on land zoned for urban or future urban development where there is no existing habitable dwelling; (iv) no new flood prone areas; and (v) no more than a 10% average increase of flood hazard (defined as flow depth times velocity) for main access to authorised habitable dwellings existing at the time the Outline Plan is submitted. (b) Compliance with this condition shall be demonstrated in the Outline Plan, which shall include flood modelling of the pre-Project and post-Project 100 year ARI flood levels (for Maximum Probable Development land use and including climate change). (c) Where the above outcomes can be achieved through alternative measures outside of the designation such as flood stop banks, flood walls, raising existing authorised habitable floor level and new overland flow paths or varied through agreement with the relevant landowner, the Outline Plan shall include confirmation that any necessary landowner and statutory approvals have been obtained for that work or alternative outcome.
Construction Conditions	
11.	**Construction Environmental Management Plan (CEMP)** (a) A CEMP shall be prepared prior to the Start of Construction for a Stage of Work. (b) The objective of the CEMP is to set out the management procedures and construction methods to be undertaken to, avoid, remedy or mitigate any adverse effects associated with Construction Works as far as practicable. To achieve the objective, the CEMP shall include: (i) the roles and responsibilities of staff and contractors; (ii) details of the site or project manager and the Project Liaison Person, including their contact details (phone and email address); (iii) the Construction Works programmes and the staging approach, and the proposed hours of work; (iv) details of the proposed construction yards including temporary screening when adjacent to residential areas, site layouts (including construction yards), locations of refuelling activities and construction lighting; (v) methods for controlling dust and the removal of debris and demolition of construction materials from public roads or places; (vi) methods for providing for the health and safety of the general public; (vii) procedures for incident management; (viii)procedures for the refuelling and maintenance of plant and equipment to avoid discharges of fuels or lubricants to Watercourses; (ix) measures to address the storage of fuels, lubricants, hazardous and/or dangerous materials, along with contingency procedures to address emergency spill response(s) and clean up; (x) procedures for responding to complaints about Construction Works; and (xi) methods for amending and updating the CEMP as required. (c) Any CEMP prepared for a Stage of Work shall be submitted to Council for information at least ten working days before the Start of Construction for a Stage of Work.
12.	**Stakeholder and Communication and Engagement Management Plan (SCEMP)** (a) A SCEMP shall be prepared prior to the Start of Construction for a Stage of Work. The objective of the SCEMP is to identify how the public and stakeholders (including directly

No.	Condition
	affected and adjacent owners and occupiers of land) will be engaged communicated with throughout the Construction Works. To achieve the objective, the SCEMP shall include: (i) the contact details for the Project Liaison Person. These details shall be on the Project website, or equivalent virtual information source, and prominently displayed at the main entrance(s) to the site(s); (ii) the procedures for ensuring that there is a contact person available for the duration of Construction Works, for public enquiries or complaints about the Construction Works; (iii) methods for engaging with Mana Whenua, to be developed in consultation with Mana Whenua; (iv) a list of stakeholders, organisations (such as community facilities) and businesses and persons who will be engaged communicated with; (v) Identification of the properties whose owners will be engaged with; (vi) methods to communicate key project milestones and the proposed hours of construction activities including outside of normal working hours and on weekends and public holidays, to the parties identified in (iv) and (v) above; and surrounding businesses and residential communities; (vii) linkages and cross-references to communication and engagement methods set out in other conditions and management plans where relevant. (b) Any SCEMP prepared for a Stage of Work shall be submitted to Council for information ten working days prior to the Start of Construction for a Stage of Work.
13.	**Complaints Register** (a) At all times during Construction Works, a record of any complaints received about the Construction Works shall be maintained. The record shall include: (i) The date, time and nature of the complaint; (ii) The name, phone number and address of the complainant (unless the complainant wishes to remain anonymous); (iii) Measures taken to respond to the complaint (including a record of the response provided to the complainant) or confirmation of no action if deemed appropriate; (iv) The outcome of the investigation into the complaint; (v) Any other activities in the area, unrelated to the Project that may have contributed to the complaint, such as non-project construction, fires, traffic accidents or unusually dusty conditions generally. (b) A copy of the Complaints Register required by this condition shall be made available to the Manager upon request as soon as practicable after the request is made.
14.	**Cultural Monitoring Plan** (a) Prior to the start of Construction Works, a Cultural Monitoring Plan shall be prepared by a Suitably Qualified Person(s) identified in collaboration with Mana Whenua. (b) The objective of the Cultural Monitoring Plan is to identify methods for undertaking cultural monitoring to assist with management of any cultural effects during Construction works. (c) The Cultural Monitoring Plan shall include: (i) Requirements for formal dedication or cultural interpretation to be undertaken prior to start of Construction Works in areas identified as having significance to Mana Whenua; (ii) Requirements and protocols for cultural inductions for contractors and subcontractors; (iii) Identification of activities, sites and areas where cultural monitoring is required during particular Construction Works; (iv) Identification of personnel to undertake cultural monitoring, including any geographic definition of their responsibilities; and (v) Details of personnel to assist with management of any cultural effects identified during cultural monitoring, including implementation of the Accidental Discovery Protocol (d) If Enabling Works involving soil disturbance are undertaken prior to the start of Construction Works, an Enabling Works Cultural Monitoring Plan shall be prepared by a Suitably Qualified Person identified in collaboration with Mana Whenua. This plan may be prepared as a standalone Enabling Works Cultural Monitoring Plan or be included in the main Construction Works Cultural Monitoring Plan. **Advice Note:** *Where appropriate, the Cultural Monitoring Plan shall align with the requirements of other conditions of the designation and resource consents for the Project which require monitoring during Construction Works.*

<table>
<tr><th>No.</th><th>Condition</th></tr>
<tr><td>15.</td><td>

Construction Traffic Management Plan (CTMP)

(a) A CTMP shall be prepared prior to the Start of Construction for a Stage of Work.
(b) The objective of the CTMP is to avoid, remedy or mitigate, as far as practicable, adverse construction traffic effects. To achieve this objective, the CTMP shall include:
(i) methods to manage the effects of temporary traffic management activities on traffic;
(ii) measures to ensure the safety of all transport users;
(iii) the estimated numbers, frequencies, routes and timing of traffic movements, including any specific non-working or non-movement hours to manage vehicular and pedestrian traffic near schools or to manage traffic congestion;
(iv) site access routes and access points for heavy vehicles, the size and location of parking areas for plant, construction vehicles and the vehicles of workers and visitors;
(v) identification of detour routes and other methods to ensure the safe management and maintenance of traffic flows, including pedestrians and cyclists, on existing roads;
(vi) methods to maintain vehicle access to property and/or private roads where practicable, or to provide alternative access arrangements when it will not be;
(vii) the management approach to loads on heavy vehicles, including covering loads of fine material, the use of wheel-wash facilities at site exit points and the timely removal of any material deposited or spilled on public roads;
(viii) methods that will be undertaken to communicate traffic management measures to affected road users (e.g. residents/public/stakeholders/emergency services);
(c) Any CTMP prepared for a Stage of Work shall be submitted to Council for information ten working days prior to the Start of Construction for a Stage of Work.

</td></tr>
<tr><td>16.</td><td>

Construction Noise Standards

(a) Construction noise shall be measured and assessed in accordance with NZS6803:1999 Acoustics – Construction Noise and shall comply with the noise standards set out in the following table as far as practicable:

Table 17.1: Construction noise standards

<table>
<tr><th>Day of week</th><th>Time period</th><th>$L_{Aeq(15min)}$</th><th>L_{AFmax}</th></tr>
<tr><td colspan="4">Occupied activity sensitive to noise</td></tr>
<tr><td>Weekday</td><td>0630h - 0730h
0730h - 1800h
1800h - 2000h
2000h - 0630h</td><td>55 dB
70 dB
65 dB
45 dB</td><td>75 dB
85 dB
80 dB
75 dB</td></tr>
<tr><td>Saturday</td><td>0630h - 0730h
0730h - 1800h
1800h - 2000h
2000h - 0630h</td><td>55 dB
70 dB
45 dB
45 dB</td><td>75 dB
85 dB
75 dB
75 dB</td></tr>
<tr><td>Sunday and Public Holidays</td><td>0630h - 0730h
0730h - 1800h
1800h - 2000h
2000h - 0630h</td><td>45 dB
55 dB
45 dB
45 dB</td><td>75 dB
85 dB
75 dB
75 dB</td></tr>
<tr><td colspan="4">Other occupied buildings</td></tr>
<tr><td>All</td><td>0730h – 1800h
1800h – 0730h</td><td>70 dB
75 dB</td><td></td></tr>
</table>

</td></tr>
</table>

<table>
<tr><th>No.</th><th>Condition</th></tr>
<tr><td></td><td>(b) Where compliance with the noise standards set out in Table [above] is not practicable, and unless otherwise provided for in the CNVMP as required by Condition 18c)(x), then the methodology in Condition 19 shall apply.</td></tr>
<tr><td>17.</td><td>Construction Vibration Standards
(a) Construction vibration shall be measured in accordance with ISO 4866:2010 Mechanical vibration and shock – Vibration of fixed structures – Guidelines for the measurement of vibrations and evaluation of their effects on structures and shall comply with the vibration standards set out in the following table as far as practicable.
Table CNV2 Construction vibration criteria
<table>
<tr><th>Receiver</th><th>Details</th><th>Category A</th><th>Category B</th></tr>
<tr><td rowspan="2">Occupied Activities sensitive to noise</td><td>Night-time 2000h - 0630h</td><td>0.3mm/s ppv</td><td>2mm/s ppv</td></tr>
<tr><td>Daytime 0630h - 2000h</td><td>2mm/s ppv</td><td>5mm/s ppv</td></tr>
<tr><td>Other occupied buildings</td><td>Daytime 0630h - 2000h</td><td>2mm/s ppv</td><td>5mm/s ppv</td></tr>
<tr><td>All other buildings</td><td>At all other times</td><td colspan="2">Tables 1 and 3 of DIN4150-3:1999</td></tr>
</table>
*Category A criteria adopted from Rule E25.6.30.1 of the AUP
**Category B criteria based on DIN 4150-3:1999 building damage criteria for daytime
(b) Where compliance with the vibration standards set out in Table [above] is not practicable, and unless otherwise provided for in the CNVMP as required by Condition 18(c)(x), then the methodology in Condition 19 shall apply</td></tr>
<tr><td>18.</td><td>Construction Noise and Vibration Management Plan (CNVMP)
(a) A CNVMP shall be prepared by a Suitably Qualified Person prior to the Start of Construction for a Stage of Work.
(b) A CNVMP shall be implemented during the Stage of Work to which it relates.
(c) The objective of the CNVMP is to provide a framework for the development and implementation of the Best Practicable Option for the management of construction noise and vibration effects to achieve the construction noise and vibration standards set out in Conditions 16 and 17 to the extent practicable. To achieve this objective, the CNVMP shall be prepared in accordance with Annex E2 of the New Zealand Standard NZS6803:1999 'Acoustics – Construction Noise' (NZS6803:1999) and shall as a minimum, address the following:
i. Description of the works and anticipated equipment/processes;
ii. Hours of operation, including times and days when construction activities would occur;
iii. The construction noise and vibration standards for the project;
iv. Identification of receivers where noise and vibration standards apply;
v. A hierarchy of management and mitigation options, including any requirements to limit night works and works during other sensitive times, including Sundays and public holidays as far practicable and identification of the Best Practicable Option;
vi. Methods and frequency for monitoring and reporting on construction noise and vibration;
vii. Procedures for communication and engagement with nearby residents and stakeholders, including notification of proposed construction activities, the period of construction activities, and management of noise and vibration complaints.
viii. Contact details of the Project Liaison Person;
ix. Procedures for the regular training of the operators of construction equipment to minimise noise and vibration as well as expected construction site behaviours for all workers;
x. Identification of areas where compliance with the noise [Condition 16] and/or vibration standards [Condition 17 Category A or Category B] will not be practicable and the specific management controls to be implemented and consultation requirements with owners and occupiers of affected sites.</td></tr>
</table>

No.	Condition
	xi. Procedures and requirements for the preparation of a Schedule to the CNVMP (Schedule) for those areas where compliance with the noise [Condition 16] and/or vibration standards [Condition 17 Category B] will not be practicable and where sufficient information is not available at the time of the CNVMP to determine the area specific management controls Condition 18 (c)(x). xii. Procedures for: A. communicating with affected receivers, where measured or predicted vibration from construction activities exceeds the vibration criteria of Condition 17; B. assessing, mitigating and monitoring vibration where measured or predicted vibration from construction activities exceeds the Category AB vibration criteria of Condition 17, including the requirement to undertake building condition surveys before and after works to determine whether any damage has occurred as a result of construction vibration; and xiii. Requirements for review and update of the CNVMP
19.	**Schedule to a CNVMP** (a) An updated Schedule to the CNVMP (Schedule) shall be prepared prior to the start of the construction to which it relates by a Suitably Qualified Person, in consultation with the owners and occupiers of sites subject to the Schedule, when: (i) Construction noise is either predicted or measured to exceed the noise standards in Condition 16, except where the exceedance of the L_{Aeq} criteria is no greater than 5 decibels and does not exceed: A. 0630 – 2000: 2 period of up to 2 consecutive weeks in any 2 months, or B. 2000 - 0630: 1 period of up to 2 consecutive nights in any 10 days. (ii) Construction vibration is either predicted or measured to exceed the Category B standard at the receivers in Condition 17. (b) The objective of the Schedule is to set out the Best Practicable Option measures to manage for the management of noise and/or vibration effects of the construction activity beyond those measures set out in the CNVMP. The Schedule shall include details such as: (i) Construction activity location, start and finish dates; (ii) The nearest neighbours to the construction activity; (iii) The predicted noise and/or vibration level for all receivers where the levels are predicted or measured to exceed the applicable standards and predicted duration of the exceedance; (iv) The proposed mitigation options that have been selected, and the options that have been discounted as being impracticable and the reasons why; (v) The consultation undertaken with owners and occupiers of sites subject to the Schedule, and how consultation has and has not been taken into account; and proposed communications with neighbours. (vi) Location, times and types of monitoring; (c) The Schedule shall be submitted to the Manager Council for certification at least 5 working days (except in unforeseen circumstances) in advance of Construction Works that are covered by the scope of the Schedule and shall form part of the CNVMP. (d) Where material changes are made to a Schedule required by this condition, the Requiring Authority shall consult the owners and/or occupiers of sites subject to the Schedule prior to submitting the amended Schedule to the Manager for certification in accordance with (c) above. The amended Schedule shall document the consultation undertaken with those owners and occupiers, and how consultation outcomes have and have not been taken into account.
Advice note	***Accidental Discoveries*** ***Advice Note:*** *The Requiring Authority is advised of the requirements of Rule E11.6.1 of the AUP for "Accidental Discovery" as they relate to both contaminated soils and heritage items.* *The requirements for accidental discoveries of heritage items are set out in Rule E11.6.1 of the AUP [and in the Waka Kotahi Minimum Standard P45 Accidental Archaeological Discovery Specification, or any subsequent version].*

No.	Condition
20.	**Pre-Construction Ecological Survey** (a) At the start of detailed design for a Stage of Work, an updated ecological survey shall be undertaken by a Suitably Qualified Person. The purpose of the survey is to inform the detailed design of ecological management plan by: (i) Confirming whether the species of value within the Identified Biodiversity Areas recorded in the *Identified Biodiversity Area Schedule 2* are still present; (ii) Confirming whether the project will or may have a moderate or greater level of ecological effect on ecological species of value, prior to implementation of impact management measures, as determined in accordance with the EIANZ guidelines. (b) If the ecological survey in (a) above confirms the presence of ecological features of value in accordance with condition 20a)(i) and that effects are likely in accordance with condition 20(a)(ii) then an Ecological Management Plan (or Plans) shall be prepared in accordance with Condition 21 for these areas (Confirmed Biodiversity Areas).
21.	**Ecological Management Plan (EMP)** (a) An EMP shall be prepared for any Confirmed Biodiversity Areas (confirmed through Condition 20) prior to the Start of Construction for a Stage of Work. The objective of the EMP is to minimise effects of the Project on the ecological features of value of Confirmed Biodiversity Areas as far as practicable. The EMP shall set out the methods that will be used to achieve the objective which may include: (i) If an EMP is required in accordance with condition 20(b) for the presence of long tail bats: a. Measures to minimise as far as practicable, disturbance from construction activities within the vicinity of any active long tail bat roosts (including maternity) that are discovered through survey until such roosts are confirmed to be vacant of bats. b. How the timing of any construction work in the vicinity of any maternity long tail bat roosts will be limited to outside the bat maternity period (between December and March) where reasonably practicable; c. Details of areas where vegetation is to be retained where practicable for the purposes of the connectivity of long tail bats; d. Details of how bat connectivity will be provided and maintained (e.g. through the presence of suitable indigenous or exotic trees or artificial alternatives). e. Details of where opportunities for advance restoration / mitigation planting have previously been identified and implemented. f. Where mitigation to minimise effects is not practicable, details of any offsetting proposed. (b) The EMP shall be consistent with any ecological management measures to be undertaken in compliance with conditions of any regional resource consents granted for the Project.
Advice note	***Advice Note:*** *Depending on the potential effects of the Project, the regional consents for the Project may include the following monitoring and management plans:* *(i) Stream and/or wetland restoration plans;* *(ii) Vegetation restoration plans; and* *(iii) Fauna management plans (eg avifauna, herpetofauna, bats).*
22.	**Tree Management Plan** (a) Prior to the Start of Construction for a Stage of Work, a Tree Management Plan shall be prepared. (b) The objective of the Tree Management Plan is to avoid, remedy or mitigate effects of construction activities on trees identified as protected or notable in the Auckland Unitary Plan. (c) The Tree Management Plan shall: (i) confirm the trees that will be affected by the project work and are identified as protected or notable in the Auckland Unitary Plan; and (ii) demonstrate how the design and location of project works has avoided, remedied or mitigated any effects on any tree identified in (i) above. This may include: A. planting to replace trees that require removal (with reference to the ULDMP planting design details in Condition 9);

No.	Condition
	B. tree protection zones and tree protection measures such as protective fencing, ground protection and physical protection of roots, trunks and branches; and C. methods for work within the rootzone of trees that are to be retained in line with accepted arboricultural standards. (iii) demonstrate how the tree management measures (outlined in A – C above) are consistent with conditions of any resource consents granted for the project in relation to managing construction effects on trees.
Operational Conditions	
23.	**Low Noise Road Surface** (a) Asphaltic concrete surfacing (or equivalent low noise road surface) shall be implemented within 12 months of Completion of Construction of the project. (b) Any future resurfacing works of the Project shall be undertaken in accordance with the Auckland Transport Reseal Guidelines, Asset Management and Systems 2013 or any updated version and asphaltic concrete surfacing (or equivalent low noise road surface) shall be implemented where: (i) The volume of traffic exceeds 10,000 vehicles per day; or (ii) The road is subject to high wear and tear (such as cul de sac heads, roundabouts and main road intersections); or (iii) It is in an industrial or commercial area where there is a high concentration of truck traffic; or (iv) It is subject to high usage by pedestrians, such as town centres, hospitals, shopping centres and schools. (c) Prior to commencing any future resurfacing works, the Requiring Authority shall advise the Manager if any of the triggers in Condition 23(b)(i) – (iv) are not met by the road or a section of it and therefore where the application of asphaltic concrete surfacing (or equivalent low noise road surface) is no longer required on the road or a section of it. Such advice shall also indicate when any resealing is to occur.
24.	**Traffic Noise** For the purposes of Conditions 25 to 37: (a) Building-Modification Mitigation – has the same meaning as in NZS 6806; (b) Design year has the same meaning as in NZS 6806; (c) Detailed Mitigation Options – means the fully detailed design of the Selected Mitigation Options, with all practical issues addressed; (d) Habitable Space – has the same meaning as in NZS 6806; (e) Identified Noise Criteria Category – means the Noise Criteria Category for a PPF identified in *Schedule 3: Identified PPFs Noise Criteria Categories*; (f) Mitigation – has the same meaning as in NZS 6806:2010 Acoustics – Road-traffic noise – New and altered roads; (g) Noise Criteria Categories – means the groups of preference for sound levels established in accordance with NZS 6806 when determining the Best Practicable Option for noise mitigation (i.e. Categories A, B and C); (h) NZS 6806 – means New Zealand Standard NZS 6806:2010 Acoustics – Road-traffic noise – New and altered roads; (i) Protected Premises and Facilities (PPFs) – means only the premises and facilities identified in green, orange or red in *Schedule 3: PPFs Noise Criteria Categories*; (j) Selected Mitigation Options – means the preferred mitigation option resulting from a Best Practicable Option assessment undertaken in accordance with NZS 6806; and (k) Structural Mitigation – has the same meaning as in NZS 6806.
25.	The Noise Criteria Categories identified in *Schedule 3: PPFs Noise Criteria Categories* at each of the PPFs shall be achieved where practicable and subject to Conditions 25 to 37 (all traffic noise conditions).

No.	Condition
	Achievement of the Noise Criteria Categories for PPFs shall be by reference to a traffic forecast for a high growth scenario in a design year at least 10 years after the programmed opening of the Project.
26.	As part of the detailed design of the Project, a Suitably Qualified Person shall determine the Selected Mitigation Options for the PPFs identified on *Schedule* 3*: PPFs Noise Criteria Categories.*
27.	Prior to construction of the Project, a Suitably Qualified Person shall develop the Detailed Mitigation Options for the PPFs identified in *Schedule 3: PPFs Noise Criteria Categories*, taking into account the Selected Mitigation Options.
28.	If the Detailed Mitigation Options would result in the Identified Noise Criteria Category changing to a less stringent Category, e.g. from Category A to B or Category B to C, at any relevant PPF, a Suitably Qualified Person shall provide confirmation to the Manager that the Detailed Mitigation Option would be consistent with adopting the Best Practicable Option in accordance with NZS 6806 prior to implementation.
29.	The Detailed Mitigation Options shall be implemented prior to completion of construction of the Project, with the exception of any low-noise road surfaces, which shall be implemented within twelve months of completion of construction.
30.	Prior to the Start of Construction, a Suitably Qualified Person shall identify those PPFs which, following implementation of all the Detailed Mitigation Options, will not be Noise Criteria Categories A or B and where Building-Modification Mitigation might be required to achieve 40 dB $L_{Aeq(24h)}$ inside Habitable Spaces ('Category C Buildings').
31.	Prior to the Start of Construction in the vicinity of each Category C Building, the Requiring Authority shall write to the owner of the Category C Building requesting entry to assess the noise reduction performance of the existing building envelope. If the building owner agrees to entry within three months of the date of the Requiring Authority's letter, the Requiring Authority shall instruct a Suitably Qualified Person to visit the building and assess the noise reduction performance of the existing building envelope.
32.	For each Category C Building identified, the Requiring Authority is deemed to have complied with Condition 31 above if: (a) The Requiring Authority's Suitably Qualified Person has visited the building and assessed the noise reduction performance of the building envelope; or (b) The building owner agreed to entry, but the Requiring Authority could not gain entry for some reason (such as entry denied by a tenant); or (c) The building owner did not agree to entry within three of the date of the Requiring Authority's letter sent in accordance with Condition 31 above (including where the owner did not respond within that period); or (d) The building owner cannot, after reasonable enquiry, be found prior to completion of construction of the Project. If any of (b) to (d) above apply to a Category C Building, the Requiring Authority is not required to implement Building-Modification Mitigation to that building.
33.	Subject to Condition 32 above, within six months of the assessment undertaken in accordance with Conditions 31 and 32, the Requiring Authority shall write to the owner of each Category C Building advising: (a) If Building-Modification Mitigation is required to achieve 40 dB LAeq(24h) inside habitable spaces; and (b) The options available for Building-Modification Mitigation to the building, if required; and (c) That the owner has three months to decide whether to accept Building-Modification Mitigation to the building and to advise which option for Building-Modification Mitigation the owner prefers, if the Requiring Authority has advised that more than one option is available.
34.	Once an agreement on Building-Modification Mitigation is reached between the Requiring Authority and the owner of a Category C Building, the mitigation shall be implemented, including any third

No.	Condition
	party authorisations required, in a reasonable and practical timeframe agreed between the Requiring Authority and the owner.
35.	Subject to Condition 31, where Building-Modification Mitigation is required, the Requiring Authority is deemed to have complied with Condition 33 if: (a) The Requiring Authority has completed Building Modification Mitigation to the building; or (b) An alternative agreement for mitigation is reached between the Requiring Authority and the building owner; or (c) The building owner did not accept the Requiring Authority's offer to implement Building-Modification Mitigation within three months of the date of the Requiring Authority's letter sent in accordance with Condition 33 (including where the owner did not respond within that period); or (d) The building owner cannot, after reasonable enquiry, be found prior to completion of construction of the Project.
36.	The Detailed Mitigation Options shall be maintained so they retain their noise reduction performance as far as practicable
37.	The Noise Criteria Categories at the PPFs identified in *Schedule 3: Identified PPFs Noise Criteria Categories* do not need to be complied with where: (a) the PPF no longer exists; or (b) agreement of the landowner has been obtained confirming that the Noise Criteria Category level does not need to be met.

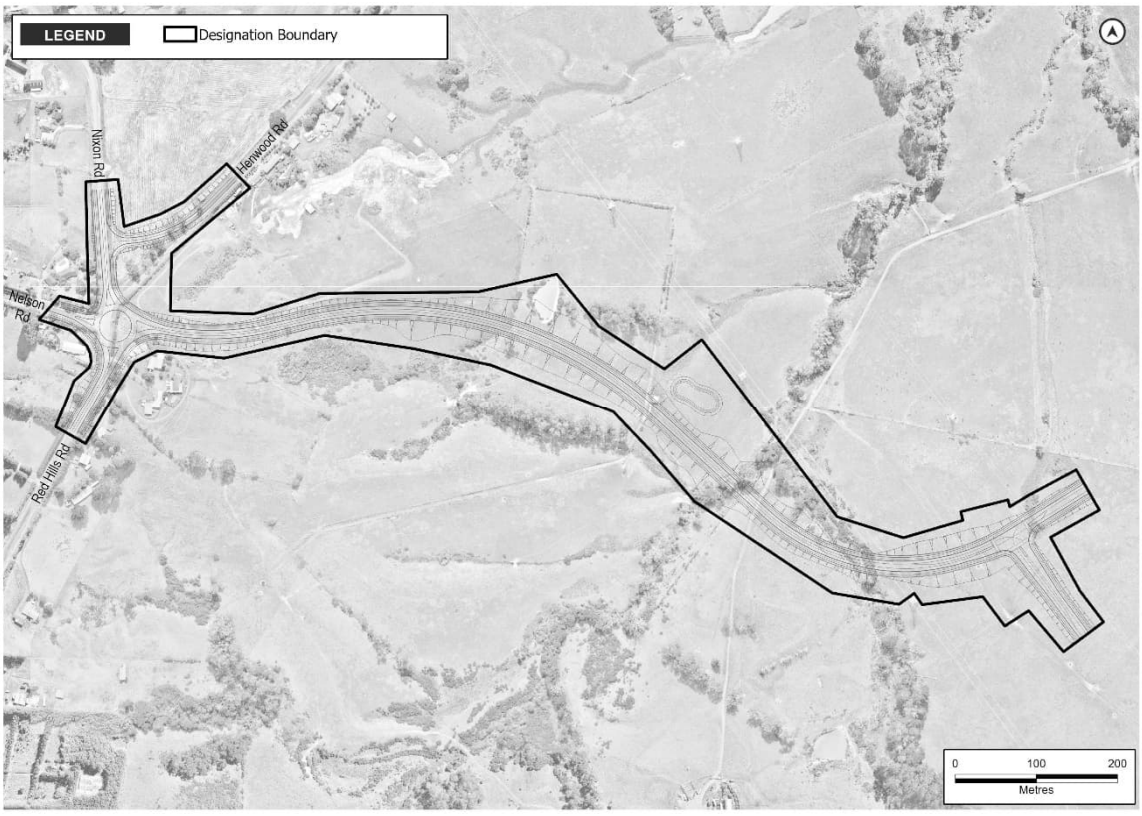
Schedule 1: General Accordance Plans and Information

Project Description – NOR 2c Redhills East-West Arterial Transport Corridor – Nixon Road Connection

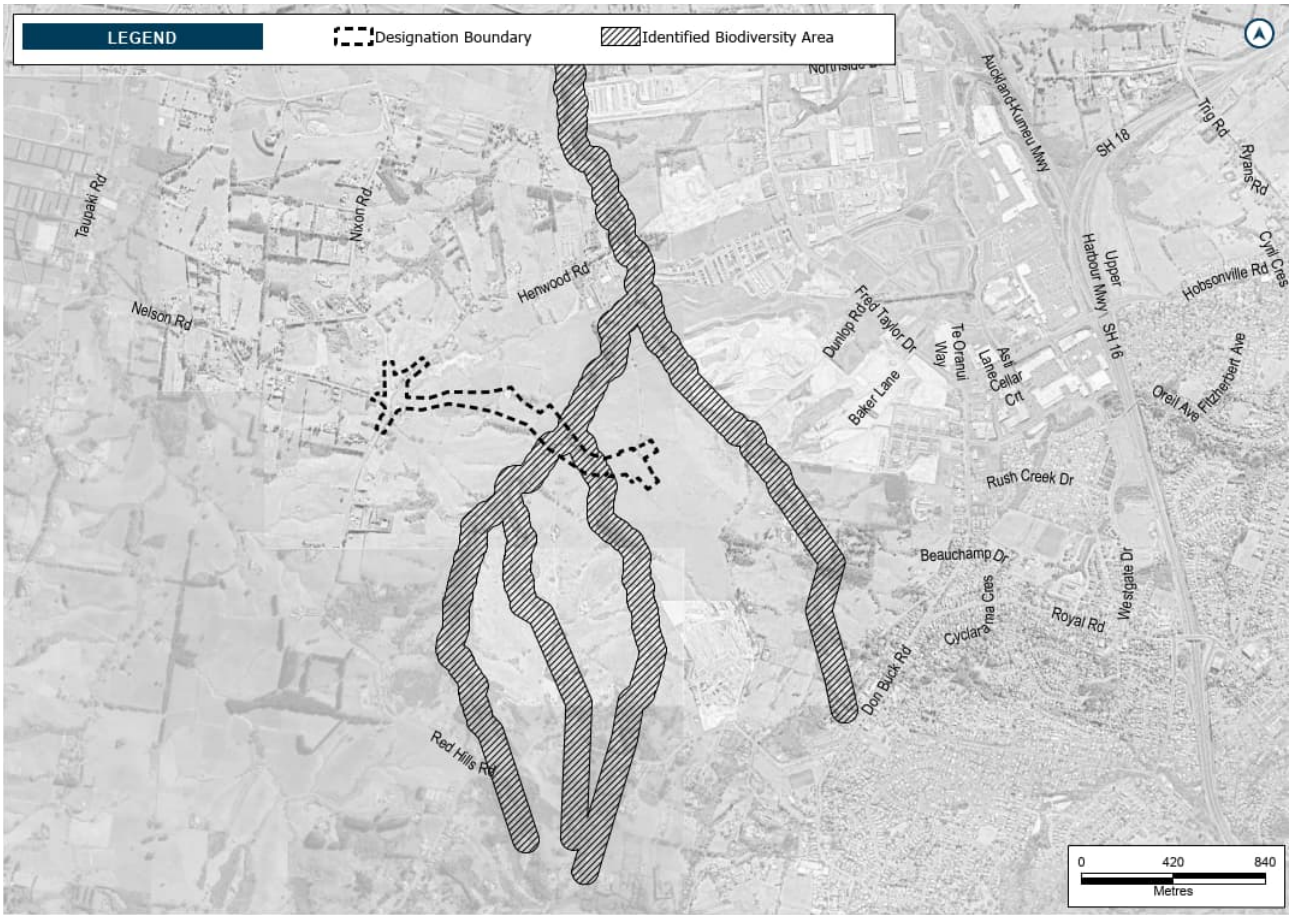
The proposed work is the construction, operation, and maintenance of a transport corridor in Redhills, from the Nixon Road, Nelson Road and Red Hills Road intersection to the intersection with NORs 1 and 2a, including active transport facilities and associated infrastructure. The proposed work is shown in the following Concept Plan and includes:

(a) An upgraded and new transport corridor, including public transport and active transport facilities;
(b) Associated works including intersections, bridges, embankments, retaining, culverts, stormwater management systems;
(c) Changes to local roads, where the proposed work intersects with local roads; and
(d) Construction activities, including vegetation removal, construction compounds, laydown areas, bridge works area, construction traffic management and the re-grade of driveways.

NOR Concept Plan



Schedule 2: Identified Biodiversity Areas – Long Tailed Bats



Schedule 3: Identified PPFs Noise Criteria Categories

Address	New or Altered Road	Noise Category
7, 31 Nelson Road	Altered	Category A
307 Red Hills Road	Altered	Category A
315 Red Hills Road	Altered	Category A
319 Red Hills Road	Altered	Category A
8 Nelson Road	Altered	Category A
315 Red Hills Road	Altered	Category A
319 Red Hills Road	Altered	Category A

PPF Location Plan

ATTACHMENT 13

REDHILLS ARTERIAL TRANSPORT NETWORK ASSESSMENT OF EFFECTS ON THE ENVIRONMENT

Supporting Growth

North West Assessment of Effects on the Environment – Redhills Arterial Transport Network

Volume 2

December 2022

TE TUPU NGĀTAHI Supporting Growth

WAKA KOTAHI NZ TRANSPORT AGENCY

Document Status

Version No.	Responsibility	Name
2020 Draft	**Author**	Matthew Kerr-Ridge Nicolai Berry
	Reviewer	Bryce Julyan Diana Bell Jill Gregory Andrew Beatson
1.0	**Author**	Bridget O'Leary
	Reviewer	Andrew Beatson
	Approver	Tracey Grant

Revision Status

Version	Date	Reason for Issue
1.0	December 2022	Final

The Assessment of Effects on the Environment report and supporting documents are structured as set out in the table below:

Volume	Title	Contents
1	Form 18's	NoR1 Redhills North-South Arterial Transport Corridor • Attachment A: Designation plans • Attachment B: Schedule of Directly Affected Property • Attachment C: Proposed NoR Conditions NoR2a Redhills East West Arterial Transport Corridor – Dunlop Road • Attachment A: Designation plans • Attachment B: Schedule of Directly Affected Property • Attachment C: Proposed NoR Conditions NoR2b Redhills East West Arterial Transport Corridor – Baker Lane • Attachment A: Designation plans • Attachment B: Schedule of Directly Affected Property • Attachment C: Proposed NoR Conditions NoR2c Redhills East West Arterial Transport Corridor – Nixon Road Connection • Attachment A: Designation plans • Attachment B: Schedule of Directly Affected Property • Attachment C: Proposed NoR Conditions
2	AEE (this report)	Appendix A: Assessment of Alternatives Report Appendix B: Statutory Assessment Appendix C: Proposed NoR Conditions
3	Drawings	Designation and Indicative Design Drawings
4	Supporting Technical Reports	Appendix A: Assessment of Transport Effects Appendix B: Assessment of Construction Noise and Vibration Appendix C: Assessment of Traffic Noise and Vibration Appendix D: Assessment of Historic Heritage Effects Appendix E: Assessment of Landscape and Visual Effects Appendix F: Assessment of Ecological Effects Appendix G: Assessment of Flooding Effects Appendix H: Urban Design Framework

Table of Contents

Tables

Figures

Appendices

Appendix A: Assessment of Alternatives Report

Appendix B: Statutory Assessment

Appendix C: Proposed NoR Conditions

Acronyms

Acronym / Term	Description
AC DBC	Auckland Council Housing Infrastructure Fund Detailed Business Case
ACNV	Assessment of Construction Noise and Vibration
ADR	AUP:OIP Accidental Discovery Protocol
AEP	Annual Exceedance Probability (Stormwater)
AEcE	Assessment of Ecological Effects
AEE	Assessment of Effects on the Environment (this report)
AHHE	Assessment of Historic Heritage Effects
ALVE	Assessment of Landscape and Visual Effects
ATNV	Assessment of Traffic Noise and Vibration
ARI	Average Recurrence Interval (Stormwater)
AT	Auckland Transport
ATE	Assessment of Transport Effects
AUP:OIP	Auckland Unitary Plan: Operative in Part
BPO	Best Practicable Alternative (Noise & Vibration)
CEMP	Construction Environmental Management Plan
CIA	Cultural Impact Assessment
CNVMP	Construction Noise and Vibration Management Plan
CNVMS	Construction Noise and Vibration Management Schedules
CTMP	Construction Traffic Management Plan
DBC	Detailed Business Case
dB L_{Aeq}	Decibels equivalent continuous sound level (Noise and Vibration)
EIANZ	Environment Institute of Australia and New Zealand
FULSS	Future Urban Land Supply Strategy (2017)
HIF	Housing Infrastructure Fund
HNZPTA	Heritage New Zealand Pouhere Taonga Act 2014
IBC	Indicative Business Case
LGA	Local Government (Auckland Council) Act 2009
MPD	Maximum Probable Development
MCA	Multi Criteria Assessment
MHS	Residential - Mixed Housing Suburban Zone
MHU	Residential – Mixed Housing Urban Zone
NoR	Notice(s) of Requirement
NPS	National Policy Statement

NZS 6806	New Zealand Standard 6806:2010 'Acoustics - Road-traffic noise - New and altered roads
ONF	Outstanding Natural Feature
ONL	Outstanding Natural Landscape
PBC	Programme Business Case
PPF	Protected Premises and Facilities (Noise & Vibration)
RMA	Resource Management Act 1991
RATN	Redhills Arterial Transport Network
RPS	Regional Policy Statement
SEA	Significant Ecological Area
SG DBC	Supporting Growth Detailed Business Case
SH16	State Highway 16
SH18	State Highway 18
SHZ	Residential - Single House Zone
TDM	Transport Design Manual
THAB	Residential – Terrace Housing and Apartment Zone
The Council	Auckland Council
The Design Framework	Te Tupu Ngātahi Design Framework
The Programme	The Supporting Growth Programme
The Urban Design Framework	Urban Design Framework – Redhills Arterial Transport Network
ULDMP	Urban and Landscape Design Management Plan
Waka Kotahi	Waka Kotahi NZ Transport Agency

1 Introduction

This Assessment of Effects on the Environment (**AEE**) has been prepared for the Redhills Arterial Transport Network (**RATN**) and includes four Notices of Requirement (**NoR**) submitted by Auckland Transport (**AT**) as a requiring authority under the Resource Management Act 1991 (**RMA**).

The RATN forms part of the Supporting Growth Programme (the Programme) to enable the future construction, operation and maintenance of transport infrastructure to support future urban growth in the North West area of Auckland.

The projects in the RATN are listed in Table 1, with an illustration of the RATN context and extent shown in Figure 1.

Table 1: Redhills Arterial Transport Network – Projects and Notice Reference

Notice	Project	Description	Requiring Authority
NoR1	Redhills North-South Arterial Transport Corridor	New urban arterial transport corridor and upgrade of Don Buck and Royal Road intersection.	AT
NoR2a	Redhills East-West Arterial Transport Corridor – Dunlop Road	New urban arterial transport corridor that intersects with Fred Taylor Drive and connects to the remaining East-West connection (NoR2c) at the intersection with the Redhills North-South arterial corridor.	AT
NoR2b	Redhills East-West Arterial Transport Corridor – Baker Lane	New urban arterial transport corridor that intersects with Fred Taylor Drive and connects to the intersection of the remaining East-West connection and Dunlop Road (NoR2a).	AT
NoR2c	Redhills East-West Arterial Transport Corridor – Nixon Road Connection	New urban arterial transport corridor that intersects with the Redhills East West Arterial Corridor – Dunlop Road. This includes the upgrade of the existing Red Hills Road / Nelson Road / Nixon Road intersection, and the existing Nixon Road / Henwood Road intersection.	AT

The purpose of the proposed designations for NoR1 and NoR2(a, b and c) is the “Construction, operation and maintenance of a transport corridor”.

A lapse period of 15 years is proposed for both NoR1 and NoR2(a, b and c).

Appropriate conditions have also been proposed to enable the proposed work and to manage potential adverse effects (provided in 0).

The AEE has been prepared in accordance with section 168A of the RMA in such detail as corresponds with the scale and significance of the effects that the activity may have on the environment.

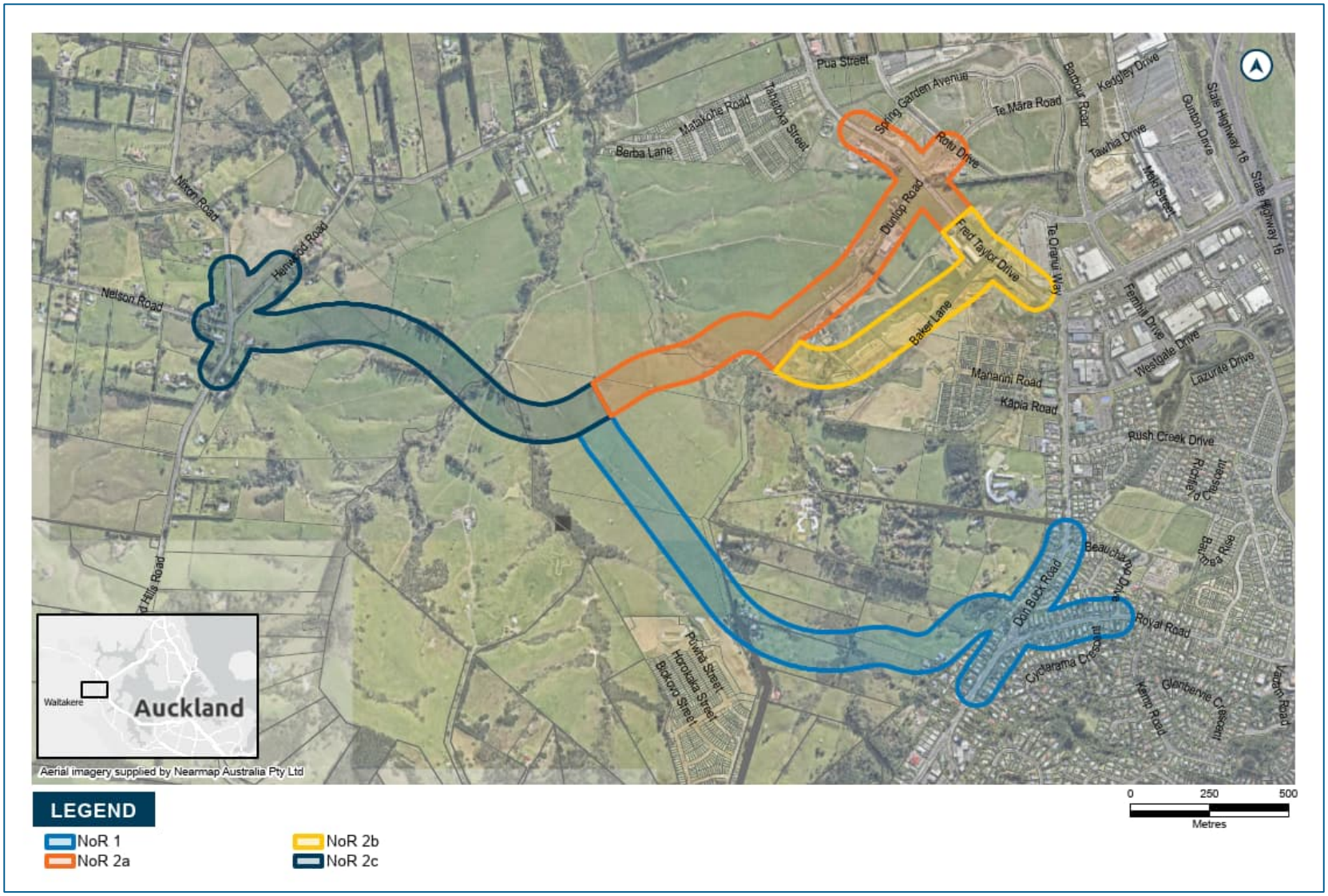


Figure 1: Redhills Arterial Transport Network Context and Extent

1.1 Supporting Growth Programme

The Programme is a collaboration between AT and Waka Kotahi NZ Transport Agency (Waka Kotahi) to identify and plan the transport network in Auckland's identified growth areas over the next 10 to 30 years.

AT and Waka Kotahi have worked in close alignment with Auckland Council (the Council), Mana whenua and KiwiRail Holdings Limited and are working closely with stakeholders and the community to develop the strategic transport network to support Auckland's growth areas.

The key objective of the Programme is to identify and protect land for future implementation of the required strategic transport corridors / infrastructure.

The Programme has identified the North West Preferred Transport Network in the North West Growth Area (Figure 2) which includes the RATN. Route protection for the North West Preferred Transport Network is now being progressed, including the RATN; the subject of this NoR.

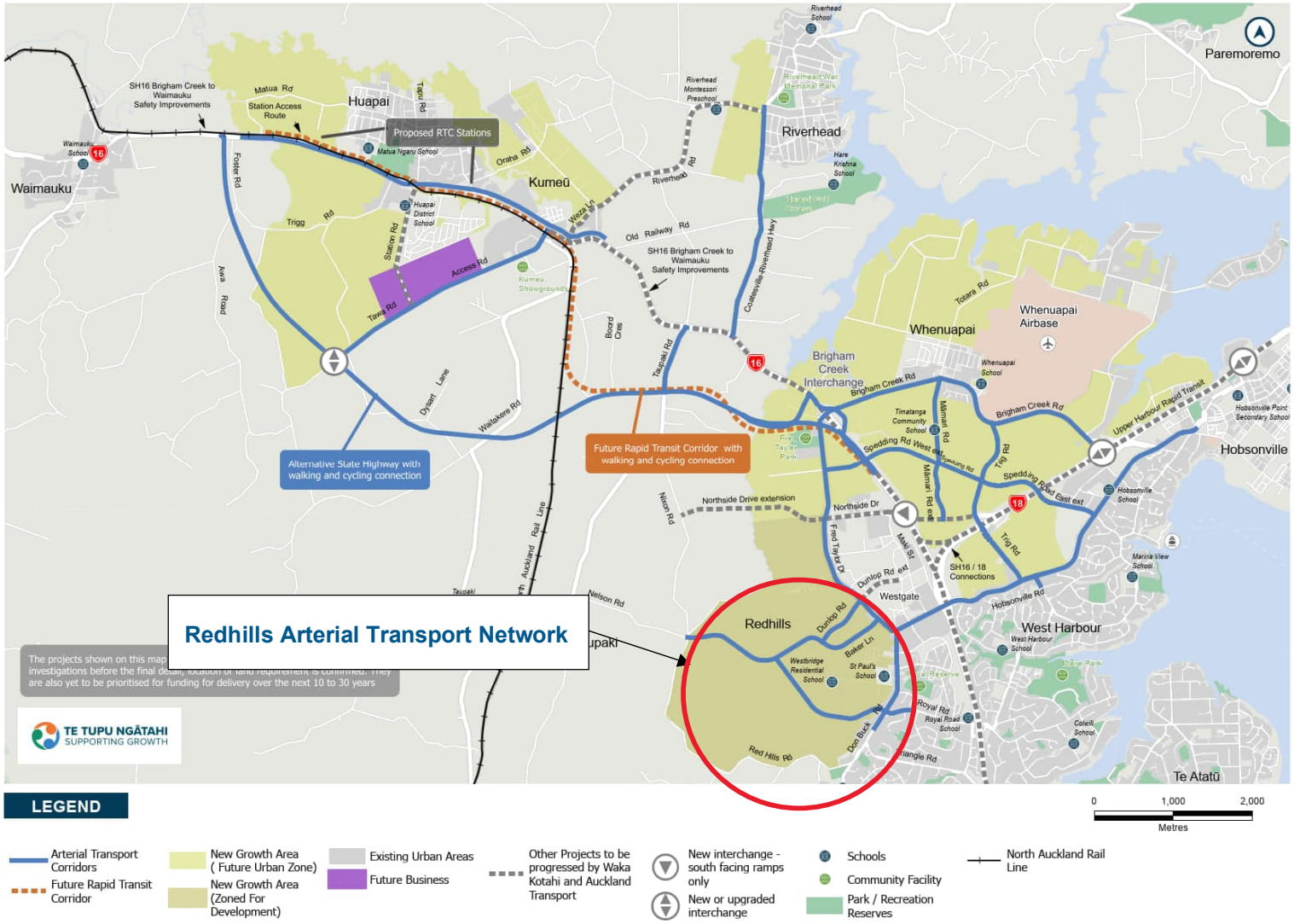


Figure 2: North West Preferred Transport Network

1.2 Housing Infrastructure Fund

The Housing Infrastructure Fund (HIF) was established by the Crown in 2016 to help address the funding constraints of high-growth councils, with the purpose of providing Crown loans to fund bulk infrastructure (water and transport) which enables housing development. The Council made an application for funds from the HIF to accelerate the development of houses in greenfield areas identified in the Future Urban Land Supply Strategy 2017 (FULSS). In July 2017 the Crown announced its recommendation (in principle) to provide a $300 million loan through the HIF for bulk infrastructure in North West Auckland, estimated at the time to support the early construction of at least 10,500 new homes in North West Auckland.[1]

Between 2017 and 2019, two business cases were developed to determine how the HIF could be used for the delivery of bulk infrastructure to support housing development in the North West, including the RATN:

- *Auckland Council Housing Infrastructure Fund Detailed Business Case 2018* (**AC DBC**) - considered the extent to which the HIF could be used to fund the investment in all infrastructure required to support accelerated development.
- Supporting Growth North West Housing Infrastructure Fund Detailed Business Case 2019 (**SG DBC**) – further developed the identified transport network.

As Redhills was rezoned for urban land use (mostly residential zoning) through the Auckland Unitary Plan: Operative in Part (AUP:OIP) process, the progressive development of the area is anticipated over the next 10 years, subject to the provision of sufficient bulk infrastructure.

The SG DBC identified that the HIF would not be enough alone to enable the construction of the entire RATN. However, through coordination with developers, the HIF could be used to enable construction of parts of the RATN.

[1] With approval of the HIF in 2017 for bulk infrastructure in the North West, Auckland Council is expected to repay this loan by 2027.

2 Background and Context

2.1 Need for the Supporting Growth Programme

Auckland is New Zealand's largest city, home to approximately 1.65 million people. In 2017, Auckland attracted 36,800 new residents; more than the rest of the country combined. The Auckland Plan 2050 – Development Strategy signals that Auckland could grow by 720,000 people to reach 2.4 million over the next 30 years. This will generate demand for more than 400,000 additional homes and require land for 270,000 more jobs[2]. Most of this growth will go into existing urban areas. However, around a third will go into future urban zoned areas (greenfields) as identified in the AUP:OIP.

In July 2017, the FULSS was updated in line with AUP:OIP zonings, with 15,000 hectares of land allocated for future urbanisation. The FULSS provides for sequenced and accelerated greenfield growth in ten areas of Auckland.

The significant growth anticipated will pose a number of future transport challenges for the region. Given the scale and duration of the growth proposed, the early route protection of critical transport corridors provides the required certainty for AT, Waka Kotahi, stakeholders and the community. The implementation of the strategic transport network required to support the growth will be staged over the next 30 years. A key part of this integrated approach is collaborating with the Council as it develops Structure Plans and works towards progressing subsequent plan changes to rezone land in the future urban areas.

The required transport networks will play a vital role in the success of new neighbourhoods by providing safe, accessible and sustainable travel choices that connect communities and encourage a transformational shift from private vehicles to public transport, walking and cycling. The early protection of these strategic transport corridors will provide for the following outcomes at a Programme-wide level:

- **Supporting and enabling growth:** Protecting improved and new transport corridors will support Council's growth aspirations for the growth areas of Auckland, including intensification or density of growth, resulting in more efficient urban land development.
- **Improved access to economic and social opportunities and resilience of the strategic transport network:** Protecting improved and new transport corridors will improve travel choices and access to the critical economic and social needs of the existing and future communities, reduce an over-reliance on existing strategic transport corridors, and better align the form and function of existing transport corridors with the planned urban form. Key to this is achieving a transformational mode shift from private vehicles to public transport, walking and cycling – which will provide for greater people moving capacity and greater travel choice for all people as the city grows.
- **Land use and transport integration:** Integrating transport solutions with Council's aspirations for land use and urban form can provide for growth in a way that delivers high quality urban outcomes, placemaking and enhanced liveability – including the desire for a quality, connected urban environment

[2] Draft Auckland Plan 2050 Development Strategy: https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/auckland-plan/development-strategy/future-auckland/Pages/what-auckland-look-like-future.aspx

- **Improved safety:** Protecting improved and new transport corridors will help to address existing and increasing safety risks on transport corridors as growth areas urbanise, including:
    - improved safety for all transport modes;
    - provision of dedicated space for cyclists and pedestrians to safely accommodate these modes;
    - specific safety improvement projects, such as improvements to existing road and rail corridors; and
    - a reduction in private vehicle travel as a result of mode shift towards public transport and walking and cycling.
- **Sustainable outcomes:** Protecting improved and new transport corridors will support the Government's policy shift towards more sustainable outcomes. This includes a reduction in greenhouse gas emissions and improved climate change resilience – through effective land use and transport integration and supporting mode shift towards more sustainable travel choices such as public transport and walking and cycling.
- **Infrastructure integration:** Integrating the transport response with the needs and opportunities of network utility providers to provide a better whole of system outcome.

2.2 Reasons for the Projects

Two key transport problems were identified in the AC DBC and SG DBC when considering housing development and the provision of infrastructure in the Redhills area:

- **Problem 1:** Uncertainty in the provision of infrastructure coupled with fragmented land ownership in North West Auckland creates risk aversion and leads to delays in the delivery of houses.
- **Problem 2:** Lack of an appropriate, integrated multi-modal transport system for Whenuapai is limiting travel choice, quality community outcomes and efficient access to jobs, education, and core services for our customers.

Derived from these problems, the following more specific issues have been identified for the RATN area:

- Redhills is within close proximity to the existing strategic transport network (State Highway 18 (**SH18**), State Highway 16 (**SH16**), Fred Taylor Drive and Don Buck Road) however there are limited transport connections available and there is no internal transport network to support development.
- The current mode share for private vehicles in the surrounding North West area is at least 85%, highlighting a lack of viable alternatives.
- The forecast vehicle trip demand is projected to at least double for the North West by 2048, which will significantly increase existing congestion on key linkages if action is not taken.

As noted in Section 1.2, the RATN is needed to support housing development in Redhills enabled by the AUP:OIP. The purpose of the RATN is to provide urban standard transport corridors that will support urbanisation of the surrounding land.

The need for route protection of the RATN is driven by the rate and scale of committed developments, and pressure from developers who have begun developments and / or are beginning to prepare development proposals for the area. If the transport corridors are not identified and protected in the

near future this may result in a combination of more expensive acquisition costs, a lack of certainty around public infrastructure investment, and a loss in ability to influence good urban form. It is therefore critical that the transport system supports and shapes the growth proposed.

To assist with assessing the relative strengths or weaknesses of alternate corridor options for the RATN, investment objectives were developed as part of the AC DBC and further refined in the SG DBC. The investment objectives are an important tool for informing decisions on funding which were developed from the key transport problems identified above.

The RMA Project Objectives for the RATN were then derived from the investment objectives once the required route and method was confirmed. The diagram below (Figure 3) shows how the investment objectives have evolved through the business case options assessment process into the current Project Objectives.

2.3 Project Timeframes

Investigation and reporting of the RATN commenced in 2015 as part of Supporting Growth Programme Business Case 2016 (PBC). This was progressed through to 2020 when the NoRs were first prepared. Due to funding constraints, the RATN was placed on hold, until 2022 when work recommenced.

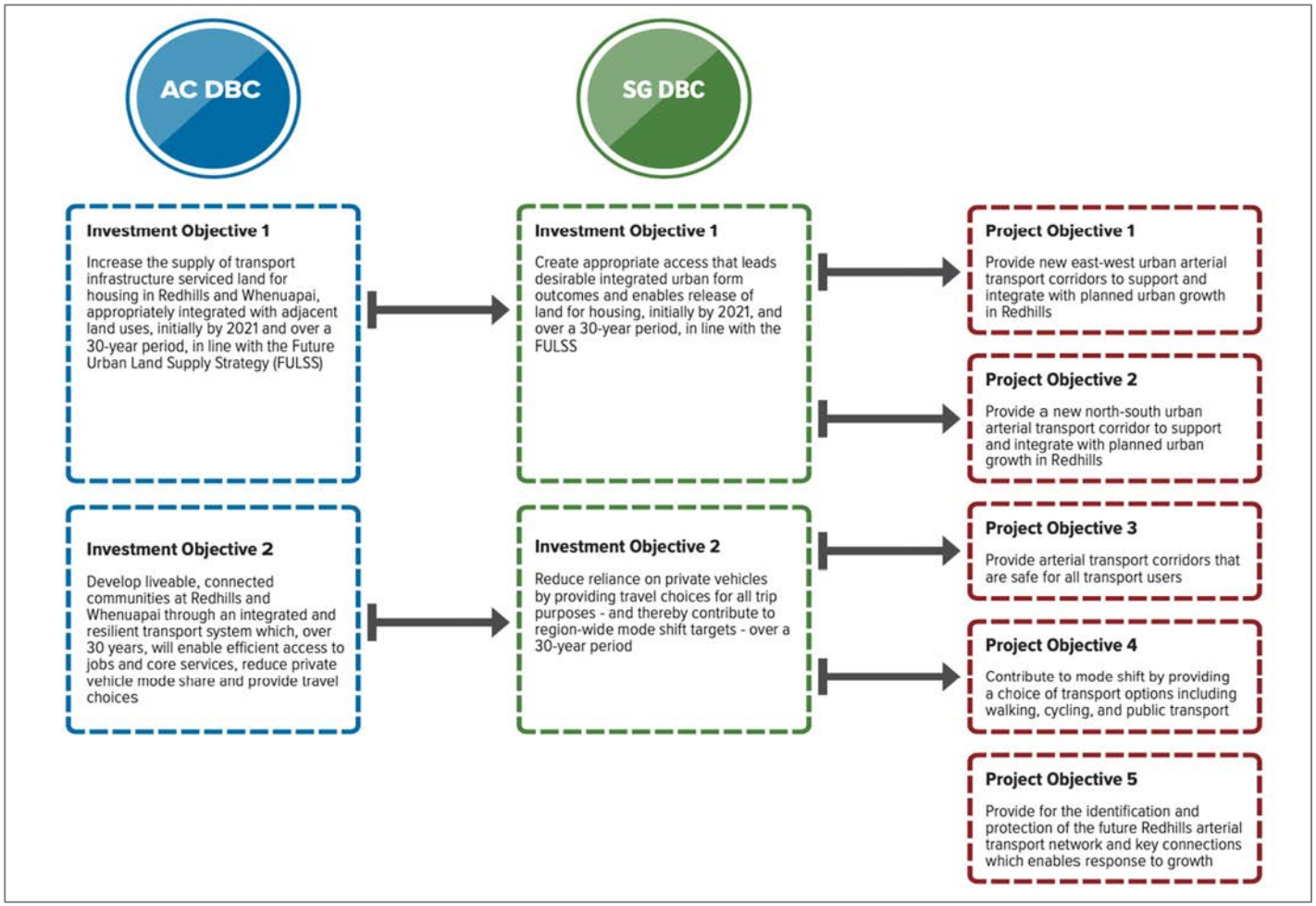


Figure 3: Development Process for Project Objectives

3 The Proposed Network

This section provides a project description for the RATN. The two corridors that make up the RATN comprise:

- Redhills North-South Arterial Transport Corridor (the **N-S Project**); and
- Redhills East-West Arterial Transport Corridor (the **E-W Project**)

3.1 Indicative Design and Drawings

The information provided throughout this report and accompanying documentation (including design drawings), describe the indicative alignment and other ancillary permanent works. Any numbers, areas or dimensions outlined in this section are approximate and may change as a result of detailed design. The final alignment for the RATN (including the design and location of ancillary components, such as stormwater treatment devices and soil disposal sites), will be refined and confirmed at the detailed design stage and confirmed through the Outline Plan of Works and regional resource consent processes. The indicative design was used to identify any actual or potential adverse effects of the RATN and to inform this assessment.

3.2 Redhills North-South Arterial Transport Corridor

The N-S Project provides for a new arterial transport corridor extending from the intersection of Don Buck and Royal Roads intersection in the south and connecting to a new intersection with the proposed Redhills East-West Arterial Transport Corridor (the E-W Project) in the north (Section 3.3 of this report). As well as general traffic, the corridor will also provide for walking, cycling and public transport. The N-S Project includes the signalisation of the existing roundabout at Don Buck and Royal Roads and the formation of a new signalised intersection with the E-W Project.

An overview of the design is provided in Figure 4, with an indicative cross-section of the N-S Project shown in Figure 5. The full set of indicative design drawings for the N-S Project are provided in Volume 3.

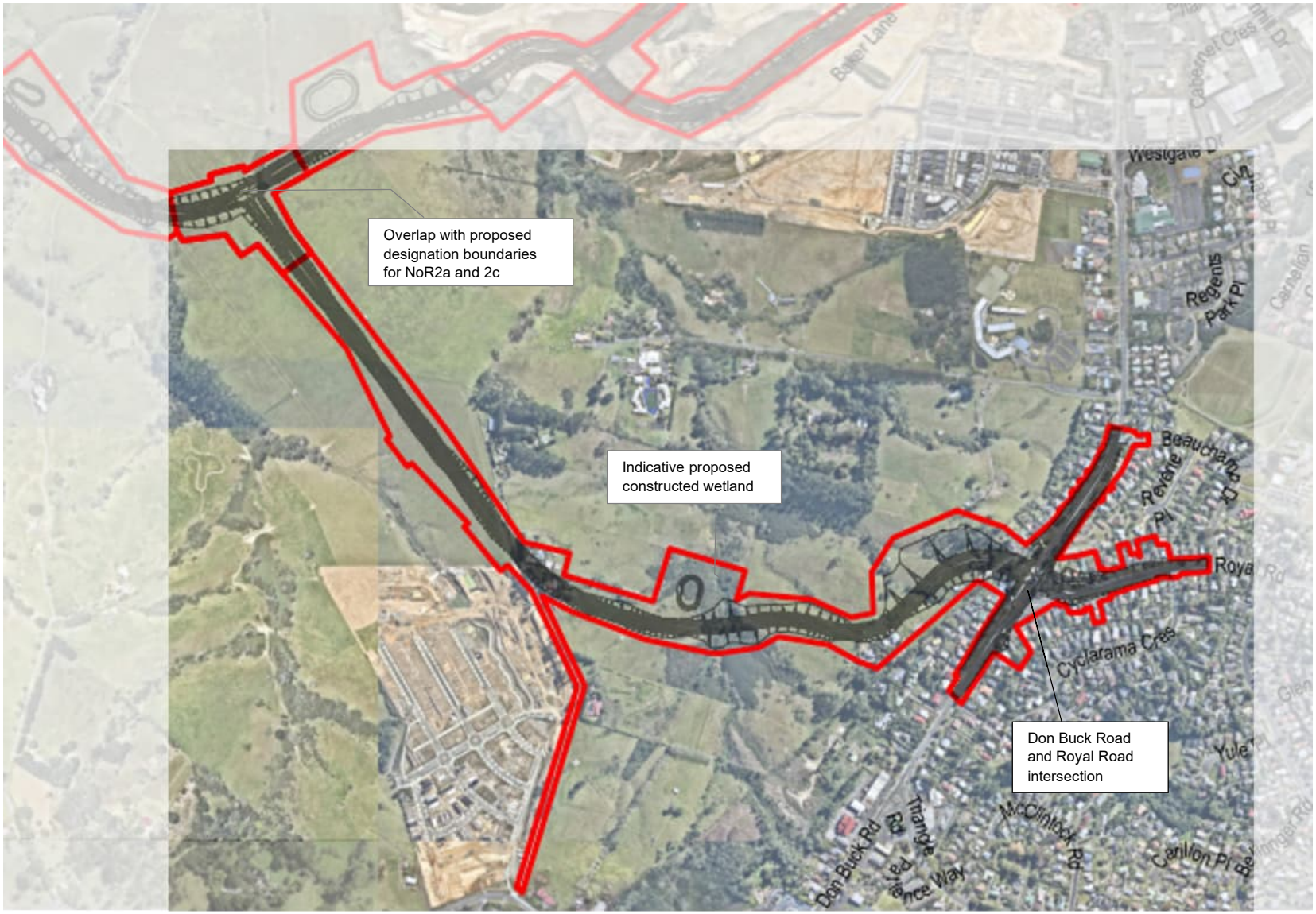


Figure 4: Redhills North-South Arterial Transport Corridor

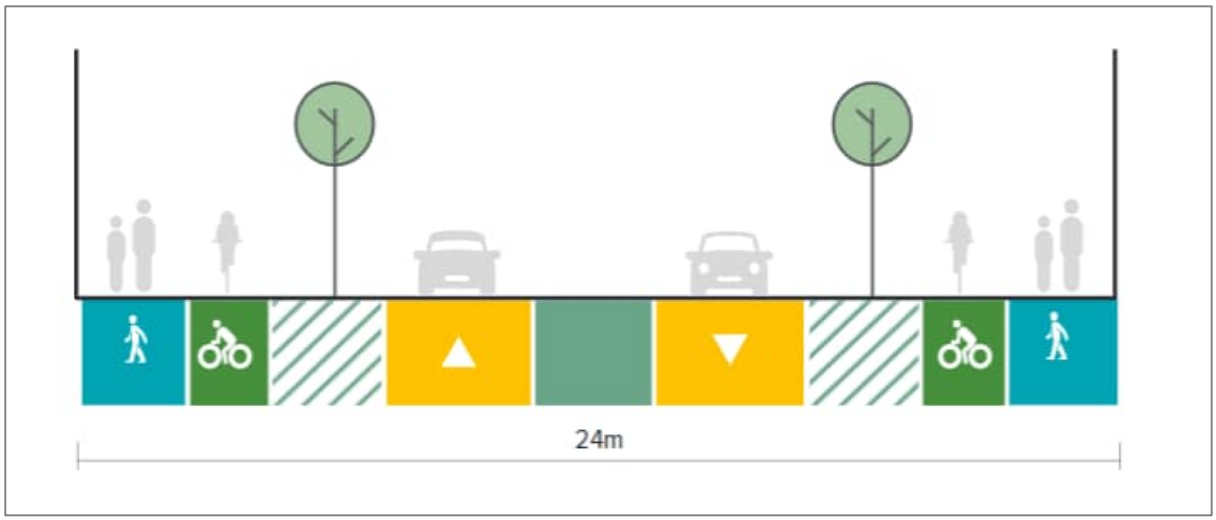


Figure 5: Redhills North-South Arterial Transport Corridor typical cross-section

3.2.1 North-South Arterial Road Layout

The N-S Project will provide for the construction of a two-lane, approximately 24m wide urban arterial transport corridor extending from the Don Buck Road and Royal Road intersection in the south and connecting to a new intersection with the E-W Project (Section 3.3) to the North.

The proposed speed environment is expected to be 50km/h throughout, with no on-street parking and the inclusion of a flush or solid median. The indicative cross-section identifies new 1.8m wide footpaths and 2m wide cycle paths will be provided on both sides of the arterial corridor, with a 2.3m berm provided between these facilities and the road carriageway. This will allow for a flexible design approach that can provide safe walking and cycling facilities with high amenity (during later design stages).

The N-S Project will connect to the E-W Project on the western side of the proposed local centre in the centre of Redhills. This new internal intersection will be signalised as the future local centre environment will result in high numbers of pedestrians, and signals enable pedestrian and cyclist movements to be prioritised and crossing widths reduced.

The alignment geometry of the N-S Project corridor includes the following:

- From the new intersection with the E-W Project, the N-S Project alignment will climb steeply at 8% gradient for approximately 110m, then will traverse across undulating land and stream tributaries before again climbing steeply at 8% for approximately 325m; and then connecting with Don Buck Road at the intersection with Royal Road.
- This alignment will also pass underneath the existing Transpower 110kV and 220kV transmission lines and pylons at one section and run between the pylons for approximately 1km in length.

The N-S Project will require land from both rural and lifestyle block properties as well as land within existing urban residential properties situated adjacent to, or within close proximity to, the Don Buck Road and Royal Road intersection. As the new corridor will provide an important arterial connection it is likely that the corridor will be classified as Limited Access Road under Section 346C of the Local

Government Act 1974. Consequently, while current existing access will be maintained, intensification of access or new access direct to the arterial corridor will generally be discouraged as the area urbanises.

3.2.2 Don Buck Road / Royal Road Intersection Layout

The N-S Project includes a new signalised intersection approximately 50m north of the existing roundabout. The relocation of the intersection will allow Royal Road to be straightened and connect to Don Buck Road at a less acute angle.

Localised widening will be required to accommodate vehicle stacking at the intersection, tie-ins to the existing carriageway at the N-S Project extents, and walking / cycling facilities and crossings around the Don Buck Road and Royal Road intersection. This widening will tie back into the existing road carriageway and footpaths as soon as practicable and safe. Don Buck Road will be lowered by up to approximately 1.2m over a length of 150m to provide adequate sight distances for the intersection.

A signalised intersection is proposed as multiple approach lanes will be required, and a multiple lane roundabout would lead to severance and safety issues associated with crossing for pedestrians and turning cyclists. A roundabout would also require a significant footprint, resulting in adverse urban form impacts. Signalised intersections also provide greater ability to implement bus priority measures

3.2.3 Don Buck Road

Don Buck Road has a relatively wide road reserve width (approximately 32m) on the north side of the intersection and can accommodate widening of the road carriageway. The existing retaining wall on the eastern side of the corridor is to be replaced with a new retaining wall approximately 5m high. A new retaining wall approximately 1.5m high is required on the west side of the corridor to accommodate the difference in level between the trafficked road corridor and low-level service lanes (discussed below).

Vehicle access to existing residential properties along Don Buck Road is largely provided by three low level service lanes, and the N-S Project will maintain these lanes with modifications. Vehicle access to other residential properties along Don Buck Road will generally remain unchanged. Further consideration of the extent of solid and flush medians will be undertaken in the next phase of design to accommodate unrestricted vehicle movements from driveways where possible.

3.2.4 Royal Road

A length of approximately 250m of Royal Road will be realigned for the new intersection with Don Buck Road and the N-S Project. This length of Royal Road will also be widened to accommodate a right turn lane, cycleway and footpath facilities.

Several residential properties on the north side of Royal Road will be required to provide for the new intersection and road layout. Ancillary works such as small retaining walls (less than 1m high) and driveway regrading will be necessary on some properties along Royal Road.

A portion of the existing Royal Road carriageway immediately east of the existing roundabout will be reused for property access.

3.2.5 Public Transport Provisions

The N-S Project proposes the following bus priority measures through the upgraded intersection of Don Buck Road and Royal Road:

- A dedicated bus approach lane on Royal Road, and
- Providing for 'bus only' through movements in the left-turn lanes.

The exact location of bus stops will be defined later through the detailed design stage, once greater certainty is available on the location of key land use activities and demand for bus stops can be determined (e.g., around centres and schools). The proposed transport corridor cross section widths allow for space that can incorporate a bus stop.

3.3 Redhills East-West Arterial Transport Corridor

The E-W Project provides for a new arterial transport corridor extending across the Redhills area from the intersection of Nixon Road, Nelson Road and Red Hills Road in the west, which splits into two separate two-lane arterial transport corridors which both connect to Fred Taylor Drive in the east. The dual corridors are referred to as 'Dunlop Road' and 'Baker Lane' respectively (these are the names of the existing road and access lane which will be upgraded to form the new corridors).

An overview of the design is provided in Figure 6, with an indicative cross-section of the E-W Project corridors shown in Figure 7. The full set of design drawings for the E-W Project are provided in Volume 3.

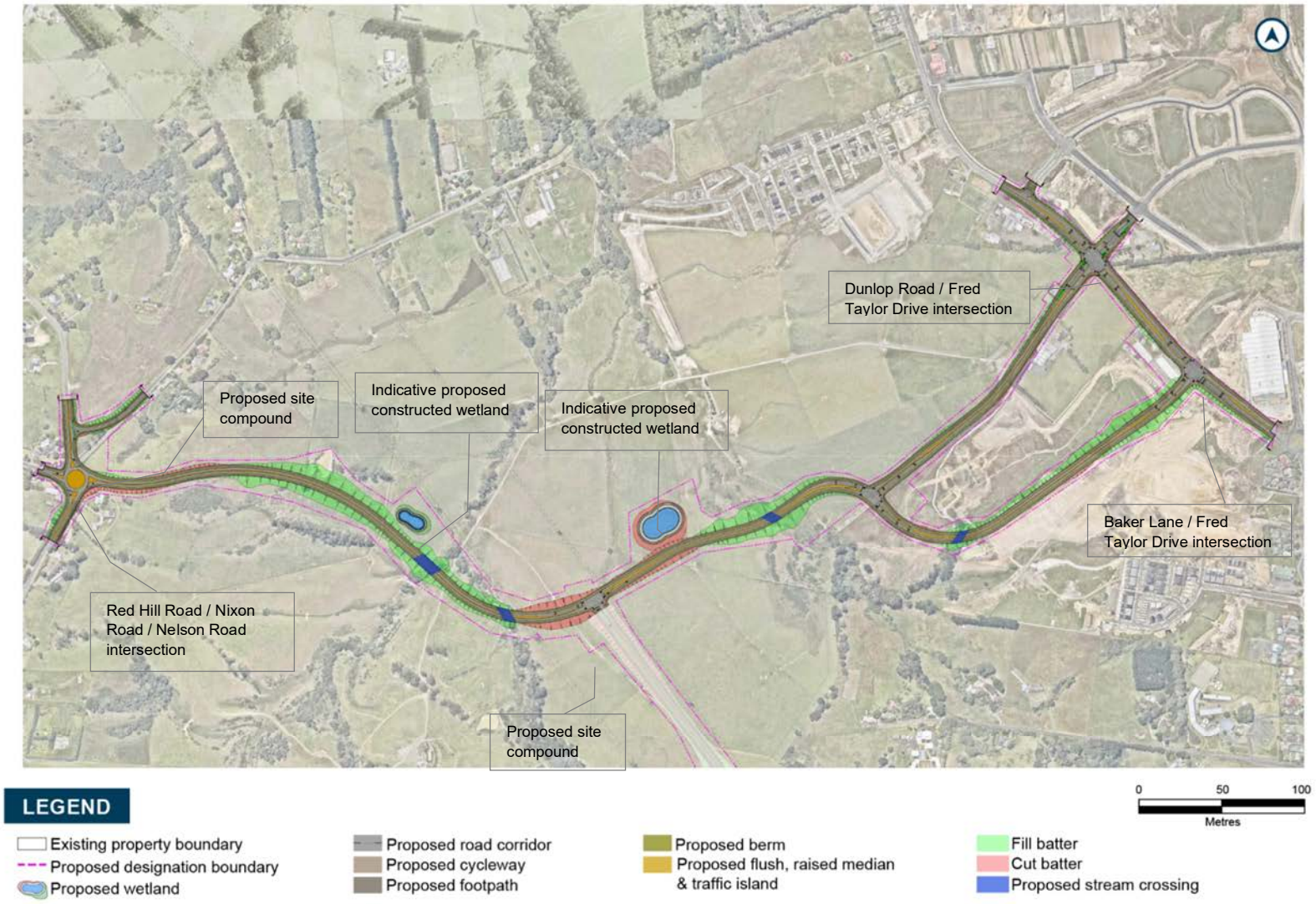


Figure 6: Redhills East West Arterial Transport Corridor

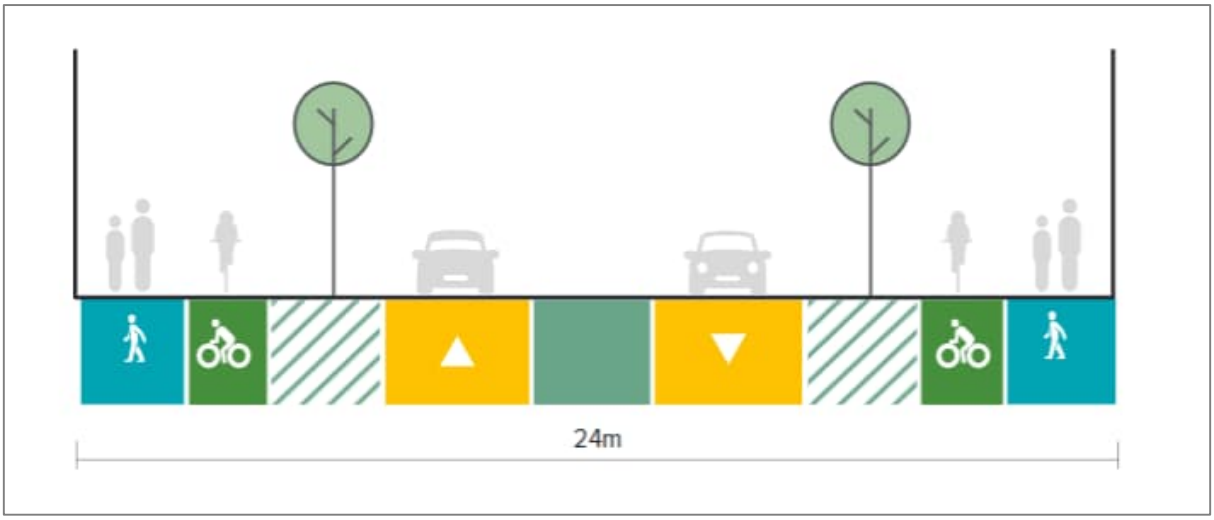


Figure 7: Redhills – East-West Arterial Transport Corridor typical cross-section

3.3.1 East-West Arterial Road Layout

The E-W Project will provide for the construction of a two-lane, 24m wide urban arterial transport corridor extending from the intersection of Nelson Road, Nixon Road and Red Hills Road, splitting into two separate two lane arterial corridors (Dunlop Road and Baker Lane) that connect to two new intersections with Fred Taylor Drive. The new internal intersection with the N-S Project (as discussed previously in Section 3.2) will intersect with the E-W Project to the west of the proposed local centre. This intersection will be signalised due to the anticipated high numbers of pedestrians associated with the future local centre environment. These signals will enable pedestrian movements to be prioritised and crossing widths reduced.

The new speed environment will be 50km/h throughout, with no on-street parking and the inclusion of a flush or solid median. New 1.8m footpaths and 2m wide cycle paths will be provided on both sides of the arterial corridor, with a 2.3m berm provided between these facilities and the road carriageway. This will provide safe walking and cycling facilities with high amenity.

This corridor will provide a strategic connection between Nixon Road and Fred Taylor Drive (via the new Dunlop Road and Baker Lane arterials, described separately in more detail below) and a key transport corridor to the proposed local centre in the centre of Redhills (located midway along this route). This corridor is positioned on the perimeter of the local centre zone, with future collector roads expected to provide direct access into the local centre.

The alignment geometry of this corridor includes the following:

- From the upgraded intersection of Nixon, Nelson and Red Hills Roads in the west, the alignment will extend roughly perpendicular from the intersection then follow a curvilinear geometry to tie into the northern perimeter of the local centre. The vertical alignment will be steep at 8% for 550m as the corridor falls away from the ridge and will follow the existing terrain down to the lower topography in the centre of Redhills.
- The vertical grade will then be generally flat as it passes over numerous existing streams and under the Transpower transmission lines.

As the new corridor will provide an important arterial connection it is assumed that the corridor will be classified as a Limited Access Road under section 346C of the Local Government Act 1974. Consequently, while current existing access will be maintained where practicable, intensification of access will generally be discouraged as the area urbanises.

While stream crossings have been minimised where practicable through the options assessment process (outlined in Section 8.2), four new stream crossings are required within the corridor. The alignments of these crossings have been determined to minimise the skew of the crossings, reducing construction complexity, and potential ecological impacts. The form of these crossings (i.e., bridges or culverts) has not been identified and will be determined at the detailed design phase when regional resource consents will be sought. However, the current designation footprint has been designed to not preclude bridges or culverts from being provided.

3.3.2 Baker Lane

The new Baker Lane will consist of a 24m urban arterial corridor that connects with Fred Taylor Drive in the east. The corridor will initially follow the existing alignment of Baker Lane from Fred Taylor Drive for approximately 100m, then will divert north to align with the proposed development plans adjacent to the corridor.

3.3.3 Dunlop Road

The new Dunlop Road will consist of a 24m urban arterial corridor that connects with Fred Taylor Drive in the east. This corridor will connect the East West arterial transport corridor (and the proposed local centre) with Fred Taylor Drive, which enables a connection to the Westgate Metropolitan Centre and the proposed Public Transit Hub adjacent to SH16. The Dunlop Road corridor will therefore function as the primary public transport route between Redhills and Westgate.

3.3.4 Fred Taylor Drive

Fred Taylor Drive will be widened to accommodate the new Dunlop Road and Baker Lane intersections and additional vehicle lanes (to accommodate four lanes). The widening will extend approximately 200 metres on either side of the Dunlop Road and Baker Lane intersections, for approximately 800m in total, before tying into the existing Fred Taylor Drive.

Fred Taylor Drive has a corridor width of approximately 20m, with an additional 5m either side provided for through ATs existing designation 1468, Road Widening – State Highway 16 (Westgate to Whenuapai) for ‘Road widening’ purposes. The alignment has been developed working from the existing designation line on the northern side of Fred Taylor Drive to minimise further property impacts on the northern side of Fred Taylor Drive where development is currently progressing (except for property requirements within the existing designation 1468 area).

This section of Fred Taylor Drive will likely undergo full reconstruction; however, the design will maintain the existing road levels where practicable to tie into adjoining developments.

3.3.5 Intersection Layouts

The E-W Project involves one new (Baker Lane / Fred Taylor Drive) and two upgraded intersections (Dunlop Road / Fred Taylor Drive and Red Hills Road / Nixon Road / Nelson Road). Localised widening will be required at all intersections to accommodate a larger intersection footprint, vehicle

stacking, walking and cycling facilities and crossings, and tie-ins to the existing carriageway at the project extents. This widening will require localised property acquisition along the corridor.

The Red Hills Road / Nixon Road / Nelson Road intersection will include the following:

- A new single lane roundabout. The roundabout will provide a threshold treatment between the urbanised and rural areas, with the single lane approach providing for pedestrian and cycle crossings.
- Nixon Road will be lowered by up to 600mm for a length of 150m to provide appropriate sight distance to the roundabout in accordance with the Austroads standards.
- Henwood Road will be realigned for approximately 120m, to connect to Nixon Road 100m north of the new roundabout, providing separation from the roundabout intersection.

The Baker Lane / Fred Taylor Drive and Dunlop Road / Fred Taylor Drive intersections will include the following:

- Signalised intersections have been proposed for the intersections of Dunlop Road and Fred Taylor Drive and Baker Lane and Fred Taylor Drive.
- A signalised intersection is proposed as multiple approach lanes will be required, and a multiple lane roundabout would lead to severance and safety issues associated with crossing for pedestrians and turning cyclists. A roundabout would also require a significant footprint, resulting in adverse urban form impacts. Signalised intersections also provide greater ability to implement bus priority measures for the Dunlop Road intersection and support walking, cycling and bus movements from Redhills to Westgate.
- These intersections will be designed to future proof for extensions of the roads to the north-east (i.e., Baker Lane Extension and Dunlop Road Extension).

3.3.6 Public Transport Provisions

As discussed, the Dunlop Road corridor will provide a connection for frequent bus services from Redhills to Westgate, connecting the proposed local centre in Redhills to Fred Taylor Drive, which enables a connection with the Westgate Metropolitan Centre and the proposed Public Transit Hub adjacent to SH16.

The Dunlop Road corridor will include bus priority measures providing for ‘bus only’ through movements in the left-turn lanes.

The exact location of bus stops will be defined at later stages as part of the detailed design, once greater certainty is available on the location of key land use activities and demand for bus stops can be determined (e.g., around centres and schools). The proposed transport corridor cross section has sufficient width for bus stops.

3.4 Stormwater

Final design of stormwater wetlands, pond numbers, location and specifications for the RATN will be confirmed at the detailed design stage, in conjunction with regional resource consents sought. However, the designation footprint will provide sufficient space to enable the wetlands based on the principles outlined in Section 5.1.1.2.

3.4.1 Natural Hazards and Flooding

The stormwater design has taken into account the risks associated with the natural hazards caused by flooding and erosion. The RATN will be required to deliver the following outcomes:

- No increase in flood levels for existing authorised habitable floors that are already subject to flooding
- No more than a 10% reduction in freeboard for existing authorised habitable floors
- No increase of more than 50mm in flood level on land zoned for urban or future urban development where there is no existing habitable dwelling
- No new flood prone areas
- No more than a 10% average increase of flood hazard (defined as flow depth times velocity) for main access to authorized habitable dwellings existing at the time the Outline Plan is submitted.

3.5 Utilities

The existing utility infrastructure and other proposed changes to utilities within the RATN area are discussed in Section 6.1.7.

The following changes to utilities are expected as a result of the road works associated with the RATN

N-S Project:

- The N-S Project involves lowering part of Don Buck Road, and this is expected to result in the relocation of Watercare's trunk watermain as part of the construction works. Some of the local watermains may also need to be relocated.
- Watercare local watermains along Royal Road will need to be relocated as part of the realignment of Royal Road.
- The Vector overhead power infrastructure will be relocated and / or undergrounded where necessary as part of the construction works. New power reticulation will be installed in all new arterial corridors in conjunction with Vector.
- Some of the existing communications ducts will need to be relocated and / or protected as part of the works. AT will work with other utility providers to coordinate any potential relocation works during construction where possible.

E-W Project:

- The Watercare trunk watermains along Fred Taylor Drive can be protected during construction works, however some of the local watermains may need to be relocated.
- The Vector overhead power infrastructure may be relocated and / or undergrounded where necessary as part of the construction works and will be determined at the detailed design stage.
- Some of the existing communications ducts will need to be relocated and / or protected as part of the works. AT will work with other utility providers to coordinate any potential relocation works during construction where possible.

4 Overview of NoRs

4.1 Requiring Authority Status

AT is responsible for Auckland's transport projects and services (excluding state highways), including roads, footpaths, cycling, parking and public transport services such as rail. AT is a Council Controlled Organisation under the Local Government (Auckland Council) Act 2009 (LGA), which states that AT's purpose is to "contribute to an effective, efficient and safe Auckland land transport system in the public interest".

AT's functions are identified in section 45 of the LGA and include managing and controlling the AT system in accordance with the LGA, including by performing the statutory functions and exercising the statutory powers set out in section 46 of the LGA as if AT were a local authority or other statutory body, and acting as a requiring authority under section 167 of the RMA.

Under section 47(1) of the LGA, AT is deemed to be approved as a requiring authority, as a network utility operator, under section 167 of the RMA. This is for the purpose of "constructing or operating or proposing to construct or operate roads in relation to the Auckland transport system" and "the carrying out of an activity or a proposed activity ... in relation to the Auckland transport system for which it or the Auckland Council has financial responsibility". Subsequently, AT may designate land under the RMA to construct, operate and maintain roads and to carry out activities which relate to the transport system.

4.2 NoR Summary

The NoRs, if confirmed and subject to any conditions, will designate land in the AUP:OIP for the purpose of the construction, operation and maintenance of the RATN. The designation authorises the works to be undertaken within the footprint, without further consents under the district plan provisions of the AUP:OIP.

Table 2 provides an overview of the key details associated with the NoRs.

Table 2: NoR Overviews

Notice	Project Name	Purpose	Objectives	Extent (succinct description)	Lapse Period (see also section 3.2 below)	Overview of Properties
NoR1	Redhills North-South Arterial Corridor	Construction, operation and maintenance of an arterial transport corridor	• **Project Objective 1**: Provide a new north-south urban arterial transport corridor from Royal Road to the future East-West Arterial Corridor to support and integrate with planned urban growth in Redhills. • **Project Objective 2**: Provide arterial transport corridors that are safe for all transport users. • **Project Objective 3**: Contribute to mode shift by providing a choice of transport options including walking, cycling and public transport. • **Project Objective 4**: Provide for the identification and protection of the future Redhills arterial transport network and key connections which enables growth.	The NoR submitted proposes a designation footprint that comprises: • Approximately 1.8km, generally providing a 24m wide cross section • land for ancillary works including construction, mitigation and ongoing operations and maintenance	15 years	75 properties directly affected by the NoR
NoR2a	Redhills East-West Arterial Corridor – Dunlop Road Extension	Construction, operation and maintenance of an arterial transport corridor	• **Project Objective** 1: Provide new east-west urban arterial transport corridors from Fred Taylor Drive to Nixon Road to support and integrate with planned urban growth in Redhills.	The NoR submitted proposes a designation footprint that comprises: • Approximately 1.4km, generally providing a 24m wide cross section • land for ancillary works including construction,	15 years	16 properties directly affected by the NoR

			• **Project Objective 2**: Provide arterial transport corridors that are safe for all transport users. • **Project Objective 3**: Contribute to mode shift by providing a choice of transport options including walking, cycling and public transport. • **Project Objective 4**: Provide for the identification and protection of the future Redhills arterial transport network and key connections which enables growth.	mitigation and ongoing operations and maintenance		
NoR2b	Redhills East-West Arterial Corridor – Baker Lane Extension			The NoR submitted proposes a designation footprint that comprises: • Approximately 0.8 km of Baker Lane, generally providing a 24m wide cross section • land for ancillary works including construction, mitigation and ongoing operations and maintenance		11 properties directly affected by the NoR
NoR2c	Redhills East-West Arterial Corridor – Nixon Road Connection			The NoR proposes a designation footprint that comprises: • Approximately 1.2km, generally providing a 24m wide cross section • land for ancillary works including construction, mitigation and ongoing operations and maintenance		11 properties directly affected by the NoR

4.3 Lapse Period

In accordance with section 184 of the RMA, a designation lapses five years after it is included in the district plan unless:

a) It has been given effect to; or
b) Within three months of the designation lapsing, the territorial authority determines that substantial progress or effort has been and continues to be made towards giving effect to the designation, or
c) The designation specifies a different lapse period

A key objective of the Te Tupu Ngātahi Supporting Growth Programme is to identify and protect land now for future transport networks. It is considered that an extended lapse period of 15 is a method that is reasonably necessary to achieve this key objective as it provides statutory protection of the future transport corridors in a manner that enables a flexible and efficient infrastructure response to landuse.

The RATN is identified in the Auckland Regional Land Transport Plan 2021-2031 as part of the 'Greenfield transport infrastructure – Northwest' project. It is expected that funding for the construction of the RATN will be made available in coordination with residential development within the Redhills area. It is anticipated that the development of Redhills will occur progressively over the coming decade. The delivery of residential development will be led by private developers; therefore, the delivery of the RATN will be largely determined by the pace at which private development occurs.

As the timing of this development is yet to be confirmed, there is a need for flexibility for AT in the timing of delivery of the RATN. As such, AT requires a lapse duration beyond the standard 5-year lapse period for the RATN NoRs. As enabled by section 184(c) of the RMA, lapse periods of 15 years are required for each of the RATN NoRs.

4.4 Notification

Auckland Transport requests that all the notices associated with the RATN (NoR 1, NOR 2a, NoR 2b, NoR 2c) are publicly notified.

5 Design and Assessment Approach

As discussed in Section 1, the RATN is comprised of numerous projects divided into four NoRs. A general approach to design and assessment has been developed to support the delivery of the projects and the wider Programme. The following sub-sections discuss the approach to design, existing and future environment, and managing effects as they apply to the RATN.

5.1 Approach to Design

As noted, the designations proposed by the NoRs, if confirmed, will identify and protect the land in the AUP:OIP and provide approval for the construction, operation and maintenance of the RATN. As discussed in Section 3.1, the design information is indicative for the RATN. It has been prepared to a level sufficient to inform the proposed designation footprints and to assess an envelope of effects that includes operational and maintenance requirements, potential construction areas, and areas required to mitigate any adverse effects.

The key transport elements which will be provided by the RATN are described in Section 3.2 for the North-South arterial transport corridor (NoR 1) and Section 3.3 for the East-West arterial transport corridor (NoR 2 (a, b and c)). The final design details for the RATN will be refined and confirmed before construction as part of the Outline Plan or Plans (as the Outline Plans may be staged to reflect project phases or construction sequencing) which will be submitted to Council as set out in section 176A of the RMA. Resource consents will also need to be applied for in the future.

The indicative alignment drawing sets for each project in the RATN are contained in Volume 3 and includes the following:

- Indicative alignment general arrangement layout plan, including proposed designation footprint; and
- Indicative intersection layout.

These have informed the proposed designation footprint and include ancillary components, such as construction areas and stormwater requirements.

5.1.1 Design Philosophy and Standards

The following section outlines the design philosophy and key design standards that have been adopted for the RATN.

The RATN will provide new arterial transport corridors which will play a vital role within Redhills and as part of a wider regional arterial network. Specifically, there is a need for the RATN to provide for safe and efficient connections between key destinations, integrate with the new or planned communities at Redhills and improve access to the wider transport network and provide choice in mobility.

Overall, the key design outcomes sought are:

- Compatibility with planned urbanisation of the area in the AUP:OIP
- Separated / dedicated off road cycle paths
- Separated footpaths
- Bus priority at intersections

- Enable good urban design and amenity outcomes
- Ensure safety for all road users.

5.1.1.1 Arterial Corridor Design

The RATN has been investigated, designed and assessed in accordance with the Auckland Transport Transport Design Manual (TDM) design guidelines and relevant national standards. The design standards are as follows:

- A design speed of 60km/h has been adopted for all the arterial roads with a posted speed of 50km/h for all the future and interconnecting roading networks.
- A maximum vertical gradient of 8.0% has been adopted for the alignments. Vertical gradients have been set as low as practically possible to mitigate potential problems arising from:
    - Engineering costs related to working on steep gradients, providing an economic balance between cut and fill quantities, and long-term road maintenance costs
    - Vehicle speeds and other road safety concerns attributed to steep gradients
    - Consideration for active modes using the transport corridor
- A generic arterial cross-section has been developed for the transport corridors within the RATN, and generally incorporates the following elements:
    - Berm
    - Footpath
    - Cycleway
    - Traffic lanes
    - Solid or flush median
    - Communications duct for utilities
    - Street lighting on both sides of the transport corridor, providing for cyclist and pedestrian path lighting in accordance with TDM and national lighting standards
    - Appropriate delineation with standard road pavement markings and advance guidance / warning signage in accordance with relevant national standards
    - All batter slopes designed to 3H:1V in accordance with TDM minimum design standards.
- Final cross-sections will be produced at the detailed design stage and will be submitted as part of the Outline Plan(s).
- Active mode mobility is a key desired design outcome, therefore walking and cycling have been prioritised in the RATN design. A nominal 1.8m footpath and 2.0m cycle path are provided with a small buffer between them.
- Public transport has also been prioritised in the design to respond appropriately to forecast demand. Bus stop facilities are expected to be installed along each of the arterials at nominal spacing of 400m.
- The standard arterial road pavement design, and in particular the surfacing details, will be refined during future design phases.

The cross-section provides flexibility to enable the connections with the future collector and local road network through the provision of medium strips and berm space.

5.1.1.2 Stormwater Design and Management

As no regional consents are being sought at this stage, the stormwater design approach has focused on confirming the designation footprint required for appropriate stormwater management. Detail on specific stormwater design and treatment features will be undertaken at the detailed design stage when regional consents will be sought.

Provision has been made for the future mitigation of potential stormwater effects (stormwater quantity, stormwater quality and instream structures) by identifying the space required for stormwater management devices (for example ponds) and incorporating land for that purpose into the proposed designation boundaries.

These devices have been designed to attenuate the 100year ARI event by using 10% of the total roading impervious catchment area (proposed and existing) as the required device size – which is sufficient for a device in accordance with Auckland Council and Waka Kotahi guidance[3,4]. In identifying the land required for these devices, preliminary sizing and siting has been undertaken and offset allowances made for construction phase works.

Potential stormwater bridge and culvert locations have been assessed based on predicted overland flow paths from flood modelling (refer section 5.1.1.3 below).

5.1.1.3 Flood Hazard Assessment Methodology

The Assessment of Flooding Effects for Redhills, provided in Volume 4, assesses the potential effects of the proposed transport corridors during construction and operational phases on the flood extents and levels in the surrounding area. The summary below should be read in conjunction with this report.

The assessment of flooding effects for the Redhills Arterial Transport Network has involved the following steps:

- Desktop assessment to identify potential flooding locations from Auckland Council Geomaps.
- Modelling of the pre-development terrain with Maximum Probable Development (MPD) and 100year Average Recurrence Interval (ARI) plus climate change rainfall.
- Two climate scenarios were modelled, one allowing for 2.1°C of temperature increase and one for 3.8°C of temperature increase. The higher climate change scenario has been used to undertake a sensitivity analysis to understand the increased risk of greater climate change impacts.
- Producing flood level maps for the pre-development scenario to show the flood levels and extents (greater than 50 mm) that need to be considered.
- Inspection and review of flood maps at key locations such as proposed bridges and major earthworks to ensure this is allowed for in future design.

5.1.1.4 Geotechnical

Desktop assessments have been carried out based on published geological and geomorphological conditions to enable the generalised topography and geology of the areas to be identified.

[3] Auckland Council's Stormwater Management Devices in the Auckland Region, Guideline Document 2017/001 (December 2017)

[4] Waka Kotahi NZTA's Stormwater Design Philosophy Statement (May 2010)

As discussed in Section 5.1.1.1 above, 3H:1V cut and fill slopes have been used in all arterial designs, and for determining earthworks quantities and potential impacts on existing features and property boundaries. This is sufficient to determine the footprint of the land required to enable the work. No additional geotechnical or engineering strengthening has been assumed for the cut and / or fill batters, and this will be confirmed during the later design stages.

5.1.1.5 Urban Design Framework

Land use and transport integration, through the placement and interrelationship of movement networks and the areas they pass through, has the potential to contribute to high quality liveable places. The Programme has the potential to have a meaningful, and positive impact on the liveability and quality of future urban areas, including Redhills.

In recognition of this, the Te Tupu Ngātahi Design Framework (the Design Framework) was established for the Programme. The Design Framework provides measurable guidance for outcomes-based decisions throughout each phase of the Programme delivery. The design principles that make up the Design Framework seek to ensure that any transport networks will contribute positively to new and existing communities, the environment and the social and economic vitality of Auckland.

There are twenty design principles that provide high level guidance on the following attributes: responsive, resilient, sustainable, vibrant and high-quality urban environments. Each of the principles describe what ‘good looks like’ and what to aim for in the design of transport networks. The principles sit within an integrated system across various layers, to be prioritised and applied according to desired outcomes articulated in the strategic policy direction and the unique needs of each context.

The Redhills Arterial Transport Network – Urban Design Evaluation (the Urban Design Evaluation) (Volume 4) provides a project specific overview of the urban design considerations and inputs during option development and refinement of the RATN and the identification of future transport and land use integration opportunities for the RATN.

The Urban Design Evaluation provides urban design focused commentary on the indicative design detail and recommends the framework for how and where any urban design opportunities should be considered in future design stages.

Of particular note, the Urban Design Evaluation states that the North-South transport corridor could potentially preclude vehicular access from adjacent Mixed Housing Suburban zoned land and could also pose a barrier to some users with disabilities or other physical ability limitations on the basis of the gradient required for the North-South transport corridor to approach Don Buck Road. The future establishment of an urban integration strategy that is focused on integration with built form, access, connectivity and character of adjacent development will address and manage this interface to the extent reasonably practicable.

In order to address these effects an Urban and Landscape Design Management Plan (ULDMP) will be prepared (as set out in the conditions in 0). The commentary and recommendations in the Urban Design Evaluation have formed the basis of these urban design specific conditions, and where relevant integrate with recommendations from other interrelated disciplines.

5.2 Approach to Existing and Likely Future Environment

The RATN will support the future urbanisation of the Redhills area. As such, assessing the effects on the environment solely as it exists today (i.e., at the time of this assessment) will not provide an accurate reflection of the environment in which the effects of the construction and operation of the transport corridor will be experienced. Accordingly, when considering the environment within which construction and operation of the transport corridor will occur, this assessment considers the likely future environment (as directed by the current land use zoning and approved resource consents) as well as the existing environment.

The RATN intersects a range of zones under the AUP:OIP which influence the existing and likely future land use patterns for assessment purposes. Areas where the existing land use corresponds with the AUP:OIP zoning are unlikely to experience substantial changes to the existing land use. However, areas that have been recently live zoned or up-zoned under the AUP:OIP and are currently rural or peri-urban are likely to experience material change as a result of urbanisation, enabled or anticipated by planning provisions.

These scenarios are summarised in Table 3.

Table 3: Existing and Likely Future Environment

Land use today	Zoning	Likelihood of Change for the environment	Likely Future Environment
Rural	Residential – Single House	High	Urban
	Residential – Mixed Housing Suburban		
	Residential – Mixed Housing Urban		
	Residential - Terrace Housing and Apartment Building Zone		
	Business - Local Centre Zone		
Residential	Business - Local Centre Zone	Moderate	Urban
	Residential – Mixed Housing Urban	Low	
	Residential - Terrace Housing and Apartment Building Zone		
Business	Business - Local Centre Zone	Low	Urban
	Business - Mixed Use Zone		
	Business – Light Industry		
Special Purpose	Special Purpose - School Zone	Low	Special Purpose

[5] Based on AUP:OIP zoning/policy direction

[6] Based on AUP:OIP zoning/policy direction

The likely future environment assessment has also been guided by overlays within the AUP:OIP which identify features considered to be of high natural, cultural or heritage value with associated controls apply on development which may adversely affect those features. The overlays and protective rules provide useful guidance on areas that are likely to remain in the future urban environment.

5.3 Approach to Assessment of Effects

The assessment of effects on the environment has been limited to matters that trigger a district plan consent requirement under the AUP:OP as these are the only activities authorised by the proposed designations and alterations. Where NES or regional plan consent requirements are triggered, these are not authorised and will require future resource consents.

Notwithstanding this, relevant national and regional consent matters have been considered in the alternatives assessment, each corridor design and the resulting designation footprints. Consents will be sought when detailed design for each transport corridor is completed to confirm exact consent requirements, understand the actual or potential effects of activities that require consent and confirm the measures proposed to manage those adverse effects.

6 Existing and Likely Future Environment

6.1 Existing Environment

This section provides an overview of the existing natural, built and social environment in which the RATN will be located.

6.1.1 Site and Context Overview

The RATN is located in Redhills, approximately 13km north-west of the Auckland CBD. Redhills is a transitional landscape on the periphery of the existing urban environment of North West Auckland. The area is generally characterised by a range of rural and urban land uses, including large areas of developing or recently developed urban land use.

The RATN area extends between the intersection of Red Hills Road and Nelson Road, to the east, and Fred Taylor Drive, to the west, for the Redhills East-West arterial transport corridor (NoR 2(a, b and c)). The Redhills North-South arterial transport corridor (NoR 1) extends south to the intersection of Don Buck Road and Royal Road (including the intersection) (Figure 8).

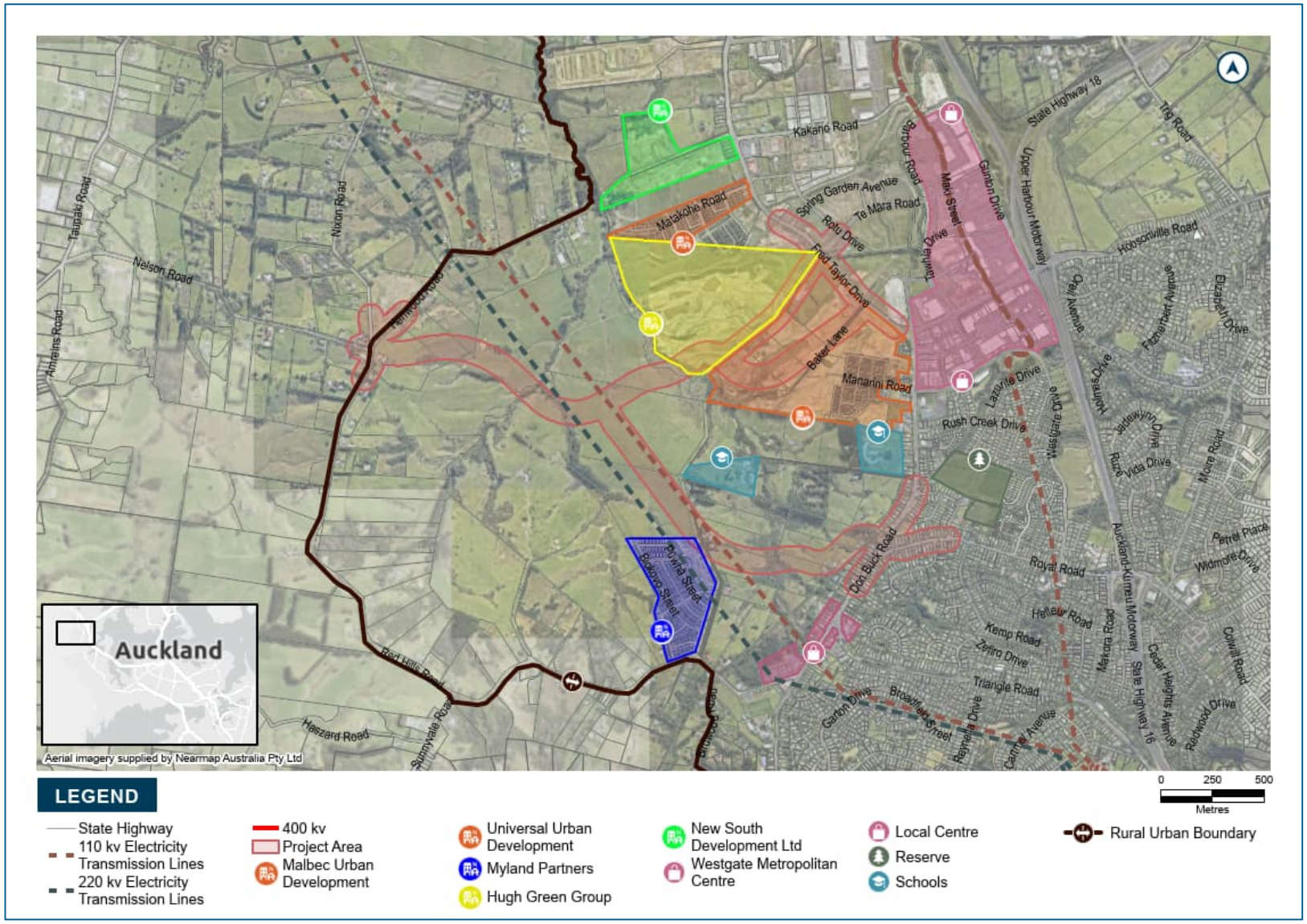


Figure 8: Redhills Arterial Transport Network Surrounding Context

Key features within and surrounding the RATN area include:

- Westgate Metropolitan Centre is approximately 1.3km to the north-east of the RATN area providing a range of commercial and retail land uses (e.g., the NorthWest Mall and Westgate shopping area) as well as community facilities and open space.
- SH16 is accessible from Royal Road approximately 1km to the east, providing a connection to the Auckland CBD. SH18 is accessible from Fred Taylor Drive approximately 1km to the north east of the RATN area.
- Westgate and Massey are immediately east of the RATN area and are characterised by suburban residential land uses in the form of single detached housing.
- A commercial and retail strip is located at the Red Hills Road and Don Buck Road intersection, which includes a takeaway, petrol station, General Practitioner clinic and pet grooming centre.
- Existing Transpower 11kV transmission lines running in a north-west to south-east direction through the centre of Redhills.

The majority of the Redhills area is currently greenfield and rural in character. This land is predominantly in the form of open pasture for farming and grazing and consists of a range of rural residential properties, larger lifestyle blocks and an extensive farming operation owned by a developer. These properties vary in size; however, the vast majority contain rural / semi-rural dwellings and / or farm accessory buildings.

The lower northern portion of the Redhills area bordering Fred Taylor Drive, and an area located on the northern side of Red Hills Road, close to the intersection with Don Buck Road are currently undergoing urban development.

Land use along the eastern extent of the RATN area is generally more urban, characterised by predominantly low-density, single detached residential development along Don Buck Road and Royal Road.

6.1.2 Topography and Hydrology

The Redhills area is an amphitheatre shape, with Red Hills Road traversing the prominent ridgeline along the western and southern perimeter of the RATN area and connecting with Don Buck Road along the eastern fringe to create a bowl-shape that falls in a generally northerly direction.

The landform within the RATN area is dominated by rolling and undulating topography and a network of riparian corridors and overland flow paths. While there are tracts of native and exotic vegetation distributed through the central and southern areas of Redhills, open pasture is the most prevalent landcover. The pastoral landscape is notably modified, including realigned natural watercourses and minimal areas of riparian vegetation.

The Redhills area generally has a low risk for flooding at a 1% AEP (1 in 100) extreme rainfall event. There are however numerous local flood prone areas at low points in the area where the RATN is likely to cross existing streams (Figure 9).

Figure 9 below shows the three named streams within the RATN area: Redhills Stream, Waiteputa Stream and Ngongetepara Stream. Stream classifications for the Redhills catchment indicate five permanent stream branches, four intermittent, two ephemeral, one unclassified and seven described as wetlands within the RATN area.

The landform is compartmentalised by these three streams, and further shaped by the many tributaries of each stream outlined, as well as their associated overland flow paths. The three separate watercourses culminate at the northern edge of the site at Ngongetepara Stream which ultimately drains north into Brigham Creek.

The landform and hydrological corridors within the north and north-eastern sections of the RATN area have been modified to accommodate urban and residential development adjacent to Fred Taylor Drive.

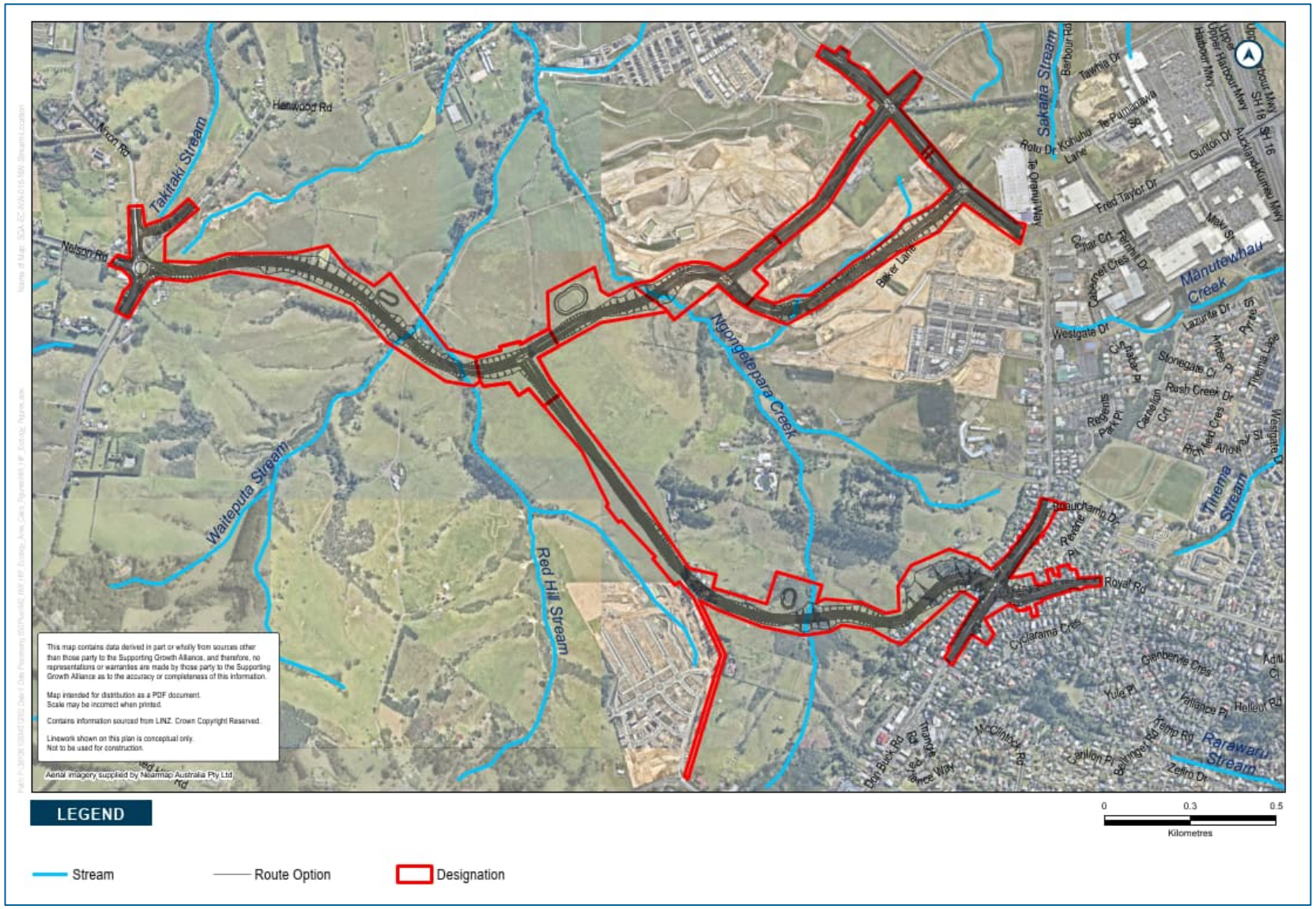


Figure 9: Redhills Arterial Transport Network Topography and Hydrology

The Redhills area is predominantly underlain by residual Waitemata Group Soils; (largely the East Coast Bays Formation, with a small area of the Cornwallis Formation present in the western part of Redhills near Nixon Road) (Figure 10). The East Coast Bays Formation materials consist of “alternating sandstone and mudstone” and the Cornwallis Formation is comprised of “thick bedded, pebbly and gritty volcanic sandstone”.

Additionally, the site is underlain by Puketoka Formation sediments (and Holocene alluvial deposits) in the northern central part of the Redhills area. The Puketoka Formation comprises “pumiceous mud, sand and gravel”, with the Holocene River deposits comprised of “sand, silt, mud and clay with local gravel and peat beds”.

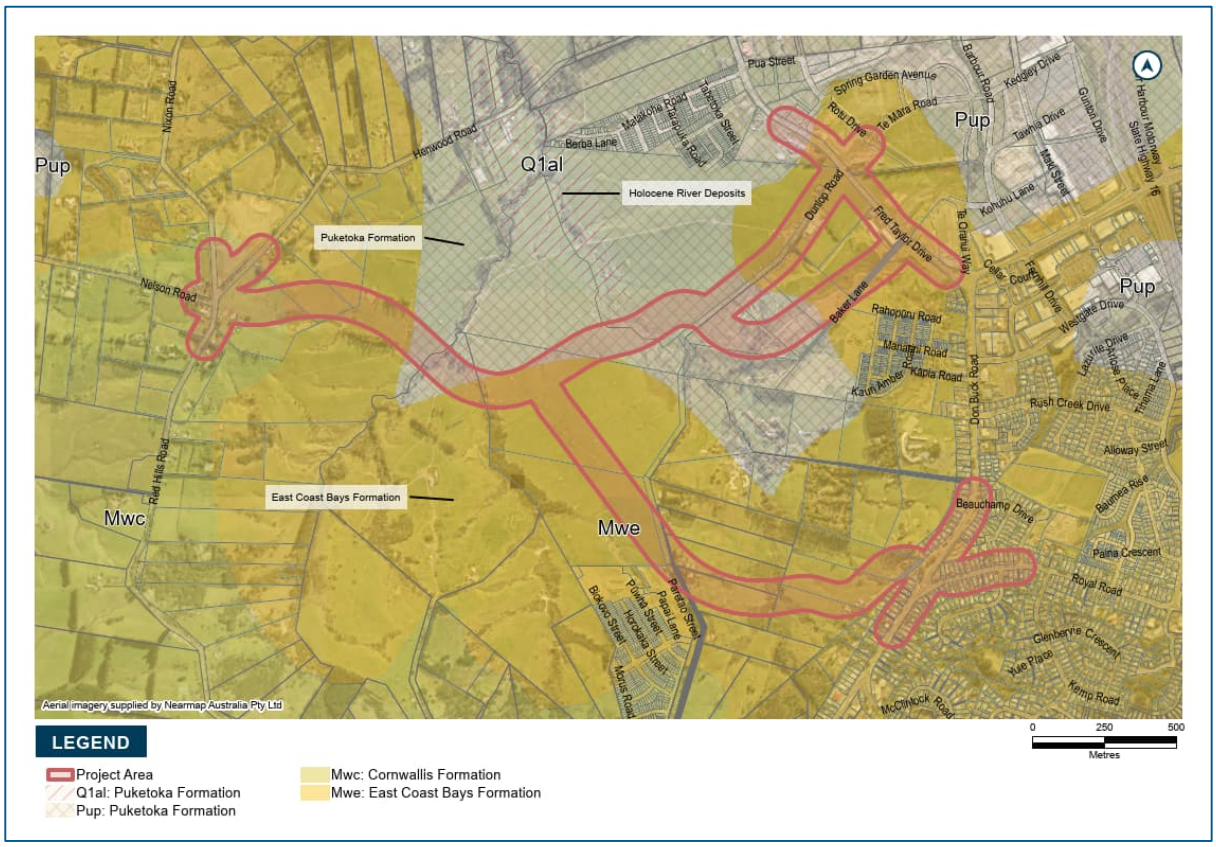


Figure 10: Redhills Area Geology (QMaps, 2019)

6.1.3 Ecological Environment

The following is a summary of the ecological environment and baseline within the RATN project area. Further detail can be found in the Redhills Arterial Transport Network– Assessment of Ecological Effects (AEcE) contained within Volume 4.

The RATN lies within the Tamaki Ecological District, which has a warm humid climate and is characterised by volcanic cones, isthmus, harbours and volcanic terrain (McEwen, 1987). Originally forested, the landscape would have been dominated by northern North Island lowland broadleaved forest with abundant taraire (Beilschmiedia tarairi) and pūriri (Vitex lucens) (Singers et al., 2017).

6.1.3.1 Terrestrial Ecology (Flora)

The RATN area is currently dominated by exotic grassland with small areas of exotic forest, exotic scrub, regenerating mānuka, kānuka scrub and indigenous/exotic planted vegetation. Regenerating forest fragments are found in the wider Redhills area outside of the RATN. No notable trees (as identified in the AUP:OIP) occur within or adjacent to the Project Area.

There are no Significant Ecological Areas (SEAs) within the RATN area, however there are five within 3 km of the RATN area:

- SEA_T_2031, which is approximately 150m to the south of the RATN area
- SEA_T_2030, which is approximately 600m to the southwest of the RATN area
- SEA_T_6336, which is approximately 800m to the southwest of the RATN area
- SEA_T_6337, which is approximately 1.1km to the southwest of the RATN area
- SEA-M2-57, which is approximately 3km to the east of the RATN in the inner Waitemata harbour.

There is generally limited riparian planting around the existing streams and watercourses (described in Section 6.1.2), with widespread stock access, sediment deposition, bank erosion and stream damage identified.

Table 4 describes the habitats observed within the Project Area and their ecological value in accordance with the EIANZ Guidelines. Kānuka and mānuka species have been listed as 'Threatened – Nationally Vulnerable' because of the spread of myrtle rust within New Zealand. These species are currently common throughout the Tamaki Ecological District, in addition the individuals within the Project Area are predominantly immature or semi-mature. Therefore, the presence of these Threatened species has not altered the valuation of the habitats within which they occur.

Table 4: Ecological values of the vegetation types present within the Project Area

Habitat	Classification (Singers et al., 2017)	Ecological Value
Brown Fields (includes cropland)	BF	Low
Exotic Forest	EF	Moderate
Exotic Grassland	EG	Low
Exotic Scrub	ES	Low
Planted Vegetation – Exotic (amenity)	PL.3	Low
Treeland – Exotic-Dominated	TL.3	Moderate
Mānuka, kānuka scrub	VS3	High

6.1.3.2 Terrestrial Ecology (Fauna)

Bats

Existing records confirm the presence of long-tailed bats (Chalinolobus tuberculatus) within 1 km of the Project Area. Seven Automatic Bat Monitors (ABM) were deployed across the RATN area in

November 2019. A low number of bat passes were identified at three of the ABM sites, located along Red Hill Stream which extends into the vegetated foothills of the Waitakere Ranges.

The results indicate that the corridors of low value riparian vegetation and indigenous and exotic forest habitat within the RATN provide suitable foraging and commuting habitat for indigenous bats. Mature trees (Eucalyptus sp. and Pinus sp.) with suitable roosting features (branch and trunk cavities) were identified within and adjacent to the Project Area (including district plan vegetation located along the northern side of Henwood Road).

The conservation status of long-tailed bats is 'Threatened – Nationally Critical' (O'Donnell et al., 2018), therefore the ecological value of long-tailed bats is Very High.

Birds

New Zealand Bird Atlas database identified 12 indigenous bird species which are listed as 'At Risk' or 'Threatened' (Robertson et al., 2021) within a 2 km radius of the RATN area. These indigenous bird species are associated with coastal and marine habitats located > 1.5 km from the Project Area.

North Island fernbird (At Risk – Declining) is associated with freshwater wetlands. The wetland habitat within SEA_T_2030, located approximately 600 m from the RATN, has the potential to support this species. Therefore, North Island fernbird may commute through the Project Area, between coastal wetlands located to the north and east, through to those within the SEA.

Additionally, North Island kākā (At Risk – Recovering) are recorded to be present in the wider landscape. As they are a highly mobile it is anticipated that this species may utilise the RATN area.

During the site investigation, incidental bird observations were recorded, including 12 indigenous bird species. These species could nest in scrub and trees within the RATN Area, while the exotic wetland and areas of open water could provide nesting habitat for pūkeko, paradise shelduck, pied stilt, spur-winged plover, and white-faced heron. Northern New Zealand dotterel (Threatened – Nationally Increasing) was observed in Brown Field (BF) habitat associated with residential development construction at Baker Lane, Westgate (which is located within the Project Area).

Connective linkages through the RATN area could be of value to some TAR bird species as they migrate through the area. Table 5 presents the ecological value for TAR bird species identified within the RATN area.

Table 5: Ecological value for TAR bird species

Species	Habitat	Conservation Status (Robertson et al., 2021)	Ecological Value
North Island fernbird*	EW, OW	At Risk - Declining	**High**
North Island kākā*	TL.3, VS3	At Risk - Recovering	**High**
Northern New Zealand dotterel**	BF	Threatened – Nationally Increasing	**Very High**

Lizards

A review of the DOC Bioweb database found five indigenous lizard records within a 6 km radius of the Project Area. Four of the five indigenous lizard species identified have a conservation status of 'At Risk' (Hitchmough et al., 2021).

Indigenous lizards were not identified during opportunistic searches completed during the site walkover. Copper skink and ornate skink have been recorded within 500 m of the RATN. Copper skink and ornate skink habitat includes fragmented modified forest edge, scrub and rank grassland habitats ('surrogate habitats') in Auckland. This habitat type is present within the RATN area and is connected to high quality SEA habitat to the south-west.

Forest geckos, elegant geckos, and pacific geckos (identified in the desktop review) require intact or regenerating forest habitat for survival. The forest habitat within the RATN area is small (approximately 0.28 ha), early successional and highly fragmented. It is therefore unlikely that these species would occur within the RATN area, and they have not been considered further in this report.

Table 6 presents the ecological value of lizards identified within the Project Area.

Table 6: Ecological value for TAR lizard species

Species	Habitat	Conservation Status (Hitchmough et al., 2021)	Ecological Value
Ornate skink	• EF (with appropriate understorey) • EG • ES • PL.3 • TL.3 (with appropriate understorey) • VS3 (with appropriate understorey)	At Risk - Declining	High
Copper skink	• EF (with appropriate understorey) • EG • ES • PL.3 • TL.3 (with appropriate understorey) • VS3 (with appropriate understorey)	At Risk - Declining	High

6.1.3.3 Aquatic Ecology

Streams and wetlands

Auckland Geomaps layers indicate that the RATN could cross three named streams: Red Hill Stream, Waiteputa Stream and Ngongetepara Stream. All streams within the RATN area were numbered, classified (permanent, intermittent, or ephemeral) and mapped.

All permanent and intermittent streams accessed during the site investigations were surveyed using the Rapid Habitat Assessment (RHA). The streams measured overall habitat quality scores that ranged from 'Poor' to 'Moderate'. The RHA category was included within the ecological value assessment (refer Table 7 below).

Twenty stream branches associated with wetland complexes were identified during the site investigations within the Project Area. These were assessed against the stream classification criteria developed by Storey and Wadhwa, 2009. The streams are mapped in the AEcE contained within Volume 4.

The ecological values of freshwater habitats, informed by ecological baseline information, are presented in Table 7.

Table 7: Summary of aquatic ecological value identified in the RATN area

Stream ID	Ecological Value
RH-S1a, RH-S1b, RH-S2b, RH-S2c, RH-S4, RH-S5b, RH-S5c, RH-S5d, RH-S5e, RH-S7b, RH-S7c, RH-S7d, RH-S8, RH-S10	Low
RH-S2a, RH-S3, RH-S5a, RH-S6, RH-S7a, RH-S9	Moderate

Fish

The New Zealand Freshwater Fish Database (NZFFD) (Stoffels, 2022) did not hold fish records for Red Hill Stream and Waiteputa Stream, which are tributaries of Ngongetepara Stream. However, the database indicates that three fish species, and two freshwater invertebrate species have been recorded in the Ngongetepara Stream. This includes longfin eel which is classified as 'At Risk – Declining' (Dunn et al., 2018). The desktop review results are presented in Table 8 and Table 9.

Table 8: Freshwater fish species recorded in Ngongetepara Stream

Common Name	Conservation Status (Dunn et al., 2018)
Shortfin eel	Not Threatened
Longfin eel	At Risk – Declining
Banded kōkopu	Not Threatened

Table 9: Freshwater invertebrate species recorded in Ngongetepara

Common Name	Conservation Status (Grainger et al., 2018)
Kōura	Not Threatened
Freshwater shrimp	Not Threatened

Fish surveys were not carried out during site investigations, however longfin eel (At Risk – Declining) has been recorded in the wider catchment associated with the Project Area (Table 7 10). The freshwater habitats within the RATN area were assessed for their potential to support native fish during the RHA. No freshwater fish were observed during site investigations.

6.1.4 Transport Environment

The existing transport environment includes several key arterial corridors (Waka Kotahi One Network Road Classification). The RATN area is bordered to the east by Fred Taylor Drive and Don Buck Road, facilitating north-south movements (Figure 8). Fred Taylor Drive provides direct access to SH18, with Don Buck Road providing access to SH16 via Royal Road. The RATN area is bordered to the south and west by Red Hills Road and Nixon Road. The area has no existing internal road network and access to property is by minor local, no-exit roads and private driveways.

6.1.4.1 Transport Corridors

The following transport corridors are relevant to the RATN:

- Fred Taylor Drive is a strategic arterial that is currently a mix of an urban and rural two-lane corridor, with four lanes at signalised intersection approaches. The posted speed limit to the north of the intersection with Don Buck Road is 80kph, with a 50kph speed limit to the east of the intersection with Don Buck Road. It is currently in a state of change with iterative upgrades being provided by developers as the road frontages are upgraded.
- Don Buck Road is a strategic urban arterial two-lane corridor with a 50kph speed limit. It contains footpaths, a mixed of shared paths and on road cycle facilities, a central median and is part of the frequent public transport network.
- Royal Road is a residential urban arterial two-lane corridor with a 50kph speed limit. It contains footpaths and limited cycling facilities, local bus services and provides access to SH16.
- Dunlop Road is a local road that provides internal access to rural properties and a panel beater within Redhills, with no walking and cycling facilities.
- Baker Lane is currently a construction access for development within Redhills, previously operating as a private unsealed driveway providing access to the rear rural properties.
- Red Hills Road, Nixon Road and Nelson Road are rural two-lane roads with an 80kph speed limit and no walking and cycling facilities for the majority of the road.

6.1.4.2 Intersections

The following intersections are relevant to the RATN:

- The intersection of Don Buck Road and Fred Taylor Drive is a roundabout intersection with two approach lanes, and a partial dual lane within the roundabout.
- The intersection of Don Buck Road and Royal Road is a small roundabout intersection, with Royal Road connecting at an acute angle with substandard sight lines along Don Buck Road.
- The intersection of Dunlop Road with Fred Taylor Drive is a priority give-way intersection with a single approach lane in all directions, no flush median and no footpath or cycle facilities.
- The intersection of Red Hills Road, Nixon Road and Nelson Road is a stop-controlled intersection with a single approach lane, no flush median and no footpath or cycling facilities.

The majority of these existing roads provide two traffic lanes with some form of footpath(s). However, pedestrian facilities currently have limited crossing points and are relatively narrow.

Cycling facilities in the area vary in quality and design and generally do not connect well to each other. Aside from bus stops, there are no dedicated public transport facilities.

Existing traffic volumes in the Redhills area have been counted by AT in from October 2020 to March 2022. The results of these surveys are shown in Table 10 below.

Table 10: Existing Traffic Volumes on Surrounding Road Network

	Survey Date	5 Day ADT7	7-day ADT	AM Peak Volumes	PM Peak Volumes
Fred Taylor Drive: between Bakers Lane and Don Buck Road roundabout	February 2022	14,030	13,140	870	1,260
Royal Road: between Kemp Road and Lawson Creek Street	October 2020	7,042	7,970	760	810
Don Buck Road: between Beauchamp Road and Rush Creek Drive	August 2021	21,940	21,220	2,070	1,880
Red Hills Road: between Don Buck Road and Birdwood Road	March 2022	9,350	8,830	970	1,060

6.1.5 Cultural and Heritage Environment

There are no archaeological sites recorded within the RATN area, with the nearest known sites over 400m away (including a plane crash site during World War II, a gum diggers' camp and hut site, a 1930's Post Office and a historic dwelling). The nearest recorded archaeological site related to Māori settlement is some 2km to the east of the RATN area.

Similarly, there are no identified Sites of Significance to Manawhenua identified under the AUP:OIP within or in close proximity to the RATN area.

6.1.6 Community and Recreational Facilities

Community and recreational facilities within or in proximity to the RATN area include:

- St. Pauls Primary School (498 Don Buck Road) accessed down local access ways; and
- Westbridge Residential School (488E Don Buck Road) located approximately 1km off Don Buck Road down a long access way, providing co-educational schooling and 24-hour care.

6.1.7 Utilities

The existing utilities within the RATN area are summarised in Table 11 below.

Table 11: Existing utilities in the RATN area

Utility Type	Details
Watercare Watermains	• Don Buck Road: contains trunk watermains and local watermains • Royal Road: contains various local watermains • There is no water infrastructure along Red Hills Road or other local roads within the Redhills area

[7] Average Daily Traffic

	• Fred Taylor Drive: contains trunk watermains, local watermains on both sides of the road (sizes and type vary) and local watermains connections to dwellings
Watercare Wastewater	• A wastewater transmission line runs along the eastern side of the Ngongetepara Stream, from Dunlop Road in the south to the property at 134 Fred Taylor Drive in the north, and then east along Northside Drive. • Fred Taylor Drive, Don Buck Road and Red Hills Road (or the properties adjacent to) contain local wastewater lines.
Power Network	• Transpower operate two high voltage power transmission lines (1 x 110kV, 1 x 220kV) in the form of overhead power cables with pylons that run north-west to south-east through the centre of Redhills. The following restrictions exist: o Construction must be outside a 12m (horizontal) buffer from all existing pylons (without specific approval) o Minimum clearance of 4.5m for construction related vehicles (i.e., cranes, diggers, oversized haulage vehicles etc) as well as future road infrastructure (e.g., power poles and streetlights) • Vector overhead power infrastructure on existing roads
Communications	• All existing road corridors will contain communication ducts, chambers and cables (copper and fibre)
Stormwater	• Existing stormwater infrastructure is largely located where the RATN ties-in with the existing surrounding roads and includes the following: o Stormwater along Red Hills Road, Nixon Road and Henwood Road is currently conveyed via roadside swales, with no underground stormwater infrastructure. o The majority of the stormwater along the section of Fred Taylor Drive adjacent to the RATN is conveyed via roadside swales. A small stretch of Fred Taylor Drive (±100m north west and ±100m south east of the existing Dunlop Road intersection) is conveyed via kerb, channel and catchpits and into underground stormwater pipes of unknown size, which eventually discharges back into the roadside swales. o Stormwater along Don Buck Road / Royal Road is conveyed via kerb, channel and catchpits and into the underground stormwater pipes

6.2 Planning context

Table 12 details the relevant planning context as specified by the AUP:OIP and Auckland Council GeoMaps, with the current AUP:OIP land use zoning shown in Figure 11. The key elements of the planning context for the RATN area are as follows:

- The RATN runs through greenfield land which is predominantly zoned under the AUP:OIP for urban residential land use.
- Local centre land is zoned 'Business – Local Centre' Zone near the centre of the RATN area.
- The North-South arterial transport corridor is proposed to run along the western edge of the 'Business – Local Centre' Zone, with the East-West arterial transport corridor proposed to run along the northern edge of the 'Business – Local Centre' Zone.

- The proposed North-South arterial transport corridor will be in close proximity to existing Transpower transmission lines that extends across Redhills from the north-west to the south-east.
- AT is the requiring authority for existing designations along Fred Taylor Drive that provide for road widening. These enable a 30m wide corridor between the Don Buck Road and Brigham Creek Road intersections (Des. Ref: 1468).
- There are numerous private land developers who are currently active around the RATN area. It is anticipated that two of these developers (Hugh Green Group and Universal Homes) will play an active role in the delivery of components of the RATN.

Table 12: AUP:OIP Planning Context for the RATN Area

Planning Context: RATN area	
Zones	Residential – Terrace Housing and Apartment Building Zone Residential – Mixed Housing Urban Zone Residential – Mixed Housing Suburban Zone Residential – Single House Zone Business – Mixed Use Zone Business – Local Centre Zone Business – Light Industry Zone Special Purpose – School Zone Road Zone
Modifications	Proposed Plan Change 78 – Intensification (refer section 6.2.3 below)
Precincts	I610 Redhills Precinct Westgate sub-precinct C
Overlays	High-Use Aquifer Management Areas Overlay [rp] – Kumeu Waitemata Aquifer National Grid Corridor Overlay – National Grid Yard Uncompromised National Grid Corridor Overlay – National Grid Subdivision Corridor Stormwater Management Area Control - MASSEY, Flow 2 Significant Ecological Areas Overlay - SEA_T_2031, Terrestrial Natural Resources: Significant Ecological Areas Overlay - SEA_T_2030, Terrestrial Natural Resources: Significant Ecological Areas Overlay - SEA_T_6336, Terrestrial
Controls	Macroinvertebrate Community Index – Rural Macroinvertebrate Community Index – Urban Macroinvertebrate Community Index – Exotic
Transport Designations	1433, Road – Fred Taylor Drive Transport Corridor, AT 1468, Road Widening – State Highway 16 (Westgate to Whenuapai), AT
Other Designations	4311 (Air Space Restriction Designation), Defence purposes – protection of approach and departure paths (Whenuapai Air Base), Minister of Defence 4646, Educational purposes - special school years 0-13 (Westbridge Residential School), Designations, Minister of Education
Non-Statutory Features	Ngongetepara Stream (River Number: 78850) Ngongetepara Stream Tributary (River Number: 78883) Red Hill Stream (River Number: 78871)

	Waiteputa Stream (River Number: 78870) Overland Flow Paths Flood Prone Areas Flood Plains

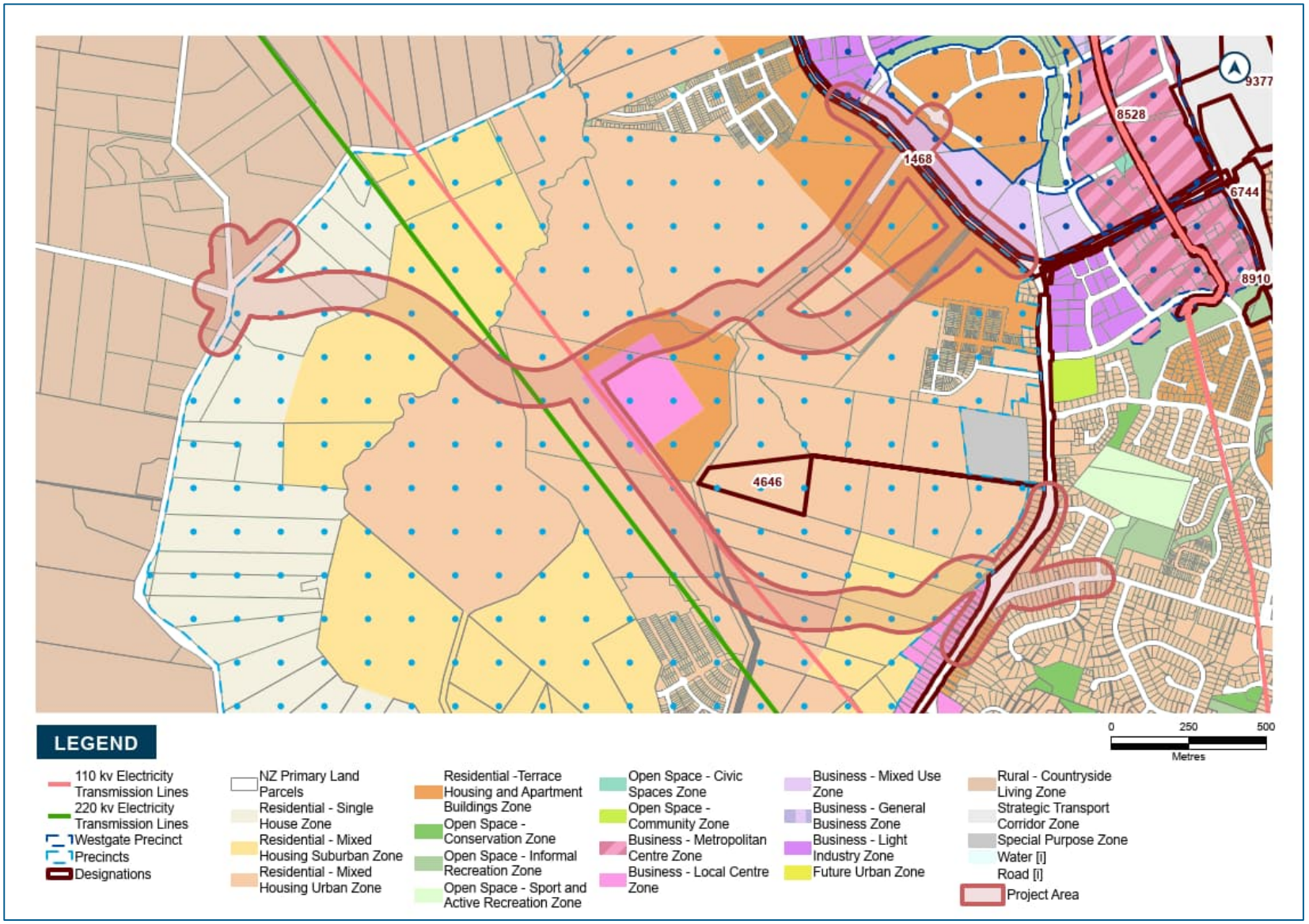


Figure 11: AUP:OIP Zoning for RATN area

6.2.1 Redhills Precinct Plan

The AUP:OIP contains the Redhills Precinct Plan (I610 Redhills Precinct), which provides an indicative proposed roading network and specific policies, objectives and rules for Redhills.

The purpose of the Redhills precinct is to implement the Redhills Precinct: Precinct Plan 1 (Figure 12) to "ensure the precinct has a high quality residential development with a local centre established centrally within the precinct to provide a heart and focal point to the Redhills community".

Arterial road connections are indicated throughout the precinct to provide future connectivity east-west between Fred Taylor Drive and Nelson Road, and north-south between Royal Road and Henwood Road. These connections are identified to provide direct strategic transport connections between SH16 and the rural communities and future urban areas to the north and west of Redhills. Furthermore, these indicative arterial connections have fixed intersection points where they meet the existing surrounding transport network (Figure 12).

The Redhills Precinct Plan also proposes a "green" road circuit to provide for walking and cycling facilities and high amenity recreational spaces, including indicative open spaces and riparian stream corridor recreational spaces.

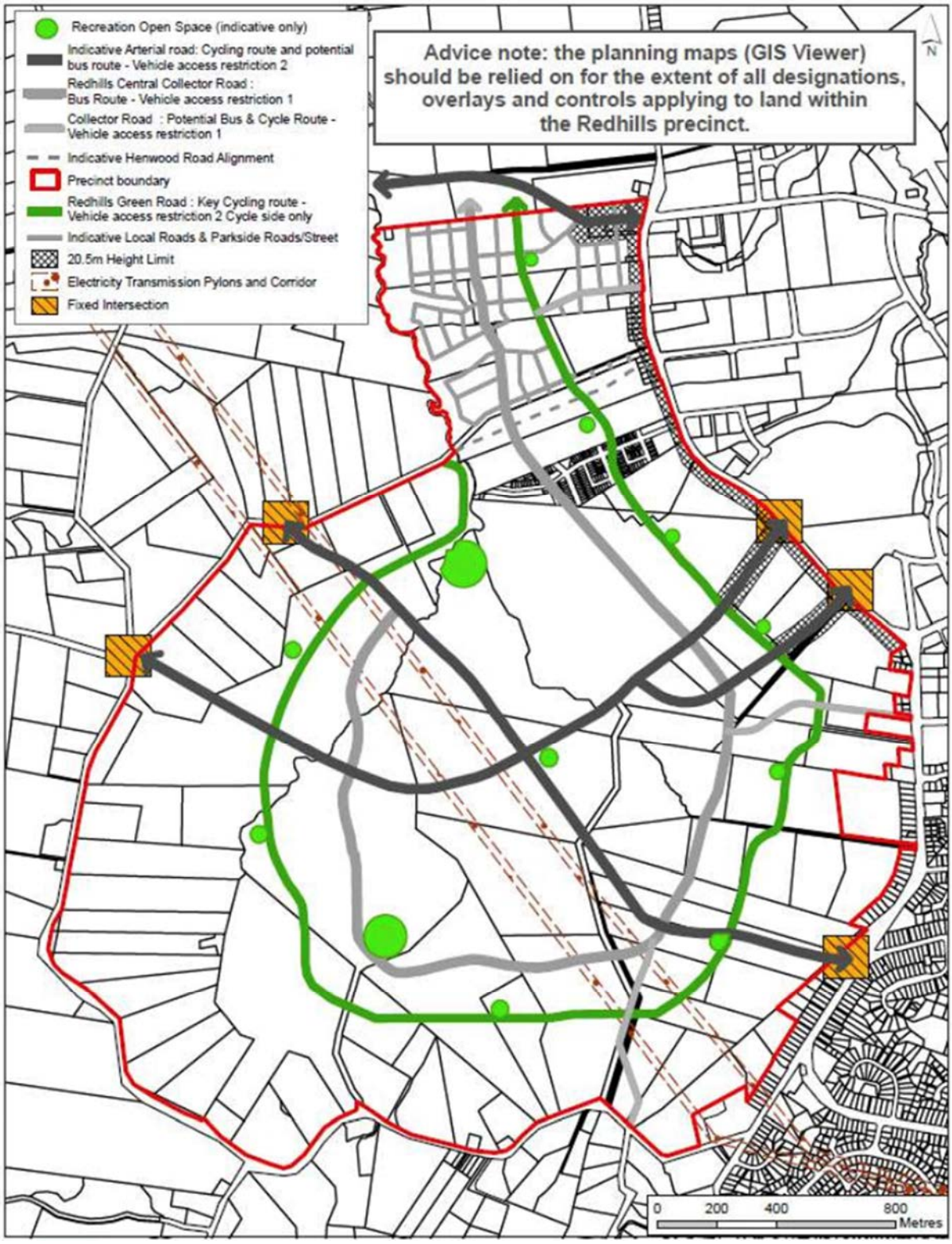


Figure 12: I616.10.1. Redhills Precinct: Precinct Plan 1

6.2.2 Westgate Precinct Plan

The Westgate Precinct (I616. Westgate Precinct) consists of seven sub-precincts (Figure 13). This precinct has the purpose to “develop a new metropolitan centre in Sub-precinct A, integrated with the existing Westgate Centre in Sub-precinct E”. The precinct seeks to provide “an integrated

employment and business area, comprising a retail core in Sub-precincts A and E, surrounded by a mix of large format retail, compact mixed use, residential and open space activities in the adjoining sub-precincts".

Sub-precinct C is located adjacent to the RATN along the north-eastern boundary of Fred Taylor Drive and is zoned under the AUP:OIP as 'Business – Mixed Use Zone'. Specific activity thresholds for this sub-precinct include limiting a supermarket to the south-eastern block adjoining Fred Taylor Drive, providing a maximum gross floor area for large format retail and trade suppliers and limiting residential activities on the ground floor.

Furthermore, the Westgate Precinct includes a conceptual road network (Figure 14) to provide further detail on the transport links including strategic access points. The components of this anticipated network relevant to the RATN are as follows:

- A 'left in left out' vehicle access on Fred Taylor Drive at the existing intersection with Baker Lane; and
- A 'strategic access' signalised intersection at the existing intersection of Dunlop Road with Fred Taylor Drive.

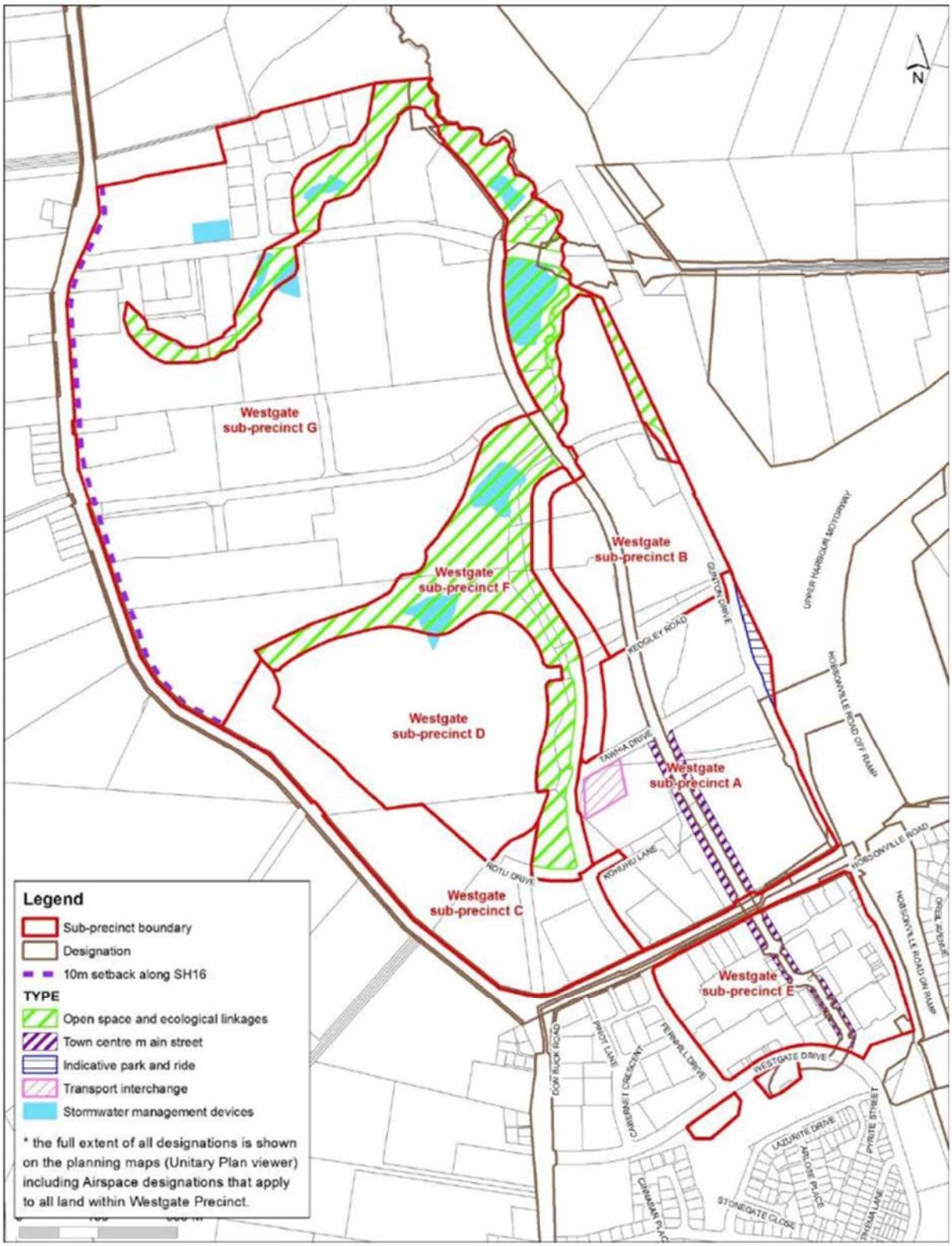


Figure 13: I615.10.1 Westgate Precinct Plan 1

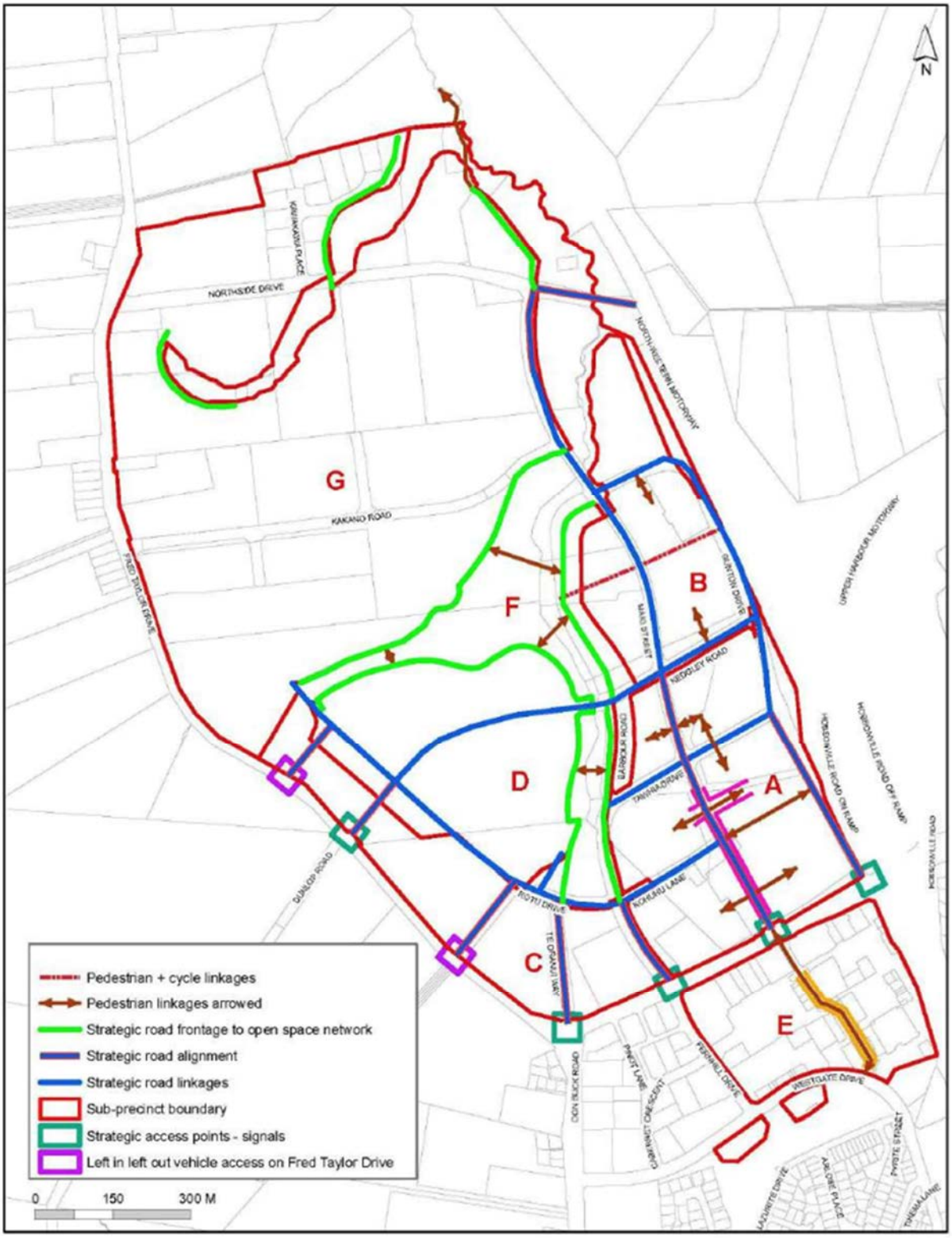


Figure 14: I615.10.2 Westgate Precinct Plan 2 – Conceptual Road Network

6.2.3 Plan Changes

Proposed Plan Change 78 (Intensification) in response to the NPS-UD and requirements of the RMA to enable more intensive development in and around neighbourhood, local, town and city

centres and rapid transit stops and incorporate Medium Density Residential Standards into the AUP:OP.

Tracts of residentially zoned land within the RATN area are proposed to be up-zoned from Single House Zone and Mixed Housing Suburban to Mixed Housing Urban Zoned, and Mixed Housing Urban Zone to Terrace Housing and Apartment Building Zone.

6.3 Likely Future Environment

As discussed previously in Section 5.2, the largely greenfield and rural existing environment of the RATN, the current range of residential and business zonings under the AUP:OIP, and the provisions of the Redhills Precinct Plan (outlined in Section 6.2.1) indicate a high likelihood of land use change. It is anticipated that the RATN will be constructed within a transitional environment and will be operated within an urban or rapidly urbanising environment. Accordingly, when considering the environmental context of the RATN, it is important to consider the likely future environment as well as the existing environment. The following sub-sections outline the key land use features that will comprise the likely future environment.

6.3.1 Future Residential Areas

As illustrated in Figure 11, most of the current AUP:OIP zoning within the Redhills Precinct and surrounding the RATN area is for the following residential land uses:

- 'Residential - Single House' Zone (**SHZ**);
- 'Residential - Mixed Housing Suburban' Zone (**MHS**);
- 'Residential - Mixed Housing Urban' Zone (**MHU**); and
- 'Residential - Terrace Housing and Apartment Buildings' Zone (**THAB**).

Overall, the residential zone density graduates from the centre of Redhills outwards, with the greatest density and intensive land uses situated near the Redhills centre and along the existing transport corridors, and the lower density zones largely situated out to the rural fringe.

THAB zoning within the RATN area is in the following locations (see Figure 11):

- Adjacent / surrounding the proposed local centre to the north, east and south;
- Along the south-western boundary of Fred Taylor Drive and the western boundary of the northern portion of Don Buck Road.

This development of up to seven storeys (including supporting non-residential activities) in the THAB zone is anticipated in the RATN area due to its location adjacent to the proposed local centre, with the benefits of proximity to local businesses and services, and the access to the Dunlop Road public transport corridor and eventual Westgate Transit Hub. This development is also expected in the THAB zone adjacent to Fred Taylor Drive due to its close proximity to the arterial network, SH16 and SH18, and the Westgate Metropolitan Centre (a 10-minute walk away) and its associated future Public Transport Hub.

6.3.1.1 Transitioning Residential Areas

As the current land use in these residential zones throughout the Redhills Precinct area is predominately rural greenfield with very few residential dwellings, it is expected to be gradually urbanised in general accordance with the Redhills Precinct Plan.

However, there are some areas of the Redhills Precinct area that are currently experiencing this urban development, which will provide a range of medium-high density housing, jobs, services, and facilities. This includes the north-eastern portion of the Precinct containing the Universal Homes 'West Hills' development, part of the northern section of the Precinct containing the Malbec development, and the Myland 'Cardinal West' development in the southern part of the precinct.

The expected urban form outcomes within each AUP:OIP zone are summarised in Table 13.

Table 13: AUP:OIP Zoning Potential Urban Form

Zone	Anticipated Outcomes
Single House Zone	Development is low density, typically one dwelling per site, up to two storeys in height.
Mixed Housing Suburban	Development is typically two storey detached and attached housing in a variety of types and sizes.
Mixed Housing Urban	Development typically up to three storeys in a variety of sizes and forms, including detached dwellings, terrace housing and low-rise apartments.
Terraced Housing and Apartment Building	Provides for urban residential living in the form of terrace housing and apartments. Buildings are enabled up to five, six or seven storeys.

6.3.2 Existing Residential Areas

The existing residential area surrounding the Don Buck Road and Royal Road intersection is zoned MHU. However, the current development is still largely characterised as low-density, single detached dwellings. While there is evidence of some subdivision and subsequent infill housing the majority of these dwellings are still single or double storey and detached. The MHU zone allows greater intensity for the residential area surrounding the Don Buck Road and Royal Road intersection, enabling development of detached, terraced and low-rise apartment housing up to three storeys. However, the MHU zone does not significantly change the potential development yields which could be achieved from these properties, consequently it is anticipated that any intensification of this area will occur more slowly than the adjacent greenfield land in the Redhills Precinct area.

6.3.3 Business Zoned Areas

As shown in Figure 11, 'Business – Local Centre' zones are provided under the AUP:OIP in the following locations:

- The centre of the Redhills Precinct;
- On the eastern boundary of the Redhills Precinct area, adjacent to Don Buck Road and immediately to the south of the Don Buck Road and Royal Road intersection.

The Local Centre zone primarily provides for "local convenience needs of surrounding residential areas, including local retail, commercial services, offices, food and beverage, and appropriately scaled supermarkets" (AUP:OIP H11.1). The built form provisions typically enable buildings up to four storeys high, allowing residential use on the upper floors.

- Additionally, the Redhills Precinct seeks to ensure the following for the local centre in the centre of Redhills:
    - It is "established centrally within the precinct to provide a heart and focal point for the Redhills community" (AUP:OIP I610.1).
    - The two arterial roads in the Redhills Precinct (i.e., the North-South arterial transport corridor and East-West arterial transport corridor) "will intersect with each other at the local centre, to support the centre and enhance its use by passing traffic and public transport, walking and cycling" (AUP:OIP I610.1).
    - Subdivision and development promote more intensive development around the local centre.
    - Subdivision and development create a safe and accessible environment for pedestrians, cyclists and public transport.
    - Subdivision and development create a low speed, main street environment with active frontages to key public interfaces.

The local centre zoned land adjacent to Don Buck Road is predominantly occupied by low-density residential housing, similar to the surrounding land use. However, in the future this is expected to be developed in accordance with the built form provisions of the 'Business – Local Centre' zone due to its location along an arterial corridor and its close proximity to SH16, SH18 and the Westgate Metropolitan Centre.

Furthermore, whilst not within the Redhills Precinct, there is a 'Business - Mixed Use' Zone adjacent to Fred Taylor Drive on the north-west side of the corridor.

The Mixed Use zone provides for 'residential activity and predominantly smaller scale commercial activity…and is typically located around centres and along corridors served by public transport', acting as a transition area in terms of scale and activity between residential areas and business centre zones (AUP:OIP H13.1). Building heights can vary, with provisions typically enabling four storeys. However, as this area is in very close proximity to the Westgate Metropolitan Centre, greater height is enabled and anticipated.

6.3.4 Transport Network

The indicative roading network provided in the Redhills Precinct Plan (discussed in Section 6.2.1) was informed by the AC DBC through an Environment Court appeal, and subsequent mediation process. This resulted in the Redhills Precinct Plan identifying the following transport elements:

- The future intersection locations with the existing road network – including the use of Baker Lane to intersect with Fred Taylor Drive rather than a connection at the Don Buck Road / Fred Taylor Drive roundabout.
- An indicative alignment of the future arterial road network within Redhills, in particular the relationship of the roading network and the future Redhills town centre.
- A key public transport corridor on Dunlop Road to provide greater benefits for walking and cycling and public transport between the future Redhills town centre, Westgate Metropolitan Centre, the future Westgate Rapid Transit Station and the Rapid Transit Network and beyond.

The resulting indicative Precinct Plan transport network (specified in 'I610.10.1. Redhills Precinct: Precinct plan 1') is shown below in Figure 15.

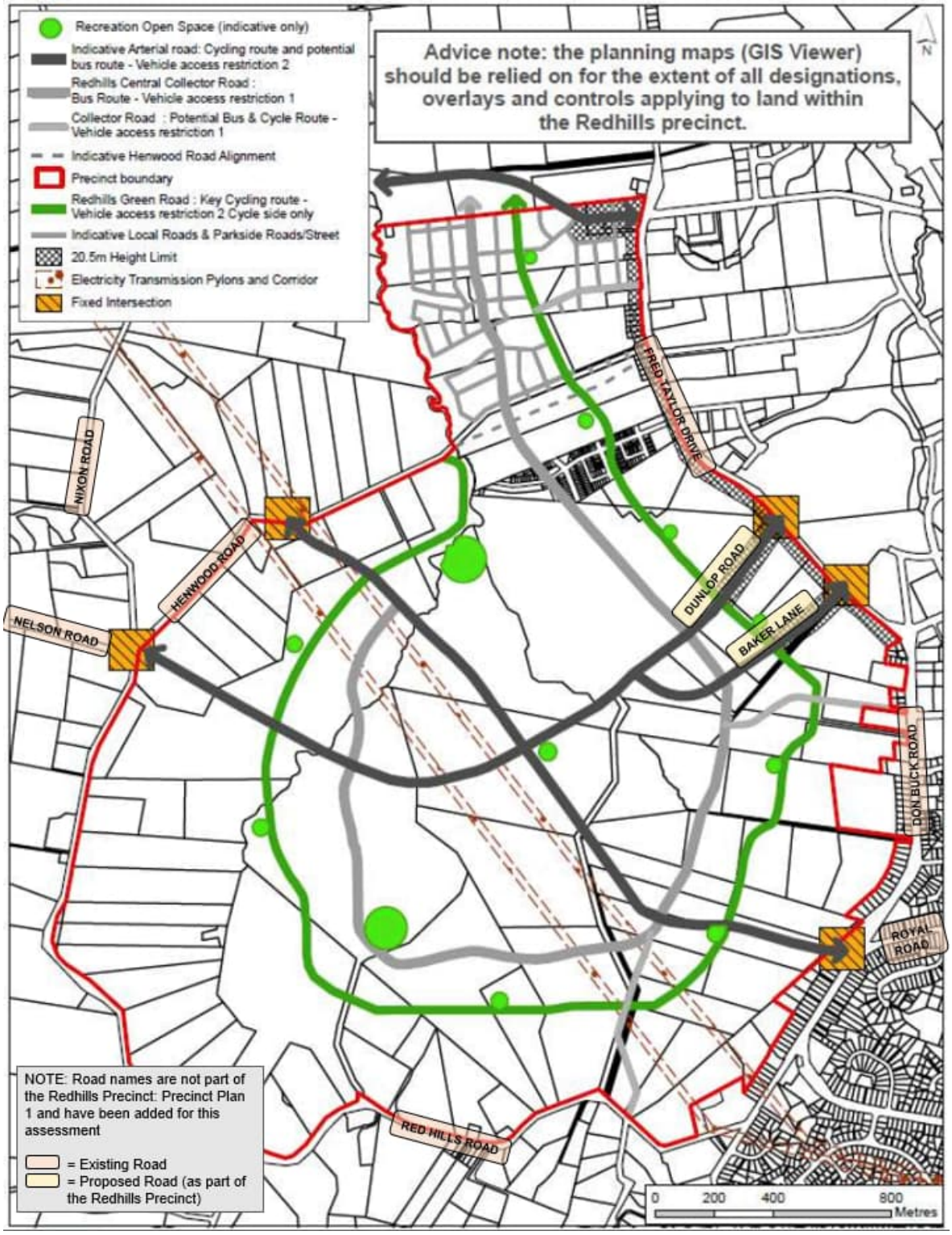


Figure 15: Redhills Precinct: Precinct Plan 1

AT noted that it would subsequently follow up these indicative alignments with confirmed alignments via typical planning processes (e.g., a NoR) through the Programme. The RATN and associated NoRs seek to formally protect the arterial corridors which will form the basis of the future transport environment.

Additionally, numerous indicative collector roads and local roads are proposed in the Redhills Precinct: Precinct Plan 1 (Figure 15), including:

- A central collector road that forms a 'loop' inside the Green Road;
- Multiple collector roads that link Red Hills Road, Don Buck Road and Fred Taylor Drive with the central collector road; and
- Various internal local roads / streets in a grid pattern in the northern section of the Precinct.

Once the Redhills area is developed, these transport corridors will serve a variety of movement needs and purposes, including:

- Access to the surrounding residential land;
- Access to the east to the strategic roading network via Don Buck Road, Fred Taylor Drive, and onward to SH16 and SH18;
- Access to the Westgate Metropolitan Centre and transport links in that area;
- Access to the proposed Rapid Transit station at Royal Road; and
- Access through to the ferry terminals at West Harbour and Hobsonville.

The RATN will serve a range of local and strategic uses across a range of modes and will therefore need to facilitate all modes of travel, including walking, cycling, public transport and private vehicles.

The North West Preferred Transport Network which has been identified through the Programme (Figure 2) also includes a range of other future projects on the periphery of the Redhills area which will have a direct interface with the RATN. These include:

- Fred Taylor Drive Upgrade
- Don Buck Road Upgrade

6.3.5 Open Space and Waterways

The objectives of the Redhills Precinct Plan in relation to open space include (AUP:OIP I610.2. Objectives):

(9) The intrinsic character of the precinct and its location in proximity to the Northwest Wildlink is recognised and stream ecology and remnant vegetation is restored, with opportunities created for natural wildlife corridors.

(10) Parks and open space corridors achieve an integrated, attractive and safe open space network across the precinct that integrates stormwater management, and ecological and recreational functions, while enhancing the amenity of cyclists and pedestrians who will have access through these open space areas.

To achieve this, the Redhills Precinct Plan includes provision for a "Green Road" circuit that will provide a high amenity cycle and pedestrian route, connecting recreational spaces such as parks and stream corridors, and connections to commuter cycling routes.

Furthermore, there is a strong emphasis on achieving an integrated and attractive open space network across the precinct that integrates stormwater management, and ecological and recreational functions. The Recreation Open Space network is indicated on the Redhills Precinct: Precinct Plan 1 (Figure 15).

Riparian margins as identified within the Redhills Precinct: Precinct Plan 1 (Figure 15) must also be planted with native vegetation. Stream edge routes for pedestrians and cycle paths along both sides of permanent and intermittent streams are also encouraged, with pedestrian and cycle paths required to be located adjacent to, and not within the 10m planted strip.

7 Redhills North-South Arterial Transport Corridor (NoR1)

This section provides the following for the Redhills North-South Arterial Transport Corridor (the N-S Project):

- A description of construction works
- Assessment of alternatives, and
- Assessment of effects on the environment.

Refer to Section 3 for a description of the permanent works associated with the N-S Project.

7.1 Construction Works

7.1.1 General approach

While it is anticipated that construction may not occur for some time (and therefore the construction techniques may change), an indicative construction methodology has been developed based on the level of design undertaken to date and the current land use / land form in which the corridors are located and with the knowledge that a contractor is yet to be confirmed. As such, there is a preference to retain some flexibility in construction methodologies, and the construction will be guided through the management plan process. The conditions for the proposed designation and future resource consents will be in place to manage the effects of the construction activities.

Should the contractors wish to undertake construction activities in a manner which is not within the scope of the proposed designations, additional authorisations will need to be obtained at that time

Management Plans form an integral part of the construction methodology for the Project setting out how specific matters will be managed. A suite of Management Plans are proposed for the Project. These are discussed in Section 9 of this AEE and include the following:

- Construction Environmental Management Plan (**CEMP**);
- Stakeholder and Communication Engagement Management Plan (**SCEMP**);
- Cultural Monitoring Plan (**CMP**);
- Construction Traffic Management Plan (**CTMP**);
- Ecological Management Plan (**EMP**);
- Tree Management Plan (**TMP**); and
- Construction Noise and Vibration Management Plan (CNVMP);

The management of any potential or actual effects arising from construction activities that relate to regional resource consenting matters will be provided for when these consents are sought, in the future.

The Management Plans and future Outline Plan(s) required for the proposed designations will be submitted to Auckland Council prior to the commencement of construction.

Following the Completion of Construction, the designation boundary will be reviewed and any land that is not required for the permanent work or for the on-going operation, maintenance or mitigation of the RATN will be reinstated in coordination with directly affected landowners or occupiers.

Typical offsets for construction areas of various construction work have been adopted to inform the proposed designation boundaries. These offsets and typical construction areas have been based on similar transport infrastructure projects of this size and nature. These are intended to allow sufficient

working areas to facilitate the construction of the Project and are indicative only. Final areas will be determined during detailed design and informed through the Outline Plan process.

7.1.2 Indicative Construction Zones and Programme

It is anticipated that the works for the entire RATN will be broken down into separate construction stages as follows:

- **Stage 1:** Baker Lane from Fred Taylor Drive to the Dunlop Road intersection
- **Stage 2:** Dunlop Road from Fred Taylor Drive to the E-W Project junction
- **Stage 3:** E-W Project from Dunlop Road junction to Red Hills Road
- **Stage 4:** N-S Project from Don Buck Road to E-W Project

The expected duration for each stage ranges from 1.5 years to 3 years.

Table 14 provides an overview and summary of the typical construction activities associated specifically with the N-S Project, being Stage 4 identified above.

Table 14: N-S Project Construction Activities Summary

Stage	Construction Activities
Stage 4	Don Buck Road / Royal Road • Vegetation clearing and demolition / modification of existing properties • Protect or relocate existing services • Lane widening along the east side of Don Buck Road • Earthworks cut and fill (approximately 24,000m3 of cut and 3,800m3 of fill mostly on the embankment to Royal Road) • Realignment of existing road • New intersection with N-S Project • Alignment change from Royal Road to Don Buck Road • Construct new berm, footpath and cycleway on both sides of the road • New road surface and median • Line marking • Lighting and road furniture N-S Project • Install environmental controls, silt fences, and temporary sediment retention ponds • Vegetation clearing and demolition / modification of existing properties • Construct three new culverts • Construct one stormwater wetland • Bulk earthworks cut and fill (approximately 30,000m3 of cut and 310,000m3 of fill) • Construct retaining walls to the south near the Don Buck Road intersection • Construct new berm, footpath and cycleway on both sides of the transport corridor • New road construction and median • Line marking • Lighting and road furniture

7.1.3 Construction Laydowns and Work Areas

As the N-S Project will be predominantly constructed though greenfield land that will likely be undergoing urban development at the same time as the N-S Project is constructed, indicative construction laydowns and work area locations have been identified and assessed for the purpose of

providing for the works within the proposed designation footprint. These are shown in the indicative design drawings provided in Volume 3.

7.1.4 Construction Activities

7.1.4.1 Site Establishment and Clearance

In preparation for the works, the N-S Project area will need to be cleared of all impediments to construction such as buildings, structures and vegetation.

The existing vegetation within the N-S Project area will require removal to enable the construction and operation of the corridor. This is mostly comprised of localised shelterbelt vegetation scattered throughout the Redhills area.

Regional resource consents will likely be required before construction commences and will include details on measures to manage erosion and sediment arising from construction. All environmental / management controls related to watercourses will be set up prior to the removal of any riparian vegetation and considered as part of the regional resource consent process.

7.1.4.2 Earthworks

The N-S Project will require bulk earthworks for the construction of the new arterial corridor. Regional resource consents for earthworks will be sought at the detailed design stage.

Environmental controls will be installed prior to commencing bulk earthworks and all unsuitable soils will be removed from the site before placing fill material or constructing structures. Regional resource consents for earthworks will be sought at the detailed design stage.

The N-S Project alignment passes beneath the Transpower transmission lines however this should not affect construction as there is only a 2.5m cut at this location. Works in this section will be conducted in accordance with the ‘working around live cables’ guidance from Transpower.

The AUP:OIP’s Accidental Discovery Protocol (ADR) will be adopted to address any unexpected heritage items during construction, unless an archaeological authority for the N-S Project has been obtained from Heritage New Zealand.

7.1.4.3 Drainage and Stormwater

As discussed in Section 5.1.1.2 a number of indicative constructed wetlands are shown along the N-S Project to provide stormwater treatment and flood attenuation to the various catchments along the route. However, the specific stormwater network and infrastructure elements associated with the N-S Project, including the finalised location of the wetlands, will be determined at a later detailed design stage in conjunction with regional resource consents sought.

Subject to any regional resource consents required it is anticipated that these construction works activities are likely to involve typical shallow drain laying, involving excavations with simple batters or trench shields to provide ground support. Where road crossings are required, construction will be through excavation in stages with single lane closure traffic management. These works will likely be constructed upon the completion of the bulk earthworks.

The N-S Project provides sufficient space within the designation footprint to provide for these works.

7.1.4.4 Watercourse Crossings

Construction works for the N-S Project will include several watercourse crossings and other associated activities within the existing watercourses (Redhills Stream, Waiteputa Stream and Ngongetepara Stream). The form of the stream crossings (i.e., bridges or culverts) and the construction works / structures within the watercourses will be confirmed and assessed at a later detailed design stage as part of future applications for regional resource consents. The N-S Project provides sufficient space within the designation footprint to enable these works.

7.1.4.5 Retaining Structures

Retaining structures are proposed to support the minor cuts and fill along the Don Buck Road / Royal Road intersection. The exact scope, design, and construction methodology of the retaining structure will be determined as the design develops, however will likely involve small to medium size construction equipment (typically up to 20T excavators).

7.1.4.6 Pavement and Surfacing

Pavement and surfacing will commence once earthworks, drainage and utilities works are complete. Due to gradient changes and the new cross-section design, it is likely that most of the existing surface will be removed for the new pavement. This will likely be staged to maintain traffic flow along the corridor, with the intersections requiring further staging. New street lighting will be installed once the bulk earthworks and drainage are complete.

7.1.4.7 Construction Reinstatement

N-S Project construction will have temporary impacts to private properties along the N-S Project corridor. This may include temporary changes to property access, private outdoor space (including fences, gardens and vegetation and lawns) and, in localised instances, impacts to dwellings and other private structures. Reinstatement is to be addressed on a case-by-case basis through discussion with individual landowners and will follow the provisions under the Public Works Act 1981, which is a process separate from the requirements of the RMA.

7.1.5 Typical Plant and Equipment

To help inform the assessment, a list of typical plant and equipment which may be required for construction has been developed (Table 15).

Table 15: Typical Plant and Equipment Summary

Construction Type	Construction Activity
Typical across all works	• Site facility • Light vehicles • Hiab truck
Bulk Earthworks	• 30T excavator • 20T excavator • Compactor / sheepsfoot roller • Water cart • Tippers / ADT's
Drainage	• 20T excavator

	• Trench shields • Tandem tipper • Loader • Plate compactor
Pavement Construction	• Grader • Smooth drum roller • Tandem tippers • Kerbing machine • Plate compactor • Paver

7.2 Assessment of Alternatives

When considering a NoR by a requiring authority, a territorial authority is required under section 171(1)(b) of the RMA to have particular regard to whether adequate consideration has been given to alternative sites, routes, or methods of undertaking the work if either:

i) The requiring authority does not have an interest in the land sufficient for undertaking the work; or

ii) It is likely the work will have a significant adverse effect on the environment.

In this instance, AT does not currently have an interest in all of the land through which the RATN will be constructed and operated.

The development of alternatives for the RATN was completed through a sequential options development process in the Supporting Growth Programme Business Case 2016 (PBC), AC DBC, SG DBC and development of this NoR application and the N-S Project as described in Section 3.2.

Figure 16 provides a summary of the options development process in relation to each of the steps. In summary, once problems, issues and objectives had been established, a list of corridor options were developed to achieve the outcomes. These were refined into a range of alignment options with the preferred options further refined to develop the N-S Project as it is described in Section 3.2.

A comprehensive assessment of alternatives was undertaken and is provided in 0. This includes the key decisions made during the assessment of corridor options, alignment options, design refinement and statutory methods. It also outlines the further review of AC DBC and SG DBC options that was subsequently undertaken due to the introduction of the National Policy Statement for Freshwater Management 2020 (NPS-FM), which affords additional protection to natural wetlands. Please refer to 0 for these assessments.

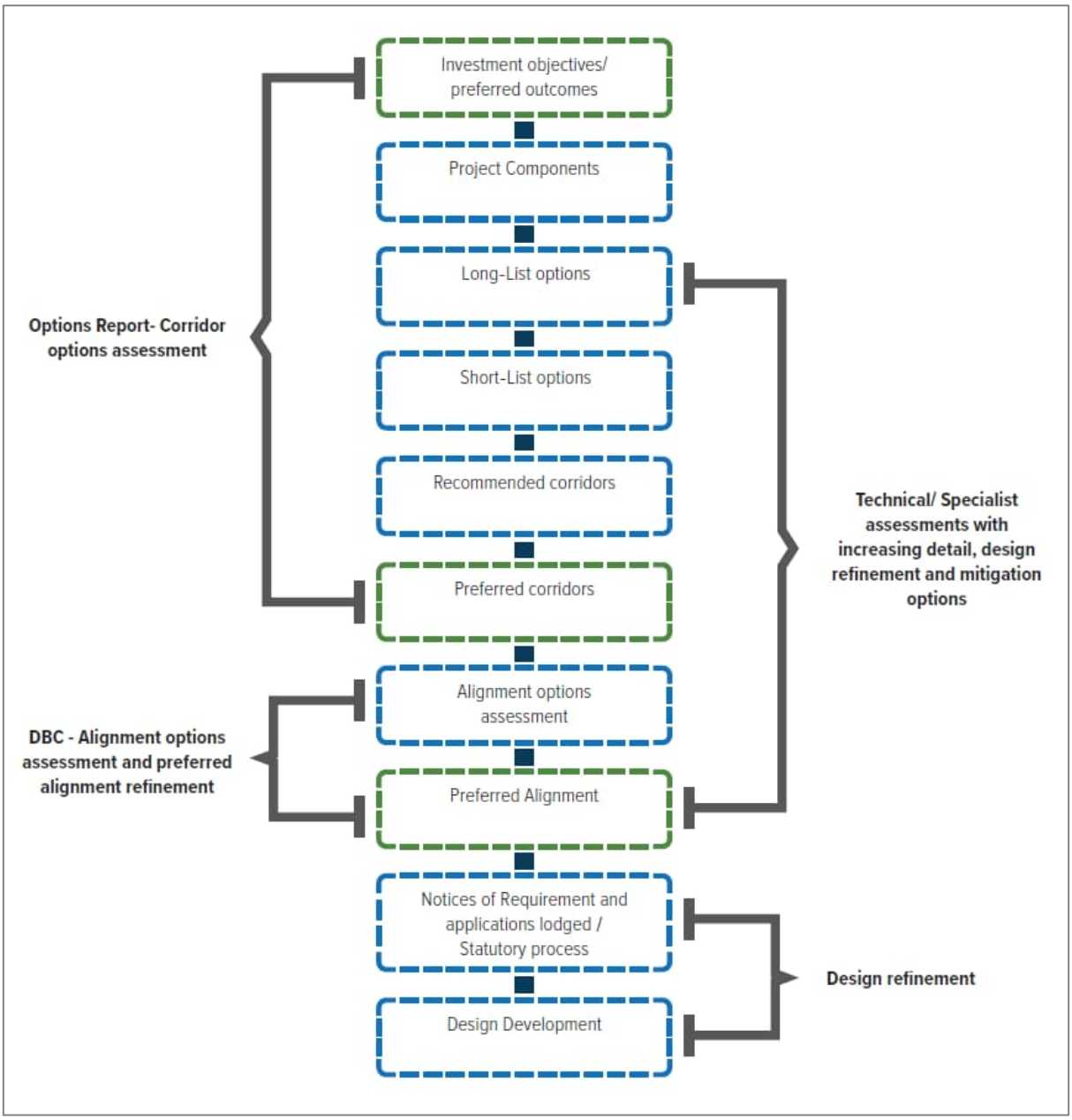


Figure 16: Summary of Options Development Process

A wide range of alternatives have been investigated for addressing the transport needs for the N-S Project area. A key driver for the assessment of alternatives was to avoid adverse effects where practicable. That evaluation confirmed that the N-S Project (connecting from the upgraded and signalised Don Buck Road / Royal Road intersection in the south and connecting to the E-W Project) would provide a balance of strong transport and urban outcomes while minimising potential adverse effects.

A further review of AC DBC and SG DBC options was undertaken in response to introduction of the National Policy Statement for Freshwater Management 2020 (NPS-FM). It concluded that that the strategic connections and relationship to the future local centre largely determine the form of the RATN. Impacts on wetlands could not be entirely avoided given the need for arterial transport

corridors to traverse the Redhills area, to enable its development, however, the preferred North-South corridor has been refined to reduce wetland impacts where possible.

The N-S Project supports the development of land in Redhills which is planned for under the AUP:OIP and Redhills Precinct Plan, thereby supporting the objectives and policies of the AUP:OIP. Its location and design represent the most appropriate approach to the changing local environment, providing a high-quality urban corridor for the urbanisation and development of the surrounding area and connecting to the future and existing transport network.

An assessment of the various alternative methods for achieving the N-S Project was undertaken, and it was concluded that a designation is considered the most appropriate mechanism to provide for the Project.

The conclusion reached in the assessment of alternatives has been based on a comprehensive, robust and replicable optioneering process. As such it is concluded that adequate consideration has been given to alternative sites, routes, or methods for undertaking the work, satisfying the requirements of section 171(1)(b) of the RMA.

7.3 Assessment of Effects on the Environment

Section 171 of the RMA requires that when considering a NoR, a territorial authority must consider the effects on the environment of allowing the requirement.

This section provides a summary of the actual and potential effects of the construction, operation and maintenance of the N-S Project, including whether these effects are positive or adverse and the scale, duration and locality of effects.

As set out in Section 7.2, the consideration of adverse effects has been a key driver for the assessment of alternatives, identification of the proposed designation corridor and the subsequent refinement of the corridor. Where effects cannot be avoided, measures to remedy or mitigate significant adverse effects have been proposed. Details of these are included in Section 9 and are reflected in the proposed designation conditions.

Positive effects are summarised in Section 7.3.1, and adverse effects on the environment are described in Sections 7.3.2 to 6.4.9.

7.3.1 Positive Effects

The Project Objectives (Section 4.1) have been developed to address the key problems and issues identified in Section 2.2. In achieving these objectives, the N-S Project will deliver a range of positive effects for the Redhills area.

Significant growth is anticipated and provided for under the AUP:OIP in Redhills. A range of infrastructure, including transport infrastructure, is required to achieve the growth figures sought under the Auckland Plan. The N-S Project supports the ongoing and proposed urbanisation of the area, by providing an internal arterial transport network that connects to the existing surrounding strategic transport network through new and upgraded intersections. The N-S Project will include pedestrian, cycle and public transport facilities along all transport corridors which will enable greater choice of mode and provide improved safety outcomes for transport users.

Overall, the N-S Project will provide significant benefits to the local community and wider North West area, supporting the Council's growth strategy. In providing an urban transport corridor which responds to the growth demand in the area, the N-S Project will improve transport network functions and contribute to a high-quality urban environment for local residents, businesses and road users.

7.3.1.1 Walking and Cycling

There are currently limited footpaths and limited and / or no cycle facilities on the existing Don Buck Road and Royal Road. The proposed walking and cycling facilities for the N-S Project and sections of Don Buck Road and Royal Road within the N-S Project extents (as described in Section 3.2) have been designed to provide separated and protected walking and cycling facilities on both sides of the corridors. All intersections within the N-S Project have been provided with pedestrian / cycle crossing facilities. This will provide a significant improvement to the existing walking and cycling network and is a positive effect of the N-S Project.

Overall, the N-S Project will create an improved and safer walking and cycling network that encourages and promotes alternative modes of transport. The proposed walking and cycling improvements will integrate with existing networks (where these exist) and the likely future environment.

7.3.1.2 Public Transport Network

As described in Section 3.2.5, the N-S Project will enable public transport services to operate within the Redhills area. Dedicated bus priority measures will be provided at the intersection of Don Buck Road and Royal Road to enhance bus travel times and reliability, including:

- A dedicated bus approach lane on Royal Road; and
- Providing for 'bus only' through movements in the left-turn lanes.

These upgrades will allow buses travelling on the proposed N-S Project and Royal Road to avoid potential queuing delays at intersections and improve travel time reliability. Prioritising bus services at this intersection is consistent with the future RTN intentions for the North West, enabling connectivity to a new planned Rapid Transit Network station on SH16 at Westgate and at Royal Road.

Overall, the N-S Project will enable an efficient public transport network in Redhills and provide a quicker and more reliable public transport network within the surrounding transport corridors, which will support the existing and the likely future environment in Redhills and its surroundings.

7.3.1.3 Road Safety

The design of the N-S Project has been undertaken to reflect AT's commitment to Vision Zero which aims for no deaths or serious injuries on Auckland's transport system by 2050. The N-S Project supports this approach by:

- Providing for safe walking and cycling facilities on all corridors.
- Safe intersection design based on AT standards and provision of crossing facilities for vulnerable users.

Overall, the N-S Project is well aligned with the principles of AT's Vision Zero. It will provide new, and improve existing, transport corridors to provide high levels of road safety in the N-S Project area. Detailed design investigations will be completed at a later stage to further support safety outcomes.

7.3.2 Transportation Effects

This section provides an assessment of the actual and potential adverse transportation effects that will result from the construction, operation and maintenance of the N-S Project. The assessment is informed by the Redhills Arterial Transport Network: Assessment of Transport Effects (ATE) contained within Volume 4.

7.3.2.1 Construction Traffic Effects

The assessment of expected construction traffic has been developed based on the indicative construction methodology (outlined in Section 7.1). It is anticipated that the larger part of works required for this package of projects will likely be delivered offline. However, this will be confirmed at detailed design stage, and regardless there is still likely to be some works in the live carriageway, which means that temporary traffic management will be required.

The scale of temporary traffic management to delineate live traffic away from the construction zones is largely dependent on the various stages and requirements of the construction activities. It is expected that short term temporary road closure for nights or weekends may be required for some specific activities, such as road surfacing, traffic switches and gas relocation. Other activities may require stop/go or contraflow traffic management, such as drainage, utility relocation, survey and investigation work.

The construction of the N-S Project will require significant earthworks. Final cut and fill volumes will be confirmed following detailed design prior to construction. The construction traffic movements to accommodate the earthworks will likely result in the increase of traffic volume on construction routes used during the construction period of the Project.

Given the construction timing and staging of the package has yet to be determined, there is a degree of uncertainty associated with any predicted construction methodology and associated traffic routes. This means:

- The routes that will be used by construction vehicles will depend on the location of quarries and disposal sites which are not yet certain
- The exact location and extent of compound sites/lay down areas has yet to be determined
- The timing of construction of other projects could impact on likely construction vehicle routes

Notwithstanding this, it is considered that with available connectivity to the strategic network and available capacity in the network, construction traffic will be able to be readily accommodated.

It is noted that construction access for the N-S Project will be required from a private driveway (currently servicing five properties) accessed off Red Hills Road. This access has been included within the designation extent and no specific mitigation is considered necessary in addition to that already identified through a Construction Traffic Management Plan (CTMP) (refer section 7.3.2.1.1 below).

Overall, the ATE does not identify any significant adverse impacts on the wider transport network as a result of the construction traffic; however, it does identify the potential for localised changes to traffic movement and property access. Measures to mitigate these potential effects will be secured through a designation condition requiring preparation and implementation of a CTMP, such that the adverse effects are no more than minor. These measures are summarised below.

7.3.2.1.1 Construction Traffic Management

As discussed above, the potential adverse effects of construction traffic will be managed through a CTMP. The purpose of the CTMP is to ensure the construction of each Project is managed in such a way that enables safe and efficient movement of local traffic throughout the construction period and to minimise disruption to road users, particularly the adjacent residential properties and local activities.

Localised transport effects will be managed through appropriate construction management protocols, including:

- Measures to provide for the safety of all road users is maintained throughout construction; for instance, temporary speed limits.
- Identification of detour routes and other methods to provide for the safe management and maintenance of traffic flows, including pedestrians and cyclists, on existing roads;
- Methods to provide ongoing vehicle and pedestrian access to private and adjacent properties; and
- Methods for communicating and timing construction activities to minimise the effects of temporary traffic and access restrictions.

7.3.2.2 Operational Transport Effects

The assessment of operational effects provided in the ATE was completed using a mix of quantitative transport modelling and qualitative assessment measures relating to the following transport functions:

- Walking and cycling
- Public transport
- Road user safety
- Property access
- General traffic

The positive transport effects as a result of the N-S Project have been described previously in Section 7.3.1. The following sub-sections provide a summary of the adverse operational effects with respect to each of these transport functions.

7.3.2.2.1 Walking and Cycling

The proposed walking and cycling facilities are described in Section 3.2. There are no adverse operational effects anticipated on walking and cycling, as the effects are expected to be positive (as described in Section 7.3.1).

All proposed berm widths will significantly exceed the 0.6m buffer requirement of the AT TDM, which is considered more than sufficient to provide for walking and cycling facilities.

7.3.2.2.2 Access

Driveways

As the proposed N-S Project, Don Buck Road and Royal Road are expected to be classified as ‘arterial’ corridors, any new direct property access will be limited by the AUP:OIP.

In terms of existing properties, the overarching design philosophy for the Project has been to maintain driveway access where practicable and minimise impacting land other than where necessary.

There are 10 existing properties where it has been identified that a driveway (compliant with the AUP:OP) may not be possible to implement, primarily due to changes to road levels and the incursion of the corridor into the front of the properties. These properties have been included within the designation boundary. They include the following properties:

- 13, 15A, 17A, 18, 19, 20, 22, 24, 26, 28 Royal Road.

Access Lanes

There are currently three existing low-level access lanes provided along Don Buck Road, with all three provided at a lower level than the existing road. The provision of these vehicle accesses in these locations will be retained, and these access lanes will be reformed. Access lanes are proposed to be a minimum of 3m wide, allowing for vehicle travel one-way at a time, with passing enabled by the provision of driveways if two vehicles should meet on the access lane. Walking and cycling facilities will be located adjacent to the carriageway, at the higher level.

This is generally an improvement to the existing access lane configuration providing for safer vehicle access to private properties.

In terms of the lower-level access on Don Buck Road to the south of Royal Road on the eastern side, the low-level access is proposed to be reformed to deliver an access with appropriate grades, resulting in a northward shift. This access rearrangement, in addition to the road realignment in this location has resulted in access and property impacts on 1 Royal Road, 443 and 445 Don Buck Road. These three properties have accordingly been included within the proposed designation boundary.

Additionally, as part of the design of the signalised intersection at Royal Road a raised traffic island has been proposed to separate traffic at the intersection approaches. The provision of this barrier has been provided as a safety measure, however some properties accessing the road network from the low-level access nearest the intersection will no longer be able to turn right, with the access arrangement operating as a left-in left-out at this location. Vehicles will however be able to access the roading network from the low level access point further from the intersection and complete all movements at this location and be able to pass each other in the low-level access if necessary, therefore these effects are considered to be minor.

7.3.2.2.3 General Traffic

Table 16 provides a summary of the expected traffic volumes for the arterial corridors within the N-S Project area and those adjacent to the Redhills Precinct.

A two-lane corridor can efficiently accommodate vehicles volumes as shown below and therefore the proposed corridor design is expected to meet forecasted needs, with the additional lane provision at intersections to accommodate greater bus priority.

Table 16: Predicted Annual Average Daily Traffic (AADT) Volumes for 2048 Scenario

Count Location	2048 predicted AADT
Don Buck Road north of Royal Road	21,800
N-S Project between E-W Project and Royal Road	8,500

The ATE has assessed the performance of the proposed Don Buck Road and Royal Road intersection, with the intersection predicted to perform at a satisfactory level during the peak periods under a 2048 scenario.

The intersection was identified as having capacity restraints by 2048, with approaches reaching practical capacity or experiencing queues. However, this is not uncommon in peak periods in urban environments and is not considered a significant delay. Furthermore, with the significant growth expected in Redhills and the wider North West area, travel by vehicle will continue to be subject to congestion in the weekday peak periods. Moreover, bus reliability will improve, operational performance in other periods should improve, and facilities for pedestrians and cyclists will provide enhanced alternatives for travel.

7.3.2.2.4 Surrounding Network Connections

The collector road network as identified in the Redhills Precinct Plan (see Section 6.3.4 for further detail) has not been specifically provided for within the N-S Project. Given there is a degree of uncertainty about the timing and form of adjacent subdivision and development, the N-S Project includes a flush median along the length of the N-S Project corridor, which will provide additional width to accommodate potential intersections for collector connections when these are confirmed. The median will also facilitate the opportunity for future pedestrian / cycle crossing points along the N-S Project corridor, as urbanisation occurs on both sides of the corridor.

The location of these collector intersections will also need to be integrated with bus stop locations and pedestrian crossing facilities. The N-S Project does not preclude these facilities being provided at a later stage of design.

Overall, while the future collector and local transport network is yet to be determined, the N-S Project design provides sufficient flexibility to enable these connections to be formed as the surrounding land is developed. As such, the N-S Project will have no adverse effects on the future network connectivity.

7.3.2.3 Summary of Transport Effects

Considering both the positive transport effects in Section 7.3.1 and the actual and potential transport effects described above, overall, the N-S Project will provide an improved transport environment which includes:

- Improved walking and cycling facilities with increased safety, which will provide for the urbanisation of the local walking and cycling catchment, and improve the connectivity for all travel modes between Redhills and Massey;
- Improved public transport efficiency and reliability through the provision of bus priority and sufficient space to accommodate the development of the future public transport network;
- A high standard of road safety through transport design and improvements in road safety to existing transport corridors in the N-S Project area; and
- Improved network performance through upgraded intersection designs and traffic signalling.

To provide these benefits, the construction of the N-S Project will require some temporary and localised disruption to traffic movements and property access. These construction effects can be appropriately managed through the implementation of a CTMP.

Additionally, multiple existing properties may require changes to their current vehicle access (outlined in Section 7.3.2.2.2). A detailed access assessment will be completed by a suitably qualified traffic engineer and / or transport planner as part of the Outline Plan of Works to identify appropriate means to mitigate these effects.

Overall, the N-S Project will have positive effects for the local and wider transport network. Any adverse effects will be temporary and localised, and any permanent effects mitigated such that they will be no more than minor.

7.3.3 Noise and Vibration Effects

This section identifies and assesses the actual and potential effects of noise and vibration associated with the construction, operation and maintenance of the N-S Project. The assessment is informed by the Redhills Arterial Transport Network: Assessment of Construction Noise and Vibration (ACNV) and the Redhills Arterial Transport Network: Assessment of Traffic Noise and Vibration (ATNV) contained within Volume 4.

7.3.3.1 Construction Noise and Vibration Effects

The indicative construction methodology (Section 7.1) has been assessed for construction noise and vibration against the relevant standards. The proposed designation boundary has been assumed as the construction boundary, and noise predictions were based on reasonable worst-case assumptions which included:

- The majority of noisy works will be carried out between 7am-6pm on weekdays with limited night-time and weekend works for the pavement and surfacing stage when required.
- Equipment and construction activity sound power levels for dominant noise sources for the N-S Project were identified.
- Minimum set back distances from receivers were calculated to comply with day-time noise criterion of 70 decibels equivalent continuous sound level (**dB L_{Aeq}**) without mitigation.

The vibration effects associated with construction of the N-S Project have been assessed in relation to potential building damage. The effect of vibration on amenity has not been assessed and has only been discussed to the extent that it is relevant to mitigation.

Indicative vibration emission radii distances have been predicted for the most vibratory equipment. Actual vibration levels are highly dependent on local conditions and the selection of machinery, which is currently unknown. To account for inaccuracies, the likely worst-case vibration has been calculated based on the equipment and hard ground geology to provide offset distances.

The predicted results were then assessed against the relevant criteria to determine if there would be any potential construction noise and vibration exceedances for any of the existing receivers along the N-S Project.

7.3.3.1.1 Construction Noise Effects

The ACNV identifies that the closest properties outside the designation boundary and adjacent to the N-S Project area could experience worst-case noise levels up to 90 decibels equivalent continuous sound level (dB LAeq,) with mitigation, which does not comply with the AUP:OIP day-time noise criterion. This has the potential to result in noise disturbance effects (e.g., loss of concentration,

annoyance, a reduction in speech intelligibility and reduced productivity) without appropriate mitigation.

Operation of construction equipment will be intermittent in nature. Construction will be linear so as the equipment moves away from the receiver noise levels will reduce. The worst-case situations, where mitigated noise levels could reach 90 dB LAeq at the closest receivers, are not expected to be frequent, due to the setback distances to the majority of the proposed works and the use of equipment with lower source noise levels for large portions of the works. Mitigated noise levels are expected to comply with the 70 dB L_{Aeq} daytime noise criterion for most of the construction works.

The ACNV sets out a hierarchy of mitigation measures which will be adopted through a Construction Noise and Vibration Management Plan (CNVMP) and any Schedules produced for the works (refer to section 7.3.3.1.3 for details). The preparation and implementation of CNVMP and Schedules will be secured through a designation condition.

The ACNV concludes that by following this hierarchy the BPO for mitigation will be implemented, whilst avoiding undue disruption to the community.

Overall, construction noise will be temporary and construction noise levels can be significantly reduced through the implementation of the hierarchy of mitigation measures. Accordingly, by providing appropriate mitigation and construction management the potential construction noise effects will be no more than minor.

7.3.3.1.2 Construction Vibration Effects

The ACNV identifies that, in worst case circumstances (without mitigation), 73 residential dwellings adjacent to the N-S Project area may experience vibration levels of 5 mm/s or above, exceeding the criteria for residential properties. 5mm/s is the threshold above which cosmetic building damage may occur, such as cracking.

The vibration amenity criteria (vibration levels of 0.3mm/s for night time and 2 mm/s during the day) could be exceeded in existing or future buildings if they are occupied during the works and within 21m of the roller compactor (high vibratory equipment) or within the emission radii identified for the other vibration generating equipment (refer to Volume 4 for details).

In addition to cosmetic building damage, the potential adverse effects associated with excessive vibration may range from annoyance to loss of amenity or inability to carry out work. It is noted the structural damage is not expected. These vibration effects will reduce with distance from the source and the level of vibration transmission into a building will depend on a number of factors, such as the foundation type and building construction. Vibration can typically be tolerated inside buildings if it occurs intermittently during the day, is of limited duration and where there is effective prior engagement.

The ACNV sets out a hierarchy of mitigation measures which will be adopted through a Construction Noise and Vibration Management Plan (CNVMP) and any Schedules produced for the works (refer to section 7.3.3.1.3 for details). The preparation and implementation of CNVMP and Schedules will be secured through a designation condition.

Additionally, to manage the potential for cosmetic damage to buildings, a building condition survey will be offered to be carried out before and after construction works at properties where predictions

indicate the relevant building damage criteria may be exceeded, to determine if any damage has been caused. Any damage confirmed to be caused by the N-S Project will then be repaired.

Overall, construction vibration will be temporary and through the implementation of the hierarchy of mitigation measures, the risk of significant adverse effects associated with excessive construction vibration levels can be avoided. Accordingly, by providing appropriate mitigation and construction management, the potential construction vibration effects will be no more than minor.

7.3.3.1.3 Construction Noise and Vibration Management Plan

A Construction Noise and Vibration Management Plan (**CNVMP**) is proposed as the most effective way to control noise and vibration impacts. The objective of the CNVMP is to provide a framework for the development and implementation of the Best Practicable Option for the management of construction noise and vibration effects to achieve the construction noise and vibration standards set out in the conditions to the extent possible. The CNVMP will include a comprehensive suite of measures, which are set out in detail in the ACNV in Volume 4 and the proposed designation conditions in 0.

Where noise and/or vibration limits are predicted to be exceeded for a more sustained period or by a large margin, a Site Specific or Activity Specific Construction Noise and Vibration Management Schedules ("Schedule") will be produced. Any Schedule will include details such as:

(i) Construction activity location, start and finish dates;

(ii) The nearest neighbours to the construction activity;

(iii) The predicted noise and/or vibration level for all receivers where the levels are predicted or measured to exceed the applicable standards and predicted duration of the exceedance;

(iv) The proposed mitigation options that have been selected, and the options that have been discounted as being impracticable and the reasons why;

(v) The consultation undertaken with owners and occupiers of sites subject to the Schedule, and how consultation has and has not been taken into account; and

(vi) Location, times and types of monitoring.

Where measured or predicted vibration from construction exceeds Category A, then there is also a requirement to undertake building condition surveys.

Night works may potentially be required during pavement construction stages. Where there is no practicable alternative, night works can be managed through increasing the frequency of communication with stakeholders, carrying out regular monitoring to ensure criteria are being met and, as a last resort, offering alternative accommodation.

As set out above, where necessary, pre-condition surveys by a suitably qualified engineer will be offered to be undertaken at all buildings where the N-S Project building damage criteria is identified as likely be exceeded. A post-construction condition survey of the same buildings will be conducted when construction is completed, and any damage shown to have been caused by the Project construction rectified by AT.

7.3.3.2 Traffic Noise and Vibration Effects

This section identifies and assesses the actual and potential effects of traffic noise and vibration associated with the N-S Project.

The Assessment of Traffic Noise and Vibration Effects report for Redhills, in Volume 4, contains predictions of road traffic noise carried out using the method recommended in NZS 6806: Acoustics – Road traffic noise – New and altered roads (NZS 6806) in accordance with the AUP:OP.

The assessment of effects undertaken in the report is two-fold: in accordance with NZS 6806 and in relation to the predicted noise level changes comparing the future traffic noise levels with and without the extended and / or upgraded transport corridors. The summary below should be read in conjunction with this report.

7.3.3.2.1 Assessment Methodology

As required by NZS 6806, the assessment methodology included the prediction of existing and future traffic noise levels, both without (Existing and Do Nothing scenarios) and with the proposed transport corridors (Do Minimum scenario). The scenarios are explained below:

- The Existing scenario represents the current road network with current traffic volumes, i.e., the existing environment as it is experienced now
- The Do Nothing scenario represents the current road network with future traffic volumes, assuming a full build out of the area
- The Do Minimum scenario represents the proposed future road network, incorporating the proposed or upgraded transport corridors and other planned transport projects in the area. This scenario assumes a full build out of the area, and the transport infrastructure to enable the development. This is a realistic scenario at a point in time when all proposed designations are operational. In this instance the Do Minimum scenario includes use of AC-14 or equivalent low noise road surface, with the exception of Red Hills Road which is chip seal.

Noise effects of road traffic on existing noise sensitive locations, referred to as Protected Premises and Facilities (PPFs) within NZS 6806, have been assessed. PPFs within a 100m radius of the urban transport corridors have been included.

Where transport corridors are considered ‘Altered Roads’, these have been assessed by comparing the predicted noise levels in the design year without the projects (Do Nothing) with the predicted noise levels in the design year with the projects (Do Minimum).

Transport corridors considered to be ‘New Roads’ have been assessed by comparing the predicted existing noise levels with the Do Minimum predictions.

7.3.3.2.2 Potential Traffic Noise and Vibration Effects

Adverse noise effects as a result of high levels of traffic noise may include sleep disturbance, loss of concentration, annoyance, a reduction in speech intelligibility and reduced productivity. The effects are not restricted to PPFs but also future residential and other noise-sensitive developments. The effects on future residential and other noise-sensitive developments are not included in the NZS 6806 definition of PPF. Where new noise sensitive developments are established in the vicinity of a road, their design should take account of the potential noise effects and care should be taken to avoid or minimise the effects.

The magnitude of effects will largely depend on noise levels received in noise-sensitive spaces within buildings, although there are also potential annoyance effects associated with a loss of amenity when high noise levels are received in outdoor living or recreation spaces.

Traffic from new or upgraded roading projects is not generally expected to create any vibration issues. The smooth and even surface typical of new urban roads would likely generate no more than negligible traffic vibration impacts. Therefore, traffic vibration has not been assessed for the transport corridors.

7.3.3.2.3 Assessment of Traffic Noise Effects

Following implementation of recommended mitigation measures outlined in Section 7.3.3.2.4, noise levels associated with the new N-S arterial and associated alterations to Don Buck Road are predicted to decrease or remain unchanged at over half of PPFs, resulting in positive noise effects. This is due to the intended redistribution of traffic across the wider network, resulting in a reduction in traffic volumes along sub-arterial roads such as Red Hills Road.

Of the PPFs that are not predicted to receive a reduction or experience no change in noise levels, the predicted increase is assessed as negligible (between 0 dB and 2 dB) for most. In total 22 PPFs are predicted to experience a 3 dB to 4 dB increase in noise level, resulting in slight adverse noise effects. 7 PPFs are predicted to experience a 5 dB to 8dB increase in noise level, resulting in moderate noise effects. These PPFs remain in the lowest noise category (Category A) under NZS 6806, and in accordance with the standard do not require mitigation.

There is one PPF located in the N-S Project area that was assessed against new road criteria (27 Redhills Road). A noise level of 47 dB LAeq(24h) is predicted at this PPF; an increase of 12 dB, resulting in significant adverse effects. This increase is due to the introduction of the new noise source near the PPF. However, this PPF remains in the lowest noise category (Category A) under NZS 6806, and in accordance with the standard does not require mitigation.

Further, ambient noise levels in the area will likely increase as the area urbanises and therefore the change in noise level due to the Project will likely not be as noticeable at the time. A noise barrier was investigated but not considered practical due to the gap that would be required to maintain access to the property compromising the performance of the barrier.

All predictions are based on traffic flow along ‘New Roads’ and ‘Altered Roads’ at the design year (2048). These traffic volumes are predicated based on the anticipated urbanisation of the area and implementation of surrounding infrastructure projects. Development of the surrounding areas will likely increase activity and associated noise levels. Therefore, any changes predicted for the traffic noise effects related to these projects are not likely to represent such a significant change at the time of construction due to the change in environment.

The results of the noise assessment will be confirmed at detailed design stage including confirmation of the road traffic noise at current PPFs. The review, confirmation and refinement of the BPO shall aim to achieve the same noise criteria categories as determined with the current BPO.

Nevertheless, the predictions show that all PPFs across the N-S Project area will receive levels within the lowest design noise levels. Therefore, resulting noise levels will be reasonable in a residential context at the majority of PPFs assessed and no further noise mitigation is deemed necessary at this stage.

7.3.3.2.4 Recommended measures to avoid, remedy or mitigate potential adverse 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. Road surface material has the largest influence on the generation of road traffic noise.
- The installation of noise barriers either on the roadside or on the property boundary.
- Building Modification measures (e.g., mechanical ventilation to enable windows and doors to remain closed, or upgrade or replacement of windows, wall linings, floors and ceiling linings.

NZS 6806 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 option.*[8]

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. Barriers may also not be appropriate in suburban and urban environments for urban design reasons – this would be considered when the BPO is confirmed. 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.

Application of AC-14 or equivalent low noise road surface has been recommended for the new N-S arterial road and will be retained along Don Buck Road. Red Hills Road is currently finished in chip seal and the results indicate that this can remain unchanged. No additional mitigation measures are required.

7.3.3.2.5 Summary of Traffic Noise and Vibration Effects

Predicted traffic noise levels during operation of the N-S Project are generally expected to reduce or increase negligibly with recommended mitigation implemented when compared to the Do Nothing scenario for ‘Altered Roads’.

One PPF is predicted to experience a noise level increase of 12 dB when comparing the Existing and Do Minimum scenarios (for ‘New Roads’), potentially resulting in significant adverse effects. However, ambient noise levels in the area will likely increase as the area urbanises and therefore the

[8] NZS6806, Section 1.1.1

change in noise level due to the Project will likely not be as noticeable at the time. A noise barrier was investigated but not considered practical due to the gap that would be required to maintain access to the property compromising the performance of the barrier.

7.3.4 Archaeology and Heritage Effects

This section provides an assessment of the actual and potential effects on archaeology and heritage that will result from the construction, operation and maintenance of the RATN (both the N-S Project and the E-W Project). The assessment is informed by the Redhills Arterial Transport Network: Assessment of Historic Heritage Effects (AHHE) contained within Volume 4.

The AHHE has been prepared based on review of the following sources to determine whether any archaeological or other historic heritage sites have been recorded on or in the immediate vicinity of the RATN area within Redhills:

- The New Zealand Archaeological Association's site record database (ArchSite);
- Auckland Council's Cultural Heritage Inventory;
- AUP:OIP schedules;
- The Heritage New Zealand Pouhere Taonga New Zealand Heritage List / Rārangi Kōrero; and
- Literature and archaeological reports relevant to the RATN area.

This was supplemented with a visual inspection of the RATN area.

The AHHE concludes that there are no archaeological sites recorded within or in close proximity to the RATN area. The nearest sites are more than 400m away (including a plane crash site during World War II, a gum diggers' camp and hut site, a 1930's Post Office and historic dwelling). The nearest recorded archaeological site related to Māori settlement is some 2km to the east of the RATN area. As such, the construction and operation of the RATN will have no effects on any known archaeological or other historic heritage values.

In any area where archaeological sites have been recorded in the general vicinity it is possible that unrecorded subsurface remains may be exposed during development. However, it is considered unlikely in this situation as the Redhills area is located some distance from the coast and navigable waterways, where Māori and early European archaeological sites tend to be concentrated. Furthermore, the area has been farmland throughout the period of European ownership.

To mitigate the very limited potential for unidentified archaeological remains to be exposed during construction, the conditions include an advice note referring to the AUP:OIP Accidental Discovery Rule (ADR) (E12.6.1).

Overall, the RATN is unlikely to have effects on any known archaeological or other historic heritage values and the very limited risk that unidentified archaeological remains are exposed will be managed through the ADR.

7.3.5 Cultural Effects

This section addresses the potential cultural effects associated with the construction, operation and maintenance of the RATN (both the N-S Project and the E-W Project).

Manawhenua have been partners throughout the development of the Programme, with Ngāti Whātua o Kaipara and Te Kawerau ā Maki the predominant iwi groups with an interest in the Redhills area.

Manawhenua involvement in the Programme has included options assessment, design refinement and effects assessment for the RATN. Engagement with these iwi groups has included regular hui as part of the Manawhenua Forum (refer Section 10.2.3) and site walkovers to identify and address any culturally significant effects.

Ngāti Whātua o Kaipara and Te Kawerau ā Maki have also produced Cultural Impact Assessments (CIA) for the RATN.

7.3.5.1 Manawhenua Treaty areas and site of significance

The RATN does not directly affect any identified properties or land currently being negotiated under Treaty settlements, land returned under a Treaty settlement, marae, Māori freehold lands, Tupuna Maunga Affected Areas, Tangata Whenua Management Areas, or Sites of Significance under the AUP:OP. The sites are also not within the coastal environment under the Marine and Coastal Area (Takutai Moana) Act 2011, therefore there are no customary marine title areas/groups or protected customary rights that need to be considered in relation to these corridors.

The N-S Project falls partially within, and the remainder of the RATN is proximate to, Te Kawerau ā Maki's statutory acknowledgement area (recorded in Appendix 21.7 of the AUP:OP). As such, the relevant consent authorities must have regard to the statutory acknowledgement relating to the area.

7.3.5.2 Ngāti Whātua o Kaipara

In the CIA, Ngāti Whātua o Kaipara raised matters including:

- Road design
- Vegetation removal
- Potential to enhance ecology and environment
- Effects of site works
- Potential to uncover archaeological or heritage items

7.3.5.3 Te Kawerau ā Maki

Te Kawerau ā Maki are associated with the area within which the North West Preferred Transport Network (refer Figure 2) is located. The CIA prepared by Te Kawerau ā Maki addresses the entirety of the North West Preferred Transport Network. This includes the RATN.

The following is a summary of the key matters raised by Te Kawerau ā Maki, in respect to the RATN:

The future transport network

- Te Kawerau ā Maki do not oppose the RATN.
- The CIA notes the potential positive operational benefits of the RATN through walking and cycling provision and opportunity for cultural design and place making.

Impacts on streams and ecology

- The CIA identifies impacts on Waiteputa (a tributary of Ngongetepara Stream), including effects arising from earthworks in proximity to the awa, permanent fill batter slopes adjacent to the awa, and formation of a new section of road and net increase in impervious surface.
- Impacts on Wai Māori (fresh water) are identified, including effects arising from earthworks within proximity to watercourses and vegetation clearance along watercourse embankments.
- Te Kawerau ā Maki identified in the CIA that the stormwater management approach proposed as having minor beneficial effect.

Impacts on whenua (soils)

- The CIA raises the impact of bulk earthworks associated with the Project.

7.3.5.4 Recommended measures to avoid, remedy or mitigate potential adverse effects

A suite of measures is proposed to avoid, remedy and mitigate cultural effects arising from the RATN, and will be secured through designation conditions. These are summarised below.

General

- Te Tupu Ngātahi will continue to engage with manawhenua to seek to further understanding of the cultural effects that may result from the construction and operation of the RATN.
- Manawhenua will be invited to prepare a Cultural Advisory Report in advance of the detailed design. The purpose of the report is to assist in understanding and identifying treasures affected by the project and inform their management and protection.

Cultural design and expression

- Manawhenua will be invited to participate in the development of the ULDMP to input into relevant cultural landscape and design matters on each corridor. This includes the management of potential effects on cultural sites, landscapes and values.

Risk of archaeological discovery

- A Cultural Monitoring Plan will be prepared prior to the start of construction works or enabling works. These plans will be prepared in collaboration with manawhenua to ensure that effects are managed appropriately, including features discovered by accident.
- Accidental discovery protocols set out under the AUP:OIP Accidental Discovery Rule (E12.6.1) will be adhered to. An advice note is proposed to this effect.

Construction environmental controls

- Concerns relating to construction works and potential impacts of sediment on streams and wetlands will be considered through the CEMP, and future regional consents. Detailed design will provide the opportunity to reduce earthwork extents, where practicable.

Ecological mitigation

- Potential construction and operational impacts on fish, lizards, birds and bats have been considered through the Assessment of Ecological Effects (Volume 4) and Section 7.3.7, and

mitigation measures recommended. Ecological mitigation will be secured through designation conditions requiring pre-construction ecological surveys, and preparation and implementation of an Ecological Management Plan (EMP).

Riparian vegetation

- Effects and mitigation for impacts on riparian vegetation will be considered at detailed design, for those corridors that have impacts on streams. Where there is a known impact on riparian vegetation due to a crossing or culvert design, suitable space for future mitigation planting has been included in the designation footprint, however mitigation will be confirmed under future regional consents.

7.3.5.5 Summary of Cultural Effects

Manawhenua have been partners through the development of the RATN and their values have been reflected through the decision-making process and implementation of key mitigation protocols. While the RATN will not affect any identified Sites of Significance to Manawhenua under the AUP:OIP, there is the potential for impacts on cultural values to the natural environment and cultural landscape context, identified through direct engagement with manawhenua.

Provision for cultural input and engagement will be enabled through the ULDMP and monitoring plans to manage adverse effects on cultural heritage and the potential for new archaeological discovery. The ULDMP will also consider how corridor features integrate with the corridor as a whole, including any proposed mitigation, and how the transport corridors can contribute to or reduce effects on the relevant cultural landscape.

7.3.6 Landscape and Visual Effects

This section provides an assessment of the actual and potential landscape and visual effects that will result from the construction, operation and maintenance of the N-S Project. This assessment is informed by the Redhills Arterial Transport Network – Assessment of Landscape and Visual Effects (ALVE) contained within (Volume 4).

It is noted that the ALVE was finalised in 2020 prior to the NORs being placed on hold. The general premise of this assessment is still correct, with only very minor changes made to the alignment since 2020 (notably a slight amendment to the alignment of the N-S corridor immediately west of the Don Buck / Royal Road intersection).

7.3.6.1 Construction Landscape and Visual Effects

As outlined in Section 5.2, construction of the N-S Project is likely to take place in the existing (mostly rural) environment or while this landscape is transitioning into an urban environment. Within this context, the following changes need to be considered when considering construction related landscape and visual effects:

- Physical changes to the landscape during construction as a result of construction activities, such as earthworks, vegetation removal, and site clearance; and
- Temporary changes to visual amenity as a result of construction activities, such as construction laydown areas and machinery.

These changes to the landscape environment have the potential to result in temporary adverse landscape and visual effects during construction, particularly when viewed from properties that are immediately adjacent to the N-S Project. However, through the implementation of appropriate mitigation and design considerations, the potential adverse effects can be minimised, and the level of effect will diminish over time following completion of the N-S Project. These mitigation and design considerations include:

- Cut and fill slopes are proposed be shaped to a natural profile to integrate into the surrounding natural landform.
- Vegetation removal is proposed to retain noteworthy and high value trees and vegetation identified within the N-S Project area where possible.
- Existing fences and garden plantings (removed through the N-S Project works) are proposed to be reinstated (in consultation with the landowner).
- Reinstatement of the N-S Project area following the completion of construction, including the removal of any leftover fill from site compound areas, the reshaping of ground to integrate with the surrounding landform and the reinstatement of site compound areas with grass and landscaping.
- Remnant land that is maintained in the road corridor (where existing dwellings are removed) will be grassed to mitigate adverse visual amenity effects potentially arising from residual land.

Overall, there may be minor adverse effects on visual amenity during construction. However, these effects will be temporary and largely confined to the period of construction. These temporary effects are typical for the construction of new transport corridors and upgraded intersections, and when considered within the context of a landscape which is likely to be changing at the time of the construction of the N-S Project, are further mitigated.

7.3.6.2 Operational Landscape and Visual Effects

As outlined in Section 5.2, operation of the N-S Project is likely to take place in an urban landscape. By the time the N-S Project is operational it can reasonably be assumed that further sections of the Redhills Precinct will have urbanised, alongside (if not as part) of the implementation of the NoR section. As such, operational related landscape and visual effects need to be considered within this context.

The N-S Project will result in longer-term changes to the landscape context of the N-S Project area, which have the potential to result in adverse effects to the landscape character, natural character and visual amenity of the area. These changes include:

- For private properties adjacent to the N-S Project (specifically along Royal Road and Don Buck Road), proposed earthworks will permanently impact private properties in the following ways:
    - Encroachment into some private yards, impacting on residential amenity and existing entrance way design;
    - Surface level changes between private property boundaries and the upgraded road corridor, requiring some existing driveways and private access ways to be regraded;
    - Greater proximity of the carriageway and footpath/cycleway to property boundaries and increased traffic volumes;
    - Introduction of noise mitigation walls or other mitigation features and retaining walls;

- Potential effects on natural character through clearance and/or disturbance of vegetation (although limited) associated with stream crossings within the margins of Waiteputa Stream, Red Hill Stream and Ngongetepara Stream, heightening the impression of further human modification.
- Adverse visual effects for a number of properties located directly west of the existing Don Buck Road / Royal Road roundabout. These properties currently enjoy views over the Redhills Precinct, however have the potential to be disrupted by the elevated section of the N-S Project and associated fill slopes. However, as discussed adverse visual effects are considered within the context of the urbanisation of the Redhills area, and such effects are considered to be moderated by the land use for this localised setting of 'Business – Local Centre' surrounded by 'Residential - Mixed Housing Suburban' under the AUP:OIP, with future development expected to respond to the N-S Project accordingly.

These localised, permanent effects from the N-S Project area can be managed through the preparation of an ULDMP which will include the following matters:

- All cut and fill slopes will be shaped to a natural profile to integrate into the surrounding natural landform. Where there are large-scale fill slopes (that are retained within the road reserve) it is recommended these are reinstated with grass, where practicable, if they are not able to be integrated with adjacent land use through site specific landscape design.
- Retaining walls and noise mitigation walls will be designed to integrate with private boundary fencing and where practicable incorporate existing and reinstatement planting.
- The consideration of any proposed bridge design (if applicable) to be designed to contribute to the local sense of place and urban amenity of the future urban landscape
- The consideration to investigate walking and cycling connectivity opportunities to integrate with existing and future open space (as indicated by the Precinct Plan)
- The retaining wall (Don Buck / Royal Road intersection) will be reinstated to be designed to contribute to the local sense of place and urban amenity of the future urban landscape.

Furthermore, the ALVE recommends the following opportunities to be considered at the detailed design phase and implemented through the ULDMP (if practicable):

- The planting of any constructed stormwater wetlands with appropriate (low maintenance) native species and the integration of wetlands into the surrounding urban landscape context
- Expand reinstatement planting areas around stream crossings to include a greater extent of wetland and riparian margin

On the basis of the above, the magnitude and nature of landscape character, natural character and visual change within the N-S Project area are considered to accord with that which will occur throughout the adjacent development of the Redhills areas. While the N-S Project will result in some temporary adverse effects to the landscape and visual amenity in the N-S Project area, the landscape mitigation measures proposed through the implementation of an ULDMP can adequately remedy adverse effects arising from the N-S Project.

Anticipated development within Redhills on adjacent land will, over time, substantially change the scale and character of the adjacent landscape and absorb the landscape and visual changes proposed within the N-S Project area. As such, the N-S Project will contribute to an improvement of the landscape values for the future urban context of the area.

7.3.7 Ecological Effects

This section provides an assessment of the actual and potential ecological effects that will result from the construction, operation and maintenance of the RATN (both the N-S Project and the E-W Project). The assessment is informed by the Redhills Arterial Transport Network– Assessment of Ecological Effects (AEcE) contained within Volume 4.

Although regional consents are not being sought at this time, ecological effects arising in respect of activities that require regional consents have been considered to inform design, options assessment and the proposed designation footprint. This includes the identification of any ecological features of value for the purposes of design and alignment decisions. In summary, these regional consenting matters relate to:

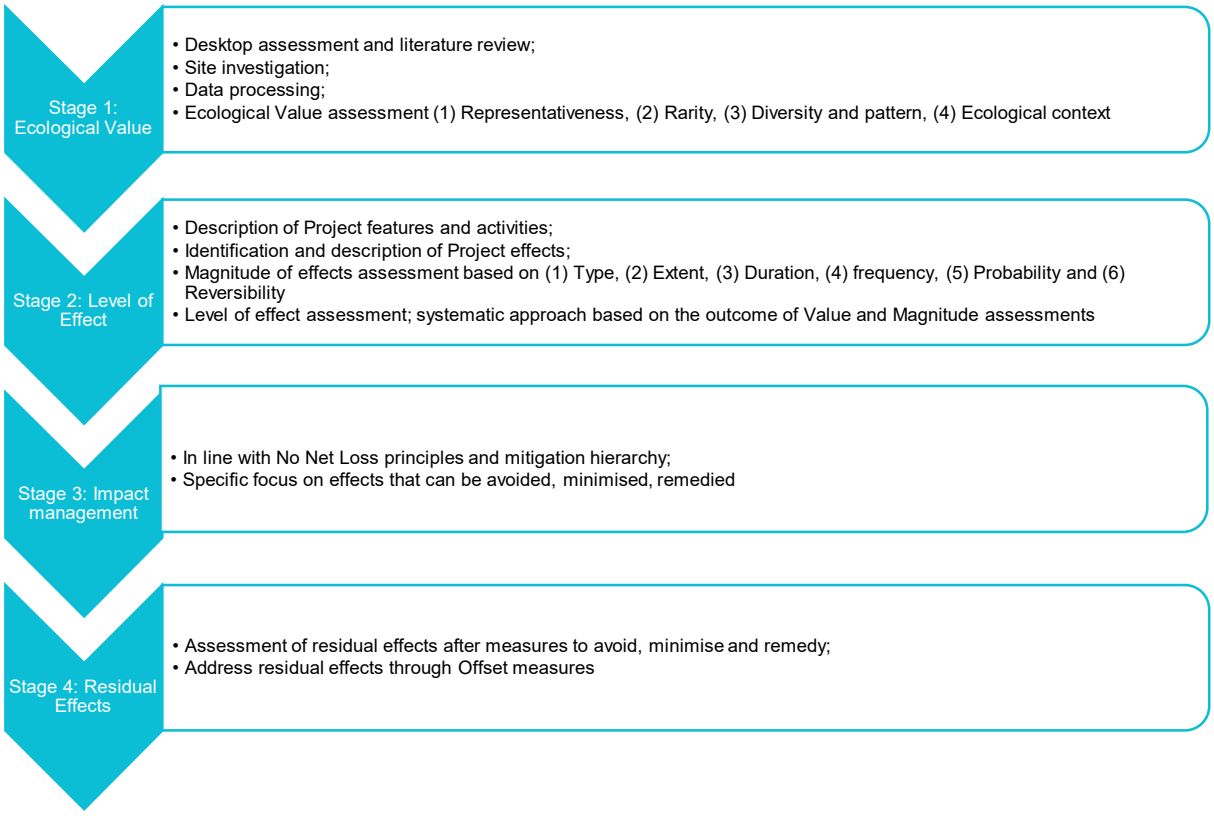
- Effects of vegetation removal on terrestrial habitats;
- Effects of vegetation removal on fauna (bats, birds, lizards) behaviour and their roosts/nests;
- Effects on streams and wetlands; and
- Earthworks effects – weed dispersal and sediment discharge.

The assessment of ecological effects contained in this section is limited to those effects arising from matters that would trigger a district plan requirement.

7.3.7.1 Assessment Methodology

The ecological assessment of effects follows the Ecological Impact Assessment (EcIA) Guidelines (EIANZ, 2018). These guidelines were used to assess the ecological value of identified ecological features (refer to Section 6.1.3 above) and evaluate the magnitude and level of potential effects that the RATN could have on these features, as summarised in Figure 17 below. Note that that for Stage 2 (Level of Effect) and Stage 3 (Impact Management) additional consideration was given to the permitted baseline and the likely future ecological environment under the AUP:OP.

Figure 17: Ecological Impact Assessment Guideline Process



Site visits

The ecological assessment has been informed by site visits to key ecological features (identified from a desktop screening exercise), where features were accessible. Additional bat surveys were carried out which confirmed the presence of bat activity[9] (but low frequency) in the broader landscape.

7.3.7.2 Construction Effects

The potential construction effects (direct and indirect) to the terrestrial habitat and species within and adjacent to the RATN area (as they relate to district matters) have been identified:

- Vegetation removal subject to district controls.
- Disturbance and displacement to roosts/nests and individual (existing) bats, birds and lizards due to construction activities (noise, light, dust etc.). It is assumed that this effect will occur after vegetation clearance (subject to regional consent controls) has been implemented and is therefore likely to happen in habitats adjacent to the project footprint/designation or underneath structures such as bridges[10] .

[9] Bat monitors were placed along streams and vegetated linear features within the RATN area. Monitors were deployed between 1 – 26 November 2019 for 19 suitable nights.

[10] Herpetofauna have been considered but excluded in the assessment of ecological effects as construction effects are considered **Very Low**.

A description of these potential construction effects and a summary of the subsequent level of ecological effects (prior to mitigation) based on the ecological value and magnitude of the effect presented in Table 17.

Table 17: Summary of Ecological Effects During Construction

Effects type		Description	Subsequent level of Effect
Habitat	**Terrestrial**	• A total area of 2246m^2 terrestrial vegetation within in the RATN area will be removed. • Permanent loss of habitat/ecosystem due to vegetation removal, but unlikely probability that fragmentation and edge effects will occur.	**Very Low**
Species	**Bats**	Bats may utilise habitats (EF, TL.3, VS3 (refer Table 4)) associated with the RATN Area for roosting or foraging. Potential disturbance and displacement to roosts and individual bats adjacent to construction activities, including: <u>Light</u> • Night works may be required, and site compounds are likely to be lit. • Lighting at night has the potential to modify the behaviour of bats if foraging within this area or roosting in nearby isolated stands of mature trees. <u>Noise and Vibration</u> • Noise and vibration can be an issue if bats are roosting in the immediate vicinity of the construction works. Bat surveys indicated the RATN area provides suitable foraging and commuting habitat for bats. It can be assumed that bats will utilise roost sites within the RATN area as mature trees with suitable roosting features were identified.	**Moderate**
		Potential effects due to removal of district plan vegetation: • Bats may be impacted by the removal of district plan vegetation through loss of foraging habitat, roost loss[11], or mortality or injury.	**Low**
	Birds	Potential disturbance and displacement to roosts and individual bats adjacent to construction activities, including: • Noise, vibration and lighting disturbance caused by construction activities, which could displace native birds from suitable nesting and foraging habitat within and adjacent to the RATN area. • The Northern New Zealand dotterel was observed at the Universal Homes residential development construction site. It is expected that the road will be constructed once the residential development is already constructed, therefore dotterel are unlikely to be present, and therefore would not be impacted by	Non-Threatened or At-Risk (TAR) Birds **Low** Terrestrial TAR birds (Northern New Zealand dotterel) **Low**

[11] Roost loss has been considered but excluded as an effect as the consequence of roost loss (if it does occur at all) is considered Negligible in the context of this Project.

		disturbance effects during construction. Additionally Northern New Zealand dotterel are increasingly breeding in modified habitats including construction sites (Waka Kotahi, 2012), suggesting that they can become acclimatised to construction disturbance.	
		Potential effects due to removal of district plan vegetation: • Loss of foraging habitat • Mortality or injury to birds	Non-TAR Birds **Very Low**
			Terrestrial TAR birds (North Island kākā) **Very Low**

In accordance with the Environment Institute of Australia and New Zealand (EIANZ) guidelines, impact management measures (i.e., mitigation) are only proposed for those effects that have been assessed as moderate and above, therefore mitigation is only required for the construction effects of the RATN on bats.

To protect bats during the construction of the RATN, an Ecological Management Plan (EMP) will be prepared and implemented. This EMP will be prepared in line with the current best practice and include the following:

- Surveys prior to construction to confirm presence/likely absence. Surveys to confirm bat roost locations if activity is confirmed.
- Confirmation of maternity roosts may require a seasonal restriction on construction activity (no or restricted construction during December to March).
- Siting of compounds and laydown areas to avoid particular habitat.
- Lighting design to reduce light levels and spill from construction areas.
- Restriction of nightworks around particular habitat.
- Bat management should be incorporated with any regional consent conditions that may be required for regional compliance.

Assuming bat presence is confirmed, with the implementation of the EMP detailed above, it is considered that the magnitude of the construction effects from the RATN on bats could be reduced to Very Low.

7.3.7.3 Operational Effects

The potential operational effects from the RATN (as they relate to district matters) have been identified:

- Loss in connectivity to indigenous fauna (e.g., bats, birds, herpetofauna) due to light, noise and vibration effects from the operation of the road, leading to fragmentation of habitat; and
- Disturbance and displacement of indigenous fauna and their nests/roosts (e.g., bats, birds, herpetofauna) due to light, noise and vibration effects from the operation of the road[12].

[12] Herpetofauna have been considered but excluded in the assessment of ecological effects as operational effects are considered **Very Low**.

A description of these potential operational effects and a summary of the potential level of ecological effects (prior to mitigation) based on the ecological value and magnitude of the effect presented in Table 18.

Table 18: Summary of Ecological Operational Effects

Effects type		Description	Subsequent Level of Effect
Species	**Bats**	Disturbance and displacement of new and existing roosts (including maternity roost) and individuals due to noise/vibration and lighting (including disturbance of commuting and foraging bats at night and adverse effects on insect prey populations).	**High**
		Loss in connectivity due to permanent habitat loss, light, and noise effects from the road can lead to fragmentation of terrestrial habitat and influence bat movement in the broader landscape.	**Very High**
	Birds	Noise, vibration, dust and lighting disturbance caused by the presence of the road could potentially displace native birds (existing) from suitable nesting and foraging habitat within and adjacent to the RATN area.	Non-TAR birds **Low**
			Terrestrial TAR birds (Northern New Zealand dotterel) **Low**
			Terrestrial TAR birds (North Island kākā) **Low**
			Wetland TAR birds (North Island fernbird) **Low**
		Loss in connectivity due to permanent habitat loss, light and noise effects from the road, may lead to fragmentation of terrestrial, wetland and riparian habitat due to the presence of the road. The Northern New Zealand dotterel was observed at the Universal Homes residential development construction site. It is expected that the road will be constructed once the residential development is already constructed, therefore Northern New Zealand dotterel are unlikely to be present, and therefore would not be impacted by loss in connectivity.	Non-TAR birds **Low**
			Terrestrial TAR birds (Northern New Zealand dotterel) **Low**
			Terrestrial TAR birds (North Island kākā) **Low**
			Wetland TAR birds (North Island fernbird) **Low**

In accordance with the EIANZ guidelines, impact management measures (i.e., mitigation) are only proposed for those effects moderate and above, therefore mitigation is only required for the operational effects of the RATN on bats.

To address the operational project effects (disturbance and loss in connectivity) on long-tailed bats, an Ecological Management Plan (EMP) for the Project will be prepared and implemented, and will include consideration for:

- Buffer planting (including hop-over/under late-stage/mature planting), retention of existing mature trees between the road alignment and features with potential for bat roost.
- Light and noise management through design. For example, this could include:
    - maintaining stream corridors / hop-over vegetation as dark corridors as far as practicable (while maintaining pedestrian safety).
    - Measures to reduce light spill into adjacent habitat used by bats such as using reflector lenses to direct light onto the road.

Overall, with implementation of the impact management measures detailed above it is considered that the magnitude of the operational effects from the RATN on bats could be reduced to very low.

7.3.7.4 Summary of Ecological Effects

Following the implementation of the identified mitigation measures the residual level of construction effect associated with the construction of the RATN is considered very low. Potential effects are therefore able to be appropriately managed.

Following the implementation of the identified mitigation measures the residual level of operational effect associated with the operations of the RATN is considered very low. Potential effects are therefore able to be appropriately managed.

7.3.8 Natural Hazards

7.3.8.1 Flooding Effects

This section provides an assessment of the actual and potential flooding effects that may result from the construction, operation and maintenance of the RATN (both the N-S Project and the E-W Project). The assessment is informed by the Redhills Arterial Transport Network – Assessment of Flooding Effects (AFE) contained within Volume 4.

Construction effects

There may be some temporary construction phase flooding risk associated with temporary works required for the construction of culverts and stormwater management infrastructure. However, it is expected that construction works can be carried out in a way that will appropriately manage the risk. Flood risk mitigation measures will be captured in the Construction Environmental Management Plan (CEMP) and it is recommended this be included as a condition of the proposed designation. The management and mitigation measures for construction effects are set out in Section 6.1 of the AFE contained within Volume 4.

Operational effects

The RATN is near the top of the Redhills catchment therefore flood flows and stormwater effects will be minimised. There is a minor risk of flooding at locations of bridges, particularly on the main stream reach. Existing overland flow paths can be accommodated although these may be impacted by the future development within the area, with some of the flow reduced by piping.

Potential flooding effects will be appropriately managed and are expected to result in negligible up to minor effects subject to the following recommended design outcomes, which will be secured by a designation condition:

- No increase in flood levels for existing authorised habitable floors that are already subject to flooding
- No more than a 10% reduction in freeboard for existing authorised habitable floors
- No increase of more than 50mm in flood level on land zoned for urban or future urban development where there is no existing habitable dwelling
- No new flood prone areas
- No more than a 10% average increase of flood hazard (defined as flow depth times velocity) for main access to authorised habitable dwellings existing at the time the Outline Plan is submitted.

Further, sensitivity analysis for the potential increased rainfall due to climate change was undertaken. This found there was a slight change to the identified flood effects at key locations under a more severe climate change scenario (3.8° temperature change). However, no additional mitigation is required as it is anticipated these effects can be mitigated utilising appropriate design.

In summary, the RATN is considered to have no more than minor effects in relation to flood hazards in the Redhills area. While further regional resource consents will be required for any proposed stream crossings, the proposed designation footprint has sufficient area to enable these crossings to be designed to avoid any new or exacerbated flooding effects either upstream or downstream of these future crossings.

7.3.8.2 Geotechnical

A desktop geotechnical assessment has been completed for the Redhills area. This was used to identify initial construction related constraints related to:

- Slope stability for excavations and embankment fills;
- Liquefaction potential;
- The presence of springs and high groundwater tables; and
- The settlement potential of soft compressible soils.

As discussed in Section 6.1.2 and shown in Figure 10, the Redhills area is predominantly underlain by residual Waitemata Group soils and Tauranga Group soils.

Whilst the desktop assessment has not indicated any significant geotechnical issues, discrete locations have been highlighted as areas of possible instability. Slope instability has been identified as most likely around steep slopes, slopes on sidling streams and the more significantly incised ephemeral watercourses where stream crossings are proposed.

These do not suggest significant constraints, and the adoption of a conservative approach of unsupported slopes cut at no steeper than 3H:1V will meet target stability factors for safety.

In conclusion, any slope stability geotechnical issues can be addressed within the proposed designation boundary such that effects on adjacent properties and the wider environment will be less than minor.

7.3.9 Property, Land Use and Business Effects

The N-S Project design philosophy has been to avoid and minimise potential adverse effects on private properties and businesses through alignment and project design, where this is practicable. This has included specific consideration of the potential property and business impacts in the assessment of alternatives as discussed in Section 7.2 and detailed in Appendix A0.

Where impacts on property, land use and businesses cannot be avoided, the potential effects are categorised into two broad groups:

- Directly affected properties/landowners; and
- Properties and businesses affected by proximity to the N-S Project.

An assessment of these potential property, land use and business disruption effects is provided in the following sub-sections.

7.3.9.1 Directly Affected Properties

The proposed designation requires land to provide a sufficient footprint to enable the construction and operation of the N-S Project (Designation Drawings are provided in Volume 3). Based on the proposed designation footprint, 75 private properties will be directly affected.

A description of existing land uses of the directly affected properties is provided in Section 6.1. In summary:

- A significant portion of the N-S Project area within Redhills is currently private farmland. The land is primarily used for grazing and contains minimal farming-related structures;
- The land use surrounding the Don Buck Road and Royal Road intersection is predominantly comprised of low-density residential properties; and
- The properties along the western road frontage of Don Buck Road (south of the roundabout) are zoned Business - Local Centre Zone providing for a range of business activities although the current land use is predominantly residential.

The potential pre-construction, construction and post construction effects on directly affected properties is discussed in the following sub-sections.

7.3.9.2 Pre-Construction

The proposed designation has a lapse duration of 15 years to provide a sufficient timeframe which enables construction of the N-S Project in response to the progressive urbanisation of Redhills. While the length of the lapse date reflects the need to provide long term certainty regarding the alignment of the N-S Project.

The proposed designation will not preclude the continued (unchanged) use of any directly affected properties prior to construction. However, in accordance with section 176 of the RMA, written consent would be required from AT for any works that would “prevent or hinder” the N-S Project, including:

- undertaking any use of the land;
- subdividing the land; and
- changing the character, intensity, or scale of the use of the land.

The purpose of the N-S Project is to support urban growth in Redhills. As outlined in Section 5.2, the majority of the N-S Project is located within Redhills, a greenfield area which is likely to experience a

high level of change as the area transitions from rural to urban land use. As outlined in Section 6.3, the N-S Project is likely to be constructed within a transitional environment and will be operated within an urban or rapidly urbanising environment. As such, the N-S Project is unlikely to affect the current land use of Redhills until such a time that the area starts to develop which would be concurrent with the construction of the N-S Project. At this point potential land development issues would be addressed through the construction and operation of the N-S Project (further discussed in Sections 7.3.9.3 and 7.3.9.4).

The areas of the N-S Project along Don Buck Road and Royal Road are expected to have a lesser scale of development change as this area is an existing residential environment - albeit that the area is generally zoned MHU under the AUP:OIP which allows for higher density development than that existing. As discussed, development is not precluded within the designation area, however any development within the designation area will require approval pursuant to section 176 of the RMA. As outlined in Section 10.2.6, AT has actively sought to engage with developers through the N-S Project development process to address development plans and adapt where practicable to enable development in and around the N-S Project corridor. AT will continue this process once the designation is confirmed, using section 176 of the RMA as the mechanism for approval with particular regard to the compatibility and viability of construction, flexibility of the N-S Project design and where possible avoiding effects on reasonable future changes to land use which do not prevent or hinder the N-S Project.

Considering these effects, the pre-construction of the N-S Project will have no more than minor effects on property, land use and business.

7.3.9.3 Construction

During construction the N-S Project will temporarily require land to enable construction activities (detailed in Section 7.1). Within Redhills, the identified land is predominantly pastoral, while along Don Buck Road and Royal Road the land is predominantly residential. Potential effects from temporary land acquisition include temporary loss of grazing pasture, stock-proof fencing, disruption to farm activities, disruption to access, changes to driveway gradient, loss of vegetation and temporarily affected amenity.

It is proposed that the designation will be drawn back to the operational boundary once construction is complete. Effects from temporary land acquisition can be mitigated through site specific arrangements which will be developed with the individual landowners through the Public Works Act processes.

Potential adverse effects from construction activities are addressed throughout Section 7.3 with appropriate mitigation identified to avoid or minimise effects on properties in proximity to the works. Particular mitigation measures for residential property and business disruption during construction include:

- Implementation of a CTMP to manage construction traffic and disruption to the local transport network (Section 7.3.2.1.1), including methods to:
    - Maintain vehicle access to property and/or private roads where practicable, or to provide alternative access arrangements when it will not be; and
    - Communicate traffic management measures to affected parties.
- Implementation of a CNVMP and any Schedules produced to manage construction noise and vibration effects on sensitive receivers (Section 7.3.3.1.3), including methods to:

- Communicate and engage with nearby residents and stakeholders; and
- Minimise construction disruption for affected properties during construction.

- Implementation of a Stakeholder and Communication Management Plan to identify how the public and stakeholders will be communicated with throughout construction, including methods to:
  - Determine adequate notice periods for the commencement of construction activities and works that affect access to properties;
  - Inform parties of the expected timing, duration and staging of works and regular updating of progress; and
  - Provide feedback, inquires and complaints during the construction process.

These measures will appropriately minimise disruption to affected properties and allow the continued use of properties where possible. Potential effects will be temporary and therefore it is considered that they will be less than minor.

7.3.9.4 Post Construction

The N-S Project will permanently require land which is required for the finished N-S Project (permanent transport corridor). The primary effect is loss of productive and residential land which will be mitigated through the Public Works Act process.

Any residual land (land not permanently required) will be reinstated in coordination with landowners through the temporary land acquisition process. The finished form of the corridor and viability of land adjacent to the road corridor will be evaluated based on the principles of the ULDMP. The purpose of this document is to:

> *"Enable integration of the Project's permanent works into the surrounding landscape and urban context; and*
>
> *Ensure that the completed Project mitigates potential adverse landscape and visual effects as far as practicable and contributes to a quality urban environment."*

The ULDMP requires the consideration of the future land use context as this relates to the N-S Project corridor and seeks to ensure a suitable urban outcome for the area. Key considerations include:

- Design to integrate with the adjacent urban (or proposed urban) landscape context, including the surrounding existing or proposed topography, urban environment and landscape character.
- Integration of batters and cut/fill slopes in the landscape, measures may include:
  - Grading cut and fill slopes to integrate with the surrounding landform.
  - Minimising encroachment into water bodies and indigenous vegetation.
  - Planting batters that coincide with wetland and stream courses.

The ULDMP is anticipated to be further developed in coordination with adjacent development where this is practical. In this way the ULDMP will ensure that the N-S Project appropriately integrates with future land uses which are directly adjacent to the corridor and avoids, where possible, the potential to create residual land as a result of the N-S Project. It is therefore considered that the effects of land acquisition will be no more than minor on these landowners.

7.3.9.5 Properties Impacted by Proximity

Aside from the properties which will be directly affected by the designation, there is the potential that other properties outside the designation footprint could be affected by the N-S Project as a result of their proximity to the construction activities.

Potential adverse effects from construction activities are addressed throughout Section 7.3 with appropriate mitigation identified to avoid or minimise effects on properties in proximity to the works. The particular mitigation measures for directly affected properties during construction, which are described in Section 6.4.9.3, are also applicable to properties impacted by proximity.

The potential adverse effects to properties and businesses in proximity to the N-S Project area would be temporary and through the implementation of appropriate construction management, can be avoided or minimised, such that they are no more than minor.

8 Redhills East-West Arterial Transport Corridor (NoR2a, NoR2b and NoR2c)

This section refers to the following projects (outlined in Table 1), collectively referred to and assessed as the 'Redhills East-West Arterial Transport Corridor' (defined above as the E-W Project):

- Redhills East-West Arterial Transport Corridor – Dunlop Road Extension;
- Redhills East-West Arterial Transport Corridor – Baker Lane Extension; and
- Redhills East-West Arterial Transport Corridor – Nixon Road Connection.

This section provides the following for the E-W Project:

- A description of construction works
- Assessment of alternatives; and
- Assessment of effects on the environment.

Refer to Section 3 for a description of the permanent works associated with the E-W Project.

8.1 Construction Works

8.1.1 General approach

As noted in Section 3.1, an indicative construction methodology has been developed based on the level of design undertaken to date and the current land use / land form in which the corridor is located to allow an assessment of likely construction effects.

The key components of this construction methodology for the E-W Project are outlined in the following sub-sections.

8.1.2 Indicative Construction Zones and Programme

As identified at section 7.1.2 of this report, it is anticipated that the works for the entire RATN will be broken down into four separate construction stages. Stages 1, 2 and 3 relate to the E-W Project as follows:

- **Stage 1:** Baker Lane from Fred Taylor Drive to the Dunlop Road intersection
- **Stage 2:** Dunlop Road from Fred Taylor Drive to the E-W Project junction
- **Stage 3:** The E-W Project from Dunlop Road junction to Red Hills Road

Table 19 provides an overview and summary of the typical construction activities associated specifically with the E-W Project.

Table 19: E-W Project Construction Activities Summary

Stage	Construction Activities
Stage 1	• Baker Lane o Site establishment o Vegetation clearing and demolition / modification of existing properties o Install environmental controls, silt fences, and temporary sediment retention ponds o Construct three new culverts o Construct stormwater wetland

	o Bulk earthworks cut and fill to formation level (approximately 4000m^3 of cut and 97,000m^3 of fill) o Install network drainage o Pavement construction o Construct new berm, footpath and cycleway on both sides of the road o Intersection tie-in to Fred Taylor Drive o Line marking o Lighting and road furniture • Fred Taylor Drive o Lane widening west side of road, mainly south of Baker Lane to create turning lane o Diversion of overhead services on west side of road o Earthworks cut and fill (approximately 10,000m^3 of cut and 10,000m^3 of fill) o Remarking of existing road o New intersection to accommodate Dunlop Road and Baker Lane upgrades o Construct new berm, footpath and cycleway on both sides of the road o New road surface and median o Line marking o Lighting and road furniture
Stage 2	• Dunlop Road o Vegetation clearing and demolition / modification of existing properties o Install environmental controls, silt fences, and temporary sediment retention ponds o Earthworks cut and fill (approximately 15,000m^3 of cut and 3,000m^3 of fill) o Install network drainage o Pavement construction o Construct new berm, footpath and cycleway on both sides of the road o New intersection with E-W Project and Baker Lane o Intersection tie-in to Fred Taylor Drive o Line marking o Lighting and road furniture • Fred Taylor Drive o Lane widening west side of road, mainly south of Baker Lane to create turning lane o Diversion of overhead services on west side of road o Earthworks cut and fill o Remarking of existing road o New intersection to accommodate Dunlop Road and Baker Lane upgrades o Construct new berm, footpath and cycleway on both sides of the road o New road surface and median o Line marking o Lighting and road furniture

Stage 3	• E-W Project – Nixon Road Connection o Install environmental controls, silt fences, and temporary sediment retention ponds o Vegetation clearing o Construct culvert(s) and / or bridge structure(s), including piling and retaining structures o Bulk earthworks cut and fill to formation level (approximately 75,500m^3 of cut and 170,000m^3 of fill) o Construct stormwater wetland o Install network drainage o Pavement construction o Construct new berm, footpath and cycleway on both sides of the transport corridor o Line marking o Lighting and road furniture o Construct intersection with N-S Project o Road widening, realignment, and roundabout construction along Nixon Road, Henwood Road, and Nelson Road o Line marking

8.1.3 Construction Laydowns and Work Areas

As the E-W Project will be predominantly constructed though greenfield land that will likely be undergoing urban development at the same time as the E-W Project is constructed, indicative construction laydowns and work area locations have been identified and assessed for the purpose of providing for the works within the proposed designation footprint. These are shown in the indicative design drawings provided in Volume 3.

8.1.4 Construction Activities

8.1.4.1 Site Establishment and Clearance

In preparation for the works, the E-W Project area will need to be cleared of all impediments to construction such as buildings, structures and vegetation.

The existing vegetation within the E-W Project area will require removal to enable the construction and operation of the corridor. This is mostly comprised of localised shelterbelt vegetation scattered throughout the Redhills area.

Regional resource consents will likely be required before construction commences and will include details on measures to manage erosion and sediment arising from construction. All environmental / management controls related to watercourses will be set up prior to the removal of any riparian vegetation.

8.1.4.2 Earthworks

The E-W Project will require bulk earthworks for the construction of the new arterial corridor and the widening of Fred Taylor Drive, and minor earthworks for the Dunlop Road corridor. Regional resource consents for earthworks will be sought at the detailed design stage.

Environmental controls will be installed prior to commencing bulk earthworks and all unsuitable soils will be removed from the site before placing fill material or constructing structures. Regional resource consents for earthworks will be sought at the detailed design stage.

Like the N-S Project, the alignment passes beneath the Transpower transmission lines. All works near Transpower transmission lines will be undertaken in accordance with best practice guidance from Transpower regarding 'working around live cables'.

The AUP:OIP's ADR will be adopted to address any unexpected heritage items during construction, unless an archaeological authority for the E-W Project has been obtained from Heritage New Zealand.

8.1.4.3 Drainage and Stormwater

As discussed in Section 3.4, a number of constructed wetlands are proposed along the E-W Project to provide stormwater treatment and flood attenuation to the catchments along the route. However, the specific stormwater network and infrastructure elements associated with the E-W Project, including the finalised location of the wetlands, will be determined at a later detailed design stage in conjunction with regional resource consents sought.

Construction activities are anticipated to include shallow drain laying, involving excavations with simple batters or trench shields to provide ground support. Where existing road crossings are required, construction will be through excavation in stages with single lane closure traffic management. These works will be constructed upon the completion of the bulk earthworks.

The E-W Project provides sufficient space within the designation footprint to enable these works.

8.1.4.4 Watercourse Crossings

The E-W Project requires several watercourse crossings and associated construction activities within watercourses (Redhills Stream, Waiteputa Stream and Ngongetepara Stream). The form of the stream crossings (i.e., bridges or culverts) and the construction works / structures within the watercourses will be confirmed at detailed design as part of regional resource consents.

The E-W Project provides sufficient space within the designation footprint to enable these works.

8.1.4.5 Pavement and Surfacing

Pavement and surfacing will commence once earthworks, drainage and utilities works are complete. For the existing Fred Taylor Drive and Dunlop Road, this will likely be staged in two halves to maintain traffic flow in the adjacent lane, with the intersections requiring further staging.

Street lighting will be installed once the bulk earthworks and drainage are complete.

8.1.4.6 Construction Reinstatement

E-W Project construction will have temporary impacts to private properties along the E-W Project corridor. This may include temporary changes to property access, private outdoor space (including fences, gardens and vegetation and lawns) and in localised instances impacts to dwellings and other private structures.

Reinstatement is to be addressed on a case-by-case basis through discussion with individual landowners and will follow the provisions under the Public Works Act 1981, which is a process separate from the requirements of the RMA.

8.1.5 Typical Plant and Equipment

A list of typical plant and equipment which may be required has been developed to inform the assessment, (Table 20).

Table 20: Typical Plant and Equipment Summary

Construction Type	Construction Activity
Typical across all works	• Site facility • Light vehicles • Hiab truck
Bulk Earthworks	• 30T excavator • 20T excavator • Compactor / sheepsfoot roller • Water cart • Tippers / ADT's
Drainage	• 20T excavator • Trench shields • Tandem tipper • Loader • Plate compactor
Pavement Construction	• Grader • Smooth drum roller • Tandem tippers • Kerbing machine • Plate compactor • Paver

8.2 Assessment of Alternatives

When considering a NoR by a requiring authority, a territorial authority is required under section 171(1)(b) of the RMA to have particular regard to whether adequate consideration has been given to alternative sites, routes, or methods of undertaking the work if either:

i) The requiring authority does not have an interest in the land sufficient for undertaking the work; or

ii) It is likely the work will have a significant adverse effect on the environment.

In this instance, AT does not currently have an interest in all of the land through which the RATN will be constructed and operated.

The development of alternatives for the RATN was completed through a sequential options development process in the PBC, AC DBC, SG DBC and development of this NoR application and the E-W Project as described in Section 3.3.

Figure 18 provides a summary of the options development process in relation to each of the steps. In summary, once problems, issues and objectives had been established, a list of corridor options were developed to achieve the outcomes. These were refined into a range of alignment options with the preferred options further refined to develop the E-W Project as it is described in Section 3.3.

A comprehensive assessment of alternatives was undertaken and is provided in Appendix A. This includes the key decisions made during the assessment of corridor options, alignment options, design refinement and statutory methods. It also outlines the further review of AC DBC and SG DBC options that was subsequently undertaken due to the introduction of the National Policy Statement for Freshwater Management 2020 (NPS-FM), which affords additional protection to natural wetlands. Please refer to 0 for these assessments.

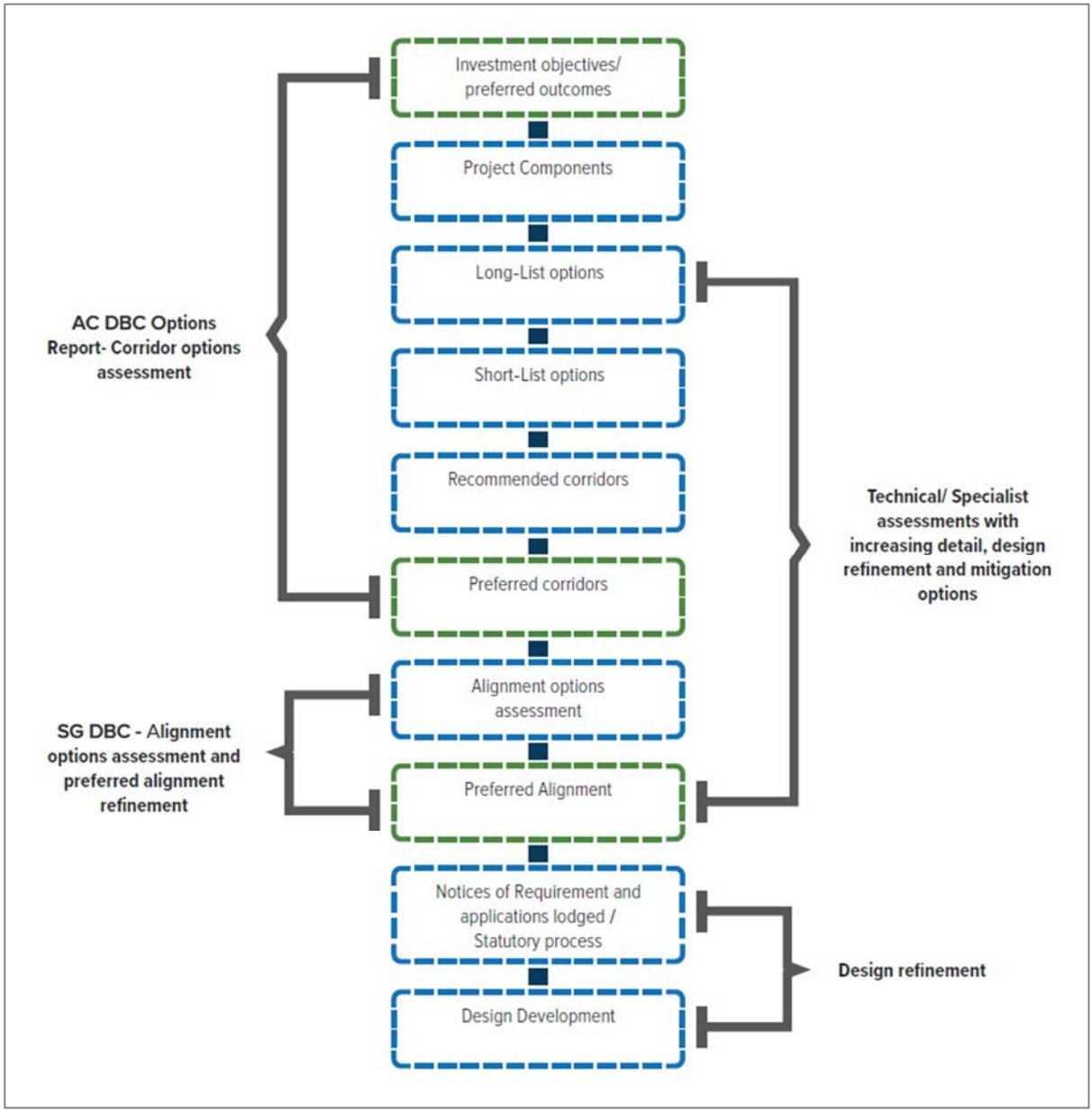


Figure 18: Summary of Options Development Process

A wide range of alternatives have been investigated for addressing the transport needs for the E-W Project area. A key driver for the assessment of alternatives was to avoid adverse effects where practicable. That evaluation confirmed that the East-West arterial transport corridor connecting from the upgraded Red Hills Road / Nixon Road / Nelson Road intersection (roundabout) to the west and connecting to Fred Taylor Drive to the east, including the dual arterial corridors of Baker Lane and Dunlop Road) would provide a balance of strong transport and urban outcomes while minimising potential adverse effects.

A further review of AC DBC and SG DBC options was undertaken in response to introduction of the National Policy Statement for Freshwater Management 2020 (NPS-FM). It concluded that that the strategic connections and relationship to the future local centre largely determine the form of the RATN. Impacts on wetlands could not be entirely avoided given the need for arterial transport corridors to traverse the Redhills area, to enable its development, however, the preferred East-West corridor had been refined to reduce wetland impacts where possible.

The E-W Project supports the development of land in Redhills which is planned for under the AUP: OIP and Redhills Precinct Plan, thereby supporting the objectives and policies of the AUP:OIP. Its indicative location and design represent the most appropriate approach to the changing local environment, providing a high-quality urban corridor for the urbanisation and development of the surrounding area and connecting to the future and existing transport network.

An assessment of the various alternative methods for achieving the E-W Project was undertaken, and it was concluded that a designation is considered the most appropriate mechanism to provide for the Project.

The conclusion reached in the assessment of alternatives has been based on a comprehensive, robust and replicable optioneering process. As such it is concluded that adequate consideration has been given to alternative sites, routes, or methods for undertaking the work, satisfying the requirements of section 171(1)(b) of the RMA.

8.3 Assessment of Effects on the Environment

Section 171 of the RMA requires that when considering a NoR, a territorial authority must consider the effects on the environment of allowing the requirement.

This section provides a summary of the actual and potential effects of the construction, operation and maintenance of the E-W Project, including whether these effects are positive or adverse and the scale, duration and locality of effects.

As set out in Section 8.2, the consideration of adverse effects has been a key driver for the assessment of alternatives, identification of the proposed designation corridor and the subsequent refinement of the corridor. Where effects cannot be avoided, measures to remedy or mitigate significant adverse effects have been proposed. Details of these are included in Section 9 and reflected in the proposed designation conditions.

Positive effects are summarised in Section 8.3.1, and adverse effects on the environment are described in Sections 8.3.2 to 7.4.9.

8.3.1 Positive Effects

The Project Objectives (Section 4.1) have been developed to address the key problems and issues identified in Section 2.2. In achieving these objectives, the E-W Project will deliver a range of positive effects for the Redhills area.

Significant growth is anticipated and provided for under the AUP:OIP in Redhills. A range of infrastructure, including transport infrastructure, is required to support the growth figures sought under the Auckland Plan. The E-W Project supports the ongoing urbanisation of the area, by providing an internal arterial transport network that provides connections to the existing strategic transport network through new and upgraded intersections. The E-W Project provides pedestrian, cycle and public

transport facilities along all transport corridors. This enables greater choice of mode and provides improved safety outcomes for transport users on existing corridors and safe transport corridors for transport users on new roads. Public transport will be provided through bus priority measures along Dunlop Road to provide a connection between the future Redhills local centre to Fred Taylor Drive, which then enables a connection to the Westgate Metropolitan Centre and future Public Transit Hub.

Overall, the E-W Project will provide significant benefits to the local community and wider Auckland Region, supporting the Council's growth strategy. In providing urban transport corridors which respond to the growth demand in the area, the E-W Project will improve transport network functions and contribute to a high-quality urban environment for local residents, businesses and road users.

8.3.1.1 Walking and Cycling

There are currently limited footpaths and limited and / or no cycle facilities on the existing Fred Taylor Drive and Dunlop Road, with no walking and cycling facilities within the Redhills interior. The proposed walking and cycling facilities for the E-W Project (including Dunlop Road and Baker Lane) and the section of Fred Taylor Drive within the E-W Project extents have been designed to provide separated and protected walking and cycling facilities on both sides of the corridors. All intersections within the E-W Project have been provided with pedestrian / cycle crossing facilities. This will provide a significant improvement to the existing walking and cycling network and is a positive effect of the E-W Project.

Additionally, the dedicated walking and cycling facilities will provide enhanced alternatives for travel, further contributing to effective network performance.

Overall, the E-W Project will create an improved and safer walking and cycling network that encourages and promotes alternative modes of transport. The proposed walking and cycling improvements will integrate with existing networks and the likely future environment.

8.3.1.2 Public Transport Network

As described in Section 3.3.6, the E-W Project will enable public transport services to operate within the Redhills area. The existing Dunlop Road corridor will provide a connection between the proposed Redhills local centre and Fred Taylor Drive for frequent public transport services, which enables a further connection with the Westgate Metropolitan Centre. Dedicated bus priority measures including providing for 'bus only' through movements in the left-turn lanes at the intersection of the upgraded Dunlop Road and Fred Taylor Drive will enhance bus travel time and reliability. Furthermore, the proposed intersection improvements will also enable efficient public transport as bus services will be less restricted due to the bus advance lanes.

These upgrades on the Dunlop Road corridor will allow buses using the route to avoid intersection queuing, avoid potential delays at intersections and improve travel time reliability.

Overall, the E-W Project will provide for the future public transport network in Redhills and provide a quicker and more reliable public transport network within the surrounding transport corridors.

8.3.1.3 Road Safety

The design of the E-W Project has been undertaken to reflect AT's commitments to Vision Zero, which aims for no deaths or serious injuries on Auckland's transport system by 2050. The E-W Project supports this approach by:

- Providing for safe walking and cycling facilities on all corridors.
- Safe intersection design based on AT standards and provision of crossing facilities for vulnerable users.

Overall, the E-W Project is well aligned with the principles of AT's Vision Zero. It will provide new, and improve existing, transport corridors to provide high levels of road safety in the E-W Project area. Detailed design investigations will be completed at a later stage to further support safety outcomes.

8.3.2 Transportation Effects

This section provides an assessment of the actual and potential transportation effects that result from the construction, operation and maintenance of the E-W Project. The assessment is informed by the ATE contained within Volume 4.

8.3.2.1 Construction Traffic Effects

The assessment of expected construction traffic has been developed based on the indicative construction methodology (outlined in Section 8.1). It is anticipated that the larger part of works required for this package of projects will likely be delivered offline. However, this will be confirmed at detailed design stage, and regardless there is still likely to be some works in the live carriageway, which means that temporary traffic management will be required.

The scale of temporary traffic management to delineate live traffic away from the construction zones is largely dependent on the various stages and requirements of the construction activities. It is expected that short term temporary road closure for nights or weekends may be required for some specific activities, such as road surfacing, traffic switches and gas relocation. Other activities may require stop/go or contraflow traffic management, such as drainage, utility relocation, survey and investigation work.

The construction of the E-W Project will require significant earthworks. Final cut and fill volumes will be confirmed following detailed design prior to construction. The construction traffic movements to accommodate the earthworks will likely result in the increase of traffic volume on construction routes used during the construction period of the Project.

Given the construction timing and staging of the package has yet to be determined, there is a degree of uncertainty associated with any predicted construction methodology and associated traffic routes. This means:

- The routes that will be used by construction vehicles will depend on the location of quarries and disposal sites which are not yet certain
- The exact location and extent of compound sites/lay down areas has yet to be determined
- The timing of construction of other projects could impact on likely construction vehicle routes

Notwithstanding this, it is considered that with available connectivity to the strategic network and available capacity in the network, construction traffic will be able to be readily accommodated.

Overall, the ATE does not identify any significant adverse impacts on the wider transport network as a result of construction traffic; however it does identify the potential for localised effects to traffic movement and property access. Measures to mitigate these effects will be secured through a designation condition requiring preparation and implementation of a CTMP, such that the adverse effects are no more than minor. These measures are summarised below.

8.3.2.1.1 Construction Traffic Management

As discussed above, the potential adverse effects of construction traffic will be managed through a CTMP. The purpose of the CTMP is to ensure the construction of each Project is managed in such a way that enables safe and efficient movement of local traffic throughout the construction period and to minimise disruption to road users, particularly the adjacent residential properties and local activities.

Localised transport effects will be managed through appropriate construction management protocols, including:

- Measures to provide for the safety of all road users is maintained throughout construction; for instance, temporary speed limits.
- Identification of detour routes and other methods to provide for the safe management and maintenance of traffic flows, including pedestrians and cyclists, on existing roads;
- Methods to provide ongoing vehicle and pedestrian access to private and adjacent properties; and
- Methods for communicating and timing construction activities to minimise the effects of temporary traffic and access restrictions.

8.3.2.2 Operational Transport Effects

The assessment of operational effects provided in the ATE was completed using a mix of quantitative transport modelling and qualitative assessment measures relating to the following transport functions:

- Walking and cycling
- Public transport
- Road user safety
- Property access
- General traffic

The positive transport effects as a result of the E-W Project have been described previously in Section 8.3.1. The following sub-sections provide a summary of the adverse operational effects with respect to each of these transport functions.

8.3.2.2.1 Walking and Cycling

The proposed walking and cycling facilities are described in Section 3.3. There are no adverse operational effects anticipated on walking and cycling, as the effects are expected to be positive (as described in Section 8.3.1).

Some of the proposed footpath widths in the E-W Project area do not meet the minimum recommended width of facilities within the Redhills Precinct Plan. However, they are consistent with AT TDM standards and therefore will provide adequately for capacity and safety of users in the future urban environment. All proposed berm widths significantly exceed the 0.6m buffer requirement of the AT TDM, which is considered more than sufficient to provide for walking and cycling facilities.

8.3.2.2.2 Access

Driveways

As the proposed E-W Project (including Dunlop Road and Baker Lane) and Fred Taylor Drive are currently or expected to be classified as 'arterial' corridors, new direct property access will be limited by the AUP:OIP.

In terms of existing properties, the overarching design philosophy for the Project has been to maintain driveway access where practicable and minimise impacting land other than where necessary.

The ATE has determined that driveways (compliant with the AUP:OP) can be maintained to all properties along the E-W corridor.

8.3.2.2.3 General Traffic

Table 21 provides a summary of the expected traffic volumes for the arterial corridors within the E-W Project area.

A two-lane corridor can efficiently accommodate vehicles volumes as shown below and therefore the proposed corridor design is expected to meet forecasted needs, with the additional lane provision at intersections to accommodate greater bus priority.

Table 21: Predicted Annual Average Daily Traffic Volumes for 2048 Scenario

Count Location	2048 predicted AADT
Dunlop Road	8,300
Baker Lane	14,400
E-W Project between Baker Lane and N-S Project	16,800
E-W Project between N-S Project and Nixon Road	11,400

The ATE has assessed the performance of the proposed intersections within the E-W Project, with all the intersections predicted to perform at satisfactory levels during the peak periods under a 2048 scenario. Vehicles travelling along Fred Taylor Drive were considered to experience increased travel delays due to the introduction of two intersections. This delay is not considered to be significant within an urbanising context, and in light of increased outcomes for pedestrians and cyclists this is considered to be an acceptable effect.

8.3.2.2.4 Surrounding Network Connections

The collector road network as identified in the Redhills Precinct Plan (see Section 6.3.4 for further detail) has not been specifically provided for within the E-W Project corridors. Given there is a degree of uncertainty about the timing and form of adjacent subdivision and development, the E-W Project includes a flush median along the lengths of the E-W Project, which provides additional width to accommodate potential intersections for collector connections when these are confirmed. The median will also facilitate the opportunity for future pedestrian / cycle crossing points along the E-W Project, as the urbanisation occurs on both sides of the corridor.

The location of these collector intersections will also need to be integrated with the bus stop locations and pedestrian crossing facilities. The E-W Project does not preclude these facilities being provided at a later stage of design.

Overall, while the future collector and local transport network is yet to be determined, the E-W Project design provides sufficient flexibility to enable these connections to be formed as the surrounding land is developed. As such, the E-W Project will have no adverse effects on the future network connectivity.

8.3.2.3 Summary of Transport Effects

Considering both the positive transport effects in Section 8.3.1 and the actual and potential transport effects described above, overall, the E-W Project will provide an improved transport environment which includes:

- Improved walking and cycling facilities with increased safety which provides for the urbanisation of the local walking and cycle catchment, and improves the connectivity for all travel modes between Redhills and Westgate.
- Improved public transport efficiency and reliability through the provision of bus priority and sufficient space to accommodate the development of future public transport network.
- A high quality of road safety through transport design and improvements in road safety to existing transport corridors in the E-W Project area.
- Improved network performance through upgraded intersection design and traffic signalling.

To provide these benefits, the construction of the E-W Project will require some temporary and localised disruption to traffic movements and property access. These construction effects can be appropriately managed through the implementation of a CTMP.

Additionally, a small number of properties will require changes to their existing vehicle access. A detailed access assessment will be completed by a suitably qualified traffic engineer and / or transport planner as part of the Outline Plan of Works to identify appropriate means to mitigate these effects.

Overall, the E-W Project will have positive effects for the local and wider transport network. Any adverse effects will be temporary and localised, such that they will be no more than minor.

8.3.3 Noise and Vibration Effects

This section identifies and assesses the actual and potential effects of noise and vibration associated with the construction, operation and maintenance of the E-W Project. The assessment is informed by the ACNV and the ATNV contained within Volume 4.

8.3.3.1 Construction Noise and Vibration Effects

The indicative construction methodology (Section 8.1) has been assessed for construction noise and vibration against the relevant standards. The proposed designation boundary has been assumed as the construction boundary, and noise predictions were based on reasonable worst-case assumptions which included:

- The majority of noisy works will be carried out between 7am-6pm on weekdays with probable night-time and weekend works for the pavement and surfacing stage when required.

- Equipment and construction activity sound power levels for dominant noise sources for the E-W Project were identified.
- Minimum set back distances from receivers were calculated to comply with day-time noise criterion of 70 dB L_{Aeq} without mitigation.

The vibration effects associated with construction of the E-W Project have been assessed in relation to potential building damage. The effect of vibration on amenity has not been assessed and has only been discussed to the extent that it is relevant to mitigation.

Indicative vibration emission radii distances have been predicted for the most vibratory equipment. Actual vibration levels are highly dependent on local conditions and the selection of machinery, which is currently unknown. To account for inaccuracies, the likely worst-case vibration has been calculated based on the equipment and hard ground geology to provide offset distances.

The predicted results were then assessed against the relevant criteria to determine if there would be any potential construction noise and vibration exceedances for any of the existing receivers along the E-W Project.

8.3.3.1.1 Construction Noise Effects

The ACNV identified that the closest properties outside the designation boundary and adjacent to the E-W Project area are predicted to experience worst-case noise levels up to 90 dB LAeq with mitigation, which does not comply with the AUP:OIP day-time noise criterion. This has the potential to result in noise disturbance effects (e.g. loss of concentration, annoyance, a reduction in speech intelligibility and reduced productivity) without appropriate mitigation.

Operation of construction equipment will be intermittent in nature. Construction will be linear so as the equipment moves away from the receiver noise levels will reduce. The worst-case situations, where mitigated noise levels could reach 90 dB LAeq at the closest receivers, are not expected to be frequent, due to the setback distances to the majority of the proposed works and the use of equipment with lower source noise levels for large portions of the works. Mitigated noise levels are expected to comply with the 70 dB LAeq daytime noise criterion for most of the construction works.

The ACNV sets out a hierarchy of mitigation measures which will be adopted through a Construction Noise and Vibration Management Plan (CNVMP) and any Schedules produced for the works (refer to section 8.3.3.1.3 for details). The preparation and implementation of CNVMP and Schedules will be secured through a designation condition.

The ACNV concludes that by following this hierarchy the BPO for mitigation will be implemented, whilst avoiding undue disruption to the community.

Overall, construction noise will be temporary and construction noise levels can be significantly reduced through the implementation of the hierarchy of mitigation measures. Accordingly, by providing appropriate mitigation and construction management the potential construction noise effects will be no more than minor.

8.3.3.1.2 Construction Vibration Effects

The ACNV identifies that in worst case circumstances (without mitigation) two residential dwellings adjacent to the E-W Project area may experience vibration levels of 5 mm/s or above, exceeding the criteria for residential properties. 5mm/s is the threshold above which cosmetic building damage may occur, such as cracking.

The vibration amenity criteria (vibration levels of 0.3mm/s for night time and 2 mm/s during the day) could be exceeded in existing or future buildings if they are occupied during the works and within 21m of the roller compactor (high vibratory equipment) or within the emission radii identified for the other vibration generating equipment (refer to Volume 4 for details).

In addition to cosmetic damage, the potential adverse effects associated with excessive vibration may range from annoyance to loss of amenity or inability to carry out work. These vibration effects will reduce with distance from the source and the level of vibration transmission into a building will depend on a number of factors, such as the foundation type and building construction. Vibration can typically be tolerated inside buildings if it occurs intermittently during the day, is of limited duration and where there is effective prior engagement.

The ACNV sets out a hierarchy of mitigation measures which will be adopted through a Construction Noise and Vibration Management Plan (CNVMP) and any Schedules produced for the works (refer to section 8.3.3.1.3 for details). The preparation and implementation of CNVMP and Schedules will be secured through a designation condition.

Additionally, to manage the potential for cosmetic damage to buildings, a building condition survey will be offered to be carried out before and after construction works at properties where predictions indicate the relevant building damage criteria may be exceeded, to determine if any damage has been caused. Any damage confirmed to be caused by the E-W Project will then be repaired.

Overall, construction vibration will be temporary and through the implementation of the hierarchy of mitigation measures, the risk of significant adverse effects associated with excessive construction vibration levels can be avoided. Accordingly, by providing appropriate mitigation and construction management the potential construction noise effects will be no more than minor.

8.3.3.1.3 Construction Noise and Vibration Management Plan

A CNVMP is proposed as the most effective way to control noise and vibration impacts. The objective of the CNVMP is to provide a framework for the development and implementation of the Best Practicable Option for the management of construction noise and vibration effects. The CNVMP will include a comprehensive suite of measures, which are set out in detail in the ACNV in Volume 4 and the proposed designation conditions in 0.

Where noise and/or vibration limits are predicted to be exceeded for a more sustained period or by a large margin, a Site Specific or Activity Specific Construction Noise and Vibration Management Schedules (“Schedule”) will be produced. Any Schedule will include details such as:

- Construction activity location, start and finish dates;
- The nearest neighbours to the construction activity;
- The predicted noise and/or vibration level for all receivers where the levels are predicted or measured to exceed the applicable standards and predicted duration of the exceedance;
- The proposed mitigation options that have been selected, and the options that have been discounted as being impracticable and the reasons why;
- The consultation undertaken with owners and occupiers of sites subject to the Schedule, and how consultation has and has not been taken into account; and
- Location, times and types of monitoring;

Where measured or predicted vibration from construction exceeds Category A, then there is also a requirement to undertake building condition surveys.

Night works may potentially be required during pavement construction stages. Where there is no practicable alternative, night works can be managed through increasing the frequency of communication with stakeholders, carrying out regular monitoring to ensure criteria are being met and, as a last resort, offering alternative accommodation.

As set above, where necessary pre-condition surveys by a suitably qualified engineer will be offered to be undertaken at all buildings where the E-W Project building damage criteria is identified as likely be exceeded. A post-construction condition survey of the same buildings will be conducted when construction is completed, and any damage shown to have been caused by the Project construction rectified by the AT.

8.3.3.2 Operational Noise and Vibration Effects

This section identifies and assesses the actual and potential effects of traffic noise and vibration associated with the E-W Project.

The Assessment of Traffic Noise and Vibration Effects report for Redhills, in Volume 4, contains predictions of road traffic noise carried out using the method recommended in NZS 6806: Acoustics – Road traffic noise – New and altered roads (NZS 6806) in accordance with the AUP:OP.

The assessment of effects undertaken in the report is two-fold: in accordance with NZS 6806 and in relation to the predicted noise level changes comparing the future traffic noise levels with and without the extended and / or upgraded transport corridors. The summary below should be read in conjunction with this report.

8.3.3.2.1 Assessment Methodology

As required by NZS 6806, the assessment methodology included the prediction of existing and future traffic noise levels, both without (Existing and Do Nothing scenarios) and with the proposed transport corridors (Do Minimum scenario). The scenarios are explained below:

- The Existing scenario represents the current road network with current traffic volumes, i.e. the existing environment as it is experienced now
- The Do Nothing scenario represents the current road network with future traffic volumes, assuming a full build out of the area
- The Do Minimum scenario represents the proposed future road network, incorporating the proposed or upgraded transport corridors and other planned transport projects in the area. This scenario assumes a full build out of the area, and the transport infrastructure to enable the development. This is a realistic scenario at a point in time when all proposed designations are operational. In this instance the Do Minimum scenario includes use of AC-14 or equivalent low noise road surface.

Noise effects of road traffic on existing noise sensitive locations, referred to as Protected Premises and Facilities (PPFs) within NZS 6806, have been assessed. PPFs within a 100m radius of the urban transport corridors have been included.

Where transport corridors are considered ‘Altered Roads’, these have been assessed by comparing the predicted noise levels in the design year without the projects (Do Nothing) with the predicted noise levels in the design year with the projects (Do Minimum).

Transport corridors considered to be ‘New Roads’ have been assessed by comparing the predicted existing noise levels with the Do Minimum predictions.

8.3.3.2.2 Potential Traffic Noise and Vibration Effects

Adverse noise effects as a result of high levels of traffic noise may include sleep disturbance, loss of concentration, annoyance, a reduction in speech intelligibility and reduced productivity. The effects are not restricted to PPFs but also future residential and other noise-sensitive developments. The effects on future residential and other noise-sensitive developments are not included in the NZS 6806 definition of PPF. Where new noise sensitive developments are established in the vicinity of a road, their design should take account of the potential noise effects and care should be taken to avoid or minimise the effects.

The magnitude of effects will largely depend on noise levels received in noise-sensitive spaces within buildings, although there are also potential annoyance effects associated with a loss of amenity when high noise levels are received in outdoor living or recreation spaces.

Traffic from new or upgraded roading projects is not generally expected to create any vibration issues. The smooth and even surface typical of new urban roads would likely generate no more than negligible traffic vibration impacts. Therefore, traffic vibration has not been assessed for the transport corridors.

8.3.3.2.3 Assessment of Traffic Noise Effects

Following the implementation of recommended mitigation measures outlined in Section 8.3.3.2.4, noise levels associated with the new E-W arterial and associated alterations to existing roads are predicted to decrease or remain unchanged at the vast majority of PPFs, resulting in positive noise effects. This is due to the intended redistribution of traffic across the wider network and subsequent reduction in traffic volumes.

Of the PPFs that are not predicted to receive a reduction or experience no change in noise levels, the predicted increase is assessed as negligible (between 0 dB and 2 dB) for all PFFs.

All predictions are based on traffic flow along ‘New Roads’ and ‘Altered Roads’ at the design year (2048). These traffic volumes are predicated based on the anticipated urbanisation of the area and implementation of surrounding infrastructure projects. Development of the surrounding areas will likely increase activity and associated noise levels. Therefore, any changes predicted for the traffic noise effects related to these projects are not likely to represent such a significant change at the time of construction due to the change in environment.

The results of the noise assessment will be confirmed at detailed design stage including confirmation of the road traffic noise at current PPFs. The review, confirmation and refinement of the BPO shall aim to achieve the same noise criteria categories as determined with the current BPO.

Nevertheless, the predictions show that all PPFs across the E-W Project area will receive levels within the lowest design noise levels. Therefore, resulting noise levels will be reasonable in a residential context all PPFs assessed, and no further noise mitigation is deemed necessary at this stage.

8.3.3.2.4 Recommended measures to avoid, remedy or mitigate potential adverse effects

There are broadly three mitigation options that can be applied to manage road traffic noise. These are outlined in Section 7.3.3.2.4 above.

Application of AC-14 or equivalent low noise road surface has been recommended for the new E-W arterial road and will be retained along Fred Taylor Drive. No additional mitigation measures are required.

8.3.3.2.5 Summary of Traffic Noise and Vibration Effects

Predicted traffic noise levels during operation of the E-W Project are generally expected to reduce or increase negligibly with recommended mitigation implemented when compared to the Do Nothing scenario for 'Altered Roads'.

8.3.4 Archaeology and Heritage Effects

As discussed at Section 7.3.4 of this report, an assessment of the actual and potential effects on archaeology and heritage that will result from the construction, operation and maintenance of the RATN has been undertaken. The assessment is informed by the AHHE contained within Volume 4.

To mitigate the very limited potential for unidentified archaeological remains to be exposed during construction, the conditions include an advice note referring to the AUP:OIP Accidental Discovery Rule (ADR) (E12.6.1).

Overall, the RATN is unlikely to have effects on any known archaeological or other historic heritage values and the very limited risk that unidentified archaeological remains are exposed will be managed through the ADR.

8.3.5 Cultural Effects

Refer to Section 7.3.5 of this report for discussion in respect to the potential cultural effects associated with the construction, operation and maintenance of the RATN, including the E-W Project.

8.3.6 Landscape and Visual Effects

This section provides an assessment of the actual and potential landscape and visual effects that will result from the construction, operation and maintenance of the E-W Project. This assessment is informed by the ALVE contained within (Volume 4).

8.3.6.1 Construction Landscape and Visual Effects

As outlined in Section 5.2, construction of the E-W Project is likely to take place in the existing (mostly rural) environment or while this landscape is transitioning into an urban environment. Within this context, the following changes need to be considered with regard to potential construction related landscape and visual effects:

- Physical changes to the landscape during construction as a result of construction activities, such as earthworks and fill slopes, vegetation removal, and site clearance; and
- Temporary changes to visual amenity as a result of construction activities, such as construction laydown areas and machinery.

These changes to the landscape environment have the potential to result in temporary adverse landscape and visual effects during construction, particularly when viewed from properties that are immediately adjacent to the E-W Project. However, through the implementation of appropriate mitigation and design considerations, the potential adverse effects can be minimised, and the level of

effect will diminish over time following completion of the E-W Project. These mitigation and design considerations include:

- Cut and fill slopes are proposed be shaped to a natural profile to integrate into the surrounding natural landform.
- Vegetation removal is proposed to retain noteworthy and high value trees and vegetation identified within the E-W Project area where possible.
- Existing fences and garden plantings (removed through the E-W Project works) are proposed to be reinstated (in consultation with the landowner).
- Reinstatement of the E-W Project area following the completion of construction, including the removal of any leftover fill from site compound areas, the reshaping of ground to integrate with the surrounding landform and the reinstatement of site compound areas with grass and landscaping.
- Remnant land that is maintained in the road corridor (where existing dwellings are removed) will be grassed to mitigate adverse visual amenity effects potentially arising from residual land.

Overall, there may be minor adverse effects on visual amenity during construction. However, these effects will be temporary and largely confined to the period of construction. These temporary effects are typical for the construction of new transport corridors and upgraded intersections, and when considered within the context of a landscape which is likely to be changing at the time of the construction of the E-W Project, are further mitigated.

8.3.6.2 Operational Landscape and Visual Effects

As outlined in Section 5.2, operation of the E-W Project is likely to take place in an urban landscape. By the time the E-W Project is operational it can reasonably be assumed that further sections of the Redhills Precinct will have urbanised alongside (if not as part) of the implementation of the NoRs. As such, operational related landscape and visual effects need to be considered within this context.

The E-W Project will result in longer-term changes to the landscape context of the E-W Project area, which have the potential to result in adverse effects to the landscape character, natural character and visual amenity of the area. These changes include:

- Potential effects on natural character through clearance and/or disturbance of vegetation (although limited) associated with stream crossings within the margins of Waiteputa Stream, Red Hill Stream and Ngongetepara Stream, heightening the impression of further human modification.
- Potential for moderate to large-scale fill slopes (in some locations) that are not able to be actively integrated back into the adjacent urban development parcel (i.e. remain within the road reserve) to be viewed as left-over spaces, and adversely impact the amenity of the road corridor and adjacent urban neighbourhood.

These localised, permanent effects from the E-W Project area can be managed through the preparation of an ULDMP which will include the following matters:

- All cut and fill slopes will be shaped to a natural profile to integrate into the surrounding natural landform. Where there are large-scale fill slopes (that are retained within the road reserve) it is recommended these are reinstated with grass, where practicable, if they are not able to be integrated with adjacent land use through site specific landscape design.

- Retaining walls will be designed to integrate with private boundary fencing and where practicable incorporate existing and reinstatement planting.
- The consideration of any proposed bridge design (if applicable) to be designed to contribute to the local sense of place and urban amenity of the future urban landscape
- The consideration to investigate walking and cycling connectivity opportunities to integrate with existing and future open space (as indicated by the Precinct Plan)
- A Planting Plan will be prepared for the E-W Project, including:
    - New street tree planting along the entire length of the E-W Project corridors to mitigate the loss of individual or small groupings of existing native trees and shrubs (where practicable and not in conflict with the Transpower transmission lines) ;
    - Treatment of fill slopes to integrate them with adjacent land use; and
    - An ecological analysis to determine appropriate street tree species selection.

Furthermore, the ALVE recommends the following opportunities to be considered at the detailed design phase and implemented through the ULDMP (if practicable):

- The planting of any constructed stormwater wetlands with appropriate (low maintenance) native species and the integration of wetlands into the surrounding urban landscape context
- Expand reinstatement planting areas around stream crossings to include a greater extent of wetland and riparian margin

On the basis of the above, the magnitude and nature of landscape character, natural character and visual change within the E-W Project area are considered to accord with that which will occur throughout the adjacent development of the Redhills areas. While the E-W Project will result in some temporary adverse effects to the landscape and visual amenity in the E-W Project area, the landscape mitigation measures proposed through the implementation of an ULDMP can adequately remedy adverse effects arising from the E-W Project.

Anticipated development within Redhills on adjacent land will, over time, substantially change the scale and character of the adjacent landscape and absorb the landscape and visual changes proposed within the E-W Project area. As such, the E-W Project will contribute to an improvement of the landscape values for the future urban context of the area.

8.3.7 Ecological Effects

Refer to Section 7.3.7 of this report for an assessment of the actual and potential ecological effects that will result from the construction, operation and maintenance of the RATN, including the E-W Project.

8.3.8 Natural Hazards

8.3.8.1 Flooding Effects

Refer to Section 7.3.8.1 of this report for an assessment of the actual and potential flooding effects that may result from the construction, operation and maintenance of the RATN, including the E-W Project.

8.3.8.2 Geotechnical

A desktop geotechnical assessment has been completed for the Redhills area. This was used to identify initial construction related constraints related to:

- Slope stability for excavations and embankment fills;
- Liquefaction potential;
- The presence of springs and high groundwater tables; and
- The settlement potential of soft compressible soils.

As discussed in Section 6.1.2 and shown in Figure 10 below, the Redhills area is predominantly underlain by residual Waitemata Group soils and Tauranga Group soils.

Whilst the desktop assessment has not indicated any significant geotechnical issues, discrete locations have been highlighted as areas of possible instability. Slope instability has been identified as most likely around steep slopes, slopes on sidling streams and the more significantly incised ephemeral watercourses where stream crossings are proposed.

These do not suggest significant constraints, and the adoption of a conservative approach of unsupported slopes cut at no steeper than 3H:1V will meet target stability factors for safety.

In conclusion, any slope stability geotechnical issues can be addressed within the proposed designation boundary such that effects on adjacent properties and the wider environment will be less than minor.

8.3.9 Property, Land Use and Business Effects

The E-W Project design philosophy has been to avoid and minimise potential adverse effects on private properties and businesses through alignment and project design, where this is practicable. This has included specific consideration of the potential property and business impacts in the assessment of alternatives as discussed in Section 8.2 and detailed in Appendix A0.

Where impacts on property, land use and businesses cannot be avoided, the potential effects are categorised into two broad groups:

- Directly affected properties/landowners; and
- Properties and businesses affected by proximity to the E-W Project.

An assessment of these potential property, land use and business disruption effects is provided in the following sub-sections.

8.3.9.0 Directly Affected Properties

The proposed designations (NoR2a, NoR2b and NoR2c) require land to provide a sufficient footprint to enable the construction and operation of the E-W Project (Designation Drawings are provided in Volume 3). Based on the proposed designation footprints, 38 private properties will be directly affected.

A description of existing land uses of the directly affected properties is provided in Section 6.1. In summary:

- A significant portion of the E-W Project area within Redhills is currently private farmland. The land is primarily used for grazing and contains minimal farming-related structures;

- The land surrounding the existing Red Hills Road, Nixon Road and Nelson Road intersection is predominantly comprised of rural lifestyle properties;
- The eastern area of the Redhills bordering Fred Taylor Drive is currently undergoing urban development.

The potential pre-construction, construction and post construction effects on directly affected properties is discussed in the following sub-sections.

8.3.9.1 Pre-Construction

The proposed designations have a lapse duration of 15 years to provide a sufficient timeframe to enable construction of the E-W Project in response to the progressive urbanisation of Redhills. While the length of the lapse date reflects the need to provide long term certainty regarding the alignment of the E-W Project.

The proposed designation will not preclude the continued (unchanged) use of any directly affected properties prior to construction. However, in accordance with section 176 of the RMA, written consent would be required from AT for any works that would "prevent or hinder" the E-W Project, including:

- Undertaking any use of the land;
- Subdividing the land; and
- Changing the character, intensity, or scale of the use of the land.

The purpose of the E-W Project is to support urban growth in Redhills. As outlined in Section 6.3, the majority of the E-W Project is located within Redhills, a greenfield area which is likely to experience a high level of change as the area transitions from rural to urban land use. The E-W Project is likely to be constructed within a transitional environment and will be operated within an urban or rapidly urbanising environment. As such, the E-W Project is unlikely to affect the current land use of Redhills until such a time that the area starts to develop which would be concurrent with the construction of the E-W Project. At this point potential land development issues would be addressed through the construction and operation of the E-W Project (further discussed in Sections 8.3.9.2 and 8.3.9.3).

As discussed, development is not precluded within the designation areas, however any development within the designation areas will require approval pursuant to section 176 of the RMA. As outlined in Section 10.2.6, AT has actively sought to engage with developers through the E-W Project development process to address development plans and adapt where practicable to enable development in and around the E-W Project corridor. AT will continue this process once the designations are confirmed, using section 176 of the RMA as the mechanism for approval with particular regard to the compatibility and viability of construction, flexibility of the E-W Project design and where possible avoiding effects on reasonable future changes to land use which do not prevent or hinder the E-W Project.

Considering these effects, the pre-construction of the E-W Project will have no more than minor effects on property, land use and business.

8.3.9.2 Construction

During construction the E-W Project will temporarily require land to enable construction activities (detailed in Section 8.1). Within Redhills, the identified land is predominantly pastoral, with a small number of rural residential properties adjacent to the existing Red Hills Road, Nixon Road and Nelson Road intersection. Potential effects from temporary land requirement include temporary loss of

grazing pasture, stock-proof fencing, disruption to farm activities, disruption to access, changes to driveway gradient, loss of vegetation and temporarily affected amenity.

It is proposed that the designations will be drawn back to the operational boundary once construction is complete. Effects from temporary land acquisition can be mitigated through site specific arrangements which will be developed with the individual landowners through the Public Works Act processes.

Potential adverse effects from construction activities are addressed throughout Section 8.3 with appropriate mitigation identified to avoid or minimise effects on properties in proximity to the works. Particular mitigation measures for residential property and business disruption during construction include:

- Implementation of a CTMP to manage construction traffic and disruption to the local transport network (Section 8.3.2.1.1), including methods to:
    - Maintain vehicle access to property and/or private roads where practicable, or to provide alternative access arrangements when it will not be; and
    - Communicate traffic management measures to affected parties.
- Implementation of a CNVMP and any Schedules produced to manage construction noise and vibration effects on sensitive receivers (Section 8.3.3.1.3), including methods to:
    - Communicate and engage with nearby residents and stakeholders; and
    - Minimise construction disruption for affected properties during construction.
- Implementation of a Stakeholder and Communication Management Plan to identify how the public and stakeholders will be communicated with throughout construction, including methods to:
    - Determine adequate notice periods for the commencement of construction activities and works that affect access to properties;
    - Inform parties of the expected timing, duration and staging of works and regular updating of progress; and
    - Provide feedback, inquires and complaints during the construction process.

These measures will appropriately minimise disruption to affected properties and allow the continued use of properties where possible. Potential effects will be temporary and therefore it is considered that they will be less than minor.

8.3.9.3 Post Construction

The E-W Project will permanently require land which is required for the finished E-W Project (permanent transport corridor). The primary effect is loss of productive and residential land which will be mitigated through the Public Works Act process.

Any residual land (land not permanently required) will be reinstated in coordination with landowners through the temporary land acquisition process. The finished form of the corridor and viability of land adjacent to the road corridor will be evaluated based on the principles of the ULDMP. The purpose of this document is to:

> *"Enable integration of the Project's permanent works into the surrounding landscape and urban context; and*

Ensure that the completed Project mitigates potential adverse landscape and visual effects as far as practicable and contributes to a quality urban environment."

The ULDMP requires the consideration of the future land use context as this relates to the E-W Project corridor and seeks to ensure a suitable urban outcome for the area. Key considerations include:

- Design to integrate with the adjacent urban (or proposed urban) landscape context, including the surrounding existing or proposed topography, urban environment and landscape character.
- Integration of batters and cut/fill slopes in the landscape, measures may include:
    - Grading cut and fill slopes to integrate with the surrounding landform.
    - Minimising encroachment into water bodies and indigenous vegetation.
    - Planting batters that coincide with wetland and stream courses.

The ULDMP is anticipated to be further developed in coordination with adjacent development where this is practical. In this way the ULDMP will ensure that the E-W Project appropriately integrates with future land uses which are directly adjacent to the corridor and avoids, where possible, the potential to create residual land as a result of the E-W Project. It is therefore considered that the effects of land requirement will be no more than minor on these landowners.

8.3.9.4 Properties Impacted by Proximity

Aside from the properties which will be directly affected by the designation, there is the potential that other properties outside the designation footprint could be affected by the E-W Project as a result of their proximity to the construction activities.

Potential adverse effects from construction activities are addressed throughout Section 8.3 with appropriate mitigation identified to avoid or minimise effects on properties in proximity to the works. The particular mitigation measures for directly affected properties during construction, which are described in Section 8.3.9.0, are also applicable to properties impacted by proximity.

The potential adverse effects to properties and businesses in proximity to the E-W Project area would be temporary and through the implementation of appropriate construction management, can be avoided or minimised, such that they are no more than minor.

9 Proposed Measures to Manage Adverse Effects

The concept design for the RATN (as reflected in this AEE and supporting drawings and assessments) has sought to avoid or mitigate adverse effects through the route selection process and the concept design of the RATN elements. Where it has not been practicable to avoid adverse effects, through route selection or design, measures are proposed to remedy or mitigate any residual adverse effects.

This will be achieved through the development and implementation of a suite of measures covering detailed design, construction and operation management plans and monitoring. These measures are included in the proposed designation conditions as relevant, for each NoR (refer Appendix C) and are summarised in Table 22 below.

Table 22: Summary of measures to avoid, remedy or mitigate potential adverse effects

AEE Section /Topic	Measure	Condition #
Transportation	Construction Traffic Management Plan	16
Traffic Noise and Vibration	Traffic noise mitigation measures as set out in designation conditions	24 - 38
Construction Noise and Vibration	Construction Noise and Vibration Management Plan Schedule to a Construction Noise and Vibration Management	17 - 20
Archaeology and Heritage	Accidental Discovery Rule under the AUP:OIP	n/a
Cultural	Mana whenua partnership Cultural Advisory Report Urban Landscape and Design Management Plan Stakeholder and Communications and Engagement Management Plan Cultural Monitoring Plan Ecological Management Plan Accidental Discovery Rule under the AUP:OIP	 8 9 13 15 22
Landscape and Visual	Urban Landscape and Design Management Plan Tree Management Plan	9 23
Ecology	Pre-construction Ecological Survey Ecological Management Plan	21 22
Natural Hazards	Construction Environmental Management Plan Flood risk outcomes as set out in designation conditions	12 10
Property, Land Use and Business	Stakeholder and Communications and Engagement Management Plan Complaints register Construction Noise and Vibration Management Plan Construction Traffic Management Plan	13 14 17-20 16

Urban Design Evaluation	Urban Landscape and Design Management Plan	9

10 Engagement

This section provides a summary of engagement that has been undertaken to date and which is ongoing for the RATN. It summarises the approach during each phase, focusing on key themes and common issues raised across the RATN and the North West Network more generally.

Prior to detailed design and construction, further engagement will be undertaken by the requiring authority, as needed to manage impacts of the RATN. This is set out in detail in the AEE and the proposed conditions.

10.1 Overview of Engagement

Engagement with partners, stakeholders, potentially affected parties and the wider community has been ongoing. Table 23 provides a brief summary of the key RATN development stages and engagement undertaken.

Table 23: Project Stage Engagement Summary

Project Stage	Timing	Description
Programme Business Case (PBC) – Auckland wide	2015 - 2016	**Engagement undertaken:** • Workshops, meetings and events with Manawhenua, Local Boards, communities and a wide range of stakeholders, to understand the issues, opportunities and community aspirations in each growth area (Auckland-wide). • Manawhenua were engaged to: o Seek feedback on the draft preferred transport networks; o To develop a set of Manawhenua values that could be considered and further developed at the next stage of the RATN; and o To provide cultural, historical and social knowledge and information that will help to inform the RATN. • Two stages of consultation undertaken ('long-list' options phase and preferred Programme stage) – both stages involved a series of public based community open day events, feedback sessions, online forms and a business owner / operator survey. **Outcome:** • A process-led refinement of the long list into preferred options leading to the completion and publication of the Preferred Transport Network Plans in 2016. • These high-level maps showed a range of indicative transport connections required to support the growth in each growth area of Auckland.
Indicative Business Case (IBC) – North West area wide	2018/19	**Engagement undertaken:** • Engagement sought to build on the PBC and receive feedback and input from partners, stakeholders and the general public on the short-listed options being considered for the four Supporting Growth business case areas, including the North West. • Engagement was undertaken via information days, workshops and meetings to develop an IBC for the entire North West growth area.

		Outcome: • The RATN options were subsequently modified and refined as the process progressed. • As a result, the Indicative Strategic Transport Networks were identified in Redhills and Whenuapai to support growth. These Indicative Network maps were published in mid-2019.
Detailed Business Case (DBC) – North West HIF	2019	**Engagement undertaken:** • Engagement with stakeholders, developers, and landowners was undertaken to prepare a NW HIF DBC and understand the issues and opportunities of the Indicative Strategic Transport Networks developed during the IBC phase. • Focus was on meetings with landowners and developers affected by the RATN and informing the wider community on the Indicative Strategic Transport Network. **Outcome:** • Designs were subsequently modified and refined. • As part of this, the Indicative Strategic Transport Network was further developed in this phase to create preferred routes for the RATN.
Notices of Requirement – North West HIF	2019/20 and 2022	**Engagement undertaken:** • Engagement with stakeholders, developers, and landowners has been undertaken to prepare NoRs for the new and upgraded arterials in Redhills and Whenuapai to support growth (including this RATN). This has included briefings and presentations to local boards and elected representatives, Community Drop-in sessions held at Te Manawa in Westgate, letters and plans sent to identified affected landowners, and emails, phone calls and meetings with landowners. • Engagement was undertaken during 2019 and 2020 when the NoRs were first prepared. Due to funding constraints, the RATN was not lodged with Council until 2022. Further engagement was undertaken during 2022 prior to lodgement. The purpose of engagement in 2022 was to refresh the project purpose with Local Boards as well as key stakeholders, with the focus being directed to landowner engagement. **Outcome:** • The preferred routes were further refined as part of this phase to create indicative alignments for the RATN.

10.2 Engagement with Partners, Stakeholders and Landowners / Developers

The Programme partners and stakeholders have continued to be involved throughout the various RATN development stages. This has included engagement with key stakeholder groups and developers on a Programme-wide basis to gain an understanding of proposed work programmes, land holdings, projects, timing, integration opportunities and to establish enduring relationships. Where possible, engagement with landowners has been undertaken on a one-to-one basis to understand how they use their land (including any further development plans to the property) and how they would be affected by the RATN.

As illustrated in Figure 19 below, the feedback from these stakeholder groups, including landowners and developers, has been used to build knowledge, to understand risk, and to refine the design of the RATN where practicable and appropriate.

Figure 19: Engagement feedback loop

10.2.1 Waka Kotahi

Waka Kotahi are investors and partners to the Programme and engagement has been undertaken with Waka Kotahi through the development of the RATN. Engagement with Waka Kotahi has been facilitated via the Owner Interface Managers within the Programme, and through regular forums leading up to business case milestones and attendance at business case workshops. Other projects and business cases are also being progressed within the North West area to provide for predicted growth and safety improvements. The Programme has sought to integrate across these other projects and has been involved in updates and workshops, with information shared between the projects to align key messaging.

10.2.2 Auckland Council

There is close alignment between the Programme and the Council which supports the Programme's desired outcome of integration of land use and transport. Programme wide, a regular Integration

Forum between the Programme and the Council has been facilitated to enable these commitments, and to actively identify and manage risks and opportunities that are inherent to the Programme.

Engagement with the Council regarding the RATN has been closely aligned with the structure planning and zoning process that has already been completed, resulting in the Redhills Precinct Plan (and its associated indicative transport network).

Additional engagement undertaken with the Council through the North West business case stages included attendance at business case workshops, stakeholder workshops, Council attendance at North West Public Information Days and various meetings with the Council Resource Consents and Policy Planning and Parks team.

10.2.3 Manawhenua

Manawhenua are recognised as Treaty Partners by AT and Waka Kotahi, and as such the Programme recognises their responsibilities and commitments in regard to engagement with Manawhenua.

Across the Programme, Manawhenua have been involved in the development of the indicative strategic transport networks.

The Programme recognises the Crown Settlement Area of Interest & Statutory Acknowledgement instruments in place for Te Kawerau ā Maki and Ngāti Whātua o Kaipara. Both iwi were actively involved throughout the business case process.

Ngāti Whātua o Orākei, Te Runanga o Ngāti Whātua, Ngāti Te Ata Waiohua, and Te Ākitai Waiohua have noted their interest in the area with the Council and council-controlled organisations and were involved in the development of the RATN since November 2017.

Te Tupu Ngātahi maintains a Manawhenua Forum (for operational and kaitiaki level interaction that focuses on project-wide delivery and consistency), with specific discussion on the RATN. This has involved presenting to manawhenua on a regular basis, seeking input on the corridor development and potential effects on cultural values. This has informed the corridor alignments and the mitigation measures proposed. Iwi invited to the Northern Te Tupu Ngātahi hui includes Ngai Tai Ki Tamaki; Ngati Maru; Ngati Whanaunga; Ngati Whātua o Kaipara; Te Ākitai Waiohua; Ngati Paoa Trust Board; Te Kawerau a Maki; Ngati Tamatera, Te Runanga o Ngati Whatua and Ngati Manuhiri.

Further opportunities for governance level relationships are provided via the Tamaki Transport Table and the existing connections with governance through the owner participants (AT and Waka Kotahi).

Manawhenua contributed to the development of criteria and values to be integrated into the MCA framework.

Ngāti Whātua o Kaipara and Te Kawerau ā Maki have both prepared CIAs for the Project. These are summarised in Section 7.3.5 of this AEE.

The Programme involved Manawhenua as partners in decision-making and considered their views when identifying priorities for investment options. This included seeking feedback on the draft preferred transport networks, developing a set of Manawhenua values to be considered and further developed, and attending the option evaluation and recommendation making processes.

Throughout the process, key Manawhenua issues and opportunities were identified, as summarised in Table 24.

Table 24: North West Specific Manawhenua Issues and Opportunities

Key issues	Opportunities
• Impacts on riparian planting • Property development impacting stream health • Protection / consideration of growing areas and history	• Restoration of streams and waterways • Mitigation planting and art work • Improvement of forest and native vegetation areas through the Crown Settlement Area of Interest & Statutory Acknowledgement of Te Kawerau ā Maki & Ngāti Whātua o Kaipara

The Programme has also held various hui with Manawhenua to feed into the development of the RATN, with these Hui both informing and enabling Manawhenua to influence the preferred network options.

Manawhenua also participated in the site walkover in November 2019 with the wider RATN Project Team and Council specialists.

10.2.4 Engagement with Stakeholders

Engagement with stakeholders has been undertaken primarily at a Programme-wide level, through a series of Stakeholder Reference Group presentations and one-to-one meetings. Engagement methods and communication techniques have been tailored to each stakeholder, largely with the purpose to discuss issues / opportunities in relation to the RATN. Table 25 provides an overview of the key stakeholders and the purpose of engagement with each.

Table 25: Key stakeholders for the RATN

Key Stakeholders	Purpose of Engagement
Auckland Council Councillors	• Discuss issues / opportunities in relation to the RATN
Auckland Council Local Boards	• Discuss issues / opportunities in relation to the RATN
Watercare	• Discuss issues / opportunities in relation to the RATN • To align Watercare planned infrastructure in both Whenuapai and Redhills
The Ministry of Education	• Discuss issues / opportunities in relation to the RATN • Discuss new potential school locations
Vector	• Discuss issues / opportunities in relation to the RATN • Vector have infrastructure across all urban areas.
Transpower	• Discuss issues / opportunities in relation to the RATN • To discuss their plans for undergrounding / master planning within the Redhills area, National Grid requirements, implications of moving the National Grid, and Transpower's projects identified in its Auckland Strategy • Transpower is a network utility provider for land that has been identified in the AUP:OIP as subject to a National Grid Corridor Overlay through the RATN area

Engagement with these stakeholders was largely through one-on-one meetings or email updates to explain both the study areas and our plans for further refining the network, and to explore opportunities to work together to minimise impacts and enable positive outcomes.

Local Boards were provided with project update presentations and memorandums in July and August 2022, and briefings were held with elected representatives.

The Programme met with Transpower multiple times due to the close proximity of sections of the RATN to the two Transpower high voltage overhead power pylons that run north-west to south-east through the centre of Redhills. Key matters discussed involved:

- The relationship between the new arterial corridors and land uses in close proximity to the pylons;
- Advised on AUP:OIP provisions and corridor and National Standards;
- Concerned about approvals and any pylon (asset) impacts through project work.

Furthermore, a Utility Infrastructure Alignment forum lead by Watercare is held regularly and provides an opportunity for integration between infrastructure and utilities projects in the North West. The North West Infrastructure Forum includes representation from:

- Watercare
- Vector
- Chorus
- AT
- Waka Kotahi

The Programme delivered numerous presentations to introduce the Programme as a whole, discuss public feedback periods and the timeline of the Programme. It was also an opportunity to receive updates from infrastructure providers on plans for the North West.

10.2.5 Engagement with Landowners

During the DBC and NoR phases of the RATN, one-to-one meetings were arranged with potentially and directly affected landowners within the RATN area to discuss impacts and opportunities. Initial engagement took the form of informing landowners that they are located within the investigation area, via a letter. Landowners were then met with individually, including both residential (owner-occupied and tenanted) and business owners, at various stages of the RATN development to gain an understanding of local knowledge of the area, how they use their land, to talk through the indicative strategic transport networks and to understand any arising constraints, issues and opportunities.

The alignment design was further developed and refined during early 2020 which resulted in minor to significant changes to property impacts and designation boundaries. In June 2020 those landowners were contacted by letter where there had been a change in impact or a new impact. A plan was attached to the letter showing their property and the new road alignment and face to face meetings were offered. These included 11 landowners in the RATN area that had not been engaged with yet.

The purpose of the engagement was to:

- Engage with newly impacted landowners that hadn't been met with yet.
- Re-engage with landowners and communicate the post-design changes and impact to their property
- Understand from those landowners whose properties are now fully designated their sentiments and appetite for undertaking topographical driveway surveys to see if there is a suitable access solution.

When the RATN recommenced in 2022, further landowner engagement was undertaken, commencing with letters and project overview maps being sent to all property owners identified as potentially affected by the proposed designation. Once the proposed designation boundaries were confirmed, a plan of each property was produced and a further letter and copy of the plan were sent to each property owner. This encouraged landowners to get in touch with Te Tupu Ngātahi should they have any further questions or require a meeting. 20 phone calls and emails were received in relation to the RATN.

Meetings with landowners were held at local community venues or online via Microsoft Teams. These meetings were attended by two members of the Project Team and, in some cases, a property specialist from AT. These meetings allowed landowners to ask questions and understand the route protection process and timing. To date, 15 meetings have taken place with landowners in relation to the RATN.In summary, four key periods of landowner engagement were undertaken (focusing on both the Trig Road Project and the RATN):

- For the 2019 North West DBC landowner engagement period, the Programme sent letters to 112 landowners. A total of 75[13] landowner meetings were undertaken over a five-week period.
- For the 2019 North West NoR landowner engagement period, the Programme sent letters to 112 landowners. A total of 55[14] landowner meetings were undertaken over a five-week period.
- For the 2020 North West NoR landowner engagement period the Programme sent letters to 83 landowners where there was a change in impact to their property. Approximately 59[15] landowner meetings were undertaken over a four-week period. This included 24 landowners newly impacted by the further design work that was undertaken.
- For the 2022 North West NoR landowner engagement period, 15 landowner meetings were undertaken for the RATN.

The predominant themes of feedback received across the four engagement periods for the RATN were:

- **Site Boundary**: Concerns with loss of land and acquisition, queries if boundaries would stay the same, and concerns with the repercussions of the road coming closer to their house.
- **Access:** Questioning how this is impacted, and how it will be restored.
- **Property Acquisition:** Most landowners mentioned this, questioning what the process is, how compensation is determined, and whether it would be full or partial acquisition. During the 2020 engagement period an AT Property Specialist attended most of the landowner meetings to provide information on the property acquisition process including compensation and timeframes.
- **Property – Loss of Value:** Loss of property value was a main theme raised during the 2020 engagement period.

[13] 75 being the number of landowners who responded to requests from the North West DBC team for a landowner meeting

[14] 55 being the number of landowners who responded to requests from the North West NoR team for a landowner meeting

[15] 49 being the number of landowners who responded to requests from the North West NoR team for a landowner meeting

- **Re-development Potential:** Landowners concerned with the loss of land and the impacts this has on their ability to subdivide or develop land.
- **Alignment Concerns:** Landowners generally expressed interest in wanting more detail on alignments – there was an ongoing trend that the lack of detail is frustrating and causes a lack of certainty, in response to this more detail was provided during the 2020 engagement period.
- **Timing:** Landowners enquired about timeframes for NoR lodgment and the construction period. Landowners raised during the 2022 engagement period that they were surprised the RATN was still occurring as they had thought it had been cancelled rather than put on hold. As a result, generally, landowners expressed that due to the delay and uncertainty around the timing of the RATN they wanted to move forward with property acquisition.

In summary, the Project Team has undertaken ongoing engagement with affected landowners throughout the development of the RATN. This has both informed affected landowners of the RATN and potential impacts, and identified the key themes of concerns to landowners, with further information provided and surveys undertaken (where appropriate) to close out concerns. As such, the landowner engagement provided and detailed in this section is considered sufficient.

10.2.6 Engagement with Developers

To facilitate effective developer engagement across the Programme, a Land Development Co-ordination Team was initiated that included appropriate representatives from within the Programme (including AT, and Council personnel) that meets and coordinates discussions with developers.

The Programme has undertaken a direct approach to engagement with developers, predominantly through one-to-one meetings. The purpose of these meetings was to ensure the Project Team had a greater understanding of their land holdings and to establish relationships for ongoing engagement and discuss how their land is potentially impacted by the proposed alignments. Additionally, engagement has also been undertaken with developers with interests in the RATN area, in addition to those with property impacted by the other North West projects being progressed by the Programme.

During the 2022 engagement period, developers, commercial landowners and local businesses were contacted and draft designation plans were shared with these stakeholders via online and in person meetings.

The predominant themes from engagement with developers can be summarised as follows:

- Developers with development plans that are ready to develop need to align timing and sequencing with the Programme.
- Developers interested in developing are seeking a better understanding of transport networks in relation to their land.
- Existing developments may be impacted by transport networks and upgrades.
- Developers in the general vicinity are interested in the way the areas may develop and how transport networks may influence growth.
- Developers are interested in projects in the wider business case areas and other growth-related infrastructure that is to be implemented by others.
- Questions surrounding funding of transport networks and cost of development.
- Expectations for greater level of detail at the NoR stage, with specific requests such as the engineering approach, access changes, timing of works, acquisition processes and opportunities for design compromise to reflect developer plans.

Developers have generally been supportive of the Programme, recognising the need to improve transport infrastructure to enable the release of developable land in the areas. The delivery timing of transport infrastructure is of significant interest for developers, in order to establish certainty for their own development plans.

10.3 Community Engagement

Engagement with the community for the RATN has been undertaken as part of the wider engagement for the North West.

This engagement was largely through Public Information Days and survey questions, and included written responses, online and hardcopy surveys, and webpage views. Furthermore, to reflect the future 'communities', engagement with youth (high school students) and young professionals was undertaken across three workshops.

The North West Project Team also attended a community drop-in session in October 2022 at Te Manawa Library in Westgate. This was organised by the Waka Kotahi State Highway 16 Brigham Creek to Waimauku Safety Improvements project which has crossover with the North West projects. Approximately 40 people visited the Te Tupu Ngātahi stand to talk to the team and pick up information handouts. Attendees included both landowners affected by the RATN and local community leaders.

The Te Tupu Ngātahi website was also updated to provide information about the RATN, including an updated project overview map and information sheets about how the proposed designation may be used in the future.

The summary of this community feedback relevant to the RATN is presented in Table 26 below.

Table 26: Summary of Key Public Feedback Themes relating to Redhills

Key Theme	Feedback Summary
Area Specific Feedback	
Redhills	• Mixed response between options for the north-south connection • Desire for existing arterial roads to be upgraded, especially regarding safety, walking and cycling networks and congestion • Fred Taylor Drive, Don Buck Road and Metcalfe Road were identified to be of highest priority to the public • Consideration of topography in design • Public transport is poorly integrated
General Transport	
Walking and Cycling	• Lack of safe cyclists and pedestrian facilities and crossings, and strong support for increased facilities (including separation between vehicles and cyclists • Support for increased facilities between residential areas and town centres, increased linkages to regional cycle network • Need for cycle facilities at transport centres
Safety	• Key concern for all transport mode users • Rural roads not fit for urban growth • Existing road corridors too narrow • High engagement regarding speed limit review, with it commonly perceived too high

Public Transport	• Currently poor or non-existent service and desire for immediate improvement • Desire for provision of Park and Rides and local feeder buses to support public transport (largely regarding ferries) • Consistent themes of improving connections, level of service (frequency, speed, increased destinations) and connectivity; and integrating modes of transport
Local Bus Network	• Greater accessibility to bus services, including suggestions for more bus stops, Park and Rides and shuttle buses to major transport stations – specific areas that require bus stops / stations provided and destinations provided • Concerns with the current low frequency of bus services • Suggestions for bus lanes and express services
Rail (light and heavy)	• Some thought light rail would be better and quicker than buses, providing more options for transport

10.4 Ongoing Consultation

Te Tupu Ngātahi continues to meet and engage with potentially impacted landowners as required. The Te Tupu Ngātahi website will continue to be updated with the key steps in the NoR process (i.e. public notification, hearing dates, decisions and appeals) and the Programme will continue to engage with submitters post lodgement during the hearings process.

11 Resource Management Amendment Act 2020

To date, the overlap between the RMA regime and climate change has been limited as sections 104E and 70A of the RMA have constrained the ability of local authorities to account for climate change considerations in exercising their roles and functions. However, the amendment to the RMA that came into effect on 30 November 2022 is intended to better align the RMA with the CCRA. The Resource Management Amendment Act 2020 repeals the restrictions under the RMA in relation to climate change with the following consequences:

- The repeal of section 104E means that effects on climate change of a discharge to air of greenhouse gases can in future be considered in the context of an application for a discharge permit or coastal permit to do something that would otherwise contravene section 15 or section 15B.
- The repeal of section 70A means that when making a rule to control the discharge into air of greenhouse gases a regional council may now have regard to the effects of such a discharge on climate change.
- An amendment to section 74(2)(c) means that when preparing or changing a district plan, a territorial authority must now have regard to any ERP or national adaptation plan made in accordance with the CCRA.

The above RMA amendments do not directly affect the RATN NORs as no resource consent is sought or required for the discharge of contaminants to air. The control of discharges of contaminants into air remains a regional council function in accordance with s 30(1)(f) of the RMA. As such, the effects associated with a discharge to air will remain a regional plan matter. The proposed implementation timeframe for the RATN (15 years) means that only designations are proposed at this stage and the designations will not authorise regional plan consenting requirements. Resource consents will be required in the future to authorise activities controlled under the regional plan matters of the AUP:OP or the relevant planning document that applies at the time of implementation.

12 Statutory Assessment

The following assessment is provided in accordance with the relevant sections under the RMA applicable to the RATN (NoR1, NoR2a, NoR2b, NoR2c).

12.1 Section 171 Recommendation by a Territorial Authority

Section 171(1) of the RMA sets out the matters which are to be taken into consideration by the Council when considering a NoR.

These matters have been addressed throughout the AEE and associated technical assessments. In summary:

- Section 171 (1)(a): Relevant provisions of policy statements and plans have been addressed in Section 12 (this section) and in Appendix B. In summary, this analysis concludes that it is considered that the proposed works are consistent with the following:
    - The AUP:OIP;
    - The AUP:OIP Regional Policy Statement (**RPS**);
    - National Policy Statements (**NPS**) including the NPS:FM, the NPS:UD and the NPS:ET.
- Section 171 (1)(b)(i): Adequate consideration of alternative sites, routes and methods has been addressed in Section 7.2 for the N-S Project (NoR1), Section 8.2 for the E-W Project (NoR2a, NoR2b and NoR2c), and in 0.
- Section 171 (1)(b)(ii): Effects on the environment and Part 2 are addressed in Sections 7.3 for the N-S Project (NoR1), Section 8.3 for the E-W Project (NoR2a, NoR2b and NoR2c) and Section 12 (this section).
- Section 171 (1)(c): The works and proposed designations are reasonably necessary to achieve the Project Objectives for the proposed designations because:
    - The proposed works will assist in the efficient operation of the local transport network.
    - The proposed works identify and protect an urban arterial transport network in Redhills and key connections to the existing transport network. No transport network currently exists in Redhills, and these arterial corridors will provide access to and support the planned urban growth in Redhills.
    - Sufficient space and facilities will be provided to ensure that the proposed transport corridors are safe for all transport users, including vehicles, public transport, walking and cycling.
    - The proposed works contribute to mode shift by providing a choice of transport options through the provision of separated and protected walking and cycling facilities, including signalised pedestrian / cycle crossing facilities, and public transport measures to improve bus travel time and reliability.
    - The proposed designations will allow AT and / or its authorised agents to undertake the works for the construction, operation and maintenance of the RATN comprising transport corridors and associated ancillary components / activities.
    - The proposed designations will enable works to be undertaken in a comprehensive and integrated manner.

- The proposed designations will add protection to the route from future incompatible development which may preclude or put at risk the construction and / or operation and maintenance of the corridor.
- The proposed designations will be included in the AUP:OIP providing certainty to the public as to the intended use of the land and nature of the activity authorised.

- Other matters that inform the territorial authority's consideration are addressed in Section 12.1.1 below.

In summary, the RATN is consistent with the relevant provisions of the NPS's, gives effect to the RPS and is generally consistent with the relevant objectives and policies of the AUP:OIP. Adequate consideration has been given to alternative sites, routes and methods and the RATN will avoid, remedy or mitigate any adverse effects on the environment. Lastly, the proposed works and proposed designations are reasonably necessary for achieving the objectives of AT for the RATN. Given the above factors, it is considered that the Council can recommend confirmation of the requirement by AT.

12.1.1 Section 171(1)(d) Other Matters

Section 171(1)(d) requires the territorial authority to have particular regard to:

> *'Any other matter the territorial authority considers reasonably necessary in order to make a recommendation on the requirement'*

It is considered that there are no other matters under s171(1)(d) that are reasonably necessary to make a recommendation on the NORs.

12.2 Other Policy Considerations

Other legislation and policy that has informed development and will inform the implementation of the Project is set out in Table 27, Table 28 and Table 29.

Table 27: Assessment against potential other matters - National

National
Government Policy Statement on land transport (GPS) for 2021/22 – 2030/31
The Government Policy Statement on Land Transport 2021 continues the strategic direction of GPS 2018, but provides stronger guidance on what Government is seeking from land transport investments. The GPS outlines the Government's strategy to guide land transport investment over the next 10 years, influencing decisions on how money from the National Land Transport Fund will be invested across activity classes, such as state highways and public transport. The overall strategic priorities for GPS 2021, the national objectives for land transport and the themes and the results the Government wishes to achieve through the allocation of the Fund are summarised as follows: • Safety – a safe system, free of death and serious injury • Access – a system that provides increased access to economic and social opportunities • Climate change – a low carbon transport system that supports emissions reductions, while improving safety and inclusive access • Improving freight connections – improving freight connections for economic development. The RATN provides a safe and reliable transport network that supports growth, enables sustainable travel choice, provides for high levels of road safety and improves access to employment and social amenities. The

National
RATN will provide safe transport infrastructure, including safe walking and cycling facilities on all corridors, safe intersection design based on AT standards, and crossing facilities for vulnerable users. The proposed road network will enhance bus travel time and reliability by providing dedicated bus facilities and bus priority. The GPS 2021 prioritises reduction of greenhouse gas emissions and a shift to active modes, public transport and low emission vehicles. This focus is well aligned to the upgraded transport corridor which provides an increase in modal choice including active modes and public transport, thereby seeking to reduce reliance on single occupancy vehicles. Overall, the RATN positively contributes towards the strategic priorities in the GPS.
The Thirty Year New Zealand Infrastructure Plan 2015
The Thirty Year New Zealand Infrastructure Plan makes changes to the current approach to planning and management and to encourage investment in New Zealand's infrastructure while recognising the challenges the country needs to navigate. The Plan envisages that by 2045 New Zealand's infrastructure will be resilient, co-ordinated and contribute to a strong economy and high living standards. The Plan notes that challenges exist around projected population growth with Auckland forecast to grow by another 716,000 people by 2045 meaning that over the next 25 years, the city will need to provide 400,000 more dwellings. The RATN provides an integrated approach to land-use and infrastructure planning which is critical to deliver good urban outcomes. The plan envisages $18.7 billion being spent on infrastructure between 2015 and 2025. The RATN forms part of this spending and falls within the scope of this Plan by enabling and providing for future urban growth in Redhills.
Road to Zero: New Zealand's Road Safety Strategy 2020-2030
Road to Zero outlines a strategy to guide improvements in safety on our roads, streets, footpaths, cycleways, bus lanes and state highways in New Zealand over the next 10 years. The vision of the strategy is a *New Zealand where no one is killed or seriously injured in road crashes.* The Strategy focuses on achieving this vision through system management, road user choices, vehicle safety, work-related road safety and infrastructure improvements and speed management. The RATN plays a role in providing opportunity to plan and design system improvements that embed the Road to Zero strategy. The RATN will provide for high levels of road safety for all users. The RATN will improve transport facilities for all modes, resulting in improved safety for those that travel by car, commercial vehicle, active mode and public transport.
Heritage New Zealand Pouhere Taonga Act 2014
Under the Heritage New Zealand Pouhere Taonga Act 2014 (HNZPTA) no person shall modify or destroy an archaeological site unless an authority is granted by Heritage New Zealand Pouhere Taonga (whether or not a site is a recorded archaeological site). An archaeological assessment has been provided (Volume 4) which states that no known archaeological sites are located within the RATN area. As such there are no requirements to obtain authority under the HNZPTA.

Table 28: Assessment against other potential matters - Regional

Regional
Auckland Transport Alignment Project (ATAP)
The Auckland Transport Alignment Project ("ATAP") is a joint project involving Auckland Council, the Ministry of Transport, AT, Waka Kotahi, the Treasury and the State Services Commission. The final report (April 2018) sets out a clear direction for the development of Auckland's transport system over the next 10 years. The vision seeks transport investment decisions that deliver broad economic, social, environmental and cultural benefits to Auckland and New Zealand by providing safe, reliable and sustainable access to opportunities.

Regional
Specifically, this includes easily connecting people, goods and services to where they need to go; providing high quality and affordable travel choices for people of all ages and abilities; seeking to eliminate harm to people and the environment; supporting and shaping Auckland's growth, and; creating a prosperous, vibrant and inclusive city. The ATAP package highlights the need for significant investment in transport infrastructure to enable urban growth in greenfield FUZ areas, encourage the use of public transport and active modes, and to provide a reasonable level of service to future residents. ATAP specifically notes investment into three main areas including for arterial roads and footpaths (including bus and cycle lanes where required). The RATN is consistent with ATAP as it will provide safe and reliable transport corridors that integrates with land use planning, supports growth, enables sustainable travel choice for all transport users, provides for high levels of road safety and improves access to employment and social amenities.
Auckland Regional Land Transport Plan 2018-2028
The Regional Land Transport Plan (RLTP) sets out the funding programme for Auckland's transport services and activities over a 10-year period. Planned transport activities for the next three years are provided in detail while proposed activities for the following seven years are outlined. The RLTP is jointly delivered by AT, Waka Kotahi and KiwiRail, and forms part of the National Land Transport Programme. Te Tupu Ngātahi is identified as a committed, ongoing programme in the RLTP which it identifies will enable the sequence of land release specified in the FULSS, and improves access to places where people live and work.
Auckland Future Land Supply Strategy 2017
The FULSS was adopted by the Council in July 2017 and is a region wide strategic document detailing the location and timing for the release of new greenfield areas. It recognises the importance of aligning infrastructure planning with growth management and identifies Whenuapai as being development ready by the first half of Decade 1 (2018-2022). The RATN is critical to delivering this greenfield capacity, given the improved accessibility it will provide to future collector roads and sites along its length. Without the RATN, the opening up of these sites to greenfield development could be delayed and/or at lower development yields, thereby undermining the growth objectives of the FULSS and the wider sustainable urban development of Auckland.
Hauraki Gulf Marine Park Act 2000
The Hauraki Gulf Marine Park Act seeks to integrate the management of natural, historic and physical resources of the Hauraki Gulf, the islands and its catchment which includes the Redhills area within Schedule 3 'catchment' indicating areas that drain to the Hauraki Gulf. The Act recognises the national significance of the Hauraki Gulf and life supporting capacity of the environment of the Gulf. The RATN is designed with provision for stormwater treatment via stormwater ponds. Space is provided within the proposed designation boundary to accommodate the ponds, thereby enabling treatment of the runoff from the corridor before discharge into the receiving environment of the Hauraki Gulf. This will ensure the protection of the Hauraki Gulf environments life supporting capacity.
Auckland Plan 2050
The purpose of the Auckland Plan is to contribute to Auckland's social, economic, environmental and cultural well-being through a 30 year vision for Auckland's growth. It sets a strategic direction for Auckland and its communities that integrates social, economic, environmental, and cultural objectives. The Auckland Plan's Development Strategy outlines the direction Auckland will take managing expansion in future urban areas noting the constraint that these areas are predominantly rural at present and have little or no infrastructure in place to cope with urban development. The Auckland Plan outlines the need to provide the required bulk infrastructure (water, wastewater, storm water and transport) to these areas in the right place at the right time. The Auckland Plan also seeks that Aucklanders will be able to get where they want to go more easily, safely and sustainably. The RATN will provide a safe and reliable arterial transport network that integrates with land use planning, supports growth, enables sustainable travel choice for all transport users, provides for high levels of road safety and improves access to employment and social amenities. The development of the RATN

Regional
has been a direct response to the Auckland Plan. The RATN will help facilitate the sustainable growth of the North West area enabling the bulk transport infrastructure required to unlock development potential.
Vision Zero for Tāmaki Makaurau: a transport safety strategy and action plan to 2030
Developed in 2019, Vision Zero extends the existing safe system approach, to place safety at the forefront of the future transport system for all modes by designing safe places for people. Vision Zero has a goal to eliminate transport deaths and serious injuries by 2050 (in line with the Auckland Plan 2050). The RATN plays a key role in providing opportunity to plan and design system improvements that embed Vision Zero principles, and specifically contribute to the Vision Zero priorities. The RATN will provide safe transport infrastructure, including safe walking and cycling facilities on all corridors, safe intersection design based on AT standards, and crossing facilities for vulnerable users. The RATN will improve transport facilities for all modes, resulting in improved safety for those that travel by car, commercial vehicle, active mode and public transport.
Te Tāruke-ā-Tāwhiri: Auckland's Climate Action Framework and Plan
The purpose of Auckland's Climate Action Framework and Plan is to increase Auckland's resilience to the impact of climate change and reduce emissions that cause climate change, with one of the key moves identified to deliver clean, safe and equitable transport options. The RATN has been designed having regard to and taking into account climate change and resilience to it. The RATN will deliver better accessibility and mode choice (thus reducing the present reliance on low occupancy vehicles). This provides an important component to realising the regional emissions benefits of an integrated network. This shows alignment with, and a positive contribution towards the Climate Action Framework and Plan.
Auckland's Urban Ngahere (Forest) Strategy
The Auckland Urban Ngahere (Forest) strategy recognises the ecosystem services as well as economic and cultural benefits delivered by green infrastructure within the urban environment and sets out objectives of the strategy which include the need to grow and protect urban ngahere in existing and future urban areas. Although the RATN seeks the removal of some trees within the proposed designation footprint, this will be mitigated by planting within the upgraded road corridor. The long-term outcome of comprehensive street tree planting will be more trees in the public realm and increased amenity value within the road corridor, consistent with the Auckland Urban Ngahere (Forest) strategy.

Table 29: Assessment against other potential matters - Local

Local Board Plans
The RATN is situated within the Henderson Massey local board area. The Henderson-Massey Local Board Plan outlines outcomes for the local board area. The plan identifies outcomes relating to an improved and well-connected transport system, including active modes, managing growth, economic prosperity and protection and care for the environment. The RATN is consistent with the outcomes of the Local Board Plan. The upgrade will integrate well with proposed surrounding land uses and the wider transport network, to respond to the timing, scale and form of urban development triggers and staging of future infrastructure corridors. In doing so the RATN manages any adverse effects on the environment. The RATN will provide a multimodal, safe and reliable arterial corridor that supports growth, enables sustainable travel choice for all transport users, provides for high levels of road safety and improves access to employment and social amenities. The RATN will also support the economic outcomes sought by supporting economic growth and increased productivity. The RATN will help facilitate the sustainable growth of the Henderson-Massey area.

12.1 Part 2 (Purpose and Principles)

With regard to the relevance of Part 2, it has been well established, that where a plan has been competently prepared under the RMA it may be that in many cases there will be no need to refer to

Part 2. However, if there is doubt that a plan has been "competently prepared" under the RMA, then it will be appropriate and necessary to have regard to Part 2. That is the implication of the words "subject to Part 2" in section 171(1) of the RMA.

In the context of these application's, the objectives and policies of the relevant statutory documents were prepared having regard to Part 2 of the RMA, they capture all relevant planning considerations and contain a coherent set of policies designed to achieve clear environmental outcomes. They also provide a clear framework for assessing all relevant potential effects, and there is no need to go beyond these provisions and look to Part 2 in making this decision. However, in the interests of caution, an assessment has been provided.

Sections 12.1.1 to 12.1.4 consider the Project against the purpose and principles of Part 2 of the RMA.

12.1.1 Section 6 Assessment

Section 6 of the RMA states that in achieving the purpose of the Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall recognise and provide for matters of national importance. The specified matters of national importance of particular relevance to the RATN are:

> *(a) the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development:*
>
> *(e) the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga:*
>
> *(h) the management of significant risks from natural hazards.*

With regard to natural character and indigenous ecology, the RATN has sought to avoid the most significant vegetation (SEAs). Stream crossings and wetland impacts are not yet determined and will require detailed design and subsequent regional resource consent applications. Nevertheless, the RATN has sought to avoid stream crossings and wetland impacts where it is practicable and locating the proposed road network in less-sensitive locations.

Manawhenua have been actively involved throughout development of the corridor, including through alternatives assessment and identification of the preferred options. The opportunity to provide CIA's was provided and the CIAs prepared by Te Kawerau ā Maki and Ngāti Whātua o Kaipara have been considered by the Project team.

The ongoing partnership with Manawhenua has provided an understanding and the incorporation of Manawhenua values and expression of kaitiakitanga throughout the development of the Project.

There are no sites of significance to Manawhenua, wāhi tapu, other taonga or Māori land identified under the AUP:OP within the transport corridor. The relationship of the respective iwi with the transport corridor, their ancestral lands, wāhi tapu and taonga will be recognised and provided for through the involvement of Manawhenua in developing and implementing various mitigation measures and management plans at the time of detailed design and construction.

The proposed designation provides sufficient space to allow for the provision of stormwater management for the RATN. This ensures appropriate attenuation can be provided which avoids the

adverse effects of flood hazards, both upstream and downstream of the RATN area. Furthermore, flood modelling assessments that have been undertaken identified overland flow paths in Redhills and concluded that the additional flooding effects as a result of the RATN will be no more than minor.

Given these factors, the RATN is considered to be consistent with section 6 of the RMA

12.1.2 Section 7 Assessment

Section 7 of the RMA relates to other matters that all persons exercising functions and powers under the RMA shall have particular regard to, in relation to managing the use, development, and protection of natural and physical resources, including (as particularly relevant to the RATN):

(a) kaitiakitanga:

(aa) the ethic of stewardship:

(b) the efficient use and development of natural and physical resources:

(c) the maintenance and enhancement of amenity values:

(d) intrinsic values of ecosystems:

(f) maintenance and enhancement of the quality of the environment:

(i) the effects of climate change:

The values of kaitiakitanga and the ethic of stewardship have been adopted to direct the option assessment and design development process for the RATN. As previously discussed, the RATN Project team has worked with, and is continuing to work with Manawhenua to ensure that appropriate measures are employed to protect the mauri of the local environment.

The RATN also represents the efficient use and development of natural and physical resources by upgrading existing intersections where feasible and ensuring the design avoids high quality natural environments where practicable.

The RATN area, while currently rural in character, is zoned in the AUP:OIP for a range of residential and business zones, including higher density THAB zoning and a ‘Business - Local Centre’ zone in the centre of Redhills. The development of this land will contribute to the sustainable development and growth of the Redhills and wider North West area but cannot be achieved without adequate transport infrastructure investment. Within this context, the RATN is vital to the efficient delivery of urban development in the Auckland region. In addition, the RATN supports the efficient operation of the existing transport network through providing safer and more efficient intersections that provide for improved public transport routes and safe facilities for walking and cycling. The RATN will also provide an attractive contribution to the future urban character of the area, providing for the maintenance and enhancement of amenity values and the quality of the future receiving environment. Corridors will be provided which support multiple transport modes, with the provision for urban design features and planting at the completion of the corridors.

The RATN avoids any SEAs or where practicable avoids any other identified high value ecological habitats (particularly wetlands), recognising the intrinsic values of the local ecosystem.

Lastly, the RATN supports a compact urban form within the existing Rural Urban Boundary. It is also noted that the RATN includes provisions for future public transport services, such as the priority

measures provided on Dunlop Road, and provides for active transport modes, seeking to achieve mode shift.

As such, the RATN is considered to be consistent with section 7 of the RMA.

12.1.3 Section 8 Assessment

Section 8 of the RMA requires that the principles of the Treaty of Waitangi (Te Tiriti o Waitangi) are taken into account when managing the use, development, and protection of natural and physical resources.

AT has partnered with Manawhenua throughout the development of the RATN. This has resulted in the selection of a transport corridor alignment which avoids and minimises adverse effects on cultural values where practicable. This has included minimising the disturbance of streams and ensuring that construction management plans will be in place to protect water quality and any uncovered cultural heritage.

Further engagement will be undertaken in the detailed design and construction phases to ensure that the principles of the Treaty of Waitangi are taken into account.

Given these factors, the RATN is considered to be consistent with section 8 of the RMA.

12.1.4 Section 5 Assessment

The RMA has a single overarching purpose: to promote the sustainable management of natural and physical resources. Sustainable management is defined in section 5 of the RMA as:

> *...managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety while –*
>
> *(a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and*
>
> *(b) Safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and*
>
> *(c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment.*

The RATN will enable people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety through the following:

- The RATN provides a vital transport connection for Redhills and the wider North West area, by providing an internal arterial transport network that provides connections to the existing strategic transport network through new and upgraded intersections. This will provide access to Redhills (zoned for a range of residential and business land uses under the AUP:OIP) and supports the ongoing urbanisation of the Redhills area, ensuring that the local transport network operates in an efficient manner. The RATN therefore supports the economic and social wellbeing of the community and wider North West area.
- The RATN has also been designed to provide for multiple transport modes in a manner which protects the health and safety of all road users. The RATN provides pedestrian, cycle and public transport facilities along all transport corridors. This enables greater choice of mode

and provides improved safety outcomes for transport users on existing corridors and safe transport corridors for transport users on new roads.

The effects of the RATN are addressed in Sections 7.3 and 8.3 of this report. The RATN represents the sustainable use of natural and physical resources, by avoiding and minimising adverse effects.

As outlined in the Assessment of Alternatives (Sections 7.2 and 8.2), the options development process has considered the life-supporting capacity of air, water, soil, and ecosystems by:

- Avoiding SEAs.
- Avoiding stream crossings and wetlands where practicable, locating the road network in less-sensitive locations and aligning the road corridors to minimise width of impact.

Measures to avoid, remedy or mitigate any adverse effects on the environment from the RATN have been outlined in Section 7.3 and Section 8.3 and the conditions proposed to secure these outcomes are summarised in (Section 9). Refer to Appendix C 0 for the full condition set.

Through this process, the RATN is considered to be consistent with section 5 of the RMA.

13 Conclusion

The RATN represents an important transport investment in the future of Auckland's northwest growth area. The RATN will support the planned development of land identified under the AUP:OIP as appropriate for continued urbanisation.

In assessing these effects, it is relevant to acknowledge the existing landscape and natural values associated with the RATN corridors are in transition, with the final receiving environment explicitly identified as changing from the current largely rural land use to an urban environment. As this change is proposed over the coming decades it is appropriate to plan for the infrastructure that will support it ahead of this transformation.

Within this urban context, the RATN will provide a high-quality transport corridor similar in character to other roads in metropolitan Auckland. In accordance with current best practice and the wider policy framework the RATN will provide for all modes safely and in particular for public transport, cycling and walking facilities. In this regard the RATN will have significant positive effects.

Any actual or potential adverse effects of the RATN generated during its construction, operation and / or maintenance, have been identified, assessed and have been avoided or mitigated by the management plans and other measures proposed by AT.

Overall, the RATN is consistent with the relevant statutory planning documents and regulatory tests, thereby satisfying the requirements of the RMA for the Council to recommend that the NoRs be confirmed by the requiring authority.

Appendix A: Assessment of Alternatives Report

Appendix B: Statutory Assessment

Appendix C: Proposed NoR Conditions

ATTACHMENT 14

REDHILLS ARTERIAL TRANSPORT NETWORK ASSESSMENT OF ALTERNATIVES

Supporting Growth

Redhills Arterial Transport Network

Assessment of Alternatives

Volume 2 Appendix A

December 2022

TE TUPU NGĀTAHI Supporting Growth

WAKA KOTAHI NZ TRANSPORT AGENCY

Document Status

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Table of Contents

Tables

Figures

Appendices

Appendix 1. **MCA – corridor assessment**

Appendix 2. **MCA route assessment**

Acronyms

Acronym/Term	Description
AC DBC	Auckland Council Housing Infrastructure Fund Detailed Business Case
AEP	Annual Exceedance Probability
AT	Auckland Transport
AUP:OP	Auckland Unitary Plan Operative in Part 2016
FULSS	Future Urban Land Supply Strategy
GD01	GD01: Stormwater Management Devices Guide
GD04	GD04: Water Sensitive Design Guide
HIF	Housing Infrastructure Fund
MCA	Multi-Criteria Analysis
NoR	Notice of Requirement
PBC	Programme Business Case
RATN	Redhills Arterial Transport Network
RMA	Resource Management Act 1991
SG DBC	Supporting Growth Detailed Business Case
SH16	State Highway 16
SH18	State Highway 18
THAB	Residential – Terraced Housing and Apartment Zone
Waka Kotahi	Waka Kotahi NZ Transport Agency

1 Introduction

Auckland Transport (**AT**), as a requiring authority under the Resource Management Act 1991 (**RMA**), is serving Notices of Requirement (**NoR**) on Auckland Council (as the territorial authority) to designate land in the Auckland Unitary Plan: Operative in Part 2016 (**AUP:OP**) to enable the construction, operation, mitigation and maintenance of the future strategic transport network in Redhills, Auckland (the **Redhills Arterial Transport Network** or the **RATN**).

The RATN is comprised of two main arterial transport corridors; the North-South arterial corridor, and the East-West arterial corridor. The RATN has been divided into four NoRs which are described in Table 1 below.

Table 1: Overview of the Redhills Arterial Transport Network

Notice	Project	Description
NoR1	Redhills: North-South Arterial Corridor	Construction, operation and maintenance of a new arterial corridor from the centre of Redhills to the intersection of Don Buck Road and Royal Road.
NoR2a	Redhills: East-West Arterial Corridor	Construction, operation and maintenance of a new arterial corridor from Fred Taylor Drive to a new intersection with Baker Lane, generally following the alignment of Dunlop Road.
NoR2b		Construction, operation and maintenance of a new arterial corridor from Fred Taylor Drive to a new intersection with Dunlop Road, generally following the alignment of Baker Lane.
NoR2c		Construction, operation and maintenance of a new arterial corridor from a new intersection with Dunlop Road and Baker Lane to the intersection of Nixon Road, Nelson Road and Red Hills Road.

Section 171(1)(b) of the RMA requires a territorial authority, when making a recommendation on a NoR, to consider whether adequate consideration has been given to alternative sites, routes or methods of undertaking the work in situations where:

a. the requiring authority does not have an interest in the land sufficient for undertaking the work; or

b. it is likely that the work will have a significant adverse effect on the environment.

AT does not have an interest in all of the land required for the RATN and so AT is required to give adequate consideration to alternative sites, routes and methods in accordance with section 171(1)(b).

The purpose of this report is to document both the development of alternatives and the process used to assess and compare options in order to provide the information necessary to inform an assessment under section 171(1)(b) of the RMA for the RATN and to demonstrate that a thorough and robust assessment of alternatives has been undertaken.

1.1. Structure of this Report

The structure of the report is as follows:

Section	Heading	Description
1	Introduction	Purpose and structure of the report.
2	Background	Summary of the relevant project background which has directed the options development process, including a summary of the business case history for the RATN, and a discussion on the development of the investment objectives and project objectives.
3	Summary of Corridor Option Development and Assessment	Summary of the development and assessment of corridor options for the RATN as part of the Auckland Council Housing Infrastructure Fund Detailed Business Case.
4	Consideration of Alternative Routes	Overview of the development and assessment of corridor options and route options for the RATN as part of the Supporting Growth Programme Detailed Business Case, and the identification of the recommended options.
5	Stormwater Assessment	Overview of the assessment of stormwater options for the RATN.
6	Alternative Methods	Overview of the assessment of alternative methods for implementing the RATN.
7	Conclusions	Summary of conclusions.

2 Background

The delivery of bulk infrastructure is critical to enabling the urban development of greenfield land. As such, Auckland Council developed the Future Urban Land Supply Strategy (**FULSS**) to help provide clarity and certainty around when future urban land will have bulk infrastructure in place and be ready for urban development. In July 2017, the FULSS was updated in line with the AUP:OP zoning to establish an indicative approach to the staged urbanisation of rural land over the next 30 years.

In response to the FULSS, AT, Waka Kotahi NZ Transport Agency (**Waka Kotahi**), and Auckland Council identified a need to determine the most appropriate transport responses to support this envisioned urban growth.

To determine the most appropriate transport solution to respond to the scale and pace of growth in Auckland, AT and Waka Kotahi worked in partnership to develop business cases for each of Auckland's identified growth areas: Warkworth, North, North West and South.

The Supporting Growth Programme was established in 2018 which is a collaboration between AT and Waka Kotahi to undertake this work and investigate, plan and identify the preferred transport network to support Auckland's future urban growth areas over the next 30 years. AT and Waka Kotahi have partnered with Auckland Council, Manawhenua and KiwiRail Holdings Limited and are working closely with stakeholders and engaging with the community to develop the strategic transport network to support Auckland's growth areas. The RATN is located within the North West Growth area (refer to AEE for further detail).

2.1. Project Area – Overview

This report relates to the North West growth area, more particularly the area known as Redhills which is located approximately 20 km (by road) north west of the Auckland city centre. The area is comprised of 600ha of predominantly greenfield land which is bound by Fred Taylor Drive to the east, Don Buck Road to the south and Red Hills Road to the west.

Redhills was rezoned for a mix of residential and local centre land use zoning in 2016 as part of the AUP:OP process. The Redhills area was previously zoned Foothills and Countryside under the legacy Auckland Council District Plan – Waitākere Section 2003. The Redhills zoning under the AUP:OP provides for a new local centre (Business – local centre zone) in the middle of Redhills. The new local centre is surrounded by higher density residential land use zoning through the Residential – Terrace Housing and Apartment Building zone (**THAB**) and the Residential – Mixed Housing Urban zone. Further higher density residential land use is provided through THAB zoning adjacent to Fred Taylor Drive. Towards the western area of Redhills the zoning provides for lower density residential land use through the Residential – Mixed Housing Suburban zone and the Residential – Single House zone adjacent to the rural environment beyond the Rural Urban Boundary.

The Redhills zoning is complimented by the I610 Redhills Precinct, the purpose of which is to ensure a "*high quality residential development with a local centre established centrally within the precinct to provide a heart and focal point for the Redhills community*". This is implemented through the I610.10.1. Redhills Precinct: Precinct Plan 1 (Figure 2) which provides direction for the indicative transport network and opens spaces. This includes indicative alignments for the future arterial transport network within Redhills with fixed connection points into the surrounding transport network at the following existing intersections:

- Dunlop Road and Fred Taylor Drive;
- Baker Lane and Fred Taylor Drive;
- Don Buck Road and Royal Road;
- Red Hills Road, Nelson Road and Nixon Road; and
- Henwood Road (new intersection).

Figure 1 shows the land use zoning and existing precincts for Redhills under the AUP:OP, with the associated Redhills Precinct: Precinct Plan 1 shown in Figure 2.

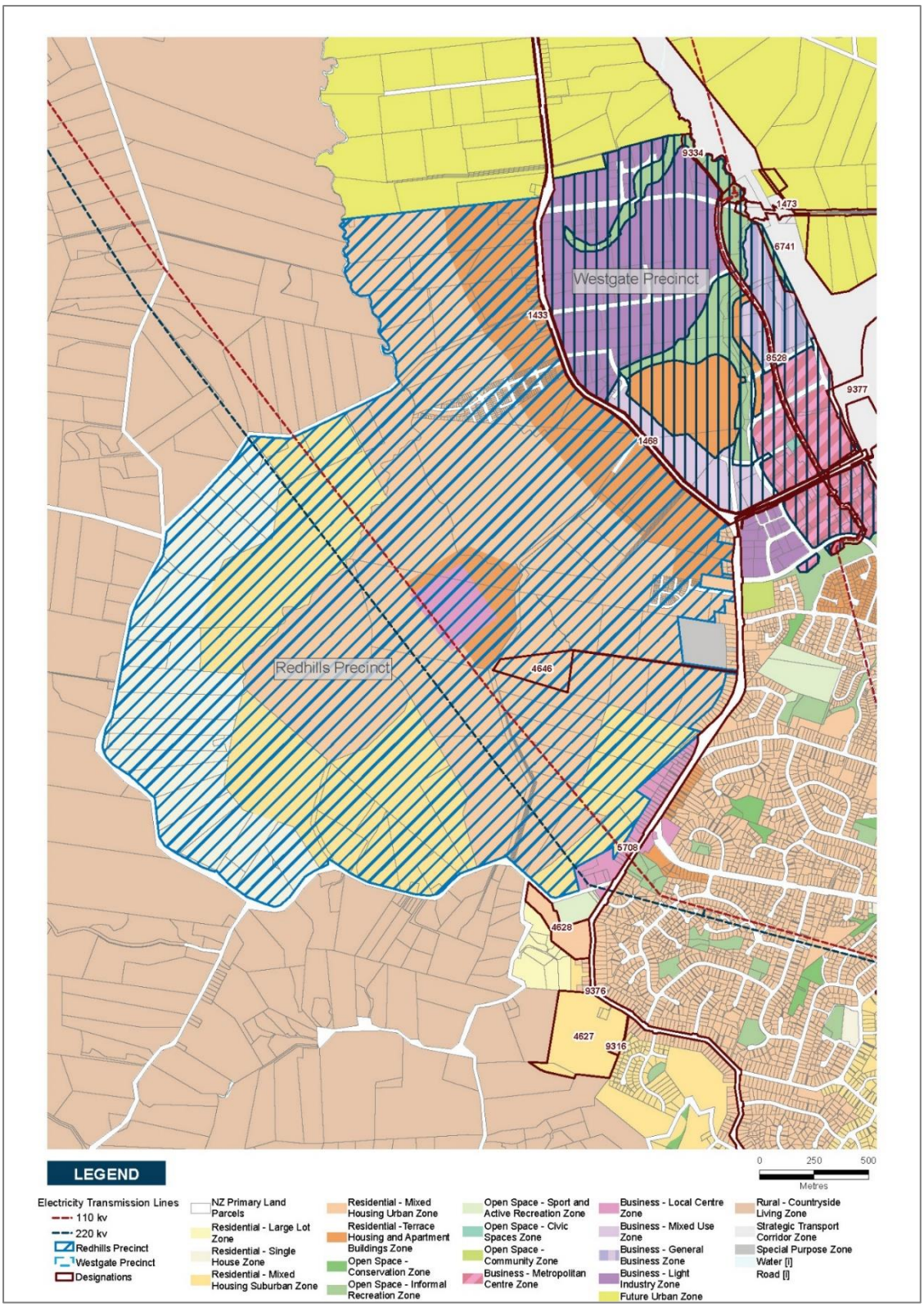


Figure 1: Redhills AUP:OP Land Use Zoning and Precincts

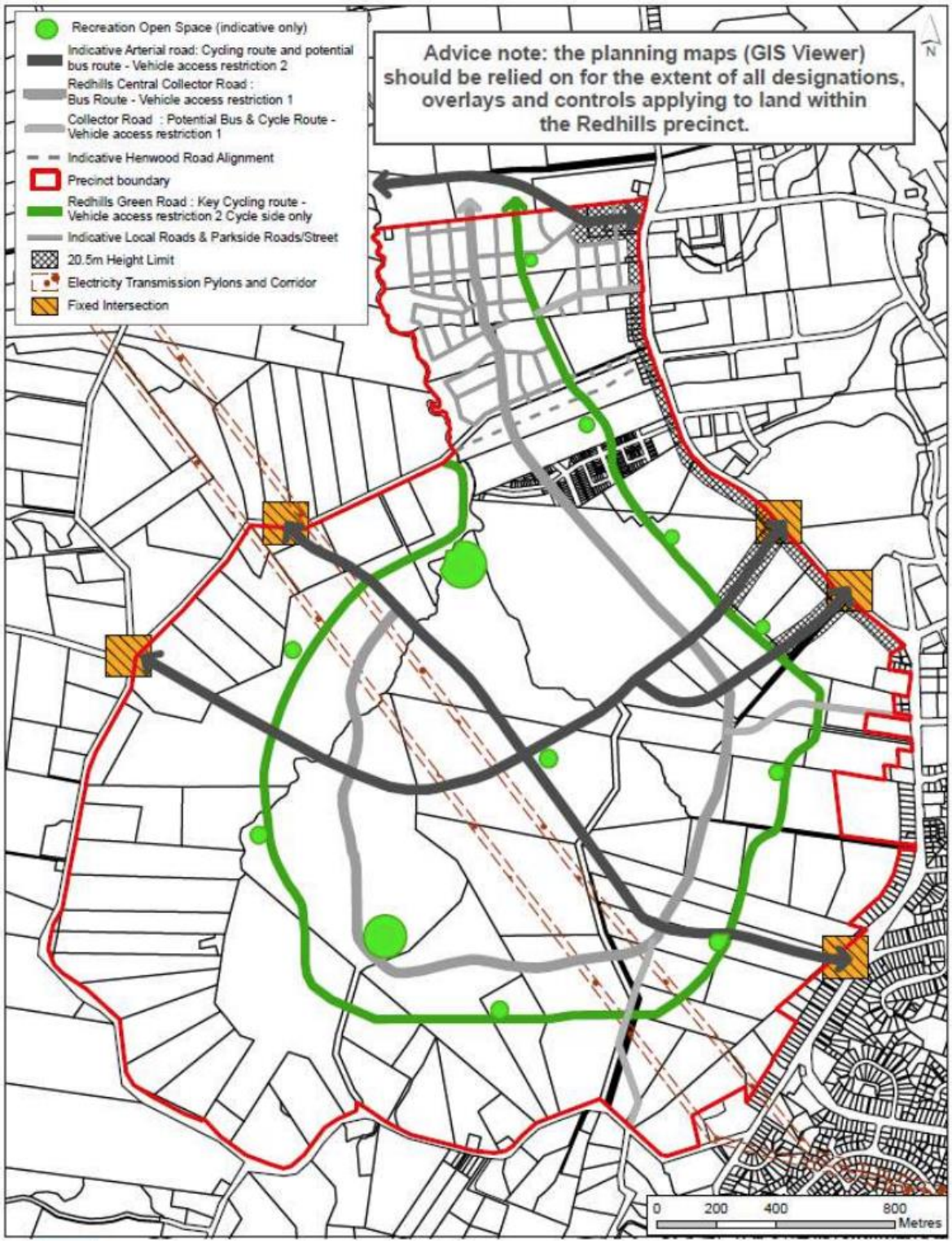


Figure 2: Redhills Precinct - Precinct Plan 1

2.2. Overview of the Option Development and Evaluation Process

In 2016, the Programme Business Case (**PBC**) was completed which identified a high-level draft preferred strategic transport network to support all of the growth areas in Auckland. This initial option development process involved workshops and collaborative consultation with multiple stakeholders to formulate potential options and interventions.

For the North West growth area, the PBC considered 80 long list options and 39 short list options, ultimately recommending 13 transport network components, including new and improved north-south and east-west connections in Redhills.

Following the completion of the PBC, the Crown announced its recommendation (in principle) to provide a loan to Auckland Council to fund $300 million of bulk infrastructure in North West Auckland through the Housing Infrastructure Fund (**HIF**).[1] This funding of bulk infrastructure was estimated at the time to support the early construction of at least 10,500 new homes in North West Auckland.

In order to consider the extent to which the HIF could be used to fund the investment of all infrastructure required to support accelerated development in Whenuapai and Redhills, Auckland Council prepared the Housing Infrastructure Fund Detailed Business Case (**AC DBC**). The AC DBC was supported by the Transport Network Option Evaluation Report that assessed options for Redhills.

The AC DBC concluded that a portion of the funding available from the HIF should be used to support the development of parts of the RATN. It is expected that this funding will be used where it can be integrated with early housing developments – likely to be those areas adjacent to Fred Taylor Drive where developers have progressed design and consenting. As such, there is a short term need to secure the land necessary to undertake the works as well as a longer term need to provide flexibility of staging and implementation within the wider RATN.

Following the AC DBC, the Supporting Growth Programme prepared the Supporting Growth Programme Detailed Business Case (**SG DBC**) in 2019 which specifically developed and evaluated options for the RATN. The SG DBC included further corridor refinement, multi-criteria analysis (**MCA**) and input from stakeholder/community engagement to assess options for the RATN.

The options from the AC DBC and SG DBC were then subject to further review, taking into account the additional protection afforded to natural wetlands under the National Policy Statement for Freshwater Management 2020.The development and assessment of alternatives for the RATN has therefore been completed through sequential options development processes in the PBC, AC DBC and SG DBC. This process forms the basis for this report, and

[1] The HIF was established by the Crown in 2016 to provide 10-year interest-free loans to high-growth councils. The funds were provided to help address funding constraints of high growth councils, with the purpose of funding core infrastructure to support housing development and increase housing supply. With approval of the HIF in 2017 for bulk infrastructure in the North West, Auckland Council is expected to repay this loan by 2027.

a summary of this process is outlined in

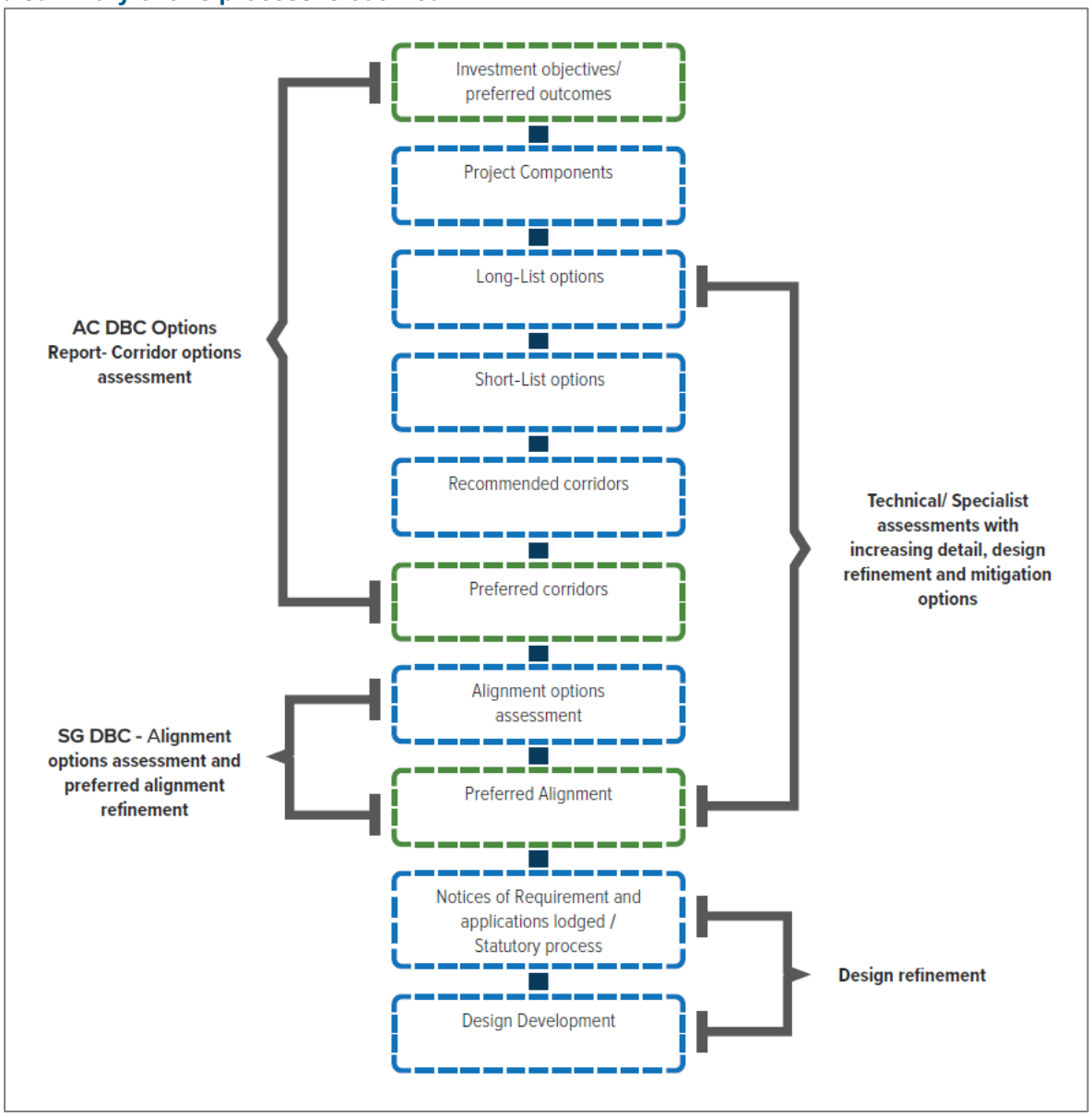


Figure 3 below.

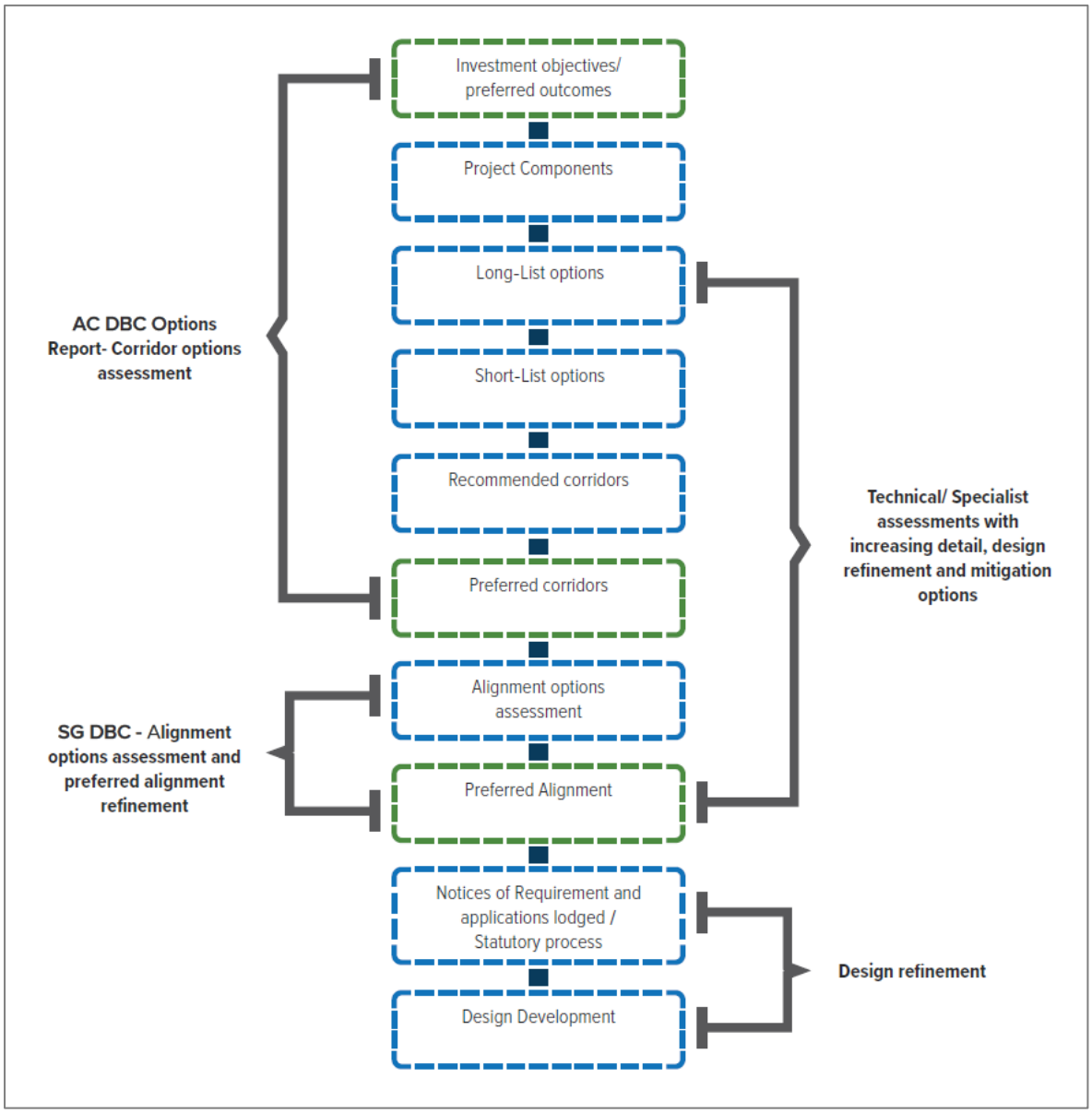


Figure 3: Options Development Process

2.3. Redhills Arterial Transport Network Investment Objectives and Project Objectives

Investment objectives were developed through the AC DBC process to assist with option assessment and investment decisions. These were developed at an area wide level for Whenuapai and Redhills and therefore did not contain project specific detail.

The investment objectives were then refined through the SG DBC process to confirm whether they remained relevant when focusing on the transport network option evaluation for the North West HIF area. As discussed at section 4.1 of this report, options have been assessed against the investment objectives in each of the MCA processes to assist in identifying the preferred options for the RATN.

The investment objectives have then been used to develop the RMA project objectives that are specific to the RATN. This process is shown in Figure 4 below.

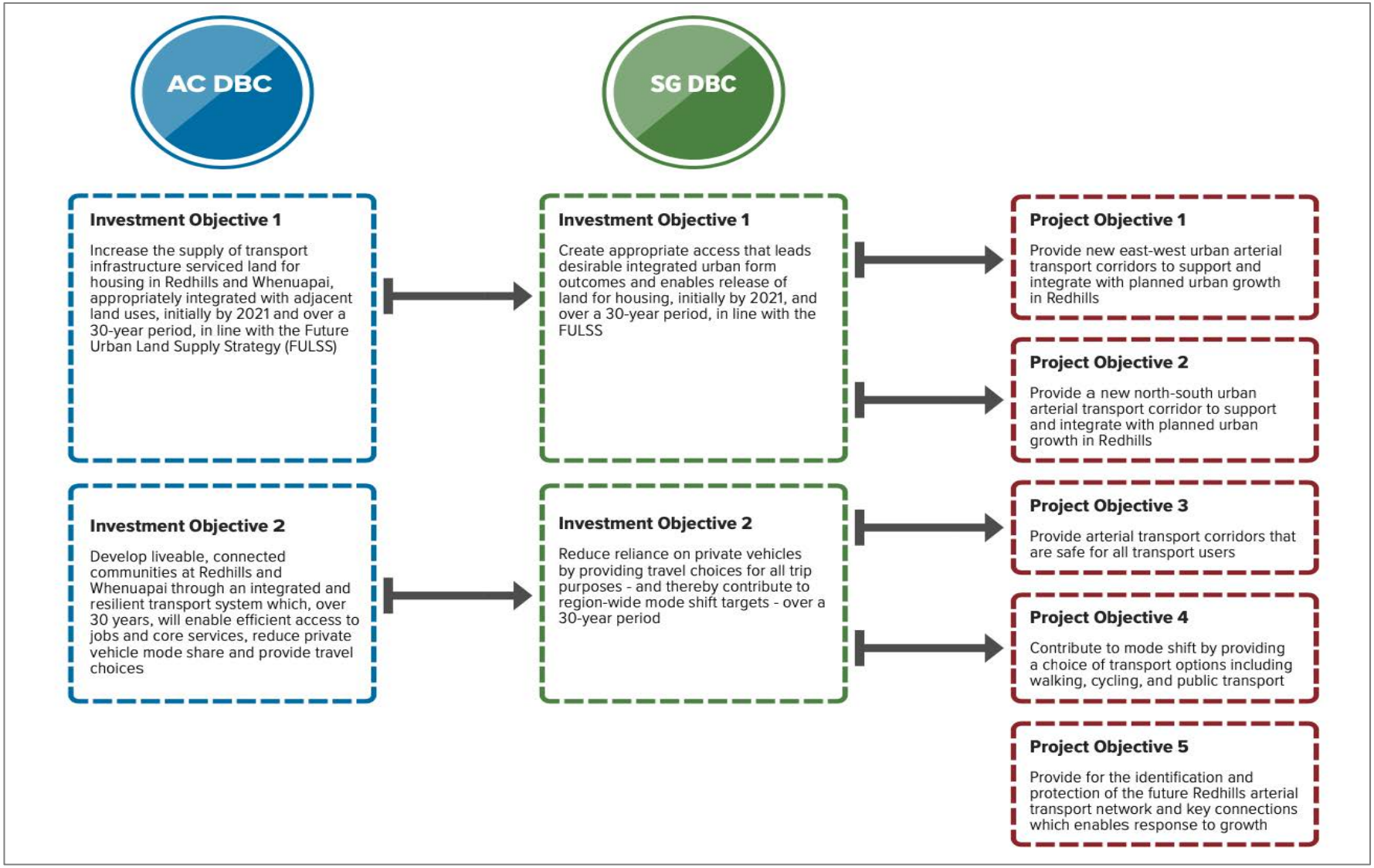


Figure 4: Development Process for Project Objectives

3 Summary of Corridor Option Development and Assessment

As noted above, following the Crown's recommendation (in principle) to provide a loan to Auckland Council to fund $300 million of bulk infrastructure in North West Auckland through the HIF, Auckland Council undertook to assess which parts of the PBC recommended network should be accelerated through the HIF funding.

This section of the report briefly describes the options assessment undertaken as part of the AC DBC which built on the conclusions of the PBC that new and improved north-south and east-west connections were required in Redhills.

For the purposes of this assessment, a 30m wide cross section was assumed for all Redhills assessments in order to accommodate the recommended typologies and key features of an urban arterial road.

3.1. Overview of Assessment Framework

To enable a structured, consistent, systematic and replicable process for assessing alternatives and options, an MCA framework was developed for the AC DBC. The MCA is a tool that is often used to assist in the decision-making process and provides an opportunity to understand how different options compare against a set of standard and grouped criteria. This interdisciplinary framework was developed collaboratively, drawing on the collective knowledge and experience of AT, Waka Kotahi, Auckland Council, Manawhenua and the Supporting Growth Programme team. This framework, with additional refinements, would later form the basis of the Supporting Growth Programme wide MCA framework (as discussed further at section 4.1), and was used during the SG DBC options assessments discussed at section 4 of this report.

The MCA framework utilised for the AC DBC adopted four broad criteria – investment objectives, implementability, assessment of environmental effects and opportunity outcomes and applied the following principles:

- The process should be transparent and ideally replicable, allowing additional options to be consistently assessed if they are developed or raised after the original options;
- The environmental effects component of the MCA framework would be finer grained and would require specialist input; and
- No in-built weighting would be applied, although sensitivity testing could be undertaken as appropriate.

The full MCA framework is set out in Appendix 1 to this report. The MCA used a graduated 11-point scoring scale, ranging from -5 for Very High Adverse Effects to +5 Very High Positive Impacts. A final overall score was based on a qualitative assessment of potential effects.

In addition to the MCA scoring, the options and their scores were discussed at a workshop with the Project stakeholders and Manawhenua. These stakeholders included members of the Supporting Growth Programme Partners (Waka Kotahi, AT) and Auckland Council. The workshops helped to test options and scoring and assist with determining which options should proceed to the next stage and be assessed further.

3.2. East-West Corridor Options Development and Assessment

3.2.1 East-West Corridor Long List

3.2.1.1 Option Development

The need for a new east-west connection in Redhills was identified in the PBC. A new east-west connection would provide access across Redhills, providing a central connection for the residents in Redhills to access the key metropolitan centre at Westgate/Massey North and both the State Highway 16 (**SH16**) and State Highway 18 (**SH18**) motorways. The connection would form an important link to the future employment node within Whenuapai, and would significantly improve connectivity between Taupaki (and beyond) to the west and destinations in the east. Transport modelling for this potential connection indicated that due to the anticipated traffic volumes this connection would provide an arterial function.

Influencing factors that would contribute to a liveable community were also considered when developing options, which included accessibility and connection to key land uses such as the future Redhills local centre, Westgate metropolitan centre, future Whenuapai industrial area, the state highway network (SH16 and SH18) and the future rapid transit network.

Overall, ten options were developed at the long list phase described and shown in Table 2 and Figure 5 below.

Table 2: East-West Corridor Long List Options

Option Name	Option Description
East-West A	East-west connection from Nelson Road to Dunlop Road, to the north of the local centre zoning.
East-West B	East-west connection from Nelson Road to Dunlop Road, through the local centre zoning.
East-West C	East-west connection from Nelson Road to Dunlop Road, to the south of the local centre zoning.
East-West D	East-west connection from Nelson Road to Fred Taylor Drive intersection, to the north of the local centre zoning.
East-West E	East-west connection from Nelson Road to Fred Taylor Drive intersection, through the local centre zoning.
East-West F	East-west connection from Nelson Road to Fred Taylor Drive intersection, to the south of the local centre zoning.
East-West G	East-west connection from Nelson Road to Westgate Drive, to the north of the local centre zoning.
East-West H	East-west connection from Nelson Road to Westgate Drive, through the local centre zoning.
East-West I	East-west connection from Nelson Road to Westgate Drive, to the south of the local centre zoning.
East-West J	East- west option that connects to the west at a mid-point south of Nelson Road and connects to the east at Fred Taylor Drive. This was used to test the assumption of the Nelson Road connection.

With the exception of East-West Option J, all other options provided the western connection point at the existing intersection of Red Hills Road, Nelson Road and Nixon Road. This location is strategic as it provides access from Redhills to the land to the north (via Nixon Road), the west (via Nelson Road) and the south (via Red Hills Road).

While the area to the west of Redhills remains rurally zoned in the AUP:OP and no substantial development is anticipated in that area over the next 30 years, this area provides a large catchment that uses Westgate (including the NorthWest Mall and Westgate shopping area), which is the closest metropolitan centre. The existing roads to the west and north of Redhills also provide alternative connections between Kumeu-Huapai and Westgate, allowing traffic to avoid the use of SH16, strengthening the need for access into the adjacent rural area.

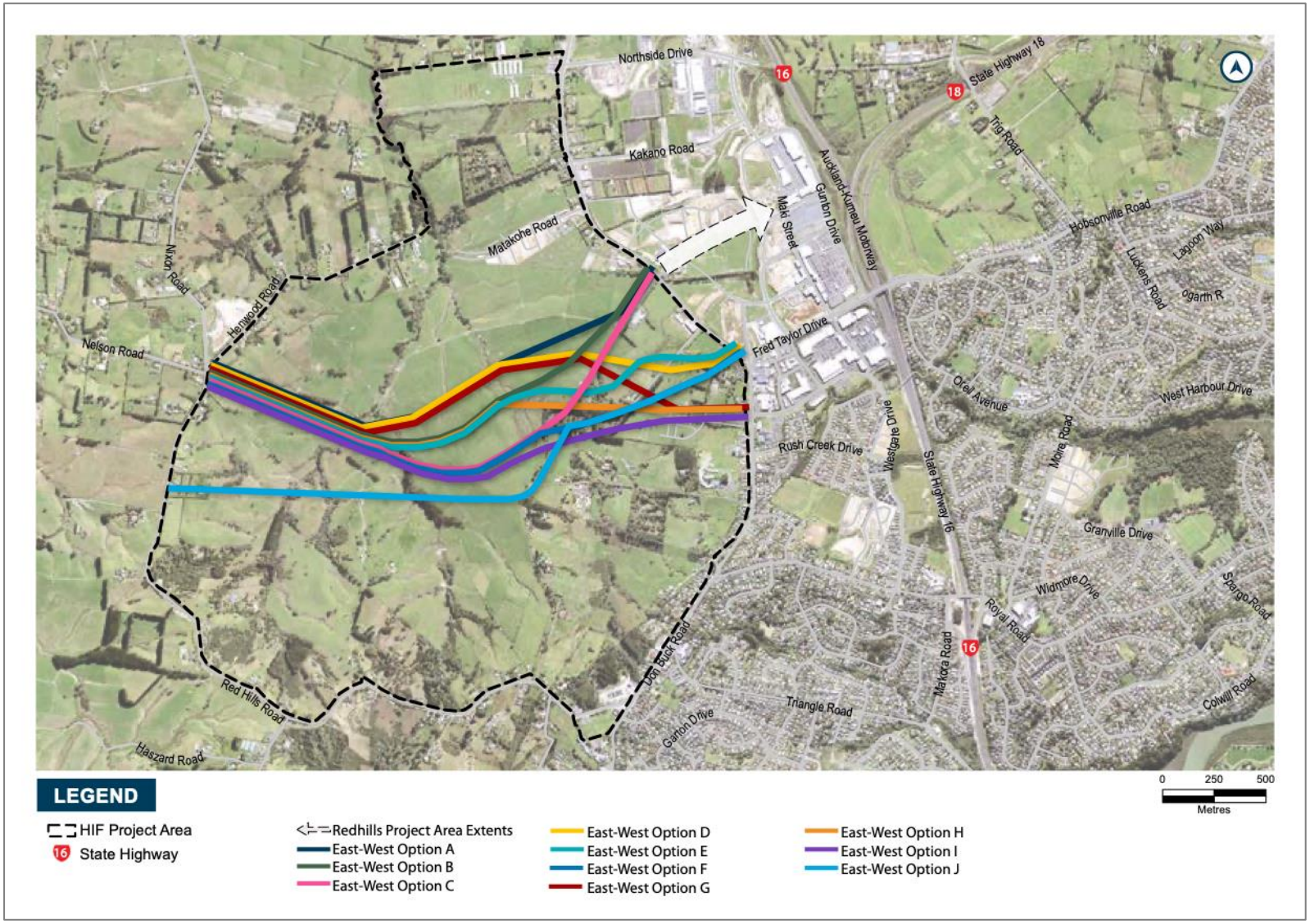


Figure 5: East-West Corridor Long List Options

3.2.1.2 Option Assessment

These long list options were then evaluated using the MCA assessment framework set out above at section 3.1, with input from specialists. Options were also discussed at a workshop with stakeholders and Manawhenua.

Key outcomes of the East-West long list MCA scoring were:

- While all options scored positively against Investment Objectives 1 and 2, East-West Option D and East-West Option F scored particularly well due to providing direct connection to Westgate without bisecting the future Redhills local centre. Options which did not provide direct connections to Westgate generally scored less favourably as they did not provide as strong strategic connections. Likewise, those options which bisected the local centre were considered less desirable as this would result in poorer land use integration outcomes.
- East-West Option F scored more favourably than all other options for the transport system integration criteria due to being the most direct strategic connection.
- East-West Option B, East-West Option E and East-West Option H, all scored less favourably against the urban design land use futures criteria compared with all other options as these options bisected the future local centre resulting in a poor urban design outcome.
- While most of the options scored similarly for the environmental criteria, East-West Option H scored less favourably for the landscape/visual, water quality, and ecology criteria due to the greater number of stream crossings required for this option.
- Scores for all other criteria were equal and therefore did not provide any differentiating factors.

Manawhenua advised during the workshop that their preference is to avoid options that adversely impact the wetlands to the east of the local centre zone and highlighted the cultural significance of these wetlands. It was noted that options which bisected this area would limit the potential to restore this wetland area. Options East-West B, East-West C, East-West E, East-West F, East-West H, and East-West I all bisected the wetland area and were therefore considered less favourable.

Stakeholders and specialists generally agreed that the options which were aligned to the north of the local centre zone, adjacent to the THAB zone (Options East-West A, East-West D and East-West G) achieved better integration for land use and transport. The scale of an arterial corridor bisecting the local centre zone would result in poor urban design outcomes, leading to severance of the local centre. This would adversely impact the desired purpose for this centre “to provide a heart and focal point for the Redhills community” (I610. Redhills Precinct).

Options which provided a connection to the Westgate Metropolitan Centre via Dunlop Road (Options East-West A, East-West B and East-West C) were considered the best options to support the wider public transport network as they provided a more direct connection to the future Westgate Transport Hub. However, the options which provided a direct connection into the current Fred Taylor Drive/Don Buck Road/Te Oranui Way intersection (Options East-West D, East-West E, East-West F and East-West J) were considered optimal for vehicular traffic travelling through and from Redhills despite concerns with increasing the traffic volume and intersection size. It was also noted that these options were less attractive for walking and cycling due to heavy vehicle traffic volumes and the lack of walking and cycling protection.

As a result of the above issues, the option of splitting the East-West arterial function emerged at the workshop, leading to a new dual arterial option. This resulted in the provision of an arterial corridor for vehicle traffic on Fred Taylor Drive, and an arterial corridor prioritising active modes and public transport modes on Dunlop Road. This option is discussed further at section 3.2.3 of this report.

3.2.1.3 Recommended Options to proceed to Short List

Based on the MCA and workshop discussions, East-West Option A and East-West Option D were selected to progress to the short list phase with the following attributes:

- A western connection at the intersection of Red Hills Road/Nixon Road/Nelson Road;
- An alignment to the north of the proposed local centre;
- An eastern connection to be tested at Dunlop Road and Fred Taylor Drive;
- Consideration of dual arterial transport corridors, with an arterial corridor to Fred Taylor Drive (along Dunlop Road) prioritising public transport and an additional arterial corridor for vehicular traffic to Fred Taylor Drive;
- Both roundabout and an optimised intersection layout to be tested at Fred Taylor Drive.

3.2.2 East-West Corridor Short List

3.2.2.1 Option Development

The options had been developed at the long list phase based on packaging together individual components along the route such as network connection points, or a route around the local centre. Through the assessment process it became clear that some of these components still had individual merit which may have been overshadowed by being partnered with lower performing components and therefore could not be justified to be discarded at the long list stage. These components were highlighted throughout the long list process and were recommended to be included as variants within the short list stage. This approach is standard practice to ensure the optimal route is identified.

Table 3 lists the five options which were developed from the long list East-West Option A and East West Option D for the short list stage.

Table 3: East-West Corridor Short List Options

Option Name	Option Description
East-West 1	This option originates from East-West Option A and provides a connection from the Red Hills Road/Nixon Road/Nelson Road intersection to Dunlop Road. Alignment passes to the north of the local centre and the adjacent THAB zoning. Full arterial corridor along alignment (including public transport and pedestrian/cycle).
East-West 2a – roundabout	This option is a variant of East-West Option D providing a connection from the Red Hills Road/Nixon Road/Nelson Road intersection connecting to the Fred Taylor Drive roundabout. Alignment passes to the north of the local centre and the adjacent THAB zoning. This option assumes a collector connection via Dunlop Road could be established with less strategic priority (although not directly provided by this option). This option assumed a connection into a five-way round-about at Fred Taylor Drive.

East-West 2b – optimised intersection	As per East-West 2a, however with a signalised intersection at the existing Fred Taylor Drive roundabout.
East-West 3a – roundabout	This option was derived from East-West Option A and East-West Option D providing a connection from the Red Hills Road/Nixon Road/Nelson Road intersection with two connections into Fred Taylor Drive east of the local centre: • an arterial connection via Dunlop Road; and • an arterial connection into Fred Taylor Drive Roundabout. This option assumes a connection into a five-way round-about at Fred Taylor Drive. The alignment passed to the north of the local centre and central THAB zoning.
East-West 3b – optimised intersection	As per East-West 3a, however with a signalised intersection at Fred Taylor Drive.

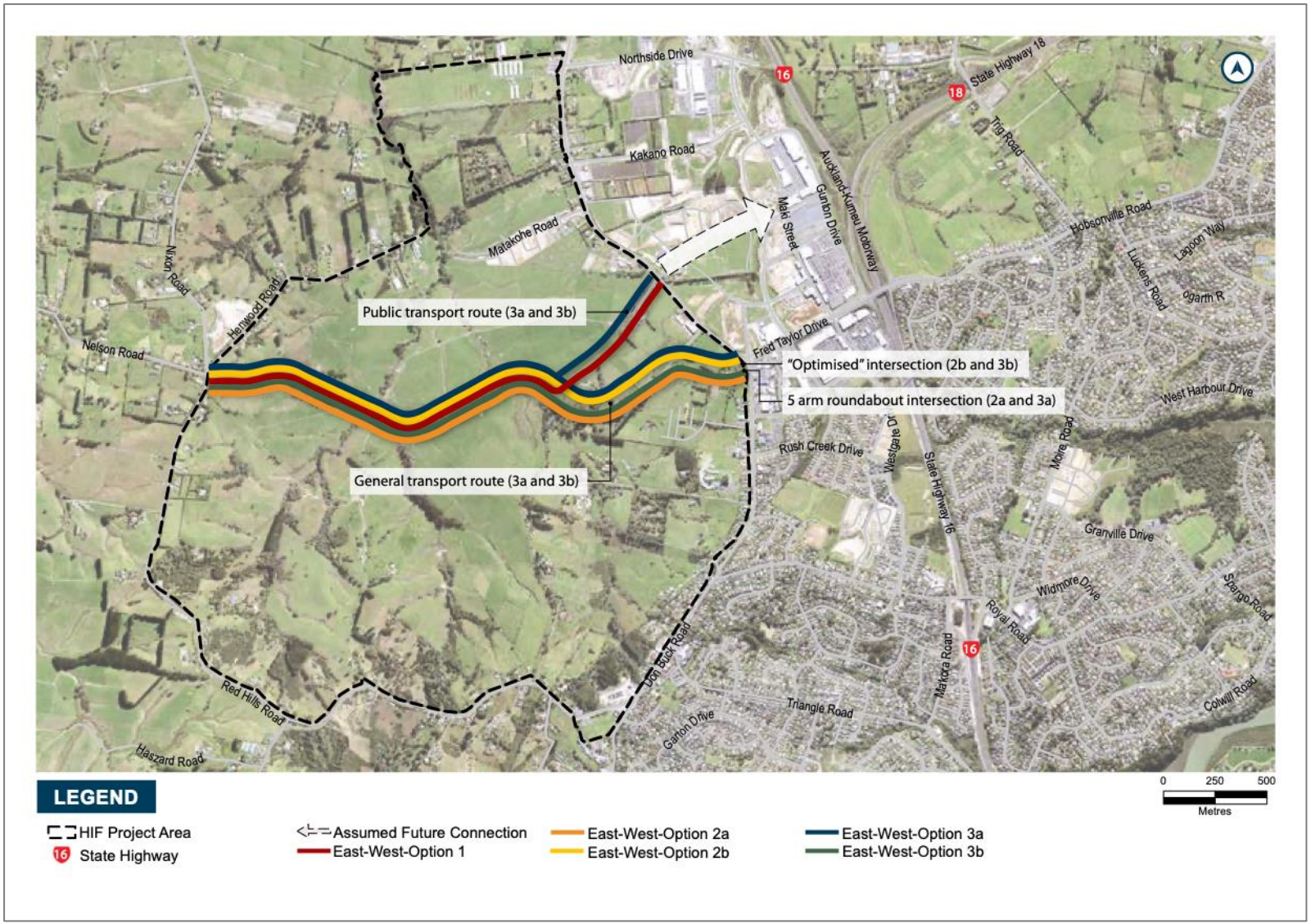


Figure 6: East-West Corridor Short List Options

3.2.2.2 Option Assessment

The short list options were then evaluated using MCA and discussions with stakeholders. Technical investigations were also undertaken to understand the feasibility of the options and if there were any road design, construction or integration issues with the surrounding network.

Key outcomes of the East-West short list MCA scoring were:

- While all options scored positively against the investment objectives, East-West Option 2B and East West Option 3B with signalised intersections scored more favourably compared to the other options which utilised a roundabout intersection, as a five way roundabout was considered a less favourable transport outcome with lesser benefits for all users. This scoring was also reflected in the transport system integration criterion, where East-West Option 2B and East-West Option 3B scored significantly better. East-West Option 3B scored highest as Dunlop Road was identified as the best route for public transport and cycling, while the additional arterial corridor provides a more strategic and direct connection to Fred Taylor Drive.
- The urban design criteria were the other key differentiators, with East-West Option 3B scoring the best due to providing increased connectivity to the proposed local centre and with the Dunlop Road intersection being smaller and easier to navigate for active mode users.
- Scores for construction impacts, human health, economic, water quality, ecology, heritage, climate change, social equitability, and greenhouse gas emissions were equal and did not provide any differentiation between the options.

Stakeholders at the workshop agreed that both Dunlop Road (with its public transport and active modes prioritisation) and the arterial connection to the existing Fred Taylor Drive intersection (providing a strategic connection) provided benefits to the network. During the Redhills Precinct Environment Court process significant concerns were being raised by businesses accessing to and from Te Oranui Way – the function of which would be curtailed by a five-leg intersection. To address the concerns with the requirement for a five-leg intersection, it was suggested that another connection option could be tested for the East West arterial to Fred Taylor Drive via what is known as Baker Lane (an undeveloped paper road) (East-West Option 3C).

3.2.2.3 Further Corridor Refinement – Assessment of East-West Option 3C

East-West Option 3C was tested as an alternative connection to Fred Taylor Drive (Figure 7). This option used the preferred Fred Taylor Drive option (East-West Option 3B) as a base and replaced the East-West arterial leg from the Fred Taylor Drive/Don Buck Road/Te Oranui Way intersection with a new signalised intersection at a Fred Taylor Drive/Baker Lane (roughly 250m north), which is also identified in the AUP:OP as a future strategic connection into the Westgate Precinct.

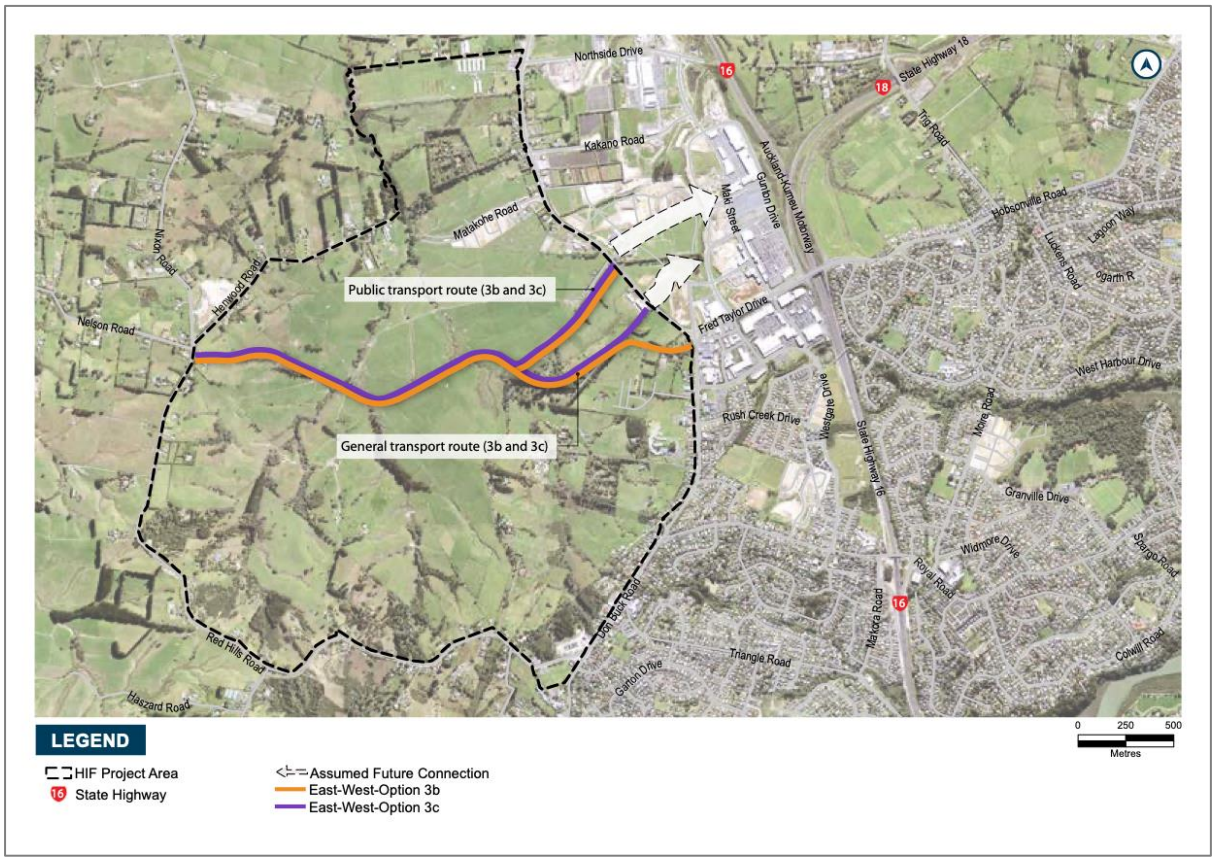


Figure 7: East-West Corridor Short List Options Refinement

The specialists assessed this East-West Option 3C against the previous East-West Option 3B using the same MCA framework. The key differentiators were as follows:

- East-West Option 3C was slightly less convenient and legible for general traffic but provided improved access for pedestrians and cycling (and thus liveability) as no five-leg intersection was required.
- Whilst the five-leg intersection associated with East-West Option 3B operated satisfactorily from a traffic perspective and provided a more direct, legible access to the strategic transport network (including SH16 and the proposed rapid transit network), the intersection layout resulted in reduced access to existing land use and reduced pedestrian amenity due to no pedestrian crossing on the eastern leg of the Fred Taylor Drive/Don Buck Road/Te Oranui Way intersection. The two intersections at Fred Taylor/Baker Lane and Fred Taylor Drive/Dunlop Road operated more efficiently than East-West Option 3B due to the four-leg intersection. This was considered to provide better pedestrian and cycling facilities, however the staggered intersections provided slightly less legibility for vehicles accessing the strategic transport network. On balance, the efficient intersections and walking and cycling benefits associated with East-West Option 3C were preferred.
- East-West Option 3C resulted in better land efficiency with a larger amount of land available for THAB zoning.
- East-West Option 3C was considered a more legible and safe walking and cycling environment, with stronger links to the Westgate Metropolitan Centre.

It should be noted that during this design process, the provisions relating to the Redhills Precinct in the AUP:OP were being resolved through an appeal process in the Environment Court. The alternatives assessments throughout the options assessment process, while considering the AUP:OP provisions as context, were based on design principles and specialist assessment. The limited scope of the appeals process meant that some outcomes agreed between the relevant parties could not be included in the AUP:OP provisions.

3.2.2.4 Recommended East-West Option

Overall, the recommended East-West route was confirmed as East-West Option 3C (Figure 8) which includes:

- A western connection at Nelson Road;
- A route to the north of the local centre where it is anticipated that the collector/local road network will continue public transport access from the arterial into the local centre zone; and
- A dual arterial connection to the east comprising:
    - A public transport priority arterial connecting at the Fred Taylor Drive/Dunlop Road intersection; and
    - An arterial connection at the Fred Taylor Drive/Baker Lane intersection.

This option was recommended because it provided:

- The most legible and direct east west connectivity for Redhills and the wider strategic network;
- The best increase of land supply with the most efficient use of THAB zoned land;
- A resilient network with clear priority for buses accessing Westgate Station;
- Exclusive pedestrian and cyclist facilities along the whole route;
- Access to the local centre without causing a severance effect; and
- A four-leg intersection at the congested existing intersection of Fred Taylor Drive/Don Buck/ Te Oranui Way.

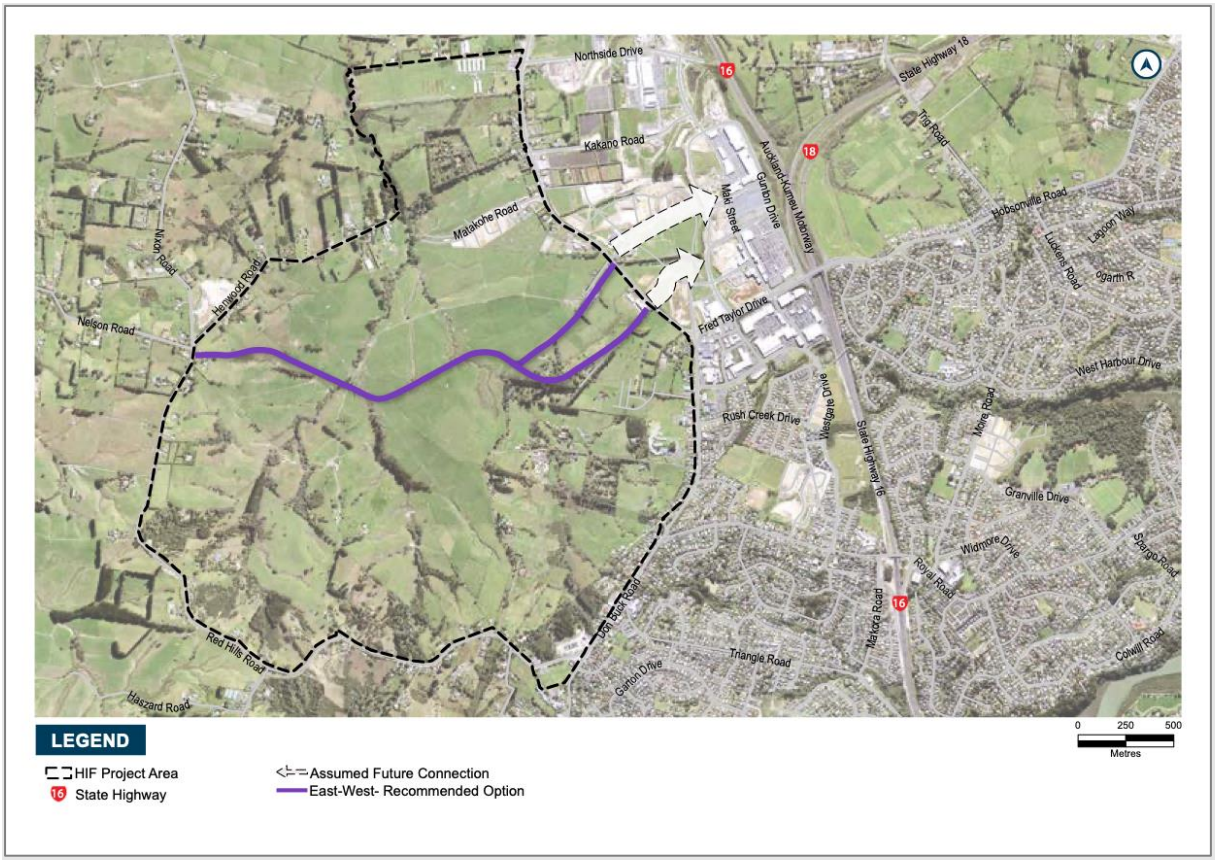


Figure 8: East-West Corridor Recommended Option

3.3. North-South Corridor Options Development and Assessment

3.3.1 North-South Corridor Long List

3.3.1.1 Option Development

The need for a new north-south connection in Redhills to connect to Don Buck Road and to provide a direct link to SH16 was also identified in the PBC. Like the east west connection, the access to the Redhills local centre zone was a key consideration for the option development. In addition, the corridor was required to provide a strategic connection to Kumeu/Riverhead and Coatesville to the north and SH16 to the south to ensure communities could efficiently access employment opportunities.

Eight options were initially developed for the North-South long list. North-South Option H was initially the only option located to the east of the Ngongetepara Stream (as shown in Figure 5 below), however North-South Option I was developed as an additional eastern option through the workshop process to test a more eastern option from Royal Road. The nine options considered at the long list stage are described in Table 4 and shown in Figure 9.

The options provided a range of different approaches to:

- Connect Redhills to the existing transport network to the south, with different options connecting at Royal Road, Triangle Road and Red Hills Road;
- Interact with the proposed Redhills local centre, with different options bisecting or wrapping around either the east or west;
- Connect Redhills to a potential new transport corridor to the north of Redhills (which would involve the North-South corridor being extended beyond Redhills as part of a later Supporting Growth Programme project); and
- Deviating to the east and west of the existing Transpower transmission lines which bisect Redhills.

Table 4: North-South Corridor Long List Options

Option Name	Option Description
North-South A	This option links to Nixon Road to the north and Red Hills Road to the south. This option goes to the west of the local centre zoning.
North-South B	This option links to Nixon Road to the north and the Don Buck Road/Triangle Road intersection to the south. This option goes through the local centre zoning.
North-South C	This option links to Nixon Road to the north and the Don Buck Road/Royal Road intersection to the south. This option goes to the north of the local centre zoning.
North-South D	This option links to the Nixon Road/Taupaki Road intersection to the north and Red Hills Road to the south. This option goes to the west of the local centre zoning.
North-South E	This option links to Nixon Road/Taupaki Road intersection to the north and Triangle Road to the south. This option goes through the local centre zoning.
North-South F	This option links to Nixon Road/Taupaki Road intersection to the north and the Don Buck Road/Royal Road intersection to the south. This option goes to the north of the local centre zoning.
North-South G	This option links to Coatesville-Riverhead Highway/SH16 intersection to the north and the Don Buck Road/Royal Road intersection to the south. This option goes to the west of the local centre zoning. This option was included in the earlier PBC stage.
North-South H	North-south connection. This option links to Coatesville-Riverhead Highway/SH16 intersection to the north and Red Hills Road to the south. This option goes through the local centre zoning.
North-South I	This option links to Coatesville-Riverhead Highway/SH16 intersection to the north. This option is located to the east of the Ngongetepara stream and goes around the local centre to the west before connecting at Triangle Road.

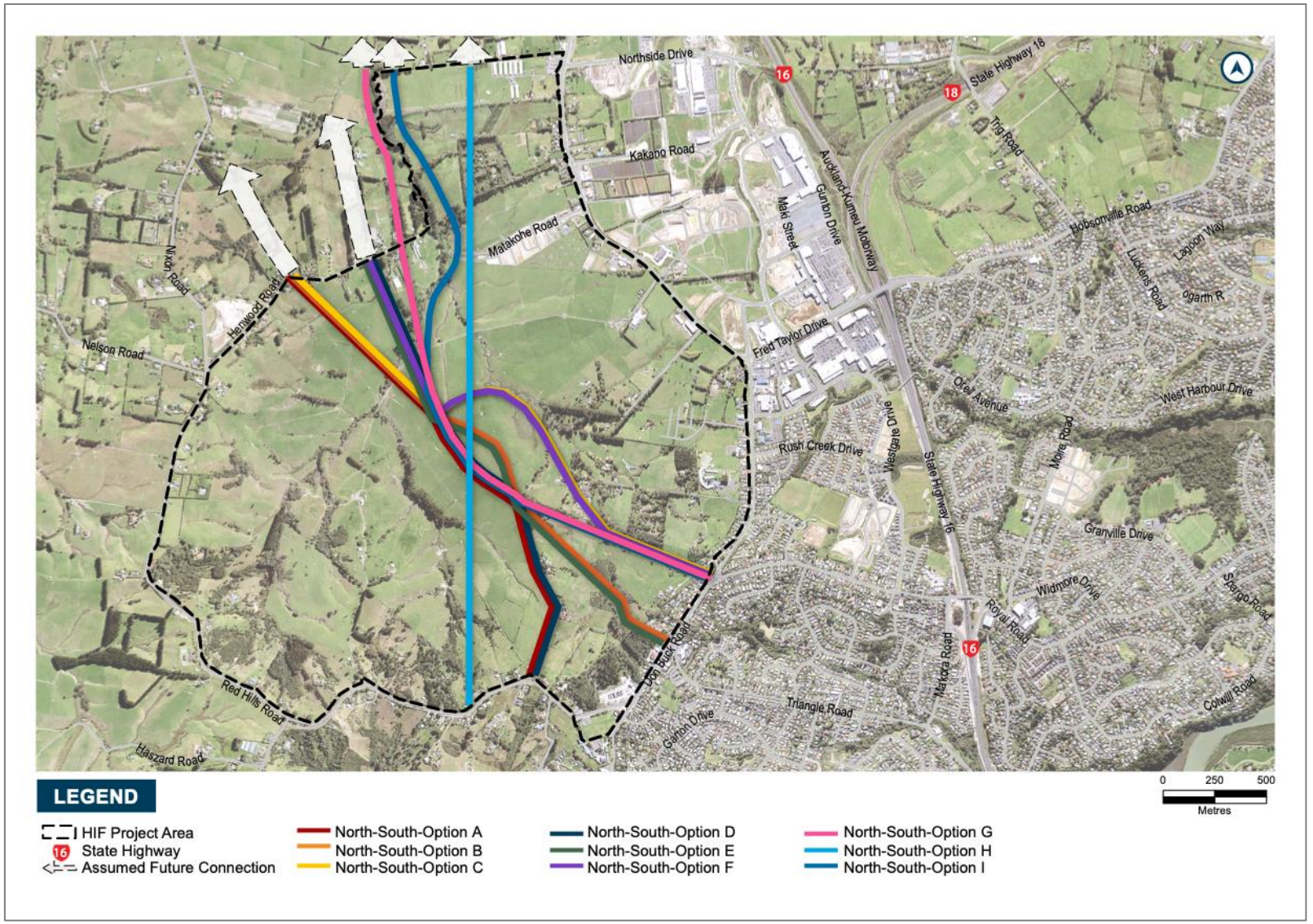


Figure 9: North-South Corridor Long List Options

3.3.1.2 Option Assessment

These long list options were then evaluated using the MCA assessment framework set out above at section 3.1, with input from specialists. Options were also discussed at a workshop with stakeholders and Manawhenua.

While all options scored positively for Investment Objectives 1 and 2, North-South Option F, North-South Option G and North-South Option I scored particularly well due to the more strategic connection provided by the Royal Road connection. Royal Road was considered the most strategic southern connection point due to the direct access to SH16, the North-Western Cycleway and the future Rapid Transit Station which is earmarked for Royal Road.

North-South Option C and North-South Option E scored less favourably compared with all other options for the property and community impacts, as the connection to Triangle Road provided by these options would likely result in significant impacts to the existing local centre which is established along Don Buck Road at this location.

North-South Option H scored poorly against the urban design and landscape/visual criteria due to direct impacts on the Ridgeline Protection Overlay (Natural Heritage) and the Significant Ecological Areas Overlay in the AUP:OP. In addition, the southern connection would not provide direct walking and cycling connectivity to the surrounding strategic network. North-South Option A and North-South Option D also scored less favourably against the urban design criteria, as these options would not provide direct walking and cycling connectivity to the surrounding strategic network. North-South Option B and North-South Option E scored poorly for the urban design: quality of the urban environment criteria as these options bisected the proposed Redhills local centre.

The workshop confirmed Royal Road was the best performing southern connection because it was the most direct route to the strategic transport network, and did not affect the existing local centre at Triangle Road. However, while the options with connections to Triangle Road generally did not score as well as the options with connections to Royal Road, these options still scored well against the investment objectives. It was therefore agreed that these connection options should be included as a variant in the short list.

Manawhenua identified that opportunities to integrate with the natural environment, particularly the Ngongetepara Stream, required further consideration. Therefore as discussed above, an additional option, North-South Option I, was developed following the workshop to test a connection from Royal Road in the south and following the eastern bank of the Ngongetepara Stream in the north. This option scored relatively well against most of the MCA criteria.

Manawhenua outlined that any alignments should avoid the existing wetland area directly east of the proposed Redhills local centre, which was supported further by the ecology technical specialists. North-South Option C and North-South Option F both impact the wetlands.

As the Coatesville/Riverhead area is also a planned growth area under the FULSS 2017, support was expressed for connecting the North-South route to the Coatesville-Riverhead Highway as part of the wider strategic network. This would improve access to transport serviced land and adjacent sub-regions therefore North-South Option H was supported.

3.3.1.3 Recommended Options to proceed to Short List

Based on the MCA and workshop discussions, North-South Option G and North-South Option I were recommended to proceed to the short list stage due to having stronger socio-economic benefits in addition to better urban design outcomes and less adverse environmental effects. Key considerations which were to be further investigated at the short list stage included:

- Alignment to the west (North-South Option G) and east (North-South Option I) of the Ngongetepara Stream;
- Connection with Coatesville-Riverhead Highway to the north;
- Alignment to pass around the west of the proposed local centre; and
- Southern connections to be tested at Royal Road and Triangle Road.

3.3.2 North-South Corridor Short List

3.3.2.1 Option Development

Emerging from the long list recommended options (North-South Option G and North-South Option I), four North-South variant options were developed at the short list phase, which as noted above, were based on, and included, components identified in the long list phase which had individual merit.

Table 5: North-South Corridor Short List Options

Option Name	Option Description
North-South 1	*Variant option to the long list North-South I* North-South connection from Royal Road to assumed future connection to Coatesville-Riverhead Highway/SH16 east of the Ngongetepara Stream. Alignment passes to the west of the local centre and adjacent THAB zoning. Largely aligned with Watercare sewer line. Gradient around Royal Road can be optimised.
North-South 2	*Variant option to the long list North-South G* North-South connection from Royal Road to assumed future connection to Coatesville-Riverhead Highway/SH16 west of the Ngongetepara Stream. Alignment passes to the west of the local centre and adjacent THAB zoning. Gradient around Royal Road can be optimised.
North-South 3	*Variant option to the long list North-South I* North-South connection from Triangle Road to assumed future connection to Coatesville-Riverhead Highway/SH16 east of the Ngongetepara Stream. Alignment passes to the east of the local centre and adjacent THAB zoning. Largely aligned with Watercare sewer line.
North-South 4	*Variant option to the long list North-South G* North-South connection from Triangle Road to assumed future connection to Coatesville-Riverhead Highway/SH16 west of the Ngongetepara Stream. Alignment passes to the west of the local centre and adjacent THAB zoning.

Figure 10: North-South Corridor Short List Options

3.3.2.2 Option Assessment

The short list options were then evaluated using MCA and discussions with stakeholders. Technical investigations were also undertaken to understand the feasibility of the options and if there were any road design, construction or integration issues with the surrounding network.

As shown in Figure 10, the North-South corridor options can be divided into two sections. North of the proposed local centre, the options either go to the east or the west of the Ngongetepara Stream. South of the proposed local centre, the options either connect to Royal Road or Triangle Road.

The options to the west of the Ngongetepara Stream were preferred as they were considered to:

- Create a more efficient use of urban zoned land and were more aligned with planned development;
- Establish a more strategic regional connection;
- Minimise ecological impacts on the stream; and
- Have less topographical constraints for construction.

Options connecting to Royal Road were preferred because they were considered to:

- Avoid a building with historic heritage value;
- Not impact on the existing local centre at Triangle Road;
- Provide the best strategic cycling connection; and
- Provide better connections for public transport, active modes and connections to employment land in Whenuapai.

Whilst there were opportunities and constraints for both alignments, the western alignment and Royal Road connection for the North-South route were supported by all stakeholders. Manawhenua expressed concerns about the lack of local connectivity with Northside Drive and a western alignment. However, it was generally acknowledged that the northern part of the North-South alignment had a greater regional connectivity function to connect to Coatesville-Riverhead, with local connectivity and releasing immediate land supply within Redhills being primarily addressed through the future collector network.

3.3.2.3 Further Corridor Refinement – Assessment of North-South Option 2A

Following the technical investigations, MCA assessment and workshop discussions the project team considered it desirable to locate the alignment of the North-South route as close as practicable to the Transpower transmission lines to reduce land fragmentation and improve future land use design within the Redhills area. This refinement was discussed with Transpower and subsequent high-level feedback and potential mitigation measures were received and incorporated into the design.

North-South Option 2 was considered to be the best performing option for wider connections so was used as the basis for assessing the refinement. A new North-South Option 2A was therefore proposed, locating the route further west to more closely follow the Transpower transmission lines between the proposed local centre and the Redhills Precinct northern boundary, as shown in Figure 11. All other aspects of North-South Option 2 remained the same.

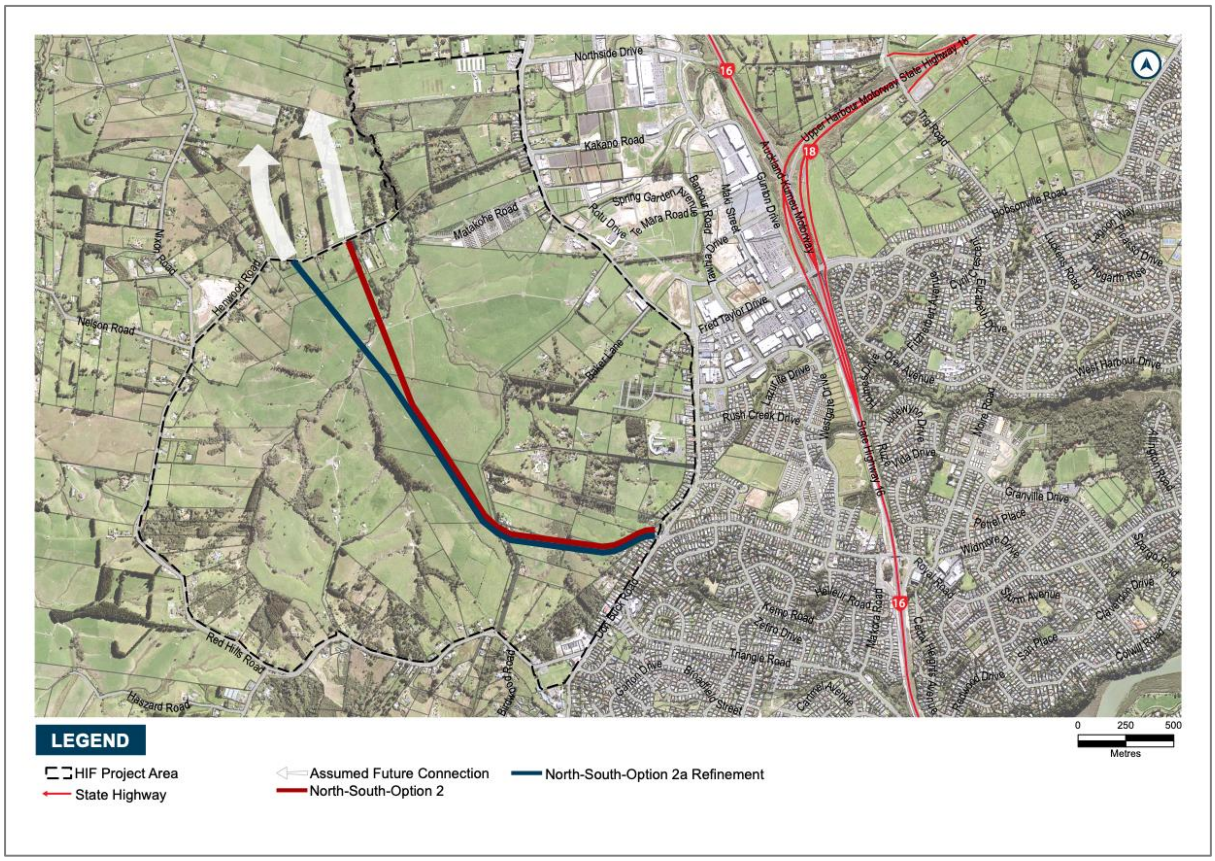


Figure 11: North-South Corridor Short List Options Refinement

The specialists were then asked to assess North-South Option 2A against North-South Option 2. Key points are as follows:

- Both options achieved the same strategic transport connections.
- The co-location of North-South Option 2A with Transpower transmission lines created the following outcomes:
  - A more efficient use of land for housing, and therefore a slight advantage in housing yield;
  - Better implementability (being the consideration of factors that would influence the likely implementation success of the project e.g. funding, technical factors and potential to be granted consent/approval for the works) as it provided an opportunity to integrate with the existing transmission lines;
  - Reduced impacts on landscape values by co-locating infrastructure; and
  - Improved ecological outcomes through less stream crossings and being located further west of the Ngongetepara tributary.
- North-South Option 2A produced a less desirable outcome for walking and cycling due to the steeper terrain.

3.3.2.4 Recommended Option

Overall, the recommended North-South route was North-South Option 2A (Figure 12) as this route provided the best connections with the transport network to achieve the key objectives for the release of land supply and integration with the surrounding network. As discussed, this follows the same route as North-South Option 2, except the northern section follows the alignment of the Transpower transmission lines.

Figure 12: North-South Corridor Recommended Option

4 Consideration of Alternative Routes

As noted above, the process taken to considering alternatives for the RATN was sequential and iterative, with each stage of assessment being informed by the previous stage of assessment and an increasing level of detail and refinement occurring depending on the stage of assessment. As such, the recommended corridor options from the AC DBC were taken forward into a route refinement and assessment phase as part of the SG DBC.

4.1. Overview of Assessment Framework

Following design refinements and further options development, specialists were engaged to assess route options using the MCA process. By this time, the Supporting Growth Programme had finalised a programme wide Supporting Growth Programme MCA framework, in consultation with AT, Waka Kotahi and Manawhenua. The MCA criteria included investment objectives (as discussed further below) and the four well-beings: Cultural, Social, Environmental and Economic. Several sub-criteria were developed under each well-being grouping.

The MCA was not the sole means of assessing options but was complementary to the decision-making process, which also incorporated input from AT, Manawhenua, feedback from the consultation and engagement process, subject-matter experts and the project team. The MCA criteria were tailored to suit the specific issues relevant to the Redhills area, consistent with the Supporting Growth Programme MCA and the earlier corridor assessment framework. A rationalisation process was undertaken to identify any criteria in the Supporting Growth Programme MCA criteria for which scoring may be inappropriate and/or unnecessary – either due to duplication of the criteria with the investment objectives or the inability of any particular criteria to differentiate between options. These criteria are set out at Appendix 2.

4.1.1 Scored Criteria

Technical experts were appointed to undertake assessments of the options in their area of expertise.

The Supporting Growth Programme MCA used a graduated scoring scale, ranging from -5 for Very High Adverse Effects to +5 Very High Positive Impacts to score options against the MCA framework.

Scoring was completed by technical experts and discussed at several MCA workshops. Prior to each workshop, experts were provided with a briefing pack, which contained the MCA criteria and scoring guidelines, an overview of each of the options, and a pre-scoring worksheet where they documented their approach and key assumptions that informed their scoring. On the day of a workshop, the draft scores and commentary were challenged in a group setting. The experts then considered the issues raised in discussion and finalised their scores.

4.1.2 Non-Scored Criteria

In addition to the scored criteria, there were four non-scored criteria considered as part of the Supporting Growth Programme MCA framework. These criteria were less suited for scoring through the MCA scoring framework, and were instead considered through a descriptive (qualitative) assessment which can be used to help to direct decision making (in combination with the scored criteria). A description of the non-scored criteria (as specified by the Supporting Growth Programme MCA framework) is provided in Table 6.

Table 6: Non-Scored Criteria

Criteria	Description
Stakeholder feedback	Stakeholder feedback for each option identifying scale/validity of objections, identified preference/proposed changes to options etc. Feedback provided by other key partners/stakeholders.
Policy analysis	Options alignment with the strategic policy framework including the AUP:OP and Auckland Plan with consideration to provisions that derive from section 6 of the RMA. Ensure the strategic framework assessment does not consider detailed issues raised in the effects criteria.
Value for money	Provide an estimate of likely value for money in conjunction with transport outcomes and construction costs.
Manawhenua	Optioneering commentary including (but not limited to) identification of cultural issues or any other matter related to an option, providing input commentary on criteria scoring, identification of cultural issues etc.

4.1.3 Investment Objectives

As described in section 2.3 for the purpose of undertaking an assessment of options, the investment objectives were refined for this phase of assessment. These investment objectives were developed with a view to supporting the NoR processes that would follow. Table 7 outlines the Redhills specific investment objectives for this stage.

Table 7: Redhills Specific Investment Objectives

Investment Objectives	Sub-criteria
Investment Objective 1 Create appropriate access to the Redhills live zoned land that leads to desirable urban form outcomes and enables the release of land for housing, initially by 2021, and over a 30-year period, in line with the FULSS.	• Network connectivity and integration • Intersection performance • Traffic performance (LOS) • Housing yield • Timing of infrastructure • Severance effects • Direct access
Investment Objective 2 Reduce reliance on private vehicles by providing travel choices for all trip purposes, thereby contributing to region-wide mode shift targets, over a 30-year period.	• Mode share • Public transport prioritisation • Cycling provision • Gradient

4.1.4 Intersection Assessment

Each intersection option across both the North-South and East-West alignments formed part of an existing road option and had therefore been broadly assessed using the MCA framework. To assist in the decision-making process for the design of each intersection a further refined MCA framework was developed, comprised of a limited set of MCA criteria appropriate for the scale of variation in each proposed intersection form. The key factors for the assessment were the footprint and function of each intersection option. Accordingly, along with the investment objective scoring, the following

criteria were selected for their ability to differentiate between the proposed intersection forms (discussed in section 4.3):

Table 8: Intersection Assessment MCA Criteria

Criteria	Commentary
Urban design	Providing design insight between intersection forms and associated external impact on surrounding community.
Land requirement	Confirm the extent of impact on surrounding properties, including the number and type of properties affected.
Landscape/visual	Consider the visual impacts associated with the design variants.
Construction cost/risk	Detail the likely cost and risk profile between both intersection forms.
Safety	Safety for all transport users, including private vehicles, public transport, pedestrians, cyclists, and other road corridor users.

4.2. Review of Options

Prior to route refinement occurring however, the previous corridor option development and assessments (sections 3.2 and 3.3) undertaken during the AC DBC were further challenged by the project team to ensure the process that had been undertaken to date was robust.

4.2.1 North-South Options Review

The northern section of the North-South corridor recommended option (section 3.3.2.4) extended from the proposed Redhills local centre to a connection with the Coatesville-Riverhead Highway to the north. The northern section was the subject of Environment Court appeals (as discussed at section 3.2.2.3) The Supporting Growth team considered that further assessment of alternatives for this northern section needed to be undertaken, including around the use of the existing Red Hills Road/Nixon Road/Taupaki Road connection, in light of the appeals before the Environment Court. It was also noted that this part of the alignment required further investigation regarding the relationship with the stream network. On this basis, the project team decided to remove this section of the corridor from the accelerated HIF work and include it in the wider North West programme for further consideration.

In relation to the southern section of the North-South corridor, the project team determined that sufficient consideration of alternatives had been undertaken in the previous option development and assessment process (section 3.3), including a detailed assessment of the alternative Royal Road and Triangle Road connections, and therefore no additional assessment was required. As such the AC DBC recommended option for the southern section of the North-South corridor (section 3.3.2.4) was moved forward into route refinement.

4.2.2 East-West Options Review

The project team considered that further work was required to understand the design and function of the Dunlop Road and Baker Lane dual arterial corridors and their intersections of the East-West corridor recommended option (section 3.2.2.4). Two options were developed that provided alternative intersection prioritisation within the wider East-West arterial corridor as shown in Table 9.

Table 9: East-West Dunlop Road and Baker Lane Alternative Intersections

Option Name	Option Description
New East-West Road Option A	Enables Baker Lane as the main route for general traffic, and Dunlop Road intersecting the East-West corridor/Baker Lane as the main route for public transport. This alignment formed part of the East-West corridor recommended option (section 3.2.2.4).
New East-West Road Option B	Enables Dunlop Road as the main corridor and provides public transport priority along Dunlop Road, with Baker Lane intersecting the East-West corridor/Dunlop Road. The option was designed to straighten out Dunlop Road and improve the intersection form.

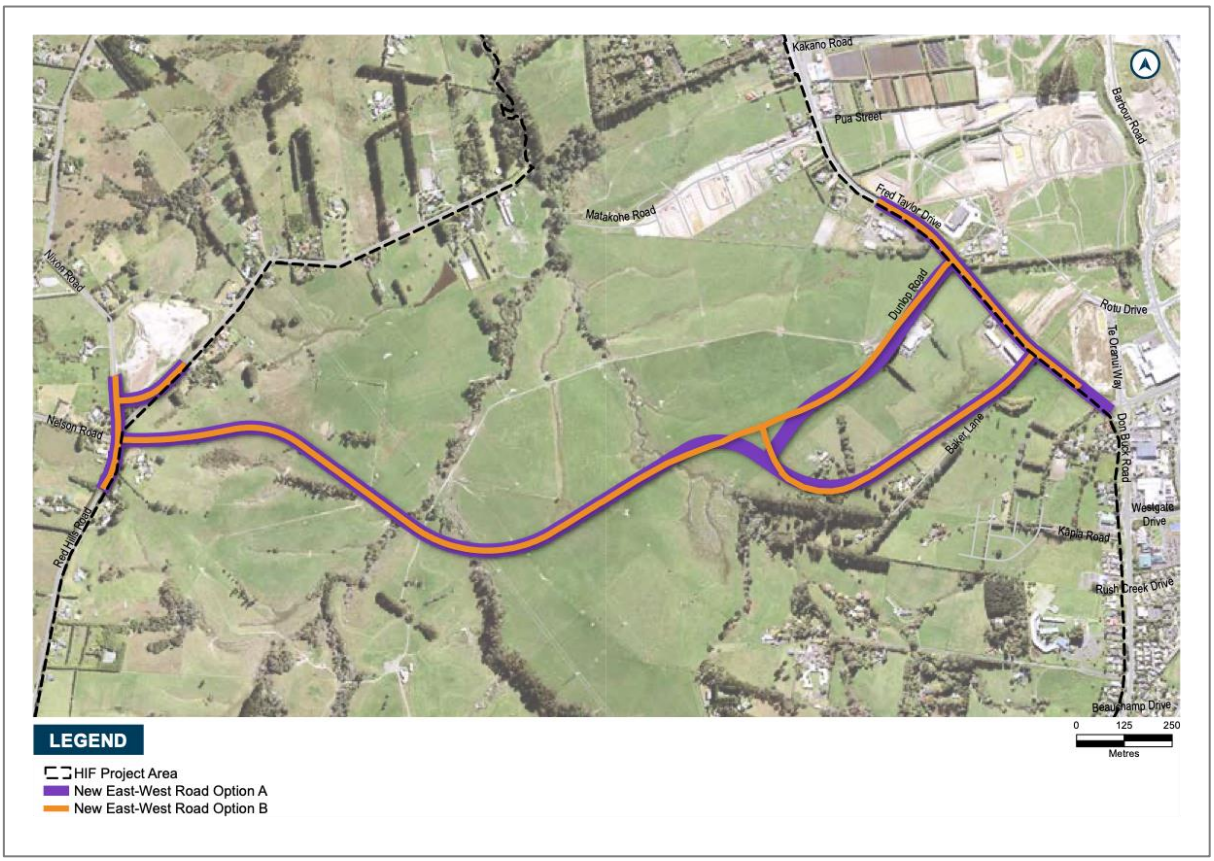


Figure 13: East-West Route Alternatives

In addition to East-West Options A and B, the project team also considered different designs for intersection form (roundabout v signalisation) at the following locations:

- North-South arterial and Don Buck Road/Royal Road intersection;
- East-West arterial and Red Hills Road/Nixon Road/Nelson Road intersection;
- Baker Lane/Fred Taylor Drive intersection; and
- Dunlop Road/Fred Taylor Drive intersection.

4.2.2.1 Investment Objectives Assessment

East-West Option A and Option B were assessed against the relevant sub-criteria from the investment objectives. Option A scored positively for all sub-criteria, while Option B was neutral.

Option A enabled Dunlop Road to act as the main east-west public transport link, with Baker Lane attracting the majority of the general traffic movements. This option was considered to be well integrated with the planned transport network to the east and west of Dunlop Road (which included an east-west corridor that provided for public transport movements between the proposed Redhills local centre and the Westgate Metropolitan Centre and future RTN.

Option A provided for more efficient and reliable public transport prioritisation because general traffic volumes are more likely to use Baker Lane, leaving Dunlop Road to be utilised as an important public transport connection. This is a more desirable outcome than Option B which sees higher traffic volume along Dunlop Road. Option B was not considered to be well integrated with surrounding transport network plans and was likely to adversely impact public transport patronage and the achievement of mode shift targets.

4.2.2.2 Scored Criteria

East-West Option A and B were differentiated by a limited number of criteria. This included urban design, with Option A scoring positively as it would contribute positively to connectivity, local and regional way-finding, and flexibility in development, and would be legible and of appropriate scale.

In contrast, Option B scored negatively in relation to urban design due to its poor integration with the public and private realms, poorly defined way-finding, and inflexibility to support connectivity opportunities. These differences were attributed to the changes in form and function of the Dunlop Road arterial within the wider East-West corridor, and the consequential poor integration with the future Redhills local centre and existing Westgate metropolitan centre, including the potential for Option B to undermine the intended public transport function of Dunlop Road.

4.2.2.3 Non-Scored Criteria

The following feedback and assessment was undertaken for the non-scored criteria:

- **Stakeholder feedback:** AT has been in discussions with the developers who own land in the area of Dunlop Road and Baker Lane regarding the alignment options. From a general development perspective, it was determined to be beneficial to not have two corridors traversing the land of a single land owner/developer, and to provide enough development opportunities on each property adjacent to the corridors. As the landowner plans develop, there may be opportunities to be involved in master planning exercises with the developers. This would enable greater flexibility and will allow AT to integrate with other infrastructure and development layout needs and constraints. Overall, Option A was preferable over Option B as it minimised the fragmentation of developer land, allowing for more developable land for housing.
- **Policy Analysis:** Both Option A and B were considered to be generally consistent with the AUP:OP policy framework.

- **Value for Money:** A high-level assessment was undertaken which determined that costs and benefits for both Option A and B would be similar. Option B was identified as having less public transport benefits due to delays caused by the increased attractiveness to general traffic as a result of the alignment layout.
- **Manawhenua:** Manawhenua provided support for Option A and the use of Dunlop Road as a public transport link between the proposed Redhills local centre and the Westgate Metropolitan centre and the future rapid transit station.

4.2.2.4 Recommended Route

Overall, based on the assessment and analysis documented above, East West Option A was considered to be the preferred option for the East-West route in Redhills.

Figure 14: East-West Recommended Option

4.3. Redhills Intersections

Following identification of the preferred options for both the North-South and East-West alignments, the four intersection locations identified through the options assessment, being the North-South arterial/Don Buck Road/Royal Road intersection, the Dunlop Road/Fred Taylor Drive intersection, the Baker Lane/Fred Taylor Drive intersection and the East-West arterial/Red Hills Road/Nixon Road/Nelson Road intersection were assessed on the basis of alternative designs (roundabouts vs. signalisation).

4.3.1 Investment Objectives Assessment

Overall, signals were assessed as performing better than roundabouts at all intersections except for the Red Hills Road/Nixon Road/Nelson Road intersection. Both signals and roundabouts were considered to be able to integrate with the surrounding network, however roundabouts were deemed to present issues for network legibility and safety for pedestrians and cyclists. Signalised intersections are easier to navigate and more clearly enable pedestrian movements than roundabouts – assuming formalised crossings are provided at all arms, whereas roundabouts are less legible and navigable for pedestrians due to the inability to incorporate a specific phase for pedestrians.

The Red Hills Road/Nixon Road/Nelson Road intersection differs from the other intersections as it is located on the rural-urban fringe at the western edge of the Redhills area. A roundabout at this location can signal the transition between the urban and rural areas and encourages road users to moderate their speed as they move between the rural and urban road networks. Signals could be used at this intersection; however, a roundabout was preferred as it would better integrate with the adjacent semi-rural network. Traffic volumes at this intersection were also forecast to be lower than the other three intersections, making crossing opportunities easier for pedestrians and cyclists.

4.3.2 Scored Criteria

Overall, signals scored better than roundabouts under the urban design criteria as they provide an integrated and efficient interface between public and private realm spaces, flexibility in their ability to support other connectivity enhancement opportunities, consistency of scale with the anticipated adjacent land uses and support priority principles in relation to pedestrian and cycle networks.

Roundabouts generally have larger land requirement impacts, with an exception being the North-South/Don Buck Road/Royal Road intersection (as the size of the realigned intersection meant the signalised intersection also resulted in a moderately negative land impact).

User safety was the only other distinguishing criteria, with signals scoring better at all intersections except the Red Hills Road/Nixon Road/Nelson Road intersection, where the roundabout option scored more favorably for safety.

4.3.3 Recommended Intersections

Based on the analysis and assessment documented above, the following options were recommended at each intersection:

Signalisation

- North-South arterial/Don Buck Road/Royal Road intersection
- Dunlop Road/Fred Taylor Drive intersection
- Baker Lane/Fred Taylor Drive intersection

Roundabout

- East-West arterial/Red Hills Road/Nixon Road/Nelson Road intersection

5 AC DBC and SG DBC Options Review

The options assessments in the AC DBC and SG DBC were undertaken prior to the introduction of the National Policy Statement for Freshwater Management 2020 (NPS-FM). A further review of the options considered in each DBC was subsequently undertaken with a focus on the impacts on natural wetlands.

It was found:

- The AC DBC and SG DBC confirmed the need for strategic transport connections at Nixon Road to the west, Dunlop Road and Baker Lane to the east, and Royal Road to the south.
- The AC DBC established the benefits of the new arterial corridors abutting the future Redhills local centre (as opposed to bisecting it), as avoiding severance issues, and providing for better integration with future land use, which is expected to be characterised by small scale businesses serving the needs of the local community.
- The AC DBC process resulted in the North-South corridor running to the west of the future local centre to avoid impacts on the wetlands immediately to the east. The East-West corridor alignment was progressed to the north of the future local centre as this achieved better integration for land use and transport, reducing the severance of the THAB zone around the local centre. In the review of this option, it was noted that situating the East-West corridor to the south of the local centre would have resulted in impacts on the wetlands located immediately to the east. Refer to Figure 15 below.

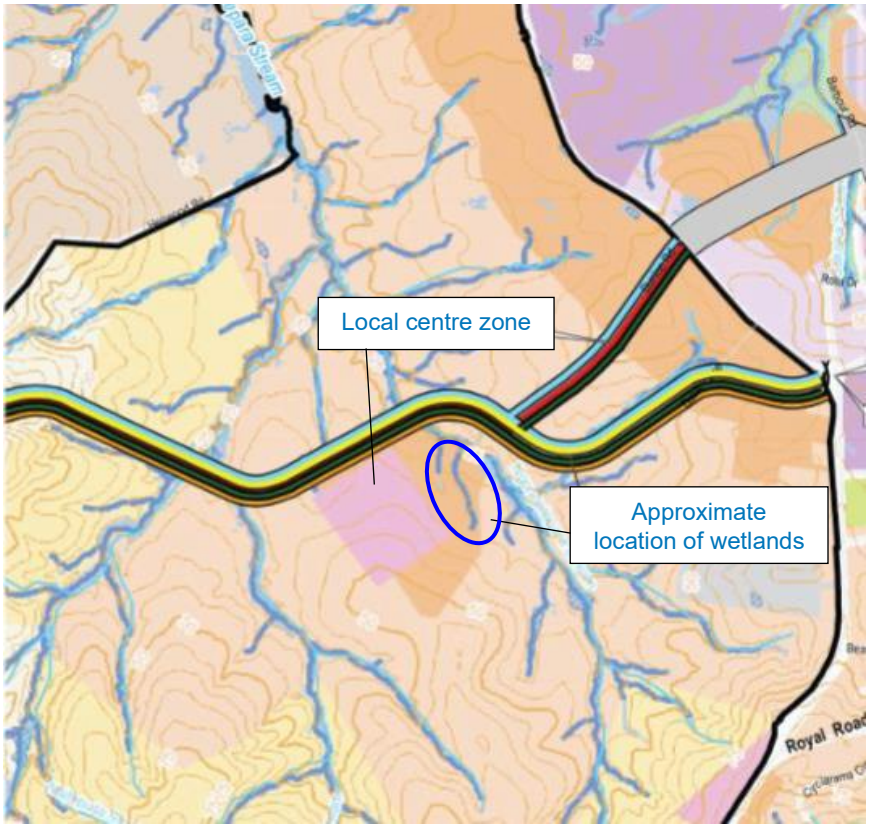


Figure 15: East-West Corridor and wetlands east of the Local Centre

- The review found that the strategic connections and relationship to the future local centre largely determine the form of the RATN. Impacts on wetlands could not be entirely avoided given the need for arterial transport corridors to traverse the Redhills area, to enable its development, however, the preferred North-South and East-West corridors were refined to reduce wetland impacts where possible.
- On this basis, it was concluded that the preferred North-South and East-West alignment as identified by the SG DBC should be progressed.

Subsequently an opportunity was identified to refine the design of the preferred option to reduce wetland impacts. The alignment of the North-South corridor immediately west of the Don Buck Road / Royal Road intersection was amended, introducing a curve to enable the corridor to run closer to the rear of the existing residential properties on Don Buck Road. This pulled the alignment back from two wetland features, reducing the extent of impact. It is possible that the alignment could be refined further at detailed design stage to entirely avoid wetland impacts in these two locations.

6 Stormwater Assessment

Alternative stormwater designs were considered for the RATN to inform the necessary designation boundaries. The stormwater options considered were directed by minimum stormwater outcomes and the engineering constraints of the RATN area. While the evaluation of stormwater alternatives involved technical input from a range of other (non-engineering) disciplines, the primary decision-making process was driven by key engineering considerations which directed the feasibility and suitability of the options available.

As such, the MCA framework was not considered to be an effective decision-making tool for this purpose. Instead, the assessment of stormwater design alternatives used the following process:

1. Identification of the expected minimum stormwater outcomes for the Project (Stormwater Design Philosophy Principles);
2. Analysis of key (engineering and non-engineering) constraints and design considerations which influence the potential stormwater design solutions; and
3. Qualitative evaluation of the potential stormwater design options available to achieve the desired stormwater outcomes within the context of the key constraints and considerations.

The following sub-sections outline this process in relation to the RATN.

6.1. Stormwater Design Philosophy Principles

The key principles of the stormwater design philosophy which were adopted for the consideration of stormwater design alternatives are outlined in Table 10.

Table 10: Stormwater Design Philosophy Principles

Topic	Stormwater Design Philosophy Principles
Designation Boundary	• Establish a conceptual stormwater design to inform the designation boundary for the RATN. • Provide sufficient space to allow the future stormwater design solution to be further developed during subsequent stages of the RATN.
Stormwater Quality	• Avoid the potential impacts of stormwater runoff from new high contaminant generating impervious areas through the treatment of stormwater in accordance with GD01: Stormwater Management Devices Guide (**GD01**), where practicable.
Stormwater Quantity	• Avoid adverse effects on the operation and structural integrity of other infrastructure in a 100 year rainfall event. • Avoid increase in inundation affecting upstream and downstream properties in a 100 year rainfall event. • Adopt on-site stormwater solutions for the retention/detention of runoff from new impervious areas where practicable.
Operation and Maintenance	• Adopt whole of life considerations in the selection and design of the treatment devices – including design life, maintenance cost, and operational effectiveness. • Adopt water sensitive design principles (as specified by GD04: Water Sensitive Design Guide (**GD04**)) where practicable.

Construction	• Minimise construction effects where practicable by:
	  • Limiting cut/fill requirements by locating stormwater devices in locations which utilise the natural topography of the RATN area; and
	  • Minimising the construction footprint of the RATN by locate stormwater devices as close as possible to the transport corridor.

Ecology and Hydrology	• Avoid direct impacts on existing watercourses by locating stormwater devices offline, where practicable. • Avoid indirect impacts on the catchment hydrology by minimising changes to the general flow of groundwater and overland flow within the catchment.
Climate Change	• Avoid the potential impacts of climate change by designing to account for increased Average Recurrence Interval storm events as outlined in the Auckland Council Code of Practice for Land Development and Subdivision Chapter 4 – Stormwater (2015).
Private Property	• Minimise permanent impacts on private property by locating stormwater devices within the transport corridor where practicable. • Minimise impacts on established urban areas by locating stormwater devices in greenfield areas where these are available.

6.2. Constraints and Considerations

Table 11 provides an analysis of the key (engineering and non-engineering) constraints and design consideration which influence the potential stormwater design alternatives.

Table 11: Key Constraints and Design Considerations

Constraint	Description
Corridor Width	• The general cross-section for the RATN corridors provides sufficient space to establish rain gardens/swales.
Topography	• The RATN is located along an undulating landscape with sections of the alignment in excess of 8% grade. This may restrict the practicality of using rain gardens/swales. • The topography of the surrounding catchment is undulating with numerous high and low points which limits the practicality of locating stormwater devices.
Infrastructure capacity	• There is no existing stormwater infrastructure within Redhills. • The existing stormwater infrastructure along Don Buck Road and Royal Road has limited capacity.
Watercourse and hydrology	• There are existing watercourses and wetlands located on the periphery of the RATN. • There are overland flow paths crossing the RATN area and surrounding catchment.
Land use	• The existing transport corridor along Don Buck Road and Royal Road is constrained by existing residential land use which limits the availability of space adjacent to the corridor.

	• The current land use in Redhills is rural in character but has been zoned for a range of residential and business land uses under the AUP:OP. While this provides less of a constraint compared to the existing urban environment, the Project is seeking to support growth and therefore developable land adjacent to the corridors should be maximised. Additionally, Integration with the future urban land use in this greenfield area needs to be accommodated.

6.3. Stormwater Design Options

GD01 was used to guide the range of potential stormwater devices which were considered for the RATN. The range of potential stormwater devices each provide differing methods for managing the effects of stormwater runoff with the aim of achieving one or more of the following:

- Managing the impacts of stormwater quality and quantity
- Mimicking or replicating natural runoff and flow
- Meeting the stormwater quality requirements of the AUP:OP
- Aligning with water sensitive design principles (GD04).

Stormwater devices can generally be considered to provide one or both of the following functions:

1. Treatment of stormwater runoff to manage contaminants; and/or
2. Retention and/or detention of stormwater runoff to manage flow.

Table 12 provides a list of the potential stormwater devices which were considered for the RATN and identifies the primary function(s) of each device.

Table 12: Potential Stormwater Devices and Function

	Treatment	Retention/Detention
Stormwater Wetland(s)/Pond(s)	✓	✓
Rain Gardens/Swales	✓	✓
Filtration Devices	✓	✗
Detention Tanks	✗	✓
Pervious Paving	✓	✓
Existing Network	✓	✓

Table 13 provides an analysis of the suitability of each of the potential stormwater management device options with respect to the RATN area and stormwater design philosophy taking into account both treatment and retention/detention functions.

Table 13: Consideration of Potential Stormwater Options

Treatment Options	Comments
Stormwater Wetland(s)/Pond(s)	Constructed wetlands provide water quality and quantity management. Plants and microbes within a wetland can remove, metabolise or inactivate pollutants. Wetlands can be designed for detention of the 90th/95th percentile flows, and for attenuation up to the larger 100 year storm events for flood mitigation. Wetlands are normally placed in the lower areas of a catchment as a final stage of the treatment suite. Wetlands can at later design stages be combined with at source bioretention devices located on the proposed arterial routes. This can improve longevity and the required maintenance works. Wetlands can provide additional Manawhenua values and incorporate water quality treatment without any additional requirement of a stormfilter device/s. The key constraint to the use of a wetland is the availability of sufficient space. As much of the RATN is surrounded by greenfield land which is identified for urbanisation this area is considered suitable for locating a wetland.
Rain Gardens/Swales	Rain gardens/swales are generally a favourable stormwater treatment option for transport corridors as they can often be incorporated into the design of the transport corridor and provide an effective treatment option with relatively low maintenance cost. The general corridor cross-section for the RATN corridors provides sufficient space to incorporate rain gardens/swales into the corridor. However, the Project is seeking to support growth and therefore developable land adjacent to the corridors should be maximised. Provision of wider corridors for swales would not be as supportive of this objective. Rain gardens/swales provide a hydrological function by reducing runoff volumes (through retention) and detaining runoff flows. However, they generally have limited capacity to attenuate larger events and generally need to be supplemented with additional stormwater devices for this function. Rain gardens/swales may be viable within the medium strip of the corridor where there is sufficient space and these are not required for transport functions. Rain gardens/swales are ineffective at providing treatment at grades which are in excess of 8%, and retention//detention at grades in excess of 4%. Parts of the RATN have a slope greater than 4% and parts have a slope greater than 8%, therefore rain gardens/swales will be ineffective along these sections of the alignment and alternative treatment options would be required in these sections.
Stormwater Filters	Stormwater filters can provide effective treatment where it is possible to provide a bypass for events greater than the water quality storm event. There is sufficient corridor width to provide underground stormwater filters within the RATN corridors. These devices require ongoing maintenance in accordance with the manufacturers' specification. The devices have limited lifespans and need to be replaced periodically. In comparison to other treatment device options this ongoing maintenance cost and limited life span make this option comparatively cost inefficient. Stormwater filters also do not provide any form retention/detention function and additional stormwater devices are also required to provide this function. Accordingly, stormwater filters are generally less favourable unless there are significant constraints which prohibit the use of other devices.

Pervious Paving	Pervious pavement will not be suitable for traffic areas of high acceleration, decelerating or turning. This option will not comply with the pavement and structural requirements of the RATN.
Existing Public Stormwater Network	There is no existing stormwater treatment within Redhills, therefore this is not a viable option.

6.4. Stormwater Recommendations

Based on the above assessments, the recommended stormwater system for the RATN will be comprised of constructed wetlands to provide water quality and quantity management.

The selection of these constructed wetlands will inform the designation boundary for the RATN, with the final design of the wetlands and primary stormwater system to be determined at the later detailed design phase when regional resource consents are sought.

7 Alternative Methods

7.1. Introduction

The Supporting Growth Programme seeks to identify and protect the required transport network to support Auckland's projected growth over the next three decades. The RATN is likely to be delivered over the next three decades. AT has decided to use a designation as the method to both protect the RATN over the coming decades and allow for the future construction, maintenance and operation of the RATN. Section 171 of the RMA requires an assessment of alternative methods, in addition to routes and sites.

Other possible methods to achieve the RATN include:

- Landowner/developer negotiation;
- Precinct plan or further plan change;
- Obtaining resource consents;
- Alternation to existing designations;
- Traditional property acquisition; or
- A combination of the above.

HIF funding is available for parts of the RATN, including NoR2a (Dunlop Road), NoR2b (Baker Lane) and part of NoR2 (to the intersection with the North-South Project). These projects are likely to be implemented in the short term (within 5 years), while the remainder of the RATN is anticipated to be constructed at a later date.

7.2. Key Risks and Considerations

The following provides an overview of the key considerations which have influenced the preferred methodology for delivering the RATN.

- **Development Pressure**: Redhills is zoned for a range of residential and business land uses under the AUP:OP to enable urban development of the area. A number of developers with landholdings in Redhills are known to be working towards development in the immediate future.
- **Fragmented Land Ownership:** The northern part of the Redhills area is owned by a single landowner. However, the southern half of Redhills is owned by numerous land owners, with fragmented and constrained land holdings around the Don Buck Road/Royal Road intersection. The fragmented nature of the land holdings to the south means there is a low likelihood of the entire RATN being implemented as part of a wider land development project.
- **Redhills Precinct Plan**: The Redhills Precinct Plan in the AUP:OP (I610 Redhills Precinct) provides an indicative arterial network for Redhills (I610.10.1. Redhills Precinct: Precinct Plan 1) which generally aligns with the RATN.
- **Construction Timing**: HIF funding is limited to particular parts of the RATN. It is likely the RATN will be delivered in stages, potentially by different landowners in conjunction with AT.
- **Existing Fred Taylor Drive Designation:** Two existing transport designations apply to parts of the RATN – Fred Taylor Drive Transport Corridor (1433, AT) and Road Widening – State Highway 16 (Westgate to Whenuapai) (1468, AT). Together these designations

provide for a transport corridor at least 30m wide along Fred Taylor Drive between Don Buck Road and the Brigham Creek roundabout.

7.3. Route Protection Mechanisms

Table 14 provides an assessment of the suitability of each of the available methods.

Table 14: Consideration of methods to achieve the RATN

Mechanism	Consideration	Suitability
Designation	A NoR to designate land for a public work under the RMA provides a strong level of route protection from incompatible development particularly where development pressure is anticipated along the corridor. Once confirmed it also provides authorisation to undertake and maintain the works. A NoR has interim route protection effect as soon as the notice is lodged with Council which ensures the corridors will be protected from incompatible development from that date, enabling a cohesive interim protection for linear networks like roads. This effectively manages risk of development within the corridor that may otherwise hinder the proposed work. This is particularly important as Redhills is anticipated to undergo significant urbanisation as signalled by the AUP:OP and Redhills Precinct Plan. A number of large-scale residential developments are already underway. A designation, if confirmed, is included in the relevant district plan as a publicly visible layer. This provides visibility to the public about the intended land use and project extent. It also provides certainty to other infrastructure providers, developers and landowners about the future network location, enabling coordinated development planning. A designation enables streamlined delivery of a corridor following detailed design, by consenting the project requirements under the district plan and allowing OPWs to be sought at a later date. Designations also provide landowners with particular rights under the RMA to require acquisition if they can no longer have reasonable use of their properties. Further, a designation does not preclude AT from reaching agreements with landowners to deliver parts of the RATN as the Redhills area develops.	**Strong**
Land owner/ developer negotiation	Landowner or developer negotiations can include private parties purchasing land and vesting roads that support development, or development agreements whereby a developer agrees to “set aside land for future transport corridor” and/or construction at a future point. Infrastructure Funding Agreements (IFA) are the preferred form of landowner/ developer agreement to enable delivery of transport infrastructure. IFAs provide route protection where a developer agrees to design and implement a project. For landowner agreements to be efficient, the aspirations and timing of each party must be aligned. Securing agreements with some developers to deliver parts of the RATN may be likely, as a number of them are already underway with planning and bulk earthworks. However, where a developer has no immediate plans to develop, there is limited incentive to enter into longer term agreements to provide route protection for the network.	**Moderate**

Mechanism	Consideration	Suitability
	Landownership in other parts of the RATN is more fragmented; therefore, this method relies on individual property owners, who may not be developers (with sufficient capital or expertise) to enter into agreements. Private property owners with no development aspirations that are not part of a broader scheme may not have capacity or desire to negotiate such agreements. Additionally, it is not compulsory for landowners to enter into agreements, for linear corridors requiring a consistent network, agreement must be secured along the length of the route. A piecemeal approach significantly reduces the utility of this method for route protection purposes.	
Precinct Plan or further Plan Change	The RATN is already indicatively shown in the Redhills Precinct Plan in the AUP:OP (generally in accordance with the RATN as shown in the Assessment of Environmental Effects). The activity status for development within the Precinct encourages applications in general accordance with the Redhills Precinct Plan, and the provisions relating to the transport network were the subject of Environment Court appeals discussed earlier (section 3.2.2.3). Landowners may seek non-complying consents that do not deliver the indicative network shown in the Redhills Precinct. The inclusion of the RATN in the Redhills Precinct Plan in the AUP:OP does not provide protection from development and does not authorise the construction of the RATN. Alternatively, a new Corridor Overlay could be included in the Unitary Plan to provide for the RATN. AUP:OIP overlays can provide certainty to the community by publicly identifying the network, however they do not protect the land necessary for the works. Any overlays would require a plan change, this may not be an approach accepted by Council as the AUP:OP overlays are generally focussed on RMA Section 6 and 5 matters (e.g., heritage, significant ecological areas). There are existing infrastructure overlays in the AUP:OP for noise (e.g., Airport Noise Overlay, City Centre Port Noise Overlay) as well as the National Grid Corridor Overlay, which is most reflective of how an overlay may appear for a transport corridor. However, it is noted that the National Grid is also served by the NPS on electricity transmission which sets out key protections from the adverse impacts of third-party development. There is currently no NPS which would provide the required protection for key transport corridors. Progressing a 'Transport Corridor Overlay' within the AUP:OIP is not considered as a viable route protection method for the RATN.	**Moderate**
Obtaining resource consents	Resource consent granted under a district plan gives approval to use or develop land. A resource consent, if granted, is not shown publicly in a district plan meaning the public would have limited awareness of its existence. It does not protect land or provide rights of exclusion that would hinder incompatible land use. It would be possible to progress the RATN via district resource consents (along with necessary regional consents). This process would require a complex assessment against a range of district plan rules, resulting in a more complex application process and less cohesive conditions set.	**Weak**

Mechanism	Consideration	Suitability
Alteration to existing designations	The existing Fred Taylor Drive designations provide for widening of that particular road corridor beyond the existing carriageway. These designations could be varied to provide for the upgrade of the Fred Taylor Drive part of the RATN, but this does not provide for the protection or delivery of the majority of the RATN.	**Weak**
Traditional property acquisition	Traditional property acquisition to acquire the necessary land for the RATN was considered. Land is typically purchased a few years before a project goes to construction and delivery, based on detailed design plans. Purchasing property at this stage ahead of detailed design may result in too much or too little land being required and may not enable construction areas to be protected which are required temporarily to construct the corridors. Like developer negotiations, traditional property purchase would not provide route protection until acquisition, where multiple owners are present this is unlikely to be achieved in a timely or consistent manner.	**Weak**

7.4. Recommendations

A designation is the most efficient and effective mechanism for enabling construction, operation and maintenance of the RATN as it will:

- Provide certainty to all parties by defining use and extent of the RATN
- Set aside the required area and restrict activities or use that may prevent or hinder the identified RATN being realised
- Enable ongoing interim use of the required land by owners where it will not hinder the RATN
- Allow detailed design to be undertaken prior to project delivery
- Provides authorisation under the district plan to undertake the works, and maintain and operate the transport corridor.

8 Conclusion

A wide range of alternatives have been investigated for addressing the future transport needs of the Redhills area. A key driver for the consideration of alternatives was to avoid adverse effects where practicable. That evaluation confirmed that the following options would provide a balance of strong transport and urban outcomes for Redhills and the wider North West area, while minimising potential adverse effects:

- A North-South arterial corridor, connecting from the upgraded and signalised Don Buck Road/Royal Road intersection in the south and connecting to the East-West arterial corridor to the west of the proposed local centre and adjacent THAB zoning. This corridor is situated to the West of the Ngongetepara Stream and aligned with the existing Transpower transmission lines that traverse the Redhills area.
- An East-West arterial corridor, connecting from the upgraded (roundabout) Red Hills Road/Nixon Road/Nelson Road intersection to the east and connecting to Fred Taylor Drive to the west. The section of the corridor to the east of the proposed local centre includes two dual arterial corridors; Dunlop Road (with public transport prioritisation) and Baker Lane.

The assessment of alternatives has been based on a comprehensive and replicable optioneering process. As such, it is considered that adequate consideration has been given to alternative sites, routes or methods for undertaking the work, satisfying the requirements of section 171(1)(b) of the RMA.

Appendix 1. MCA – corridor assessment

Investment Objectives	Measures	
Performance against objectives	Investment Objective 1 *Increase the supply of transport infrastructure serviced land for housing in Redhills and Whenuapai, appropriately integrated with adjacent land uses, initially by 2021 and over a 30-year period, in line with the Future Urban Land Supply Strategy.*	
	Investment Objective 2 *Develop liveable, connected communities at Redhills and Whenuapai through an integrated and resilient transport system which, over 30 years, will enable efficient access to jobs and core services, reduce private vehicle mode share and provide travel choices.*	
Implementability	**Sub-criteria**	**Measures**
Consentabilty	Consentabilty	What is the level of complexity in gaining statutory approvals and scale/significance/costs of mitigation? Is a new designation or alteration required? Consideration of conflicting/ overlapping designations. Qualitative assessment of the number of consents required and consideration of the zoning and Plan objectives and policies.
Affordability	Operational/ Maintenance	Are there any factors that might affect the ability to operate or maintain the option over its projected life without major additional costs?
	Financial	Funding and likely BCR.
Stakeholders/ Customers	Stakeholders/ Customers	Expectation of this option to relevant stakeholders/customers (how aligned or otherwise is the option with these expectations)? Scale/validity of anticipated objections from stakeholders/customers related to this option (risk)? Alignment to strategic plans and policies (Central Government, Auckland Council, CCOs).
Assessment of Effects		
Transport	User safety	Safety for all transport users, including: • Private vehicles • Walkers/cyclists
	Transport system integration	Are there any wider transport system effects (i.e. impacts on other strategic connections and/or the existing transport network) and how well does the option meet the forecast transport demand?
Construction (temporary impacts)	Construction impacts on utilities and lifeline infrastructure	Requirements for relocation/design of alternative major infrastructure, including consideration of Safety impacts of such requirements and risk of continuity of service over construction.
	Construction costs	Assessed cost for construction of options including: • Complexity and risk in construction • Complexity in programme • Cost and complexity of undertaking works on contaminated land (including health and safety)

	Construction impacts	Impacts on people and businesses from disruption from traffic, dust, noise (including from a quality of life/amenity point of view and economic impacts on businesses).
Socio-economic	Urban Design: Land use futures	To what extent will there be impacts on the orderly development of land (within the corridor, adjacent to it and impacted by it – i.e. consider all 3 scales), in relation to: • Underlying urban structure (block and street pattern) • Size and shape of potential development parcels to enable appropriate building typologies • Ability to consolidate residual land • Access that does not prevent neighbouring development
	Social cohesion	Will the option impact on Connectivity/Accessibility for the public including access to: • Jobs • Other communities or within the same community (i.e. social cohesion) • Shops/services/other community and cultural facilities/'attractors' Will the options impact on existing community facilities and open space?
	Human Health	Are there any sensitive land uses nearby or clearly planned (childcare centres, hospitals, rest homes, marae, schools)? Will the option impact human health relating to: • Air Quality • Contaminated land • Noise and vibration
	Economic	Impacts on existing economic opportunities that are anticipated for future development (consideration will be given to economic activities that will change because of planned land use development).
Natural Environment	Landscape/ visual	Will the option have visual effects on the environment? The extent of effects on: • the natural landscape and features such as streams, coastal edges, natural vegetation and underlying topography – acknowledging planned changes to area considering urban land use/zoning • natural character and outstanding natural features/landscapes including geological features (mapped and protected features)
	Water quality	Impact of operational stormwater in regard to quantity and quality (including life supporting capacity).
	Ecology	Extent of effects on: • significant indigenous vegetation • significant habitats of indigenous fauna • indigenous biodiversity • stream ecology (recognising integration of ecology with future urban land use zoning and realistic future of some elements, such as intermittent streams)
Heritage	Heritage	Extent of effects on: • sites and places of valued heritage buildings and places • sites and places of archaeological value

		• sites and places of cultural heritage value
	Manawhenua	Extent of effects on the relationship of Māori to their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other Taonga (tangible and intangible). Extent of effects on Māori landholdings which includes marae, papakāinga and Maori land.
Opportunity Outcomes		
Holistic socio-economic considerations	Urban Design: Access and amenity (of the walking and cycling network)	Do the connections feel safe? • Is the option well overlooked or isolated from other activities and casual surveillance? • To what extent does the option require CPTED measures (e.g. lighting, landscape pruning, straightening of paths, removal of obstacles)? • Does the option help overcome safety concerns (perceptual) associated with cycling? • Are connections direct? • Does the option follow direct routes with minimal detours and waiting times to key destinations and existing infrastructure? • Does the option create severance and delay for pedestrians at key destinations? • Does the option provide connections to key PT interchanges? Are connections comfortable? • Does the option provide an easy gradient for walking and cycling? • Is there shade, shelter from wind; are the edges soft or hard, low or high? • Are connections coherent? • Is the option well integrated into a continuous and consistent cycling network? • Are connections attractive? • Is the option aesthetically pleasing and attracts new users? • Does it integrate with open space and stream corridors?

	Urban Design: Quality of the urban environment	To what extent does the option support (both current and future planned state):
		• An inviting, pleasant and high amenity public realm
		• Active interface between public and private realm (appropriate building entries and openings, front setbacks, streetscape)
		• Open space integration, e.g.
		  • Strong physical and perceptual relationship between activity nodes/ public spaces/public streets
		  • Adequate space for services, street furniture and people
		  • A 'green web' of sustainable landscape planting
		  • Reinforcing landscape/vegetation patterns
		  • Context and planned place making considerations e.g.
		  • response to/reading of underlying topography
		  • locating views to landmarks and distinctive natural and/or built features [from the corridor]

		• impact on the outlook, landscape setting and character of existing neighbouring uses • requirements for noise walls or other barriers that may visually close off places • Type and scale of new structures (e.g. Project may be out of scale now but appropriate for desired future character)
	Climate Change	Opportunity to reduce the vulnerability to effects of climate change through siting of the option, thereby reducing requirements for adaptation.
	Social Equitability	Opportunity to increase local training and employment for workplace upskilling and increasing support for disadvantaged communities.
	Greenhouse gas emissions (GHG)	Opportunity to reduce GHG emissions through mode choice; and to reduce GHG emissions through the design and construction phase (i.e. ease of constructability, significance of earthworks resulting in fuel use and GHG emissions generation).
	Use of materials/ waste	Opportunity to reduce the amount of energy-intensive materials used in construction (e.g. asphalt, concrete, steel etc) and reduce the amount of waste produced through materials reuse (e.g. demolition materials from existing roads and structures, waste spoil etc).

Appendix 2. MCA route assessment

Scored criteria

Criteria	Sub-criteria	Description
Heritage	**Heritage**	Extent of effects on sites and places of: • Valued heritage buildings, trees (heritage value) and places • Archaeological value • European cultural heritage value
Socio-economic impacts	**Land use futures**	To what extent will the option impact on the future development of land (within the corridor, adjacent to it and impacted by it – i.e. consider all 3 scales), in relation to: • Underlying existing urban structure (block and street pattern) • Integration with the future land use scenario (aligning housing delivery with infrastructure delivery) • Size and shape of potential development parcels to enable appropriate building typologies • Ability to consolidate residual land • Access that does not prevent neighbouring development
	Urban design	To what extent does the option support (both current and future planned state) a quality urban environment, particularly relating to: • Context and planned place making considerations • An inviting, pleasant and high amenity public realm • Open space integration • Active interface between public and private realm • Scale of long-term impact on amenity and character
	Land requirement	Scale of public/private land (m^2/number of properties/unique status of impacted property) required to deliver the option.
	Social cohesion	Impact on access to: • Employment • Other communities or within the same community • Shops/services/other community and cultural facilities/'attractors' • Severance of the existing community (including consented) • Scale of effect on existing community facilities and open space
	Human health and wellbeing	Will the option potentially affect any sensitive land uses (adjacent residential, childcare centres, hospitals, rest homes, marae and schools)? Particularly: • Air quality • Contaminated land • Noise and vibration • Water quality
Natural environment	**Landscape/ visual**	The extent of effects on: • Streams, coastal edges, natural vegetation and underlying topography – acknowledging planned changes to area considering land use/ zoning

		• Natural character and outstanding natural features/landscapes including geological features (mapped and protected features)
	Stormwater	Impact of operational stormwater (both quantity and quality) on the receiving environment, including: • Life supporting capacity • Potential flooding effects of the option within the catchment • Extent and consequences of likely mitigation measures
	Ecology	Extent of effects on: • Significant indigenous flora • Significant habitats of indigenous fauna • Indigenous biodiversity • Stream/waterway ecology • Coastal environment (e.g. CMA)
Environmental opportunities	**Climate change outcomes**	• Opportunities to improve resilience to effects of climate change and requirement for adaptation e.g.: flooding, sea level rise, storm events, drought/heat wave • Climate Change risk assessment and adaptation options (not just an opportunity/treat as risk and opportunity) • Ability to mitigate greenhouse gas emissions (GHG) emissions – construction and operational; access to renewables; ability to use renewable
Transport	**User safety**	Safety for all transport users, including: • Private vehicles • Public transport • Pedestrian/cyclists/other road corridor users
Construction impacts	**Construction impacts on utilities/ infrastructure**	Requirements for relocation/design of infrastructure, including • Consideration of safety impacts • Risk of continuity of service over construction • Engagement with utility providers • Opportunities for integration with other bulk infrastructure
	Construction disruption	Construction impacts on people and businesses regarding: • Traffic & noise • Earthworks related effects including dust • Quality of life and amenity • Economic impacts on businesses/community/town centres
Construction cost and risk	**Construction costs and risks**	Assessed cost for construction of options including: • Complexity and risk in construction (including consideration of constructability) • Complexity in programme • Cost and complexity of undertaking works on contaminated land (including health and safety)

Criteria from the Supporting Growth Programme framework determined to be unnecessary for the Project specific MCA and reasons why:

Criteria	Commentary
Social equitability	Given the similarity of the options which were being assessed (location, scale, mode, etc.) it was determined that this criterion would not provide a differentiating score and was not assessed. All options have an equal ability to provide for local training and employment for workplace upskilling and apply sustainable procurement methods.
Ecological opportunities	Given the similarity of the options which were being assessed (location, scale, mode, etc.) it was determined that this criterion would not provide a differentiating score. All options have an equal ability to include ecological restoration opportunities.
Transport integration	This criterion was addressed in Investment Objective 1 with a more localised context. It was determined that this criterion would replicate the score of Investment Objective 1 and was not assessed.
Maintenance costs	Given the similarity of the options which were being assessed (location, scale, mode, etc.) it was determined that this criterion would not provide a differentiating score. All options would have comparable maintenance costs.
Operational costs	Given the similarity of the options which were being assessed (location, scale, mode, etc.) it was determined that this criterion would not provide a differentiating score. All options would have comparable operational costs.
Behavioural change/ future technology opportunities	This criterion was addressed in Investment Objective 2 with a more localised context. It was determined that this criterion would replicate the score of Investment Objective 2 and was not assessed.

ATTACHMENT 15

REDHILLS ARTERIAL TRANSPORT NETWORK SATUTORY ASSESSMENT

Statutory Assessment

Theme	Key Objectives and Policies	Analysis
Enabling Infrastructure *Infrastructure is enabled and where appropriate protected.* *Benefits of infrastructure are recognised while adverse effects are avoided, remedied or mitigated.*	National Policy Statement on Electricity Transmission O(5), P(10). AUP:OIP RPS B2.2.1(1)(c), B2.2.1(1)(d), B2.2.1(5), B2.3.1(1)(d), B2.3.1(2). AUP:OIP RPS B3.2.1(1), B3.2.1(2), B3.2.1(3), B3.2.1(4), B3.2.1(5), B3.2.1(7), B3.2.1(8), B3.2.2(1), B3.2.2(2), B3.2.2(3), B3.2.2(6), B3.2.2(7), B3.2.2(8), B3.2.2(9), B3.3.1(1), B3.3.2(1), B3.3.2(2), B3.3.2(3), B3.3.2(4), B3.3.2(5), B3.3.2(7). AUP:OIP E17.2(1), E17.2(3), E17.3(1). AUP:OIP E26.2.1(1), E26.2.1(2), E26.2.1(4), E26.2.1(5), E26.2.1(9), E26.2.2(1), E26.2.2(2), E26.2.2(4), E26.2.2(5), E26.2.2(14), E26.2.2(15). AUP:OIP E27.2(1), E27.2(2), E27.2(5).	**Summary of Objectives and Polices** Objectives and policies in Chapters B2 and B3 of the AUP:OIP recognise the importance infrastructure plays in realising Auckland's full economic potential. This includes integrating the provision of infrastructure with urban growth, avoiding incompatible land uses and increasing resilience. The provisions recognise the importance of the transport network in the movement of people, goods and services, urban form, enabling growth, and providing choices. Objectives and policies in Chapter E26 of the AUP:OIP identify that infrastructure is critical to the social, economic, and cultural well-being of people and communities and the quality of the environment. The development, operation, use, repair, maintenance, upgrading and removal of infrastructure is anticipated, and the benefits infrastructure can have, as well as a range of adverse effects, are acknowledged within the objectives and policies. **Assessment** *Land Use Integration* The RATN will have significant benefits for Redhills as it will help provide a resilient, efficient, reliable and safe transport network, where no transport network currently exists. The RATN will result in substantial improvements to the road network which will provide benefits to local communities and other road users. By providing access to future urban land use in Redhills the RATN will facilitate urban development and enable the general social and economic growth of the future suburb and wider North West area. While the majority of the RATN area is currently rural in character, the RATN area is located inside the Rural Urban Boundary and is zoned under the AUP:OIP for a range of residential and business land uses. The RATN will achieve appropriate transport-land use integration by providing new arterial corridors to service the anticipated urban growth of the Redhills area prior to or when development occurs. The RATN is integrated with existing land use zoning and precinct plan provisions. Key outcomes which the RATN has sought to achieve include: • Aligning corridors to avoid severance of local centres while still providing a high level of connectivity. • Maximising opportunities for public transport patronage by establishing corridors within high density catchments. • Providing alignments which conform to the natural topography to minimise cut and fill where possible. *Infrastructure Integration* The RPS, the regional plan and district plan provide objectives and policies that seek to ensure infrastructure is provided in an integrated manner, with both land use and existing infrastructure. In particular, the RPS recognises

Theme	Key Objectives and Policies	Analysis
		that some core infrastructure is of national importance such as the National Grid, State Highways and the rail network. AT has been working closely with Auckland Council, Watercare, Transpower and other providers to ensure the future transport network, which the RATN will be an important part of, is delivered in an integrated way with existing and additional infrastructure. AT has engaged and consulted with Transpower to ensure the national significance of the National Grid has been recognised through the RATN. AT has sought to maximise land use efficiency through the RATN by situating the RATN N-S Project alignment between the two National Grid transmission corridors which bisect Redhills. The resulting co-location of infrastructure provides efficiency of land use by concentrating the area required for infrastructure within a single corridor. This also helps to reduce the potential for reverse sensitivity effects on the National Grid as the arterial corridor provides a buffer land use between more sensitive activities which could otherwise locate in this corridor. *Mode Choice* The RATN will provide for a range of mode choices including private vehicles, public transport, walking and cycling. This will contribute to a transport network that is safe and efficient for users of all transport modes, not just private vehicle users. It will ensure future communities are better connected to places of employment therefore enabling economic growth in these areas, and will help to encourage multi-modal transport outcomes in a transport environment which currently prioritises private vehicles and freight. Improved public transport operations in Redhills will be enabled by the RATN through the provision of high quality urban standard arterial corridors. The RATN will also provide bus priority at key intersections to enable the operation of a more effective local bus network. Additionally, the RATN corridors have the capacity for bus stops along the alignments. This enables the RATN to be flexible and adapt to the future land use of the surrounding area when it is developed, providing bus stops where they are most appropriate and necessary along the corridors. The RATN will provide high quality, separated walking and cycling facilities which will be accessible for all sectors of the community. This will help to enable larger public transport catchments to further support the public transport network. Pedestrian safety and amenity will be prioritised through the design of public footpaths and cycle ways. All footpaths or cycleways within the RATN will be separated and protected from the transport corridor and will be of sufficient width and capacity to ensure there will not be any adverse effects of providing walking and cycling modes alongside the transport corridors. All intersections within the RATN will be provided with pedestrian and cycle crossing facilities. This will ensure that the benefits of an integrated transport network are realised. *Design Philosophy* The objectives and policies of the AUP:OIP recognise the benefits and the value of investment in infrastructure. They seek to enable the safe, efficient and secure provision of infrastructure where appropriate, while also acknowledging that there may be some adverse effects as a result of the provision of such infrastructure that cannot be completely

Theme	Key Objectives and Policies	Analysis
		avoided. Infrastructure has operational and functional needs that must be recognised to ensure that the infrastructure is effective. The RATN has a functional and operational need to locate in Redhills. The options assessment has demonstrated the need for a new transport network in Redhills to support urban development of the area as directed by the AUP:OIP. Without the infrastructure the needs of the future community could not be met. As there is no existing transport network in Redhills, the RATN will provide new transport corridors (with the exception of the connection points into the existing transport network surrounding Redhills). The optioneering process for these new corridors has balanced direct connectivity with environmental impacts to provide efficient alignments for these corridors, seeking to avoid adverse effects of the RATN through design where practicable. Effects on any scheduled landscape features or overlays under the AUP:OIP have been avoided through the location of the RATN alignment. Of note, there are SEAs in part of the wider RATN area, however these areas have been avoided, limiting the potential adverse effects of the RATN. Redhills forms the upper catchment of the Ngongetepara Stream, with tributaries and wetlands criss-crossing the area. The spread of these watercourses and wetlands across Redhills means that it is impractical to avoid all effects on these features. However, key factors in the options development process have included minimising the number of stream crossings, locating the road network in less-sensitive locations and aligning the road corridor to minimise the width of impact. Applying these principles has avoided unnecessary effects on watercourses and wetlands while still enabling an efficient and logical transport network. Any adverse effects that could not be avoided through design have been mitigated or remedied where appropriate by the design and management framework which has been adopted for the RATN. Innovative design has been encouraged from the outset of the RATN and will continue to be encouraged during further detailed design to address any environmental effects. The width of the proposed corridors provides flexibility, enables the design to respond to the surrounding land use as needed. Likewise, where stream crossings are required, the width of the corridor is sufficient to enable the appropriate crossing option to be confirmed, as directed by further investigation and assessment at subsequent stages of the RATN. This will be supported by the management framework which identifies key environmental outcomes and directs further design and assessment to provide for adaptability and innovation. *Construction Effects* Most of the RATN's potential environmental effects arise from construction activities, such as earthworks and noise and vibration associated with earthworks, vegetation clearance etc. Construction effects on the environment, the health and safety of the community and amenity values will be managed by AT through a full range of mitigation and management measures. Mitigation measures will include a suite of management plans, including a construction noise and vibration management plan, construction traffic management plan, ecological management plan and tree management plan. These management plans will ensure that the any adverse effects associated with the construction of the RATN are appropriately managed.

Theme	Key Objectives and Policies	Analysis
		Operational Effects Redhills is zoned for a range of residential and business land uses under the AUP:OIP, providing for the development of a new residential area. While the majority of the RATN area is currently rural in character, the urbanisation of Redhills has started and is expected to continue over the following decade. The AUP:OIP zoning anticipates that the urbanisation of Redhills will provide for a mix of residential forms and densities, with a new local centre in the middle of the new suburb. Part of the urbanisation of Redhills will include the development of a new transport network connecting the new community both internally and into the surrounding transport network. As such, the new arterial transport corridors provided by the RATN are anticipated elements of a future urban environment. The operational effects of the RATN therefore need to be considered within the context of the anticipated urbanisation of Redhills, rather than the current rural context which is observed. The assessment of operational effects relies on a framework of adaptive management plans which provide the guidance and principles to direct the future development and implementation of the RATN, while providing flexibility for the RATN to respond to the specific requirements of the future urban context. The designation of the RATN enables the management of operational effects to be achieved in two ways; first through further design development which responds to the detail of the urbanising environment, and secondly by enabling developers to respond to the future arterial corridor by orientating and designing developments to maximise the benefits of the new corridor while minimising the potential adverse effects.
Enabling infrastructure *within an overlay and in addition to the above* *Protect scheduled values but provide for infrastructure where:* • *There is functional or operational need; and* • *No practicable alternative.*	AUP:OIP RPS B3.2.1(4), B3.2.1(8), B3.2.2(3), B3.2.2(6), B3.2.2(7), B3.2.2(8), B3.2.2(9). AUP:OIP E26.2.1(9), E26.2.2(4).	**Summary of Objectives and Policies** The policies of Chapter B3 seek to enable the development and operation of infrastructure, even in sensitive areas that are scheduled in the AUP:OIP in relation to natural heritage, the coastal environment and historic heritage, provided adverse effects are avoided where practicable and an operational and functional need to locate in sensitive areas is demonstrated. While the objectives and policies of the AUP:OIP generally seek to recognise the benefits, functional and operational needs and value of investment in infrastructure and enable the safe, efficient and secure provision of infrastructure where appropriate, the objectives and policies also anticipate that there may be some adverse effects as a result of the provision of such infrastructure. However, the objectives and policies recognise that in some instances such adverse effects may be appropriate given the necessity of, and essential services provided by, infrastructure. **Assessment** The RATN alignments do not include any overlays that protect scheduled values and require specific assessment in relation to land use and infrastructure integration in addition to the above assessment but the wider RATN area does include the following overlays, controls and designations: • High Use Aquifer Management Area Overlay • SEA – Terrestrial

Theme	Key Objectives and Policies	Analysis
		• Ridgeline Protection Overlay • Macroinvertebrate Community Index • National Grid Corridor Designation • Airspace Restriction Designation The RATN has avoided the Terrestrial SEA and Ridgeline Protection Overlay through options assessment and design of the alignments. As discussed above, AT has worked with Transpower to ensure the national significance of the National Grid corridors that bisect Redhills are maintained. AT has sought to maximise land use efficiency through the RATN by situating the North-South Redhills alignment between the two National Grid transmission corridors which bisect Redhills. The resulting co-location of infrastructure provides efficiency of land use by concentrating the area required for infrastructure within a single corridor. This also helps to reduce the potential for reverse sensitivity effects on the National Grid as the arterial corridor provides a buffer land use between more sensitive activities which could otherwise locate in this corridor. The High Use Aquifer Management Area Overlay covers all of Redhills, as well as most of the wider North West area. This overlay seeks to manage the take and use of water from aquifers which is not relevant to the RATN. The Macroinvertebrate Community Index also covers all of Redhills, as well as much of the wider North West area. This control is covered in the relevant Auckland wide provisions. The Minister for Defence Airspace Restriction Designation covers all of Redhills, as well as much of the wider North West area. This designation protects the approach and departure paths of the Whenuapai airbase through height limit planes which require that “no obstacle shall penetrate the approach and departure path”.
Urban growth and development capacity *Development capacity is planned and sequenced with infrastructure to meet the future needs of communities.* *Urban growth and its associated infrastructure is provided for in appropriate locations, whilst recognising the*	National Policy Statement on Urban Development, O(1),(6), P(1)(c)(e)(f), (6). AUP:OIP RPS B2.2.1(1), B2.4.1(5), B2.4.1(6), B2.4.2(6), B2.4.2(9), B2.4.2(10). AUP:OIP RPS B3.3.1(1)(b), B3.3.1(1)(c), B3.3.2(5)(a). AUP:OIP RPS B9.2.1(2), B9.2.1(5).	**Summary of Objectives and Policies** The National Policy Statement on Urban Development (NPS-UD) seeks to ensure urban environments are well-functioning and enable all people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety. Within the NPS-UD Auckland is recognised as a Tier 1 urban environment and therefore is subject to a greater policy direction in terms of intensification and density of urban form. The NPS-UD directs that urban development is integrated with infrastructure planning and funding decisions and is strategic over the medium to long term. The objectives and policies of the AUP:OIP seeks to provide sufficient feasible development capacity for housing with set dwelling targets over the next 30 years. In order to reach these targets adequate infrastructure must be existing or provided prior to or with development. Provisions in Chapter E27 Transport seek to ensure that land use and all modes of transport are integrated in a manner that realises the benefits of an integrated network and manages the adverse effects of traffic generation.

Theme	Key Objectives and Policies	Analysis
values of highly productive rural land.	AUP:OIP E27.2(1), E27.2(2), E27.2(5), E27.2(6).	**Assessment** The objectives and policies emphasise the importance of providing short, medium and long term residential and business capacity. This includes medium and long-term strategic planning for urban development. The RATN area is identified under the AUP:OIP for urbanisation through 'live' urban zoning. The RATN directly responds to the need for efficient and effective transport infrastructure to support urbanisation. The RATN achieves the objectives and policies relating to appropriate transport-land use integration by planning and protecting the transport routes which are required to service growth in the Redhills area. This ensures that the necessary transport infrastructure can be delivered in an integrated manner with the urban development of the Redhills area at the time that development occurs. AT has collaborated and integrated with other infrastructure providers and Auckland Council to ensure that a cohesive network is planned and staged to align with development ready land. The National Policy Statement on Urban Development and RPS recognise the contribution urban growth makes to peoples social, economic, cultural and environmental wellbeing. The RATN will provide high quality, effective, efficient and safe transport routes that support the movement of people, goods and services. Throughout the design of the RATN, consideration has been had to the potential intensity, scale, and resulting character and amenity of the future urban land uses of the surrounding land. The final design will therefore be integrated with and support the development of the surrounding area. This will enable people, communities and future generations in the wider RATN area to provide for their social, economic, cultural and environmental wellbeing. Providing the infrastructure to enable development to occur will provide housing benefits and will give the community access to high amenity public transport and active modes. This gives effect to the relevant objectives and policies under the National Policy Statement on Urban Development.
Manawhenua *Manawhenua values are to be recognised and protected.* *Manawhenua are to be included in resource management processes, particularly in decision making in their role as kaitiaki.*	AUP:OIP RPS B4.2.1(2). AUP:OIP RPS B6.2.1(1), B6.2.1(2), B6.2.2(1), B6.3.1(1), B6.3.1(2), B6.3.1(3), B6.3.2(1), B6.3.2(2), B6.3.2(3), B6.3.2(4), B6.3.2(6), B6.5.1(1), B6.5.1(2), B6.5.1(3), B6.5.1(5), B6.5.2(1), B6.5.2(4), B6.5.2(5), B6.5.2(6), B6.5.2(8), B6.5.2(9).	**Summary of Objectives and Policies: Kaitiakitanga** The RPS requires recognition of and provision for the principles of Te Tiriti o Waitangi, in particular through Manawhenua participation in resource management processes. **Assessment: Kaitiakitanga** Recognition of Te Tiriti o, Waitangi partnerships is a key objective for the Programme and Manawhenua have been involved in the Programme from the start of the early IBC works. Manawhenua have since been actively involved throughout development of the early concepts, through alternatives assessment and identification of the preferred options. This partnership approach has allowed the incorporation of Manawhenua values and expression of kaitiakitanga throughout the Programme. This has included participation in identifying any opportunities for mitigation, and any opportunities for representing cultural features in the landscape. In relation to the RATN, manawhenua provided input through MCA's, and CIAs were prepared by Te Kawerau ā Maki and Ngāti Whātua o Kaipara. Manawhenua consultation on the appropriate management of natural and physical resources has formed a significant part of the overall design of the RATN. This approach has ensured that the mauri of, and the relationship of Manawhenua with, natural and physical resources has been provided for and enhanced

Theme	Key Objectives and Policies	Analysis
	AUP:OIP RPS B7.4.1(6), B7.4.2(7)(d). AUP:OIP E1.2(2). AUP:OIP E3.3(5), E3.3(6), E3.3(7)(e), E3.3(9)(c), E3.3(13)(c). AUP:OIP E11.2(1), E11.3(2)(c), E11.3(2)(d), E11.3(3). AUP:OIP E12.3(1), E12.3(2)(c), E12.3(4). AUP:OIP E20.2(4), E20.3(3), E20.3(9). AUP:OIP E21.2(5), E21.3(3), E21.3(10).	overall. Consultation has ensured that Manawhenua values, mātauranga and tikanga have been properly considered and accorded sufficient weight when decisions have been made on the RATN. This approach has allowed the incorporation of Manawhenua values and expression of kaitiakitanga throughout the RATN. Manawhenua have provided input into the effects assessment of the RATN on freshwater and particularly around earthworks including robust sediment control and management. Where possible the RATN will limit the disturbance of land to the extent necessary for the delivery of the RATN. This will help maintain the cultural and spiritual values of Manawhenua in terms of land and water quality, preservation of wāhi tapu, and kaimoana gathering. Combined with appropriate and robust sediment control measures, any adverse effects on waterways will be mitigated. Road runoff and stormwater treatment is included in the design along with long-term maintenance, to maintain water quality over time. AT is committed to ongoing engagement with Manawhenua which aligns closely with the RPS' long term view. Manawhenua will continue to be involved in the RATN to help maintain consistency with these objectives and policies. **Summary of Objectives and Policies: Māori Values** The principles of the Te Tiriti o Waitangi are recognised and provided for in the sustainable management of natural and physical resources, wāhi tapu and other taonga. Sites and places of significance to Manawhenua are recognised and provided for in the objectives and policies of the AUP:OIP. **Assessment: Māori Values** The partnership approach adopted with Manawhenua means that Manawhenua values are embedded in the RATN which gives effect to the provisions of the AUP:OIP. The partnership approach has meant manawhenua have been involved in corridor development and decision-making on the RATN alignment and design. In particular, the Programme has sought to avoid wāhi tapu and other taonga where possible in order to avoid destruction of sites of significance. The Programme has also recognised Manawhenua cultural values, particularly with regards to the mauri of, and the relationships of Manawhenua with natural and physical resources including freshwater, land, air and coastal resources. Significant adverse effects on these values will be avoided, with lesser adverse effects avoided, remedied or mitigated as appropriate. The RATN does not affect any areas scheduled in the AUP:OIP in relation to natural heritage, natural resources or historic heritage values that require particular consideration. The RATN area also does not include any Maori Land or Treaty Settlement Land. Designation conditions are proposed to provide for ongoing consultation with manawhenua, opportunities for cultural monitoring, and accidental discovery protocols which require manawhenua involvement. Appropriate actions will be taken ensuring tikanga Māori is adhered to particularly where any kōiwi are accidentally discovered.

Theme	Key Objectives and Policies	Analysis
Indigenous Biodiversity and Ecological Values *The protection and enhancement of indigenous biodiversity and ecological values (including in degraded areas) is promoted.* *Protect scheduled values but provide for infrastructure in sensitive areas considering:* • *the benefits and value of providing that infrastructure;* • *the functional or operational need to locate or traverse that location;* • *whether any practicable alternatives would avoid or reduce effects on the scheduled values;* • *how the infrastructure contributes to the planned growth and intensification of Auckland.*	AUP:OIP RPS B7.2.1(1), B7.2.1(2), B7.2.2(5), B7.3.1(1), B7.3.1(2), B7.3.1(3), B7.3.2(1), B7.3.2(4), B7.3.2(5), B7.3.2(6), B7.4.1(2), B7.4.1(4), B7.4.1(5), B7.4.2(1)(a), B7.4.2(1)(c), B7.4.2(1)(d), B7.4.2(7)(a), B7.4.2(7)(b), B7.4.2(7)(c), B7.4.2(7)(e), B7.4.2(8), B7.4.2(9). AUP:OIP E1.2(1), E1.2(3), E1.3(2), E1.3(3), E1.3(8), E1.3(9), E1.3(10), E1.3(11), E1.3(12), E1.3(13), E1.3(14), E1.3(26). AUP:OIP E3.2(1), E3.2(2), E3.2(3), E3.2(4), E3.2(5), E3.2(6), E3.3(1), E3.3(2), E3.3(3), E3.3(4), E3.3(7), E3.3(8), E3.3(9), E3.3(13), E3.3(15). AUP:OIP E10.2(1), E10.3(1), E10.3(2), E10.3(3). AUP:OIP E11.2(1), E11.2(2), E11.2(3), E11.3(1), E11.3(2),	**Summary of Objectives and Policies** The AUP:OIP objectives and policies seek to protect and enhance ecological values across terrestrial, freshwater and coastal environments. The primary method the AUP:OIP uses to protect biodiversity is the identification of SEAs. These areas receive the highest level of protection. Biodiversity values outside SEAs need to be considered and effects on them addressed. The permanent loss and significant modification or diversion of lakes, rivers, streams (excluding ephemeral streams), and wetlands are to be avoided unless, amongst other matters, it is necessary to provide for infrastructure and no practicable alternative exists. **Assessment** Although resource consents are not being sought for the RATN at this time, ecological effects arising in respect of activities that require consents have been considered to inform the alternatives assessment, transport corridor design, the assessment of environmental effects and the proposed designation footprint. The RATN does not affect marine SEAs scheduled under the AUP:OIP and has been developed through robust constraints mapping to avoid terrestrial SEAs scheduled under the AUP:OIP. Redhills has been identified as appropriate for urbanisation by the AUP:OIP. The natural values within this area will therefore be subject to significant change through urbanisation. It is not practicable to locate or design the alignments to completely avoid areas with indigenous biodiversity values therefore the best practicable option has been chosen, as demonstrated through the comprehensive alternatives assessment process and design refinement. The RATN will seek to maintain ecosystem services and indigenous biological diversity values where it is possible to do so, while recognising that the proposed transport infrastructure is critical to enable existing and future communities to provide for their social, economic, and cultural well-being. The RPS also directs that where water quality is good or excellent it must be maintained and where it has been degraded, it must be progressively improved. The AUP:OIP requires activities/development above a certain threshold to provide treatment for discharges so that any significant adverse effects are avoided and all other effects are mitigated. The objectives and policies recognise full treatment will not be achievable in all circumstances. For infrastructure, treatment constraints can include space limitations, the need to accommodate other utility providers and the function of roads as overland flow paths for surrounding uses. In treating discharges, the BPO must be adopted, having regard to (among other things) the scale of effects, infrastructure investment priorities and operational requirements. Assessment of the BPO has been undertaken to inform the development of the RATN. The BPO has been adopted in relation to stormwater design, mitigation and measures in conditions in order to minimise any potential adverse effects of stormwater discharges. The RATN has sufficient space within the designation boundaries to implement BPO treatment and attenuation of stormwater, details of which will be finalised during detailed design. Where possible the RATN will limit the disturbance of land to the extent necessary for the delivery of the RATN, which will ultimately provide for people and communities social, economic and cultural well-being as well as their health and

Theme	Key Objectives and Policies	Analysis
	E11.3(4), E11.3(5), E11.3(7). AUP:OIP E12.2(1), E12.3(1), E12.3(2)(c). AUP:OIP E15.2(1), E15.2(2), E15.3(1), E15.3(2), E15.3(3), E15.3(4)(b), E15.3(5), E15.3(6) E15.3(7).	safety with the provision of two new high standard roads. The final design will incorporate measures to ensure the stability and safety of surrounding land, buildings and structures.
Freshwater *The health and well-being of water bodies and freshwater ecosystems is prioritised* *The permanent loss and significant modification or diversion of lakes, rivers, streams (excluding ephemeral streams), and wetlands are to be avoided unless, amongst other matters, it is necessary to provide for infrastructure and no practicable alternative exists.*	NPS-FW O(1), P(6),(7), (8),(9). AUP:OIP RPS: B7.2.1(2), B7.3.1(3), B7.3.2(1), B7.3.2(4), B7.3.2(5), B7.3.2(6), B7.4.1(4), B7.4.1(5), B7.4.2(1)(a), B7.4.2(1)(d), B7.4.2(7)(b), B7.4.2(9), AUP:OIP E12.2(1), E12.3(1), E12.3(2)(c).	**Summary of Objectives and Policies** The NPS-FW objective and policies seek to ensure that natural and physical resources are managed in a way that prioritises first, the health and well-being of water bodies and freshwater ecosystems followed by the health needs of people and then the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future. In particular, the NPS-FW seeks to protect natural wetlands, rivers, outstanding waterbodies and habitats of indigenous freshwater species. The relevant AUP:OIP objectives and policies seek to protect and enhance ecological values in freshwater environments. The permanent loss and significant modification or diversion of lakes, rivers, streams (excluding ephemeral streams), and wetlands are to be avoided unless, amongst other matters, it is necessary to provide for infrastructure and no practicable alternative exists. The objectives and policies seek to manage subdivision, use, development, including discharges and activities in the beds of lakes, rivers, streams, and in wetlands, to limit the establishment of structures within the beds of lakes, rivers and streams and in wetlands to those that have a functional need or operational requirement to be located there. **Assessment** Ecological effects arising in respect of activities that require regional consents have been considered to inform alternatives assessment, transport corridor design and the proposed designation footprints, however the AEE is focused on district plan matters. Regional resource consents (such as NES FW) are not being sought for the RATN at this time. However, generally, the transport corridors within the RATN have sought to avoid or minimise impacts on streams and high value wetlands. This is demonstrated through the comprehensive alternatives assessment process undertaken and design refinement. The alignment and design refinement process for the proposed designations have sought to avoid or minimise impacts on high value natural wetlands and streams, unless there is a functional requirement for any such impacts. There will be further opportunities to minimise any impacts within the transport corridor alignment during the detailed design.

Theme	Key Objectives and Policies	Analysis
		As discussed under the indigenous biodiversity assessment above, some freshwater environments have been impacted where there is a functional and operational need to do so. In considering the potential future effects arising from activities that may require regional consents in the future, the Assessment of Ecological Effects identified that any potential effects of the RATN on ecological features within or adjacent to the transport corridors, can be adequately managed and will be subject of future regional consent processes. There is flexibility in the proposed designation to further minimise impacts at detailed design. The proposed transport infrastructure is critical to enable existing and future communities to provide for their social, economic, and cultural well-being.
Natural landscapes *Natural landscapes with outstanding values are to be protected by avoiding adverse effects on those areas.* *Significant adverse effects in other areas should also be avoided, and all other adverse effects are to be avoided, remedied or mitigated.*	AUP:OIP RPS B4.2.1(1), B4.2.1(3), B4.2.2(3), B4.2.2(6), B4.2.2(7), B4.2.2(8), B4.3.1(1), B4.3.1(2), B4.3.2(3), B4.5.1(1), B4.5.2(4).	**Summary of Objectives and Policies** The RPS seeks to recognise and protect natural heritage. In particular, the policies of the RPS seek to identify features with outstanding natural values, evaluate and schedule those outstanding natural features, protect the physical and visual integrity of those features from inappropriate subdivision use, and development, and, where practicable and appropriate, enhance outstanding natural features. The RPS identifies that the volcanic heritage of Auckland is a particularly notable feature across the region. The RPS also indicates that notable trees are a particularly important natural feature. Therefore, the RPS seeks to protect the values of both volcanic features and notable trees. **Assessment** The RATN will not adversely affect any outstanding natural features, landscapes, areas, volcanic features, notable trees or other relevant natural landscapes in Redhills. Appropriate assessment has been undertaken to support the RATN, which has confirmed that there are no such areas within the RATN's footprint.
Natural hazards and environmental risk *Avoid increasing risk of adverse effects in areas subject to natural hazards (including climate change).* *Where infrastructure and development is required in these areas, natural hazard*	NPS-UD O(8), P(1)(e)(f), (6)(e). AUP:OIP RPS B2.3.1(1)(f). AUP:OIP RPS B10.2.1(1), B10.2.1(2), B10.2.1(3), B10.2.1(4), B10.2.1(5), B10.2.1(6), B10.2.2(5), B10.2.2(7), B10.2.2(8), B10.2.2(10), B10.4.1(1), B10.4.2(3).	**Summary of Objectives and Policies** The NPS-UD directs that urban environments support reductions in greenhouse gas emissions and are resilient to the current and future effects of climate change. The objectives and policies of Chapter B10 of the AUP:OIP enable and recognise the importance of infrastructure to support urban growth which includes integrating the provision of resilient transport networks and infrastructure in these areas and avoiding effects in areas subject to natural hazards and risk and adapting to the effects of climate change. Specific AUP:OIP objectives and policies reinforce the unique requirements of infrastructure and that it can have an operational or functional need to locate within a natural hazard area. Where infrastructure is required to locate within a hazard area significant adverse effects on people and property are sought to be first avoided, and otherwise mitigated to the extent practicable.

Theme	Key Objectives and Policies	Analysis
risks must be managed.	AUP:OIP E1.2(3), E1.3(11)(c), E1.3(15)(b), E1.3(16). AUP:OIP E12.2(1), E12.3(5), E12.3(6). AUP:OIP E36.2(1), E36.2(2), E36.2 (3), E36.2 (4), E36.2(5), E36.3(21-28), E36.3(35)	**Assessment** The RATN will deliver better accessibility and mode choice by providing corridors that support public transport as well as walking and cycling on all corridors, therefore reducing the reliance on low occupancy vehicles. This provides an important component to realising the regional emissions benefits of an integrated network. This shows alignment with the objectives and policies, and a positive contribution towards a reduction in greenhouse gas emissions. The RATN has been designed, and an options assessment undertaken, in recognition of the existing environment, including its constraints and opportunities, specific engineering requirements and implementation of integrated water principles. Design development has considered the risk of adverse effects to people, property, infrastructure and the environment from natural hazards. The areas subject to natural hazards have been avoided wherever possible from the outset in establishing the alignments for the RATN. The flooding assessment has recommended outcomes to ensure at detailed design that existing flooded properties are not exacerbated, no flood prone areas are created and any increase in flood risk for existing or future habitable floor levels or access to properties are no more than minor. Final measures to achieve these outcomes will be confirmed through detailed design at the OPW stage. Therefore, the RATN will not result in an increase in natural hazards or result in the creation of new risks to people, property and infrastructure. The RATN will manage the risk of adverse effects of climate change as the RATN design includes the footprint required to establish an integrated stormwater management system which will respond and adapt to the potential effects of climate change such as increased rainfall/flooding. The integrated stormwater management system will protect public health and safety and prevent or minimise adverse effects of contaminants on freshwater ensuring maintenance of water quality, flows etc. The AUP:OIP objectives and policies also seek to manage the effects of development and land disturbance from urbanisation on natural systems such as overland flow paths and floodplains and the management of water quality and water systems. While the RATN does cross over areas of floodplain and intercepts overland flow paths, the RATN appropriately manages and provides for these through the integrated stormwater management solution noted above. Any temporary diversions of overland flow paths due to construction will be managed to avoid any flooding risks to downstream sites and the finished RATN will appropriately manage surface runoff through the proposed stormwater management to ensure any conveyance functions are not permanently reduced by the RATN.
Urban form and quality design *Transport networks support a quality urban form and are designed to achieve high levels of amenity*	AUP:OIP RPS B2.2.1(1)(e), B2.3.1(3), B2.3.2(1)(d), B2.3.2(1)(e), B2.3.2(1)(f), B2.3.2(2), B2.3.2(4), B2.3.2(5).	**Summary of Objectives and Policies** The objectives and policies seek to create and protect urban environments that are both functional and enjoyable for people, by balancing the place and movement function of transport networks. To achieve balance between place and movement, the objectives and policies recognise a necessary mode shift, minimising private vehicle travel in favour of public transport, walking and cycling. **Assessment**

Theme	Key Objectives and Policies	Analysis
and safety for users. The place function of transport networks is balanced with the functional movement purpose.	AUP:OIP RPS B3.3.1(1)(d), B3.3.2(4)(a), B3.3.2(7). AUP:OIP E12.2(1), E12.3(2). E12.3(3) AUP:OIP E17.2(1), E17.2(2), E17.2(3), E17.3(1), E17.3(4). AUP:OIP E24.2(1), E24.2(2), E24.3(1), E24.3(2). AUP:OIP E25.2(1), E25.2(2), E25.2(4), E25.3(2), E25.3(5), E25.3(10).	The RATN is delivering the outcomes sought by route protecting corridors that provide for active modes. The RATN footprint also provides sufficient room for the inclusion of public transport and the associated requirements of public transport such as bus stops. The RATN also retains sufficient flexibility to adapt to future land use as and when required. For example, bus stops locations will be identified in the future as the development of the surrounding land occurs. *Health and Safety* The health and safety of people and communities is promoted as the RATN balances the function of a road as a place for people with the function of being a route for the movement of vehicles. This is done by providing sufficient room within the RATN footprint for both active modes and vehicles ensuring safe access and use of the RATN is provided to pedestrians and cyclists of all ages and abilities. The RATN footprint also provides sufficient room for street furniture and landscape plantings to enhance the amenity values for pedestrians and cyclists. *Transport-Land Use Integration* The RATN environment includes areas that are zoned for urban use but are currently rural in character. The RATN has been designed to be able to respond to future land use, taking into account the future use, intensity, scale, character and amenity of the adjacent land. In particular, the RATN will integrate the required transport infrastructure with the Local Centre zone and the surrounding residential zones to support compact urban development. The RATN will provide for social, cultural and economic outcomes, through the provision of high quality transport corridors, facilitating the planned urban growth of the RATN area. *Construction Effects* The objectives and policies require that the impacts of construction on amenity are managed (dust, noise and vibration) while acknowledging that some disturbance and reduced amenity is inevitable. Land disturbance associated with the RATN is necessary to provide for the social, economic and cultural well-being of the surrounding people and communities who will benefit from improved transport infrastructure due to the RATN as well as coordinated and efficient delivery of infrastructure which is required to facilitate development. Any adverse effects on the environment and on community health and safety associated with the construction of the RATN will be avoided, remedied or mitigated where appropriate and required including through construction noise management, traffic management and earthworks controls. As the RATN is only seeking to route protect at this stage, specific construction management details in relation to effects such as noise and vibration or dust will be confirmed during detailed design or when regional resource consents are obtained. The design does not preclude amenity within the transport corridor (e.g., street trees and street furniture) and appropriate construction management will be secure through the proposed designation conditions. *Operational Effects* Operational effects of the RATN will be avoided where possible through best practise safety in design principles, and otherwise mitigated were necessary such as in relation to operational noise and lighting. The specific details in

Theme	Key Objectives and Policies	Analysis
		relation to amenity considerations for the operation of the RATN will be detailed during further design or when regional resource consents are obtained.
Built heritage and archaeology *Recognises the importance of heritage to the identity of Auckland by avoiding significant adverse effects on scheduled historic heritage, where practicable, and encouraging new development to have due regard to significant historic heritage.*	AUP:OIP RPS B5.2.1(1), B5.2.2(6), B5.2.2(7), B5.3.1(2), B5.3.2(4)(c), B5.3.2(4)(d).	**Summary of Objectives and Policies** The RPS recognises the importance of heritage to the identity of Auckland, and the importance of active stewardship to protect it from inappropriate subdivision, use and development. The provisions seek to avoid significant adverse effects on scheduled historic heritage, where practicable, and to encourage new development to have due regard to significant historic heritage. The RPS objectives and policies enable the development, operation and maintenance of infrastructure, in circumstances where it is necessary and appropriate, in areas with natural and physical resources that have been scheduled in the AUP:OIP in relation to natural heritage, historic heritage and special character. **Assessment** The RATN will not adversely affect any identified historic heritage places. Appropriate assessment has been undertaken to support the RATN, which has confirmed that there are no identified heritage places within the RATN's footprint. Accidental Discovery Protocol and cultural monitoring will be implemented as part of the Project to manage the unlikely event that a previously unknown archaeological and/or cultural heritage feature is discovered during construction.
Residential Zones	AUP:OIP H3.2(1), H3.2(3), H3.2(4), H3.3(6), H3.3(7). AUP:OIP H4.2(3), H4.2(4), H4.3(7), H4.3(9), H4.3(10). AUP:OIP H5.2(1), H5.2(3), H5.2(4), H5.3(7), H5.3(8), H5.3(10). AUP:OIP H6.2(1), H6.2(3), H6.2(4), H6.3(8), H6.3(9), H6.3(10).	The land surrounding the RATN includes "live zoned" residential land consisting of Residential –Single House Zone, Residential – Mixed Housing Suburban Zone, MHU Zone and THAB Zone under the AUP:OIP. The RATN area requires both new and upgraded transport infrastructure in order to service the new development that will occur in these live zoned residential areas. Improving the transport infrastructure in Redhills will help to unlock the development capacity of the surrounding land in a coordinated and efficient way. Providing for development will support and provide for the social, economic and cultural well-being of the surrounding people and communities who will benefit from improved transport infrastructure. The surrounding residential zoned land will have access to effective public transport which will be enabled by the RATN. There is flexibility within the RATN footprint to include public transport infrastructure where it is necessary in response to the future needs of the developed surrounding area. The RATN has sufficient room within its footprint for street furniture and landscape planting to enhance the amenity values for road users. Footpaths and cycle ways will be provided that are safe and accessible by pedestrians and cyclists of all ages and abilities. These elements will encourage people to use the RATN as it will be safe and attractive.

Theme	Key Objectives and Policies	Analysis
		Any adverse effects on residential amenity will be avoided, remedied or mitigated as appropriate such as noise effects on surrounding residential properties. The specifics around how effects will be managed will be confirmed during detailed design. Adverse effects on water quality, quantity and amenity values due to an increase in impervious area have been avoided or mitigated through the provision for appropriate stormwater management and treatment systems.
Business Zones	AUP:OIP H11.2(7), H11.2(8), H11.3(18), H11.3(20), H11.3(21). AUP:OIP H13.2(1), H13.2(2), H13.2(3), H13.3(3), H13.3(12). AUP:OIP H13.2(7), H13.2(8), H13.2(9), H13.3(20), H13.3(21), H13.3(22),	The land surrounding the RATN includes "live zoned" business land consisting of Business – Local Centre Zone and Business – Mixed Use Zone under the AUP:OIP. The RATN is consistent with the general objectives and policies applying across all the business zones and the specific objectives and policies relating to the Local Centre and Mixed Use zones. The RATN is consistent with the outcomes sought in these zones, providing access to land that is identified for future urban development through improved and efficient transport infrastructure. In turn this will promote the social and economic wellbeing of the community. The RATN will make the Redhills area an attractive place to live, work and visit by unlocking access to future residential and business development. The RATN will ensure that the business zones are a focal point; an attractive environment that encourages ongoing investment, promotes commercial activity, and provides employment, housing and goods and services, all at a variety of scales. The RATN will positively contribute towards the planned future form and quality of the Redhills area, delivering on the planning and design outcomes identified under the AUP:OIP. Route protection of the RATN will ensure that both the transport infrastructure and the development of the surrounding land occurs in a coordinated, planned and efficient manner. The RATN will deliver high quality, safe and interesting streets, that positively contribute to pedestrian amenity, movement, safety and convenience for people of all ages and abilities. The RATN is anticipated as part of an urbanised environment, and any effects associated with the operation of the RATN will be managed such that it is compatible with the future residential and business activities that will occupy the surrounding area. A high level of amenity is anticipated in this zone, and the RATN will uphold the amenity values during both construction and implementation through use of appropriate mitigation.
Precinct Provisions	AUP:OIP I610.2(2), I610.2(3), I610.2(4), I610.2(6), I610.2(7), I610.2(8), I610.2(9), I610.2(11), I610.3(1), I610.3(4), I610.3(5), I610.3(6), I610.3(7), I610.3(10), I610.3(11),	The RATN is within the Redhills Precinct under the AUP:OIP. The RATN will contribute to the function, vitality and viability of the Massey North / Westgate Metropolitan Centre and the Redhills Local Centre by enabling and adding to a more efficient wider transport network. *Redhills Precinct: Precinct Plan 1* The relevant elements of the Redhills Precinct: Precinct Plan 1 have been recognised. An integrated network approach has been taken when selecting the preferred road alignments. The RATN is to be implemented prior to or at the same time as development occurs to ensure the urban development of the Redhills area will be adequately

Theme	Key Objectives and Policies	Analysis
	I610.3(12),I610.3(13), I610.3(15).	serviced with transport infrastructure. Through the provision of effective and efficient access the RATN will positively contribute to a well-connected, adaptable, safe, attractive, healthy and pleasant environment for living and working. The design of the RATN ensures an appropriate balance is achieved between traffic movement, safety, connection and sense of place. The RATN will contribute to providing a safe, efficient and integrated transport system that provides strategic roading connections, a choice of travel modes, encourages walking, cycling and use of public transport, and provides strong, legible connections to and through the precinct, whilst minimising crossings through natural features. The RATN includes provision for safe and accessible footpaths, cycle ways and public transport, and the design has sought to avoid adverse effects on natural features areas as far as practicable. *Stormwater Water* Stormwater runoff will be managed appropriately via an integrated stormwater management system that minimises flood risk. The ability to provide such an integrated stormwater management system has been incorporated into the RATN footprint. The RATN has sought to avoid stream crossings where practicable. All stream crossings will be designed to minimise freshwater habitat loss during the detailed design phase. In particular, the RATN has considered how stream ecology and remnant vegetation can be restored, and provides opportunities for natural wildlife corridors. Use of replacement planting to mitigate any necessary vegetation removal will be considered further during detailed design.

ATTACHMENT 16

REDHILLS ARTERIAL TRANSPORT NETWORK DRAFT CONDITIONS

TE TUPU NGĀTAHI
SUPPORTING GROWTH

North West Redhills Arterial Transport Network

Draft Conditions

Notice of Requirement Key

Reference	Project	Purpose
1	Redhills North-South Arterial Transport Corridor	Construction, operation and maintenance of a transport corridor
2a	Redhills East-West Arterial Transport Corridor – Dunlop Road	Construction, operation and maintenance of a transport corridor
2b	Redhills East-West Arterial Transport Corridor – Baker Lane	Construction, operation and maintenance of a transport corridor
2c	Redhills East-West Arterial Transport Corridor – Nixon Road Connection	Construction, operation and maintenance of a transport corridor

Abbreviations and definitions

Acronym/Term	Definition
Activity sensitive to noise	Any dwelling, visitor accommodation, boarding house, marae, papakāinga, integrated residential development, retirement village, supported residential care, care centre, lecture theatre in a tertiary education facility, classroom in an education facility and healthcare facility with an overnight stay facility.
ARI	Annual Recurrence Interval
Average increase in flood hazard	Flow depth times velocity.
AUP	Auckland Unitary Plan.
BPO or Best Practicable Option	Has the same meaning as in section 2 of the RMA 1991.
CEMP	Construction Environmental Management Plan
Certification	Confirmation from the Manager that a plan or material change to a plan or CNVMP Schedule plan has been prepared in accordance with the condition to which it relates. A management plan shall be deemed certified: (a) where the Requiring Authority has received written confirmation from Council that a management plan is certified; or (b) five working days from the submission of a management plan where no written confirmation of certification has been received. A material change to a management plan or CNVMP Schedule shall be deemed certified: (a) where the Requiring Authority has received written confirmation from Council that the material change to the management plan is certified; or (b) ten working days from the submission of the material change to the management plan where no written confirmation of certification has been received. (c) five working days from the submission of the material change to a CNVMP Schedule where no written confirmation of certification has been received.
CNVMP	Construction Noise and Vibration Management Plan

Acronym/Term	Definition
CNVMP Schedule or Schedule	A schedule to the CNVMP
Completion of Construction	When construction of the Project (or part of the Project) is complete and it is available for use.
Confirmed Biodiversity Areas	Areas recorded in the Identified Biodiversity Area Schedule where the ecological values and effects have been confirmed through the ecological survey under Condition 20**Error! Reference source not found.**.
Construction Works	Activities undertaken to construct the Project excluding Enabling Works.
Council	Auckland Council
CTMP	Construction Traffic Management Plan
EMP	Ecological Management Plan
EIANZ Guidelines	Ecological Impact Assessment: EIANZ guidelines for use in New Zealand: terrestrial and freshwater ecosystems, second edition, dated May 2018.
Enabling works	Includes, but is not limited to, the following and similar activities: • geotechnical investigations (including trial embankments) • archaeological site investigations • formation of access for geotechnical investigations • establishment of site yards, site entrances and fencing • constructing and sealing site access roads • demolition or removal of buildings and structures • relocation of services • establishment of mitigation measures (such as erosion and sediment control measures, temporary noise walls, earth bunds and planting)
Existing authorised habitable floor	The floor level of any room (floor) in a residential building which is authorised by building consent and exists at the time the outline plan is submitted, excluding a laundry, bathroom, toilet or any room used solely as an entrance hall, passageway or garage.
Flood prone area	A potential ponding area that relies on a single culvert for drainage and does not have an overland flow path.
HNZPT	Heritage New Zealand Pouhere Taonga.
HNZPTA	Heritage New Zealand Pouhere Taonga Act 2014
Identified Biodiversity Area	Means an area or areas of ecological value where the Project ecologist has identified that the project will potentially have a moderate or greater level of ecological effect, prior to implementation of impact management measures, as determined in accordance with the EIANZ guidelines.
Mana whenua	Mana Whenua as referred to in the conditions is considered to be (as a minimum but not limited to) the following (in no particular order), who at the time of Notice of Requirement expressed a desire to be involved in the Project: • Te Kawerau a Maki • Ngāti Whātua o Kaipara • Te Ākitai Waiohua • Ngāti Whanaunga **Note**: Other iwi and hapu not identified above may have an interest in the Project and should be consulted.

Acronym/Term	Definition
Manager	The Manager – Resource Consents of the Auckland Council, or authorised delegate.
Maximum Probable Development	Design case for consideration of future flows allowing for development within a catchment that takes into account the maximum impervious surface limits of the current zone or, if the land is zoned Future Urban in the Auckland Unitary Plan, the probable level of development arising from zone changes.
Network Utility Operator	Has the same meaning as set out in section 166 of the RMA.
NOR	Notice of Requirement
NZAA	New Zealand Archaeological Association
Outline Plan	An outline plan prepared in accordance with section 176A of the RMA.
Pre-Project development	Existing site condition prior to the Project (including existing buildings and roadways).
Post-Project development	Site condition after the Project has been completed (including existing and new buildings and roadways).
Project Liaison Person	The person or persons appointed for the duration of the Project's Construction Works to be the main point of contact for persons wanting information about the Project or affected by the Construction Works.
Protected Premises and Facilities (PPF)	Protected Premises and Facilities as defined in New Zealand Standard NZS 6806:2010: *Acoustics – Road-traffic noise – New and altered roads.*
Requiring Authority	Has the same meaning as section 166 of the RMA and, for this Designation is Auckland Transport.
RMA	Resource Management Act (1991)
SCEMP	Stakeholder Communication and Engagement Management Plan
Stage of Work	Any physical works that require the development of an Outline Plan.
Start of Construction	The time when Construction Works (excluding Enabling Works) start.
Suitably Qualified Person	A person (or persons) who can provide sufficient evidence to demonstrate their suitability, experience and competence in the relevant field of expertise.
ULDMP	Urban and Landscape Design Management Plan

NoR No.	No.	Condition
General Conditions		
All	**1.**	**Activity in General Accordance with Plans and Information** (a) Except as provided for in the conditions below, and subject to final design and Outline Plan(s), works within the designation shall be undertaken in general accordance with the following plans and information Project description and concept plan in schedule 1: (b) Where there is inconsistency between: (i) the documents listed in condition 1(a) above Project description and concept plan in schedule 1 and the requirements of the following conditions, the conditions shall prevail; (ii) the documents listed in condition 1(a) above Project description and concept plan in schedule 1, and the management plans under the conditions of the designation, the requirements of the management plans shall prevail.
All	**2.**	**Project Information** (a) A project website, or equivalent virtual information source, shall be established within 12 months of the date on which this designation is included in the AUP. All directly affected owners and occupiers shall be notified in writing once the website or equivalent information source has been established. The project website or virtual information source shall include these conditions and shall provide information on: (i) the status of the Project; (ii) anticipated construction timeframes; and (iii) contact details for enquiries. (iv) a subscription service to enable receipt of project updates by email; and (v) how to apply for consent for works in the designation under s176(1)(b) of the RMA. (b) At the start of detailed design for a Stage of Work, the project website or virtual information source shall be updated to provide information on the likely date for Start of Construction, and any staging of works.
All	**3.**	**Designation Review** (a) The Requiring Authority shall within 6 months of Completion of Construction or A as soon as otherwise practicable following Completion of Construction the Requiring Authority shall: (i) review the extent of the designation to identify any areas of designated land that it no longer requires for the on-going operation, maintenance or mitigation of effects of the Project; and (ii) give notice to Auckland Council in accordance with section 182 of the RMA for the removal of those parts of the designation identified above.
All	**4.**	**Lapse** (a) In accordance with section 184(1)(c) of the RMA, this designation shall lapse if not given effect to within 15 years from the date on which it is included in the AUP.
All	**5.**	**Network Utility Operators (Section 176 Approval)** (a) Prior to the start of Construction Works, Network Utility Operators with existing infrastructure located within the designation will not require written consent under section 176 of the RMA for the following activities: (i) operation, maintenance and urgent repair works; (ii) minor renewal works to existing network utilities necessary for the on-going provision or security of supply of network utility operations; (iii) minor works such as new service connections; and (iv) the upgrade and replacement of existing network utilities in the same location with the same or similar effects as the existing utility. (b) To the extent that a record of written approval is required for the activities listed above, this condition shall constitute written approval.
Pre-construction Conditions		

NoR No.	No.	Condition
All	6.	**Outline Plan** (a) An Outline Plan (or Plans) shall be prepared in accordance with section 176A of the RMA. (b) Outline Plans (or Plan) may be submitted in parts or in stages to address particular activities (e.g. design or construction aspects), or a Stage of Work of the Project. (c) Outline Plans shall include any management plan or plans that are relevant to the management of effects of those activities or Stage of Work, which may include: (i) Construction Environmental Management Plan; (ii) Construction Traffic Management Plan; (iii) Construction Noise and Vibration Management Plan; (iv) Urban and Landscape Design Management Plan; (v) Ecological Management Plan (vi) Tree Management Plan
All	7.	**Management Plans** (a) Any management plan shall: (i) Be prepared and implemented in accordance with the relevant management plan condition; (ii) Be prepared by a Suitably Qualified Person(s); (iii) Include sufficient detail relating to the management of effects associated with the relevant activities and/or Stage of Work to which it relates. (iv) Summarise comments received from Mana Whenua and other stakeholders as required by the relevant management plan condition, along with a summary of where comments have: a. Been incorporated; and b. Where not incorporated, the reasons why. (v) Be submitted as part of an Outline Plan pursuant to s176A of the RMA, with the exception of SCEMPs CEMPs, CTMPs and CNVMP Schedules. (vi) Once finalised, uploaded to the Project website or equivalent virtual information source. (b) Any management plan developed in accordance with Condition 7 may: (i) Be submitted in parts or in stages to address particular activities (e.g. design or construction aspects) a Stage of Work of the Project, or to address specific activities authorised by the designation. (ii) Except for material changes, be amended to reflect any changes in design, construction methods or management of effects without further process. (iii) If there is a material change required to a management plan which has been submitted with an Outline Plan, the revised part of the plan shall be submitted to the Council as an update to the Outline Plan or for Certification as soon as practicable following identification of the need for a revision; (c) Any material changes to the SCEMPs, CEMPs or CTMPs are to be submitted to the Council for information.
All	8.	**Cultural Advisory Report** (a) At least six (6) months prior to the start of detailed design for a Stage of Work, Mana Whenua shall be invited to prepare a Cultural Advisory Report for the Project. (b) The objective of the Cultural Advisory Report is to assist in understanding and identifying Ngā Taonga Tuku Iho ('treasures handed down by our ancestors') affected by the Project, to inform their management and protection. To achieve the objective, the Requiring Authority shall invite Mana Whenua to prepare a Cultural Advisory Report that: (i) Identifies the cultural sites, landscapes and values that have the potential to be affected by the construction and operation of the Project; (ii) Sets out the desired outcomes for management of potential effects on cultural sites, landscapes and values; (iii) Identifies traditional cultural practices within the area that may be impacted by the Project; (iv) Identifies opportunities for restoration and enhancement of identified cultural sites, landscapes and values within the Project area;

NoR No.	No.	Condition
		(v) Taking into account the outcomes of (i) to (iv) above, identify cultural matters and principles that should be considered in the development of the Urban and Landscape Design Management Plan, Stakeholder and Communication and Engagement Management Plan, and the Cultural Monitoring Plan referred to in Condition 14. (vi) Identifies and (if possible) nominates traditional names along the Project alignment. Noting there may be formal statutory processes outside the project required in any decision-making. (c) The desired outcomes for management of potential effects on cultural sites, landscapes and values identified in the Cultural Advisory Report shall be discussed with Mana Whenua and those outcomes reflected in the relevant management plans where practicable. (d) Conditions 8(b) and (c) above will cease to apply if: (i) Mana Whenua have been invited to prepare a Cultural Advisory Report by a date at least 6 months prior to start of Construction Works; and (ii) Mana Whenua have not provided a Cultural Advisory Report within six months prior to start of Construction Works.
All	**9.**	**Urban and Landscape Design Management Plan (ULDMP)** (a) A ULDMP shall be prepared prior to the Start of Construction for a Stage of Work. (b) Mana Whenua shall be invited to participate in the development of the ULDMP(s) to provide input into relevant cultural landscape and design matters including how desired outcomes for management of potential effects on cultural sites, landscapes and values identified and discussed in accordance with Condition 8(c) may be reflected in the ULDMP. The objective of the ULDMP(s) is to: (i) Enable integration of the Project's permanent works into the surrounding landscape and urban context; and (ii) Ensure that the Project manages potential adverse landscape and visual effects as far as practicable and contributes to a quality urban environment. (c) The ULDMP shall be prepared in general accordance with: (i) Auckland Transport's Urban Roads and Streets Design Guide; (ii) Waka Kotahi Urban Design Guidelines: Bridging the Gap (2013) or any subsequent updated version; (iii) Waka Kotahi Landscape Guidelines (2013) or any subsequent updated version; (iv) Waka Kotahi P39 Standard Specification for Highway Landscape Treatments (2013) or any subsequent updated version; and (v) Auckland's Urban Ngahere (Forest) Strategy or any subsequent updated version. (d) To achieve the objective, the ULDMP(s) shall provide details of how the project: (i) Is designed to integrate with the adjacent urban (or proposed urban) and landscape context, including the surrounding existing or proposed topography, urban environment (i.e. centres and density of built form), natural environment, landscape character and open space zones; (ii) Provides appropriate walking and cycling connectivity to, and interfaces with, existing or proposed adjacent land uses, public transport infrastructure and walking and cycling connections; (iii) Promotes inclusive access (where appropriate); and (iv) Promotes a sense of personal safety by aligning with best practice guidelines, such as: a. Crime Prevention Through Environmental Design (CPTED) principles; b. Safety in Design (SID) requirements; and c. Maintenance in Design (MID) requirements and anti-vandalism/anti-graffiti measures. (e) The ULDMP(s) shall include: (i) a concept plan – which depicts the overall landscape and urban design concept, and explain the rationale for the landscape and urban design proposals; (ii) developed design concepts, including principles for walking and cycling facilities and public transport; and (iii) landscape and urban design details – that cover the following:

NoR No.	No.	Condition
		a. Road design – elements such as intersection form, carriageway gradient and associated earthworks contouring including cut and fill batters and the interface with adjacent land uses, benching, spoil disposal sites, median width and treatment, roadside width and treatment; b. Roadside elements – such as lighting, fencing, wayfinding and signage; c. architectural and landscape treatment of all major structures, including bridges and retaining walls; d. Architectural and landscape treatment of noise barriers; e. Landscape treatment of permanent stormwater control wetlands and swales; f. Integration of passenger transport; g. Pedestrian and cycle facilities including paths, road crossings and dedicated pedestrian/ cycle bridges or underpasses; h. Re-instatement of construction and site compound areas, driveways, accessways and fences. (f) The ULDMP shall also include the following planting details and maintenance requirements: (i) planting design details including: a. identification of existing trees and vegetation that will be retained with reference to the Tree Management Plan. Where practicable, mature trees and native vegetation should be retained; b. street trees, shrubs and ground cover suitable for berms; c. treatment of fill slopes to integrate with adjacent land use, streams, riparian margins and open space zones; d. planting of stormwater wetlands; e. identification of vegetation to be retained and any planting requirements under Conditions 21 and 22; f. integration of any planting requirements required by conditions of any resource consents for the project; and g. re-instatement planting of construction and site compound areas as appropriate. (ii) a planting programme including the staging of planting in relation to the construction programme which shall, as far as practicable, include provision for planting within each planting season following completion of works in each Stage of Work; and (iii) detailed specifications relating to the following: a. weed control and clearance; b. pest animal management (to support plant establishment); c. ground preparation (top soiling and decompaction); d. mulching; and e. plant sourcing and planting, including hydroseeding and grassing, and use of eco-sourced species.
All	Advice note	**Advice Note:** *This designation is for the purpose of construction, operation and maintenance of a transport corridor and it is not for the specific purpose of "road widening". Therefore, it is not intended that the front yard definition in the Auckland Unitary Plan which applies a set back from a designation for road widening purposes applies to this designation. A set back is not required to manage effects between the designation boundary and any proposed adjacent sites or lots.*
Specific Outline Plan Requirements		
All	**10.**	**Flood Hazard** (a) The Project shall be designed to achieve the following flood risk outcomes: (i) no increase in flood levels for existing authorised habitable floors that are already subject to flooding; (ii) no more than a 10% reduction in freeboard for existing authorised habitable floors;

NoR No.	No.	Condition
		(iii) no increase of more than 50mm in flood level on land zoned for urban or future urban development where there is no existing habitable dwelling; (iv) no new flood prone areas; and (v) no more than a 10% average increase of flood hazard (defined as flow depth times velocity) for main access to authorised habitable dwellings existing at the time the Outline Plan is submitted. (b) Compliance with this condition shall be demonstrated in the Outline Plan, which shall include flood modelling of the pre-Project and post-Project 100 year ARI flood levels (for Maximum Probable Development land use and including climate change). (c) Where the above outcomes can be achieved through alternative measures outside of the designation such as flood stop banks, flood walls, raising existing authorised habitable floor level and new overland flow paths or varied through agreement with the relevant landowner, the Outline Plan shall include confirmation that any necessary landowner and statutory approvals have been obtained for that work or alternative outcome.
Construction Conditions		
All	**11.**	**Construction Environmental Management Plan (CEMP)** (a) A CEMP shall be prepared prior to the Start of Construction for a Stage of Work. (b) The objective of the CEMP is to set out the management procedures and construction methods to be undertaken to, avoid, remedy or mitigate any adverse effects associated with Construction Works as far as practicable. To achieve the objective, the CEMP shall include: (i) the roles and responsibilities of staff and contractors; (ii) details of the site or project manager and the Project Liaison Person, including their contact details (phone and email address); (iii) the Construction Works programmes and the staging approach, and the proposed hours of work; (iv) details of the proposed construction yards including temporary screening when adjacent to residential areas, site layouts (including construction yards), locations of refuelling activities and construction lighting; (v) methods for controlling dust and the removal of debris and demolition of construction materials from public roads or places; (vi) methods for providing for the health and safety of the general public; (vii) procedures for incident management; (viii)procedures for the refuelling and maintenance of plant and equipment to avoid discharges of fuels or lubricants to Watercourses; (ix) measures to address the storage of fuels, lubricants, hazardous and/or dangerous materials, along with contingency procedures to address emergency spill response(s) and clean up; (x) procedures for responding to complaints about Construction Works; and (xi) methods for amending and updating the CEMP as required. (c) Any CEMP prepared for a Stage of Work shall be submitted to Council for information at least ten working days before the Start of Construction for a Stage of Work.
All	**12.**	**Stakeholder and Communication and Engagement Management Plan (SCEMP)** (a) A SCEMP shall be prepared prior to the Start of Construction for a Stage of Work. The objective of the SCEMP is to identify how the public and stakeholders (including directly

NoR No.	No.	Condition
		affected and adjacent owners and occupiers of land) will be engaged communicated with throughout the Construction Works. To achieve the objective, the SCEMP shall include: (i) the contact details for the Project Liaison Person. These details shall be on the Project website, or equivalent virtual information source, and prominently displayed at the main entrance(s) to the site(s); (ii) the procedures for ensuring that there is a contact person available for the duration of Construction Works, for public enquiries or complaints about the Construction Works; (iii) methods for engaging with Mana Whenua, to be developed in consultation with Mana Whenua; (iv) a list of stakeholders, organisations (such as community facilities) and businesses and persons who will be engaged communicated with; (v) Identification of the properties whose owners will be engaged with; (vi) methods to communicate key project milestones and the proposed hours of construction activities including outside of normal working hours and on weekends and public holidays, to the parties identified in (iv) and (v) above; and surrounding businesses and residential communities; (vii) linkages and cross-references to communication and engagement methods set out in other conditions and management plans where relevant. (b) Any SCEMP prepared for a Stage of Work shall be submitted to Council for information ten working days prior to the Start of Construction for a Stage of Work.
All	**13.**	**Complaints Register** (a) At all times during Construction Works, a record of any complaints received about the Construction Works shall be maintained. The record shall include: (i) The date, time and nature of the complaint; (ii) The name, phone number and address of the complainant (unless the complainant wishes to remain anonymous); (iii) Measures taken to respond to the complaint (including a record of the response provided to the complainant) or confirmation of no action if deemed appropriate; (iv) The outcome of the investigation into the complaint; (v) Any other activities in the area, unrelated to the Project that may have contributed to the complaint, such as non-project construction, fires, traffic accidents or unusually dusty conditions generally. (b) A copy of the Complaints Register required by this condition shall be made available to the Manager upon request as soon as practicable after the request is made.
All	**14.**	**Cultural Monitoring Plan** (a) Prior to the start of Construction Works, a Cultural Monitoring Plan shall be prepared by a Suitably Qualified Person(s) identified in collaboration with Mana Whenua. (b) The objective of the Cultural Monitoring Plan is to identify methods for undertaking cultural monitoring to assist with management of any cultural effects during Construction works. (c) The Cultural Monitoring Plan shall include: (i) Requirements for formal dedication or cultural interpretation to be undertaken prior to start of Construction Works in areas identified as having significance to Mana Whenua; (ii) Requirements and protocols for cultural inductions for contractors and subcontractors; (iii) Identification of activities, sites and areas where cultural monitoring is required during particular Construction Works; (iv) Identification of personnel to undertake cultural monitoring, including any geographic definition of their responsibilities; and (v) Details of personnel to assist with management of any cultural effects identified during cultural monitoring, including implementation of the Accidental Discovery Protocol (d) If Enabling Works involving soil disturbance are undertaken prior to the start of Construction Works, an Enabling Works Cultural Monitoring Plan shall be prepared by a Suitably Qualified Person identified in collaboration with Mana Whenua. This plan may

<table>
<tr><th>NoR No.</th><th>No.</th><th>Condition</th></tr>
<tr><td></td><td></td><td>be prepared as a standalone Enabling Works Cultural Monitoring Plan or be included in the main Construction Works Cultural Monitoring Plan.

Advice Note: Where appropriate, the Cultural Monitoring Plan shall align with the requirements of other conditions of the designation and resource consents for the Project which require monitoring during Construction Works.</td></tr>
<tr><td>All</td><td>15.</td><td>Construction Traffic Management Plan (CTMP)
(a) A CTMP shall be prepared prior to the Start of Construction for a Stage of Work.
(b) The objective of the CTMP is to avoid, remedy or mitigate, as far as practicable, adverse construction traffic effects. To achieve this objective, the CTMP shall include:
(i) methods to manage the effects of temporary traffic management activities on traffic;
(ii) measures to ensure the safety of all transport users;
(iii) the estimated numbers, frequencies, routes and timing of traffic movements, including any specific non-working or non-movement hours to manage vehicular and pedestrian traffic near schools or to manage traffic congestion;
(iv) site access routes and access points for heavy vehicles, the size and location of parking areas for plant, construction vehicles and the vehicles of workers and visitors;
(v) identification of detour routes and other methods to ensure the safe management and maintenance of traffic flows, including pedestrians and cyclists, on existing roads;
(vi) methods to maintain vehicle access to property and/or private roads where practicable, or to provide alternative access arrangements when it will not be;
(vii) the management approach to loads on heavy vehicles, including covering loads of fine material, the use of wheel-wash facilities at site exit points and the timely removal of any material deposited or spilled on public roads;
(viii) methods that will be undertaken to communicate traffic management measures to affected road users (e.g. residents/public/stakeholders/emergency services);
(c) Any CTMP prepared for a Stage of Work shall be submitted to Council for information ten working days prior to the Start of Construction for a Stage of Work.</td></tr>
<tr><td>All</td><td>16.</td><td>Construction Noise Standards
(a) Construction noise shall be measured and assessed in accordance with NZS6803:1999 Acoustics – Construction Noise and shall comply with the noise standards set out in the following table as far as practicable:
Table 17.1: Construction noise standards
<table>
<tr><th>Day of week</th><th>Time period</th><th>$L_{Aeq(15min)}$</th><th>L_{AFmax}</th></tr>
<tr><td colspan="4">Occupied activity sensitive to noise</td></tr>
<tr><td>Weekday</td><td>0630h - 0730h
0730h - 1800h
1800h - 2000h
2000h - 0630h</td><td>55 dB
70 dB
65 dB
45 dB</td><td>75 dB
85 dB
80 dB
75 dB</td></tr>
<tr><td>Saturday</td><td>0630h - 0730h
0730h - 1800h
1800h - 2000h
2000h - 0630h</td><td>55 dB
70 dB
45 dB
45 dB</td><td>75 dB
85 dB
75 dB
75 dB</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>NoR No.</th><th>No.</th><th>Condition</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td>Sunday and Public Holidays</td><td>0630h - 0730h
0730h - 1800h
1800h - 2000h
2000h - 0630h</td><td>45 dB
55 dB
45 dB
45 dB</td><td>75 dB
85 dB
75 dB
75 dB</td></tr>
<tr><td colspan="4">Other occupied buildings</td></tr>
<tr><td>All</td><td>0730h – 1800h
1800h – 0730h</td><td>70 dB
75 dB</td><td></td></tr>
</table>
(b) Where compliance with the noise standards set out in Table [above] is not practicable, and unless otherwise provided for in the CNVMP as required by Condition 18c)(x), then the methodology in Condition 19 shall apply.
</td></tr>
<tr><td>All</td><td>17.</td><td>
Construction Vibration Standards
(a) Construction vibration shall be measured in accordance with ISO 4866:2010 Mechanical vibration and shock – Vibration of fixed structures – Guidelines for the measurement of vibrations and evaluation of their effects on structures and shall comply with the vibration standards set out in the following table as far as practicable.
Table CNV2 Construction vibration criteria
<table>
<tr><th>Receiver</th><th>Details</th><th>Category A</th><th>Category B</th></tr>
<tr><td rowspan="2">Occupied Activities sensitive to noise</td><td>Night-time 2000h - 0630h</td><td>0.3mm/s ppv</td><td>2mm/s ppv</td></tr>
<tr><td>Daytime 0630h - 2000h</td><td>2mm/s ppv</td><td>5mm/s ppv</td></tr>
<tr><td>Other occupied buildings</td><td>Daytime 0630h - 2000h</td><td>2mm/s ppv</td><td>5mm/s ppv</td></tr>
<tr><td>All other buildings</td><td>At all other times</td><td colspan="2">Tables 1 and 3 of DIN4150-3:1999</td></tr>
</table>
*Category A criteria adopted from Rule E25.6.30.1 of the AUP
**Category B criteria based on DIN 4150-3:1999 building damage criteria for daytime
(b) Where compliance with the vibration standards set out in Table [above] is not practicable, and unless otherwise provided for in the CNVMP as required by Condition 18(c)(x), then the methodology in Condition 19 shall apply
</td></tr>
<tr><td>All</td><td>18.</td><td>
Construction Noise and Vibration Management Plan (CNVMP)
(a) A CNVMP shall be prepared by a Suitably Qualified Person prior to the Start of Construction for a Stage of Work.
(b) A CNVMP shall be implemented during the Stage of Work to which it relates.
(c) The objective of the CNVMP is to provide a framework for the development and implementation of the Best Practicable Option for the management of construction noise and vibration effects to achieve the construction noise and vibration standards set out in Conditions 16 and 17 to the extent practicable. To achieve this objective, the CNVMP shall be prepared in accordance with Annex E2 of the New Zealand Standard NZS6803:1999 'Acoustics – Construction Noise' (NZS6803:1999) and shall as a minimum, address the following:
i. Description of the works and anticipated equipment/processes;
ii. Hours of operation, including times and days when construction activities would occur;
iii. The construction noise and vibration standards for the project;
iv. Identification of receivers where noise and vibration standards apply;
</td></tr>
</table>

NoR No.	No.	Condition
		v. A hierarchy of management and mitigation options, including any requirements to limit night works and works during other sensitive times, including Sundays and public holidays as far practicable and identification of the Best Practicable Option; vi. Methods and frequency for monitoring and reporting on construction noise and vibration; vii. Procedures for communication and engagement with nearby residents and stakeholders, including notification of proposed construction activities, the period of construction activities, and management of noise and vibration complaints. viii. Contact details of the Project Liaison Person; ix. Procedures for the regular training of the operators of construction equipment to minimise noise and vibration as well as expected construction site behaviours for all workers; x. Identification of areas where compliance with the noise [Condition 16] and/or vibration standards [Condition 17 Category A or Category B] will not be practicable and the specific management controls to be implemented and consultation requirements with owners and occupiers of affected sites. xi. Procedures and requirements for the preparation of a Schedule to the CNVMP (Schedule) for those areas where compliance with the noise [Condition 16] and/or vibration standards [Condition 17 Category B] will not be practicable and where sufficient information is not available at the time of the CNVMP to determine the area specific management controls Condition 18 (c)(x). xii. Procedures for: A. communicating with affected receivers, where measured or predicted vibration from construction activities exceeds the vibration criteria of Condition 17; B. assessing, mitigating and monitoring vibration where measured or predicted vibration from construction activities exceeds the Category AB vibration criteria of Condition 17, including the requirement to undertake building condition surveys before and after works to determine whether any damage has occurred as a result of construction vibration; and xiii. Requirements for review and update of the CNVMP
All	**19.**	**Schedule to a CNVMP** (a) An updated Schedule to the CNVMP (Schedule) shall be prepared prior to the start of the construction to which it relates by a Suitably Qualified Person, in consultation with the owners and occupiers of sites subject to the Schedule, when: (i) Construction noise is either predicted or measured to exceed the noise standards in Condition 16, except where the exceedance of the L_{Aeq} criteria is no greater than 5 decibels and does not exceed: A. 0630 – 2000: 2 period of up to 2 consecutive weeks in any 2 months, or B. 2000 - 0630: 1 period of up to 2 consecutive nights in any 10 days. (ii) Construction vibration is either predicted or measured to exceed the Category B standard at the receivers in Condition 17. (b) The objective of the Schedule is to set out the Best Practicable Option measures to manage for the management of noise and/or vibration effects of the construction activity beyond those measures set out in the CNVMP. The Schedule shall include details such as: (i) Construction activity location, start and finish dates; (ii) The nearest neighbours to the construction activity; (iii) The predicted noise and/or vibration level for all receivers where the levels are predicted or measured to exceed the applicable standards and predicted duration of the exceedance; (iv) The proposed mitigation options that have been selected, and the options that have been discounted as being impracticable and the reasons why;

NoR No.	No.	Condition
		(v) The consultation undertaken with owners and occupiers of sites subject to the Schedule, and how consultation has and has not been taken into account; and proposed communications with neighbours. (vi) Location, times and types of monitoring; (c) The Schedule shall be submitted to the Manager Council for certification at least 5 working days (except in unforeseen circumstances) in advance of Construction Works that are covered by the scope of the Schedule and shall form part of the CNVMP. (d) Where material changes are made to a Schedule required by this condition, the Requiring Authority shall consult the owners and/or occupiers of sites subject to the Schedule prior to submitting the amended Schedule to the Manager for certification in accordance with (c) above. The amended Schedule shall document the consultation undertaken with those owners and occupiers, and how consultation outcomes have and have not been taken into account.
All	Advice note	***Accidental Discoveries*** ***Advice Note:*** *The Requiring Authority is advised of the requirements of Rule E11.6.1 of the AUP for "Accidental Discovery" as they relate to both contaminated soils and heritage items. The requirements for accidental discoveries of heritage items are set out in Rule E11.6.1 of the AUP [and in the Waka Kotahi Minimum Standard P45 Accidental Archaeological Discovery Specification, or any subsequent version].*
All	**20.**	**Pre-Construction Ecological Survey** (a) At the start of detailed design for a Stage of Work, an updated ecological survey shall be undertaken by a Suitably Qualified Person. The purpose of the survey is to inform the detailed design of ecological management plan by: (i) Confirming whether the species of value within the Identified Biodiversity Areas recorded in the *Identified Biodiversity Area Schedule 2* are still present; (ii) Confirming whether the project will or may have a moderate or greater level of ecological effect on ecological species of value, prior to implementation of impact management measures, as determined in accordance with the EIANZ guidelines. (b) If the ecological survey in (a) above confirms the presence of ecological features of value in accordance with condition 20a)(i) and that effects are likely in accordance with condition 20(a)(ii) then an Ecological Management Plan (or Plans) shall be prepared in accordance with Condition 21 for these areas (Confirmed Biodiversity Areas).
All	**21.**	**Ecological Management Plan (EMP)** (a) An EMP shall be prepared for any Confirmed Biodiversity Areas (confirmed through Condition 20) prior to the Start of Construction for a Stage of Work. The objective of the EMP is to minimise effects of the Project on the ecological features of value of Confirmed Biodiversity Areas as far as practicable. The EMP shall set out the methods that will be used to achieve the objective which may include: (i) If an EMP is required in accordance with condition 20(b) for the presence of long tail bats: a. Measures to minimise as far as practicable, disturbance from construction activities within the vicinity of any active long tail bat roosts (including maternity) that are discovered through survey until such roosts are confirmed to be vacant of bats. b. How the timing of any construction work in the vicinity of any maternity long tail bat roosts will be limited to outside the bat maternity period (between December and March) where reasonably practicable; c. Details of areas where vegetation is to be retained where practicable for the purposes of the connectivity of long tail bats; d. Details of how bat connectivity will be provided and maintained (e.g. through the presence of suitable indigenous or exotic trees or artificial alternatives). e. Details of where opportunities for advance restoration / mitigation planting have previously been identified and implemented. f. Where mitigation to minimise effects is not practicable, details of any offsetting proposed.

NoR No.	No.	Condition
		(b) The EMP shall be consistent with any ecological management measures to be undertaken in compliance with conditions of any regional resource consents granted for the Project.
	Advice Note: *Depending on the potential effects of the Project, the regional consents for the Project may include the following monitoring and management plans:* *(i) Stream and/or wetland restoration plans;* *(ii) Vegetation restoration plans; and* *(iii) Fauna management plans (eg avifauna, herpetofauna, bats).*	
All	**22.**	**Tree Management Plan** (a) Prior to the Start of Construction for a Stage of Work, a Tree Management Plan shall be prepared. (b) The objective of the Tree Management Plan is to avoid, remedy or mitigate effects of construction activities on trees identified as protected or notable in the Auckland Unitary Plan. (c) The Tree Management Plan shall: (i) confirm the trees that will be affected by the project work and are identified as protected or notable in the Auckland Unitary Plan; and (ii) demonstrate how the design and location of project works has avoided, remedied or mitigated any effects on any tree identified in (i) above. This may include: A. planting to replace trees that require removal (with reference to the ULDMP planting design details in Condition 9); B. tree protection zones and tree protection measures such as protective fencing, ground protection and physical protection of roots, trunks and branches; and C. methods for work within the rootzone of trees that are to be retained in line with accepted arboricultural standards. (iii) demonstrate how the tree management measures (outlined in A – C above) are consistent with conditions of any resource consents granted for the project in relation to managing construction effects on trees.
Operational Conditions		
All	**23.**	**Low Noise Road Surface** (a) Asphaltic concrete surfacing (or equivalent low noise road surface) shall be implemented within 12 months of Completion of Construction of the project. (b) Any future resurfacing works of the Project shall be undertaken in accordance with the Auckland Transport Reseal Guidelines, Asset Management and Systems 2013 or any updated version and asphaltic concrete surfacing (or equivalent low noise road surface) shall be implemented where: (i) The volume of traffic exceeds 10,000 vehicles per day; or (ii) The road is subject to high wear and tear (such as cul de sac heads, roundabouts and main road intersections); or (iii) It is in an industrial or commercial area where there is a high concentration of truck traffic; or (iv) It is subject to high usage by pedestrians, such as town centres, hospitals, shopping centres and schools. (c) Prior to commencing any future resurfacing works, the Requiring Authority shall advise the Manager if any of the triggers in Condition 23(b)(i) – (iv) are not met by the road or a section of it and therefore where the application of asphaltic concrete surfacing (or equivalent low noise road surface) is no longer required on the road or a section of it. Such advice shall also indicate when any resealing is to occur.

NoR No.	No.	Condition
1, 2b, 2c	24.	**Traffic Noise** For the purposes of Conditions 25 to 37: (a) Building-Modification Mitigation – has the same meaning as in NZS 6806; (b) Design year has the same meaning as in NZS 6806; (c) Detailed Mitigation Options – means the fully detailed design of the Selected Mitigation Options, with all practical issues addressed; (d) Habitable Space – has the same meaning as in NZS 6806; (e) Identified Noise Criteria Category – means the Noise Criteria Category for a PPF identified in *Schedule 3: Identified PPFs Noise Criteria Categories*; (f) Mitigation – has the same meaning as in NZS 6806:2010 Acoustics – Road-traffic noise – New and altered roads; (g) Noise Criteria Categories – means the groups of preference for sound levels established in accordance with NZS 6806 when determining the Best Practicable Option for noise mitigation (i.e. Categories A, B and C); (h) NZS 6806 – means New Zealand Standard NZS 6806:2010 Acoustics – Road-traffic noise – New and altered roads; (i) Protected Premises and Facilities (PPFs) – means only the premises and facilities identified in green, orange or red in *Schedule 3: PPFs Noise Criteria Categories*; (j) Selected Mitigation Options – means the preferred mitigation option resulting from a Best Practicable Option assessment undertaken in accordance with NZS 6806; and (k) Structural Mitigation – has the same meaning as in NZS 6806.
1, 2b, 2c	25.	The Noise Criteria Categories identified in *Schedule 3: PPFs Noise Criteria Categories* at each of the PPFs shall be achieved where practicable and subject to Conditions 25 to 37 (all traffic noise conditions). Achievement of the Noise Criteria Categories for PPFs shall be by reference to a traffic forecast for a high growth scenario in a design year at least 10 years after the programmed opening of the Project.
1, 2b, 2c	26.	As part of the detailed design of the Project, a Suitably Qualified Person shall determine the Selected Mitigation Options for the PPFs identified on *Schedule 3: PPFs Noise Criteria Categories.*
1, 2b, 2c	27.	Prior to construction of the Project, a Suitably Qualified Person shall develop the Detailed Mitigation Options for the PPFs identified in *Schedule 3: PPFs Noise Criteria Categories*, taking into account the Selected Mitigation Options.
1, 2b, 2c	28.	If the Detailed Mitigation Options would result in the Identified Noise Criteria Category changing to a less stringent Category, e.g. from Category A to B or Category B to C, at any relevant PPF, a Suitably Qualified Person shall provide confirmation to the Manager that the Detailed Mitigation Option would be consistent with adopting the Best Practicable Option in accordance with NZS 6806 prior to implementation.
1, 2b, 2c	29.	The Detailed Mitigation Options shall be implemented prior to completion of construction of the Project, with the exception of any low-noise road surfaces, which shall be implemented within twelve months of completion of construction.
1, 2b, 2c	30.	Prior to the Start of Construction, a Suitably Qualified Person shall identify those PPFs which, following implementation of all the Detailed Mitigation Options, will not be Noise Criteria Categories A or B and where Building-Modification Mitigation might be required to achieve 40 dB $L_{Aeq(24h)}$ inside Habitable Spaces ('Category C Buildings').

NoR No.	No.	Condition
1, 2b, 2c	31.	Prior to the Start of Construction in the vicinity of each Category C Building, the Requiring Authority shall write to the owner of the Category C Building requesting entry to assess the noise reduction performance of the existing building envelope. If the building owner agrees to entry within three months of the date of the Requiring Authority's letter, the Requiring Authority shall instruct a Suitably Qualified Person to visit the building and assess the noise reduction performance of the existing building envelope.
1, 2b, 2c	32.	For each Category C Building identified, the Requiring Authority is deemed to have complied with Condition 31 above if: (a) The Requiring Authority's Suitably Qualified Person has visited the building and assessed the noise reduction performance of the building envelope; or (b) The building owner agreed to entry, but the Requiring Authority could not gain entry for some reason (such as entry denied by a tenant); or (c) The building owner did not agree to entry within three of the date of the Requiring Authority's letter sent in accordance with Condition 31 above (including where the owner did not respond within that period); or (d) The building owner cannot, after reasonable enquiry, be found prior to completion of construction of the Project. If any of (b) to (d) above apply to a Category C Building, the Requiring Authority is not required to implement Building-Modification Mitigation to that building.
1, 2b, 2c	33.	Subject to Condition 32 above, within six months of the assessment undertaken in accordance with Conditions 31 and 32, the Requiring Authority shall write to the owner of each Category C Building advising: (a) If Building-Modification Mitigation is required to achieve 40 dB LAeq(24h) inside habitable spaces; and (b) The options available for Building-Modification Mitigation to the building, if required; and (c) That the owner has three months to decide whether to accept Building-Modification Mitigation to the building and to advise which option for Building-Modification Mitigation the owner prefers, if the Requiring Authority has advised that more than one option is available.
1, 2b, 2c	34.	Once an agreement on Building-Modification Mitigation is reached between the Requiring Authority and the owner of a Category C Building, the mitigation shall be implemented, including any third party authorisations required, in a reasonable and practical timeframe agreed between the Requiring Authority and the owner.
1, 2b, 2c	35.	Subject to Condition 31, where Building-Modification Mitigation is required, the Requiring Authority is deemed to have complied with Condition 33 if: (a) The Requiring Authority has completed Building Modification Mitigation to the building; or (b) An alternative agreement for mitigation is reached between the Requiring Authority and the building owner; or (c) The building owner did not accept the Requiring Authority's offer to implement Building-Modification Mitigation within three months of the date of the Requiring Authority's letter sent in accordance with Condition 33 (including where the owner did not respond within that period); or (d) The building owner cannot, after reasonable enquiry, be found prior to completion of construction of the Project.
1, 2b, 2c	36.	The Detailed Mitigation Options shall be maintained so they retain their noise reduction performance as far as practicable

NoR No.	No.	Condition
1, 2b, 2c	**37.**	The Noise Criteria Categories at the PPFs identified in *Schedule 3: Identified PPFs Noise Criteria Categories* do not need to be complied with where: (a) the PPF no longer exists; or (b) agreement of the landowner has been obtained confirming that the Noise Criteria Category level does not need to be met.

Proposed Designation Condition Schedules

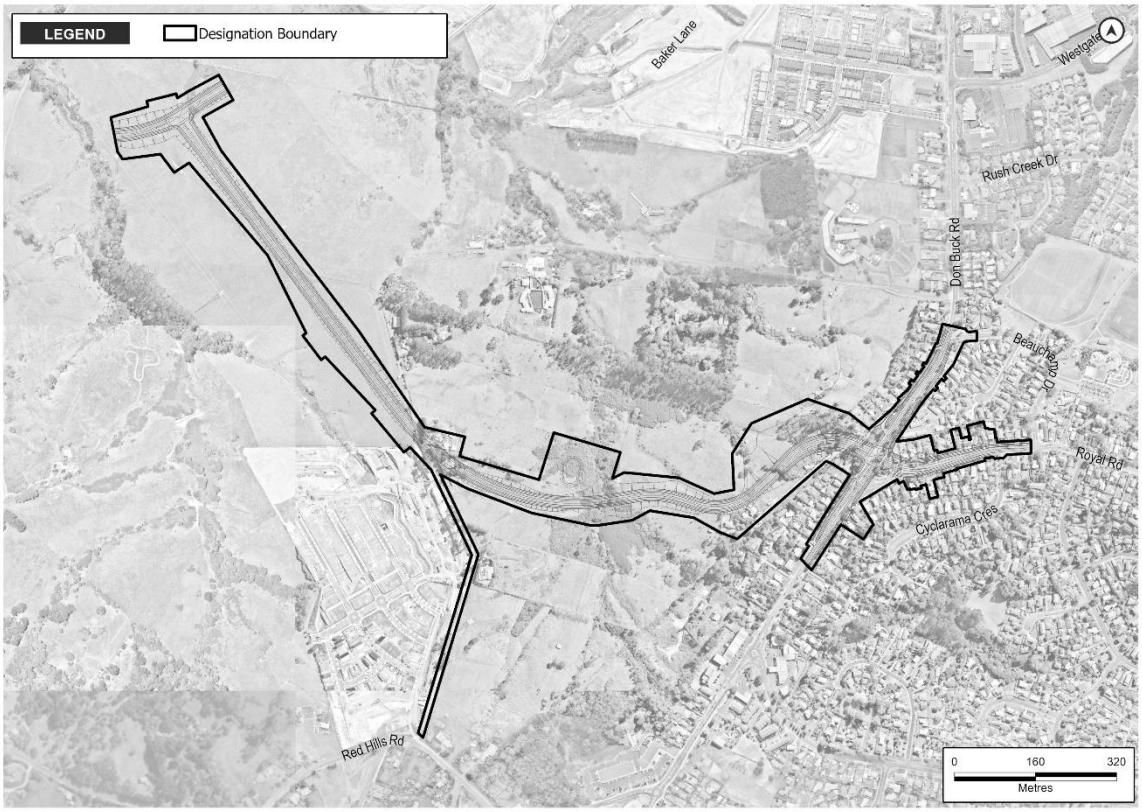
Schedule 1: General Accordance Plans and Information

Project Description – NOR 1 Redhills North-South Arterial Transport Corridor

The proposed work is the construction, operation, and maintenance of a transport corridor in Redhills, from Don Buck Road to the intersection with NORs 2a and 2c, including active transport facilities and associated infrastructure. The proposed work is shown in the following Concept Plan and includes:

(a) An upgraded and new transport corridor, including public transport and active transport facilities;
(b) Associated works including intersections, bridges, embankments, retaining, culverts, stormwater management systems;
(c) Changes to local roads, where the proposed work intersects with local roads; and
(d) Construction activities, including vegetation removal, construction compounds, laydown areas, bridge works area, construction traffic management and the re-grade of driveways.

NOR Concept Plan

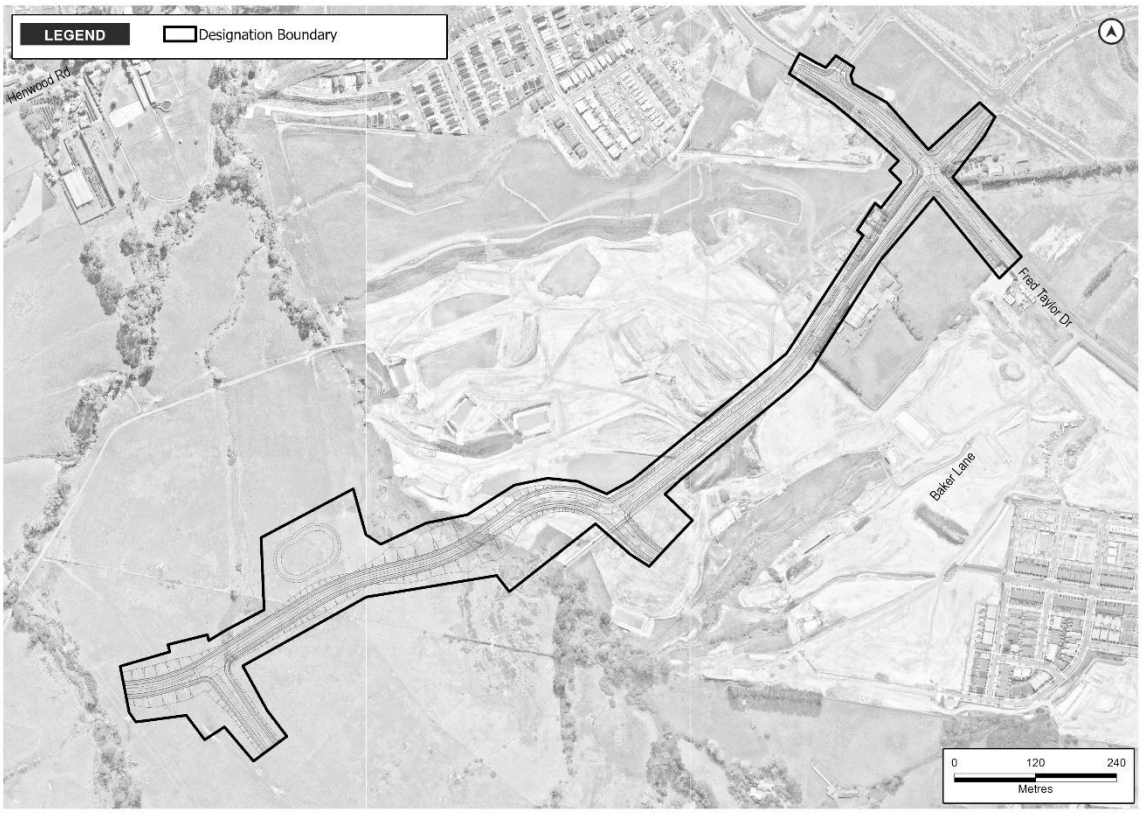


Project Description – NOR 2a Redhills East-West Arterial Transport Corridor – Dunlop Road

The proposed work is the construction, operation, and maintenance of a transport corridor in Redhills, from Fred Taylor Drive to the intersection with NORs 1 and 2c, including active transport facilities and associated infrastructure. The proposed work is shown in the following Concept Plan and includes:

(a) An upgraded and new transport corridor, including public transport and active transport facilities;
(b) Associated works including intersections, bridges, embankments, retaining, culverts, stormwater management systems;
(c) Changes to local roads, where the proposed work intersects with local roads; and
(d) Construction activities, including vegetation removal, construction compounds, laydown areas, bridge works area, construction traffic management and the re-grade of driveways.

NOR Concept Plan

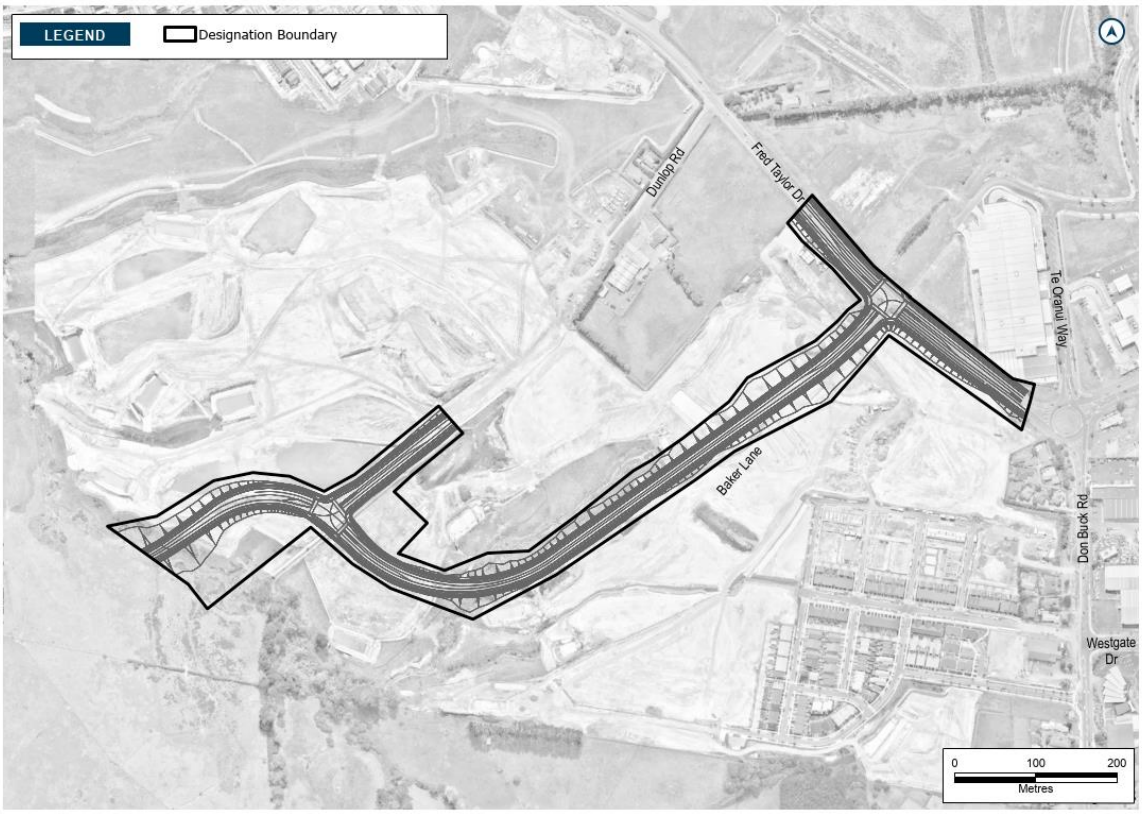


Project Description – NOR 2b Redhills East-West Arterial Transport Corridor – Baker Lane

The proposed work is the construction, operation, and maintenance of a transport corridor in Redhills, from Fred Taylor Drive to the intersection with NOR 2a, including active transport facilities and associated infrastructure. The proposed work is shown in the following Concept Plan and includes:

(a) An upgraded and new transport corridor, including public transport and active transport facilities;
(b) Associated works including intersections, bridges, embankments, retaining, culverts, stormwater management systems;
(c) Changes to local roads, where the proposed work intersects with local roads; and
(d) Construction activities, including vegetation removal, construction compounds, laydown areas, bridge works area, construction traffic management and the re-grade of driveways.

NOR Concept Plan

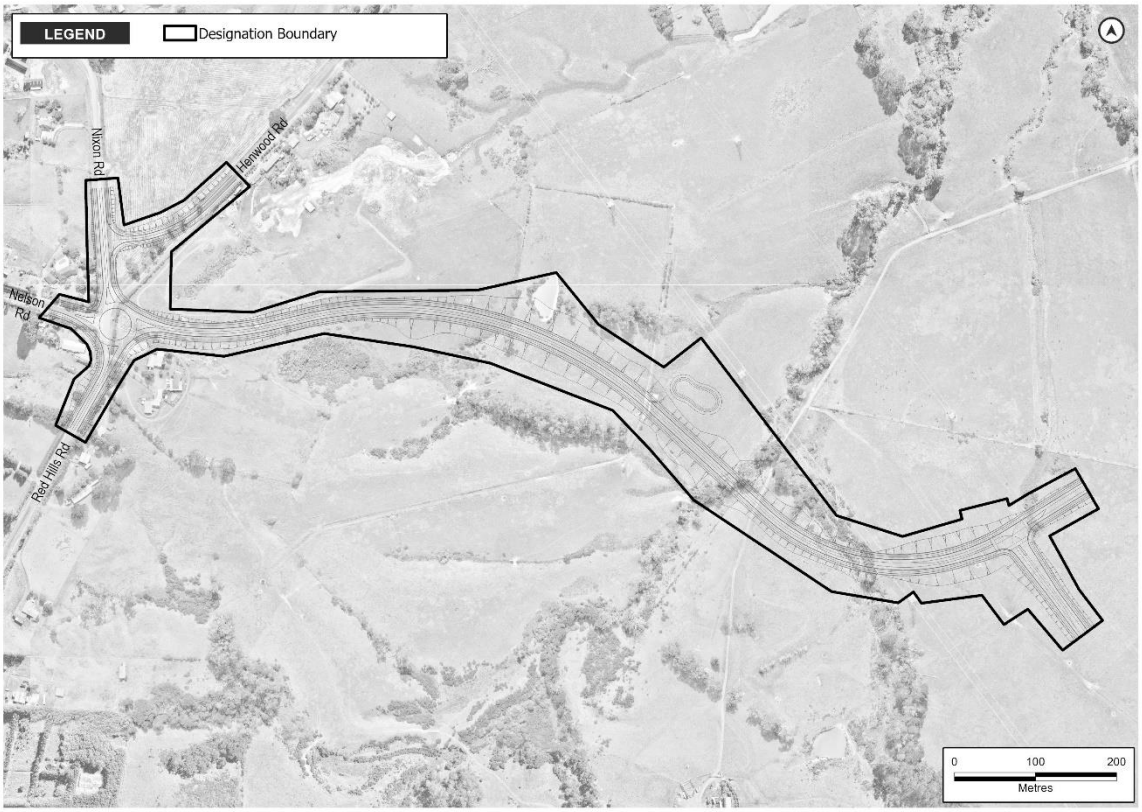


Project Description – NOR 2c Redhills East-West Arterial Transport Corridor – Nixon Road Connection

The proposed work is the construction, operation, and maintenance of a transport corridor in Redhills, from the Nixon Road, Nelson Road and Red Hills Road intersection to the intersection with NORs 1 and 2a, including active transport facilities and associated infrastructure. The proposed work is shown in the following Concept Plan and includes:

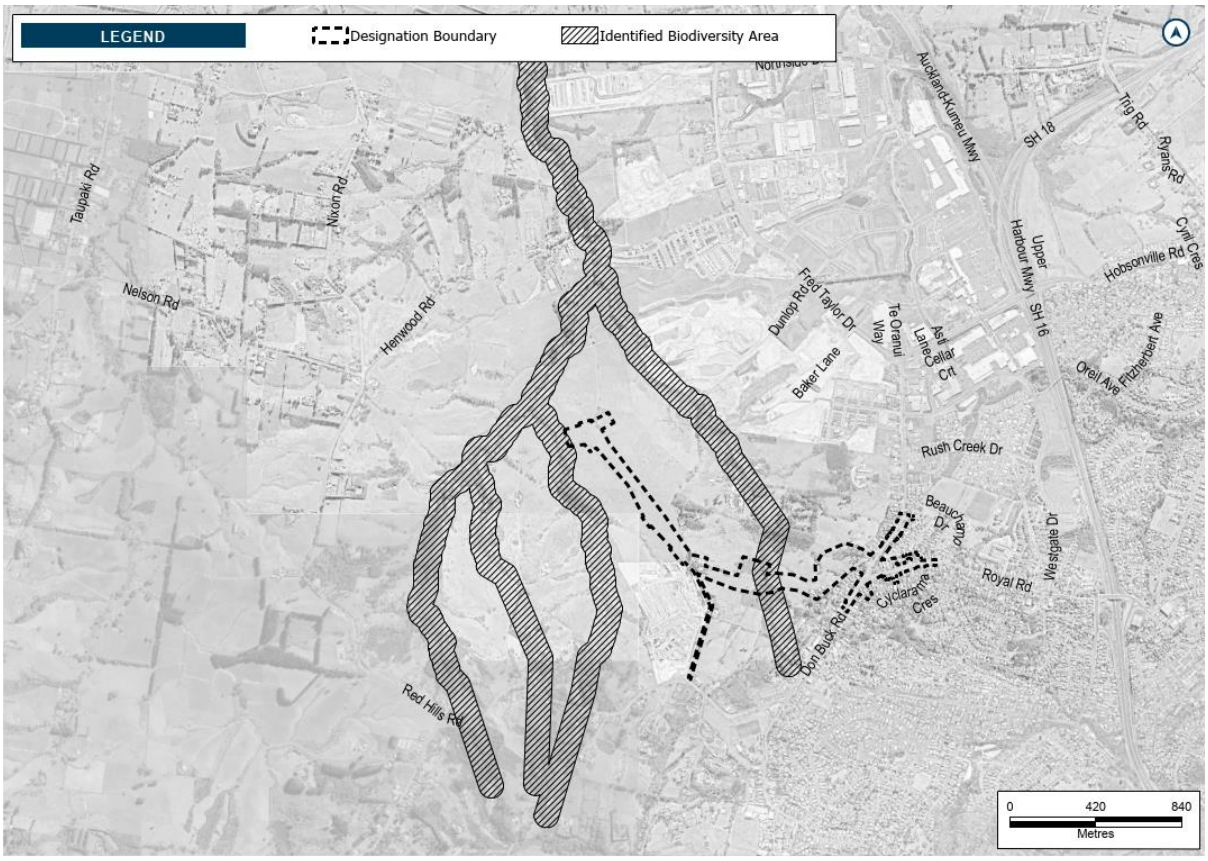
(a) An upgraded and new transport corridor, including public transport and active transport facilities;
(b) Associated works including intersections, bridges, embankments, retaining, culverts, stormwater management systems;
(c) Changes to local roads, where the proposed work intersects with local roads; and
(d) Construction activities, including vegetation removal, construction compounds, laydown areas, bridge works area, construction traffic management and the re-grade of driveways.

NOR Concept Plan

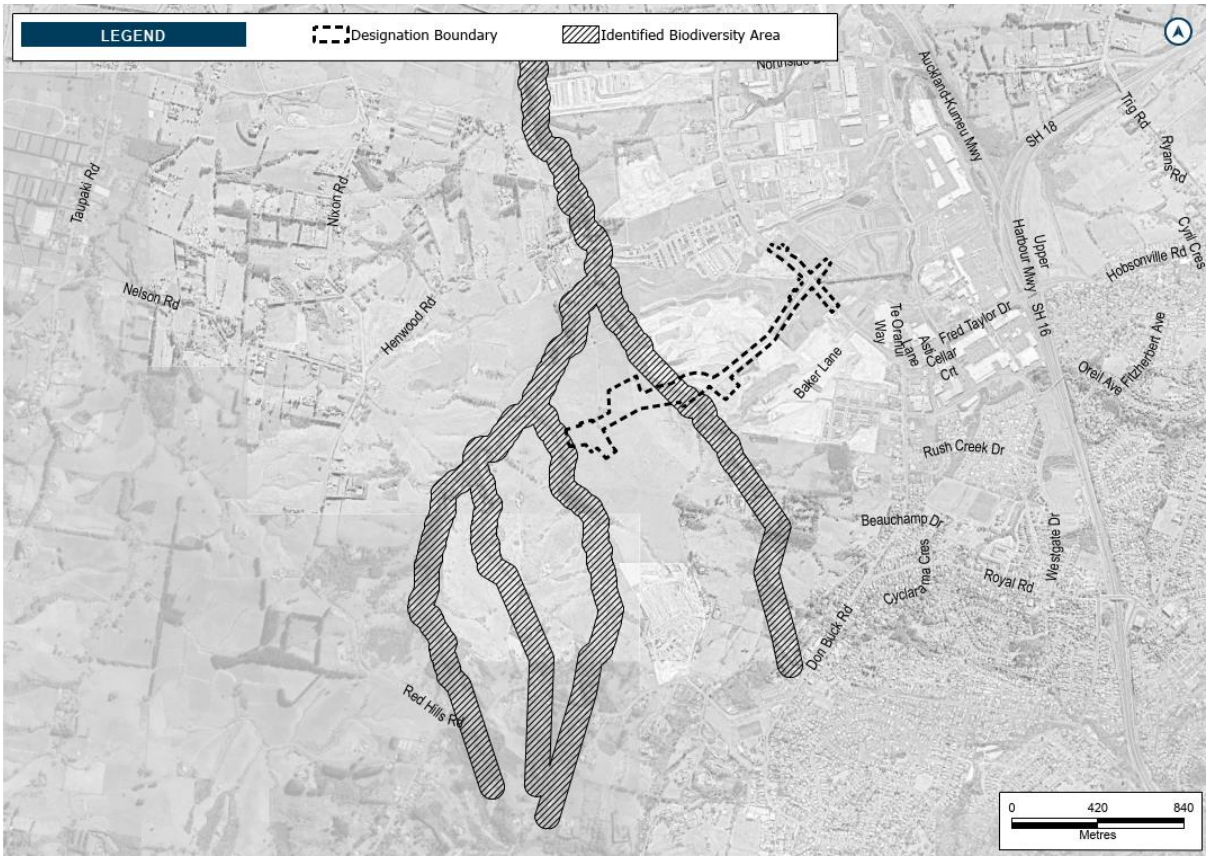


Schedule 2: Identified Biodiversity Areas – Long Tailed Bats

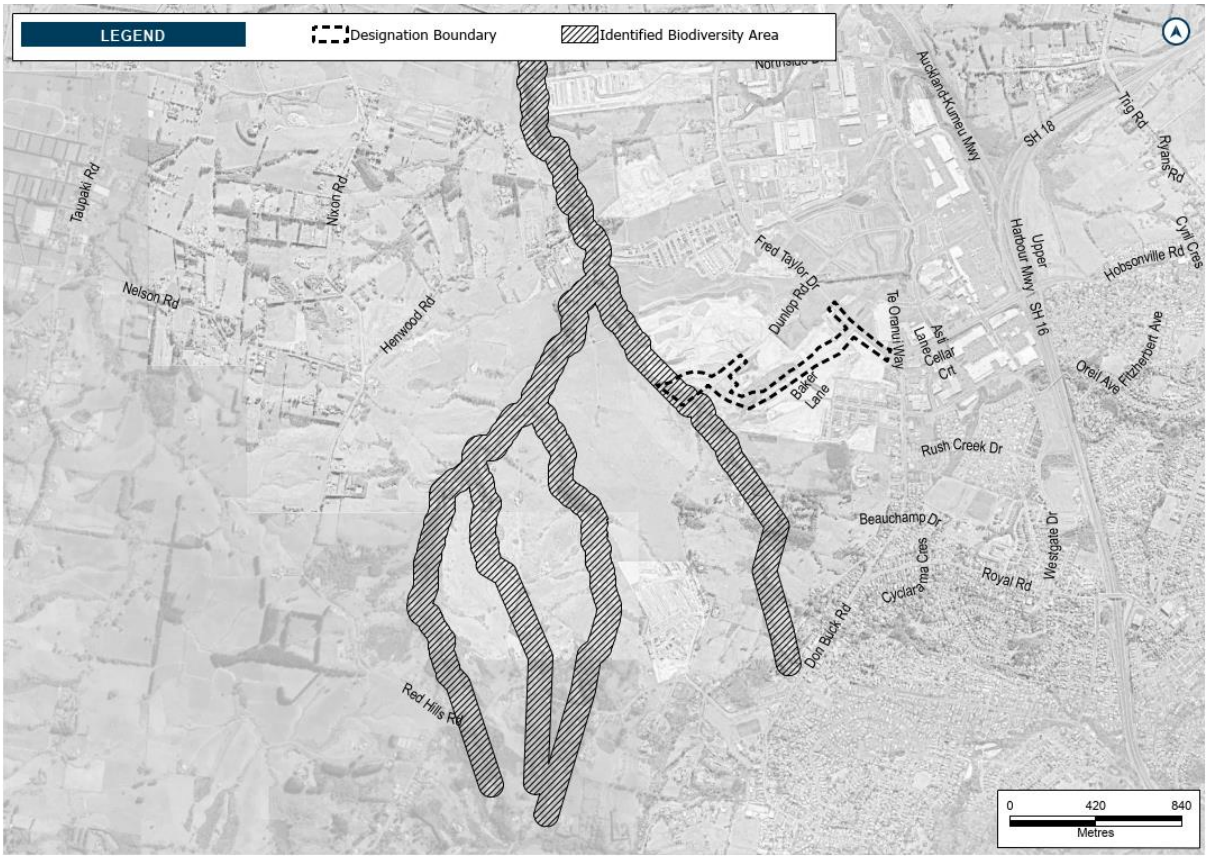
NoR 1



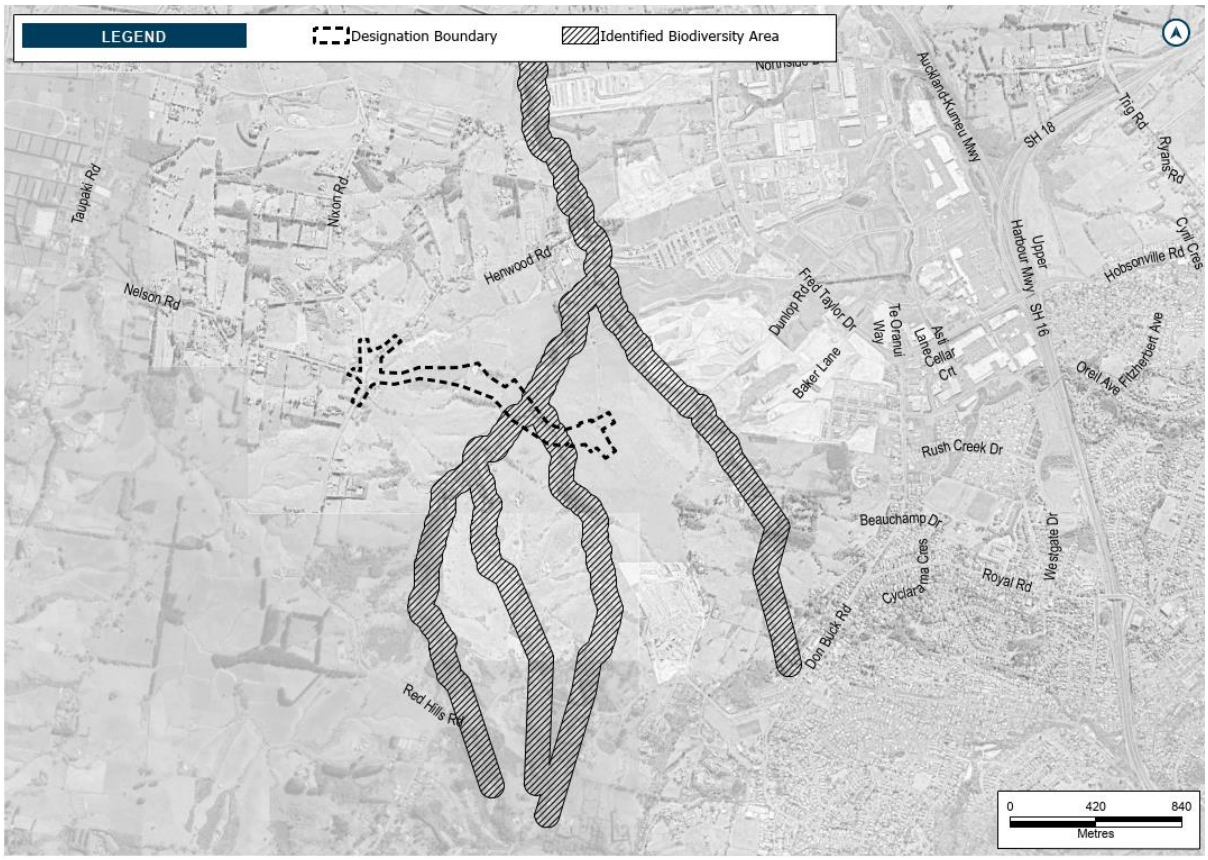
NoR 2a


LEGEND
Designation Boundary
Identified Biodiversity Area
Auckland-Kumeu Mwy
SH 16
Trig Rd
Ryans Rd
Upper Harbour Mwy
SH 16
Hobsonville Rd
Cyril Cres
Taupaki Rd
Nixon Rd
Nelson Rd
Henwood Rd
Baker Lane
Te Oranui Way
Aster Cellar Crt
Fred Taylor Dr
Orell Ave
Fitzherbert Ave
Rush Creek Dr
Beauchamp Dr
Cyclamen Cres
Royal Rd
Westgate Dr
Don Buck Rd
Red Hills Rd
0
420
840
Metres

NoR 2b


LEGEND
Designation Boundary
Identified Biodiversity Area
Taupaki Rd
Nixon Rd
Nelson Rd
Henwood Rd
Fred Taylor Dr
Dunlop Rd
Te Oranui Way
Baker Lane
Astel Cellar Lane
Crt
Auckland-Kumeu Mwy
SH 18
Trig Rd
Ryans Rd
Upper Harbour Mwy
SH 16
Hobsonville Rd
Cyril Cres
Orell Ave
Fitzherbert Ave
Rush Creek Dr
Beauchamp Dr
Cyclorama Cres
Royal Rd
Westgate Dr
Don Buck Rd
Red Hills Rd
0
420
840
Metres

NoR 2c


LEGEND
Designation Boundary
Identified Biodiversity Area
Auckland-Kumeu Mwy
SH 18
Trig Rd
Ryans Rd
Taupaki Rd
Nixon Rd
Henwood Rd
Nelson Rd
Upper Harbour Mwy
SH 16
Hobsonville Rd
Cyril Cres
Dunlop Rd
Fred Taylor Dr
Te Oranui Way
Baker Lane
Astr Cellar Lane Crt
Orell Ave
Fitzherbert Ave
Rush Creek Dr
Beauchamp Dr
Cyclorama Cres
Royal Rd
Westgate Dr
Don Buck Rd
Red Hills Rd
0
420
840
Metres

Schedule 3: Identified PPFs Noise Criteria Categories

NoR 1

Address	New or Altered Road	Noise Criteria Category
40 Royal Road	Altered	Category A
20A Belleaire Court	Altered	Category A
32 Royal Road	Altered	Category A
432 Don Buck Road	Altered	Category A
428 Don Buck Road	Altered	Category A
434 Don Buck Road	Altered	Category A
492 Don Buck Road	Altered	Category A
38 Royal Road	Altered	Category A
2/47, Royal Road	Altered	Category A
30 Royal Road	Altered	Category A
20 Belleaire Court	Altered	Category A
31 Royal Road	Altered	Category A
36 Royal Road	Altered	Category A
490 Don Buck Road	Altered	Category A
480 Don Buck Road	Altered	Category A
27 Royal Road	Altered	Category A
37 Royal Road	Altered	Category A
29 Royal Road	Altered	Category A
25 Royal Road	Altered	Category A
51 Royal Road	Altered	Category A
461 Don Buck Road	Altered	Category A
459 Don Buck Road	Altered	Category A
34 Royal Road	Altered	Category A
440, Don Buck Road	Altered	Category A
423 Don Buck Road	Altered	Category A
486 Don Buck Road	Altered	Category A
40A Royal Road	Altered	Category A
2/14, Royal Road	Altered	Category A
44 Royal Road	Altered	Category A
463 Don Buck Road	Altered	Category A
16 Royal Road	Altered	Category A
23 Royal Road	Altered	Category A
49 Royal Road	Altered	Category A
131A Hobsonville Road	Altered	Category A
422 Don Buck Road	Altered	Category A
417 Don Buck Road	Altered	Category A
45 Royal Road	Altered	Category A
41 Royal Road	Altered	Category A
39 Royal Road	Altered	Category A
131 Hobsonville Road	Altered	Category A
478 Don Buck Road	Altered	Category A
19 Luckens Road	Altered	Category A
465 Don Buck Road	Altered	Category A
415 Don Buck Road	Altered	Category A
22A Trig Road	Altered	Category A
484 Don Buck Road	Altered	Category A

1, 33 Cyclarama Crescent	Altered	Category A
442 Don Buck Road	Altered	Category A
18 Belleaire Court	Altered	Category A
473 Don Buck Road	Altered	Category A
479 Don Buck Road	Altered	Category A
1, 53 Kemp Road	Altered	Category A
469 Don Buck Road	Altered	Category A
145A Hobsonville Road	Altered	Category A
21 Royal Road	Altered	Category A
34A Trig Road	Altered	Category A
407 Don Buck Road	Altered	Category A
476 Don Buck Road	Altered	Category A
2/14, Royal Road	Altered	Category A
457 Don Buck Road	Altered	Category A
444 Don Buck Road	Altered	Category A
31 Beauchamp Drive	Altered	Category A
147F Hobsonville Road	Altered	Category A
464 Don Buck Road	Altered	Category A
3 Royal Road	Altered	Category A
2 Cyclarama Crescent	Altered	Category A
448A Don Buck Road	Altered	Category A
420 Don Buck Road	Altered	Category A
490 Don Buck Road	Altered	Category A
431 Don Buck Road	Altered	Category A
470 Don Buck Road	Altered	Category A
444A Don Buck Road	Altered	Category A
450A Don Buck Road	Altered	Category A
450 Don Buck Road	Altered	Category A
438 Don Buck Road	Altered	Category A
28 Beauchamp Drive	Altered	Category A
452 Don Buck Road	Altered	Category A
462 Don Buck Road	Altered	Category A
29 Cyril Crescent	Altered	Category A
472 Don Buck Road	Altered	Category A
17 Royal Road	Altered	Category A
5 Royal Road	Altered	Category A
436 Don Buck Road	Altered	Category A
21 Cyclarama Crescent	Altered	Category A
454 Don Buck Road	Altered	Category A
13 Royal Road	Altered	Category A
416 Don Buck Road	Altered	Category A
446 Don Buck Road	Altered	Category A
17 Cyclarama Crescent	Altered	Category A
11 Royal Road	Altered	Category A
15 Royal Road	Altered	Category A
27 Cyclarama Crescent	Altered	Category A
9 Royal Road	Altered	Category A
425 Don Buck Road	Altered	Category A
3A Royal Road	Altered	Category A
1/7, Royal Road	Altered	Category A
426 Don Buck Road	Altered	Category A

2/14, Royal Road	Altered	Category A
13 Cyclarama Crescent	Altered	Category A
474 Don Buck Road	Altered	Category A
21 Royal Road	Altered	Category A
2/28, Royal Road	Altered	Category A
433 Don Buck Road	Altered	Category A
21 Cyclarama Crescent	Altered	Category A
459 Don Buck Road	Altered	Category A
29 Cyclarama Crescent	Altered	Category A
129B Hobsonville Road	Altered	Category A
437 Don Buck Road	Altered	Category A
26 Beauchamp Drive	Altered	Category A
441 Don Buck Road	Altered	Category A
435 Don Buck Road	Altered	Category A
440, Don Buck Road	Altered	Category A
145B Hobsonville Road	Altered	Category A
451 Don Buck Road	Altered	Category A
9A Royal Road	Altered	Category A
23 Royal Road	Altered	Category A
1/7, Royal Road	Altered	Category A
426 Don Buck Road	Altered	Category A
2/14, Royal Road	Altered	Category A
29 Beauchamp Drive	Altered	Category A
1/31, Cyclarama Crescent	Altered	Category A
413 Don Buck Road	Altered	Category A
19 Cyclarama Crescent	Altered	Category A
31 Royal Road	Altered	Category A
475 Don Buck Road	Altered	Category A
2/33, Cyclarama Crescent	Altered	Category A
439 Don Buck Road	Altered	Category A
424 Don Buck Road	Altered	Category A
6 Beauchamp Drive	Altered	Category A
15 Cyclarama Crescent	Altered	Category A
27A Royal Road	Altered	Category A
477 Don Buck Road	Altered	Category A
3A Louise Place	Altered	Category A
3 Beauchamp Drive	Altered	Category A
4 Beauchamp Drive	Altered	Category A
37 Cyclarama Crescent	Altered	Category A
1/31, Cyclarama Crescent	Altered	Category A
3A Louise Place	Altered	Category A
41A, Cyclarama Crescent	Altered	Category A
476A Don Buck Road	Altered	Category A
11 Cyclarama Crescent	Altered	Category A
18 Reverie Place	Altered	Category A
20 Reverie Place	Altered	Category A
16 Reverie Place	Altered	Category A
13 Reverie Place	Altered	Category A
39 Cyclarama Crescent	Altered	Category A
8 Beauchamp Drive	Altered	Category A
3 Cyclarama Crescent	Altered	Category A

25 Beauchamp Drive	Altered	Category A
3/427 Don Buck Road	Altered	Category A
39 Cyclarama Crescent	Altered	Category A
23 Beauchamp Drive	Altered	Category A
11 Reverie Place	Altered	Category A
27 Beauchamp Drive	Altered	Category A
14 Reverie Place	Altered	Category A
43 Royal Road	Altered	Category A
15 Reverie Place	Altered	Category A
9 Cyclarama Crescent	Altered	Category A
7 Reverie Place	Altered	Category A
5 Cyclarama Crescent	Altered	Category A
6 Cyclarama Crescent	Altered	Category A
9 Reverie Place	Altered	Category A
3 Kemp Road	Altered	Category A
7 Cyclarama Crescent	Altered	Category A
3/427 Don Buck Road	Altered	Category A
4 Cyclarama Crescent	Altered	Category A
411 Don Buck Road	Altered	Category A
5 Kemp Road	Altered	Category A
421 Don Buck Road	Altered	Category A
27 Red Hills Road	New	Category A

NoR 2b

Address	**New or Altered Road**	**Noise Category**
554A Don Buck Road	Altered	Category A
554 Don Buck Road	Altered	Category A
552A Don Buck Road	Altered	Category A
558 Don Buck Road	Altered	Category A
556 Don Buck Road	Altered	Category A
560 Don Buck Road	Altered	Category A
562 Don Buck Road	Altered	Category A
552 Don Buck Road	Altered	Category A
552 Don Buck Road	Altered	Category A
54 Fred Taylor Drive	Altered	Category A

NoR 2c

Address	**New or Altered Road**	**Noise Category**
7, 31 Nelson Road	Altered	Category A
307 Red Hills Road	Altered	Category A
315 Red Hills Road	Altered	Category A
319 Red Hills Road	Altered	Category A
8 Nelson Road	Altered	Category A
315 Red Hills Road	Altered	Category A
319 Red Hills Road	Altered	Category A

PPF Location Plans


Legend
NZS 6806 Assessment Area
Protected Premises and Facilities
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Unitary plan data sourced from Auckland Council published web services.
Legend information can be viewed on Auckland Council unitary plan viewer.
Linework shown on this plan is conceptual only.
Not to be used for construction.
Don Buck Rd
Royal Rd
Jack Smyth Ct
Beauchamp Dr
Cyclarama Cres
Kemp Road
Reverie Place
Beauchamp Drive
Belleaire Court
Hobsonville Road
Royal Road
Cyclarama Crescent


Legend
NZS 6806 Assessment Area
Protected Premises and Facilities
This map contains data derived in part or wholly from sources other than those party to the Supporting Growth Alliance, and therefore, no representations or warranties are made by those party to the Supporting Growth Alliance as to the accuracy or completeness of this information.
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Unitary plan data sourced from Auckland Council published web services.
Legend information can be viewed on Auckland Council unitary plan viewer.
Linework shown on this plan is conceptual only.
Not to be used for construction.
Don Buck Rd
Beauchamp Dr
Reverie Pl
19 Luckens Road
486 Don Buck Road
484 Don Buck Road
72A Trig Road
480 Don Buck Road
478 Don Buck Road
476A Don Buck Road
476 Don Buck Road
474 Don Buck Road
472 Don Buck Road
470 Don Buck Road
145B Hobsonville Road
145A Hobsonville Road
464 Don Buck Road
Buck Road
490 Don Buck Road
479 Don Buck Road
477 Don Buck Road
473 Don Buck Road
475 Don Buck Road
27 Beauchamp Drive
34A Trig Road
469 Don Buck Road
33 Beauchamp Drive
29 Beauchamp Drive
25 Beauchamp Drive
23 Beauchamp Drive
28 Beauchamp Drive
26 Beauchamp Drive
3A Louise Place
465 Don Buck Road
463 Don Buck Road
461 Don Buck Road
459 Don Buck Road
459 Don Buck Road
457 Don Buck Road
20A Belleaire Court
20 Belleaire Court
451 Don Buck Road
131A Hobsonville Road
129B Hobsonville Road
2/14 Royal Road
7 Reverie Place
9 Reverie Place
11 Reverie Place
13 Reverie Place
15 Reverie Place
14 Reverie Place
8 Beauchamp Drive
6 Beauchamp Drive
4 Beauchamp Drive
20 Reverie Place
18 Reverie Place
16 Reverie Place


27 Red Hills Road
Legend
NZS 6806 Assessment Area
Protected Premises and Facilities
This map contains data derived in part or wholly from sources other than those party to the Supporting Growth Alliance, and therefore, no representations or warranties are made by those party to the Supporting Growth Alliance as to the accuracy or completeness of this information.
Map intended for distribution as a PDF document.
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Not to be used for construction.
Maxar, Earthstar Geographics, and the GIS User Community


Fred Taylor Dr
Fred Taylor Dr
Fred Taylor Dr
Fred Taylor Dr
Cellar Ct
Astil Ln
Astil Ln
Cellar Ct
Don Buck Rd
Don Buck Rd
Don Buck Rd
Pinot Ln
Cabernet Cres
558 Don Buck Road
560 Don Buck Road
556 Don Buck Road
562 Don Buck Road
54 Fred Taylor Drive
554A Don Buck Road
554 Don Buck Road
552A Don Buck Road
553 Don Buck Road
552 Don Buck Road
Rahopuru Rd
Orange Dr
Legend
NZS 6806 Assessment Area
Protected Premises and Facilities
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8 Nelson Road
Nelson Rd
Nelson Rd
Nixon Rd
Red Hills Rd
7, 3 Nelson Road
319 Red Hills Road
319 Red Hills Road
315 Red Hills Road
315 Red Hills Road
Red Hills Rd
307, Red Hills Road
Legend
NZS 6806 Assessment Area
Protected Premises and Facilities
This map contains data derived in part or wholly from sources other than those party to the Supporting Growth Alliance, and therefore, no representations or warranties are made by those party to the Supporting Growth Alliance as to the accuracy or completeness of this information.
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ATTACHMENT 17

REDHILLS ARTERIAL TRANSPORT NETWORK RESPONSE TO SOFT LODGEMENT REQUEST FOR FURTHER INFORMATION

TE TUPU NGĀTAHI
SUPPORTING GROWTH

22 December 2022

Te Tupu Ngātahi
Supporting Growth
PO Box 105218
Auckland 1143

Todd Elder and Jo Hart
Auckland Council
135 Albert Street
Auckland
Private Bag 92300, Auckland 1142

Dear Todd and Jo

Re: Response to soft lodgement requests for further information - North West HIF – Redhills Arterial Transport Network and Trig Road Corridor Upgrade Projects

Thank you for engaging with Te Tupu Ngātahi prior to lodgement of the above Projects. This letter contains our responses to the questions and comments provided by Auckland Council's specialists through the soft lodgement process. Refer to points 1 – 6 below.

The documentation has been updated in response to feedback where possible. Due to programme constraints some feedback has been responded to in this letter, which therefore should be considered part of the supporting documentation for the NORs.

The requests for information are set out in Table 1 below. Please let us know if any correspondence is not listed below.

Table 1: Requests for Information

Date	Topic
12 October 2022	*Supporting Growth Northwest Soft-lodgement – Response 1* • Built Heritage • Archaeology and Historic Heritage • Arboriculture
26 October 2022	*RE: SGA NW Local - Soft Lodgement* • Transport
28 October 2022	*Healthy Waters - Initial comments* • Stormwater and Flooding

Date	Topic
31 October 2022	*Supporting Growth NW - HIF planning review (Notices of requirement)* • Planning
14 December 2022	*NoR NW HIF Redhills and Trig Rd: Urban Design Comment* • Urban Design

Yours sincerely

Bridget O'Leary
Planning Lead, North West HIF – Redhills and Trig Road
info@supportinggrowth.nz
0800 4769 255

Response to soft lodgement requests for further information

1. Planning and General Matters

Ref	NOR	Request	Response	Relevant Document / Section
1	All	**Statutory Assessment** I haven't been able to do a full statutory assessment for either Redhills or Trig Road HIF as Appendix B has not been included with the draft AEE and technical documents.	Noted.	**Redhills and Trig Road:** AEE Appendix B
2	All	**Conditions** • While I can see the types of conditions/management plans that are anticipated, a draft set of conditions has not been included • Will there be an OPW condition which sets out the management plans that need to be submitted • Will there be a condition which relates to the amendment of the designation boundary post construction to remove areas of the designation which are no longer required.	• Refer to Redhills - AEE Appendix C and Trig Road – AEE Appendix E for proposed designation conditions. Proposed consent conditions for Trig Road are contained in AEE Appendix D. • Management plan requirements are set out in proposed designation conditions 6 and 7. • Proposed designation condition 3 requires review and amendment of the designation boundary post-construction.	**Redhills:** AEE Appendix C **Trig Road:** AEE Appendix E
3	All	**Memo – HIF Gap Analysis** In regards to planning review, it sufficiently identifies parts of the AEE that need to be updated.	Noted.	
4	Trig	**AEE** • Section 4.2 Planning context - Designation 4667 (Ministry of Education – Trig Road Primary School) will need to be included • Section 9 Section 171(1)(d) Any other matters - Should the Hauraki Gulf Marine Park Act also be included? The definition of catchments means any area of land where the surface water drains into the Hauraki Gulf. Map in act includes Whenuapai/upper reaches of the Waitematā Harbour.	• Designation 4667 included in Section 5.2 Planning Context. • Refer to Sections 13.2.4 and 13.3 of the AEE.	AEE Section 5.2 AEE Section 13.2.4 and 13.3

2. Transport

Ref	NOR	Request	Response	Relevant Document / Section
1	All	**Scope of Stakeholder Engagement** • Has engagement been undertaken with Royal New Zealand Defence Force (RNZDF), with regards to proximity and resulting transport effects of NOR proposals on the Whenuapai Airbase area? • Are there any height or obstacle limitation controls in the vicinity of the airbase which impact upon the NOR proposals?	• Engagement has been undertaken with the Ministry of Defence and the designs shared with them. The key matter raised during engagement was the potential bird strike risk at Trig Road if stormwater ponds were to contain standing water. In response a dry stormwater pond has been selected for attenuation of peak stormwater flows, mitigating this risk. Overall the Ministry of Defence were broadly comfortable with the Projects. • Whenuapai airbase controls on landuse and subdivision are set out under their Designation 4311 Whenuapai Airfield Approach and Departure Path Protection and Chapter D23 of the AUP:OIP. Designation 4311 conditions state that restrictions do not apply to obstacles under 9m. The NOR designs do not include fixtures such as lighting, however, these would be built as per the AT Transport Design Manual which notes that lighting masts are up to 6m in height. These detailed matters will be confirmed at delivery and detailed design. On this basis there are no height or obstacle limitation controls that will impact on the NORs.	**Trig Road:** AEE Section 11.2.4 **Trig Road:** AEE Section 3.1.4.2.1
2	All	**Assessment of Transport Effects – Introduction (Chapter 2)** • Paragraph 2 of the Introduction refers to the Whenuapai area being expected to be development ready by 2018-2022 with approximately 400 hectares to accommodate 6,000 dwellings. • As the above timescale has already lapsed, please confirm, or update the above statement accordingly	• The Whenuapai area is expected to be staged for delivery. Whenuapai (SHA) was programmed to deliver approximately 1,150 dwellings in 2012, and Whenuapai Stage 1 between 2018 -2022. This area was planned to be released as part of Proposed Plan Change 5 as proposed by Council. This has recently been withdrawn. • The overall expectation is that while this land release has been delayed, the longer-term intention for urbanisation remains and as such does not impact on the transport assessment.	
3	All	**Assessment of Construction Traffic Effects** • All Assessments of Transport Effects refer to the requirement for Auditing, monitoring and reporting requirements relating to traffic management activities to be undertaken in accordance with Waka Kotahi's incoming Code of Practice for Temporary Traffic Management. • Please can this reference be updated to refer to the NZ Guide to Temporary Traffic Management (NZGTTM)?	• The standard referred to is still under development. See https://www.nzta.govt.nz/roads-and-rail/new-zealand-guide-to-temporary-traffic-management/.	

4	**All**	**Assessment of Construction Traffic Effects** Consideration of options to implement dynamic lanes	The necessity or requirement for dynamic lanes will be considered as part of future implementation business cases. The request links this to the assessment of Construction Traffic Effects. If dynamic lanes are considered appropriate to manage traffic during construction this will be detailed as part of the Construction Traffic Management Plan (condition 15).	**Redhills:** AEE Appendix C **Trig Road:** AEE Appendix E
5	**Redhills**	**Scope of Assessment in Assessment of Transport Effects Report, Section 2.1** Scope of key transport features does not cover proposed improvements to Don Buck Road/ Royal Road, which are included in NOR1 (Redhills North-South Arterial Corridor). Please include these.	The intersection of Don Buck Road and Royal Road is included. The scope of works on Royal and Don Buck is related to intersection tie ins – rather than dedicated upgrades to these corridors. The corridor of Don Buck Road is included within the North West Local Redhills Riverhead Package. Royal Road is currently not proposed to be designated.	
6	**Redhills**	**Scope of Assessment in Assessment of Transport Effects Report, Section 2.1** The south-eastern end of NOR1 adjoins NORs for RE1 (Don Buck Road) and for Royal Road. Clarity is required in relation to key transport characteristics and consistency in form with adjoining upgrade works.	There is no adjoining design for Royal Road at this stage. The indicative design has been developed to integrate back with the existing Royal Road corridor. The final design of these transitions will be confirmed prior to implementation and will be detailed in the Urban Landscape Design Management Plan (ULDMP) (condition 9). The facilities on Don Buck Road will tie in with the existing corridor to the south of the Royal Road intersection. To the north of the Royal Road intersection, the tie in point with RE1 is a midblock location. This point has been provided to enable either the NOR1 Royal Road intersection upgrade to occur first, or the Don Buck Road upgrade (RE1).	**Redhills:** AEE Appendix C
7	**Redhills**	**Scope of intersection performance assessment in Assessment of Transport Effects Report Table 10** Please expand intersection performance assessment in Table 10 to additionally cover the proposed signalised intersections of: • Dunlop Road (extended) / Baker Lane (extended) / East-West arterial corridor • East-West arterial corridor / North-South arterial corridor	Refer to attached memo (Appendix 1).	
8	**Redhills**	**Table 10 of Assessment of Transport Effects Report indicates forecast LoS D at intersection of Royal Road / Don Buck Road** • Please undertake further assessment of adverse effects and how these can be appropriately managed or mitigated against and confirm if queue clears in one traffic phase. • Both roads are required to facilitate strategic movements by public transport and freight. While it is understood that AT may tolerate a Level of Service at low as D, further	The intersection of Don Buck Road and Royal Road has been assessed utilising peak commuter flows. This has been balanced against direction from the Urban Street and Road Design Guide – Design Hour which specifies that consideration is also to be given to the needs of users and functions for the rest of the day. Addressing only the performance of the peak hour can lead to very wide streets with excess capacity for the residual periods in the day. In addition to this, the impact of widening an intersection to provide for capacity has been balanced against urban design outcomes and	

		assessment is required to understand whether the intersection and wider network can still facilitate efficient movements of both freight and public transport. Further assessment may include analysis of journey and delay times, further analysis of queue lengths on individual approaches and performance during interpeak periods in addition to peak periods. • Also, please confirm whether the SIDRA models made allowances for pedestrian and cycle movements.	proposed impacts. Additional capacity will also be counter to wider objectives to encourage mode shift to walking, cycling and public transport. As such, it is considered that the performance of the intersection provides an appropriate balance of vehicle efficiency and a safe and attractive environment for cyclists and pedestrians. In addition to the above, the intersection of Royal Road and Don Buck Road has been designed to provide sufficient space for public transport priority measures. As noted in the Transport Assessment (refer Volume 4), whilst queuing for private vehicles is predicted at this intersection in the future, it is also experienced at the current roundabout. With projected growth levels, no improvement to the intersection would further exacerbate this current poor performance, and buses would also experience poor reliability and longer travel times. There will be periods in the peak commuter hour, where vehicles may not clear the intersection in one phase. As mentioned in the Transport Assessment, this is not unexpected in the peak hour and not considered to be a significant delay. Performance in the interpeak is expected to be better than in the peak hour. The SIDRA models have made allowances for pedestrian and cycle movements.	**Redhills:** Volume 4
9	**Redhills**	**Project Interdependencies** • The Assessment of Transport Effects does not identify any projects with interdependencies upon the subject NORs. Please identify and assess projects with interdependencies, such as NORs for upgrade works on adjoining sections of road. • Interdependent projects could result in key transport effects upon the subject NORs and vice versa, which need to be understood. It may be appropriate to align timing and phasing of upgrade works on associated with adjoining NORs.	Two main interrelationships exist for the Redhills network in terms of network delivery. These exist at the main intersection points where the new offline network integrates with the existing online network at Fred Taylor Drive and Don Buck Road. The implementation of these intersections will be necessary to connect with the existing road network. These have been designed to include a designation footprint sufficient to integrate with the roading network, should the staging mean the new corridors occur before or after the existing road upgrades. There is also in particular a condition of the ULDMP (condition 9) to provide appropriate walking and cycling connectivity to, and interface with, existing or proposed adjacent land uses, public transport infrastructure and walking and cycling connections. At a wider network level, upgrades to Royal Road were identified as part of the North West DBC to provide future connectivity to the North West Rapid Transit Corridor. This interdependency was considered to be integral to the form and function of Royal Road, and as such further	**Redhills:** AEE Appendix C

			design to inform a potential NOR has been delayed until further design detail for the NWRTC is available. The proposed designation for the intersection of Royal Road and Don Buck Road as such integrates back into the existing Royal Road corridor. No other specific interdependencies have been identified, and the other operational assessments in the Transport Assessment assume that the long-term full network is in place. It is noted that the rate and sequencing of land use growth, wider growth pressures and timing of individual projects will change and evolve. This means that at the time of implementation the project will need to demonstrate how it will integrate with the prevailing urban form and surrounding road network.	**Redhills:** Volume 4
10	**Redhills**	**Road Design Speeds** Please can you confirm the design and posted speed limits of relevant roads.	The design speed used to inform the indicative design was 60kph, with a posted speed of 50kph on all corridors. This is provided in Section 2.1 of the Transport Assessment.	**Redhills:** Volume 4
11	**Redhills**	**Assessment against AT Roads & Streets Framework (RASF)** • The Assessment of Transport Effects does not include an assessment of the southern section of Trig Road against AT's RASF, with regards to 'Place' and 'Movement' functions and modal priorities. Please provide assessment. • An assessment against the RASF would be consistent with the scope of assessment undertaken for the other NORs and would be expected to confirm whether place, movement and transport functions are consistent with those for adjoining NOR upgrade proposals.	A RASF assessment that considers place and movement has been completed for the corridors and included in Section 6.6 of the Transport Assessment. A modal priority assessment, a separate component of the RASF, has not been completed for these corridors. It is noted that a full RASF assessment is based on information available at the time of the assessment, and that the assessments are intended to also respond to land use context. As such, the modal priority assessments will be completed prior to implementation, and iteratively updated as land use becomes more certain. The RASF assessment is a live process. Within the context of the designation, the indicative cross section enables space for the implementation of a corridor that can respond to a range of modal priorities.	
12	**Trig**	**Forecast LoS D at intersections of Trig Road / Hobsonville Road / Luckens Road in Table 10 of Assessment of Transport Effects** • Please undertake further assessment of adverse effects and how these can be appropriately managed or mitigated against. • Both Trig Road and Hobsonville Road are required to facilitate elements of usage by public transport and freight. While it is understood that AT may tolerate a Level of Service as low as D or E, further assessment is requested to understand whether the intersection and wider network	The intersection of Trig Road and Hobsonville Road has been assessed utilising peak commuter flows. This has been balanced against direction from the Urban Street and Road Design Guide – Design Hour which specifies that consideration is also to be given to the needs of users and functions for the rest of the day. Addressing only the performance of the peak hour can lead to very wide streets with excess capacity for the residual periods in the day. In addition to this, the impact of widening an intersection to provide for capacity has been balanced against urban design outcomes and proposed impacts. As such, it is considered that the performance of the intersection provides an appropriate balance of vehicle efficiency and a safe and	

		can still facilitate efficient movements of both freight and public transport. • Further assessment may include analysis of journey and delay times, further analysis of queue lengths on individual approaches and performance during interpeak periods in addition to peak periods.	attractive environment for cyclists and pedestrians. Additional capacity will also be counter to wider objectives to encourage mode shift to walking, cycling and public transport. In addition to the above, the intersection of Trig Road and Hobsonville Road has been designed to provide sufficient space for public transport priority measures, as such delays in the peak period will be experienced by private vehicles rather than public transport. Performance in the interpeak is expected to be better than in the peak hour. The SIDRA models have made allowances for pedestrian and cycle movements	
13	**Trig**	**Assessment against AT Roads & Streets Framework (RASF)** The Assessment of Transport Effects does not include an assessment of the southern section of Trig Road against AT's RASF, with regards to 'Place' and 'Movement' functions and modal priorities. Please provide assessment.	A RASF assessment that considers place and movement has been completed for the corridors and included in Section 6.6 of the Transport Assessment. A modal priority assessment, a separate component of the RASF, has not been completed for these corridors. It is noted that a full RASF assessment is based on information available at the time of the assessment, and that the assessments are intended to also respond to land use context. As such, the modal priority assessments will be completed prior to implementation, and iteratively updated as land use becomes more certain. The RASF assessment is a live process. Within the context of the designation, the indicative cross section enables space for the implementation of a corridor that can respond to a range of modal priorities.	**Trig Road:** Volume 4
14	**Trig**	**Future Safety Performance** What are the existing personal and collective safety risk ratings along the Trig Road Corridor and how are these expected to change as a result of the proposed upgrade works?	It is considered that an assessment of the existing personal and collective safety risk ratings provides limited value in the context of providing an assessment of safety effects. This is largely due to the significant land use change and the use of indicative designs. The current design will be subject to the ULDMP condition (condition 9), which requires that prior to construction, the detailed design of the project will consider the road design matters such as walking and cycling facilities, median widths and treatments and other matters which will influence the personal and collective safety risk. The requirement for the ULDMP to be in accordance with appropriate design standards will also ensure that the safety benefits are realised. Notwithstanding this, Auckland Transport have mapped existing collective risk for the whole network, and these can be found on Future Connect. https://mahere.at.govt.nz/FutureConnect/	**Trig Road:** AEE Appendix

3. Arboriculture

Ref	NOR	Request	Response	Relevant Document / Section
1	All	Under the S92 please provide an arborist report identifying all protected trees to be affected and methodologies and control measures in place with recommended suite of conditions. I am sure that community facilities need this under the TOA as well.	An arborist report is not being provided as part of the NORs. No notable trees (as identified in the AUP:OIP) will be affected by the NORs. In respect to Trig Road, there is a group of three notable trees (ID 1974) located within the front boundary of the property at 8 Luckens Road, West Harbour. This site is not subject to the NOR and will not be affected by tie-in works to be undertaken within the existing road corridor. Works in the road corridor immediately in front of the property will comprise line marking only. Trees in the FUZ or road reserve adjacent to the FUZ are not protected under the AUP:OIP. The Projects will not affect trees within open space zones. Trees in roads over height/girth requirements that are affected are likely to change in the time between NOR and implementation (due to growth, removal or addition). Therefore, an arboriculture assessment of the environment at this time is of limited value. Instead, a Tree Management Plan condition is proposed for each NOR. This sets out how any notable and protected trees will be managed, measures to mitigate effects including tree protection measures and tree replacement planting. Refer to condition 22 (Redhills) and condition 20 (Trig). The Tree Asset Owner Approval (TAOA) is not being sought, nor is it required at this time. Any required TAOA will be sought closer to implementation, the rationale being similar to that above, in that it is likely to be of limited value until closer to implementation.	**Trig Road:** AEE Section 5.2 and 7.4.1 **Redhills:** AEE Appendix C **Trig Road:** AEE Appendix E
2	All	More specifically I need all notable trees identified and verification that there are no others affected.	Refer to point 1 above. The Tree Management Plan conditions will ensure that adverse effects on any notable or protected trees that exist at the time of implementation are avoided, remedied or mitigated.	**Redhills:** AEE Appendix C **Trig Road:** AEE Appendix E

3	**Trig**	Under brief review I believe the only site may be: site #1980 Pohutukawa (2) Kauri at 104a Hobsonville Road	These trees are located over 1 kilometre east of the Project area and are therefore not affected by the NOR.	
4	All	Under the arborist report justify why the only alternative is the removal of one notable tree and what are the effects on the adjacent notable tree and how they will be managed/controlled.	No notable trees are to be removed as a result of the Projects.	

4. Archaeology and Historic Heritage

Ref	NOR	Request	Response	Relevant Document / Section
1	All	Regards the two HIF assessments (for Redhills and Trig Road(s) – these are for smaller areas but they provide detailed research and a better indication of the risk as this company has done the bulk of the work in this environment. These will be acceptable.	Noted.	
2	**Trig**	The built heritage team cannot complete this stage of the soft lodgement. Attached is a study list of 'Built Heritage in Whenuapai'. Can you please check to see if any of the sites are affected by the NoRs.	One site on the 'Built Heritage in Whenuapai' Study List is subject to the proposed designation for the Trig Road Project; item number 5, "Quail Hollow", located at 40 Trig Road, Whenuapai. The Study List identifies this site as Cultural Heritage Inventory (CHI) site 3705. Recent correspondence with the Council's Built Heritage Team has confirmed that the record has been removed from the CHI due to insufficient heritage information to warrant its retention. The Built Heritage Team advised that as part of their ongoing work to improve the quality of the data in the CHI, records which contained very little, and often uninformative information are being investigated and systematically removed from the CHI. This record was part of a rough identification of places for a study list by Waitakere City Council in the late 1990's. The site is not subject to any heritage protection under Chapters D17 or D18 of the AUP:OIP. As stated in Section 7.1 of the Historic Heritage Assessment (refer Volume 4), there are no archaeological sites recorded within or in close proximity to the Project area. The first ~9m of the site at 40 Trig Road is subject to the proposed designation. This area comprises the front yard, including the driveway and manoeuvring area. The existing dwelling and garage at the property are located outside of the proposed designation. The space within the front yard is required to enable the construction of a retaining wall located along the current property boundary. Any landscaping, paving	**Trig Road:** Volume 4

			and fencing impacted by construction works will be reinstated as required by the ULDMP condition (condition 9). The formed road corridor will not encroach into the site. Overall, given the proposed works will not affect the existing buildings located at 40 Trig Road, and as any built heritage values associated with these buildings have not been confirmed, it is considered that any adverse effects on built heritage values will be less than minor. Further, in the unlikely event that an unknown archaeological site is exposed during construction, the AUP:OIP Accidental Discovery Rule (E12.6.1), will be adhered to, mitigating any potential adverse effects on historic heritage values.	**Trig Road:** AEE Appendix E

5. Stormwater and Flooding

Ref	NOR	Request	Response	Relevant Document / Section
1	**Trig**	The Trig Road document provides significantly more information on specific stormwater management to be provided for the upgrade to the road. I am happy that what has been provided by SGA in the document is a realistic representation of the land take required to provide the necessary stormwater management. Information is provided within the document of device sizing, and this will be refined through the design process.	Noted. For clarity, a greater level of stormwater detail has been provided in respect to the Trig Road Project as the resource consents required to implement the Project are being sought now, in addition to the NOR.	

6. Urban Design

Ref	NOR	Request	Response	Relevant Document / Section
1	**Trig**	I note there is no Urban Design Assessment for Trig Road but the AEE does contain a section within the AEE. Will an Urban Design Assessment be provided for this?	No standalone Urban Design Assessment will be provided however the relevant matters are addressed in the AEE. Proposed designation condition 9 requires the preparation of an Urban Landscape and Design Management Plan (ULDMP) that will ensure that the detailed design of the corridor responds to and integrates with the surrounding landscape and urban context.	**Trig Road:** AEE Appendix E

2	**Trig**	Is there going to be a connection provided to the existing pedestrian pathway located at 91 Hobsonville Road, shown in a red circle below. This land is within the Conservation Zone and provides a pedestrian connection to Mona Value cul-de-sac.	The intention is to provide a connection to the existing pathways and there is space within the proposed designation for that connection to be made. This will be secured through the ULDMP (designation condition 9).	**Trig Road:** AEE Appendix E

Appendices

Appendix 1: North West – Redhills Arterial Transport Network Intersection Performance

TE TUPU NGĀTAHI
SUPPORTING GROWTH

Memorandum

To:	**Auckland Council**
From:	Michelle Seymour, Transport Planner, Te Tupu Ngātahi
Date:	16 December 2022
Subject:	North West Redhill Arterial Transport Network: Request for further information

The following memo has been prepared to provide additional information as requested as part of the soft lodged documentation for the North West Redhill Arterial Transport Network.

Request: Scope of intersection performance assessment in Assessment of Transport Effects Report Table 10

Please expand intersection performance assessment in Table 10 to additionally cover the proposed signalised intersections of:

- Dunlop Road (extended) / Baker Lane (extended) / East-West arterial corridor
- East-West arterial corridor / North-South arterial corridor

The performance of these intersections is summarised in the below table.

Intersection	Peak Period	Overall Level of Service	Degree of Saturation (worst Movement)	Maximum Queue Distance
Dunlop Road (extended)/Baker Lane (extended) /East West Corridor	Morning Peak Period	B	0.427	89.3 (East West Arterial approach)
	Evening Peak Period	B	0.463	70.5 (East West Arterial approach)
East West Corridor/North South Corridor	Morning Peak Period	C	0.500	85.7 (East West Arterial - East Approach)
	Evening Peak Period	C	0.657	144.1m (East West Arterial - East Approach)

In terms of performance, the intersections are shown to perform to a satisfactory level, with sufficient overall capacity in the peak periods in 2048. It is noted that these traffic volumes have been based on the land use assumptions with the wider models, and as further certainty is available regarding land use, refinements to the intersection layouts are likely. This is also provided for in Condition 9, where the Urban Design and Landscape Management Plan will review road design elements including intersection form and pedestrian and cycling infrastructure.

It is also confirmed that walking and cycling movements have been allowed for on all movements at these T-intersections.

Name:	**Michelle Seymour**
Title:	Transport Planner

ATTACHMENT 18

REDHILLS ARTERIAL TRANSPORT NETWORK INDICATIVE DESIGN AND DESIGNATION DRAWINGS

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REDHILLS

MASSEY

REDHILLS RD (HIF)

FRED TAYLOR DR
SPRING GARDEN AVE
ROTU DR
RAUPO DR
KOHUHU LANE
DUNLOP RD
TE ORANUI WAY
FRED TAYLOR DR
BAKER LN
WESTGATE DR
KĀPIA RD
RUSH CREEK DR
DON BUCK RD
BEAUCHAMP DR
REVERIE PL
KEMP RD
ROYAL RD
CYCLARAMA CR
DON BUCK RD
NIXON RD
HENWOOD RD
NELSON RD
REDHILLS RD

N

16

LEGEND

- NoR 1
- NoR 2A
- NoR 2B
- NoR 2C
- STATE HIGHWAY 16

ORIGINAL IN COLOUR

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ORIGINAL SIZE A1

REV	REVISIONS	DRAWN	DATE
E	ISSUED FOR NOTICE OF REQUIREMENT LODGEMENT	JDT	DEC.2022
D	FOR NOTICE OF REQUIREMENT	VDLT	11.09.20
C	FOR DRAFT DETAILED BUSINESS CASE	VDLT	25.07.19
B	FOR AT INTERNAL REVIEW	VDLT	17.04.19
A	FOR SAFETY AUDIT	VDLT	05.04.19

SURVEYED	NA	
DRAWN	V. DELA TORRE	28.08.20
DRAWING CHECK	J. DELA TORRE	28.08.20
DESIGN	P. HADWIN	28.08.20
DESIGN REVIEW	D. ZIMMERLE	28.08.20
APPROVED	B. BUSNARDO	07.12.2022

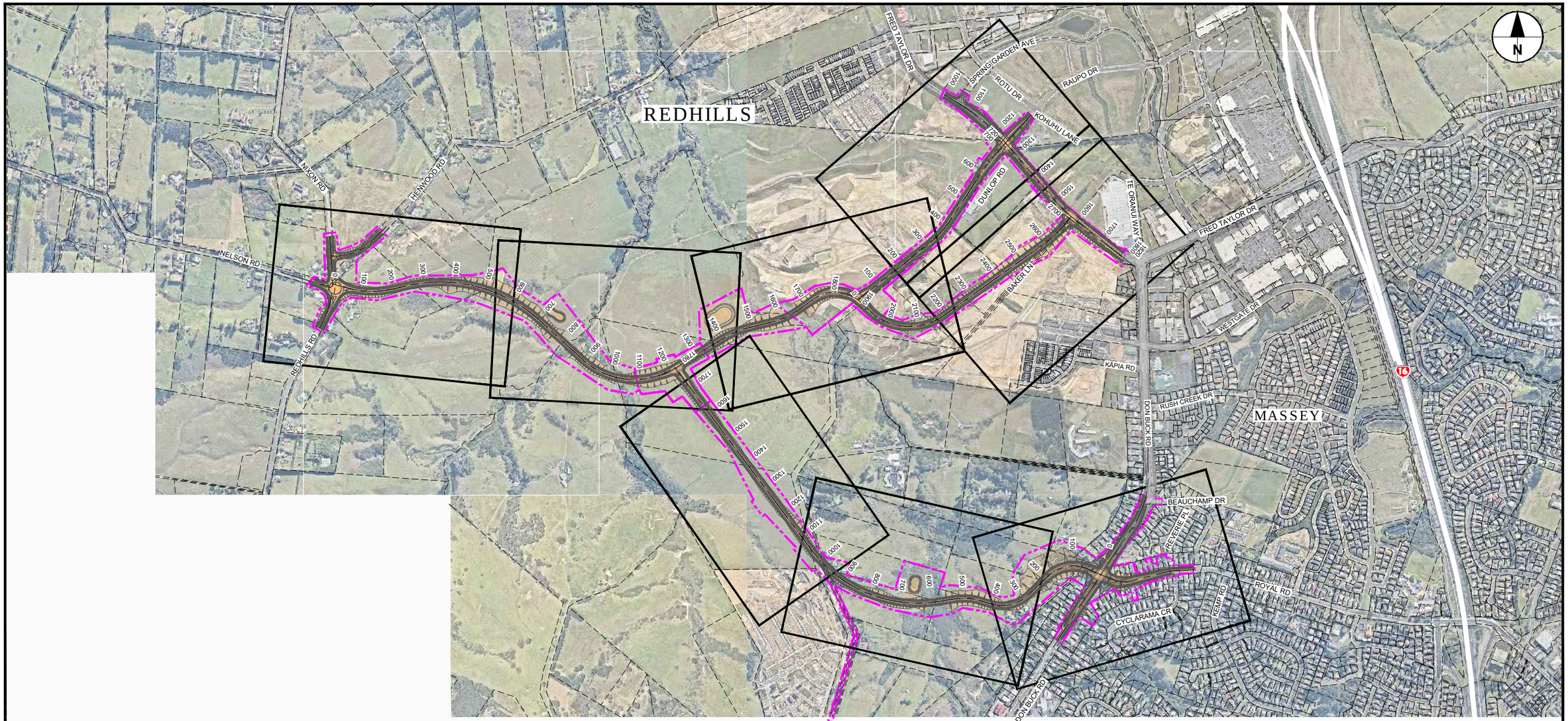
TE TUPU NGĀTAHI Supporting Growth

WAKA KOTAHI NZ TRANSPORT AGENCY

Project: **SUPPORTING GROWTH PROGRAMME**
NORTH WEST HIF REDHILLS

Drawing Title: GENERAL ARRANGEMENT PLAN

Drawing Status: **FOR LODGEMENT**
Drawing Date: 07.12.2022
A1 Scales 1:5000 | A3 Scales 1:10000
Discipline: CIVIL
Drawing No.: SGA-DRG-NWE-001-GE-1101
Revision: E



REDHILLS RD (HIF)

Scale NTS

DRAWING LIST - REDHILLS RD (HIF)		
DRAWING No.	DRAWING TITLE	REVISION
SGA-DRG-NWE-001-GE-1001	LOCATION PLAN, GENERAL NOTES, DRAWING LIST	E
SGA-DRG-NWE-001-CI-1001	GENERAL ARRANGEMENT LAYOUT PLAN - SHEET 1 OF 8	B
SGA-DRG-NWE-001-CI-1002	GENERAL ARRANGEMENT LAYOUT PLAN - SHEET 2 OF 8	B
SGA-DRG-NWE-001-CI-1003	GENERAL ARRANGEMENT LAYOUT PLAN - SHEET 3 OF 8	B
SGA-DRG-NWE-001-CI-1004	GENERAL ARRANGEMENT LAYOUT PLAN - SHEET 4 OF 8	B
SGA-DRG-NWE-001-CI-1005	GENERAL ARRANGEMENT LAYOUT PLAN - SHEET 5 OF 8	B
SGA-DRG-NWE-001-CI-1006	GENERAL ARRANGEMENT LAYOUT PLAN - SHEET 6 OF 8	B
SGA-DRG-NWE-001-CI-1007	GENERAL ARRANGEMENT LAYOUT PLAN - SHEET 7 OF 8	B
SGA-DRG-NWE-001-CI-1008	GENERAL ARRANGEMENT LAYOUT PLAN - SHEET 8 OF 8	B

GENERAL NOTES

GENERAL

1.1 THE GENERAL ARRANGEMENT (GA) PLANS PROVIDE PRELIMINARY / CONCEPT LEVEL DESIGN REQUIRED TO IDENTIFY THE DESIGNATION FOOTPRINT FOR THE CONSTRUCTION AND OPERATION OF THE PERMANENT WORKS.

1.2 THE GA PLANS INDICATE HOW EACH CORRIDOR TIES INTO THE EXISTING AND FUTURE TRANSPORT NETWORK.

STORMWATER

2.1 THE STORMWATER DESIGN IS INDICATIVE.

2.2 STORMWATER POND SIZES ARE INDICATIVE AND DESIGNED IN ACCORDANCE WITH AUCKLAND COUNCIL'S GUIDELINE DOCUMENT GD01: STORMWATER MANAGEMENT DEVICES GUIDE.

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REV	REVISIONS	DRAWN	DATE
E	ISSUED FOR NOTICE OF REQUIREMENT LODGEMENT	JDT	DEC. 2022
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SURVEYED	N/A	
DRAWN	V. DELA TORRE	28.08.2020
DRAWING CHECK	J. DELA TORRE	28.08.2020
DESIGN	D. De ALMEIDA	28.08.2020
DESIGN REVIEW	R. BROWN	28.08.2020
APPROVED	B. BUSNARDO	07.12.2022

TE TUPU NGĀTAHI Supporting Growth

WAKA KOTAHI NZ TRANSPORT AGENCY

Project: **SUPPORTING GROWTH PROGRAMME**
NORTH WEST HIF REDHILLS

Drawing Title: LOCATION PLAN, GENERAL NOTES, DRAWING LIST

Drawing Status: **FOR LODGEMENT**

Drawing Date: 07.12.2022

A1 Scales: NTS | A3 Scales: NTS

Discipline:

Drawing No.: SGA-DRG-NWE-001-GE-1001

Revision: **E**

ORIGINAL SIZE A1

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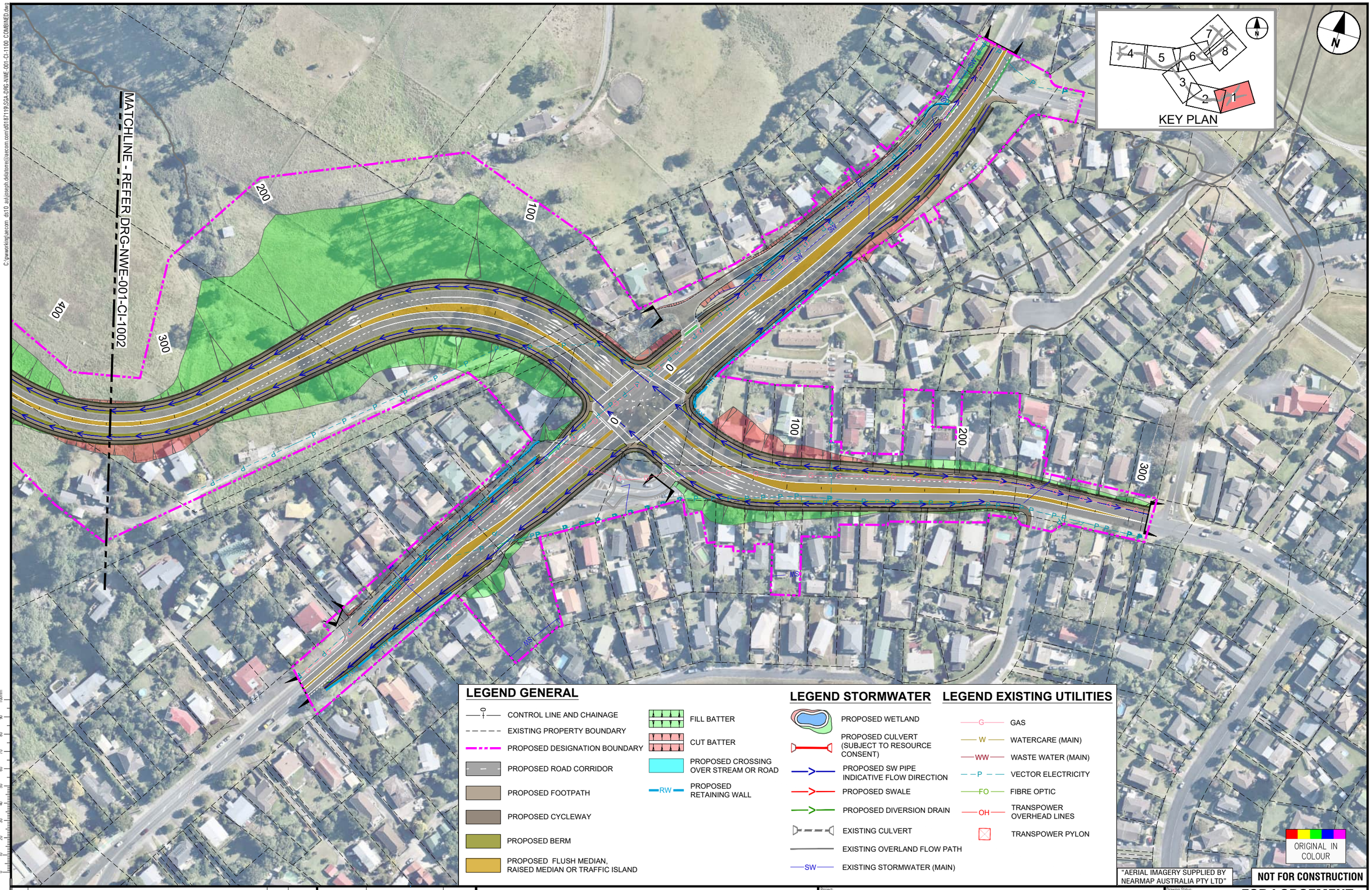

LEGEND GENERAL

- CONTROL LINE AND CHAINAGE
- EXISTING PROPERTY BOUNDARY
- PROPOSED DESIGNATION BOUNDARY
- PROPOSED ROAD CORRIDOR
- PROPOSED FOOTPATH
- PROPOSED CYCLEWAY
- PROPOSED BERM
- PROPOSED FLUSH MEDIAN, RAISED MEDIAN OR TRAFFIC ISLAND
- FILL BATTER
- CUT BATTER
- PROPOSED CROSSING OVER STREAM OR ROAD
- RW — PROPOSED RETAINING WALL

LEGEND STORMWATER

- PROPOSED WETLAND
- PROPOSED CULVERT (SUBJECT TO RESOURCE CONSENT)
- PROPOSED SW PIPE INDICATIVE FLOW DIRECTION
- PROPOSED SWALE
- PROPOSED DIVERSION DRAIN
- EXISTING CULVERT
- EXISTING OVERLAND FLOW PATH
- SW — EXISTING STORMWATER (MAIN)

LEGEND EXISTING UTILITIES

- G — GAS
- W — WATERCARE (MAIN)
- WW — WASTE WATER (MAIN)
- P — VECTOR ELECTRICITY
- FO — FIBRE OPTIC
- OH — TRANSPOWER OVERHEAD LINES
- TRANSPOWER PYLON

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ORIGINAL SIZE A1

REV	REVISIONS	DRAWN	DATE
B	ISSUED FOR NOTICE OF REQUIREMENT LODGEMENT	VDLT	DEC. 2022
A	FOR DRAFT NOTICE OF REQUIREMENT	VDLT	SEPT. 2020

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DRAWING CHECK	J. DELA TORRE	28.08.2020
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DESIGN REVIEW	R. BROWN	28.08.2020
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WAKA KOTAHI NZ TRANSPORT AGENCY

Project: **SUPPORTING GROWTH PROGRAMME**
NORTH WEST HIF REDHILLS (NoR 1)

Drawing Title: GENERAL ARRANGEMENT LAYOUT PLAN
SHEET 1 OF 8

Drawing Status: **FOR LODGEMENT**

Drawing Date: 07.12.2022

A1 Scales 1:1000 | A3 Scales 1:2000

Discipline: CIVIL

Drawing No.: SGA-DRG-NWE-001-CI-1001

Revision: B

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LEGEND GENERAL

- CONTROL LINE AND CHAINAGE
- EXISTING PROPERTY BOUNDARY
- PROPOSED DESIGNATION BOUNDARY
- PROPOSED ROAD CORRIDOR
- PROPOSED FOOTPATH
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- CUT BATTER
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- RW — PROPOSED RETAINING WALL

LEGEND STORMWATER

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- PROPOSED CULVERT (SUBJECT TO RESOURCE CONSENT)
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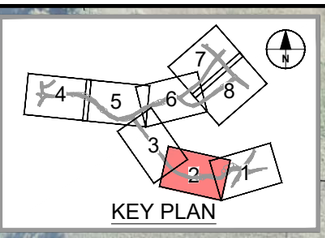
KEY PLAN



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REDHILLS RD WETLAND 01

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KEY PLAN

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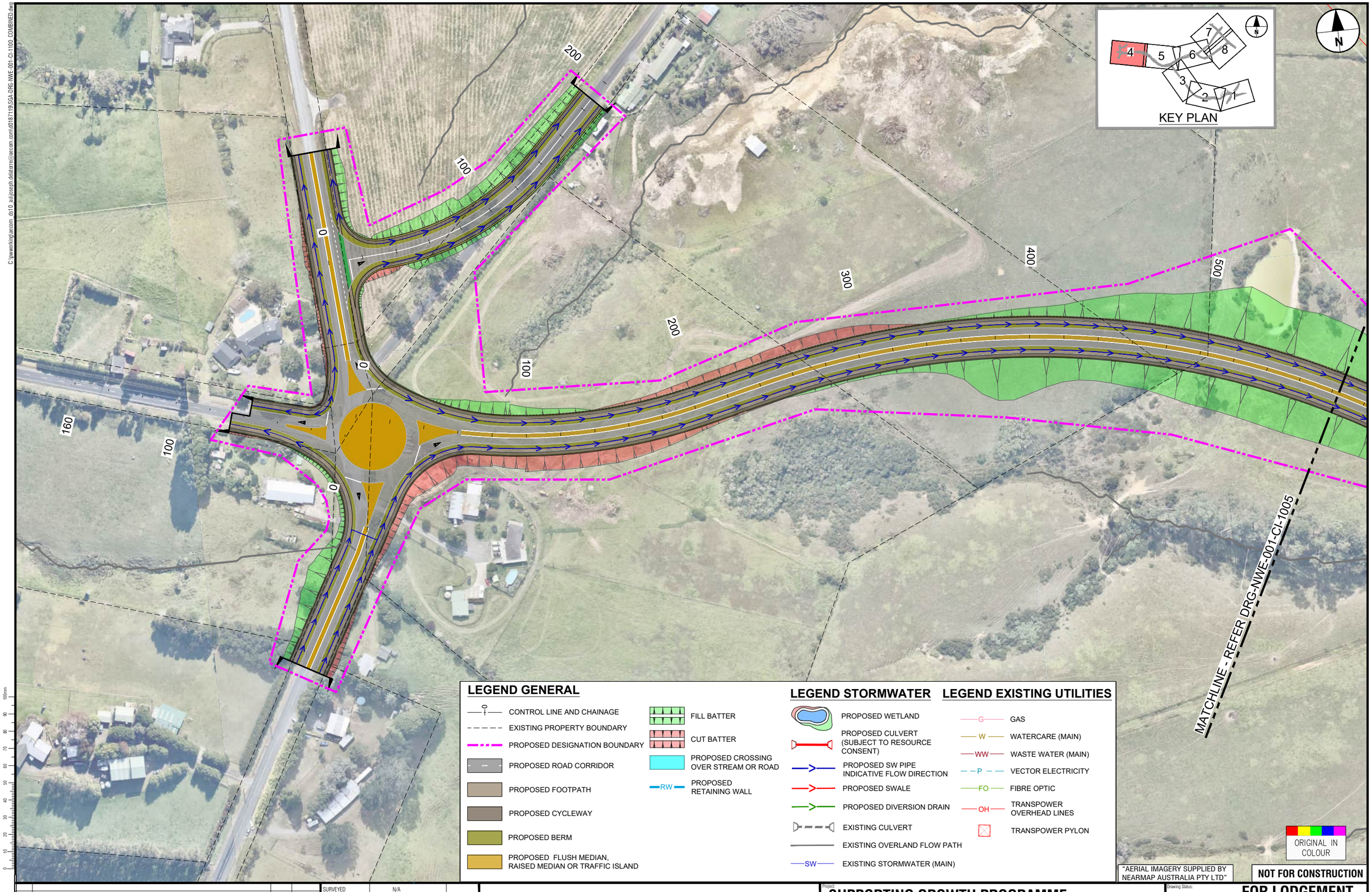
Discipline: CIVIL

Drawing No.: SGA-DRG-NWE-001-CI-1003

Revision: B



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Project: **SUPPORTING GROWTH PROGRAMME**
NORTH WEST HIF REDHILLS (NoR 2C)

Drawing Title: GENERAL ARRANGEMENT LAYOUT PLAN
SHEET 4 OF 8

Drawing Status: **FOR LODGEMENT**

Drawing Date: 07.12.2022

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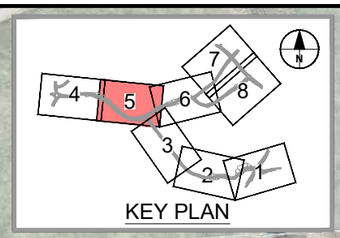

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REDHILLS RD WETLAND 02

REDHILLS RD WETLAND 03

600 700 800 900 1000 1100 1200 1300 1400 1700 1780

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WAKA KOTAHI NZ TRANSPORT AGENCY

Project: **SUPPORTING GROWTH PROGRAMME**
NORTH WEST HIF REDHILLS (NoR 2C AND NoR 2A)

Drawing Title: GENERAL ARRANGEMENT LAYOUT PLAN
SHEET 5 OF 8

Drawing Status: **FOR LODGEMENT**

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Discipline: CIVIL

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Revision: B

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KEY PLAN

REDHILLS RD WETLAND 03

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Drawing Title: GENERAL ARRANGEMENT LAYOUT PLAN
SHEET 6 OF 8

Drawing Status: **FOR LODGEMENT**

Drawing Date: 07.12.2022

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Discipline: CIVIL

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SHEET 7 OF 8

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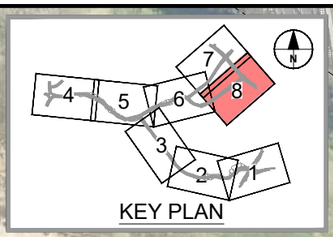

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SHEET 8 OF 8

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Revision: B

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ATTACHMENT 19

REDHILLS ARTERIAL TRANSPORT NETWORK ASSESSMENT OF TRANSPORT EFFECTS

TE TUPU NGĀTAHI
SUPPORTING GROWTH

Redhills Arterial Transport Network
Assessment of Transport Effects

December 2022

Version 1.0

Document Status

Version	Responsibility	Name
2020 Draft	Author	M Seymour
	Reviewer	J Phillips Matthew Kerr-Ridge
1.0	Author	M Seymour
	Reviewer	A Murray
	Approver	Bridget O'Leary

Revision Status

Version	Date	Reason for Issue
1.0	December 2022	Final for Lodgement

Table of Contents

Appendices

Table of Figures

Table of Tables

Acronym/Term	Description
AEE	Assessment of Environmental Effects
AT	Auckland Transport
ATAP	Auckland Transport Alignment Plan
AUP:OP	Auckland Unitary Plan Operative in Part 2016
CTMP	Construction Traffic Management Plan
ITA	Integrated Transport Assessment
LoS	Level of Service
MSM	Macro Strategic Model
NoR	Notice of Requirement
RMA	Resource Management Act 1991
RPTP	Regional Public Transport Plan
RTN	Rapid Transit Network
SH16	State Highway 16
SH18	State Highway 18
SSTMP	Site Specific Traffic Management Plan
TDM	Transport Design Manual
Waka Kotahi	Waka Kotahi NZ Transport Agency

1 Introduction

1.1 Background

Auckland's population is growing rapidly; driven by both natural growth (more births than deaths) and migration from overseas and other parts of New Zealand. The Auckland Plan 2050 anticipates that this growth will generate demand for an additional 313,000 dwellings and require land for approximately 263,000 additional employment opportunities.

In response to this demand, the Auckland Unitary Plan Operative in Part (**AUP:OP**) identifies 15,000 hectares of predominantly rural land for future urbanisation. To enable the urban development of greenfield land, appropriate bulk infrastructure needs to be planned and delivered.

The Te Tupu Ngātahi Supporting Growth Programme is a collaboration between Auckland Transport (**AT**) and Waka Kotahi NZ Transport Agency (**Waka Kotahi**), to investigate, plan and deliver the transport networks needed to support Auckland's future urban growth areas over the next 30 years.

1.2 Purpose of this Report

The Te Tupu Ngātahi Supporting Growth Programme has identified the need for a new arterial transport network in Redhills to support the urban development of the area. This report has been prepared to support AT's notices of requirement (**NoRs**) for the Redhills Arterial Transport Network (the **Project**). The NoRs under the Resource Management Act (**RMA**) are to designate land to enable the future construction, maintenance, and operation of the Project.

This report provides an assessment of transport effects associated with the construction, operation and maintenance of the Project. This assessment has been prepared to inform the Assessment of Environmental Effects (**AEE**) for the NoRs.

2 Redhills Project Description

The Project consists of two new arterial corridors through the Project area, providing sufficient space for two-lanes for vehicles, new footpaths and dedicated cycleways on both sides of the road. The Project has been broken down into the following NoRs:

Table 1: Notice of Requirements within the Redhills Project

Notice	Project	Description
NoR1	Redhills North-South Arterial Corridor	New urban arterial transport corridor and upgrade of Don Buck and Royal Road intersection.
NoR2a	Redhills East-West Arterial Corridor – Dunlop Road	New urban arterial transport corridor that intersects with Fred Taylor Drive and connects to the remaining East-West corridor (NoR2c) at the intersection with the Redhills North-South arterial corridor.
NoR2b	Redhills East-West Arterial Corridor – Baker Lane	New urban arterial transport corridor that intersects with Fred Taylor Drive and connects to the intersection of the remaining East-West connection and Dunlop Road (NoR2a).
NoR2c	Redhills East-West Arterial Corridor – Nixon Road connection	New urban arterial transport corridor that intersects with the Redhills East West Arterial Corridor – Dunlop Road. This includes the upgrade of the existing Red Hills Road/Nelson Road/Nixon Road intersection, and the existing Nixon Road/Henwood Road intersection

To safely tie into the existing road network, the Project includes the upgrade of existing intersections where the new corridors will connect, as follows:

- Signalisation of the intersection at Don Buck Road and Royal Road (NoR 1);
- Signalisation of the intersection at Fred Taylor Drive and Dunlop Road (NoR 2a);
- Signalisation of the intersection at Fred Taylor Drive and Baker Lane (NoR 2b); and
- A new roundabout at the intersection of Red Hills Road, Nixon Road and Nelson Roads (NoR 2c).

The Project also provides for new stormwater wetlands for the treatment and attenuation of stormwater from the new corridors.

This report has primarily considered the Project area as a whole. Where relevant, NoR 1 is referred to as the N-S Project, and NoR2a, NoR2b and NoR2c are collectively referred to as the E-W Project.

The Project has been split between four NoRs to reflect the likely implementation of the Project. It may also be possible for each designation to be delivered in stages as the Project area develops.

An overview of the Project is provided in Figure 1. This design, along with the wider designation boundary, is referred to as the Project area throughout this report.

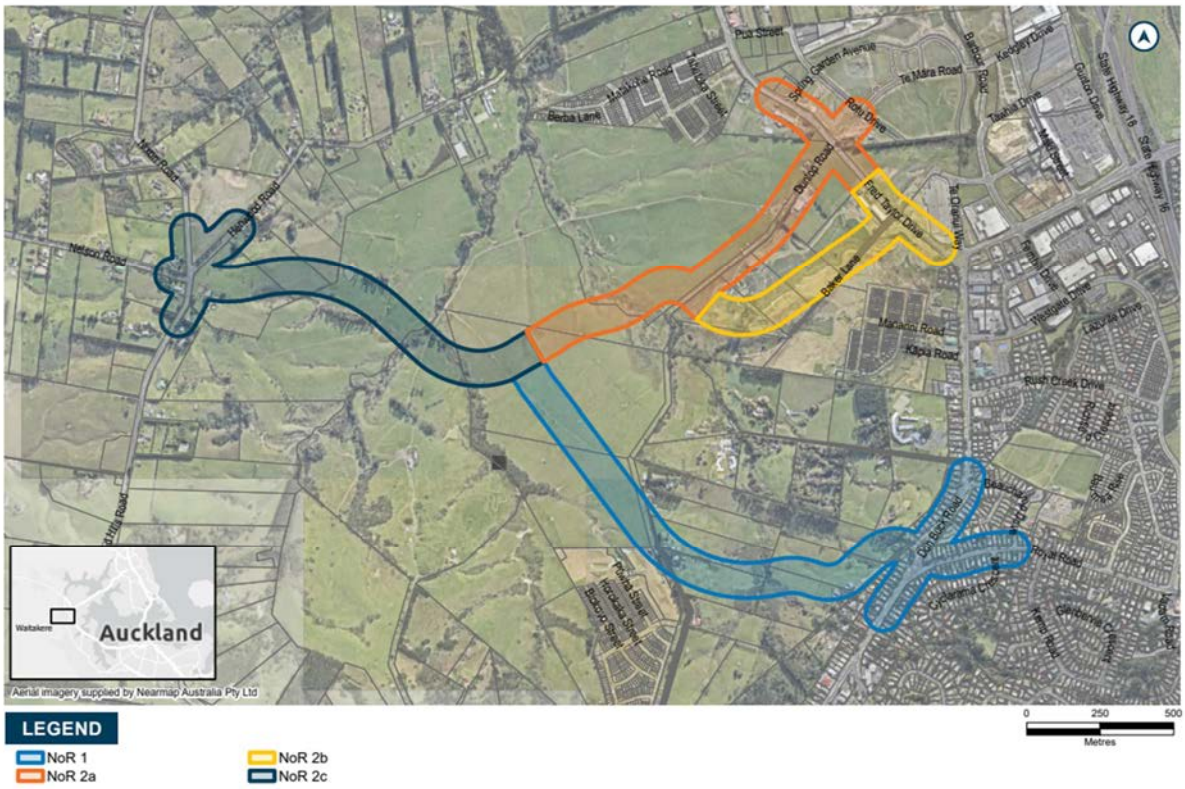


Figure 1: Redhills Arterial Transport Network

2.1 Project Features

The indicative transport features of the Project include:

E-W Project

- Two-lane arterial standard road (24m cross section) between Fred Taylor Drive and Nelson Road
- Signalised intersection at Dunlop Road and Fred Taylor Drive, to include a bus advance box and signal priority, cycle advance box, and pedestrian crossing facilities
- Signalised intersection at Baker Lane and Fred Taylor Drive to include a cycle advance box and pedestrian crossing facilities
- Footpaths on both sides of the road
- Dedicated uni-directional cycle lanes on both sides of the road
- A new roundabout at the intersection of Red Hills Road, Nelson Road and Nixon Road
- Posted speed of 50kph

N-S Project

- Two-lane arterial standard road (24m cross section) between Don Buck Road and the E-W Project
- Signalised intersection at N-S Project, Don Buck Road and Royal Road, to include a bus advance box and signal priority, cycle advance box, and pedestrian crossing facilities
- Footpaths on both sides of the road
- Dedicated uni-directional cycle lanes on both sides of the road
- Posted speed of 50kph

Upgrade to Fred Taylor Drive

- Four-lane arterial standard road between Don Buck Road and the Dunlop Road
- Signalised intersection at Dunlop Road and Baker Lane, to include cycle advance box, and pedestrian crossing facilities, with Dunlop Road also providing a bus advance box
- Footpaths on both sides of the road
- Dedicated uni-directional cycle lanes on both sides of the road
- Posted speed of 50kph

Figure 2: Indicative Redhills Arterial Transport Network Cross Section

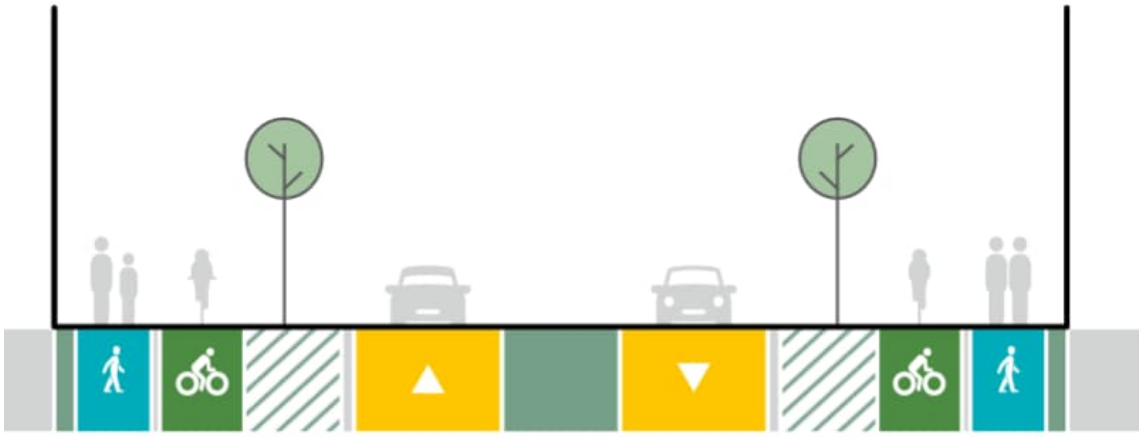


Figure 3: Indicative Fred Taylor Drive Cross Section

3 Assessment Framework

3.1 Statutory Context

3.1.1 Notice of Requirement

This assessment has been prepared to support the NoR process for the Project. Section 171 of the RMA sets out the matters that must be considered by a territorial authority in making a recommendation on an NoR. This includes consideration of the actual or potential effects (including positive effects) on the environment of allowing the requirement.

No regional resource consents are currently being applied for. The necessary regional resource consents will be sought prior to construction of the corridors, at which time any regional consenting matters will be assessed.

3.1.2 Redhills Precinct Plan

When the AUP:OP was originally notified the Redhills area was zoned Future Urban Zone. Through submissions and decisions, the zoning was changed to the current urban zones and a new Precinct was introduced. The Redhills Precinct (I610. Redhills Precinct) includes specific policies, objectives and rules and an indicative proposed roading network was developed (Precinct Plan 1). The inclusion of the Precinct Plan, and specifically the indicative roading network, was appealed to the Environment Court[1].

AT was part of these proceedings and advised the Court that AT and Waka Kotahi were progressing the Te Tupu Ngātahi Supporting Growth Programme. Through this Programme, AT would further investigate and plan for key arterial transport networks to support the future urban growth planned in Auckland and route protect for them. This included accelerated investigation and planning of the transport needs for Redhills.

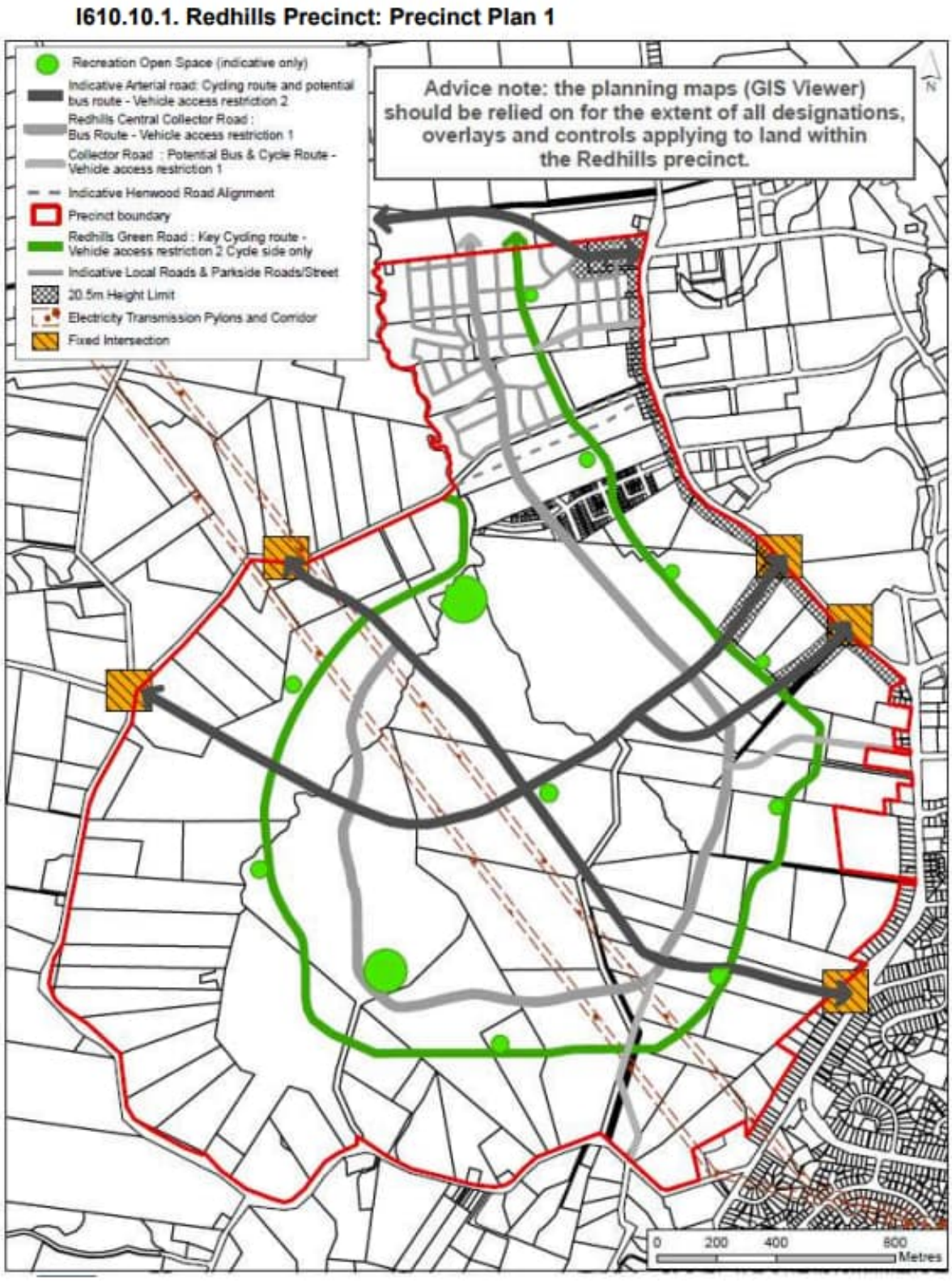
These investigations were used to support the resolution of the appeal and several key factors were identified as preferred outcomes for the Redhills area:

- The future intersection locations with the existing road network – including the use of Baker Lane to connect with Fred Taylor Drive, rather than a connection at the existing Don Buck Road/Fred Taylor Drive roundabout.
- An indicative alignment of the future arterial road network, particularly the relationship of the roading network and the future Redhills local centre. Given scope limitations in the Environment Court proceedings, AT noted that it would subsequently follow up these indicative alignments with confirmed alignments via typical planning processes (such as these NoRs) as part of the wider Te Tupu Ngātahi Supporting Growth Programme, discussed below.
- Confirmation of the core function of the arterial road network – including a key public transport corridor on Dunlop Road to provide greater benefits for walking and cycling and public transport. This would establish connections between the commercial centre of Redhills local centre, Westgate Metropolitan Centre, the future Westgate Rapid Transit Station and the Rapid Transit Network (**RTN**).

[1] ENV-2016-AKL-000232 Bunnings Limited v Auckland Council

The resulting indicative transport network is shown below in Figure 4.

Figure 4: Redhills Precinct Plan



3.1.2.1 North-South Arterial

It is noted that the arterial alignments in the Precinct Plan as shown in Figure 4 differ from the NoR alignment assessed in this report. A notable difference is related to the N–S Project connection. While the Precinct Plan indicates that this corridor would continue in a northerly direction until the corridor meets with Henwood Road, the NoR alignment terminates at the intersection with the E-W Project connection, adjacent to the future local centre.

Work completed by the Supporting Growth Programme in the North West in 2018 identified that the section of the N-S Project connection extending north to Henwood Road, while providing connectivity and accessibility for walking and cycling, did not form a critical part of the wider connections for private vehicles or public transport. Based on this, the connection is expected to form the function of a collector road rather than an arterial road. The Programme concluded that the existing Taupaki Road corridor through to State Highway 16 (**SH16**) would provide the core movement function between Redhills and Kumeu, Huapai and Riverhead, supported by a collector network. Further detail of the indicative North West Transport Network is provided in Section 4.2.4.

On this basis, the northern section of the indicative North-South arterial identified in the Precinct Plan is not included in this Project. The current Project does not preclude a corridor being provided in this location should this be progressed in the future.

3.1.2.2 East-West Arterial

Another deviation is the location of the E-W Project to the north of the new Redhills local centre. While this was identified as the preferred option at the time the Precinct Plan provisions were settled, the change in the alignment was not considered to be within the scope of the appeals process and as such this change was not incorporated in the Precinct Plan. A collector road will provide more appropriate connectivity for movements to and from that centre, with the arterial adjustment providing a limited access East-West link across the Redhills area.

3.1.2.3 Northside Drive Extension

The extension of Northside Drive from Fred Taylor Drive to the west was investigated as part of the Supporting Growth Programme. The corridor was identified as part of the wider North West Transport Network identified in the North West Detailed Business Case. It is noted that a Notice of Requirement is not being sought for this corridor at this time.

3.2 Project Objectives

The Project objectives are as follows:

N-S Project

- **Project Objective 1:** Provide a new north-south urban arterial transport corridor from Royal Road to the future east-west arterial corridor to support and integrate with planned urban growth in Redhills.
- **Project Objective 2:** Provide arterial transport corridors that are safe for all transport users.
- **Project Objective 3:** Contribute to mode shift by providing a choice of transport options including walking, cycling and public transport.

- **Project Objective 4:** Provide for the identification and protection of the future Redhills arterial transport network and key connections which enables growth.

E-W Project

- **Project Objective 1:** Provide new east-west urban arterial transport corridors from Fred Taylor Drive to Nixon Road to support and integrate with planned urban growth in Redhills.
- **Project Objective 2:** Provide arterial transport corridors that are safe for all transport users.
- **Project Objective 3:** Contribute to mode shift by providing a choice of transport options including walking, cycling and public transport.
- **Project Objective 4:** Provide for the identification and protection of the future Redhills arterial transport network and key connections which enables growth.

4 Receiving Environment

Chapter Summary: Receiving Environment
The existing transport environment includes several arterial routes that currently facilitate movements north to south along Don Buck Road and Fred Taylor Drive, as well as east to west on Royal Road. The existing roads currently provide two traffic lanes, with footpaths provided on much of the existing network. Cycling facilities are variable, with a mix of no facilities (Royal Road), shared path and on-road cycles lanes (Don Buck Road and Fred Taylor Road). Generally, the cycle facilities provide for a relatively disjointed journey for cyclists, and pedestrian facilities, while provided for in the way of footpaths, currently have limited crossing facilities and relatively narrow paths. Aside from bus stops, there are currently no dedicated public transport facilities.

4.1 Approach to Receiving Environment

A key objective of the Te Tupu Ngātahi Supporting Growth Programme is to protect land now to ensure that the transport networks required to support growth areas in the future, around Auckland, can be provided in an efficient and co-ordinated manner. This Project supports the development of housing in the Redhills area.

The AUP:OP zoning provides the future urban context in which the Project will operate. Table 2 sets out the likely future receiving environment of the Redhills area based on zoning provisions. This zoning signals a high probability of land use change over time from the currently mostly rural character of the area. This likely future receiving environment has been used to inform the assessment.

Table 2: Redhills Arterial Transport Network receiving land use environment

Redhills Arterial Transport Network receiving environment	
Residential – Single House Zone	• Maintain and enhance amenity values of established neighbourhoods • 'Generally characterised by one to two storey buildings with multi-unit development not anticipated'
Residential – Mixed Housing Suburban Zone	• 'Largely characterised by one and two storey, mainly standalone buildings with boundary setbacks and landscaped gardens', however 'enables intensification through attached two storey housing in a variety of types and sizes'
Residential – Mixed Housing Urban Zone	• 'Reasonably high-intensity zone enabling greater intensity of development than previously provided for' • Development 'typically up to three storeys in a variety of sizes and forms including detached dwellings, terraced housing and low-rise apartments'
Residential – Terraced Housing and Apartment Building Zone	• 'A high-intensity zone…providing for urban residential living in the form of terraced housing and apartments…with the greatest density, height and scale of development of all the residential zones' • Buildings enabled up to five, six or seven storeys • 'Predominantly located around metropolitan, town and local centre zones and the public transport network', also providing for a range of non-residential activities within an 'urban residential character'

Redhills Arterial Transport Network receiving environment	
Business – Local Centre Zone	• 'Generally located in areas of good public transport' • 'Primarily provides for local convenience needs of surrounding residential areas, including local retail, commercial services, offices, food and beverage, and appropriately scaled supermarkets'

Proposed Plan Change 78 was notified on 18 August 2022 in response to the government's National Policy Statement on Urban Development 2020 (amended in 2022) and requirements of the Resource Management Act. The plan change proposes to up-zone land within the Redhills area from Single House Zone and Mixed Housing Suburban Zone to Mixed Housing Urban Zone. Implications of this Proposed Plan Change in terms of transport modelling can be found in Section 5.1.1. For additional information refer to the AEE.

4.2 Transport Specific Context

The following section provides a brief summary of the existing transport environment and the likely future transport environment.

4.2.1 Existing Transport Environment

Table 3 and Table 4 provide a summary of the key characteristics of the existing road network and intersections.

Table 3: Existing Road Transport Network

Existing Corridor	Key Characteristics
Fred Taylor Drive	• 80kph speed limit north of the roundabout with Hobsonville Road. • Mixed urban and rural two lanes in majority, four lanes at signalised intersection approaches. • Currently in state of change with iterative upgrades being provided by developers as the road frontages are upgraded. • Corridor changes in form between sections with no kerb and channel or active mode facilities in parts, and in other sections footpath and cycling facilities are provided. • Various cycle standards have been in used, and the facilities change between on road cycle lanes, shared paths and more recently "Copenhagen style" off-road cycle facilities. These variations are largely a result of changes to design standards and a shift in preference towards off-road separated cycle facilities to support Auckland Council and AT mode shift objectives.
Royal Road	• 50 kph speed limit. • Urban two-lane corridor with footpaths and limited cycle facilities. • Provides access to SH16 interchange. • Local bus services.

Existing Corridor	Key Characteristics
Don Buck Road	• 50 kph speed limit. • Urban two-lane road with footpaths, mix of shared path and on road cycle facilities. • Over dimension route with flush median. • Part of the frequent public transport network.
Dunlop Road and Baker Lane	• Dunlop Road currently is approximately 20m wide and has no walking or cycling facilities. It operates as a local road that provides access to the rural properties to the west and a panel beater. • Baker Lane is currently a construction access for development within Redhills. Prior to this Baker Lane was a private unsealed driveway providing access to the rear rural properties.
Red Hills Road	• 80 kph speed limit. • Rural two-lane road with a footpath from Don Buck Road to Sunnyvale Road for approximately 1.8km. • There are no walking and cycling facilities in the vicinity of the Henwood Road intersection.

Table 4: Existing Intersections in Redhills

Existing Corridor	Key Characteristics
Fred Taylor Drive and Dunlop Road	• Priority give way intersection • Single approach lane in all directions, no flush median • No footpaths or cycle facilities
Fred Taylor Drive and Royal Road	• Roundabout intersection • Two approach lanes, partial dual lane roundabout • Shared path adjacent on Don Buck Road, leads to on road cycle lanes • No cycle facilities on Royal Road • 1.2m – 1.5m footpath on Royal Road
Fred Taylor Drive and Baker Lane	• Priority give way intersection • Single approach lane in all directions, no flush median • No footpaths or cycle facilities
Nixon Road and Nelson Road	• Stop controlled intersections • Single approach lane with no flush median • No footpaths • No cycling facilities

4.2.2 Existing Traffic Volumes

Existing traffic volumes in the Redhills area have been counted by AT in from October 2020 to March 2022. The results of these surveys are shown in Table 5 below.

Table 5: Existing Traffic Volumes on Surrounding Road Network

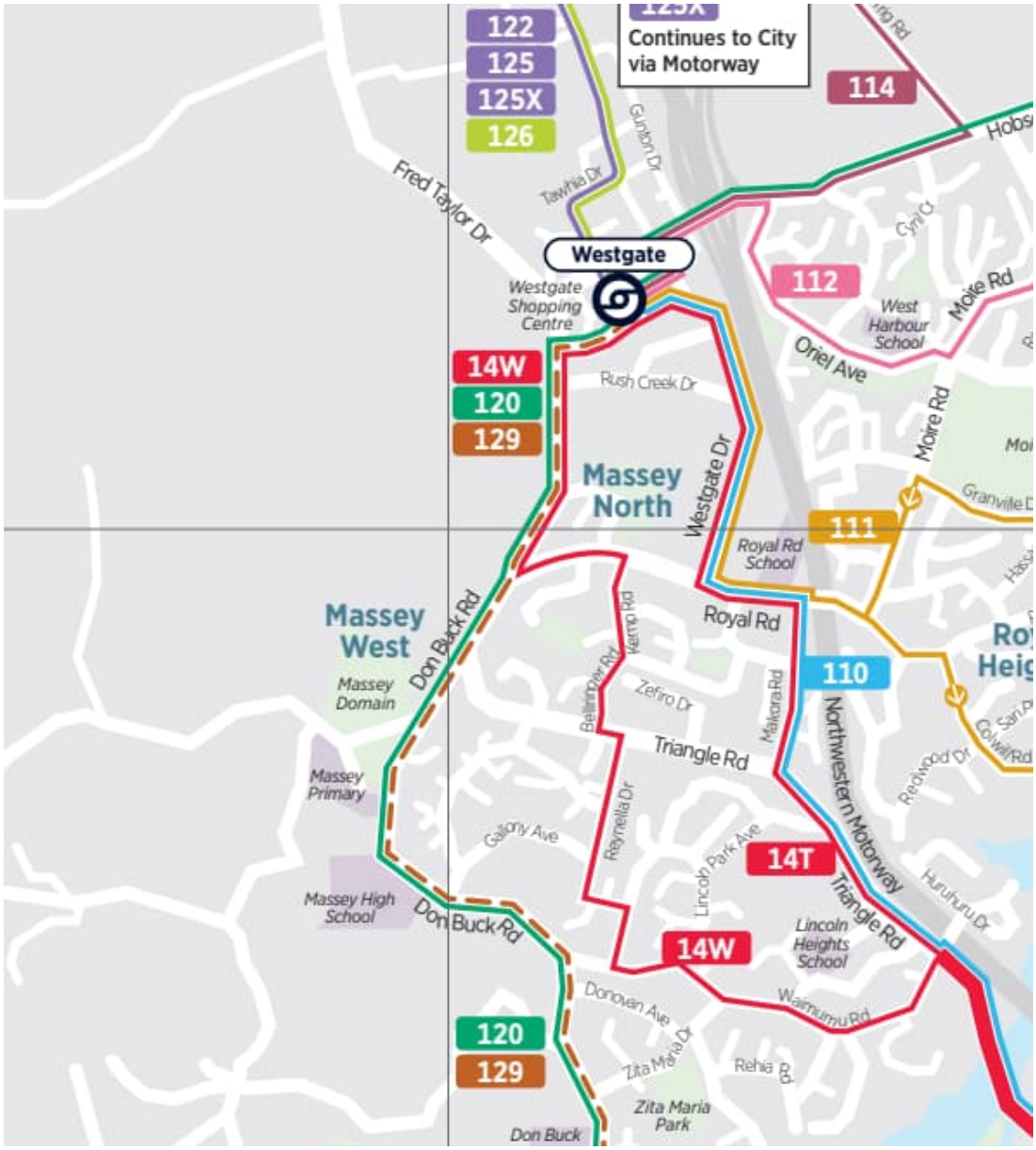
	Survey Date	5 Day ADT[2]	7-day ADT	AM Peak Volumes	PM Peak Volumes
Fred Taylor Drive: between Bakers Lane and Don Buck Road roundabout	February 2022	14,030	13,140	870	1,260
Royal Road: between Kemp Road and Lawson Creek Street	October 2020	7,040	7,970	760	810
Don Buck Road: between Beauchamp Road and Rush Creek Drive	August 2021	21,940	21,220	2,070	1,880
Red Hills Road: between Don Buck Road and Birdwood Road	March 2022	9,350	8,830	970	1,060

4.2.3 Existing Bus Services

The following figure shows the existing bus services in the Redhills area. As detailed in Table 3, there are currently services on Don Buck Road and Royal Road.

[2] Average Daily Traffic

Figure 5: Existing Bus Services

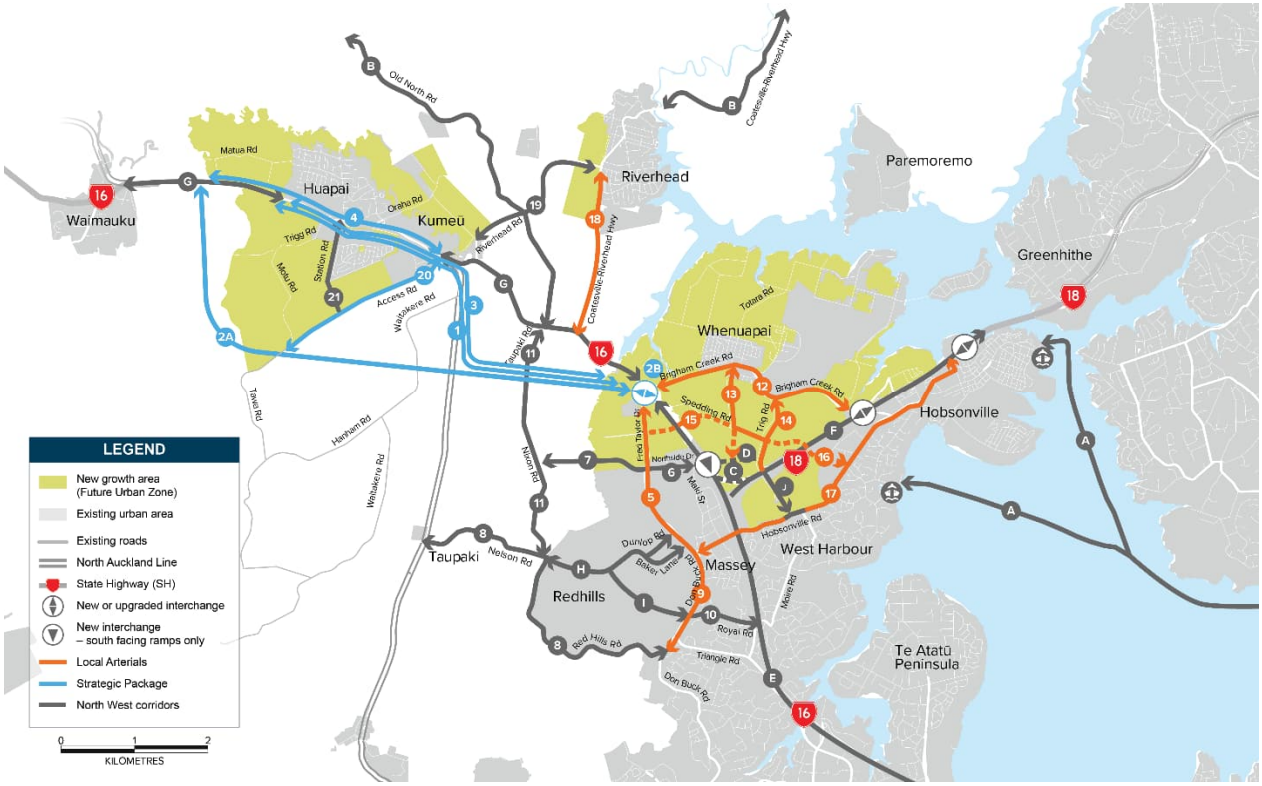


4.2.4 Future Transport Environment

The transport corridors within Redhills and the surrounding area will be delivered as part of the wider urbanisation that is scheduled to occur in the North West of Auckland.

To understand the future transport network requirements an indicative network for the North West has been developed to support Auckland Council's planned urban growth and is shown below in Figure 6.

Figure 6: Indicative North West Transport Network



Subsequent to the North West Indicative Business Case for the Te Tupu Ngātahi Supporting Growth Programme, the Housing Infrastructure Fund Detailed Business Case was completed under the Te Tupu Ngātahi Supporting Growth Programme, which focussed on the development of the Redhills Arterial Transport Network (this Project) and the southern section of Trig Road.

The assessment identified that, once the Redhills area is developed, the corridors will need to serve a variety of movement needs, including:

- Access to the surrounding residential land
- Access to the east to the strategic roading network via Don Buck Road, Fred Taylor Drive, and onward to SH16 and State Highway 18 (**SH18**)
- Access to the Westgate Shopping Mall and transport links in that area
- Access to the proposed RTN station at Royal Road

The Redhills corridors will, in the future, serve a range of local and strategic land use activities across a range of modes and therefore needs to provide the facilities associated with an urban arterial.

The access that these corridors will facilitate will need to allow for all modes of travel, including walking, cycling, public transport and private vehicles.

4.2.5 Future Walking and Cycling Network

It is proposed that the future arterial corridors in Redhills will provide walking and cycling facilities on both sides of the road. These will connect to the existing networks at signalised intersection points at Royal Road and Fred Taylor Drive, which are also expected to have pedestrian and dedicated cycle facilities in the future. The facilities on all arterial roads include:

- 1.8m footpaths on both sides of the road
- 2.0m protected cycle paths on both sides of the road.

Within the Redhills area, the corridors will eventually integrate with a series of corridors identified indicatively as a 'green network' on the Redhills Precinct Plan in the AUP:OP. The green network will be provided by landowners/developers through subdivision and development proposals. The green network includes:

- A green road that provides for two way separated cycle facilities (3.0 – 3.4m) with a 2.5m to 3.0m footpath on the cycle side, and 1.8m – 2.2m footpath on the other side;
- Stream edge routes that provide for pedestrian and cycle paths on both sides of permanent streams, and one side of intermittent streams; and
- Reserve edge roads with facilities along the northern and western side of permanent and intermittent streams.
- The N-S Project and the E-W Project have been developed having consideration for future corridors in the Redhills area both for traffic and walking and cycling, and do not preclude future intersections with the remainder of the network.

4.2.6 Future Local Public Transport Network

Two core public transport services are proposed by AT to support the future urban development within the Redhills Area. These are currently envisaged as bus services with the exact route dependent on roading infrastructure being in place (and as such a delivery date has not been determined). The provisions for these as per the RPTP are shown in Table 6.

Figure 7: Future Local Public Transport Services in Redhills (for key see Table 6)

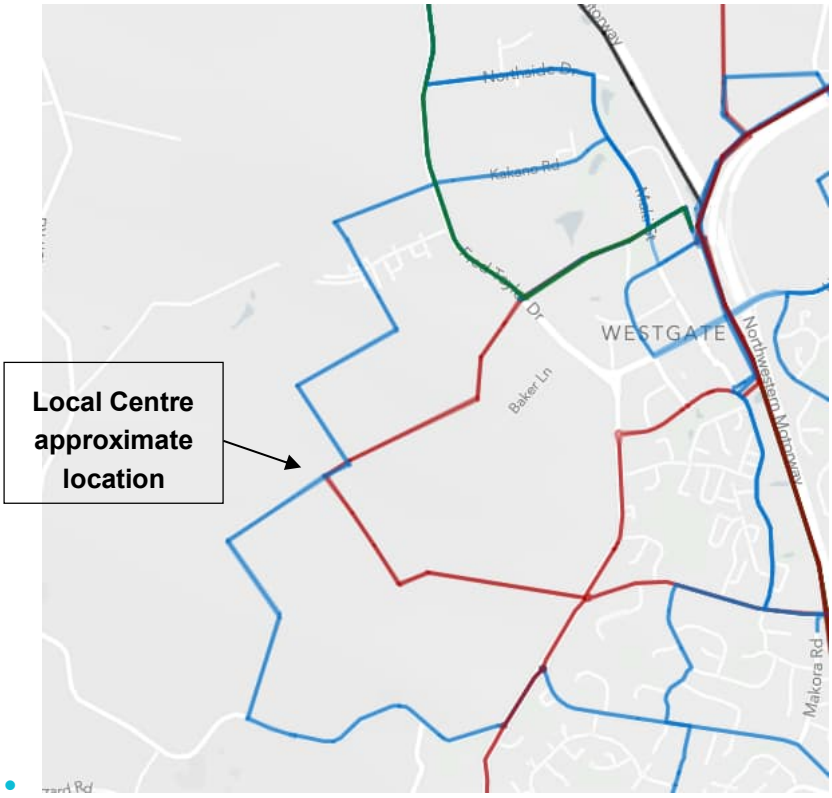


Table 6: Future Public Transport Services in Redhills Source: RPTP 2018

Route	Service Category	Frequency
Westgate / Redhills / Westgate Circuit (Red)	• Frequent	• Every 10 mins in the peak, • Every 15 mins outside of the peak
Westgate / Redhills / Westgate Circuit (Blue)	• Connector	• Every 15 mins in the peak, • Every 20 mins outside the peak

4.3 Summary of Transport Context

Overall, it is considered that the existing transport networks surrounding Redhills, and the lack of transport network within the Redhills area currently will not support the overall urban outcomes sought for the area as urbanisation continues. The existing network has intermittent facilities for walking and cycling, a low level of public transport and no dedicated facilities to provide for reliable and attractive travel by bus.

As growth increases in the area the current lack of an arterial network will reduce connectivity and result in a heavy reliance on the existing network around Redhills including Fred Taylor Drive and Don Buck Road. Without an arterial network, there will be an increasing reliance on the local and collector network. This will result in longer, less efficient bus networks, and safe cycle connections on desire lines would be limited. Without providing for through movement functions on arterials, there will likely be an increase in traffic utilising lower order corridors such as local and collector roads, with potential adverse effects on amenity and capacity.

5 Methodology and Analysis

Given the long-term nature of the designations being sought by the NoRs, this assessment does not assess the interim staging of individual Projects and development staged over the next three decades but instead places a greater focus on the 'full build out' of the future urban area in 2048+ to support future communities. Therefore, this assessment focusses on the likely future environment (full build out 2048+) and wider infrastructure upgrades.

To ascertain the long-term effects of the Projects, this assessment assesses the transport effects arising from each of the Projects in a future context.

The methodology for the operational and construction transport effects are applicable for each NoR specified within this document. Any nuances are specified throughout the assessment.

The Assessment of Transport Effects has two elements:

- Assessment of operational effects on the transport system
- Assessment of construction effects on the transport network

The assessment is targeted at route protection, rather than imminent implementation. As such, it:

- Makes greater use of generic cross-sections and design standards ·
- Focuses more on desired outcomes and footprints
- Takes a longer-term view, with its inherent uncertainties
- Assumes more use of recommended management plans and planning processes rather than specific design details to manage potential effects

A key element of the assessment is the definition of the 'existing/likely future environment', against which the effects are assessed. This is a complex issue as the proposed works are planned to support urban development and will be unlikely to occur without such development. Additionally, the source of the potential effects (such as people and vehicle movement), is generally from that urban development itself, rather than from the planned infrastructure.

To isolate the effects of the planned works, the 'Existing Environment' includes the likely future urban development but does not include the planned Projects for which designations are sought. The effects of the Projects are then assessed using the same land use assumptions. Given the long-term perspective of the assessment, the analysis is based on the estimated 'full build out' for the future urban arealt is also noted that the Redhills network has been designed as part of an overall integrated system, but in general can be delivered separately. As such this assessment considers the projects individually – with commentary on interdependencies where appropriate.

5.1 Approach to Assessment of Operational Transport Effects

5.1.1 Transport Modelling

Throughout the transport network analysis process, a range of different transport modelling tools have been used to undertake quantitative assessments of the transport system. These then inform decisions about planning the transport network, corridors, and intersections.

The impacts of the Projects on the future transport environment are assessed using forecasting transport models, owned by the Auckland Forecasting Centre (AFC). The models include:

- The regional multi-modal model (MSM). This model creates estimates of car, truck and public transport movements at a regional level based on land use, network and policy inputs. This model is the primary tool to estimate future PT usage. Generally, this model is run using regional assumptions as per recent ATAP planning, but with scenario-specific inputs in the growth areas.
- A local traffic model (SATURN). This uses the traffic demands from MSM on a more detailed representation of the road network.
- A strategic active model (walk/cycling) model (SAMM). This tool gives strategic-level estimates of walking and cycling demands.

The assessment of operational effects will therefore be informed by modelled estimates of travel and network performance for a future full-build-out scenario.

A key input to the models are regional land use forecasts, which influence the future quantum and location of travel. Regionally agreed land use forecasts are prepared by Auckland Council via the Auckland Forecasting Centre (AFC), with the most recent available forecasts (at the time of this assessment), referred to as Scenario I11.5. Those forecasts are based on regional population forecasts from Statistics NZ, with spatial allocation to individual spatial areas based on the AFC land use model and known detail around specific land use planning processes.

Land use forecasts have inherent uncertainty, particularly in terms of the specific rate of new growth in specific areas. Currently, there is additional uncertainty around the likely outcomes and rate and location of higher-density development sought through central Government policies such as the National Policy Statement on Urban Development (NPS-UD) and Auckland Council's Plan Change 78. A key intent of those policies is to enable higher density development, especially around high-quality public transport systems. The specific planning response to those policies is currently being progressed by Auckland Council, and revised land use forecasts reflecting any expected changes were not available at the time of preparing this assessment. Generally, it is considered that this Project is not inconsistent with such policy direction, regarding supporting higher density urban development via more sustainable travel modes. Given this context, the use of those available I11.5 forecasts is considered acceptable for this assessment.

In addition to the SATURN modelling, SIDRA[3] modelling has been undertaken to assess the operational outputs of key intersections along the project corridors. The regional model (MSM) was used to inform assessment of the public transport network components.

In regard to traffic modelling analysis used in this report, a Level of Service (LOS) metric has been used. This refers to a qualitative measure used to assess the quality of motor vehicle traffic service. LOS is used to analyse road corridors and intersections by categorising traffic flow and assigning quality levels of traffic based on a performance measure ranging from A to F and can be summarised as follows:

- **LOS A: free flow**. Traffic flows at or above the posted speed limit and motorists have complete mobility between lanes.
- **LOS B: reasonably free flow**. LOS A speeds are maintained, manoeuvrability within the traffic stream is slightly restricted.

[3] SIDRA modelling enables an assessment of individual intersections using inputs from regional models.

- **LOS C: stable flow, at or near free flow**. Ability to manoeuvre through lanes is noticeably restricted and lane changes require more driver awareness.
- **LOS D: approaching unstable flow**. Speeds slightly decrease as traffic volume slightly increase. Freedom to manoeuvre within the traffic stream is much more limited and driver comfort levels decrease.
- **LOS E: unstable flow, operating at capacity**. Flow becomes irregular and speed varies rapidly because there are virtually no usable gaps to manoeuvre in the traffic stream and speeds rarely reach the posted limit.
- **LOS F: forced or breakdown flow.** Every vehicle moves in lockstep with the vehicle in front of it, with frequent slowing required. Travel time cannot be predicted, with generally more demand than capacity

5.1.2 Relevant Standards and Guidelines

Integrated Transport Assessment

The AT Integrated Transport Assessment (**ITA**) Guidelines[4] have been used to inform the preparation of this ITA. In particular, the Guidelines identify that an ITA should provide an assessment of the accessibility of a proposal by walking, cycling, public transport and private motor vehicles. The Guidelines also indicate that the ITA should consider the potential effects a proposal could have on the existing and future transport network and any mitigation measures needed to ensure that any adverse effects of a proposal are avoided, remedied or mitigated.

Design Standards

The proposed cross sections have been developed in coordination with AT design specialists with reference to AT's Transport Design Manual (**TDM**)[5].

It is considered that the TDM aligns with AT's future design approach and enables a design consistent with the future transport aspirations for the Redhills area, such as providing facilities to support travel by walking, cycling, and public transport.

5.1.3 Assessment Methodology - Transport Mode

As detailed in Section 3.2, the N-S Project and the E-W Project each have an identified set of Project Objectives. From a transport perspective these objectives are focused predominantly on the themes of connectivity, safety, travel choice and mode shift from private vehicles to walking, cycling, and public transport.

Based on this, Table 7 summarises the key network components that have been assessed in terms of operational effects resulting from the Project.

Table 7: Summary of Assessment Methodology

Criteria	Information sources	Assessment Method
Safety	Project design drawings Crash Analysis (CAS) database	Assessment to determine alignment with Vision Zero standards and design compliance with Transport Design Manual

[4] Integrated Transport Assessment Guidelines, January 2015, Auckland Transport

[5] https://at.govt.nz/about-us/manuals-guidelines/roads-and-streets-framework-and-the-transport-design-manual/

Criteria	Information sources	Assessment Method
Walking and Cycling	Walking and cycling network plans Proposed cross sections	Assessment to determine alignment with walking and cycling strategic documents and design compliance with Transport Design Manual
Public Transport	Transport Model tools (MSM, SATURN and SIDRA) Supporting Growth Indicative Future Public Transport Network (Remix)[6]	Assessment to determine alignment with future network provisions and design compliance with the Transport Design Manual
Property Access	Engineering Standards	Assessment identifying where there is a potential effect on access in the existing environment
General Traffic	Transport Model tools (MSM, SATURN and SIDRA) Project design drawings	Assessment using key model outputs including traffic volumes, levels of service for corridor midblock performance and intersection performance. Assessment of surrounding network connections
Overall Assessment against Project Objectives	Connectivity Travel choice Mode Shift	Qualitative assessment based on above assessments
Note: A Road Safety and Audit and Safe System assessment with be done as part of the implementation business case/detailed design stage prior to implementation.		

5.2 Approach to Assessment of Construction Traffic Effects

In order to assess the potential construction traffic effects, an indicative construction methodology has prepared. This can be found in the AEE.

Based on the indicative construction methodology an assessment of construction effects has been completed for the package sufficient to support each Notice of Requirement. This assessment will consider:

- An overview of key considerations including speed, potential impacts to pedestrians and cyclists and property access
- Identification of any works that should not occur at the same time
- Assessment of potential conflict areas with vulnerable road users that will need specific mitigation within a Construction Traffic Management Plan (**CTMP**) and / or Site-Specific Traffic Management Plans (**SSTMP**).

The Project specific construction effects will be managed via a CTMP and/or SSTMP which will be developed immediately prior to implementation when the greatest certainty is available.

[6] SGA Remix file provided by Auckland Transport on the draft plan of the bus network to be implemented by 2048

5.2.1 Temporary Traffic Management

The impact of any temporary traffic management measures implemented to undertake the projects will be re-assessed in the future, prior to construction, when a greater level of detail is available in terms of the specific construction methodology and traffic environment.

It is noted that there may be some nuances between projects delivered 'online' as they are existing roads and those delivered 'offline' as new greenfield roads. It is noted that the majority of the Project is expected to be capable of being delivered "offline" or without impact to the existing road corridors, with the exception of intersections and tie ins. In particular, any future assessment should be required to consider potential road closures, any capacity reductions on key corridors through lane closures, and any other ancillary effects such as shoulder closures.

At the time of construction of the Project or any stage of the Project, a Construction Traffic Management Plan (**CTMP**) will be developed with the purpose of managing traffic and transport effects on the local community and wider network and community. The CTMP will consider the effects on the transport network of potential road closures, any capacity reductions on key corridors through lane closure, and effects of any other ancillary activities such as shoulder closures.

6 Assessment of Transport Effects

Chapter Summary: Assessment of Transport Effects

The assessment of transport effects of the Project has identified the following outcomes and it is considered that, where necessary, the adverse effects identified in this report can be appropriately mitigated through the measures identified and detailed in Section 7. Significant positive transport effects of the Project, including the provision of separated walking and cycling facilities and public transport priority measures have also been identified.

Assessment of Walking and Cycling Effects

- All corridors within the Project are proposed to include separated walking and cycling facilities to encourage increased mode share for walking and cycling. This is achieved through the provision of safe separated facilities.
- The proposed facilities are a considerable improvement on the existing facilities and provide a significant contribution to achieving the Project outcomes. In particular, the provision of high quality walking and cycling facilities will support walking and cycling as safe travel choice for future and existing communities.
- Cycle and pedestrian crossings are proposed at all new and upgraded intersections which will provide safe crossing for these modes across arterial roads, also reducing crossing delays for pedestrians and cyclists.

Assessment of Safety Effects

- The Project design is consistent with Vision Zero outcomes sought by AT and prioritises facilities to support safe travel by foot, bike or public transport.
- The provision of separated facilities significantly improves safety for people that travel by walking and cycling.

Assessment Public Transport Effects

- The provision of bus priority at the intersections of Royal Road and Don Buck and Fred Taylor Drive and Dunlop Road is consistent with the future route intentions identified in the RPTP.
- The implementation of bus priority at these intersections will improve bus reliability and travel times, encouraging mode shift to public transport.
- Prioritising bus services at these intersections is consistent with the future RTN intentions for the North West, enabling connectivity to a new planned RTN station on SH16 at Westgate and at Royal Road.

Assessment of Access Effects

- For the majority of existing properties, there will be little to no change in the level of vehicle access provided, however for 10 properties on Royal Road it has been identified that reinstatement of a driveway will not be possible. These properties have been included within the designation.
- For properties that currently gain access via a low-level access on Don Buck Road, these accesses will be reformed. The ability to turn right to and from the low level access at the point closest to the Royal Road intersection will be limited to left in left out, however full movements will still be provided at the opposing point of the low level access. As such this effect is considered minor.
- Limited access is proposed to be maintained on Fred Taylor Drive and there is no additional effect when compared to the current environment. Limited access is also proposed to be provided on the new corridors – consistent with the provisions in AUP:OP for arterial roads and provisions within the Redhills Precinct Plan.

Assessment of General Traffic Effects

- The proposed intersections, as modelled with 2048 traffic volumes, generally operate well.

Chapter Summary: Assessment of Transport Effects

- The overall Level of Service (LoS) for all intersections is a LoS D (refer to section 6.5.2), which suggests some delay to private vehicles, but generally a level of delay that would be expected in an urban context during peak commuter periods.
- The Royal Road and Don Buck Road intersection experiences some capacity constraints by 2048, with queuing experienced on some approaches in the peak weekday commuter periods.
- With the significant growth expected in Redhills and the North West area, travel by car will continue to be subject to congestion in the weekday peak periods. The Project Objectives seek to provide for travel capacity through increased travel choice (such as pedestrian, cycle and public transport improvements), rather than through additional lane capacity for vehicles. Accordingly, it is considered that overall, these effects are minor.
- To provide for an efficient public transport network, where necessary, additional capacity, is provided for bus priority at intersections.

Roads and Streets Framework Assessment

- A Roads and Streets Framework Assessment has been completed. This assessment indicates that the new corridors will have a Place 1/Movement 2 functionality.
- A Place 1 categorisation recognises that the adjacent land use has a primarily local function with a localised catchment of users.
- A Movement 2 categorisation recognises that the network function is of medium strategic significance. The corridors provide connectivity to the wider arterial network and to Westgate Metropolitan Centre.

Assessment of Construction Effects

- Construction effects are proposed to be managed via a detailed CTMP. This will be completed in relation to a confirmed construction methodology at the time of delivery of the Project or stages of the Project.
- The assessment of expected construction traffic has been developed based on the indicative construction methodology. The expected volumes of construction traffic are capable of being accommodated within the existing road network.
- Specific measures related to access and safe movement of vulnerable road users, including pedestrians and cyclists, are expected to be provided at the time of resource consent.

6.1 Walking and Cycling

The Redhills area is in close proximity to several key trip attractors, including Westgate shopping centre and the public transport interchange (1.5km from the centre of the Redhills area). Travelling along Royal Road, from the Redhills local centre, access to the SH16 strategic shared path and the potential Royal Road rapid transit station is approximately 2.5km.

Due to relative distances, there are many opportunities to encourage local residents to walk or cycle to these facilities. The proposed cycle lanes and footpaths will provide safe alternative transport options and encourage a mode shift for these local movements.

Based on the TDM, specifically the Urban Street and Road Design, the standard for walking and cycling is to provide separated, protected walking and cycling facilities where general traffic volumes exceed 5,000 vehicles per day and 30km/hr.

In situations where roads are heavily or moderately trafficked, such as Don Buck Road or Fred Taylor Drive, this can encourage people on bicycles to utilise pedestrian facilities – leading to additional safety conflicts – whilst cyclists remaining on the road carriageway are also at risk. As such, separated cycle and pedestrian paths are proposed for all corridors in the Project.

All intersections within the Project have been provided with pedestrian and cycle crossing facilities, which connect with the expected future adjacent facilities.

All the corridors within the Project extents meet these triggers and therefore these facilities are proposed, not only for safety, but also to provide walking and cycling opportunities equal to those available to people who choose to drive, i.e. that footpaths are safe, coherent and connected.

Overall, the proposed walking and cycling facilities provide a significant improvement over the current walking and cycling facilities.

Table 8: Assessment of Geometry of Walking and Cycling Facilities

Standards	Minimum Standard Width	Assessment
Redhills Precinct Plan[7]	**Footpaths:** 2.0m for all arterials except in town centre 1.8m each side on Baker Lane	The indicative footpath provision is 1.8 m, which is less than the minimum identified in the Redhills Precinct Plan. However, it is consistent with AT TDM standards and therefore will provide adequately for capacity and safety of users in the future urban environment. A 2.3m berm is indicated between the pedestrian, and cycling, facilities, and the carriageway. This significantly exceeds the 0.6m buffer requirement of the AT TDM and provides sufficient width for design flexibility whilst providing for safety and amenity for walking and cycling.
	Cycle Paths Baker Lane: 2.2m each side including mountable kerb and excluding 1m separation to on-street parking, where applicable All other arterials: 1.8m each side excluding 0.6m buffer to carriageway and 1m separation to on-street parking where applicable	

[7] As the purpose of the NoR is to confirm a designation, in accordance with s 176(1)(a) of the RMA, the provisions of the Redhills Precinct Plan relating to transport requirements will not apply to the Project, unless specifically required by designation conditions. As such, the standards set out in the Redhills Precinct Plan are used as guidelines for the purpose of this assessment.

		No on street parking is proposed to be provided on Baker Lane. There is no expected effect from this.
Auckland Transport Design Manual	**Footpaths:** 1.8m minimum	There is sufficient space to enable the indicative design to be in accordance with the AT TDM requirements. This will provide adequate widths and capacity for the safe and efficient use by pedestrians and cyclists in the future urban environment.
	Cycle Paths 2.0m width recommended for raised cycle paths.	

6.2 Road Safety

The design of the Project has been undertaken with consideration of the latest safety guidance. This includes AT's Vision Zero and Waka Kotahi's Road to Zero. The Project is expected to result in positive effects on safety, and these consist of:

- Significantly improved walking and cycling facilities on Fred Taylor Drive and Don Buck Road (including separation), resulting in improved protection for vulnerable road users.
- Significantly improved walking and cycling crossing facilities (crossing Fred Taylor Drive and Don Buck Road), resulting in a significantly safer environment for all road users.
- New walking and cycling facilities on the E-W and N-S corridors resulting in greater levels of safe connections

Overall, the indicative proposed design of the Project is well aligned with the transport safety principles from AT and Waka Kotahi. It will provide a much safer transport system which will likely reduce the number of deaths and serious injuries and result in positive effects for all road users. It is noted that the detailed design will be completed in the future to further detail measures to achieve the anticipated safety outcomes.

6.3 Public Transport Network

The Project proposes to provide for a new arterial network through the Redhills area, which will support the urbanisation of the area provided for under the AUP:OP. The provision of these key corridors will enable public transport services to operate within the area.

The E-W Project within Redhills will utilise the existing Dunlop Road corridor to provide a direct link for frequent public transport services from Redhills to Westgate, particularly connecting the proposed Local Centre at Redhills with the Metropolitan Centre at Westgate. The intersection of Dunlop Road with Fred Taylor Drive provides for bus priority measures, enabling buses to travel through (from the left turn lane) in both directions, reducing the potential for delays for buses.

A similar approach is proposed at the intersection of Royal Road and Don Buck Road. This includes a dedicated bus approach lane on Royal Road, and bus priority on all other approaches (being able to travel through from the left turn lanes).

The design philosophy has sought to minimise the footprint of the approach arms to the intersections, thereby minimising crossing distances for pedestrian and cyclists. An analysis of the performance of these proposed intersections can be found in Section 6.5.

The proposed corridor width allows space to incorporate bus stops. The exact location of bus stops will be defined at later stages, as part of detailed design for the Project when there is greater certainty on the location of key land use activities, and high demand locations for bus stops can be determined, e.g. around centres and schools.

6.4 Access

The proposed Project corridors within the Redhills Precinct are to be classified as 'Arterial' corridors. Being arterial corridors, the core purpose of these corridors is to facilitate safe and efficient movement along the corridor for connection between key destinations, rather than property access. These arterial corridors will not provide for direct property access in the longer term. It is therefore expected that any new accesses on the corridors will be limited.

As such, this section primarily addresses the effects of the Project on existing property access.

6.4.1 Existing Driveway Access and Standards

In terms of existing properties, the overarching design philosophy for the Project has been to maintain driveway access where practicable and minimise impacting land other than where necessary.

There are 10 existing properties where it has been identified that a driveway (compliant with the AUP:OP) may not be possible to implement, primarily due to changes to road levels and the incursion of the corridor into the front of the properties. These properties have been included within the designation boundary. They include the following properties:

- 13, 15A, 17A, 18, 19, 20, 22, 24, 26, 28 Royal Road.

6.4.2 Low-Level Access Lanes – Don Buck Road

There are currently existing low-level access lanes provided in three sections on Don Buck Road contained within the Project area. These are located south of the Don Buck Road and Royal Road intersection on both sides of the road, and north of the intersection on the western side of the road. These are all provided at a lower level than the existing road. These are shown below in Figure 8 and Figure 10.

Figure 8: Existing Low Level Access on Don Buck Road South of Royal Road

Figure 9: Existing Low-Level Access on Don Buck Road North of Royal Road

The low-level vehicle access in these locations will be retained, and these access lanes will be reformed. Walking and cycling facilities will be located adjacent to the carriage way, at the higher level.

The low-level access on Don Buck Road to the north of Royal Road (Figure 9) will be reformed within the existing road corridor.

The low-level access on Don Buck Road to the south of Royal Road on the western side will also be largely reformed in the road reserve, with some minor property impacts.

In terms of the low-level access on Don Buck Road to the south of Royal Road on the eastern side, the low-level access is currently not within the road reserve. The connection of this low-level access at the Royal Road intersection has been reformed to deliver an access with appropriate grades, which has resulted in a northward shift. This access rearrangement, in addition to the road realignment in this location has resulted in access and property impacts on 1 Royal Road, 443 and 445 Don Buck Road. These three properties have accordingly been included within the designation boundary.

The low-level accessways are proposed to be 3.0m wide, which will allow for vehicle travel one way at a time. This is slighter narrower than the current provisions of between 3.5m and 3.8m – however this also only provided one-way access at a time and is not expected to have operational effects.

6.4.3 Implications on Access Movements

As part of the design of the signalised intersection at Royal Road a raised traffic island has been proposed to separate traffic at the intersection approaches. The provision of the raised island has been provided as a safety measure to prevent crashes between vehicles at the intersection.

The additional lanes provided at the approach to the intersections will also create an additional barrier for vehicles to complete a right turn movement near the intersection.

The implication of these raised islands is that properties accessing the road network from the low level access at the nearest point to the intersection will no longer be able to turn right, and the access will in effect be a left in-left out arrangement at this location. Vehicles will however be able access the roading network from the low level access point further from the intersection and complete all movements at this location.

As stated above, the provision of driveways will enable vehicles to pass each other in the low-level access if necessary.

6.4.4 Limited Access – Fred Taylor Drive

Fred Taylor Drive is an existing arterial road that was previously part of the State Highway network. Currently there is limited vehicle access for properties adjacent to Fred Taylor Drive. The Project does not propose to change this, and consolidated access will continue to be required for this corridor. There are no additional property access effects for those properties located on Fred Taylor Drive and all existing movements will be maintained.

6.4.5 Summary

The identified access effects are primarily related to the signalisation of the intersection at Don Buck Road and Royal Road (NoR1). The remaining NoR's do not have any identified access effects.

In terms of the access for properties within the NoR1 extents this assessment finds that:

- There are 10 properties on Royal Road where reinstatement of a driveway will not be possible. These properties have been included within the designation.
- For properties that currently gain access via a low-level access on Don Buck Road, these accesses will be reformed. The ability to turn right to and from the low level access at the point closest to the Royal Road intersection will be limited to left in left out, however full movements will

still be provided at the opposing point of the low level access. As such this effect is considered minor.

- Limited access is proposed to be provided on the new corridors – consistent with the provisions in the AUP:OP for arterial roads and provisions within the Redhills Precinct Plan. Limited access is also proposed to be maintained on Fred Taylor Drive and there is no additional effect when compared to the current environment.

6.5 General Traffic

6.5.1 Traffic Volumes

The following table provides a summary of the expected traffic volumes on the identified corridors within Redhills and those adjacent to the Redhills Precinct. A two-lane corridor can efficiently accommodate vehicles volumes as shown below and therefore the proposed corridor design is expected to meet forecasted needs, with the additional lane provision at intersections to accommodate greater bus priority.

Table 9: Predicted AADT[8] Volumes for 2028 and 2048

Count Location	2048 predicted AADT
Dunlop Road	8,300
Baker Lane	14,400
E-W Project between Baker Lane and N-S Project	16,800
Don Buck Road north of Royal Road	21,800
N-S Project between E-W Project and Royal Road	8,500
E-W Project between N-S Project and Nixon Road	11,400

6.5.2 Intersection Performance

The performance of the road network within the Project has been assessed using inputs from SATURN to understand intersection performance. SIDRA enables isolated intersection models to be performed to understand the network capacity, predicted LoS and anticipated queue lengths. A summary of these key performance measures is shown below in Table 10.

Table 10: Summary of Intersection Performance 2048

Intersection	Peak Period	Overall Level of Service	Degree of Saturation (worst movement)	Maximum Queue Distance (m)
Dunlop Road and Fred Taylor Drive	Morning Peak	C	0.52	94
	Evening Peak	C	0.48	71
Baker Lane and Fred Taylor Drive	Morning Peak	C	0.72	134
	Evening Peak	C	0.90	134

[8] Annual Average Daily Traffic

Royal Road and Don Buck Road	Morning Peak	C	0.90	258
	Evening Peak	D	1.00	397
E-W Project and Nixon Road	Morning Peak	A	0.53	30
	Evening Peak	A	0.42	22

Overall, the proposed intersections are predicted to perform at a satisfactory level during the peak periods under a 2048 scenario.

The overall LoS for all intersections is LoS D or below, with only the Royal Road and Don Buck Road intersection experiencing significant capacity constraints by 2048. A LoS D means that intersections will be generally within an acceptable performance level. Based on the Highway Capacity Manual standards, a LoS D suggests that occasionally a driver may have to wait through more than one signal cycle before proceeding. This is not uncommon in peak periods in urban environments and overall, not considered a significant delay.

It is noted that at the intersection of Royal Road and Don Buck Road there are approaches that are reaching practical capacity (defined as an intersection movement with a degree of saturation above 0.900) and experiencing approximately 400m queues in the 2048 scenario.

However, it should be noted that with the significant growth in Redhills and the North West area, travel by car will continue to be subject to congestion in the weekday peak periods. The Project Objectives however seek to provide for travel capacity through increased travel choice (such as pedestrian, cycle and public transport improvements), rather than through additional lane capacity for vehicles.

The current intersection at Royal Road and Don Buck Road currently experiences significant delays in the peak period with significant queues. The projected growth in Redhills would exacerbate the intersection performance should the intersection remain as existing. As such, while the performance in 2048 suggest delays to private vehicles in the peak period, bus reliability will improve, operational performance in other periods should improve, and facilities for pedestrians and cyclists will be much greater.

In regard to Fred Taylor Drive, there will be increased delay to vehicles travelling along this corridor because of the introduction of two intersections. This delay is not considered to be significant within an urbanising context, and in light of increased outcomes for pedestrians and cyclists this is considered to be an acceptable effect.

6.6 Roads and Streets Framework Assessment

The Roads and Streets Framework describes, balances, and integrates the intended strategic and local place and movement functions of road and streets, as well as the levels of service for all transport modes.

Based on the future land use and the surrounding road network, a draft assessment has been completed for the N-S Project and E-W Project. This identifies a categorisation of Place (1) and Movement (2). This recognises that the adjacent land use has a primarily local function, with a small catchment of users, while a Movement 2 category recognises that the network function is of medium strategic significance. The proposed routes provide connectivity for the wider rural area and Redhills

to the east through to the Metropolitan Centre for all modes, and the connections on the N-S Project from Redhills through to SH16 and future rapid transit stations.

6.7 Overall Assessment against Project Objectives

From a transport perspective the Project Objectives are focused on the themes of connectivity, safe travel choice, mode shift and supporting planned urban growth. The above assessments have detailed the expected outcomes that the Project will provide, and overall, the Project achieves these outcomes. Without the Project, the walking and cycling facilities both along the corridors and at the key intersections with Fred Taylor Drive and Don Buck Road are substandard within an urbanising context and are not attractive for travel by these modes. Currently public transport priority is limited at these intersections and without priority treatments buses on the Project will be subject to increasing levels of delay.

The Project addresses these outcomes in the following ways:

- In terms of connectivity, the provision of the N-S Project and the E-W Project provides corridors for multi-modal travel through the Redhills area. This provides for increased connectivity for all travel modes between Redhills, Taupaki (to the north and west of Redhills), Massey (to the east) and the metropolitan centre at Westgate. In addition, the provision of these corridors provides increased resilience to the wider network, decreasing reliance on Fred Taylor Drive and Don Buck Road to provide for all through movement in the Project area.
- All corridors within the Project will include the provision of safe walking and cycling facilities to enable attractive travel choices for residents in the Project area and enable connections to the existing and/or future active networks. The Project also includes the upgrade of intersections within the existing arterial network, providing safe crossing for pedestrians and cyclists.
- Improved public transport facilities at the intersection Don Buck Road with Royal Road and Dunlop Road with Fred Taylor Drive will provide for improved reliability for bus travel times, thereby increasing the efficiency and attractiveness of public transport travel to future RTN's.

Overall, the Project provides a safe, attractive arterial network that supports future travel choice and will sufficiently provide for increased connectivity in the Redhills area.

6.8 Assessment of Staging Effects

The Redhills network has been assessed as a complete network, with the assessment focused on the long-term outcomes of the Project in the context of the future environment.

This is a project of considerable magnitude, and it is likely that the Project will be separated into discrete construction projects, or at a minimum be delivered in stages.

For the various modes of travel, an assessment of the effects, that a staged delivery may have on these travel choices, and how these may be overcome is detailed in Table 11. This does not preclude measures that may be put in place to provide safe movement for all modes during construction which is discussed further in Section 6.9.

Table 11: Staged Delivery of Redhills Network

Transport Mode	Key Staging Considerations
Walking and Cycling	• Integration with the existing walking and cycling facilities present at the time of construction is critical to providing a safe and connected journey for those that travel by foot and cycle.
Public Transport	• To achieve an efficient public transport network, the entire Redhills network will need to be delivered. It is likely that a staged result may reduce efficiency and catchment opportunities for the public transport services until such time that the full network is available. • Public transport services on the existing roads within the Project extents will continue to operate. • There may be opportunities for new bus routes to be implemented on stages of the new network supported by supplementary collector roads.
General Traffic	• The intersections are proposed to be constructed to accommodate traffic volumes as anticipated at the full build out of Redhills. • Should a staged approach be undertaken there will be ample capacity within these intersections to allow for interim levels of land use. • The delivery of elements of the network in stages is likely to occur congruent with the land development. For example, large portions of land in the eastern part of Redhills will require access via the Redhills network to enable the development.

6.9 Assessment of Construction Effects

It is anticipated that the larger part of works required for this package of projects will likely be delivered offline. However, there is still likely to be some works in the live carriageway, which means that temporary traffic management will be required. The scale of temporary traffic management to delineate live traffic away from the construction zones is largely dependent on the various stages and requirements of the construction activities. It is expected that short term temporary road closure for nights or weekends may be required for some specific activities, such as road surfacing, traffic switches and gas relocation. Other activities may require stop/go or contraflow traffic management, such as drainage, utility relocation, survey and investigation work.

The effect of temporary road closure or other traffic management methods to existing traffic on the specific corridor and adjacent road network should be confirmed in the future as part of the CTMP for each Project on the basis of the current traffic environment. This will take into account the level of growth and activities that has occurred in Redhills, the availability of the alternative routes, and any additional sensitive land use activities.

The construction of the Projects will each likely require significant earthworks. Final cut and fill volumes will be confirmed following detailed design prior to construction. The construction traffic movements to accommodate the earthworks will likely result in the increase of traffic volume on construction routes used during the construction period of each of the Projects.

Given the construction timing and staging of the package has yet to be determined, there is a degree of uncertainty associated with any predicted construction methodology and associated traffic routes. This means:

- The routes that will be used by construction vehicles will depend on the location of quarries and disposal sites which are not yet certain
- The exact location and extent of compound sites/lay down areas has yet to be determined
- The timing of construction of other projects could impact on likely construction vehicle routes

Notwithstanding this, it is considered that with available connectivity to the strategic network and available capacity in the network, construction traffic will be able to be readily accommodated.

It is noted that the access to compound sites/laydown areas and construction zone for construction vehicles, plant and materials will be via site access points identified as part of future CTMPs.

Details of the routes and time restrictions will need to be updated and refined as part of the CTMP process. It is anticipated that the routes for construction traffic will likely be limited to arterial corridors and intersections with the provision of adequate vehicle tracking.

Speed Limits

In order to maintain the safety of all road users, it is recommended to implement a safe and appropriate temporary speed limit during the construction period on the network within the extent of works, and along the construction routes if needed. This should be in accordance with the latest traffic management standards at the time of construction. These recommended measures and other measures highlighted in the CTMP are expected to reduce the potential safety risks that may be associated with construction traffic.

Pedestrians and cyclists

The existing provision for pedestrian and cyclists is variable across the network. It is likely that the demand for these modes will increase if urbanisation occurs prior to construction, but future parallel collectors could also be used as alternative routes. Therefore, effects should be assessed again when a greater level of detail is available about surrounding facilities and land use activities prior to construction. However, it is recommended that residents and stakeholders be kept informed of construction times and progress, and general observations of pedestrian and cyclist activity be used to inform appropriate traffic management measures in the CTMP.

Property access for residents and businesses

During the time of construction, there will be temporary traffic management controls such as temporary concrete or steel barriers. Existing driveways that remain during construction will be required to have temporary access provision. It is anticipated that the contractor should undertake a property specific assessment of any affected driveways and provide temporary access arrangements if required. The temporary access should ensure the ability for residents to safely access and exit the property. These requirements should be captured in the CTMP or SSTMP, if required. Confirmation of traffic management controls will be required immediately prior to works to reflect the land use considerations at that time.

Land use activities that will need further consideration in the CTMP

At the time of this report, no specific land use or activities have been identified as requiring specific consideration during the development of the CTMP. Overall, it is considered that expected construction effects can be managed via the use to the CTMP or SSTMP prior to implementation.

7 Managing Effects and Achieving Project Outcomes

7.1 Managing Operational Effects

Table 12 below summarises the proposed measures to manage the identified effects of the Project and help to ensure that the positive effects are achieved.

Table 12: Summary of Proposed Measures

Operational Transport Effects	
Walking and Cycling Effects	In order to provide safe and attractive walking and cycling facilities to appropriate standards that are integrated with the wider network an Outline Plan should specify: • The type of walking and cycling infrastructure to be provided within the corridor including confirmation of the proposed dimensions; • Details on the integration proposed for walking and cycling facilities between the extent of the works and the existing facilities; • Details of any staging implications and measures in place to ensure connectivity between stages.
Safety Effects	All transport design in New Zealand is subject to a Road Safety Audit at the detailed design stage. Once through that audit, the design will form part of the Outline Plan process.
Access Effects	It is recommended that a detailed access assessment is completed by a suitably qualified traffic engineer and/or transport planner following detailed design that considers property access implications and identifies appropriate mitigation where an access compliant with the AUP:OP cannot be provided.

7.2 Managing Construction Traffic Effects

It is considered that the potential construction traffic effects can be accommodated and managed appropriately via a CTMP. The purpose of the CTMP is to ensure the construction of each Project is managed in such a way that enables safe and efficient movement of local traffic throughout the construction period and to minimise disruption to road users, particularly the adjacent residential properties and local activities. Based on the assessment of transport construction effects, it is recommended:

1) A CTMP shall be prepared prior to the Start of Construction for a Stage of Work. Any potential construction traffic effects shall be reassessed prior to construction taking into account the specific construction methodology and traffic environment at the time of construction.
2) The objective of the CTMP is to avoid, remedy or mitigate, as far as practicable, adverse construction traffic effects. To achieve this objective, the CTMP shall include:
   a) Methods to manage the effects of temporary traffic management activities on traffic;
   b) Measures to ensure the safety of all transport users;

c) The estimated numbers, frequencies, routes and timing of traffic movements, including any specific non-working or non-movement hours to manage vehicular and pedestrian traffic near schools or to manage traffic congestion;
d) Size access routes and access points for all construction vehicles, the size and location of parking areas for plant, construction vehicles, and the vehicles of workers and visitors;
e) Identification of detour routes and other methods to ensure the safe management and maintenance of traffic flows, including pedestrians and cyclists, on existing roads;
f) Methods to maintain vehicle access to property and/or private roads where practicable, or to provide alternative access arrangements when it will not be;
g) The management approach to loads on heavy construction vehicles, including covering loads of fine material, the use of wheel-wash facilities at site exit points and the timely removal of any material deposited or spilled on public roads;
h) Method that will be undertaken to communicate traffic management measures to affected road users (e.g. residents/public/stakeholders/emergency services);

3) Auditing, monitoring and reporting requirements relating to traffic management activities shall be undertaken in accordance with Waka Kotahi's Code of Practice for Temporary Traffic Management.
4) Any CTMP prepared for a Stage of Work shall be submitted to Council for information ten (10) working days prior to the Start of Construction for a Stage of Work.

8 Conclusion

This assessment of transport effects has identified that the Project provides safe and appropriate urban arterial corridors that support future travel choice and provides for increased connectivity for the current and future communities in Redhills.

Without the Project, the walking and cycling facilities at the intersections are substandard in an urban context, and the current capacity at the intersections will result in unreliable journey times for public transport. If key arterial routes are not provided in Redhills, a transport network hierarchy that enables journeys to be undertaken on appropriate corridors will not occur.

Transport outcomes are significantly improved by the Project and will include:

- Connectivity between the future growth area in Redhills and the Metropolitan Centre at Westgate and, connectivity by foot, cycle, and public transport;
- The level of provision for walking and cycling to enable attractive travel choices for future residents in the Project area;
- Connections to the arterial network through the upgrade of intersections providing safe crossing for pedestrians and cyclists;
- Public transport facilities at the intersection of Dunlop Road and Fred Taylor Drive and Royal and Don Buck Road as key intersections on key future public transport corridors.

In terms of adverse effects, the Project will likely result in 10 properties on Royal Road where the provision of a safe and appropriate driveway will be not be achievable and as such these properties have been included within the designation.

At the intersection of Royal Road and Don Buck Road there are approaches that are reaching practical capacity (defined as an intersection movement with a degree of saturation above 0.90) and experiencing approximately 400m queues in the 2048 scenario. While this results in an effect on car drivers, also provided at the intersection is public transport priority to increase reliability for buses and dedicated walking and cycling facilities for active modes. Within the context of increased travel choices, and an urban environment the peak commuter period delays for drivers are considered to be minor.

Overall, the Project provides safe, attractive arterial roads that support future travel choice and will sufficiently provide for increased connectivity in the Redhills area.

Appendix 1

Modelling Assumptions

Within the SATURN model there are a series of assumptions included within each forecast year. The below table summarises the assumptions regarding related projects and their likely impacts on the network if they do not occur. Assumptions have been made about the implementation years of these projects, which have in turn informed the years in which the projects have been included in the transport model.

Table A1: Infrastructure Assumptions and Potential Impacts

Project	Model Years included			Potential impacts on RATN
	2028	2038	2048	
SH16/18				
Squadron Drive Ramps	Y	Y	Y	No impact
SH16/18 Connections	-	Y	Y	Northside Drive ramps relieve capacity on Hobsonville Road as additional south facing ramps are provided, and east/west connection over is SH16 completed. May reduce traffic volumes at intersection of Fred Taylor Drive and Don Buck Road.
SH16 Brigham Creek Interchange	-	Y	Y	Moderate impact. Current access to Westgate from north of SH16 Brigham Creek interchange is via Fred Taylor Drive. This will remain the primary access to Westgate, as no north facing ramps are to be provided at Hobsonville Road or Northside Drive. Interchange will influence form of the northern end of Fred Taylor Drive.
SH18 Brigham Creek Interchange	-	-	Y	No impact
City Centre to North West RTN				
Interim Bus Solution	Y	-	-	Limited impact. Attractive public transport solution considered necessary to influence transport choice.
To Westgate	Y	Y	Y	Significant impact. Provision of high frequency, rapid transport option for residents. Prior to this fragmented priority offering via bus lanes on SH16. Dunlop Road provides direct link between Redhills Centre and Westgate RTN station.
To Kumeu		Y	Y	Moderate impact. Station locations in between Westgate and Kumeu may support travelling south in the morning to reach RTN. Most significant impact on Taupaki / Nelson Road connection.
Other Projects				
SH18 RTN	-	Y	Y	Limited impact on Redhills network.

Kumeu Alternative Corridor	-	Y	Y	Moderate impact. Most significant impact on Taupaki/Nelson Road connection, and function of Fred Taylor Drive in the north.
Rawiri Road Bridge and Connections	-	Y	Y	No impact.

ATTACHMENT 20

REDHILLS ARTERIAL TRANSPORT NETWORK ASSESSMENT OF CONSTRUCTION NOISE AND VIBRATION

Supporting Growth

Redhills Arterial Transport Network

Assessment of Construction Noise and Vibration

Version 1.0

December 2022

TE TUPU NGĀTAHI Supporting Growth

WAKA KOTAHI NZ TRANSPORT AGENCY

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1.0	December 2022	Final for Lodgment

Table of Contents

Tables

Figures

Appendices

Acronyms

Acronym/Term	Description
AEE	Assessment of Environmental Effects
AT	Auckland Transport
AUP:OP	Auckland Unitary Plan Operative in Part 2016
BPO	Best Practicable Option
CNVMP	Construction Noise and Vibration Management Plan
DIN	Deutsches Institut Für Normung e.V. (German Institute for Standardisation)
NoR	Notice of Requirement
Receivers	Noise sensitive areas such as dwellings, hospitals, school and commercial properties
RMA	Resource Management Act 1991
Waka Kotahi	Waka Kotahi NZ Transport Agency

1 Executive Summary

Construction noise levels have been assessed using the method recommended in NZS 6803 in accordance with the Auckland Unitary Plan Operative in Part (AUP:OP). As construction of each Project is expected to last for more than 20 weeks, the “long-duration” noise limits are applicable.

Noisy activities will typically be carried out between 7am – 6pm on weekdays. Night-time and weekend works will be limited and only occur for critical activities.

Construction vibration levels have been assessed against the requirements of the AUP:OP, which refer to the criteria in DIN 4150-3:1999 for the avoidance of cosmetic building damage (DIN criteria). The AUP:OP also details amenity criteria, which act as a trigger for consultation if predicted to be exceeded.

Construction noise setback distances and vibration emission radii have been determined (based on assumptions of construction activities and equipment) for each of the NoR sections. The construction boundary is assumed to be the edge of the proposed alignment. Affected receivers have been identified using construction noise setback distances and vibration emission radii. The construction noise setback distances and vibration emission radii were used to determine where any potential construction noise and vibration exceedances of the relevant criteria could occur. It should also be noted that the emission radii are conservative and vibration levels measured on site tend to be much lower than those predicted at the NoR stage of a project.

Potential effects of construction noise and vibration have then been assessed and construction management and mitigation measures identified where appropriate. To avoid and/or minimise exceedances of the Project construction noise and vibration criteria, Best Practicable Option (BPO) mitigation and management measures should be utilised.

NoR 1 Redhills North-South Arterial Corridor

Results of assessment and recommended measures

The noise environment is dominated by road traffic noise from vehicles on Don Buck Road and the surrounding road network.

Receivers are located at varying distances from the construction boundary along the alignment with the closest existing receiver being 2m from the alignment. With mitigation in place, as set out in Section 5.2, noise levels of up to 90 dB LA_{eq} could still occur intermittently at the closest receivers, if high noise generating activities occur on the construction boundary. At this level effects could include loss of concentration, annoyance, and a reduction in speech intelligibility.

Operation of construction equipment will be intermittent in nature. Construction will be linear so as the equipment moves away from the receiver noise levels will reduce. The worst-case situations, where mitigated noise levels could reach 90 dB LA_{eq} at the closest receivers, are not expected to be frequent, due to the setback distances to the majority of the proposed works and the use of equipment with lower source noise levels for large portions of the works. It is therefore predicted that mitigated noise levels can comply with the 70 dB LA_{eq} noise criterion for most of the construction works.

Vibration levels could exceed the Category B criteria at 73 existing dwellings prior to mitigation being implemented, if high vibration generating equipment, such as the roller compactor, is used on the construction boundary at the closest position to the receivers. At these receivers there is potential for cosmetic damage to buildings (such as cracking) and annoyance from perception of vibration. Vibration can typically be tolerated inside buildings if it occurs intermittently during the day, is of limited duration and where there is effective prior engagement.

A CNVMP is the most effective way to avoid, remedy or mitigate construction noise and vibration effects on receivers.

NoR 2A Redhills East-West Arterial Corridor – Dunlop Road

Results of assessment and recommended measures

The existing noise environment is dominated by road traffic noise from vehicles on Fred Taylor Drive and the surrounding road network

At the time of writing of this assessment, there were no dwellings identified in proximity of the NoR designation boundary.

However, future dwellings within 90m of the works could experience unmitigated noise levels that exceed the daytime noise criterion during high noise generating activities such as the pavement works. The exclusion zone distance reduces to 28m with noise barriers implemented effectively around working sites.

The extent of effects from construction noise will be dependent on the distance that the dwellings are located from the works.

Operation of construction equipment will be intermittent in nature. Construction will be linear so as the equipment moves away from the receiver noise levels will reduce. The worst-case situations, where mitigated noise levels could reach 90 dB LA_{eq} at the closest receivers, are not expected to be frequent, due to the setback distances to the majority of the proposed works and the use of equipment with lower source noise levels for large portions of the works. It is therefore predicted that mitigated noise levels can comply with the 70 dB LA_{eq} noise criterion for most of the construction works.

If the roller compactor is used at the edge of the construction boundary, future dwellings within 8m of the works and commercial buildings within 4m of the works may experience vibration levels above the daytime Category B criterion, if the roller compactor is used on the construction boundary in the closest position to them.

NoR 2B – Redhills East-West Arterial Corridor – Baker Lane

Results of assessment and recommended measures

The existing noise environment is dominated by road traffic noise from vehicles on Fred Taylor Drive and the surrounding road network

Receivers are located at varying distances from the construction boundary along the alignment with the closest existing receiver being 30m from the alignment. Receivers within 90m of the works could

experience unmitigated noise levels that exceed the daytime noise criterion during high noise generating activities such as the pavement works.

Operation of construction equipment will be intermittent in nature. Construction will be linear so as the equipment moves away from the receiver noise levels will reduce. The worst-case situations are not expected to be frequent, due to the setback distances to the majority of the proposed works and the use of equipment with lower source noise levels for large portions of the works. It is therefore predicted that mitigated noise levels can comply with the 70 dB LA_{eq} noise criterion for most of the construction works.

If the roller compactor is used at the edge of the construction boundary, dwellings within 8m of the works and commercial buildings within 4m of the works may experience vibration levels above the daytime Category B criterion, if the roller compactor is used on the construction boundary in the closest position to them. Based on the designation boundary footprint, there are no existing dwellings where the Category B criterion is predicted to be exceeded.

The Category B criteria would be met at any further buildings constructed that are 8m or more from the proposed works and commercial structures that are 4m or more from the proposed works.

NoR 2C – Redhills East-West Arterial Corridor – Nixon Road connection

Results of assessment and recommended measures

The existing noise environment is dominated by road traffic noise from the surrounding road network. Although the existing land use is rural, the works could take place in a more urbanised environment, and some future dwellings could be located close to the works.

Receivers are located at varying distances from the construction boundary along the alignment with the closest existing receiver being 2m from the alignment. Receivers within 90m of the works could experience unmitigated noise levels that exceed the daytime noise criterion during high noise generating activities such as the pavement works. We note that the existing receivers may not be present at the time of construction.

With mitigation in place, as set out in section 7.2, noise levels of up to 90 dB LA_{eq} could still occur intermittently at the closest receivers, if high noise generating activities occur on the construction boundary. At this level effects could include loss of concentration, annoyance, and a reduction in speech intelligibility.

Operation of construction equipment will be intermittent in nature. Construction will be linear so as the equipment moves away from the receiver noise levels will reduce. The worst-case situations, where mitigated noise levels could reach 90 dB LA_{eq} at the closest receivers, are not expected to be frequent, due to the setback distances to the majority of the proposed works and the use of equipment with lower source noise levels for large portions of the works. It is therefore predicted that mitigated noise levels can comply with the 70 dB LA_{eq} noise criterion for most of the construction works.

Vibration levels could exceed the Category B criteria at two existing dwellings prior to mitigation being implemented, if high vibration generating equipment, such as the roller compactor, is used on the construction boundary at the closest position to the receivers. At these receivers there is potential for cosmetic damage to buildings (such as cracking) and annoyance from perception of vibration.

Vibration can typically be tolerated inside buildings if it occurs intermittently during the day, is of limited duration and where there is effective prior engagement.

Summary

Construction noise and vibration can be mitigated and managed, utilising the measures set out in Section 7.2, to generally comply with the applicable limits as defined in the AUP:OP. Exceedances of the criteria could occur intermittently over a short duration if high noise or vibration generating equipment are used near occupied buildings. Where an exceedance is predicted at any receiver that exists at the time of construction, the effects will be mitigated and managed through the CNVMP and Schedules.

A CNVMP is the most effective way to avoid, remedy or mitigate construction noise and vibration effects on receivers.

2 Introduction

2.1 Background

Auckland's population is growing rapidly; driven by both natural growth (more births than deaths) and migration from overseas and other parts of New Zealand. The Auckland Plan 2050 anticipates that this growth will generate demand for an additional 313,000 dwellings and require land for approximately 263,000 additional employment opportunities.

In response to this demand, the Auckland Unitary Plan Operative in Part (**AUP:OP**) identifies 15,000 hectares of predominantly rural land for future urbanisation. To enable the urban development of greenfield land, appropriate bulk infrastructure needs to be planned and delivered.

The Supporting Growth Programme is a collaboration between Auckland Transport (**AT**) and Waka Kotahi NZ Transport Agency (**Waka Kotahi**), to investigate, plan and deliver the transport services needed to support Auckland's future urban growth areas over the next 30 years.

2.2 Purpose of this Report

The Supporting Growth Programme has identified the need for a new arterial transport network in Redhills to support the urban development of the area. This report has been prepared to support AT's notices of requirement (**NoRs**) for the Redhills Arterial Transport Network (the **Project**). The NoRs under the Resource Management Act (**RMA**) are to designate land to enable the future construction, maintenance and operation of the Project.

This report provides an assessment of the actual and potential noise and vibration effects associated with the construction of the Project on the existing and likely future environment, and recommends measures that may be implemented to avoid, remedy and/or mitigate these effects.

This assessment has been prepared to inform the Assessment of Environmental Effects (**AEE**) for the NoRs. Effects associated with traffic noise are assessed against different standards and criteria and are discussed in a separate report.

The key matters addressed in this report are as follows:

a. Description of the Project as it relates to construction noise and vibration;
b. Overview of the methodology used to undertake the assessment and identification of the assessment criteria and any relevant standards or guidelines;
c. Identification and description of the existing and likely future noise environment;
d. Description of the actual and potential noise and vibration effects of construction of the Project;
e. Recommended measures to avoid, remedy or mitigate potential adverse construction noise and vibration effects (including any conditions/management plan required); and
f. Overall conclusion of the level of potential construction noise and vibration effects of the Project after recommended measures are implemented.

2.3 Project Description

The Project consists of two new arterial corridors through the Project area, providing sufficient space for two-lanes for vehicles, new footpaths and dedicated cycleways on both sides of the road. The Project has been broken down into the following NoRs:

Table 2-1: List of Notices of Requirement

Notice	Project	Description
NoR1	Redhills North-South Arterial Corridor	New urban arterial transport corridor and upgrade of Don Buck and Royal Road intersection.
NoR2a	Redhills East-West Arterial Corridor – Dunlop Road	New urban arterial transport corridor that intersects with Fred Taylor Drive and connects to the remaining East-West corridor (NoR2c) at the intersection with the Redhills North-South arterial corridor.
NoR2b	Redhills East-West Arterial Corridor – Baker Lane	New urban arterial transport corridor that intersects with Fred Taylor Drive and connects to the intersection of the remaining East-West corridor and Dunlop Road (NoR2a).
NoR2c	Redhills East-West Arterial Corridor – Nixon Road connection	New urban arterial transport corridor that intersects with the Redhills East-West Arterial Corridor – Dunlop Road. This includes the upgrade of the existing Red Hills Road/Nelson Road/Nixon Road intersection, and the existing Nixon Road/Henwood Road intersection.

To safely tie into the existing road network, the Project includes the upgrade of existing intersections where the new corridors will connect, as follows:

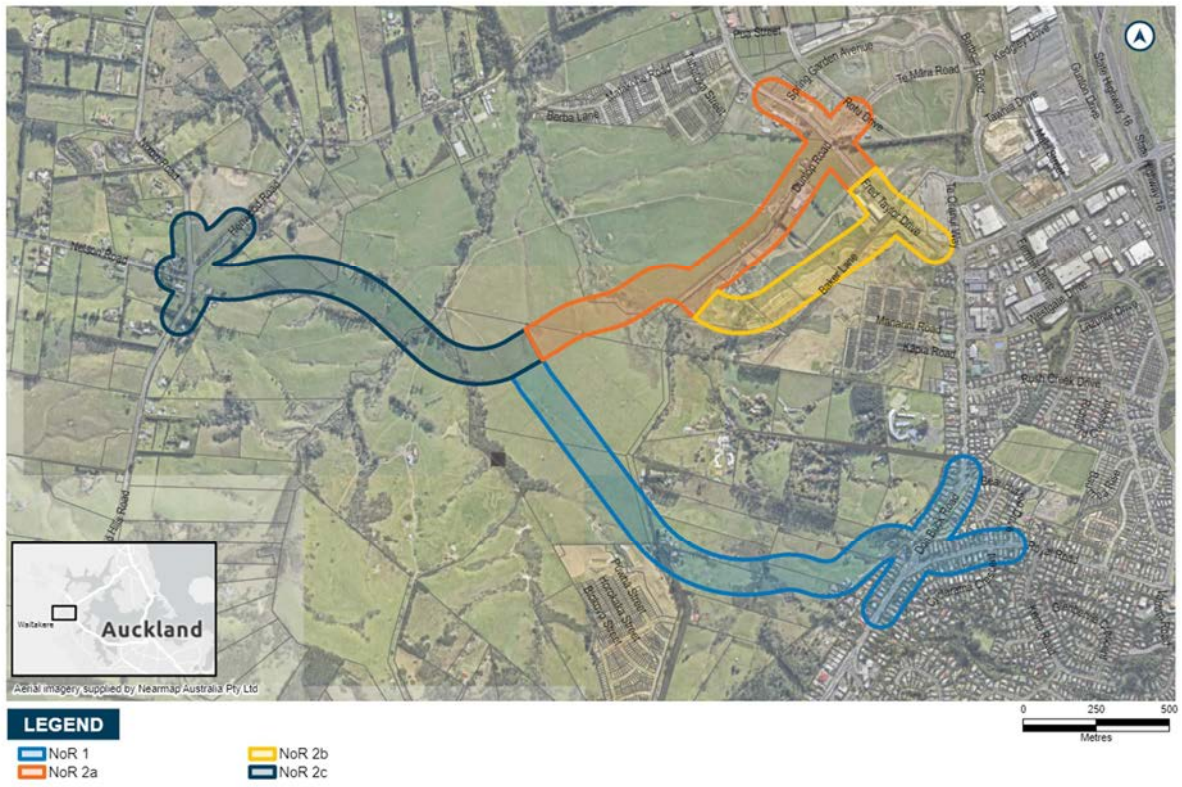
- Signalisation of the intersection at Don Buck Road and Royal Road (NoR1);
- Signalisation of the intersection at Fred Taylor Drive and Dunlop Road (NoR 2a);
- Signalisation of the intersection at Fred Taylor Drive and Baker Lane (NoR 2b); and
- A new roundabout at the intersection of Red Hills Road, Nixon Road and Nelson Roads (NoR 2c).

The Project also provides a footprint for new stormwater wetlands for the treatment and attenuation of stormwater from the new corridors.

This report has primarily considered the Project area as a whole. Where relevant, NoR1 is referred to as the N-S Project, and NoR2a, NoR2b and NoR2c are collectively referred to as the E-W Project.

The Project has been split into four NoRs to reflect the likely implementation of the Project. It may also be possible for each designation to delivered in stages as the Project area develops.

An overview of the Project is provided in Figure 2-1. This design, along with the wider designation boundary, is referred to as the Project area throughout this report.



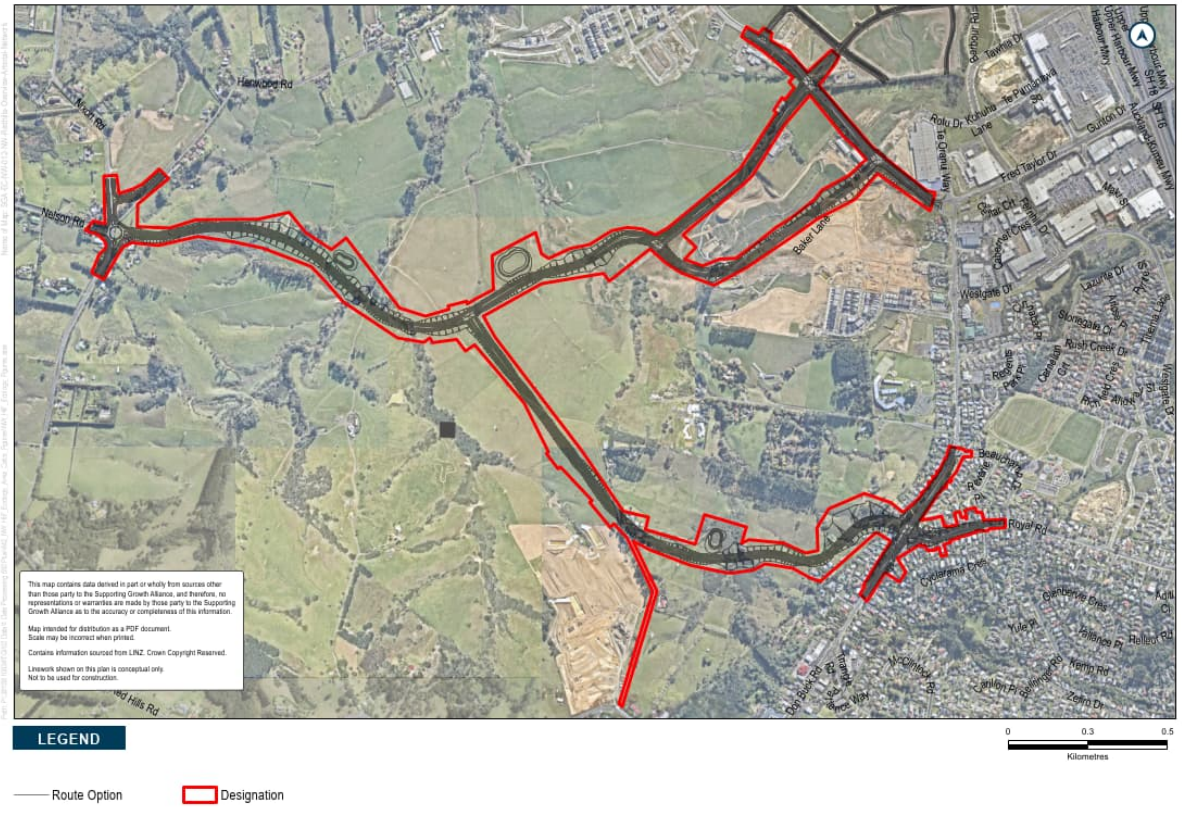


Figure 2-1: Redhills Arterial Transport Network

3 Assessment Framework

3.1 Statutory Context

3.1.1 Notice of Requirement

This assessment has been prepared to support the NoR process for the Project. Section 171 of the RMA sets out the matters that must be considered by a territorial authority in making a recommendation on a NoR. This includes consideration of the actual or potential effects (including positive effects) on the environment of allowing the requirement.

No regional resource consents are currently being applied for. The necessary regional resource consents will be sought prior to construction of the corridors, at which time any regional consenting matters will be assessed.

3.1.2 Resource Management Act

Under the provisions of the RMA there is a duty to adopt the Best Practicable Option (**BPO**) to ensure that the noise from any development does not exceed a reasonable level. Specifically, sections 16 and 17 RMA reference noise effects as follows:

Section 16 *"every occupier of land (including any premises and any coastal marine area), and every person carrying out an activity in, on, or under a water body or the coastal marine area, shall adopt the best practicable option to ensure that the emission of noise from that land or water does not exceed a reasonable level".*

Section 17 *"every person has a duty to avoid, remedy, or mitigate any adverse effect on the environment arising from an activity carried on by or on behalf of the person, whether or not the activity is in accordance with a national environmental standard, a rule, a resource consent or a designation, or relevant sections of the RMA".*

3.2 Relevant Standards and Guidelines

3.2.1 Construction Noise

Rule E25.6.1(3) of the AUP:OP states that "The noise from any construction activity must be measured and assessed in accordance with the requirements of *New Zealand Standard NZS6803:1999 Acoustics – Construction noise"*. Rules E.25.6.27(1) and E.25.6.27(2) contain construction noise limits for sensitive and all other receivers.

Furthermore, Rule E25.6.29 specifies that construction noise levels for work within the road for construction, maintenance and demolition activities must meet the relevant noise levels in the relevant table E25.6.27.1 or E25.6.27.2 (as replicated in below), with some relaxation of the compliance requirement for certain times and durations.

The construction noise standards provided by Rules E25.6.27(1) and E25.6.27(2) of the AUP:OP have been adopted for the purpose of this assessment.

The applicable construction noise criteria are detailed in Table 3-1 for sensitive receivers and in Table 3-2 for all other receivers.

Construction of the Project is likely to occur in stages, however as it is anticipated that each stage of works will likely take longer than 20 weeks, the long duration limits have been adopted in Table 3-1 and Table 3-2 below.

Table 3-1: Construction noise criteria for sensitive receivers (outside of Business – City Centre Zone and the Business – Metropolitan Centre Zone)

		Noise level for Construction duration >20 weeks	
Time of week	Time period	LA_{eq} dB	LA_{max} dB
Weekdays	06:30 – 07:30	55	75
	07:30 – 18:00	70	85
	18:00 – 20:00	65	80
	20:00 – 06:30	45	75
Saturdays	06:30 – 07:30	40	70
	07:30 – 18:00	70	85
	18:00 – 20:00	40	70
	20:00 – 06:30	40	70
Sunday and public holidays	06:30 – 07:30	40	70
	07:30 – 18:00	50	80
	18:00 – 20:00	40	70
	20:00 – 06:30	40	70

Table 3-2: Construction noise criteria for all other receivers (outside of Business – City Centre Zone) and the Business – Metropolitan Centre Zone)

Time period	Noise level LA_{eq} dB
07:30 – 18:00	70
18:00 – 07:30	75

Exemptions to these levels are provided in Rule E25.6.29(2) and E25.6.29(3). Under E25.6.29 (2) noise levels specified (as replicated above) do not apply for planned works in the road between the hours of 10pm and 7am where:

a. the number of nights where the noise generated by the works exceeds the relevant noise levels at any one receiver is for 3 nights or less; and
b. the works cannot practicably be carried out during the day or because the road controlling authority requires this work to be done at night time; or
c. because of the nature of the works the noise produced cannot be practicably be made to comply with the relevant noise levels.

Under E25.6.29(3), noise levels specified (as replicated above) do not apply for planned works in the road between the hours of 7am and 10pm where:

a. the number of days where the noise generated by the works exceeds the relevant noise levels at any one receiver is 10 days or less; or
b. because of the nature of the works and the proximity of receivers the noise generated cannot practicably made to comply with the relevant noise levels.

If situations fall under the exemption rules then a copy of the works access permit issued by AT or approval from Waka Kotahi must be provided to Auckland Council five days prior to work commencing; and a Construction Noise and Vibration Management Plan (**CNVMP**) must be provided to Auckland Council no less than five days prior to the works commencing in accordance with the applicable provisions of Standard E25.6.29(5). These exemptions apply to works within a road, however the Project includes works to widen roads and construct new roads, therefore the exemptions would not apply to these works that take place outside of the road corridor. For the Project, construction noise standards and management of any non-compliances will form part of the management plan regime discussed later in this report.

3.2.2 Construction Vibration

The main objective of controlling construction vibration is to avoid vibration-related damage to buildings, structures, and services, in the vicinity of the works. Any adverse effects of construction vibration on human comfort would typically only be experienced for short durations, for most types of construction work.

It should be noted that the level of vibration perceived by humans, and the level of vibration that is likely to result in annoyance for some people, are magnitudes lower than the level of vibration capable of damaging structures. This means that vibration levels which readily comply with the cosmetic building damage criteria will likely cause annoyance and adverse reaction from building occupants who mistakenly believe that their building is sustaining damage.

Construction vibration has only been assessed against the limits of Table 3-4 which relate to the avoidance of potential cosmetic building damage. Potential exceedances of the amenity criteria will be considered when assessing the construction vibration effect on nearby receivers. However, it is recommended that the limits relating to human comfort detailed in Table 3-3 should be used as trigger for communication and consultation and should be included in the construction management plan.

3.2.2.1 Auckland Unitary Plan (Operative in Part)

The AUP:OP contains rules relating to construction vibration that cover both building damage and amenity. Rule E25.6.30 states that construction activities must be controlled to ensure any resulting vibration does not exceed:

a. The limits set out in German Industrial Standard DIN 4150-3 (1999): *Structural vibration – Part 3 Effects of vibration on structures* when measured in accordance with that Standard on any structure not on the same site; and
b. The limits set out in Table 3-3 in any axis when measured in the corner of the floor of the storey of interest for multi-storey buildings, or within 500mm of ground level at the foundation of a single storey building.

Table 3-3: AUP:OP Table E25.6.30.1 Vibration limits in buildings

Receiver	Period	Peak Particle Velocity (PPV) mm/s
Occupied activity sensitive to noise or vibration	Night-time 10pm to 7am	0.3
	Daytime 7am to 10pm	2.0
Other occupied buildings	At all times	2.0

3.2.2.2 DIN 4150-3:1999 – Structural vibrations: Effects of vibrations on structures

Deutsches Institut für Normung e.V. (German Institute for Standardisation) (**DIN**) publishes standards including DIN 4150 that contains guideline vibration limits for buildings, which when complied with "will not result in damage that will have an adverse effect on the structure's serviceability". These limits are set out in Table 3-4.

Different criteria are given for "short-term" (transient) vibration sources such as blasting and pile driving, and "long-term" sources such as vibrocompaction or sheet piling. Note that the definition of "short-term" and "long-term" in DIN 4150-3:1999 differ from those in NZS 6803:1999 and do not strictly relate to the duration of the works, but rather how a building responds to the construction vibration. Short term vibration will not result in a significant increase in vibration due to resonance in the structure.

Table 3-4: Vibration velocity guideline values for structures (DIN 4150)

Type of structure	Short term vibration				Long Term Vibration**
	PPV at foundation, frequency of:			Vibration at horizontal plane of highest floor at all frequencies (mm/s)	PPV at horizontal plane of highest floor (mm/s)
	1 Hz to 10 Hz	10 Hz to 50 Hz	50 Hz to 100 Hz*		
Buildings used for commercial purposes, industrial buildings and buildings of similar design	20	20 to 40	40 to 50	40	10
Dwellings and buildings of similar design and/or use	5	5 to 15	15 to 20	15	5
Structures that, because of their sensitivity to vibration, do not correspond to those listed in lines 1 and 2 and are of great intrinsic value	3	3 to 8	8 to 10	8	2.5

** At frequencies above 100 Hz, the values given in this column may be used as minimum values*
*** The Standard defines short-term vibration as "vibration which does not occur often enough to cause structural fatigue, and which does not produce resonance in the structure being evaluated". Long-term vibration is defined as all other vibration types not covered by the short-term vibration definition.*

Clause 5.1 of DIN 4150-3 notes that a vibration level in excess of the DIN criterion does not necessarily result in building damage. The definition of 'damage' in DIN 4150-3 is: "any permanent effect of vibration that reduces serviceability of a structure or one of its components".

Examples of a 'reduction of serviceability' include:

- the impairment of stability of the building and its components;
- a reduction in the bearing capacity of floors.

For dwelling type buildings (Table 3-4 – line 2) and structures sensitive to vibration (Table 3-4– line 3), the serviceability is considered to have been reduced if:

- cracks form in plastered surfaces of walls;
- existing cracks in the building are enlarged;
- partitions become detached from loadbearing walls or floors.

These effects are deemed 'minor damage'.

There are no buildings within 100m of the Project, which are considered to be sensitive to vibration, in accordance with line 3 of Table 3-4.

3.2.3 Auckland Transport construction vibration criteria

The following criteria are the recommended Project construction vibration criteria for both building damage and amenity applicable for all NoRs.

The two category criteria, detailed in Table 3-5 are to facilitate a progressive management response to the increasing risks and effects during construction.

Category A sets the criteria for the amenity effects where vibrations may be perceived by occupants within a building, as adopted from the AUP:OP, and an indicator of when communication and consultations should be initiated to manage effects. Category B are based on DIN 4150 building damage criteria for daytime.

Table 3-5: Auckland Transport Construction vibration criteria

Vibration Level	Effect	Category A	Category B
Occupied Activities sensitive to noise	Night-time 2000h – 0630	0.3mm/s ppv	2mm/s ppv
	Daytime 0630h – 2000h	2mm/s ppv	5mm/s ppv
Other occupied buildings	Daytime 0630h – 200h.	2mm/s ppv	5mm/s ppv
All other buildings	All other times	Tables 1 and 3 of DIN4150-3:1999	

Where compliance with the vibration standards set out in Table 3-5 is not practicable, and unless otherwise provided for in the CNVMP (refer Section 7.2.1), a schedule (refer Section 7.2.2) will be required.

4 Receiving Environment

4.1 Existing Ambient Environment

Construction noise criteria and assessments are not dependent on existing noise levels. In addition, by the time of construction of the Project, the existing environment in the Project area is likely to have changed due to urbanisation of the area and the ambient conditions would be different. Instead, construction noise must comply with the relevant limits as set out in the AUP:OP taking into account receivers that exist at the time of construction.

4.2 Noise Monitoring Procedure

Noise survey equipment, meteorological conditions, data analysis and results are described below.

The noise monitoring was undertaken in general accordance with the relevant requirements of NZS 6801[1], 6802[2] and 6806. This meant the results could adequately inform both the operational and construction noise assessments, whilst providing a robust baseline dataset for the Project.

A measurement position at 440 Don Buck Road was selected that was free-field to avoid reflections from buildings or extraneous factors which could influence the sound levels, where practicable. Measurement and calibration details required by NZS 6801 are held on file.

The unattended noise monitoring results can be found in Appendix 1. Monitoring was undertaken for approximately 7 days.

4.2.1 Meteorological Conditions

During the surveys, meteorological data was obtained from Auckland, Motat Ews (41351) weather station operated by NIWA. This is the closest station where data was available at an hourly resolution or less.

The meteorological data from this weather station was used to identify periods when conditions were likely to have been outside the meteorological restrictions given in NZS 6801, and therefore data measured during these periods has been excluded from the noise analysis.

4.2.2 Data Analysis

Road traffic was the dominant noise source with birdsong clearly audible. There is a natural variation in the noise environment throughout the day, and often variations for the weekends. Each day's data was analysed, and abnormal events excluded. A summary of the measured noise levels has been included in Table 4-1. The times in the table reflect the key periods for construction noise as assessed against the criteria in section 3.2.1.

[1] New Zealand Standard 6801:2008 Acoustics – Measurement of environmental sound

[2] New Zealand Standard 6802:2008 Acoustics – Environmental noise

Table 4-1: Summary of measured noise levels

Date	Time Periods	LA_{eq} (dB)	LA_{max} (dB)	LA_{90} (dB)
19/11/19	7:30 – 18:00	60	81	54
	18:00 – 20:00	61	90	52
	20:00 – 06:30	57	86	38
20/11/19	06:30 – 7:30	62	81	57
	7:30 – 18:00	63	98	54
	18:00 – 20:00	61	88	54
	20:00 – 06:30	58	88	39
21/11/19	06:30 – 7:30	63	80	57
	7:30 – 18:00	64	95	56
	18:00 – 20:00	62	90	54
	20:00 – 06:30	58	89	41
22/11/19	06:30 – 7:30	62	78	57
	7:30 – 18:00	62	88	55
	18:00 – 20:00	63	92	54
	20:00 – 06:30	56	87	38
23/11/19	06:30 – 7:30	59	77	45
	7:30 – 18:00	61	96	51
	18:00 – 20:00	58	75	48
	20:00 – 06:30	54	80	33
24/11/19	06:30 – 7:30	55	78	38
	7:30 – 18:00	59	83	48
	18:00 – 20:00	59	82	48
	20:00 – 06:30	58	94	36
25/11/19	06:30 – 7:30	61	83	55
	7:30 – 18:00	62	94	53
	18:00 – 20:00	65	105	50
	20:00 – 06:30	57	85	37
26/11/19	06:30 – 7:30	61	81	57
	7:30 – 18:00	62	95	53
	18:00 – 20:00	60	89	52
	20:00 – 06:30	58	84	41
27/11/19	06:30 – 7:30	61	78	56
	7:30 – 18:00	61	97	54

	18:00 – 20:00	63	92	52
	20:00 – 06:30	58	88	40
28/11/19	06:30 – 7:30	61	80	56
	7:30 – 18:00	64	95	55

Measurements show that Don Buck Road noise levels are dominated by traffic and are already currently relatively high which is expected of an urban area.

5 Indicative Construction Methodology

An indicative construction methodology has been prepared to inform the assessment of the Project and, while subject to change, assists in determining the envelope of effects. An overview of the indicative construction methodology is set out in the AEE. The final construction methodology for the Project will be confirmed during the detailed design phase and finalised once a contractor has been engaged for the work.

A summary of the key components of the indicative construction methodology relevant for this report is outlined in the sub-sections below.

5.1 General Construction Overview

It is anticipated that the works will be broken down into separate construction stages based on the type of works required and the nature of the work environment. These anticipated stages are:

- **Stage 1**: Baker Lane from Fred Taylor Drive to the Dunlop Road intersection
- **Stage 2**: Dunlop Road from Fred Taylor Drive to the E-W Project junction
- **Stage 3**: E-W Project from Dunlop Road junction to Red Hills Road
- **Stage 4**: N-S Project from Don Buck Road to E-W Project

The expected duration for each stage ranges from 1.5 years to 3 years.

5.2 Indicative Construction Methodology

Each zone's specific construction activities will vary based on the type of work needing to be undertaken and the surrounding environment. However, in all cases the general sequence of construction is anticipated to be:

1. Bulk earthworks over summer months
2. Divert or remove services
3. Construct permanent and temporary stormwater drainage and controls
4. Move traffic away from works longitudinally (on live roads)
5. Construct earthworks and retaining structures and if applicable bridges
6. Construct new longitudinal drainage
7. Construct new pavement to half of the road
8. Move traffic onto newly constructed pavement (on live roads)
9. Complete longitudinal drainage
10. Complete pavement and median
11. Move traffic to new alignment (on live roads)
12. Complete footpath and cycleway

Please refer to the AEE for further details.

Relevant to this report, a proposed access to the site for Stage 4 will be off Don Buck Road opposite Royal Road, or via a local accessway off Red Hills Road at the southern end of the Project site (23 Red Hills Road, Massey).

5.3 Plant and Equipment

For the purposes of this report, Table 5-1 provides an indicative list of plant and equipment which may be required for construction across all stages of the Project.

Table 5-1: Redhills Arterial Transport Network plant and equipment summary

Construction Type	Construction Activity
Typical across all works	• Site and worker facilities • Light vehicles • Hiab truck (i.e. crane truck) • Small handheld tools and plant
Clearing	• 20T excavator • Mulcher • Tandem tipper
Overhead line relocation	• Line crew • Elevated work platform or cherry picker • Directional drilling equipment
Bulk Earthworks	• 30T excavator • 20T excavator • Compactor/Sheepsfoot roller • Water cart • Tippers/Articulated dump trucks
Drainage	• 20T excavator • Trench shields • Tandem tipper • Loader • Plate compactor
Pavement Construction	• Grader • Smooth drum roller • Tandem tippers • Kerbing machine • Plate compactor • Paver

5.4 Removal of Buildings

Based on the indicative construction area maps, it has been confirmed that the following properties will be demolished to make room for the Project and therefore these have not been considered in the construction assessment:

- 1 Royal Road
- 2 Royal Road
- 4 Royal Road
- 6 Royal Road
- 443 Don Buck Road
- 445 Don Buck Road
- 456 Don Buck Road
- 458A Don Buck Road

- 460 Don Buck Road
- 23 Red Hills Road
- 68 Fred Taylor Drive
- 1 Dunlop Road
- 25 Red Hills Road

6 Assessment Methodology

Predictions of construction noise have been undertaken for the Project in accordance with NZS 6803, and vibration emission radii determined, based on assumptions of construction type, activities and equipment as provided by the Project team as set out in section 5 of this report. The proposed designation boundary has been assumed as the construction boundary and a reasonable worst-case approach has been applied to assessing the level of effect from the predicted construction noise and vibration emission radii.

Affected receivers have been identified using construction noise setback distances and vibration emission radii. The construction noise setback distances and vibration emission radii were used to determine where any potential construction noise and vibration exceedances of the relevant criteria could occur. Potential effects of construction noise and vibration have then been assessed and construction management and mitigation measures identified where appropriate.

This report proposes a framework for construction noise and vibration management such that the most effective and practicable methods for mitigation will be planned and implemented, taking into account the extent of predicted effects. At the core of this framework is the Construction Noise and Vibration Management Plan (CNVMP) in Section 7.2.1 which will be developed prior to commencement of construction and updated as necessary throughout the duration of construction.

Construction of the Project is likely to occur in stages as urbanisation of the surrounding area occurs or is confirmed to occur. For some parts of the Project, construction could be several years into the future. Therefore, receivers are likely to have changed and there could potentially be new receivers in the vicinity of the Project due to increased development. Construction noise and vibration levels will therefore need to be re-considered when the CNVMP is prepared to take account of these receivers also.

6.1 Construction Noise

Construction of the Project is split between four zones as described in section 2.3 of this report with construction activities in each zone expected to last for a minimum of 12 months.

Predictions for the Project have been assessed against the “long-duration” noise criteria for works greater than 20 weeks under NZS6803:1999 as presented in Table 3-1 and Table 3-2. It is expected the majority of noisy works will be carried out between 7am – 6pm on weekdays with some night time and weekend works for the pavement and surfacing stage as required, especially to tie in to the existing network.

Various construction activities and pieces of equipment will act as noise sources on site during construction works. A list of the most dominant noise sources based on the equipment list provided by the Project team have been compiled in **Error! Reference source not found.** and an indicative sound power level for each construction type/activity has been provided in **Error! Reference source not found.**. Given construction will occur in the future, the current methodology may not be inclusive of all equipment used nearer the time of construction. Equipment tables will need to be updated to reflect selection at the development of the management plan. The minimum set back distance required from receivers for each activity to comply with the day-time noise criterion of 70 dB LA_{eq} without any mitigation has also been calculated.

6.1.1 Equipment Noise Levels

Table 6-1Error! Reference source not found. details the sound power levels from the equipment with the most likely significant noise sources and the various receiver setback distances required to achieve compliance with the 70 dB LA_{eq} day time noise criterion without any mitigation. The noise data has been taken from British Standard 5228-1:2009 "*Code of practice for noise and vibration control on construction and open sites*", manufacturers data or the AECOM database of noise measurements.

Table 6-1: Construction equipment sound levels and indicative compliance distance

Equipment	Source BS5228	Sound power level (dB LA_{eq})	Minimum set back distance from receivers to comply with day-time limit (70 dB LA_{eq}) without mitigation, meters
30T excavator	C.2.19	105	22
20T excavator	C.2.21	99	11
Roller Compactor	C.2.40	101	14
Tipper Truck	C.2.30	107	28
Bulldozer	C.5.14	114	63
Plate Compactor	C.5.29	110	40
Smooth Drum Roller	C.5.20	103	20
Paver	C.5.30	103	20

Table 6-2Error! Reference source not found. details the sound power levels from key construction activities/types. The equipment sound power levels in Error! Reference source not found. have been combined according to the various construction types as presented in Table 5-1 to provide an indicative activity sound power level. From this combined level a minimum set back distance at which compliance can be achieved has been determined.

Table 6-2: Activity sound power levels and indicative compliance distance

Construction Type	Activity Sound power level (dB LA_{eq})	Minimum set back distance from receivers to comply with day-time limit (70 dB LA_{eq}) without mitigation, meters
Typical across all works	110	40
Clearing	113	56
Overhead Line relocation	93	10
Bulk Earthworks	115	71
Drainage	117	90
Pavement construction	117	90

6.2 Construction Vibration

Vibration generation and propagation is highly site specific. The generation of vibration is dependent on the local site geology, the equipment being used, the nature of the works, and even the operator.

To account for the inaccuracy in the prediction of vibration, the likely worst-case vibration has been calculated based on the equipment and hard ground geology.

Vibration from a source transmits in a spherical pattern and reduces with distance. There will be a particular distance from each source at which the vibration level equals the relevant vibration criteria. This distance is called the 'emission radius'. The vibration criteria and emission radii for high vibration generating equipment are detailed in Table 6-3.

Table 6-3: Vibration sources and indicative emission radii

Equipment	Building Damage (DIN 4150) emission radii	
	Residential (5 mm/s)	Commercial (10 mm/s)
Plate Compactor	1 m	1 m
Roller Compacter	8 m	4 m
Excavator	6 m	2 m
Tipper Truck	1 m	0.5 m

We recommend that vibration measurements are undertaken at specific locations as identified through the CNVMP and schedules at the commencement of construction activities to establish vibration propagation site laws for vibration generating equipment. This approach will confirm the emission radii used in this assessment and ensure the applicable criteria are complied with. It has been found on other major construction projects, that the measured vibration levels for a particular activity are much lower than those predicted during the assessment stage.

7 Overview of Construction Effects and Mitigation

7.1 Overview of Construction Effects

Potential construction noise and vibration effects are summarised in this section.

7.1.1 Construction noise

Table 7-1 gives examples of the potential effects on receivers at different noise levels based on NZS6803 with most exposed façades providing a 20 dB reduction. Depending on the construction of the house, facades may provide up to a 25 – 30 dB reduction, therefore assumptions and effects provided below are based on a conservative approach.

Table 7-1: Potential construction noise effects on receivers

External Noise Level	Potential Daytime Effects Outdoors	Corresponding Internal Noise Level	Potential Daytime Effects Indoors
65 dB LA_{eq}	Conversation becomes strained, particularly over longer distances	45 dB LA_{eq}	Noise levels would be noticeable but unlikely to interfere with residential or office daily activities.
65 to 70 dB LA_{eq}	People would not want to spend any length of time outside, except when unavoidable through workplace requirements	45 to 50 dB LA_{eq}	Concentration would start to be affected. TV and telephone conversations would begin to be affected.
70 to 75 dB LA_{eq}	Businesses that involve substantial outdoor use (for example garden centres such as Bunnings) would experience considerable disruption.	50 to 55 dB LA_{eq}	Phone conversations would become difficult. Personal conversations would need slightly raised voices. Office work can generally continue, but 55 dB is considered by the experts to be a tipping point for offices. For residential activity, TV and radio sound levels would need to be raised.
75 to 80 dB LA_{eq}	Some people may choose protection for long periods of exposure. Conversation would be very difficult, even with raised voices.	55 to 60 dB LA_{eq}	Continuing office work would be extremely difficult and become unproductive. In a residential context, people would actively seek respite.
80 to 90 dB LA_{eq}	Hearing protection would be required for prolonged exposure (8 hours at 85 dB) to prevent hearing loss.	60 to 70 dB LA_{eq}	Untenable for both office and residential environments. Unlikely to be tolerated for any extent of time.

With effective management of construction activities, which includes consultation and communication with affected parties and scheduling noisy works during the daytime rather than night-time period,

noise levels can be controlled so that the effects on the nearest residential receivers are reduced. Barriers will not be effective at all locations, particularly where receivers are more than one storey. Where barriers are not going to be effective, the use of enclosures or local screening of equipment should be considered and implemented, where practicable. If noisy activities must take place during the night-time, and screening or other mitigation measures do not provide sufficient attenuation to meet the night-time noise criteria or are not practicable, it may be necessary to offer temporary relocation to affected residents. Temporary relocation should be considered on a case-by-case basis and as a last resort.

7.1.2 Construction Vibration

The vibration effects associated with construction of the Projects are considered in terms of human response and building damage. However, in our experience the main concern for building occupants during construction is damage to the building itself.

Humans can generally perceive vibrations at a much lower level than when building damage is likely to occur. The adverse effects of construction vibration on building occupants may be significant in some buildings adjacent to the areas of works. Adverse effects may range from annoyance to loss of amenity or inability to carry out work. Vibration effects will reduce with distance from the source, and the level of vibration transmission into a building will depend on a number of factors, such as the foundation type and building construction.

Potential effects and human perception of the vibration levels found within the AUP:OP/DIN criteria have been combined below and adopted for this assessment.

Table 7-2: Potential vibration effects on human perception summary against AUP:OP/DIN criteria

External Noise Level	Potential Daytime Effects Outdoors
0.14 mm/s	The threshold of perception for stationary people. Just perceptible in particularly sensitive environments.
0.3 mm/s	Can be just perceptible during normal residential activities, particularly for more sensitive receivers. Levels above may wake most people from their sleep. This is the AUP:OP limit for construction vibration generated at night-time for sensitive receivers.
1 mm/s	Is typically tolerable with prior notification. Complaint or adverse reaction is likely in office or residential environments, particularly if there is no prior warning. What people actually feel would be subject to the source but could include a steady vibration from sources such as vibratory compaction, or a small jolt such as from the movement of a large digger either of which could rattle crockery and glassware. Sleep disturbance would be almost certain for most people.
2 mm/s	Vibration would clearly be felt. However, it can typically be tolerated in indoor environments such as offices, houses and retail if it occurs intermittently during the day and where there is effective prior engagement. Effects experienced would be somewhere between levels of 1 and 5 mm/s.

	This is the AUP:OP limit for large construction projects generating vibration.
5 mm/s	Unlikely to be tolerable in a workplace. Highly unsettling for both workplaces and dwellings. If exposure is prolonged, some people may want to leave the building Computer screens would shake and items could fall off shelves if they are not level. This is the threshold below which no cosmetic damage will occur in the DIN standard.
10 mm/s	Likely to be intolerable for anything other than a very brief exposure.

The AUP:OP sets the criteria for amenity at 0.3mm/s for night time and 2 mm/s during the day. Based on the worst-case source of a roller compactor, any receiver within a 21m radius of the construction area may experience vibration of 2 mm/s inside their property. Whilst at this level building damage is highly unlikely to occur, human perception may result in slight concerns but can generally be tolerated if activity occurs intermittently and with prior notice.

At 0.3 mm/s the emission radii could be up to 140m from construction areas, and at this level people could feel slight vibrations especially during the night-time, which may cause sleep disturbance. High vibratory activities should therefore be avoided, where practicable, during the night-time and careful management of the type of equipment used at night should be included within the CNVMP (refer Section 7.2.1)

Construction vibration effects generally have a short timeframe, typically a few days at a time. The use of high vibratory equipment, such as a roller compactor, should be controlled through a CNVMP to limit potential vibration effects, and alternative equipment with lower vibratory effect should be used where practicable.

7.2 Recommended Measures to Avoid, Remedy or Mitigate Construction Effects

7.2.1 Construction Noise and Vibration Management Plan

Implementing noise management and mitigation measures via a CNVMP is the most effective way to control construction noise and vibration impacts. The objective of the CNVMP should provide a framework for the development and implementation of best practicable options to avoid, remedy or mitigate the adverse effects on receivers of noise and vibration resulting from construction.

E25.6.29(5) sets out the minimum level of information that must be provided in a CNVMP. Accordingly, as a minimum, we recommend that the CNVMP should include the following content:

- Description of the works and anticipated equipment/processes;
- Hours of operation, including times and days when construction activities would occur;
- The construction noise and vibration standards for the Projects;
- Identification of receivers where noise and vibration standards apply;
- A hierarchy of management and mitigation options, including any requirements to limit night works and works during other sensitive times, including Sundays and public holidays as far as practicable;
- Methods and frequency for monitoring and reporting on construction noise and vibration;

- Updates of the predicted noise and vibration levels based on the final methodology and construction activities;
- Confirmation of which buildings will be included in a pre and post building condition survey;
- Identification of appropriate monitoring locations for receivers of construction noise and vibration;
- Procedures to respond to complaints received on construction noise and vibration, including methods to monitor and identify noise and vibration sources;
- Procedures for responding to monitored exceedances; and
- Procedures for monitoring construction noise and vibration and reporting to the Auckland Council Consent Monitoring officer.
- Procedures for maintaining contact with stakeholders, notifying of proposed construction activities, the period of construction activities, and handling noise and vibration complaints;
- Contact details of the Project Liaison Person;
- Procedures for the regular training of the operators of construction equipment to minimise noise and vibration as well as expected construction site behaviours for all workers;
- Identification of areas where compliance with the noise and/or vibration standards will not be practicable and the specific management controls to be implemented and consultation requirements with owners and occupiers of affected sites;
- Procedures and requirements for the preparation of a Schedule to the CNVMP (Schedule) for those areas where compliance with the noise and/or vibration standards will not be practicable and where sufficient information is not available at the time of the CNVMP to determine the area specific management controls; and
- Procedures and timing of reviews of the CNVMP.

The construction noise and vibration level predictions will be confirmed at the time the CNVMP is prepared.

7.2.2 Schedules

In addition to a CNVMP, it may be necessary to produce Site Specific or Activity Specific Construction Noise and Vibration Management Schedules ("Schedules") where noise and/or vibration limits are predicted to be exceeded for a more sustained period or by a large margin. A schedule to the CNVMP provides a specific assessment of an activity and/or location and should include details such as:

- Activity location, start and finish dates;
- The nearest neighbours to the activity;
- A location plan;
- Predicted noise/vibration levels and BPO mitigation for the activity and/or location;
- Communication and consultation with the affected neighbours;
- Location, times and type of monitoring; and
- Any pre-condition survey of buildings predicted to receive vibration levels exceeding the Category B criteria, which document their current condition and any existing damage.

7.2.3 Noise mitigation measures

A hierarchy of mitigation measures will be adopted through the CNVMP and Schedules (where produced), as follows:

- Managing times of activities to avoid night works and other sensitive times;
- Liaising with neighbours so they can work around specific activities;

- Selecting equipment and methodologies to restrict noise;
- Using screening/enclosures/barriers; and
- Offering neighbours temporary relocation.

By following this hierarchy, the BPO for mitigation will be implemented, whilst avoiding undue disruption to the community. In particular, temporary relocation of neighbours can cause significant inconvenience and should only be offered where other options have been exhausted and noise levels still require mitigation.

Some activities are likely to be set back a considerable distance from the nearest receivers and require very little or no mitigation to achieve compliance with the relevant Project noise limits. Alternative methodologies, careful equipment selection and use of noise barriers or localised screening (e.g. for concrete cutting) would be suitable management and mitigation measures and should be implemented where they are practicable and effective.

7.2.4 Vibration mitigation

Similar to noise, a hierarchy of vibration mitigation measures will be adopted through the CNVMP and Schedules (where produced) as follows:

- Managing times of activities to avoid night works and other sensitive times (communicated through community liaison);
- Liaising with neighbours so they can work around specific activities;
- Operating vibration generating equipment as far from sensitive sites as possible;
- Selecting equipment and methodologies to minimise vibration;
- Offering neighbours temporary relocation; and
- In specific situations, a cut-off trench may be used as a vibration barrier if located close to the source.

In general, there are less options available to mitigate vibration propagation and insulate receiver buildings, compared to noise. Mitigation will therefore focus on scheduling of activities, effective communication with neighbours, and selection of appropriate equipment and methods, where practicable.

Appropriate vibration mitigation measures for each activity will be listed in the CNVMP and Schedules (where produced).

7.2.5 Building Condition Survey

A detailed building precondition survey should be undertaken by a suitably qualified engineer prior to the start of construction at all buildings where the daytime Category B criteria may be exceeded. The survey shall include, but not be limited to, the following:

- Determination of building classification: commercial, industrial, residential or a historic or sensitive structure;
- Determination of building specific vibration damage risk thresholds; and
- Recording (including photographs) the major features of the buildings including location, type, construction (including foundation type), age and present condition, including existing levels of any aesthetic damage or structural damage.

A post-construction condition survey of the same buildings shall be conducted when construction is completed, and any damage shown to have been caused by the Project construction rectified by the Project Team.

7.2.6 Night Works

Night works have the potential to cause the greatest disturbance to residents and should be avoided where possible. However, it is possible that night works will be required during the construction period for critical activities. Before night works are programmed, it is important to determine if there are alternative options that would avoid working at night and, if so, whether those options are technically and practicably feasible.

Where there are no practicable alternative options to night works, it may be necessary to implement enhanced noise and vibration management measures, but this will depend on the location of the worksite and the proposed activities.

When work must be carried out at night, it may be necessary to:

- Increase the frequency of communications with stakeholders;
- Carry out regular noise and vibration monitoring to confirm noise and vibration levels; or
- Offer temporary relocation to neighbours if unreasonable noise and/or vibration levels cannot be avoided.

8 NoR 1: Redhills North-South Arterial Corridor

8.1 Existing and Likely Future Environment

8.1.1 Planning Context

Within the Project area there are a range of zones under the AUP:OIP which influence the existing and likely future land use patterns for assessment purposes.

Table 8-1 below provides a summary of the existing and likely future environment as it relates to the North-South Arterial Corridor within the RATN.

Table 8-1: North-South Arterial Corridor Existing and Likely Future Environment

Land use today	Zoning	Likelihood of Change for the environment[3]	Likely Future Environment[4]
Rural	Residential – Mixed Housing Suburban	High	Urban
	Residential – Mixed Housing Urban		
	Residential - Terrace Housing and Apartment Building Zone		
	Business - Local Centre Zone		
Residential	Business - Local Centre Zone	Moderate	Urban
	Residential – Mixed Housing Urban	Low	
	Residential - Terrace Housing and Apartment Building Zone		
Business	Business - Local Centre Zone	Low	Urban
Special Purpose	Special Purpose - School Zone	Low	Special Purpose

Please refer to the AEE for further information on the planning context.

[3] Based on AUP:OP zoning/policy direction

[4] Based on AUP:OP zoning/policy direction

8.1.2 Noise Environment

The works will take place within rural and suburban environments, with some dwellings located close to the road corridor along Don Buck Road. The existing noise environment is dominated by road traffic noise from vehicles on Don Buck Road and the surrounding road network.

8.2 Assessment of Construction Noise and Vibration Effects

8.2.1 Construction Noise Effects

Receivers are located at varying distances from the construction boundary along the alignment with the closest existing receiver being 2m from the alignment.

Receivers within 90m of the works could experience unmitigated noise levels that exceed the daytime noise criterion during high noise generating activities such as the pavement works. Based on the footprint of the designation boundary, this would correspond to 191 existing dwellings that could experience noise levels above the 70 dB LA_{eq} daytime noise criterion.

The exclusion zone distance reduces to 28m with noise barriers implemented effectively around working sites. This would correspond to 114 existing dwellings that could experience noise levels above the daytime 70 dB LA_{eq} daytime noise criterion.

We note that the existing receivers may not be present at the time of construction.

With mitigation in place, as set out in section 7.2, noise levels of up to 90 dB LA_{eq} could still occur intermittently at the closest receivers, if high noise generating activities occur on the construction boundary. At this level effects could include loss of concentration, annoyance, and a reduction in speech intelligibility.

Operation of construction equipment will be intermittent in nature. Construction will be linear so as the equipment moves away from the receiver noise levels will reduce. The worst-case situations, where mitigated noise levels could reach 90 dB LA_{eq} at the closest receivers, are not expected to be frequent, due to the setback distances to the majority of the proposed works and the use of equipment with lower source noise levels for large portions of the works. It is therefore predicted that mitigated noise levels can comply with the 70 dB LA_{eq} noise criterion for most of the construction works.

If a critical activity has to be carried out during the night-time in close proximity to residential receivers, consultation and mitigation measures will be essential. The use of noisy equipment should be avoided, where practicable, to prevent sleep disturbance. Any night-time works are likely to be limited in duration and will be managed through the CNVMP (as per Section 7.2.1) and a Schedule (as per Section 7.2.2).

Provided that the works are mitigated and managed through the CNVMP and Schedules at the time of construction, we consider that noise effects from construction works as currently planned will be reasonable.

8.2.2 Construction Vibration Effects

If the roller compactor is used at the edge of the construction boundary, dwellings within 8m of the works and commercial buildings within 4m of the works may experience vibration levels above the daytime Category B criterion, if the roller compactor is used on the construction boundary in the closest position to them. Based on the designation boundary footprint, 73 existing dwellings may experience vibration levels up to 5 mm/s.

Once the compactor is 8m away from the dwellings and 4m from commercial buildings the Category B criterion will be met. The Category B criteria would be met at future residential structures that are 8m or more from the proposed works and commercial structures that are 4m or more from the proposed works.

At buildings in close proximity to the proposed works, there is the potential for cosmetic damage to buildings (such as cracking) and annoyance from perception of vibration. Buildings where the daytime Category B criteria may be exceeded must be identified at the time of construction, and pre-condition surveys must be carried out at these buildings.

The Category A vibration amenity criteria could be exceeded in existing or future buildings if they are occupied during the works and within 21m of the roller compactor or within the emission radii identified for the other vibration generating equipment in Table 6-3. The effect on receivers would be subject to their respective proximity to the works but could include steady vibration from the roller compactor or a small jolt from a digger which could rattle crockery and glassware.

Vibration can typically be tolerated inside buildings if it occurs intermittently during the day, is of limited duration and where there is effective prior engagement.

High vibration generating activities should not occur during the night-time in close proximity to residential receivers to avoid sleep disturbance, unless it is a critical activity and there is no alternative.

It should also be noted that the emission radii are conservative and vibration levels measured on site tend to be much lower than those predicted at the NoR stage of a project.

Provided that the works are mitigated and managed through the CNVMP and Schedules at the time of construction, we consider that vibration effects from construction works as currently planned will be reasonable.

8.3 Conclusions

The predicted construction noise and vibration levels are based on indicative information provided by the Project team, as set out in Section 6, and any conclusions in this assessment should be confirmed during the detailed design stage, taking account of the receivers as they exist at the time of construction.

Construction noise and vibration can be mitigated and managed, utilising the measures set out in Section 7.2, to generally comply with the applicable limits as defined in the AUP. Exceedances of the criteria could occur intermittently over a short duration if high noise or vibration generating equipment are used near occupied buildings. Where an exceedance is predicted at any receiver that exists at the time of construction, the effects will be mitigated and managed through the CNVMP and Schedules.

A CNVMP is the most effective way to avoid, remedy or mitigate construction noise and vibration effects on receivers.

9 NoR 2A: Redhills East-West Arterial Corridor – Dunlop Road

9.1 Existing and Likely Future Environment

9.1.1 Planning context

Within the Project area there are a range of zones under the AUP:OIP which influence the existing and likely future land use patterns for assessment purposes.

Table 9-1 below provides a summary of the existing and likely future environment as it relates to the Dunlop Road Corridor within the RATN.

Table 9-1: Dunlop Road Corridor Existing and Likely Future Environment

Land use today	Zoning	Likelihood of Change for the environment[5]	Likely Future Environment[6]
Rural	Residential – Mixed Housing Urban	High	Residential
	Residential – Terraced Housing and Apartment Zone		
	Business – Town Centre		
Business	Business - Mixed Use Zone	Low	Business
	Business – Light Industry		
Residential	Residential – Mixed Housing Urban	Low	Urban
	Residential – Terraced Housing and Apartment Zone		

Please refer to the AEE for further information on the planning context.

9.1.2 Noise Environment

The works will take place in residential and business zones, with some dwellings located close to the road corridor along Fred Taylor Drive. The existing noise environment is dominated by road traffic noise from vehicles on Fred Taylor Drive and the surrounding road network.

[5] Based on AUP:OP zoning/policy direction

[6] Based on AUP:OP zoning/policy direction

9.2 Assessment of Construction Noise and Vibration Effects

9.2.1 Construction Noise Effects

At the time of writing of this assessment, there were no dwellings identified in proximity of the NoR designation boundary.

However, future dwellings within 90m of the works could experience unmitigated noise levels that exceed the daytime noise criterion during high noise generating activities such as the pavement works. The exclusion zone distance reduces to 28m with noise barriers implemented effectively around working sites.

The extent of effects from construction noise will be dependent on the distance that the dwellings are located from the works. Table 7-1 provides a summary of potential construction noise effects.

Operation of construction equipment will be intermittent in nature. Construction will be linear so as the equipment moves away from the receiver noise levels will reduce. Also, equipment with lower source noise levels than the worst-case will be used for large portions of the works. It is therefore predicted that mitigated noise levels can comply with the 70 dB LA_{eq} daytime noise criterion for most of the construction works at any future receivers.

If a critical activity has to be carried out during the night-time in close proximity to residential receivers, consultation and mitigation measures will be essential. The use of noisy equipment should be avoided, where practicable, to prevent sleep disturbance. Any night-time works are likely to be limited in duration and will be managed through the CNVMP (as per Section 7.2.1) and a Schedule (as per Section 7.2.2).

Provided that the works are mitigated and managed through the CNVMP and Schedules at the time of construction, we consider that noise effects from construction works as currently planned will be reasonable.

9.2.2 Construction Vibration Effects

If the roller compactor is used at the edge of the construction boundary, future dwellings within 8m of the works and commercial buildings within 4m of the works may experience vibration levels above the daytime Category B criterion, if the roller compactor is used on the construction boundary in the closest position to them.

At buildings in close proximity to the proposed works, there is the potential for cosmetic damage to buildings (such as cracking) and annoyance from perception of vibration. Buildings where the daytime Category B criteria may be exceeded must be identified at the time of construction, and pre-condition surveys must be carried out at these buildings.

The Category A vibration amenity criteria could be exceeded in existing or future buildings if they are occupied during the works and within 21m of the roller compactor or within the emission radii identified for the other vibration generating equipment in Table 6-3. The effect on receivers would be subject to their respective proximity to the works but could include steady vibration from the roller compactor or a small jolt from a digger which could rattle crockery and glassware.

Vibration can typically be tolerated inside buildings if it occurs intermittently during the day, is of limited duration and where there is effective prior engagement.

High vibration generating activities should not occur during the night-time in close proximity to residential receivers to avoid sleep disturbance, unless it is a critical activity and there is no alternative.

It should also be noted that the emission radii are conservative and vibration levels measured on site tend to be much lower than those predicted at the NoR stage of a project.

Provided that the works are mitigated and managed through the CNVMP and Schedules at the time of construction, we consider that vibration effects from construction works as currently planned will be reasonable.

9.3 Conclusions

The predicted construction noise and vibration levels are based on indicative information provided by the Project team, as set out in Section 6, and any conclusions in this assessment should be confirmed during the detailed design stage, taking account of the receivers as they exist at the time of construction.

Construction noise and vibration can be mitigated and managed, utilising the measures set out in Section 7.2, to generally comply with the applicable limits as defined in the AUP. Exceedances of the criteria could occur intermittently over a short duration if high noise or vibration generating equipment are used near occupied buildings. Where an exceedance is predicted at any receiver that exists at the time of construction, the effects will be mitigated and managed through the CNVMP and Schedules.

A CNVMP is the most effective way to avoid, remedy or mitigate construction noise and vibration effects on receivers.

10 NoR 2B: Redhills East-West Arterial Corridor – Baker Lane

10.1 Existing and Likely Future Environment

10.1.1 Planning Context

Within the Project area there are a range of zones under the AUP:OIP which influence the existing and likely future land use patterns for assessment purposes.

Table 10-1 below provides a summary of the existing and likely future environment as it relates to the Baker Lane Corridor within the RATN.

Table 10-1: Baker Lane Corridor Existing and Likely Future Environment

Land use today	Zoning	Likelihood of Change for the environment[7]	Likely Future Environment[8]
Rural	Residential – Mixed Housing Urban	High	Urban
	Residential – Terraced Housing and Apartment Zone		
Business	Business - Mixed Use Zone	Low	Business
	Business – Light Industry		
Residential	Residential – Mixed Housing Urban	Low	Urban
	Residential – Terraced Housing and Apartment Zone		
Special Purpose	Special Purpose - School Zone	Low	Special Purpose

Please refer to the AEE for further information on the planning context.

10.1.2 Noise Environment

The works will take place in residential and business zones, with some dwellings located close to the road corridor along Fred Taylor Drive. The existing noise environment is dominated by road traffic noise from vehicles on Fred Taylor Drive and the surrounding road network.

[7] Based on AUP:OP zoning/policy direction

[8] Based on AUP:OP zoning/policy direction

10.2 Assessment of Construction Noise and Vibration Effects

10.2.1 Construction Noise Effects

Receivers are located at varying distances from the construction boundary along the alignment with the closest existing receiver being 30m from the alignment.

Receivers within 90m of the works could experience unmitigated noise levels that exceed the daytime noise criterion during high noise generating activities such as the pavement works. Based on the footprint of the designation boundary, this would correspond to 9 existing dwellings that could experience noise levels above the 70 dB LA_{eq} daytime noise criterion when works are at their closest location to each receiver.

The exclusion zone distance reduces to 28m with noise barriers implemented effectively around working sites, and there are no existing dwellings within this exclusion zone distance from the designation boundary.

We note that the existing receivers may not be present at the time of construction.

Operation of construction equipment will be intermittent in nature. Construction will be linear so as the equipment moves away from the receiver noise levels will reduce. The worst-case situations are not expected to be frequent, due to the setback distances to the majority of the proposed works and the use of equipment with lower source noise levels for large portions of the works. It is therefore predicted that mitigated noise levels can comply with the 70 dB LA_{eq} noise criterion for most of the construction works.

If a critical activity has to be carried out during the night-time in close proximity to residential receivers, consultation and mitigation measures will be essential. The use of noisy equipment should be avoided, where practicable, to prevent sleep disturbance. Any night-time works are likely to be limited in duration and will be managed through the CNVMP (as per Section 7.2.1) and a Schedule (as per Section 7.2.2).

Provided that the works are mitigated and managed through the CNVMP and Schedules at the time of construction, we consider that noise effects from construction works as currently planned will be reasonable.

10.2.2 Construction Vibration Effects

If the roller compactor is used at the edge of the construction boundary, dwellings within 8m of the works and commercial buildings within 4m of the works may experience vibration levels above the daytime Category B criterion, if the roller compactor is used on the construction boundary in the closest position to them. Based on the designation boundary footprint, there are no existing dwellings where the Category B criterion is predicted to be exceeded.

The Category B criteria would be met at any further buildings constructed that are 8m or more from the proposed works and commercial structures that are 4m or more from the proposed works.

At buildings in close proximity to the proposed works, there is the potential for cosmetic damage to buildings (such as cracking) and annoyance from perception of vibration. Buildings where the daytime Category B criteria may be exceeded must be identified at the time of construction, and pre-condition surveys must be carried out at these buildings.

The Category A vibration amenity criteria could be exceeded in existing or future buildings if they are occupied during the works and within 21m of the roller compactor or within the emission radii identified for the other vibration generating equipment in Table 6-3. The effect on receivers would be subject to their respective proximity to the works but could include steady vibration from the roller compactor or a small jolt from a digger which could rattle crockery and glassware.

Vibration can typically be tolerated inside buildings if it occurs intermittently during the day, is of limited duration and where there is effective prior engagement.

High vibration generating activities should not occur during the night-time in close proximity to residential receivers to avoid sleep disturbance, unless it is a critical activity and there is no alternative.

It should also be noted that the emission radii are conservative and vibration levels measured on site tend to be much lower than those predicted at the NoR stage of a project.

Provided that the works are mitigated and managed through the CNVMP and Schedules at the time of construction, we consider that vibration effects from construction works as currently planned will be reasonable.

10.3 Conclusions

The predicted construction noise and vibration levels are based on indicative information provided by the Project team, as set out in Section 6, and any conclusions in this assessment should be confirmed during the detailed design stage, taking account of the receivers as they exist at the time of construction.

Construction noise and vibration can be mitigated and managed, utilising the measures set out in Section 7.2, to generally comply with the applicable limits as defined in the AUP. Exceedances of the criteria could occur intermittently over a short duration if high noise or vibration generating equipment are used near occupied buildings. Where an exceedance is predicted at any receiver that exists at the time of construction, the effects will be mitigated and managed through the CNVMP and Schedules.

A CNVMP is the most effective way to avoid, remedy or mitigate construction noise and vibration effects on receivers.

11 NoR 2C: Redhills East-West Arterial Corridor – Nixon Road Connection

11.1 Existing and Likely Future Environment

11.1.1 Planning Context

Within the Project area there are a range of zones under the AUP:OIP which influence the existing and likely future land use patterns for assessment purposes.

Table 11-1 below provides a summary of the existing and likely future environment as it relates to the Nixon Road Connection within the RATN.

Table 11-1: Nixon Road Connection Existing and Likely Future Environment

Land use today	Zoning	Likelihood of Change for the environment[9]	Likely Future Environment[10]
Rural	Residential – Single House	High	Urban
	Residential – Mixed Housing Suburban		
	Residential – Mixed Housing Urban		
	Residential – Terraced Housing and Apartment Zone		

Please refer to the AEE for further information on the planning context.

11.1.2 Noise Environment

The existing noise environment is dominated by road traffic noise from the surrounding road network. Although the existing land use is rural, the works could take place in a more urbanised environment, and some future dwellings could be located close to the works.

11.2 Assessment of Construction Noise and Vibration Effects

11.2.1 Construction Noise Effects

Receivers are located at varying distances from the construction boundary along the alignment with the closest existing receiver being 2m from the alignment.

Receivers within 90m of the works could experience unmitigated noise levels that exceed the daytime noise criterion during high noise generating activities such as the pavement works. Based on the footprint of the designation boundary, this would correspond to 8 existing dwellings that could experience noise levels above the 70 dB LA_{eq} daytime noise criterion.

[9] Based on AUP:OP zoning/policy direction

[10] Based on AUP:OP zoning/policy direction

The exclusion zone distance reduces to 28m with noise barriers implemented effectively around working sites. This would correspond to 7 existing dwellings that could experience noise levels above the 70 dB LA_{eq} daytime noise criterion.

We note that the existing receivers may not be present at the time of construction.

With mitigation in place, as set out in section 7.2, noise levels of up to 90 dB LA_{eq} could still occur intermittently at the closest receivers, if high noise generating activities occur on the construction boundary. At this level effects could include loss of concentration, annoyance, and a reduction in speech intelligibility.

Operation of construction equipment will be intermittent in nature. Construction will be linear so as the equipment moves away from the receiver noise levels will reduce. The worst-case situations, where mitigated noise levels could reach 90 dB LA_{eq} at the closest receivers, are not expected to be frequent, due to the setback distances to the majority of the proposed works and the use of equipment with lower source noise levels for large portions of the works. It is therefore predicted that mitigated noise levels can comply with the 70 dB LA_{eq} noise criterion for most of the construction works.

If a critical activity has to be carried out during the night-time in close proximity to residential receivers, consultation and mitigation measures will be essential. The use of noisy equipment should be avoided, where practicable, to prevent sleep disturbance. Any night-time works are likely to be limited in duration and will be managed through the CNVMP (as per Section 7.2.1) and a Schedule (as per Section 7.2.2).

Provided that the works are mitigated and managed through the CNVMP and Schedules at the time of construction, we consider that noise effects from construction works as currently planned will be reasonable.

11.2.2 Construction Vibration Effects

If the roller compactor is used at the edge of the construction boundary, dwellings within 8m of the works and commercial buildings within 4m of the works may experience vibration levels above the daytime Category B criterion, if the roller compactor is used on the construction boundary in the closest position to them. Based on the designation boundary footprint, two existing dwellings (59 Nelson Road and 315 Red Hills Road) may experience vibration levels up to 5 mm/s.

Once the compactor is 8m away from the dwellings and 4m from commercial buildings the Category B criterion will be met. The Category B criteria would be met at future residential structures that are 8m or more from the proposed works and commercial structures that are 4m or more from the proposed works.

At buildings in close proximity to the proposed works, there is the potential for cosmetic damage to buildings (such as cracking) and annoyance from perception of vibration. Buildings where the daytime Category B criteria may be exceeded must be identified at the time of construction, and pre-condition surveys must be carried out at these buildings.

The Category A vibration amenity criteria could be exceeded in existing or future buildings if they are occupied during the works and within 21m of the roller compactor or within the emission radii identified for the other vibration generating equipment in Table 6-3. The effect on receivers would be

subject to their respective proximity to the works but could include steady vibration from the roller compactor or a small jolt from a digger which could rattle crockery and glassware.

Vibration can typically be tolerated inside buildings if it occurs intermittently during the day, is of limited duration and where there is effective prior engagement.

High vibration generating activities should not occur during the night-time in close proximity to residential receivers to avoid sleep disturbance, unless it is a critical activity and there is no alternative.

It should also be noted that the emission radii are conservative and vibration levels measured on site tend to be much lower than those predicted at the NoR stage of a project.

Provided that the works are mitigated and managed through the CNVMP and Schedules at the time of construction, we consider that vibration effects from construction works as currently planned will be reasonable.

11.3 Conclusions

The predicted construction noise and vibration levels are based on indicative information provided by the Project team, as set out in Section 6, and any conclusions in this assessment should be confirmed during the detailed design stage, taking account of the receivers as they exist at the time of construction.

Construction noise and vibration can be mitigated and managed, utilising the measures set out in Section 7.2, to generally comply with the applicable limits as defined in the AUP. Exceedances of the criteria could occur intermittently over a short duration if high noise or vibration generating equipment are used near occupied buildings. Where an exceedance is predicted at any receiver that exists at the time of construction, the effects will be mitigated and managed through the CNVMP and Schedules.

A CNVMP is the most effective way to avoid, remedy or mitigate construction noise and vibration effects on receivers.

12 Conclusion

An assessment of the construction noise and vibration effects has been undertaken for the Projects considering a reasonable worst case scenario. The predicted noise levels and effects are based on indicative information as provided by the Project team and any assessment conclusions should be confirmed at the time the CNVMP is prepared, taking account of the final equipment selections, methodology and receivers as they exist at the time of construction.

Construction noise and vibration can be mitigated and managed, utilising the measures set out in Section 7.2, to comply with the applicable limits for the majority of the works. Exceedances of the criteria could occur intermittently across all NoRs, if high noise or vibration generating equipment is used near occupied buildings.

Night works will be limited to critical activities that cannot be carried out at any other time.

A CNVMP will be prepared prior to construction commencing in accordance with Section 7.2.1 of this report. The CNVMP will provide a framework for the development and implementation of best practicable options to avoid, remedy or mitigate the adverse effects of construction noise and vibration on receivers that exist at the time of construction. The construction noise and vibration level predictions will be confirmed and updated at the time the CNVMP will be prepared. Communication and consultation will occur with the affected receivers and a site specific schedule will be prepared if required.

Elevated noise levels should be avoided and mitigated where possible to reduce the likelihood of adverse effects such as loss of concentration, annoyance and sleep disturbance (for night works).

Whilst vibration levels at the Category A criterion of 2mm/s PPV can generally be tolerated if activity occurs intermittently and with prior notice, communication and consultation will be the key management measure to avoid annoyance and concern. Where vibration levels are predicted to exceed the Category B criteria, and where the construction methodology cannot be changed to reduce vibration levels, building conditions surveys are recommended.

Overall, construction noise and vibration can be controlled for all NoRs (NoRs 1, 2A, 2B and 2C) to reasonable levels with the implementation of appropriate mitigation and management measures.

Appendix 1. Noise Monitoring Results

Noise Logger Report

440 Don Buck Road, Whenuapai

Item	Information
Logger Type	Svan
Serial number	20614
Address	440 Don Buck Road, Whenuapai
Location	440 Don Buck Road, Whenuapai
Facade / Free Field	Free field
Environment	road

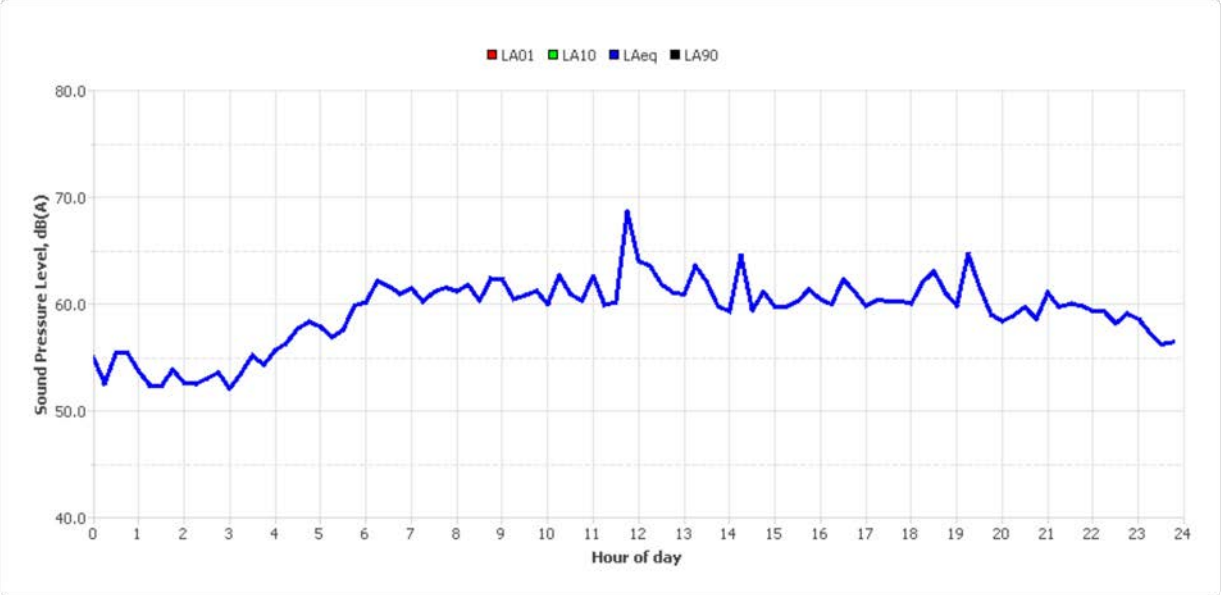
Measured noise levels

Logging Date	L_{Aeq} Day	Eve	Night	ABL Day	Eve	Night	$L_{Aeq,15hr}$	$L_{Aeq,9hr}$
Tue Nov 19 2019	-	60	56	-	-	-	60	56
Wed Nov 20 2019	62	61	57	-	-	-	62	57
Thu Nov 21 2019	63	61	57	-	-	-	63	57
Fri Nov 22 2019	63	63	57	-	-	-	63	57
Sat Nov 23 2019	62	59	54	-	-	-	61	54
Sun Nov 24 2019	59	58	53	-	-	-	59	53
Mon Nov 25 2019	64	63	58	-	-	-	64	58
Tue Nov 26 2019	62	60	57	-	-	-	62	57
Wed Nov 27 2019	61	62	58	-	-	-	61	58
Thu Nov 28 2019	64	-	57	-	-	-	64	57
Summary	**62**	**61**	**57**	**-**	**-**	**-**	**62**	**57**

Note: Results denoted with '-' do not contain enough valid data for a value to be calculated. The data has been excluded either manually or automatically as a result of adverse weather conditions.

Logger Location	Logger Deployment Photo
	

Typical Day



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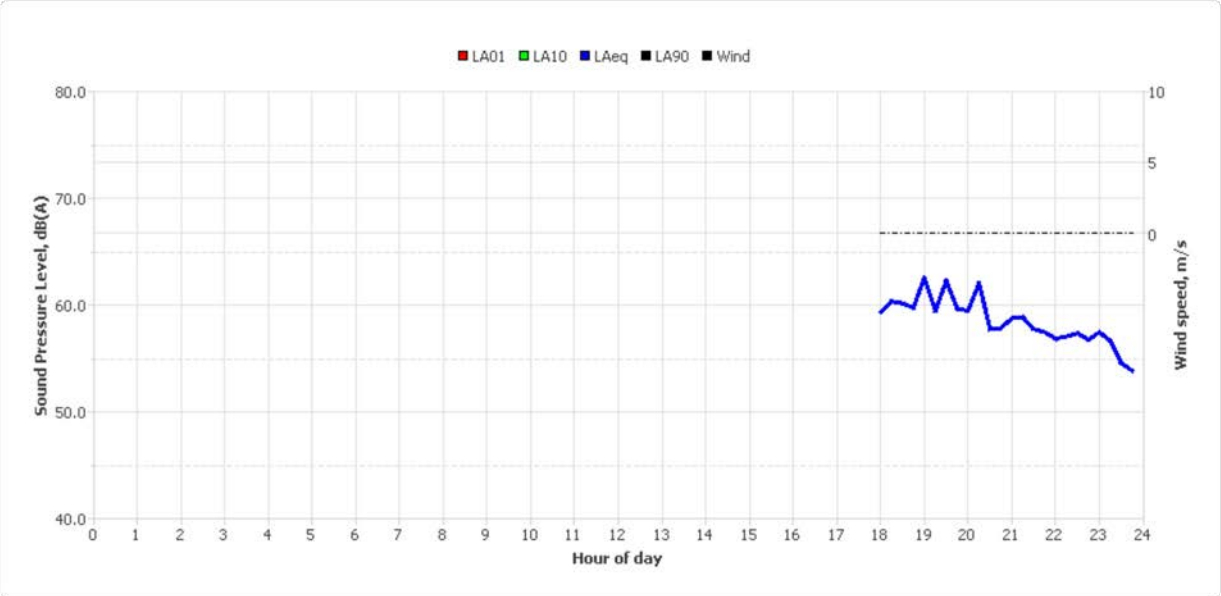
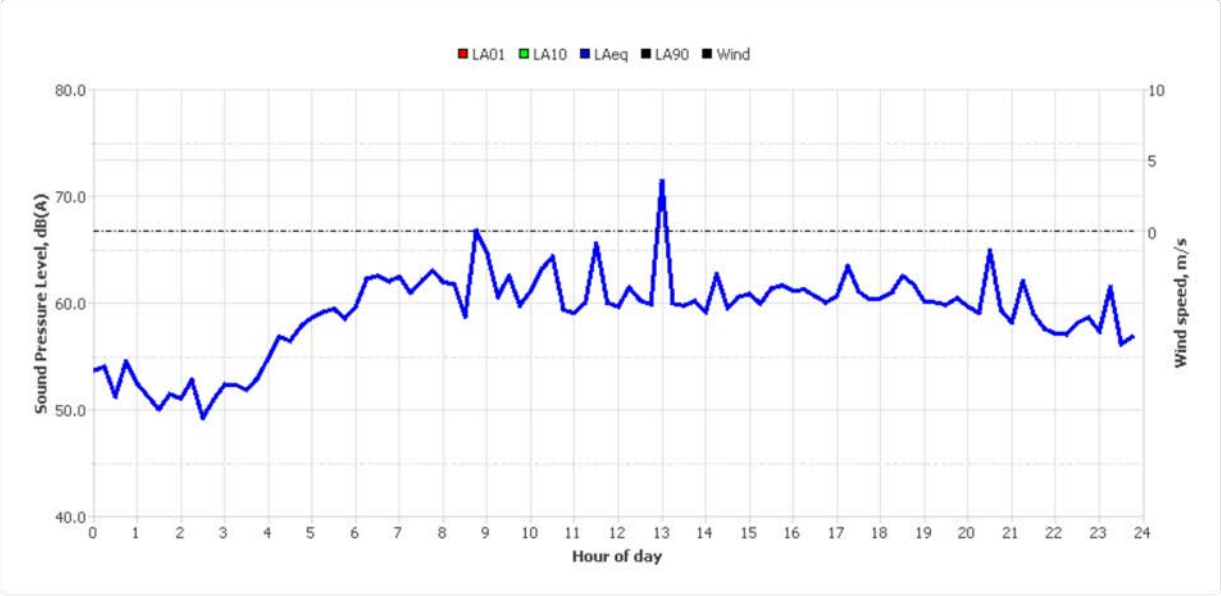
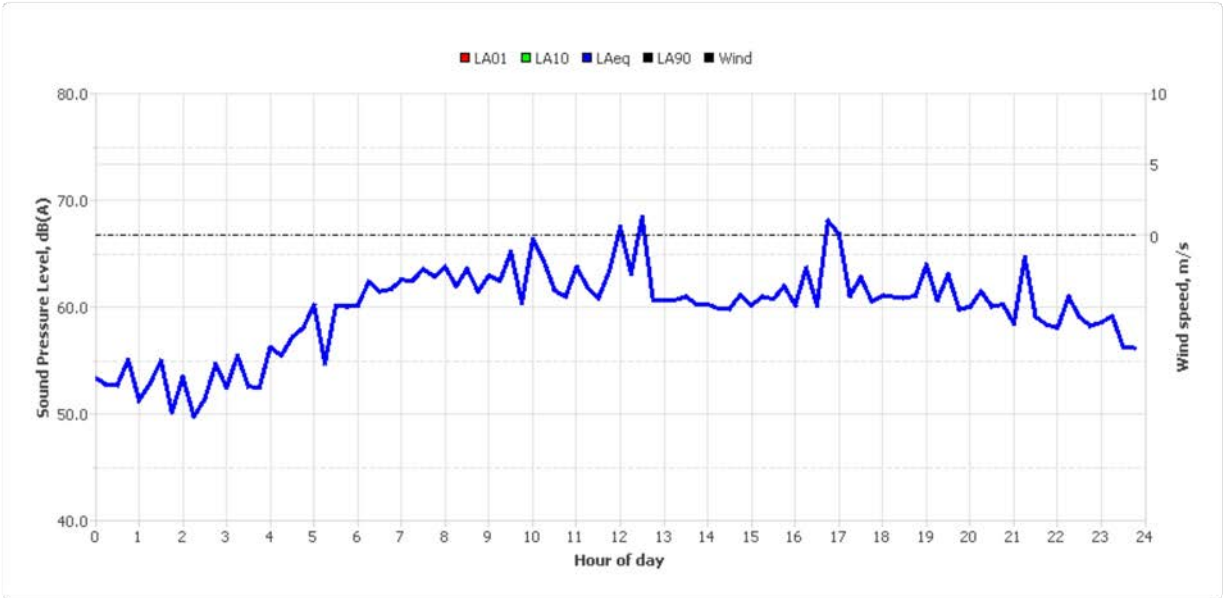


Wednesday, 20 Nov 2019



Thursday, 21 Nov 2019



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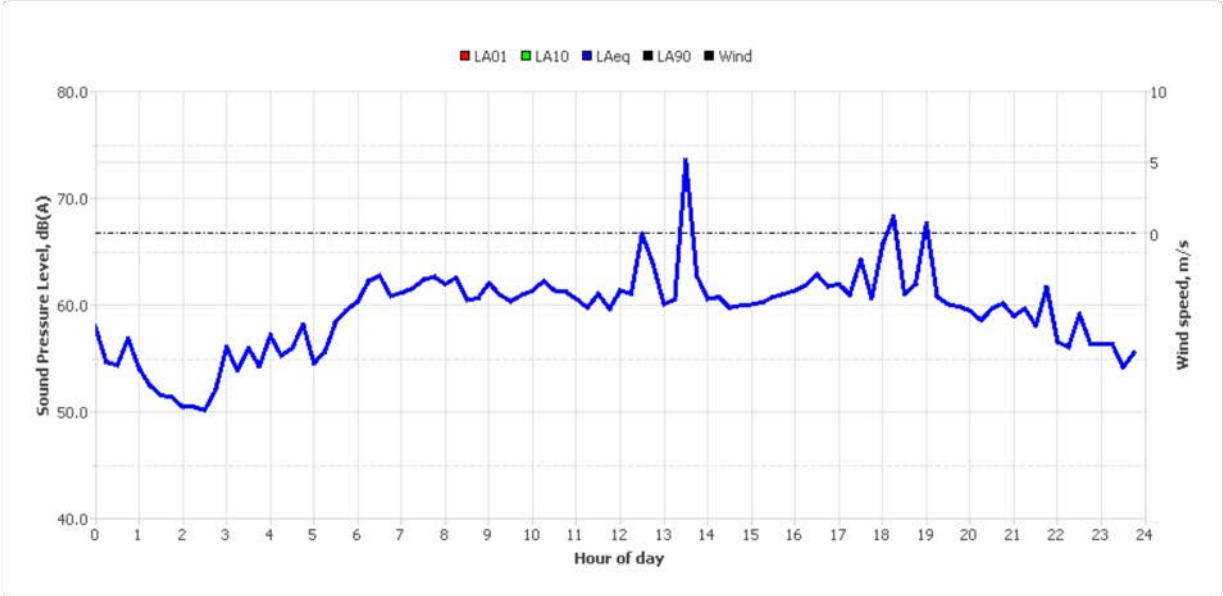

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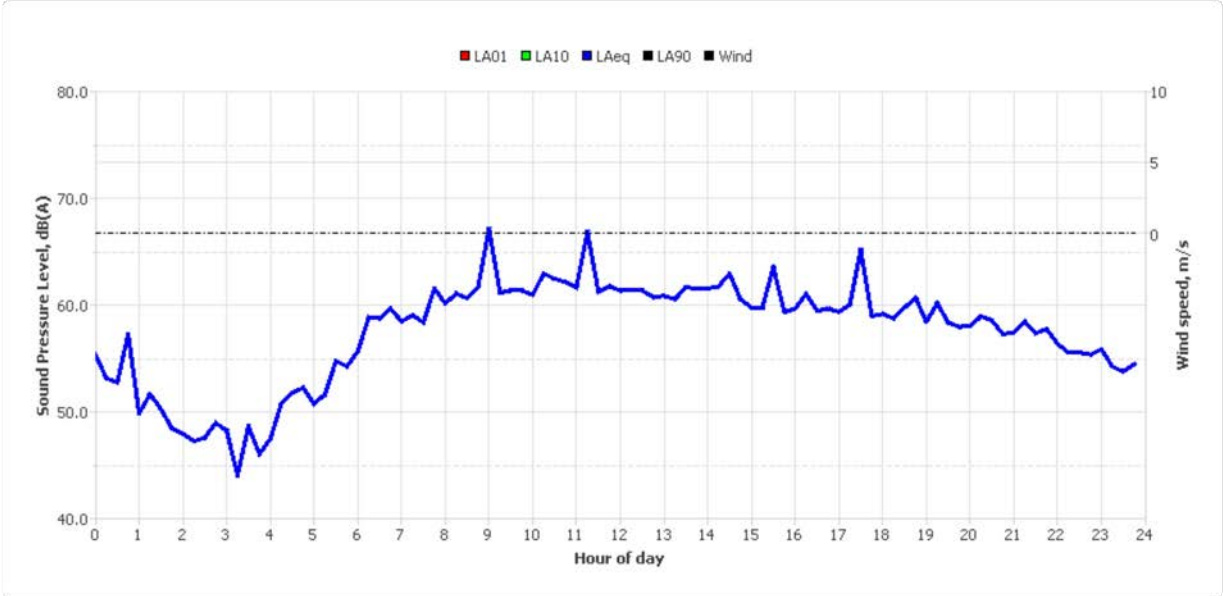

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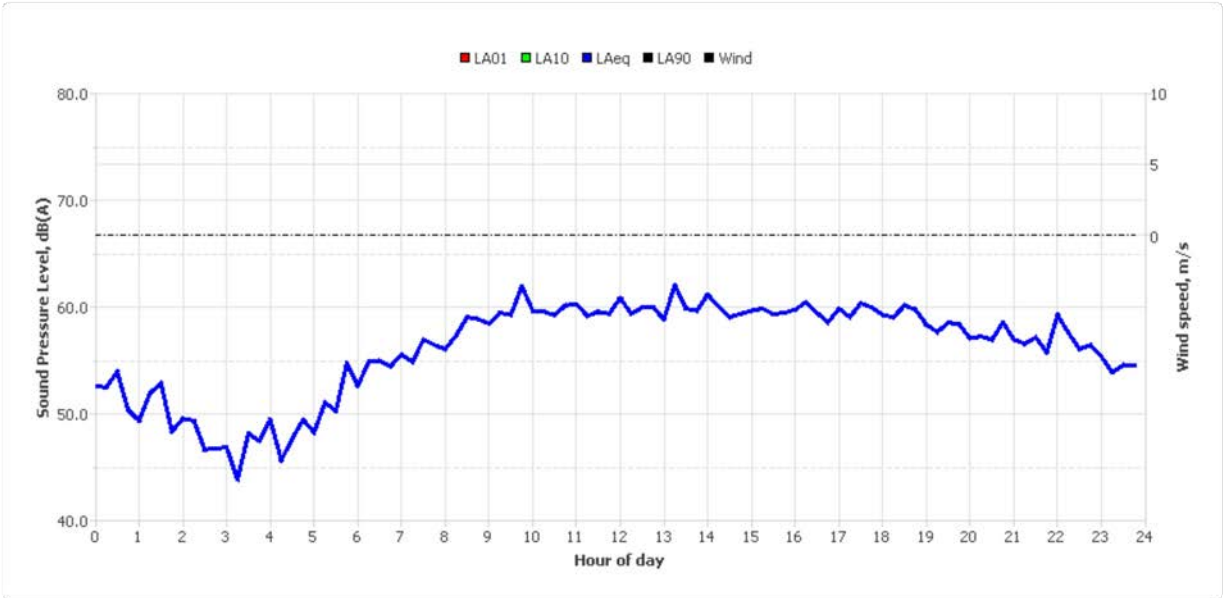

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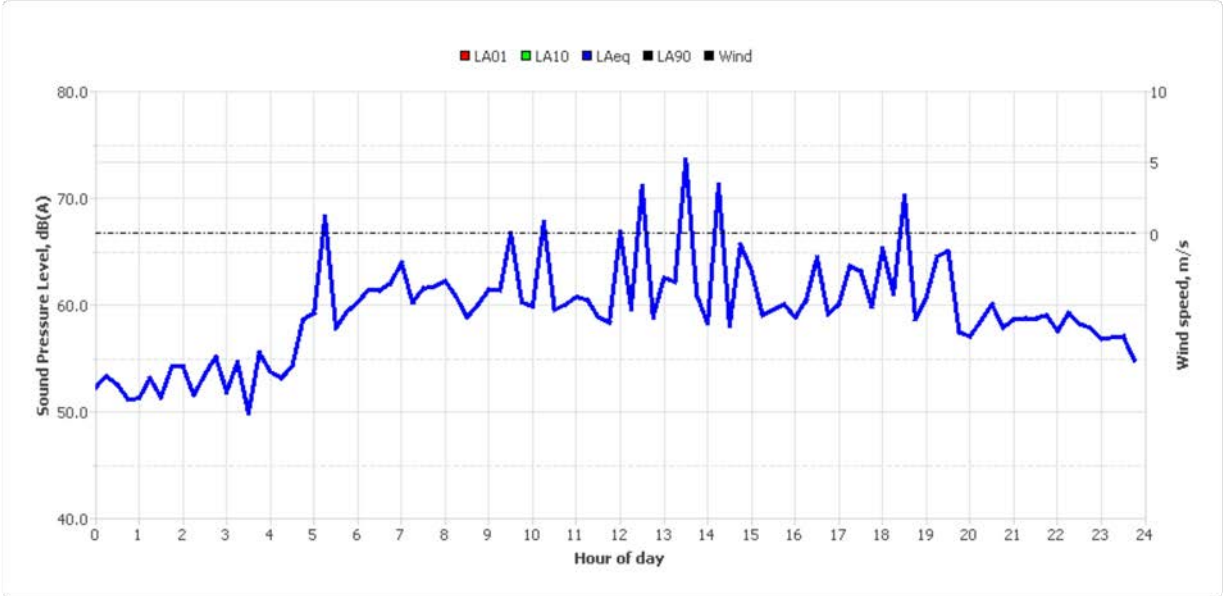

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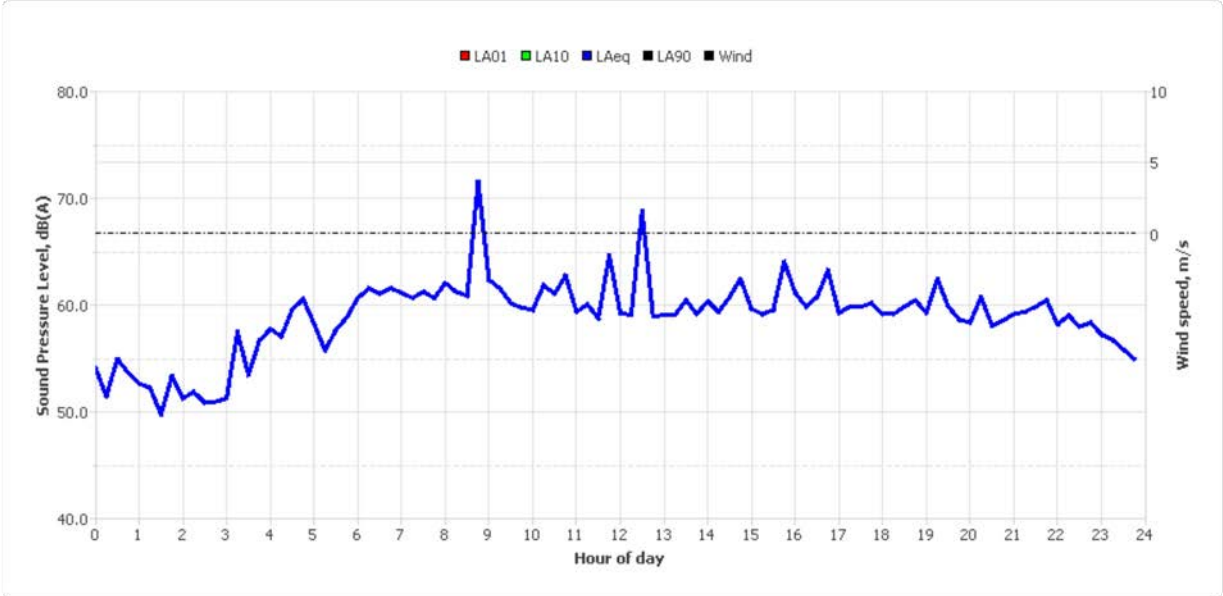

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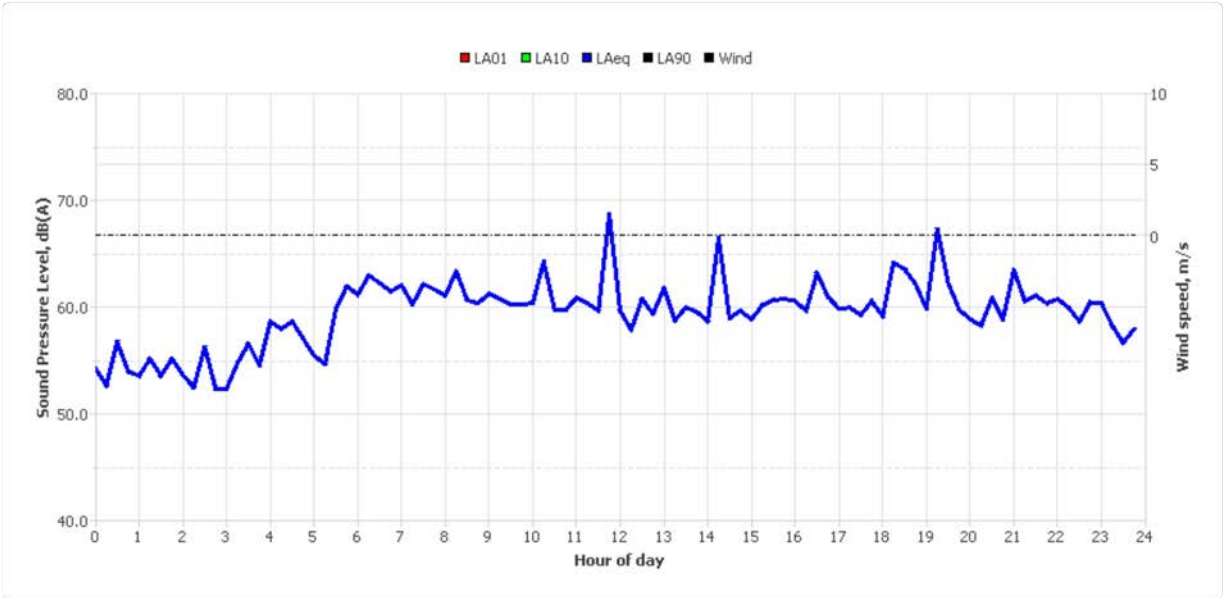

Thursday, 28 Nov 2019