Papakura to Bombay Stage 2

Assessment of Effects on the Environment

NZ Transport Agency Waka Kotahi

Reference: 506207-0590-REP-NN-0186

Revision: A

16/02/2024

aurecon

NZ TRANSPORT AGENCY WAKA KOTAHI

Document control record

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Document control						aurecon
Report title		Assessment of Effects on the Environment				
Document code		506207-0590-REP-NN-0186	**Project number**		506207	
File path		Https://aurecongroup.sharepoint.com/sites/P2B/3 Deliver/3.1 Deliverables (WiP)/506207-0590-REP-NN-0186.docx				
Client		NZ Transport Agency Waka Kotahi				
Client contact			**Client reference**			
Rev	**Date**	**Revision details/status**	**Author**	**Reviewer**	**Verifier** (if required)	**Approver**
A	2023-11-24	NoR	EJ, DG	DI	HM	SG
Current revision		**A**				

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Abbreviations

Abbreviation	Term
AEE	Assessment of Environmental Effects
AT	Auckland Transport
ATAP	Auckland Transport Alignment Project
AUPOP	Auckland Unitary Plan (Operative in Part 2016)
BMP	Bat Management Plan
BPO	Best Practicable Option as defined in the RMA
CEMP	Construction Environment Management Plan
CHI	Auckland Council Cultural Heritage Inventory
CIA	Cultural Impact Assessment
CMP	Cultural Monitoring Plan
CNVMP	Construction Noise and Vibration Management Plan
CTMP	Construction Traffic Management Plan
CIA	Cultural Impact Assessment
DCR	Design Construction Report
DBC	Detailed Business Case
EclA	Ecological Impact Assessment
EIMP	Electricity Infrastructure Management Plan
EMP	Ecological Management Plan
EPA	Environmental Protection Authority

ESCP	Erosion Sediment Control Plan
FDS	Future Development Strategy
FTA	Fast Track Consenting Act 2020
FULSS	Auckland Future Urban Land Supply Strategy
FUZ	Future Urban Zone
GPS	Government Policy Statement
GRPA	Government Roading Powers Act 1989
HHMP	Historic Heritage Management Plan
HNZPT	Heritage New Zealand Pouhere Taonga
LINZ	Land Information New Zealand
LMP	Lizard Management Plan
LTA	Land Transport Act 1998
LTMA	Land Transport Management Act 2003
LVA	Landscape, Visual and Natural Character Effects Assessment
MCA	Multi-criteria assessment
MDRS	Medium Density Residential Standards
NES Freshwater	National Environmental Standards for Freshwater 2020
NES Electricity	National Environmental Standard for Electricity Transmission Activities 2010
NIMT	North Island Main trunk
NoR	Notice of Requirement
NoR 1	Alteration to the SH1 Designation 6706
NoR 2	Alteration to the SH1 Designation 6700
NoR 3	Alteration to the SH1 Designation 6701
NoR 4	Shared User Path between Quarry Road and Bombay Interchange
NoR 5	Drury South Interchange Connections
NPS-FM	National Policy Statement for Freshwater Management 2020
NPS-UD	National Policy Statement for Urban Development 2020
NUMP	Network Utilities Management Plan
NUO	Network Utility Operator
NZAA	New Zealand Archaeological Association
NZCPS	New Zealand Coastal Policy Statement
NZTA	NZ Transport Agency Waka Kotahi
NZUP	New Zealand Upgrade Programme
OLFP	Overland flow path
PBC	Programme Business Case
P2B	SH1 Upgrades Project between Papakura to Bombay
P2DS	Papakura to Drury South Project
P2P	Papakura to Pukekohe

PC	Plan Change
PWA	Public Works Act
RMA	Resource Management Act 1991
RPS	Regional Policy Statement
SCI	Southern Corridor Improvements Project
SCMP	Stakeholder and Communications Management Plan
SEA	Significant Ecological Area
SEA-T	Significant Ecological Area – Terrestrial
SGA	Te Tupu Ngātahi Supporting Growth Alliance Te Tupu Nga Tahi Supporting Growth Alliance
SH1	State Highway 1 Motorway, the Southern Motorway
SMAF-1	Stormwater Management Area Flow Area 1
Southern IIG	NZTA Southern Iwi Integration Group
SRS	Site Recording Scheme
Supporting Growth IBC	Supporting Growth: South Indicative Business Case for Route Protection
SUP	Shared Use Path
TFUG	Transport for Future Urban Growth
TMP	Tree Management Plan
ULDF	Urban and Landscape Design Framework
ULDMP	Urban and Landscape Design Management Plan

Glossary of Acronyms / Terms

Acronym/Term	Description
the Council	Means Auckland Council, the unitary authority that replaced eight councils in the Auckland Region as of 1 November 2010.
the Project	Stages 2 of the P2B project between Drury and Bombay
Project Area	Area of land that is within the proposed designation boundary.

1 Introduction

1.1 Introduction to the Project

NZ Transport Agency Waka Kotahi (referred herein as 'NZTA') is seeking Notices of Requirement (NoR) for Stage 2 of the Papakura to Bombay Project – Papakura ki Pukekura (P2B) project.

For clarity and by way of summary we note that:

- The Project Area, which was formally known as Stages 2 and 3 under the P2B project, is now to referred to as a single stage for route protection, this is referred herein as Stage 2 or 'the Project',
- The Project incorporates the remaining portion of the P2B project area approximately 200m north of Quarry Road to the location of the existing Bombay/Mill Road Interchange,
- The Project is for route protection of the land required to authorise the future construction, operation, maintenance of upgrades of the State Highway 1 (SH1) corridor, and;
- Resource consents for regional matters will be sought separately and at the time of implementation of the Project.

This Assessment of Effects on the Environment (AEE) has been prepared to support the Project. NZTA is the Requiring Authority of the existing designations and the applicant under the Resource Management Act 1991 (RMA).

The NoRs included in Stage 2 of the P2B are described in Table 1-1 below.

Table 1-1 Overview of NoRs

Notice	Project	Requiring Authority
NoR 1	Alteration to SH1 Designations 6706	NZTA
NoR 2	Alteration to SH1 Designations 6700	NZTA
NoR 3	Alteration to SH1 Designations 6701	NZTA
NoR 4	Construction, operation, and maintenance of a new Shared User Path (SUP) from 200m north of Quarry Road to the existing Bombay/Mill Road Interchange.	NZTA
NoR 5	Construction of a new state highway between Great South Road and Quarry Road, which will tie-into Drury South Interchange – Drury South Interchange Connections.	NZTA

1.2 NZ Transport Agency Waka Kotahi

The Land Transport Management Act 2003 (LTMA) provides the statutory framework for New Zealand's land transport system and is the statute under which NZTA operates (in conjunction with the Government Roading Powers Act 1989 (GRPA) and the Land Transport Act 1998 (LTA)).

NZTA's principal objective under section 94 of the LTMA is "to undertake its functions in a way that contributes to an effective, efficient, and safe land transport system in the public interest". NZTA's functions are set out in section 95(1) and the principles under which it must operate are affirmed in section 96 of the LTMA.

Section 95 (1)(h) of the LTMA includes the management of “the State highway system (including its planning, funding, design, supervision, construction, maintenance, and operation) in accordance with this Act and the Government Roading Powers Act 1989”

Section 95 (1)(i) of the LTMA sets out the function of overseeing “the planning, operation, implementation, and delivery of public transport (including issuing guidelines for regional public transport plans).”

Section 61 of the GRPA sets out the powers and duties of the NZTA in relation to state highways. NZTA has the sole powers of control for all purposes, including construction and maintenance, of all state highways under the GRPA. Further, section 88 states that the NZTA is able to declare a state highway, or part of a state highway, a limited access road.

NZTA was approved under section 167 of the RMA as a Requiring Authority by two gazette notices in 1994 and 2015.

Pursuant to the 1994 notice, NZTA may designate land, water, subsoil, or airspace for the "construction and operation (including the maintenance, improvement, enhancement, expansion, realignment and alteration) of any State highway or motorway pursuant to the GRPA". Under the 2015 notice, it may also designate land, water, subsoil, or airspace for "the purpose of constructing or operating (or proposing to construct or operate) and maintaining cycleways and shared paths in New Zealand pursuant to the GRPA and the LTMA.

1.3 Notification

NZTA is requesting that all the Project NoRs are publicly notified.

2 Background and context

2.1 Papakura to Bombay Project

The P2B project is a NZTA project to improve the safety and functionality of SH1 and provide for long term growth in the south of Auckland.

The P2B project aims to improve accessibility along the Southern Motorway portion of SH1 for all road users, including cyclists and pedestrians as part of a system solution to improve accessibility, provide high quality and sustainable mobility and facilitate mode shift. The P2B project builds on the Southern Corridor Improvements (SCI) project. The SCI project was located between Manukau and Papakura, to the immediate north of the P2B project and provided more capacity and better travel time reliability and travel choice on SH1.

The P2B project has been divided into stages, with the earlier stages referred to as the Papakura to Drury South (P2DS) project. The P2DS project was included in the South Auckland package of the New Zealand Upgrade Programme (though its delivery was subsequently reduced in scope to end at Drury). Specifically, Stage 1B1 of P2DS project, which involves approved upgrades to Drury Interchange, including its realignment and changes to the SH1 Designation 6706 boundary, which were granted resource consents and confirmed designations by the Environmental Protection Authority (EPA) under the COVID-19 Recovery (Fast-track Consenting) Act 2020 ("FTA"). It is important to note that Stage 2 of the P2B project is not a part of or funded by New Zealand Upgrade Programme.

Further detail of the P2B project staging is provided in the section below.

2.1.1 P2B project Staging

The stages of P2B project are illustrated in Figure 2-1 below, and can be summarised as follows:

- **Stage 1** is located from approximately 1.3km north of the Papakura Interchange (the end of the SCI project) up to and including upgrades to Drury Interchange, a length of approximately 6.1km. It is further divided into three stages:
  - **Stage 1A** is the works to be constructed within the existing designation from Papakura Interchange (the southern end of SCI) up to north of Otuuwairoa bridges. This work includes the southbound and northbound widening of the SH1 motorway to three lanes, a 4.0m wide shoulder in both directions and the replacement of the Park Estate Road overbridge. Stage 1A was consented under s176A of the RMA and construction works commenced in April 2021 and are ongoing.
  - **Stage 1B1** works includes the upgrade of both the Papakura and Drury Interchanges. This includes widening and realigning the motorway on the approaches to Drury Interchange, SH1 Bremner Road Overbridge replacement, Jesmond Bridge replacement and a new shared user path (SUP) on the western side of the alignment. Stage 1B1 was consented under the FTA in 2021. Early works at Drury Interchange are underway with the main works beginning in 2024.

    At Drury, the new Drury Interchange overbridges will be constructed prior to the KiwiRail electrification of the North Island Main trunk (NIMT) between Papakura and Pukekohe (commonly referred to as Papakura to Pukekohe (P2P) electrification project). To achieve this, construction work at Drury Interchange on the NIMT bridges started in February 2022. Planning approvals for KiwiRail's P2P electrification major works were approved in August 2021, and construction is currently underway.
  - **Stage 1B2** works are the replacement of the Otuuwairoa bridges, and widening of the motorway on its approaches, completion of the SUP adjacent to this segment of the motorway, a new SUP connection into Great South Road and installation of stormwater management devices. A third lane in each direction will be constructed as part of Stage 1B2, however this has already been consented as part of the Stage 1A.
- **Stage 2** includes the all the areas south of a point 200m to the north of Quarry Road. There is currently no funding allocated for the construction of Stage and involves route protection only for the land required to

authorise upgrades to the motorway corridor. See Figure 2-1 below for the indicative location of Stage 2 in the P2B project.

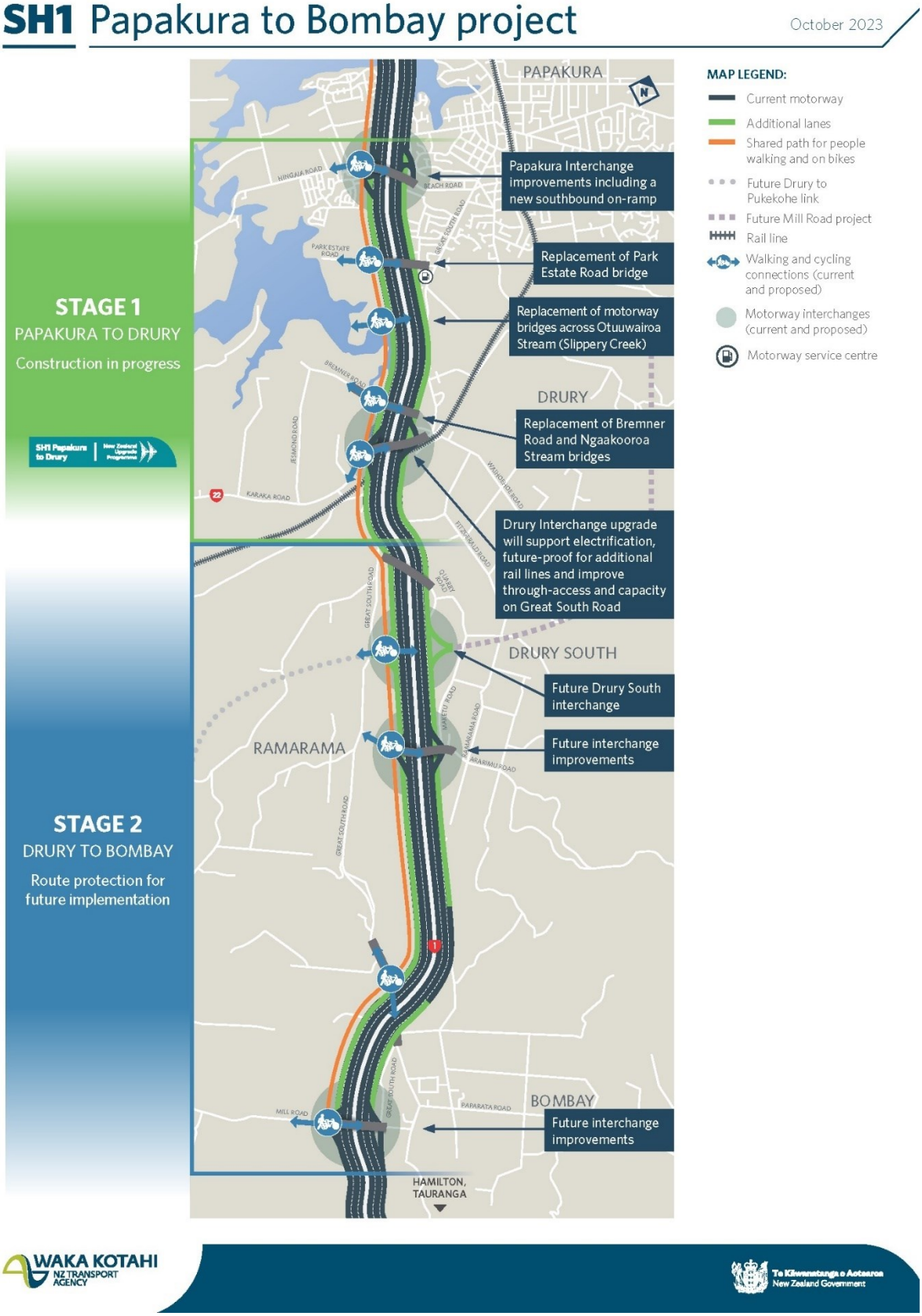


Figure 2-1 Indicative location plan showing Stage 2 of the P2B project

2.1.2 Drury Access Ramp Project

NZTA lodged NoR for an alteration to SH1 Designation 6706, and resource consents for regional matters on 16 August 2023. The NoR is to authorise works required to a construct a new southbound access ramp at Drury Interchange to provide a direct vehicle connection from SH1 to Drury Centre Precinct. The Drury Access Ramp project will be delivered in conjunction with the P2DS project, which includes planned upgrades to Drury Interchange (i.e. Stage 1B1 of the P2B project).

The Drury Access Ramp project is applicable to the Project because it proposes an alteration to the existing SH1 Designation 6706 and its conditions, which are the subject of the Project NoR 1. As of February 2024, the Council is yet to make a decision on the NoR, and the proposed alteration to SH1 Designation 6706 remains non-operative in the AUP.

2.2 Supporting Growth Alliance Te Tupu Ngātahi

Supporting Growth Alliance Te Tupu Ngātahi (SGA) is a collaboration between Auckland Transport (AT) and NZTA to plan transport investment in Auckland's future urban zoned areas over the next 10 to 30 years. AT and NZTA have partnered with Auckland Council, Mana Whenua and KiwiRail Holdings Limited (KiwiRail) and are working closely with stakeholders and the community to develop the strategic transport network to support Auckland's future growth areas.

The key objective of the SGA is to protect land for future implementation of necessary transport corridors and infrastructure. Designations will identify and safeguard the land required for constructing, operating, and maintaining these transport corridors and infrastructure. Designations provide certainty for the Requiring Authority and stakeholders, allowing for informed decision-making and reduced long-term costs. They also enable more effective land use and transport outcomes.

The Southern Indicative Strategic Transport Network is illustrated in Figure 2-2 below, which was identified in the Supporting Growth South Indicative Business Case for Route Protection (Supporting Growth IBC). It is important to note that the Drury South Interchange Connections (NoR 5) was identified in the Supporting Growth IBC alongside a suite of SGA projects, as it was an integral part of Southern Indicative Strategic Transport Network, and for providing transport links with SH1. The relationship between the Project and Supporting Growth IBC is discussed in further detail within the Alternatives Assessment Report at **Appendix K** of this Report.

The SGA southern package of projects includes key tie-ins with Stage 2 of the P2B project, which are detailed in the sections below.

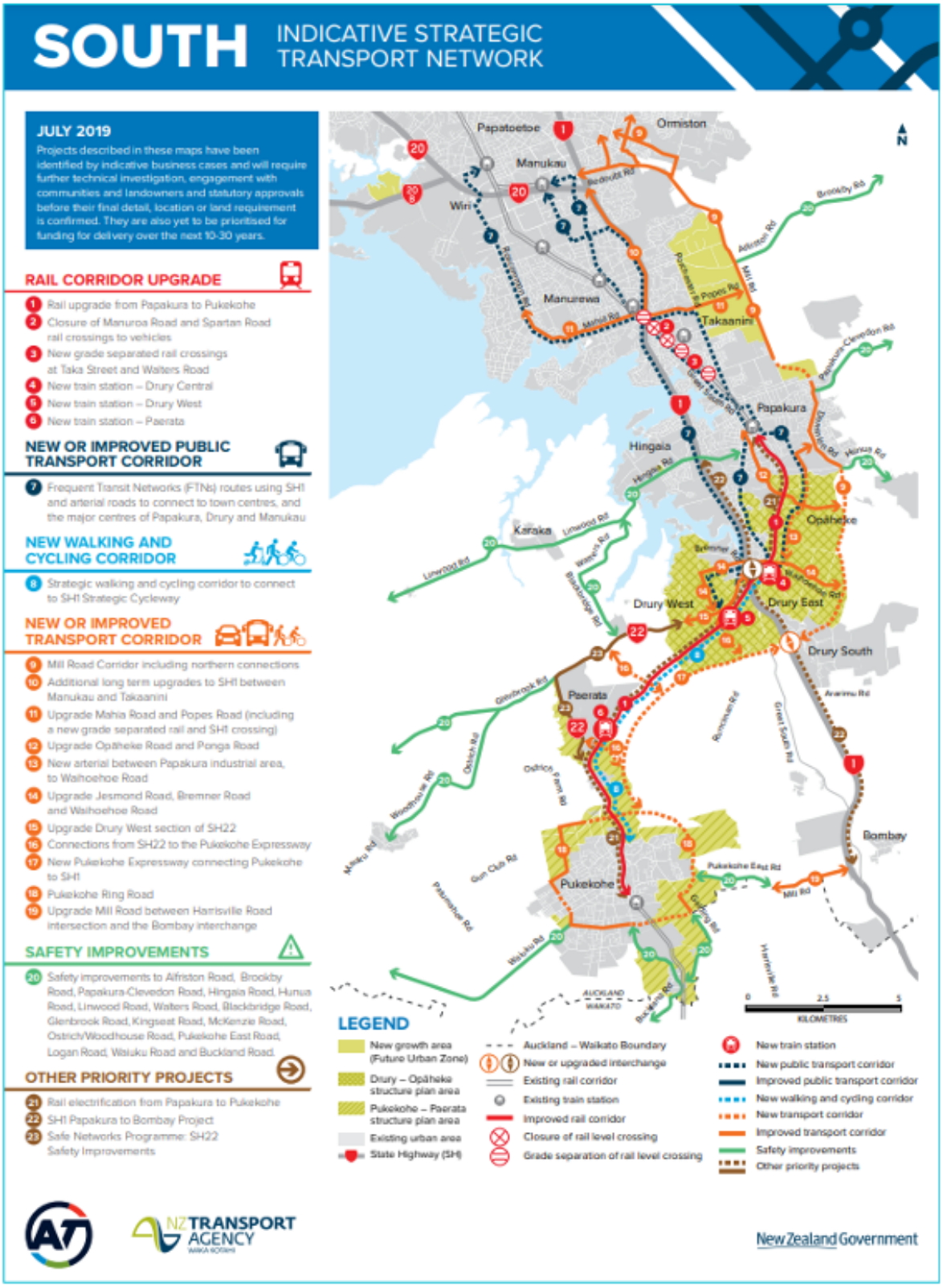


Figure 2-2 Indicative transport network as shown in the SGA IBC (2019)

2.2.1 Drury – Pukekohe Arterial Transport Network

The Drury - Pukekohe Arterial Transport Network is an SGA project part of the wider Pukekohe Transport Network. It involves the construction of a new state highway, including a SUP, connecting Great South Road in Drury to State Highway 22 in Pukekohe. The project is one of several transport initiatives in the Pukekohe,

Paerata, and Drury West areas. Auckland Transport and NZTA have both submitted NoRs[1] to Auckland Council for route protection. At the time of writing, submissions for the project are now closed[2].

The Project (Stage 2) will in part provide the strategic link between the Drury and Pukekohe through the application of NoR for the Drury South Interchange Connections (NoR 5), which will provide for an arterial connection between SH1 and Great South Road. The Project will interface the SGA NoR 8 at the intersection of Great South Road, which will connect to the planned Pukekohe Link Road.

Engagement with SGA on the Project is ongoing to achieve alignment in the project designs and is detailed further in Section 9 of this Report.

2.2.2 Mill Road and Pukekohe East Road Upgrade

The Pukekohe: Mill Road and Pukekohe East Road Upgrade is an SGA project, which involves upgrading Mill Road and Pukekohe East Road to accommodate additional vehicle lanes and SUP. The project is part of the Pukekohe Transport Network, which includes various transport improvements for the Pukekohe, Paerata, and Drury West areas. NoR[3] for the project was lodged with Auckland Council in October 2023. At the time of writing, submissions for the project closed in November 2023. Hearings for the project are expected to progress in 2024.

The Project (Stage 2) will interface with the Mill Road and Pukekohe East Road Upgrade. The two project will interface at Bombay Interchange via Mill Road. As noted above, engagement with SGA is ongoing, and detailed in Section 9 of this Report.

Additional information on all supporting growth projects see Supporting Growth Programme.

[1] Pukekohe: Drury – Pukekohe Link (NoR): **Pukekohe : Drury – Pukekohe Link (NoR 2) Waka Kotahi NZ Transport Agency (aucklandcouncil.govt.nz)**
[2] As of February 2024
[3] Pukekohe: Mill Road and Pukekohe East Road Upgrade (NoR): **Pukekohe : Mill Road and Pukekohe East Road Upgrade (NoR 8) Waka Kotahi NZ Transport Agency (aucklandcouncil.govt.nz)**

3 Project description

The proposed works for the Project are summarised in the following sections. Further detail is contained in Section 3 of the Design and Construction Report (DCR) at **Appendix C** and the General Arrangement Plans at **Appendix B** of this Report.

3.1 Purpose of the Project

The purpose of P2B project is to provide upgrades to SH1 between Papakura and Bombay, improving accessibility for all road users (including active modes), and support regional growth through the improvement of safety, functionality, and resilience of the existing transport corridor.

The Project is Stage 2 of P2B project. Its purpose is to continue the improvements of Stage 1 of the P2B project, including increases in capacity and upgraded facilities for pedestrians and cyclists. These in turn will reduce travel times along SH1, leading to quicker and more efficient journey times for both northbound and southbound users during peak hours. The upgraded facilities for active mode users will improve accessibility and safety, and promote mode shift and community health.

The need for the construction of Stage 2 is driven by urban growth and general development, especially in south Auckland and northern Waikato. The improvements associated with the Drury South Interchange, the interchange connections and SH1 north to Drury interchange are largely driven by urbanisation and urban growth in Drury, Pukekohe and south Auckland. Construction of the Project is anticipated to be integrated with the timing of that urbanisation and growth.

3.2 Project Objectives

Having regard to the above, NZTA has developed the following objectives for the wider P2B project:

- Improve the safety and resilience of the SH1 network between Papakura and Bombay,
- Increase transport choice and accessibility to support growth in the south of Auckland,
- Support national and regional economic growth and productivity, and;
- Support the inter and intra-regional movement of people and freight.

The P2B Project Objectives have been developed by taking into consideration the following strategic objectives:

- Government Policy Statement 2021 (GPS) on Land Transport. The 2021 GPS contains consistent strategic priorities to the P2B Projective Objectives,
- The Papakura to Bombay Detailed Business Case (DBC), which identified the following activity objectives:
  - Support the national and regional economy,
  - Improve access to employment and economic opportunities, and;
  - Support liveable communities.
- The NZTA P2B Project Outcomes[4].

In addition to the P2B Protect Objectives, the design outcomes of the P2B project have been developed alongside mana whenua, for further details see Section 9 of this Report.

[4] Waka Kotahi NZ Transport Agency Papakura to Bombay Request for Proposal 14 December 2018

3.3 Project Overview

The Project will include alterations to the existing SH1 corridor by widening from four to six lanes from approximately 200m north of Quarry Road to the location of Mill Road/Bombay Interchange. This will provide for an additional lane in both directions. Both capacity and safety improvements are proposed along the SH1 corridor, namely; upgraded interchanges, wider shoulders, new barriers, and additional lighting are proposed along the full extent of the Project.

The Project also involves the extension of a 3.0 m wide SUP from Stage 1B1 (200m north Quarry Road) to Mill Road/Bombay Interchange. This SUP is to be located on the western side of the motorway and will require a new designation between Drury and Bombay interchanges, in all locations, overlapping the existing SH1 Designations 6706, 6701 and 6700.

The Project includes several proposed structures along the SH1 corridor. The Project will include a new overhead dumbbell interchange design proposed at Drury South (NoR 2), linking the SH1 with Quarry Road to the east and the proposed Pukekohe arterial to the west at Great South Road. The interchange will feature direct on/off ramps. Grade separated SUPs (beneath the interchange roundabouts) have been provided (NoR 4). Link roads to the adjacent network (Quarry Road and Great South Road) are proposed either side of the Drury South Interchange (NoR 5). These connections are proposed to have four traffic lanes, and cycle lanes and footpaths on either side of the motorway corridor.

The proposed Ramarama Interchange will replace the existing bridge across the motorway, incorporating enhanced active mode facilities (NoR 2). Only the western extent of the interchange has been upgraded to incorporate a roundabout accessing the motorway ramps, while the eastern intersection with on and off ramps will be largely maintained and linked into the new over-bridge. To minimise disruption during construction, the new bridge is proposed to be constructed offline immediately to the north of the existing bridge. The proposed Mill Road/Bombay Interchange includes on and off ramps with four through lanes and shared use paths either side across the bridge, which will integrate with signalised intersections currently under development through an adjacent project (NoR 3). The widened bridge is proposed to be built to the north of the existing bridge to accommodate the additional capacity.

Detailed description of the objectives and purpose of each of the Project NoRs is provided in Table 3-1 below, and detailed description of the proposed works within each NoR is provided in Sections 3.3.1 – 3.3.5 below.

Table 3-1 Overview of the Project NoRs

Notice	Requiring Authority	Project	Designation Purpose	Project Objectives	Extent	Lapse Period	Overview of Properties
NoR 1	NZTA	Alteration to SH1 Designation 6706	Motorway between Takanini and Hamilton	• Improve the safety and resilience of the SH1 network between Papakura and Bombay. • Increase transport choice and accessibility to support growth in the south of Auckland. • Support national and regional economic growth and productivity; and, • Support the inter and intra-regional movement of people and freight.	SH1 CH 15160 to CH 15500 State Highway 1 from north of Takanini Interchange to south of Quarry Road, Drury	No Lapse Period	3 properties
NoR 2		Alteration to SH1 Designation 6700	Motorway		SH1 CH 15500 to CH 22740 State Highway 1 from south of Quarry Road, Drury to Bombay Road, Bombay		24 properties
NoR 3		Alteration to SH1 Designation 6701	Motorway		SH1 CH 22740 to CH 24600 State Highway 1 from Bombay Road to Mill Road, Bombay		7 properties
NoR 4		Shared User Path	For the construction, operation and maintenance of a shared path and associated infrastructure		SH1 CH 15160 to CH 24580 State Highway 1 from Quarry Road, Drury to Bombay Interchange/Mill Road.	20 years	34 properties
NoR 5		Drury South Interchange Connections	For the construction, operation, and maintenance of a State Highway		CH 300 to CH 1750 Adjacent State Highway 1 linking to Quarry Road to the east, and Great South Road to the west.	20 years	16 properties

3.3.1 NoR 1 – Alteration to SH1 Designation 6706

As illustrated in Figure 3-1 and outlined in Table 3-2 below, the proposed alteration to the existing SH1 Designation 6706 will provide widening of the existing SH1 corridor and authorise the future upgrades to the SH1 network.

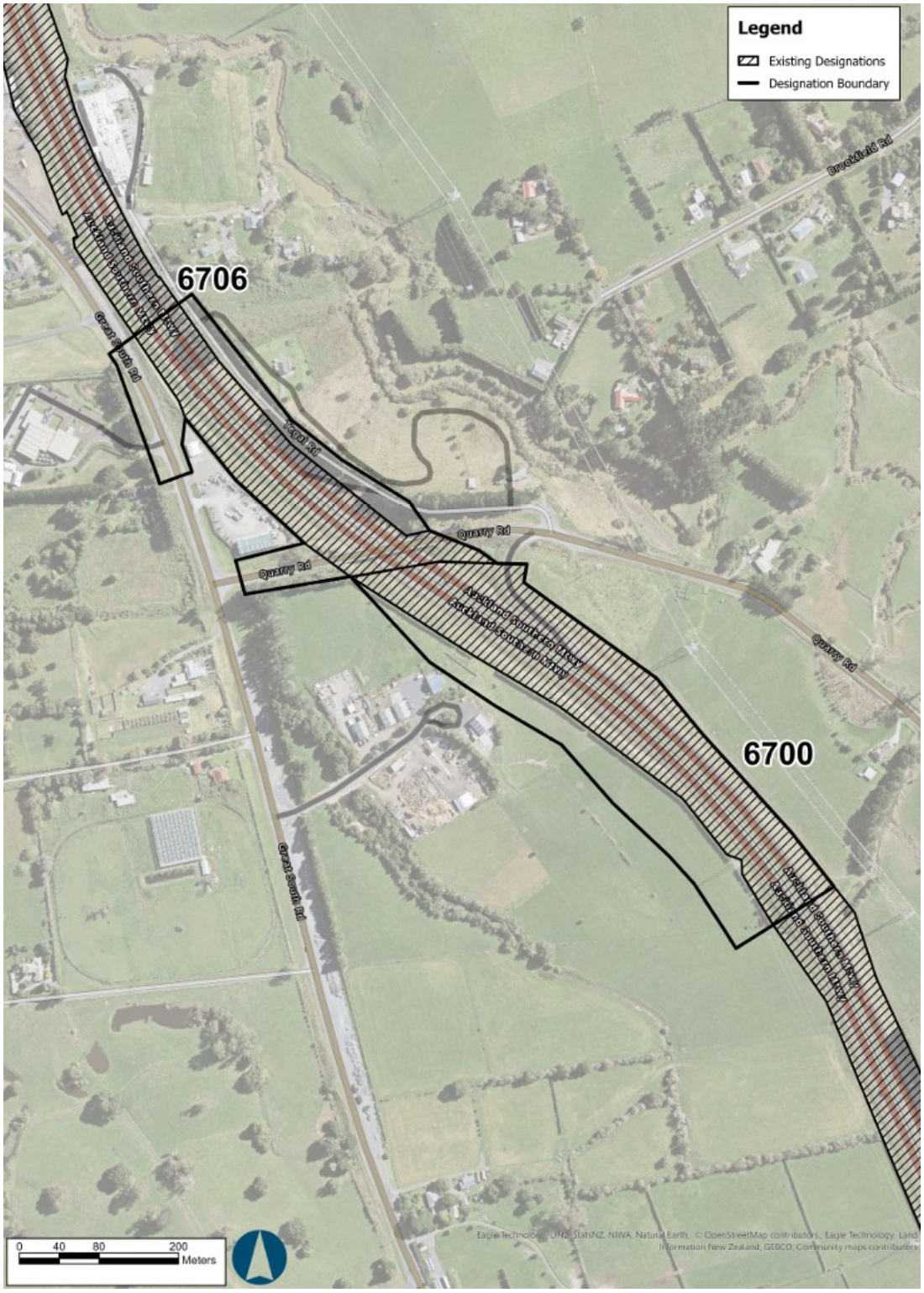
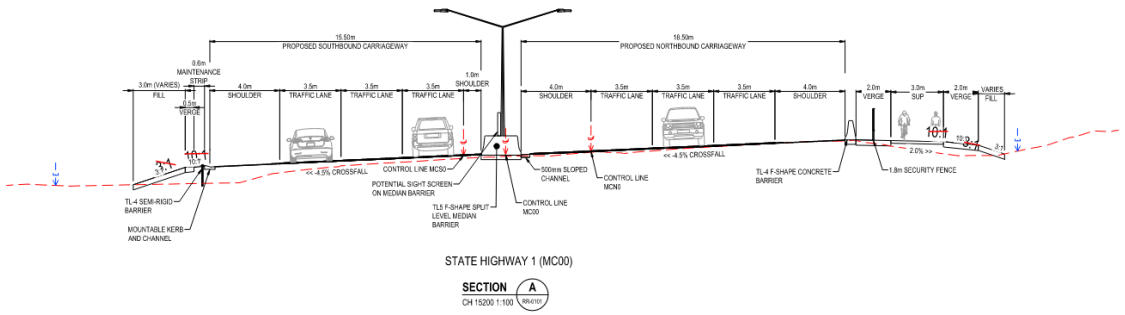


Figure 3-1 NoR 1 – Alteration to SH1 Designation 6706

Table 3-2 Overview of the alterations to SH1 Designation 6706

NoR 1 – Alteration to SH1 Designation 6706	
Key features	
Overview	▪ Increase from four to six general traffic lanes on SH1. ▪ Safety improvements include upgrading interchanges, wider shoulders, new barriers, and improved lighting along the full extent of the Project.
Structures	▪ N/A
Speed Environment	▪ Design to accommodate 110km/h design speed on SH1.
Access Lanes	▪ Designed to accommodate potential bus lane within the shoulder of the carriageway.
Intersections	▪ N/A
Stormwater Infrastructure	▪ Swales and wetland treatment train (100% treatment of impervious surfaces and full scale wetland).
Typical cross section	
	

3.3.2 NoR 2 – Alteration to SH1 Designation 6700

As illustrated Figure 3-2 and outlined in Table 3-3 below, the proposed alteration to the existing SH1 Designation 6700 to provides widening of the existing SH1 corridor and will authorise the future upgrades to the SH1 network.

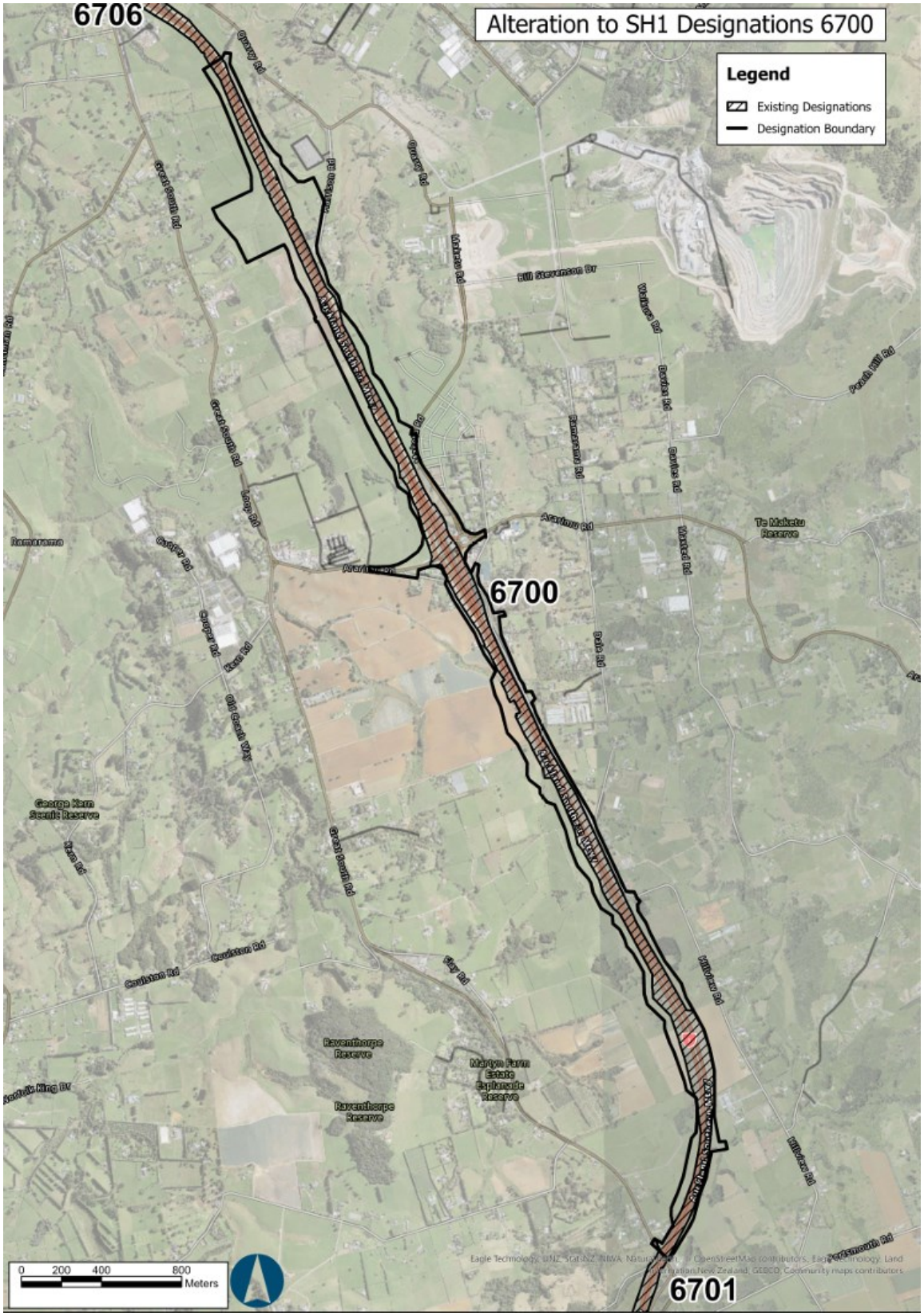
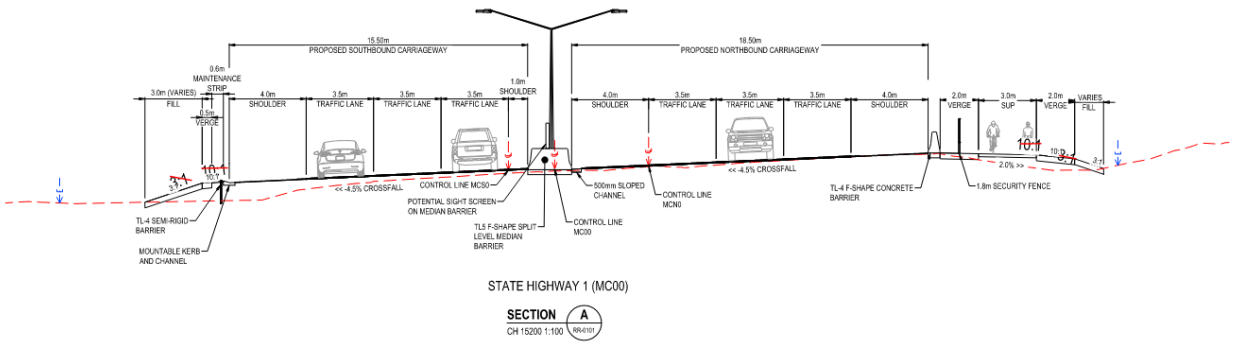


Figure 3-2 NoR 2 – Alteration to SH1 Designation 6700

Table 3-3 Overview of the alterations to SH1 Designation 6700

NoR 2 – Alteration to SH1 Designation 6700	
Key features	
Overview	▪ Increase from four to six general traffic lanes on SH1. ▪ Safety improvements include upgrading interchanges, wider shoulders, new barriers, and improved lighting along the full extent of the Project.
Structures	▪ New overbridge at Ramarama Interchange (Ararimu Road over-bridge). ▪ New over-bridge at the location of Drury South Interchange with four general traffic lanes. ▪ Associated on and off ramps at Drury South Interchange.
Speed Environment	▪ Design to accommodate 110km/h design speed on State Highway 1.
Access Lanes	▪ Designed to accommodate potential bus lane within the shoulder of the carriageway.
Intersections	▪ New Drury South Interchange – new over-pass with roundabouts. ▪ Upgraded Ramarama Interchange – new overbridge with new roundabout on western side and modified roundabout on eastern side with ramp signals.
Stormwater Infrastructure	▪ Swales and wetland treatment train (100% treatment of impervious surfaces and full scale wetland).
Typical cross section	
	

3.3.3 NoR 3 – Alteration to SH1 Designation 6701

As illustrated in Figure 3-3 and outlined in Table 3-4 below, the proposed alteration to the existing SH1 Designation 6701 are to provide widening of the existing SH1 corridor and accommodate the future upgrades to the SH1 network.

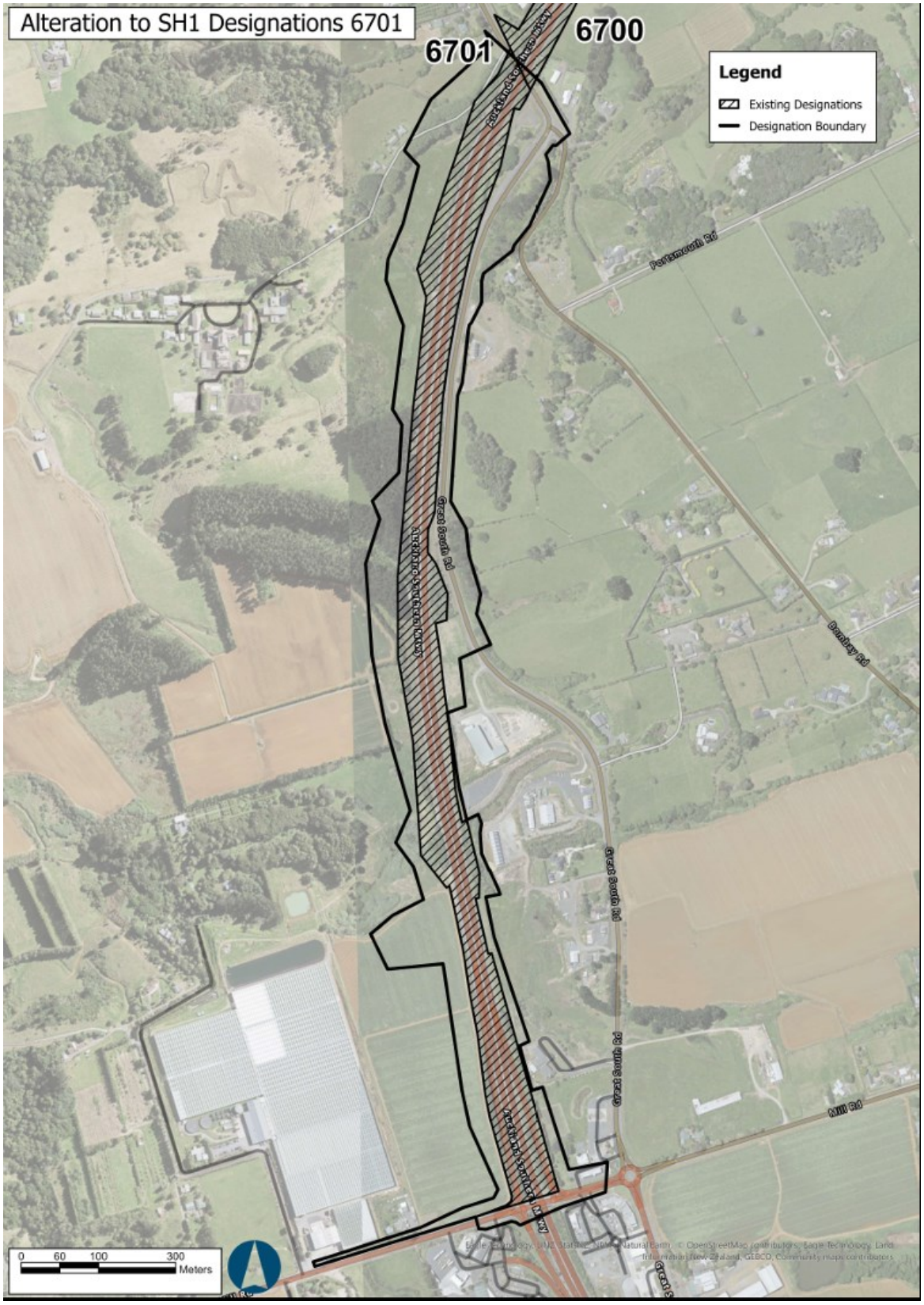
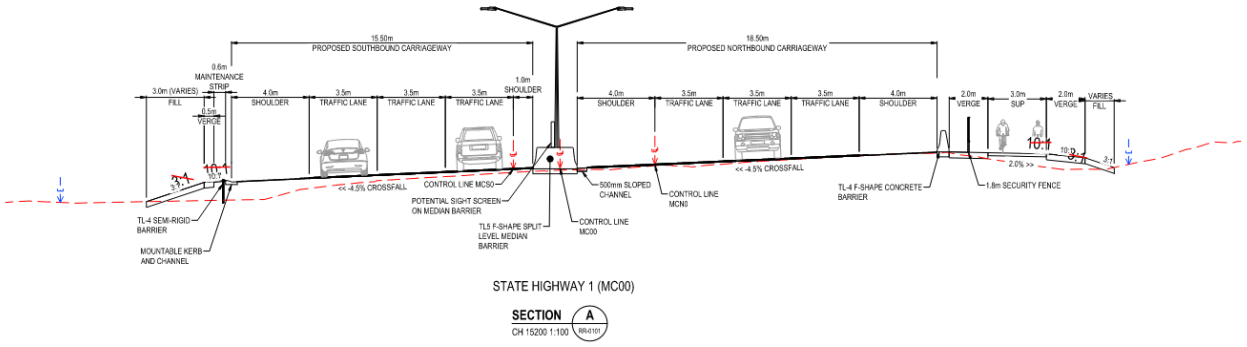


Figure 3-3 NoR 3 – Alteration to SH1 Designation 6701

Table 3-4 Overview of the alterations to SH1 Designation 6701

NoR 3 – Alteration to SH1 Designation 6701	
Key features	
Overview	▪ Safety improvements include upgrading interchanges, wider shoulders, new barriers, and improved lighting along the full extent of the Project. ▪ Increase from four to six general traffic lanes on SH1.
Structures	▪ Upgrades to the existing Mill Road/Bombay Interchange. ▪ State Highway 1 Great South Road Bridge.
Speed Environment	▪ Design to accommodate 110km/h design speed on State Highway 1.
Access Lanes	▪ Designed to accommodate potential bus lane within the shoulder within the carriageway.
Intersections	▪ Bombay Interchange. ▪ Mill Road Bridge – altering both abutments to allow realignment of the state highway beneath Bombay Interchange.
Stormwater Infrastructure	▪ Swales and wetland treatment train (100% treatment of impervious surfaces and full-scale wetland).
Typical cross section	
	

3.3.4 NoR 4 – Construction, Operation and Maintenance of a SUP

As illustrated in Figure 3-4 and outlined in Table 3-5 below, NoR 4 will authorise the construction, operation, and maintenances of a new SUP, along the western side of SH1.

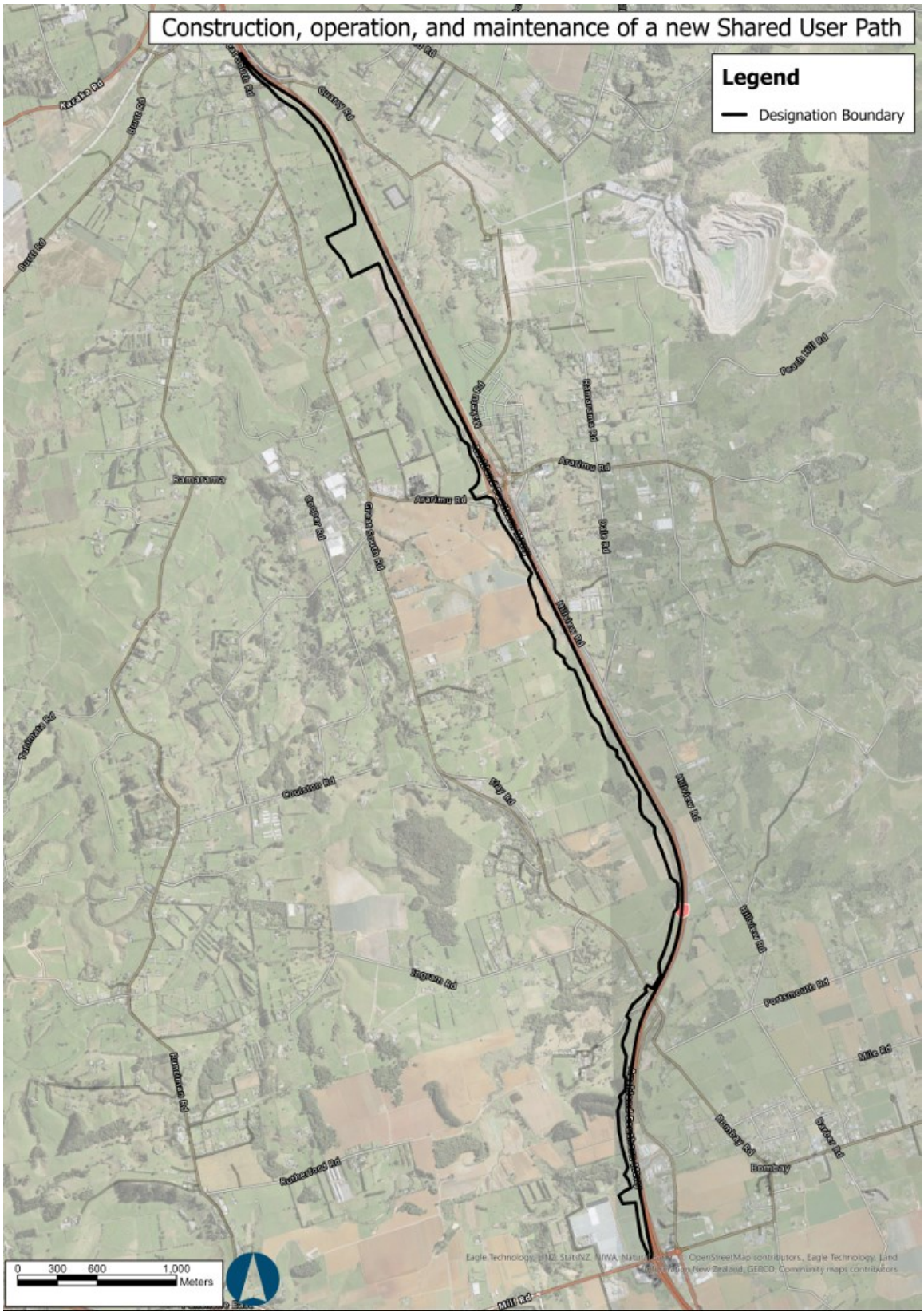
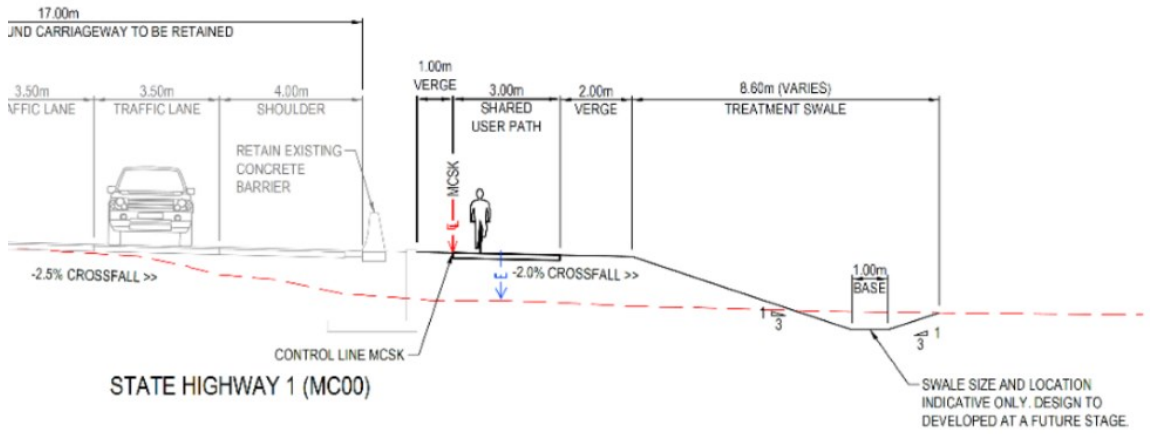


Figure 3-4 NoR 4 – Shared User Path

Table 3-5 Overview of the new SUP

NoR 4 – Construction, operation, and maintenance of a new SUP	
Key features	
Overview	▪ Requires a new designation between 200m north of Quarry Road to the existing Mill Road/Bombay Interchanges, with some locations overlapping the existing SH1 Designations 6706, 6700 and 6701. ▪ 3.0m wide SUP located on the western side of the motorway.
Structures	▪ New bridge at Great South Road, Bombay. ▪ Tie-ins to all new and upgraded motorway interchange (i.e. Drury South, Ramarama and Bombay).
Speed Environment	▪ N/A
Access Lanes	▪ N/A
Intersections	▪ Grade separated tie-in at all interchanges.
Typical cross sections (SUP)	
	

3.3.5 NoR 5 – Drury South Interchange Connections

As illustrated in Figure 3-5 and outlined in Table 3-6 below, NoR 5 will authorise the construction, operation and maintenances of a new link road between Quarry Road and Great South Road, referred to as the Drury South Interchange Connections.

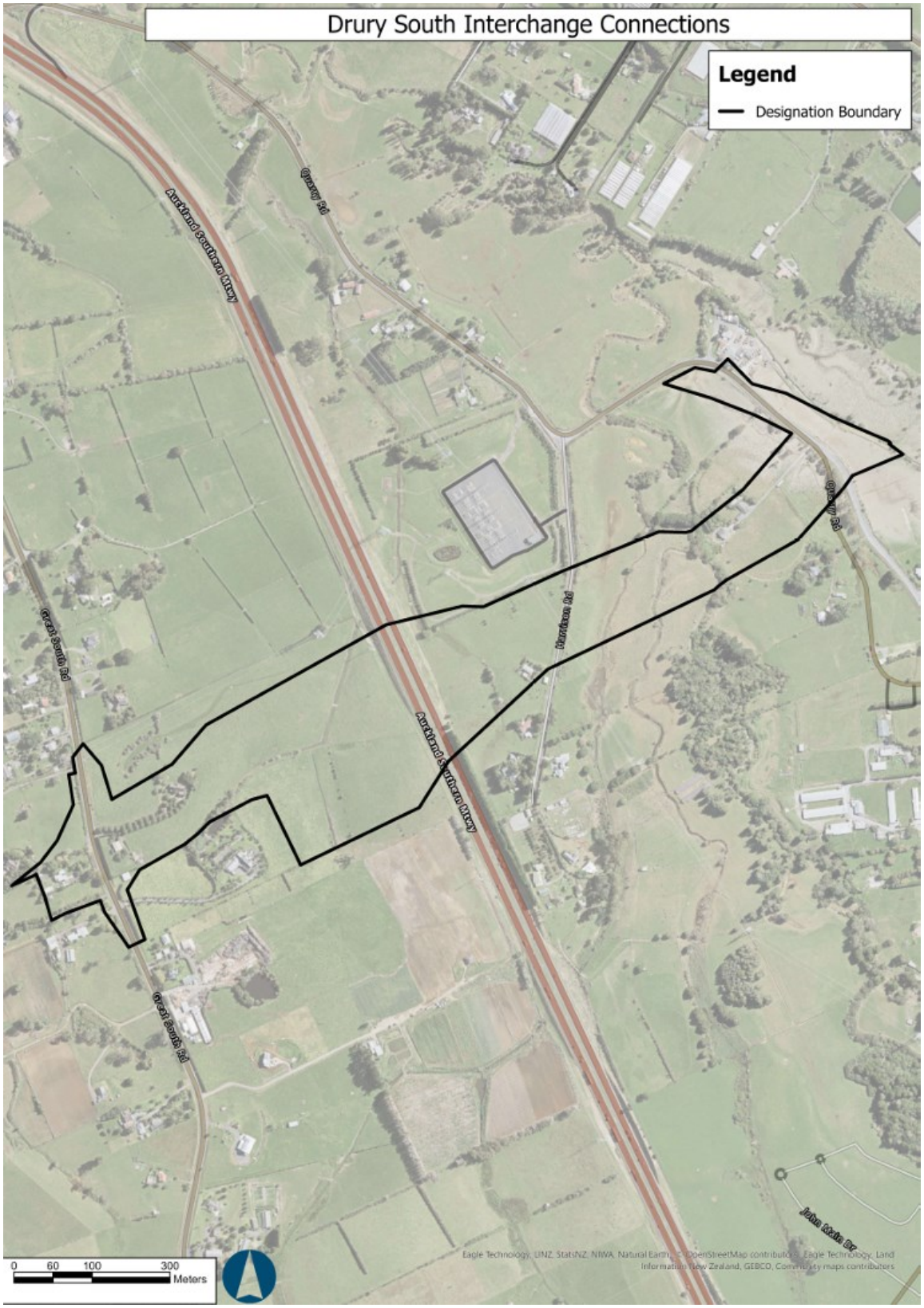
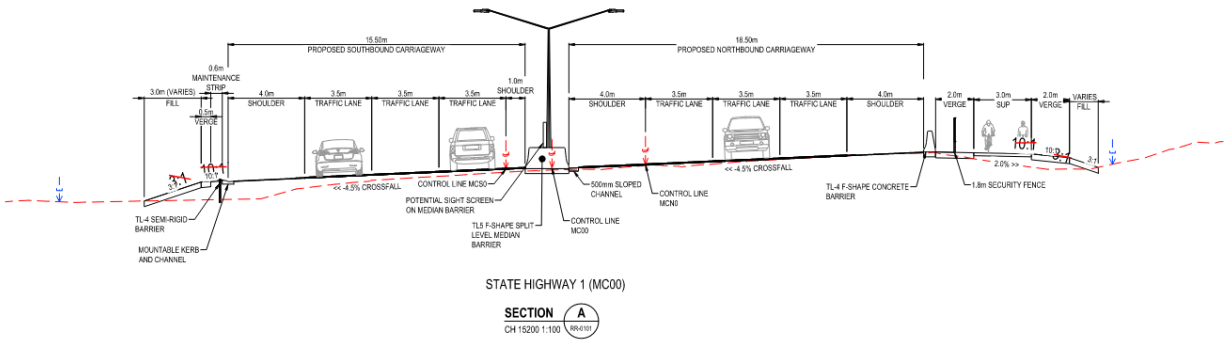


Figure 3-5 NoR 5 – Drury South Interchange Connections

Table 3-2 Overview of the new link roads at Drury South Interchange

NoR 5 – Drury South Interchange Connections	
Key features	
Overview	▪ Four traffic lanes, cycle lanes and footpaths on either side. ▪ New link roads to the adjacent network (Quarry Road and Great South Road) to tie-into the proposed Drury South Interchange.
Structures	▪ Raised viaduct across the Hingaia reserve area.
Speed Environment	▪ N/A
Access Lanes	▪ Designed to accommodate potential bus lane within the shoulder within the carriageway
Intersections	▪ Round-about intersection tie-in to Great South Road. ▪ Signalised intersection at Quarry Road.
Stormwater Infrastructure	▪ Swales and wetland treatment train (100% treatment of impervious surfaces and full scale wetland).
Typical cross sections	
	

4 Section 171 of the Resource Management Act 1991

Section 171 of the RMA sets out the matters that a territorial authority must (subject to Part 2), have particular regard to when considering the effects on the environment of allowing a Requirement. These matters are set out in Table 4-1 below:

Table 4-1 Outline of where Section 171 of the RMA has been addressed in the AEE

Matters to consider	Section of the AEE where the matter is primarily addressed
(1) When considering a requirement any submissions received, territorial authority must, subject to Part 2, consider the effects on the environment of allowing the requirement, having particular regard to-	
(1)(a) Whether particular regard has been had of any relevant provision of: i) *A national policy statement;* *ii) A New Zealand coastal policy statement;* *iii) A regional policy statement or proposed regional policy statement;* *iv) A plan or proposed plan*	Section 11
(1)(b) Whether adequate consideration has been given to alternative sites, routes or methods of undertaking the work if[5]: i) *The requiring authority does not have an interest in the land sufficient for undertaking the work; or* *ii) It is likely that the work will have a significant adverse effect on the environment.*	Section 5 Appendix K
(c) Whether the work and designation are reasonably necessary for achieving the objectives of the requiring authority for which the designation is sought[6].	Section 6
(d) Any other matter the territorial authority considers reasonably necessary in order to make a recommendation on the requirement[7].	Section 11
(1B) The potential positive impacts on the environment resulting from planned measures can be taken into account to offset any negative impacts that may occur from the designated activity	Section 10

[5] Section 171(1)(b) of the RMA
[6] Section 171(1)(c) of the RMA
[7] Section 171(1)(d) of the RMA

5 Assessment of Alternatives

5.1 Statutory Requirements to Consider Alternatives

Section 171(1)(b) of the RMA requires that when making a recommendation on a NoR, a territorial authority shall consider whether adequate regard has been given to alternative sites, routes, or methods of undertaking the work in circumstances where:

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

d) it is likely that the work will have significant adverse effect on the environment.

There are several principles and key considerations for a requiring authority to apply and adhere to when undertaking an assessment of alternatives and identifying a preferred option. Of note are the following:

- The Requiring Authority must not act in an arbitrary way when considering alternatives,
- The process should be adequately transparent and robust, and clearly recorded so that it can be understood by others,
- An appropriate range of alternatives should be considered,
- If an adequate process has been followed in the assessment of these options, the decision on preferred options is for the Requiring Authority to make, and;
- The extent of options considered, and the assessment of these options, should be proportional to the potential effects of the options being considered.

The Project will mostly be located within the existing motorway corridor, with land take required along the edges of the corridor to authorise the future upgrades. Some of these works will be located outside of the existing corridor on land which NZTA does not have sufficient interest in, as such, a comprehensive assessment of alternatives has been undertaken to determine appropriate locations and design options for the works.

A summary of the assessment process and options considered is set out below. The Assessment of Alternatives Report attached at **Appendix K** of this Report sets out the assessment in greater detail.

5.2 Assessment of Alternatives Methodology

This section provides an overview of the assessment of alternatives methodology used to develop and assess design options for the Project.

The need for the Project was first identified in the Transport for Future Urban Growth Programme Business Case (PBC) in 2016, which was later followed by the Papakura to Bombay Detailed Business Case (DBC) in 2018. The DBC outlined preliminary design options and staging for the Project. The findings from which have been used to inform a set of design requirements for the Project. These design options have been further tested through an assessment of alternatives. The methodology used for the assessment of alternatives involved the following steps:

a) Gap analysis of recommendation at each new phase of assessment (PBC to DBC),

b) Development of the multicriteria assessment framework (MCA),

c) Optioneering development,

d) Pre-scoring of options; Interdisciplinary workshops,

e) Analysis and testing of outcomes from workshops,

f) Identification of technical preferred options,

g) Engagement with stakeholders (including mana whenua representatives),

h) Analysis and testing of preferred options following feedback received through engagement and any new information,

i) Recommendation by the Project Team, and;

j) NZTA Board decision on the recommended options.

In some instances, where specific circumstances required, deviation from the process set out above occurred. Where the process was deviated from, this was identified and described in the relevant sections of the Assessment of Alternatives Report at **Appendix K**.

An overview of the alternatives assessment process undertaken across the PBC, DBC and NoR phases is illustrated in Figure 5-1 below.

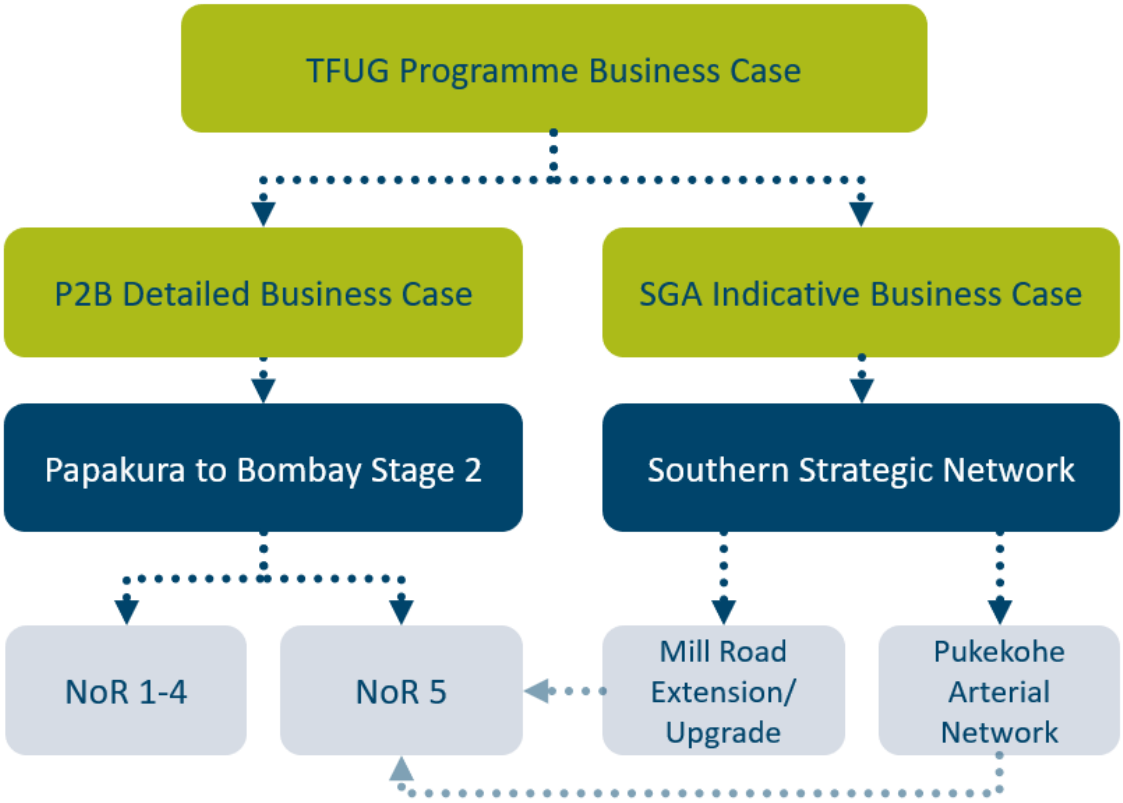


Figure 5-1 Diagram illustrating the design options development in relation to the PBC and Southern Indicative Strategic Network

5.3 Consideration of Alternative Design Options

As discussed above, the DBC identified improvements to the SH1 corridor between Papakura and Bombay, as a fundamental part of the Transport for TFUG PBC and Auckland Transport Alignment Project (ATAP).

The DBC identifies that there is a need to act now and protect the required land adjacent to the corridor to enable the improvements; rapid urban development will restrict this and severely impact future inter-regional accessibility.

Based on the findings of the DBC a suite of design requirements for the P2B were made, as follows:

- Improvements to the SH1 Corridor, including:
  - Six general traffic lanes (with provisional space for a shoulder),
  - Design to accommodate 110 km/h design speed,

- Shared user path (western side of the SH1 corridor), and;
- Swales and wetland treatment train (100% treatment of impervious surfaces, full scale wetlands).

- Upgrade or construction of interchanges and structures:
  - Drury South: new over-pass with roundabout,
  - Ramarama Interchange: modified roundabout with ramp signals,
  - Bombay interchange: signalised interchange with northbound signals[8], and;
  - Mill Road Bridge: alter both abutments to allow realignment of the road beneath the Bombay Interchange.

The Project works will in part be located within the existing SH1 Designations (6706, 6700, and 6701). In these locations NZTA has a sufficient interest in the land required and has applied the DBC design requirements, without a detailed assessment of alternative locations or design options.

Where the proposal requires works on land outside of the existing designation boundaries, where NZTA does not have sufficient interest in the land, and where there was a potential for a significant adverse effect on the environment, a detailed design options assessment has been undertaken to determine the location and feasible alternative design options. For the Project these aspects included:

- Drury South Interchange,
- Drury South Interchange Connections – Eastern Connections,
- Drury South Interchange – Transpower Substation Site,
- Ramarama Interchange (Ararimu Over-Bridge), and;
- St Stephen's School Driveway.

These aspects of the proposal were run through a Multi-Criteria Assessment (MCA) to determine the optimal design option. Further details about this process and the outcomes are detailed in Assessment of Alternatives at **Appendix K**.

The emerging preferred design options were progressed to design refinement alongside, the basic design requirements developed from the DBC, to determine the concept design for NoR. Additional assessments were undertaken during design refinement to determine appropriate tie-ins to local road network, side of road widening and walking and cycling facility placement around the interchanges.

Further details of this process are provided at **Appendix K** of this Report. Overall, adequate consideration has been given to alternative sites, design options and methods in a manner that is transparent, robust, and replicable.

5.4 Consideration of Alternative Methods

Section 171 requires the consideration of alternative methods for protection of the required land for the purposes of route protection. This process is detailed in Section 5 of the Alternatives Assessment at **Appendix K** of this Report.

Long term designations were generally identified as the preferred method for route protection of the Project as these are the most logical and effective method to protect a corridor and authorise the land use aspects of the proposed works in an evolving environment for the following reasons:

a) A designation provides certainty to all parties including the community and affected landowners,

[8]Note: Following early discussions with the Franklin Local Board, the NZTA has carried out investigations and modelling to address safety, congestion, and access concerns at Bombay Interchange. The conclusion is that installing traffic lights would be the most suitable short-term solution for these issues. Construction of these upgrades is set to commence early 2024, additional information available here: Signalisation of Bombay Interchange | Waka Kotahi NZ Transport Agency (nzta.govt.nz)

b) It is a well-recognised and understood tool for route protection which also enables land acquisition processes through the link to the Public Works Act (PWA),

c) It maximises flexibility for future implementation – in the south of Auckland where there is development timing uncertainty, designations allow the provision of infrastructure to integrate with development,

d) Authorises the works within the designation in a comprehensive manner and negates the need for additional land use consents to implement works authorised under the district plan (s9(3) of the RMA),

e) Will provide for ongoing future operation and maintenance requirements of the state highway corridor,

f) Provides immediate route protection from the time a NoR is lodged,

g) Enables compulsory acquisition of the land, if required,

h) Provides a mechanism (s176 of the RMA) to manage landowners' interim use of the land to prevent compromise of the corridor, whilst at the same time limiting 'planning blight'[9] as much as practicable, and;

i) Will ensure the Project is consistent with and will link into existing designations made operative under previous stages of the P2B project (i.e. Stage 1B1 – alterations to Drury Interchange and construction of a new SUP).

The use of NoRs will allow NZTA the most effective method for protecting land required for Stage 2 of the P2B project, however this depends on the lapse period being long enough to allow funding to confirmed and detailed design to be undertaken, refer to Section 7 (below) for further detail regarding the lapse period sought for each designation, and the rationale.

5.5 Summary

The preferred design option for each of the Project NoRs has been based on a comprehensive and robust optioneering process considering specialist assessment, engagement with mana whenua and feedback from stakeholders and landowners. As such, it is concluded that adequate consideration has been given to alternative sites, alignments, and methods for undertaking the work, satisfying the requirements of s171(1)(b) of the RMA.

[9] Planning blight– refers to the negative impact and uncertainty caused by the potential designation of land for a specific purpose, the uncertainty can affect the value, enjoyment, and development potential of the land and surrounding properties, due to the anticipation of future changes and restrictions that may result from the proposed project.

6 Whether the work and designation are reasonably necessary for achieving the objectives

Section 171(1)(c) of the RMA requires a territorial authority to have particular regard to whether the work and designation are reasonably necessary for achieving the objectives of the requiring authority for which the designation is sought.

The design and construction methodology, which has primarily informed the requirement for land to undertake the construction, operation, and maintenance of the Project, as well as supporting infrastructure (i.e. stormwater mitigation, structural elements), are discussed in detail in the Design Construction Report (DCR) at **Appendix C** of the application AEE.

Table 6-1 provides an assessment of whether the work and designation are reasonably necessary for achieving the project objectives:

Table 6-1 Assessment of whether the work and designation are reasonably necessary for achieving the project objectives

Notice	P2B project Objectives	Stage 2 is reasonably necessary to achieve the Project Objectives because it:
NoR 1 to 3 Alterations to SH1 Designations (6706, 6700, 6701)	■ Improve the safety and resilience of the SH1 network between Papakura and Bombay, ■ Increase transport choice and accessibility to support growth in the south of Auckland, ■ Support national and regional economic growth and productivity, ■ Increase transport choice and accessibility to support growth in the south of Auckland, and; ■ Support the inter and intra-regional movement of people and freight.	■ Will provide an additional lane in each direction to ensure continued efficiency of the motorway corridor from Stage 1 of the P2B project, ■ Reduce crash risk and severity through safety upgrades to SH1 corridor, ■ Supports the inter and intra-regional movement of people and freight by providing for widening of an existing transport corridor, by providing for faster travel times, including freight movements, and provision of a wider shoulder, which may be used as a special vehicle lane or public transport connection in the future, ■ Reinforces the roading hierarchy in conjunction with adjacent transport projects to re-direct traffic away from the local roading network, and allow for more efficient travel on SH1, contributing to the efficiency of the wider network, and; ■ Enhance the visual amenity of the existing motorway corridor through the implementation amenity planting to be determine in the Project ULDMP.
NoR 4 Construction, Operation and Maintenance of a Shared User Path		■ Contributes to increasing transport choice and accessibility to support growth in the south of Auckland by providing a SUP alongside SH1, where there is currently no active mode access along the corridor, ■ Supports national and regional economic growth and productivity by promoting a sustainable and efficient transport system and improving the health and well-being of communities, by facilitating mode-shift, and; ■ Increase safety for active mode user by provided a separated alterative from local roading network.
NoR 5 Drury South Interchange Connection		■ Improves the safety and resilience of SH1 network and the new interchange constructed at Drury South Interchange, by proposing capacity and safety improvements along the existing corridor, ■ Contributes to an increase in transport choice and accessibility to support growth in the south of Auckland by proposing link roads to the adjacent network on either side of the Drury South Interchange. These connections are proposed to have four traffic lanes, cycle lanes and footpaths on either side. In addition to providing direct links into SH1 from land zoned for Light Industrial, which will support freight movement and economic productivity within the region, ■ Contributes to the inter and intra-regional movement of people and freight, ■ Provides an integral tie-into the Pukekohe Arterial Network (discussed in Section 2.2 above) to create an integrated transport network for the south of Auckland, which will support the movements of people and freight in the region, and; ■ Increase the accessibility of transportation options, especially by enabling the use of active modes, through provision for a SUP that is connected to the local transport network. Encouraging the uptake of active modes, which will lead to more efficient and sustainable journeys, and promote community health and well-being. Overall enhancing the efficiency of the transport network and enable it to support sustainable growth in the region.

7 Lapse period sought and rationale

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

- It has been given effect to, or
- 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
- The designation specifies a different lapse period.

Key purposes of the Project include authorising the future upgrades to SH1, improving accessibility for all road users (including active modes), and supporting regional growth through the improvement of safety, functionality, and resilience of the existing transport corridor.

The Project has adopted a long term 'route protection' approach (which has been widely demonstrated by NZTA in similar NoR applications)[10] in order to effectively integrate with adjacent transport networks, it is strongly recommended to. This is because the forecast growth that the Project is intended to accommodate may not occur for several years. At the time of writing this Report, funding for the construction of the Project has not been allocated.

It is therefore recommended that the Project adopt an extended lapse period of 20 years. This recommendation is necessary to achieve the key objective of providing statutory protection for the future upgrades to the transport corridor. This extended lapse period will provide the required statutory certainty and protection for the land requirements while maintaining the flexibility required to obtain project funding and respond to future developments in transport and land use within the Project Area. As enabled by section 184(1)(c) of the RMA, a lapse period of 20 years is required for Stage 2 of the P2B project. Table 7-1 provides an overview of the recommended lapse dates for each NoR.

Table 7-1 Recommended Lapse Dates

Notice	Lapse Period
NoR 1 – Alteration to SH1 Designation 6706	No lapse period[11]
NoR 2 – Alteration to SH1 Designations 6701	
NoR 3 – Alteration to SH1 Designations 6702	
NoR 4 – Construction, Operation and Maintenance of a SUP	20 years
NoR 5 – Drury South Interchange Connections	20 years

7.1 Need for extended lapse date

Foremost the above lapse dates account for the uncertainty associated with when the Project will be required for construction.

The P2B DBC (discussed in Section 3) determined incremental analysis of the forecast network performance to predict the staged approach to SH1 improvements, to effectively respond to changes in the transport network and offset the effects of growth in South Auckland. The analysis was based (at the time) on the traffic modelling of the FULSS 2017 land use forecasts, incremental economic analysis and integration with the

[10] Reference to the Supporting Growth Programme, discussed in detail in Section 2 above.

[11] Note: SH1 Designation 6706 has been given effect to through the works associated with Stage 1B1 of the P2B Project, it will therefore have no lapse period. Case reference: Poutama Kaitiaki Charitable Trust v Taranaki Regional Council [2022] NZHC 629.

implementation of the Supporting Growth Programme. The analysis recommended the following staged approach:

- Improvements southwards between Drury and the proposed new interchange at Drury South Interchange would be necessitated around 2036, to align with the proposed construction of the Mill Road Extension and Pukekohe Expressway, which both reinforce the roading hierarchy by directing traffic from the local roading network on to SH1; and
- Complete improvements between Drury South and Bombay by 2046 to respond to development growth in the Southern Growth Area (South Auckland and North Waikato).

These transport triggers are still considered to be relevant to the Project today and necessitate NZTA to act immediately to protect the land required for these future upgrades to SH1. Route protection can only be achieved through an extended lapse period, which both aligns with the timeframe of the corresponding SGA projects, and the demands of future urban growth.

In July 2023 Auckland Council approved[12] the Future Development Strategy (FDS 2023-2053), which replaced the Development Strategy 2018 and the FULSS 2017. While there is no material change on the full build out within areas of Future Urban Zones (FUZ), the document proposes a new timeframe of land development, which sequences land development later than originally proposed in the FULSS 2017. Based on FDS 2035-2053, FUZ land at Drury are expected to be development 2035 onwards.

Furthermore, the uncertainty around the requirement for the Project, leads into uncertainty around funding. At the time of writing this Report, no funding has been allocated towards the construction of the Project. An extended lapse period will allow adequate time for finding to be acquired in advance on the Project triggers discussed above.

The long-term need for Stage 2 of the Project is clear. It is important to note that route protection is necessary as:

- It provides statutory protection of the land required for upgrades to the SH1 and the adjacent transport network, and support future growth in a manner that recognises the uncertainty associated with the timing of that growth, as well as protecting land which is FUZ from being live zoned land in the future, especially with regard to land at Drury South,
- It supports efficient land use and transport integration by enabling the efficient delivery of transport infrastructure at a time and in a way that is integrated with adjacent SGA Projects, and future urbanisation,
- It provides the Requiring Authority sufficient time to undertake the following activities, once funding for the Project has been obtained:
  - Tendering / procurement,
  - Property and access negotiations and other processes associated with construction of the projects,
  - Detailed design of the projects,
  - Obtain the necessary resource consents and other statutory approvals,
  - Provide property owners, businesses, and the community with certainty on where infrastructure and transport routes will be located (i.e., within the designation boundaries), and;
- The changes to Central Government create uncertainty for the delivery pathway for the Project, of note, the Government has signalled they will repeal the Natural and Built Environment Act 2023 (NBEA) in December 2023, which would change the NoR pathway for the Project.

We also note that:

- A lapse period is a limit and not a target. An extended lapse period does not mean that the designation will not be given effect to until the end of the lapse period sought. If urbanisation was confirmed within the lapse

[12] Request provided to Auckland Council's Planning, Environment and Parks Committee to adopt the final version of the FDS 2023-2053, with a decision expected late 2023.

period sought it is likely that the designation will be implemented to enable appropriate integration with development,

- It is not uncommon for infrastructure projects to have a longer lapse period and this has been confirmed on recent projects such as the Drury Arterial Network (part of the SGA), Southern Links (NZTA), and the Northern Interceptor Wastewater Pipeline (Watercare) and the Hamilton Ring Road (Waikato District Council, Hamilton City Council),
- Setting a shorter lapse period would not be a significant factor in facilitating earlier availability of funding than is planned at the time the NoR is sought,
- The inclusion of a lapse date allows for flexibility, considering the inter-dependence with adjacent transport projects (such as the Pukekohe Transport Network referenced in Section 2.2) within the South Programme. If the adjacent SGA projects were accelerated in their delivery, it would be necessary to construct the Project at an earlier date in order to maximise the utilisation of the broader network investment, and;
- Adopting a standard lapse period will likely result in a set of conditions, that are not adequately tailored to the purpose of 'route protection' and will not be able manage the long-term uncertainty of delivering a project that will not be constructed for 15-20 years, if the requiring authority is required to extend the lapse period through the standard application of section 184 of the RMA.

It is acknowledged that when considering an extended lapse period, it is appropriate to balance the need for that lapse period against the potential *'planning blight'* effects on landowners. In the absence of a specific construction commencement date, and other precise information regarding construction duration within any specific area, the method for managing any outstanding uncertainty associated with the lapse period being sought is ongoing communication with affected landowners. Providing s176(1)(b) approvals for works within the designation where this does not prevent or hinder the future work will also mitigate the *'planning blight*' effects on landowners. This is particularly relevant for development of the limited areas of FUZ adjacent to the proposed notices (primarily south of Drury Interchange and dispersed at the Drury South).

The FUZ enables the land to continue to be used for rural purposes until such a time as the zoning is changed to an urban zoning. The AUPOP identifies the FUZ as being a transitional zone wherein land can be used for a range of general rural activities but cannot be used for urban activities until the site is rezoned for urban purposes; and while the FUZ anticipates urbanisation, it does not require it, nor does it set a timeframe for when the urbanisation will occur. In this regard, it is considered:

- People who currently live within the FUZ experiencing a rural lifestyle are unlikely to remain within that area as urbanisation of the FUZ is confirmed and implemented. As such, there is likely to be some uncertainty for existing residents about when urbanisation is likely to occur,
- People who live within the FUZ are likely already experiencing the effects of uncertainty irrespective of the proposed extended lapse date,
- The network is unlikely to be implemented until urbanisation is (at least) confirmed. If urbanisation does not occur, it is likely that the network will not be constructed. Confirmation of urbanisation is therefore considered to be critical to providing certainty on the likely construction of the network, and;
- Future communities, i.e. people who move into the area as the FUZ urbanises, will do so with knowledge of where the network will be.

8 Approach to Route Protection Assessment

As discussed above, at the time of preparing this assessment there is no funding allocated for the construction of Stage 2. It is anticipated that Stage 2 will not be constructed for 15-20 years, as predicated by the 2019 DBC. As such the NZTA's design and assessment of effects has been developed in a way that reflects the route protection exercise within an environment that likely to be changed by the time the Project is constructed.

Considering the possibility of changes in the receiving environment and evolving technical and design standards, conducting detailed design of the Project at this stage would be impractical. Therefore, the proposed approach to conditions aims to facilitate detailed design nearer to the construction phase while outlining essential outcomes that must be achieved or principles/factors that need to be taken into account.

This design and assessment approach is consistent across this Report and attached specialists reports (**Appendix D** to **Appendix J**) that support its findings. Further details of the construction methodology are provided in the Design and Construction Report (DCR) at **Appendix C** of this Report.

8.1 Approach to Design

The design of the Project has focused on developing an indicative design that is sufficient to inform the NoR footprints and to assess an envelope of effects whilst recognising the need for flexibility required due to the uncertainty of the future urban environment.

The proposed general arrangement plans are attached for information at **Appendix B** of the application. The concept design contained within these plans has been used to inform the land requirements for the proposed NoR footprints, which includes ancillary components, such as construction areas and stormwater requirements. The detailed design will be undertaken before construction and an Outline Plan or Plans (as the Outline Plans may be staged to reflect Project phases or construction sequencing) will be submitted to the Council as set out in s176A of the RMA. Resource consents (for Regional Plan matters) will also need to be applied for in the future.

The detailed design will be guided by the Papakura ki Pukekura Urban and Landscape Design Framework (ULDF), Revision G attached at **Appendix M** of the application. The ULDF sets out the design principles across the entire P2B project.

It is understood that the final design of the Project (including the design and location of associated works including bridges, culverts, stormwater management systems, soil disposal sites, signage, lighting at interchanges, landscaping, realignment of access points to local roads, and maintenance facilities), will be refined and confirmed at the detailed design stage.

8.2 Construction Methodology

An indicative construction methodology has been developed for the Project and has been used to inform the NoR footprints, assess potential effects on the environment, and to identify measures to avoid, remedy or mitigate those effects, as appropriate and relevant to each NoR.

The construction methodologies have been developed based off the previous stage of the P2B project. However, the actual construction detail will be confirmed at detailed design, and will consider measures required to mitigate effects, the designation areas and any resource consents conditions. Importantly, timing of implementation of the Project will dictate what land development is present along the corridors and will inform the final methodology. As such, NZTA is seeking flexibility in each of the NoR construction methods to accommodate these factors and retain opportunities to reduce the impact and duration of adverse construction effects at delivery.

8.3 Earthworks

Earthworks will comprise of cutting and filling to achieve the proposed design alignment. Cut slopes are primarily to tie design levels into swales, where they can be maintained within the existing designations. Fill slopes are primarily to form up new traffic lanes or the SUP, again within the existing designation.

Standard earthworks practises will be followed in accordance with the specifications and guidelines of NZTA. The general earthwork strategy will be developed in more detail by the contractor. However, the general earthwork strategy assumed for works currently is to import fill (from local quarries where possible) for all fill embankments. Site won materials may need an area to be able to manage moisture contents via disking and air drying or through the use of cement or lime stabilisation. If previous fill materials have been lime or cement treated this disking area will also allow these materials to be broken up into workable sizes for future compaction. The contractor will therefore need to identify these opportunities and integrate them within their construction program and site access constraints.

Larger fill embankments may undergo relatively significant settlements due to the underlying softer/organic soils and therefore either ground improvements or wick drains and/or time for consolidation will need to be allowed along with a final trim/fill before placing the final pavement surfacing makeup.

Embankments will also incorporate geogrids placed within the slopes as constructed as required to ensure slope or wall stability.

It is noted that bulk earthworks will be the subject of a future regional resource consent process where the effects of these works will be assessed, and mitigation measures confirmed. It is acknowledged that the construction areas have been used to guide the layout of the designation.

8.4 Sequencing of Main Construction Activities

The programme assumes a generally staged construction process, with exact staging to be determined at detailed design. The construction sequence for a typical project within the Project Areas are outlined below:

- Enabling works, including site investigation and service relocation,
- Site establishments for main contractor,
- Establish traffic management to enable access and establish construction areas,
- Earthworks, establishment of environmental controls, topsoil stripping and cut to fill activities,
- Structures work, including bridges, retaining walls and culverts,
- Network drainage,
- Pavement construction, and;
- Finishing works, including line-marking, landscaping and disestablishment.

Special attention will also be required for construction activities, such as piling, near overhead power lines and sensitive environmental areas. The erection of the bridge beams is likely to be undertaken during night-time under closures.

8.5 Approach to Stormwater Management

As regional resource consents are not being sought at this stage, the stormwater design approach for the Project has focussed on identifying an indicative and feasible treatment methodology and the NoR footprint required for appropriate stormwater management. The design of specific stormwater treatment devices will be further developed during detailed design for the Project and regional resource consents sought at that time.

The indicative stormwater design and associated designation footprint has been developed taking into account:

- Existing stormwater infrastructure and stormwater management requirements,

- Future stormwater discharge and diversion, stormwater runoff quality, and flood hazard requirements, and;
- The AUPOP and other industry standards, regulations, and guidelines.

The proposed designation footprints have allowed for indicative stormwater quality treatment in accordance with Auckland Council Guideline GD01 for all existing and proposed impervious areas, except where a Project only consists of a SUP. Generally, the indicative designs adopt treatment swales or wetlands, depending on which best fits the local conditions and topography. These devices have been selected on the basis that they are proven good practice, green infrastructure methods well suited to road corridors and the contaminants generated within them.

AUPOP SMAF-1 design criteria for retention and detention measures have been allowed for within the FUZ/greenfield environments, where discharging to freshwater streams. These criteria are summarised as follows:

- Provide retention (volume reduction) of at least 5mm runoff depth, and;
- Provide detention and a drain-down period of 24 hours for the difference between the pre- and post-development runoff volumes from the 95th percentile, 24-hour rainfall event minus the 5mm retention.

Where required, attenuation storage to match pre-Project peak flows to post-Project peak flows for either or both the 10- and 100-year rainfall events has been provided. Attenuation will be provided within devices which can be designed to detain larger storm events, including wetland and swales. In some instances, diversions or provision of compensatory flood storage will be provided.

Resilience to flooding was applied through:

- Setting the corridor vertical alignment above the 100-year ARI flood plain where practicable,
- Providing 0.5m freeboard for culverts between the headwater level and edge of the corridor, and;
- Providing freeboard to bridges in accordance with the NZTA Bridge Manual requirements.

All existing streams and stream crossings will be maintained through either culverts or bridges. Bridges and culverts are proposed within the indicative design where appropriate to manage environmental effects. However, the final form of stream crossings with consideration to upstream ponding, erosion protection and fish passage will be confirmed during the future detailed design and resource consenting phase.

8.6 Approach to the assessment of effects

Section 171(1) of the RMA sets out the matters that must be considered by a territorial authority in making a recommendation on a NoR for a new or alteration to an existing designation.

When assessing the actual or potential effects on the environment under section 171 of the RMA, the assessment of effects on the environment for the Project has been limited to matters that trigger a district plan consent requirement under the AUPOP as these are the only activities authorised by the proposed designations. Where NES or regional plan consenting requirements are triggered, these will not be authorised by the proposed designations and will require resource consents in the future. Notwithstanding this, relevant national and regional resource consent matters have been considered to inform the Project's design, the alternatives assessment process, and the proposed designation footprint.

In the future prior to construction, the Project will require NES and regional resource consents for a number of activities to enable the proposed works. These resource consents are not sought at this time but will be sought when detailed design for the Project is completed so as to confirm consent requirements, understand the actual or potential effects of activities that require consent and define the measures proposed to manage any adverse effects.

Based on the above, the assessment of effects that have been undertaken to support the Project are limited to the following matters, and are discussed in detail in Section 10 below:

- Transport and Traffic,
- Noise and Vibration,

- Ecology,
- Arboricultural,
- Archaeology and Historic Heritage,
- Landscape, Visual and Natural Character,
- Flood Impacts,
- Existing Utilities,
- Property, and;
- Māori Culture, Values and Aspirations.

Consistently across this Report and supporting expert reports, effects are assessed in two parts being, construction phase and operational phase effects. Recommendations to avoid, remedy or mitigate any potential for adverse effects arising from the Project are summarised in Section 10.13 below.

8.7 Approach to Assessing the Existing Environment

The following section provides a brief overview of the existing environment in relation to each of the Project NoRs. The section is structured in separate Project NoR areas, and provides a description of the physical and natural features of the existing environment within which the upgraded SH1 and SUP will be constructed, operated, and maintained. It draws on information from a number of sources including the expert reports attached in this application.

The approach to assessing the likely Future Environment (i.e. the likely receiving environment) is outlined in Section 8.8 below.

8.7.1 NoR 1 – 3 and NoR 4 – Alteration to SH1 Designation 6706, 6700 and 6701 and New SUP Designation

The receiving environment here is considered for all the SH1 Designation alterations (NoR 1-3), and the new SUP (NoR 4) as the alignments are mostly contained within the existing SH1 corridor alignment (See Figure 8-1 and Table 8-1).

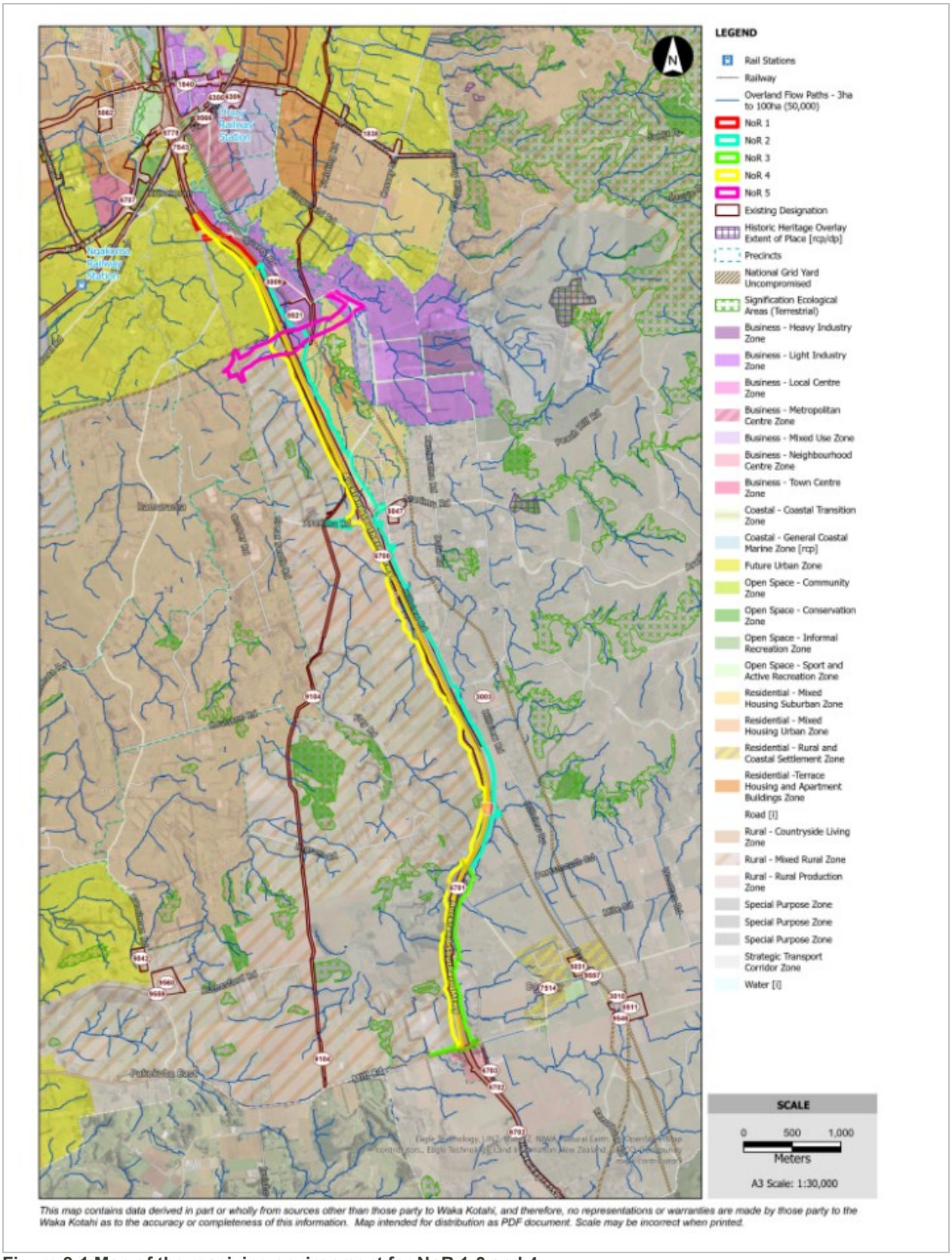


Figure 8-1 Map of the receiving environment for NoR 1-3 and 4

Table 8-1 Assessment of the NoR 1-4 Designation receiving environment

Features	Description
Current land use	▪ State Highway 1 ▪ Rural production ▪ Lifestyle blocks and residential ▪ Light industrial and commercial ▪ Areas of residential development
Community and local facilities	▪ Ramarama Hall
Waterbodies	There are streams that intersect or flow immediately adjacent to the Project Area, this includes: ▪ Hingaia Stream and its tributaries ▪ Ngaakooroa Stream and its tributaries.
Vegetation and landscape	▪ Vegetation cover in the area including shelterbelts, restoration planting around SH1 and the Ararimu Road Interchange ▪ Recent amenity planting surrounding intermittent streams (Hingaia Stream) and an artificial pond ▪ Mature trees are present along the Ararimu Road ▪ Notable Trees located at Bishop Selwyn Cairn
Ecology	Potential fauna within the Project Area: ▪ Long-tailed bats, ▪ At-risk lizards (e.g ornate skink and copper skinks), and; ▪ Common non-threatened native bird species
Historic heritage and archaeology	▪ Scheduled site; Bishop Selwyn Cairn Stone Monument (CHI item 1800; Scheduled site 96) is located within NoR 3
Existing designations	▪ SH1 Designations (NZTA): – Designation 6706 – Designation 6700 – Designation 6701 ▪ Designation 8009 – electricity supply purposes (Counties Energy Ltd) ▪ Designation 8521 – electricity transmissions (Transpower NZ) ▪ Designation 9104 – Pukekohe to East Tamaki Gas Pipeline (First Gas Ltd)
Precincts	The Project may overlay the following precincts: ▪ Drury South sub-precinct A ▪ Drury South sub-precinct B ▪ Drury South Residential sub-precinct B ▪ Bombay 1 sub-precinct A ▪ Bombay 1 sub-precinct B

Planning Controls	▪ Arterial Roads ▪ Vehicle Access Restriction Control at Ramarama Interchange and Bombay Interchange ▪ Macroinvertebrate Community Index
Planning Overlays	▪ Significant Ecological Areas ▪ High Use Stream Management Areas ▪ High Use Aquifer Management Areas ▪ Quality Sensitive Aquifer Management Areas ▪ Notable Tree Overlay ▪ Historic Heritage Extent of a Place ▪ National Grid Corridor
Other non-statutory features	▪ Drury South Crossing development area (Drury South Ltd)
Current zoning	▪ Strategic Transport Corridor Zone ▪ The current surrounding land use within the Project Area includes the Future Urban Zone (FUZ), Business – Heavy Industry Zone, Rural- Mixed Rural Zone, Rural – Rural Production Zone, Residential – Mixed Suburban Zone, Special Purpose Zone
Likely future zoning	▪ Existing residential zones likely to be upzoned by PC78 ▪ Areas of FUZ are likely to be lived zoned around the time of construction, see Section 8.8 below

8.7.2 NoR 5 – Drury South Interchange Connections

This section provides a description of the physical and natural features of the existing environment within the Drury South Interchange Connections Project Area (See Figure 8-2 and Table 8-2). This draws on information from a number of sources including the expert reports attached in this application

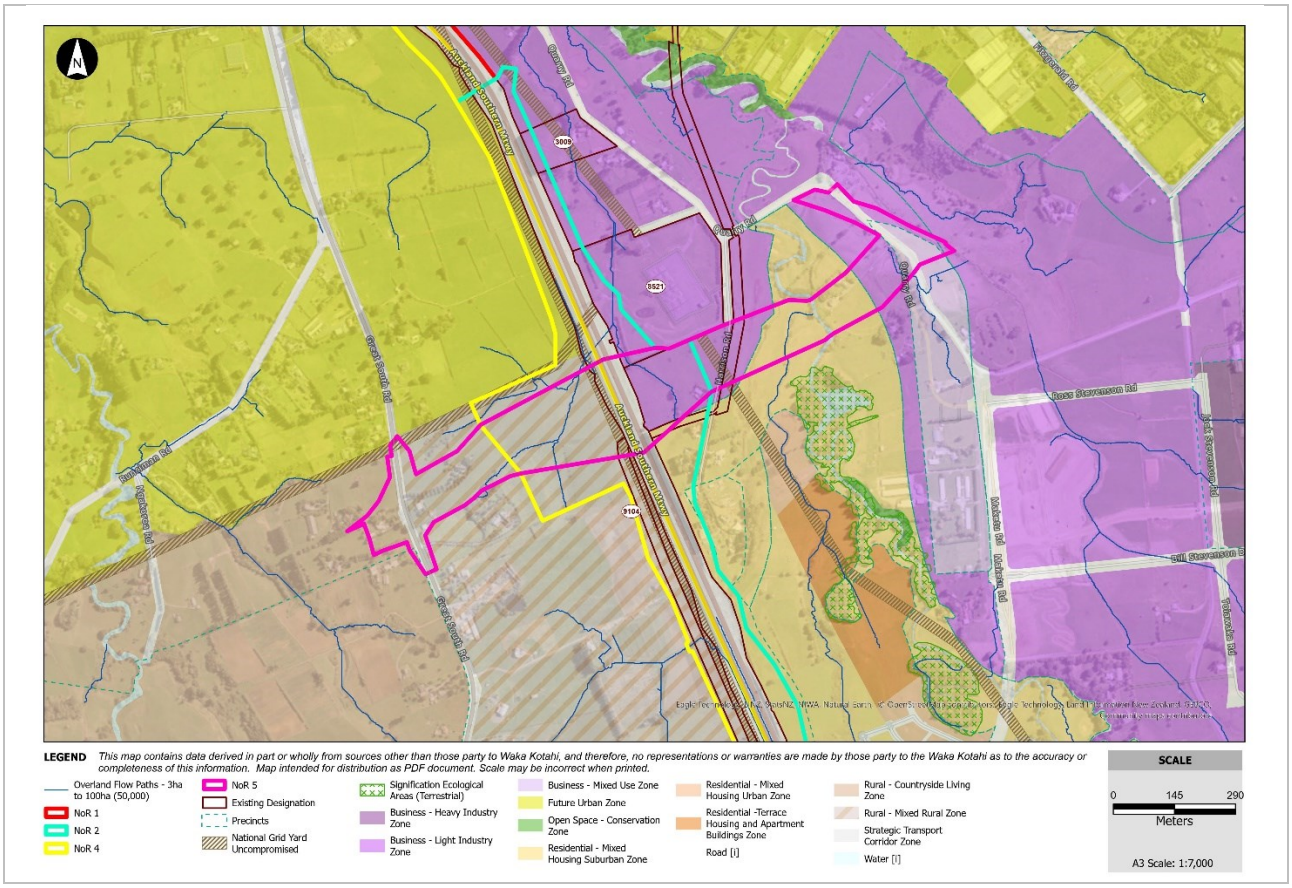


Figure 8-2 Map of the receiving environment for NoR 5

Table 8-2 NoR 5 project area receiving environment

Features	Description
Current land use	▪ State Highway 1 ▪ Rural production ▪ Lifestyle blocks and residential areas ▪ Areas of residential development
Community and local facilities	▪ N/A
Waterbodies	▪ There are streams that intersect or by flow immediately adjacent to the Project Area, including Hingaia Stream and its tributaries.
Vegetation	▪ Vegetation cover in the area including shelterbelts, restoration planting along SH1. ▪ Recent amenity planting surrounding intermittent streams (Hingaia Stream) and an artificial pond.
Ecology	Potential fauna to be identified: ▪ Long-tailed bats. ▪ At-risk lizards (e.g ornate skink and copper skinks). ▪ Common non-threatened native bird species.

Historic heritage and archaeology	▪ There are no registered heritage sites within the Project Area ▪ Potential for none recorded archaeological sites in proximity to the Hingaia Stream
Existing designations	▪ Designation 8521 – electricity transmissions (Transpower NZ) ▪ Designation 9104 – Pukekohe to East Tamaki Gas Pipeline (First Gas Ltd)
Precincts	The Project may impact the following precincts: ▪ Drury South sub-precinct A ▪ Drury South sub-precinct B ▪ Drury South Residential sub-precinct B
Planning Controls	▪ Arterial Roads ▪ Macroinvertebrate Community Index
Planning Overlays	▪ High Use Stream Management Areas ▪ High Use Aquifer Management Areas ▪ Quality Sensitive Aquifer Management Areas ▪ Notable Tree Overlay ▪ National Grid Corridor
Other non-statutory features	▪ Drury South Crossing development area (Drury South Limited) ▪ Transpower sub-station
Current zoning	▪ Strategic Transport Corridor Zone ▪ The current surrounding land use within the Project Area includes the Business – Light Industry Zone, Rural- Mixed Rural Zone, Rural – Rural Production Zone, Residential – Mixed urban Zone, Special Purpose Zone.
Likely future zoning	Potential for areas of existing residential zone to be up-zoned by PC78

8.8 Approach to Assessing the Likely Future Environment

The Project seeks route protection for the land required to authorise future upgrades to SH1. These upgrades will fulfil the requirements identified through the business case assessment, which recommended increased capacity on SH1 in response to changes in the adjacent transport network, and in response to urban growth. These triggers are not anticipated in the short term, as discussed in Section 7 above. Given the delayed requirement for the Project, as of February 2024, there is no funding allocated for the construction of the Project. As such, the Project is not anticipated to be constructed for 15-20 years.

It is well established, for the purposes of this Report, that the *"environment"* is the existing environment as well as elements of the future environment such as permitted activities under the relevant plans and resource consents that have or are likely to be implemented. In addition, it is acknowledged that the future environment requires consideration of that environment as signalled by operative objectives and (DP) policies of the AUPOP.

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 Project will be experienced.

The Project Team has developed an approach to assessing the likely receiving environment. This has included considering the range of existing and future urban zoning patterns in South Auckland, which will influence the likely future environment for assessment purposes. Project Areas with existing urban zoning or rural zoning that is not identified for future urban growth are not likely to materially change in the future. Those Project Areas that are currently rural or urban zoned but have recently been live zoned or up zoned for urban development or have a FUZ are likely to experience material change because of the urbanisation contemplated by the operative plan changes in this area.

There is currently only one section of FUZ within the Project Area, which is approximately 1.3km from Quarry Road to north of the proposed Drury South Interchange on the western side of SH1, see Figure 8-2 below. The remaining sections of the alignment are either within live-zoned areas or are outside of the rural urban boundary (RUB). The FUZ land is located close to the upgraded Drury Interchange and proposed Drury South Interchange. The Auckland FDS indicates this area to be a priority investment in years 11-30 (approximately 2035). While there is a potential risk that the construction of the Project may be prioritised earlier, it is reasonable to assume the area will be or will be in the process of being live zoned ahead of, or in parallel to, the constructing the Project.

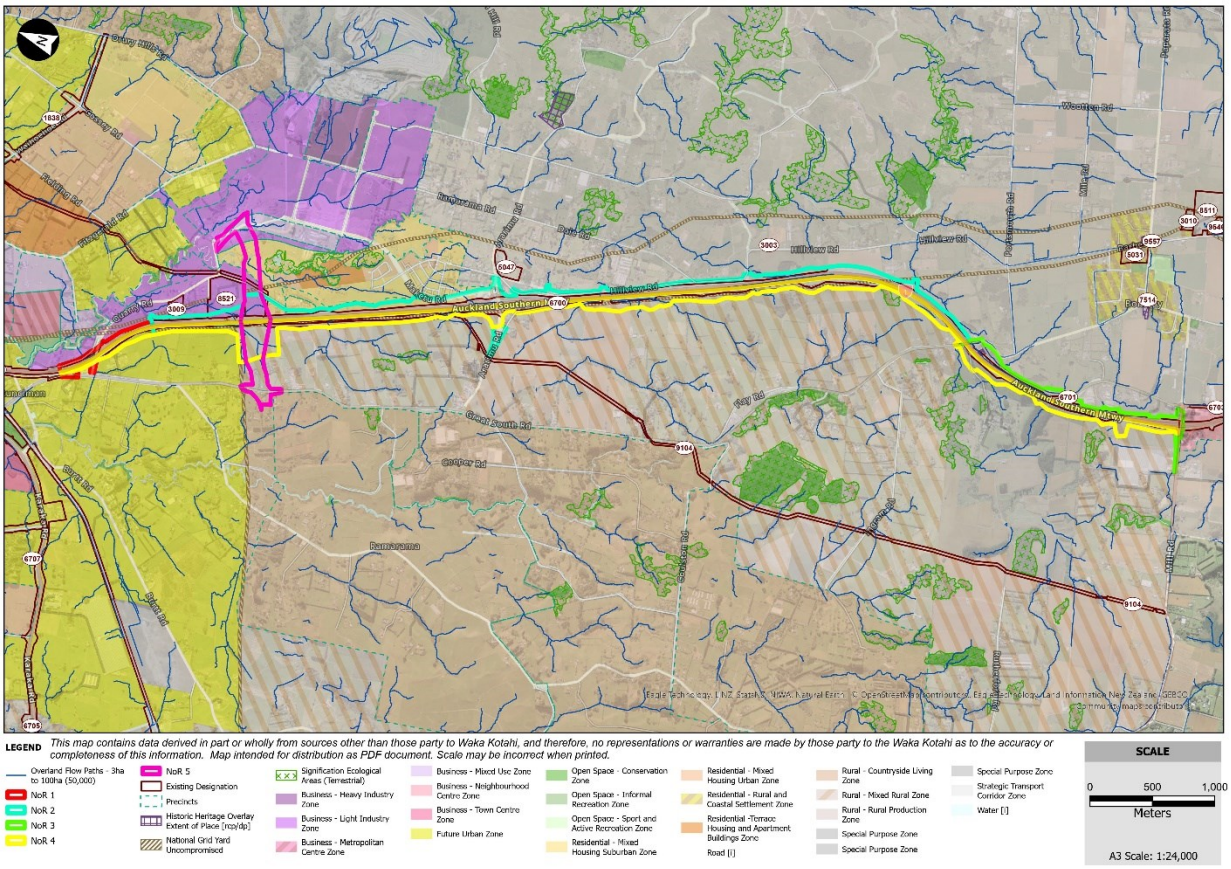


Figure 8-2 Existing environment map of the Stage 2 Project Area highlighting FUZ land (Source: GeoMaps)

The likely future environment assessment has also been guided by overlays within the AUPOP which identify features considered to be of high natural, cultural or heritage value with associated controls that apply to 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.

8.8.1 Statutory Context

8.8.1.2 Overview

This section provides an overview of the strategic context across the Project (and surrounding area) to guide assessment of the likely future receiving environment.

8.8.1.3 Drury- Opāheke Structure Plan

The Drury- Opāheke Structure Plan was adopted by Auckland Council in 2019 and sets out the pattern of land uses and the supporting infrastructure network for the future growth areas of Drury and Opāheke. The structure plan provides a signal to developers and Requiring Authorities for when land use is expected to be progressively live zoned through private plan changes. The indicative land use plan is provided in Figure 8-4 below.

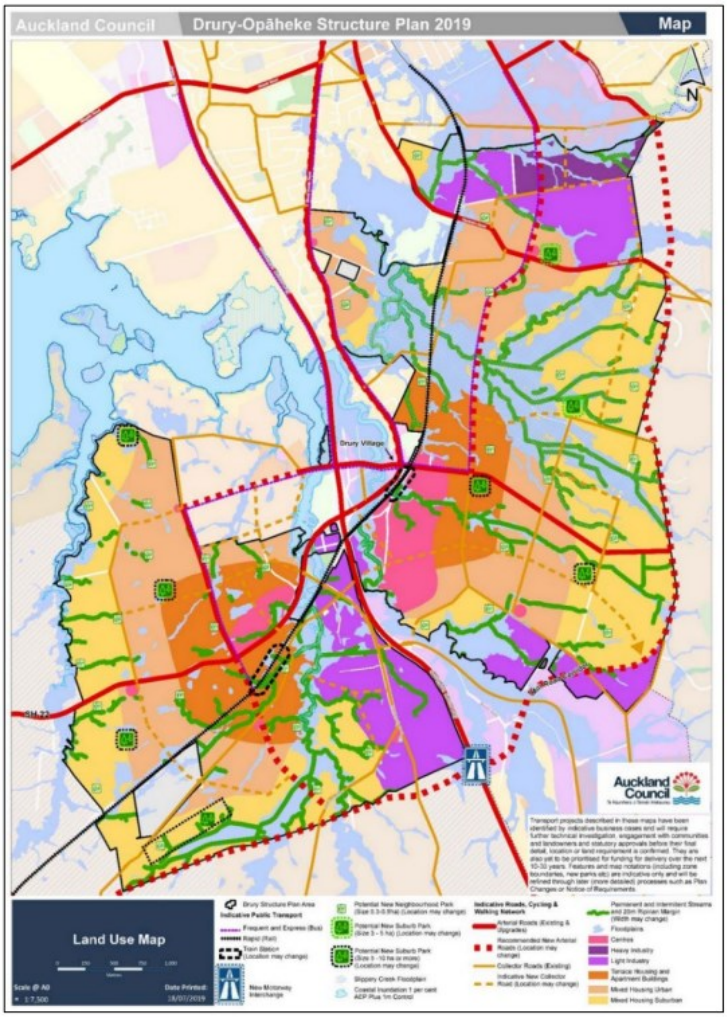


Figure 8-4 Drury- Opāheke Structure Plan

The plan recognises SH1 as a strategic transport corridor that provides a critical connection for the local area and the wider Auckland region. It serves as a major arterial route, facilitating the movement of people, goods, and services between Auckland and other parts of New Zealand.

The plan emphasises the need to enhance and develop SH1 to support the anticipated growth and urbanisation of South Auckland. It highlights the importance of improving the capacity, efficiency, and safety of SH1 to accommodate increased traffic demand and support sustainable transport options. This includes the provision of public transport infrastructure and active modes of transportation, such as cycling and walking facilities, along the SH1 corridor.

8.8.1.4 Council Initiated Plan Changes

Within current residential zones and land adjacent to rapid transit stops, greater intensification is anticipated in line with recent policy changes including the introduction of the National Policy Statement for Urban Development (NPS-UD) and Medium Density Residential Standards (MDRS). The intention of the MDRS is to enable housing choice in main urban areas. These standards support the development of three homes up to three storeys on each site without the need for resource consent. To enable this, the Resource Management (Enabling Housing Supply and Other Matters) Amendment Act 2021 requires Tier 1 territorial authorities in greater Auckland, Hamilton, Tauranga, Wellington and Christchurch to incorporate the MDRS into every relevant residential zone in their district plan. Auckland Council has actioned this through Plan Change 78 (PC78) which was notified on 18 August 2022.

The opportunity to lodge a Further submission to submission points notified on 21 August 2023 closed on 4 September 2023. Hearings on the plan change are set to occur in 2024, however, recent Central Government direction will allow local authorities such as Auckland Council to opt-out of the zoning changes. This creates uncertainty as to whether PC78 will be adopted ahead of construction of the Project.

8.8.1.5 Developer Interests

There are a number of developer-led resource consents and interest in within the Project Area, which will alter the existing and likely future environment. These interests are summarised in Table 8-3. At the time of writing, there were no developer led Plan Changes. Notably, these are the relevant plan changes and resource consents that are known to the Project Team, and we cannot explicitly state there are no other relevant developments within proximity to the Project.

Table 8-3 Developer-led operative projects within the Project Area

Operative Project	Proposal and interaction with the Project
Drury Centre Precinct	Kiwi Property Holdings No. 2 Limited have been granted resource consent to subdivide land at Fitzgerald, Flanagan and Brookfield Roads in Drury, South Auckland, and develop these sites for a commercial retail centre. The Minister for the Environment decided to refer this application to an expert consenting panel, and on 5 November 2021, Schedule 32 was included in the COVID-19 Recovery (Fast-track Consenting) Referred Projects Order 2020. The application was granted approval in July 2023.
Drury South Ltd	Land use consent (BUN60305778) for construction of infrastructure associated with the subdivision on properties at Drury South between the motorway corridor and Maketu Road. Including a realignment of tributary of the Hingaia Stream.

8.8.1.6 Adjacent Projects

There are number of projects which are taking place within the Project Area, which will influence the assessment of the existing and likely future environment. It is noted that there are a number of NoRs, which propose to interface the Project, and while these are not operative within the AUPOP and do not form part of the existing environment, it is reasonable to expect that these notices have the potential to form part of the future receiving environment. Current projects within the receiving environment are discussed in Table 8-4 below.

Table 8-4 Projects located adjacent the Project Area

Project	Proposal and interaction with the Project

NoR: Drury Access Ramp Project	NZTA NoR application to alter SH1 Designation 6706 and bundled regional resource consent application (BUN60423831) for the purpose of constructing a new southbound access ramp at Drury Interchange. Lodged with Auckland Council in August 2023.
NoR: Drury – Pukekohe Link	NZTA (SGA) application discussed in Section 2.2.1 above.
NoR: Pukekohe East Road Upgrade	NZTA (SGA) application discussed in Section 2.2.2 above.

9 Project Engagement

This section sets out the consultation and engagement process that NZTA has undertaken with mana whenua, landowners, network utility operators, community, and stakeholders in respect of the Stage 2 of the P2B project. It summarises engagement undertaken during each stage of the P2B project (refer Table 9) and includes the tools and activities implemented, the parties engaged, the common issues and themes raised and the engagement outcomes.

9.1 Engagement Overview

NZTA has undertaken consultation and engagement on the P2B project since 2016 for each of its stages. Stakeholder, community and affected property owner input and feedback has helped shape its design, most recently for the planning of route protection for Stage 2 of the P2B project. Working alongside the community, the P2B project team has engaged widely and used local insights to inform development and delivery of the project throughout consenting, design, and construction.

In April 2021, construction began on Stage 1A of the project, while also designing and lodging consents for the later stages (1B1 and 1B2) and sharing updates on the route protection requirements and timeframes for Stage 2. Further detail regarding the timing of approvals for previous stages of the P2B project are provided in Section 2.1.1 (above).

NZTA is dedicated to working closely with stakeholders, affected property owners and the community throughout design of the Stage 2. Engagement with mana whenua, Auckland Council and, along with interest and community groups, ensures that the Project Team recognises cultural history and utilises local knowledge to help it better understand the region it is working in and how best to design for safety and future transport resilience.

Table 9-1 below outlines the broad P2B project phases, and the key stakeholder, affected property owner and community engagement undertaken to both inform, consult and collaborate to ensure the P2B project continues to hear and incorporate local insight and knowledge.

9.1.1 P2B project Engagement Timeline

Table 9-1 Engagement based on the whole P2B project timeline

Project Phase	Timing	Engagement and Consultation milestone
Business Case	2017	NZTA sought feedback from community and industry stakeholders on improved improvements to SH1. Review the 2017 Consultation Summary here.
Detailed Business Case	2018	NZTA sought feedback on preferred option for SH1 improvements as part of the wider Supporting Growth Programme southern public consultation period. Review the 2018 Consultation Summary here.
Design and consenting	2019	NZTA began to meet with affected property owners individually regarding the potential impacts on their properties and continued to meet with stakeholders and communities to update on progress, share next steps and listen to feedback to inform design challenges. Review the 2020 Consultation Summary here.

Construction, design and consenting – Staged delivery	2021	NZTA continued to meet with affected property owners regarding individual impacts, and stakeholders and communities to share information on the staged delivery programme, the construction progress on Stage 1A and whilst also informing on the design and consenting progress of Stages 1B1/1B2 and Stage 2. Review the Stage 1B1 overview info boards here.
Construction, design and consenting – Staged delivery	2022	NZTA continued to meet with affected property owners regarding individual impacts, and stakeholders and communities to share information on Stage 1A construction progress and design and consenting progress of Stages 1B1/1B2 and Stage 2. Review the 2022 Consultation summary here
Construction, design and consenting – Staged Delivery	2023	NZTA continues to meet with affected property owners regarding individual impacts, and stakeholders and communities to share information on construction progress and design and consenting progress on of stages 1B1/1B2 and Stage 2.

9.1.1.2 Stage 2 Route Protection

Communication and engagement with south Auckland communities on Stage 2 of the P2B project has, since 2019, focused on the requirement for future route protection to enable planning for anticipated future roading improvements to be undertaken with more certainty. In January 2020, the Government had announced that *Stage 2'*[13] to Drury South would form part of the project to be delivered under NZUP (discussed in Section 2 above). However, funding for *Stage 2* was subsequently removed from the delivery scope following a further Government announcement in July 2021. In 2023, *Stage 2 and 3* were combined into a single stage for the purpose of route protection.

When future funding is secured for staged delivery of this stage, the route protection will include an additional (third) lane in each direction on SH1, wide shoulders for future bus services, a shared walking and cycling path on the western side, full stormwater treatment and improved safety and amenity features.

Table 9-2 below, outlines the engagement and consultation undertaken with stakeholders, the community and affected property owners to understand key challenges, issues and opportunities to inform the preliminary design for the designation requirements for the Project under the RMA.

9.2 Key Stakeholders

Table 9-2 sets out the engagement activity to date with stakeholder groups on the P2B project.

Table 9-2 Engagement approach by stakeholder group

Who we engaged:	How we engaged
Mana Whenua	▪ **Southern Iwi Integration Group (SIIG) hui** – the project team meets monthly with Ngāi Tai ki Tamaki, Ngāti Tamaoho, Ngati Tamatera, Ngāti Te Ata Waiohua, Ngāti Paoa Trust Board, Ngaati Whanaunga, Te Ahiwaru Waiohua, Te Ākitai Waiohua, Ngāti Maru, Ngāti Tamatera (Since late 2022), through the collective iwi and NZTA SIIG forum.

[13] **Note:** The former *'Stage 2'* referred to the P2B Project Area between Drury Interchange and Drury South. Engagement material pre-dating 2023 will refer to the Project as *'Stage 2 and 3'*, which has since been re-named as Stage 2, a single stage for route protection including the remaining P2B project extent from Drury Interchange south to the Mill Road/Bombay Interchange.

Key Stakeholders	▪ **Auckland Council** – a pre-application meeting was held with the Plans and Places team to brief them on the Project, and pre-lodgement discussion are ongoing. ▪ **Te Tupu Ngātahi Supporting Growth** – SGA has been engaged throughout the lifecycle of the P2B project including through the programme business case, most recently prior to the lodgement of adjacent project NoRs ▪ **Healthy Waters** ▪ **Local boards and community committees** – The project team regularly (generally quarterly) attends Local Board and Community committee meetings to share presentations, project updates and obtain feedback. a) Franklin Local Board b) Papakura Local Board c) Drury Community Committee d) Tuakau Community Board e) Pokeno Community Committee ▪ **Network Utility Operators** – Transpower; Watercare; Counties Energy; Vector Gas; First Gas; Chorus; Spark Fibre; One New Zealand; Tuatahi First Fibre; and 2 Degrees/Vocus; Veolia. The design team have established regular meetings with the above utility providers to advise of the designation application and process. Ongoing meetings are arranged, as and when required to update on project progress.
Community	▪ **P2B project webpage** – provides ongoing updated information on project progress and projects construction. **Project page** ▪ **Community information days** – Up to four community information days are hosted annually to meet the project team. In 2023, these were held at Papakura library on 11 March 2023, and three hosted at Drury Hall in Drury on, 17 June 2023, 9 September 2023 and 25 November 2023. All between the hours of 10am – 1pm. The project team regularly meet with between 100 -200 people at each event. ▪ **E-Newsletter** – monthly construction updates and quarterly project newsletters to provide construction and project updates. Stage 2 information provided in June 2019, March 2020 and June 2021 E-newsletters. **Publications** ▪ **Factsheets** –Papakura to Bombay route protection information sheet published March 2022 is provided in print and on the website. **Information Sheet** ▪ **Notifications, emails and letters** - Letters and notifications are released in association with project milestones or to request meetings/involvement/ feedback or to provide updates. ▪ **0800 SH1 P2B (0800 741 722)** – A free phone number is provided to speak to a member of the project team.
Potentially affected property owners	▪ **Letters and emails** – Communications commenced in 2019 and continues with potentially affected landowners. Letters and correspondence were sent to landowners identified as being potentially affected by the proposed route protection requirements. The letters invited them to discuss the project and provide feedback and insights. Further emails and e-newsletters provide general project updates. ▪ **Landowner interactions** – Approximately 80 landowners were contacted by the project team, to meet and discuss potential property impacts. Ongoing discussions are being held with a number of landowners where required due to design changes since previous meetings. Only a few property owners chose not to meet.

9.3 Engagement

9.3.1 Mana whenua

NZTA recognises and respects Te Tiriti o Waitangi and works with Māori to build strong, meaningful and enduring relationships to achieve mutually beneficial outcomes.

NZTA is committed to working in partnership with mana whenua to deliver the P2B project, following the principles of Te Ara Kotahi, our strategy for partnering with Māori, which recognises and provides for cultural heritage, identity and Mātauranga Māori.

A collective iwi and NZTA forum, called the Southern Iwi Integration Group (Southern IIG), was established in mid-2014 to discuss and consider matters of interest in relation to the development and delivery of various NZTA projects in South Auckland.

The intended purpose of the Southern IIG is to provide a forum to discuss and consider how matters, such as natural and cultural heritage, potential social, environmental and cultural impacts and design are accounted for or integrated in the P2B project's development and delivery. In undertaking Stage 2, NZTA recognises the relationships of Mana Whenua with the land and waterways of Aotearoa New Zealand and their unbroken, living connections across the land, waterways and time.

For the P2B project, engagement with the Southern IIG started with the development of the P2B business case in 2016 and has continued through its various design and consenting stages until the present day.

The Southern IIG comprises of active kaitiaki representatives from the following iwi for the P2B project:

- Ngāi Tai ki Tamaki
- Ngāti Tamaoho
- Ngati Tamatera
- Ngāti Te Ata Waihoua
- Ngāti Paoa Trust Board
- Ngaati Whanaunga
- Te Ahiwaru Waihoua
- Te Ākitai Waiohua
- Ngāti Maru
- Ngāti Tamatera (Since late 2022).

The Project Team continues to engage regularly with the Southern IIG at its general monthly hui, supported by additional workshops or briefings as required. Participating iwi receive invitations, agendas and meeting minutes for these meetings, and each group elects whether they wish to attend. The Southern IIG generally meets on the third Friday of each month.

In addition to the monthly Southern IIG hui, a fortnightly design hui has been held with iwi since November 2021. The design hui take the form of a working group and they are valuable for assisting the Project team with identifying preferred design outcomes. These meetings are generally attended by iwi representatives, the NZTA Project Director, Iwi Engagement Lead, Planning Lead and Engagement & Partnerships lead and specialists from various technical disciplines, such as planning, design, geotech, roads, bridges, and stormwater.

The NZTA commitment to working in partnership with mana whenua led to the development of an Iwi Partnership Plan with mana whenua in 2022, which is a living documents that has since been updated in 2023. This document embeds the values and principles of the partnership and how both parties engage. It has been designed to enable mana whenua aspirations for partnerships at all levels of the Kaupapa/project.

Reflecting this partnership, currently three iwi representatives are members of the SH1 Papakura to Drury Project Steering Committee, which acts as an advisory body to the NZTA project sponsor.

The outcomes and opportunities from this partnership are focused around five pous/areas as outlined in Table 9 below.

Table 9-2 The five pous/areas of the partnership focused outcomes and opportunities

Ngā hua	Outcomes and opportunities	Stage 2 Route Protection
Cultural Pou	The cultural pou focuses on incorporating Te Ao Māori into design, promoting te reo Māori, acknowledging the mana of Oopaheke, korero tuku iho, and increasing cultural competency of NZTA, suppliers, and construction team.	Promotion of te reo in project communications
Social Pou	The social pou focuses on nurturing and looking after tāngata/people through supporting kaimahi/workers in their roles.	
Economic Pou	The economic pou focuses on partnership in economic outcomes and in procurement and tendering process. It focuses on growing, supporting, engaging mana whenua businesses and the Māori economy. It looks to how the P2B project can procure and support mana whenua and Māori businesses.	Increasing economic opportunities for Māori
Environmental Pou	The environmental pou focuses on nurturing, improving, and regenerating the taiao/environment, including increasing the mauri of the wai/waterways. It is underpinned by mana whenua role as kaitiaki guardians of the taiao/environment	ISC ULDF/UDLMP 100% stormwater treatment
Partnership Pou	The partnership pou crosses over all the four pou and focuses on the strength of the partnership, how we engage and how we can continually build and grow this.	

9.3.2 Auckland Council

9.3.2.1 Auckland Council

The P2B project team has engaged with the Premium Team and the Plans and Places Team at Auckland Council through the pre-lodgement process for all project stages of the P2B project. This included meeting with Auckland Council specialists.

For Stage 2, representatives from NZTA attended a pre-application meeting with Auckland Council's Plans and Places Team on Friday 17 November 2023. Key points of discussion included:

- The Project timeline, and indicative lodgement date,
- The key areas of interest, and summary of the specialist involved in the application, and;
- The interfaced between the Project and lodged SGA NoR applications.

The feedback was incorporated into the AEE, drawings, proposed conditions and technical reports. Auckland Council requested to be kept up to date and informed of any changes to the lodgement programme.

9.3.2.2 Auckland Transport

Representatives from Auckland Transport were invited to attend a pre-application meeting held between the Project Team and Auckland Council.

9.3.2.3 Healthy Waters

Healthy Water has been engaged at various stages throughout the P2B project. Specific engagement for Stage 2 has occurred largely around the flood modelling requirements at Drury South, and has been managed in conjunction with Tonkin + Taylor, the contractor for Drury South Ltd development.

9.3.2.4 Local Boards

The P2B Project Team regularly attends and meets with the Franklin Local Board, the Papakura Local Board, the Tuakau Community Board (previously the Onewhero-Tuakau Community Board) and the Drury Community Committee at approximately quarterly intervals each year.

The P2B Project Team also meets with the Pokeno Community Committee on a six-monthly basis as preferred by the committee. The project team provides presentations on project updates, including programme, design and planning updates and stakeholder and community engagement updates.

Following early discussions with the Franklin Local Board, the NZTA has carried out investigations and modelling to address safety, congestion, and access concerns at Bombay Interchange. The conclusion is that installing traffic lights would be the most suitable short-term solution for these issues. Construction of these upgrades is set to commence early 2024, additional information available here: Signalisation of Bombay Interchange | Waka Kotahi NZ Transport Agency (nzta.govt.nz)

Feedback regarding Stage 2 route protection has remained supportive due to providing these community leaders with more certainty for anticipated future transport improvements through the mechanism of a longer termed route protection process.

9.3.3 Supporting Growth Alliance

Regular engagement is ongoing with SGA to support the development of the design and ensure integration with the planned transport network within and adjacent to and in the immediate vicinity of the Project, namely the Pukekohe Arterial Network and Mill Road Upgrade Project. Mana whenua are also involved with the SGA and meet regularly as part of the SGA projects.

9.3.4 Network Utility Operators

A number of NUOs are being consulted to discuss the potential impacts of the proposed works on the existing utilities and any future works they have planned in the area, which are identified in Table 9 below. The consultations with NUOs will be on-going throughout the design development.

Table 9-3 Network Utilities engaged with to identify existing and proposed assets

Organisation	Utility Type
Transpower	Pylons and Overhead Transmission Lines
Watercare	Wastewater pipelines, Watermains and Fibre Optic Cables
Counties Energy	Electricity Lines and Fibre Optic Cables
Vector Gas	Gas Transmission Lines
First Gas	Gas Transmission Lines
Chorus	Communication Cables
Spark	Cell Tower and Communications cables
2 degrees / Vocus	Communications Cable
One NZ	Communications Cable

Veolia	Watermains and Wastewater pipelines
Tuatahi First Fibre	Communications Cable

As part of the initial engagements with the NUOs, a number of critical existing assets were identified that may be impacted by the design, including:

- Transpower overhead pylons approaching the existing substation located immediately northeast of the proposed Drury South interchange,
- A number of Vector Gas and First Gas pipelines that fall within the proposed designation boundary,
- Counties Energy have identified the construction of a Counties Energy Zone Substation at 201 Quarry Road, and;
- Counties Energy also highlighted that they have a number of overhead lines in this area that may require relocation depending on the proposed road alignment.

9.3.4.1 Transpower

Transpower is identified as a key stakeholder in the Project due to the interaction between the proposed Drury South Interchange and the Drury Transpower Substation (Designation 8521). Transpower has been engaged by the P2B Project Team throughout various stages of the P2B project, but specific engagement relating to the Drury South site began in 2020 during the concept design stage for Drury South Interchange.

Transpower Substation

The Transpower Substation located at Harrison Road at Drury South has been a constraining factor for the design of Drury South Interchange throughout the concept design phase of the Project. Engagement has been ongoing with Transpower at the site, and conjunction with Tonkin+Taylor who has been undertaking flood modelling as part of the Crossing development (Drury South Ltd) at Drury South.

Transpower has been engaged by the Project Team during the options assessment phase for the Drury South Interchange (NOR 2) and Drury South Interchange Connections (NOR 5). The key objectives of Transpower in relation to the Project has been:

- Maintaining access to the site,
- Not impeding the safe and efficient operation of the site,
- Minimising the potential for reverse sensitivity effects,
- Not causing adverse flooding impacts on the site, and;
- Complying with the complying with the conditions of the designation (ID. 8521).

Design options were shared with representatives at Transpower at various stages throughout 2021, and preference of the emerging design option Option B, was indicated as is minimised the land take requirement at the sub-station site. Given the Transpower designation (ID 8521) will pre-date the Project, NZTA will require S176A approval from Transpower prior to construction works. Engagement with Transpower is ongoing to establish the preferred pathway to achieve this approval, which may require s176A or a rolling back of the existing designation, the details of which are to be agreed between Transpower and NZTA.

The design options and potential property impacts relating to the Transpower Substation are detailed in Assessment of Alternatives Report attached at **Appendix K** of the application AEE.

9.3.5 Community Engagement

NZTA's primary commitment is to maintain clear, timely and effective communication with the Project neighbours and the wider community. The Project Team ensures timely focused engagement is delivered at key project milestones for the P2B engagement programme, noting the P2B project is staged in delivery.

Since 2017, NZTA has hosted various community information days (with some interference due to the COVID-19 pandemic) to provide opportunity for the public to meet with the P2B Project Team, receive project updates, and provide feedback on the consenting, design, and construction phases of the projects. Since construction began on Stage 1A in 2021, these information days have become much more frequent.

In 2023, NZTA hosted four community information days, one at the Papakura Library on 11 March and three at Drury Hall on 17 June, 9 September, and 25 November between 10 – 1pm. The first event attracted around 50 visitors while the latter three events attracted between 130 and 200 visitors, providing the public with information on the progress of the project design and delivery. These opportunities also gave the community the opportunity to meet with members of the project team in person to discuss the wider P2B project and have their questions answered.

Quarterly project newsletters issued electronically (to over 600 project subscribers) and in print offer informative updates and monthly e-newsletters are issued electronically with more construction-focussed updates.

The following feedback and themes (Table 9-**)** are consistent as ongoing priority feedback from the community and neighbours of the project and continues to inform the project design and delivery. How the project has been listening to the community and responding to these concerns can be viewed here

Table 9-4 Compiled from all community information days to date

Theme	Key Feedback
Project objectives and supporting growth	▪ The proposed improvements improve access for a growing population. ▪ It's important that infrastructure keeps pace with growth. ▪ People need more encouragement to use public transport. ▪ Ensure the roads are built to last and resilient to the impact of climate change. ▪ Concern whether plans will be sufficient for growth. ▪ Desire for more certainty around decisions and timing. ▪ Support for infrastructure being future proofed for growth. ▪ Desire to see faster progress than previous projects on the SH1 Southern Motorway. ▪ The importance of meeting project delivery timeframes. ▪ Desire for disruption to residents and road users to be minimised. ▪ Positive response to route protection. ▪ Looking to understand how the project fits in with wider transport projects in the area.
Walking and cycling	▪ A shared path would provide health benefits and increase local transport choices. ▪ The path should connect to residential areas and be protected from the noise of the motorway. ▪ Some participants questioned the utilisation of shared paths in the area. ▪ Strong support for increased walking and cycling networks and capacity. ▪ Cycle lanes need to be separated from cars for safety, noise and fumes. ▪ Personal safety and safety between modes was cited as a concern. ▪ Desire for links into communities and connections to public transport. ▪ Support for the walking and cycling path and improved local connections. ▪ Concern about how people on foot and people on wheels interact on a shared pathway.

Public transport (PT)	▪ High level of agreement that more frequent services and better journey times would encourage them to use PT. ▪ Key issues were ensuring a reliable and genuine express service, with a need for quality connections and ease of access to the network.
An additional northbound and southbound lane	▪ Support for additional northbound and southbound lanes. ▪ Participants suggested longer merge lanes (for motorway on-ramps) and lanes for slow vehicles and buses.
Strategic connections	▪ Desire for connections to schools, rail, jobs and Pukekohe West growers. ▪ Concern about Drury as both a pinch point and safety hazard. ▪ Consider truck – train interchange and park and ride facilities. ▪ Mixed feedback on using the additional capacity lanes for special vehicles versus general traffic. ▪ Concern over dedicated bus lanes duplicating the existing rail network.
New or upgraded interchanges	▪ Support for the interchanges at Papakura, Drury, Ramarama and Bombay to be upgraded.
New local road connections	▪ Support for Mill Road Extension and Pukekohe Expressway. ▪ Protection of sites and connections with Pukekohe and SH22. ▪ Desire for disruption to existing residents to be minimised. ▪ Split preference for trucks and traffic to be located away from existing homes versus those wanting a direct route close to those homes.
Intelligent transport systems (ITS)	▪ Mixed feedback on variable speed limits. ▪ Support for ITS to manage traffic flow and capacity.
Stormwater	▪ Support for the treatment of stormwater from the highway. ▪ Positive response to using swales and wetlands for treatment and flood mitigation.
General Feedback	▪ Suggested transport improvements within the local area, including a train station at Drury and extra lanes along Great South Road. ▪ Improve local amenity at Drury, including reducing traffic and easing congestion. ▪ Reserve a lane for trucks, to improve traffic flow. ▪ Fast-track the project. ▪ Concern about severance to Drury caused by planned interchange. ▪ Desire to see faster progress than the previous SH1 Southern Corridor Improvements project (between Papakura and Manukau). ▪ Questions about extending the first phase south from Drury to Ramarama. ▪ Minimising disruption to residents and road users. ▪ Wanting to learn about further construction to come and timeframes. ▪ Positive feedback about the construction works underway, with minimal traffic impacts to date.

9.3.6 Engagement with affected landowners

Engagement with property owners potentially affected by the project was initiated in mid-2019. Letters were sent to all property owners identified in the detailed business case providing information on the project and offering a meeting with members of the project team. These in-person and (where requested) online meetings provided an opportunity for property owners to learn what portion of their property that might be affected by the Project in future. As preliminary design work had not been completed at this stage, these initial meetings offered property owners the opportunity to learn of the wider project benefits and intentions and the implications of route protection on their ongoing use of their properties, and for the project team to learn from the property owners about their local circumstances and considerations and any individual property challenges that might influence the design of the project. Since these initial meetings, further meeting opportunities have been provided in 2022 and 2023 to discuss with individual owners the emerging impacts on their properties and to provide opportunity for their further feedback as the design work progressed. Wherever possible, two meetings have been held with all potentially affected property owners. Subsequently, where new additional landowners were identified during the development of the preliminary design, meetings were also offered and held to show the emerging design with interested property owners.

Common themes raised by property owners included:

- Concern about the amount of land the project required from their properties and why,
- Concern about the uncertainty of timeframe for when project construction might occur in future,
- Concern about the impact of route protection on their ability to sell or develop their land before required for the project,
- Negative impact on their financial situation and ability to provide a legacy for their families,
- Concern raised to potential impacts to rural/industrial businesses,
- Concerns raised for the impact on notable features on their property and surrounding boundaries i.e. streams, bores and trees, and;
- Concerns raised about privacy and amenity impacts these changes will have from the current environment.

The project team responds to concerns through design changes where practical and feasible. The project team continues to meet and engage with directly affected property owners as necessary, to ensure they have adequate information about the project's expected impact on their property and regarding route protection in general.

As well as meeting/s with the project team, property owners also receive general project progress updates via email, e-newsletters (if subscribed) and are made aware of community information days. As with other stakeholders, property owners are also able to emails or call the project team and receive responses to their queries.

9.4 Summary

Engagement for Stage 2 has occurred for the P2B project through all project stages including during the development of the indicative business case, options assessment and NoR preparation. Engagement has been with project partners, affected network providers, key stakeholders, directly affected property owners and the wider community. Engagement has been used by the project team to inform and amend as appropriate the design for the future upgrade of the SH1 Southern Motorway and the route protection of land required for the project until funding is available for future construction.

10 Assessment of Effects on the Environment

10.1 Introduction

This section provides a summary of the actual and potential effects generated from the construction and operation of all the Project NoRs including whether these effects are positive or adverse, as well as the scale, duration and location of these effects.

Key transport outcomes, land use integration and the avoidance of adverse effects on areas or features of high value have informed the extent of the NoR boundaries. Where avoidance has not been possible, measures to remedy or mitigate adverse effects have been proposed. Details of these are included in Section 10.13 and reflected in proposed designation conditions at **Appendix L** (Parts 1 to 5).

The assessments contained in the section below generally pertains to all the Project NoRs overall, where the assessment is specific to Project NoR areas this is made explicit in the section headings.

10.2 Positive Effects of the Project

The Project is integral to enhancing the safety and resilience of the state highway network between Auckland and Hamilton. It is expected the Project will provide increased transportation options and accessibility to support national and regional economic growth. The following section discusses the multitude of positive impacts the Project (across all Project NoRs) may generate for the region.

10.2.1 Transport and Traffic Effects

The Project represents a strategic enhancement of an existing transport corridor of national significance. The Project Objectives are aimed to protect the long-term viability, safety and efficiency of this corridor, and have been identified through various levels of investigation. Modelling undertaken to support the Project anticipates positive benefits of these enhancements on the overall transport network to be significant and can be summarised as follows:

- Achieve the overall objective of the P2B project by continuing the operational performance of SH1 in South Auckland until 2046,
- Improve the safety, efficiency and effectiveness of travel along SH1 and at Drury South Interchange, which is a strategically significant route both regionally and nationally as the main transport corridor between Auckland and Hamilton. The additional lanes along the motorway will ensure effective continuity of capacity from Stage 1 of the P2B project, which will;
  - Significantly reduce travel times along SH1, which will lead to quicker and more efficient journey times for both northbound and southbound users during peak hours in the years 2038 and 2048,
- Provide upgraded facilities for pedestrians and cyclists, which will:
  - improve accessibility and safety for active mode users,
  - address the current lack of such facilities in the Project Area,
  - provide active mode users with a safe separated accessway, acting as an alternative to local roading network,
  - promote active mode shift (away from private vehicle use), and;
  - facilitate community health and wellbeing through the uptake of active modes,
- Provide improvements along SH1 to enhance the safety and resilience of the motorway network, including wider shoulders, enhanced median barriers, wider traffic lanes, and an improved alignment (ie. 110km/h design speed),

- Provide for a wide shoulder within the motorway corridor allowing for the future adoption of a bus lane along SH1,
- Improve efficiency at Ramarama Interchange where northbound ramps will intersect a new roundabout intersection layout, with grade separated SUP connections,
- In conjunction with adjacent transport projects, re-enforces the roading hierarchy by, deceasing traffic on the local road network, and allowing for more efficient travel via SH1,
- Provide improved connectivity for national and regional freight by providing direct connections between land zoned for Light Industrial at Drury South and SH1 via the Drury South Interchange Connections, and;
- Provide a vital transport connection to achieve the strategic objectives of adjacent transport project, specifically the SGA Pukekohe Arterial Network and Mill Road Upgrades Project, without which they cannot directly connect to SH1 and direct traffic away from the local roading network.

10.2.1.1 Vehicle Emissions

The Project proposes additions and alterations to an existing piece of transport infrastructure (SH1), which is a significant transport corridor supporting the New Zealand and Auckland economies. SH1 (and the Project) form part of a wider integrated multi modal transportation network planned to connect into adjacent transport projects and support growth in the South of Auckland. In addition, the Project a priority identified under ATAP. The Project supports New Zealand's efforts to mitigate climate change and transition to a low-emissions economy by:

- Providing a new SUP, connecting to the path at Drury Interchange and into local walking and cycling infrastructure, which will be a key enabler in facilitating mode choices for users, where there are currently no active mode provisions on SH1, and;
- Future proof for the opportunity of a bus lane (or similar link) along SH1, which can be accommodated within the widened shoulder of the state highway (if necessitated).

The wider P2B project is expected to increase the capacity of SH1, which is due principally to respond to planned growth areas in the South of Auckland. For Stage 2, the increase in capacity is also due in part to adjacent transport projects, which make SH1 a more attractive option for efficient travel. These adjacent projects are intended to reinforce the roading hierarchy, by decreasing traffic volumes on the local roading network, and allowing for more efficient travel via SH1. Overall, the impact of this Project on SH1 operational traffic volumes is expected to be minor[14].

It is noted that the emissions associated with the use of SH1 will be influenced by multiple factors, including the uptake of electric vehicles and other strategic system level interventions to decarbonise New Zealand's land transport system. Such as, the Emissions Reduction Plan (2021), which seeks rapid adoption of low-emission vehicles and work towards decarbonising the heavy vehicle fleet. In the longer term, consideration of other system wide/network optimisation interventions (e.g. prioritising a lane for freight and/or high occupancy vehicles) could reduce increases in VKT, and hence lower emission impacts.

10.2.2 Ecology Effects

The Project will provide the opportunity to enhance ecological value, through the treatment of stormwater and restoration of riparian areas, however these effects will not be assessed until the detailed design stage and application for regional resource consent. In terms of the route protection exercise, where the assessment of effects is limited to DP matters, the Project is expected to have the following positive effects on ecology within the receiving environment:

Native restoration planting and removal of exotic street trees will occur on roadsides which will:

- Provide habitat for native fauna,

[14] Stage 2 P2B Transport Impact Assessment

- Assist in providing a native plant seed source in the local area which will eventually lead to the growth of native plants in other areas, and;
- Provide indigenous resources for native fauna and contribute to local native seed sources.

10.2.3 Arboricultural Effects

Positive arboricultural effects will occur within the Project Area as the project provides the opportunity to introduce new trees and increase the number of native species. Where most tree planting within the existing grass berms and residual land is largely 'ad hoc', is self-seeded or consists of non-uniform plantings. The future construction of the altered traffic lanes and associated SUP will enable replacement and enhancement planting on NZTA land, across the entire Project Area. This has the potential to provide for positive effects on the trees within the Project Area.

10.2.4 Archaeological and Historic Heritage Effects

Archaeological and/or historic heritage sites encountered within the proposed area of works (either known or unknown) are likely to be destroyed, the subsequent archaeological investigations undertaken would help provide information about the sites. It is recommended that where possible that this information be presented to the public through the use of interpretive panels or displays, which on balance may enhance the awareness of these places in the community.

10.2.5 Landscape and Visual Effects

The Project will result in the following positive effects on the landscape character of the Project Area through:

- Providing green corridors through extensive planting on either side of SH1,
- Construction of a SUP to provide active accessibility for the community, and;
- Enhancement of the Akaroa Trail route within the SUP.

The Project will result in the following positive effects on the visual amenity of the Project Area through:

- Increased visual amenity by providing an increase in planting around SH1,
- Improved aesthetics of existing bridges,
- Detailed design to consider planting heights to enhance and frame key views, and;
- Landscape planting between SUP and SH1 to enhance SUP user experience.

In addition, the use of the ULDF in guiding the detail design may result in the following positive effect by providing:

- Detailed design is to consider planting heights to enhance and frame key views, and;
- Landscape planting between SUP and SH1 would enhance SUP user experience.

10.2.6 Network Utility Operators

The implementation or upgrade of motorway corridor and associated relocation of utilities, if required, will allow utilities to be generally located outside the carriageway in the future, making ongoing access and maintenance easier.

Subject to ongoing engagement with utility providers (provided through the proposed designation conditions at **Appendix L**) there is the potential for positive effects resulting from the rationalisation of utilities service locations in the existing corridors and co-location within a common services trench for underground services for both new and existing corridors. This will also make future access and maintenance of the different utilities more manageable.

10.3 Transport and Traffic Effects and Mitigation

The Assessment of Transport and Traffic Effects Report (Transport Assessment), attached at **Appendix D** of the this Report assess the actual and potential effects of the future construction and operation of the Project as it relates to the wider transport network; and recommends ways of managing these effects.

The Transport Assessment has been based on both a 2038 and a 2048 forecast year to account for construction effects and full operational effects respectively. This aligns with the available regional transport models and the likely implementation timeframes for the Project (approximately 10-20 years).

The following section provides a summary of the transport and traffic effects, and proposed mitigation measures for all the Project NoRs.

The positive transport and traffic effects of all Project NoRs are set out in Section 10.2 above.

10.3.1 Methodology

The Transport Assessment methodology outlined in this section assess the Project in the context of the of the existing and likely future environment. The approach to the assessed environment can be found in Section 4 of the Transport Assessment at **Appendix D**.

The Transport Assessment considered the potential for effects on the transport network both during the construction and once the Project is operational. The focus on longer-term route protection for longer-term implementation means that the assessment focused less on detailed analysis of the existing environment and more on the likely future environment and potential effects of the Project NoRs.

Based on the indicative construction methodology (refer DCR at **Appendix C**) an assessment of construction effects was completed for the Project sufficient to support each NoR. This considered:

- 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, and;
- Assessment of potential conflict areas with vulnerable road users that will need specific mitigation within a Construction Traffic Management Plan (CTMP).

Potential operational transport effects were assessed using:

- Transport planning assessment of expected outcomes and effects,
- Transport modelling to inform demands and network performance, and;
- Alignment with various policy documents.

10.3.2 Transport and Traffic Effects Across all Project NoRs

10.3.2.1 Construction Effects

The Project construction will employ temporary traffic management techniques, which are already commonly used across Auckland's motorway network to minimise disruption and improve efficiency during the construction phase. It is expected that contractors will use these conventional traffic management approaches, but the specifics will be determined in the detail design stage. Therefore, it is recommended to align these details with the principles outlined in the Project's Construction Traffic Management Plan (CTMP).

There is no existing walking and cycling facilitates within the existing motorway interchanges at Bombay and Ramarama, except for a limited number of disconnected footpaths, and therefore the number of people

accessing them via Ararimu Road and/or Mill Road is expected to be few in number. Therefore overall the adverse effects on walking and cycling during the construction of the Project are anticipated to be negligible.

As above, the public transport network does not utilise the motorway corridor (with the exception of very few inter-city bus services), as such, any potential for construction effects on the public transport network are not anticipated.

The potential for adverse construction effects on the transport network within specific NoRs is discussed in Section 10.3.3 below.

10.3.2.2 Operational Effects

As discussed in Section 10.2, all the Project NoRs have been assessed to have a positive operational effect on the transport network. The following section discussed the specific operation effects on the wider transport network (both positive and adverse).

10.3.2.3 Safety and Efficiency of the Transport Network

The Project will bring about a significant change from the existing condition of the motorway corridor and result in effects on the operation of the transport network. This section assesses the potential for effects of the operation of the Project on the users of the motorway corridor, which include traffic volumes, travel times and, the safety of the motorway corridor.

The Project will result in an increase of traffic volumes south of the Drury Interchange, and between the Drury South and Ramarama interchanges, most noticeably around the forecast year of 2048. Minor reduction of traffic volumes is expected on the Ramarama Interchange ramps due to the addition of a new interchange at Drury South, while increased volumes are predicted at the Mill Road/Bombay Interchange, as a result of Southern Growth Area. There will be no significant changes in traffic volumes forecasted south of Mill Road/Bombay Interchange.

The operation of the Project is expected to affect travel times on the motorway network. For the purposes of the Transport Assessment a travel time between Bombay and Papakura Interchange was assessed. The modelling indicates that a reduction in travel times will be observed, with the most significant reduction around 2038. However, the 2048 forecast year shows worsened travel times, with lower average reductions in travel time and less significant benefits during the northbound morning peak period. This is likely to be a result of capacity constraints on the network north of the P2B project extent. Overall, it is considered that the Project will contribute to improving travel times on the motorway network.

The Project (in conjunction with adjacent transport projects, i.e. SGA projects) is expected to result in an increase in traffic on SH1 and local arterials leading to the motorway, with corresponding reductions in traffic on parts of the local network. Reduced traffic volumes on the local road network resulting in a lower rate of crashes. Reduced congestion is expected to lead to fewer rear-end collisions and a safer environment for all road users, including pedestrians and cyclists. However, it is noted that a reduction in congestion may lead to higher speeds on the road, which carries the risk of more accidents. Additionally, the wider lanes, shoulders, and additional lanes on SH1 may contribute to an increase in crashes due to more lane changing and vehicle manoeuvring.

Overall, the potential for adverse effects on safety of users of the motorway corridor are expected to be appropriate and are consistent with those of other motorway upgrade projects, which seek enhance the efficient and safe operation of the network.

10.3.2.4 Effects on Pedestrians and Cyclists

It is expected the Project will enhance pedestrian and cycle facilities within the Project Area by providing a SUP and grade-separated facilities at all interchanges. This is predicted to have a positive effect on pedestrian safety, as there are currently no active modes facilities provided at these locations. However, it is noted that

increased traffic volumes on certain local roads near interchanges may have the potential to impact amenity for pedestrians and cyclists.

Overall, the transport corridor will have a number of significant positive effects on pedestrians and cyclists.

10.3.2.5 Effects on Public Transport

The widening of motorway shoulder will accommodate for potential future bus lanes.

Potential future bus lanes using SH1 will experience improved travel times and safer journeys through the Project Area. The reduction in traffic volumes on SH22 and the local road network, particularly Linwood Road, will enhance the reliability of bus services operating on these routes. The proposed shoulder lanes on SH1 offer the potential for future bus routes to utilise them and providing more reliable travel speeds for buses on the motorway network.

Overall, no significant adverse public transport effects have been identified.

10.3.2.6 Effects on Freight

The Project will directly benefit freight movements on SH1 by reducing travel times in both directions. Additionally, nearby routes such as SH22, Linwood Road, and Great South Road will experience a reduction in traffic volumes, providing further benefits to freight movements. The new Drury South interchange will offer increased route choices and potentially reduce journey times for freight movements, particularly in anticipation of future growth around Pukekohe and Drury.

Overall, the Project will result in a positive effect on the movement of freight within SH1.

10.3.3 Transport and Traffic Effects for Specific-NoRs

The following section assessed the potential for adverse effects on transport and traffic associated with the construction and operation of specific Project NoRs.

The potential for adverse effects on the existing SH1 corridor are largely addressed within the section above, which pertains to all Project NoRs.

10.3.3.1 NoR 1-3 SH1 Alterations and NoR 4 SUP

There are no additional construction or operational effects associated with NoRs 1-4, beyond those discussed in Section 10.3.2 above.

10.3.3.2 NoR 5 Drury South Interchange Connections

10.3.3.2.1 Construction Effects

The construction effects associated with the Drury South Interchange Connections is expected to be consistent with the assessment above. The contractors engaged to deliver the Project will adopt a combination of both conventional and innovative traffic management approaches to minimise disruption to traffic movement, as well as to assist with the efficient construction of the improvements themselves. Furthermore, the Project (NoR 5) will only interface with the existing transport network at the Great South Road and Maketu Road intersections, where conventional traffic management approaches will allow the existing transport corridor to continue operating through construction, notwithstanding minor delays to travel.

10.3.3.2.2 Operational Effects

The Drury South Interchange Connections is expected to have the following effects on the operation of the transport network:

- The construction of SUP will allow for walking and cycling connections between Great South Road and Quarry Road, where there are currently no existing facilities, providing greater transport choices for users of the network,
- Provide for future public transport connections between Pukekohe and Drury via SH1, and;
- Reduced congestion, delays and increased route choice will be beneficial for the efficient movement of freight.

In addition to the above points, the Project will provide two new connections either side of SH1 with associated intersections at Great South Road and Quarry Road. These are additions to the road network, and can be expected to increase the risk of crashes, as there are no existing intersections at these locations.

10.3.4 Recommended Measures to Avoid, Remedy or Mitigate Potential Adverse Transport and Traffic Effects

The following section sets out the measures to avoid remedy or mitigate the potential adverse effects on transport and traffic, unless stated, the recommendation are applicable to all of the Project NoRs (i.e. NoR 1-3, NoR 4, and NoR 5).

10.3.4.1 Construction Effects

It is considered that potential temporary construction traffic effects can be accommodated and adequately managed via a CTMP which is to be developed closer to the time of construction. This is a standard mitigation approach, which has been utilised on similar motorway upgrade projects, such as the Southern Corridor Improvements Project. As set out in the proposed conditions (**Appendix L**), a CTMP is proposed to be prepared for all Project NoRs. Any potential construction traffic and transport effects shall be reassessed prior to construction taking into account the specific construction methodology and traffic environment at the time of construction. 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 should include:

- Methods to manage the effects of temporary traffic management activities on traffic,
- Measures to ensure the safety of all transport users,
- 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,
- 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,
- Identification of detour routes and other methods to ensure the safe management and maintenance of traffic flows, including pedestrians and cyclists, on existing roads,
- Methods to maintain vehicle access to property and/or private roads where practicable, or to provide alternative access arrangements when it will not be,
- 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, and;
- Methods that will be undertaken to communicate traffic management measures to affected road users (e.g. residents/public/stakeholders/emergency services).

Auditing, monitoring and reporting requirements relating to traffic management activities shall be undertaken in accordance with NZTA's New Guide to Temporary Traffic Management.

10.3.4.2 Operational Effects

As discussed above the Project is expected to have a positive effect on the operation of the wider transport network. Therefore, no mitigation measures are identified as necessary to mitigate the potential operational effects on the transport network at this time.

10.3.5 Summary of Transport and Traffic Effects

Based on the assessment of construction and operational effects, as summarised above, there is sufficient network capacity to enable construction of the Project NoRs. To adequately address the potential for any adverse construction effects, a CTMP will be prepared prior to the start of construction. With this mitigation in place the potential for adverse effects on the transport network arsing from construction of the Project will be less than minor. In terms of the operation of the new network, the Project will provide considerable positive effects on the transport system, in particular improved safety, connectivity, resilience and contribution to mode shift from private vehicles.

10.4 Noise and Vibration Effects and Mitigation

The Assessment of Noise and Vibration Effects Report (Noise and Vibration Assessment), attached at **Appendix E** of this Application, respectively assesses the likely construction noise and vibration effects, associated with all the Project NoRs using the methods recommended in the NZS 6803 in accordance with the AUPOP.

The following sections provide a summary of the assessment, including the methodology applied and recommended measures to manage any adverse effects.

There were no positive effects identified in relation to noise and vibration.

10.4.1 Construction Noise and Vibration

10.4.1.1 Methodology

The following methods were followed in the assessment of construction noise and vibration effects:

- Analysing the ambient noise level data from site surveys to determine if the recommended noise performance standards are appropriate,
- Reviewing the noise and vibration emission data for each construction task/process based on equipment data previously measured by Marshall Day Acoustics for similar activities. Data from appropriate noise and vibration standards (e.g., BS5228-1:2009) has also been considered, where relevant, and;
- Predicted noise and vibration levels from construction based on relevant standards and guidelines and determined conservative setback distances where compliance with the relevant standards can be achieved.

Protected Premises and Facilities (PPFs) also referred to as sensitive receivers in Noise and Vibration Assessment, included dwellings (including those that have building consent but are not built yet), educational facilities and their playgrounds within 20m of any school building, boarding houses, retirement villages, Marae, hospitals with in-patient facilities and motels/hotels in residential zones. Businesses were not considered PPFs as they are not considered noise sensitive and are often noise generators in their own right.

10.4.1.2 Construction Noise Effects across all Project NoRs

The Project is located in a predominantly rural setting and is removed from existing residential/urban areas. The exception of this is a small area of FUZ located to the north-west of NoR 1, and the Drury South Precinct which extends from the proposed Drury South Interchange to Ramarama Interchange (adjacent NoR 2).

Overall, the proposed works are generally removed from sensitive receivers, with only a limited number of dwellings in proximity to the proposed NoRs.

Table 10-1 below summarises the number and approximate location of buildings that may receive noise levels exceeding the relevant noise criteria (refer to Section 4.1.1 of the Noise and Vibration Assessment, from earthworks, without mitigation).

Table 10-1 Dwellings at which works may exceed the noise standards (without mitigation)

NoR 1	NoR 2	NoR 3	NoR 4	NoR 5
25 Tegel Road	88 Ararimu Road		187, 188, 203, 1-5/216 Mill Road	65 Harrison Road
10, 296 Quarry Road	1 Bombay Road		33, 85, 151, 177, 199, 352 Hillview Road	
	7 McEldownie Road		1121, 1246, 1255, 1279B, 1832, 1875, 1940, 1974, 1998 Great South Road	
	6, 34, 44 Maher Road			
	11 Piwaiwaka Lane			
	17, 19, 21, 23, 25, 27 Pekepeke Lane			

The works on SH1 will generally remain within the extents of the existing designations. The SUP will be constructed within NoR 4 which in parts overlaps with the existing SH1 Designations. NoR 5 consists of the construction of a new link road at Drury South Interchange which is outside the existing SH1 Designations.

10.4.1.3 Construction Noise Effects for Specific-NoRs

The following section outlines the potential for adverse construction noise effects on specific-NoRs.

10.4.1.3.1 NoR 1-3 Alteration of SH1 Designations

The Noise and Vibration Assessment considered that night-time works would generally be required for bridge works and re-surfacing (within NoR 1-3), which both occur as a right within the existing SH1 Designations (6706, 6700, 6701). The assessment makes particular note of the property at 1823 Great South Road, which is located 85m from the SH1 bridge crossing of Great South Road bridge. It is anticipated that the construction works will exceed the night-time noise levels at this dwelling. The exceedance is considered to be more than minor, and will require consultation and management of noise levels if piling is undertaken at night, which will be managed through a Site-Specific Noise Management Schedule.

10.4.1.3.2 NoR 4 SUP

The construction works on the SUP (NoR 4) will largely be undertaken during the daytime and will be located almost entirely within the existing motorway corridor. The Noise and Vibration Assessment finds that noise levels at the dwellings along the eastern extent of the motorway corridor will experience levels between 45 and 55dB LAep, while properties to the west of the corridor would experience levels of 70 dB LAep with a barrier in place. The levels are considered to be acceptable for person/s at these properties.

10.4.1.3.3 NoR 5 Drury South Interchange Connections

The construction works for the Drury South Interchange Connections will largely take place outside of the existing motorway corridor, through land zoned Mixed Rural and Business Zones (Drury South Ltd). The Noise and Vibration Assessment identified 65 Harrison Road and 296 Quarry Road, as sensitive receivers that may experience noise level above the permitted standards without mitigation in place.

10.4.1.4 Construction Vibration Effects across all Project NoRs

The Noise and Vibration Assessment considered the potential for vibration effects generated by the construction of the Project on nearby dwellings, which indicates that the levels are generally below the threshold where cosmetic to damage to dwellings may occur. However, it is recommended person/s in the vicinity of the construction works should be notified prior to commencement of construction.

Generally, vibration levels can be perceived well below the level at which cosmetic damage to dwellings may occur. People tend to react to low vibration levels, therefore it is important to inform residents in the vicinity of the works of the potential for construction vibration to be felt.

While a few dwellings may experience vibration levels exceeding the amenity criteria (described above), no buildings are predicted to receive vibration levels exceeding the building damage criteria. The Project standards, especially during the night, are more stringent and can be exceeded at distances greater than 200m. As a result, it is recommended to schedule vibration-intensive activities near residential areas during the daytime, whenever feasible.

The following section summarises the potential for construction vibration effects on specific Project NoRs.

10.4.1.5 Construction Vibration Effects for Specific-NoRs

The potential for adverse vibration effects generated by the construction of the Project NoRs, is in general consistent with the assessment above. The recommendation is made to manage the vibration-intensive activities near residential areas, where the magnitude of vibration exceeds the *low-risk* category. The Noise and Vibration Assessment, categorises five (5) dwellings within the medium risk category (Category B), these properties are mapped in the attachment of the Nosie and Vibration Assessment at **Appendix C**.

10.4.1.6 Recommended Measures to Avoid, Remedy or Mitigate Potential Adverse Construction Noise and Vibration Effects

The Noise and Vibration Assessment Report recommends measures to avoid, remedy or mitigate construction noise and vibration effects with the overall recommendations outlined below. The primary mechanism to respond to these recommendations are the Construction Noise and Vibration Management Plan (CNVMP) and CNVMP Schedules, which is the standard approach that has been used across all the P2B projects, are proposed as condition (**Appendix L**) on all the Project NoRs.

A summary of the key recommendations from the Construction Noise and Vibration Assessment Report are as follows:

- The Project will require preparation of a CNVMP that should also include information set out in NZS6803:1999 such as:
  - Summary of the Project noise standards contained within this assessment,
  - Summary of assessments/predictions contained within this assessment,
  - General construction practices, management and mitigation that will be used for the Project,
  - Noise management and mitigation measures specific to activities and/or receiving environments, particularly for high noise and/or vibration activities, and all night-time works,
  - Monitoring and reporting requirements,

- Procedures for handling complaints, and;
- Procedures for review of the CNVMP throughout the period of Project works.

The CNVMP will be implemented on site for each specific area of work. The CNVMP should be prepared when more detail is available. In addition to the CNVMP, NZTA standard procedures for the management of noise and vibration should be implemented for all noise and vibration emissions from construction activities, irrespective of the construction occurring inside or outside the designation. These will be relied on to avoid, remedy and mitigate adverse effects where appropriate.

In addition, Site Specific Noise and/or Vibration Management Schedules (Schedules) are a useful tool in determining how the noise and vibration effects from specific activities or in specific areas will be managed and potentially affected parties communicated with. Schedules would generally be prepared where there is a high risk of exceeding the noise and/or vibration standards.

The Schedules are specific to the activity or receiver they relate to, and would therefore contain detailed information on communication, management, and mitigation specific to a certain task or area.

The following information would normally be included in a Schedule:

- The activity start and finish dates,
- The nearest neighbours to the activity,
- A location plan,
- The activity equipment and methodology,
- Predicted noise/vibration levels,
- Recommended BPO mitigation,
- Documented communication and consultation with affected persons,
- Monitoring details, and;
- Any pre-activity building condition survey for any buildings predicted to receive vibration levels exceeding the Category A criteria and receiving noise levels towards the Category B criteria.

The Schedules will be attached to the CNVMP, providing additional information that would sit alongside the general management and mitigation options within the CNVMP.

10.4.1.7 Summary of Construction Noise and Vibration Effects

The construction of Project NoRs will generate adverse noise and vibration effects, which are unavoidable and largely transient in nature. However, the effects are expected to be minimal as the majority of the work is taking place in a sparsely populated rural area or within the existing SH1 Designations. Where the noise and vibration levels have been identified to exceed the permitted standards, the recommended mitigation measures will be sufficient to mitigate these effects.

10.4.2 Operational Noise and Vibration

10.4.2.1 Methodology

The following were assessed to determine the potential for traffic noise effects on person/s within the Project Area:

- The noise criteria categories of NZS 6806 based on traffic in the Project Area only;
  - The change in noise level causing adverse and positive effects, recognising:
  - The magnitude of change (on a population basis),
  - The predicted level of traffic on the Project roads and other local roads in the area, and;

The potential for people to be highly annoyed by the resulting traffic noise levels over the wider area, again based on both the Project and local road networks. This three-stage approach has been adopted because the measurable effects of a noise level increase in some cases may not reflect the full magnitude of the effect as experienced by people. For example, the measured change in noise level may be low but the resultant effect high in some instances, particularly adjacent to existing major roads with adjoining residential receivers.

It is noted that the one of the assumptions adopted for the assessment predictions was the use of low noise road surface.

10.4.2.2 Operational Noise Effects across all Project NoRs

The following sections provide a summary of the potential for adverse effects of traffic noise during operation of the Project. It is noted that traffic noise generated from the Project NoRs cannot be modelled independently of each other. Therefore, the findings of the modelling applying to the Project overall, and there is no assessment of specific-NoRs operational noise effects.

The Project provides for route protection of the future widening of SH1. As the implementation of the Project will be some between 15-20 years in the future, the modelling provides an overview of likely effects and changes. Since the alignment location is fixed (i.e. the existing SH1 and associated connections), the modelling is considered to closely reflect what will be implemented in the future.

In assessing the noise effects of the Project, the comparison is made between the existing situation (2023) and the Design Year[15]. The assessment scenarios include the Do-nothing scenario with future traffic and the Do-minimum scenario with the Project implemented but no additional noise mitigation. Both scenarios in the design year include the assumption use of PA10 road surface (low noise surface). Although the future traffic volumes may change slightly, a 30% change is required to result in a 1 decibel change in traffic noise levels. Therefore, any minor changes in traffic volumes are considered to have no impact on the assessment outcome. The character of the noise will remain unchanged as it involves the alteration of an existing state highway, but the subjective annoyance reaction may vary among individuals based on their perception of the Project. Overall, the Project is expected to have a minimal and unnoticeable change in the overall noise level in the vicinity, ranging from -1 to +2 decibels.

The Noise and Vibration Assessment, assess the potential for adverse operational noises effects as follows:

- Any traffic noise generated within the existing SH1 Designations (i.e. SH1 Designation 6706, 6700 and 6701) is authorised by the existing designation, which have no noise limits associated with them,
- Traffic noise generation inside NoR 5 areas cannot be assessed separately from traffic noise generation inside the existing SH1 Designation (NoR 1-3),
- The SUP (NoR 4) will not generate traffic noise levels, and where noise is generated from passing bikes or pedestrians, this will be transient, and will be greatly insignificant in comparison to traffic noise generated by the adjacent SH1 corridor, and;
- The Noise and Vibration Assessment has modelled the potential for traffic noise across the remaining NoRs assessed to be ‘altered-roads’ (i.e. NoR 1-3 and 5), is predicted to change the overall noise level in the Project vicinity only marginally, to an unnoticeable and negligible degree, ranging from -1 to +2 dB.

Overall, the potential for adverse noise effects generated from the operation of the Project is negligible.

10.4.2.3 Operational Vibration Effects across all Project NoRs

The Noise and Vibration Assessment has considered that adverse vibration effects resulting from the operation of the new and altered roads, is not expected to be a risk, where the road is built according to best practise,

[15] Design Year – refers to a year 10 to 20 years after opening of the Project. Given the changing environment surrounding the Project (e.g. the Future Urban Zone that is to be developed in the future, and its associated roading projects), we have determined that 2038 is an appropriate design year. While this year is towards the upper end of the 20 year design year period, it would allow all of the P2B project stages and other projects in the area to be implemented.

and dwellings are location more than 5m from the general traffic lanes. As such there have been no operational vibration effects anticipated as a result of the Project.

10.4.2.4 Recommended Measurers to Avoid, Remedy or Mitigate Adverse Operational Noise and Vibration Effects

The Project will not have a significant impact on the traffic noise levels. The Noise and Vibration Assessment has been made on the assumption of a low noise road surface being proposed on the alignment, which will benefit existing and future dwellings in the Project vicinity. Any additional mitigation for these houses will be determined during the detailed design, should the houses still exist at that time. The mitigation may consist of barriers or building modification mitigation, whichever is determined to be the best practicable option at the time.

10.4.2.5 Summary of Operational Noise and Vibration Effects

In conclusion, the Noise and Vibration Assessment determines that the potential for adverse noise effects from traffic within the Project Area is negligible, with only a marginal change in overall noise levels predicted across all Project NoRs, with appropriate mitigation in place.

10.5 Ecology Effects and Mitigation

The Assessment of Ecological Effects Report (Ecology Assessment), attached at **Appendix F** of the application assess the potential for adverse effects on terrestrial ecology associated with the construction and operation of the Project, and proposes measures to mitigate these effects.

Positive ecology effects on the receiving environment are discussed in Section 10.2 above.

10.5.1 Methodology

For the purposes of the Ecology Assessment only, NoR 2 (Alteration to SH1 Designation 6700) is delineated into four (4) sections, as illustrated in Figure 10-1 Study Area as shown in the Ecological Assessment Study Area below. This naming convention is adopted for the purposes of this Report.

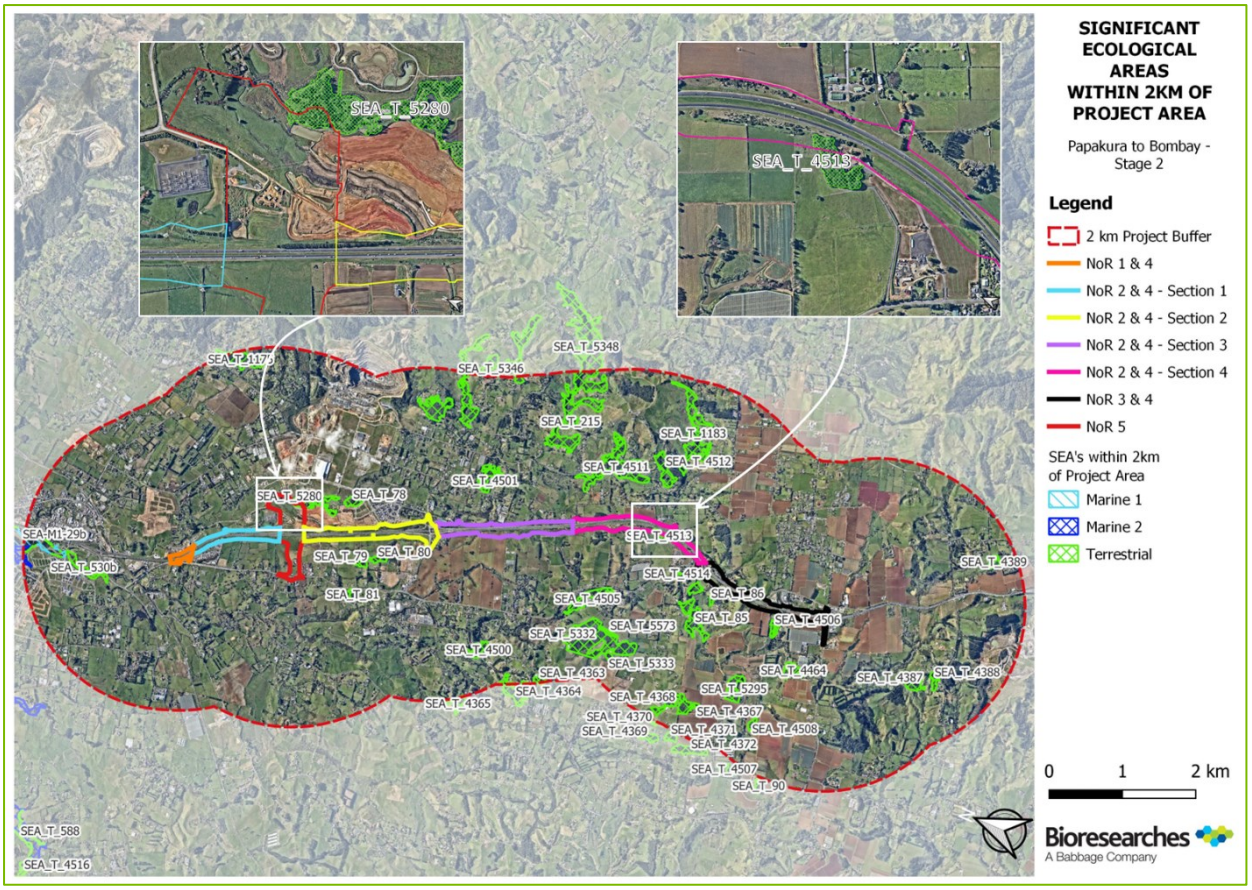


Figure 10-1 Study Area as shown in the Ecological Assessment Study Area

The assessment methodology is discussed in detail in Section 3 of the Ecology Assessment. The key aspects of the assessment approach are discussed in the sections below.

10.5.1.1 EcIA Assessment

The Ecology Assessment follows the approach outlined in the Ecological Impact Assessment (EcIA) Guidelines published by the Environmental Institute of Australia and New Zealand (EIANZ). This provides a standardised matrix framework to assess the ecological value of identified features and evaluate the magnitude of potential effects that the Project could have on these features.

10.5.1.2 Assessment of District Plan Matters and Approach to Regional Matters

The Ecology Assessment assesses DP matters only, while it is noted, there is some discussion of the existing freshwater environment and SEAs, this is only intended to guide the determination of the NoR boundaries. Resource consents for RP matters and triggers under the NES: FW will be sought a later date.

A desktop review was undertaken to determine locations and extents of protected vegetation (riparian margins, Section E15.4.1 (A18, 19) of the AUPOP and SEA, Section E15.4.2 of the AUPOP, and fauna habitats. Further assessment of these objective and polices is included in Section 11.1 below.

10.5.1.3 Wildlife Act

The Wildlife Act 1953 includes specific provisions for activities that may disturb, injure, or kill native animals. These matters have been considered in the EcIA in relation to the future construction of the Project.

Regional matters, including compliance with Wildlife Act 1953, will be addressed in a future consent phase along with a supporting EcIA, and are not formally assessed in this report. However, the relevant regional matters have been screened to inform the designation boundary and future regional resource consents.

10.5.1.4 Biodiversity Areas

Given the longer timeframes associated with the project it is possible that the biodiversity values identified at this point in time may change by the time the Project is constructed. As a result NZTA proposes an approach which identifies certain areas with biodiversity values now (referred to as Biodiversity Areas) and then required an updated assessment of those Biodiversity Areas at the time of construction. These specific ecological area should be reassessed in the future to determine whether species of value or if habitat of moderate or high value is still present and the appropriate ecological management undertaken in response to the values and the effects. It is anticipated that regional consents would also be sough at this time.

For the purposes of this Report a Biodiversity Area refers to an area or areas of ecological value where the Project ecologist has identified that the Project will potentially support moderate or higher values, or have a moderate or greater level of ecological effect, prior to implementation of impact management measures, as determined in accordance with the EIANZ guidelines.

10.5.2 Ecology Effects across all Project NoRs

10.5.2.1 Construction Effects

Construction activities associated with each of the Project NoRs have the potential to cause adverse effects on Biodiversity Areas within or adjacent to the NoR boundaries without mitigation measures in place. Potential adverse effects that relate to the construction activities are:

- Habitat removal that is subject to district controls, including native fauna (bats, birds and lizards) effects (strike resulting in mortality/injury, roost/nest loss/disturbance), and;
- Disturbance and displacement to roosts/nests, and bats, birds, and lizards (and their movement) 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 footprints/designations or underneath structures such as bridges.

The following sections explain the above adverse construction effects in more detail as they relate to bats, birds and lizards.

10.5.2.1.1 Bats

The ecological value of bats is assessed to be very high. It is noted however that closest records of short-tailed bats (*Mystacina tuberculate*), are located in Thames (59 kilometres southeast of the Project Area). Short-tailed bats are much less mobile by comparison to long-tailed bats. Therefore, it is unlikely that short-tailed bats will be present within the Project Area, and potential for adverse effects on this species is not anticipated. The following assessment considers the potential for adverse effects on long-tailed bat (*Chalinolobus tuberculatus*) referred herein as 'bats', as this species may be present in the Project Area.

The following potential construction related effects to bats have been identified within and adjacent to all the NoRs:

- Disturbance and displacement of long-tailed bats and/or their roosts due to construction activities leading to a change in movements within the receiving environment. It is assumed that this effect will occur after vegetation clearance (subject to RP consents) has been undertaken and is therefore likely to happen in habitats adjacent to the NoR boundaries or underneath structures such as bridges,
- Additionally, bats may be impacted by removal of DP vegetation[16] through loss of foraging habitat, roost loss and mortality or injury to bats, and;
- During construction of the Project NoRs, the following specific activities are anticipated to contribute to the above adverse effects on bats:

[16] Note: DP vegetation, refers to vegetation protected under Section E15.4.1 (A18, 19) and Section E15.4.2 of the AUPOP

- Night works (when required) and site compounds that may be lit overnight. There is potential that these works will modify the behaviour of bats if they are foraging within this area or roosting in nearby isolated stands of mature trees, and;
- Construction noise and vibration. This can affect the behaviour of bats roosting nearby.

The Ecological Assessment concludes that the potential for adverse construction effects on bats across all Project NoRs will be no more minor, given the quality of the existing habitat is already significantly compromised (i.e. lit at night, experiences traffic noise), and is unlikely to accommodate bats. The effects generated through the construction of the Project will only represent a negligible change in this baseline environment, and resulting magnitude of that effect on bats will be low, if bats are present.

The overall construction effects on bats are expected to be no more than minor, this assessment is consistent across all the Project NoRs, and mitigation of these potential effects is recommended in Section 10.5.4 below.

10.5.2.1.2 Birds

The following potential construction related effects on native birds within and adjacent to all the Project NoRs have been identified in relation to native brids:

- Disturbance and displacement of native birds and/or their nests due to construction activities leading to a change in bird movements. It is assumed that this effect will occur after vegetation clearance (subject to RP consents) has been implemented and is therefore likely to happen in habitats adjacent to the Project NoRs or underneath structures such as bridges,
- Additionally, birds may be impacted by removal of district plan vegetation (through loss of foraging habitat, nest loss and mortality or injury to birds), and;
- During construction of the Projects NoRs, the following specific activities are anticipated to contribute to the above adverse effects on birds:
  - Construction noise and vibration. This can affect the behaviour of birds roosting in the immediate vicinity of construction works (up to 100 m from designation boundaries).

NoR-specific effects are discussed further in Section 10.5.3

10.5.2.1.3 Lizards

The following potential construction related effects to native lizards (*Arboreal gecko spp* and *Ground skink spp*.) within and adjacent to all the NoRs have been identified:

- Disturbance and displacement of lizards due to construction activities leading to a change in population movements. It is assumed that this effect will occur after vegetation clearance (subject to RP matters) has been implemented and is therefore likely to happen in habitats adjacent to the Project footprints/designations or underneath structures such as bridges,
- During construction of the Projects NoRs, construction activities controlled by DP provisions (i.e.: construction noise, vibration and dust) of the AUPOP are not anticipated to contribute to the above adverse effects on lizards. The magnitude of effects of disturbance and displacement due to noise and vibration for native lizards is considered negligible across all NoRs, both within the current and likely future ecological environment,
- As the ecological value of all lizard species is high, the overall level of effect is assessed as low prior to mitigation, and impact management concerning construction activities such as noise, vibration and dust is not required. The level of effect within the likely future ecological environment is expected to remain the same as the baseline, and;
- Overall, the magnitude of effect is assessed as negligible due to unlikelihood of lizard disturbance due to construction related noise and vibration within the Project. This assessment is consistent across all Project NoRs.

10.5.2.2 Operational Effects

The operational activities associated with Project NoRs have the potential to cause adverse effects on Biodiversity Areas within or adjacent to them, without mitigation. Potential adverse effects that relate to the operational activities are:

- Loss in connectivity for indigenous fauna (e.g., bats, birds, lizards) due to light, noise, and vibration effects from the operation of the transport corridors, leading to fragmentation of habitat,
- Disturbance and displacement of indigenous fauna and their nests/roosts (e.g., bats, birds, lizards) due to light, noise, and vibration effects from the operation of the transport corridors and stations. It is assumed that the habitat features (such as wetlands and riparian margins) will retain the same value as for the ecological baseline for at least a portion of the initial operation, and;
- The following sections explain the above adverse operational effects in more detail as they relate to bats, birds, and lizards.

10.5.2.2.1 Bats

The ecological value of bats is assessed as being high, however the existing habitat is already fragmented by the presence of the existing motorway, which is lit at night with high traffic movement, and already generates vehicle noise. It is therefore unlikely bats will frequently visit the Project Area, and potential for adverse operational effects on bats is no more than minor.

NoR-specific operation effects on bats are discussed further in Section 10.5.3.

10.5.2.2.2 Birds

The loss of connectivity through the presence of the transport corridors and associated disturbance, such as operational noise/vibration and light, could lead to an overall reduction in size and quality of bird foraging habitat, and has the potential to impact on bird movements in the broader landscape.

The level of effect on birds due to operational impacts associated with loss or decrease in connectivity has been assessed in the context of habitat suitability, the existing degree of fragmentation and the likely fragmentation in the future urban environment.

Connectivity effects are assessed as being low. This is however dependent on the ecological value of the species which could be reduced to having a negligible effect. Therefore, impact management is not required.

NoR-specific operation effects on birds are discussed further in Section 10.5.3.

10.5.2.2.3 Lizards

Potential operational effects on lizards across all the project NoRs from the operation of the new, upgraded or widened corridors include:

- Potential for loss in connectivity due to the presence of the transport corridor, where it is not already existing (including light and noise effects from the corridor, leading to fragmentation of terrestrial, wetland and riparian habitat and a change in population movements due to the presence of the infrastructure), and;
- Disturbance and displacement of lizards leading to a change in population dynamics due to light, noise, and vibration from the transport corridor.

No records for native species occur within the Project Area, however, plague skink was recorded approximately 230 m east of NoR 2 and 4, and NoR 5, and copper skink within 910m of NoR 2 and 4. Copper skinks may be present in other NoRs if suitable vegetation is present, although it is noted that extensive pre-clearance surveys and destructive searches along similar adjacent areas for the Southern Corridor Project, including planted bunds and below hedge rows, did not identify any native lizards. The magnitude of effects of loss in connectivity and disturbance to native lizards is considered negligible across all NoRs, both within the current and future environment considerations. As the ecological value of all lizard species is high, the overall level of effect is

assessed as low prior to mitigation, and such impact management is not required. The level of effect within the likely future ecological environment is expected to remain the same as the baseline.

Overall, the magnitude of effect is assessed as negligible due to unlikelihood of lizard disturbance due to operation of the Project. This assessment is consistent across all Project NoRs.

10.5.3 Ecology Effects for Specific-NoRs

10.5.3.1 Construction Effects

10.5.3.1.1 Bats

Although long-tailed bats are not expected to be present in the survey area, they may potentially use stream corridors as foraging or flight paths, leading to their presence over the crossing locations at night. However, the vegetation within the road corridor is unlikely to serve as suitable roosting or foraging habitat for bats.

Considering that NoR 1 is primarily situated in an established light industrial zone where light levels are generally maintained throughout the night, the potential for construction effects on bats is assessed to be minimal. However, for NoR 2-5, which are situated in a rural-urban environment, there is a likelihood of adverse effects on bats. Therefore, it is advised to conduct pre-construction surveys in these project areas to verify the presence of long-tailed bats before initiating construction activities.

NoR-specific construction disturbance effects on bats during construction are summarised in Table 10-2 below.

Table 10-2 Summary of NoR-specific Construction effects on bats

NoR	Disturbance and displacement to roosts and individuals (existing) due to construction activities (noise, light, dust etc.)
NoR 1	Low
NoR 2	Moderate
NoR 3	Moderate
NoR 4	Moderate
NoR 5	Moderate

10.5.3.1.2 Birds

The effect of habitat removal on native birds (specifically relating to mortality/injury and nest loss/disturbance) has also been considered for the district plan trees located in NoR 2, 3, 4 and 5 (refer Section 10.6). There is a reasonable probability that native birds utilise these trees for nesting. Non-TAR birds are assessed as having low ecological value and the magnitude of effect is considered to be low, with the overall level of effect assessed as low prior to mitigation.

NoR-specific disturbance effects on birds during construction are summarised in Table 10-3, for NoRs where the level of effect is assessed as moderate or higher.

Table 10-3 Summary of NoR-specific ecology construction effects

NoR	Disturbance and displacement to nests and individuals (existing) due to construction activities (noise, light, dust etc.) - Non-TAR	Loss of District Plan vegetation which may remove nests and foraging habitat, and injure or kill birds

NoR 1	Low	Low
NoR 2	High	Low
NoR 3	Low	Low
NoR 4	High	Low
NoR 5	High	Low

10.5.3.2 Operation Effects

10.5.3.2.1 Bats

Table 10-4 details the NoR-specific effects on long-tailed bats during operation. Only NoRs where the level of effect is moderate or higher are presented, with associated impact management presented in Section 10.5.4 below.

The level of effect within the likely future ecological environment across all NoRs is expected to remain the same as the baseline.

Table 10-4 Summary of NoR-specific operation effects on bats

NoR	Loss in habitat connectivity due to presence of the upgraded roadway and associated noise and lighting	Kill or injuring - vehicle strike
NoR 1	-	-
NoR 2	Moderate	Low
NoR 3	-	-
NoR 4	Moderate	Low
NoR 5	Moderate	Low

10.5.3.2.2 Birds

Noise, vibration, and lighting disturbance caused by the presence of the Project could potentially displace native birds from suitable nesting and foraging habitat within and adjacent to the NoRs. Table 10-5 below summarises the NoR-specific operational disturbance effects for birds related to disturbance.

Table 10-5 Summary of NoR-specific operation effects on birds

NoR	Loss in habitat connectivity due to presence of the upgraded roadway and associated noise and lighting	Loss in connectivity presence of the road	Kill or injuring - vehicle strike
NoR 1	Very Low	Very Low	
NoR 2	Very Low	Very Low	
NoR 3	Low	Very Low	
NoR 4	Very Low	Very Low	

NoR 5	Low	Very Low

10.5.4 Proposed Measures to Avoid, Remedy or Mitigate the Potential for Adverse Effects on Ecology

10.5.4.1 Construction Effects

Pre-construction ecological surveys and Ecological Management Plans (EMP) will be prepared for each of all Project NoRs prior to construction. The pre-construction ecological surveys will be conducted in the identified Biodiversity Areas, to determine whether species of value or if habitat of moderate or high value is still present at the time of construction. If this is the case, the following relevant management plans will be prepared:

- A Lizard Management Plan (LMP): Details of the LMP will be dependent on the lizard habitat present during the construction phase. It is expected to include activities such as reassessment or surveys of lizards habitats prior to construction, the placement of compounds and laydown areas, identification of relocation sites and the determination of timing and methods for capturing and relocating lizards. Considering that there may be a time lag between when the construction occurs and when its full ecological effects are detectable on lizard communities, the lizard management plan may recommend additional effects management measures for affected lizards, such as undertaking habitat enhancement, pest control and ongoing monitoring. The triggers to undertake these measures will be commensurate with the number of lizards relocated,
- A Bat Management Plan (BMP): Details of the BMP will be dependent on the bat habitat present during the construction phase. The likely activities will involve conducting surveys of bat habitat before construction is commenced, positioning compounds and laydown areas to steer clear of bat habitat, designing lighting systems to minimise light levels and prevent light spill from construction areas, and enforcing restrictions on night works in proximity to bat habitats,
- Native bird management: Considerations for bird management will include conducting a pre-construction bird survey within Biodiversity Areas to confirm the absence of TAR species and to provide guidance in case such species are found. This guidance may involve avoiding construction activities during the bird breeding seasons, which typically spans from September to February, nesting bird surveys, and where practicable, works set back from wetland edge, and;
- A Restoration Planting Plan (RPP): Details of the RPP will depend on vegetation and fauna habitat present at the time of construction and is likely to include identification of strategic revegetation to buffer and restore habitats, and potentially offset or compensate for high vegetation and/or fauna habitat values.

10.5.4.2 Operational Effects

Although a loss of connectivity, disturbance and displacement may be experienced by indigenous fauna; the removal of predominantly exotic (terrestrial) vegetation of low ecological value results in negligible to very low effects on fauna. Therefore, no measures are identified as necessary to mitigate the potential operational effects on terrestrial ecology.

10.5.5 Summary of Effects on Ecology

The Ecological Assessment found that overall the construction phase effects on terrestrial ecology (lizards, bats and birds) will be less than minor to minor, and operational effect were found to be negligible to minor. Suitable mitigation has been developed for those effects determined to be minor. The residual level of effect for construction and operational effects are considered negligible to less than minor.

10.6 Arboricultural Effects and Mitigation

The Assessment of Arboricultural Effects Report (Arboricultural Assessment) is attached at **Appendix G** of the application AEE, assesses the Project's potential to generate adverse effects on the trees located within the Project NoRs.

The subsequent sections provide a summary of the arboricultural effects and proposed management measures. In addition to this assessment, the amenity and ecological values associated with trees proposed for removal are assessed in the landscape and visual assessment (at Section 10.8), and the terrestrial ecology assessment (at Section 10.5).

Any potential for positive arboricultural effects are covered as part of Section 10.2 above.

10.6.1 Methodology

The Arboricultural Assessment methodology involved recording details of all trees that may be impacted by the construction and operation of the Project within the proposed designation areas.

For completeness, all trees that fall within the designation boundaries that are within road reserve, open space zones, or the notable tree overlay were recorded, and their protection status based on the current Regional Plan or District Plan were subsequently identified. Trees in road reserve or open space zones (i.e., subject to District Plan controls) that are either a pest species or are less than 4m in height and / or 400mm in girth were recorded, however their removal is a Permitted activity under the AUPOP[17].

No trees subject to Regional Plan provisions were identified in the assessment (including trees located with SEAs), however, it is noted that trees subject to Regional Plan provisions would be managed through a future resource consenting process.

10.6.2 Construction Effects across all Project NoRs

The Project is identified to result in potential adverse arboricultural effects on trees within Open Space zoned land, road reserve and the Notable Tree overlay, which are protected by District Plan provisions.

The potential for adverse arboricultural construction effects on specific Project NoRs is contained in Section 10.6.3 below.

10.6.3 Construction Effects for Specific-NoRs

The Arboricultural Assessment identifies that potential adverse arboricultural effects from the construction phase of the Project may arise from:

- The removal of approximately 34 Notable London Plane trees to enable the works within NoR 4, and;
- Works within the protected root zone of at least twelve (12) retained Notable London Plane trees to enable works in 4.

Table 10-6 below summarises the number of protected trees potentially impacted within each project NoRs. A full tree schedule is provided in the appendices of the Arboricultural Assessment included in **Appendix G** of the application AEE.

Table 10-6 Summary of NoR-specific operation effects on birds

Project Area	Number of protected trees requiring removal	Works within the protected root zone of retained vegetation
NoR 1	0	0
NoR 2	0	0

[17] As per Activity Table E26.4.3.1 (A82) and (A91)

NoR 3	0	0
NoR 4	~34	14
NoR 5	0	0
Total	**~34**	**14**

The following sections discusses the effects within specific-NoRs.

10.6.3.1 NoR 3 Alteration to SH1 Designation 6701

The SH1 Designation boundary at this location will be altered to incorporate Great South Road, therefore encompassing a notable Puriri tree grove and Norfolk Island pine trees (2) associated with the existing heritage site (Taururua Memorial, see Section 10.7 Archaeological and Heritage Effects), located between the existing SH1 corridor and Great South Road. There are no proposed works within this area, and it is currently outside of the proposed corridor alignment, adverse effects on these trees because of the altered designation boundary is therefore negligible. This assessment assumes that measures will be required to ensure the protection of this area in future.

10.6.3.2 NoR 4 SUP

The SUP constructed along the western extent of the SH1 corridor will require a batter slope to support the new structure within the property at 1832 Great South Road (i.e. St Stephen's School). The proposed works will result in the removal of approximately twenty-one (21) smaller Notable London Plane trees growing on either side of the entranceway (running east west), and at least thirteen (13) of the more significant, Notable, London Plane trees growing on either side of entranceway (six (6) on the southeast side and seven (7) on the northwest side also requiring removal.

The driveway to 1832 Great South Road historically connected to Great South Road at the present-day location of the Stephen's School Taururua Memorial (cairn). The entranceway was severed by the re-alignment southern motorway (circa. 1993), which likely resulted in the remove of some of the original London Plane Trees. This explains why the tree located to east (associated with the re-aligned Great South Road entrance) appear younger. The Arboricultural Assessment has delineated these groups as shown Figure 10-2 10-1 Location plan showing the driveway entrance to St Stephens School (Source: Arboricultural Assessment Report) (below), with 'Group 2' being the younger group of London Plane Trees.

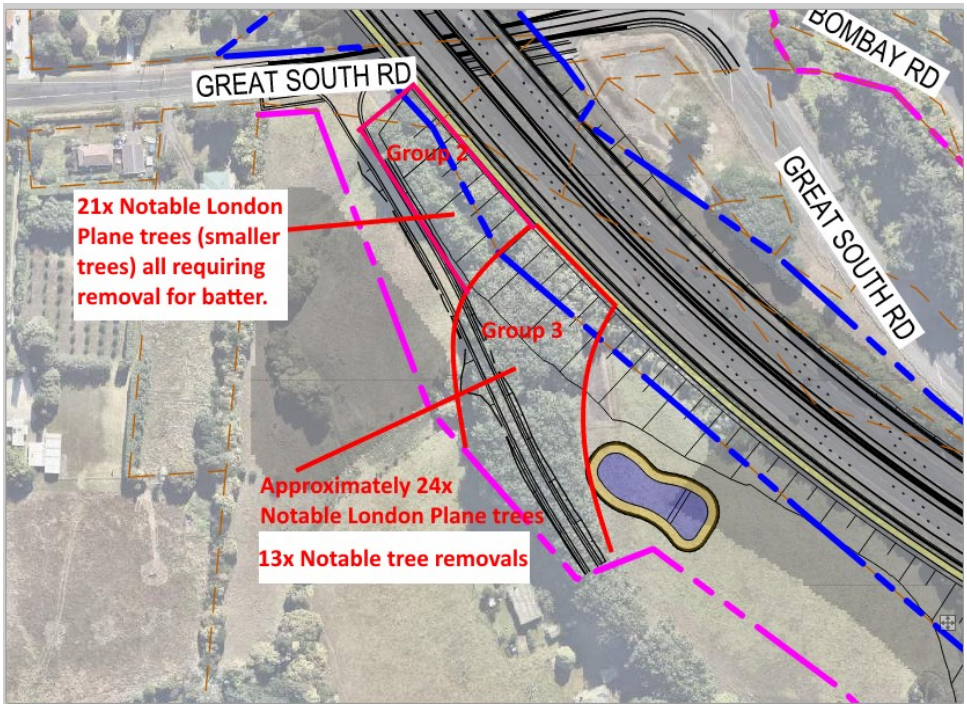


Figure 10-2 10-1 Location plan showing the driveway entrance to St Stephens School (Source: Arboricultural Assessment Report)

The arboricultural effects associated with the removal of Notable Trees is considered to be greater for the older stand of London Plane Trees (Group 3), while the younger (Group 2) tress are only expected to be around 30 years old, which diminishes their heritage value (detailed further in Section 10.7 below). Overall, the nature of removing notable trees is considered to have a minor effect on arboriculture value without mitigation in place. The removal of these trees will also result in potential adverse effects on landscape visual amenity and heritage character, which are discussed detail in Section 10.8.3 below.

Furthermore, the construction of the batter slope will require works within the protected root zones of at least eleven (11 of the remaining Notable London Plane trees. The potential for arboricultural effects of the works within the protected root zone of the London Plane Trees. Effects associated with construction may be minor without mitigation in place.

10.6.4 Operational Effects across all Project NoRs

Operational effects on trees are limited. These include the maintenance of sight lines and the overhead and lateral clearances of general traffic lanes and the high-quality walking and cycling facilities. The required clearances will be limited to existing retained vegetation. Newly planted vegetation within proposed berm areas will only require management in the medium term. Once the Project has been constructed, no further effects on trees are anticipated.

There are no operational effects identified with specific-NoRs.

10.6.5 Recommended Measurers to Avoid, Remedy or Mitigate Adverse Arboricultural Effects

Proposed measures to manage the potential construction and operational effects of the Project on trees are discussed in the sections below.

10.6.5.1 Construction Effects

Across all Project NoRs

The Arboricultural Assessment sets out a range of measures to avoid, remedy or mitigate construction effects of the Project. The overall recommendations are outlined below. In response to these recommendations, a TMP and ULDMP are proposed as conditions for NoR 1-5, this is to ensure consistency across all of the SH1 Designations and new SUP.

The key recommendation from the arboricultural assessment include:

- Preparation of a TMP which covers information such as:
  - Confirmation that protected trees identified in Appendix A of Arboricultural Assessment (**Appendix G**) still exist,
  - Advice on how the design and location of works can avoid, remedy or mitigate effects on the existing trees,
  - Recommended planting to replace trees that require removal,
  - Establishing tree protection zones and specifying tree protection measures such as protective fencing, ground protection and physical protection of roots, trunks and branches, and;
  - Detailing methods for all work within the root zone of trees that are to be retained in line with appropriate arboricultural standards.
- Urban Landscape Design Management Plan (ULDMP) proposed as a condition on all the new designations, which should include:
  - Detail of methodologies to establish new trees within the road reserve, including creation of quality below ground environments, correct planting and appropriate maintenance.

Bishop Selwyn Cairn (NoR 3)

The Notable Trees located at Bishop Selwyn Cairn must be protected by a mechanism in the NoR conditions, to ensure that no works will occur within the protected root zone of these trees.

St Stephen's School (NoR 4)

As noted above, replacement planting will be decided through planting details for the Project under the ULDMP proposed as a condition on the NoRs. Specifically for the site at St Stephen's School, where the construction of the Project (NoR 4) results in the removal of Notable Trees, it is recommended to prepare a site-specific planting plan. The planting plan must effectively remedy the Notable Trees with new plantings that may include indigenous tree species that will reach a mature height larger than 10.0m. The Arboricultural Assessment recommends a 1:1 ratio of replanting on a square meterage of Notable Tree canopy removed, to be replanted within the St Stephen's School planting plan area.

10.6.5.2 Operational Effects

It is recommended that any new public trees or mass planted vegetation (trees specifically) are planted no closer to the future general traffic lanes than 1 m to enable unrestricted future growth.

Once the Project has been constructed, no further effects on trees are anticipated. Ongoing maintenance of street trees and trees retained adjacent to the corridor is a standard operational requirement.

10.6.6 Summary of Arboricultural Effects

The Arboricultural Assessment has found that the majority of Notable Trees to be removed by the Project (21) are much younger than anticipated, and with the use of the St Stephen's School site-specific planting plan, there is an opportunity to provide re-planting that may include native species, which can enhance the arboricultural value of the Project Area. On balance with this mitigation in place, it is expected that the potential for adverse effects on trees will be less than minor. Effects on the remaining trees within the Project NoRs will be adequately mitigated through the use of a ULDMP and TMP condition on each of the NoRs.

10.7 Archaeology and Historic Heritage Effects and Mitigation

The Assessment of Archaeology and Historic Heritage Report (Archaeological Assessment) is provided in **Appendix H** of the application AEE and assess the actual and potential effects of the future construction and operation of the Project, and recommends measures that may be implemented to avoid, remedy and/or mitigate these effects.

10.7.1 Methodology

The Archaeological Assessment methodology outlined in this section assesses the Project in the context of the existing and future environment. The approach to the assessed environment can be found in Section 3.2 of the Archaeology Assessment. For brevity the following key data sources were consulted during research of the assessment:

- Site records from the New Zealand Archaeological Association (NZAA) Site Recording Scheme (SRS) were obtained from ArchSite;
- Records of previous archaeological investigations on Takaanini and in the wider vicinity were obtained from the Heritage New Zealand Pouhere Taonga (HNZPT) digital library,
- Historic maps and plans held by Land Information New Zealand (LINZ) were accessed using QuickMap,
- Aerial Photographs held by LINZ, Auckland Council and in other online archives were searched,
- Historic aerials were accessed from Retrolens,
- The Auckland Council Cultural Heritage Inventory (CHI**)** and the Auckland Council GeoMaps GIS viewer were searched for any areas of cultural significance in the vicinity, and;
- Field surveys of the proposed NoRs.

10.7.1.1 Archaeology

The assessment criteria assess first the archaeological values within the site context (condition, rarity / uniqueness and information potential), and second the archaeological values between sites (archaeological landscape / contextual value, amenity value, cultural association).

10.7.1.2 Historic Heritage

The assessment of effects on historic heritage is based on standard international practices for Environmental Impact Assessment. The methodology has been aligned to regional values assessment criteria for Auckland set out in the AUPOP Regional Policy Statement (RPS) Statement B5.2.2.1 Identification and evaluation of historic heritage places.

10.7.2 Archaeology effects across all Project NoRs

10.7.2.1 Construction Effects

The proposed designations largely follow existing roads and otherwise run through areas that are currently undeveloped pasture, often crossing or running alongside several free-flowing streams. Where specific archaeological sites are recorded and have potential to be impacted by the proposed works, these are discussed in Section 10.7.4.

The Archaeological Assessment identifies the following construction effects which are applicable to all the Project NoRs:

- Potential discovery of pre-European Māori Midden/Oven sites, and;
- Encountering unknown archaeological sites during construction works within Great South Road.

Due to the nature of the works, avoidance of any potential sites encountered is unlikely to be achievable. A Historic Heritage Management Plan (HHMP) will be prepared and submitted for NoRs, in addition to a general Archaeological Authority prepared under Section 44 of the HNZPTA, which will outline levels of recording, sampling, and reporting according to current archaeological practice.

Construction effects on archelogy and built heritage are discussed in Section 10.7.3 below.

10.7.2.2 Operational Effects

On completion of earthworks there are no expected effects on archaeological sites associated with the operation of the Project. Therefore, operational effects or measures to avoid, remedy or mitigate operational effects are not discussed further.

The Project will not generate any NoR-specific operation effects on archaeology.

10.7.3 Historic Heritage effects across all Project NoRs

10.7.3.1 Construction Effects

For the most part Historic Heritage sites have been identified both through the AUPOP and HNZPT list. A Historic Heritage Management Plan (HHMP) will be prepared and submitted for NoRs to account for accidental discovery and accommodate for places that are not currently listed.

Construction effects historic heritage within specific-NoRs are discussed in Section 10.7.4 below.

10.7.3.2 Operational effects

On completion of earthworks there are no expected effects on heritage sites associated with the operation of the Project. Therefore, operational effects or measures to avoid, remedy or mitigate operational effects are not discussed further.

The Project will not generate any NoR-specific operation effects on heritage.

10.7.4 Archaeological Effect for Specific-NoRs

10.7.4.1 Construction Effects

During the initial screening, seven items were recorded in the NZAA SRS or Auckland Council CHI that may exist within the proposed NoRs. However, it was determined that there was no reasonable cause to suspect that evidence of five of these items would be within the proposed NoRs, it was also determined that there is a possibility of the original road surface of the Great South Road to the west of the Southern Motorway overbridge near St Stephens School entrance (NoR 3).

Four properties were identified for field survey due to the presence of tributaries of the Ngākōroa and Hingaia Streams intersecting the proposed NoR 3, 4 and 5. Two of these properties were inspected, but no archaeological sites were identified. The remaining two properties will be surveyed during the detailed design process when access is available, and an Archaeological Authority will be required for works within these areas.

Although there has been extensive modification to the area along this section of the southern motorway, there is still potential for pre-European Māori and pre-1900 historic archaeological sites to be present within the proposed NoRs 1-5.

10.7.5 Historic Heritage Effects for Specific-NoRs

10.7.5.1 Construction Effects

10.7.5.1.1 NoR 2 Alteration SH1 Designation 6700

NoR 2 includes the construction of upgraded motorway infrastructure in proximity of Ramarama Hall (CHI item 1507), which is included in Auckland Council's Cultural Heritage Inventory (CHI). The Archaeological Assessment finds that while the NoR boundary will encompass this scheduled site, the design will ensure that the hall is not impacted and access will be maintained throughout the construction phase of the Project. The assessment found that the Ramarama Hall has been relocated, and highly modified overtime, with little visible evidence of its connection to the community. The hall was therefore found to have minor local significance, but not regionally or nationally. No works are proposed near the hall and access with be mainted throughout construction. The Project therefore can be constructed without adversely affecting the heritage value of Ramarama Hall.

10.7.5.1.2 NoR 3 Alteration SH1 Designation 6701

The proposed boundary alteration (NoR 3) at intersection of SH1 and Great South Road at the southern extent of the Stage 2 alignment, will encompass Bishop Selwyn Cairn Stone Monument (CHI item 1800; Scheduled site 960). While the site will be located within the altered designation boundary, the indicative design shows there will be no works or construction support areas located within the scheduled site. Therefore, there the potential for adverse effects arising from construction of the Project are expected to be avoided. However, a mitigation measure will be required to ensure this area is protected in future.

Furthermore, it is possible that some enhancements will be undertaken in this setting, in conjunction with stakeholders, through the use of a ULDMP. Though it is not proposed in the current design scheme, the concept design for the NoR boundary has allowed adequate space for the SUP to link-into Great South Road at the location of the SH1 overbridge. This allows the opportunity in the future to strengthen walking and cycling access to the heritage site, which would likely support the local heritage value.

10.7.5.1.3 NoR 4 Construction, Operation and Maintenance of a SUP

As discussed in Section 10.7.3 above the construction of SUP will result in removal of approximately 34 Notable (London Plane) Trees located at the property at 1832 Great Southern Road (St Stephen's School). An investigation of the legacy Franklin District Plan has indicated that the trees are well over 100 years old, which likely gives them heritage value at a local level, and why they were listed in the legacy plan. The trees are thought to be planted between 1870-1902, and were associated with the former Rutherford Homestead. This predates St Stephen's School for Māori boys, which was established at the property much later in 1931.

Furthermore, and as previously discussed in the section above, the accessway to 1832 Great South Road was realigned in the 1990's when the Southern Motorway was constructed. As is seen in Figure 10-310-2 Comparison of aerial photograph SN1404 T/18 (1962) and modern satellite imagery (2017) – St Stephens School Site (Source: Archaeological Assessment) below, some of the trees were removed and new trees were planted along the length of the new accessway (circa. 1978). Despite these trees being less than 30 years old, they are afforded the same notable protection as the original trees associated with the Rutherford Homestead. It is important to note, that the Project results in the removal of 22 of these much younger Notable Trees.

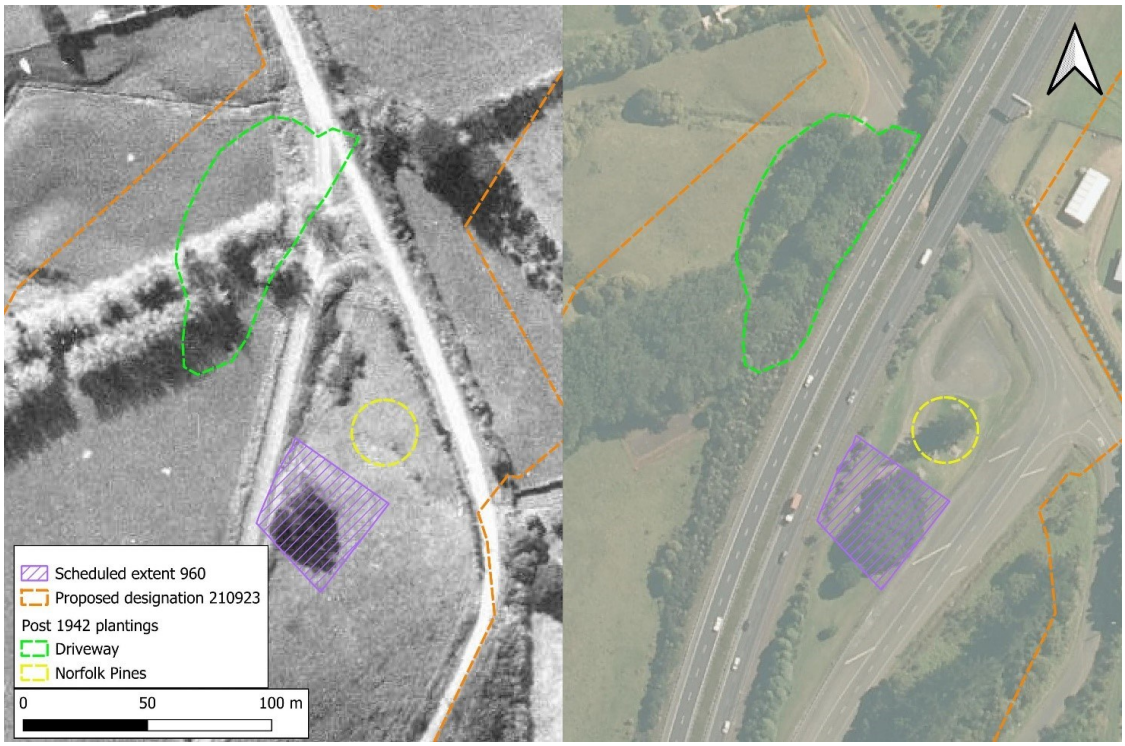


Figure 10-310-2 Comparison of aerial photograph SN1404 T/18 (1962) and modern satellite imagery (2017) – St Stephens School Site (Source: Archaeological Assessment)

Considering the removal of the trees required by construction of NoR 4 is only limited to the younger group of trees (approximately 30 years of age) it is considered that the adverse effects on the local heritage value will be minor. Largely on account that the heritage value of the grove of trees has already been compromised by the construction of the Southern Motorway.

The removal of the London Plane trees at 1832 Great South Road is considered to have adverse effects on the landscape visual amenity of the area, which is detailed in Section 10.8 below.

10.7.6 Recommended Measurers to Avoid, Remedy or Mitigate Adverse Archaeological and Historic Heritage Effects

The Archaeological Assessment sets out a range of measures to avoid, remedy or mitigate construction effects of the Project. The overall recommendations are outlined below, and are applicable to all Project NoRs:

- Preparation and implementation of a HHMP, which will guide works during construction including induction requirements for contractors (and sub-contractors) and procedures for archaeological monitoring, inspection, and investigation,
- A General Archaeological Authority to modify or destroy previously unrecorded archaeological sites that may be encountered within the Project corridor is to be applied for from HNZPT under Section 44 of the HNZPT Act. The Authority will be obtained in advance of any earthworks commencing to minimise delays, should archaeological remains be exposed once works are under way, and;
- Ensuring that the recording of any archaeological or historic heritage features encountered during works will be undertaken by a suitably qualified archaeologist consistent with accepted archaeological practice and in accordance with the requirements of the Heritage New Zealand authority.

For the removal of Notable Trees at St Stephen's School the Archaeological Assessment has recommended adopting the findings of the Arboricultural Assessment attached at **Appendix G**, and associated recommendations outlined in Section 10.6 of this Report.

10.7.7 Summary of Archaeological and Heritage Historic Effects

In adopting the recommendations set out in the section above it is expected that the potential for adverse effect on archaeology and historic heritage within the Project Area can mostly be avoided, and where effects cannot be avoided, these effects can be adequately mitigated through the use of a HHMP. For the removal of Notable Trees, the historic heritage effects are considered to be mitigated through re-planting. Overall, with the recommended mitigation in place, the potential for adverse effects on Archaeological and Historic Heritage as a result of the Project will be less than minor.

10.8 Landscape, Visual and Natural Character Effects and Mitigation

The Landscape, Visual and Natural Character Effects Assessment Report (LVA) is included at **Appendix L** of the application AEE and assesses the potential for adverse effects generated by the construction and operation of the Project on landscape character and visual amenity of the receiving environment. Based on this assessment, a series of recommendations are outlined to mitigate of these effects.

Positive landscape character and visual amenity effects generated by the Project are discussed in Section 10.2.5 above.

10.8.1 Methodology

The LVA was undertaken in accordance with Tuia Pito Ora New Zealand Institute of Landscape Architects (2022) *Te Tangi a te Manu, Aotearoa New Zealand Landscape Assessment Guidelines* (Te Tangi a te Manu). Actual and potential landscape and visual effects during the construction and operational phases of the Project were considered for the overall Project as well as the individual NoRs.

The outcomes of the LVA are guided in part by the Papakura ki Pukekura Urban and Landscape Design Framework (Project ULDF) Rev G dated 12 February 2024, which attached at **Appendix M** of the application AEE. The Project ULDF was prepared in collaboration with NZTA's SIIG Forum and seeks to retain views of natural features, balanced with the nearby urban development where visual and noise mitigation will be implemented for future neighbours. The Project ULDF has been prepared to encompass the entire P2B project alignment, across all project stages. The Project ULDF be used for the Project to guide the detailed landscape design outcomes, which will be prepared as part of an Urban and Landscape Design Management Plan (ULDMP) at the time of construction.

10.8.2 Landscape, Visual and Natural Character Construction Effects across all NoRs

The construction effects associated with all the Project NoRs are expected to be largely unavoidable and transient in nature. Furthermore, the construction works enabled by NoRs 1-3 and 4 is expected to be mostly contained within the existing SH1 designation boundaries.

There are no effects on landscape character anticipated within NoR 1-4 as part of the construction works, as the character of the motorway corridor will not materially change from a landscape in which a nationally significant motorway system is constructed, maintained and operated. However, NoR 5 is located outside of the existing motorway corridor, and expected to result in adverse effects on landscape character, detailed in Section 10.8.1 below.

The potential for adverse effects generated by the Project within specific NoRs is discussed in the Section 10.8.1 below.

10.8.1 Landscape, Visual and Natural Character Construction Effects for Specific-NoRs

The following sections discuss the landscape and visual effects generated by the construction of specific-NoRs.

10.8.1.1 NoR 1 Alteration to SH1 Designation 6706

Construction works within NoR 1 take place within an existing major transport corridor that has been the subject of a number of upgrades in the past 3 years. Any visual amenity effect will be temporary in nature and will primarily be experienced by motorists passing through the construction site. As such, any effect on visual amenity will be less than minor.

10.8.1.2 NoR 2 Alteration to SH1 Designation 6700

Construction works within NoR 2 will involve building the Drury South Interchange, GSR overbridge, and retaining walls at Hillside Road and Ramarama interchange. These structures are significant in size, and as a result, the construction period will be prolonged. This may temporarily affect visual amenity for motorists, as these structures will be visible in the foreground. However, these works are consistent with other large-scale construction projects being undertaken within in the motorway corridor.

10.8.1.3 NoR 3 Alteration to SH1 Designation 6701

Construction works within NoR 3 will result in less than minor change in the landscape character as the baseline condition of the existing visual amenity at Bombay Interchange is low. The works are expected to be noticeable within the foreground of motorist views but will not temporarily diminish the commanding views from Pukekura Hills or towards landscape features in the middle ground or background. Overall, the effects associated with construction works within NoR 3 are expected be less than minor.

10.8.1.4 NoR 4 Construction, Operation and Maintenance of a SUP

Construction works associated with the SUP within NoR 4 will mostly be undertaken in conjunction with the works associated with the upgrading of the SH1 corridor. For this reason, the construction of the SUP bridges, and road underpasses are considered to be barley distinguished beyond the construction works discussed for NoR 1-3 (above). The visual amenity receptors of the works are limited to a few existing residential properties at SH1 and GSR (refer *VIEWPOINT 07* of the LVA), notably the person/s located at 1823 Great South Road. Effects from the removal of a grove of Notable Trees at St Stephen's School to construct the SUP, is anticipated to result in more than minor effects on the visual amenity of these person/s, because the removal will expose views of the elevated SUP. Overall, the effects are expected to be more minor on account of the removal of planted grove at St Stephen's School.

10.8.1.5 NoR 5 Drury South Interchange Connections

Construction works for NoR 5 will largely occur outside of the existing motorway corridor, within a rural setting, that is undergoing significant changes in character, particularly on the east side of SH1. This will be particularly evident for the raised link road located to the east of Drury South Interchange, which will extensive earthworks in a floodplain and sensitive waterways associated with the Hingaia Stream reserve.

The construction activity taking place within the floodplain is considered to have more than minor effect on visual amenity in contrast to the likely future environment, which will comprise of a mix between residential, light industrial and public open space.

Construction works are likely to temporarily disrupt use of open space along the Hingaia Stream corridor. This is likely to result in a minor effect on the landscape character of the stream corridor.

The construction of the bridged structure will have less than minor effect on the natural character of a localised area of the Hingaia Stream floodplain during installation of the bridge footings.

Overall, despite being transient in nature construction of NoR 5 is expected to have more than minor landscape, visual and natural character effects.

10.8.2 Landscape, Visual and Natural Character Operational Effects across all NoRs

The existing environment is one of that is dominated by the visual character of an existing large scale motorway corridor, which cut through a rural setting.

The landscape and visual effects of the project NoR 1-3 are primarily driven by the extension (widening from 4 to 6 lanes and the inclusion of a SUP) of the existing motorway corridor. This includes such things as:

- New vehicle lanes,
- Removal of existing vegetation,
- Retaining walls and slope batters,
- Stormwater management (i.e. swales and wetlands),
- Motorway infrastructure (i.e. off ramps), and;
- Structures (i.e. bridges, barriers, lighting).

These structures are located predominantly within the existing SH1 designations (NoR 1-4) and are consistent with the existing landscape character of the motorway network. The LVA expects that in parts the visual amenity of the motorway will be enhanced through the introduction of landscape planting along the corridor. Positive landscape visual effects are discussed in Section 11.2 above. On balance it is expected that the landscape visual effects generated by the operation of the motorway corridor will be less than minor.

The following section summarises the operational effects of the specific NoRs in relation to landscape character, visual amenity and natural character.

10.8.3 Landscape, Visual and Natural Character Operational Effects for Specific-NoRs

The following sections discuss the landscape visual effects generated by the operation of specific-NoRs.

10.8.3.1 NoR 1 –3 Alteration to SH1 Designations

The operational effects on the Project Area are expected to be less than minor across NoRs 1-3. This assessment is based on the minimal change in visual amenity experienced by motorists within the SH1 carriageway when compared to the existing condition of the site. Furthermore, for NoRs 2 and 3, it is considered that the visual amenity experienced by motorists will improve due to the inclusion of landscape planting alongside the corridor.

Positive effects generated by the Project are discussed in Section 10.2 above.

10.8.3.2 NoR 4 SUP

The extended SUP will form part of the overall P2B consented under Stage 1 (Stage 1B1) and is considered relatively minor in the context of the proposed road structures. Furthermore, the SUP will mostly be located mostly within the existing SH1 designation. Where the SUP is located outside of the existing designation, the landscape character effects are still considered to be negligible, as the SUP will provide a low contrast in comparison to the existing SH1 overbridges and road infrastructure which already influence the landscape character.

The SUP will not affect natural character.

As above the potential for adverse visual amenity effects as the SUP will form a very limited component of the wider scene resulting in a less than minor modification. Visual amenity effect on the person/s at 1823 Great South Road, Bombay will potentially be more than minor, due to the SUP, which will be predominately within the foreground view of these person/s.

10.8.3.3 NoR 5 Drury South Interchange Connections

The operation of the link road to Drury South, east and west of SH1, will result in permanent effects on landscape character and visual amenity, including new physical structures within a mostly greenfield site.

The new bridge across the Hingaia Stream and adjacent floodplain will be a prominent feature recreational user of the open space corridor and adjacent future residential areas onlooking, which is considerate of a less than minor effect on the landscape character of the area without mitigation in place.

The bridge has been designed to minimise the potential environmental impacts of the floodplain and associated waterways. There is some potential for overshadowing the stream, but this is relatively limited. The resulting effects on natural character a less than minor without mitigation in place.

The introduction of a four lane long-span bridge across the Hingaia Stream floodplain (eastern connection), and four lane new link road within an existing rural setting (western connection) will represent prominent changes in the visual amenity of the area. Although the bridge is prominent, the raised structure allows for visual permeability below the piers for recreational users within the Open Space reserve. However, the visual contrast of the link road is considered minor, with the bridge and road connections presenting a recognisable new element across the stream environment. Overall, the potential for operational effects arising from NoR 5 on the visual amenity of the area will be minor.

10.8.4 Recommended Measures to Avoid, Remedy and Mitigate Adverse Landscape, Visual and Natural Character

10.8.4.1 Construction Effects

The LVA makes recommendations to avoid, remedy or mitigate the potential for adverse effects on landscape character and visual amenity associated construction of the Project.

The adverse effects arising from construction of the works within the Project NoRs are expected to be less than minor without mitigation in place. The following recommendation are proposed to mitigate adverse effects on visual amenity:

- Existing trees adjacent to the works will be retained and protected where possible to screen construction support sites, minimising clearing where possible,
- Where possible, trees will be trimmed rather than removed. Works would be carried out by a qualified arborist,
- All areas disturbed by construction and not required for operation of the project are to be restored to existing condition, and;
- Early planting works are to be considered to provide a screening buffer that has time to mature before the project is fully operational.

10.8.4.2 Operational Effects

The LVA makes recommendations to avoid, remedy or mitigate the potential for adverse effects on landscape character and visual amenity associated operation of the Project NoRs.

NoR 1-4 result in a negligible change in landscape character of the Project Area from the existing use as a motorway corridor, and visual amenity will be enhanced through the upgrading of ageing infrastructure, and addition of landscape planting.

NoR 5 will be predominantly located outside the existing SH1 corridor, with a stream reserve, which will result in changes to the visual amenity of the area. The recommendations to mitigate these residual effects, where possible, will be outlined in the ULDMP.

Any proposed landscaping will be managed through the development of an ULDMP, which will be provided at the outline plan of works stage. The ULDMP will be in part guided by the Project wide ULDF, which sets the design principles for the Project alignment overall.

A ULDMP is recommended as a condition on all the Project NoRs, and incorporates the below measures to avoid, remedy or mitigate operational effects:

Walking and cycling connectivity

- Investigate opportunities to integrate with existing and future open space (namely the Hingaia Stream Reserve) along the proposed designation and within the FUZ areas. This will ensure stronger connections and active mode share across a wider catchment. Footpath and cycleway connections should be designed in a manner which contributes to the local identity and urban amenity of the landscape, and aligned with Mana Whenua preferred design principles. Designs should also look to enhance any landscape and ecological corridors (designed in conjunction with topography and planting – outlined below), and;
- Investigate opportunities to improve active mode access to the Bishop Selwyn Cairn heritage site, to enhance the amenity value of the site.

Stormwater wetlands

- Configure stormwater wetlands to a naturalised appearance (avoiding a purely engineered design / form), conforming and integrating with the adjacent landform and future urban context. Provide planting of appropriate indigenous plant species for long term sustainability, maintenance and hydrological and ecological function.

Permanent earthworks

- Integrate cut and fill slopes with the surrounding context,
- Shape fill slopes to a naturalised profile and integrate into the surrounding natural landform,
- Modified slopes are to be a suitable gradient to allow terrestrial and riparian planting to be established, and;
- Where it is anticipated that a bridge is required to span a vegetated gully or stream catchment, a construction methodology should be prepared to minimise vegetation loss within the corridor. Any vegetation removed should be offset through future planting works.

Private properties

- Reinstate driveways, accessways, private fences and garden plantings for existing remaining properties affected by works within the proposed designations.

Planting design details

- Landscape design and planting design details should be prepared for the Project that demonstrate (but are not limited to) the following:
  - Retains existing vegetation where possible,
  - Reinstatement planting within private property boundaries,
  - Treatment of fill slopes and residual land to integrate with adjacent land use patterns (in relation to visual and biophysical aspects),
  - Stormwater wetland design and planting,

- Integration of Mana Whenua preferred design principles in relation to planting, structures and hard landscape elements (as outlined in the Project ULDF),
- Site preparation, implementation, and maintenance requirements for all planting typologies, and;
- Planting to be designed to provide an extension of, and be contiguous with, existing established vegetation patterns

In regard to the construction of the SUP within NoR 4, the LVA recommends:

- Where removal of Notable Trees (Schedule 10 AUPOP) is proposed at St Stephen's School (1832 Great South Road), re-planting is provided within a planting plan area to provide visual screening of the raised SUP,
- Provide the opportunity in the future detailed design, to provide access to the historical heritage site (Bishop Selwyn Carin) on the east side of the SH1 corridor, and;
- Provide for landscape planting in accordance with the outcomes of the ULDF to provide screening and/or architectural façade between the private properties (identified in VIEWPOINT 07 of the LVA) and SUP, whichever is most feasible during detailed design.

The proposed mitigation measures should, where practicable, be integrated with revegetation requirements of future resource consent processes.

10.8.5 Summary of Landscape, Visual and Natural Character Effects

The Project will have landscape, visual and natural character effects that are consistent with what is expected from an upgrade of existing motorway infrastructure within an existing motorway corridor. The construction of this infrastructure will be noticeable to motorists but will be temporary in nature, similar to what is typically seen during maintenance works on large motorway corridors.

Construction of NoR 1-4 will have less than minor adverse effects on the landscape and natural character, , as the NoRs are consistent with the current land use as major transport corridor, and provide opportunity for new landscape planting, the residual effects are anticipated to be less than minor and positive in localised places.

Construction of NoR 5, which requires works with the Hingaia Stream floodplain is anticipated to result in more than minor adverse effects on the landscape and natural character of the Project Area, which has landscape, cultural and recreational value, with the recommended mitigation in place, effects are expected to be positive in localised places.

Operation of the NoR 1-4 will have less than minor adverse effects on landscape and natural character with mitigation in place, as the Project do not represent a significant change is the existing baseline condition. With the proposed mitigation in place, namely amenity planting within the corridor, the residual effect will be largely positive.

Operation of NoR 5 will result in more than minor adverse effects on landscape and natural character, which may be mitigated to lower levels, with the recommendations outlined above, largely on account to introducing a large structure within the Hingaia floodplain. With the recommended mitigation in place, it is anticipated the effects can be mitigated and result in largely positive effects in localised places.

Construction of NoR 1-3 will have more than minor adverse effects on visual amenity, largely on account of the large scale and pro-longed construction of works at Drury South and Ramarama Interchange, as experienced as users of the state highway corridor. Mitigation is recommended above and will result in residual effects that will be less than minor.

The construction of NoR 4 will result in more than minor adverse effects on visual amenity, requiring replanting to occur on the site at St Stephen's School to provide visual screening of views of the elevated SUP, and along the alignment to screen views to private property. With mitigation in place, the residual effects will be no more than minor of visual amenity.

The construction of NoR 5 will result in more than minor effects on visual amenity as a result of large scale earthworks within the Hingaia floodplain (east), and a predominantly rural area (west), with mitigation in place the residual effect will likely be no more than minor.

The operational of NoR 1-4 will result is less than more minor adverse effects on visual amenity, when mitigated by the recommendations above, which will ensure the detailed design is guided by the project ULDF. Overall, the residual effect is expected to result in no more than minor effect for NoR 4, and localised positive effects for NoR 1-3.

The operation of NoR 5 will result in more than minor adverse effects on visual amenity, largely as a result of the new structure within the Hingaia floodplain, with mitigation the effects will be no more than minor.

10.9 Flood Impact Effects and Mitigation

The Flood Impact Assessment Report (Flood Assessment) is attached at **Appendix J** and assesses the actual and potential effects of the future construction and operation of the Project as it relates to flood hazard effects. Flood hazard effects have been assessed as a subset of stormwater effects, noting that flood hazard effects are the specific effects authorised by designations (i.e. would otherwise trigger a District Plan resource consent requirement under section 9(3) of the RMA). Other stormwater matters, including stormwater discharge quality, stormwater quantity including retention/detention), and effects on streams are Regional Plan matters that will be considered as part of a future consenting process, and accordingly are not assessed as part of the application.

The future mitigation of stormwater effects (stormwater discharge quality and retention/detention) has been indicatively considered to ensure that sufficient is available within the proposed designation boundaries to provide for potential future requirements.

10.9.1 Methodology

The Flood Assessment has focused on identifying areas where flood hazards are present in the existing and future environment, to provide an indicative land requirement to mitigate any potential adverse flooding effects resulting from the Project. The design of specific stormwater and flooding mitigation will be further developed for each stage of the Project at a later date, at which stage the Project will require resource consents for Regional Plan matters.

10.9.1.1 Desktop Study

Flood risk was assessed across the Project alignment through a desktop review of the following reference material:

- Auckland Council GIS resources (Auckland GeoMaps),
- Regionwide Rural Rapid Flood Model Build Report (AC, 2023),
- Oira Creek and Ngākōroa Stream RFHA Model Build Report (AC, 2017),
- Design Drawings, and;
- Indicative Construction Methodologies.

Using the design drawings and the flood plain layers downloaded from the AC GeoMaps, the loss of flood storage volume due to the Project works were estimated. The outcome of this assessment was then used to confirm the proposed designation footprint as well as recommend the suitable flood mitigation measures that can be implemented on site.

10.9.1.2 Flood Model

The flood impacts of Drury South Interchange (NoR 2) and Drury South Interchange Connections (NoR 5) were considered to be most significant from a flood hazard perspective, as the works are located within and along the main tributary of the Hingaia catchment and intersects the main flood plain of the Hingaia Stream. Tonkin+Taylor was engaged by NZTA to perform the flood modelling and the results formed the basis of the Flood Assessment. The TUFLOW 1D/2D (TUFLOW) hydraulic linked model has been developing since 2018 as part of the Drury South Area (DSA) development. This model is considered better suited for detailed design purposes as it focuses on a smaller extent but provides a more detailed representation of the hydraulic elements within the study area. This updated TUFLOW model has been verified and has undergone multiple reviews with Auckland Council. In preparing this Report, several workshops between NZTA and Tonkin+Taylor were held to ensure the model's suitability for this assessment (see Section 9).

The TUFLOW flood model has been updated accordingly for this Project by incorporating the following elements to form the post-development scenario:

- Design surface of the proposed new Drury South Interchange,
- Bridge configuration of the proposed link between Quarry Road Great South Road, and;
- Culvert modification at CH 16600 west of Transpower Substation.

A technical memorandum detailing the inputs, methodology and assumptions used in the flood modelling for this assessment was prepared by Tonkin+Taylor and included in Appendix A of the Flood Assessment.

Flood Impacts

The Flood Assessment assessed the flood risks based on a 1% AEP event with climate change scenario. The maximum water surface elevation for each culvert crossing was determined based on the flood plain extent (1% AEP with climate change) from AC GeoMaps, after which, a high-level estimate of the water level was then extracted using the 2016 LiDAR from LINZ. From this, the approximate fill volume of the affected areas due to project works was then calculated using GIS software (i.e., 1% AEP CC water surface elevation minus 2016 LiDAR). This was then used to determine the likely volume required for compensatory flood storage and to assess the adequacy of the proposed designation footprint to provide space for mitigation.

The existing and future flood risk was assessed in accordance with a qualitative risk matrix shown in 10-7 below, which categories flood impacts based on land use and associated risk of flood impacts. The existing and future land uses were determined using the base assumptions outlined in Section 8 of this Report.

Table 6-7 Risk-matrix used to assess the Project flooding risks

Flood Volume Displacement		Land Use		
		Less Vulnerable (e.g., open space and rural area)	**Moderately Vulnerable** (e.g., commercial area, industrial area, mixed rural)	**Highly Vulnerable** (e.g., future urban, educational facilities)
Negligible	none			
Low	(< 1,000 m^3)			
Moderate	(1,000 – 10,000 m^3)			
High	(> 10000 m^3)			

10.9.2 Construction Effects across all Project NoRs

During the construction phase of the Project localised flooding impacts may arise due to temporary diversions during the installation of new culverts and/or modifications to existing structures, and in the case of NoR 5 (only), temporary staging platforms required for the construction of new bridges. The exact construction methodology will be outlined at detailed design stage of works. However, it is expected that construction activities can be carried out in a manner that adequately mitigates any potential flood risk on the receiving

environment. Any mitigation details will need to align with the principles outlined in the Construction Environmental Management Plan (CEMP). For these reasons it is considered that the potential for adverse flooding effects arising from construction of the Project can be adequately managed through a CEMP.

There are no NoR-specific flooding effects associated with the Project.

10.9.3 Operational Effects

The anticipated infrastructure within the Project Area will generate similar operational flood effects based on the degree of floodplain volume displacement or the presence of an obstructed OLFPs.

Specific operational effects for each NoR are discussed below.

10.9.3.1 NoR 1 - 3 Alteration to SH1 Designations and NoR 4 SUP

The operation of the altered state highway will not alter the flooding regime within and outside of the Project Area. NoR 1-3 and 4 are predominantly located outside on the periphery of the flood plain (located at Drury South), the immediate area surrounding NoR 1 act as flood storage and is not a major OLFP. As such the flood plain area in NoR 1 (and 4) is expected to be relatively small compared to the total flood extent along the Hingaia Stream. NoR 3 (and 4) are located at the head of the catchment area, and are only expected to have localised effects around the existing culvert locations. The flood extent at these locations is expected to remain consistent with existing condition, no additional adverse flooding impacts are expected to be generated on properties within the area. Swales are proposed alongside SH1 to attenuate the flood storage to match pre-Project flows to post-Project peak flows. With this mitigation in place the potential for flooding impacts is anticipated to be adequately managed through the detailed design.

10.9.3.2 NoR 2 Alteration to SH1 Designation and NoR 4 SUP

The operation of the altered state highway will not alter the flooding regime within and outside of the Project Area. Based on the risk matrix, there will be a minor increase in flood level on some rural zone properties upstream and downstream of the existing culvert crossings due to flood displacement, however the flood extent is expected to remain consistent within the existing condition. Swales are proposed alongside SH1 to attenuate the flood storage to match pre-Project flows to post-Project peak flows. With this mitigation in place the potential for flooding impacts is anticipated to be adequately managed through the detailed design.

A minor increase in flood level (up to 120 mm) is noticeable in the OLFP upstream of the existing culvert south of Drury South Interchange (location CH 17380). The flood extent is limited to rural property in pastured land. Furthermore, the flood level increase will remain within the existing channel on the site, and considered to be adequately accommodated within this environment without causing adverse effects on person/s or property.

Further displacement is observed at the existing upstream culvert north Drury South Interchange (location CH 16660), at this location an increase flood level of up to 200mm is expected. This increase is primarily attributed to the filling of a portion of the floodplain which intersects the proposed southbound access ramp at Drury South Interchange. The loos of flood storage have resulted in displacement of flood volume has resulted in an increased flood level of the adjacent rural property. A similar effect is caused to the east of the culvert, however the displacement level is expected to be less than 0.50m, which is a negligible change and can be mitigated within the proposed designation boundary.

10.9.3.3 NoR 5 Drury South Interchange Connections

The Drury South Interchange Connections will operate across the main body of the Hinagaia Stream floodplain, the model from the Flood Assessment indicates that there will be a minor increase in flood impacts in some areas.

NoR 5 is bridged across the Hingaia Stream reserve to the east of SH1. The bridge piers will have a minor effect on the floodplain due to the large expanse of the flood plain is comparison to the small cross section of the bridge piers. The peak velocity through the flood plain during the 1% AEP event with climate change in the

vicinity of the bridge piers is less than 0.5m/s. This is a fair indication that the flooding is primarily controlled by restrictions downstream, the than the capacity at the location of the bridge. Due to the low velocity, the head losses around the piers are expected to be small, hence the impact is negligible.

10.9.4 Recommended Measures to Avoid, Remedy or Mitigate Adverse Flooding Effects

10.9.4.1 Construction

Measures to manage flood hazard associated with the construction of the Project are included in the CEMP that is included as a condition of the NoRs.

The CEMP will be developed prior to construction in conjunction with an experienced Stormwater Engineer and will consider the effects of temporary works, earthworks, storage of materials, temporary diversion and drainage on flow paths, flow levels and velocities.

In preparing the CEMP, key matters include:

- Siting construction yards and stockpiles with minimal effects on flood flows,
- Methods to reduce the conveyance of materials and plant that is considered necessary to be stored or sited within the flood plain (e.g. actions to take in response to the warning of heavy rainfall events),
- Staging and programming to carry out work when there is less risk of high flow events,
- Diverting overland flow paths away or through areas of work, and;
- Minimizing the physical obstruction to flood flows at the road sag point.

10.9.4.2 Operation

A Flood Hazard condition is proposed on all Project NoRs which will require the future detailed design of the Project to be designed to achieve specific flood risk outcomes. This includes flood modelling of the pre-Project and post-Project 100 year ARI flood levels (for Maximum Probable Development land use and including climate change).

Future detailed design of the alignments will be subject to a separate detailed flood hazard assessment which will refine the design of formations, culverts, bridge crossings and location/size of treatment (attenuation, water quality or both). Regional stormwater consents will also be required closer to the time of construction.

The following flood hazard outcomes are included on all NoRs. This requires that the Projects be designed to achieve the following:

- No increase of more than 100mm in flood level on land zoned for urban or future urban development where there is no habitable existing dwelling;
- 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 time the Outline Plan is submitted;
- Compliance shall be demonstrated in the Outline Plan, which shall include flood modelling of the pre-Project and post-Project 10% and 1% AEP flood levels (for Maximum Probable Development land use and including climate change), and;
- 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.

10.9.5 Summary of Flooding Effects

The flood hazard risks during construction can be adequately managed. Proposed works will be located outside of flood plains and overland flow paths as far as practicable. Where this is not possible, potential flooding effects will be managed through the flood risk mitigation measures set out in the CEMP for existing high flood hazard areas. For those areas where there is an increased flood risk, mitigation measures are proposed within Section 10.9.4.

There are potential operational effects risks of increased flood levels upstream and downstream of crossings and where the vertical alignment of the road causes displacement effects. A number of potential management and mitigation measures have been provided to manage operational effects at the future detailed design stage within section above Flood hazard outcomes are included as conditions on all of the NoRs so that flood hazard effects can be appropriately managed.

10.10 Existing Utility Effects and Mitigation

This section identifies existing utilities within or adjacent to the new or upgraded SH1 corridor, the expected effects of the Project on those utilities and any measures proposed to manage potential impacts.

10.10.1 Methodology

The Project and proposed NoR footprints have considered desktop information from the publicly available Vector, Watercare, Transpower, etc. viewers and Auckland Council GeoMaps. However, thorough site investigations will be required at detailed design stage to confirm the full scope of works for service relocations. As part of the P2B, regular engagement with network utility operators has also been undertaken to better understand how each new or upgraded transport corridor interfaces with utilities, which is detailed in Section 5 above.

10.10.2 Existing Utility Approval Protocols

To understand the potential effects on utilities an understanding of the existing utility approval protocols is required.

There are established protocols for works within the existing road reserve controlled under the Utilities Access Act 2010 and associated National Code of Practice for Utility Operators' Access to Transport Corridors (Code of Practice). Under the Code of Practice utility providers can access the road reserve (excluding motorways) as of right, subject to reasonable conditions imposed from the transport authority. Access is managed through the Corridor Access Request process, provided through NZTA as the region's road controlling authorities. This is only applicable where works are proposed within the local road network (i.e. Quarry Road, Great South Road, Mill Road and Ararimu Road).

All parties also have a duty to take all practicable steps to protect other parties' assets when working through its transport corridors. Effects of the new or upgraded transport corridors on these utilities can be effectively managed under the Code of Practice or subsequent superseding document as part of standard roading authority and network utility practice.

In addition, where a designation is in place for a utility under the RMA, NZTA will be required to seek approval for works, noting that approval may be withheld if the works would prevent or hinder the public work or project or work to which the earlier designation relates. There are established protocols for obtaining this approval under the RMA.

10.10.3 Construction Effects on Typical Utilities

The construction effect on typical utilities associated with each Project include:

- Water infrastructure – wastewater, potable water, stormwater,

- Electricity overhead and underground lines,
- Gas lines, and;
- Ethernet and telecommunications.

Additional non-typical utilities are identified in Table 10-8, below.

Table 10-8 Non-typical Utilities

NoR	Non-Typical Utilities
NoR 1 – Alteration to SH1 Designation 6706	Transpower National Grid – 220kV High Voltage
NoR 2 – Alteration to SH1 Designation 6700	Transpower National Grid – 220kV High Voltage Designation 8009 – Counties Power Designation 8521 – Transpower Site Designation 9104 – Pukekohe to East Tamaki Gas Pipeline
NoR 3 – Alteration to SH1 Designation 6701	Transpower National Grid – 220kV High Voltage
NoR 4 – Construction, operation and maintenance of a SUP	Transpower National Grid – 220kV High Voltage Designation 9104 – Pukekohe to East Tamaki Gas Pipeline
NoR 5 – Drury South Interchange Connections	Transpower National Grid – 220kV High Voltage Designation 8521 – Transpower Site

The Project will result in construction disruption to existing network utilities within each NoR and may require the protection or relocation of services. The impacts of the Project's construction can generally be grouped into two categories:

- Impacts to general services and assets, and;
- Impacts to non-typical assets, where works around them require additional control beyond business as usual, due to the potential disruptions to the service being significant.

10.10.3.1 Construction General Services and Assets

The Project will be formed as part of the motorway corridor upgrades. These will cross rural roads that are expected to carry network utilities and these have been considered in the concept design. Existing road upgrades will impact the existing road reserve and are expected to have the following impacts on network utilities:

- Limitations on access to utilities within the corridor whilst construction works are being undertaken,
- Risk of uncovering assets or potential damage to assets if depths are unknown, resulting in temporary disruption to users and requiring repair, and;
- Location of devices shifting in relation to the road reserve corridor due to reallocation of corridor space.

NZTA have existing established processes for engaging and coordinating works with utility providers in the corridor. Although there will be temporary disruption, the staging of construction along the alignments will limit prolonged disruption in any section.

Engagement with network utilities will occur to coordinate works where practicable (such as laying new cables or services under the 'dig once' principle) as per the proposed designation conditions. These works will be coordinated to align with the Code of Practice and/or RMA requirements.

10.10.3.2 Construction Effects on Non-typical Utilities

Construction for the new or upgraded corridors with non-typical utilities has the potential for significant effects if carried out in an unplanned and uncoordinated way. Given the established protocols which exist under the Code of Practice and NZTA's role as roading authorities, as well as ongoing engagement across the P2B, significant impacts are unlikely to occur.

The Project Team has held regular meeting with the relevant NUOs through the concept design phase, and the wider P2B. Affected NUOs were engaged via meetings, phone call and email. This was to ascertain the design did not constitute a material risk to the utility and identify design cooperation that may benefit both parties. No opposing feedback was received to date from utility providers.

The following three designations and associated infrastructure interact with the Project, whereby they overlap with the proposed designation footprints but are unlikely to be directly affected by permanent works:

- Designation 8009 – electricity supply purposes (Counties Energy Ltd),
- Designation 8521 – electricity transmissions (Transpower NZ), and;
- Designation 9104 – Pukekohe to East Tamaki Gas Pipeline (First Gas Ltd).

NZTA will be required to seek written consent under section 177 from the above NUOs, where the Project affects these designations. Engagement undertaken with these parties is outlined in Section 9 above.

The National Grid Corridor overlay insects or is closely parallel to all the Project NoRs. Constructability assessments of the indicative designs have considered the constraints associated with working near the National Grid. Construction activities around the National Grid will require management to reduce potential effects and appropriate construction methodologies will need to be developed and implemented. It is noted that NZTA has been maintaining ongoing engagement with Transpower throughout the P2B, which is outlined in Section 9 above. The Project NoRs will all adopt the Transpower conditions used on previous stages of P2B, in addition to an Electricity Infrastructure Management Plan (EIMP).

10.10.4 Operational Effects

Temporary diversion or relocation of non-typical utilities is not currently expected to be required (to be confirmed during detailed design). If temporary diversions are subsequently considered necessary, they are expected to be accommodated within the designation footprint, which will reduce the geographical extent of impacts. Early engagement with the respective utility provider will be required to identify the critical service and confirm a relocation methodology. These steps alongside meeting the Code of Practice and, if relevant, meeting RMA requirements for existing utilities that are designated will provide confidence that effects are avoided and or managed appropriately.

Once the Project is constructed and transport corridors operational there will be no ongoing adverse effects to the utility operations. As set out above in the positive effects discussion, it is considered that the rationalisation of utility services and location outside the existing carriageways will make access and maintenance easier.

10.10.5 Recommended Measures to Avoid, Remedy or Mitigate Potential Adverse Network Utility Effects

A Network Utility Management Plan (NUMP) will be prepared prior to the Start of Construction for a Stage of Work, as outlined in the conditions for all the Project NoRs. This will set out a framework for protecting, relocating and working in proximity to exiting network utilities and will be prepared in consultation with the relevant Network Utility Operators, including Transpower in relation to the National Grid Corridor.

In addition, as set out in the proposed conditions, Network Utility Operators with existing infrastructure located within the proposed designation footprints will not require RMA written consent under section 176 of the RMA for the following prior to construction:

- Operation, maintenance and urgent repair works,

- Minor renewal works to existing network utilities necessary for the on-going provision or security of supply of network utility operations,
- Minor works such as new service connections, and;
- The upgrade and replacement of existing network utilities in the same location with the same or similar effects as the existing utility.

This has been offered via a condition for each of the Project NoRs, to streamline and provide certainty to utility partners. For works that will exceed this threshold, NZTA have established processes for sections 176 or 178 approvals. This will not replace any of the existing approvals required e.g., Corridor Access Request will still apply.

10.10.5.1 NoR Conditions

In addition to a NUMP condition, each of the Project NoRs will include specific Transpower and Electricity Infrastructure Management Plan (EIMP) conditions. These conditions have been developed over the course of previous stages of the P2B project in consultation with the relevant NUOs. To ensure continuity to this approach the Project has adopted these conditions.

Of note, NoR 1 Alteration to SH1 Designation 6706 will require amendments to operative conditions of Designation 6706. There is an existing NUMP condition within this set prepared for Stage 1B1 and 1B2 of the P2B project, which will be amended to include the Project.

10.10.6 Summary of Effects on Network Utilities

Service relocation works are expected to be accommodated within the construction corridors within the proposed designation footprints. Additional work areas may be required for realignment/relocation of key services for example overhead power lines. The exact scope of services for relocation works will be confirmed through detailed design in consultation and engagement with the respective utility providers. If additional works are required outside the designation, approvals will be sought as necessary based on the detailed methodology at the time.

An assessment of the existing utilities within the corridor has been carried out and considered. Through the implementation of the Requiring Authority approval for ongoing access and maintenance of works in advance of construction, it is considered that potential adverse effects on network utilities can be avoided or appropriately managed.

10.11 Property and Access Effects and Mitigation

Potential adverse effects on existing private properties have been reduced, where practicable through the development of the Project concept design and the proposed NoR boundaries. This has included specific consideration of the potential property and business impacts in the assessment of alternatives as discussed in Section 5 and detailed in **Appendix K** of the application AEE. Notwithstanding this, there is a strategic need to protect the Project land requirement to support the future transport requirements Southern Growth Area and adjacent transport network.

Where impacts on property, land use and businesses cannot be avoided, the potential effects discussed in this section relate to directly affected properties/landowners. Potential effects on properties and businesses affected by proximity to the Project have been discussed in Section 10.11.1 below.

The proposed NoRs require land to provide a sufficient footprint to enable the construction, operation, and mitigation of effects of the Project. 77 private properties will be directly affected. These properties are primarily rural and working agricultural, with some rural residential and pockets of light industrial land/business land uses. NoR 2 in particular affects more properties due to the length of the corridor.

The land required for the Project is shown in the General Arrangement Plans included in **Appendix C** of the application AEE. It is likely that urban development will begin to occur adjacent to the proposed NoRs before

the Project is constructed. This is already beginning to be evident with some recently operative private plan changes around Drury and Paerata (detailed in Section 3).

Potential adverse effects on the development of private property may arise. However, development is not precluded within the proposed designated area. NZTA will work with landowners and developers under the process in s176(1)(b) to provide written consent for development within the proposed designations, provided those works will not prevent or hinder the work authorised by the proposed designation.

10.11.1 Construction Effects on Property and Access

Land required for the permanent work will be acquired prior to construction. If only temporary occupation of the land is required, it will be leased. Potential effects from the temporary lease/use of land include disruption to farm activities and businesses, disruptions to access, loss of vegetation, temporary loss of grazing pasture and temporarily affected amenity.

The concept design proposes property access will be temporarily affected at the location of 1832 Great South Road (St Stephens School) where the construction of a new batter slope to support the SUP (NoR 4) will require the re-alignment of the existing driveway.

Various measures to mitigate adverse effects from construction activities are addressed throughout Section 10 (above), including development and implementation of a Stakeholder and Communications Management Plan (SCMP), CTMP, CNVMP and CEMP prior to the start of construction. These measures will appropriately minimise disruption to affected properties and allow the continued use of the properties where practicable. Potential construction effects will generally be temporary.

Of note, the Project is for an upgrade to the existing SH1 corridor, which can only be accessed via formal motorway interchanges. Where the Project requires land acquisition on properties that doesn't affect property access, the construction effects are expected to be limited, as they will not alter the development aspirations of these properties, as they are already limited in access a state highway corridor.

10.11.2 Operational Effects on Property and Access

Following the Completion of Construction, the implanted NoR boundaries will be reviewed and any land that is not required for the permanent work or for the ongoing operation, maintenance or mitigation of effects of the Project will be reinstated in coordination with directly affected landowners or occupiers.

This will include the reinstatement and reintegration of construction areas with the surrounding landform, reinstatement of driveways, accessways, fences and gardens, and integration of batters and cut/fill slopes with the landscape.

These matters will be discussed prior to or during construction with directly affected landowners and will follow the provisions under the Public Works Act 1981 which is a process separate from the requirements of the RMA.

10.11.3 Recommend Measures to Avoid Remedy or Mitigate Effects on Property and Access

Following confirmation of the designations, a project website or other suitable information source shall be established with information on the Project, such as their status and anticipated construction timeframes. This requirement is provided for via a condition on each NoR.

Additional measures available for landowners include:

- Providing information on the Section 176(1)(b) process and NZTA contact details to support the integration of development with the extension and / or upgrade of each corridor, where practicable, and;
- Providing information on the PWA to address landowner uncertainty, noting the PWA is a non-RMA process.

Implementation of a SCEMP will occur prior to the start of the construction to identify how the public and stakeholders (including directly affected and adjacent landowners and occupiers of land) will be communicated with before and during construction works. The requirement to provide a SCEMP is provided for via a condition on each NoR. The SCEMP will:

- Determine adequate notice periods for the commencement of construction activities and works that affect access to properties, and,
- Identify appropriate communication channels to support property owners and occupiers to understand and plan around works, (such as a project website, and nominated contact person). The selected communication channels will inform parties of,
  - The expected timing, duration and staging of works,
  - The type and nature of effects to be anticipate, and;
  - Progress updates provided regularly.

At detailed design stage, engagement will be undertaken with affected landowners on NZTA's approach to temporary and permanent land impacts (including leasing or acquisition processes, as covered under the PWA). For those properties that are fully designated and required permanently, these will be purchased and no longer be present at construction. For partially acquired properties, management plans will be implemented to manage adverse amenity impacts.

10.11.3.1 Access

Disruption to property access will be managed via the CTMP for the Project, which is provided for via a condition on each NoR. The approach is to maintain vehicle access to property and/or private roads where practicable, or to provide alternative access arrangements when it will not be practicable. Where legal access cannot be maintained, the impacted property typically falls wholly within the designation footprint and will likely require full acquisition prior to operation.

10.11.4 Summary of Effect on Property and Access

The new and upgraded motorway corridor can be expected to have a range of effects on property. These include the private property restrictions and landowner uncertainty imposed by the designation throughout its duration. Prior to and during construction, effects will include changes to the existing environment's amenity, disturbance to normal enjoyment whilst works are carried out, as well as permanent changes to private properties.

Prior to construction, measures are proposed which will assist in alleviating some of the associated uncertainty for landowners, including the measures within the SCEMP, and the Project Information condition included on each NoR. Given the mitigation proposed, it is considered that effects on property will be appropriately managed.

10.12 Māori Culture, Values and Aspirations

Only mana whenua can speak to the impact that a project may have on their cultural values, heritage and aspirations. This section draws on engagement that has been undertaken with mana whenua on the P2B project to date and inputs provided by mana whenua representatives during the concept design for Stage 2. In developing the P2B project, recognition has been given to both the relationship of tangata whenua to their lands, culture and traditions in the Papakura to Bombay area and the commitment to partnership between mana whenua and NZTA (as a representative of the Crown) founded through Te Tiriti o Waitangi.

10.12.1 Mana Whenua Feedback

The Project Team engaged with mana whenua on the Project from the beginning of the business case phase (in 2018), across previous stages of P2B and through to the Stage 2 NoR concept design phase, primarily through the NZTA SIIGNZTA Southern IIG, with mana whenua also attending Project workshops.

Mana whenua highlighted to the Project Team a number of considerations, including:

- Interactions with wetlands and freshwater are particularly sensitive,
- Futureproofing for climate change is essential, including longevity of assets in relation to stormwater and flooding,
- Ideally, impacts to highpoints, knolls/puke should be avoided, and if earthworks do occur the readability of the landform should be maintained,
- Loss of habitats, and biodiversity was a particular concern,
- Impacts from sediment discharge, erosion, dust, emissions and light pollution were a particular concern,
- Avoiding impacts on SEAs and Notable Trees[18],
- Project landscaping opportunities, and re-planting of native species,
- Interest in opportunities in cultural expressions in particular at Ramarama,
- Impacts of register archaeological, heritage and unrecorded sites, and;
- Impacts on te mana o te wai, Hingaia and Ngaakaaroa streams/catchments.

The engagement undertaken with the Southern IIG (see Section 9) provides a broader overview of engagement with and feedback received from all iwi involved over the course of the P2B to date.

10.12.2 Cultural Impact Assessment

Engagement with Southern IIG representatives has been ongoing throughout the P2B. The representatives have at various times been invited to provide CIAs or CVAs pertaining to the P2B alignment overall. This process began for the P2B project in July 2020 when mana whenua confirmed preparation of CIAs / CVAs was a desired approach. NZTA has offered assistance in the preparation of these documents by holding workshops, one on one meetings and discussions at monthly hui with the Southern IIG.

On 5 December 2023 NZTA met with members of the Southern IIG (design hui) regarding their desire to submit CIAs or CVAs specifically for Stage 2 of the P2B project. The Following mana whenua groups indicated an interest in preparing a CIA or CVA:

- Ngaati Whanaunga have provided a CVA for the full corridor, and expressed interest to provide a CIA on Stage 2 of the P2B project,
- Ngāti Tamaoho have provided a CVA for the full corridor, and noted the interest to provide a redacted addendum,
- Ngāi Tai ki Tamaki indicated they would use what was provided for the SCI project, and would like to do a cultural statement in addition to this,
- Ngāti te Ata Waiohua to complete an addendum to the P2B wide CIA and provide redacted version for submission, and;
- Te Ākitai Waiohua decided not to provide a CVA, but requested to work with the Project Team on consent conditions.

[18] Note: The removal of Notable Trees at St Stephens School was discussed with mana whenua representatives at an Southern IIG design hui in December 2023, where mana whenua indicated they were comfortable with the removal of these trees, with appropriate mitigation in place. These discussed are detailed in the Assessment of Alternatives Report at Appendix K.

The following mana whenua representatives confirmed (12 December 2023) not to provide CIAs or CVAs for the Project:

- Ngāti Tamaoho

Subsequently Ngāti te Ata Waiohua elected to provide a written statement in place of a CIA. At the time of submission (16 February 2024) NZTA had not received a written statement from members of Ngāti te Ata Waiohua, however, it is anticipated written statement can be addressed adequately through the application process.

NZTA will continue to engage with the member of the Southern IIG during the NoR process and following the completion of the Project. For representatives of mana whenua groups within the Southern IIG who decided to submit CIAs or CVAs during the post-lodgement period, this is considered to be an accepted approach.

The following section provides a summary of the CIAs provided to Project to date.

10.12.2.1 Ngaati Whanaunga

Ngaati Whanaunga have undertaken a comprehensive CIA to inform this application for Stage 2 of the P2B. Due to confidentiality reasons, only a summary of the CIA has been provided for lodgement. The findings of this assessment suggest key cultural values relating to the Project Area are:

- Mauri,
- Wāhi tapu,
- Kōrero Tūturu,
- Rawa Tūturu, and;
- Hiahiatanga Tūturu.

The potential impact on these cultural values of the as result of the construction and operation of the Project is considered to range from more than minor to minor. Whakāronui o te Wa is not considered applicable to the Project.

Ngaati Whanaunga has considered the potential for positives effects, which are summarised as:

- Reinforcing the Southern Motorway's function to support national and regional economic growth,
- Supporting the growth and liveability of communities by increasing access to employment, markets, services and amenities,
- Providing an additional traffic lane in each direction, interchange improvements and opportunities for dedicated public transport services,
- Promoting walking and cycling in South Auckland and enables people already using active modes to access new areas,
- Extending the Auckland walking and cycling network, maximising the investment in the Southern Path built to the immediate north of the project area as part of the SCI project,
- Contributing to the safety and resilience of Auckland's transport system, and;
- Creating infrastructure that improves the Southern Motorway's resilience against the impacts of climate change.

The key adverse effects on cultural values arising from the construction and operation of the Project, are summaries as:

- Archaeology & heritage,
- Earthworks,
- Ecology,
- Existing utilities,

- Māori culture values and aspirations (potentially positive if managed effectively),
- Noise & vibration,
- Property, and;
- Stormwater

Based on these adverse effects Ngaati Whanaunga has proposed a suite of recommendations to ensure that these effects can be mitigation throughout the construction and operation of the Project. These measures have been taken into account when preparing the NoR conditions (attached **Appendix L**) and can be summarised as follows:

- General requirements,
- Pre-development conditions (including pre-construction meetings),
- Construction conditions (i.e. Archaeological monitoring), and;
- Post-construction and reporting.

Overall, with incorporation of Ngaati Whanaunga recommendations, they anticipate that potential for adverse effects from the construction and operation of the Project on cultural values will be no more than minor.

10.12.1 Mana Whenua Treaty Areas and Sites of Significance

The Project 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 AUPOP. The proposed NoRs 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 Project is almost wholly within the Ngāti Tamaoho statutory acknowledgement area, which recognises the association between Ngāti Tamaoho and a particular area and enhances the iwi ability to participate in specified RMA processes. The Project Team has taken this into account by engaging representatives of Ngāti Tamaoho in the development of the Project.

Of note, the Project is also within the proposed Te Ākitai Waiohua statutory acknowledgement area, which is outlined in a Deed of Settlement signed with the Crown November 2021. The Crown will introduce legislation to Parliament to give effect to the settlement in law. Although Te Ākitai Waiohua statutory acknowledgment area has not been formalised yet, NZTA will continue on-going engagement with representatives Te Ākitai Waiohua through the relevant RMA processes.

10.12.1 Recommended Measures to Avoid, Remedy or Mitigate Adverse Effects on Māori

Engagement with mana whenua is naturally broad and encompasses matters beyond those matters required to be considered in relation to a NoR under a DP, including RP matters and broader partnership interests. The measures proposed to avoid, remedy and mitigate potential adverse effects of the Project in the following section address the relevant DP matters and enables the relationship with mana whenua to continue in the future stages of the Project, without predetermining regional consenting outcomes or matters best addressed directly between the treaty parties.

A number of design hui were held with Mana whenua through NZTA's Southern IIG Forum to work collaboratively on the draft condition set proposed for each NoR. The conditions that relate to ongoing Mana whenua involvement in the Project were developed and agreed with Mana whenua. The proposed NoR conditions include the following measures to ensure ongoing involvement of Mana whenua in Project design and construction and ensure the continued recognition of Mana whenua cultural values throughout the Project life cycle.

Cultural landscape and design expression

Mana whenua will be invited to participate in the development of the ULDMP, proposed as a condition on the NoRs, to input into relevant cultural landscape and design matters on each NoR. This includes the management of potential effects on cultural sites, landscapes and values. The ULDMP is provided for via a condition on each proposed NoR.

Cultural Monitoring Plan

Prior to the start of construction works or enabling works, mana whenua will be invited to prepare a Cultural Monitoring Plan (CMP). The objective of the CMP is to identify methods for undertaking cultural monitoring. The CMP will include:

- 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,
- Requirements and protocols for cultural inductions for contractors and subcontractors,
- Identification of activities, sites and areas where cultural monitoring is required during particular Construction Works,
- Identification of personnel to undertake cultural monitoring, including any geographic definition of their responsibilities, and;
- Details of personnel to assist with management of any cultural effects identified during cultural monitoring, including implementation of any Accidental Discovery Protocol.

10.13 Summary of key proposed mitigation

The majority of adverse effects have been avoided and mitigated via alignment decisions and design choices. Where potential effects have not been designed out, measures are proposed to avoid, remedy or mitigate the potential adverse effects identified in this AEE, and these are summarised in Table 10-9 below.

These measures are included in the proposed conditions as relevant, for each Project NoR. The below measures are in relation to district plan matters only, and proposed measures to avoid, remedy or mitigate potential adverse effects in relation to regional plan matters will be determined at the time future regional consents are sought.

Table 10-9 Summary of key mitigation measures

Matter	Proposed Condition to Manage Effects
Traffic and Transport	▪ Construction Traffic Management Plan (CTMP), and ▪ Property access condition,
Noise and Vibration	▪ Construction Noise and Vibration Management Plan (CNVMP), ▪ Site Specific Construction Noise and Vibration Management Schedules, and; ▪ Operational (traffic) noise conditions.
Ecology	▪ Pre-Construction Ecological Survey; - If the ecological survey finds no presence of ecological species, then no EMP is required. - Ecological Management Plan (EMP); - Bat Management Plan (BMP), - Ecological Management Plan (EMP) required for the presence of Threatened or At-Risk birds (excluding wetland birds), and the presence of Threatened or At-Risk wetland birds, - Lizard Management Plan (LMP), and/or; - Restoration Planting Plan (RPP).
Arboriculture	▪ Tree Management Plan (TMP), and; ▪ Urban Landscape Design Management Plan (ULDMP).
Archaeology and Heritage	▪ Historic Heritage Management Plan (HHMP), and; ▪ Archaeological Authority.
Landscape, Natural Character and Visual	▪ Urban Landscape Design Management Plan (ULDMP)
Network utilities	▪ Network Utilities Management Plan (NUMP), ▪ Electricity Infrastructure Management Plan (EIMP), ▪ Transpower conditions, and; ▪ Network Utility Operators (Section 176 Approval)
Flood impacts	▪ Flood hazard condition
Māori cultural values	▪ Cultural Monitoring Plan (CMP), ▪ Urban Landscape Design Management Plan (ULDMP), and; ▪ Accidental discovery protocol.

11 Assessment of Relevant RMA Planning Documents

The following sections provide an assessment of the Project against:

- Section 171(1)(a) of the RMA,
- Section 171(1)(d) of the RMA, and;
- Part 2 of the RMA.

It is noted that the requirements of sections 171(1)(b) and 171(1)(c) are addressed in Sections 5 and 6 of this AEE respectively, and accordingly are not repeated here.

11.1 Section 171(1)(a) – Relevant statutory provisions

Section 171(1)(a) of the RMA requires territorial authorities, subject to Part 2 of the Act, to consider the environmental effects of NoRs having particular regard to any relevant provisions of:

(i) A national policy statement;

(ii) A New Zealand coastal policy statement;

(iii) A regional policy statement or proposed regional policy statement; and

(iv) A plan or proposed plan.

In accordance with section 171(1)(a) of the RMA, an assessment of the Project in the context of the relevant statutory provisions has been undertaken. Table 11-1 outlines the statutory provisions that are considered relevant to the NoRs. Table 11-2 then provides a full assessment of the Project against these matters, and is organised thematically under the following headings:

- Urban growth and development capacity,
- Enabling Infrastructure and Transport,
- Enabling infrastructure within an overlay and in addition to the above,
- National Grid,
- Mana Whenua,
- Indigenous biodiversity and Ecological Values,
- Natural hazards,
- Urban form and quality design,
- Highly Productive Land,
- Future Urban Zone,
- Rural Zones, including Countryside Living,
- Business Zones, and;
- Residential Zones.

Only designations for the proposed NoR works are sought at this time. The following policy assessment focusses on key national, regional and district policy and plan matters relevant to the assessment of the proposed NoRs. However, it should be noted that, effects related to the regional plan matters are not authorised by the NoRs, therefore the objectives and policies related to regional matters have not been assessed in detail. While regional matters have been considered to help guide the NoR process, a detailed assessment will be required on these matters at a later date.

Table 11-1 Statutory documents assessed

Type of statutory provisions (s171(1)(a))	Relevance/Relevant Plans and Provisions
National Policy Statements (NPS)	The following NPS's are considered relevant to the Project: ▪ National Policy Statement on Urban Development. ▪ National Policy Statement on Freshwater Management. ▪ National Policy Statement on Electricity Transmission. ▪ National Policy Statement on Indigenous Biodiversity
New Zealand Coastal Policy Statement	The Project is not located within the coastal environment. This document is therefore not relevant to this application.
Regional Policy Statement or Proposed Regional Policy Statement	The Auckland Regional Policy Statement (RPS), contained in Chapter B of the AUPOP, is relevant to this application. In particular: ▪ B2 - Tāhuhu whakaruruhau ā-taone - Urban growth and form ▪ B3 - Ngā pūnaha hanganga, kawekawe me ngā pūngao - Infrastructure, transport and energy ▪ B4 - Te tiaki taonga tuku iho - Natural heritage ▪ B6 – Mana Whenua ▪ B7 - Toitū te whenua, toitū te taiao - Natural resources ▪ B9 -Toitū te tuawhenua - Rural environment ▪ B10 - Ngā tūpono ki te taiao - Environmental risk
Plans or Proposed Plans	The following district plan provisions in the AUPOP are relevant to this application: ▪ Chapter D – Overlays – D1 – High-use Aquifer Management Areas Overlay – D9 – Significant Ecological Areas – D13 – Notable Trees Overlay – D26 – National Grid Corridor Overlay ▪ Chapter E – Auckland-Wide – E12 – Land disturbance – District – E15 - Vegetation management and biodiversity – E17 – Trees in roads – E26 – Infrastructure – E27 – Transport – E36 – Natural Hazards and Flooding

Table 11-2 Assessment of the relevant statutory provisions

Theme	Key Objectives and Policies	Analysis
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 (and integrated) in appropriate locations.* *Relevant to all NoRs.*	**NPS-UD** Objective 1, 4, 6 and 8, Policy 1(c), 1(e), 1(f), and 6. **AUPOP (RPS)** *B2.2.1(1A), B2.2.1(1),* B2.2.1(3), B2.2.1(5), *B2.2.2(4),* B2.4.1(5), B2.4.1(6), B2.4.2(6), B3.2.1(5), B3.3.1(1)(b), B3.3.1(1)(c), B3.3.2(4)(b), B3.3.2(5)(a), B9.2.1(2) **AUPOP (DP)** E27.2(1), E27.2(2), E27.2(5), E27.2(5A) E27.2(6), E27.3(20A), E27.3(20B)	**Summary of Objectives and Policies** ▪ The 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 is therefore 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 AUPOP RPS has key outcomes of integrated management to give effect to the NPS–UD. ▪ The objectives and policies of the AUPOP RPS seek 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. Developments are also expected to be well-functioning urban environments that enable people and communities to provide for their social, economic, and cultural wellbeing, while improving resilience to climate change. B9.2.1(2) within the AUPOP RPS seek to protect areas of land containing elite soil from inappropriate subdivision, urban use and development. Please refer to theme Highly Productive Land for this assessment. **Assessment** ▪ The objectives and policies emphasise the importance of providing short, medium and long term residential and business capacity. This includes long-term strategic planning for urban development and generally indicate that ad hoc or out of sequence urban expansion is less desirable than that which is planned and integrated. The Project is consistent with these objectives and policies by providing for the necessary transport infrastructure to support the development of land and the eventual establishment of the necessary development capacity. ▪ Route protection will ensure that the necessary transport infrastructure is planned and integrated (and identified in the AUPOP) to meet the feasible development capacity targets over the next 30 years. ▪ Furthermore, route protection will allow funding to be integrated with development and infrastructure once as funding is available. The Project can easily progress to implementation phase (detailed design/resource consent) given the certainty that is provided through protection of the route and the NoR. ▪ Objective 8 requires urban environments to support a reduction in greenhouse gas emissions and be resilient to the current and future effects of climate change. This objective is supported by Policies 1(e), 1(f) and 6(e), which provide similar directions in relation to planning decisions. The proposed SUP will

		provide for active mode transport, by connecting the existing SUP between Papakura and Drury. This enables modes of travel not reliant on vehicle usage and supports efforts to reduce greenhouse gas emissions. The infrastructure proposed as part of the Project will support that growth, and an urban environment that is designed to be resilient to the effects of climate change. As set out in Section 10, the Project will: ▪ The Project will support the growth of urban areas in the South of Auckland. It is considered an integral part of the Southern Strategic Network, which is outlined in the PBC (Section 3). If Stage 2 P2B is not provided for the crucial connection between the Drury Arterial and Pukekohe Transport Networks (via Drury South Interchange) would be missing. These upgrades are expected to enhance the efficiency of the motorway network and divert traffic away from local road network as the urban areas in the South of Auckland develop over the next 15-20 years. ▪ Support and enable growth by protecting improved and new transport corridors that will support and integrate with Auckland Council's growth aspirations for the growth areas of Auckland, including intensification or density of growth resulting in more efficient and well-functioning urban land development; **Conclusion** The Project contributes to the achievement of these objectives and policies by protecting corridors to deliver a transport system to positively contribute to quality, connected urban and natural environments.
Enabling Infrastructure and Transport *Infrastructure (including effective, efficient and safe transport) is enabled and where appropriate protected.* *Benefits of infrastructure are recognised while adverse effects are avoided, remedied or mitigated.* *Relevant to all NoRs.*	**AUPOP (RPS)** B3.2.1(1), B3.2.1(2), B3.2.1(3), B3.2.2(1), B3.3.1(1), B3.3.2(1), B3.3.2(3) **AUPOP (DP)** E17.2(1), E17.2(3), E17.3(1)E26.2.1(1), E26.2.1(2), E26.2.1(4), E26.2.1(9), E26.2.2(4), E26.2.2(14), E26.2.2(15).	**Summary of Objectives and Polices** ▪ The objectives and policies in Chapter B3 of the AUPOP recognise the importance infrastructure (including transport 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 AUPOP 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. ▪ The AUPOP directs that land use, and all modes of transport should be integrated so that the benefits of an integrated transport network can be realised, and the adverse effects of traffic generation on the transport network can be managed. This includes enabling effective, efficient, and safe transport that supports the movement of people, goods and services, integrates with, and supports a quality compact urban form, enables growth, avoids, remedies or mitigates adverse effects on the quality of the environment and amenity values, and facilitates transport choices. The AUPOP also outlines the

		prioritisation of pedestrian safety along footpaths and seeks that road/rail crossings are operated safely with neighbouring land use. ▪ Objectives and policies in Chapter E17 seek to protect trees in roads and the cultural, amenity, landscape, and ecological values they contribute. Provision of transport infrastructure and utilities is enabled. **Assessment** ▪ The Project strongly meets these objectives and policies by providing for a wide range of transport benefits for the community. ▪ The Project will have a significant impact on transportation facilities for all modes, offering a variety of transportation options to accommodate the expected increase in demand due to urban development. It is an essential component of the broader investment in the transport network in South Auckland. The Programme IBC (Section 3) highlights the importance of interdependent transport infrastructure (such as the Project or Pukekohe Transport Network) in aligning with the timing, scale, and form of urban development, and promoting overall social and economic growth in South Auckland. ▪ The Project has demonstrated its potential to greatly improve the efficiency of SH1 (Section 10.2). By increasing capacity and reducing travel times, it is anticipated to enhance the overall performance of the motorway network. These improved efficiencies will not only benefit commercial operations, such as the movement of national and regional freight, but also contribute regional economic benefits for growing communities in South Auckland in accessing work and recreational opportunities. ▪ Improve and enable access for all people – including by way of public transport or active transport - to provide for their economic, cultural, and social needs and for their health and safety; ▪ Improve resilience of the strategic transport network in the South Auckland; and ▪ Support substantial mode shift from private vehicles to walking and cycling by; o improve accessibility and safety for active mode users; and, o address the current lack of such facilities in the Project Area. ▪ The Project plays a crucial role in supporting areas of FUZ land by providing certainty in relation to the planned location and extent of key transport infrastructure. This certainty is essential for developers as it enables them to effectively plan future growth initiatives, which effectively integrate with the overarching development strategy for South Auckland. ▪ The Project will enable intensification and growth of Auckland. **Conclusion**

		It is considered that the Project contributes to the achievement of these objectives and policies by enabling strategic transport infrastructure where appropriate while ensuring that adverse effects are avoided, remedied or mitigated.
Enabling infrastructure within an overlay and in addition to the above *Protect scheduled values but provide for infrastructure where:* *11. There is functional or operational need; and* *12. No practicable alternative.* *Relevant to all NoRs.*	**AUPOP (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) **AUPOP (DP)** D9.2(1), D9.2(3), D9.3(1), D9.3(2), D9.3(8), D10.2(1), D10.3(2), D10.3(3), D10.3(4), D10.3(5), D13.2(1), D13.3(2), D17.2(1), D17.2(2), D17.2(3), D17.3(24), D17.3(26), E26.2.1(9), E26.2.2(4), E26.2.2(5), E26.2.2(6), E26.2.2(8)	**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 AUPOP in relation to natural heritage, significant ecological areas 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 AUPOP 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 project has, in the case of areas of high value, demonstrated a comprehensive assessment of alternatives (**Appendix K**) to avoid adverse effects as far as practicable. ▪ SEAs have largely been avoided by the proposed NoRs. There is one small SEA located adjacent the existing motorway corridor within NoR 2. The proposed road alignment itself avoids the SEA. It is anticipated that through the detailed design phase and future regional consenting process there will be further opportunities to minimise and mange potential impacts on SEA including protection of the SEA during construction. ▪ The adverse effects of the Project have been largely addressed through the implementation of proposed conditions on the designations. Not all effects of the projects can be avoided or mitigated. Chapter E26 also recognises that linear infrastructure may have an operational need to traverse features or areas of value identified in the AUPOP. The same policy recognises the benefits derived from infrastructure, the adverse effects of not providing the infrastructure and seeks consideration of how the infrastructure contributes to the strategic form or function, or enables the planned growth and intensification, of Auckland. ▪ NoR 2 extends into the Historic Heritage extent of Place (Ramarama Hall). The NoR does not impact the Hall itself, and effect on the Hall will be avoided through construction. The improvements to the road will provide greater access to the site via active modes and will provide opportunities to improvements the amenity of the streetscape within these areas, which will likely offer benefits to heritage site.

		▪ There are several notable trees located within NoR 4, including fix (6) Notable London Plane trees which will be required to be removed as part of the Project, in most part due to the supporting batter slope for the upgraded motorway. The removal is largely unavoidable and is supported by a robust options assessment. Detailed design for any work in and around the remaining notable trees will be taken into account under a Tree Management Plan, which is a condition across all Project NoRs. **Conclusion** ▪ The Project is consistent with these objectives and policies. Alternative designs were explored as part of the alternatives assessment which concluded that no practicable alternative exists to avoid impacts on sensitive areas or features (such as SEAs, and notable trees). However, the extent of the designation footprints in these sensitive areas have been limited as much as practicable, and this may be revised further at the detailed design stage.
National Grid *The operation, maintenance and upgrading of the National Grid is enabled and colocation of infrastructure is encouraged where it is safe and satisfies operational and technical requirements.* *Relevant all NoR 2 and Nor 5.*	**NPS-ET** Objective, Policies 1, 10 **AUPOP (RPS)** B3.2.1(7), B3.2.2(7) **AUPOP (DP)** D26.2(1), D26.3(1), E26.2.1(7)	**Summary of Objectives and Policies** ▪ The relevant objectives and policies of the NPS for Electricity Transmission (NPS-ET) and the AUPOP seek to enable and provide for the National Grid, recognising the national significance of the electricity transmission network and to manage the adverse effects of other activities on the network to ensure its operation is not compromised. ▪ The objectives and policies of Chapter B3 of the AUPOP also encourage co-location of infrastructure where safe to do so and operational and technical requirements are satisfied. ▪ Specific AUPOP objectives and policies aim to ensure the efficient development, operation, maintenance, upgrading and removal of regionally significant infrastructure (including the National Grid) is protected from incompatible subdivision, use and development by ensuring operational and technical requirements and standards are satisfied. **Assessment** ▪ The National Grid and associated infrastructure have been protected from incompatible development, through the ongoing engagement with Transpower during the design of the Project. The feedback from this engagement has been a significant factor in the development of the design options (process detailed in **Appendix K**). This is foremost relevant at the Drury South Interchange (NoR 5), where the proposed Drury South Interchange Connections interfaces a Transpower Substation. Great consideration has been given to the avoiding and managing adverse effects on the effective operation of this site. ▪ At locations within NoR 2 and 5 there is vertical clearance constraints by the transmission lines. As outlined in Section 9, the design has been informed from engagement with Transpower which has been developed to provide adequate clearance to the lines. These details will be agreed with Transpower during the detailed design.

		▪ The Network Utility Management Plan (NUMP) condition sets out a framework for protecting, relocating and working in proximity to existing network facilities. In addition, the Project will adopt the previously used Transpower NoR conditions, which have been developed in conjunction with Transpower, across previous stages of the Project, and each NoR will require the use of an Electricity Infrastructure Management Plan (EIMP), to ensure the proposed works can be undertaken safely within proximity of the transmission lines. ▪ At detailed design, and through the implementation of the NUMP proposed as a condition of the designation, ongoing engagement will be undertaken with Transpower to confirm working room clearance around the 220kV lines during construction. Any potential adverse effects on the National Grid can be managed appropriately. **Conclusion** ▪ Stage 2 contributes to the achievement of these objectives and policies by recognising the national significance of electricity transmission and by appropriately managing any potential adverse effects to ensure its operation is not compromised. ▪ NoR conditions will be adopted to specifically mitigate effects during construction and operation of the Project on the National Grid.
Mana whenua *Mana whenua values are recognised and protected.* *Mana whenua are to be included in resource management processes, particularly in decision making in their role as kaitiaki.* *Relevant to all NoRs.*	**AUPOP (RPS)** B4.2.1(2), B6.2.1(1), B6.2.1(2), B6.3.1(1), B6.3.1(2), B6.3.1(3), B6.3.2(1), B6.3.2(2)(d), B6.3.2(3), B6.3.2(6), B6.5.1(1), 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(9), B7.4.1(6). **AUPOP (DP)** E1.2(2), E11.3(3), E12.3(1), E12.3(2)(c), E12.3(4).	***Kaitiakitanga*** **Summary of Objectives and Policies** The AUPOP requires recognition of and provision for the principles of Te Tiriti o Waitangi, in particular through Mana whenua participation in resource management processes. **Assessment** The objectives and policies of Chapter B6 recognise the role of Mana Whenua as kaitiaki and provides for integration of mātauranga Māori and tikanga into resource management processes. Of particular importance to the Project is Objective (1) and (2) and Policy (1) which recognise the principles of the Treaty of Waitangi and seek Mana Whenua participation and engagement in resource management processes and the sustainable management of natural and physical resources. Mana Whenua consultation undertaken has been outlined in Section 9 of this application. ▪ Policy B6.3.2(3) seeks to ensure that any assessment of environmental effects for an activity that may affect Mana Whenua values includes an appropriate assessment of adverse effects on those values. With respect to the Project, works are consistent with the objectives and associated policies of Chapter B6. **Assessment** ▪ NZTA's partnership approach with Mana Whenua means that Mana Whenua values are embedded in the Stage 2 (and consistently across all the P2B projects) which gives effect to the provisions of the

		AUPOP. Having involved Mana Whenua in design development and decision-making, has resulted in a distinctive and transformational outcome for the social, cultural, and economic environment. ▪ In particular, the Project has avoided wāhi tapu and other taonga where possible in order to avoid destruction of sites of significance. The Project has generally sought to locate routes outside of Māori land. The Project has also recognised Mana Whenua cultural values, particularly with regards to the mauri of, and the relationships of Mana Whenua with natural and physical resources including freshwater, land, air, and coastal resources. Significant adverse effects on these values are required to be avoided, with lesser adverse effects avoided, remedied, or mitigated as appropriate. ▪ Cultural Values Assessments have been sought from Mana Whenua Representatives from NZTA's SIIG prior to lodgement of the NoRs. ▪ The Project is located entirely within the Statutory Acknowledgment Areas of Ngāti Tamaoho, who have been engaged through NZTA's SIIG Forum, and directly notified of the Projects intention to lodge NoRs. As noted above, CIAs have been sought from these representatives. **Conclusion** ▪ The Project contributes to the achievement of these objectives and policies by actively involving Mana Whenua in the process to identify the preferred options and by avoiding wāhi tapu and other taonga where possible in order to avoid destruction of sites of significance.
Indigenous biodiversity and Ecological Values *The protection and enhancement of ecological values (including in degraded areas) is promoted.* *Relevant to all NoRs.*	**NPS – IB** Objective 1, Clause 1.7, Policy 3, 4, 8, 10, 14, 15, 17 **AUPOP (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), B7.5.1(2), B7.5.2(1)(f) **AUPOP (DP)** E12.2(1), E12.3(1), E12.3(2)(c), E15.2(1), E15.2(2), E15.3(2), E15.3(3) E15.3(4)(b), E15.3(7).	**Summary of Objectives and Policies** ▪ The NPS-IB seeks to maintain indigenous biodiversity across New Zealand so that there is at least no overall loss in indigenous biodiversity. The Policies of NPS-IB seek that a cautionary approach is used when considering effects on indigenous biodiversity both within and beyond Significant Natural Areas (SNAs) and including areas supporting highly mobile fauna (such as bats, and birds). Increased indigenous vegetation cover in urban and non-urban environments is promoted, as is information gathering and monitoring of indigenous biodiversity. ▪ At the same time, the NPS-IB sets out a need to recognise and allow for activities which contribute to New Zealand's social, economic, cultural, and environmental wellbeing, and provides a consenting pathway for specified infrastructure which provides significant national or regional public benefit, and which has a functional or operational need to locate in a particular location, when there are no practicable alternatives. ▪ The NPS-IB sets out a number of adverse effects of use and development on a SNA, which must be avoided, except where an exemption applies. Exemptions include where a use or development is for specified infrastructure which provides significant national or regional benefit, where there is a functional or operational need to locate within a SNA, and where there are no practicable alternative locations (Clause 3.11) and the effects are managed with the effects management hierarchy (Clause 3.10).

		▪ At the date of preparing this application the NPS: IB has not been given effect to in the AUPOP. However, many of the policy directions in the NPS: IB are already contained within the AUPOP and in relation to large scale infrastructure projects there is not a notable change in policy direction. The assessment of the project against the NPS: IB is therefore substantively similar to the assessment against the corresponding AUPOP provisions. ▪ The primary method the AUPOP uses to protect biodiversity is the identification of SEAs (equivalent to SNAs under the NPS: IB). These areas receive the highest level of protection. Biodiversity values outside SEAs/SNAs need to be considered and effects on them addressed. ▪ The AUPOP objectives and policies (specifically those under Chapter E9 and E15) seek to protect and enhance ecological values across both terrestrial, freshwater, and coastal environments. ▪ Significant adverse effects on biodiversity are to be avoided as far as practicable, and where avoidance is not practicable, adverse effects are to be minimised. Other adverse effects on biodiversity and ecosystems should be avoided, remedied, or mitigated. The provisions recognise that avoidance of areas with biodiversity values is not always practicable for infrastructure. Where biodiversity is affected, measures to protect and restore biodiversity through legal protection and active management should be considered. Assessment ▪ There are a range of objectives and policies within the NPSIB that are relevant to the Project. However, given the Project is only seeking NoR, the assessment is limited to DP matters. In areas where indigenous species are to be removed for the development of the Project, as DP matters, replacement planting will be implemented to maintain indigenous biodiversity in the environment. ▪ Once operational, the proposed new stormwater quality treatment devices will also achieve the same objectives and policies of the NPSIB. ▪ The Project is committed to preserving indigenous biodiversity through the implementation of mitigation measures. To establish an ecological baseline, pre-construction ecological surveys will be conducted in all NoR areas. These surveys aim to determine the presence of threatened species within the project area and, if identified, take necessary steps to mitigate any potential adverse effects on these species. This will be achieved through the adoption of Ecological Management Plans (EMPs) specifically tailored for long-tailed bats, birds, and/or lizards. ▪ Future assessment of the Project at the regional consenting phase will require assessment against relevant policies. ▪ The Project has foremost sought to avoid areas with high or significant biodiversity and ecological values where practicable, through consideration of ecological constraints through the alternatives assessment and design refinement process (as detailed in **Appendix K**). This has included SEAs and other areas of high value indigenous vegetation or habitat.

		▪ In order to ensure tangata whenua as kaitiaki able to exercise kaitiakitanga for indigenous biodiversity in their rohe, the Project has been designed in consultation with the local iwi groups in the southern area of Auckland through the NZTA's SIIG Forum. The design elements, stormwater management and overall outcomes of the Project were discussed with the Forum that ensures active participation of tangata whenua in decision-making of the Project in relation to indigenous biodiversity. Conclusion ▪ There is a strong alignment and consistency between the NPSIB, and the biodiversity provisions in the AUPOP. ▪ The Project is consistent with the objectives and policies of the AUPOP and NPSIB because option development and assessment considered existing and likely sensitive ecological features and environments. ▪ The Project has been designed to avoid SEAs, to eliminate the potential for adverse effects on areas significant biodiversity and ecological values.
Natural hazards *Avoid increasing risk of adverse effects in areas subject to natural hazards (including climate change). Where infrastructure and development are required in these areas, natural hazard risks must be managed.* *Relevant to NoR 2, 3, 4 and 5*	**AUPOP (RPS)** *B2.3.1(1),* B10.2.1(2), B10.2.1(3), *B10.2.1(4)*, B10.2.1(5), B10.2.1(6), B10.2.2(7), B10.2.2(8), *B10.2.2(12)* **AUPOP (DP)** E12.2(1), E12.3(5), E12.3(6), E36.2(1), E36.2(2), E36.2(3), E36.2(4), E36.2(5), E36.2(6), E36.3(1), E36.3(3), E36.3(4), E36.3(21), E36.3(23), E36.3(26), E36.3(29), E36.3(30).	**Summary of Objectives and Policies** ▪ The objectives and policies of the AUPOP 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 AUPOP 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. Assessment ▪ The flood impacts of the Project are largely contained within the existing site conditions, and will not increase the flood risk to habitable floor areas, increasing a risk to people and property. For the most part the additional flows can be adequately mitigated via attenuation swales within the proposed designation boundaries. ▪ Adequate conditions will be applied to each NoR to ensure detailed design does not allow for adverse flood impacts on any properties. Conclusion ▪ The Project contributes to the achievement of these objectives and policies by avoiding or minimising adverse effects on areas susceptible to natural hazards, and where the Projects are required in these areas, managing potential effects through the conditions framework.

Urban form and quality design *Transport networks support a quality urban form and are designed to achieve high levels of amenity and safety for users. The place function of transport networks is balanced with the functional movement purpose.* *Relevant to all NoRs*	**NPS-UD** Objective 4, Policy 6 AUPOP (RPS) *B2.2.1(1A), B2.2.1(1)*, B2.3.1(3), *B2.3.2(1)(d),* B2.3.2(2)(b), B2.3.2(4), B3.3.1(1)(d), B3.3.2(4)(a), B3.3.2(7) **AUPOP (RP)** B2.2.1(1A), B2.2.1(1), B2.3.1(3), B2.3.2(1)(d), B2.3.2(2)(b), B2.3.2(4), B3.3.1(1)(d), B3.3.2(4)(a), B3.3.2(7) **AUPOP (DP)** E17.2(1), E17.2(2), E17.2(3), E17.3(1), E17.3(4), E25.2(1), E25.2(2), E25.3(2), E25.3(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 need for mode shift, minimising private vehicle travel in favour of walking and cycling. **Assessment** ▪ The Project is largely determined by and contained within the existing SH1 corridor. The corridor provides an integral transport link between Auckland and Hamilton, with various existing tie-ins with the local road network. Investment in this strategic transport corridor is integral to the function of existing and future urban areas. ▪ The Project will allow for active modes to access the entire alignment and will also integrate new infrastructure with existing urban areas and neighbourhoods south of Drury. ▪ The Project is designed to achieve high levels of safety for users (which is a key benefit). In regard to amenity, due to the long delivery timeframes, details tree species are not required or appropriate to be determined at this time and will be decided through Outline Plans (including the UDLMP) and resource consents. The design does not preclude the provision of amenity within the transport corridors (e.g., trees, planting or other landscaping) and appropriate construction management will be provided. **Conclusion** ▪ It is considered that the Project contributes to the achievement of these objectives and policies by supporting quality, compact urban form, allowing space for amenity planting within/next to the corridors and preserving existing natural assets (where practicable) which positively contribute towards amenity values.
Highly Productive Land *Protection of Highly Productive land for use in primary production* *Relevant to NoR 2, 3 and 5*	**NPS: HPL:** Objective within Section 2.1. Policy 1, 2 and 8 **AUPOP (RPS)** B9.2.1 (2), B9.3.1 (2)	**Summary of Objectives and Policies** ▪ The NPS-HPL seeks to ensure highly productive land is protected for use in land-based primary production, both now and for future generations. The NPS-HPL requires that territorial authorities avoid the inappropriate use and development of highly productive land. NPS-HPL clause 3.4(2) excludes any land identified as FUZ from highly productive land as these areas have been through a planning process to be identified as suitable for urban development. The below assessment is limited to those areas where the transport corridors are located in the rural zone and are within class 1-3 soils. This is relevant only to NoR 2, 3 and 5. ▪ A use or development of highly productive land is inappropriate except where the exemptions in Clause 3.9(2) apply. These exemptions include where a use or development of highly productive land is for an activity by a requiring authority in relation to a designation or a notice of requirement under the RMA, or

		where a use or development is associated with the maintenance, operation, upgrade, or expansion of specified infrastructure, and there is a functional or operational need for the use or development to be on the highly productive land. Where one of the exemptions applies, territorial authorities must also take measures to ensure than any use or development on highly productive land minimises or mitigates any actual loss or potential cumulative loss of the availability and productive capacity of highly productive land in their district, and avoids, if possible, or otherwise mitigates, any actual or potential reverse sensitivity effects on land-based primary production activities from the use or development. ▪ Key policies include the need to recognise highly productive land as a resource with finite characteristics and long-term values for land based primary production (Policy 2), avoid urban rezoning of highly productive land, except as provided for in the NPS-HPL (Policy 5) and protect highly productive land from inappropriate use and development (Policy 8). Specific AUPOP objectives and policies reinforce that land containing elite soils is protected through land management practices to maintain its capability, flexibility and accessibility for primary production and is managed to enable its capability, flexibility and accessibility for primary production. **Assessment** ▪ Under clause 3.5(7) highly productive land must be zoned general rural or rural production (as defined in the National Planning Standards, and if the planning standards haven't been adopted, the closest district plan zone). In Auckland, the AUPOP categorises soil types based on Land Use Categories (LUC) 1-3. The relevant zoning and LUCs for highly productive soils are relevant across a large portion of the Project alignment, as per Section (above). ▪ The NPS-HPL recognises that there may be situations where it is appropriate for use and development to occur on highly productive land. There is currently only one section of FUZ within the Stage 2 P2B alignment, at the northern end on the western side of SH1 which is not highly productive land for the purposes of the NPS-HPL. Designations within FUZ are therefore not included in the below assessment. ▪ NoRs 2-5 will encroach into land that has indicatively been identified as highly productive in the AUPOP (Land Use Class 1-3). The P2B projects meet the definition of an exemption under Clause 3.9(2) of the NPS-HPL, because the use and development of this land is required in relation to a designation or a notice of requirement under the RMA. ▪ The Project is also associated with the maintenance, operation, upgrade, or expansion of specified infrastructure (i.e. state highway) and have a functional or operational need for the use or development to be on the highly productive land (Clause 3.8(2)(j)(i)). ▪ The Project is not expected to significantly erode or fragment the highly productive land, given large parcels of land are not required, and rural production land uses have already been integrated with the existing state highway corridor. **Conclusion**

		▪ It is considered the Project contributes to the achievement of these objectives and policies because the projects are generally located along the edge of the highly productive land or will enable the ongoing use of the land either side of the existing state highway corridor for rural production purposes. Adverse effects of the Project on adjacent highly productive land will be appropriately mitigated prior to construction is required. A listed exemption is specified infrastructure such as where a new road may need to traverse over an area of HPL. In many cases, the presence of specified infrastructure on HPL does not preclude the balance of the HPL being used by land-based primary production. ▪ The adverse effects of this will be appropriately mitigated prior to construction if required. In these cases, the highly productive land (if classified) is adjacent to an existing state highway corridor which is being upgraded and therefore the designations will not significantly erode or fragment the highly productive land.
Future Urban Zone *Protecting land use prior to urbanisation and setting future development opportunities.* *Relevant to NoR 1 only*	**AUPOP (DP)** H18.2(1), H18.2(2), H18.2(3), H18.2(4), H18.3(1), H18.3(2), H18.3(3), H18.3(4), H18.3(5), H18.3(6)	**Summary of Objectives and Policies** ▪ The relevant objectives of Chapter H18 seek for land to be developed to achieve the objectives of the Rural Production Zone until such time as it has been rezoned for urban purposes, and that urbanisation is avoided until the sites have been rezoned. ▪ The relevant policies seek to avoid use and development that may result in the inefficient and ineffective operation of the local and wider transport network, require significant upgrades to infrastructure, inhibit the efficient provision of infrastructure or undermine the form or nature of future urban development. Further, use and development is required to maintain and complement rural character and amenity. **Assessment** ▪ The Project is intrinsically linked to the development of small pockets of FUZ located at Drury. Although the Project it is not dependent on these areas developing, the intention of the Project is to link into the wider future transport network, which will provide an integrated network to support urban development in this area. It is expected that the Project will be constructed at a time that these areas of FUZ are 'live zoned' (approximately 2035 as per Auckland Councils FDS). Until which time the rural character and amenity of the FUZ will be maintained. ▪ The Project seeks to protect future transport corridors within the FUZ. Protection of these corridors while enabling future urban development. It will also signal to developers the planned transport network and allow for the creation of integrated communities to be effectively serviced by a range of transport modes including by private vehicle, active modes, and freight. ▪ The intensity of the Project in part has been designed to respond to the planned urban development intensity of surrounding FUZ land and therefore are not anticipated to require significant upgrades after implementation. **Conclusion**

		▪ The Project aligns with the relevant FUZ objectives. The proposed corridors will also enable the effective and efficient movement of people, goods and services at an intensity that is appropriate for the anticipated urban land uses.
Rural Zones, including Countryside Living *Relevant to NoR 2, 3,4 and 5*	**AUPOP (DP)** H19.2.1(1), H19.2.1(3), H19.2.2(3), H19.2.2(4), H19.2.2(5), H19.2.3(2), H19.4.2(1), H19.7.2(2), H19.7.2(5), H19.7.3(1), H19.7.2(4)	**Summary of Objectives and Policies** ▪ The relevant objectives and policies of the AUPOP seek to protect elite soils and manage prime soils, protect and enhance areas of significant indigenous biodiversity, maintain rural character and amenity, and protect rural land from reverse sensitivity effects. **Assessment** ▪ The visual amenity and landscape character of the rural zone (where this zoning is expected to remain in the future) has been assessed in the application LVA (**Appendix I**). It is anticipated that the landscape character and visual amenity of the area will not change noticeably from the existing condition. Where the landscape is already dominated by the existing State Highway corridor, which sits in a predominantly rural setting. The existing character will largely be maintained and in part enhanced through the integration of the corridor with the surrounding landscape. The details of this will be decided through the preparation of a UDLMP across all Project NoRs. ▪ Areas of significant biodiversity in rural zones have largely been avoided by the design, as described in the ecological values row above. Where they are not able to be avoided, mitigation measures are proposed, including the implementation of an EMP during construction and operation as appropriate. ▪ As per the assessment contained in high productive land row above, the Project will not fragment highly productive land as it will only require land take from large rural properties, where the land use is already integrated with the State Highway corridor, and thus will not compromise the ability for this land to utilised for agricultural purposes. **Conclusion** ▪ The transport corridors contribute to the achievement of these objectives and policies by improving the efficiency of rural zones through better transport connections and reliability and mitigating adverse effects on rural character and amenity values.
Business Zones *Relevant to NoR 1 and 5*	**AUPOP (DP)** H12.2(1), H12.2(3), *H12.2(4),* H12.2(5), H12.3(3), H14.2(2), *H14.2(3),* H14.2(5), H14.3(3), H14.3(12), H14.3(21), H17.2(1), H17.2(2), H17.2(3), H17.2(4), H17.3(4), H17.3(7)	**Summary of Objectives and Policies** ▪ The relevant objectives and policies of the Business - General Use Zone seek for development to positively contribute towards planned future form and quality, creating a sense of place particularly with regard to streets by providing pedestrian amenity, movement, safety and convenience for people of all ages and abilities.

		▪ The relevant objectives and policies of the Business – Light Industry Zone seek to ensure light industry activities are able to function efficiently and any adverse effects on surrounding zones are avoided, remedied, or mitigated. ▪ The objectives and policies of the relevant business zones also seek to recognise the functional and operational requirements of activities and development while avoiding, remedying or mitigating adverse effects on amenity values and the natural environment of adjacent public open spaces and residential areas. **Assessment** ▪ Only NoR 1 and 5 cross some areas of Business Light Industry Zone. These NoRs will positively contribute towards the planned future form and quality of Drury South, including this business zone. The transport corridor will improve the reliability of the transport network enabling the Light Industrial land to operate efficiently, particularly with regard to improved efficiency of freight movements and better transport connections. ▪ A UDLMP is proposed as a condition on all the Project NoRs. This will integrate the permanent works into the surrounding landscape and urban context so that potential adverse landscape and visual effects are managed. The amenity of adjacent areas during construction will be managed through engagement with the community and stakeholders (through the SCMP), and through the construction management plans (in particular the CTMP) proposed as conditions on the designations. **Conclusion** ▪ It is considered that the transport corridors contribute to the achievement of these objectives and policies by positively contributing towards planned future form and quality of business zones, improving the efficiency of access to these zones through better transport connections and reliability and mitigating adverse effects on amenity values and the natural environment of adjacent public open spaces and residential areas.
Residential Zones *Relevant to NoR 5*	**AUPOP (DP)** H4.2(3), H4.2(4), *H4.3(9),* H4.3(10), *H5.2(A1), H5.2(1),* H5.2(4), H5.2(5), *H5.2(6), H5.2(8), H5.2(10), H5.3(C1),* H5.3(8), H5.3(10)	**Summary of Objectives and Policies** ▪ The relevant objectives and policies of the Mixed Housing Suburban zone seek to ensure land is efficiently used to provide higher density urban living, increase housing capacity and improve choice and access to public transport. ▪ Specific objectives and policies also seek to recognise the functional and operational requirements for development, in particular that the zones provide a well-functioning urban environment that enable all people to provide for their social, economic and cultural well-being. The objectives and policies direct that safe street environments are provided for pedestrians, and that intensification is avoided in areas with significant transport infrastructure constraints. Assessment ▪ Some of the NoR corridor alignments interact with these zones (NoRs 2 and 5). The NoRs are consistent with the objectives and policies because they provide for the necessary transport infrastructure to support

		the residential zoning currently under development within the transport corridor areas and to increase the development capacity. ▪ The NoRs will ensure land is protected to contribute to the accessible, high quality, effective, efficient and safe transport routes (including public and active transport modes) that support the movement of people, goods and services for residential zoned areas enabling communities' social, economic and cultural wellbeing to be provided for. ▪ A ULDF is proposed as a condition of the designations. The ULDF will integrate the permanent works of each transport corridor into the surrounding landscape and urban context and ensure potential adverse landscape and visual effects are managed. ▪ Amenity of the corridors during construction will be managed appropriately through engagement with residents, the community and stakeholders, and through the construction management plans proposed as conditions of the designations. **Conclusion** ▪ It is considered that the Project supports the objectives and policies of the residential zone chapters by providing the necessary transport infrastructure required to support the growth of these areas while avoiding, remedying or mitigating adverse effects on residential amenity

11.1.1 Other Matters (section 171(1)(d))

When considering the Project, the territorial authority must have particular regard to any other matter the territorial authority considers reasonably necessary to make a recommendation on the requirement. Other matters considered relevant to each of the NoRs are consistent across the Project.

Therefore, one assessment against these matters has been undertaken. Other matters considered relevant to the Project are set out and assessed in Table 11-3 and Table 11-4 below.

Table 11-3 Assessment of national matters

Central Government
Government Policy Statement on Land Transport (GPS) for 2021/22 – 2030/31
The Government Policy Statement on Land Transport 2021 (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 the GPS are: 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; and Improving freight connections – improving freight connections for economic development. The Project effectively addresses several key priorities outlined in the GPS, such as improving access and efficiency of the land transport network. By enhancing connectivity and reducing travel times, the Project will enable economic growth and strengthens regional development opportunities, not only for freight, but also in peoples access to work and recreation. Furthermore, the Project facilitates sustainable and resilient transport choices, through the provision of a walking and cycling connection along the entire length of the Project. This will help to promote low carbon transport options and provide greater inclusive access options for users of the motorway network. With appropriately designed interchanges and road facilities, the project ensures safer and more efficient journeys for motorists while providing convenient access for pedestrians, cyclists, and accommodating the provision of public transport connections within the motorway network. Overall, through its alignment with the GPS objectives, the Project stands as a strategic investment in the land transport network. It effectively addresses pressing transportation challenges by utilising and upgrading an existing transport corridor. This approach facilitates sustainable, efficient, and accessible transport solutions, enabling the efficient travel options and enhanced access opportunities.
The Thirty-Year New Zealand Infrastructure Plan 2015
The Thirty-Year New Zealand Infrastructure Plan developed by The Treasury looks to advance the debate of long-term provisions, make 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 and co-ordinated and contributes to a strong economy and high living standards. Regarding Auckland, 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, Auckland will need to provide 400,000 more dwellings. The Project provides an integrated approach to land-use and infrastructure planning which is critical to deliver good urban outcomes. The plan envisages $18.7 billion expected to be spent on infrastructure between 2015 and 2025.
Resource Management (National Environmental Standards for Electricity Transmission Activities) Regulations 2009
The construction and operation of the Project will not have any likely adverse effects on the National Grid, or require resource consent pursuant to the NES for Electricity Transmission Activities.

Resource Management (National Environmental Standards for Freshwater) Regulations 2020
The construction and operation of the Project will likely result in works that affect freshwater streams and wetlands. Any necessary resource consents will be obtained as part of the future consent process which will consider regional issues.

Table 11-4 Assessment of the other Auckland Regional matters

Auckland Regional Matters
The 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 Project will allow for upgrades to SH1 to enhance the region's transport infrastructure, ensuring efficient and reliable connectivity for people and goods across Auckland. By reducing congestion and improving travel times, the upgraded corridor will contribute to a more resilient and accessible transport network. Additionally, the Project facilitates more sustainable transport options by incorporating a SUP, aligning with Auckland's commitment to environmental stewardship and a low-carbon future. Overall, the upgraded SH1 supports the long-term goals of the Auckland Plan 2050, creating a vibrant and well-connected city.
Auckland Future Development Strategy (FDS)
Auckland Council provided the final version of the FDS 2023-2053 to the Planning Committee in July 2023 (final decision expected late 2023), which replaced the Development Strategy 2018 and the FULSS 2017. The purpose is to plan for the anticipated growth and uncertainties facing Auckland over the next 30 years. With a projected population increase and the need for additional homes, the FDS aims to ensure well-functioning urban environments, sufficient development capacity, and integrated strategic planning and infrastructure funding. While satisfying statutory requirements, the FDS also presents an opportunity for Auckland to shape its own future direction based on its unique characteristics and aspirations, considering factors such as climate change, environmental protection, and central government legislation. The Project is critical to delivering a safe, efficient, reliable and resilient transport network, which integrates with the adjacent transport investment programme, to support the greenfield capacity planned for the Papakura-Bombay.
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, NZTA and KiwiRail, and forms part of the National Land Transport Programme. The Papakura to Bombay is identified as a committed, ongoing project in the RLTP which it identifies will enable the sequence of land release specified in the FULSS 2017 (and later FDS) and improves access to places where people live and work.

11.2 Assessment of Part 2 of the RMA

Section 171(1) of the RMA states that when considering a NoR, a territorial authority must consider the effects on the environment having particular regard to a number of matters (assessed above) and subject to Part 2 of the RMA.

Section 5(1) of the RMA states that the purpose of the RMA is to promote the sustainable management of natural and physical resources.

Section 5(2) of the RMA then provides a definition of sustainable management. In our view, in determining whether the Project promotes sustainable management, consideration of Sections 6, 7 and 8 of the RMA is required before drawing any conclusions regarding consistency with Section 5 of the RMA.

The following section provides an assessment of the effects of the Stage 2 P2B subject to Part 2 of the RMA.

11.2.1 Matters of national significance

Section 6 of the RMA states that in achieving the purpose of this 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 specified matters of national importance. We consider the following matters of national importance to be relevant to the P2B (See Table 11-5):

Table 11-5 Assessment of matters of national significance

Matters of national importance	Assessment
(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	The Project is not located within the coastal environmental. Adverse effects on natural character values have largely been avoided or minimised through the alternatives assessment process for stream and wetland environments. This matter is most relevant to the Project Areas surrounding the Hingaia Stream and Ngaakooroa Stream. Where the levels of effect were assessed to be moderate, suitable mitigation has been developed.
(c) The protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna	Through the development of the Project, we have sought to avoid or minimise impacts on a range of high value ecological areas including high value wetlands, and streams, and will be further addressed through the application regional resource consents. Of note the Project will avoid SEAs.
(e) The relationship of Māori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga	Mana Whenua have been adequately engaged with throughout the P2B project. To minimise potential adverse, the Project respects and values the relationship between Mana Whenua and the natural and cultural resources within the project area, promoting collaboration and the incorporation of cultural values in its planning and implementation as well as enshrining future opportunities through the detailed design.

(f) The protection of historic heritage from inappropriate subdivision, use, and development	Bishop Selwyn Cairn Stone Monument (CHI item 1800) and Ramarama Hall (CHI item 15071) will both be adequately protected from inappropriate development and will maintain access through construction and operation of the Project. Enhancements to the sites and site access will be facilitated through the use of the UDLMP. Heritage items potentially impacted by the construction of the Project can be appropriately mitigated through the proposed HHMP, which requires the applicant to prepare an Archaeological Authority prior to commencement of works on-site.
(g) The protection of protected customary rights	There are no affected protected customary rights groups or affected customary marine title groups.
(h) The management of significant risks from natural hazards	A number of design measures to provide resilience to flooding, inundation and climate change have been adopted across the Project. The flooding assessment has made recommendations which are to be implemented at detailed design so that there is sufficient space within the proposed designations for stormwater and flood mitigation.

11.2.2 Other matters

Section 7 of the RMA states that, in achieving the purpose of the RMA, particular regard shall be had to specified other matters. We consider the following other matters to be relevant to the Project (See Table 11-6):

Table 11-6 Assessment of other matters

Other Matter	Assessment
Kaitiakitanga:	Mana Whenua have been actively involved through the NoR phase of the Project and will continue to exercise kaitiakitanga through the future phases. This includes the preparation of management plans and the involvement of Mana Whenua as partners in the detailed design and consenting phases of these projects, as set out in the conditions.
The ethic of stewardship:	This has been recognised through engagement with key stakeholders, business associations, community groups and the wider community who exercise stewardship over particular resources. Input throughout the design process for various agencies has enabled the development of an integrated transport solution, and that provides important community and environmental outcomes.
The efficient use and development of natural and physical resources:	The Project utilises and proposes upgrades to an existing strategic transport corridor, the investment will allow more efficient use of the surrounding business and industrial land.
The maintenance and enhancement of amenity values:	The existing motorway corridor was found to have very little visual amenity value. The Project proposes to provide amenity planting along the length of the alignment which will be directed by the details of the UDLMP, which will be provided at the OPW stage of works. The addition of amenity planting is expected to enhance the visual amenity of the motorway corridor overall.

Intrinsic values of ecosystems:	Adverse effects on ecosystems have been avoided as far as practicable while providing sufficient width within the designation boundaries. It is expected that designation boundaries will be further refined during the detailed design phase. Appropriate mitigation will be undertaken where ecosystem values are compromised. The assessment undertaken has recommended the use of pre-construction surveys and use of EMPs, where there is potential risk of adversely affecting at risk species.
Maintenance and enhancement of the quality of the environment	The quality of the environment will be maintained and enhanced in some places through the implementation of the UDLMP which is a condition on the designations.
The effects of climate change:	The Project is primarily a response to urban growth within South Auckland. The Project will respond to the effects of climate change by building resilience into the motorway network and contributing to a reduction of greenhouse gas emissions by increasing the efficiency of the network and providing high-quality walking and cycling facilities. Further information on the modelling assumptions relating to the base scenario and likely future network is available in the Transport Assessment.

11.2.3 Treaty of Waitangi

In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).

NZTA have partnered with mana whenua throughout the development of the P2B project to identify areas and matters of cultural significance and incorporate this as part of the alternatives assessment process. This has included avoiding SEAs, and avoiding or minimising impact on wetlands and streams, reducing impacts on the Hingaia Stream and Ngaakooroa Stream and ensuring that construction management plans will be in place to protect water quality and any previously unrecorded items of cultural heritage encountered.

NZTA has invited representatives to provide CIAs for the Project, which have been discussed in Section 10.12 above. Further engagement will be undertaken in the detailed design and construction phases to ensure that the principles of the Te Tiriti o Waitangi are taken into account.

Given the above, the development of the P2B project is considered to be consistent with the principles of the Te Tiriti o Waitangi, and section 8 of the RMA.

11.2.4 Purpose of the Act

Section 5 of the RMA sets out the purpose of the RMA which is to promote the sustainable management of natural and physical resources, in a way, which enables people and communities to provide for their social, economic, and cultural well-being. The Project is consistent with the principles of the RMA, by utilising an existing transport corridor, the Project optimises efficiency, while simultaneously promoting improved accessibility to the broader transportation network. This enhanced access supports a more connected community, and increases access to employment opportunities and recreation, which will support the economic and social well-being of South Auckland.

The Project will result in some adverse effects, however, when considering the significant regional and local benefits of the Project, and the measures proposed to avoid, remedy, and mitigate the adverse effects, the Project is consistent with the purpose and principles of the RMA.

12 Other statutory approvals required

Further and separate approvals under other legislation will be required and will be sought in the future. This report does not seek authorisation or approval for those works, but they are set out in Table 12-1 for clarity.

Table 12-1 Assessment of other statutory approvals required

Other statutory approval required	Discussion
Outline plan of works	In accordance with section 176A of the RMA, NZTA and AT (as the requiring authorities) will submit to Auckland Council one or more outline plan(s), detailing all relevant aspects of the Project following the completion of detailed design and prior to the commencement of construction.
Land subject to existing designations	Some land to be designated for the Project is subject to existing designations by other requiring authorities (refer to Section 8.7). In order to undertake work in accordance with a designation on land with an existing designation, written consent from the requiring authority of the earlier designation is required under section 177(1)(a). The section 177(1)(a) approvals required for each corridor are set out in Section 8.7 under the existing planning environment. Written approval is required to undertake works within the earlier designations where those works may prevent or hinder the earlier designation's purpose or project. Consultation has occurred with these requiring authorities to confirm acceptability of indicative designs. However, it is appropriate that written consent is sought at detailed design prior to construction when further details and timing of the works within the requiring authority's designation will be known and to account for any changes to status of earlier designation. Therefore, written approval under section 177(1)(a) of the RMA will be sought closer to construction
Future resource consents	Implementation of the Project NoRs will require NES and regional resource consents to enable works (noting the consenting requirements may change between now and implementation of these Projects). Although not being sought at this stage, this has been considered in the indicative designs, options assessment, and the designation footprints. These consents will be sought during the detailed design phase the Project.
Approvals under other legislation	Other matters which will need to be considered include: ▪ Public Works Act 1981 – the acquisition of required land. ▪ Heritage New Zealand Pouhere Taonga Act 2014 – authorities for works on or in any archaeological sites. ▪ Wildlife Act 1953 – the disturbance or relocation of protected species.

13 Conclusion

Stage 2 of the P2B project represents a crucial step in the enhancement of Auckland's southern motorway. Gradual plan changes have accelerated the transition of the surrounding area from rural to urban, and the upgrades to SH1 will provide essential transport infrastructure to support and integrate with adjacent planned transport networks and associated urban development.

While it is acknowledged that adverse effects during the construction and operation of the Project may arise, these are mitigated through the proposed management plans and mitigation measures outlined in detail in this Report. Furthermore, the Project is expected to produce significant positive effects, contributing to the sustainable growth, connectivity, and well-being of both local and regional community.

The Project is designed in alignment with the relevant planning documents and statutory requirements. As such, the Council should have adequate information to proceed in making their recommendation on the package notices. Overall, the Project is a crucial step towards achieving a sustainable and integrated transport system that supports the future growth and development of the Auckland region.

Appendices

Appendix A – Assessment of Effects on the Environment

Appendix B – General Arrangement Plans

Appendix C – Design Construction Report

Appendix D – Assessment of Transport and Traffic Effects

Appendix E – Assessment of Noise and Vibration Effects

Appendix F – Assessment of Ecological Effects

Appendix G – Assessment of Arboricultural Effects

Appendix H – Assessment of Archaeological and Built Heritage Effects

Appendix I – Assessment of Landscape, Visual and Natural Character Effects (LVA)

Appendix J – Flood Impact Assessment Report

Appendix K – Assessment of Alternatives Report

Appendix L – Proposed Condition Sets (Part 1 to 5)

Appendix M – Urban and Design Landscape Framework (ULDF)

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