TE TUPU NGĀTAHI
SUPPORTING GROWTH

North West Strategic Assessment of Landscape Effects

December 2022

Version 1

WAKA KOTAHI
NZ TRANSPORT AGENCY

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Abbreviations

Acronym / Term	Description
AEE	Assessment of Effects on the Environment
ASH	Alternative State Highway
AT	Auckland Transport
AUP:OP	Auckland Unitary Plan Operative in Part
BCI	Brigham Creek Interchange
CC2W	City Centre to Westgate
CHI	Cultural Heritage Inventory
GIC	Green Infrastructure Corridor
Kumeū River Park	Open Space - Informal Recreation Zone adjacent to the Kumeu river at 296 Main Road
FTN	Frequent Transit Network
FULSS	Future Urban Land Supply Strategy
FUZ	Future Urban Zone
MHS	Residential – Mixed Housing Suburban Zone
NAL	North Auckland Line
NoR	Notice of Requirement (under the Resource Management Act 1991)
NPS-FM	National Policy Statement for Freshwater (2020)
RUB	Rural Urban Boundary
SG	Te Tupu Ngātahi Supporting Growth
SH16	State Highway 16
SHZ	Residential – Single House Zone
The Council	Auckland Council
TCZ	Strategic Transport Corridor Zone
ULDMP	Urban and Landscape Design Management Plan
Waka Kotahi	Waka Kotahi NZ Transport Agency

Glossary of Acronyms / Terms

Acronym / Term	Description
Auckland Council	Means the unitary authority that replaced eight councils in the Auckland Region as of 1 November 2010.
Strategic Assessment Package	Four Notices of Requirement (for ASH, RTC, Station Road and SH16) and one alteration to an existing designation (SH16 Main Road) for the Whenuapai Arterial Transport Network for Auckland Transport.
Change Management	Identification of ways to enhance the landscape and actions to avoid, remedy or mitigate adverse landscape effects.
Designation Boundary	The extent of the proposed NoRs
Landscape	Is the cumulative expression of natural and cultural features, patterns and processes in a geographical area, including human perceptions and associations.[1]
Landscape Character	Is derived from the distinct and recognisable pattern of elements that occur consistently in a particular landscape. It reflects particular combinations of geology, landform, soils, vegetation, land use and features of human settlement. These elements create a unique sense of place defining different areas of the landscape.
Likely Future Environment	The landscape and visual character as a result of the future development proposed in the AUP: OP, including specific precinct plans, structure plans and proposed plan changes relating to the Project area. The likely future environment includes any existing baseline landscape elements (i.e. ONL's, protected vegetation, water ways, landform, sites and / or elements of cultural significance, and existing land-use scenarios) that are likely to endure following anticipated future development resulting from future urban zoning, AUP:OP overlays and land development projects (planned and / or under construction).
Landscape Effects	Landscape effects derive from changes in the physical landscape, which may give rise to changes in its character and how this is experienced. This may in turn affect the perceived value ascribed to the landscape.
Natural Character	The level of natural character (or naturalness) varies within each landscape / seascape and is the result of the combined levels of indigenous nature and perceived nature. These are typically defined by the extent to which natural elements, patterns and processes occur and are legible, and the nature and extent of human modification to the landscape and ecosystems.
Natural Character Effects	Natural character effects arise from landform modification and subsequent vegetation clearance within water bodies including wetlands, lakes and rivers and their margins.[2]
Permanent Effects (Operational Effects)	Describes the effects on the landscape of completed works (including integrated landscape mitigation measures), the significance of physical landscape change and ultimately the resulting effects of the Projects on

[1] NZILA Landscape Assessment and Sustainable Management Practice Note 10.1
[2] Resource Management Act 1991 and New Zealand Coastal Policy Statement 10.1

Acronym / Term	Description
	landscape character, natural character and visual amenity for both public and private viewing audiences.
Project area	Refers to the land being developed within the boundary of the NoRs.
Temporary Effects (Construction Effects)	Describes the anticipated impacts on the bio-physical elements and features of the landscape resource (landform, vegetation and hydrology) resulting from the construction of the Project. It also includes visual amenity effects for both public and private viewing audiences from construction works.
Visual Effects	Visual effects relate to the changes to amenity values of a landscape including the "natural and physical qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes".[3]
Visual Catchment	The visual catchment is the area of land from which part or all of the Project area is visible. This is largely determined by landform, land cover and built elements, which in combination may obscure or filter views.

[3] Resource Management Act 1991.

1 Executive Summary

Assessment undertaken

This Landscape Effects Assessment (LEA) has been undertaken with reference to Te Tangi a te Manu, Aotearoa New Zealand Landscape Assessment Guidelines[4]. It assesses the effects resulting from the proposed North West Strategic Arterial Network on the physical landscape, landscape character, natural character and visual amenity. There are no ONLs within the proposed designations for the Project.

Changes and effects during the construction process and / or activities associated with the implementation of development are considered separately to those generated by a completed development.

These assessments cover six separate areas as follows:

NoR S1: Alternative State Highway, including Brigham Creek Interchange

NoR S2 SH16 Main Road Upgrade

NoR S3Rapid Transit Corridor (RTC), including the Regional Active Mode Corridor (RAMC)

NoR KS Kumeu Rapid Transit Station

NoR HS Huapai Rapid Transit Station

NoR S4 Access Road Upgrade

Potential Positive Effects

A number of positive landscape and visual effects are anticipated as a result of the scheme on completion of proposed mitigation.

Positive effects are likely to include:

- A streetscape to support the emerging urban form of the NoR S2 and S4 project corridors;
- A net increase in green infrastructure within the urban Project areas, these have the potential to include new street trees, berm and stormwater plantings and planted stormwater wetland. This is anticipated to result in improved visual amenity for road users and adjacent audiences; and
- Slower speed limits adjacent to existing dwellings and commercial activities improving the experiential qualities of the corridor for users as well as private properties adjacent to an urban road corridor.
- The likely introduction of a large linear band of predominantly native planting along either side of the Alternative State Highway. This will provide linear habitat and landscape integration along the length of the ASH

Construction Effects

Adverse construction effects are expected to be primarily related to construction sites, the presence of construction plant within existing and new road corridors, lighting of night works, and the construction of wetlands. The phasing of the Project will increase the intensity of construction traffic moving along the Project routes throughout the construction period. The phasing of the works along the corridor

[4] 'Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines', [Final Draft subject to final editing, graphic design, illustrations, approved by Tuia Pito Ora/NZILA 5 May 2021]

reduces the length of time audiences are expected to experience adverse effects resulting from construction. Mitigation measures are proposed to reduce the impacts of these construction effects. The anticipated landscape and visual effects are considered with and without the implementation of mitigation measures.

Operational Effects

Adverse operational effects are expected to be as a result of a widened or introduced road corridor resulting in changes in landform and removal of vegetation. It is proposed that during the detailed design phase the mitigation measures will be confirmed as part of a ULDMP. The anticipated landscape and visual effects are considered with and without implementing mitigation measures.

Conclusions

Across all NoRs, the adverse landscape and visual effects without the implementation of mitigation proposals will range from **moderate-high** adverse to **very low** adverse during the construction phase. Landscape and visual effects during the operational phase, without mitigation are anticipated to range from **high** adverse to **low** adverse.

It is anticipated that across all of the NoRs, where mitigation measures are undertaken landscape and visual effects will be reduced and range from **moderate** adverse to **very low** adverse during the construction phase of works. With the project information currently available, during the operational phase of works it is anticipated that landscape and visual effects will range from **low-moderate** adverse to **very low** adverse. Across all NoRs the proposed operational effects are assessed approximately 3-5 years after implementation when proposed planting has become established. After implementation and establishment, it is expected that landscape effects will continue to diminish over time while planting matures.

The highest level of anticipated adverse landscape effects with or without mitigation are related to the landscape and visual effects related to introducing new highway infrastructure into existing rural landscapes, the removal of trees within the Huapai Domain, Kumeu River Park and Fred Taylor Park and the removal of scheduled notable trees adjacent to SH16 (NoR S2 and NoR S3). Wetlands, watercourses and riparian vegetation are also sensitive to the changes proposed in the construction and operation of the projects - in particular where there are new proposed crossing points, structures and culverts including within the Totara Inlet, Totara Creek, Ngongetepara Creek, Karure Stream, Kumeū River (and its branches), Pakinui Stream and the Ahukurama Stream. It is recognised however that there is the potential for positive effects as a result of improvements to degraded watercourses. Although some landscape elements of the proposal fall under the umbrella of regional consent matters (in particular the impacts on water bodies, water courses, wetlands and riparian vegetation) and therefore outside of the scope of the NoRs. Their effects on the landscape have been considered as part of this assessment which, takes a holistic view of the landscape and have formed part of the overall consideration of the designation. These elements will also be considered within the future regional consent assessment.

The highest level of anticipated adverse visual landscape effects across all NoRs is related to retained residential properties where existing screening and filtering vegetation is removed and / or the road corridor moves closer or is introduced to the resident audience. For all of the NoRs it is anticipated that adverse effects can mitigated and will become amalgamated into the emerging urban development.

2 Introduction

This Landscape Assessment has been prepared for the North West Strategic projects and Kumeū Huapai Local Arterials Notices of Requirement (**NoRs**) for Waka Kotahi NZ Transport Agency (**Waka Kotahi**) and Auckland Transport (**AT**) (the "**Strategic Assessment Package**").

The NoRs are to designate land for future strategic and local arterial transport corridors as part of Te Tupu Ngātahi Supporting Growth Programme (**Te Tupu Ngātahi**) to enable the construction, operation and maintenance of transport infrastructure in the North West area of Auckland.

The Strategic Assessment Package will provide route protection for the strategic routes, which include:

- Alternative State Highway (**ASH**), including Brigham Creek Interchange (**BCI**)
- Rapid Transit Corridor (**RTC**), including the Regional Active Mode Corridor (**RAMC**)
- Kumeu Rapid Transit Station
- Huapai Rapid Transit Station
- State Highway 16 (**SH16**) Main Road Upgrade

It also includes the upgrade of Access Road, an existing local arterial corridor within Kumeū-Huapai.

This report assesses the landscape effects of the North West Strategic Assessment Package identified in Figure 4-1 and Table 2-1 below. Refer to the main AEE for a more detailed project description.

Table 2-1: North West Strategic Assessment Package – Notices of Requirements

Notice	Project
NoR S1	Alternative State Highway (**ASH**), including Brigham Creek Interchange (**BCI**)
NoR S2	SH16 Main Road Upgrade
NoR S3	Rapid Transit Corridor (**RTC**), including the Regional Active Mode Corridor (**RAMC**)
NoR KS	Kumeu Rapid Transit Station
NoR HS	Huapai Rapid Transit Station
NoR S4	Access Road Upgrade

2.1 Purpose and Scope of this Report

This assessment forms part of a suite of technical reports prepared to support the assessment of effects within the Strategic Assessment Package. Its purpose is to inform the AEE that accompanies the Strategic Assessment Package sought by Waka Kotahi and AT.

This report considers the actual and potential effects associated with the construction, operation and maintenance of the Strategic Assessment Package on the existing and likely future environment as it relates to landscape effects and recommends measures that may be implemented to avoid, remedy and / or mitigate these effects.

The key matters addressed in this report are as follows:

a) Identify and describe the landscape context of the Strategic Assessment Package area;
b) Identify and describe the actual and potential landscape effects of each NoR corridor within the Strategic Assessment Package;
c) Recommend measures as appropriate to avoid, remedy or mitigate actual and potential landscape effects (including any conditions / management plan required) for each corridor within the Strategic Assessment Package; and
d) Present an overall conclusion of the level of actual and potential landscape effects for each corridor within the Strategic Assessment Package after recommended measures are implemented.

2.2 Report Structure

The report is structured as follows:

a) Overview of the methodology used to undertake the assessment and identification of the assessment criteria and any relevant standards or guidelines;
b) Description of each NoR corridor and project features within the Strategic Assessment Package as it relates to landscape;
c) Identification and description of the existing and likely future landscape;
d) Description of the actual and potential positive effects of the Project;
e) Description of the actual and potential adverse landscape effects of construction of the Project;
f) Description of the actual and potential adverse landscape effects of operation of the Project;
g) Recommended measures to avoid, remedy or mitigate potential adverse landscape effects; and
h) Overall conclusion of the level of potential adverse landscape effects of the Project after recommended measures are implemented.

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

2.3 Preparation for this Report

The assessment is derived from the following data collection and field work:

- Online data collection of aerial maps and AUP:OP / GIS overlays, including, but not limited to:
  - Significant Ecological Areas (SEAs)
  - Outstanding Natural Features (ONF) and Outstanding Natural Landscapes (ONL)
  - Outstanding Natural Character (ONC)
  - High Natural Character (HNC)
  - Land Cover Data Base (LCDB)
  - AUP:OP zones; and
  - Catchments and hydrology
- Desktop analysis of the roads, urban areas / future urban areas with Google Maps and Google Streetview.
- Site Visits to each of the NoR areas, was undertaken in July 2020 and February / September 2022

- The purpose of these site visits was to understand and evaluate the existing baseline as part of determining the physical and sensory impacts the schemes would have on the site and the broader landscape, in addition to the identification of the viewing audiences.
- A study of aerial photography including land use, landform and vegetation patterns was undertaken, in addition to the site visit, to determine the visual catchment and viewing audience of the proposal.
- Private properties which are likely to be affected have been visually surveyed from nearby publicly accessible locations where possible, with further reference to aerial imagery to understand the nature of these potential viewing audiences.
- Review of related specialist reports including Ecology, Arboriculture and Urban Design.

3 Assessment Methodology

3.1 Overview

This Landscape Effects Assessment (LEA) has been undertaken with reference to Te Tangi a te Manu, Aotearoa New Zealand Landscape Assessment Guidelines[5]. The same methodology applies to the construction and operational stages of the works and for NoRs (S1, S2, S3, KS, HS and S4).

While natural character, landscape and visual amenity effects assessments are closely related, they form separate procedures. An assessment of the effects on natural character of an activity involves consideration of the proposed changes to the current condition compared to the existing. The assessment of the potential effects on landscape considers effects on physical attributes, landscape character and values. The assessment of visual effects considers how changes to the physical landscape affect the viewing audience.

A detailed description of the methodology is available in Appendix 1 of this assessment.

3.2 Scale of Effects

In determining the magnitude of potential and actual landscape and visual effects of each project, a consistent 7-point rating scale has been used that is based on the recommendations in the Te Tangi a te Manu, Aotearoa New Zealand Landscape Assessment Guidelines. The effects ratings referred to in this assessment are based upon a seven-point scale which ranges from 'very low' to 'very high' (a detailed description of these scales is available in Appendix 1 of this assessment).

3.3 Landscape Values, Landscape Sensitivity

Landscape values consider any scheduled high value landscape areas (ONLs, ONFs. HNCs or ONCs) at a national, regional or district level within or directly adjacent to the NoR areas.

The sensitivity of landscape is influenced by the existing land use, future landscape direction (AUP:OP and also the Whenuapai Structure Plan). The interfaces between lands and water (riparian margins) are particularly sensitive to landscape change. Other landscape attributes may also be sensitive to the effects of landscape change such as topographical and landform features, vegetation, landmarks and landscape features in the contextual landscape.

3.4 Landscape and Natural Character Effects

Landscape effects derive from changes in the physical landscape, which may give rise to changes in its character and how this is experienced over time. This may in turn affect the perceived value ascribed to the landscape.

Effects will be assessed in terms of:

- Temporary / construction effects, which relate to the construction activities required to implement the scheme.

[5] 'Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines', [Final Draft subject to final editing, graphic design, illustrations, approved by Tuia Pito Ora/NZILA 5 May 2021]

- Permanent / operational effects, the effects on the landscape of completed works (including integrated landscape mitigation measures).

Natural character effects pertain to changes to the coastal environment (including the coastal marine area), wetlands, and lakes and rivers[6] and their margins. Effects are primarily concerned with the degree to which natural processes, natural patterns and natural elements have undergone human modification. Alterations to watercourses, water bodies, wetlands, riparian vegetation all are the subject of a separate regional consent process, this will also consider the natural character effects.

The natural character assessment for this Project applies to the existing water bodies and wetlands associated with Totara Creek, Totara Inlet, Ngongetepara Creek, Karure Stream, Kumeū River (and its branches), Pakinui Stream and the Ahukurama Stream.

Figure 3-1: Kumeū River tributary and pond located to the south of the SH16 Main Road adjacent to the Kumeū Garden Hub.

3.5 Visual Effects

Visual effects relate to the changes that arise in the composition of available views as a result of changes to the landscape. Visual effects are considered for both temporary (construction effects) and permanent (operational effects) of the NORs.

Assessment photography was obtained during the Project site visit in November 2021 and September 2022. The outlook from viewpoints that were captured onsite were photographed and assessed in variable weather conditions and at standing eye level.

[6] A 'river' is defined in the RMA as a continually or intermittently flowing body of fresh water; and includes a stream and modified watercourse.

3.6 Limitations and Project Assumptions

This landscape assessment does not specifically address and respond to Mana whenua values from a landscape planning perspective. This report references the latest data available in respect of these matters at the time of issue.

All site assessments have been undertaken from public land and supported through detailed desktop GIS mapping and aerial photograph information.

A range of assumptions have been made in order to establish a consistent approach across the Project and to clearly define the parameters of the context of the construction and operational phases. Detailed list of the Project Assumptions is available in Appendix 1 of this assessment.

The findings of this landscape effects assessment are underpinned by the Project assumptions:

3.7 Statutory Guidance

3.7.1 Notice of Requirement

This assessment has been prepared to support the NoRs for the Project. The process for consideration of a NOR is set out in section 168 of the RMA. This includes consideration of the actual or potential effects (including positive effects) on the environment of allowing the requirement under the Resource Management Act (RMA).

3.7.1.1 Precincts and Subdivisions

A number of Precinct overlays exist that are relevant to the Strategic Package, largely within the Kumeū-Huapai area. These are outlined below and shown in Figure 3-2 below:

- **I516 Kumeū Precinct**: the purpose of the Precinct is to enable the establishment of a town centre to serve the Kumeū and Huapai area with a strong commercial core and associated residential and recreational areas.
- **I517 Kumeū Showgrounds Precinct:** Provides specifically for the activities undertaken by the Kumeū District Agricultural and Horticultural Society at the showgrounds.
- **Special Housing Area - Huapai**:**2 Precinct:** Provides for the comprehensive and integrated development for residential purposes.
- **Special Housing Area - Huapai Triangle Precinct:** which allows for urban expansion to support Huapai and Kumeū's role as a compact centre.

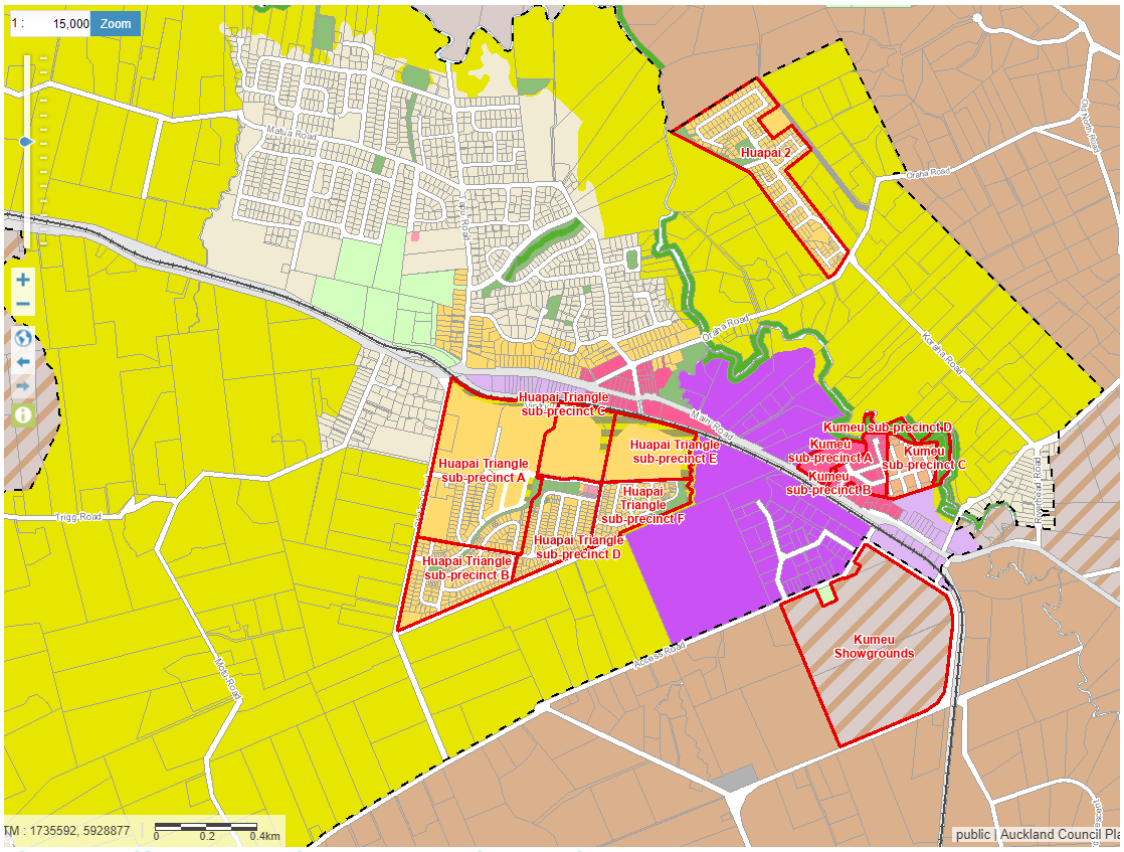


Figure 3-2: Kumeū-Huapai - AUP:OP Precinct overlays

3.8 Non-Statutory Guidance

The Kumeū-Huapai / Riverhead area has not been structure planned. Land release for the Kumeū-Huapai / Riverhead area is identified in the FULSS to occur between 2028 and 2032. Council's current view is that structure planning must occur prior to the release of land currently zoned FUZ. This is indicatively programmed for Kumeū-Huapai / Riverhead in 2025.

The project team has working closely with Auckland Council to support land use integration for the Kumeū-Huapai / Riverhead area.

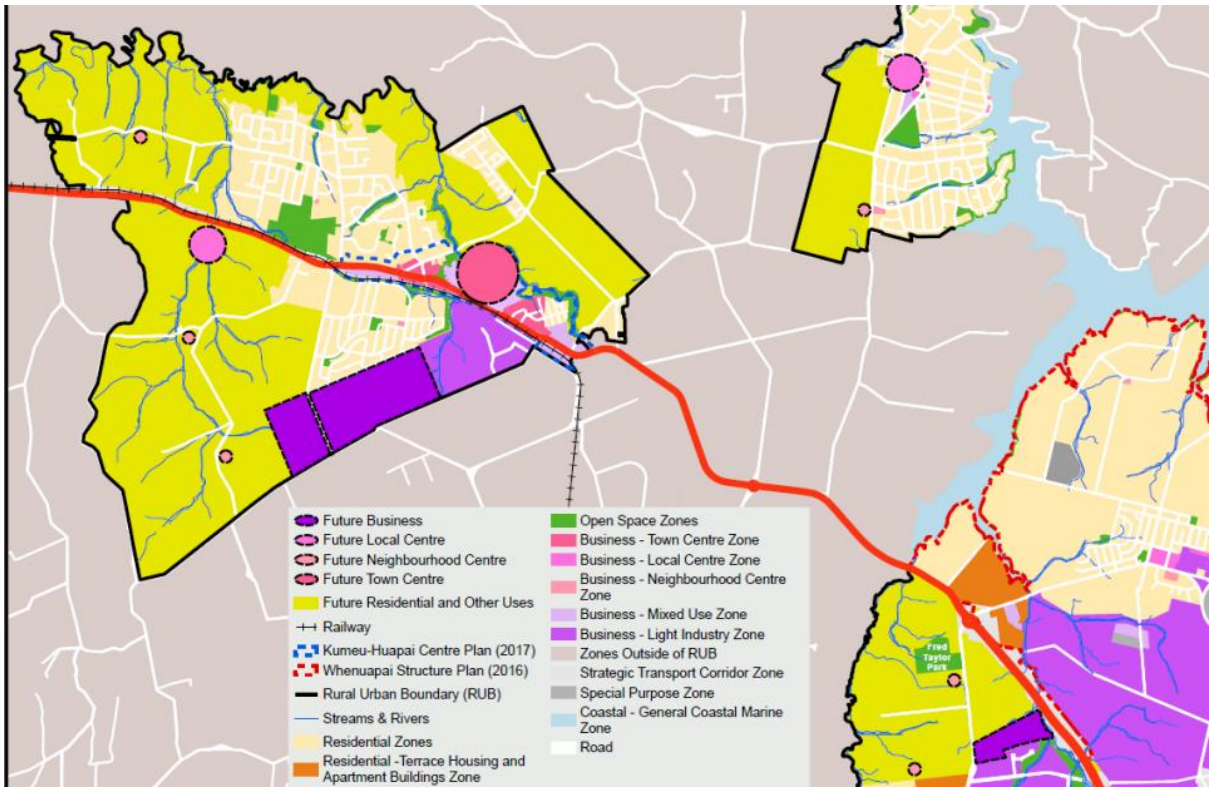


Figure 3-3: Spatial Land Use Strategy - Kumeū-Huapai, Riverhead, and Redhills North.

Note: The Spatial Land Use Strategy is not a detailed structure plan and is only intended to be a high-level outline of the future land uses in the Future Urban zone.

3.8.1 Whenuapai Structure Plan September 2016

Only the NoR S1 Alternative State Highway (**ASH**), including Brigham Creek Interchange (**BCI**) Project will be within the Whenuapai Structure Plan area.

Detailed analysis of the Whenuapai Structure Plan is available in Appendix 1 of this assessment.

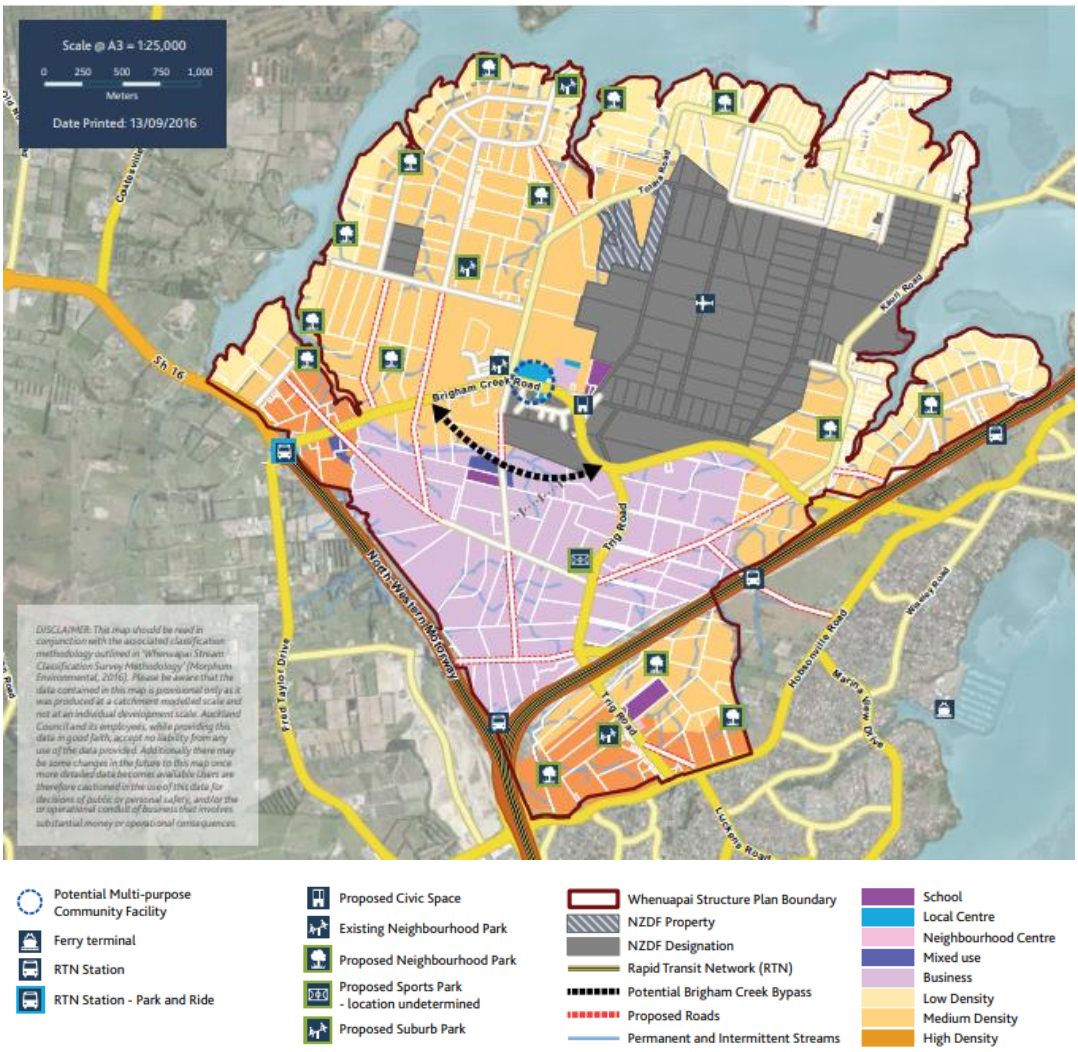


Figure 3-4: Whenuapai Structure Plan Map

3.8.2 National Policy Statement on Urban Development – NPS UD

The National Policy Statement-Urban Development (NPS-UD) came into effect on 20 August 2020 and sets out a list of things that local authorities must do to give effect to the objectives and policies defined within the policy statement.

Detailed analysis of the NPS UD is available in Appendix 1 of this assessment

4 Strategic Assessment Package Overview

An overview of the Strategic Assessment Package is provided in Figure 4-1, with a brief summary of the Strategic Assessment Package projects provided in Table 4-1.

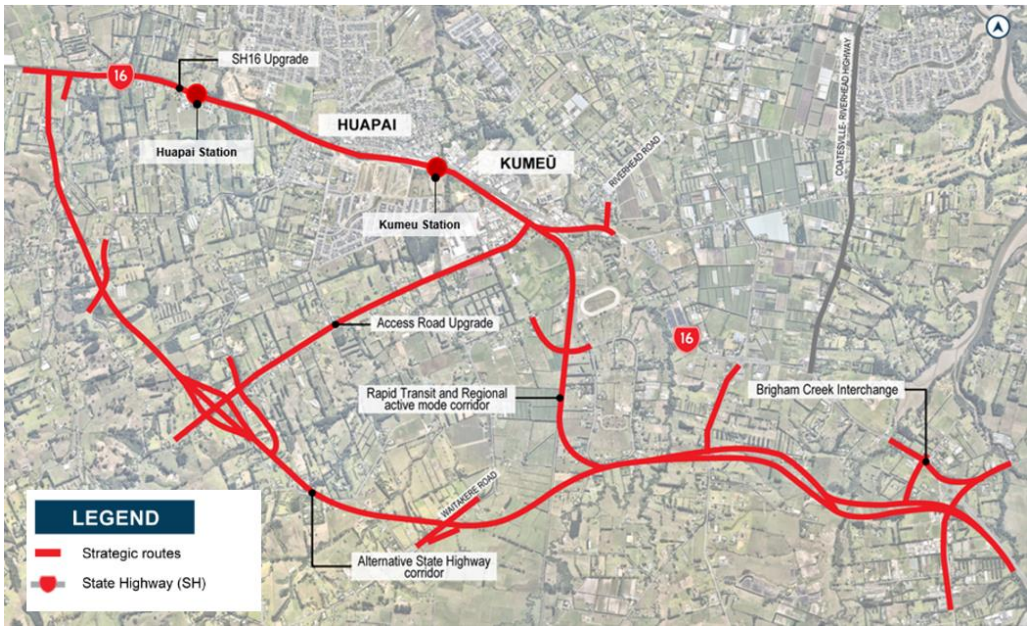


Figure 4-1: North West Strategic Assessment Package – Overview of NoRs for Assessment

Table 4-1: Strategic Assessment Package Project Summary

Corridor	NOR	Description	Requiring Authority
Alternative State Highway	S1	A new four-laned dual carriageway motorway and the upgrade of Brigham Creek Interchange.	Waka Kotahi
State Highway 16 Main Road Upgrade (alteration to existing designation 6766)	S2	Upgrade to urban corridor including active modes and realignment of Station Road intersection with SH16.	Waka Kotahi
Rapid Transit Corridor	S3	New Rapid Transit Corridor and active mode corridor in one co-located corridor.	Waka Kotahi
Kumeū RTC Station	KS	New rapid transit station, including transport interchange facilities and accessway.	Waka Kotahi
Huapai RTC Station	HS	New rapid transit station, including transport interchange facilities, park and ride and accessway.	Waka Kotahi
Access Road Upgrade	S4	Upgrade of Access Road to a four-lane cross-section with separated cycle lanes and footpaths on both sides of the corridor.	Auckland Transport

The purpose of the NoRs within the Strategic Assessment Package is to protect the transport corridors that will support the future urbanisation of Whenuapai, Redhill's North, Kumeū and Huapai. Construction and operation of the new and upgraded corridors will likely not occur until urbanisation has at least been confirmed by way of a plan change or is under development. The AUP:OP permits activities for infrastructure, which will also change the likely future environment. These activities include vegetation clearance and the removal of trees, excluding notable trees and street trees, in urban, FUZ and rural zones. The AUP:OP activities related to infrastructure and relevant to landscape impacts are set out in Appendix 3 of this assessment, Appendix 4 outlines which landscape impacts are relevant to the AUP:OP Regional and District Plans.

Please refer to the AEE for further information on these NOR, including a route description, key features and the planning context.

5 Potential Positive Effects

Positive effects in relation to landscape and visual elements are primarily associated with the provision or improvement of urban design and landscape amenity. Although infrastructure projects often introduce or expand a transportation corridor, there are opportunities to improve the visual amenity, landscape legibility and improve landscape character features. Positive landscape effects may result from general landscape improvements associated with the project and / or specific mitigation measures designed to improve anticipated landscape and / or visual effects.

A number of positive landscape effects are anticipated as a result of the operation of the Projects (including proposed mitigation).

Positive effects are likely to include:

- A streetscape to support the emerging urban form of the NoR S2 and S4 project corridors;
- The potential for a net increase in green infrastructure within the urban Project areas, these have the potential to include new street trees, berm and stormwater plantings and planted stormwater wetlands, resulting in improved visual amenity for road users and adjacent audiences;
- Slower speed limits adjacent to existing dwellings and commercial activities improving the experiential qualities of the corridor for users as well as private properties adjacent to urban road corridor.

The potential to introduce a large linear band of predominantly native planting along either side of the ASH. This would provide a linear habitat and landscape integration along the length of the ASH, which would have ecological and landscape character benefits.

6 Construction and Operational Mitigation Measures

6.1 Site Enabling Works

Construction Areas

Construction compounds, laydowns, construction machinery, earthworks, material storage will be present across all Projects in this Package. Night works, where required, will in places introduce artificial light into an existing unlit environment. Landscape effects related to activities across this package of work will be;

- the construction of a new carriage way and permanent development through undeveloped land (NoR S1, NoR S3, NoR KS and NoR HS);
- the widening of an existing road corridor (All NoRs);
- bridge construction (NoR S1, NoR S2 and NoR S3, NoR S4);
- wetland / dry pond construction (All NoRs); and;
- removal of existing buildings and development (NoR S1, NoR S2, NoR S3 and NoR S4).

A more detailed indicative construction methodology is available in the AEE, this details the sequencing, typical construction impacts and approximate construction timings.

Vegetation Clearance

Broad areas of street-side vegetation are proposed to be removed to accommodate the wider road corridors and batter slopes (all NoRs). This consists of trees and shrubs (including some large mature specimen trees) located within the road-side boundaries of private properties, within the Project area. Exotic pasture, trees, shelterbelt plantings, private gardens, exotic forest patches and cropland make up the majority of vegetation to be removed.

Vegetation clearance within the existing designation within urban routes and within rural zoned land to be removed to facilitate the construction of highway are permitted activities.

6.1.1 Urban and Landscape Design Management Plan (ULDMP) Recommended Measures to to Avoid, Remedy or Mitigate Construction and Operational Effects

As a condition of each NoR it is proposed that a ULDMP with the following recommendations and objectives is submitted. These are proposed measures to remedy and mitigate the adverse operational effects of the Project on the natural and urban landscape and lay out the main design themes, principles and outcomes of the Strategic Assessment Package.

(a) A ULDMP shall be prepared prior to the Start of Construction for a Stage of Work.

(b) Mana Whenua shall be invited to participate in the development of the ULDMP(s) to provide input into relevant cultural landscape and design matters including how desired outcomes for management of potential effects on cultural sites, landscapes and values identified and discussed in accordance with Condition [*xx]* may be reflected in the ULDMP. The objective of the ULDMP(s) is to:

(i) Enable integration of the Project's permanent works into the surrounding landscape and urban context; and

(ii) Ensure that the Project manages potential adverse landscape and visual effects as far as practicable and contributes to a quality urban environment.

(c) The ULDMP shall be prepared in general accordance with:

(i) Waka Kotahi Urban Design Guidelines: Bridging the Gap (2013) or any subsequent updated version;

(ii) Waka Kotahi Landscape Guidelines (2013) or any subsequent updated version;

(iii) Waka Kotahi P39 Standard Specification for Highway Landscape Treatments (2013) or any subsequent updated version; and

(d) To achieve the objective, the ULDMP(s) shall provide details of how the project:

(i) Is designed to integrate with the adjacent urban (or proposed urban) and landscape context, including the surrounding existing or proposed topography, urban environment (i.e. centres and density of built form), natural environment, landscape character and open space zones;

(ii) Provides appropriate walking and cycling connectivity to, and interfaces with, existing or proposed adjacent land uses, public transport infrastructure and walking and cycling connections;

(iii) Promotes inclusive access (where appropriate); and

(iv) Promotes a sense of personal safety by aligning with best practice guidelines, such as:

a. Crime Prevention Through Environmental Design (CPTED) principles;
b. Safety in Design (SID) requirements; and
c. Maintenance in Design (MID) requirements and anti-vandalism/anti-graffiti measures.

(e) The ULDMP(s) shall include:

(i) A concept plan – which depicts the overall landscape and urban design concept, and explain the rationale for the landscape and urban design proposals;

(ii) Developed design concepts, including principles for walking and cycling facilities and public transport; and

(iii) Landscape and urban design details – that cover the following:

a. Road design – elements such as intersection form, carriageway gradient and associated earthworks contouring including cut and fill batters and the interface with adjacent land uses, benching, spoil disposal sites, median width and treatment, roadside width and treatment;
b. Roadside elements – such as lighting, fencing, wayfinding and signage;
c. Architectural and landscape treatment of all major structures, including bridges and retaining walls;
d. Architectural and landscape treatment of noise barriers;
e. Landscape treatment of permanent stormwater control wetlands and swales;
f. Integration of passenger transport;
g. Pedestrian and cycle facilities including paths, road crossings and dedicated pedestrian/ cycle bridges or underpasses;
h. Historic heritage places with reference to the HHMP; and
i. Re-instatement of construction and site compound areas, driveways, accessways and fences.

(f) The ULDMP shall also include the following planting details and maintenance requirements:

(i) planting design details including:

a. Identification of existing trees and vegetation that will be retained with reference to the Tree Management Plan. Where practicable, mature trees and native vegetation should be retained;
b. Street trees, shrubs and ground cover suitable for berms;

c. treatment of fill slopes to integrate with adjacent land use, streams, Riparian margins and open space zones;
d. planting of stormwater wetlands;
e. Identification of vegetation to be retained and any planting requirements ;
f. Integration of any planting requirements required by conditions of any resource consents for the project; and
g. Re-instatement planting of construction and site compound areas as appropriate.

(ii) A planting programme including the staging of planting in relation to the construction programme which shall, as far as practicable, include provision for planting within each planting season following completion of works in each Stage of Work; and

(iii) Detailed specifications relating to the following:
a. Weed control and clearance;
b. Pest animal management (to support plant establishment);
c. Ground preparation (top soiling and decompaction);
d. Mulching; and
e. Plant sourcing and planting, including hydroseeding and grassing, and use of eco-sourced species.

6.1.2 Recommended Measures to Avoid, Remedy or Mitigate Construction Effects

In addition to the ULDMP mitigation measures for all activities and built elements, the following recommended measures during the construction period are proposed for all NoRs are outlined below:

- Provide hoarding around the boundaries of site compounds that face on to adjacent residential properties and outdoor space that overlook the works.
- Interpretation - Where practicable, during construction, install construction hoardings with interpretive panels in selected areas which are in close proximity and visible to the public, to provide information about the Project and its progress.
- Wherever possible, stockpile and re-use topsoil from existing pastoral land (within the Project area),
- Mitigate effects related to lighting during night time works by using directional lighting to prevent sky glow and glare / spill light falling on residential properties.

6.1.3 Recommended Measures to Avoid, Remedy or Mitigate Operational Effects

In addition to the ULDMP mitigation measures for all activities and built elements, the following recommended measures during the construction period are proposed for all NoRs are outlined below:

- Provide robust integration and mitigation vegetation coordinated with the ecological mitigation proposals across the whole Strategic area identified in the NW Strategic Package Assessment of Ecological Effects.

7 NoR S1: Alternative State Highway, including Brigham Creek Interchange

7.1 Project Corridor Features

The proposed Brigham Creek Interchange connects with the existing Brigham Creek Road arterial road at the Totara Inlet bridge to the west of Whenuapai township. The proposed Alternate State Highway connects with the Brigham Creek Road interchange and crosses the undulating rural landscape to the south of Kumeū and Huapai, connecting to SH16 to the west of Huapai.

The key landscape matters addressed for the Alternative State Highway and Brigham Creek Interchange are:

- The nature and extent of impacts on the landscape as a physical resource during the construction period of the scheme. A specific focus on the location of the construction compound, extent of vegetation clearance, the scale and location of proposed cut and fill slopes and the likely impacts of bridge construction.
- Consideration of landscape character effects and urban amenity issues in relation to the permanent landscape change, including specific assessment of how this corridor will integrate into the future urban environment;
- Potential removal of valued trees and consideration of future opportunities to integrate existing trees.
- Culverting, bridging and earthworks within proximity of existing wetlands and watercourses, as far as these relate to designation / district plan matters.
- An underpass at Taupaki Road and bridges over the NAL with further grade separations at Waitakere Road, Pomona Road, Tawa Road, Puke Road and Foster Road. Tawa Road is designed to future proof for a full diamond interchange.
- The construction of a new four-lane motorway corridor into a ‘greenfield’ landscape with a cross-section of approximately 50m to accommodate a four-lane dual carriageway and separated cycle lanes and footpaths. The typical cross section includes an active mode corridor with central and side barriers (See Figure 7-1 below).

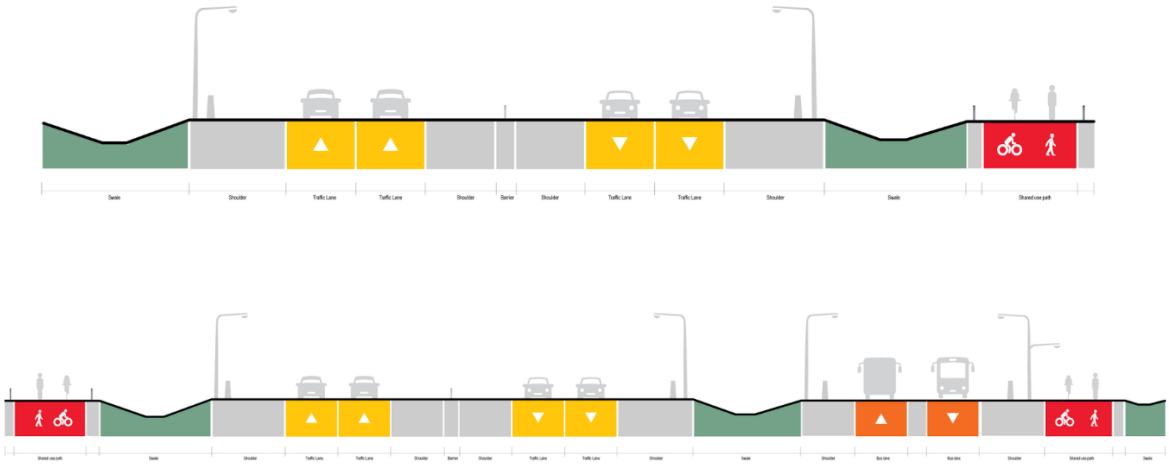


Figure 7-1: Alternative State Highway Typical Cross Sections

7.2 Existing and Likely Future Environment

7.2.1 Planning context

The Alternative State Highway (**ASH**) corridor, including the Brigham Creek Interchange (**BCI**), is largely rural and is proposed to traverse land zoned under the AUP:OP as Rural – Countryside Living Zone, Rural – Mixed Rural Zone and Rural – Rural Production Zones.

The ASH corridor will also traverse two separate areas of FUZ in Redhills North and Kumeū-Huapai with the BCI also currently sitting within FUZ land.

Table 7-1 below provides a summary of the existing and likely future environment as it relates to the ASH and BCI.

Table 7-1: Alternative State Highway and Brigham Creek Interchange Existing and Likely Future Environment

Environment today	Zoning	Likelihood of Change for the environment[7]	Likely Future Environment[8]
Rural	Rural - Mixed Rural Zone, Rural - Countryside Living Zone Rural - Production Zone	Low	Rural
Undeveloped greenfield areas	Future Urban	**High**	Urban

Please refer to the AEE for further information on the planning context.

7.2.2 Baseline / Existing Landscape

7.2.2.1 Baseline Landscape

The route of this scheme traverses west from the existing SH16 / Fred Taylor Drive / Brigham Creek Road Roundabout across the undulating rural landscape characterised to the south of Kumeū and Huapai.

[7] Based on AUP:OP zoning/policy direction
[8] Based on AUP:OP zoning/policy direction

The local landscape character within the scheme corridor is summarised below;

- Vegetation cover comprising stand-alone elements of indigenous vegetation, hedgerows, shelterbelts, trees and shrubs along field boundaries, exotic pastoral grassland, non-native stand-alone trees, agricultural production including viticulture.
- The landscape is characterised by land modification associated with the surrounding rural productive land use and rural countryside living.
- The landscape character values are the existing watercourses, stands of native vegetation and characteristic natural landforms.
- There is the potential to enhance and integrate the road corridor within the FUZ to reduce adverse effects on the emerging or changing urban landscape.

Landform and Hydrology

The scheme corridor traverses an undulating topography that is elevated to the west. High points along the corridor are present at the approaches and intersections with Tawa Road and Puke Road. The lower lying land areas of the route are where the route crosses wetlands, flood plains and watercourses, specifically the Totara Inlet, Totara Creek, Ngongetepara Creek, Karure Stream, Kumeū River (and its branches), Pakinui Stream and the Ahukurama Stream.

Landcover

The landcover across the corridor is characterised as a distinctly modified pastoral landscape. The land has been divided into irregular geometric fields bound in parts by structured hedgerows, shelter belts and small areas of native vegetation. Fields predominantly contain exotic grassland with small pockets of agricultural crops and rural industry and amenity planting in proximity to dwellings. Areas of open pasture are located directly adjacent to the road corridor intermittently along the length of the designation on both sides.

Areas of mature native trees are located in patches throughout the landscape and in proximity to stretches of riparian vegetation along waterways. Although much of the stream and wetland features across the scheme area are bordered with exotic grassland species and managed like farm drains, native riparian vegetation is present within intermittent stretches, particularly within the Kumeū, Ahukamara, and Ngongetepara streams (Figure 7-2 below).

No scheduled notable trees are present within proximity of the designation.

Figure 7-2. Ahukamara Stream located to the rear of a property at 80 Foster Road

Land Use

The scheme corridor traverses four main AUP:OP zones; Rural - Mixed Rural Zone, Rural - Countryside Living Zone, Rural - Production Zone and Future Urban zone.

Land use either side of the scheme corridor is predominantly pastoral farming with associated dwellings, between the RUB and Pomona Road the route is in surrounded by Rural – Countryside Living Zone, which has more of a rural residential focus. The existing road reserve is within a rural context and is predominantly pastoral in nature with associated dwellings. Commercial activities are concentrated to the southern portion of the corridor near to SH18 and Northside Drive. At the eastern extent of the designation within proximity to Fred Taylor Drive the scheme corridor is surrounded by FUZ.

Scheduled Landscape and Ecological Features

There are no scheduled landscape or ecological features within or proximate to the designation area.

Historical and Cultural Associations

There are no scheduled historical and cultural features within or proximate to the designation. There are however 11 Cultural Heritage Inventory (CHI) sites are within or in proximity to the designation (eight historic structures, one archaeological site, one historic botanical site and one reported historical site).

7.2.2.2 Likely Future Environment

Overview

The land surrounding the designation – within the AUP:OP Rural Urban Boundary - will witness a significant change from rural to urban land use character over the next 10 years within the section of the corridor located in the Redhills North (including the Fred Taylor Park sports park) and Kumeu Huapai FUZ land. It is anticipated that the abiotic features of the landscape will be altered over time as the surrounding landscape is urbanised.

It is anticipated that some of the defining biotic (land cover) features of the landscape will undergo substantial change alongside future development, due to the removal of large areas of vegetation to accommodate the future urban areas adjacent to the scheme. This will likely involve the implementation of street tree plantings, public open space areas and general landscaping within the private yards of future housing development for public amenity.

The balance of the scheme area within rural zoned areas will continue to have a rural function by the completion of the project. It is anticipated that the abiotic and biotic features of the landscape outside of the designation will endure.

7.2.2.3 Whenuapai Structure Plan and Spatial Land Use Strategy - Kumeū-Huapai, Riverhead, and Redhills North

The Whenuapai Structure Plan provides general guidance for how the FUZ land adjacent to the designation should be developed over time. The structure plan is illustrated in Appendix 1. The Spatial Land Use Strategy - Kumeū-Huapai, Riverhead, and Redhills North provides a high level overview of the expected future development of Kumeu and Huapai.

Land Use

The Whenuapai Structure Plan indicates that at the eastern extent of the designation around the Brigham Creek Interchange will be urbanised to be High / Medium density residential and for a “Business” land use. The plan envisages this Business use to comprise Industrial, Retail and Services. Industrial activities such as manufacturing, transport and storage, logistics, construction and wholesale trade are expected. Retail and services are expected to be required to support the increased amount of housing within the Structure Plan.

The Spatial Land Use Strategy - Kumeū-Huapai, Riverhead, and Redhills North indicates that the area surrounding scheme will be with “future residential and other uses”.

7.3 Extent of Visibility and Viewing Audience

The extent of visibility of the proposed road corridor is contained by the surrounding vegetation and the changes in topography. Notwithstanding the above, some vantage points within the scheme area are likely to witness heightened adverse visual effects. In summary the viewing audience for the scheme includes:

- *Public Views:* Transient public audience (vehicle users). Key roads where views can be obtained from include: Waitakere Road, Tawa Road, Dysart Lane, Pomona Road, Boord Crescent, Taupaki Road, Nixon Road, Fred Taylor Drive, Brigham Creek Road, Hanham Road, Puke Road, Foster Road, Trigg Road and SH16:

  - Travelers (cars, pedestrians and cyclists) along Puke Road , Foster Road, Waitakere Road, Hanham Road, Tawa Road and Taupaki Road which bisect the site (Refer Appendix Site Photo SP12, SP11, SP7, SP4, SP6);
- *Private Views:* A private viewing audience, comprising views from rural residential and lifestyle dwellings as well as from the commercial and agricultural businesses located either side of the scheme corridor. Specifically:
  - Views from the residential properties within the designation that immediately border the scheme corridor (131 Foster Road, 22, 36, 37A, 35 Awa Road, Puke Road, 79, 83A, 122 Tawa Road, 164 Motu Road, 48, 66, 70, 95, 121, 130 Pomona Road, 660, 646, 682, 703, Waitakere Road, 23, 37, 42, 62, 68A, 82, 88, 96, 108, 130, 190 Boord Crescent; 374 Taupaki Road, 212 SH16; 139, 141 and 180 Fred Taylor Drive, and; 8, 12, 14, 75 Joseph Dunstan Drive and 15 Brigham Creek Road (Refer Appendix Site Photo SP9,SP8, SP10, SP11, SP3, SP5 and SP2);
  - Occupants of nearby commercial buildings and open space adjacent to the proposed corridor. (Refer Appendix 2: Site Photo SP1);

Views are well contained within the immediate surrounding area of the scheme corridor to the east of Waitakere Road, where the landscape is relatively flat and intervening vegetation is present. To the west of Waitakere Road the topography is more undulating which results in the corridor being more visible in elevated areas and less visible in lower lying areas.

Within the Redhills North and Kumeū Huapai FUZ areas the scheme corridor audiences are likely to grow over time to include residents of future urban developments. Rural zoned areas within the corridor are expected to continue to be characterised as they are currently.

7.4 Landscape Values

There are no regionally or nationally significant landscapes (ONLs, ONFs or ONCs) within or proximate to the proposed designation boundary. The nearest ONL is Area 3, Taylor Road, south of Helensville, located approximately 840m to the north of the scheme corridor.

The gently sloping topography and the mature stands of vegetation and braided stream and wetland network, in particular along the Kumeru River and Ahukuramu Stream contribute to the visual amenity across the whole landscape. The value of the landscape is particularly heightened in proximity to the existing stream networks. Within the more modified areas of the landscape, including geometric field division, exotic shelterbelts, managed hedgerows and highly managed pastoral fields. These pastoral fields have limited natural features, with these restricted to individual stands of native vegetation. The rolling topography and steep gullies lined with are a recognisable and distinct feature within the rural landscape. These features are most prominent between Waitakere Road and Foster Road within the scheme area.

At the eastern extent of the scheme corridor the designation around the proposed Brigham Creek Interchange will require the acquisition of 1.62ha of the open space – sports and recreation zoned land within Fred Taylor Park. This parkland open space that it primarily used for sporting activity and is surrounded on two sides by mature shelter belt vegetation along the western and south western boundaries. Three open space – conservation zone areas (Lot 3 DP 109762, 146 Boord Crescent, a portion of Lot 1 and Lot 2 DP 194257, 156 and 162 Boord Crescent and Lot 3 DP 129560, to the rear of 178 and 182 Boord Crescent) along the Kumeū River will be within the proposed designation. Only one of these areas (Lot 3 DP 129560, to the rear of 178 and 182 Boord Crescent) will be directly impacted by the footprint of the Proposed corridor.

7.5 Landscape Sensitivity

This corridor is situated within a broader landscape that is a rural landscape and FUZ areas within the AUP:OP as being suitable for urbanisation. The rural landscape is predominantly a countryside living zone, which anticipates rural residential land use, including countryside living developments. The proposed FUZ area to the east is indicated by the Whenuapai Structure Plan will primarily be high and medium density residential. Rural zoned land which will be retained as rural has medium sensitivity to the type of change proposed. The scheme area within the FUZ is assessed as having a low sensitivity to landscape change.

7.6 Assessment of Landscape Effects

7.6.1 Positive Effects

Generalised positive effects related to the NoR are covered in Section 5 of this report. Additional positive effect specific to this scheme include:

- Improved and / or new opportunities for active modes of transport and the ability to provide improved connectivity between Kumeū- Huapai and Whenuapai.
- The potential for an increased net area of native planting along the length of the footprint of the NoR, replacing pastoral land with structured and diverse native planting.

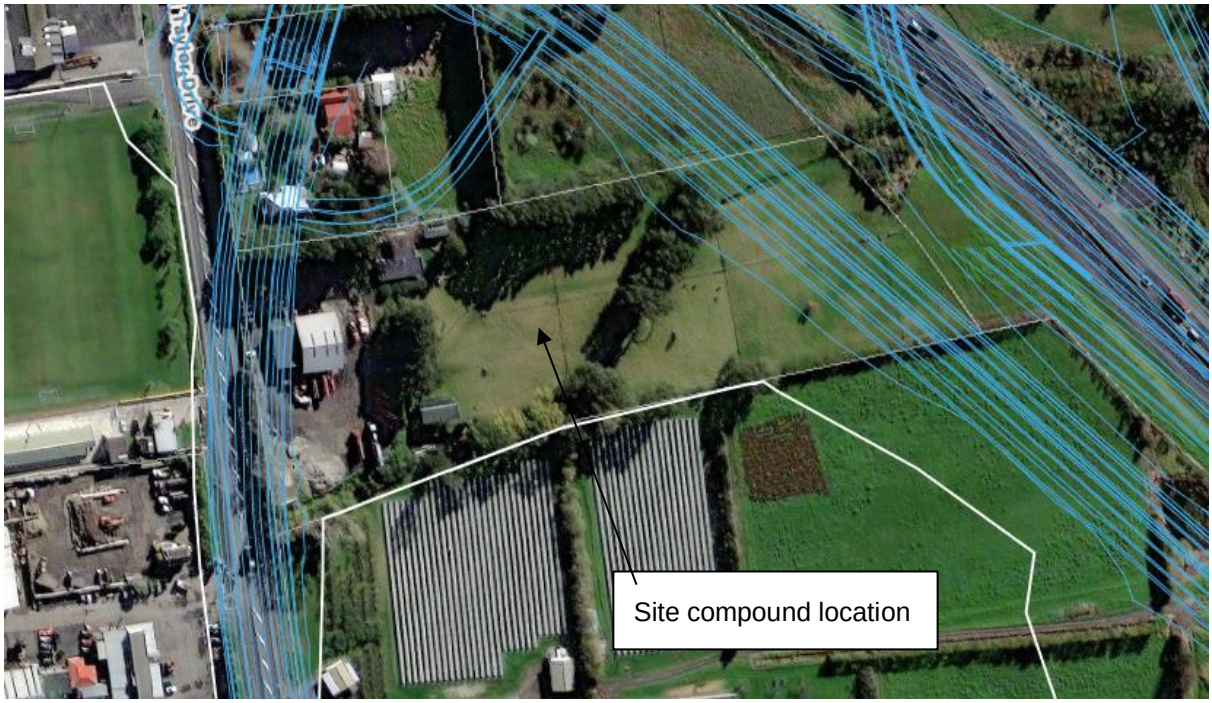
7.6.2 Assessment of Construction Effects

Construction Areas

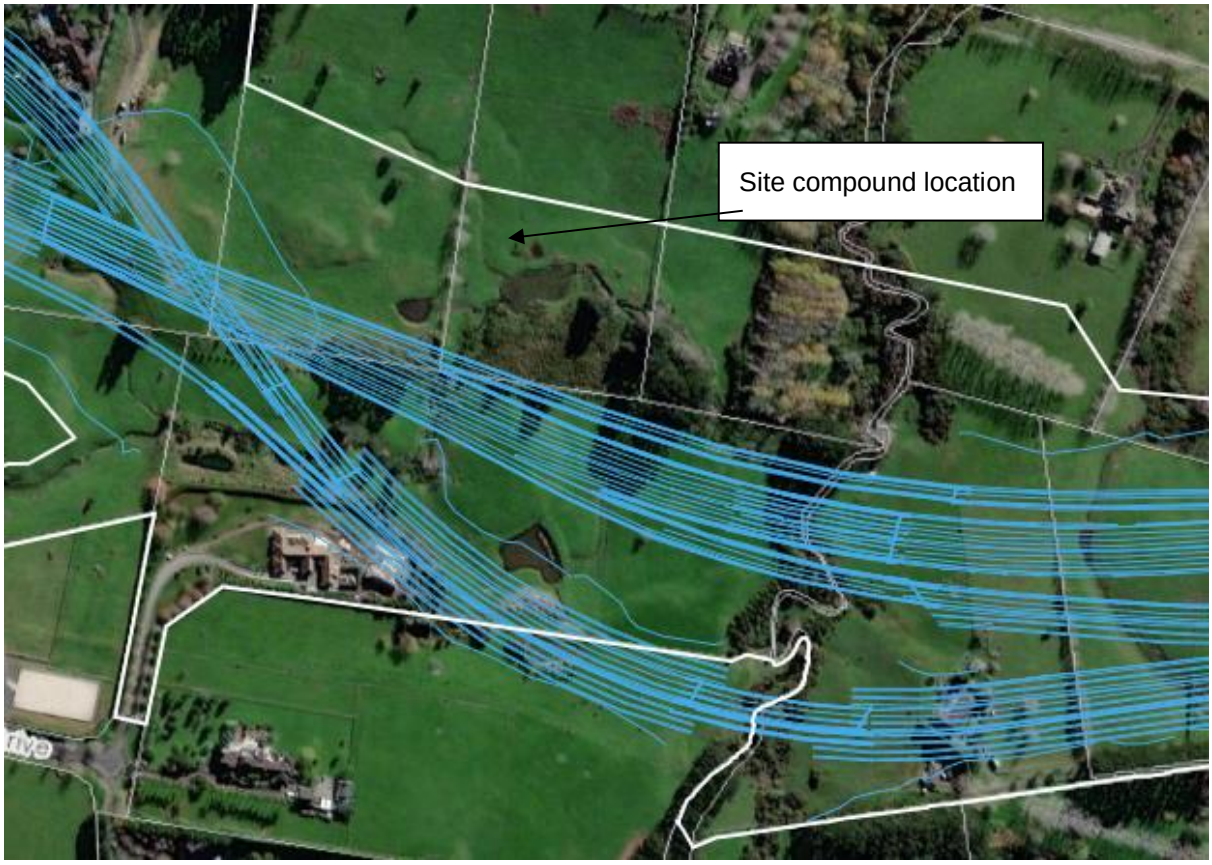
Site compound and construction areas are to be established at eight locations within the scheme area. Construction traffic will be heightened at these locations through the construction period of the scheme.

- Site compound, stockpile, sediment retention pond and lay-down area for bridge or underpass construction are indicatively located at:

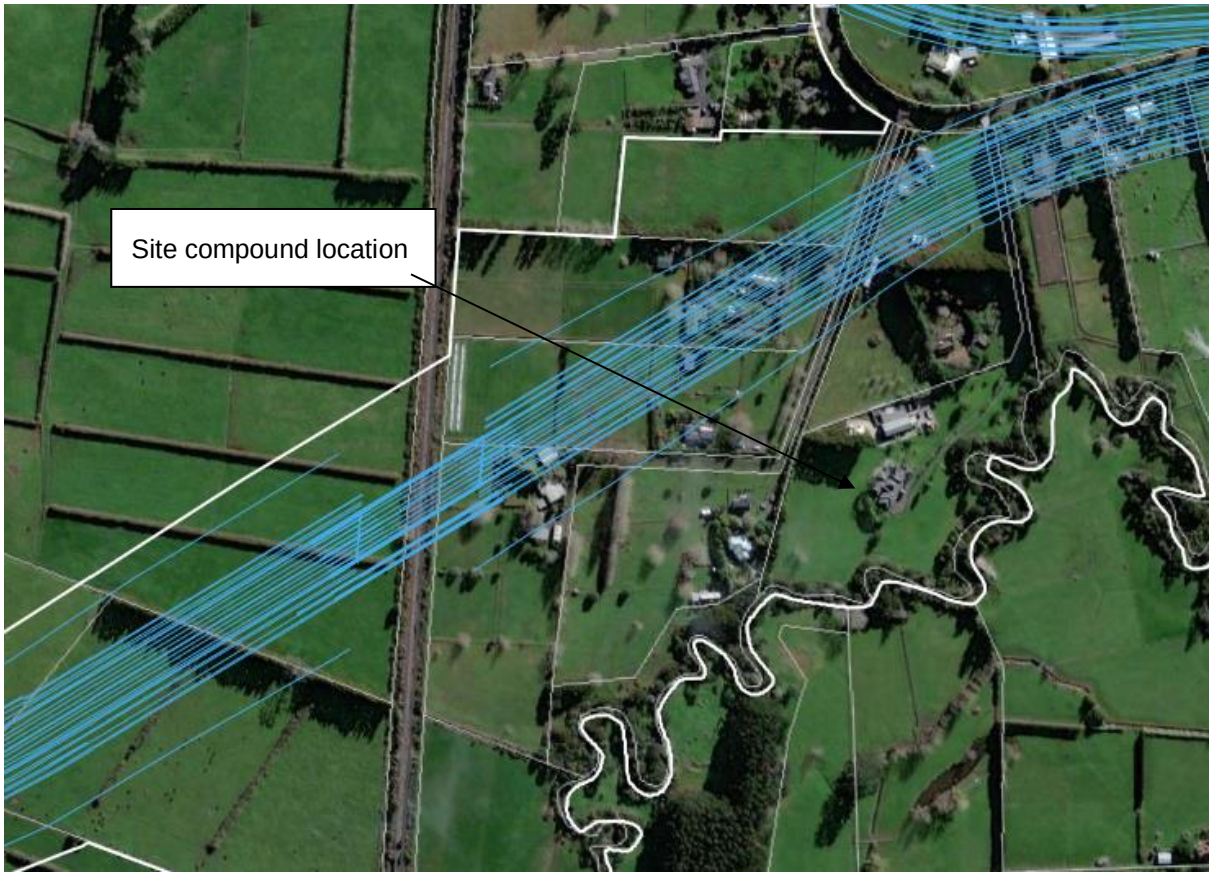
- 149 Fred Taylor Drive



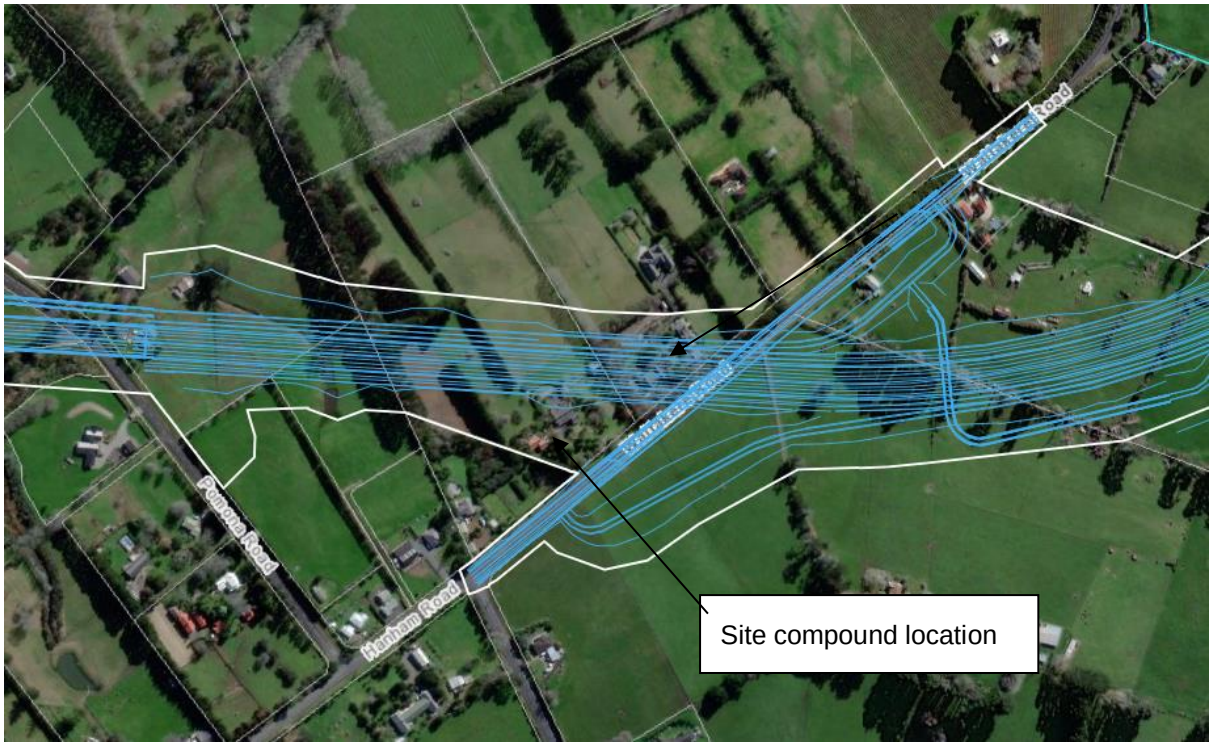
- 260 State Highway 16



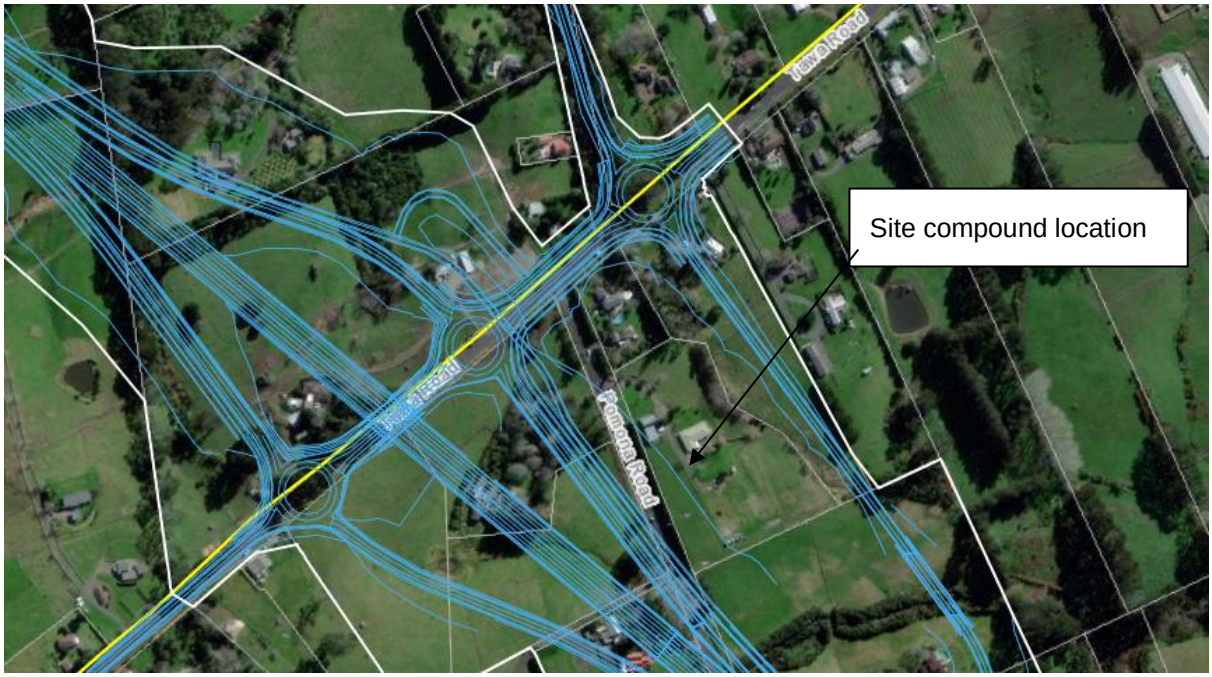
- 154 Boord Crescent (Bridge Laydown Area)



- 660 Waitakere Road



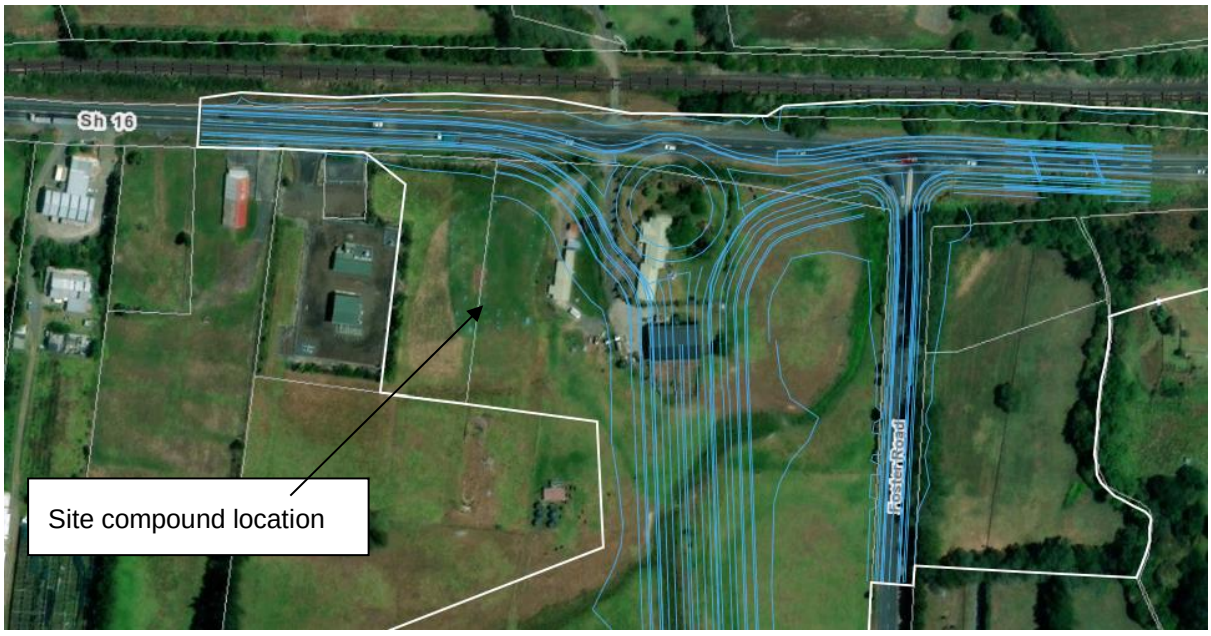
- 9 Pomona Road



- 54 Puke Road

- 40 Foster Road

- 727 State Highway 16



The indicative site compounds and construction areas are primarily located within pastoral land that is already somewhat modified by existing rural land use. It is recommended that all grassed areas are reinstated at the completion of the construction period or alternate arrangements are made in accordance with the wishes of the landowner.

Without any mitigation it is anticipated that the effects on the landscape would be **high** to **moderate-high** adverse. Assuming that mitigation measures are undertaken, the adverse physical landscape effects resulting from establishment and use of the construction work areas within the NoR area are assessed to be **low-moderate** adverse.

Vegetation Clearance

Linear stretches of vegetation typically within field boundaries and rural residential lots will be removed to accommodate the construction and operation of the scheme corridor. This will consist primarily of non-native vegetation including shelterbelts that are archetypal within the wider modified rural landscape. Exotic pasture, trees, shelterbelt plantings, private gardens, exotic stands of trees patches and cropland make up the majority of vegetation to be removed. Riparian vegetation within watercourses and wetlands will be removed to accommodate the bridges and culverts along the corridor. These works are subject to a separate regional consent process, however their potential effects on the landscape and natural character have been included within this assessment and the selection of the designation.

The riparian vegetation is a mixture of native and non-native vegetation within watercourses (Totara Inlet, Totara Creek, Ngongetepara Creek, Karure Stream, Kumeū River (and its tributaries), Pakinui Stream and the Ahukurama Stream). Vegetation at the edge of the SEA along Totara Creek (SEA_T_2034, Terrestrial) will be impacted during the construction of the Brigham Creek Interchange of the scheme corridor.

Without the implementation of mitigation measures to limit the amount of vegetation removed, it is anticipated that effects will be between **moderate high** adverse and **moderate** adverse. With the information available and assuming that the proposed mitigation is undertaken the physical landscape effects likely to arise from vegetation clearance within the designation is assessed as **low-moderate** adverse.

Structures and Earthworks

The scheme corridor design includes eight bridges, these are required to allow the crossing of existing road / rail infrastructure, proposed roads / RTC, to cross wetlands and watercourses or a combination of the two. These will be particularly concentrated at the eastern of the scheme at the BCI, where the connections towards Brigham Creek Road, Fred Taylor Drive, SH16 and the ASH cross.

The bridges will require additional earthworks at the approaches to these crossing points and will appear as new structures within the landscape with the exception of the Totara Creek inlet crossing, which will be an upgrade of the existing bridge.

It is anticipated that across the entirety of the scheme a greater amount of fill earthworks are required. This will require the importation of structural fill and material and some of these earthworks will occur on land with slopes greater than 10 degrees. Overall, the proposed design requires a large amount of fill to accommodate the long sections of raised scheme corridor and bridges.

The impacts and potential landscape effects of the proposed earthworks include the modification of and permanent changes to the underlying landform to create an elevated corridor, overpasses and underpasses, surface level changes in close proximity to private properties and earthworks in proximity to the wetlands and watercourses. The proposed cut and fill slopes range in scale from 1m to 100m wide and will alter the form of the existing marginal pastoral landform.

As a form of mitigation, it is recommended that topsoil from pastoral land impacted by the proposed earthworks[9] is re-used and proposed slopes are integrated into the surrounding landscape.

[9] Refer to NZTA Landscape Guidelines (September 2014), Section 4.12 Topsoil for additional information regarding best practice guidelines for topsoil management and soil stripping.

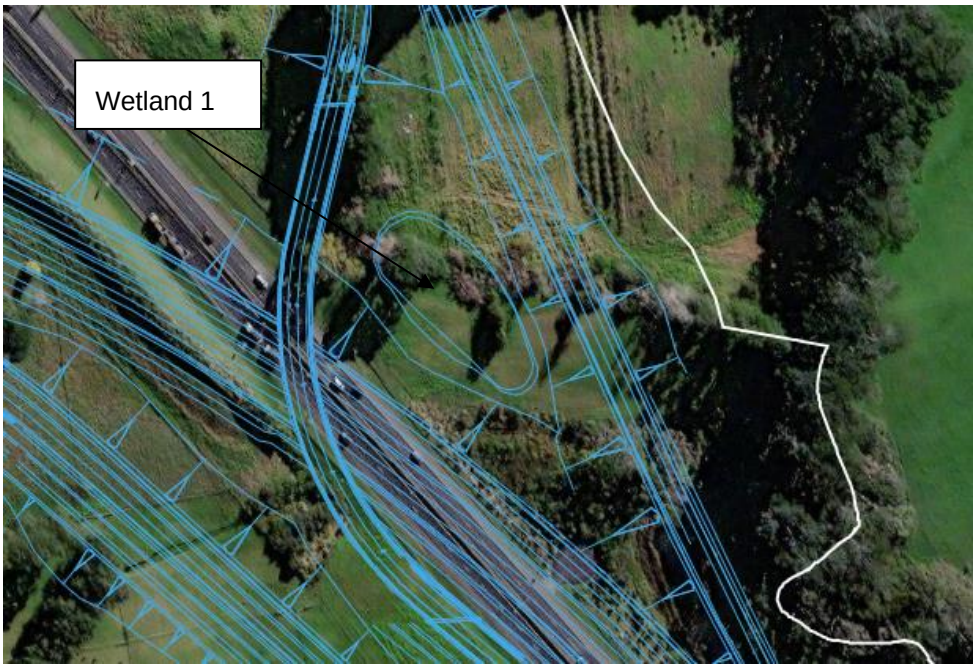
Overall, the earthworks are considered to be of a quantity that is reasonably anticipated with a development of this scope and scale, particularly a landscape with the existing underlying undulating topography. The upgrade to the BCI will be upgraded to a substantial degree that will add an increased verticality compared to the existing interchange. Although bridges and earthworks are largely matters for regional consents, these will be addressed in future regional consenting process.

Without mitigation it is anticipated that adverse effects related to earthworks and structures would be **moderate-high** adverse. With the information at hand and with the implementation of mitigation measures, including all cut and fill slopes being integrated within the existing landform, the proposed works are anticipated to be **moderate** to **low moderate** adverse.

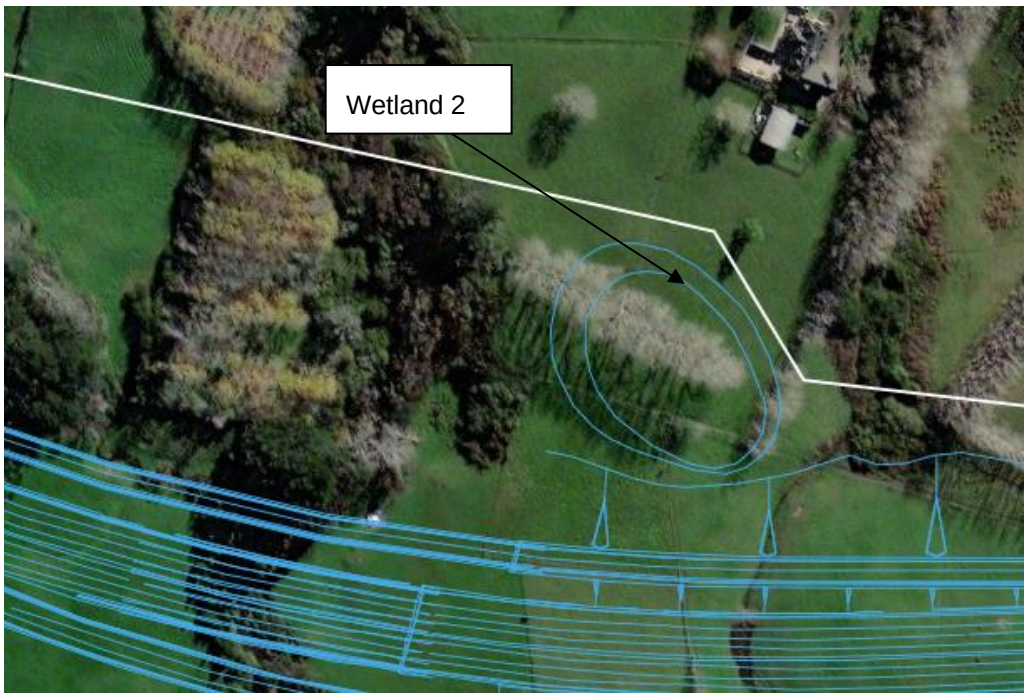
Wetlands, Dry Ponds and Features

Across the scheme corridor 29 wetland ponds are proposed.

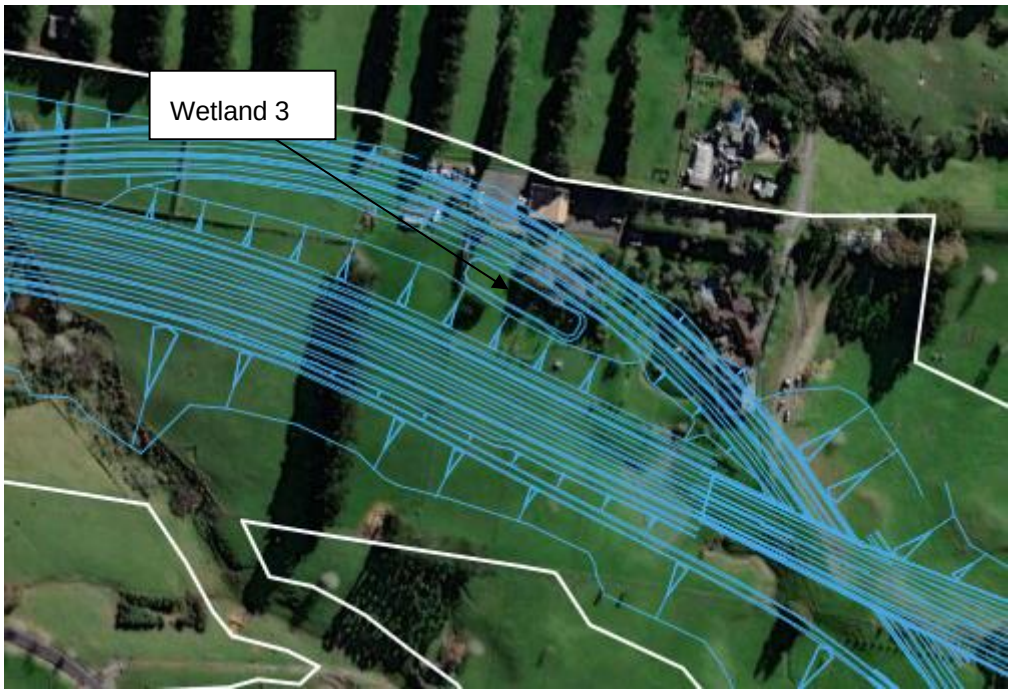
- Wetland 1 is located in an eastern portion of the Brigham Creek Interchange;



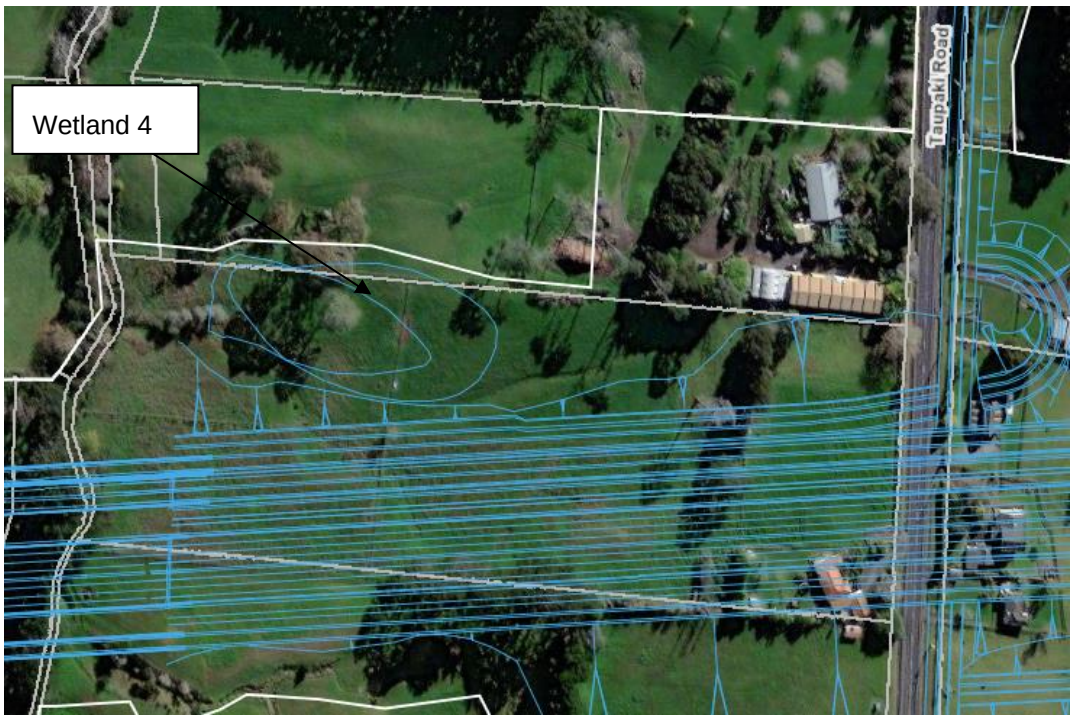
- Wetland 2 is located to the north of the corridor within the boundary of 210 Fred Taylor Drive and approximately 40m of the Ngongetepara;



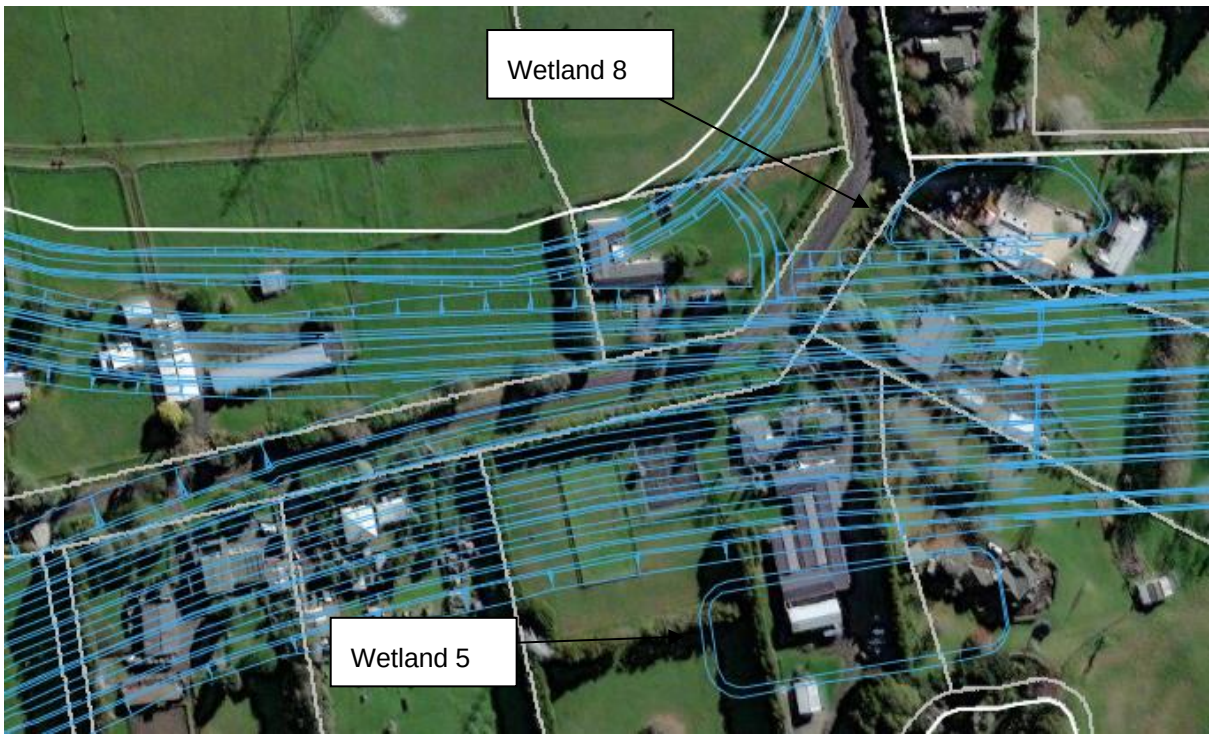
- Wetland 3 is located to the north of the corridor at between the road corridor and the RTC, within the boundary or 280 SH16;



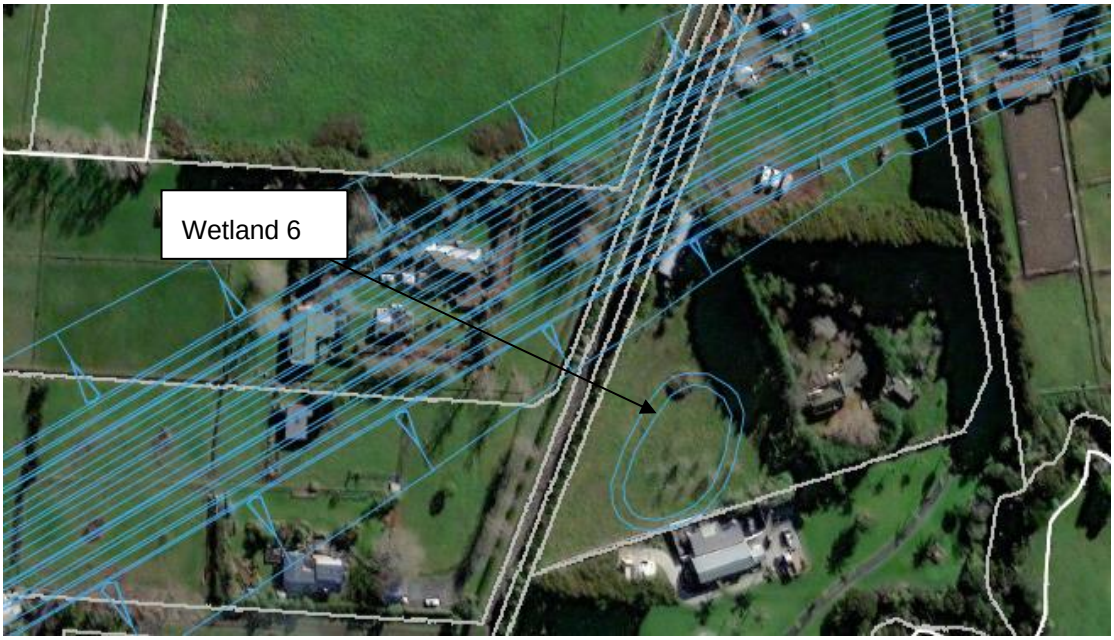
- Wetland 4 is north of the corridor within the boundary of 388 Taupaki approximately 30m of the Kumeū River;



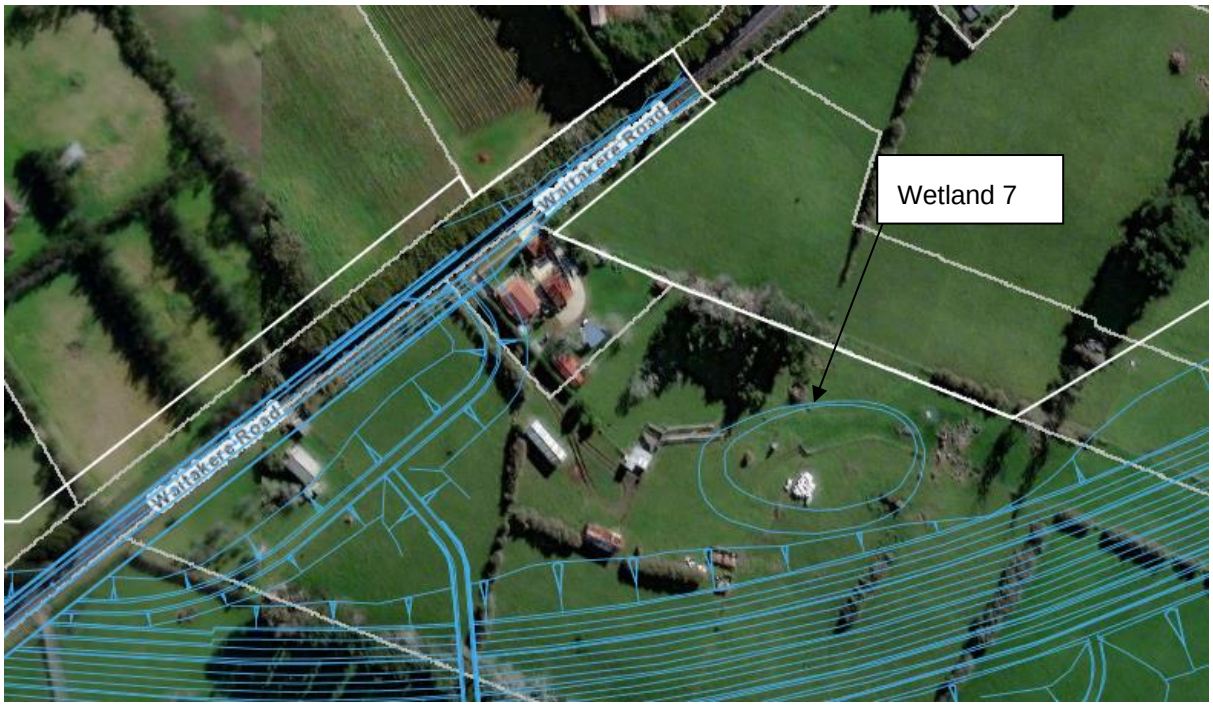
- Wetland 5 is located to the south of the corridor located within the boundary of 176 Boord Crescent approximately 30m of the Kumeū River and Wetland 8 is located to the north of the corridor within the boundary of 178 Boord Crescent within 180m of the Kumeū River;



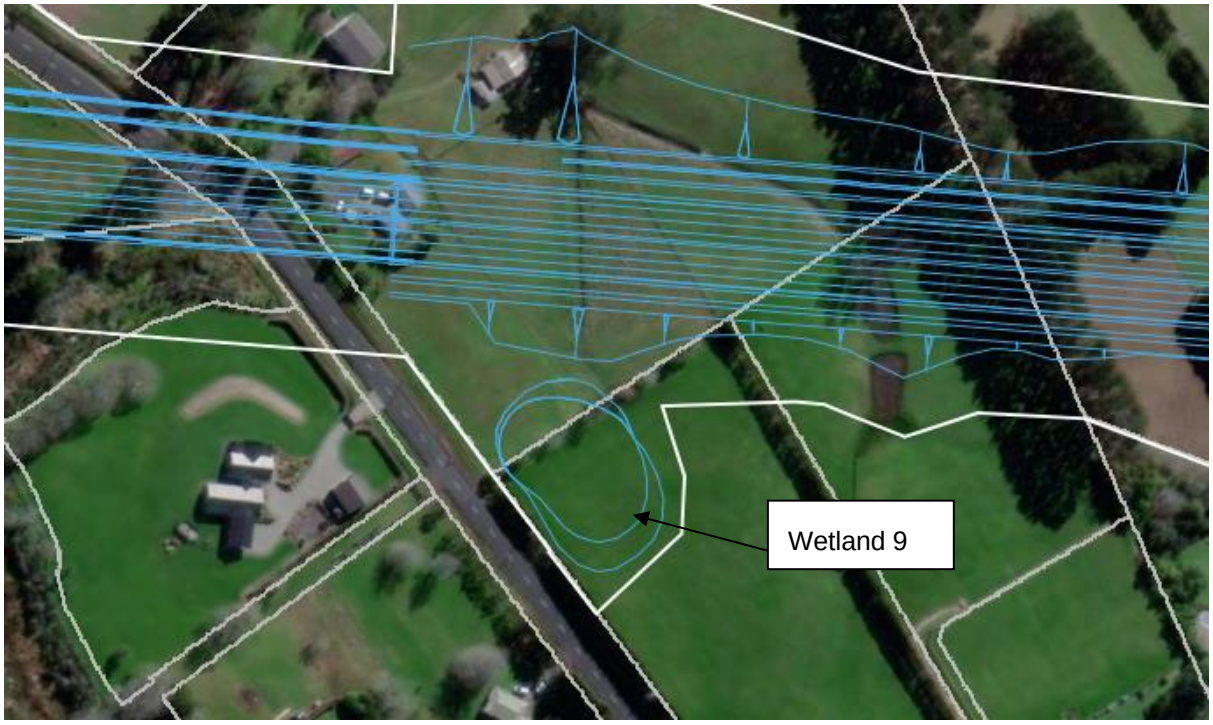
- Wetland 6 is located to the south of the corridor and is located within the boundary of the 152 Boord Crescent approximately 58m of the Kumeū River;



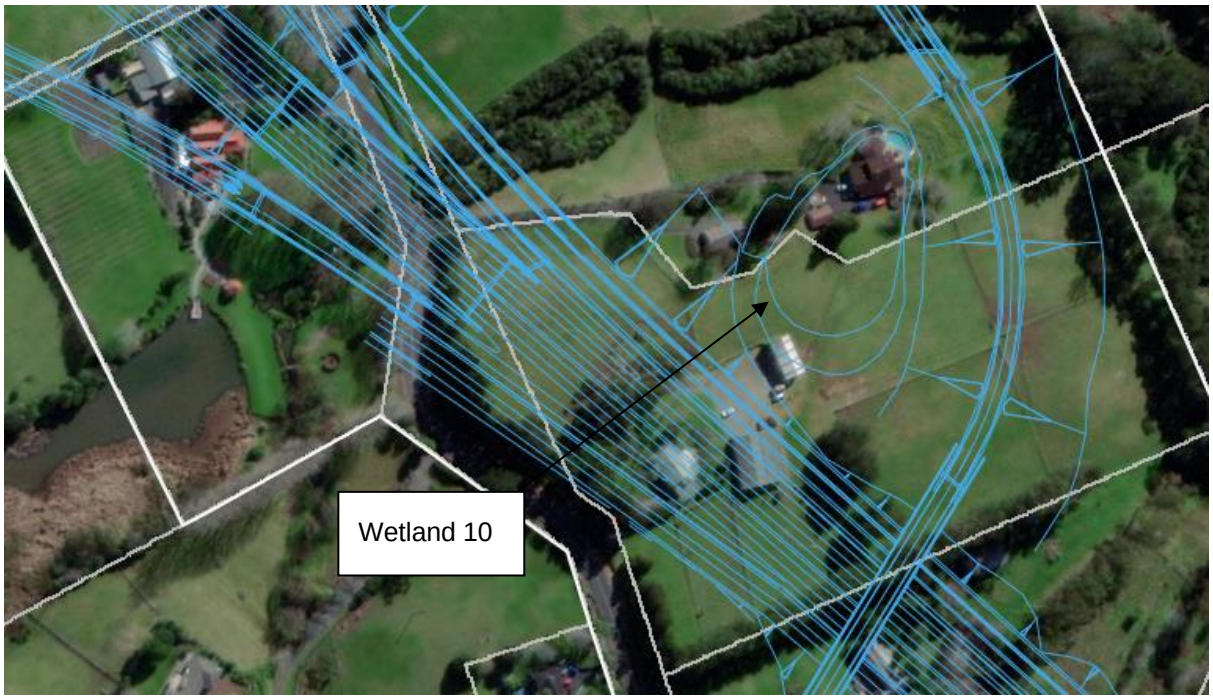
- Wetland 7 is located to the north of the corridor within the boundary of 691 Waitakere Road;



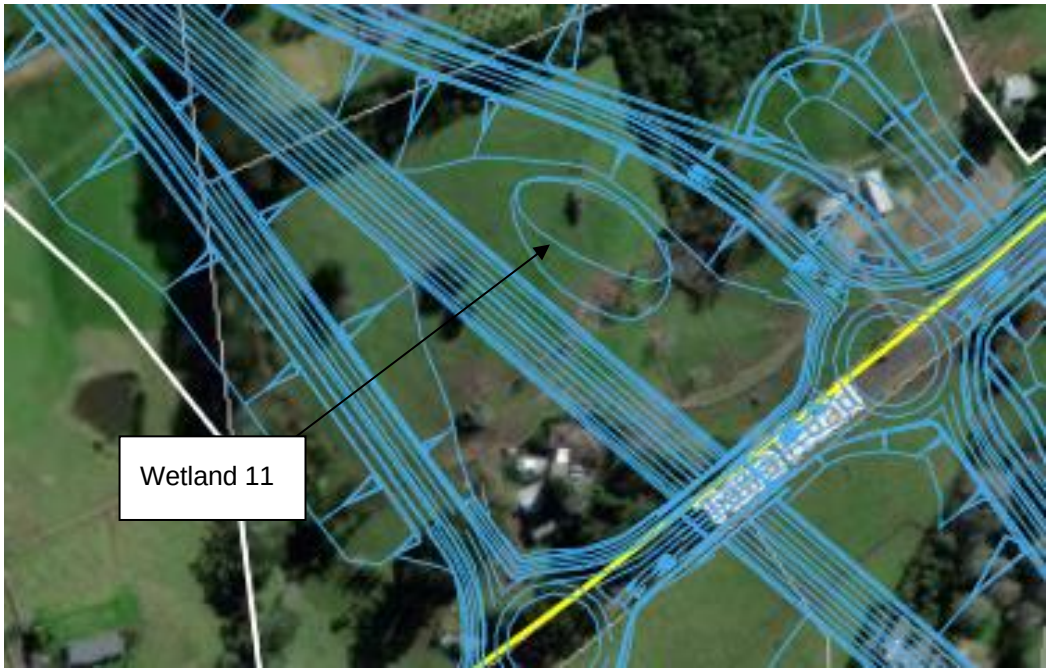
- Wetland 9 is located to the south of the corridor within the boundary of 191 and 219 Pomona Road and is within 100m of a branch of the Kumeū River;



- Wetland 10 is located to the north of the corridor and south of the realigned Pomona Road. It is located within the boundary of 55 and 37 Pomona Road the wetland is within 70m of a branch of the Kumeū River;

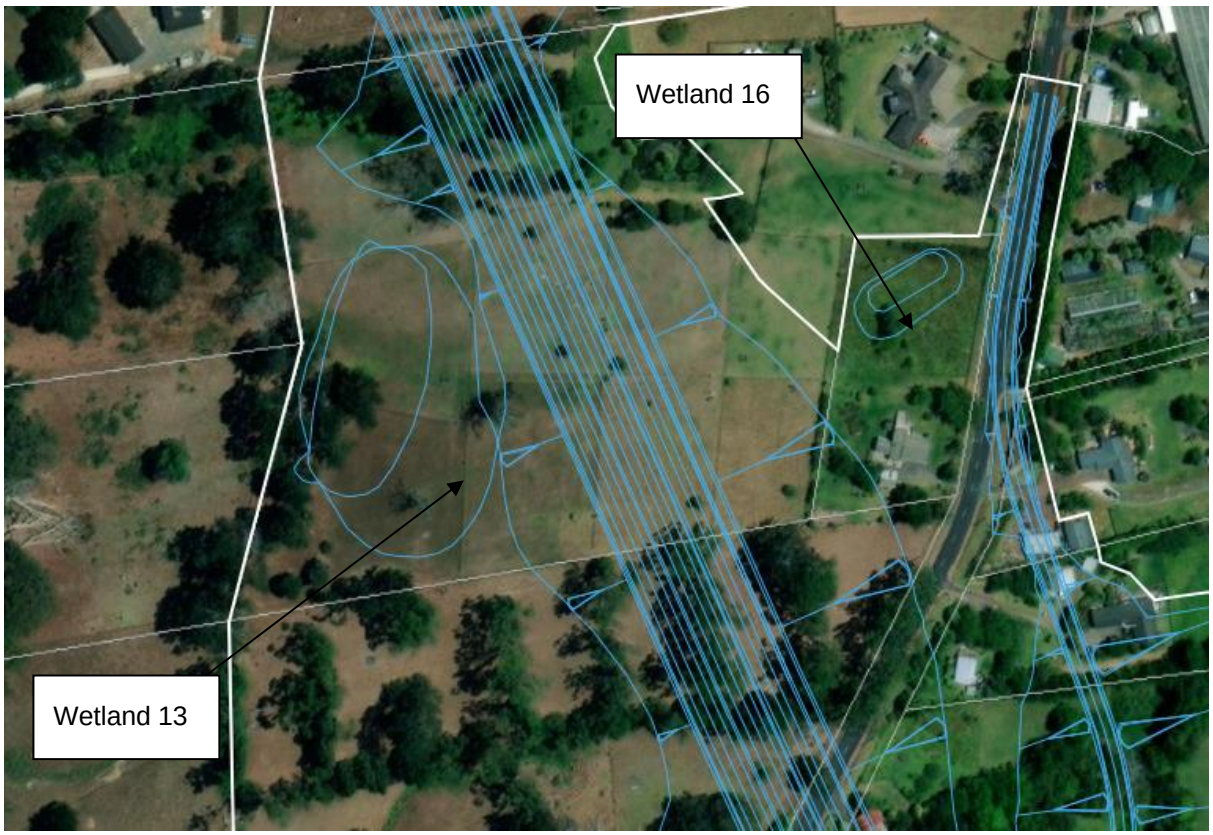


- Wetland 11 is located within a quadrant of the Tawa Road Interchange located within the boundary of 122 Tawa Road;



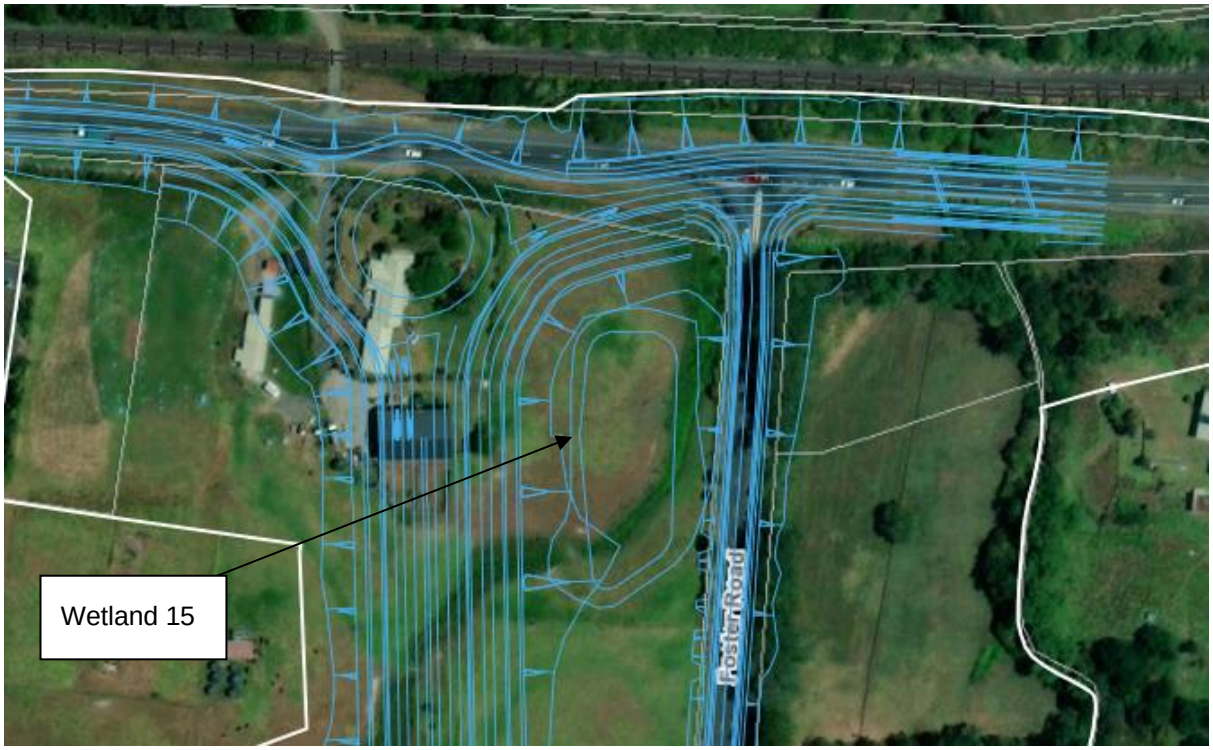
- Wetland 12 is located to the north the corridor within the boundary of 151 and 157 Puke Road and is within 50m of an intermittent branch of the Kumeū River;

- Wetland 13 is located to the south of the corridor within the boundary of 22 Puke Road and is within 80m of the Ahukuramu Stream and Wetland 16 is located to the east of the main corridor close to the realigned Puke Road within the boundary of 41 and 47 Puke Road;



- Dry Pond 14 is located to the east of the corridor next to Foster Road and is located within 40 Foster Road approximately 55m of the Ahukuramu Stream;

- Dry Pond 15 is located to the east of the corridor adjacent to Foster Road and is located within 23 Foster Road, this pond is approximately 20m of the Ahukuramu Stream;



- Wetland 18 is located to the north of the main corridor and the south of the realigned intersection of Pomona Road and Tawa Road, within the boundary of 87 and 97 Tawa Road;

- Wetland 19 is located to the south of the corridor to the north of the realigned Pomona Road and is located within the boundary of 73 Pomona Road;

Wetland 19A is located to the east of the corridor and to the west of the realigned Pomona Road and is located within the boundary of 9 Pomona Road.

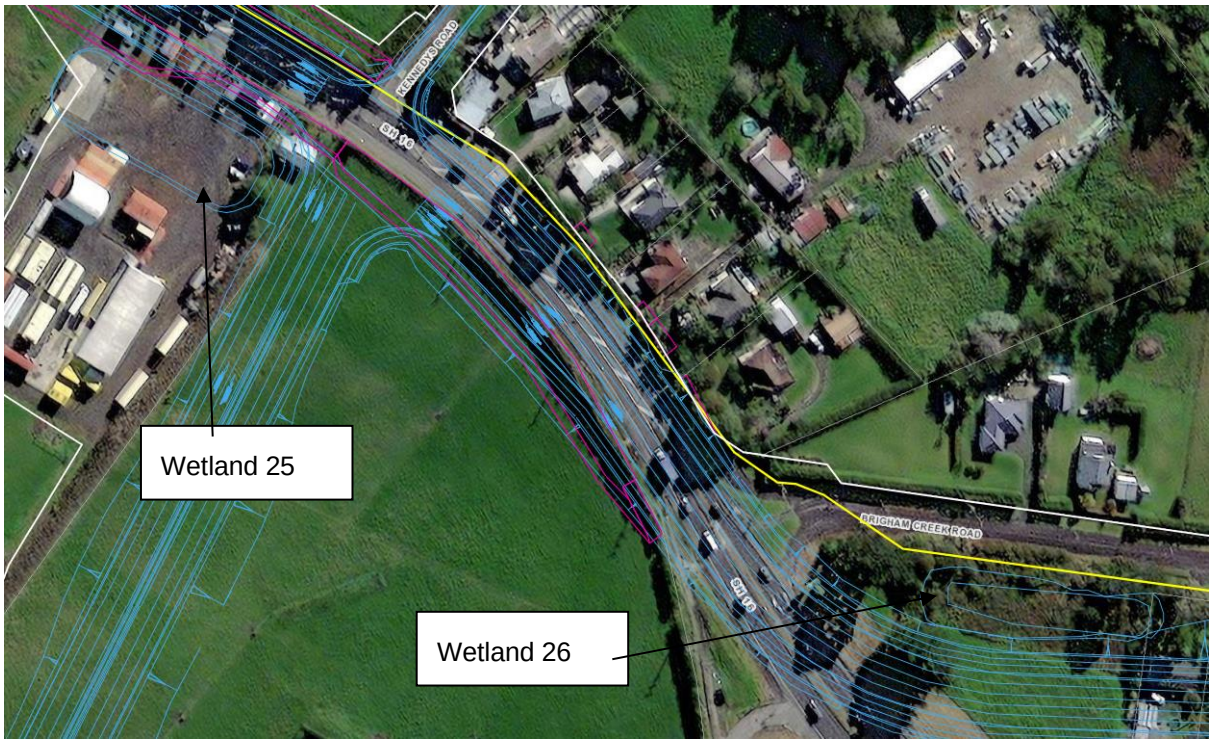
- Wetland 20 is located to the north of the corridor located within the boundary of 144 Pomona Road;

- Wetland 21 is located to the south of the adjacent to the Active Mode Corridor connection to Waitakere Road, located within the boundary of 637 Waitakere Road.

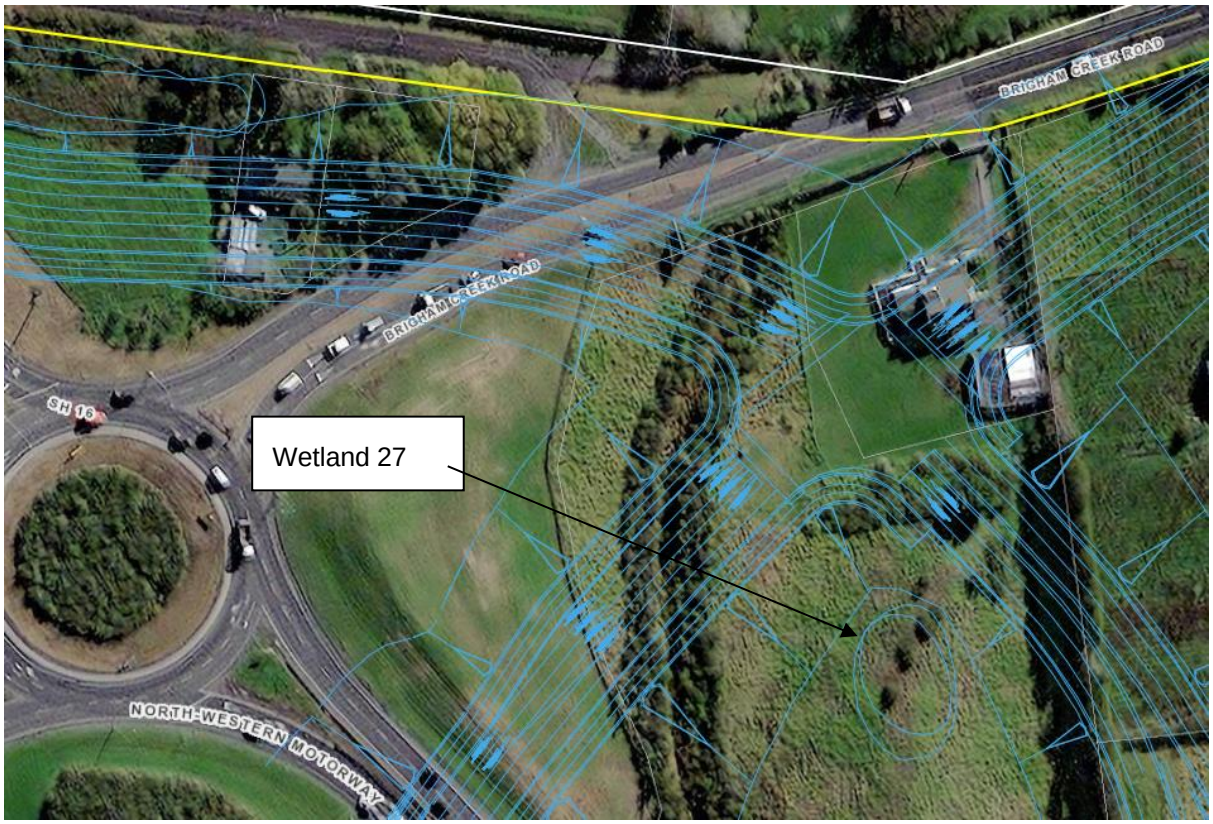
- Wetland 23 is located to the south of the Waitakere Road / Boord Crescent Link Road Bridge located within the boundary of 903 Waitakere Road;

- Wetland 24 is located to the east of the Waitakere Road / Boord Crescent Link Road Bridge located within the boundary of 37 Boord Crescent;

- Wetland 25 is located to the west of the SH16 / Brigham Creek Road Interchange Eastbound off-ramp and is located within the boundary of 216 State Highway 16 and is approximately 215m from the Ngongetepara Creek and Wetland 26 is located to the north of the Brigham Creek Road opposite properties at 2 and 6 Brigham Creek Road and is located within the boundary of 5 Brigham Creek Road;

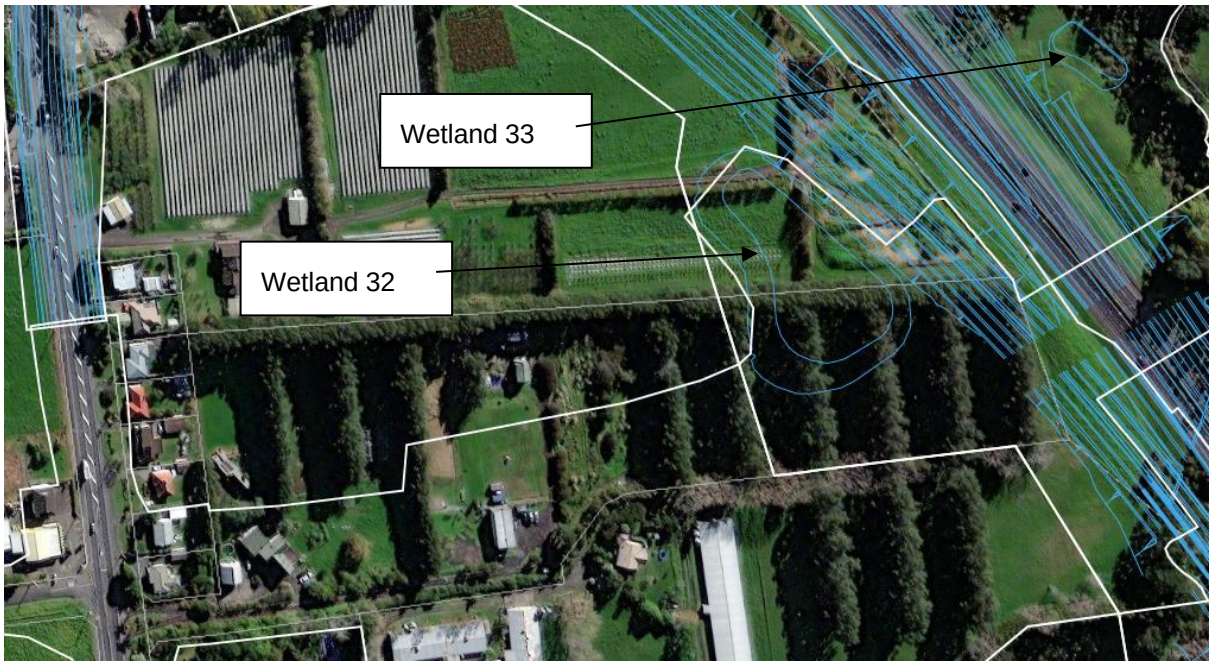


- Wetland 27 is located to the west of the SH16 Brigham Creek Intersection Westbound off-ramp and is located approximately 40m from an existing drainage ditch;



- Wetland 30 is located to the east of the Fred Taylor Drive Bridge over motorway / RT Corridor and is located within the boundary of 149 Fred Taylor Drive.

- Wetland 32 is located to the west of SH16 adjacent to the proposed Spedding Road and Fred Taylor Drive corridors and is located within the boundary of 125 and 125A Fred Taylor Drive and Wetland 33 is located to the east of SH16 at the approach to the Brigham Creek Interchange within the existing road designation, approximately 40m from the Totara Creek



The wetlands and dry ponds will require earthworks to re-shape the land and achieve optimal depths and edge profiles, which will be determined as part of the resource consent phase. With the exception of Wetland 25 which is within a brown field site that is currently used for light industry, all other wetlands and dry ponds will be within rural pastoral or residential land.

It is anticipated that mitigation will reduce adverse effects. However, due to the expected modification of the landscape and relative scale of the water features we consider adverse effects on the physical landscape to implement the proposed dry ponds to be **low** to **very low** with or without mitigation.

Private Properties

Residential properties within and adjacent to the scheme area (either partially or fully designated) will be impacted by the scheme in the following ways:

- Surface level changes between private property boundaries and the upgraded road corridor, requiring existing driveways and private accessways to be regraded;
- Encroachment into private yard areas and the removal of private garden plantings and trees, ancillary buildings and boundary fences;
- Potential impacts related to the construction of noise mitigation measures;
- Visual effects related to night works including light spill and sky glow; and;
- Demolition of existing dwellings and ancillary buildings (required properties)

Approximately 34 partially designated dwellings are anticipated to be directly impacted by the works. Landscape mitigation measures are proposed under 7.6.3 Recommended Measures to Avoid, Remedy or Mitigate Construction Effects below.

Overall, it is assessed that the adverse effects on the physical landscape on private properties will be predominantly **moderate** but **moderate-high** for a small number of properties for part of the construction period. Without mitigation effects for some properties are anticipated be **moderate -high and up** to **high** adverse for some properties or for a limited time during the construction period.

7.6.2.1 Site Finishing Works

Finishing works are expected to include grassing of exposed earth, lighting, signage, line markings, footpath / cycleway details and reinstatement of private property fences and gardens. Streetscape elements and landscaping, including that required as mitigation will also be implemented. These activities are to be determined by detailed design and will occur within the already modified areas of the designation.

Without the implementation of mitigation measures it is anticipated that landscape effects have the potential to be **low-moderate** adverse. With consideration of the information available and providing that mitigation measures are implemented, landscape effects are anticipated to be **low** to **very low** adverse through this final phase of the construction process.

7.6.2.2 Temporary Visual Effects

The construction of the scheme is currently anticipated to be in a number of stages along the proposed corridor over a period of approximately 4-5 years. Visual effects are anticipated to occur progressively through the scheme area and transient viewing audiences may concurrently experience adverse visual effects from multiple stages through the construction period.

The consideration of visual effects through the construction phase acknowledges the full range of activities (and their resultant visual impact), required to construct the Alternative State Highway.

It is anticipated that construction activities required to implement the proposal will introduce a concentrated area of construction activity into the existing rural landscape. Within the FUZ the proposed construction phase will be consistent with the construction activities expected to be associated with the urbanisation of the FUZ. However, these are anticipated to be particularly

intensified where the BCI will be built. Another important consideration is that landscape change by way of vegetation removal and land modification (on private rural property), albeit at a lesser scale, forms part of the expected backdrop of the existing environment. Although the removal of vegetation for the implementation of a highway is permitted under the AUP, this does not diminish the level of change in the landscape or experienced by audiences.

Notwithstanding the above, some vantage points within the scheme area are likely to witness heightened adverse visual effects through the construction phase due to the magnitude of vegetation removal and / or earthworks proposed. These areas are outlined below:

- Private properties where physical landscape effects will occur within their lots.
- Effects on the private properties at 208 and 210 Fred Taylor Drive in proximity to Wetland 2 and the nearby site compound;
- Private property at 284 State Highway 16 in relation to effects during the construction of Wetland 3;
- Properties at 178 and 182 in proximity to the nearby site compound and Wetland 8;
- Private property a 703 Waitakere Road in relation to effects during the construction of Wetland 7, Wetland 22 and the nearby construction compound;
- Private properties at 646 Waitakere Road; 2 and 8 Hanham Road; and; 194 and 214 Pomona Road, in relation to the construction of Wetland 9 and the nearby construction compound;
- Private property at 4 Dysart Lane in relation to effects during the construction of Wetland 2;
- Retained private property at 130 Pomona Road, in relation to effects associated with the nearby construction compound;
- Private properties at 48, 75 and 95 Pomona Road in relation to the construction of Wetland 10, Wetland 19A and the nearby site compound;
- Private properties at 164 Motu Road, 79 and 83 Tawa Road in relation to effects during the construction of Wetland 18;
- Private property at 80 Puke Road in relation to the nearby construction compound ;
- Private properties at 36 and 37 Puke Road in relation to the construction of Wetland 16;
- Private properties at 116, 130 and 131 Foster Road in relation to the nearby construction compound;
- Private properties at 69, 80 and 81 Foster Road in relation to the nearby construction compound;
- Private property at 59 Foster Road in relation to effects associated with the construction of Dry Pond 14;
- Private properties at 23 Foster Road and 695 SH16 in relation to effects associated with the construction of Wetland 15 and the nearby construction compound; and;
- Private properties at 218-220 SH16 in relation to effects associated with the construction of Wetland 25
- Private properties at 2 and 4 Brigham Creek Road in relation to effects associated with the construction of Wetland 26.

The nature and significance of the potential adverse visual effects is considered to be reduced through aspects of the scheme area by the following aspects:

- The existing Brigham Creek / Fred Taylor Drive and SH16 Interchange is already a central element within the visual composition of the surrounding area;
- The existing local road corridor landscape has already been modified by previous works required to shape the existing road connections.

- The Main Works are expected to last approximately 4-5 years and are currently proposed to be implemented in six phases which are expected to allow efficient access to the construction zones while maintaining continued access for the intersecting roads and existing private and commercial driveways.

Within the context of the surrounding area it is anticipated that audiences within a rural context are anticipated to have a greater sensitivity to the changes proposed , compared to urban audiences. Overall, with the implementation of mitigation measures adverse visual effects for the transient public viewing audience are anticipated to range from **moderate** to **low** through the construction phase, taking into account those vantage points listed above where adverse effects are likely to be heightened during the temporary construction period. Without the inclusion of mitigation measures the level of effects experienced by transient audiences are anticipated to range between **moderate** to **low-moderate** adverse.

Adverse visual effects during the construction phase are likely to be heightened for private viewing audiences directly adjacent to the scheme area on the basis of more direct and prolonged engagement with the proposed construction activities . This will include the presence of heavy machinery and the visible disturbance of both the road corridor and also individual private interfaces with the road.

Therefore, with the inclusion of mitigation measures it is anticipated that adverse visual effects will range between **moderate high** to **low** during the construction phase for private viewing audiences, depending on their location, proximity to the works and outlook. Without the inclusion of mitigation measures to it is anticipated that visual effects will range between **high** to **low-moderate** adverse.

7.6.3 Recommended Measures to Avoid, Remedy or Mitigate Construction Effects

Recommendations are in line with the recommendations in Section 6.1.2. In addition to those measures the following specific interventions are recommended:

- Ensure that measures are taken to prevent techniques to manage or avoid the effects of construction activities on ground water and wetlands within proximity to site compounds.

7.6.4 Assessment of Operational Effects

7.6.4.1 Natural Character Effects

Natural character forming elements, features and processes within the scheme area are spread across the length of the schemecorridor, these include: wetlands, rivers and perennial streams. These are set within a predominantly existing modified rural landscape that has been cleared for pastoral land use. Indigenous riparian vegetation within wetlands and waterways are varied and intermittent across the designation. The sections of the Totara Creek, Kumeū River and Pakinui Stream within the scheme corridor designation contain the most concentrated and contiguous native riparian habitats and are largely unmodified within the rural locations of these streams. We consider that the natural character rating of these element, features and processes is moderate in nature.

Clearance of indigenous riparian vegetation and habitat will be necessary to facilitate the crossing of the wetlands and watercourse environments in particular at the crossing of the Totara Creek, Kumeū River and Pakinui Stream. The proposed route design have been aligned to limit the amount of works in proximity to the Kumeū River to the south of Boord Crescent. The interim design proposes bridges

across these watercourses to minimise the impact on the natural flow of water and to enable the riparian habitat to continue underneath the bridge. Although the primary streams are bridged in the interim design subsequent branches of the stream are proposed to be culverted. Adverse effects of natural character will be heightened where watercourses are culverted as a result in the change to the natural watercourse, removal of vegetation and the disconnection of contiguous native riparian vegetation. Any required works within the river bed will be assessed as part of the future regional consents.

It is recommended that during detailed design process the extent of impacts on watercourses are reviewed to limit to the disturbance of existing wetland and watercourse features. A planting plan and vegetation protection plan is recommended as part of the ULDMP which will be developed as part of the detailed design process. It is recommended that any planting proposed as mitigation through the regional consents process is integrated with the planting plan as recommended through this assessment under the ULDMP. This will ensure that natural character values of the watercourses and wetlands are enhanced or protected where possible as an outcome of the proposal.

On the basis of the above (allowing for future landscape mitigation), adverse natural character effects are likely to be **low,** where bridges are used to cross water courses and retain natural character value. Where culverts are required we consider natural character effects to range from **low-moderate** to **moderate**, these effects will be considered further as part of a future regional resource consent.

7.6.4.2 Visual Amenity Effects

Overall, there are likely to be a range of visual amenity effects on public and private viewing audiences relative to proximity to the corridor. For existing properties set back from the designation area around the Brigham Creek Interchange, the visual amenity effects are considered to be lower due to the existing context of the interchange. However, it is anticipated that there will be an incremental increase in existing effects with the introduction of the state highway and arterial road interchange over a larger footprint.

Retained private properties that interface with the scheme corridor will predominantly be within the rural landscape and will experience a change in the view as a result of the introduction of the new elevated state highway. Private properties which have filtered, screened or distant views towards the works are expected to experience a reduced level of change in visual amenity as a result of the works. Properties which front on to the Fred Taylor Drive and SH16 and have existing short distance views will experience very little difference between baseline views and views during operation.

For some properties directly adjacent to the scheme area (which are partially designated), adverse visual amenity and residential character effects will be heightened as a result of the construction impacts including driveway regrading, potential loss of yard space and / or by the introduction of an urban style carriageway and footpaths / cycleways proximate to private dwellings. It is recommended that boundary fences and garden plantings (removed through the scheme works) be reinstated on completion of the works affecting the property. These mitigation measures included within the proposed ULDMP under the lens of neighbourhood character and as such are discussed further in the following section.

Very few rural public viewing audiences in the existing environment have a direct view of the Alternative State Highway due to the lack of connectivity to rural land. FUZ land to at the eastern and western extents of the scheme corridor is developed over time as visual effects are anticipated to be reduced for the public viewing audience, based on improved visual amenity for users associated with streetscape improvements, maturing street trees, berm planting and accessibility to active modes of transport.

Public viewing audiences within proximity to the proposal are primarily active mode users along Brigham Creek Road; Fred Taylor Drive; SH16; Puke Road; Tawa Road; and Fred Taylor Park open space; which are in or on the edge of the FUZ; and; Taupaki Road, Nixon Road, Boord Crescent, Waitakere Road, Hanham Road, Pomona, Awa Road, Foster Road and Trigg Road which have rural zoning.

Overall, some visual effects are anticipated to be mitigated by measures implemented during the finishing phase of the construction period (within the road corridor and private property boundaries), proposed planting will mature through the operational phase of the scheme. Intervening vegetation will reduce some of the long-term residual visual effects of the proposal. However, the approximately 50m wide state highway, which is raised in part, will be a noticeable new feature within the landscape particularly within rural zoned land. The road corridor will be less apparent as the FUZ is urbanised over time and in rural areas where the corridor is in cut and when integration / mitigation planting has matured.

Without the implementation of proposed mitigation it is anticipated that visual effects on transient viewers will be **low** adverse, for transient viewers within the FUZ and **low-moderate** to **moderate** adverse for rural audiences through the operational phase of the proposal. For private viewing audiences, visual effects these are anticipated to range from **high moderate** to **low-moderate** for rural audiences and **low-moderate** to **low** for audiences within FUZ.

On the basis of the above and provided that mitigation measures are undertaken, adverse visual effects within the area are likely to be **low** for transient viewers within the FUZ and **low-moderate for rural audiences** through the operational phase of the scheme. For private viewing audiences, visual effects are likely to range from **low-moderate** to **low** for rural audiences and **low** to **very low** for audiences within FUZ. In both instances effects are anticipated to reduce over an extended period of time as planting matures and forms a more effective screen / filter.

7.6.4.3 Landscape Character Effects

The principal elements of the proposal will permanently alter the character of the rural features of the landscape. The FUZ sections of the surrounding area will experience the proposal within the context of a wider landscape undergoing urbanisation. The rural zoned sections of the surrounding area are characterised by the lack of streetscape features, informal intermittent vegetation, managed and unmanaged watercourses, shelterbelt and hedgerows along field boundaries and existing rural land uses. The existing roadways through the landscape are typically rural in nature and lack urban characteristics such as a kerb and channel roadway, footpath and street lighting.

The scheme is anticipated to enter the operational phase within the context of increased urbanisation where FUZ land is progressively live-zoned and urbanised. Although it is not possible to anticipate the exact future urban land use pattern, Whenuapai Structure Plan suggests that Business, High and Medium density residential development will be introduced at land around the proposed Brigham Creek Interchange, as well as the retained Fred Taylor Park Open Space, at the eastern extent of the designation.

The development of FUZ within the Spatial Land Use Strategy - Kumeū-Huapai, Riverhead, and Redhills North is less structured and is intended to be at a high level. Neighbourhood Centres are proposed along Motu Road and to the south of Fred Taylor Park, which are proximate to the designation. It is reasonable to expect that these centres will be surrounded by a predominantly residential land use. Based on the above the magnitude and nature of landscape change proposed by the proposal we consider to be a match with the changes that will likely occur throughout the localised landscape as it is urbanised over time.

A structured planting design will be implemented through wider designation including on slopes and embankments as part of the ULDMP, to provide integration of the scheme into the landscape. It is also recommended that the ULDMP advises on design strategies to design slopes and embankments to have a more naturalised appearance and integrate with the surrounding rural landscape. These features and design details are expected to improve landscape and urban amenity of the scheme corridor.

As outlined earlier broad areas of vegetation within the existing corridor will not be able to be retained. New tree and forest planting along the length of the corridor will be relied upon to mitigate the loss of that vegetation (from a landscape character perspective).

It is assessed that planting and design interventions within the ULDMP, in conjunction with stormwater management and reinstatement planting, will reduce effects on landscape character associated with broad vegetation clearance within the context of a rural environment.

On the basis of the above without mitigation effects may be as high as **high** to **moderate high** adverse**,** allowing for future landscape mitigation, adverse landscape character effects are anticipated to be **low-moderate** to **low** once mitigation planting has established.

7.6.5 Recommended Measures to Avoid, Remedy or Mitigate Operational Effects

Recommendations are in line with the general recommendations in Section 6.1.3.

In addition to these measures the following specific interventions are recommended:

- Address the visual and landscape effects of the ASH on Fred Taylor Park by providing screening and landscape integration.

7.7 Conclusions

Overall landscape and visual effects without mitigation range from **high** adverse to **low** adverse for the construction phase and **high moderate** adverse to **low** adverse for the operational phase. With the anticipation of mitigation measures being implement landscape and visual effects are anticipated to range from **moderate-high** to **very low** for the construction phase and **low-moderate** to **very low** for the operational phase.

Overall, the adverse effects can be mitigated and reduced over time in relation to the FUZ areas which will experience urbanisation of the surrounding landscape. The FUZ landscape context has a lower level of sensitivity to change due to the anticipated developing urban form of the landscape associated with future urbanisation. The rural areas of the landscape are more sensitive to the introduction of the road corridor, however optimizing landscape integration, through the ULDMP, which will assist with the integration of the slopes and embankments into the landscape through earth shaping and mitigation planting. Heightened adverse visual effects on retained rural properties can be reduced during the construction phase, however adverse effects will be unavoidable in some instances.

8 NoR S2: SH16 Main Road Upgrade

8.1 Project Corridor Features

The proposed SH16 Main Road Upgrade is set primarily within the urban context of the existing state highway through Kumeū Huapai with the exception of the eastern rural and western FUZ ends of the designation.

The key landscape matters addressed for the SH16 Main Road Upgrade:

- The nature and extent of impacts on the landscape as a physical resource during the construction period. A specific focus on the location of the construction compound, extent of vegetation clearance, the scale and location of proposed cut and fill slopes and the likely impacts of bridge construction.
- The widening of the existing corridor to 24m and the requirement to extend into residential properties, this will be limited to sections of the corridor only.
- The expansion of the arterial road into rural 'greenfield' lots and how it will interface with the enduring rural environment that is not zoned as FUZ at the eastern and western extents of the designation.
- Consideration of landscape character effects and urban amenity issues in relation to the permanent landscape change, including specific assessment of how this corridor will integrate into the future urban environment;
- Potential removal of large mature urban trees and consideration of future opportunities to integrate existing trees.
- Consideration of landscape mitigation measures to be included within the recommended Urban and Landscape Design Management Plan (ULDMP) which would address the potential landscape and visual effects arising from the operation the scheme.
- Culverting, bridging and earthworks within proximity of existing wetlands and watercourses, as far as these relate to designation / district plan matters.

The typical cross section includes an active mode corridor with central and side barriers (See Figure 8-1 below).

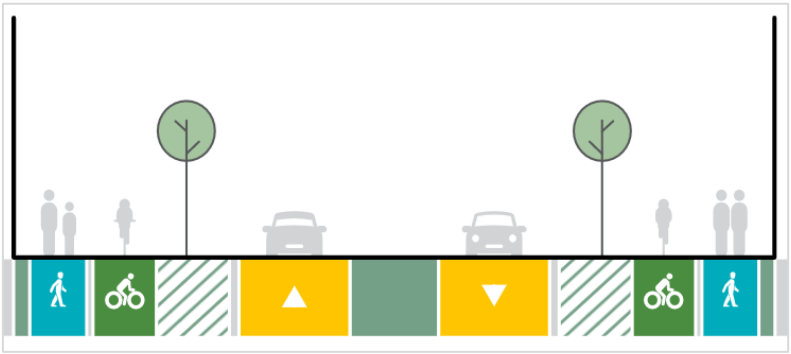


Figure 8-1: SH16 Main Road Upgrade Typical Cross Section

8.2 Existing and Likely Future Environment

8.2.1 Planning context

SH16 Main Road is proposed to be upgraded to a 24m urban corridor along the urban extent of SH16 traversing through well-established retail, commercial and residential environs through Kumeū Huapai. This corridor contains a range of business, residential and open space and rural land uses under the AUP:OP (see zoning column in Table 8-1) between the eastern extent of the Kumeū-Huapai township and the western extent of the upgraded corridor (the intersection with the proposed ASH).

Table 8-1 below provides a summary of the existing and likely future environment as it relates to the SH16 Main Road Upgrade.

Table 8-1: SH16 Main Road Upgrade Existing and Likely Future Environment

Environment today	Zoning	Likelihood of Change for the environment[10]	Likely Future Environment[11]
Rural	Rural Mixed Rural Zone, Rural Countryside Living Zone	Low	Rural
Business	Business (Industrial)	Low	Business (Industrial)
	Business (Local Centre)	Low	Business (Local Centre)
	Business (Mixed Use)	Low	Business (Mixed Use)
Residential	Residential	Low	Residential
Open Space	Open Space – Sport and Active Recreation	Low	Open Space
Undeveloped greenfield areas	Future Urban	High	Urban

8.2.2 Existing / Baseline Landscape

8.2.2.1 Baseline Landscape

The route of this Project runs along the existing SH16 Main Road between Kumeū and Huapai, approximately from Riverhead Road to Foster Road.

The local landscape character within the scheme corridor is summarised below;

- Vegetation cover comprising non-native stand-alone street trees, linear belts of mixed indigenous and non-native vegetation along riparian corridors, shelterbelts along the road corridor, exotic vegetation in around private residential and commercial property boundaries.

[10] Based on AUP:OP zoning/policy direction
[11] Based on AUP:OP zoning/policy direction

- The landscape is characterised by the urban residential and commercial areas of Kumeū and Huapai that border the existing state highway. The NAL to the south of the existing state highway contributes to the character of the landscape as a transport corridor.
- The Huapai Domain and residential zoned land has a low to low-moderate sensitivity to change.
- There is the potential to enhance and integrate the upgraded state highway within the FUZ and provide additional landscape amenity within the corridor.

Landform and Hydrology

The scheme corridor traverses a gently sloping topography that rises from east to west, the topography has been modified over time to accommodate the existing SH16. High points along the corridor are located at the western end of the corridor to the north and west of the route within the undeveloped FUZ and SHZ. The lower lying land areas of the scheme area are located within proximity of the Ahukuramu Stream, Kumeū River and its branches, flood plains and wetlands.

Landcover

The landscape across the study corridor is characterised as a distinctly modified urban landscape within the urban centres of Kumeū Huapai in the eastern portion of the corridor. These urban centres feature a combination of large lot commercial and suburban residential development. The western portion of the designation within rural and FUZ land is characterised by pastoral and arable geometric fields and rural residential properties. These field patterns are bound in parts by structured hedgerows, shelter belts and small areas of native vegetation. Fields predominantly contain exotic grassland with small pockets of agricultural crops, rural industry and amenity planting in proximity to dwellings. Areas of open pasture are more prevalent to the north of the route and agricultural to the south including the Coopers Creek Vineyard.

Areas of mature native trees are located in patches throughout the rural landscape and in proximity to stretches of riparian vegetation along waterways. Although much of the stream and wetland features across the study area, native riparian vegetation are present within intermittent stretches, particularly within the Ahukuramu Stream and Kumeū River (Figure 8-2 below).

Figure 8-2. Riparian vegetation along a tributary of the Kumeū River to the south of SH16 Main road

A single scheduled notable tree [2603, Silver dollar gum at 396] is present within the designation present within a thin strip of land between the existing highway and the NAL at 396 Main Road, Huapai (see Figure 8-3 and Figure 8-4 below). A second notable tree [2591, Poplar] is located to the south of the scheme within the boundary of a private residence at 399 SH16.

Figure 8-3. Scheduled notable Tree - 2603, Silver dollar gum at 396 SH16 viewed from Station Road

Figure 8-4. Scheduled notable Tree - 2603, Silver dollar gum at 396 SH16, viewed across the NAL from the Huapai Domain car park

Land Use

Land use either side of the scheme corridor is predominantly urban commercial the centre of Kumeū and Huapai. Development to the west of Oraha Road has a more residential focus where the corridor is bordered by single house zone and mixed housing urban residential development (with some residential land with a business – mixed use zoning) and the Huapai Domain open space. The western extents of the corridor to the west of Station Road and Huapai Domain comprises developing residential single house zone and FUZ which will be developed over time. The southern side of the route to the west of Matua Road is predicted to continue to have a mixed rural (RMZ) land use into the future.

Scheduled Landscape and Ecological Features

There are two scheduled notable trees within proximity to the scheme 2591, Poplar at 399 SH16 and 2603, Silver dollar gum at 396 SH16

Historical and Cultural Associations

A Historic Heritage and Special Character overlay 482, Huapai Tavern is located within the designation at 301 SH16 Main Road Huapai (Refer Figure 8-5 below). More in depth analysis of this heritage feature can be found in the Cultural Heritage Assessment.

Figure 8-5: Lion Red Huapai Tavern, 301 Main Road SH16, Historic Heritage and Special Character overlay 482.

8.2.2.2 Likely Future Environment

Overview

The FUZ land, at the western extent of the dignation is anticipated to undergo a significant change from rural to urban land use character. It is anticipated that the abiotic features of the landscape, principally the topography, will be altered over time as the surrounding landscape is urbanised. The character of the rural zones land is not anticipated to change, although these areas are adjacent to an existing state highway.

It is anticipated that some of the defining biotic (land cover) features of the landscape within the FUZ will undergo substantial change alongside future development, with the removal of large areas of vegetation to accommodate the proposal. This will likely involve the implementation of street tree plantings, public open space areas and general landscaping within the private yards of future housing development for public amenity.

The balance of the designation will continue to have an urban function by the completion of the scheme, including the change of some residential land for commercial and business uses. It is anticipated that the abiotic and biotic features of the landscape outside of the designation will endure.

8.2.2.3 Kumeū-Huapai / Riverhead area

This area has not undergone a structure planning exercise, it is identified by council that this process will be undertaken before the land is released to be urbanised. This processed is indicatively

programmed to be undertaken in 2025 in order for the land to be released between 2028 and 2032 as indicated in the Future Urban Land Supply Strategy (FULSS).

The Spatial Land Use Strategy for Kumeū-Huapai, Riverhead, and Redhills North has been developed with collaboration between Auckland Council and the project team. This provides a high level framework that outlines the distribution of future land use (see Figure 8-6 below).

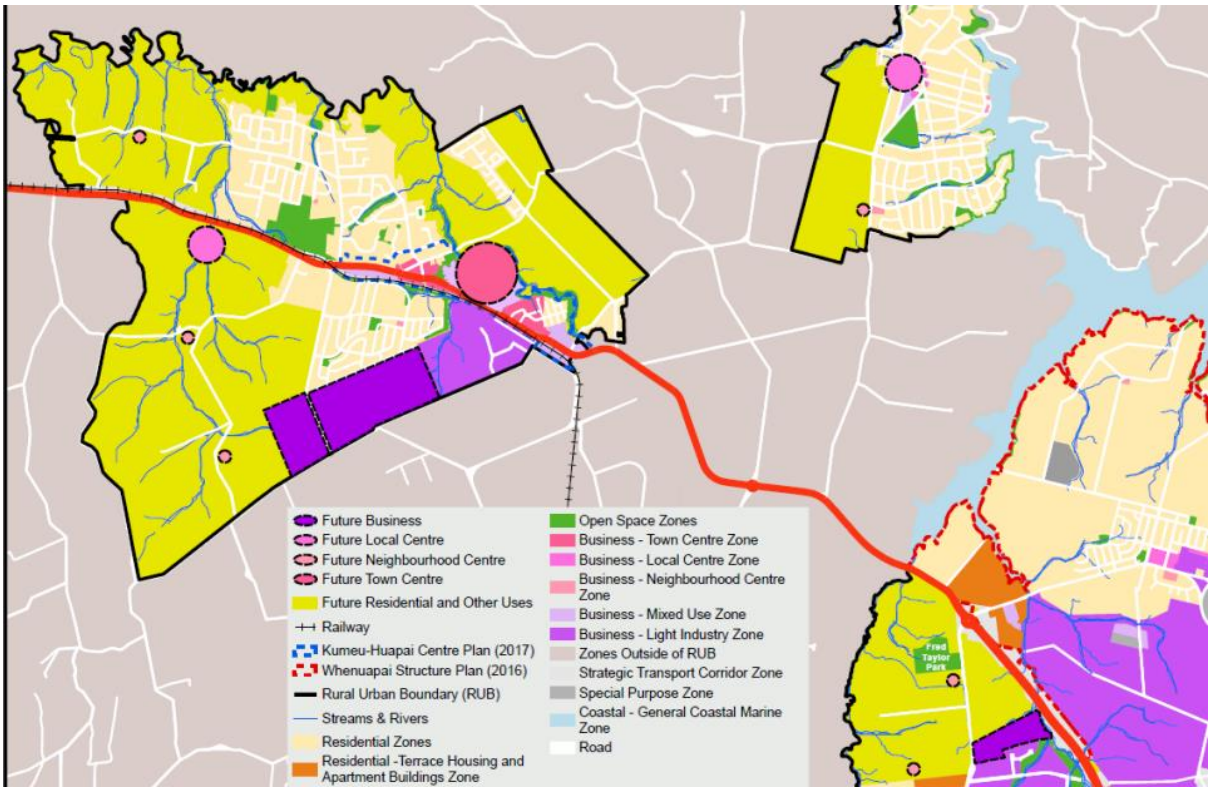


Figure 8-6: Spatial Land Use Strategy - Kumeū-Huapai, Riverhead, and Redhills North.

8.3 Extent of Visibility and Viewing Audience

The extent of visibility of the proposed road corridor is contained by the surrounding vegetation and the changes in topography. Notwithstanding the above, some vantage points within the study area are likely to witness heightened adverse visual effects. In summary the viewing audience for the proposal includes:

- *Public Views:* Transient public audience (vehicle users). Key roads where views can be obtained from include: Station Road, Access Road, Oraha Road, Tapu Road, Matua Road, Trigg Road and SH16 (Main Road) :
  - Travelers (cars, pedestrians and cyclists) along Station Road, Access Road, Oraha Road, Tapu Road, Matua Road and Trigg Road which bisect the site (Refer Appendix Site Photo SP17, SP19, SP20, SP21, SP22);
- *Private Views:* The private viewing audience, comprising views from predominantly urban business are residential properties within Kumeū and Huapai and rural residential and lifestyle dwellings as well as from the commercial and agricultural businesses located at the western end of the designation. Specifically:
  - Views from the residential properties adjacent to the proposed designation that immediately front on to scheme corridor (2, 4, 20, 22, 24, 38 Station Road, 7, 338-382, 391,393, 397, 399,

401,404,405,407, 407A, 529, 551, 573, 583, 587, 609, 619, 623, 631, 641, 643, 677, 693 and 695 Main Road; and 1 Trigg Road. (Refer Appendix Site Photo SP15, SP18, SP16)

- Occupants of nearby commercial buildings and public open space adjacent the proposed corridor (Refer Appendix Site Photo, SP13, SP14)

Views are well contained within the immediate surrounding area of the corridor to the east of the urban core of Kumeū and Huapai, where the landscape is relatively flat and intervening vegetation is present. The visual catchment within the urban core of Kumeū and Huapai is well contained by existing vegetation and built form.

To the west of the designation within the FUZ the topography is gently undulating which results in the scheme corridor being more visible in elevated areas and less visible in areas of depreciation. However, after this area has been urbanised it is expected that the visual catchment will become more contained.

8.4 Landscape Values

There are no regionally or nationally significant landscapes (ONLs, ONFs or ONCs) within or proximate to the proposed designation boundary. The nearest ONL is Area 3, Taylor Road, south of Helensville, located approximately 880m to the north of the scheme corridor.

The majority of the designation will be within an existing heavily urbanised landscape with a limited value overall. However, the Huapai Domain, Kumeū River Park (informally known as the Open Space - Informal Recreation Zone adjacent to the Kumeu river at 296 Main Road) and Kumeū River (and its branches) have a heightened landscape and amenity value within the landscape. On the periphery of the urbanised core of Kumeū and Huapai there are landscape features which contribute to the character and amenity along the road corridor (refer Figure 8-7 below).

Figure 8-7: Mature exotic shelterbelt / screening trees to the south of SH16 adjacent to the property at 7 Main Road SH16.

Towards the centre of the NOR corridor land to the north of the Kumeū River Crossing will be need to be acquisitioned. This acquired land comprises approximately 0.1ha of open space and within the Kumeū River Park (refer Figure 8-8 below). This linear open space is primarily used for informal recreation and provides a green route away from the urban centre along the Kumeū River.

Figure 8-8: View south from Kumeū River Park towards Main Road SH16.

8.5 Landscape Sensitivity

This corridor is situated within the existing SH16 road corridor, the existing two lane corridor and designation are a dominant element within the Kumeū and Huapai town centres. The broader landscape is predominantly urban and also contains areas that have been assessed within the AUP:OP as being suitable for urbanisation. The proposed FUZ area to the west will likely be developed for residential land uses within proximity to the corridor. Rural zoned land which will maintain rural has medium sensitivity to the type of change proposed. The area within existing urban and FUZ is assessed as having a very low sensitivity to landscape change.

8.6 Assessment of Landscape Effects

8.6.1 Positive Effects

Positive effects which relate to all NoRs in the Stategic Assessment Package, including NoR S2, are set out in Section 5 of this report. Additional positive effects related specifically to this NoR include:

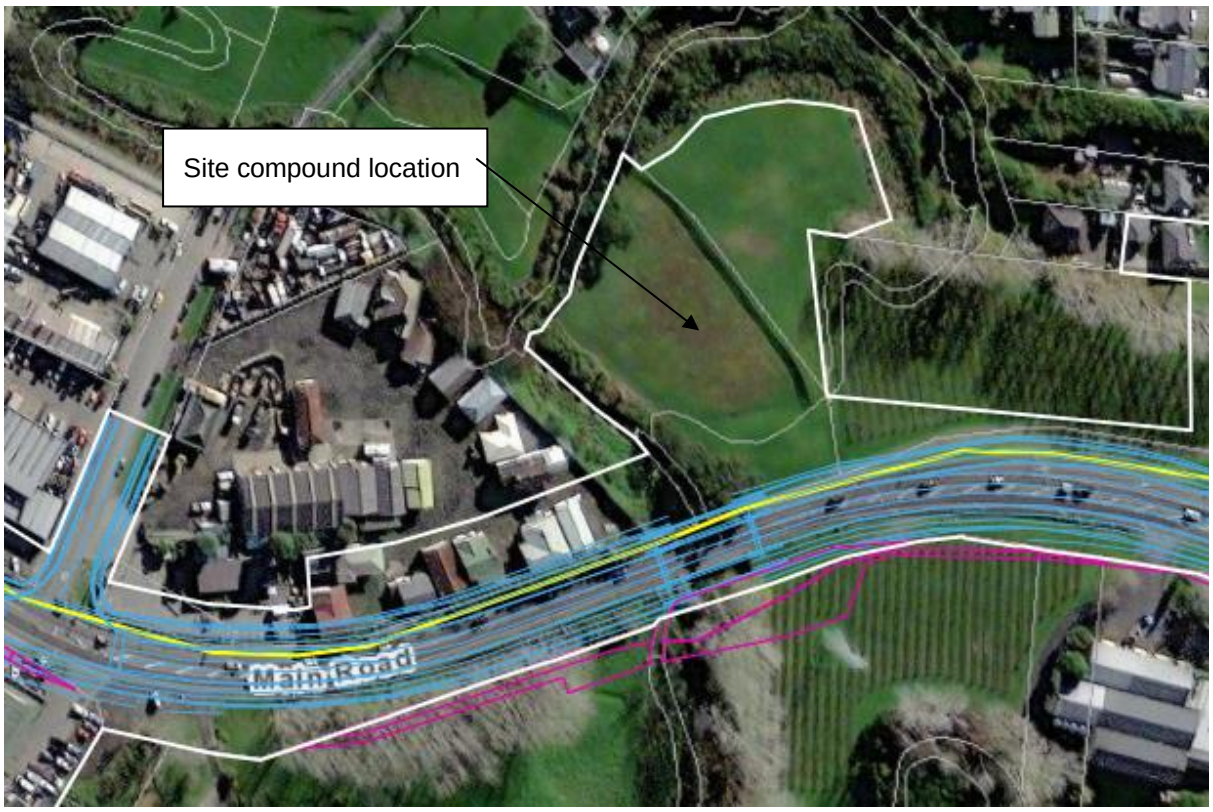
- Improved and / or new opportunities for improve visual connectivity along SH16 Main Road by providing enhanced green infrastructure along the existing car dominated state highway.
- Improved landscape amenity along the scheme corridor by tying into the retained urban landscape and the future urban environment.

8.6.2 Assessment of Construction Effects

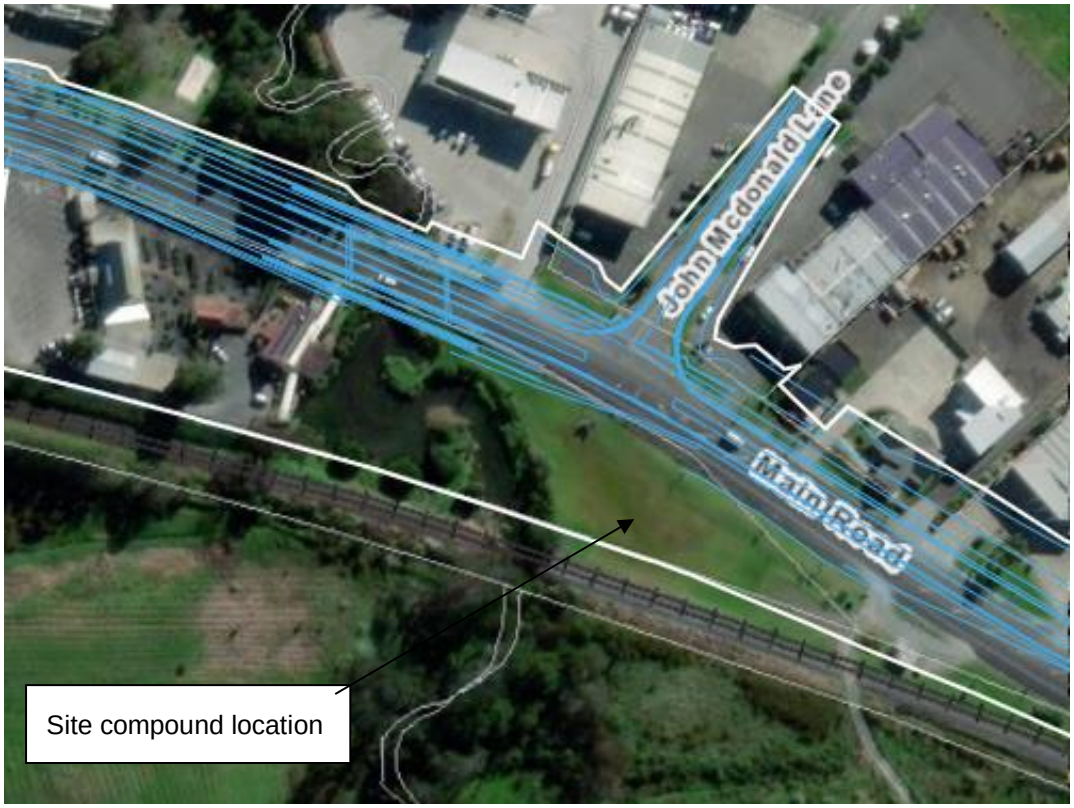
Construction Areas

The site compound and construction areas are to be established at three indicative locations within the designation. Construction traffic will be heightened at these locations through the construction period.

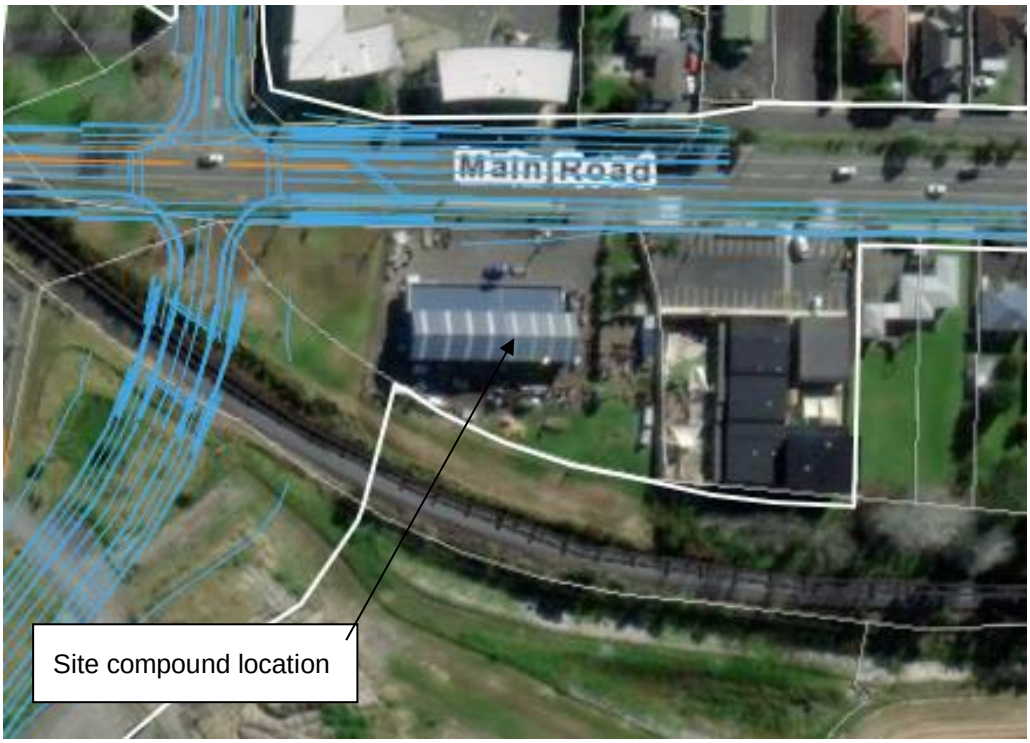
- Site compound, stockpile, sediment retention pond and lay-down area for bridge or underpass construction are located at:
- To the north of the scheme corridor at Sec 2 SO 439526, Main Road Kumeu 0810 to the west of 550 State Highway 16.



- To the south of the scheme corridor with 299 Main Road SH16



- 377 Main Road SH16



Overall, the adverse physical landscape effects resulting from establishment and use of the indicative site compounds and construction work areas within the designation are assessed to be **low** in rural areas and **very low** in existing urban areas.

Vegetation Clearance

Although vegetation clearance is a permitted activity under the AUP and within the existing designation, this does not diminish that there will be a material change that will result in landscape effects.

Linear stretches of vegetation that border the existing state highway and delineate field boundaries will be removed to accommodate the construction and operation of the rural areas of the scheme corridor. This will consist of a mixture of indigenous and non-native vegetation including shelterbelts that are archetypal within the wider modified rural landscape. Exotic pasture, trees, shelterbelt plantings, private gardens, exotic stands of trees and cropland make up the majority of vegetation to be removed. Riparian vegetation within watercourses and wetlands will be removed to accommodate the bridges and culvert along the corridor. The riparian vegetation is a mixture of native and non-native vegetation within watercourses (Kumeū River and its branches, and the Ahukurama Stream). These works are subject to a separate regional consent process, however their potential effects on the landscape and natural character have been included within this assessment and the selection of the designation.

Vegetation proposed to be removed in the urban context of the corridor will typically comprise exotic streets trees, amenity vegetation and vegetation in private backyards. Vegetation removed within the Kumeū River Park will comprise non-native parkland trees and amenity grass. The adverse physical landscape effects likely to arise from vegetation clearance within rural areas are assessed as **low.** Vegetation removal adverse effects in urban areas are assessed as being **very low** with the exception of the open space areas where effects are expected to be **low.**

Structures and Earthworks

The scheme corridor design includes four bridges, one of these bridges is required to cross a watercourses and three of the bridges cross existing or proposed rail / road infrastructure.

The balance of cut and fill earthworks across the designation are anticipated to approximately eb balanced. Overall, the proposed design has balanced of cut and fill in order to sit the expanded existing road corridor within the rural area to the west of the designation.

The impacts and potential landscape effects of the proposed earthworks include the modification of and permanent changes to the underlying landform to widen the existing corridor; replace existing bridges; surface level changes in close proximity to private properties and open space; and earthworks in proximity to the wetlands and watercourses. The proposed cut and fill slopes range in scale from 1m to 38m wide and will alter the form of the existing rural and urban land forms. Although bridges and earthworks are largely matters for regional consents, these will be addressed in future regional consenting process. It is recommended that a condition of the designation is included to promote the stockpile and re-use of topsoil from pastoral land impacted by the proposed earthworks[12]

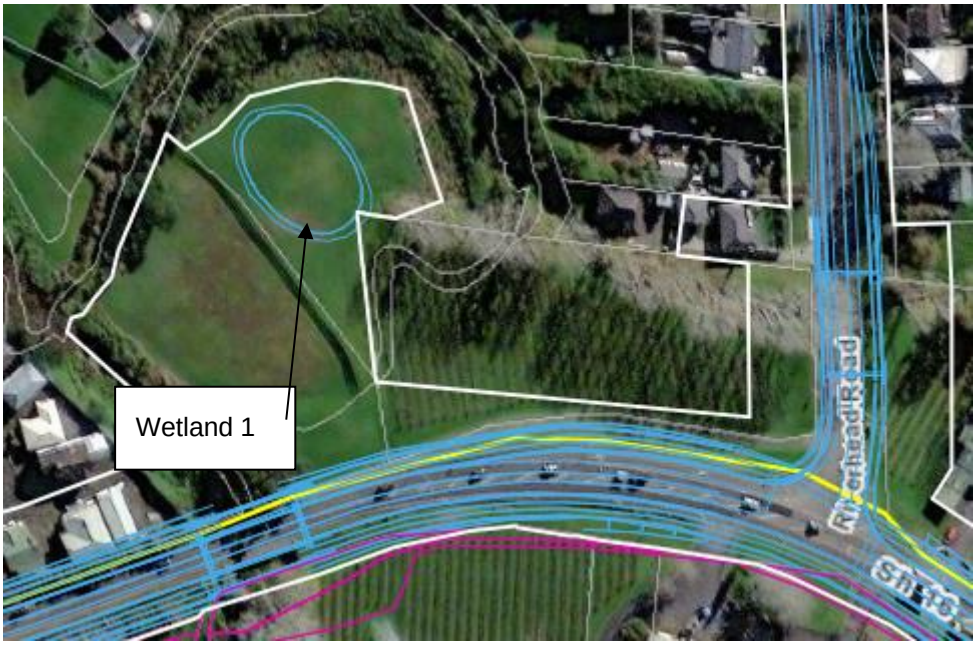
Overall, we consider the earthworks to be of a quantity that is reasonably anticipated with a scheme of this scope and scale and all cut and fill slopes are expected to be integrated with the existing modified urban environment. Provided that the proposed mitigation measures are undertaken we expect that the adverse effects of the earthworks and bridge structure will be **low**.

[12] Refer to NZTA Landscape Guidelines (September 2014), Section 4.12 Topsoil for additional information regarding best practice guidelines for topsoil management and soil stripping.

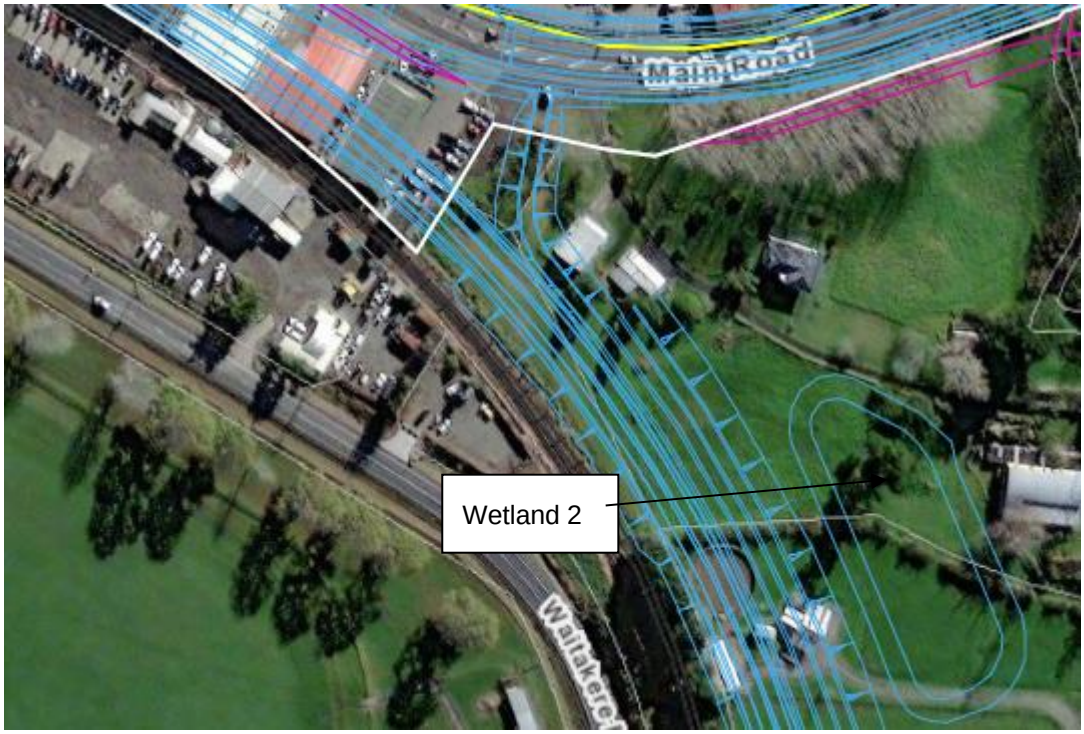
Wetlands, Dry Ponds and features

Across the designation 13 wetland ponds and three dry ponds are proposed.

- Wetland 1 is located to the north of the scheme corridor in proximity to the Kumeū River at Sec 2 SO 439526, Main Road Kumeu 0810 to the west of 550 State Highway 16.



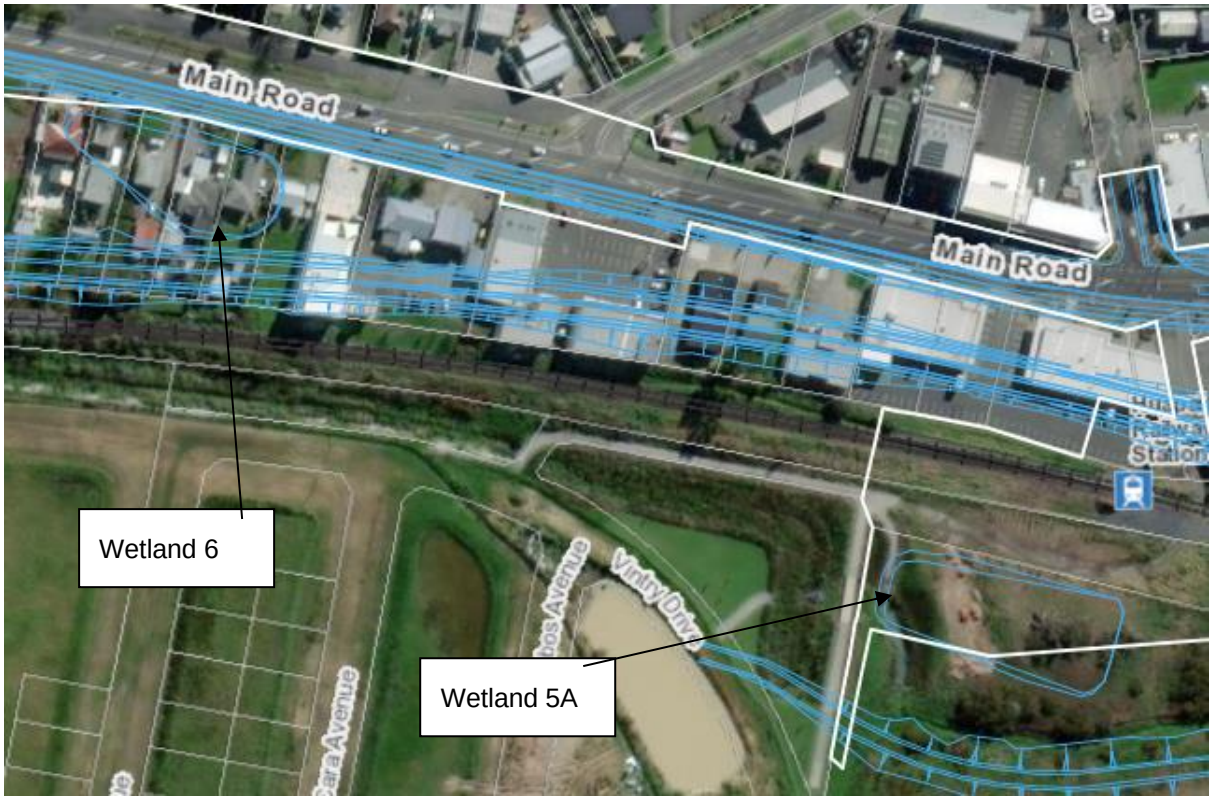
- Wetland 2 is located to the south of the scheme corridor within the boundary of 7 Main Road and approximately 40m of the Kumeū River.



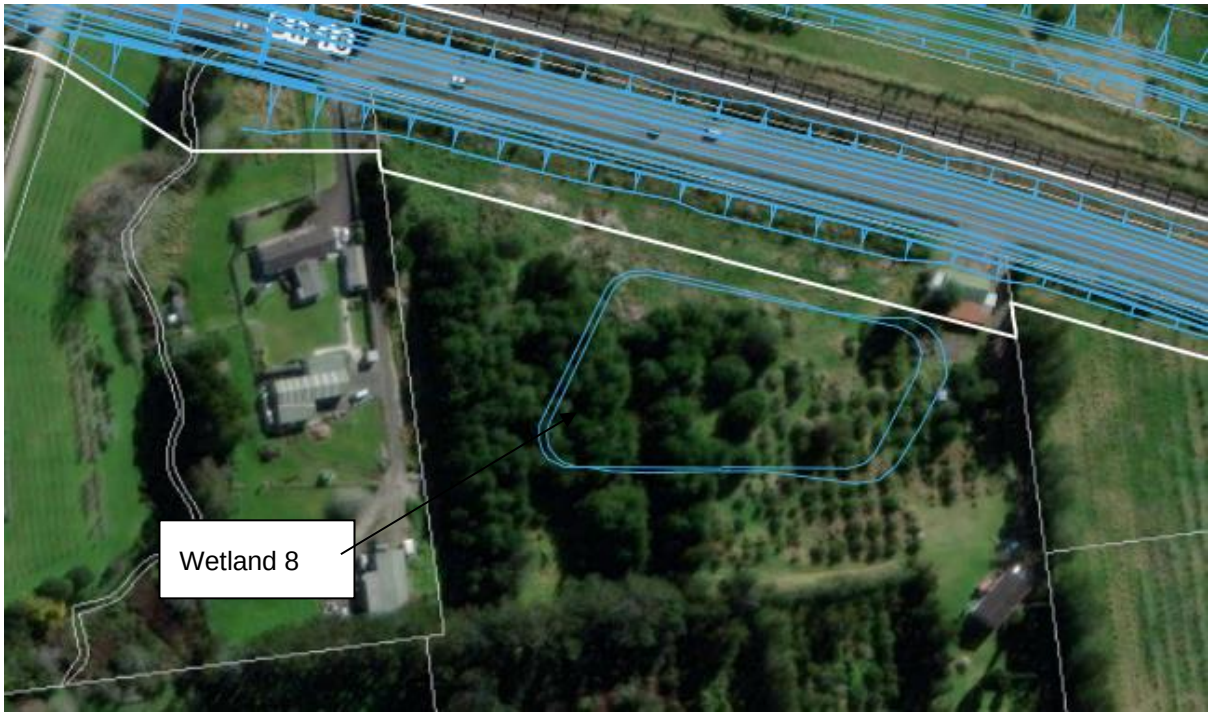
- Wetland 3 is located to the north of the scheme corridor at adjacent to Harikoa Street approximately 150m from the main scheme corridor and 30m form the Kumeū River within the boundary of the property at 108 Main Road;

- Wetland 4 is located to the south of the scheme corridor and the NAL at CH1500 within the boundary of 388 Taupaki approximately 30m of the Kumeū River;

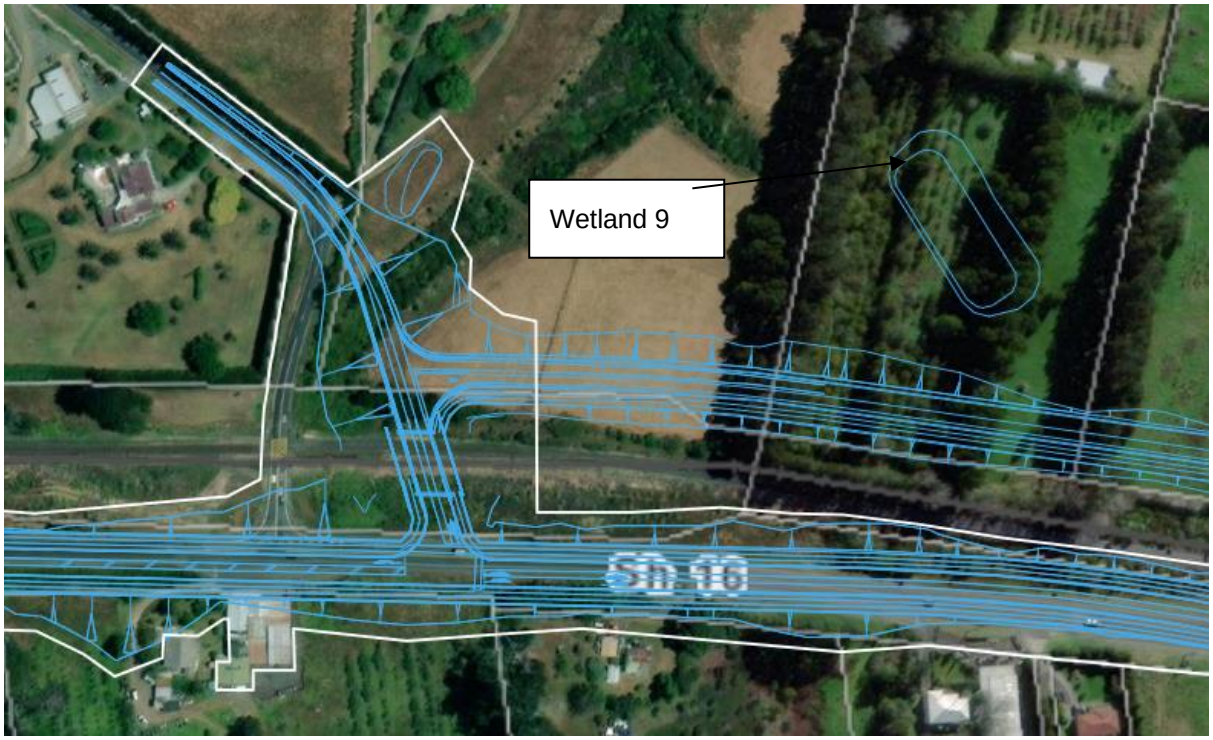
- Wetland 5A is located to the south of the Main Road corridor and the NAL is located within the boundary of 1 Winfield Road approximately 90m of the Kumeū River; and Wetland 6 is located between the expanded Main Road and NAL Corridor and CH2350 from 351, 353, 355 Main Road;



- Wetland 8 is located to the south of the scheme corridor within FUZ land at 551 SH16 Road within 50m of a Kumeū River branch watercourse;

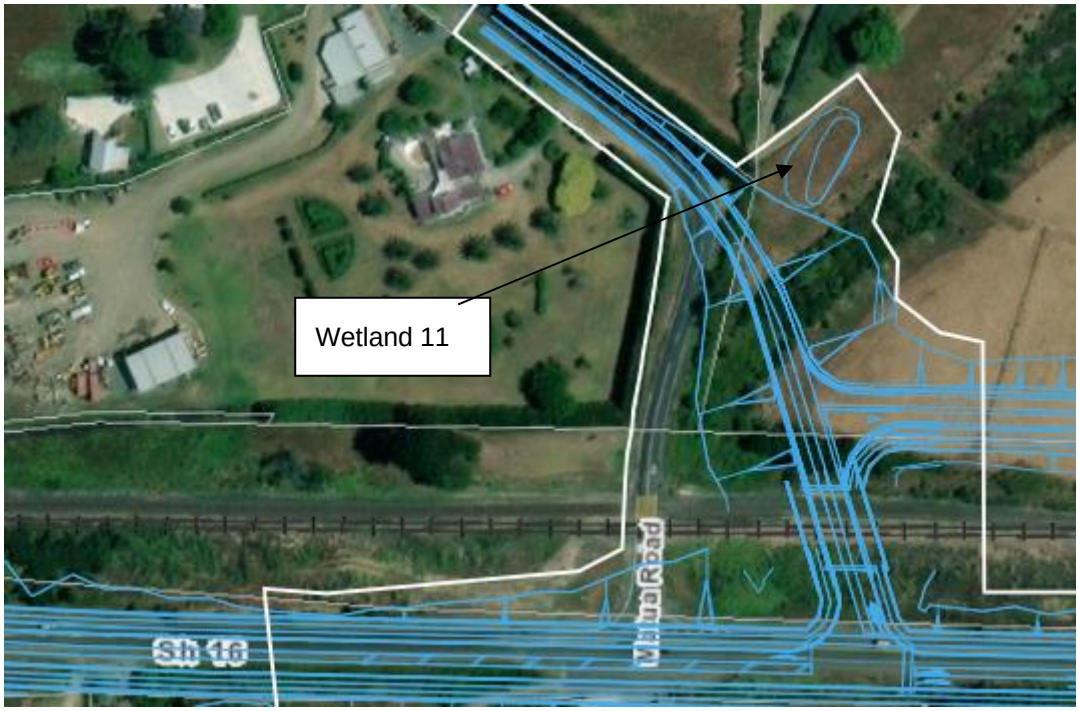


- Wetland 9 is located to the north of the scheme corridor located within the boundary of 307 Matua Road within 25m of a Kumeū River branch watercourse;

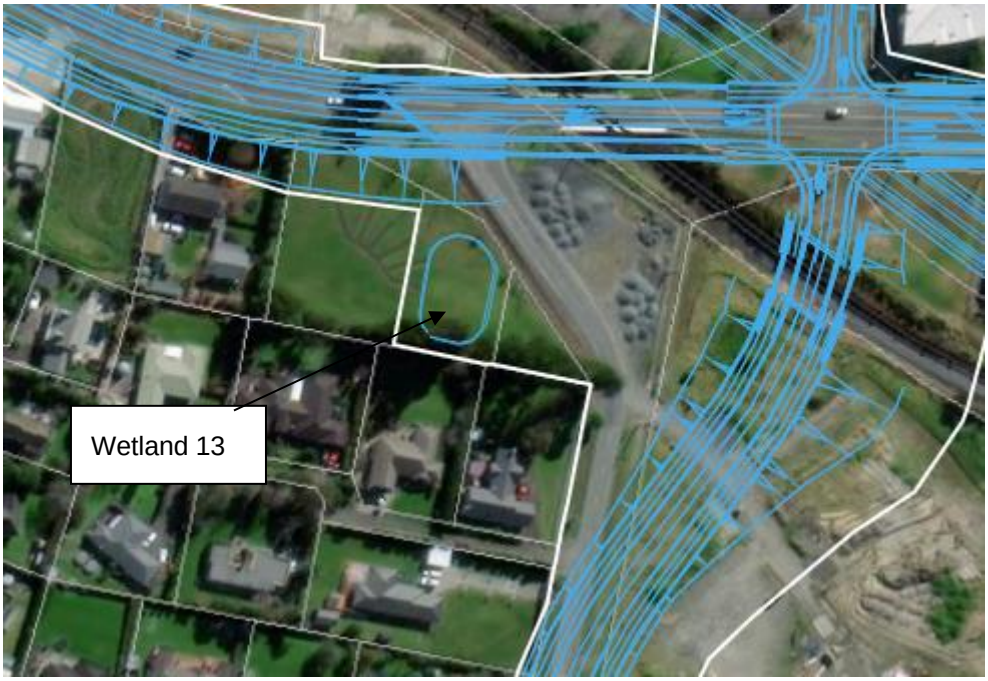


- Wetland 10 is located to the south of the scheme corridor within the boundary of 695 SH16 the wetland is within 22m of the Ahukuramu Stream;

- Wetland 11 is located to the north of the proposed corridor located within the boundary of 411 Matua Road.



- Wetland 13 is located to the south of the scheme corridor located within the boundary of 391 Main Road;



- Wetland 15 is located to the north of the scheme corridor located within the boundary of 239 Matua Road;

The proposed wetlands will require earthworks to re-shape the land and achieve optimal depths and edge profiles, which will be determined as part of the resource consent phase. Wetlands will generally be constructed within greenfield sites in both rural and urban settings with the exception of Wetland 6 and Wetland 15 which are set in set within brownfield lots previously containing built development.

With the information available, it is anticipated that without mitigation it effects on the physical landscape will be **low** adverse. We consider effects on the physical landscape with the implementation of mitigation measures the proposed wetlands to be **very low** adverse.

Private Properties

Residential properties within or adjacent to the designation (either partially or fully designated) will be impacted by the proposal in the following ways:

- Surface level changes between private property boundaries and the upgraded road corridor, requiring existing driveways and private accessways to be regraded;
- Encroachment into private yard areas and the removal of private garden plantings and trees, ancillary buildings and boundary fences;
- Potential impacts related to the construction of noise mitigation measures;
- Visual effects related to night works including light spill and sky glow; and;
- Demolition of existing dwellings and ancillary buildings within the proposed designation.

Approximately 49 retained dwellings will be impacted by the scheme works. Landscape mitigation measures are proposed under 8.6.3 Recommended Measures to Avoid, Remedy or Mitigate Construction Effects below.

Without the implementation of mitigation measures it is anticipated that effects will range between **moderate** and **low-moderate** adverse Overall, it is assessed that the adverse effects on the physical landscape on private properties will be predominantly **low-moderate**, with the implementation to mitigation measures.

8.6.2.1 Site Finishing Works

Finishing works are expected to include grassing of exposed earth, lighting, signage, line markings, footpath / cycleway details and reinstatement of private property fences and gardens. Streetscape elements and landscaping, including that required as mitigation will also be implemented. These activities are to be determined by detailed design and will occur within the already modified areas of the designation. Landscape effects are expected to be **low** through this final phase of the construction process.

Temporary Visual Effects

The construction of the proposal is currently anticipated to be in six stages along the proposed corridor over an estimated period of approximately four years. Visual effects are anticipated to occur progressively through the proposal area and transient viewing audiences may concurrently experience adverse visual effects from multiple stages through the construction period.

The consideration of visual effects through the construction phase acknowledges the full range of activities (and their resultant visual impact), required to implement the upgraded road corridor.

It is anticipated that construction activities required to implement the scheme will introduce a concentrated area of construction activity into the existing busy transportation corridor in the urban and rural landscape. Within the FUZ the proposed construction phase will be consistent with the construction activities expected to be associated with the urbanisation of the FUZ. Another important consideration is that landscape change by way of vegetation removal and land modification (on private rural property), albeit at a lesser scale, forms part of the expected backdrop of the existing environment.

Notwithstanding the above, some vantage points within the scheme area are likely to witness heightened adverse visual effects through the construction phase due to the magnitude of vegetation removal and / or earthworks proposed. These areas are outlined below:

- Private properties where physical landscape effects will occur within their lots.
- Effects on private properties at 21 and 22 Riverhead Road in proximity to a proposed site compound;
- Effects on the private property 7 Main Road, in proximity to Wetland 2 and the nearby site compound;
- Private properties at 4, 6, 8 and 10 Station Road and 395 Main Road in proximity to the proposed temporary road / during the construction of the widened NAL bridges.
- Private property at 695 State Highway 16 during the construction of Wetland 10.
- Private property at 411 Matua Road during the construction of Wetland 11.

The nature and significance of the potential adverse visual effects is considered to be moderated through the scheme area by the following aspects:

- Road works and construction activities can generally be expected to occur within the proximity of the existing road network;
- The existing SH16 is already a central element within the visual composition of the designation;

- The existing road corridor landscape has already been modified by previous works required to shape the existing road corridor.
- The Main Works are expected to last approximately 4 years and is proposed to be implemented in a staged and managed approach along the linear corridor so will not impact all properties for the entirety of the construction period.

Overall, without mitigation measures adverse visual effects for the transient public viewing audience are likely to be **low-moderate** adverse. Assuming that mitigation measures are implemented, adverse visual effects for the transient public viewing audience are anticipated to be **low-moderate** to **low** through the construction phase, taking into account those vantage points listed above where adverse effects are likely to be heightened during the temporary construction period.

Adverse visual effects during the construction phase are likely to be heightened for private viewing audiences directly adjacent to the scheme area on the basis of more direct and prolonged engagement with the construction activities. This will include the presence of heavy machinery and the visible disturbance of both the road corridor and also individual private interfaces with the road.

Therefore, without the implementation of mitigation measures adverse visual effects for private audience are likely to be **moderate** to **low-moderate** adverse. Provided that mitigation measures are implemented adverse visual effects are anticipated to range between **moderate** to **low** during the construction phase for private viewing audiences, depending on their location, proximity to the works and outlook.

8.6.3 Recommended Measures to Avoid, Remedy or Mitigate Construction Effects

Recommendations are in line with the recommendations in Section 6.1.2. In addition to those measures the following specific interventions are recommended:

- Provide hoarding or other screening along the works boundaries of site compounds, wetlands and dry ponds in proximity to residences to reduce visual effects on users of the outdoor space that overlook the works.

8.6.4 Assessment of Operational Effects

8.6.4.1 Natural Character Effects

Natural character forming elements, features and processes within the designation are more prevalent within the existing rural sections however, some features are apparent within the urban landscape. These are typically wetlands, rivers and perennial watercourses that traverse the existing modified rural and urban landscapes. Indigenous riparian vegetation within wetlands and waterways are varied and intermittent. Kumeū River and Ahukuramu Stream within the designation contain the most concentrated and contiguous native riparian habitats that have undergone some modification at bridge crossings. The natural character value of these elements, features and processes are moderate, however at the bridge approaches the existing modification reduces the character value.

Clearance of indigenous riparian vegetation and habitat will be necessary to facilitate the crossing of the wetlands and watercourse environments in particular at the crossing of Kumeū River and Ahukuramu Stream. The interim design proposes bridges across these watercourses to minimise the impact on the natural flow of water and to enable the riparian habitat to continue underneath the bridge. Although the primary watercourse streams are bridged in the design subsequent branches of the stream are proposed to be culverted. Adverse effects on the natural character will be heightened

where culverts are utilised as a result in the change to the natural watercourse, removal of vegetation and the disconnection of contiguous native riparian vegetation.

It is recommended that during detailed design process of the scheme corridor the extent of impacts on watercourses are limited to reduce the size of the area impacted. A planting plan and vegetation protection plan is recommended as part of the ULDMP. It is recommended that any planting proposed as mitigation through the regional consents process is integrated with the planting plan as recommended under the ULDMP. This will ensure that natural character values of the watercourses and wetlands are enhanced or protected where possible as an outcome of the scheme.

On the basis of the above (allowing for future landscape mitigation), adverse natural character effects are likely to be **low**, where bridges are used to cross water courses and retain natural character value. Where culverts are required we consider natural character effects to be **low-moderate** adverse, these effects will be considered further as part of a future regional resource consent. Without mitigation it is anticipated that adverse effects have the potential to be **moderate** adverse.

8.6.4.2 Visual Amenity Effects

Overall, there are likely to be a range of visual amenity effects on public and private viewing audiences relative to proximity to the corridor in the urban and rural landscapes. For existing rural properties set back from the scheme area will result in an incremental increase in the existing effects as a result of the widening of the SH16 corridor. Urban properties that are set back from the proposal experience interrupted views of works, reducing the level of effects experienced.

Retained private properties within the urban landscape that interface directly with the scheme corridor to the north of SH16 Main Road will retain the access road and existing vegetation which provides amenity and filters views towards the road. Retained private properties within the rural landscape will generally experience a heightened change in the view as a result of the state highway carriageway moving closer and established screening vegetation being removed. Retained private properties which have filtered, screened or distant views towards the works are expected to experience a reduced level of change as a result of the works. It is anticipated that residential and commercial development built within the FUZ will be designed and implemented to address the effects of the proposed widened road.

It is recommended that boundary fences and garden plantings (removed through the construction works) be reinstated on completion of the works affecting retained properties. These mitigation measures should be considered within the ULDMP under the lens of neighbourhood character and as such are discussed further in the following section.

FUZ land within proximity of the scheme corridor is expected to be developed over time as visual effects are anticipated to be reduced for the public viewing audience, based on improved visual amenity for users associated with streetscape improvements, maturing street trees, berm planting and accessibility to active modes of transport.

Public viewing audiences within proximity to the scheme are primarily pedestrians and active mode users along SH16 Main Road and to a lesser extent in the Kumeū River Park open space. Views will also be available from Oraha Road, Matua Road, Access Road, Tapu Road, Station Road and Trigg Road, these audiences will have an oblique view towards the proposal.

Overall, some visual effects are anticipated to be mitigated by measures implemented during the finishing phase of the construction period (within the road corridor and private property boundaries), that will mature through the operational phase of the scheme. These will reduce some of the long-

term residual visual effects of the proposal, however the widened transportation corridor and bridges will be a noticeable new feature within the landscape particularly within rural zoned land where the road corridor is widened. The road corridor will be less apparent as the FUZ and existing urbanised landscape and in rural areas with existing screening vegetation or where is proposed UDLMP planting has matured.

Through the operational phase of the works, without the implementation of proposed mitigation it is anticipated that visual effects on transient viewers and audiences will be **low** adverse to **very low** adverse. effects on private viewing audiences are anticipated to be **moderate** to **low-moderate** adverse. For private viewing audiences, visual effects are likely to range from **moderate** to **low** for rural audiences and **low** for audiences within FUZ. Audiences within the existing urban core of Kumeū and Huapai are likely to be **low** during operation.

With the implementation of mitigation measures, visual effects within the local area are likely to be **very low** adverse for transient viewers and audiences and **low** adverse for static audiences through the operational phase of the proposal. For private viewing audiences, visual effects are likely to range from **low-moderate** to **low** for rural audiences and **low** to **very low** for audiences within FUZ. Audiences within the existing urban core of Kumeū and Huapai are likely to be **very low** during operation. In all instances these would reduce over an extended period of time.

8.6.4.3 Landscape Character Effects

The principal elements of the scheme will result in a slight change to the character of the rural sections of the corridor. The FUZ sections of the study area will experience the proposal within the context of a wider landscape undergoing urbanisation. The rural zoned sections of the scheme area are characterised by the lack of streetscape features, informal intermittent vegetation, managed and unmanaged watercourses, shelterbelt and hedgerows along field boundaries and existing rural land uses. The existing rural sections of SH16 generally lacks urban characteristics such as a kerb and channel roadway, footpath and street lighting. These features will be introduced into the landscape by the proposal including a segregated cycleway, footpaths and a kerb and channel roadway. At the completion of the scheme, the upgraded corridor will resemble that of an urban arterial road on account of the pedestrianisation, active modes of transport, structured street tree planting, integrated stormwater management and engineered roading elements that have an inherently urban aesthetic.

The proposal is anticipated to enter the operational phase within the context of increased urbanisation where FUZ land is progressively live-zoned and urbanised. Although it is not possible to anticipate the exact future urban land use pattern, it is expected that residential development will primarily populate the FUZ.

Through the existing urban centres of Kumeū and Huapai the existing character of the landscape will remain. The proposed scheme is expected to improve the structure and amenity of the road corridor by providing a more structured road layout for active modes and consistent landscape pattern.

The development of FUZ within the Spatial Land Use Strategy - Kumeū-Huapai, Riverhead, and Redhills North is less structured and is intended to be at a high level. Neighbourhood Centres are proposed along Motu Road and to the south of Fred Taylor Park, which are proximate to the scheme area. It is reasonable to expect that these centres will be surrounded by a predominantly residential land use. Based on the above the magnitude and nature of landscape change proposed by the proposal we consider to be in alignment with the changes that will likely occur throughout the localised landscape as it is urbanised over time.

The typical cross section above (Figure 8-1) illustrates the proposed upgrade to the road and the expected future use. Although there will not be space along the entire road corridor for green infrastructure elements such as street trees and berm, there is some existing retained green existing infrastructure inside the designation to contribute to the overall amenity of the corridor. A structured planting design will be provided through wider rural and FUZ designation including on slopes and embankments as part of the ULDMP, to provide integration of the scheme into the landscape. It is also recommended that the ULDMP advises on design strategies to design slopes and embankments to have a more naturalised appearance and integrate with the surrounding landscape. These features and design details are expected to improve landscape and urban amenity of the \ corridor.

It is assessed that planting and landscape interventions within the ULDMP, in conjunction with stormwater management and reinstatement planting, will reduce effects on landscape character associated with broad vegetation clearance designation within the rural environment.

On the basis of the above without mitigation effects may be as high as **low** adverse within the urban and FUZ sections of the route and **low-moderate** to **low** adverse in the rural landscape. Allowing for future landscape mitigation, adverse landscape character effects are anticipated to be **very low** adverse within the urban and FUZ sections of the route and **low** adverse in the rural landscape.

8.6.5 Recommended Measures to Avoid, Remedy or Mitigate Operational Effects

Recommendations are in line with the general recommendations in Section 6.1.3.

In addition to these measures the following specific interventions are suggested:

- Optimise the detailed design to integrate with Kumeū River Park. and / or re-establish the boundary to the open space.
- Protect the natural character and processes of the Kumeū River and its branches, particularly at where the river branch crosses SH16 and the route impacts the existing pond. This will be covered within the regional consent process.

8.7 Conclusions

Without the implementation of mitigation measures, overall landscape and visual effects are anticipated to range from **moderate** adverse to **low** adverse for the construction phase and **moderate** adverse to **low** adverse for the operational phase.

With the implementation of a mitigation measures landscape and visual effects are anticipated to range from **moderate** to **low** adverse for the construction phase and **low-moderate** to **very low** adverse for the operational phase. Overall, the adverse effects can be mitigated and reduced over time in relation to the FUZ areas which will experience urbanisation of the surrounding landscape. The FUZ landscape context has a lower level of sensitivity to change due to the anticipated developing urban form of the landscape associated with future urbanisation.

The existing urban core of Kumeū and Huapai also have a reduced sensitivity to change will be experience landscape and visual effects during construction resulting in a **low-moderate** level of effects. However, after the scheme corridor is completed the effects will be **very low**. The rural areas of the landscape are more sensitive to the widening of the road corridor however, integration works proposed by the ULDMP will assist with the integration of the slopes and embankments into the landscape through earth shaping and mitigation planting.

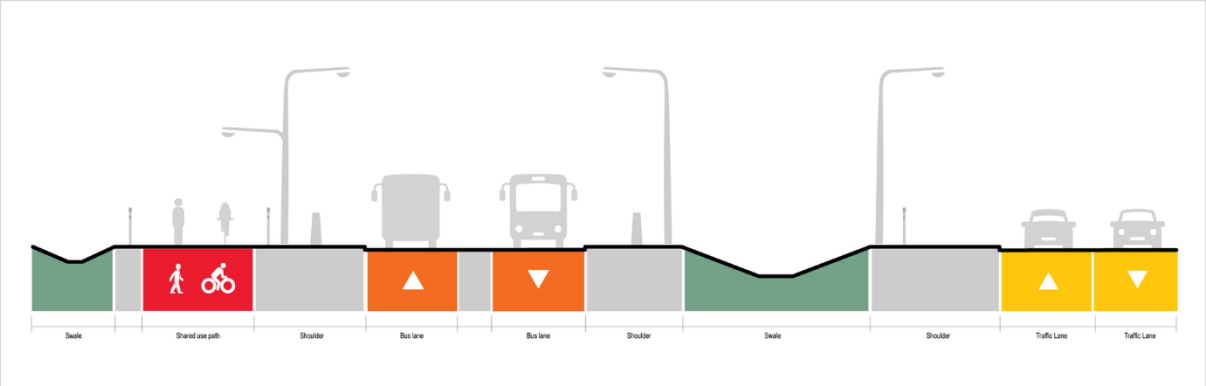
9 NoR S3: Rapid Transit Corridor and Regional Active Mode Corridor; NoR KS: Kumeū Rapid Transit Station and NoR HS: Huapai Rapid Transit Station

9.1 NoR Corridor Features

The proposed RTC, RAMC and two RTC stations are set primarily within the context of the existing transport corridor SH16 and the NAL and undeveloped rural landscape.

The key landscape matters addressed for Rapid Transit Corridor and Regional Active Mode Corridor are:

- The nature and extent of impacts on the landscape as a physical resource during the construction period of the proposal. A specific focus on the location of the construction compound, extent of vegetation clearance, impacts on water courses, the scale and location of proposed cut and fill slopes and the likely impacts of bridge construction.
- The addition of the active mode transport corridor adjacent to the existing SH16 and NAL.
- The introduction of an active mode corridor into residential lots, rural 'greenfield' lots and how this will interface with the enduring rural environment.
- Consideration of landscape character effects and urban amenity issues in relation to the permanent landscape change, including specific assessment of how this corridor will integrate into the future urban environment;
- Potential removal of valued trees consideration of future opportunities to integrate existing trees.
- Consideration of landscape mitigation measures to be included within an Urban and Landscape Design Management Plan (ULDMP) as a condition on the proposed designation to address the potential landscape and visual effects arising from the operational phase.
- Culverting, bridging and earthworks within proximity of existing wetlands and watercourses, as far as these relate to designation / district plan matters.
- The construction of a new four-lane motorway corridor with a cross-section of approximately 50m to accommodate a four-lane dual carriageway and separated cycle lanes and footpaths. The typical cross section includes an active mode corridor with central and side barriers (See and Figure 9-1 below).



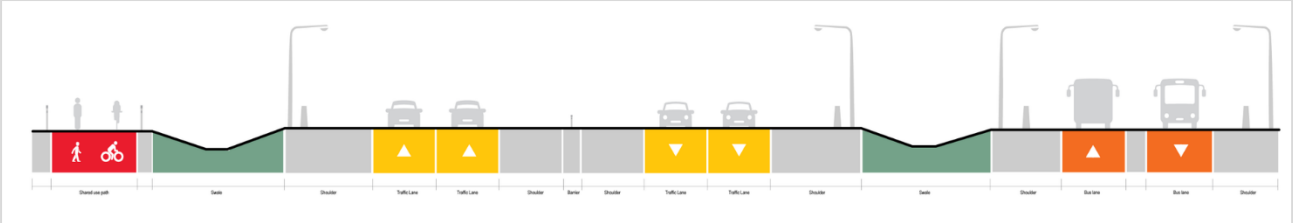


Figure 9-1: Rapid Transit Corridor Potential Cross-Sections

9.2 Existing and Likely Future Environment

9.2.1 Planning context

The Rapid Transit Corridor (**RTC**) and Regional Active Mode Corridor (**RAMC**) form a single, integrated corridor (Note the RAMC only extends to the eastern entrance to Kumeū). This corridor predominately traverses rural land outside of the FUZ, however for assessment purposes it can be split into two sections:

- The **rural section** of the RTC runs from the Brigham Creek Interchange to the entry to Kumeū-Huapai township and is co-located with the RAMC along this section. This rural section traverses land zoned under the AUP:OP as Rural – Countryside Living Zone, with an area zoned as FUZ in Redhills North.
- The **urban section** of the RTC runs from northern end of Waitakere Road to Foster Road and is co-located with the proposed SH16 Main Road upgrade[13] along this section. This urban section contains a range of land uses zoned under the AUP:OP as a mix of business zonings between the eastern extent of the Kumeū-Huapai township and Station Road

Table 9-1 below provides a summary of the North West existing and likely future environment as it relates to the RTC and the RAMC.

Table 9-1: RTC and RAMC Existing and Likely Future Environment

Environment today	Zoning	Likelihood of Change for the environment[14]	Likely Future Environment[15]
Rural	Rural	Low	Rural
Undeveloped greenfield areas	Future Urban	High	Urban
Business	Business (Industrial)	Low	Urban
	Business (Local Centre)	Low	Urban
	Business (Town Centre)	Low	Urban
Residential	Residential	Low	Urban
Open Space	Open Space – Informal Recreation	Low	Open Space

[13] Another North West Strategic project – refer to Section 8 of this report
[14] Based on AUP:OP zoning/policy direction
[15] Based on AUP:OP zoning/policy direction

Environment today	Zoning	Likelihood of Change for the environment[14]	Likely Future Environment[15]
	Open Space – Sport and Active Recreation		
Future Urban Zone / Undeveloped greenfield areas	Future Urban	**High**	Urban

The RTC stations - Kumeū Rapid Transit Station and Huapai Rapid Transit Station - are located in the urban section of the RTC corridors.

Kumeū Station is proposed to be located on land at 299 and 301 Main Road on the western side of a Kumeū River tributary. The land is zoned under the AUP:OP as Business - Town Centre Zone. An active modes overbridge is proposed across the NAL with active mode connections to:

- the Huapai Triangle crossing land zoned in the AUP:OP as Green Infrastructure Corridor and Residential - Mixed Housing Suburban Zone; and
- Wookey Lane crossing land zoned in the AUP:OP as Green Infrastructure Corridor and Residential - Mixed Housing Suburban Zone; and Business - Light Industry Zone.

Table 9-2: Kumeū Rapid Transit Station Existing and Likely Future Environment

Environment today	Zoning	Likelihood of Change for the environment[16]	Likely Future Environment[17]
Business	Business (Industrial)	Low	Urban
	Business (Town Centre)	Low	Urban
Residential	Residential - Mixed Housing Suburban Zone	Low	Urban
Open Space (located to the north of the proposed station location)	Open Space – Informal Recreation Open Space – Sport and Active Recreation	Low	Open Space

Huapai Station is proposed to be located on land at 29 and 31 Meryl Avenue on the western side of the Ahukuramu. The land is zoned under the AUP:OP as Business - Town Centre Zone. An active modes overbridge is proposed across the NAL and SH16 to FUZ land. Future connections will be determined as part of structure plan process.

[16] Based on AUP:OP zoning/policy direction
[17] Based on AUP:OP zoning/policy direction

Table 9-3: Huapai Rapid Transit Station Existing and Likely Future Environment

Environment today	Zoning	Likelihood of Change for the environment[18]	Likely Future Environment[19]
Residential (located to the east of the proposed station location)	Residential – Single House Zone	Low	Urban
Future Urban Zone / Undeveloped greenfield areas	Future Urban	High	Urban

Note: A heritage overlay is located to the west of the station location and contains the Huapai Tavern. The Tavern is impacted by the RTC Corridor; however, there is sufficient room to re-position part of the building within the Overlay. The likelihood is therefore that the Heritage Overlay is retained.

9.2.2 Existing / Baseline Landscape

9.2.2.1 Baseline Landscape

The urban section of the RTC route runs along the existing SH16 Main Road and NAL between Kumeū, Huapai and into the FUZ to the west. The Rural section of the route runs west from the Brigham Creek Interchange across rural residential land and then follows the NAL north up to SH16.

The local landscape character within the scheme corridor is summarised below;

- Vegetation cover comprising non-native stand-alone street trees, linear belts of mixed indigenous and non-native vegetation along riparian corridors, shelterbelts along the road corridor, exotic vegetation in around private residential and commercial property boundaries.
- Native and non-native vegetation within open spaces (Figure 9-2 below).
- The urban residential and commercial centres of Kumeū and Huapai that border the state highway road. The NAL to the south of the existing state highway contributes to the character of the landscape as a transport corridor.
- The Huapai Domain, Fred Taylor Park and residential zoned land have a low to low-moderate sensitivity to change.
- The rural sections of the designation are characterised by rural residential lifestyle blocks with elements of rural production and including shelterbelts and pastoral fields.

[18] Based on AUP:OP zoning/policy direction
[19] Based on AUP:OP zoning/policy direction

Figure 9-2: Linear belt of mature exotic trees along the internal road to the south of Huapai Domain.

Landform and Hydrology

The designations rural section to the east of the corridor traverses a gently sloping topography that gently slopes up from east to west, the landform has been modified over time to accommodate the existing SH16. High points along the corridor are located at the western end of the scheme corridor to the north and west of the route within the undeveloped FUZ and single house zone areas to the west. The urban section of the corridor includes a gently sloping landform from the west to the east and a generally low lying road corridor. The lower lying land areas of the designation are located within proximity of the Ngongetepara Creek, Karure Stream, Pakinui Stream, Ahukurama Stream, Totara Creek, Kumeū River and its branches, flood plains and wetlands.

Figure 9-3: Kumeū River branch and pond between the NAL and Main Road SH16.

Landcover

The landscape across the scheme corridor is characterised as a distinctly modified urban landscape within the centres of Kumeū and Huapai to the west. These urban centres feature a combination of large lot commercial and suburban residential development. The western end of the site is rural but predominantly, areas of open pasture are more prevalent with pastoral and agricultural uses including the Coopers Creek Vineyard, all designated as FUZ.

The section of the designation within rural zoned land is characterised by pastoral and arable geometric fields and rural residential properties. Theses field patterns are bound in parts by structured hedgerows, shelter belts and small areas of native vegetation. Fields predominantly contain exotic grassland with small pockets of agricultural crops, rural industry with amenity planting in proximity to dwellings.

Areas of mature native trees are located in patches throughout the rural landscape and in proximity to stretches of riparian vegetation along waterways. Although much of the stream and wetland features across the designation, native riparian vegetation are present within intermittent stretches, particularly within the Ahukuramu Stream and Kumeū River.

Land Use

The scheme corridor traverses six AUP:OP zones listed in Table 9-1.

Land use either side of the eastern area of the corridor is predominantly rural residential and rural production between the Ngongetepara Creek and SH16. Pastoral fields comprise the rural production land use amongst residential lifestyle blocks and shelterbelts.

An urban commercial land use is present through the centres of Kumeū and Huapai. Land use between to the west of Huapai has a more residential focus where the scheme corridor is bordered by single house zone and mixed housing urbm residential development (with some residential land with a business zoning) and the Huapai Domain open space. The western extents of the designation comprises developing residential SHZ and FUZ which will be developed over time between Trigg Road and Foster Road.

Scheduled Landscape and Ecological Features

A single scheduled notable tree [2603, Silver dollar gum at 396] is present within the designation present within a thin strip of land between the existing highway and the NAL at 396 Main Road, Huapai (see Figure 8-3 and Figure 8-4). A second notable tree [2591, Poplar] is located to the south of the scheme at 399 SH16.

Historical and Cultural Associations

A Historic Heritage and Special Character overlay 482, Huapai Tavern is located within the designation at 301 SH16 Main Road Huapai (Refer Figure 8-5). More in depth analysis of this heritage feature can be found in the Cultural Heritage Assessment: appendix XX of the AEE.

9.2.2.2 Likely Future Environment

Overview

The FUZ land surrounding the designation will witness a significant change from rural to urban land use character over the next 10-15 years at the western extent of the scheme area between Foster Road and Trigg Road of the RTC (west) and between SH16 to the Ngongetepara Creek of the RTC (east). It is anticipated that the abiotic features of the landscape, principally the topography, will be altered over time as the surrounding landscape is urbanised. It is anticipated that some of the defining biotic (land cover) features of the landscape will undergo substantial change alongside future development, with the removal of large areas of vegetation to accommodate the scheme. This will likely involve the implementation of street tree plantings, public open space areas and general landscaping within the private yards of future housing development for public amenity. The balance at the western end of the designation will continue to have an urban function by the completion of the proposal, including the change of some residential land for commercial and business uses.

Rural land between Foster Road and Trigg Road of the RTC (west) and between SH16 to the Ngongetepara Creek of the RTC (east) the land is expected to retain a rural aesthetic and land use and is not anticipated to experience a change in the overall character of the landscape. It is anticipated that the abiotic and biotic features of the landscape outside of the designation will endure.

9.2.2.3 Kumeū-Huapai / Riverhead area

This area has not undergone a structure plan, it is identified by Council that this process will be undertaken before the land is released to be urbanised. This processed is indicatively programmed to be undertaken in 2025 in order for the land to be released between 2028 and 2032 as indicated in the Future Urban Land Supply Strategy (FULSS).

The Spatial Land Use Strategy for Kumeū-Huapai, Riverhead, and Redhills North has been developed with collaboration between Auckland Council and the project team. This provides a high level framework that outlines the distribution of future land use (see Figure 9-4).

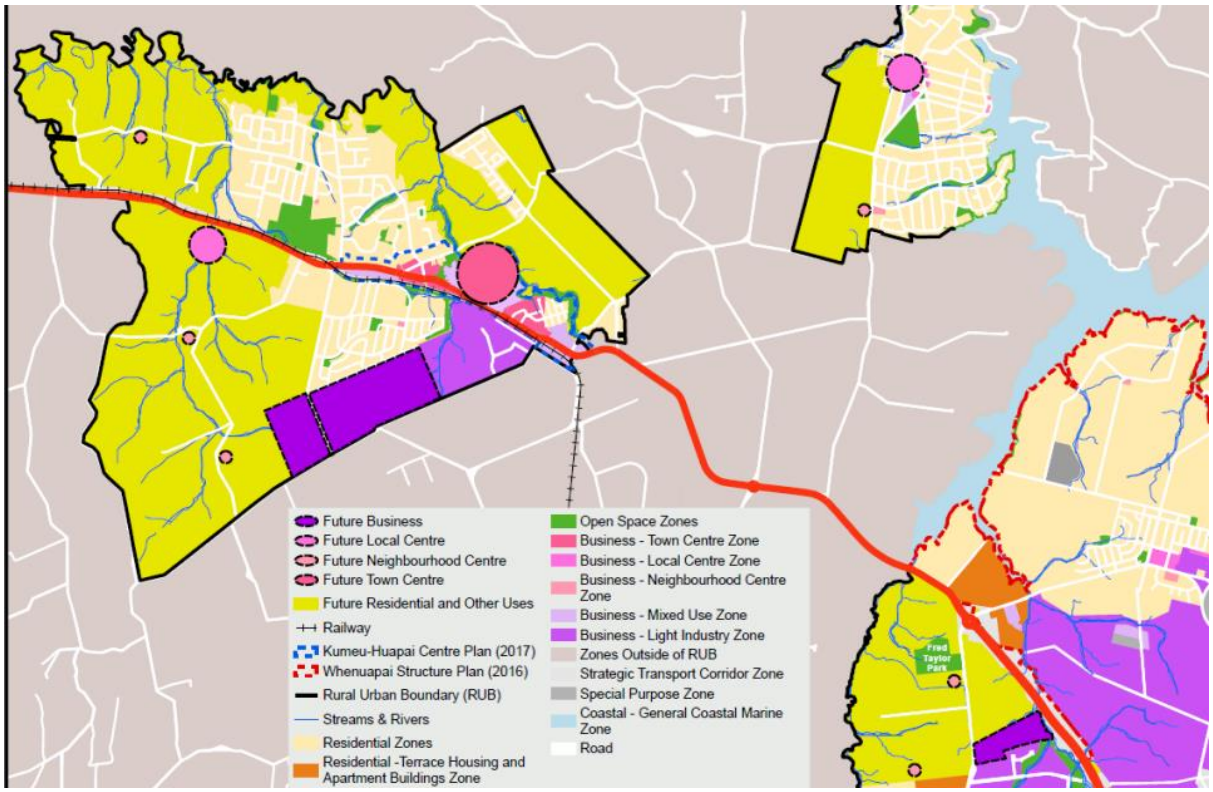


Figure 9-4: Spatial Land Use Strategy - Kumeū-Huapai, Riverhead, and Redhills North.

9.3 Extent of Visibility and Viewing Audience

The extent of visibility of the proposed road corridor is contained by the surrounding vegetation and the changes in topography. Notwithstanding the above, some vantage points within the scheme area are likely to witness heightened adverse visual effects. In summary the viewing audience for the proposal include:

- *Public Views:* Transient public audience (vehicle users). Key roads where views can be obtained from include: Waitakere Road, Tawa Road, Dysart Lane, Pomona Road, Boord Crescent, Waitakere Road, Taupaki Road, Trotting Cross Drive, Access Road, Oraha Road, Tapu Road, Station Road, Trigg Road, Matua Road and SH16:
  - Travelers (cars, pedestrians and cyclists) along SH16 Main Road, Fred Taylor Drive, Waitakere Road and Taupaki Road which bisect the site (Refer Appendix 2 Site Photo SP2, SP4, SP5, 3597, SP27, SP26);
- *Private Views:* The viewing context also includes a relatively small private viewing audience, comprising views from rural residential and lifestyle dwellings as well as from the commercial and agricultural businesses located either side of the scheme corridor. Specifically:
- Views from the residential properties within the designation that immediately front on to scheme corridor (Boord Crescent, Taupaki Road, Joseph Dunstan Drive and SH16 Main Road), (Refer Appendix 2 Site Photo SP23, SP25, SP24);

- Occupants of nearby commercial buildings and open spaces adjacent the proposed corridor. (Refer Appendix 2 Site Photo SP1, SP28, SP29, SP30)

Views are well contained within the immediate surrounding area of the scheme corridor within the urban core of Kumeū and Huapai, where the landscape is relatively flat and intervening vegetation and built form limit views from the wider area. To the west and east of the designation within the FUZ the topography is gently undulating which results in the corridor being more visible in elevated areas and less visible in areas of depreciation. However, after this area has been urbanised it is expected that the visual catchment will become more contained.

The rural eastern section of the RTC is has a flat to gently undulating landform broken up with intermittent sections of shelterbelt trees and riparian vegetation long the watercourses, which will filter and screen views towards the corridor.

9.4 Landscape Values

There are no regionally or nationally significant landscapes (ONLs, ONFs or ONCs) within or proximate to the proposed designation boundary. The nearest ONL is Area 3, Taylor Road, south of Helensville, located approximately 840m to the north of the scheme corridor.

The gently sloping topography and the mature stands of vegetation and braided stream and wetland network contribute to the visual amenity of the landscape. The modified landscape has limited natural features, which are restricted to individual stands of native vegetation.

At the eastern extent of the scheme Corridor the designation around the proposed Brigham Creek Interchange will require the acquisition of 1.62ha of open space recreation land within Fred Taylor Park. This open space is primarily used for sporting activity and is surrounded on two sides by mature shelter belt vegetation along the western and south western boundaries. Three open space conservation zone areas (Lot 3 DP 109762, 146 Boord Crescent, a portion of Lot 1 and Lot 2 DP 194257, 156 and 162 Boord Crescent and Lot 3 DP 129560, to the rear of 178 and 182 Boord Crescent) along the Kumeū River will be within the proposed designation. Only one of these areas (Lot 3 DP 129560, to the rear of 178 and 182 Boord Crescent) will be directly impacted by the footprint of the Proposed corridor.

Kumeū Rapid Transit Corridor Station

There are no regionally or nationally significant landscapes (ONLs, ONFs or ONCs) within or proximate to the proposed designation boundary

The modified landscape has limited natural features, which are restricted to the Kumeū River branch and pond to the east.

Huapai Rapid Transit Corridor Station

There are no regionally or nationally significant landscapes (ONLs, ONFs or ONCs) within or proximate to the proposed designation boundary. The nearest ONL is Area 3, Taylor Road, south of Helensville, located approximately 770m to the north of the scheme corridor.

The gently sloping topography and the mature stands of vegetation and braided stream and wetland network contribute to the visual amenity of the landscape.

9.5 Landscape Sensitivity

This corridor is situated within a broader landscape that is both in a rural and areas that have been assessed within the AUP:OP as being suitable for urbanisation. The proposed FUZ area to the east is indicated by the Whenuapai Structure Plan will be primarily high and medium density residential. Rural zoned land which will maintain rural has medium sensitivity to the type of change proposed. The FUZ areas within the designationare assessed as having a low sensitivity to landscape change.

Views are well contained within the immediate surrounding area of the scheme corridor within the urban core of Kumeū and Huapai, where the landscape is relatively flat and intervening vegetation and built form are present. To the west and east of the designation within the FUZ the topography is gently undulating which results in the scheme corridor being more visible in elevated areas and less visible in areas of depreciation. However, after this area has been urbanised it is expected that the visual catchment will become more contained.

The rural eastern section of the RTC is has a flat to gently undulating landform broken up with intermittent sections of shelterbelt trees and riparian vegetation long the watercourses, which will filter and screen views towards the proposal.

Kumeū Rapid Transit Corridor Station

This corridor is situated within a broader urban landscape that is heavily modified, a busy transportation corridor and adjacent land that is undergoing urbanisation. The immediate Project area within the FUZ areas are assessed as having a very low sensitivity to landscape change.

Huapai Rapid Transit Corridor Station

This Project area is situated within a broader landscape that have been assessed within the AUP:OP as being suitable for urbanisation. The proposed FUZ area to the east is indicated by the Spatial Land Ise Strategy residential and a local centre is located to the south of the NAL. The Project area is assessed as having a low sensitivity to landscape change.

9.6 Assessment of Landscape Effects

9.6.1 Positive Effects

Generalised positive effects related to the Project are covered in Section 5 of this report. Additional positive effects related specifically to this Project include:

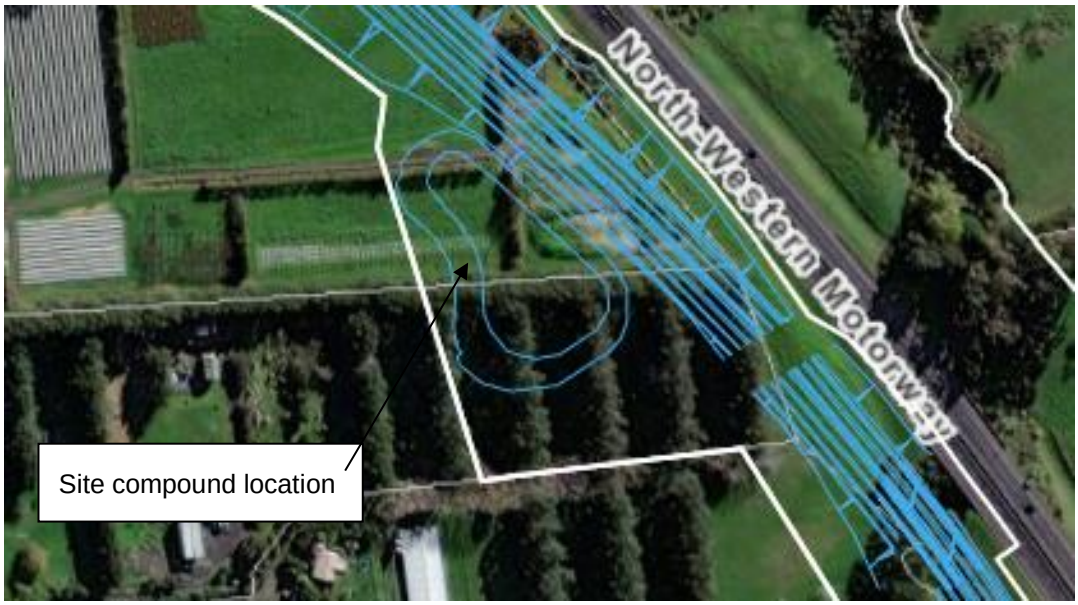
- Improved and / or new opportunities for active modes of transport and the ability to provide improved connectivity along SH16 Main Road.
- Improved and / or new opportunities for active modes of transport and the ability to provide improved connectivity between Kumeū Huapai and Fred Taylor Drive.
- Improved structure amenity along the project corridor tying into the retained urban landscape and the future urban environment.
- Opportunities for active mode transportation links to the Kumeū River Park, Huapai Domain, Fred Taylor Park, Matua Ngaru School, existing and future residential development.
- There is the potential to enhance and integrate the RTC and RAMC with the rural environment to enhance the experience of users, maintain amenity for audiences and integrate with the existing landscape character.

9.6.2 Assessment of Construction Effects

Construction Areas

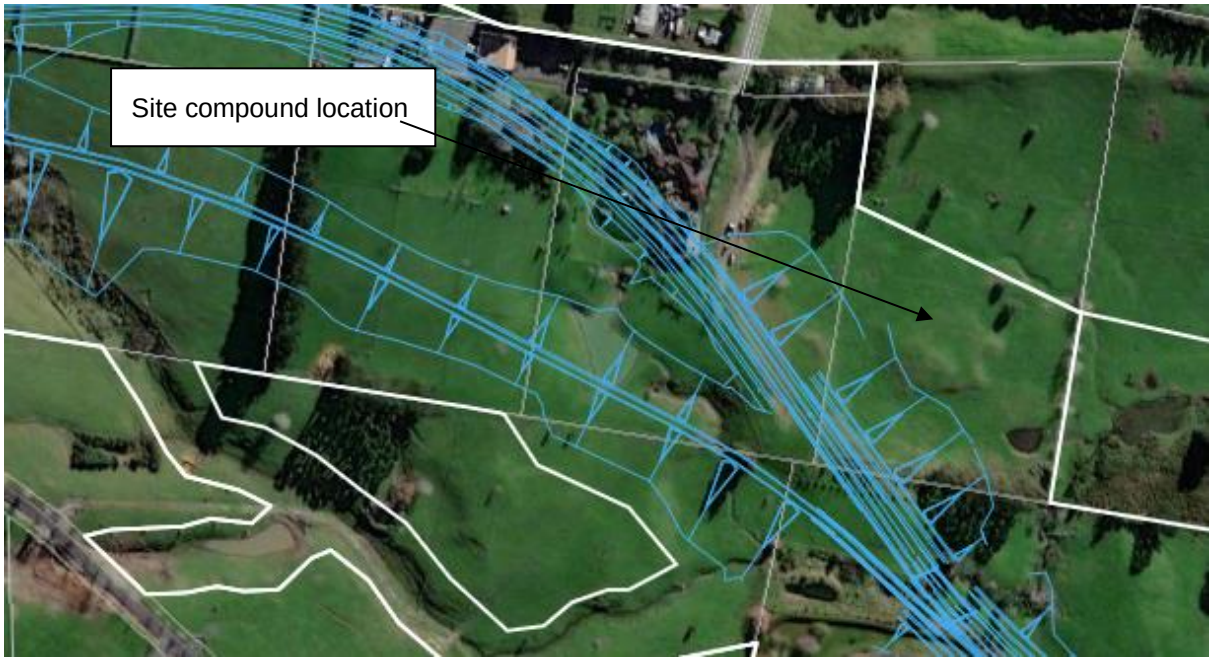
Site compound and construction areas are to be established at nine locations within the Project area. Construction traffic will be heightened at these locations through the construction period of the Project. These will be located at:

- 125 and 143 Fred Taylor Drive

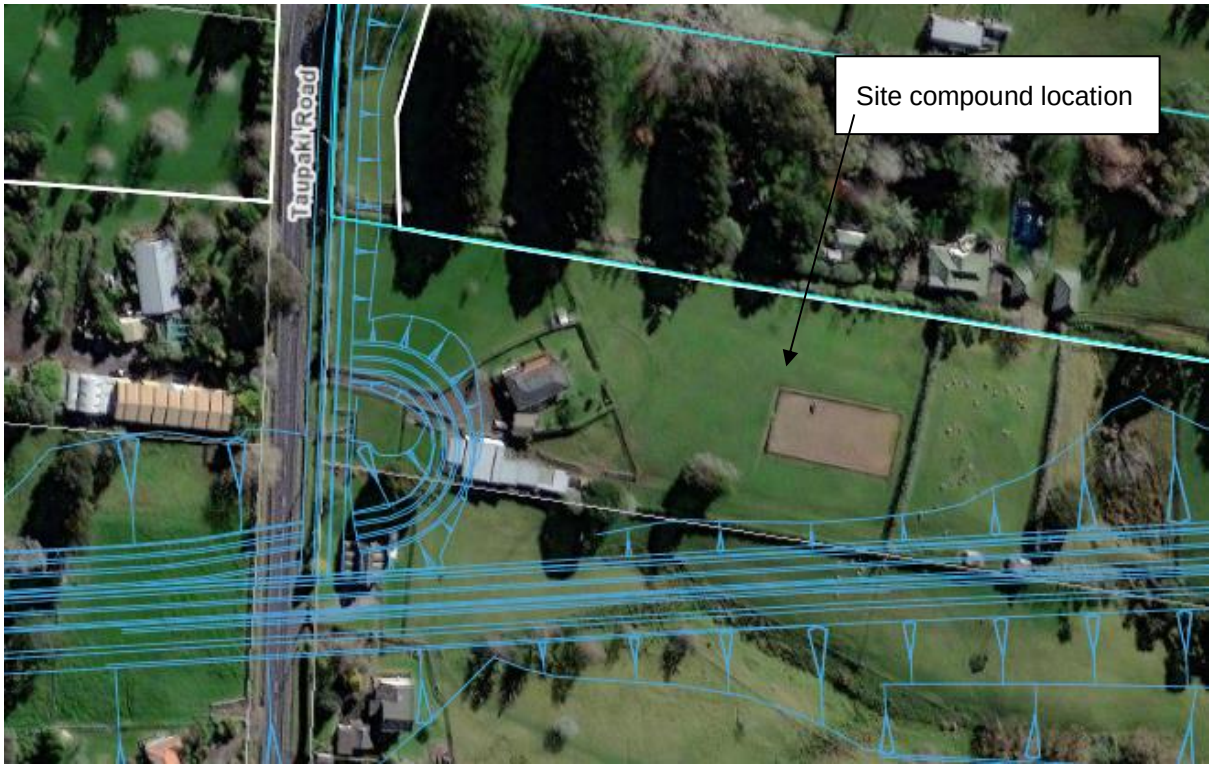


- 202 Fred Taylor Drive

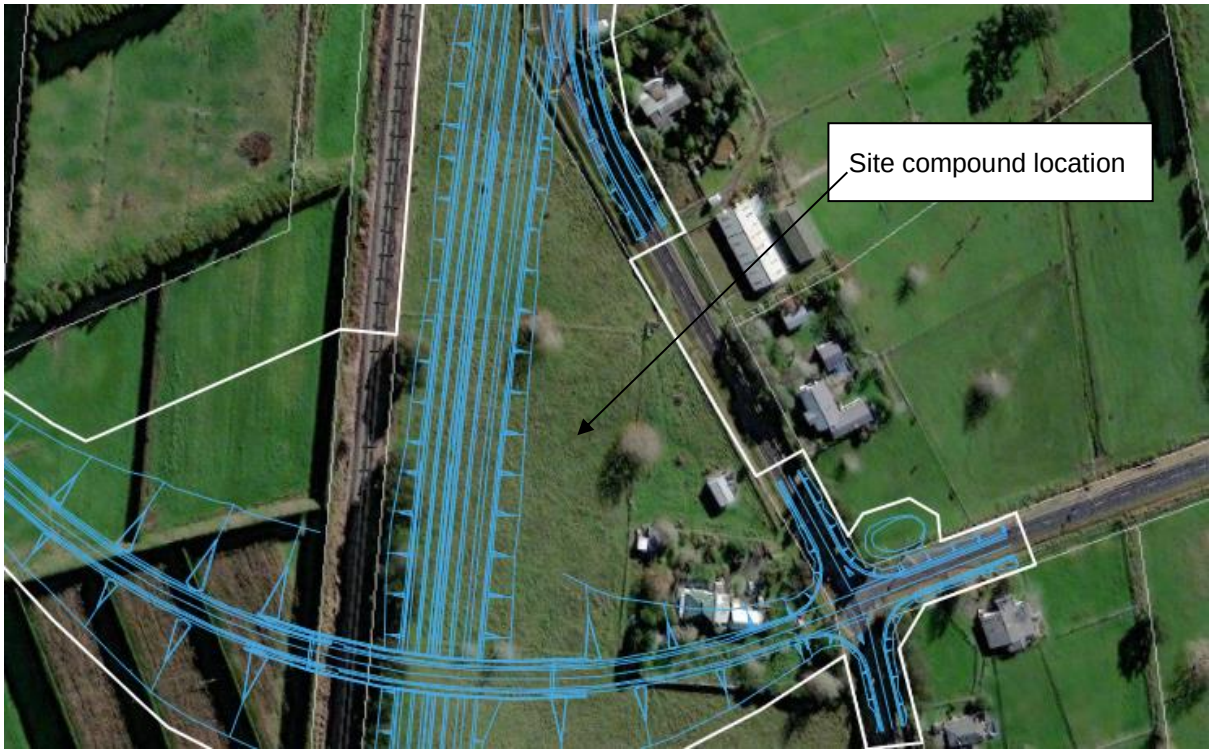
- 278 State Highway 16



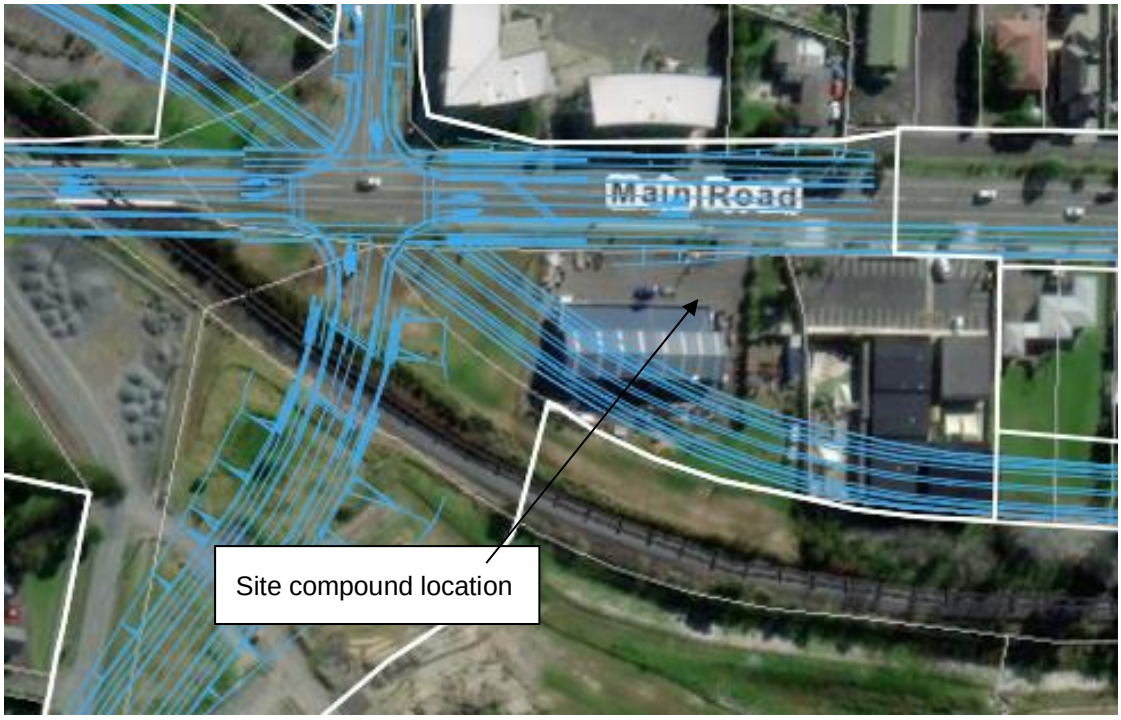
- 401 Taupaki Road



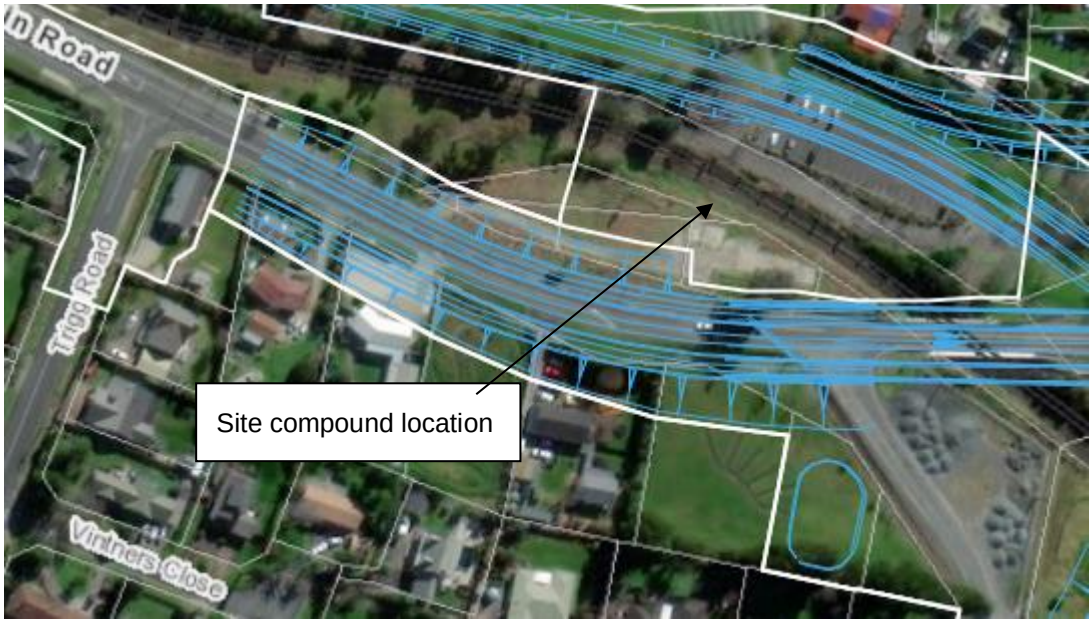
- 42 Boord Crescent



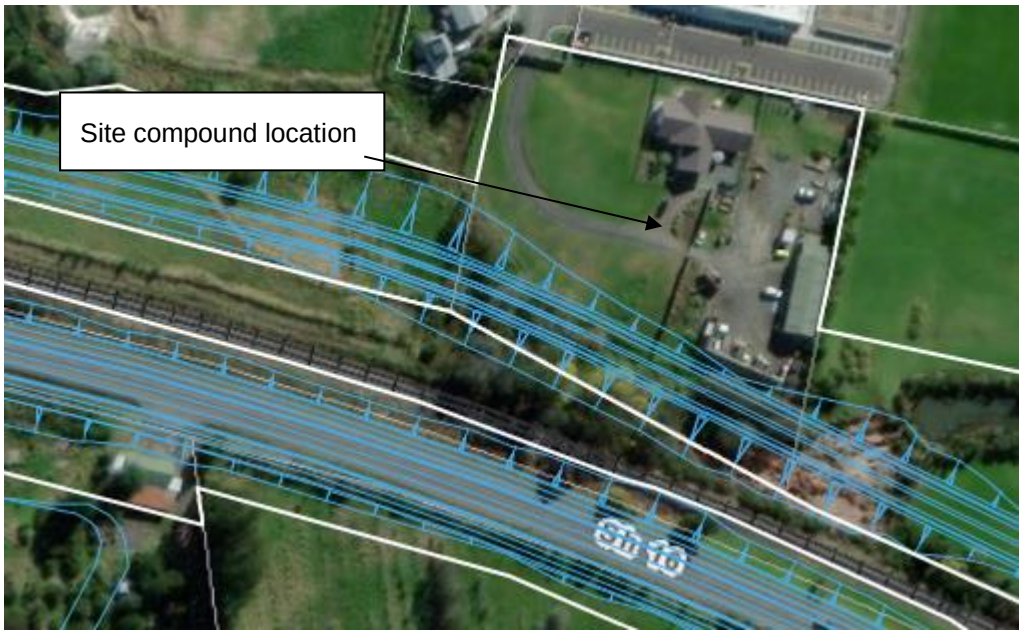
- 377 Main Road SH16



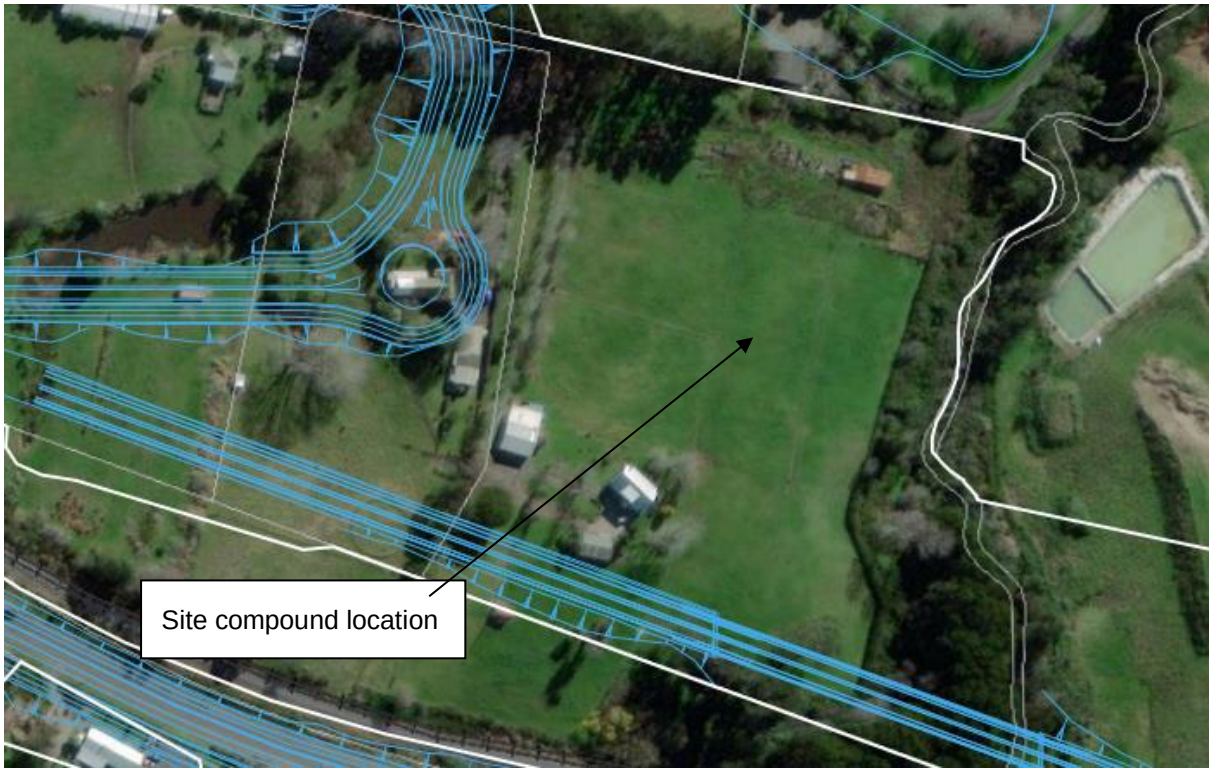
- 396 Main Road SH16



- 51 Gilbransen Road



- 29 Meryl Avenue



Without the implementation of mitigation measures it is anticipated that adverse effects, as a result of the indicative site compounds, will be **low-moderate** to **low** in rural areas and **low** to **very low** in existing urban areas. With the implementation of mitigation measures, the adverse physical landscape effects resulting from establishment and use of the construction work areas within the Project area is assessed to be **low** in rural areas and **very low** in existing urban areas.

Kumeū Rapid Transit Corridor Station

Site compound and construction areas will be entirely contained within the lot between the SH16 and NAL.

Overall, the adverse physical landscape effects resulting from establishment and use of the construction work areas within the Project area is assessed to be **very low** in the existing urban area, the effects are anticipated to be similar with or without the implementation of mitigation measures.

Huapai Rapid Transit Corridor Station

Site compound and construction areas will be entirely contained within the lot at 29, 31 and 32 Meryl Avenue. These areas are anticipated to be urbanised as part of the spatial land use strategy for Kumeū-Huapai.

Without the provision of mitigation measures it is anticipated that adverse physical landscape effects will range between **low-moderate** and **low** adverse.

With the implementation of mitigation measures the adverse physical landscape effects resulting from establishment and use of the construction work areas within the Project area is assessed to be **low** in the existing modified rural landscape.

Vegetation Clearance

Linear stretches of vegetation that border the existing road and rail corridors, within private residential properties and delineate field boundaries will be removed to accommodate the construction and operation of the rural areas of the Project corridor. This will consist of a mixture of indigenous and non-native vegetation including shelterbelts that are archetypal within the wider modified rural landscape. Exotic pasture, trees, shelterbelt plantings, private gardens, exotic stands of trees and cropland make up the majority of vegetation to be removed. Riparian vegetation within watercourses and wetlands will be removed to accommodate the bridges and culvert along the Project corridor. The riparian vegetation is a mixture of native and non-native vegetation within watercourses (Ngongetepara Creek, Karure Stream, Pakinui Stream, Totara Creek, Kumeū River (and its branches) and the Ahukurama Stream). These works are subject to a separate regional consent process, however their potential effects on the landscape and natural character have been included within this assessment and the selection of the designation.

Vegetation proposed to be removed in the urban context of the Project corridor will typically comprise exotic streets trees, amenity vegetation and vegetation in private backyards. Vegetation removed within the Huapai Domain and Fred Taylor Park will comprise non-native parkland trees and amenity grass. The proposed works will require the removal linear mature vegetation which has landscape character amenity value and screening value for the NAL and SH16. The removal of these trees will change the character of the southern portion of the Huapai Domain, reducing the sense of enclosure, landscape amenity and separation form the NAL and SH16 transportation corridor to the south.

Without the implementation of mitigation measures, the adverse physical landscape effects likely to arise from vegetation clearance within the rural Project area is assessed as **low** to **low-moderate** adverse. Vegetation removal in the urban Project area is assessed as resulting in **low** adverse in urban areas and **low** adverse in rural areas, effects in open space areas are anticipated to be **moderate** to **low-moderate** adverse.

With the inclusion of mitigation measures, the adverse physical landscape effects likely to arise from vegetation clearance within the rural Project area is assessed as **low** adverse. Vegetation removal in the urban Project area is assessed as resulting in **very low** adverse in urban areas and **low** adverse in rural areas, effects in open space areas are anticipated to be **low-moderate** adverse.

Kumeū Rapid Transit Corridor Station

Vegetation within the proposed site is limited to the vegetation in and around the Kumeū River pond and a linear belt of trees that follow the NAL. Vegetation within the linear band along the NAL will be removed in order to facilitate the rapid transport Station and overbridge structure. The riparian vegetation within the Kumeū River pond is a mixture of native and non-native vegetation within the flowing watercourse area. Riparian vegetation within the pond is outside of the station footprint but is likely to be impacted by the Wetland 5A associated with the introduction of the RTC.

Overall, the adverse physical landscape effects will arise from vegetation clearance along the NAL corridor. Effects as a result of the project are expected to be **very low** adverse with the implementation of mitigation measures. Without the implementation of mitigation measures it is anticipated that adverse effects will range between **low** and **very low**.

Huapai Rapid Transit Corridor Station

Vegetation within the proposed site is limited, however it is anticipated that the majority of this will be required to be removed in order to facilitate the construction of the station and car park area. During

the detailed design phase and with guidance from the ULDMP it may be determined that a small number of existing mature trees are retained including shelterbelt vegetation around the northern site boundary. Riparian vegetation around the Kumeū River branches are expected to be retained, where possible or practicable.

Overall, the adverse physical landscape effects will arise from the change from a rural to urban land use which is expected to result in the removal of much the vegetation. Without the implementation of mitigation measures Effects as a result of the project are anticipated to be **low -moderate** adverse. With the implementation of mitigation measures, effects as a result of the project are anticipated to be **low** adverse.

Structures and Earthworks

The Project corridor design includes five bridges, three of these bridges are required to cross wetlands and watercourses and two of the bridges cross existing or proposed road / rail infrastructure.

These bridges will be new additions to the landscape however, they will be in the context of other existing bridges and infrastructure but will require additional earthworks at the approaches to these crossing points. The proposed RTC across the northern extent of Access Road will be in the context of surrounding industrial and commercial development either side of the existing road corridor.

It is anticipated that across the length of the Project the earthworks balance will require additional fill material to be imported. The additional fill is required in order to raise the segregated corridor above the surrounding landscape, bridge crossing point and bridge the existing watercourses.

The impacts and potential landscape effects of the proposed earthworks include the modification of and permanent changes to the underlying landform to widen the existing transportation corridor; introduce a new corridor within a rural landscape, provide new bridges; surface level changes in close proximity to private properties and open space; and earthworks in proximity to the wetlands and watercourses. The proposed cut and fill slopes range in scale from 1m to 37m wide and will alter the form of the existing rural and urban landforms. Although bridges and earthworks are largely matters for regional consents, these will be addressed in future regional consenting process.

It is recommended that a condition on the designation is included that promotes the re-use of topsoil from pastoral land impacted by the proposed earthworks[20] and the integration of proposed slopes into the surrounding landscape.

Overall, we consider that the earthworks are of a quantity that is reasonably anticipated with a project of this scope and scale and all cut and fill slopes are expected to be integrated with the existing rural and urban environments. Without the inclusion of proposed mitigation it is anticipated that landscape effects will be **moderate** adverse to **low-moderate** adverse in rural areas and **low-moderate** adverse, to **low** adverse in the urban sections. Provided that the proposed mitigation measures are undertaken we expect that the adverse effects will be **low-moderate** to **low** adverse in rural areas and **low** adverse, to **very low** adverse in the urban sections

Kumeū Rapid Transit Corridor Station

The Project station design includes an overbridge which will cross the proposed RTC, SH16 and NAL. This over bridge will be a new addition to the landscape, however this will be in the context of existing large commercial urban development to the north. The land to the south of the proposed over bridge

[20] Refer to NZTA Landscape Guidelines (September 2014), Section 4.12 Topsoil for additional information regarding best practice guidelines for topsoil management and soil stripping.

is in the context of the existing NAL and MHS land which is expected to be developed for residential use.

Earthworks will be required to imbed the proposed station building, platforms and buildings into the landform, however these are expected to be minimal. It is recommended that a condition on the designation is included that promotes the re-use of topsoil from pastoral land to the south of the NAL. Although bridges and earthworks are largely matters for regional consents, these will be addressed in future regional consenting process.

Overall, the earthworks are considered to be of a quantity that is reasonably anticipated with a project of this scope and scale and all cut and fill slopes are expected to be integrated within the existing modified environment. Without the inclusion of proposed mitigation it is anticipated that landscape effects will be **low-moderate** adverse to **low** adverse. Provided that the proposed mitigation measures are undertaken we expect that the adverse effects of the earthworks and bridge structure will be **low**.

Huapai Rapid Transit Corridor Station

The Project station design includes a proposed over bridge and a Park n' Ride and Bus Lay-over which be to the north west of the proposed station. This will introduce a new large sealed area to the landscape. This will be in proximity to two branches of the Kumeū River. The overbridge over the NAL and SH16 will introduce a new element into the landscape. The land to the south of the proposed over bridge is currently rural but zoned as FUZ, this is expected to be developed as a future local centre in accordance with the Spatial Land Use Strategy.

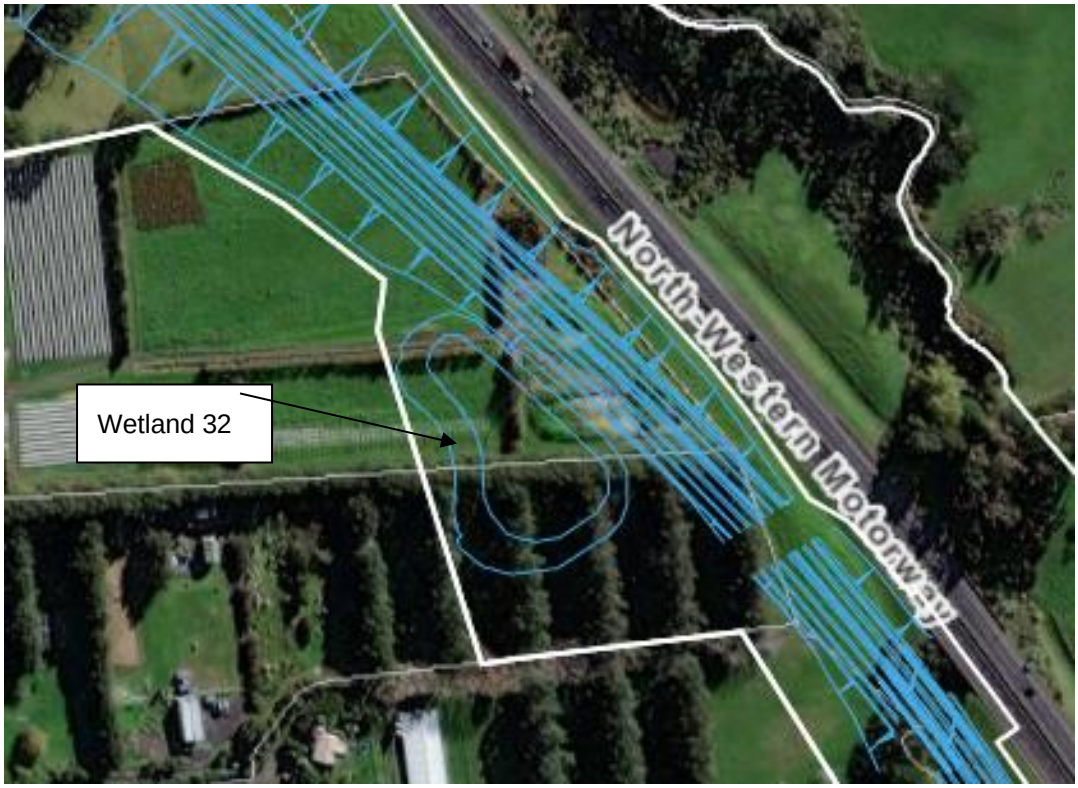
Earthworks will be required to imbed the proposed station building, platforms and buildings into the landform, however these are expected to be minimal. The earthworks required for the Park 'n' Ride and bus layover will be more extensive and cover and area of approximately 25,200m^2. Although bridges and earthworks are largely matters for regional consents, these will be addressed in future regional consenting process.

Overall, the earthworks are considered to be of a quantity that is reasonably anticipated with a project of this scope and scale and all cut and fill slopes are expected to be integrated with the expected urban landscape. Without the inclusion of proposed mitigation it is anticipated that landscape effects will be **low-moderate** adverse to **low** adverse. Provided that the proposed mitigation measures are undertaken we expect that the adverse effects of the earthworks and bridge structure will be **low**.

Wetlands, Dry Ponds and features

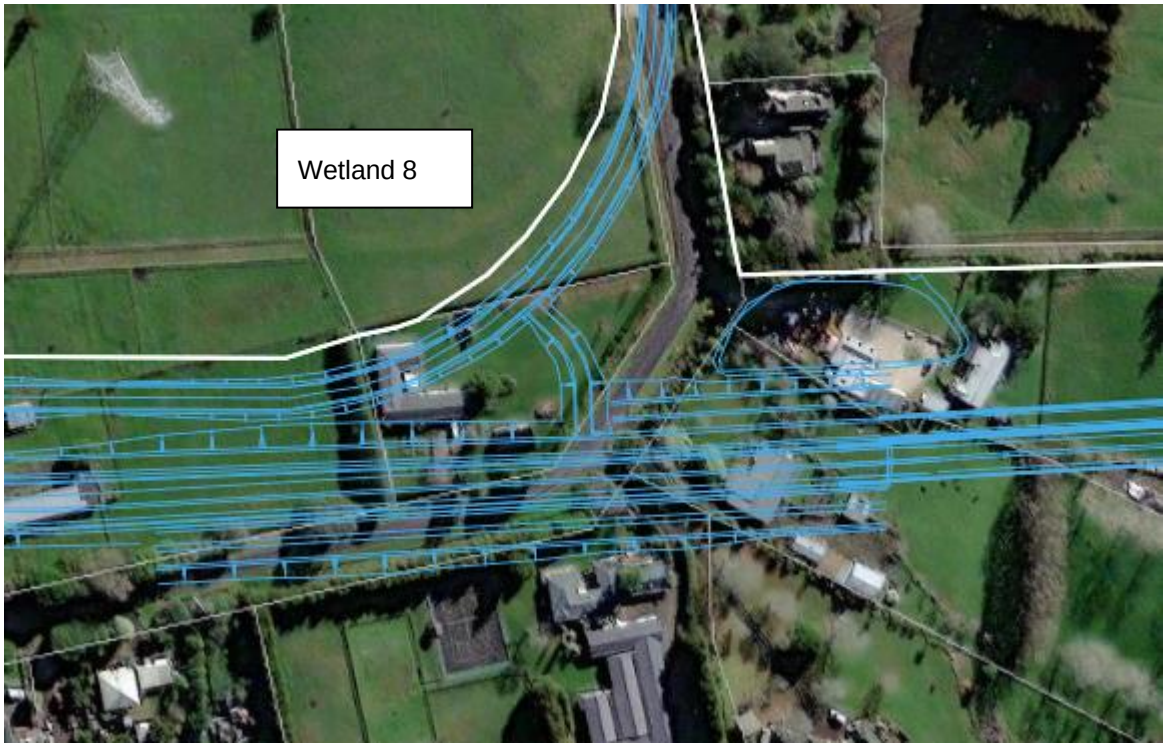
Across the Project corridor nine wetland ponds and three dry ponds are proposed within this Project area;

- Wetland 32 is located to the south of the project corridor at 125 and 143 Fred Taylor Drive in proximity to SH16;

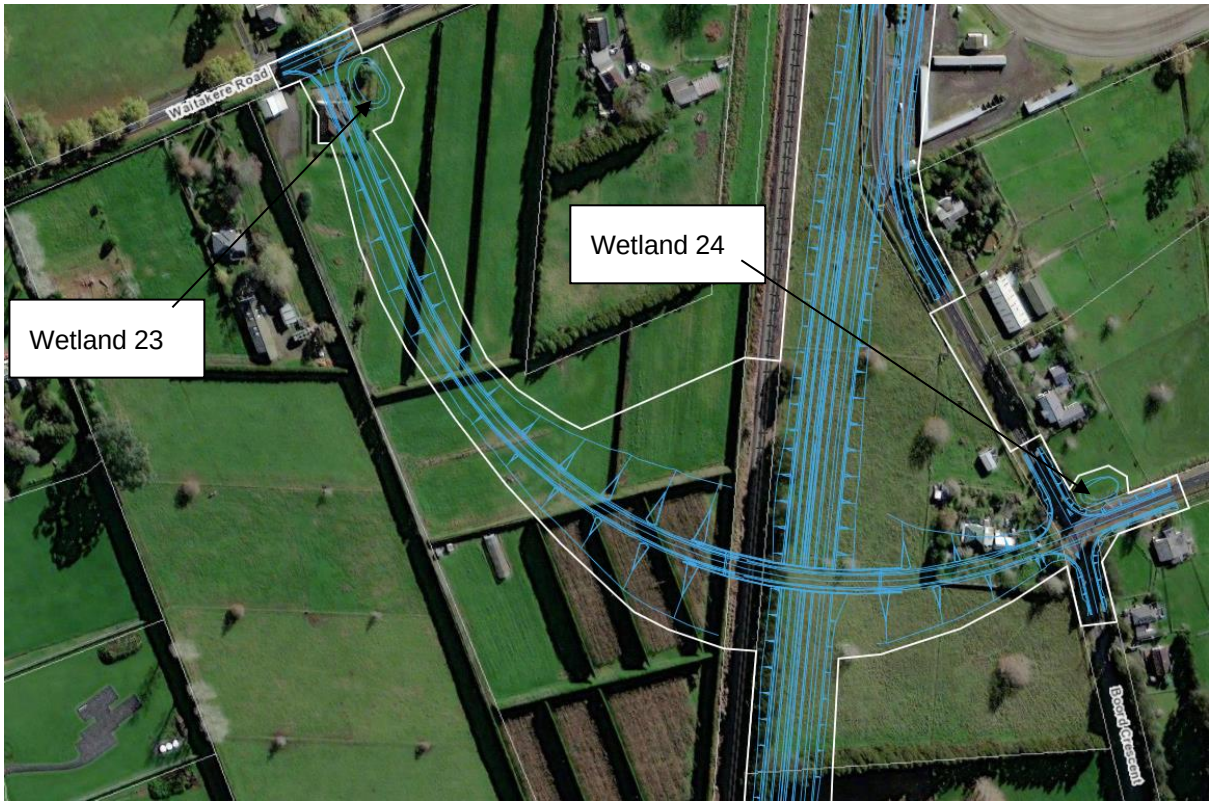


- Wetland 4 is located to the north of the Project corridor approximately 30m form the Kumeū River and set within the boundary of the property at 384 Taupaki Road;

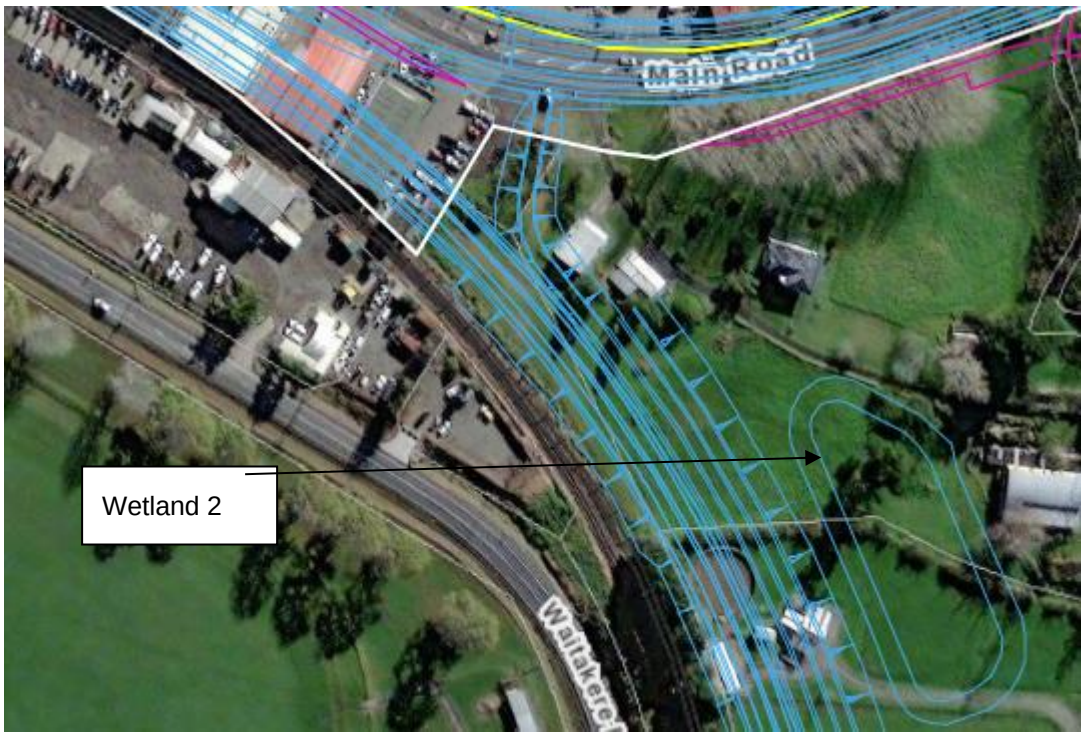
- Wetland 8 is located to the north of the Project corridor within the boundary of 178 Boord Crescent approximately 180m of the Kumeū River;



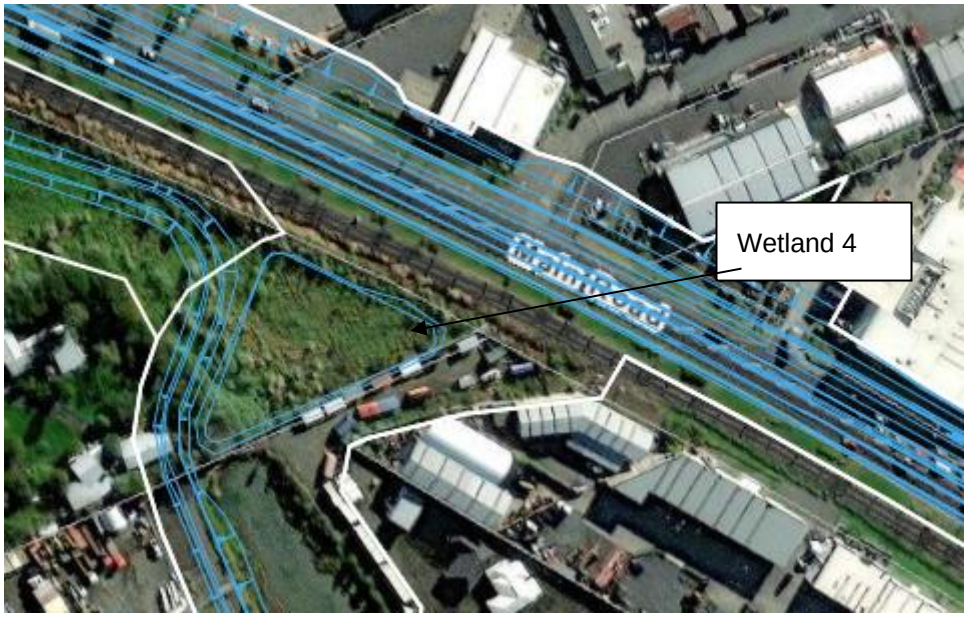
- Wetland 23 is located to the west of Waitakere road within the boundary of 903 Waitakere Road and Wetland 24 is located to the north of the project corridor within the boundary of 42 Boord;



- Wetland 2 is located to the north of the project corridor and south of the SH16 Main Road approximately 45m from the Kumeū River within the boundary of 7 Main Road;

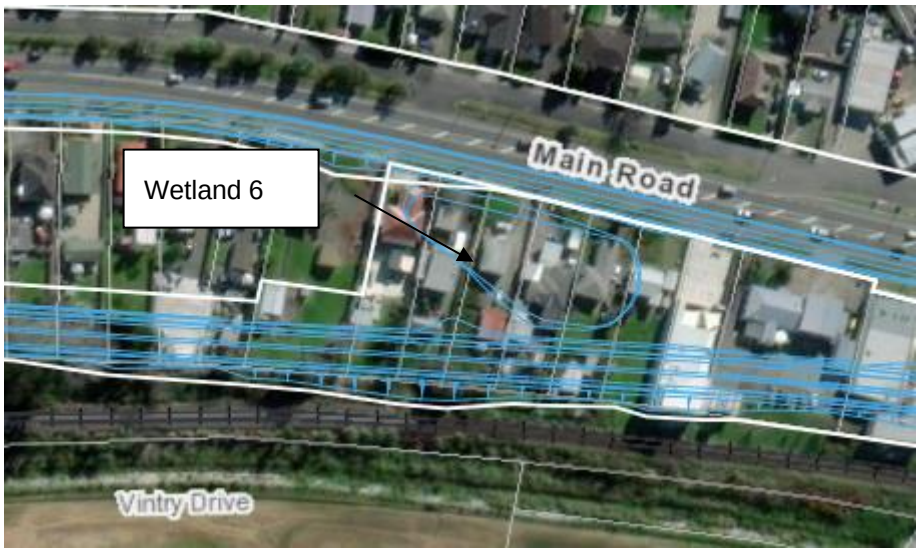


- Wetland 4 is located to the south of the project corridor and the NAL within the boundary of 223 Main Road;

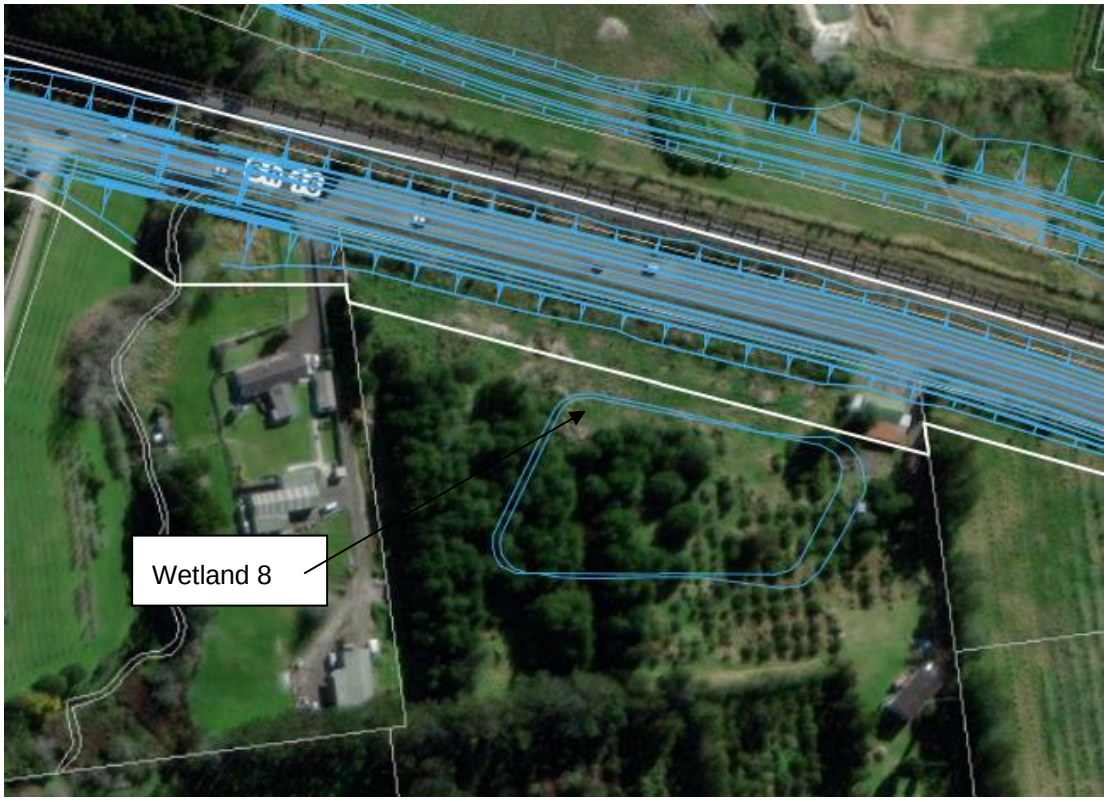


- Wetland 5A is located to the south of the Main Road corridor and the NAL is located within the boundary of 1 Winfield Road approximately 90m of the Kumeū River;

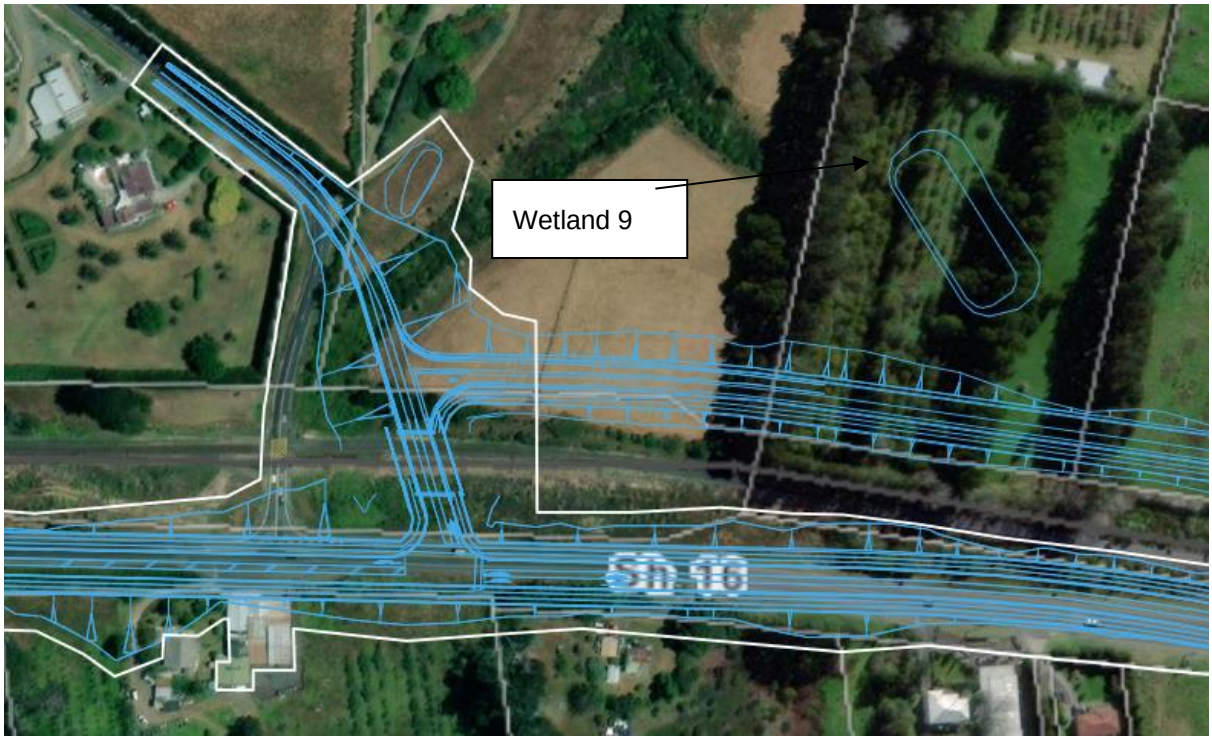
- Wetland 6 is located between the project corridor and SH16 Main Road from 351, 353, 355 Main Road;



- Wetland 8 is located to the south of the Project corridor within FUZ land at 551 SH16 Road within 50m of a Kumeū River branch watercourse;

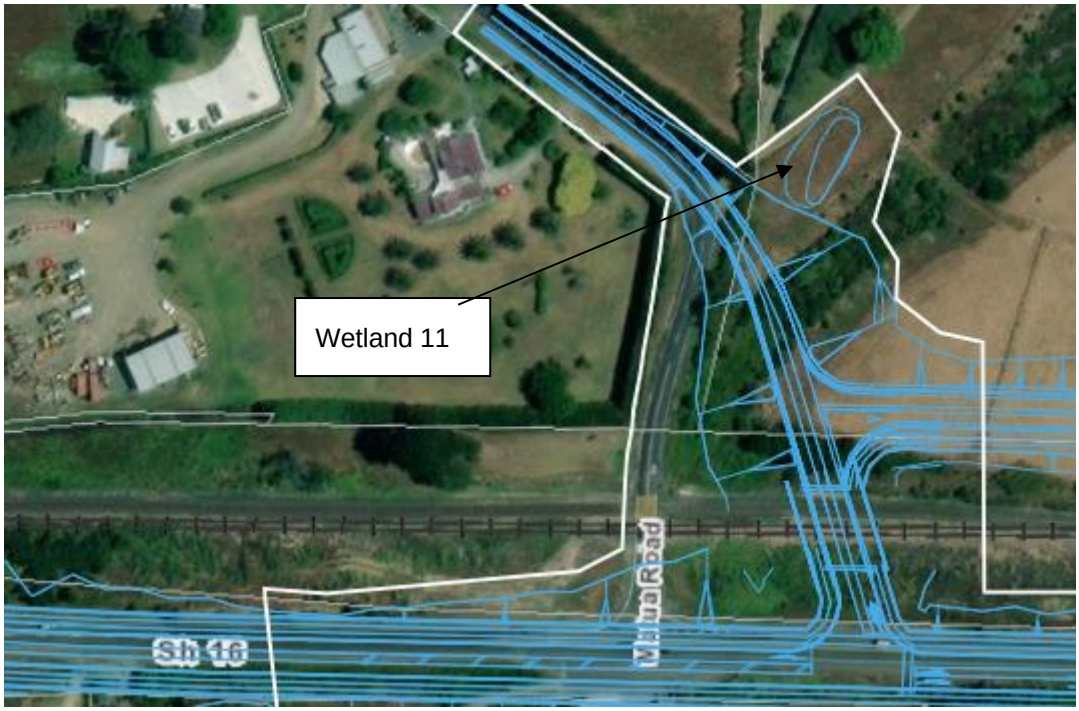


- Wetland 9 is located to the north of the Project corridor located within the boundary of 307 Matua Road within 25m of a Kumeū River branch watercourse;

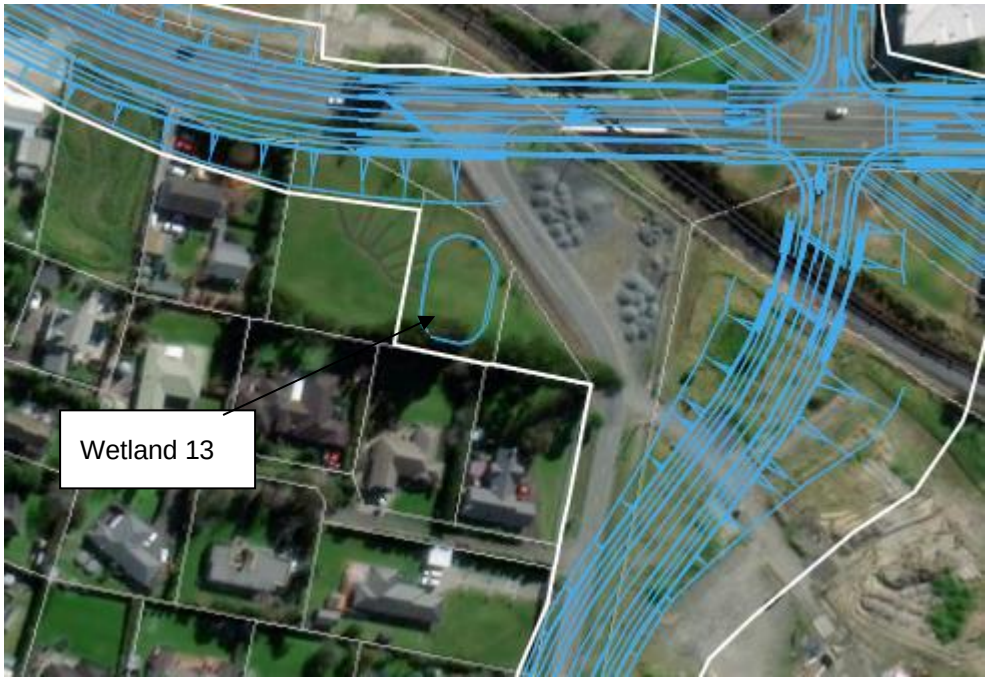


- Wetland 10 is located to the south of the Project corridor within the boundary of 695 SH16 the wetland is within 22m of the Ahukuramu Stream;

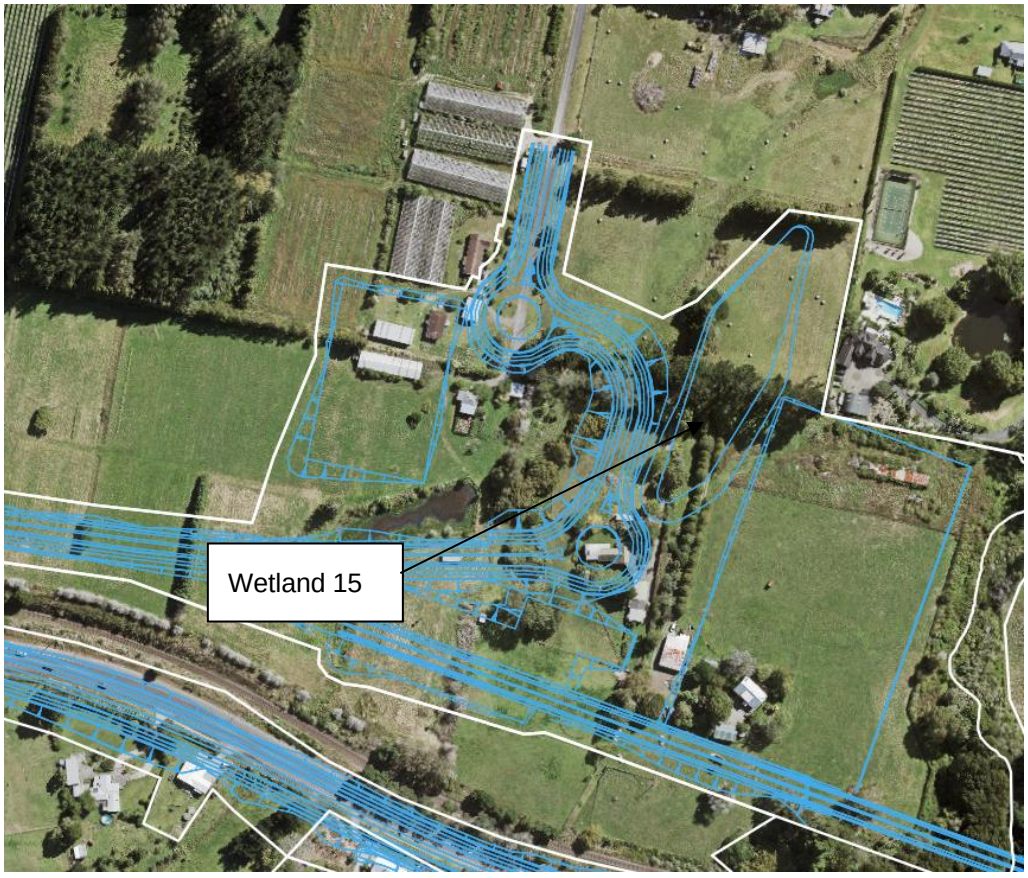
- Wetland 11 is located to the north of the proposed corridor located within the boundary of 411 Matua Road.



- Wetland 13 is located to the south of the Project corridor located within the boundary of 391 Main Road;



- Wetland 15 is located to the north of the Project corridor located within the boundary of 239 Matua Road;



The proposed wetlands will require earthworks to re-shape the land and achieve optimal depths and edge profiles, which will be determined as part of the resource consent phase. Wetlands will generally be constructed within greenfield sites in both rural and urban settings with the exception of Wetland 5A, Wetland 6 and Wetland 15 which are set in set within brownfield lots.

Without the implementation of mitigation measures we anticipate that adverse effect will be **low-moderate** to **low**. With mitigation, we consider adverse effects on the physical landscape to implement the proposed wetlands to be **low**.

Kumeū Rapid Transit Corridor Station

The Kumeū River pond to the east of the site is not expected to be directly impacted by the proposed station building and platforms. However, Wetland 5A associated with the development of the RTC will impact directly with the Kumeū River pond. Wetland 5A will require earthworks that cut into the existing sealed surface of the brownfield site.

This landscape has a lower level of sensitivity to change due to the amount of alteration to the landscape that has already taken place. On that basis, we consider adverse effects on the physical landscape to implement the proposed wetland to be **low** to **very low** with or without the inclusion of mitigation measures.

Huapai Rapid Transit Corridor Station

The Kumeū River branch to the east of the site is not expected to be directly impacted by the proposal, however the proposed design will require several crossing of a branch of the Kumeū River to the west. This watercourse has been modified over time by the adjoining rural land use and has an existing culvert from Meryl Avenue.

This landscape has a lower level of sensitivity to change due to the amount of alteration already undertaken for farming purposes. The FUZ classification also anticipates a fundamental change in the landscape from a rural to urban, which reduces the sensitivity of the landscape to change. On that basis with the inclusion of mitigation measures, we consider adverse effects on the physical landscape to implement the proposed wetland to be **low**. Without the implementation of mitigation measures it is anticipated that adverse effects will be **low-moderate** to **low**.

Private Properties

Residential properties within and adjacent to the Project area (either partially or fully designated) will be impacted by the Project in the following ways:

- Surface level changes between private property boundaries and the upgraded road corridor, requiring existing driveways and private accessways to be regraded;
- Encroachment into private yard areas and the removal of private garden plantings and trees, ancillary buildings and boundary fences;
- Potential impacts related to the construction of noise mitigation measures;
- Visual effects related to night works including light spill and sky glow; and;
- Demolition of existing dwellings and ancillary buildings (required properties within the proposed designation boundary)

Approximately 43 retained dwellings are proposed to be impacted by the project works. Landscape mitigation measures are proposed under 9.6.3 Recommended Measures to Avoid, Remedy or Mitigate Construction Effects below.

Overall, it is assessed that the adverse effects on the physical landscape on private properties will be predominantly **low-moderate** to **low** with the inclusion mitigation measures. Without the inclusion of mitigation measures is anticipated that landscape effects will range from **moderate** to **low-moderate.**

Kumeū Rapid Transit Corridor Station

Existing residential properties are set back from the Project approximately 190m to the north beyond intervening commercial and open space. These will not receive any direct impacts as a result of the project.

Residential zoned mixed housing suburban land is approximately 30m to the south of the proposed over bridge, if this land is developed by the time that the construction on the Project has started. It is expected that these projects will be affected in the following ways:

- Potential impacts related to the construction of noise mitigation measures;
- Visual effects related to night works including light spill and sky glow; and;

It is expected that these properties will not experience direct landscape effects as a result of the project and any changes to the design or layout of the development will have an appropriate setback from the designation.

Landscape mitigation measures are proposed under 9.6.3 Recommended Measures to Avoid, Remedy or Mitigate Construction Effects below.

Overall, it is assessed that with the implementation of mitigation measures the adverse effects on the physical landscape on private properties will be predominantly **low.** Without the implementation of mitigation measures it is anticipated that adverse effects will range from **low-moderate** to **low**.

Huapai Rapid Transit Corridor Station

Existing residential properties are set back from the Project approximately 200m to the north beyond existing shelterbelt vegetation around the lot. These will not receive any direct landscape character impacts as a result of the project. However, there may be visual impacts on these properties if they are retained.

The FUZ to the south of site on the opposite side of SH16 currently contains rural residential and rural production land and single house zone land beyond a branch of the Kumeu River to east is expected to be developed within the near future. The Spatial Land Use Strategy identifies that this area will be developed as a Local Centre and is expected to have a higher density of development of commercial and residential and uses. If this land is developed before construction starts on the project it is expected that there will be the following effects:

Potential impacts related to the construction of noise mitigation measures; and; visual effects related to night works including light spill and sky glow. It is expected that these properties will not experience direct landscape effects as a result of the project.

Landscape mitigation measures are proposed under 9.6.3 Recommended Measures to Avoid, Remedy or Mitigate Construction Effects below.

Overall, with the implementation of mitigation measures it is assessed that the adverse effects on the physical landscape on private properties will be predominantly **low.** Without the implementation of mitigation measures it is anticipated that adverse effects will range between **low-moderate** and **low** adverse.

9.6.2.1 Site Finishing Works

Finishing works are expected to include grassing of exposed earth, lighting, signage, line markings, footpath / cycleway details and reinstatement of private property fences and gardens. Streetscape elements and landscaping, including that required as mitigation will also be implemented. These activities are to be determined by detailed design and will occur within the already modified areas of the Project. Landscape effects are anticipated to be in the region of **low** adverse through this final phase of the construction process with or without the implementation of mitigation measures.

Kumeū Rapid Transit Corridor Station

Finishing works are expected to include grassing of exposed earth, lighting, signage, streetscape elements, car parking area and landscaping, including those required as mitigation will also be implemented. These activities are to be determined by detailed design and will occur within the already modified areas of the Project. Landscape effects are expected to be **very low** through this final phase of the construction process with or without the implementation of mitigation measures.

Huapai Rapid Transit Corridor Station

Finishing works are expected to include grassing of exposed earth, lighting, signage, streetscape elements, car parking area and landscaping, including those required as mitigation will also be implemented. These activities are to be determined by detailed design and will occur within the already modified areas of the Project. Landscape effects are expected to be **very low** through this final phase of the construction process with the implementation of mitigation measures. Without the implementation of mitigation measures it is anticipated that adverse effects have the potential to be **low** adverse.

9.6.2.2 Temporary Visual Effects

The construction of the Project is anticipated to be in stages along the proposed corridor over a period of approximately five years. Visual effects are anticipated to occur progressively through the Project area and transient viewing audiences may concurrently experience adverse visual effects from multiple stages through the construction period.

The consideration of visual effects through the construction phase acknowledges the full range of activities (and their resultant visual impact), required to implement the upgraded road corridor.

It is anticipated that construction activities required to implement the Project will introduce a concentrated area of construction activity into the existing busy transportation corridor in the urban and rural landscape. Within the FUZ the proposed construction phase will be consistent with the construction activities expected to be associated with the urbanisation of the FUZ. Another important consideration is that landscape change by way of vegetation removal and land modification (on private rural property), albeit at a lesser scale, forms part of the expected backdrop of the existing environment.

Notwithstanding the above, some vantage points within the Project area are likely to witness heightened adverse visual effects through the construction phase due to the magnitude of vegetation removal and / or earthworks proposed. These areas are outlined below:

- Private properties where physical landscape effects will occur within their lots.
- Effects on properties at 260 and 284 Sate Highway 16 due to the proximity to Wetland 3 and the main route corridor;

- Properties at 178 and 182 SH16 in proximity to the nearby site compound and Wetland 8;
- Properties at 37, 51 and 62 Boord Crescent in proximity to Wetland 24 and proposed nearby site compound.
- Effects on the private property 7 Main Road, in proximity to Wetland 2 and the nearby site compound,
- A private properties at 382 Main road in proximity to the nearby site compound;
- Private properties at 51 and 50 Gilbransen Road in proximity to Wetland 7 and Wetland 8;
- A private property at 30 Meryl Avenue in relation to the proposed nearby site compound;
- Private properties at 402 and 411 Matua Road in relation to the proposed nearby site compound.

The nature and significance of the potential adverse visual effects is considered to be moderated through the Project area by the following aspects:

- Road works and construction activities can generally be expected to occur where temporary roads, wetlands and construction compounds within the proximity of the existing road network;
- The existing SH16 is already an existing element within the visual composition of the Project area;
- The existing road corridor landscape has already been modified by previous works required to shape the existing road corridor.
- The Main Works are estimated to last approximately 5 years and is proposed to be implemented in six phases which are expected to allow efficient access to the construction zones while maintaining continued access for the intersecting roads and existing private and commercial driveways.

Without the implementation of mitigation adverse visual effects for the transient public viewing audience are anticipated to be **moderate** to **low-moderate** through the construction phase, taking into account those vantage points listed above where adverse effects are likely to be heightened during the temporary construction period. With the implementation of mitigation adverse visual effects for the transient public viewing audience are anticipated to be **low-moderate** to **low** through the construction phase.

Adverse visual effects during the construction phase are likely to be heightened for private viewing audiences directly adjacent to the Project area on the basis of more direct and prolonged engagement with the construction activities of the Project. This will include the presence of heavy machinery and the visible disturbance of both the road corridor and also individual private interfaces with the road.

Therefore, without the implementation of mitigation measures is it is anticipated that adverse effects will range between **moderate** to **low-moderate** during the construction phase for private viewing audiences, depending on their location, proximity to the works and outlook. With the implementation of mitigation it is anticipated that adverse effect will range between **low-moderate** to **low** during the construction phase for private viewing audiences.

Kumeū Rapid Transit Corridor Station

Audiences to the north of the NAL within proximity to the site will be removed during the construction of the station and over bridge. Enduring audiences will be limited to those to the north of SH16 Main Road and will comprise audiences within commercial properties, users of the Kumeū River Park open space and transient audiences in the form of road users and pedestrians. These audiences to the north have a lower level of sensitivity with the exception of users with the Open Space, which have a higher level of sensitivity. Audiences to the south of the NAL are anticipated to be residential and will have a higher level of sensitivity.

The consideration of visual effects through the construction phase acknowledges the full range of activities (and their resultant visual impact), required to implement the station building, platform and over bridge.

It is anticipated that construction activities required to implement the Project will introduce a concentrated area of construction activity within the context of the NAL and SH16 Main Road. Audiences to the north of the project have a lower level of sensitivity compared to the residential audiences that are anticipated to the south which are likely to experience a higher adverse level of effects through the construction phase of works.

The nature and significance of the potential adverse visual effects is considered to be moderated through the Project area by the following aspects:

- Construction activities can generally be expected to occur where temporary roads, wetlands and construction compounds within the proximity of the existing transportation corridor;
- The existing SH16 and NAL are already an existing element within the visual composition of the Project area.

Overall, adverse visual effects for the transient public viewing audience are anticipated to be low through the construction phase, taking into account that the project will appear for a short interval along the transportation corridor.

Adverse visual effects during the construction phase are likely to be heightened for private viewing audiences to the south of Project area on the basis of more direct and persistent engagement with the construction activities. This will include visible disturbance due to the presence of heavy machinery.

Therefore, adverse visual effects are anticipated to range between **low-moderate** to **low** during the construction phase for private viewing audiences, depending on their location, proximity to the works and outlook. These effects are likely to be within the same range with or without the inclusion of mitigation measures.

Huapai Rapid Transit Corridor Station

Audiences to the north and south of the project within proximity to the site may have removed during the construction of the station and over bridge. Potential residential audiences to the north are limited to properties at 239 Matua Road and 30 Meryl Avenue, however it is expected that these will likely be removed as part of the urbanisation of the lots and surrounding area. To the south audiences will be limited to transient audiences on SH16 Main Road and potentially retained residential audiences to the south. These audiences have a lower level of sensitivity to change due to their existing context of the transportation corridor and the expected urbanisation of the surrounding area.

To the east of the site residential properties within the SHZ will experience a mixed visual effect as a result of the construction activity. This residential audience have a higher level of sensitivity to change.

The consideration of visual effects through the construction phase acknowledges the full range of activities (and their resultant visual impact), required to implement the station building, platform, Park ‘n’ Ride, bus layover and over bridge.

It is anticipated that construction activities required to implement the Project will introduce a concentrated area of construction activity within the context of a landscape transitioning from rural to urban. Audiences within the FUZ have a lower level of sensitivity compared to the existing single

house zone residential audiences to the east of the site, which are likely to experience a higher adverse level of effects through the construction phase of works.

The nature and significance of the potential adverse visual effects is considered to be moderated through the Project area by the following aspects:

- Construction activities can generally be expected to occur where temporary roads and construction compounds within the proximity of the existing transportation corridor;
- The existing SH16 and NAL are already an existing element within the visual composition of the Project area;
- The area immediately surrounding the site is expected to be within a transitioning landscape from rural to urban.

Overall, adverse visual effects for the transient public viewing audience are anticipated to be **low** through the construction phase, taking into account that the project will appear for a short interval along the transportation corridor.

Adverse visual effects during the construction phase are likely to be heightened for private viewing audiences to the east of Project area on the basis of more direct and persistent engagement with the construction activities. This will include visible disturbance due to the presence of heavy machinery.

Therefore, adverse visual effects are anticipated to range between **low-moderate** to **low** during the construction phase for private viewing audiences, depending on their location, proximity to the works and outlook. These effects are likely to be within the same range with or without the inclusion of mitigation measures.

9.6.3 Recommended Measures to Avoid, Remedy or Mitigate Construction Effects

Recommendations are in line with the general recommendations in Section 6.1.2.

In addition to these measures the following project specific interventions are suggested:

- Provide hoarding or other screening along the works boundaries of site compounds, wetlands and dry ponds in proximity to residences to reduce visual effects on users of outdoor spaces that overlook the works; and;
  Ensure that measures are taken to prevent contamination and pollution of groundwater and wetlands within proximity to site compounds.

9.6.4 Assessment of Operational Effects

9.6.4.1 Natural Character Effects

Natural character forming elements, features and processes within the Project area are more prevalent within the rural sections of the project however, there are elements that are apparent within the urban landscape. These are typically wetlands, rivers and perennial watercourses that traverse the existing modified rural and urban landscapes. Indigenous riparian vegetation within wetlands and waterways are varied and intermittent. Kumeū River (and its branches), Ngongetepara Creek, Karure Stream, Pakinui Stream and Totara Creek) within the Project corridor designation contain the most concentrated and contiguous native riparian habitats that have undergone some modification at bridge crossings and within the urban context. We consider that the natural character value of these

element, features and processes are moderate, however at the bridge approaches and crosses the existing modification reduces the character value.

Clearance of indigenous riparian vegetation and habitat will be required to facilitate the crossing of the wetlands and watercourse environments in particular at the crossing of Kumeū River (and its branches), Ngongetepara Creek, Karure Stream, Pakinui Stream and Totara Creek. The design proposes bridges across the Ngongetepara Creek, Kumeū River and Kumeū River Branch watercourses to minimise the impact on the natural flow of water and to enable the riparian habitat to continue underneath the bridge. Although the primary watercourse streams are bridged in the design subsequent branches of the stream are proposed to be culverted. All other watercourses will be culverted. Adverse effects on natural character will be heightened where culverts are utilised as a result of the change to the natural watercourse, removal of vegetation and the disconnection of contiguous native riparian vegetation. Alterations to watercourses, water bodies, wetlands, riparian vegetation all are the subject of a separate regional consent process, this will also consider the natural character effects.

It is recommended that during detailed design process of the Project corridor the extent of impacts on watercourses are limited to reduce the size of the area impacted. A planting plan and vegetation protection plan is recommended as part of the ULDMP which will be developed as part of the detailed design of the Project. It is recommended that any planting proposed as mitigation through the regional consents process is integrated with the planting plan as recommended through this assessment under the ULDMP. This will ensure that natural character values of the watercourses and wetlands are enhanced or protected where possible as an outcome of the Project.

On the basis of the above (allowing for future landscape mitigation), adverse natural character effects are likely to be **low,** where bridges are used to cross water courses and retain natural character value. Without landscape mitigation measures it is anticipated that adverse effects have the potential to be **low-moderate** adverse.

Where culverts are required we consider natural character effects to be **low-moderate** adverse, these effects will be considered further as part of a future regional resource consent. Without landscape mitigation measures it is anticipated that adverse effects have the potential to be **moderate** adverse.

Kumeū Rapid Transit Corridor Station

Natural character forming elements, features and processes within the Project area are limited to those associated with the Kumeū River branch and pond. We consider that the natural character value of this element are overall moderate, however at the bridge approaches and crosses the existing modification reduces the character value. These are not within the footprint of the Project but will be impacted by Wetland 5A as part of the RTC and SH16 works.

On the basis of the above it is anticipated that there will not be any adverse natural character effects on the Kumeū River and pond.

Huapai Rapid Transit Corridor Station

Natural character forming elements, features and processes within the Project area are limited to those associated with the Kumeū River branches to the east and west. We consider that the natural character value of this element are overall moderate in the branch to the east and low-moderate within the branch to the west, which has already undergone some modification including a culvert. It is expected that the flow of the western branch of the Kumeū River would be maintained. The river branch to the east is not within the footprint of the Project and is not expected to be directly impacted.

However the river branch to the west is expected to require a culvert and modification to the river path.

On the basis of the above, with the implementation of mitigation measures it is expected that there will **low** adverse natural character effects on the Kumeū River branch to the west and pond. Without mitigation measures it is anticipated that effects may be as high as **low-moderate** adverse.

9.6.4.2 Visual Amenity Effects

Overall, there are likely to be a range of visual amenity effects on public and private viewing audiences relative to proximity to the corridor in the urban and rural landscapes. Rural properties set back from the Project area will experience a reduced incremental increase in effects in the context of the existing transportation corridor. Urban properties that set back from the Project area experience interrupted views of works, reducing the level of effects experienced.

There are no retained urban private properties that interface directly with the Project corridor, properties north of Main Road will retain existing vegetation which provides amenity and filters views towards the road. Retained private properties within the rural landscape will generally experience a heightened change in the view as a result of the RTC being introduced into the view. However, this will be reduced for properties which already experience the NAL and rail traffic within their views. Retained private rural properties which have filtered, screened or distant views towards the works are expected to experience a reduced level of change as a result of the works.

It is recommended that boundary fences and garden plantings (removed through the Project works) be reinstated on completion of the works affecting properties that will be retained. These mitigation measures should be considered within the ULDMP under the lens of neighbourhood character and as such are discussed further in the following section.

FUZ land within the Project corridor is expected to be developed over time as visual effects are anticipated to be reduced for the public viewing audience, based on improved visual amenity for users associated with streetscape improvements, maturing street trees, berm planting and accessibility to active modes of transport.

Public viewing audiences within proximity to the Project are primarily pedestrians active mode users along SH16 Main Road and users in the Fred Taylor Park and Huapai Domain open spaces.

Views will also be available from Fred Taylor Drive, Taupaki Road, Boord Crescent, Waitakere Road, Trotting Cross Drive, SH16 Main Road, Access Road and Matua Road, these audiences will have an oblique view towards the project.

Overall, some visual effects are anticipated to be mitigated by measures implemented during the finishing phase of the construction period (within the road corridor and private property boundaries), that will mature through the operational phase of the Project. These will reduce some of the long-term residual visual effects of the Project. In an urban setting the rapid transit corridor will be seen in proximity to the existing SH16 and / or NAL. The presence of these existing transportation corridors within the locality of the Project will result in the proposal appearing less at odds with the surrounding landscape. The proposed project corridor will be a noticeable new feature within the landscape particularly within rural zoned land where there is currently no visible transportation corridor. The road corridor will be less apparent in the FUZ where existing screening vegetation is present and where proposed UDLMP planting has matured.

Without the inclusion of mitigation measures it is anticipated that effects will be **low** adverse for transient viewers within the FUZ and urban landscape and **low-moderate** adverse for static audiences through the operational phase of the Project. For private viewing audiences, visual effects are likely to range from **moderate** adverse to **low-moderate** adverse for rural audiences and **low-moderate** adverse to **low** adverse for residential audiences within FUZ. Audiences within the existing urban core of Kumeū and Huapai are expected to experience **low** adverse effects during operation.

On that basis, with the inclusion of mitigation measures, adverse visual effects within the Project area are likely to be **very low** for transient viewers within the FUZ and urban landscape and **low** for static audiences through the operational phase of the Project. For private viewing audiences, visual effects are likely to range from **low-moderate** to **low** for rural audiences and **low** to **very low** for residential audiences within FUZ. Audiences within the existing urban core of Kumeū and Huapai are expected to experience **very low** adverse effects during operation. In all instances these would reduce over an extended period of time.

Kumeū Rapid Transit Corridor Station

Audiences to the north of the project are expected to be transient in nature and along SH16 and within the Kumeū River open space and within commercial and industrial properties. These will experience views of the proposed station within the context SH16 Main Road and built form that are expected to be built adjacent to the station.

Audiences to the south of the NAL are expected to view the finished Project within the context of amenity planting long pathway to over bridge and the active NAL. This will filter views towards the Project.

There are no retained urban private properties that interface directly with the station. However, it is anticipated that at the time of implementation the surrounding area will be developed for residential purposes.

Overall, some visual effects are anticipated to be mitigated by measures implemented during the finishing phase of the construction period, including the implementation of the soft landscape planting that will mature through the operational phase of the Project. This will reduce some of the long-term residual visual effects of the Project. In an urban setting the proposed station and overpasses will be seen in proximity to the existing SH16 and or NAL. The presence of these existing transportation corridors within the locality of the Project will result in the proposal appearing less at odds with the surrounding landscape. The proposed station will be a noticeable feature within the landscape, however this is within the context of other built development that will surround the proposal.

On that basis, adverse visual effects within the Project area are likely to be **very low** for transient viewers in urban landscape and **low** for static audiences within the FUZ through the operational phase of the Project. For private viewing audiences, adverse visual effects are likely to range from **low** to **very low** for residential audiences within existing urban zones. These would reduce over an extended period of time as the surrounding area is developed and landscape planting matures. It is anticipated that these effects will be within the same range with or without the implementation of mitigation.

Huapai Rapid Transit Corridor Station

There are no retained urban private properties that interface directly with the Project corridor, properties north of Main Road SH16 will retain existing vegetation which provides amenity and filters views towards the road. Retained private properties within the rural landscape will generally

experience a heightened change in the view as a result of the Park ‘n’ Ride, station building and but lay over being introduced into the view. However, this will be reduced for properties to the south which already experience the NAL and rail traffic within the view. Retained private rural properties which have filtered, screened or distant views towards the works are expected to experience a reduced level of change as a result of the works.

Public viewing audiences within proximity to the Project are primarily transient users along SH16 Main Road.

Overall, some visual effects are anticipated to be mitigated by measures implemented during the finishing phase of the construction period (within the road corridor and private property boundaries), that will mature through the operational phase of the Project. These will reduce some of the long-term residual visual effects of the Project. In an urban setting the proposed station and overpasses will be seen in proximity to the existing SH16 and NAL and the proposed RTC. The presence of these existing transportation corridors within the locality of the Project will result in the proposal appearing less at odds with the surrounding landscape. The proposed station will be a noticeable feature within the landscape however this is expected to be within the context of established commercial and retail buildings to the south in the proposed local centre and residential development to the north and west.

Without the implementation of mitigation measures it is considered that adverse visual effects within the Project area are likely to be **low** to **very low** for transient viewers within the FUZ and existing urban landscape and **low** adverse for static audiences through the operational phase of the Project. For private viewing audience, visual effects are likely to range from **low** adverse for residential audiences within existing urban zones. Any retained rural residential audiences would be expected to experience **low -moderate** to **low** adverse visual effects.

On that basis, with the implementation of mitigation measures, adverse visual effects within the Project area are likely to be **very low** for transient viewers within the FUZ and existing urban landscape and **low** adverse for static audiences through the operational phase of the Project. For private viewing audience, visual effects are likely to range from **low** adverse to **very low** adverse for residential audiences within existing urban zones. Any retained rural residential audiences would be expected to experience **low** adverse visual effects.

In all instances these would reduce over an extended period of time as the surrounding area is developed and landscape planting matures.

9.6.4.3 Landscape Character Effects

The principal elements of the Project will permanently alter the character of the rural sections of the project corridor. The FUZ sections of the Project area will experience the proposal within the context of a wider landscape undergoing urbanisation. The rural zoned sections of the Project area are characterised by the lack of streetscape features, informal intermittent vegetation, managed and unmanaged watercourses, shelterbelt and hedgerows along field boundaries and existing rural land uses. The existing rural roadways generally lack urban characteristics such as a kerb and channel roadway, footpaths and street lighting. These features will be introduced into the landscape by the Project including active mode transport lanes, street lighting and a kerb and channel roadway. At the completion of the Project, the upgraded corridor will resemble that of an urban arterial road on account of the pedestrianisation, active modes of transport, structured street tree planting, integrated stormwater management and engineered roading elements that have an inherently urban aesthetic.

The Project is anticipated to enter the operational phase within the context of increased urbanisation where FUZ land is progressively live-zoned and urbanised. Although it is not possible to anticipate the

exact future urban land use pattern, it is expected that residential development will primarily populate the surrounding FUZ.

Through the existing urban centres of Kumeū and Huapai the urban character of the landscape will endure, the proposed project is expected to improve the structure and amenity of the road corridor by providing a more structured road layout and consistent landscape pattern. The FUZ is not structure planned, however the Spatial Land Use Strategy - Kumeū-Huapai, Riverhead, and Redhills North provides a high level direction of future urbanisation. Neighbourhood Centres are proposed along Motu Road and to the south of Fred Taylor Park, which are proximate to the Project area. It is reasonable to expect that these centres will be surrounded by a predominantly residential land use. Based on the above the magnitude and nature of landscape change proposed by the Project we consider to be in alignment with the changes that will likely occur throughout the localised landscape as it is urbanised over time.

The typical cross sections above (Figure 9-1) illustrates the proposed upgrade to the road and the expected future use. Although there will not be space along the entire road corridor for green infrastructure elements such as street trees and berm, it is expected that there will be some retained green existing infrastructure to contribute to the overall amenity of the corridor. A structured planting design will be provided through wider rural and FUZ designation including on slopes and embankments as part of the ULDMP, to provide integration of the project into the landscape. It is also recommended that the ULDMP advises on design strategies to design slopes and embankments to have a more naturalised appearance and integrate with the surrounding rural landscape. These features and design details are expected to improve landscape and urban amenity of the Project corridor.

It is assessed that planting and design interventions within the ULDMP, in conjunction with stormwater management and reinstatement planting, will reduce effects on landscape character associated with broad vegetation clearance Project area within the rural environment.

On the basis of the above without mitigation effects may be as high as **moderate high** adverse**,** allowing for future landscape mitigation, adverse landscape character effects are anticipated to be **low-moderate** adverse to **low** adverse once mitigation planting has established.

Kumeū Rapid Transit Corridor Station

The Project is anticipated to enter the operational phase within the context of increased urbanisation where FUZ land is progressively live-zoned and urbanised. Although it is not possible to anticipate the exact future urban land use pattern, it is expected that residential development will primarily populate around the proposed station.

It is expected that a structured planting design and concourse area will be provided around the proposed station and forecourt area will be provided within a ULDMP. These features and design details are expected to improve landscape and urban amenity of the proposed urban landscape. It is anticipated that the natural qualities of the Kumeū River branch to the east will not be materially changed by the proposed works.

It is assessed that planting and design interventions provided in a ULDMP, will reduce effects on landscape character and likely result in a positive overall **very low** positive landscape character effects. Without the implementation of mitigation measures it is anticipated that landscape effects will be **low** adverse.

Huapai Rapid Transit Corridor Station

The character of the Kumeū River branch to the east is expected to endure, and the proposed project is expected to improve the relationship with that watercourse. Elements such as urban trees, amenity planting areas and urban amenity around the proposed station will help to settle the proposal into the landscape. A structured planting design and concourse area will be provided around the proposed station and forecourt area will be included within a ULDMP. The removal of existing mature trees will be partially mitigated by the proposed urban landscape design, however it is acknowledged that this loss of landscape features is in line with the expected development of the landscape from rural to urban.

It is assessed that in the context of the FUZ and with planting and design interventions provided in a ULDMP, effects on landscape character and likely result in a **very low** adverse landscape character effects. Without the implementation of mitigation measures it is anticipated that landscape effects will be **low** adverse.

9.6.5 Recommended Measures to Avoid, Remedy or Mitigate Operational Effects

Recommendations are in line with the general recommendations in Section 6.1.3.

In addition to these measures the following project specific interventions are suggested:

- The existing Huapai Domain and Fred Taylor Park and the project corridor are designed to integrate with and / or re-establish boundaries to the open spaces.
- Protect the natural character and processes of the Kumeū River, and its branches, particularly where the river branch crosses SH16 Main Road and the project corridor crosses the existing pond. This will be covered within the regional consent process.

9.7 Conclusions

It is anticipated that without the inclusion of mitigation measures adverse landscape and visual effects (with mitigation) range from **low** to **moderate** for the construction phase (**moderate** to **low** in rural areas and **moderate** to **low** in urban areas) and **very low** to **low-moderate** for the operational phase (in both rural and urban areas). Within the existing urban cores of Kumeū and Huapai it is anticipated that landscape and visual effects experienced during construction resulting in a **low-moderate** to **low** level of effects, after the project corridor is completed the effects will be **low** adverse.

Provided that mitigation measures are adverse landscape and visual effects (with mitigation) range from **very low** to **moderate** for the construction phase (**moderate** to **low** in rural areas and **low-moderate** to **very low** in urban areas) and **very low** to **low-moderate** for the operational phase (in both rural and urban areas). Overall, the adverse effects can be mitigated and reduced over time in relation to the FUZ areas which will experience urbanisation of the surrounding landscape. The FUZ landscape context has a lower level of sensitivity to change due to the anticipated developing urban form of the landscape associated with future urbanisation. Natural character effects are expected to range from low-moderate to low, providing the higher sensitivity natural character areas with bridges.

The existing urban core of Kumeū and Huapai also have a reduced sensitivity to change and are anticipated to experience landscape and visual effects during construction resulting in a **low** level of effects. However, after the project corridor is completed the effects will be **very low** adverse. The rural areas of the project are more sensitive to the introduction of the road corridor however,

integration works proposed by the ULDMP will assist with the integration of the slopes and embankments into the landscape through earth shaping and mitigation planting

Kumeū Rapid Transit Corridor Station

It is anticipated that without the inclusion of mitigation measures adverse landscape and visual effects landscape and visual effects range from **low-moderate** to **low** adverse for the construction phase and **low** adverse for the operational phase

Overall landscape and visual effects (with mitigation) range from **low** to **very low** adverse for the construction phase and **low** adverse to **very low** positive for the operational phase. Overall, the adverse effects can be mitigated and reduced over time in relation to the regeneration in the existing urban surrounds and the changes to the landscape character are expected to have a positive effect. The existing urban landscape context has a lower level of sensitivity to change due to the existing already disturbed site and anticipated further development of the landscape associated with regeneration. Natural character effects on the Kumeū River are expected to be **low**, provided that the direct impacts on the existing pond minimised.

The existing urban core of Kumeū also has a reduced sensitivity to change will be experience landscape and visual effects during construction resulting in a **low-moderate** to **low** level of effects. However, after the project corridor is completed the effects will be **low** positive. The proposed integration with the surrounding landscape and streetscape advised in the ULDMP will assist with the establishing the station within the developing urban landscape. Within the urban core the level of effects are anticipated to be the same with or without mitigation.

Huapai Rapid Transit Corridor Station

It is anticipated that without the inclusion of mitigation measures adverse landscape and visual effects landscape and visual effects will range from **moderate** to **low** adverse for the construction phase and **low-moderate** to **very low** adverse for the operational phase

Overall adverse landscape and visual effects (with mitigation) range from **low-moderate** to **very low** for the construction phase of works and **low** adverse to **very low** adverse during the operational phase. Overall, the adverse effects can be mitigated and reduced over time in relation to the urbanisation of the existing rural landscape. The existing urban landscape context has a lower level of sensitivity to change due to the anticipated urbanisation of the landscape. Natural character effects on the Kumeū River branches are expected to be **low** adverse. Provided that the direct impacts on the existing Kumeū River to the east are avoided and the effects on the river branch to the west maintain the flow of the watercourse. The proposed integration with the surrounding landscape and streetscape advised in the ULDMP will assist with the establishing the station within the developing urban landscape.

10 NoR S4: Access Road Upgrade

10.1 Project Corridor Features

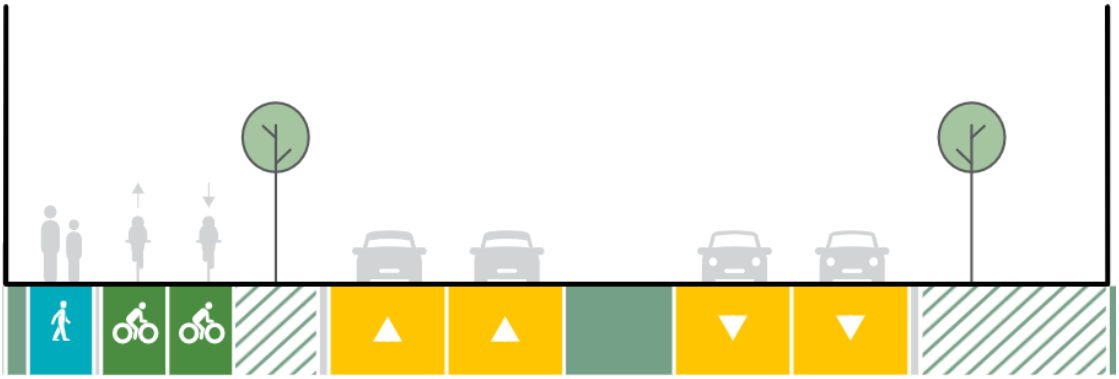
The proposed Access Road Upgrade is set between SH16 Main Road and Motu Road to the south west of the Kumeū Road. The project road corridor acts as a boundary between existing and future urban land to the north and rural land to the south.

Key features of the proposed upgrade include the following:

The nature and extent of impacts on the landscape as a physical resource during the construction period of the Project. A specific focus on the location of the construction compound, extent of vegetation clearance, impacts on water courses, the scale and location of proposed cut and fill slopes and the likely impacts of bridge construction.

- The addition of the active mode transport corridor adjacent to the rural road.
- The introduction of an active mode corridor into, rural 'greenfield' lots and how this will interface with the enduring rural environment to the south of the corridor.
- Consideration of landscape character effects and urban amenity issues in relation to the permanent landscape change, including specific assessment of how this corridor will integrate into the future urban environment to the north of the corridor;
- Potential removal of mature trees, consideration of future opportunities to integrate existing trees.
- The construction of a new bridge over the existing stream.

Figure 10-1: Access Road Typical Cross Sections



10.2 Existing and Likely Future Environment

10.2.1 Planning context

Access Road / Tawa Road is an existing arterial corridor that runs along the eastern RUB of Kumeū-Huapai.

- The northern side of Access Road is zoned under the AUP:OP as FUZ, with Business – Light Industry Zoning at the north-eastern section of Access Road.
- The southern side of Access Road is predominantly zoned under the AUP:OP as Rural – Countryside Living, with exception to the Kumeū Showgrounds which are zoned as Rural – Mixed Rural Zone are identified as a precinct (I517 Kumeū Showgrounds Precinct) in the AUP:OP.

Table 10-1 below provides a summary of the existing and likely future environment as it relates to Access Road.

Table 10-1: Access Road Upgrade Existing and Likely Future Environment

Environment today	Zoning	Likelihood of Change for the environment[21]	Likely Future Environment[22]
Business	Business (Light Industrial) Zone	Low	Business (Light Industrial)
Rural	Rural – Countryside Living Zone Rural – Mixed Rural Zone	Low	Rural
Undeveloped greenfield areas (Future Urban Zone)	Future Urban	High	Urban

10.2.2 Existing / Baseline Landscape

10.2.2.1 Baseline Landscape

The proposed project area along Access Road / Tawa Road from SH16 Main Road south west to Motu Road. The road is predominantly surrounded on either side by rural land use for the majority of the route, however land to the north of the of the site is FUZ . The north eastern end of the route borders existing urban business and light industrial development.

The local landscape character within the Project corridor is summarised below:

- Vegetation cover comprising non-native stand-alone street trees, linear belts of mixed indigenous and non-native vegetation along riparian corridors, shelterbelts along the road corridor, exotic vegetation in around private residential and commercial property boundaries.
- The urban industrial and commercial development within Kumeū at the north eastern end of the road.

[21] Based on AUP:OP zoning/policy direction
[22] Based on AUP:OP zoning/policy direction

- .
- The rural sections of the project are characterised by rural residential lifestyle blocks with elements of rural production, shelterbelts and pastoral fields.

Landform and Hydrology

The Project corridor traverses a gently sloping topography that gently slopes up towards the southern end of the corridor. High points are located adjacent to the existing commercial and industrial land to the north and close to 49 Tawa Road to the south. The lower lying land areas of the Project area are located within proximity of Kumeū River branches, flood plains and wetlands.

Landcover

The landscape across the Project corridor is characterised as a distinctly modified urban landscape within the commercial area at the north of the corridor. This commercial area feature large lot commercial and industrial development to the north of Access Road. The balance of the area to the north of the Project corridor rural is predominantly FUZ, containing areas of open pasture with rural residential properties also present.

The south of the project area is predominantly zoned as rural and contains rural residential lifestyle blocks with small pockets of agricultural production, non-residential landcover is characterised by geometric pastoral fields. These field patterns are bound in parts by structured hedgerows, shelter belts and small areas of native vegetation. Fields predominantly contain exotic grassland with small pockets of agricultural crops, rural industry and amenity planting in proximity to dwellings.

Areas of mature native vegetation are limited within this landscape and is primarily located in proximity to stretches of riparian vegetation along the Kumeū River branch. However, this is a very small element within the context of the wider Project area.

There are no scheduled notable trees within the designation.

Land Use

The Project corridor traverses four AUP:OP zones listed in table 13-1 Access Road Upgrade Existing and Likely Future Environment.

Pastoral fields comprise the majority of the area between residential properties with some smaller rural production land use amongst residential lifestyle blocks and shelterbelts. Although currently rural the land to the north of the road is zoned as FUZ and anticipated to be urbanised in the future. Land at the eastern of route surrounds the Kumeū Showgrounds (refer Figure 10-2 below) and contains the Kumeū Community Centre.

At the eastern end of the route urban commercial lands use is present to the north of the project corridor at the approach to SH16 and the southern existing urban area of Kumeū.

Figure 10-2: View north west into the Kumeū Showgrounds from Waitakere Road.

Scheduled Landscape and Ecological Features

There are no scheduled landscape or ecological features within or proximate to the Project area.

Historical and Cultural Associations

There are no scheduled historical and cultural features within or proximate to the Project area.

10.2.2.2Likely Future Environment

Overview

The FUZ land to the north of the Project corridor will witness a significant change from rural to urban land use character over the next 10-15 years. It is anticipated that the abiotic features of the landscape, principally the topography, will be altered over time as the surrounding landscape is urbanised. It is anticipated that some of the defining biotic (land cover) features of the landscape will undergo substantial change alongside future development, with the removal of large areas of vegetation to accommodate the Project. This will likely involve the implementation of street tree plantings, public open space areas and general landscaping within the private yards of future housing development for public amenity. The balance the western end of the Project Area will continue to have an urban function by the completion of the project.

Rural land to the south of the project corridor is expected to remain, the land is expected to retain a rural aesthetic and land use and is not anticipated to experience a change in the overall character of the landscape. It is anticipated that the abiotic and biotic features of the landscape outside of the designation will remain.

10.2.2.3Kumeū-Huapai / Riverhead area

This area has not undergone a structure planned it is identified by council that this process will be undertaken before the land is released to be urbanised. This processed is indicatively programmed to be undertaken in 2025 in order for the land to be released between 2028 and 2032 as indicated in the Future Urban Land Supply Strategy (FULSS).

The Spatial Land Use Strategy for Kumeū-Huapai, Riverhead, and Redhills North has been developed with collaboration between Auckland Council and the project team. This provides a high level framework that outlines the distribution of future land use (see Figure 10-3 below).

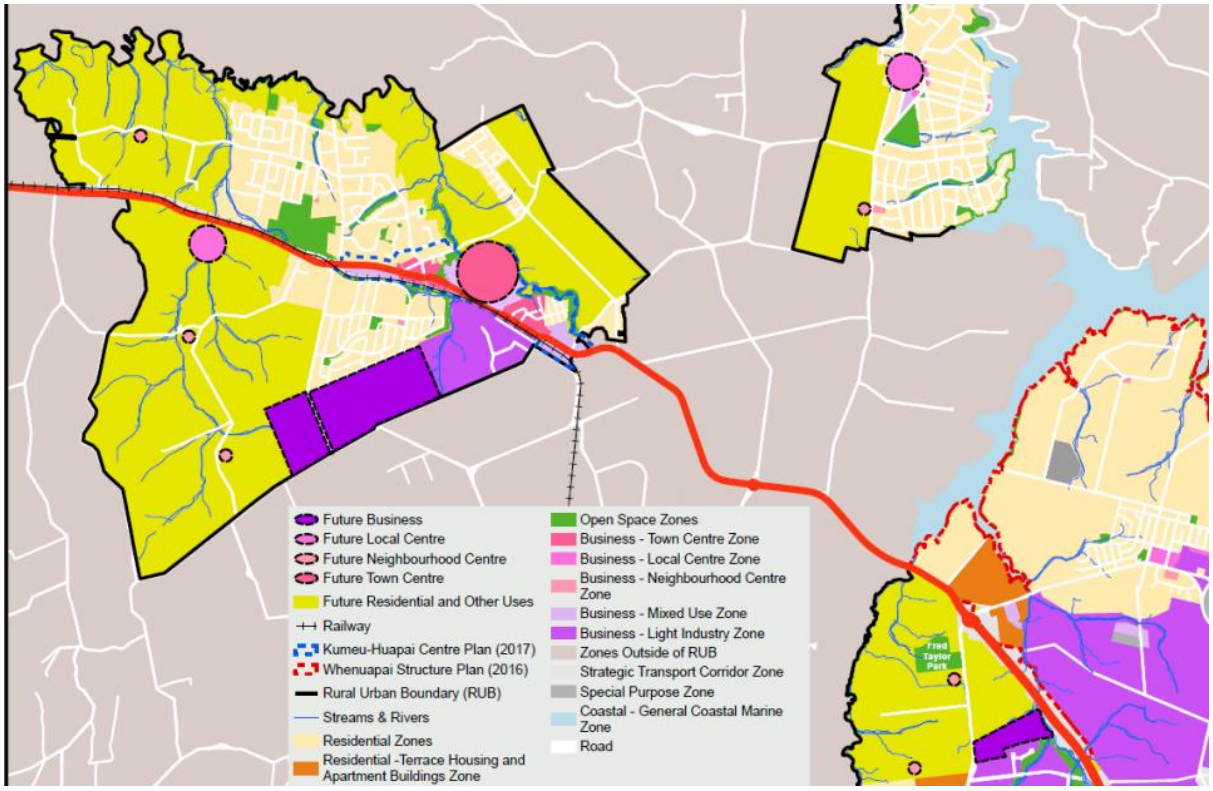


Figure 10-3: Spatial Land Use Strategy - Kumeū-Huapai, Riverhead, and Redhills North.

10.3 Extent of Visibility and Viewing Audience

The extent of visibility of the proposed widening of the road corridor is contained by the surrounding vegetation and the changes in topography. Notwithstanding the above, some vantage points within the Project area are likely to witness heightened adverse visual effects. In summary the viewing audience for the Project includes:

- *Public Views:* Transient public audience (vehicle users). Key roads where views can be obtained from include: Access Road, Tawa Road;
  - Travelers (cars, pedestrians and cyclists) along Access Road, Tawa Road, Waitakere Road and Station Road which bisects the site (Refer Appendix 2 Site Photo SP32, SP33, SP34, SP35, SP36, SP31);

- *Private Views:* The viewing context also includes a relatively small private viewing audience, comprising views from rural residential and lifestyle dwellings as well as from the commercial and agricultural businesses located to the south of the Project Corridor. Specifically:
  - Views from the residential properties within the designation that immediately front on to Project corridor along Access Road and Tawa Road (Refer Appendix 2 Site Photo SP39, SP32)
  - Occupants of nearby commercial buildings adjacent the proposed corridor. (Refer Appendix 2 Site Photo SP38 and SP37).

Views are well contained within the immediate surrounding area of the Project corridor by existing urban development to the north east of the site and existing rural vegetation within the FUZ and rural zoned land.

Within the FUZ to the north of the Project Corridor audiences likely to grow to include residents of future urban developments, over time. Rural zoned areas within the Project corridor are expected to continue to be characterised as they are currently.

10.4 Landscape Values

There are no regionally or nationally significant landscapes (ONLs, ONFs or ONCs) within or proximate to the proposed designation boundary.

The gently sloping topography and the mature stands of vegetation and braided stream and wetland network contribute to the visual amenity of the landscape. The largely modified landscape has limited natural features, which are restricted to individual stands of native vegetation and riparian vegetation within watercourses.

10.5 Landscape Sensitivity

This corridor is situated within a broader landscape that is both rural and contains areas that have been assessed within the AUP:OP as being suitable for urbanisation. The proposed FUZ area to the north is indicated by the Spatial Land Use Strategy as primarily being developed for business and commercial uses. Rural zoned land which will maintain rural has medium to low sensitivity to the type of change proposed by the project. The Project area within the FUZ is assessed as having a low sensitivity to landscape change.

10.6 Assessment of Landscape Effects

10.6.1 Positive Effects

Generalised positive effects related to the Project are covered in Section 5 of this report. Additional positive effects related specifically to this Project include:

- The opportunity to improve the stream and riparian environment of a branch of the Kumeū River within proximity to the upgraded Access Road bridge.
- There is the potential to provide a legible and integrated RUB through the design of the road corridor. By creating a threshold and a sense of transition between the two sides of the road corridor the design can maintain amenity for audiences and integrate with the existing landscape character.

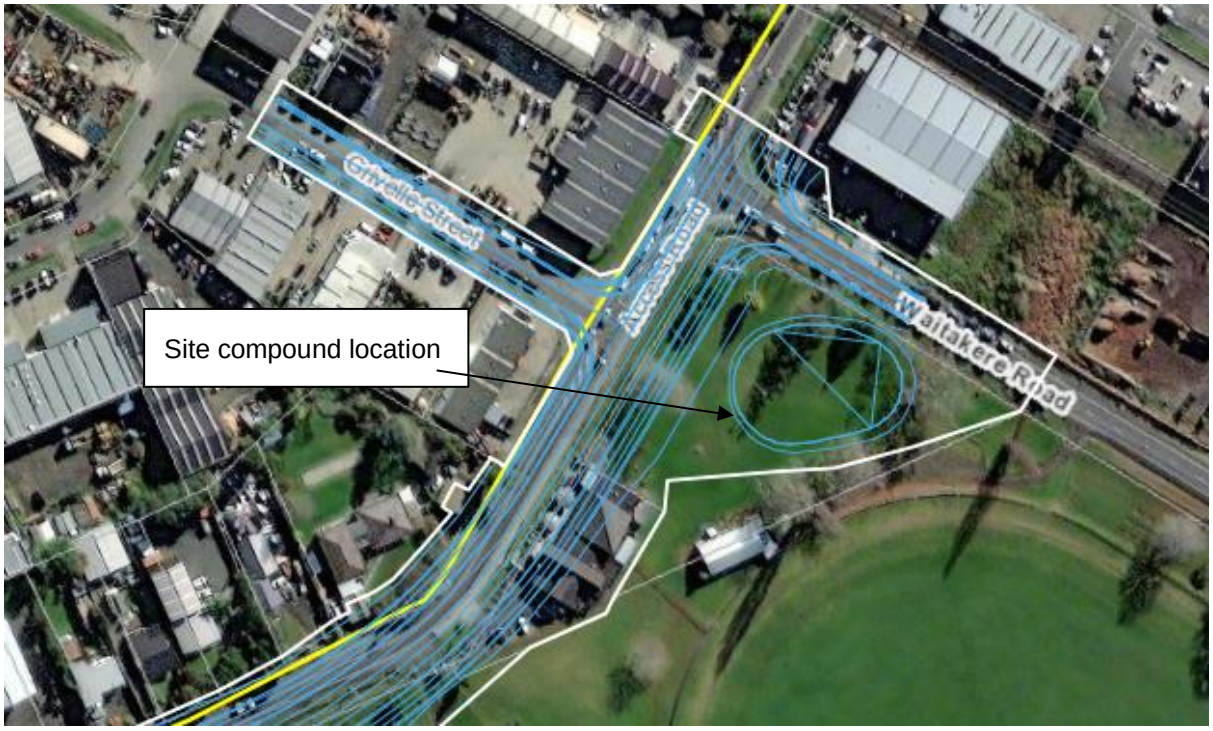
10.6.2 Assessment of Construction Effects

Construction Areas

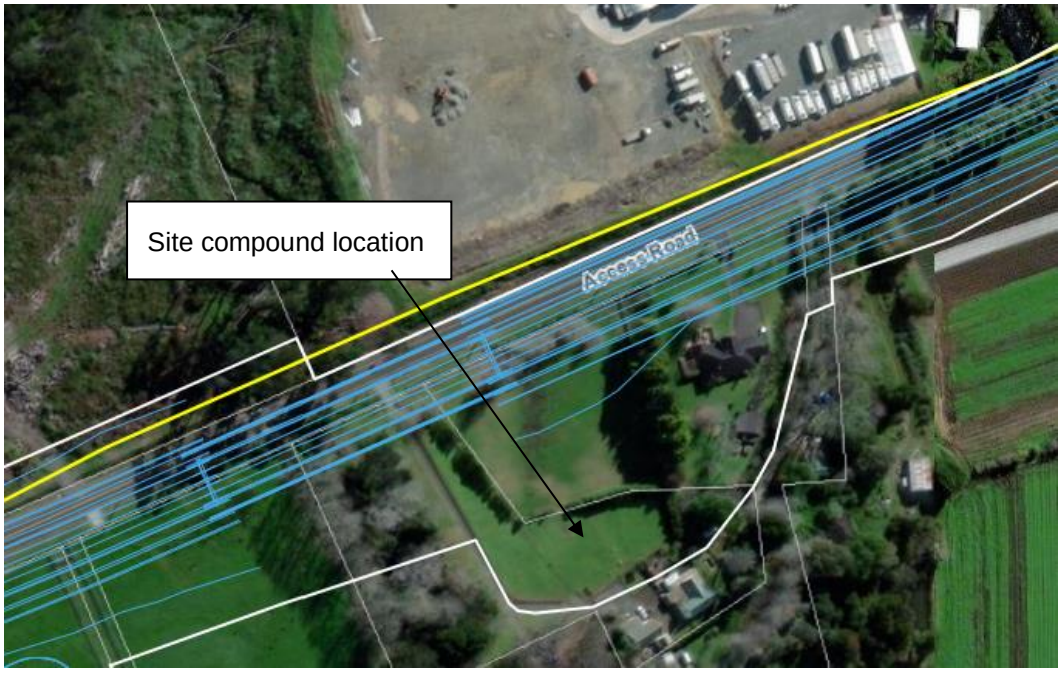
Site compound and construction areas are to be established at three locations within the Project area. Construction traffic will be heightened at these locations through the construction period of the Project.

Site compound, stockpile, sediment retention pond are located at:

- Plot 10 adjacent to 21 Access Road



- 123 Access Road



- 7 Tawa Road

Overall, the adverse physical landscape effects resulting from establishment and use of the indicative site compound and construction work areas within the Project area is assessed to be **low** adverse in rural areas and **very low** adverse in proximity to existing urban areas. These are anticipated to have relatively similar levels or effects with or without mitigation.

Vegetation Clearance

Although vegetation clearance is a permitted activity under the AUP, this does not diminish that there will be a material change that will result in landscape effects.

Linear stretches of vegetation that border the existing road corridor, within private residential properties, streetscape amenity around commercial and industrial properties and vegetation that delineate field boundaries will be removed to accommodate the construction and operation of the Project corridor. This vegetation consists of a mixture of indigenous and non-native vegetation including shelterbelts that are archetypal within the wider modified rural landscape. Exotic pasture, trees, shelterbelt plantings, private gardens and exotic stands of trees make up the majority of vegetation to be removed. Riparian vegetation within watercourses and wetlands will be removed to accommodate the replacement bridge. The riparian vegetation is a mixture of native and non-native vegetation within Kumeū River branch (Refer Figure 10-4 below). These works are subject to a separate regional consent process, however their potential effects on the landscape and natural character have been included within this assessment and the selection of the designation.

Figure 10-4: Existing vegetation to the south of the existing Access Road bridge.

Vegetation proposed to be removed in the urban context of the Project corridor will typically comprise exotic streets trees, amenity vegetation and amenity vegetation surrounding commercial and industrial development.

Without the implementation of mitigation measures the adverse physical landscape effects likely to arise from vegetation clearance within the rural Project area is assessed as between **low-moderate** to **low**. Vegetation removal in the urban Project area is assessed as being **low** adverse in urban and FUZ areas and **low** adverse in rural areas.

Overall, with the inclusion of mitigation measures the adverse physical landscape effects likely to arise from vegetation clearance within the rural Project area is assessed as **low**. Vegetation removal in the urban Project area is assessed as being **very low** adverse in urban and FUZ areas and **low** adverse in rural areas.

Structures and Earthworks

The Project corridor design requires a new bridge to replace the existing bridge that crosses a branch of the Kumeū River. This will result in a wider larger structure within the landscape, however this will be in the context of urbanised land to the north. A temporary overbridge road diversion is proposed to the south of existing road and will extend into the rural landscape.

The project anticipates that there is the potential for retaining walls at approximately six locations, these are proposed to prevent or reduce earthworks from incurring into land adjacent to the project corridor. The height of these retaining walls will be a maximum of 15m in height and are placed in proximity to retained rural residences and urban commercial buildings.

The proposed Project corridor will require fill material to be imported to fulfil a deficit in the earthworks balance across the entirety of the scheme. Overall, the proposed design requires additional fill in order to widen the project corridor and to ramp up the landform at the bridge crossing approach. Although bridges and earthworks are largely matters for regional consents, these will be addressed in future regional consenting process.`

The impacts and potential landscape effects of the proposed earthworks include the modification of and permanent changes to the underlying landform to widen the existing transportation corridor into a greenfield landscape to the south, provide a new bridge; surface level changes in close proximity to private properties; and earthworks in proximity to a watercourse. The proposed cut and fill slopes range in scale from 1m to 23m wide and will alter the form of the existing rural and urban land forms.

It is recommended that a condition on the designation is included that promotes the re-use of topsoil from pastoral land impacted by the proposed earthworks[23] and the integration of proposed slopes into the surrounding landscape.

Overall, the earthworks are considered to be of a quantity that is reasonably anticipated with a project of this scope and scale and all cut and fill slopes are expected to be integrated within the existing modified environment.

Without the inclusion of proposed mitigation it is anticipated that landscape effects will be **low-moderate** adverse to **low** adverse. Provided that the proposed mitigation measures are undertaken we expect that the adverse effects of the earthworks and bridge structure will be **low**.

Wetlands, Dry Ponds and features

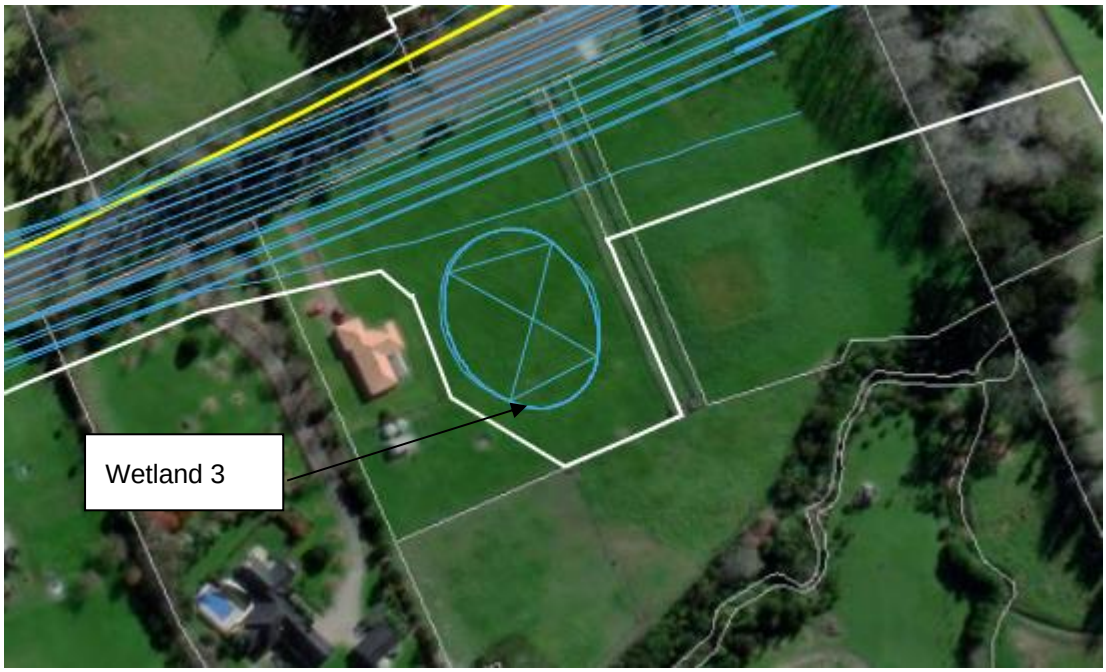
Across the Project corridor four wetland ponds are proposed;

- Wetland 1 is located to the south of the project corridor within the boundary of 83 Tawa Road;

[23] Refer to NZTA Landscape Guidelines (September 2014), Section 4.12 Topsoil for additional information regarding best practice guidelines for topsoil management and soil stripping.

- Wetland 2 is located to the south of the project corridor within the boundary of 7 Tawa Road;

- Wetland 3 is located to the south of the Project corridor at approximately 120m form a branch of the Kumeū River and set within the boundary of 161 Access Road;



- Wetland 4 is located to the north of the Project corridor within the boundary of Plot 10 adjacent to 21 Access Road

The proposed wetlands will require earthworks to re-shape the land and achieve optimal depths and edge profiles, which will be determined as part of the resource consent phase. Wetlands will all be constructed within greenfield sites in rural zoned land.

On that basis, we consider adverse effects on the physical landscape to implement the proposed wetlands to be **low**, it is anticipated that the effects level will be approximately the same at the with or without mitigation.

Private Properties

Residential properties within and adjacent to the Project area (either partially or fully designated) will be impacted by the Project in the following ways:

- Surface level changes between private property boundaries and the upgraded road corridor, requiring existing driveways and private accessways to be regraded;
- Construction of retaining walls;
- Encroachment into private yard areas and the removal of private garden plantings and trees, ancillary buildings and boundary fences;
- Potential impacts related to the construction of noise mitigation measures;
- Visual effects related to night works including light spill and sky glow; and
- Demolition of existing dwellings and ancillary buildings (required properties)

Approximately 18 retained dwellings are proposed to be impacted by the project works. Landscape mitigation measures are proposed under 10.6.3 Recommended Measures to Avoid, Remedy or Mitigate Construction Effects below.

Without the mitigation measures it is anticipated that effects on the physical landscape on retained private properties will be predominantly **low-moderate** adverse through the construction phase of works.

With the implementation of mitigation measures, it is assessed that the adverse effects on the physical landscape on retained private properties will be between **low-moderate** and **low** adverse through the construction phase of works.

10.6.2.1 Site Finishing Works

Finishing works are expected to include grassing of exposed earth, lighting, signage, line markings, footpath / cycleway details and reinstatement of private property fences and gardens. Streetscape elements and landscaping, including that required as mitigation will also be implemented. These activities are to be determined by detailed design and will occur within the already modified areas of the Project. Landscape effects are expected to be **low** through this final phase of the construction process with or without the implementation of mitigation measures.

10.6.2.2 Temporary Visual Effects

The construction of the Project is anticipated to be in two stages along the proposed corridor over an estimated period of two to three years. Visual effects are anticipated to occur progressively through the Project area and transient viewing audiences may concurrently experience adverse visual effects from multiple stages through the construction period.

The consideration of visual effects through the construction phase acknowledges the full range of activities (and their resultant visual impact), required to implement the widened road corridor.

It is anticipated that construction activities required to implement the Project will introduce a concentrated area of construction activity into the existing road corridor in the urban and rural landscape. Within the FUZ the proposed construction phase will be consistent with the construction activities expected to be associated with the urbanisation of the rural landscape. Another important consideration is that landscape change by way of vegetation removal and land modification (on private rural property), albeit at a lesser scale, forms part of the expected backdrop of the existing environment.

Notwithstanding the above, some vantage points within the Project area are likely to witness heightened adverse visual effects through the construction phase due to the magnitude of vegetation removal and / or earthworks proposed. These areas are outlined below:

- Private properties where physical landscape effects will occur within their lots.
- Effects on properties at 83 and 79 Tawa Road due to the proximity to Wetland 3, site compound at CH000 and the main route corridor;
- Properties at 21 and 17 in proximity to the nearby site compound and Wetland 2;
- A property at 233 Access Road in proximity to the relocated access driveway.
- Private properties at 165, 161, 127A, 127B Access Road and 32 Farrand Road in proximity to Wetland 3, the nearby site compound and the proposed replacement bridge.

The nature and significance of the potential adverse visual effects is considered to be moderated through the Project area by the following aspects:

- Road works and construction activities can generally be expected to occur where temporary roads, wetlands and construction compounds within the proximity of the existing road network;

- Access Road already being an existing element within the visual composition of the Project area;
- The existing road corridor landscape has already been modified by previous works required to shape the existing road corridor.
- The construction works are estimated to last approximately 2-3 years and is anticipated to be staged/managed in two phases which are expected to allow efficient access to the construction zones while maintaining continued access for the intersecting roads and existing private and commercial driveways.

It is anticipated that without the implementation of mitigation measures adverse visual effects for the transient public viewing audience are anticipated to be **low-moderate** to **low** through the construction phase

Overall, with the implementation of mitigation measures, adverse visual effects for the transient public viewing audience are anticipated to be **low-moderate** to **very low** through the construction phase, taking into account those vantage points listed above where adverse effects are likely to be heightened during the temporary construction period.

Adverse visual effects during the construction phase are likely to be heightened for private viewing audiences directly adjacent to the Project area on the basis of more direct and prolonged engagement with the construction activities of the Project. This will include the presence of heavy machinery and the visible disturbance of both the road corridor and also individual private interfaces with the road.

It is anticipated that without the implementation of mitigation measures adverse visual effects will be between **low-moderate** to **low**, during the construction phase.

With the implementation of mitigation measure adverse visual effects are anticipated to range between **low-moderate** to **very low** during the construction phase for private viewing audiences, depending on their location, proximity to the works and outlook.

10.6.3 Recommended Measures to Avoid, Remedy or Mitigate Construction Effects

Recommendations are in line with the general recommendations in Section 6.1.2.

10.6.4 Assessment of Operational Effects

10.6.4.1 Natural Character Effects

Natural character forming elements are typically wetlands, rivers and perennial watercourses that traverse the existing modified rural and urban landscapes. Indigenous riparian vegetation within wetlands and waterways are limited to the existing bridge Kumeū River branch. This contains a mixture of native and non-native vegetation, however around the vicinity of the proposed bridge crossing the vegetation is predominantly non-native and invasive species. As a result of the low value vegetation and the modification that has already been undertaken at the bridge crossings. We consider that the natural character value of these element, features and processes are low.

Clearance of some indigenous riparian vegetation and habitat will be required to facilitate the widening of the bridge crossing of the Kumeū River branch. The use of a bridge will minimise the impact on the natural flow of water and to enable the riparian habitat to continue underneath the bridge after completion. It is recommended that during detailed design process a planting plan and vegetation protection plan is recommended as part of the ULDMP, which will be developed as part of

the detailed design of the Project. This will ensure that natural character values of the watercourses and wetlands are enhanced as an outcome of the Project.

On the basis of the above (allowing for future landscape mitigation), natural character effects are likely result in a **very low** positive**,** where the river flow is retained and the existing low quality vegetation is replaced by native riparian vegetation. Without the implementation of mitigation measures it is anticipated that natural character effects will be **low** adverse.

10.6.4.2Visual Amenity Effects

Overall, there are likely to be a range of visual amenity effects on public and private viewing audiences relative to proximity to the corridor in the urban and rural landscapes. Rural properties set back from the Project area to the south will experience a reduced incremental increase in effects in the context of the existing transportation corridor. Urban properties that set back from the Project area experience interrupted views of works, reducing the level of effects experienced.

There are no residential urban private properties that interface directly with the Project corridor, properties to the northern end of the project corridor are all commercial and light industrial properties. These audiences have a lower level of sensitivity than residential audiences. Retained private residential properties within the rural landscape will generally experience a heightened change in the view as a result of the widening of the road resulting in the corridor moving closer to the audiences. The impacts perceived will be reduced for properties which are set further back from the existing road corridors or have rural properties which have views that are filtered or screened.

It is recommended that boundary fences and garden plantings (removed through the Project works) be reinstated on completion of the works affecting the property. These mitigation measures should be considered within the ULDMP under the lens of neighbourhood character and as such are discussed further in the following section.

FUZ land to the north of the Project corridor will be urbanised with the Spatial Land Use Strategy indicating that the northside will be developed for business -light industrial and residential. Visual effects are anticipated to be reduced for this viewing audience, based on improved visual amenity for users associated with streetscape improvements, maturing street trees, berm planting and accessibility to active modes of transport.

Public viewing audiences within proximity to the Project are primarily transient road users along Access Road, Tawa Road and Station Road, have a reduced level of sensitivity to change. Station Road users will have views that are perpendicular to the project corridor. It is recognised that there is the potential for new roads to adjoint the site from the FUZ, however it is not expected that effects on these audiences will be more pronounced than the identified roads.

Overall, some visual effects are anticipated to be mitigated by measures implemented during the finishing phase of the construction period (within the road corridor and private property boundaries), that will mature through the operational phase of the Project.

These will reduce some of the long-term residual visual effects of the Project. In an urban setting the approximately 30m four road lane and active mode corridor will be seen within the context of the existing Access Road and Tawa Road. The presence of the existing transportation corridors within the locality of the Project will result in the proposal appearing less at odds with the surrounding landscape. The proposed project corridor will be a noticeably altered feature within the landscape particularly the introduction of highway lighting. The road corridor will be less apparent from the FUZ

where built form urbanised road networks are street lighting and vegetation will be present in the context.

It is anticipated that without the inclusion of mitigation measures visual effects within the Project area are likely to be **low to very low** adverse for transient viewers within the FUZ landscape and **low** for static audiences through the operational phase of the Project. For private viewing audiences, adverse visual effects are likely to range from **low-moderate** for rural audiences and **low** for audiences within the FUZ. Commercial and industrial audiences within the existing urban area of Kumeū are expected to experience **very low** adverse effects during operation.

With the implementation of mitigation measures, adverse visual effects within the Project area are likely to be **very low** for transient viewers within the FUZ landscape and **low** for static audiences through the operational phase of the Project. For private viewing audiences, adverse visual effects are likely to range from **low-moderate** to **low** for rural audiences and **low** to **very low** for audiences within the FUZ. Commercial and industrial audiences within the existing urban area of Kumeū are expected to experience **very low** adverse effects during operation. In all instances these would reduce over an extended period of time.

10.6.4.3 Landscape Character Effects

The principal elements of the Project will permanently alter the character of the road corridor interface with the rural southern side of the project corridor. The FUZ section to the north of the Project area will experience the proposal within the context of a wider landscape undergoing urbanisation. The rural zoned sections of the Project area are characterised by the lack of streetscape features, informal intermittent vegetation, managed and unmanaged watercourses, shelterbelt and hedgerows along field boundaries and existing rural land uses. The existing rural roadways generally lack urban characteristics such as a kerb and channel roadway, footpaths and street lighting. These features will be introduced into the landscape by the Project including active mode transport lanes, street lighting and a kerb and channel roadway. At the completion of the Project, the upgraded corridor will resemble that of an urban arterial road as a result of the pedestrianisation, active modes of transport, structured street tree planting, integrated stormwater management and engineered roading elements that have an inherently urban aesthetic.

The Project is anticipated to enter the operational phase within the context of increased urbanisation where FUZ land is progressively live-zoned and urbanised. Although it is not possible to anticipate the exact future urban land use pattern, it is expected that business and commercial land uses will primarily populate the FUZ.

Through the existing commercial and industrial urban area the existing character of the landscape will endure. The proposed project is expected to improve the structure and amenity of the road corridor by providing a more structured road layout and consistent landscape pattern. The development of FUZ within the SLUS is less structured and is intended to be at a high level. However, it is identified that the area to the north of the project corridor will be primarily developed for business and commercial use and residential at the southern end of the Project corridor. Based on the above the magnitude and nature of landscape change proposed by the Project we consider to be in alignment with the changes that will likely occur throughout the landscape as it is urbanised over time.

The typical cross sections at Figure 10-1 illustrates the proposed upgrade to the road and the expected future use. Although there will not be space along the entire road corridor for green infrastructure elements such as street trees and berm, there is some existing retained green existing infrastructure to contribute to the overall amenity of the corridor on the southern aspect. A structured planting design will be provided along the Project corridor including on slopes and embankments as

part of the ULDMP, to provide integration of the project into the landscape. It is also recommended that the ULDMP seeks to optimise the design of slopes and embankments to have a more naturalised appearance and integrate with the surrounding rural landscape. These features and design details are expected to improve landscape and urban amenity of the Project corridor.

It is assessed that planting and design interventions within the ULDMP, in conjunction with stormwater management and reinstatement planting, will reduce effects on landscape character associated with broad vegetation clearance Project area within the rural environment.

It is assessed that in the context of the FUZ and with planting and design interventions provided in a ULDMP, effects on landscape character and likely result in a **very low** adverse landscape character effects. Within the context of the rural landscape to the south the effects on the landscape character are expected to be in line with the proposed urban interface. We consider that effects on the landscape character are likely to be **low** adverse. Without the implementation of mitigation, it is anticipated that landscape character effects have the potential to be **low-moderate** adverse.

10.6.5 Recommended Measures to Avoid, Remedy or Mitigate Operational Effects

Recommendations are in line with the general recommendations in Section 6.1.3.

In addition to these measures the following project specific interventions are suggested:

- Protect the natural character and processes of the Kumeū River, and its branches, particularly where the river branch crosses SH16 Main Road and the project corridor crosses the existing pond. This will be covered within the regional consent process.

10.7 Conclusions

Without the implementation of mitigation measures it is anticipated that landscape and visual effects could range from **low-moderate** adverse to **low** adverse for the construction phase and **low-moderate** adverse to **low** adverse for the operational phase (low-moderate to low in retained rural areas and low in urban areas).

Overall adverse landscape and visual effects (with mitigation) range from **low-moderate** to **very low** for the construction phase (moderate to low in retained rural areas and low to very low in urban areas) and **low-moderate** to **very low** for the operational phase (low-moderate to very low in retained rural areas and low to very low in urban areas). The adverse effects can be mitigated and reduced over time in relation to the FUZ areas which will experience urbanisation of the surrounding landscape.

The FUZ landscape context has a lower level of sensitivity to change due to the anticipated developing urban form of the landscape associated with future urbanisation. Natural character effects are expected to be **very low** positive, however without the implementation of mitigation measures there is the potential for **low** adverse effects.

Provided that the existing flow of the watercourse is retained and the surrounding non-native and invasive species are removed and replaced with native riparian vegetation. Although, the rural areas of the landscape are more sensitive to the widening of the road corridor, integration works proposed by the ULDMP will assist with the integration of the slopes and embankments into the landscape through earth shaping and mitigation planting.

11 Overall Conclusions

NoR S1 Alternative State Highway (ASH), including Brigham Creek Interchange (BCI)

Overall landscape and visual effects without mitigation range from **high** adverse to **low** adverse for the construction phase and **high moderate** adverse to **low** adverse for the operational phase. With the anticipation of mitigation measures being implement landscape and visual effects are anticipated to range from **moderate-high to very** for the construction phase and **low-moderate** to **very low** for the operational phase.

Overall, the adverse effects can be mitigated and reduced over time in relation to the FUZ areas which will experience urbanisation of the surrounding landscape. The FUZ landscape context has a lower level of sensitivity to change due to the anticipated developing urban form of the landscape associated with future urbanisation. The rural areas of the landscape are more sensitive to the introduction of the road corridor, however optimizing landscape integration, through the ULDMP, which will assist with the integration of the slopes and embankments into the landscape through earth shaping and mitigation planting. Heightened adverse visual effects on retained rural properties can be reduced during the construction phase, however adverse effects will be unavoidable in some instances.

NoR S2 SH16 Main Road Upgrade

Without the implementation of mitigation measures, overall landscape and visual effects are anticipated to range from **moderate** adverse to **low** adverse for the construction phase and **moderate** adverse to **low** adverse for the operational phase.

With the implementation of a mitigation measures landscape and visual effects are anticipated to range from **moderate** to **low** adverse for the construction phase and **low-moderate** to **very low** adverse for the operational phase. Overall, the adverse effects can be mitigated and reduced over time in relation to the FUZ areas which will experience urbanisation of the surrounding landscape. The FUZ landscape context has a lower level of sensitivity to change due to the anticipated developing urban form of the landscape associated with future urbanisation.

The existing urban core of Kumeū and Huapai also have a reduced sensitivity to change will be experience landscape and visual effects during construction resulting in a **low-moderate** level of effects. However, after the project corridor is completed, the effects will be **very low**. The rural areas of the landscape are more sensitive to the widening of the road corridor however, integration works proposed by the ULDMP will assist with the integration of the slopes and embankments into the landscape through earth shaping and mitigation planting.

NoR S3 Rapid Transit Corridor (RTC), including the Regional Active Mode Corridor (RAMC)

It is anticipated that without the inclusion of mitigation measures adverse landscape and visual effects (with mitigation) range from **low** to **moderate** for the construction phase (**moderate** to **low** in rural areas and **moderate** to **low** in urban areas) and **very low** to **low-moderate** for the operational phase (in both rural and urban areas). Within the existing urban cores of Kumeū and Huapai it is anticipated that landscape and visual effects experienced during construction resulting in a **low-moderate** to **low** level of effects, after the project corridor is completed the effects will be **low** adverse.

Provided that mitigation measures are adverse landscape and visual effects (with mitigation) range from **very low** to **moderate** for the construction phase (**moderate** to **low** in rural areas and **low-moderate** to **very low** in urban areas) and **very low** to **low-moderate** for the operational phase (in

both rural and urban areas). Overall, the adverse effects can be mitigated and reduced over time in relation to the FUZ areas which will experience urbanisation of the surrounding landscape. The FUZ landscape context has a lower level of sensitivity to change due to the anticipated developing urban form of the landscape associated with future urbanisation. Natural character effects are expected to range from low-moderate to low, providing the higher sensitivity natural character areas with bridges.

The existing urban core of Kumeū and Huapai also have a reduced sensitivity to change and are anticipated to experience landscape and visual effects during construction resulting in a **low** level of effects. However, after the project corridor is completed the effects will be **very low** adverse. The rural areas of the landscape are more sensitive to the introduction of the road corridor however, integration works proposed by the ULDMP will assist with the integration of the slopes and embankments into the landscape through earth shaping and mitigation planting

NoR KS Kumeu Rapid Transit Station

It is anticipated that without the inclusion of mitigation measures adverse landscape and visual effects landscape and visual effects range from **low-moderate** to **low** adverse for the construction phase and **low** adverse for the operational phase

Overall landscape and visual effects (with mitigation) range from **low** to **very low** adverse for the construction phase and **low** adverse to **very low** positive for the operational phase. Overall, the adverse effects can be mitigated and reduced over time in relation to the regeneration in the existing urban surrounds and the changes to the landscape character are expected to have a positive effect. The existing urban landscape context has a lower level of sensitivity to change due to the existing already disturbed area and anticipated further development of the landscape associated with regeneration. Natural character effects on the Kumeū River are expected to be **low**, provided that the direct impacts on the existing pond minimised.

The existing urban core of Kumeū also has a reduced sensitivity to change will be experience landscape and visual effects during construction resulting in a **low-moderate** to **low** level of effects. However, after the project corridor is completed the effects will be **low** positive. The proposed integration with the surrounding landscape and streetscape advised in the ULDMP will assist with the establishing the station within the developing urban landscape. Within the urban core the level of effects are anticipated to be the same with or without mitigation.

NoR HS Huapai Rapid Transit Station

It is anticipated that without the inclusion of mitigation measures adverse landscape and visual effects landscape and visual effects will range from **moderate** to **low** adverse for the construction phase and **low-moderate** to **very low** adverse for the operational phase

Overall adverse landscape and visual effects (with mitigation) range from **low-moderate** to **very low** for the construction phase of works and **low** to **very low** during the operational phase. Overall, the adverse effects can be mitigated and reduced over time in relation to the urbanisation of the existing rural landscape. The existing urban landscape context has a lower level of sensitivity to change due to the anticipated urbanisation of the landscape. Natural character effects on the Kumeū River branches are expected to be **low** adverse. Provided that the direct impacts on the existing Kumeū River to the east are avoided and the effects on the river branch to the west maintain the flow of the watercourse. The proposed integration with the surrounding landscape and streetscape advised in the ULDMP will assist with the establishing the station within the developing urban landscape.

NoR S4 Access Road Upgrade

Without the implementation of mitigation measures it is anticipated that landscape and visual effects could range from **low-moderate** to **low** for the construction phase and **low-moderate** to **low** for the operational phase (low-moderate to low in retained rural areas and low in urban areas).

Overall adverse landscape and visual effects (with mitigation) range from **low-moderate** to **very low** for the construction phase (moderate to low in retained rural areas and low to very low in urban areas) and **low-moderate** to **very low** for the operational phase (low-moderate to very low in retained rural areas and low to very low in urban areas). The adverse effects can be mitigated and reduced over time in relation to the FUZ areas which will experience urbanisation of the surrounding landscape.

The FUZ landscape context has a lower level of sensitivity to change due to the anticipated developing urban form of the landscape associated with future urbanisation. Natural character effects are expected to be **very low** positive, however without the implementation of mitigation measures there is the potential for **low** adverse effects.

Provided that the existing flow of the watercourse is retained and the surrounding non-native and invasive species are removed and replaced with native riparian vegetation. Although, the rural areas of the landscape are more sensitive to the widening of the road corridor, integration works proposed by the ULDMP will assist with the integration of the slopes and embankments into the landscape through earth shaping and mitigation planting.

Summary of Construction and Operational Effects with Mitigation

NoR #	Temporary Construction Effects		Operation (Permanent Effects)		
	Landscape Effects	**Visual Effects**	**Natural Character Effects**	**Visual Amenity Effects**	**Landscape Character Effects**
NoR S1 Alternative State Highway (ASH)	Moderate to Moderate-High Adverse	Low to Moderate Adverse	Low to Moderate Adverse	Very Low to Low-Moderate Adverse	Low to Low-Moderate Adverse
NoR S2 SH16 Main Road Upgrade	Low-Moderate Adverse	Low to Moderate Adverse	Low to Low-Moderate Adverse	Very Low to Low-Moderate Adverse	Very Low to Low Adverse
NoR S3 Rapid Transit Corridor and Regional Active Mode Corridor	Very Low to Low-Moderate Adverse	Low to Low-Moderate Adverse	Low to Low-Moderate Adverse	Very Low to Low-Moderate Adverse	Low to Low-Moderate Adverse

NoR KS Kumeu Rapid Transit Station	Very Low to Low Adverse	Low to Low-Moderate Adverse	Neutral	Very Low to Low Adverse	Very Low Positive to Low Adverse
NoR HS Huapai Rapid Transit Station	Very Low to Low Adverse	Low to Low-Moderate Adverse	Low	Very Low to Low	Very Low
NoR S4 Access Road Upgrade	Very Low to Low-Moderate Adverse	Ver Low to Low-Moderate Adverse	Very Low	Very Low to Low-Moderate	Very Low to Low Adverse

1 Appendix 1: Landscape Effects Methodology

1.1 Overview

This Landscape Effects Assessment (LEA) has been undertaken with reference to Te Tangi a te Manu, Aotearoa New Zealand Landscape Assessment Guidelines[24]. The same methodology applies to the construction and operational stages of the works and for NoRs (S1, S2, S3, KS, HS and S4). These guidelines have been developed to relate to the Aotearoa New Zealand environmental planning context and align with te ao Māori and te ao Pākehā concepts of landscape.

Landscape impacts result from natural or induced change in the components, character or quality of the landscape. Usually these are the result of landform or vegetation modification or the introduction of new structures, facilities or activities into the landscape.

Natural character impacts are in relation to natural or induced change to any streams, wetlands and their margins as outlined in the NZCPS[25]. These are usually the result of landform, vegetation or hydrological modification or the introduction of structures into the landscape.

Effects arise from change in the values associated with the landscape, not as simply as a result of the change itself. Visual impacts are the result of change to the landscape and are a consequence of that change.

The process of change itself, that is the construction process and / or activities associated with the development, also carry with them their own visual impacts, however, these are distinct from those generated by a completed development.

The landscape and visual effects generated by any particular proposal can, therefore, be perceived as:

- positive (beneficial), contributing to the visual character and quality of the environment.
- negative (adverse), detracting from existing character and quality of environment; or
- neutral (benign), with essentially no effect on existing character or quality of environment.

The degree to which landscape and visual effects are generated by a development depends on a number of factors, these include:

- The degree to which the proposal contrasts, or is consistent, with the qualities of the surrounding landscape.
- The proportion of the proposal that is visible, determined by the observer's position relative to the objects viewed.
- The distance and foreground context within which the proposal is viewed.
- The area or extent of visual catchment from which the proposal is visible.
- The number of viewers, their location and situation (static, or moving) in relation to the view.
- The backdrop and context within which the proposal is viewed.
- The predictable and likely known future character of the locality.
- The quality of the resultant landscape, its aesthetic values and contribution to the wider landscape character to the area.

[24] 'Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines', [Final Draft subject to final editing, graphic design, illustrations, approved by Tuia Pito Ora/NZILA 5 May 2021]

[25] 'New Zealand Coastal Policy Statement' [issued 4 November 2010]. Accessed online 24.11.2021 (https://www.doc.govt.nz/globalassets/documents/conservation/marine-and-coastal/coastal-management/nz-coastal-policy-statement-2010.pdf)

Change in a landscape and 'visibility' of a proposal does not of itself, constitute an adverse landscape or visual effect. It is the effect on the values of the landscape, positive, adverse or benign that need to be understood and evaluated.

1.2 Scale of Effects

In determining the magnitude of potential and actual landscape and visual effects of the Project, a consistent 7-point rating scale has been used that is based on the recommendations in the Te Tangi a te Manu, Aotearoa New Zealand Landscape Assessment Guidelines. The effects ratings referred to in this assessment are based upon a seven-point scale which ranges from 'very low' to 'very high' and are described in the table below.

7-point rating scale

Effect Rating	*Use and Definition*
Very High:	Total loss of key elements / features / characteristics, i.e. amounts to a complete change of landscape character and in views.
High:	Major modification or loss of most key elements / features / characteristics, i.e. little of the pre-development landscape character remains and a major change in views. Concise Oxford English Dictionary Definition High: adjective- Great in amount, value, size, or intensity.
Moderate- High:	Modifications of several key elements / features / characteristics of the baseline, i.e. the pre-development landscape character remains evident but materially changed and prominent in views.
Moderate:	Partial loss of or modification to key elements / features / characteristics of the baseline, i.e. new elements may be prominent in views but not necessarily uncharacteristic within the receiving landscape. Concise Oxford English Dictionary Definition Moderate: adjective- average in amount, intensity, quality or degree
Low-Moderate:	Minor loss of or modification to one or more key elements / features / characteristics, i.e. new elements are not prominent within views or uncharacteristic within the receiving landscape.
Low:	Little material loss of or modification to key elements / features / characteristics. i.e. modification or change is not uncharacteristic or prominent in views and absorbed within the receiving landscape. Concise Oxford English Dictionary Definition Low: adjective- 1. Below average in amount, extent, or intensity.

Effect Rating	*Use and Definition*
Very Low:	Negligible loss of or modification to key elements/ features/ characteristics of the baseline, i.e. approximating a 'no change' situation and a negligible change in views.

Mitigation

For effects that are very low or low, mitigation is generally not required. Mitigation may be required for landscape effects of a low-moderate to moderate rating and area likely to be required for effects of a moderate-high to high rating to reduce effects to a lower degree. For effects that are very high, mitigation is unlikely to reduce the level of effect to any discernible degree.

1.3 Methodology Breakdown

The methodology that forms the basis for the assessment is set out below:

- Identification of relevant statutory provisions and non-statutory guidance relating to landscape;
- Analysis and description of existing landscape elements, features and character of the existing 'Baseline Landscape' within the NoRs and surrounding areas;
- Analysis and description of landscape elements, features and character of the likely future environment within the NoRs and surrounding areas;
- Analysis and description of perceptual, sensory and associative qualities within the Project areas, and the identification of the viewing audience and visual catchment;
- Summary of landscape values within the Project areas, including inputs from other specialists such as ecology, stormwater and historic heritage;
- Evaluation of the sensitivity of the landscape within the Project areas to landscape change arising from transport infrastructure upgrades;
- Analysis and description of the development proposal including construction methodology, timeline and discussion of avoidance and mitigation measures already integrated through the design;
- Identification of the principal elements of the Project (effects generators) likely to result in landscape, natural character and visual effects;
- Identification of construction (temporary) vs operational (permanent) effects of the Projects;
- Identification of general and targeted mitigation measures to reduce the magnitude of likely effects;
- Assessment of effects (adverse, neutral and / or positive) on the bio-physical aspects of the landscape resource, landscape character, natural character and visual amenity, taking account of the proposed mitigation measures; and
- Summary of the overall landscape and visual effects of the Projects and an overall determination of the significance of landscape and visual effects.

1.4 Landscape Values

Considering the absence of any scheduled high value landscape areas (ONLs, ONFs. HNCs or ONCs) at a national, regional or district level within or directly adjacent to the Project areas, a

summary is provided of local landscape values within each Project Group. Local values generally considered three broad categories including: biophysical, perceptual and associative values.[26]

1.5 Landscape Sensitivity

The level of sensitivity of the sites and wider rural areas to land use change is influenced by the latest planning direction (AUP:OP and also the Whenuapai Structure Plan) that has placed the sites, local landscape and NoRs into the Future Urban Zone (FUZ) and some live mixed housing urban zoning around Whenuapai local centre.

Notwithstanding the above, the interface between the land and water (riparian margins) is particularly sensitive to landscape change and under Part 2 of the RMA (section 6(a)) and relevant policies of the National Policy Statement for Freshwater 2020 (NPS-FM), the values within these areas of the landscape should generally be protected from inappropriate subdivision, use and development.

Other landscape attributes may also be sensitive to the effects of landscape change such as topographical and landform features, vegetation (scheduled notable trees or patterns of contiguous land cover), existing sensitivity associated with the built environment and views afforded to landmarks and / or landscape features within the contextual landscape. A scheduled notable tree is a tree or group of trees that a community or nation regards as being of special importance. These are listed in the Schedule 10: notable trees schedule in the AUPOIP[27].

1.6 Landscape Effects

Landscape effects derive from changes in the physical landscape, which may give rise to changes in its character and how this is experienced over time. This may in turn affect the perceived value ascribed to the landscape.

Potential landscape effects in this assessment relate to the following landscape attributes:

- Biophysical - Abiotic: Geophysical processes (landform) and drainage patterns.
- Biophysical – Biotic: Vegetation cover, quality and pattern (native and exotic).
- Human attributes: Land uses, active and passive recreation, amenity and built form.

Landscape and visual effects are assessed in two parts as outlined below; firstly, through the construction period of the Projects where the bio-physical and human attributes within the Project area are required to be modified to implement the Project. Landscape and visual effects during the construction phase are generally considered to be temporary and dynamic in nature and may temporarily be heightened by the intervention of heavy machinery, areas of exposed ground and the use of construction service areas. In the second part (the operational phase of the Projects), the overall significance and value of landscape and visual change is explored and ultimately the Project's impact on landscape character, natural character and visual amenity is assessed.

The two categories of effects are outlined as follows:

- **Temporary Effects** (Construction Effects): Describes the anticipated impacts on the bio-physical elements and features of the landscape resource (landform, vegetation and hydrology) resulting

[26] Landscape Guideline: Appendix 1: NZTA Landscape and Visual Assessment Guidelines

[27] AUPOIP Schedule 10: Notable Trees, https://unitaryplan.aucklandcouncil.govt.nz/Images/Auckland%20Unitary%20Plan%20Operative/Chapter%20L%20Schedules/Schedule%2010%20Notable%20Trees%20Schedule.pdf [accessed 5 July 2022]

from the construction of the Project. It also includes visual amenity effects for both public and private viewing audiences from construction works. The construction activities required to implement the Project are categorised under the following broad headings:

  - **Site enabling works** - site establishment, demolition and vegetation clearance;
  - **Project formation works** - bulk earthworks, retaining walls, overhead structures, culvert upgrades, stormwater wetlands construction.

- **Permanent Effects** (Operational Effects): Describes the effects on the landscape of completed works (including integrated landscape mitigation measures), the significance of physical landscape change and ultimately the resulting effects of the Projects on landscape character, natural character and visual amenity for both public and private viewing audiences.
  - **Finishing works** - lighting, signage, road, footpath / cycleway details and line markings, streetscape elements and landscaping (including trees, mitigation planting and riparian / stormwater device / wetland planting).

1.7 Natural Character Effects

Section 6(a) of the RMA identifies as a matter of national importance to recognise / provide for the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers[28] and their margins, and the protection of them from inappropriate subdivision, use, and development.

Assessing existing natural character is primarily concerned with the degree to which natural processes, natural patterns and natural elements have undergone human modification. Hydrological and ecological survey and assessment for the Project area generally underpin the landscape evaluation of existing natural character values.

The natural character assessment for this Project applies to the existing water bodies and wetlands associated with the Totara Creek, Totara Inlet, Ngongetepara Creek, Karure Stream, Kumeū River (and its branches), Pakinui Stream and the Ahukurama Stream.

1.8 Visual Effects

Visual effects relate to the changes that arise in the composition of available views as a result of changes to the landscape, to people's responses to the changes, and to the overall effects with respect to visual amenity. Visual effects are considered for both temporary (construction effects) and permanent (operational effects) of the Projects.

Potential effects considered in this assessment relate to the following visual amenity attributes:

- Visual quality and composition (legibility, coherence, setting, scenic quality)
- Visibility (extent of visibility to the Project area)
- Views (viewing audience and views afforded to, from and within the Project area).

The nature and magnitude of the visual effect can be influenced by a number of factors such as:

- The extent to which the Project areas are visible;

[28] A 'river' is defined in the RMA as a continually or intermittently flowing body of fresh water; and includes a stream and modified watercourse.

- Legibility and whether there are intervening elements in the landscape that restrict views towards the Project area;
- Whether or not aspects of the Project appear 'at odds or integrated' with existing landscape character and composition;
- Distance between the viewer and the Project area;
- The nature of the viewing audience, numbers and extent of the visual catchment.

The proposed Projects are located within an evolving future urban landscape, which in itself will bring about substantial landscape and visual change. Therefore, the visual composition that exists today is likely to change considerably over the course of the next decade.

Based on the above, the visual assessment for the Projects focuses on the potential visual effects arising (through the construction and operation of the Projects) within the proposed NoR areas, and localised landscape. The focus of the assessment is on the nature and significance of effects within the Project areas and how that translates to effects for immediately adjacent land uses (existing and future but acknowledging that the existing land uses will change in the future).

Assessment photography was obtained during the project site visit in July 2020 and September 2022. The outlook from viewpoints that were captured onsite were photographed and assessed in variable weather conditions and at standing eye level. The photographs were taken with a digital SLR camera.

1.9 Limitations

This landscape assessment does not specifically address and respond to Mana whenua values from a design planning perspective. However, Mana whenua knowledge and associative values of the project landscape has been shared through the separate and parallel engagement between the Project team and Mana whenua who have expressed interest in the Projects. There are several crossovers with related specialties including urban design, ecology, arboriculture and historic heritage. This report references the latest data available in respect of these matters at the time of issue.

All site assessments have been undertaken from public land and supported through detailed desktop GIS mapping and aerial photograph information.

1.10 Project Assumptions

The findings of this landscape effects assessment are underpinned by the following assumptions:

- For the FUZ areas, it is likely that construction of the road corridors will occur ahead of, or in parallel to, the urbanisation of these areas. Therefore, the starting assumption is that the roads will be constructed in the existing village and semi-rural environment and operate in an urban environment.
- For those areas that are already urbanised or are planned to be (as per precinct plans in the AUP:OP), construction and operation of the transport corridors will be within an urban environment.
- The Whenuapai Structure Plan can be used to reasonably anticipate the likely future context of the eastern extent of NoR S1.
- The likely future land uses for NoR S2, NoR S3, NoR S4, NoR KS and NoR HS are referenced from the Spatial Land Use Strategy - Kumeū-Huapai, Riverhead, and Redhills North.

- The proposed designation footprint has sufficient space to enable design changes to occur through the detailed design phase of the Project, in order to integrate the road corridor from a visual and urban design perspective with adjoining land uses.

1.11 Statutory Guidance

1.11.1 Notice of Requirement

This assessment has been prepared to support the NoRs for the projects. The process for consideration of a NOR is set out in section 168 of the RMA. This includes consideration of the actual or potential effects (including positive effects) on the environment of allowing the requirement under the Resource Management Act (RMA).

Part 2, Schedule 6, Clause 33(7)(b) in Part 8 of the RMA, in particular ss 168, 171 and 176 of the RMA. The designation once confirmed authorises the activities relating to the Project or work enabled by the designation that would otherwise require a resource consent for land use activities pursuant to section 9(3) of the RMA. This assessment therefore focuses on the landscape and visual effects of the land use activities that will be authorised by the proposed designations for the Project. Landscape and visual effects arising from activities that require future regional consents will be assessed as part of a future consent process.

1.11.2 Precincts and Subdivisions

A number of Precinct overlays exist that are relevant to the Strategic Package, largely within the Kumeū-Huapai area. These are outlined below and shown in Figure 1-1 below:

- **I516 Kumeū Precinct**: the purpose of the Precinct is to enable the establishment of a town centre to serve the Kumeū and Huapai area with a strong commercial core and associated residential and recreational areas.
- **I517 Kumeū Showgrounds Precinct:** Provides specifically for the activities undertaken by the Kumeū District Agricultural and Horticultural Society at the showgrounds.
- **Special Housing Area - Huapai**:**2 Precinct:** Provides for the comprehensive and integrated development for residential purposes.
- **Special Housing Area - Huapai Triangle Precinct:** which allows for urban expansion to support Huapai and Kumeū's role as a compact centre.

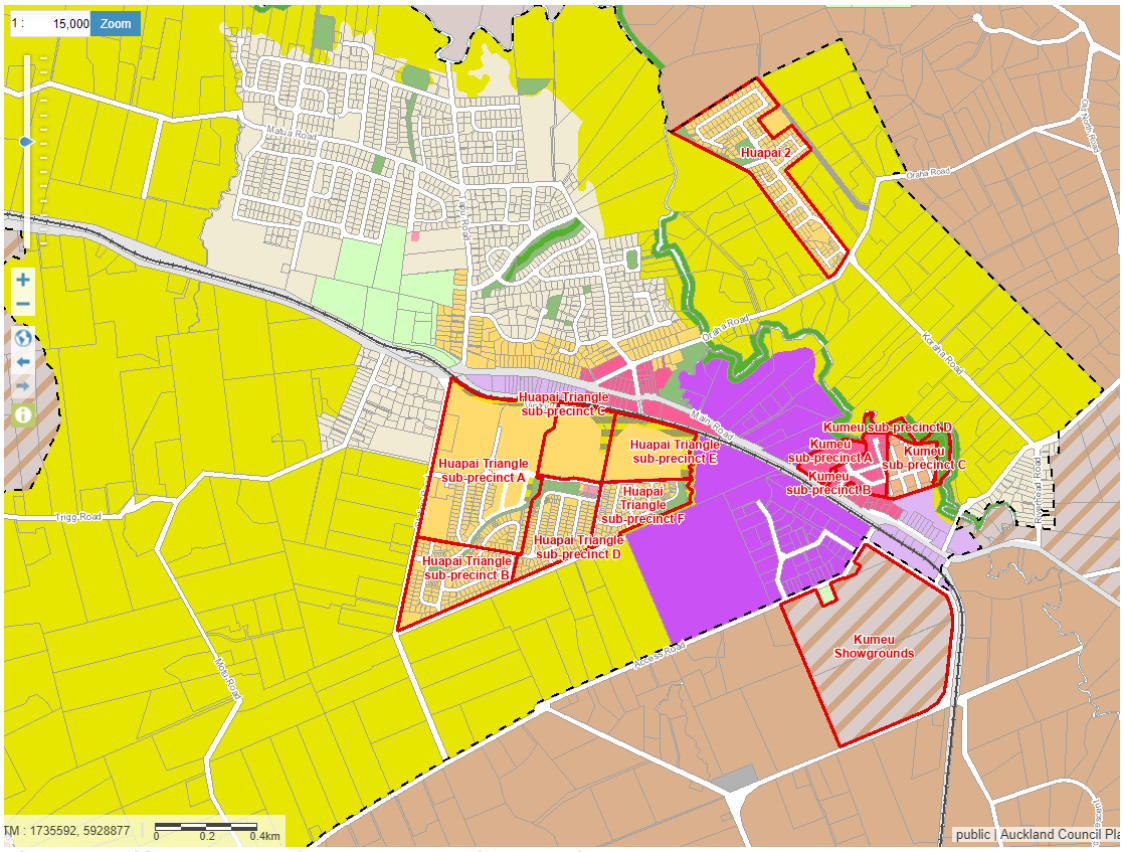


Figure 1-1: Kumeū-Huapai - AUP:OP Precinct overlays

1.12 Non-Statutory Guidance

The Kumeū-Huapai / Riverhead area has not been structure planned. Land release for the Kumeū-Huapai / Riverhead area is identified in the FULSS to occur between 2028 and 2032. Council's current view is that structure planning must occur prior to the release of land currently zoned FUZ. This is indicatively programmed for Kumeū-Huapai / Riverhead in 2025.

The project team has working closely with Auckland Council to support land use integration for the Kumeū-Huapai / Riverhead area.

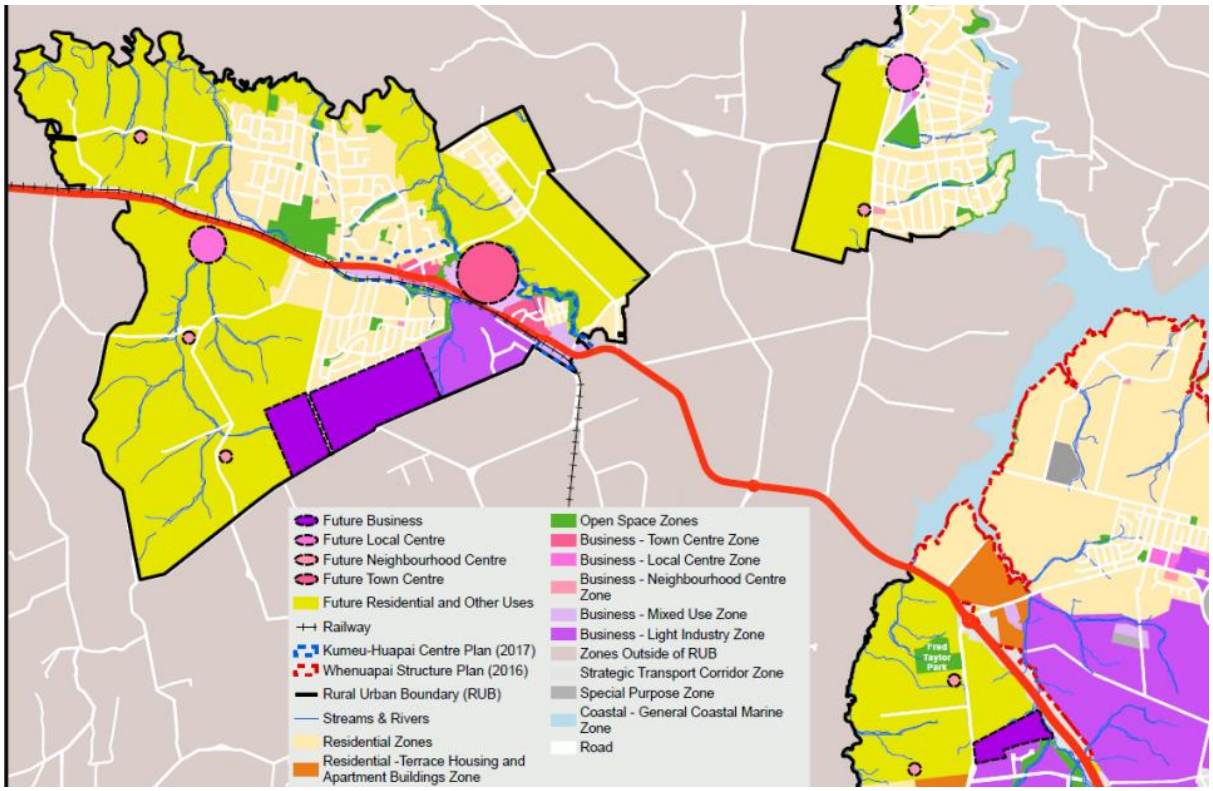


Figure 1-2: Spatial Land Use Strategy - Kumeū-Huapai, Riverhead, and Redhills North.

Note: The Spatial Land Use Strategy is not a detailed structure plan and is only intended to be a high-level outline of the future land uses in the Future Urban zone.

1.12.1 Whenuapai Structure Plan September 2016

Only the eastern extents of the NoR S1 Alternative State Highway (**ASH**), including Brigham Creek Interchange (**BCI**) Project will be within the Whenuapai Structure Plan area. The project area is anticipated to impact High Density residential and Mixed Use zoned areas in the Whenuapai Structure Plan, either side of Brigham Creek Road.

The stated vision for Whenuapai:

> *"Whenuapai is a liveable, compact and accessible place with a mix of high quality residential and employment opportunities. It makes the most of its extensive coastline, is well connected to the wider Auckland Region, and respects the cultural and heritage values integral to its distinctive character."*

Seven key objectives are identified, the sixth and seventh relate broadly to landscape as follows:

#6. Enhance the natural environment and protect natural heritage

- freshwater quality throughout the catchment is enhanced over time
- scheduled natural heritage is protected
- the overall biodiversity of the area is improved over time

- environmental constraints, such as coastal erosion and contaminated land, are adequately managed
- sedimentation of the Upper Waitematā Harbour is carefully managed through subdivision and development processes.

#7. The provision of quality open spaces

- a network of high-quality open spaces and recreation areas meet the needs of the growing Whenuapai community
- there are ample opportunities for cycling, sport, passive recreation and social interaction
- stream networks are utilised as recreational routes and connections between open spaces and the coast where practicable
- public access to, and along, the coast is enhanced where practicable.

And two further key outcome that broadly relate to landscape:

- "*2. Quality- built environment*" - the street network enhances Whenuapai's sense of place by favouring pedestrians, cyclists and public transport modes.
- "*3. A well connected Whenuapai*" - dedicated cycle and pedestrian footpaths provide safe, connected and high amenity linkages between areas of activity at a local scale.

Landscape does not feature strongly in the vision and / or the key outcomes for the Whenuapai Structure Plan with 8.2.4 Open Space and Recreation, providing the greatest specific direction. The "indicative esplanade" connections and provisions of Neighbourhood Parks, Sports Parks and Suburb Parks throughout the structure plan area are however referenced.

Land Use

Future development of land within the structure plan area will have a significant shift from rural land use to urban land use. Within the western portion of plan area within the footprint of NoR S1 includes high density residential; Mixed Use – business zones. This is expected to result in a significant shift from rural to urban land use which means that the existing landscape character and visual amenity surrounding the proposed designations is likely to experience substantial change over the next 10-30 years.

Whenuapai Structure Plan Natural Character, Landscape and Visual Assessment

A Natural Character, Landscape and Visual Assessment[29] was undertaken during the production of the structure plan to identify any potential landscape effects that may result from future land use activities. The landscape assessment identifies that while there are no areas of high natural character or landscape, the structure plan area retains relatively high levels of amenity because of its largely open rural nature, mature trees, and proximity to the Upper Waitematā Harbour.

The assessment acknowledges that there will be a level of adverse effects on the landscape as a result of changing land uses, but that this also presents opportunities to enhance some landscape outcomes. The assessment makes the following recommendations to mitigate likely adverse effects:

- maintain and enhance areas of high visual amenity, especially around the northern part of the structure plan area with appropriate built form, open space and plantings
- restore and enhance biodiversity through planting, and weed and pest control
- connect habitats along coastal and stream networks

[29] 7.9 Natural character, landscape and visual of the Whenuapai Structure Plan.

- improve the quality of stormwater entering the Upper Waitematā Harbour
- create integrated networks of public open space
- introduce appropriate plantings in new development
- provide landscape variety to build on existing characteristics of different parts of the structure plan area.

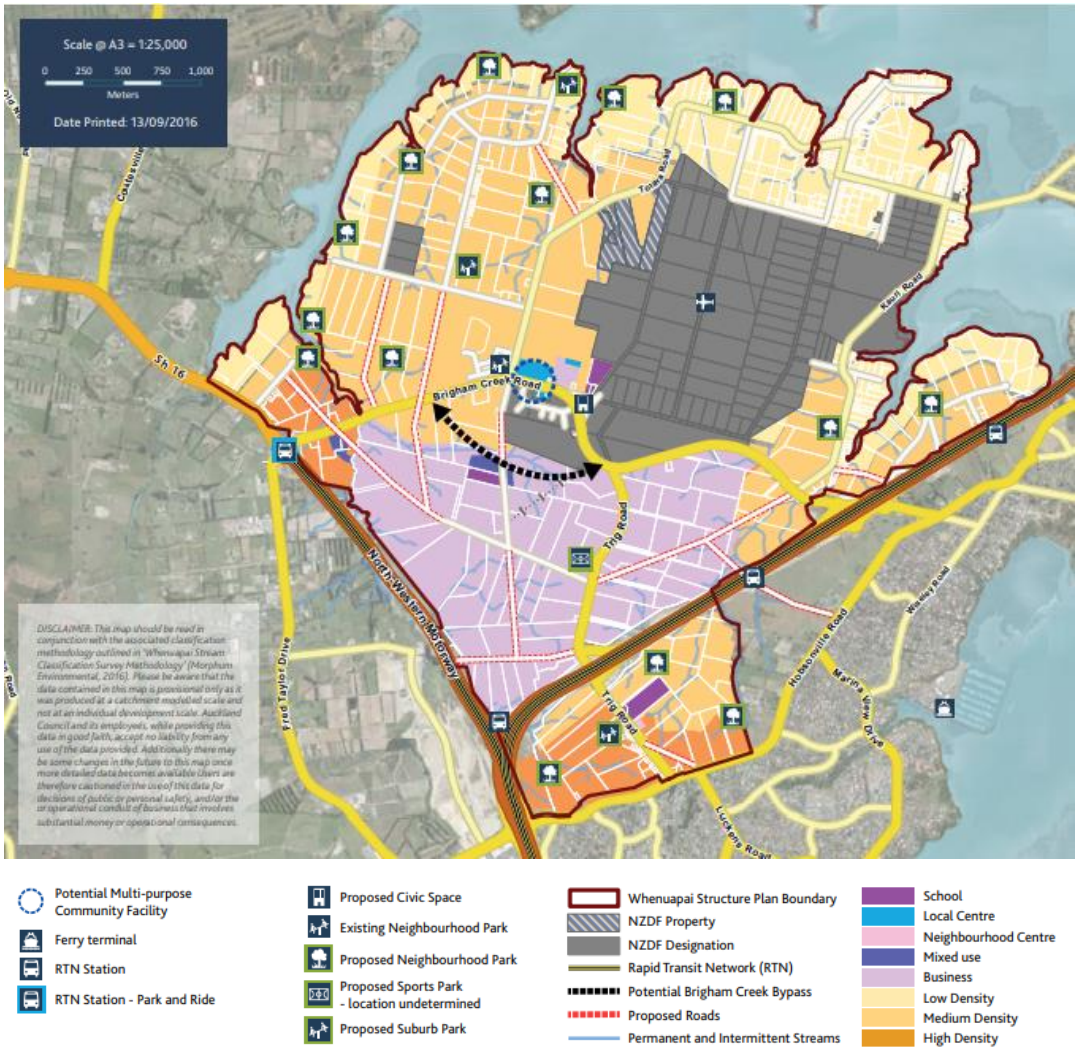


Figure 1-3: Whenuapai Structure Plan Map

1.12.2 National Policy Statement on Urban Development – NPS UD

The National Policy Statement-Urban Development (NPS-UD) came into effect on 20 August 2020 and sets out a list of things that local authorities must do to give effect to the objectives and policies defined within the policy statement. The NPS-UD does not explicitly address or refer to urban design but sets out the characteristics and rationale for "*well-functioning urban environments*" that enable all communities to provide for their social, economic, and cultural well-being and for their health and safety, now and into the future. This includes, amongst other requirements, the enabling of density and development capacity through "up-zoning" and more enabling planning provisions:

- around local centre zones
- in areas with employment opportunities

- in areas that are well serviced by existing or planned public transport or where there is high demand for housing or business
- along rapid transit stops

In the context of this Project, the NPS-UD Policy 1 defines what constitutes a well-functioning urban environment as one that provides “good accessibility for all people between housing, jobs, community services, natural spaces, and open spaces, including by way of public or active transport”. The implications of NPS-UD Policy 3 are that development of six storeys or more building heights are more likely within the context of an expanded road corridor.

2 Appendix 2: Graphic Supplement