TE TUPU NGĀTAHI
SUPPORTING GROWTH

North West Strategic Urban Design Framework Evaluation

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Version 1

WAKA KOTAHI
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Table of Contents

1 Executive Summary 1

1.1 Summary of Urban Design Outcomes Sought 2

1.1.1 NoR S1 – Alternative State Highway (ASH), including Brigham Creek Interchange 2
1.1.2 NoR S2 – SH16 Main Road Upgrade 3
1.1.3 NoR S3 – Rapid Transit Corridor (RTC), including Regional Active Mode Corridor (RAMC), NoR KS – Kumeū Rapid Transit Station and NoR HS – Huapai Rapid Transit Station 4
1.1.4 NoR S4 – Access Road Upgrade 5

2 Introduction 7

2.1 Purpose and Scope of this Report 8

3 The Design Context 9

4 NoR S1: Alternative State Highway, Including Brigham Creek Interchange 11

4.1 Alternative State Highway, Including Brigham Creek Interchange Contextual Analysis 11

4.1.1 Existing Environment 12
4.1.2 Likely Future Environment 14

4.2 ASH - Form and Function 15

4.2.1 Alternative State Highway Design Features 15

4.3 NOR S1: Alternative State Highway, including Brigham Creek Interchange - Evaluation Against the Design Framework Principles 1

4.4 Summary of Urban Design Evaluation and Recommendations for Alternative State Highway, including Brigham Creek Interchange 5

4.5 Alternative State Highway, including Brigham Creek – Urban Design Outcomes and Opportunities 7

5 NoR S2: State Highway 16 Main Road Upgrade 8

5.1 State Highway 16 Main Road Upgrade Contextual Analysis 8

5.1.1 Existing Environment 9
5.1.2 Likely Future Environment 11

5.2 State Highway 16 Main Road Upgrade - Form and Function 12

5.2.1 State Highway 16 Main Road Upgrade Design Features 13

5.3 NOR S2: State Highway 16 Main Road Upgrade - Evaluation against the Design Framework Principles 15

5.4 Summary of Urban Design Evaluation and Recommendations for State Highway 16 Main Road West Upgrade 19

5.5 State Highway 16 Main Road Upgrade - Urban Design Outcomes and Opportunities 21

6 NoR S3: Rapid Transit Corridor and Regional Active Mode Corridor; NoR KS: Kumeū Rapid Transit Station and NoR HS: Huapai Rapid Transit Station 23

6.1 Contextual Analysis 23

6.1.2 Likely Future Environment 26

6.2 Form and Function 27

6.2.1 Regional Active Mode Corridor 27

6.3 NOR S3: Rapid Transit Corridor and Regional Active Mode Corridor; NoR KS: Kumeū Rapid Transit Station and NoR HS: Huapai Rapid Transit Station Kumeū Rapid Transit Station and NoR HS: Huapai Rapid Transist Station - Evaluation against the Design Framework Principles 32

6.4 Summary of Urban Design Evaluation and Recommendations for Rapid Transit Corridor and Regional Active Mode Corridor: NoR KS: Kumeū Rapid Transit Station and NoR HS: Huapai Rapid Transit Station 36

6.5 Rapid Transit Corridor; Regional Active Mode Corridor; Kumeū Rapid Transit Station and NoR HS: Huapai Rapid Transit Station - Urban Design Outcomes and Opportunities 38

7 NoR S4 Access Road Upgrade 39

7.1 Access Road Upgrade Contextual Analysis 39

7.1.1 Existing Environment Access Road Upgrade 41

7.1.2 Likely Future Environment Access Road Upgrade 42

7.2 Access Road Upgrade – Form and Function 43

7.3 NOR S4: Access Road Upgrade - Evaluation against the Design Framework Principles 44

7.4 Summary of Urban Design Evaluation and Recommendations for the Access Road Upgrade 48

7.5 Access Road Upgrade – Urban Design Outcomes and Opportunities 50

Table of Figures

Figure 1-1: Alternative State Highway, including Brigham Creek – Urban Design Outcomes and Opportunities 3

Figure 1-2: State Highway 16 Main Road Upgrade - Urban Design Outcomes and Opportunities 4

Figure 1-3: Rapid Transit Corridor; Kumeū Rapid Transit Station and NoR HS: Huapai Rapid Transit Station - Urban Design Outcomes and Opportunities 5

Figure 1-4: Access Road Upgrade – Urban Design Outcomes and Opportunities 6

Figure 2-1: North West Strategic Package Projects and Notices of Requirement 8

Figure 4-1: Overview of the Alternative State Highway, including Brigham Creek Interchange 11

Figure 4-2: Context of Alternative State Highway & Brigham Creek Interchange 12

Figure 4-3: ASH Project Area Ecology, Hydrology & Cultural Heritage Sites 14

Figure 4-4: AUPOIP Zoning Alternative State Highway, including Brigham Creek interchange 15

Figure 4-5: NOR S1 Alternative State Highway, typical 50m cross section 1

Figure 4-6: NOR S1 Alternative State Highway, typical cross section at Boord Crescent (showing RTC alongside) 1

Figure 4-7: NOR S1 Alternative State Highway typical cross section at Brigham Creek Interchange (showing RTC alongside) 1
Figure 4-8: Alternative State Highway, including Brigham Creek interchange - urban design outcomes and opportunities 7
Figure 5-1: Overview of the SH16 Main Road Upgrade 8
Figure 5-2: Contextual Overview of the SH16 Main Road Upgrade 9
Figure 5-3: SH 16 Main Road Upgrade Ecology, Hydrology & Cultural Heritage Sites 11
Figure 5-4: SH 16 Main Road Upgrade AUPOIP Zoning 12
Figure 5-5: SH16 Main Road 24m urban arterial typical cross section 14
Figure 5-6: SH16 Main Road 24m urban arterial (typical bridge) 14
Figure 5-7: SH16 Main Road Upgrade urban design outcomes and opportunities 21
Figure 5-8: SH16 Main Road Upgrade: Town Centre Outcomes and Opportunities 22
Figure 6-1: Rapid Transit Corridor and Regional Active Mode Corridor Overview 24
Figure 6-2: Contextual Overview of Rapid Transit Corridor; Regional Active Mode Corridor; NoR KS Kumeū Rapid Transit Station and NoR HS Huapai Rapid Transit Station 24
Figure 6-3: Rapid Transit Corridor; Regional Active Mode Corridor; NoR KS - Kumeu Station; NoR HS – Huapai Station: Ecology, Hydrology & Cultural Heritage Sites 26
Figure 6-4: AUPOIP zoning for Rapid Transit Corridor; Regional Active Mode Corridor; NoR KS - Kumeu Station; NoR HS – Huapai Station 27
Figure 6-5: Typical Cross Section – RTC near Brigham Creek Interchange 29
Figure 6-6: Typical Cross Section – Rapid Transit Corridor alongside ASH at Taupaki Road (shared path will re-join Rapid Transit Corridor at Boord Crescent) 29
Figure 6-7: Typical Cross section – Rural Rapid Transit Corridor 29
Figure 6-8: Typical Cross Section – Urban Rapid Transit Corridor at SH16 Main Road 30
Figure 6-9: Typical Cross section – Rapid Transit Corridor at rear of urban block, SH16 Main Road on northern side and NAL on southern side (not shown) 30
Figure 6-10: Kumeū RT Station indicative footprint 31
Figure 6-11: Huapai RT Station indicative footprint 31
Figure 6-12: Rapid Transit Corridor; Regional Active Mode Corridor; NoR KS - Kumeu Station; and NoR HS – Huapai Station: urban design outcomes and opportunities 38
Figure 7-1: Overview of Access Road Upgrade 40
Figure 7-2: Overview Access Road Upgrade 41
Figure 7-3: Access Road Upgrade, Ecology, Hydrology & Cultural Heritage Sites 42
Figure 7-4: AUPOIP Zoning for Access Road Upgrade 43
Figure 7-5: Typical urban cross section 30m – Access Road (north of Wookey Lane 44
Figure 7-6: Typical rural cross section 35m – Access Road (south of Wookey Lane) 44
Figure 7-7: Access Road Upgrade urban design outcomes and opportunities 50

Table of Tables

Table 1-1: North West Strategic Package: Notices of Requirement and Projects 1

Table 2-1: North West Strategic Package: Notices of Requirement and Projects 7

Table 4-1: Urban Design Evaluation for Alternative State Highway, including Brigham Creek Interchange 1

Table 5-1: SH16 Main Road Upgrade Form and Function 12

Table 5-2: Urban Design Evaluation for State Highway 16 Main Road Upgrade 15

Table 6-1: Urban Design Evaluation Rapid Transit Corridor and Regional Active Mode Corridor; NoR KS: Kumeū Rapid Transit Station and NoR HS: Huapai Rapid Transit Station 32

Table 7-1: Urban Design Evaluation for the Access Road Upgrade 45

Glossary of Acronyms / Terms

Acronym/Term	Description
ADT	Average Daily Traffic
AEE	Assessment of Effects on the Environment
ASH	Alternative State Highway
Auckland Council	Means the unitary authority in the Auckland Region
Auckland Plan	The Auckland Plan 2050: Development Strategy
AUP:OP	Auckland Unitary Plan: Operative in Part
BCI	Brigham Creek Interchange
CC2W	City Centre to Westgate (**CC2W**)
DBC	Detailed Business Case
Design Framework	Te Tupu Ngātahi Design Framework
Designation Boundary	The extent of the proposed designation.
FULSS	Future Urban Land Supply Strategy
FUZ	Future Urban Zone
Ha	Hectares
NAL	North Auckland Line
NoR	Notices of Requirement
North West Strategic Network	• Alternative State Highway, including Brigham Creek Interchange (NoR S1) • State Highway 16 Main Road Upgrade (NoR S2) • Rapid Transit Corridor, including Regional Active Mode Corridor (NoR S3), Kumeū Rapid Transit Station (NoR KS) and Huapai Rapid Transit Station (NoR HS) Access Road Upgrade (NoR S4)
North West Strategic Package	Four Notices of Requirement for the North West Strategic Network for Auckland Transport and Waka Kotahi NZ Transport Agency.
PBC	The Supporting Growth Programme Business Case (**PBC**)
Project area	Refers to the land being developed within the boundary of each NoR. Includes the carriageway, batter slopes, intersections, bridging, landscape mitigation planting, street trees, stormwater wetlands and construction laydown areas.
RAMC	Regional Active Mode Corridor
RMA	Resource Management Act 1991

Acronym/Term	Description
RNZAF	The Royal New Zealand Airforce
RTC	Rapid Transit Corridor
RTN	Rapid Transit Network
RUB	Rural Urban Boundary
SaAs	Safe and Appropriate Speed
SG	Te Tupu Ngātahi Supporting Growth
SH16	State Highway 16
The Council	Auckland Council

1 Executive Summary

This North West Strategic Urban Design Framework and Evaluation (UDFE) has been prepared for the North West Strategic Network Notices of Requirement (NoRs) for Auckland Transport (AT) and Waka Kotahi NZ Transport Agency (Waka Kotahi) (the "North West Strategic Package").

The six NoRs are described in Table 1-1 and illustrated in Figure 1-1. The NoRs are to designate land for future strategic transport corridors as part of the Supporting Growth Programme to enable the future construction, operation and maintenance of transport infrastructure in the North West (NW) of Auckland.

Table 1-1: North West Strategic Package: Notices of Requirement and Projects

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

This UDFE contains an evaluation section for each project within the North West Strategic Package which has been prepared based on the guidance and principles established in the programme wide document - Te Tupu Ngātahi Design Framework (Design Framework or Design Framework Principles).

The Design Framework defines a systems based approach to evaluating the environmental and cultural context of the North West Supporting Growth projects. Twenty design principles are evaluated under the headings Environment, Social, Built form, Movement and Land use.

The UDFE provides urban design focused commentary on the current design that has informed each of the proposed designations and recommends where any urban design opportunities should be considered in future design stages. An urban design designation condition requiring the preparation of an Urban and Landscape Design Management Plan (ULDMP) is proposed to ensure further consideration is given to urban design at the detailed design stage.

The recommendations are summarised as urban design outcomes sought and noted on Figures Figure 4-8, Figure 5-7, Figure 5-8, Figure 6-12 and Figure 7-7 as urban design outcomes and opportunities. Several opportunities have been identified during the evaluation for each NoR for consideration that are not mitigation for the projects. Rather the projects help enable these opportunities which could be realised either by the requiring authority, other stakeholders or parties, such as and owners and developers. These additional opportunities are not however required to mitigate the anticipated urban design effects of the Projects.

1.1 Summary of Urban Design Outcomes Sought

The following provides a summary of the Key outcomes and opportunities sought for each NoR project.

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

The key outcomes and opportunities for NoR S1 are:

The ASH corridor will alter the existing identity and character of the area, particularly the rural areas outside of the FUZ land. The ULDMP will need to demonstrate how to minimise the impact on the built, natural and cultural values of the area. Optimise integration with adjacent zones by:

- recognising the transition from rural to urban land uses,
- resolve interface issues including access to properties,
- incorporation of acoustic barriers and screen planting where required,
- utilise the corridor and interchanges to respond to the future environment the ASH passes through to support placemaking and ensure the interchanges are legible for access to Kumeū and Huapai.

Minimise land disturbance, conserve resources and materials. The preferred alignment extends through moderate to severe undulating topography resulting in some large batter slopes. The detailed design will have to minimise impacts on streams, wetlands and adjacent dwellings.

Mana whenua shall continue to provide input into environmental and cultural landscape matters throughout the detailed design and construction phases including how desired outcomes reflect their identity and values.

Landscape plans that considers recommendations from the landscape and visual, flooding and ecological assessments including tree and stormwater wetland planting, construction compound and private property reinstatement and treatment of batter slopes. The landscape outcomes should reinforce the wider vegetation patterns of the local landscape and create connections to proposed greenways and the wider walking and cycling network.

Figure 1-1: Alternative State Highway, including Brigham Creek – Urban Design Outcomes and Opportunities

1.1.2 NoR S2 – SH16 Main Road Upgrade

Key outcomes sought for NoR S2:

An integration strategy and further design refinement should address interface issues with existing and future development, in particular around the development of the RT Stations and connections back into the future Town Centres and future communities to the south.

There is an opportunity to support partners in optimising adjacent and residual land along the corridor and to ensure the sense of identity and place is reinvigorated with the proposed upgrade of the corridor.

There is an opportunity for a gateway entrance and placemaking at the southern end of Kumeū and at the northern end at the junction with Station Road and thereby defining the extent of the Kumeū-Huapai town centre as envisioned in the Kumeū-Huapai Centre Plan.

Permeability of the corridor for active modes that addresses cross corridor connectivity (midblock crossings), modal priority and permeable access to destinations such as open spaces and community facilities and between areas of high density.

Mana whenua shall continue to provide input into environmental and cultural landscape matters throughout the detailed design and construction phases including how desired outcomes reflect their identity and values.

Landscape plans that respond to recommendations from the landscape & visual and ecological assessments including revegetation and stormwater wetland planting, adjacent construction

compound and private property reinstatement, treatment of batter slopes and structures. The landscape plans should enable a strong vegetated framework and identity for the SH16 (Kumeū and Huapai) Main Road.

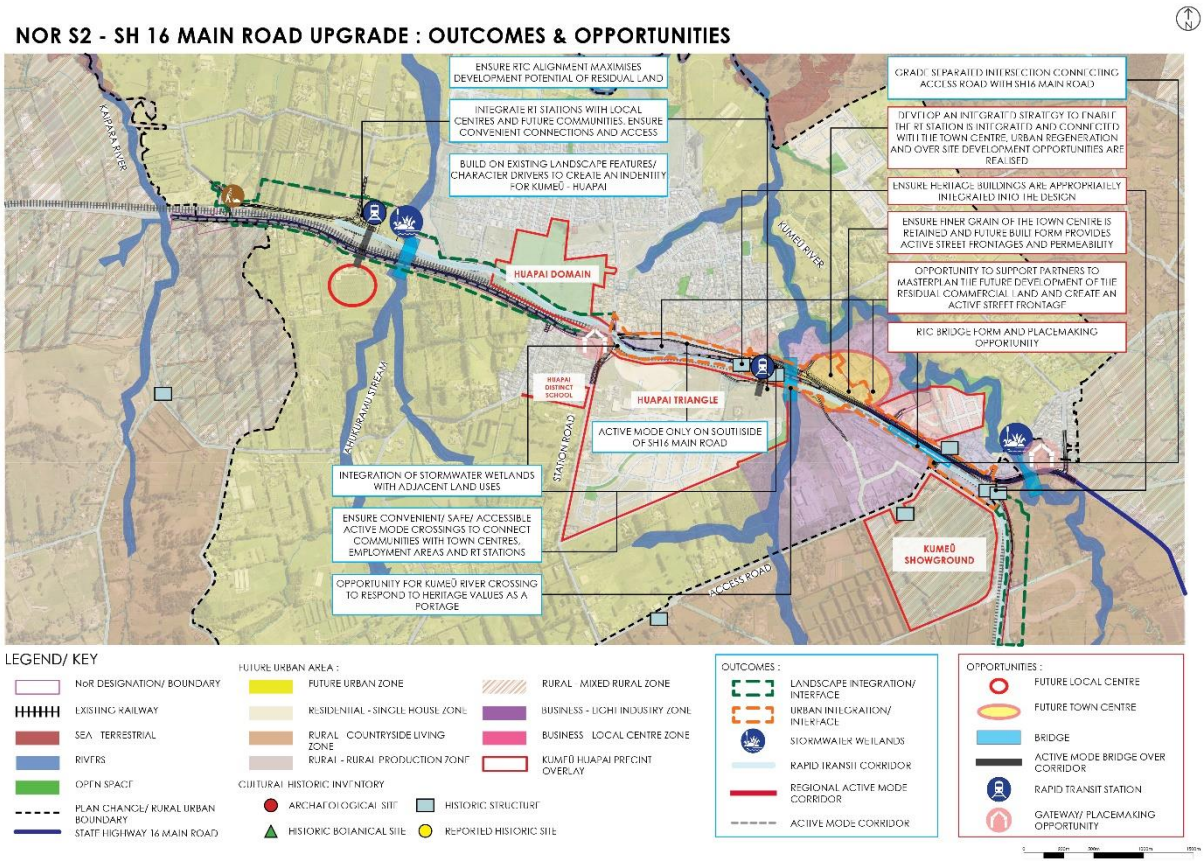


Figure 1-2: State Highway 16 Main Road Upgrade - Urban Design Outcomes and Opportunities

1.1.3 NoR S3 – Rapid Transit Corridor (RTC), including Regional Active Mode Corridor (RAMC), NoR KS – Kumeū Rapid Transit Station and NoR HS – Huapai Rapid Transit Station

Key outcomes sought for NoR S3:

A landscape interface approach within the corridor that recognises the transition from future urban to rural – countryside living. Through the urban section, future land integration should be considered in the detailed design phase and refinement of the alignment to maximise the spatial opportunity for adjacent / residual land redevelopment.

Details of the surrounding FUZ land use is currently unknown as Kumeū-Huapai is yet to be structure planned. Integration between land use and transport networks should be developed in a future stage to optimize connectivity with the RT Kumeū and Huapai Stations.

The urban section of the RTC impacts on two historic buildings and one CHI listed item. One of the buildings, Huapai Tavern is a scheduled historic place in AUP#00482 the other building, a rail shed is a scheduled historic place in AUP#00483. Rail carriages used as a cafe are identified as CHI item #18493.

An urban interface approach should respond to the changing built form interface, in particular providing legible and convenient pedestrian access between the corridor and adjacent development, between RTC Stations and local centres and adjacent future urban land uses.

The development of the RTC Stations will be a catalyst for intensification.

Design development of the Stations needs to consider connectivity with SH16 Main Road and adjacent commercial and residential areas, incorporating CPTED principles into the design.

Mana whenua shall continue to provide input into environmental and cultural landscape matters throughout the detailed design and construction phases including how desired outcomes reflect their identity and values.

Landscape plans that respond to recommendations from the landscape and visual and ecological assessments including revegetation and stormwater wetland planting, adjacent construction compound and private property reinstatement, treatment of batter slopes and structures.

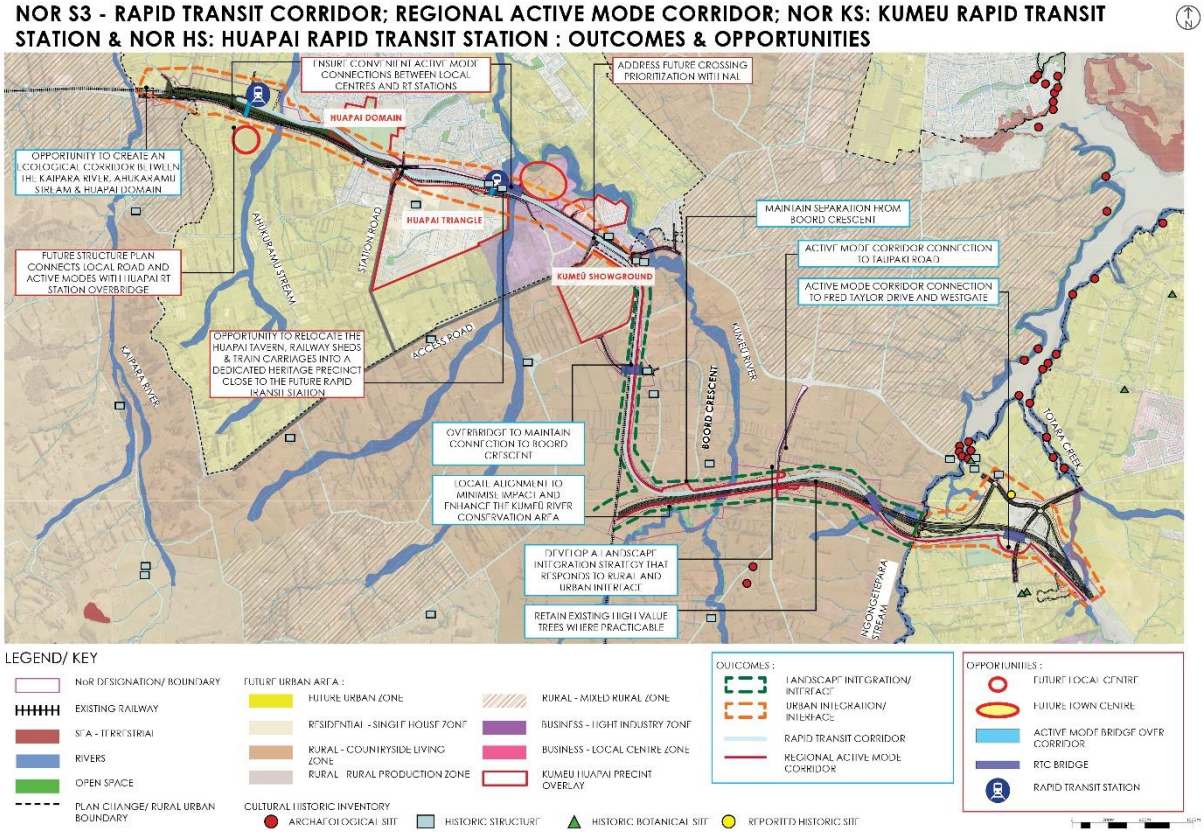


Figure 1-3: Rapid Transit Corridor; Kumeū Rapid Transit Station and NoR HS: Huapai Rapid Transit Station - Urban Design Outcomes and Opportunities

1.1.4 NoR S4 – Access Road Upgrade

Key outcomes sought for NoR S4:

The corridor aligns with the RUB, future detailed design should demonstrate an appropriate response and integration with the urban and rural character and reinforce an urban edge. The interim design includes green infrastructure, ie a swale on the rural side this will help ensure any built form is set back from the road where as the urban side of the road cross section allows for built form to address

the street. Further consideration should be given at the detailed design stage to ensure the rural character is retained with an appropriate interface.

Permeability of the corridor for active modes that addresses cross corridor connectivity (midblock crossings), modal priority and permeable access to destinations such as open spaces and community.

Mana whenua shall continue to provide input into environmental and cultural landscape matters throughout the detailed design and construction phases including how desired outcomes reflect their identity and values.

Landscape plans that considers recommendations from the landscape and visual, arboricultural heritage and ecological assessments including street tree and stormwater wetland planting, construction compound and private property reinstatement, treatment of batter slopes.

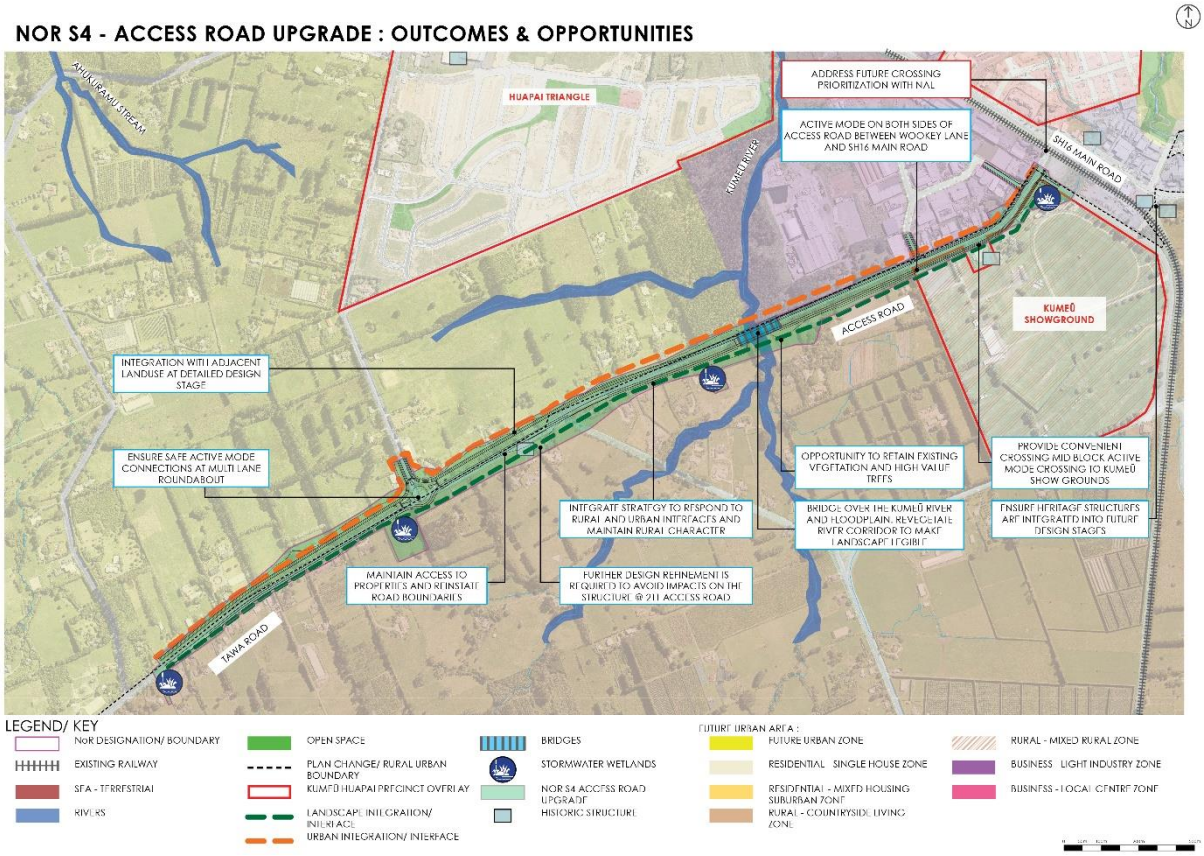


Figure 1-4: Access Road Upgrade – Urban Design Outcomes and Opportunities

2 Introduction

This Urban Design Framework and Evaluation 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 projects, which include:

- Alternative State Highway (ASH), including Brigham Creek Interchange (BCI)
- the Rapid Transit Corridor (RTC), including the Regional Active Mode Corridor (RAMC)
- Kumeū 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 transport effects of the North West Strategic Assessment Package identified in Table 2-1 below and illustrated on Figure 2-1 below. Refer to the main AEE for a more detailed project description.

Table 2-1: North West Strategic Package: Notices of Requirement and Projects

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

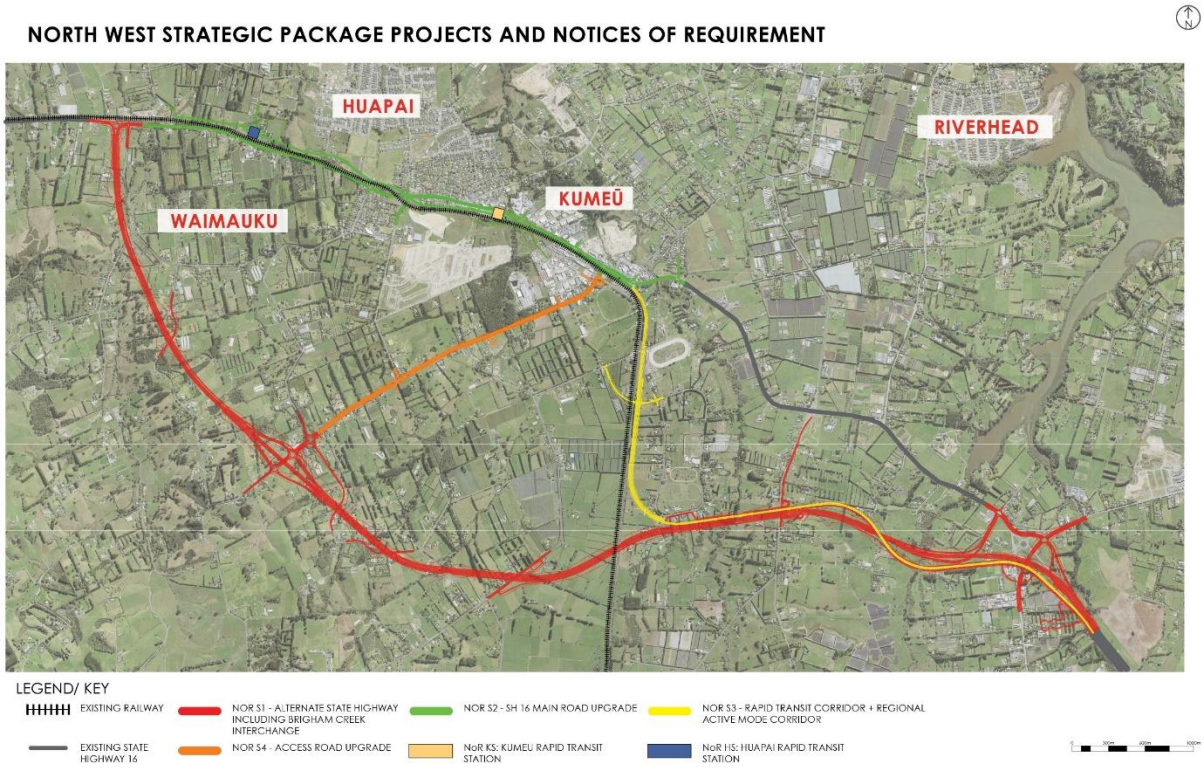


Figure 2-1: North West Strategic Package Projects and Notices of Requirement

2.1 Purpose and Scope of this Report

This urban design evaluation and framework provides an overview of the urban design considerations and inputs during option development and refinement as well as an evaluation and identification of future transport and land use integration opportunities for the North West Strategic Network.

The key sections addressed for each project are:

- Corridor Contextual Analysis
- Existing environment
- Likely future environment
- Urban design considerations - Form and Function
- Evaluation against the Te Tupu Ngātahi Design Framework principles
- Summary of urban design evaluation and recommendations
- Map of urban design outcomes and opportunities.

3 The Design Context

This urban design framework contains an evaluation which has been prepared for each of the projects based on the guidance and principles established in the programme wide document - Te Tupu Ngātahi Design Framework, Version 1.0 Final 25.03.19. The Design Framework provides the methodology that is used to evaluate each Te Tupu Ngātahi Supporting Growth Project and underpins the Urban Design Framework and Evaluation that is developed for each NoR.

The Te Tupu Ngātahi Design Framework takes a systems approach as the basis on which urban areas are organised and understood and pulls these apart as a series of layers; environment, social, built form, movement and land use, with cultural and sustainability values underpinning and spanning across these. In this way transport networks are not seen in isolation rather in terms of how they can contribute to the urban system as a whole.

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

The Design Framework sits within the context of a range of established strategic plans, policies and design guidance that guide urban development outcomes at the:

- National level (e.g. NPS on Urban Development, GPS on Land Transport, Waka Kotahi NZ Transport Agency Urban Design Guidelines "Bridging the Gap" and "Landscape Guidelines", Regional Land Transport Plan); and
- Local level (e.g. Auckland Plan 2050, ATAP, Auckland Transport Roads and Streets Framework, Transport Design Manual, Auckland Unitary Plan, AT Sustainability Framework, Auckland Transport Code of Practice).

The established strategic plans and guidance outlined above informed the development of the Design Framework content and they are referenced in general terms as they relate to the attributes that will contribute to healthy, connected and sustainable communities. Where more recent design guidance was available that did not form part of these published reports, the Design Framework included more detail, e.g. the approach to the location of rail, rapid transit and the role of active modes.

National Policy Statement on Urban Development 2020 (NPS-UD)

The 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 NPS-UD. 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:

- increased commercial and residential activity around centre zones;
- areas with employment opportunities; and
- areas that are well serviced by existing or planned public transport or where there is high demand for housing or business.

This aligns with the Design Framework principle of increasing density in and around centres to create vibrant walkable / cyclable communities that support public transport, the creation of a compact urban form and creating a community focal point and sense of place.

Auckland Council

At a local level, the key urban design considerations and provisions of the AUPOIP relevant to the North West Strategic Network include:

- Regional Policy Statement B2: Urban Growth and Form;
- Regional Policy Statement B3: Infrastructure Transport and Energy;
- Regional Policy Statement B4: Natural Heritage (E38: Urban Subdivision);
- Chapter E38: Subdivision;
- Chapter H: Zones (including structure planned zones).

The urban design specific commentary within the corridor evaluations in the sections below broadly address the objectives and policies of the relevant sections of the Regional Policy Statement and Chapters of the AUPOIP as listed above.

In addition, the Auckland Plan 2050 sets the vision and direction for Auckland and the Design Framework directly references this plan. It illustrates how the outcomes of the Auckland Plan are linked to the design principles set out for the Supporting Growth Programme in the Framework.

Kumeū-Huapai Centre Plan

The Kumeū-Huapai Centre Plan prepared by the Rodney Local Board in 2017 provides a planning framework to guide how the town centre area grows and develops in the short term and over the next 30 years. The Plan envisages a master planned town with a distinctive architectural identity, a town centre, good walking and cycling connectivity, trees and enhanced natural environment. These actions support the delivery of the vision of the future for Kumeū-Huapai as an attractive town centre that focuses on the river, has improved connections, and celebrates its heritage and rural remote areas.

Spatial Land Use Strategy - North West

The Spatial Land Use Strategy -North West (Kumeū-Huapai, Riverhead and Redhill) adopted by Auckland Council in May 2021 outlines how the future land use of the Kumeū- Huapai village including local centres and future urban expansion is supported by the North West Strategic Transport Network. The Future Urban Land Supply Strategy 2017 earmarks 80ha of Future Urban Zone in Kumeū-Huapai to be development ready by 2028-2032.

4 NoR S1: Alternative State Highway, Including Brigham Creek Interchange

4.1 Alternative State Highway, Including Brigham Creek Interchange Contextual Analysis

The ASH extends north west from the existing State Highway 16 (SH16), northern end of the north western motorway to join SH16 west of Huapai. The ASH corridor includes the Brigham Creek Interchange (north of Massey) and an interchange at Tawa / Access Road. The corridor joins with SH16 near / at Foster Road on the western edge of the FUZ, west of Huapai. This proposed state highway corridor will be approximately 11km long, travelling westward across rural farmland to the southwestern side of Kumeū and Huapai, with an additional interchange proposed at Tawa Road. An overview of the concept design is provided in Figure 4-1.

The ASH extends through an existing rural area. It starts at the Brigham Creek intersection in the south eastern end of the corridor where the zoning is FUZ and then extends to the west through Countryside Living zoned land uses until it crosses the southern portion of the Kumeū – Huapai FUZ, connecting with SH16 near / at Foster Road.

The indicative alignment has been prepared for assessment purposes, and to indicate what the final design of the Project may look like. The final alignment will be refined and confirmed at the detailed design stage.

Figure 4-1: Overview of the Alternative State Highway, including Brigham Creek Interchange

The proposed Brigham Creek Interchange (BCI) is located in Redhills North Future Urban area and to the west of Whenuapai. This interchange is anchored to the ASH, Rapid Transit Corridor and Regional Active Mode Corridor strategic projects whilst facilitating a connection to Fred Taylor Drive and Brigham Creek Road. The proposed BCI currently sits within rural land that has a Future Urban Zone (FUZ) overlay. The existing SH16 / Fred Taylor Drive / Brigham Creek Road Roundabout will be replaced by a fully grade separated interchange with on and off ramps in a 'Split-Fork" type arrangement.

Figure 4-2: Context of Alternative State Highway & Brigham Creek Interchange

4.1.1 Existing Environment

4.1.1.1 Urban / Built Features

The existing land use surrounding the ASH is largely rural (Countryside Living) consisting of low density rural residential dwellings with established gardens and rural based businesses including transportation and logistics, horticulture, plant nurseries and viticulture. Land use along and surrounding the ASH corridor and Brigham Creek Interchange consists of a patchwork of horticultural lots and lifestyle blocks containing residential dwellings with large gardens defined by shelterbelts.

The alignment crosses Totara Creek at its south-eastern, north-western motorway end. It then crosses the Ngongetepara Stream which forms the RUB to the west of the Brigham Creek Interchange. Further west the corridor crosses tributaries of the Kumeū River including conservation zoned land adjacent to the river by Boord Cresent. The corridor crosses the tributaries of the Ahukuramu Stream to the west of Tawa Road and the Kaipara River at the western end of the alignment where it joins SH16.

Westgate metropolitan centre is located to the south of the Brigham Creek interchange within the Red Hills North Future Urban area. The Kumeū and Huapai Villages are to the east of the ASH intersection with SH16.

Parks and open space include Fred Taylor Park, the Kumeū Show Grounds, Huapai Domain and open space and conservation zoning throughout Kumeū and Huapai. Schools and community amenities including halls, local shops and library located within the Kumeū and Huapai Villages.

The mid-section of the ASH extends through Rural – Countryside Living and Rural – Mixed Rural Zone with small areas of Open Space Conservation Zone to the east close to the Kumeū River. Residential properties are predominantly accessed from Boord Crescent, Waitakere Road, Hanham Road, Tawa Road, Pomona Road and Dysart Lane. The wider rural landscape is generally characterised by large lots and widely dispersed residential properties and farm buildings. Around Pomona Road and Dysart Lane, a tighter pattern of residential development and smaller lot sizes results in a denser grain of development.

4.1.1.2 Physical Features

The landscape is dominated by undulating topography and a network of riparian corridors and associated overland flow paths. Key watercourses in the Project area include the Ngongetepara Stream which is situated to the west of the Brigham Creek Interchange, the Kumeū River including conservation sections of the river by Boord Crescent, tributaries of the Ahukuramu Stream and the Kaipara River at the western end of the alignment where it joins SH16.

There are a number of existing flood prone areas alongside the ASH river crossings. The Kumeū River has the largest flood plain within the Project area.

The topography varies across the mid-section from flat and gently rising, around the Kumeū River to the east, to steeper undulating landform to the west around Pomona Road and Tawa Road. Topographical features are sensitive to changes in landform. The Kumeū River and its supportive network of tributaries and streams intermittent waterways and wetlands, are common features within low lying landform and the steeper river valleys.

Vegetation patterns comprise linear belts of exotic vegetation which delineate paddock boundaries, native and non-native planting on countryside living lots including vineyards and fruit crops and native and riparian vegetation along the stream corridors and valleys. Large and moderate sized areas of native bush are present amongst the steep sloping landform and valleys which follow the Kumeū River network.

There is currently no structure plan in place for the Kumeū - Huapai area and no green networks are proposed, however the Kumeū River and Ahukuramu Stream extend from the ASH alignment, north through FUZ land crossing SH16 Main Road, providing opportunities for the establishment of future blue green networks.

The Kumeū River and the Kaipara River provided Maori with an important transport corridor connecting the Waitematā and Kaipara Harbours. It was a waka portage known as Te Tōangaroa.

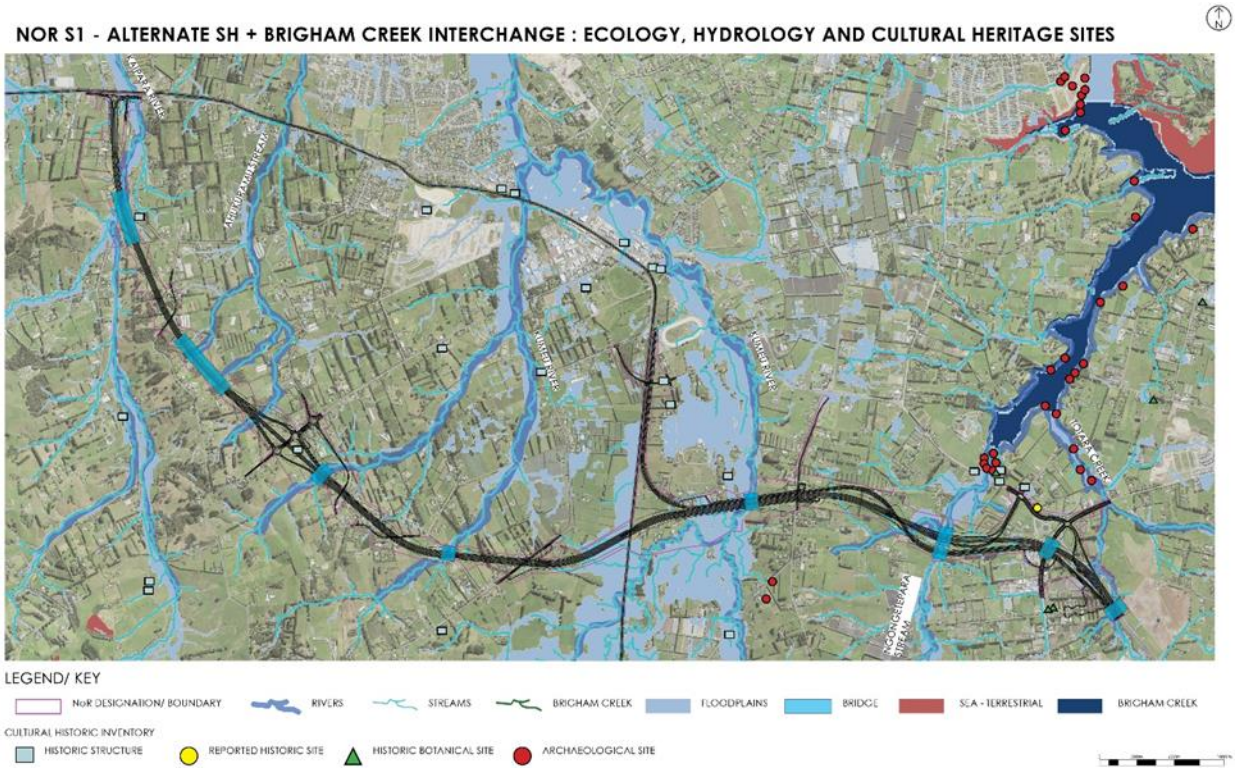


Figure 4-3: ASH Project Area Ecology, Hydrology & Cultural Heritage Sites

4.1.2 Likely Future Environment

The key land use features that will comprise the likely future environment include:

- The FUZ land around the Brigham Creek Interchange will become urbanised.
- The rural land between the FUZ zones will continue to be rural land uses.
- The FUZ land around Kumeū-Huapai will become urbanised.

The ASH will become a RUB/ FUZ edge definer and limit sprawl and thereby retaining the separate identity of Waimauku and Kumeū Huapai. Access Road will also define the edge of the FUZ.

Future transport projects within the North West Strategic area will provide for all modes including a Rapid Transit corridor and walking and cycling linking to the north western cycleway and proposed new RTN stations in Kumeū and Huapai.

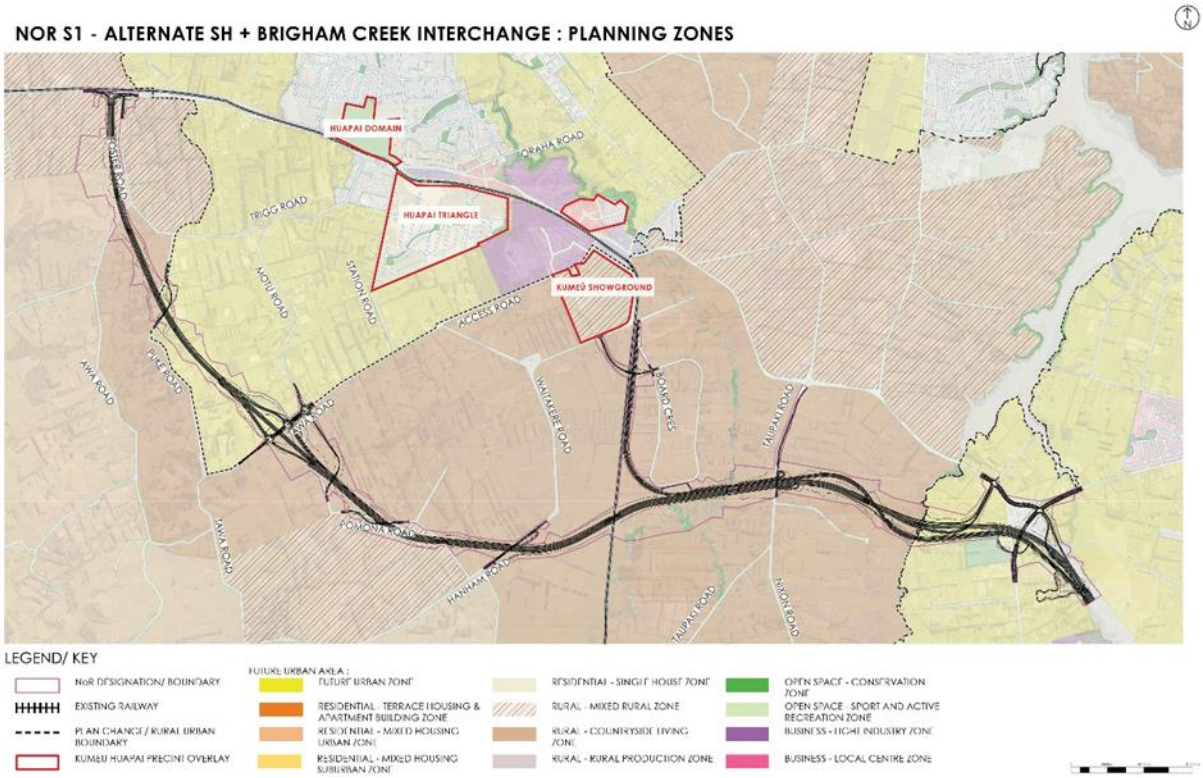


Figure 4-4: AUPOIP Zoning Alternative State Highway, including Brigham Creek interchange

4.2 ASH - Form and Function

This project consists of constructing a new four lane state highway as an extension of SH16 from the current end of the north western motorway at the Brigham Creek roundabout through mixed use rural/ countryside living land uses to join SH16 west of Foster Road in rural Huapai.

4.2.1 Alternative State Highway Design Features

Key features of the proposed new corridor include the following:

- 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 Figure 4-5, Figure 4-6, and Figure 4-7 below).
- 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 western end of the alignment ties-in at a proposed three-legged roundabout with SH16 Main Road, immediately west of Foster Road.

The re-alignment of the following local roads:

- Pomona Road, approximately 1.5km (two sections).
- Motu Road, approximately 200m.
- Puke Road, approximately 500m.
- Likely posted speed of 100km/h, design speed (of which effects will be assessed on) is 110 km/h.

- Stormwater dry ponds, wetlands and culverts.
- Batter slopes to enable the construction of the corridor, and associated cut and fill activities.
- Vegetation removal within the proposed corridor.
- Other construction related activities required outside the permanent corridor including the re-grade of driveways, construction traffic manoeuvring and construction laydown areas.

More detail of the proposed ASH features is provided in the AEE.

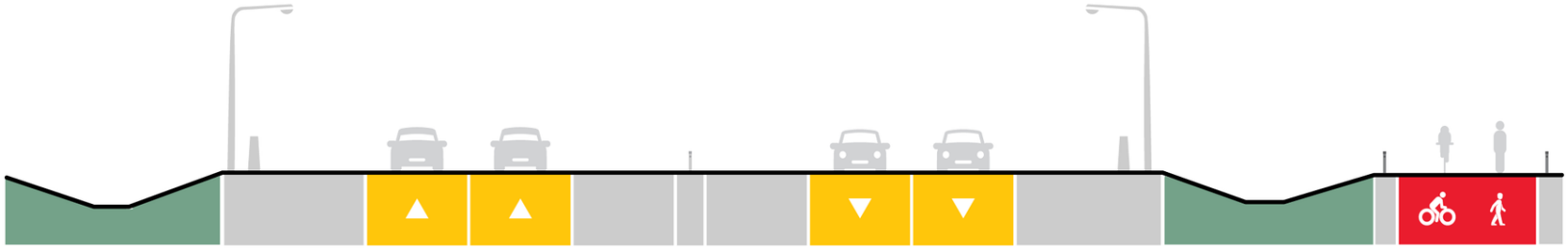


Figure 4-5: NOR S1 Alternative State Highway, typical 50m cross section

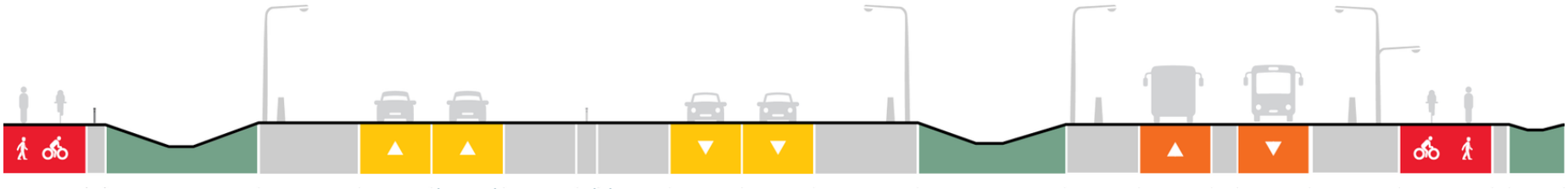
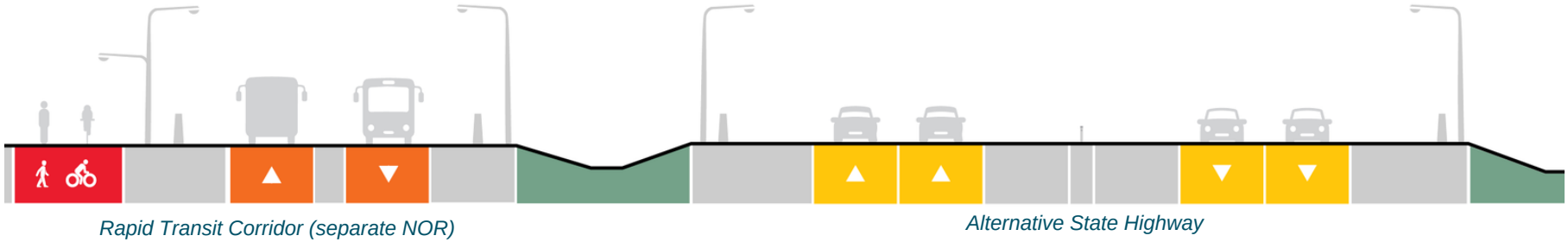


Figure 4-6: NOR S1 Alternative State Highway, typical cross section at Boord Crescent (showing RTC alongside)

Figure 4-7: NOR S1 Alternative State Highway typical cross section at Brigham Creek Interchange (showing RTC alongside)



4.3 NOR S1: Alternative State Highway, including Brigham Creek Interchange - Evaluation Against the Design Framework Principles

This evaluation considers the proposed Alternative State Highway, including Brigham Creek Interchange against the relevant - Te Tupu Ngātahi Design Framework Principles. The evaluation in Table 4-1 below provides urban design focused commentary on the current design detail and recommends how and where any urban design outcomes should be considered in future design stages.

These recommendations could form the basis of an urban design specific designation condition to prepare an Urban and Landscape Design Management Plan (ULDMP) in future delivery.

The evaluation Table 4-1 below lists each of the twenty principles identified in the Te Tupu Ngātahi Design Framework and provides an explanation which are highlighted in light blue. A recommendation of how the principle is applied to the NoR Project area is provided below each principle.

Table 4-1: Urban Design Evaluation for Alternative State Highway, including Brigham Creek Interchange

Principle	Explanation
ENVIRONMENT	
1.1 Support and enhance ecological corridors and biodiversity	Mitigate the effects on or enhance existing ecological corridors through the placement and design of movement corridors
The proposed ASH corridor designation provides spatial provisions that have the potential to support ecological connectivity and biodiversity in the local environment by providing contiguous space for diverse planting responses.	
The crossing of the Kumeū River, streams and flood plains incorporates bridge structures at key crossings, which will minimise stream interruptions and enables a connected natural system.	
1.2 Support water conservation and enhance water quality in a watershed	Take into account and work with the existing watershed as part of a whole system.
The proposed corridor cross section allows spatial provisions to provide natural drainage (swales) to stormwater wetlands as a way to address water quality and reduce hard engineering solutions. Water quality and detention / retention will be considered further in future regional consents.	
Further refinement of wetlands during the detailed design stage is recommended to define the wetland's final form and how the wetland will interface with the surrounding land uses. For example, wetlands should be configured in a naturally shaped manner and fully integrated with existing natural drainage features, swales and vegetation designed to integrate with the adjacent landform and incorporate vegetation.	
1.3 Minimise land disturbance, conserve resources and materials	Respect the existing topography, landforms and urban structure in the placement of strategic corridors. Minimise the quantity of hard engineering materials required. Minimise, mitigate any adverse effects of activities on the environment.
The ASH is likely to require a large volume of earthworks as the corridor extends through challenging terrain with moderate to severe undulating topography and elevation changes. The future construction management approach will need to address any opportunities to minimise impact on rural land use.	

Principle	Explanation
The proposed designation is wide enough to accommodate major interchanges at Brigham's Creek Road and Tawa Road. Land within the designation at Brigham Creek could be utilised for urban development or community infrastructure such as active recreation, once the highway is operational with landscaping opportunities within the designation at Tawa Road.	
1.4 Adapt to a changing climate and respond to the microclimatic factors of each area	Design for predicted future regional climatic impacts in the corridor location. Consider the positive contribution that the orientation of transport corridors can make to the local climatic environment of future places and streets.
The ASH corridor design crosses several streams and flood plains. The indicative design adopts a vertical geometry that accommodates stormwater events including the applied climate change factors as stated in Auckland Council Stormwater Code of Practice.	
The ASH corridor design has a reasonably wide designation which will provide opportunity for ecological and landscape mitigation and amenity which will contribute to reducing urban heat island effects associated with high concentrations of structures such as buildings roads and infrastructure in one area. The ASH will support the wider network in contributing to modal shift.	
SOCIAL	
2.1 Identity and place(s)	The identity or spirit of place is generally acknowledged as the unique amalgam of the inherent built, natural and cultural qualities of a place. Responding to identity in the location and type of new corridors can provide a sense of continuity and contribute to our collective memory.
The ASH corridor currently passes through a largely existing rural residential environment and is likely to impact on the identity and character of the area.	
Consideration of plant selection and placement provides the opportunity to reflect and enhance the unique local character inherent in the built, natural and cultural qualities of the location.	
In future design stages, mana whenua will be invited to provide input into relevant cultural landscape and design matters including how desired outcomes reflect their identity and values.	
Sites of historic value • There are no heritage overlays along the corridor. Heritage structures identified on Auckland Council's Cultural Heritage Inventory are located within the corridor occur at the Brigham Creek Interchange, north of the indicative alignment by Boord Crescent, within the Tawa Road Interchange and on Foster Road near Trigg Road. These features provide opportunities for future development to explore and celebrate the inherent heritage character drivers for the area. • Where Cultural Heritage Inventory items cannot be practicably retained or relocated, they should be recorded and where appropriate recognised locally through signage. Further details of these are referenced in the Assessment of Historic Heritage Effects.	
2.2 Respect culturally significant sites and landscapes	Acknowledge significant sites and features in the layout of movement corridors including ridgelines or horizons.
Mana whenua have strong ties with the Kumeū River which was a portage between the Upper Harbour and the Kaipara Harbour. Mana whenua have provided feedback on the ASH corridor informing the alignment. There are a number of archaeological sites and a Māori Heritage Area within close proximity to the Brigham Creek Interchange area. Mana whenua should continue to be partnered with and input sought on the detailed design in relation to cultural values.	

Principle	Explanation
In future design stages, mana whenua will be invited to provide input into relevant cultural landscape and design matters including how desired outcomes reflect their identity and values.	
2.3 Adaptive corridors	Corridors should demonstrate flexibility to respond to changes in their function and physical interfaces. Consider an adaptive approach in the way strategic corridors are designed to be able to respond to changes in land use, the way we move around or utilise technology over time.
The proposed ASH corridor cross section has the spatial provisions to be flexible, re-configurable and adapted at a detailed design stage for changing transport needs and to incorporate mitigation.	
2.4 Social cohesion	Provide clear, effective and legible connectivity between community and social functions.
The ASH corridor provides an inter-regional transport route that avoids the Kumeū Huapai villages enabling SH16 Main Road to be re-developed with a quality streetscape and to be less car dominated. It also enables the upgrade of SH16 to provide active modes by removing inter-regional traffic and freight from the existing SH16 Main Road. This will improve connectivity within Kumeū Huapai. Local roads will be re-aligned to maintain access under or over the Alternative State Highway.	
2.5 Safe corridors	Provide a safe and convenient network of routes accessible to people of all ages and abilities.
Active mode travel solutions (walking and cycling) are proposed as a Shared Use Path (SUP) facility as an extension of the North Western RAMC.	
BUILT FORM	
3.1 Align corridors with density	Locate stations/stops and corridors within walking distance of higher density development to facilitate modal shift, support commercial and mixed use centres and contribute to vibrant, active urban environments.
The proposed ASH corridor will enable the movement of inter-regional and freight trips out of Kumeū Huapai. This will support the upgrade of SH16 for active modes (as proposed by NoR S2) and help create a vibrant urban environment by moving the strategic trips out of Kumeū Huapai. Active mode facilities are proposed along the ASH which will tie into the proposed facilities on SH16 and the RAMC. The Brigham Creek Interchange results in a large area of residual land that could be utilised for open space/ active recreation given its close proximity the Fred Taylor Park or developed as a business zone. The Brigham Creek Interchange has been designed with the ASH and RTC on structures going over the local road connections thereby enabling direct at grade connectivity.	
3.2 Corridor scaled to the surrounding context and urban structure	Align the speed, type and scale of transport corridors and infrastructure with the environment that it moves through (appropriate scale to the context).
The function of ASH will be a dedicated high-speed rural state highway. Consideration has been given the corridor alignment to minimising environmental effects as far as is practicable. Opportunities to integrate the corridor and the details of mitigation will be determined at the detailed design stage. Opportunities / mitigation should include landscape and ecological mitigation planting to screen the corridor from adjacent properties.	
3.3 Facilitate an appropriate interface between place and movement	Facilitate the opportunity for place as well as movement in corridors (people-oriented streets)
The ASH designation is sufficiently wide to enable stream riparian margins to be planted and constructed stormwater wetlands integrated with streams and floodplains making the landscape legible. Opportunities to incorporate landscape and urban design elements into the corridor will assist with place making and identity, particularly at the Brigham Creek Road and Tawa Road interchanges.	

Principle	Explanation
MOVEMENT	
4.1 Connect nodes	Provide tangible connectivity between identified activity nodes.
The ASH corridor alignment provides direct connectivity between the Redhills North and the Huapai - Kumeū FUZ's, via the interchange at Tawa Road and the intersection on SH16 west of Kumeū Huapai.	
It also enables the upgrade of SH16 to provide active modes by removing inter-regional traffic and freight from the existing SH16 Main Road. This will improve connectivity within Kumeū Huapai.	
4.2 Connect modes	Provide for choice in travel and the ability to connect at interchanges between modes.
The ASH corridor provides complete connectivity for all modes (walking, cycling, public transport and private vehicle) however its primary function is for freight and interregional travel allowing for these to avoid SH16 Main Road. This supports the upgrade of SH16 main Road.	
4.3 Support access to employment and industry	Align the corridor location and typology to provide direct and efficient access to areas of employment and industry.
The corridor alignment provides direct access to the Kumeū Huapai and Whenuapai, and to Westgate and downtown Auckland employment areas, via SH16.	
4.4 Prioritise active modes and public transport	Provision of quality active mode corridors and dedicated public transport corridors to enable a modal shift away from private vehicle use.
The ASH corridor cross sections accommodate freight and interregional travel allowing for them to avoid SH16 Main Road. The corridor provides for a separated shared user path which connects with the North Western RAMC pathway in the east and SH16 in the west.	
The ASH designation accommodates an active mode corridor along its length from Brigham Creek to the intersection with SH16 (west of Huapai). The ASH also sits beside a RTC and AMC that links directly into the main street of the Huapai – Kumeū villages connecting with future RTC stations.	
Further development of modal priority at intersections and roundabouts at the detailed design stage will provide a higher level of service and enable modal shift.	
4.5 Support inter-regional connections and strategic infrastructure	Consider the location and alignment of significant movement corridors and placement of infrastructure (power, wastewater, water) to the network.
The ASH provides an alternative corridor for interregional and freight trips allowing them to avoid SH16 Main Road, this will improve the reliability of interregional movements in the north west. The ASH will be elevated over the North Auckland Line and has been located to avoid impacts in the National Grid overlay.	
4.6 Support legible corridor function	Consider how areas can be clearly navigated and understood by users moving from place to place.
Landscaping that responds to the finer grain of the landscape and environment, such as planting around streams and floodplains. The incorporation of wayfinding signage and design feature to act as markers for users of the active mode facilities as they move along the corridor.	
LAND USE	
5.1 Public transport directed and integrated into centres	Locate rapid transit interchanges within centres (local, town and metro) to support a mix of uses and provide modal choice to a larger number of users.

Principle	Explanation
The ASH corridor does not provide for dedicated public transport facilities; however, it will play an important role in removing inter-regional and freight traffic from SH16 Main Road. This allows SH16 to be upgraded with active mode facilities along SH16 Main Road and to the proposed RTC Stations.	
5.2 Strategic corridors as urban edges	Strategic corridors as potential definers of a land use edge.
The ASH has a strategic function to support the reliable movement of interregional trips and freight. This requires a new corridor which is predominantly located in a rural area. The ASH and Access Road will become urban edge definers. The design response to these corridors will limit sprawl, which will retain the separate identity of Waimauku and Kumeū Huapai, and prevent sprawl in rural areas.	

4.4 Summary of Urban Design Evaluation and Recommendations for Alternative State Highway, including Brigham Creek Interchange

Overall, the proposed ASH corridor design and configuration is generally supportive of the Design Framework principles. A number of urban design outcomes are shown in blue in Figure 4-8 below. These are recommended to form a part of the Urban and Landscape Design Master Plan (ULDMP) in future delivery stages. This is to ensure the detailed design of the corridor responds appropriately to the principles and the project specific urban design outcomes sought.

The ULDMP should include the following Project specific outcomes as illustrated in Figure 4-8:

The ULDMP should be based on Waka Kotahi Urban design guideline “Bridging The Gap” and Landscape Guidelines and P39 Landscape Specifications.

Develop a rural - urban interface approach within the corridor that:

- Supports and enhances ecological corridors and biodiversity. Develop a landscape ecological strategy for the corridor that avoids, or minimises impact on wildlife habitats, streams and water quality and identifies opportunities to enhance these features.
- Supports water conservation and enhance water quality throughout the corridor. Develop an integrated engineering, landscape, ecology and hydrological approach to stormwater that utilises swales (included in the ASH cross sections) and wetlands to provide enhanced water quality, ecological, cultural and amenity outcomes.
- The ASH corridor will alter the existing identity and character of the area, particularly the rural areas outside of the FUZ land. The ULDMP will need to develop techniques to minimise the impact on the built, natural and cultural character of the area, including minimising the impact on the established rural identity of rural zoned areas.
- Minimise land disturbance, conserve resources and materials. The preferred alignment extends through moderate to severe undulating topography resulting in some large batter slopes. The ULDMP will have to demonstrate how impacts on rural land use have been minimised and identify opportunities to utilise valuable land resources.
- Land within the designation at the Brigham Creek interchange, could be utilised for urban development or community infrastructure such as a recreation reserve.

- Social cohesion – As part of the wider works associated with the ASH local roads will be re-instated with access on local roads maintained. Steps to minimise localised severance issues should be considered in the ULDMP.
- Facilitate an appropriate interface between place and movement – At the detailed design stage further consideration will need to be given to the vertical alignment of the corridor and the relationship to the adjacent land use. This approach should consider the cut and fill balance along the corridor to create a desirable interface with the existing rural and future urban areas.
- Integrate the corridors with the surrounding environment and zoning, recognising that the corridor will pass through future urban and rural areas.
- Specific consideration for disconnected and residual pockets of land and how they can be used for landscape mitigation, or made ready for future development (if feasible)
- Recognises the transition from FUZ to rural land uses and provides a corridor interface that supports permeable pedestrian access and responds to the changing built form interface and spatial character of adjacent future development;
- Resolves interface issues including access to properties, incorporation of acoustic barriers and screen planting where required; and
- Utilises the corridor and interchanges to respond to the future environment it passes through FUZ to support placemaking and ensure the interchanges and access to Kumeū and Huapai, is legible.
- Mana whenua will be invited to provide input into the development of the ULDMP, in particular relevant cultural landscape and design matters including how desired outcomes reflect their identity and values.
- A landscape plan that considers recommendations from the landscape and visual, arboricultural and ecological assessments including revegetation and stormwater wetland planting, construction compound and private property reinstatement and treatment of batter slopes. The landscape outcomes should reinforce the wider vegetation patterns of the local landscape and create connections to proposed greenways and the wider walking and cycling network.

Along with the above urban design outcomes further urban design opportunities in the Project area have also been identified in Figure 4-8 and shown in orange. These opportunities are not required to mitigate the Project's urban design effects but could be considered by the requiring authority or other parties at future stages of design and development.

4.5 Alternative State Highway, including Brigham Creek – Urban Design Outcomes and Opportunities

The urban design outcomes that have been identified are shown in blue and summarised in section 4.4 above. Opportunities that have been identified are shown in orange below.

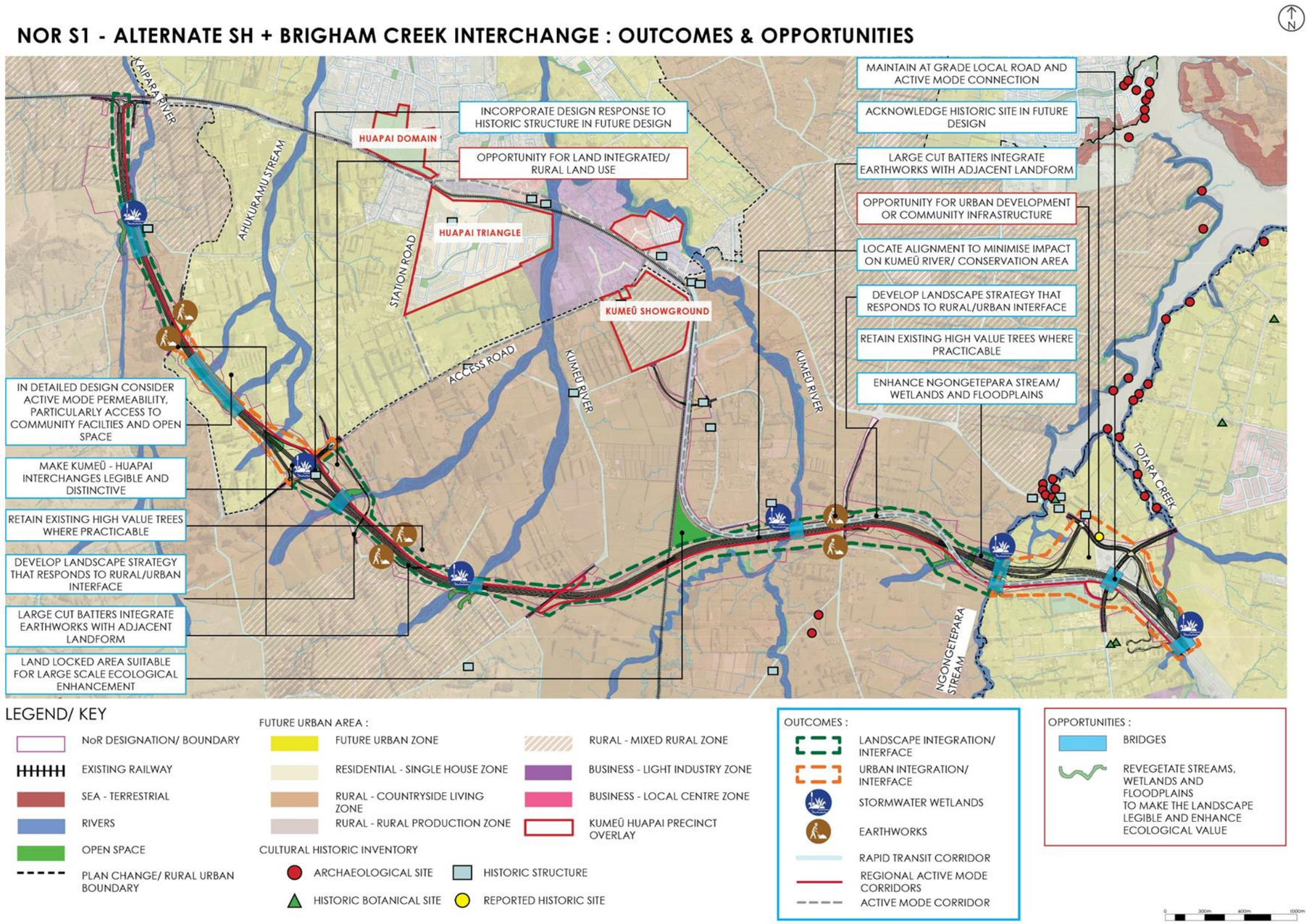


Figure 4-8: Alternative State Highway, including Brigham Creek interchange - urban design outcomes and opportunities

5 NoR S2: State Highway 16 Main Road Upgrade

5.1 State Highway 16 Main Road Upgrade Contextual Analysis

The State Highway 16 Main Road Upgrade Project (NoR S2) extends approximately 4.5km between Old Railway Road, east of Kumeū to Foster Road, west of Huapai. The SH16 Main Road is currently a 20m wide two-lane urban arterial with no active mode facilities on either side of the corridor.

SH16 Main Road is proposed to be upgraded to a 24m urban corridor traversing through well-established retail, commercial and residential environs. The corridor generally follows the existing SH16 Main Road alignment and also includes a 600m section of active mode only upgrade between Oraha Road and Tapu Road. As part of this project, Station Road will be realigned to form a new signalised intersection with SH16 and Tapu Road.

The indicative alignment has been prepared for assessment purposes, and to indicate what the final design of the Project may look like. The final alignment will be refined and confirmed at the detailed design stage.

An overview of the proposed design is provided in Figure 5-1 below;

Figure 5-1: Overview of the SH16 Main Road Upgrade

Figure 5-2: Contextual Overview of the SH16 Main Road Upgrade

The State Highway 16 Main Road Upgrade provides greater accessibility for all modes through the Kumeū-Huapai village and together with NoR S3 (RTC and RAMC), NoR KS (Kumeū Station) and NoR HS (Huapai Station) will enable the future planning and development of town centres that will support the significant growth that will occur through the FUZ.

The key features of the State Highway 16 Main Street Upgrade include:

A designation to incorporate active modes from River Head Road in the east to Matua Road in the west. The designation extends across a large part of the town centre properties that front onto SH16 and as such is a catalyst for redevelopment and revitalisation of the town centre.

SH16 main Street active modes connect to the RAMC corridor and ultimately connects with Westgate and the north western SUP to Auckland City Centre.

5.1.1 Existing Environment

5.1.1.1 Urban Features

The existing land use surrounding the State Highway 16 upgrade section extends through the Kumeū-Huapai villages, incorporating a range of light industrial, commercial businesses and community facilities as well as large areas of currently rural land zoned FUZ. The character of the SH16 Main Road is of a rural service town developed as ribbon development along a state highway. The commercial section of the Main Road extends for approximately 1.7km from Weza Lane in the east to Oraha Road in the west. The character of the SH16 Main Road consists of a predominance of shed like single storey buildings along the northern side of the Main Road and a section of small format shops near the Access Road which defines the Kumeū Village and small format shops and community facilities including library near the Matua Road intersection that defines the Huapai Village. West of Oraha Road the character of the Main Road changes to mostly residential dwellings on the northern side and mixed residential and business on the southern side. Larger commercial buildings define the western edge of Huapai Township at the Tapu Station Road intersection. A small (400m)

section of residential land adjoins the southern side of SH16 Main Road and open space on the northern side (Huapai Domain) west of Station Road. Further west rural land uses extend to the end of the SH16 Main Road Upgrade project which adjoins the ASH by Foster Road.

The presence of the NAL running parallel with the SH16 Main Road and carparking fronting onto the highway has created a wide transport corridor with a rustic character.

The existing transport function of the State Highway 16 Main Road section is characterised by:

- a variable width two- four lane high that extends through an urban area;
- mixed commercial ribbon development extends along SH16 from the south eastern end of Kumeū to the western end of Huapai;
- containing no formal walking or cycling facilities;
- having limited public transport services or facilities;
- limited north south access due to the NAL running parallel with SH16;
- containing private land access points / driveways;
- at grade NAL rail crossings; and
- a 50kph speed limit.

There are two schools in the general area. Matua Ngaru school off Gilbransen Road to the north of the designation and Huapai District School on Station Road and a preschool on the corner of Tapu Raod and Main Road.

The following outlines the key elements of the planning context for the SH16 Main Road Upgrade:

The existing SH16 corridor is generally a 20m wide and zoned ‘Strategic Transport corridor’ under the AUP:OP

The SH16 Main Road Upgrade extends along the urban extent of SH16 and contains a range of business land uses between within the Kumeū-Huapai township, extending from Weza Lane in the east to Station Road in the west.

These land uses are zoned under the AUP:OP as the following:

- Business – Local Centre Zone
- Business – Mixed Use Zone
- Business – Light Industry Zone
- Open Space - Sport and Active Recreation Zone
- Residential – Single House Zone
- Residential – Mixed Housing Suburban Zone
- Future Urban Zone
- Rural – Mixed Rural Zone

5.1.1.2 Physical Features

The existing physical features along and surrounding the SH16 Main Road Upgrade consist of urban development consisting of light industrial / mixed commercial buildings fronting both sides of SH16 Main Road from Weza Lane to Access Road at the eastern end. West of Access Road the NAL and associated grass berm bounds the southern side of SH16 Main Road and a mix of shed like retail buildings face onto the northern side of the Main Road until it crosses Kumeū River. Between John Mc Donald Lane and Oraha Road the SH16 Main Road contains a range of existing retail/ community facilities and a finer grain of built form. This includes the Railway Café and Huapai Tavern on the

southern side of SH16 and the Kumeū Library and a range of local shops on the northern side. West of Oraha Road the road is fronted by a mix of residential dwellings often utilised for commercial actives and interspersed with new commercial buildings.

There are several heritage structures located along SH16 Main Road, including the Huapai Tavern (AUP#00482) and a Rail Shed (AUP#00483) which are scheduled heritage structures and Railways Carriages which are CHI identified features (CHI item #18493).

The existing vegetation is highly modified and mostly exotic amenity planting. However, small areas of native or mixed exotic vegetation occur with areas of planted native vegetation associated with the Kumeū River.

Proposed Hydrology and Ecology

Key watercourses in the Project area shown in Figure 5-3 include Kumeū River, the Ahukuramu Stream and the Kaipara River to the west.

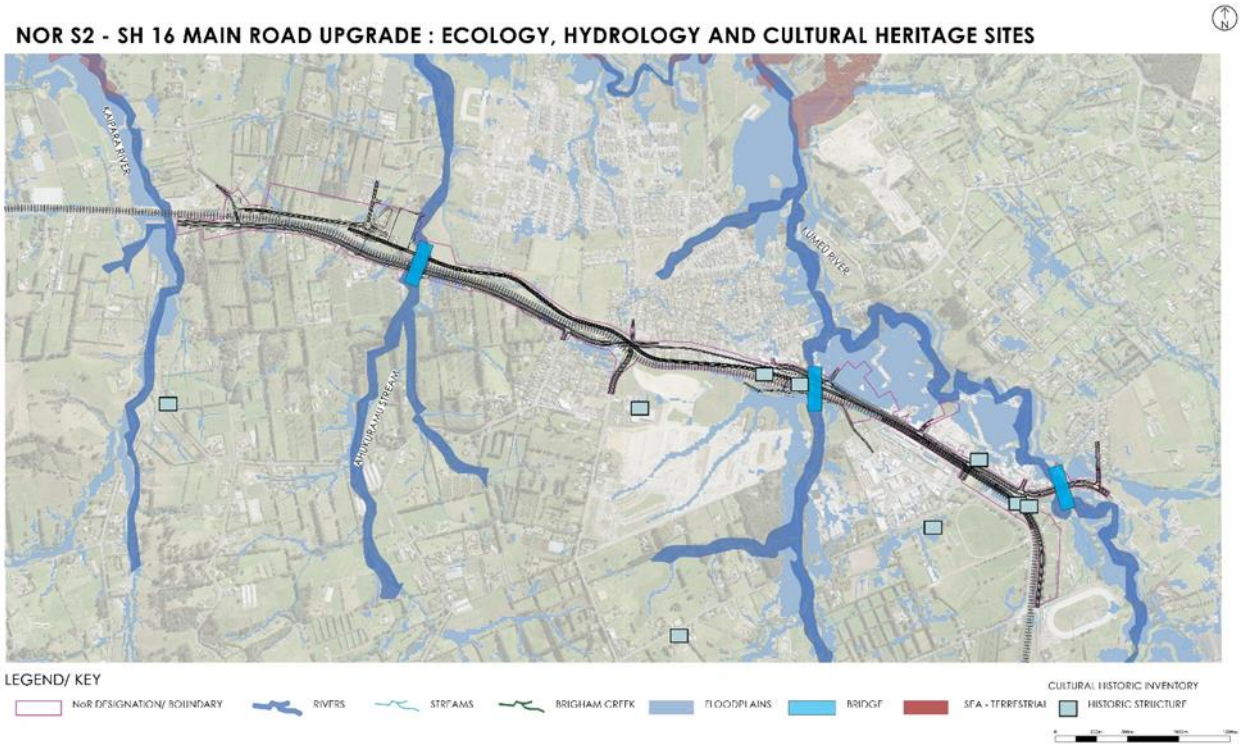


Figure 5-3: SH 16 Main Road Upgrade Ecology, Hydrology & Cultural Heritage Sites

5.1.2 Likely Future Environment

The key land use features that will comprise the future urban environment include:

Active modes extend along the SH16 Main Road throughout Kumeū-Huapai that connect to Westgate and the Central City, via the RAMC which is proposed as part of NOR S1.

Active modes that connect into FUZ communities providing convenient and safe access into the Kumeū-Huapai villages and connect to other facilities such as the Kumeū River greenway to be determined via a future structure plan and plan change process.

SH16 Main Road Upgrade active modes facilitates will provide connections to the RTC station located in the heart of a central Kumeū-Huapai Town Centre (NoR Kumeū Station) and a station with park and ride facilities at the western end of the FUZ development (NoR Huapai Station).

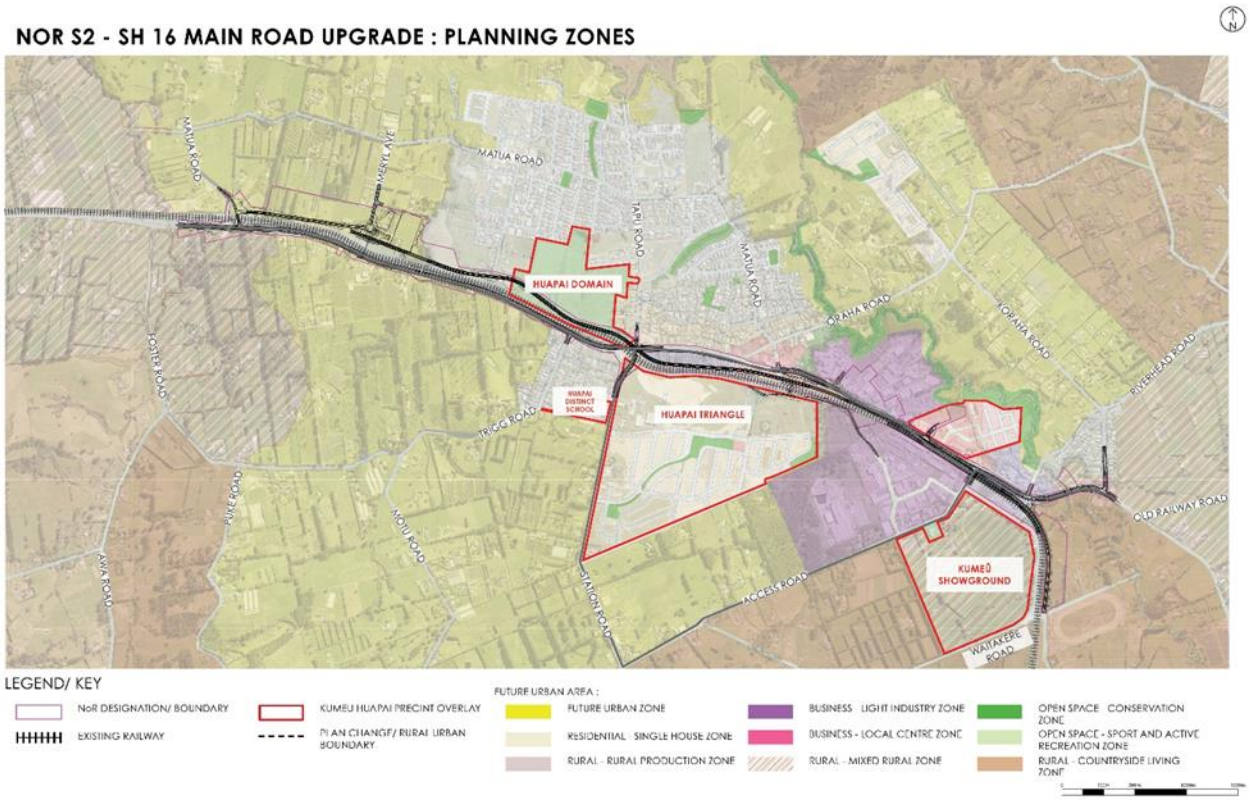


Figure 5-4: SH 16 Main Road Upgrade AUPOIP Zoning

5.2 State Highway 16 Main Road Upgrade - Form and Function

The functional intent of the SH16 Main Street Upgrade section of the Project is to provide all modes east- west connectivity through the centre of the Kumeū-Huapai village and future urban area. It enables a new Rapid Transit corridor to connect into the centre of the FUZ.

Table 5-1: SH16 Main Road Upgrade Form and Function

SH16 (Main Road) CFAF Summary
Purpose of Corridor: Main arterial running through the growth areas of Kumeū and Huapai and will support the FUZs. Additionally, the segment will provide an important function to connect people to Rapid Transit stations, the strategic cycle network and SH16 motorway interchanges
General Vehicle Volume: Average Daily Traffic (ADT) 9,000 in 2048
Priority Vehicle: 5 buses per hour under indicative 2048 AT bus network
Freight: Level 3 freight route
Vehicle Lanes Total (Priority Lanes / PT Priority at intersections): 2 (None / None)
Active Modes: Separated cycle lanes and footpaths on both sides

SH16 (Main Road) CFAF Summary
Speed Environment: 50kph
Parking and Access: Property access; no parking

5.2.1 State Highway 16 Main Road Upgrade Design Features

Key features of the proposed upgrade include the following:

- The widening of the existing 20m wide two-lane urban arterial to a 24m wide corridor with walking and cycling facilities on the northern side of the corridor where the main Road adjoins the RTC and on both the northern and southern sides where the Main Road is separated from the RTC. (See Figure 5-5 and Figure 5-6 below).
- The realignment of Station Road to form a new signalised intersection with SH16 and Tapu Road.
- Tie-ins with existing roads, stormwater dry ponds, wetlands and culverts.
- Likely posted speed of 50kph, design speed (of which effects will be assessed on) is 60 kph.
- Batter slopes to enable widening of the corridor, and associated cut and fill activities (earthworks).
- Vegetation removal along the existing road corridor.
- Other construction related activities required outside the permanent corridor including the re-grade of driveways, construction traffic manoeuvring and construction laydown areas.

More detail of the proposed Upgrade is provided in the AEE.

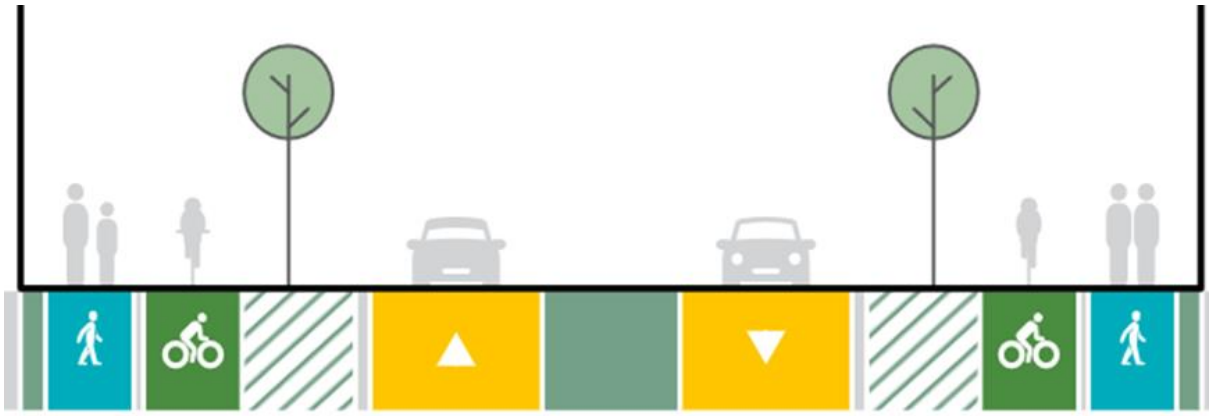


Figure 5-5: SH16 Main Road 24m urban arterial typical cross section

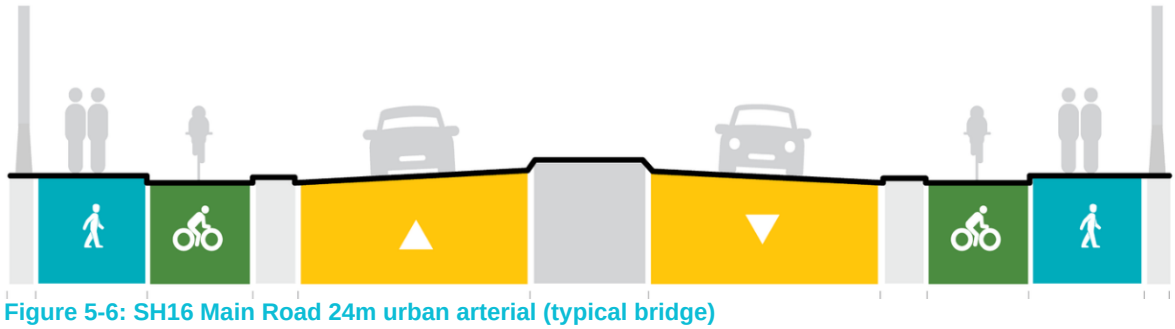


Figure 5-6: SH16 Main Road 24m urban arterial (typical bridge)

5.3 NOR S2: State Highway 16 Main Road Upgrade - Evaluation against the Design Framework Principles

This evaluation considers the application of the established Te Tupu Ngātahi Design Framework Principles against the proposed State Highway 16 Main Road Upgrade. It provides urban design focused commentary on the current design detail and recommends how and where any urban design outcomes should be considered in future design stages.

These recommendations can form the basis of an urban design specific designation condition to prepare an Urban and Landscape Design Management Plan (ULDMP) in future delivery.

The evaluation Table 5-2 below lists each of the twenty principles identified in the Te Tupu Ngātahi Design Framework and provides an explanation which are highlighted in light blue. A recommendation of how the principle is applied to the NoR Project area is provided below each principle.

Table 5-2: Urban Design Evaluation for State Highway 16 Main Road Upgrade

Principle	Explanation
ENVIRONMENT	
1.1 Support and enhance ecological corridors and biodiversity	Mitigate the effects on or enhance existing ecological corridors through the placement and design of movement corridors
SH16 Main Road is an existing urban highway. There is however the opportunity to enhance the ecology and biodiversity of the Kumeū River where SH16 Main Road crosses over the river.	
1.2 Support water conservation and enhance water quality in a watershed	Take into account and work with the existing watershed as part of a whole system.
The proposed typical corridor cross sections and designated area provide sufficient space to provide natural drainage to stormwater wetlands as a way to address water quality and reduce hard engineering solutions.	
Further refinement of stormwater wetlands along the SH16 Main Road during the detailed design stage is recommended to define the wetland's final form and how the wetlands will interface with the surrounding land uses as well as exploring opportunities to be a part of an integrated system. For example, wetlands should be configured in a naturally shaped manner and fully integrated with existing natural drainage features and vegetation.	
1.3 Minimise land disturbance, conserve resources and materials	Respect the existing topography, landforms and urban structure in the placement of strategic corridors. Minimise the quantity of hard engineering materials required. Minimise, mitigate any adverse effects of activities on the environment.
The upgrade has sought to minimise impacts on the urban structure where feasible, and the opportunity exists to integrate the corridor with existing and future development as part of the detailed design. Ensuring an attractive streetscape will help support the redevelopment of residual land impacted by both the upgrade of SH16 Main Road and also the RTC.	
1.4 Adapt to a changing climate and respond to the microclimatic factors of each area	Design for predicted future regional climatic impacts in the corridor location. Consider the positive contribution that the orientation of transport corridors can make to the local climatic environment of future places and streets.

Principle	Explanation
The corridor designs adopt vertical geometries that accommodate stormwater events including the applied climate change factors as stated in Auckland Council Stormwater Code of Practice.	
The corridor provides for active modes and prioritises public transport to support modal shift and reduce transport related climate change contributions.	
The corridor provides for street tree planting zones that, when delivered, will contribute to reducing urban heat island effects in the more intensively urbanised areas where 'islands' of higher temperatures can be caused by high concentrations of structures such as buildings, roads and infrastructure in one area.	
SOCIAL	
2.1 Identity and place(s)	The identity or spirit of place is generally acknowledged as the unique amalgam of the inherent built, natural and cultural qualities of a place. Responding to identity in the location and type of new corridors can provide a sense of continuity and contribute to our collective memory.
There is an opportunity with partners and developers to create gateways or arrival points at the eastern end of Kumeū where SH16 crosses a tributary of the Kumeū River and at the western end of the town at the Station Road SH16 Intersection. This would effectively "bookend" the town.	
There is an opportunity with partners and developers to enhance the character of land and development which fronts SH16 Main Road. This will be partly driven by the RTC Stations (NoRs KS and HS) and will respond to future structure plans and Council's Spatial Land Use Strategy.	
Consideration of street tree selection and placement provides the opportunity to reflect and enhance the unique local character inherent in the built, natural and cultural qualities of the location.	
In future design stages, mana whenua will be invited to provide input into relevant cultural landscape and environmental design matters including how desired outcomes reflect their identity and values.	
Sites of historic value include the Kumeū River as an historic Awa, the Huapai Tavern (scheduled historic place AUP00482) and other historic structures identified along the Main Road. The SH16 Upgrade impacts the frontage of the Huapai Tavern overlay; however the RTC and Kumeū RT Station impacts on the bulk of this and other heritage structures. The proposal is to relocate the Huapai Tavern within the footprint of the proposed designation for Kumeū Station (NoR KS). There is an opportunity for future development triggered by the SH16 Upgrade, RTC and the RT Station to celebrate the inherent heritage character drivers for the area.	
2.2 Respect culturally significant sites and landscapes	Acknowledge significant sites and features in the layout of movement corridors including ridgelines or horizons.
The Kumeū River is of significance to mana whenua as an historic Awa (portage) between the Upper Harbour and the Kaipara Harbour. Whilst it is unaffected by the Project, the redevelopment of the town centre with a new RTC station provides an opportunity for the SH16 Main Road Upgrade to provide active mode connections to the Kumeū River and associated greenway network to the north of the Town Centre as illustrated in the (Kumeū - Huapai Centre Plan.	
In future design stages, mana whenua will be invited to provide input into relevant cultural landscape and design matters including how desired outcomes reflect their identity and values.	
2.3 Adaptive corridors	Corridors should demonstrate flexibility to respond to changes in their function and physical interfaces. Consider an adaptive approach in the way strategic corridors are designed to be able to respond to changes in land use, the way we move around or utilise technology over time.
The proposed SH16 Main Road Upgrade corridor cross section has the spatial provisions to be flexible, re-configurable and adapted at a detailed design stage for changing contextual needs. For example, town centre corridors with strong place functions can accommodate wider footpaths and wider berms for street tree planting.	

Principle	Explanation
In future design stages ensure horizonal and vertical geometric design maintains access for all modes to adjacent land use types from SH16 Main Road is maintained, especially to existing and future Town Centre areas.	
2.4 Social cohesion	Provide clear, effective and legible connectivity between community and social functions.
The proposed corridor provides fully separated active modes along SH16 Main Road improving connectivity to existing and future town centre areas and community infrastructure, including the Kumeū Library. The active modes will connect to the proposed active modes on Access Road (NoR S4), which will provide access to the Kumeū Showgrounds and Community Centre and also at Station / Tapu Road, providing access to the Huapai Domain.	
2.5 Safe corridors	Provide a safe and convenient network of routes accessible to people of all ages and abilities.
The proposed active mode facilities will deliver a greater level of access and movement to future local communities that will promote a sense of personal safety particularly for pedestrians and cyclists.	
The proposed active mode facilities provides enhanced multimodal access at Access Road and Tapu Road.	
The active travel solutions are proposed as fully segregated and prioritised with signalised intersections at: • SH16 Main Road • Access Road • Tapu Road • Matua Road	
Further development at a detailed design stage of the final crossing points across the intersections will reinforce the sense of personal safety. Future design needs to address prioritization and safe crossing over the NAL.	
BUILT FORM	
3.1 Align corridors with density	Locate stations/stops and corridors within walking distance of higher density development to facilitate modal shift, support commercial and mixed use centres and contribute to vibrant, active urban environments.
The corridor provides a safe, connected walking and cycling network, and improves connectivity within Kumeū Huapai and to the proposed RT stations where higher density development is likely to occur in the future.	
The corridor supports a range of mixed uses and densities and directly interfaces with the existing and future Main Centres and employment zones. The project provides for active modes connecting residential land to retail and a RT Station within the town centre. This will support intensification around the RT Station and provide a pedestrian (walking and cycling) frontage that supports businesses building up to the street.	
3.2 Corridor scaled to the surrounding context and urban structure	Align the speed, type and scale of transport corridors and infrastructure with the environment that it moves through (appropriate scale to the context).
The proposed configuration and scale of the corridor provides an appropriate response to the potential needs of the adjacent urban functions, for example the town centres connecting with RTC stations. Reduced traffic along SH16 Main Road due to the ASH providing for inter-regional transport and increased walking and cycling along the Main Road will establish the appropriate environment for the development of a Town Centre. There is an opportunity to support partners in optimising adjacent and residual land along the corridor and to ensure the sense of identity and place is reinvigorated with the proposed upgrade of the corridor. A place-led masterplan is recommended to maximise development of residual land.	
3.3 Facilitate an appropriate interface	Facilitate the opportunity for place as well as movement in corridors (people-oriented streets)

Principle	Explanation
between place and movement	
The proposed cross section of the corridor provides a flexible platform to address the opportunity for place as well as movement function, for example separated pedestrian and cycle facilities, potential road median spaces that provide safe waiting zones for pedestrians. In the absence of medians, signalized or legal crossings, spaced appropriately for the adjacent land-uses and pedestrian desire routes involved, should be considered.	
The proposed cross section also provides flexibility in supporting appropriate public private interfaces and connectivity at a fine grain (pedestrian) level. For example, direct pedestrian access to higher density living is accommodated and encouraged by placing pedestrian circulation closest to the corridor boundary.	
The corridor provides active mode connection to a RT Station and Park and Ride facility at the western edge of the FUZ.	
MOVEMENT	
4.1 Connect nodes	Provide tangible connectivity between identified activity nodes.
Active modes incorporated along the Main Road will link the Kumeū Town Centre and future western Huapai Local Centre, employment areas, Kumeū Showgrounds, Kumeū River open space network and the Huapai Recreation Reserve.	
4.2 Connect modes	Provide for choice in travel and the ability to connect at interchanges between modes.
The corridors provide connectivity for all modes (walking, cycling, public transport and private vehicle).	
The corridors provide a direct active mode and prioritised PT connection between the proposed centres and the RT stations.	
4.3 Support access to employment and industry	Align the corridor location and typology to provide direct and efficient access to areas of employment and industry.
The corridor provides for active modes with direct access to the FUZ, existing residential areas to the Town Centre and industrial employment zones.	
4.4 Prioritise active modes and public transport	Provision of quality active mode corridors and dedicated public transport corridors to enable a modal shift away from private vehicle use.
The cross section proposed for the corridor accommodates high-quality PT and active travel facilities, for example separated pedestrian, cycle pathways connecting to RT Stations.	
Further development of modal priority at intersections at the detailed design stage will provide a higher level of service and enable modal shift.	
4.5 Support inter-regional connections and strategic infrastructure	Consider the location and alignment of significant movement corridors and placement of infrastructure (power, wastewater, water) to the network.
The SH16 Main Road Upgrade is part of a strategic package of projects (ASH, RTC & RAMC) that will connect the future urban development of Kumeū and Huapai with the wider north west and the Auckland Region.	
The corridors also provide regional connectivity to communities via ASH, RTC and RAMC.	
4.6 Support legible corridor function	Consider how areas can be clearly navigated and understood by users moving from place to place.
The proposed cross section for the corridors accommodates a range of modes with clear allocation of street spaces, and inherently supports future community connectivity, mobility and travel choice.	

Principle	Explanation
Further development at the detailed design stage, of intersection crossings, midblock crossings and future bus stops along the corridor will provide clear and legible cross corridor access and connectivity between areas of high density and centres.	
LAND USE	
5.1 Public transport directed and integrated into centres	Locate rapid transit interchanges within centres (local, town and metro) to support a mix of uses and provide modal choice to a larger number of users.
The SH16 Main Road Upgrade provides active mode connections to future Kumeū and Huapai RT Stations adjacent to Town Centres.	
5.2 Strategic corridors as urban edges	Strategic corridors as potential definers of a land use edge.
This principle is not relevant to this corridor.	

5.4 Summary of Urban Design Evaluation and Recommendations for State Highway 16 Main Road West Upgrade

Overall, the proposed State Highway 16 Main Road Upgrade design and configuration is generally supportive of the Design Framework principles. A number of urban design outcomes are shown in blue in Figure 5-7 and Figure 5-8 below. These are recommended to form a part of the Urban and Landscape Design Management Plan (ULDMP) in future delivery stages. This is to ensure the detailed design of the corridor responds appropriately to the principles and the project specific urban design outcomes sought.

The ULDMP should include the following Project specific outcomes as illustrated in Figure 5-7 and Figure 5-8.

Develop an urban interface approach within the corridor that:

- Provides an appropriate interface to the existing and future town centre areas and enables buildings and spaces to positively address and integrate with the corridor.
- There is an opportunity to support partners in optimising adjacent and residual land along the corridor and to ensure the sense of identity and place is reinvigorated with the proposed upgrade of the corridor.
- Responds to the spatial character of the town centre environment by supporting quality public realm infrastructure, ample pedestrian footpath widths, parking, frequent pedestrian crossing points and providing street trees for shade and amenity.
- Permeability of the corridor for active modes that addresses cross corridor connectivity (midblock crossings), modal priority and permeable access to destinations such as open spaces and community facilities and between areas of high density.
- Enhances the identity for Kumeū and Huapai including consideration of landscape design drivers related to the Kumeū River, Huapai Recreation Reserve and the Kumeū Showgrounds and the creation of gateway elements at the eastern and western edges of the town.

- Responds to adjacent property interfaces including access into properties, parking and boundary reinstatement.
- Mana whenua will be invited to provide input into the development of the ULDMP, in particular relevant cultural landscape and design matters including how desired outcomes reflect their identity and values.
- A landscape plan that addresses recommendations from the landscape and visual, and ecological assessments including street tree, stormwater wetland and ecological restoration planting, private property reinstatement and urban design aspects of the design of structures. The landscape plan should enable a strong vegetated framework and identity for the SH16 (Kumeū and Huapai) Main Road. The landscape outcomes should reinforce the wider vegetation patterns of the local landscape.
- Demonstrates that the project has adapted to the changing climate such as reducing urban heat island effects by incorporating street trees, supporting modal shift and accounting for flood hazard risks.

Further urban design opportunities in the Project area have also been identified in Figure 5-7 and Figure 5-8 shown in orange. These opportunities are not required to mitigate the Project's urban design effects but could be considered by the requiring authority or other parties at future stages of design and development.

5.5 State Highway 16 Main Road Upgrade - Urban Design Outcomes and Opportunities

The urban design outcomes that have been identified are shown in blue and summarised in section 5.4 above. Opportunities that have been identified are shown in orange on Figure 5-7 and Figure 5-8 below.

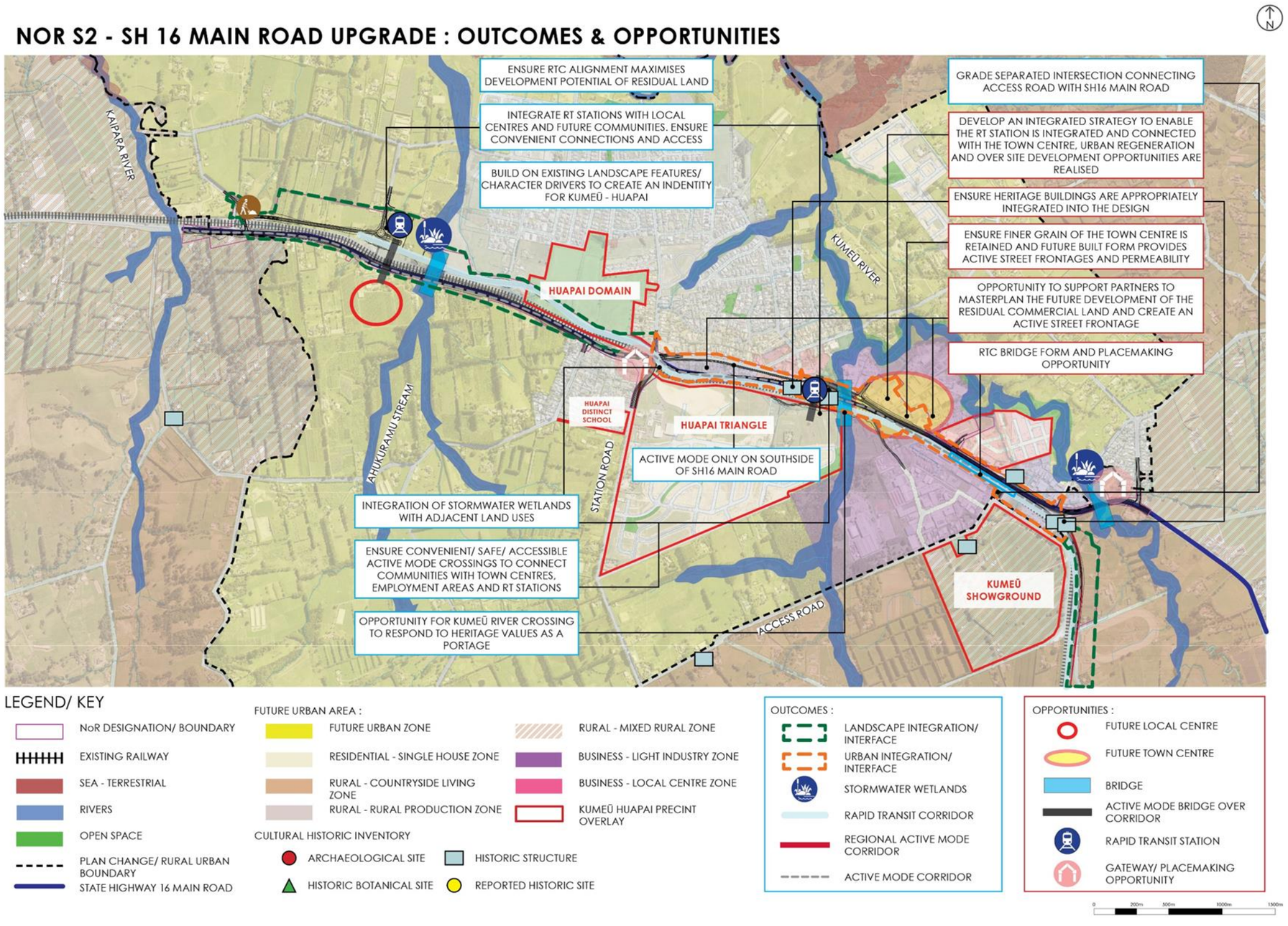


Figure 5-7: SH16 Main Road Upgrade urban design outcomes and opportunities

NOR S2 - SH 16 MAIN ROAD UPGRADE : TOWN CENTRE OUTCOMES & OPPORTUNITIES

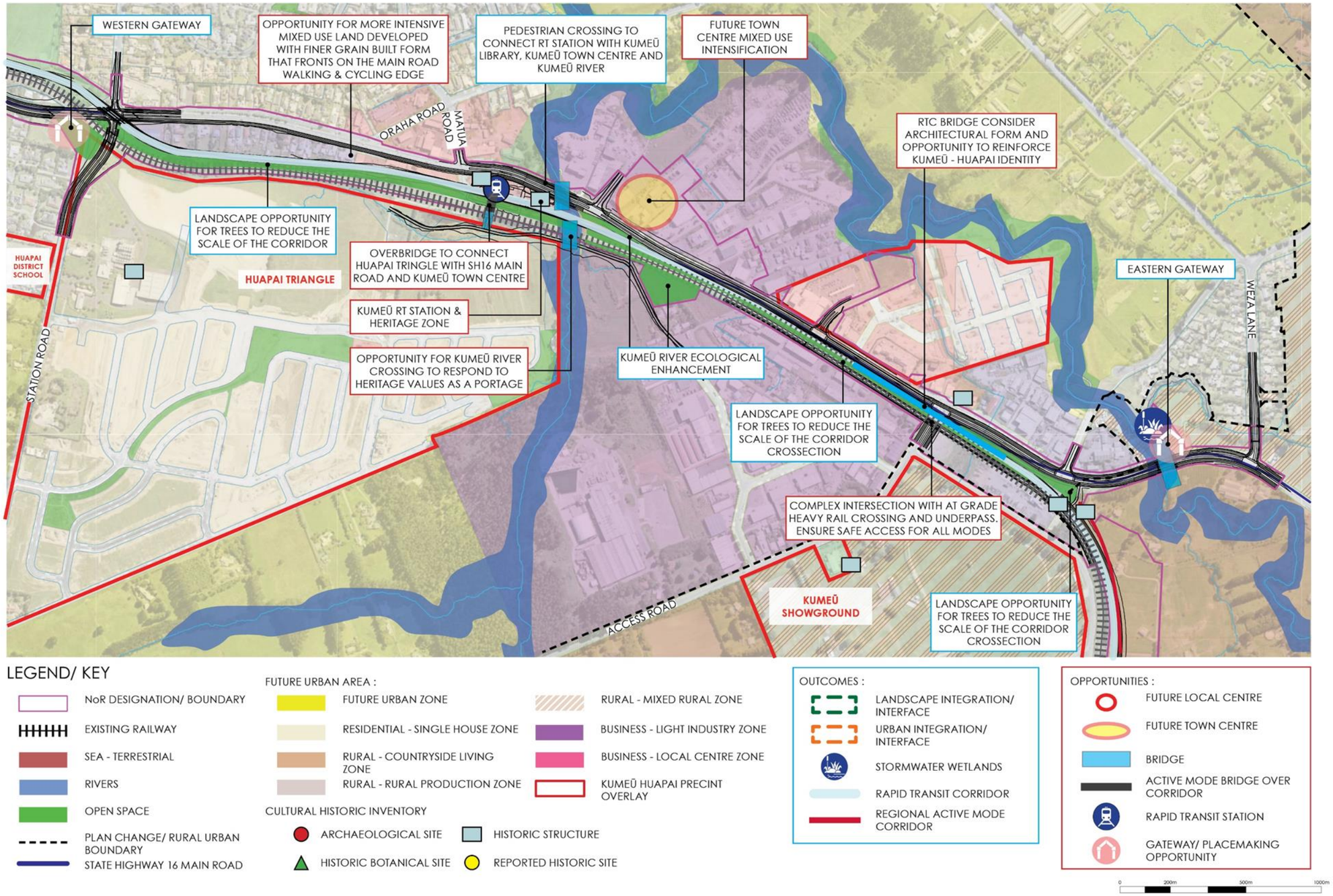


Figure 5-8: SH16 Main Road Upgrade: Town Centre Outcomes and Opportunities

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

6.1 Contextual Analysis

The Rapid Transit Corridor (RTC) will extend from the future SH16 / Brigham Creek Interchange to the west of Huapai. The RTC predominately traverses rural land outside of the FUZ at a total length of approximately 9.5km and is intended to operate in an uninterrupted free flowing manner with all road crossings grade separated. The RTC and RAMC are combined with the ASH corridor from Brigham Creek Interchange to Boord Crescent where the corridor separates from the ASH and runs parallel with the NAL until it merges with SH16 Main Road in Kumeū. The RAMC also connects with Taupaki Road.

The RTC is split into the following 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. Within the rural section, the RTC requires an extended width to accommodate both the RTC and RAMC.

The urbanised 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 along this section. Within this section, the RTC requires approximately 38m width to locate two Frequent Transit Network lanes, separated active mode facilities and the SH16 Main Road Upgrade.

The RTC corridor will support bus rapid transport.

The RTC corridor will be at grade except at key sections to pass over local arterial roads or the Alternative State Highway, including Brigham Creek Road.

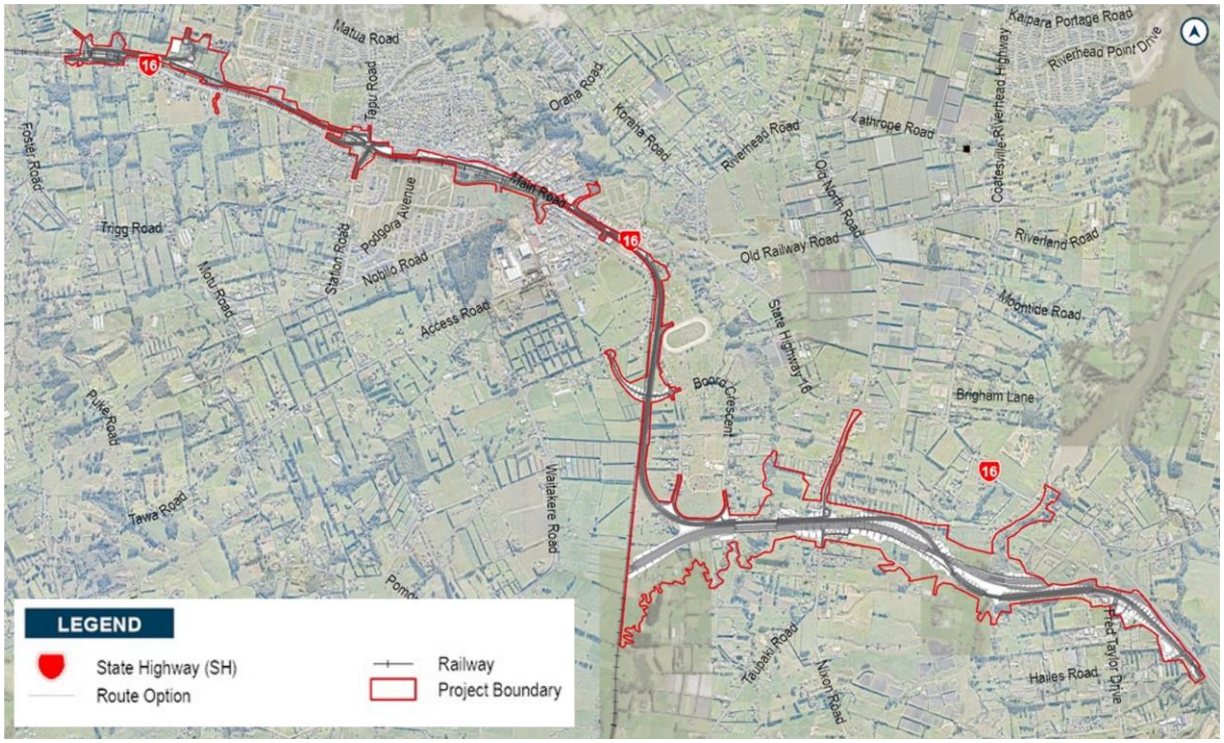


Figure 6-1: Rapid Transit Corridor and Regional Active Mode Corridor Overview

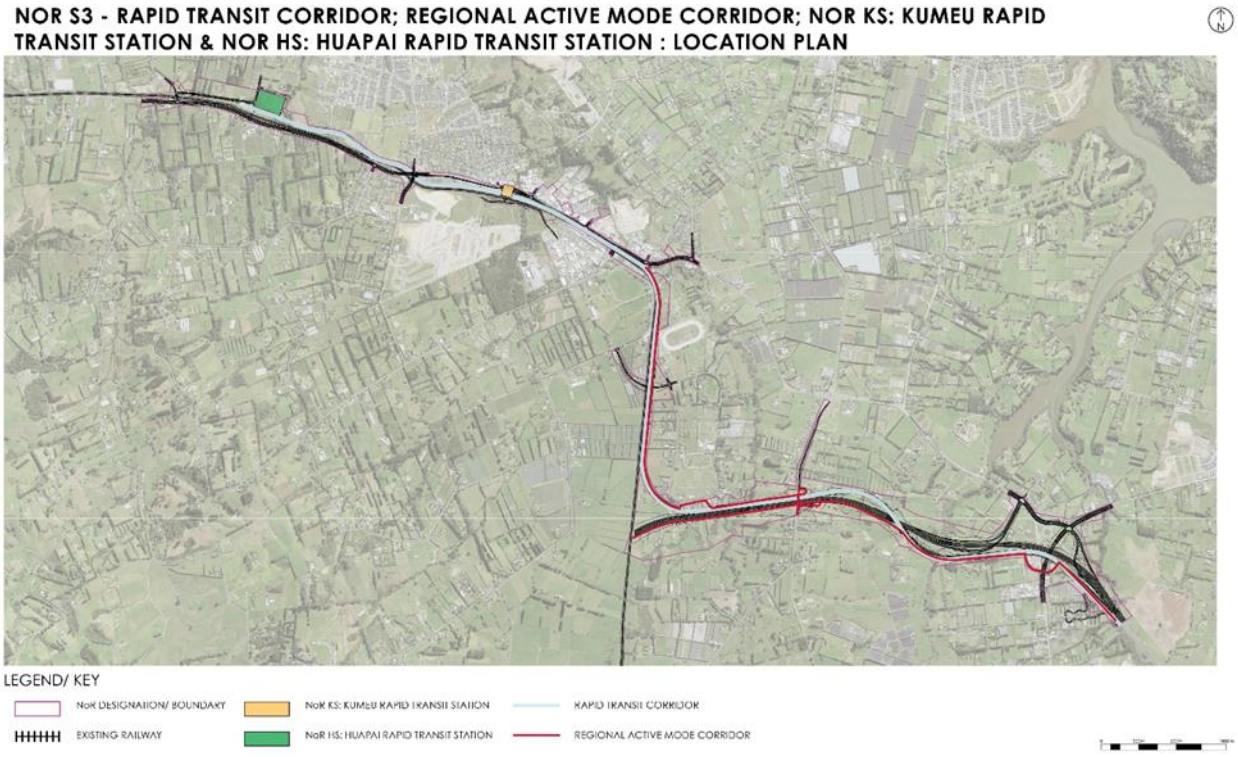


Figure 6-2: Contextual Overview of Rapid Transit Corridor; Regional Active Mode Corridor; NoR KS Kumeū Rapid Transit Station and NoR HS Huapai Rapid Transit Station

6.1.1.1 Urban Features

The RTC and AMC traverses two environments. A rural section between the Brigham Creek Interchange (west of Ngongetpara Stream) and an urban section that extends through Kumeū-Huapai township with RT stations located between the RTC and the SH16 Main Road Upgrade (on the site of the existing Huapai Tavern) to the west of the Kumeū River Tributary and a rural station located to the south of Meryl Avenue adjacent to the proposed Huapai Local Centre in the Spatial Land Use Strategy for the North West.

The RTC bridges over local roads (extension of Fred Taylor Drive) at the Brighams Creek Interchange at the eastern end of the route. West of the Brighams Creek Interchange, the rural section of the corridor is through undulating topography with several stream crossings and a variety of rural land uses including rural residential dwellings (countryside living), horticulture, transportation and logistics and a few commercial business operations. The RTC and RAMC are located on the southern side of the ASH. To the west of the Ngongetepara Stream the RTC and RAMC cross over the ASH and run along the side where the RAMC connects to Taupaki Road. The route passes to the south of Boord Crescent and provides a new connection, bridge over the RTC and RAMC, to Waitakere Road.

In the Kumeū-Huapai urban section the RTC corridor is located in between the NAL (to the south) and SH16 Main Road to the north. Between Weza Lane and John McDonald Lane the RTC is located on an existing berm between the NAL and SH16 Main Road. West of John McDonald Lane the RTC continues to run parallel (on the northern side) with the NAL. The RTC is located at the back, southern edge of mixed commercial and residential properties that follow SH16 Main Road until Station Road. Station Road defines the western extent of the commercial / urban part of the Kumeū – Huapai Village. The RTC corridor designation results in acquisition of all the properties between John McDonald Lane and Station Road, leaving an area between the RTC and SH16 Main Road that will be available for redevelopment.

Land to the west of the Kumeū River, between the RTC and SH16, contains a number of heritage buildings including the Huapai Tavern (scheduled historic place AUP00482), a Railway Shed (scheduled historic place AUP00483) and Railway Carriages (CHI item #18493) in close proximity to the proposed Kumeū RT Station.

At Station Road the existing NAL crosses under SH16 to be located on the northern side of the highway, were it runs parallel with SH16 to Waimauku and on to Hellensville. The RTC also crosses under SH16 at Station Road where it runs parallel, on the north side of the NAL, with SH16 to the south of the NAL. This section of the RTC clips the southern edge of the Huapai Domain and extends through rural properties that are zoned FUZ. The RTC ends at Matua Road at the western end of the FUZ and the RUB. At this location a future RTC interchange and park and ride facility are accommodated by a widened designation.

6.1.1.2 Physical Features

The Rapid Transit corridor crosses over the Ngongetepara Stream, Kumeū River and Ahukuramu Streams and their flood plains on bridges.

The existing vegetation is highly modified and is mostly dominated by agricultural land and exotic ecosystems such as exotic grassland and exotic amenity planting apart from along the Kumeū River which includes conservation areas near Boord Crescent.

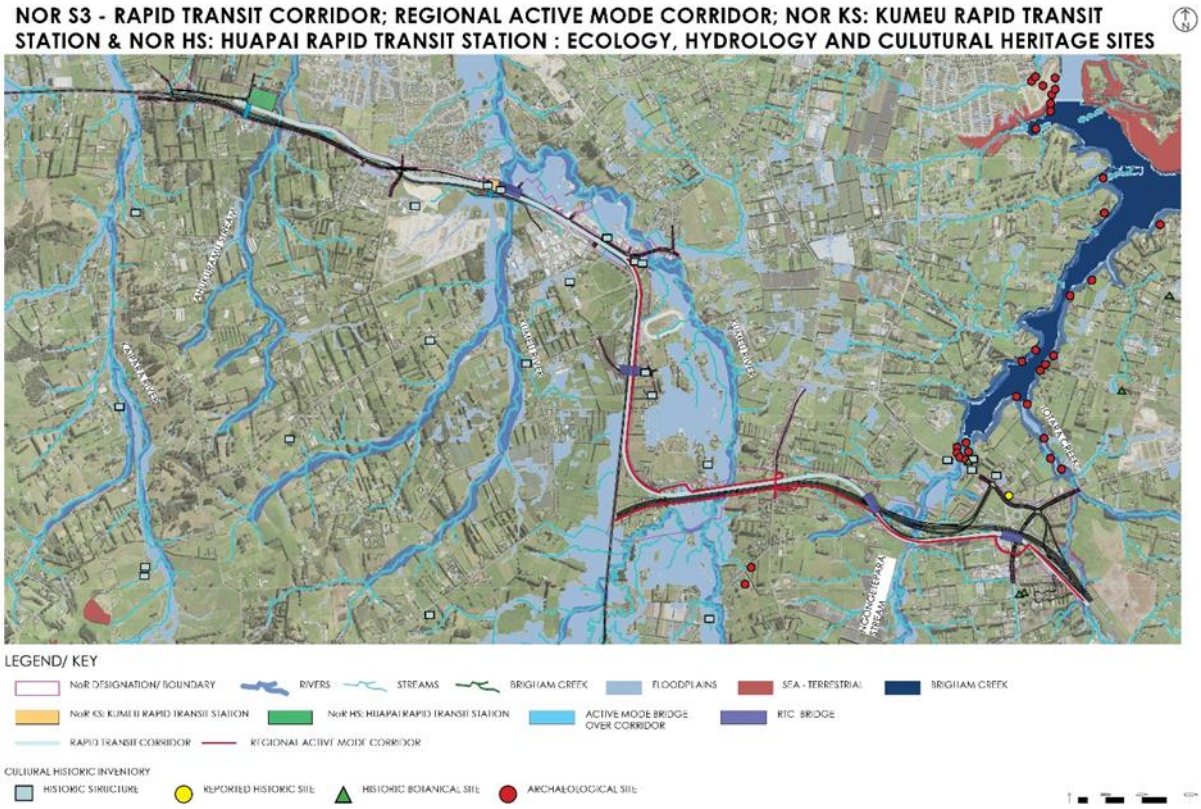


Figure 6-3: Rapid Transit Corridor; Regional Active Mode Corridor; NoR KS - Kumeu Station; NoR HS – Huapai Station: Ecology, Hydrology & Cultural Heritage Sites

6.1.2 Likely Future Environment

The rural section between the Brigham Creek Interchange and SH16 Main Road Kumeū-Huapai township is likely to remain rural in the future because of its zoning and its location outside of the RUB. The introduction of the ASH, RTC and RAMC will modify existing landscape and land use patterns.

The urban section that extends through the Kumeū-Huapai village to Matua Road will see significant change and the RTC and SH16 Main Road Upgrade together with the FUZ and RT Stations are catalysts for this change. The FUZ will result in a large increase in population with major expansion of the residential areas to the west and south of SH16. Refer Figure 6-4 below. The redevelopment of commercial land between Kumeū River (southern side of SH16 Main Road by John McDonald Lane) and Station Road presents an opportunity for a significant section of the Main Road to be redeveloped with a variety of businesses built up to and fronting onto the active mode (walking and cycling) edge of SH16 Main Road.

Having a RTC and stations conveniently located within walking and cycling distance of the urban area will be transformational. Under the NPS Urban Development, increased residential and commercial density is anticipated within a walking catchment of stations with height limits of at least 6 storeys considered appropriate.

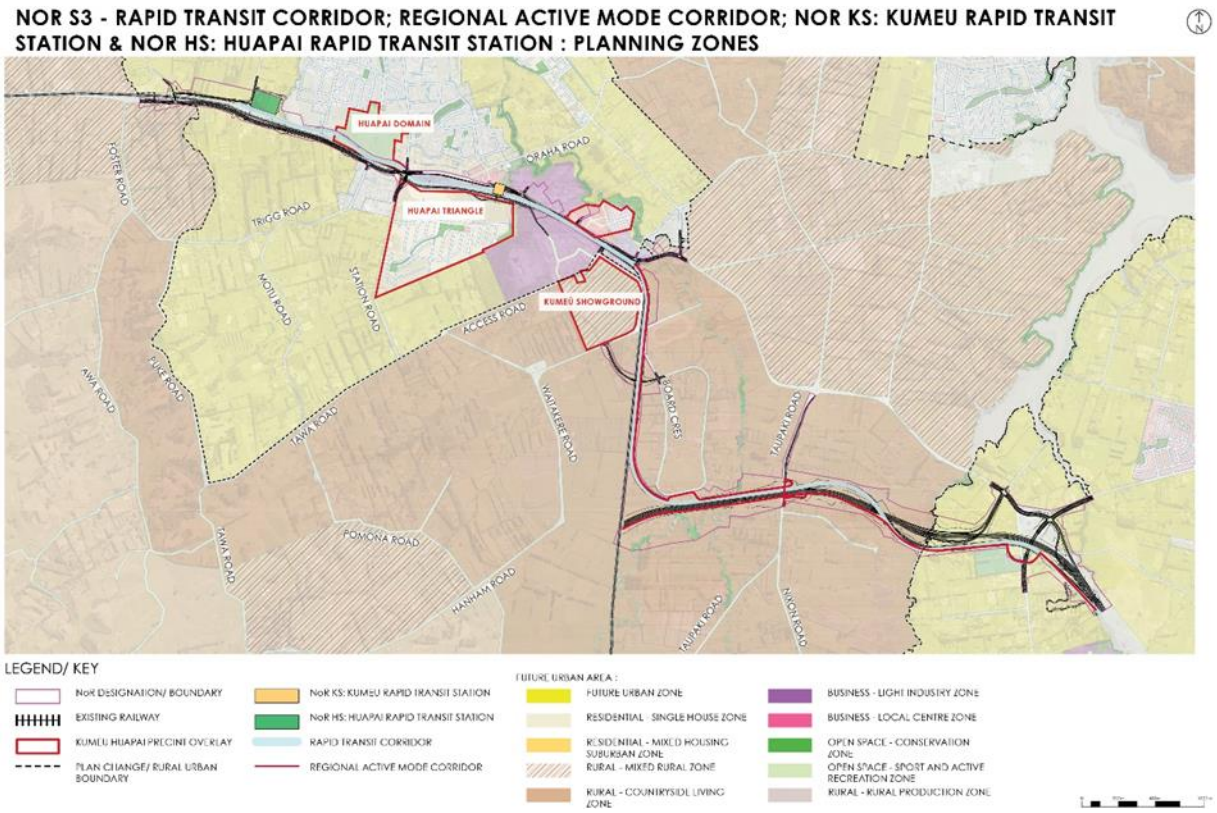


Figure 6-4: AUPOIP zoning for Rapid Transit Corridor; Regional Active Mode Corridor; NoR KS - Kumeu Station; NoR HS – Huapai Station

6.2 Form and Function

6.2.1 Regional Active Mode Corridor

The Regional Active Mode Corridor (RAMC) is a segregated walking and cycling corridor that is located adjacent to the RTC alignment from the Brigham Creek Interchange to the western edge of Kumeū- Huapai, terminating at the signalised intersection of SH16 Main Road and Weza Lane. The corridor is co-located and integrated with the RTC and is proposed to be route-protected as a single NoR. The segregated corridor provides the opportunity for long-term amenity as a key cycling corridor, while connecting to the wider North western Cycleway and ultimately to the Auckland city centre network.

6.2.1.1 Rapid Transit Corridor Design Features

Key features of the proposed Rapid Transit Corridor include the following:

- An approximately 9.5km long corridor intended to operate in an uninterrupted free flowing manner. The corridor has been designed to operate at 80km/h.
- The RTC will be at ground level except at key sections to pass over or under arterial roads (Fred Taylor Dr, Taupaki Rd, new Waitakere-Boord Cres Link Rd, Access Rd and Station Rd).
- The ASH goes over the RTC in the rural section.
- Grade separated road crossings at all intersections with adjoining roads.
- Within Kumeū-Huapai Township, upgrades of:

  - SH16 Main Road between Access Rd and John MacDonald Lane. At this section, the RTC abuts the KiwiRail boundary and the proposed SH16 upgrade which will need to be realigned north of its existing alignment.
  - Realignment of Station Road and Tapu Road to form a signalised cross-intersection. The RTC will pass under this proposed intersection to deviate to the north.
- The identification of two station locations along the route. The future Kumeū RT Station is located adjacent to the Kumeū Library between the SH16 Main Road Upgrade and the RTC to the west of the Kumeū River Tributary. The future Huapai RT Station is located to the south of Meryl Avenue.
- Batter slopes to enable the construction of the corridor, and associated cut and fill activities (earthworks).
- Vegetation removal within the proposed new corridor
- Stormwater dry ponds, wetlands and culverts.

The area to be route protected will include the transport corridor, FTN stations and additional land for tie-ins, stormwater infrastructure, batter slopes and retaining walls, and for other construction related activities including re-grade of private driveways, construction of area for traffic manoeuvring and laydown areas.

More detail of the proposed RTC features is provided in the AEE.

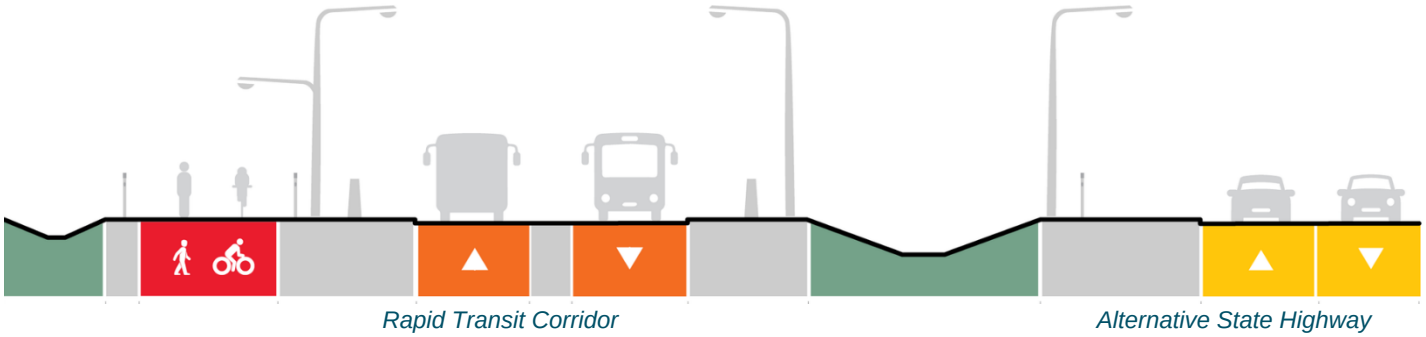


Figure 6-5: Typical Cross Section – RTC near Brigham Creek Interchange

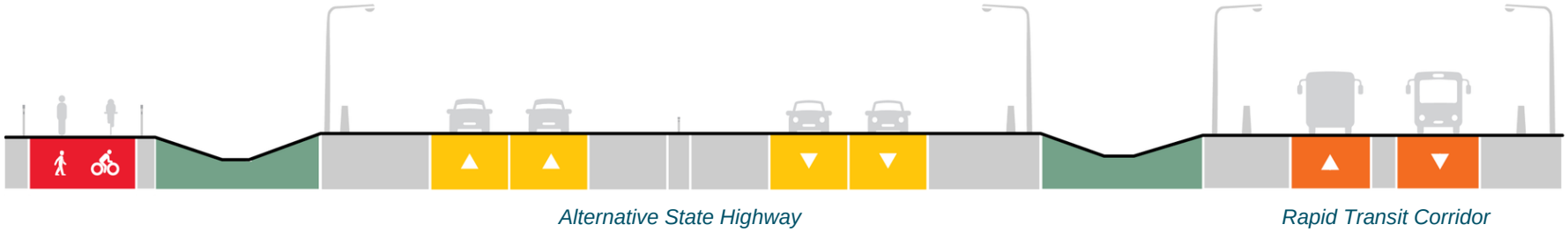


Figure 6-6: Typical Cross Section – Rapid Transit Corridor alongside ASH at Taupaki Road (shared path will re-join Rapid Transit Corridor at Boord Crescent)

Figure 6-7: Typical Cross section – Rural Rapid Transit Corridor

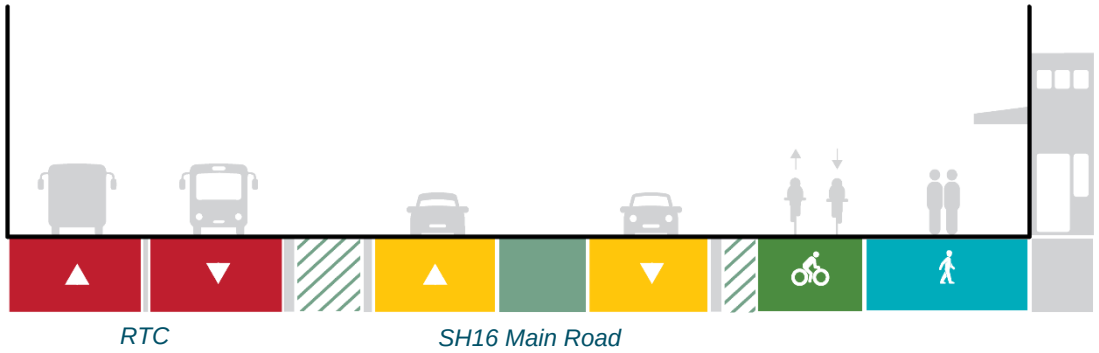


Figure 6-8: Typical Cross Section – Urban Rapid Transit Corridor at SH16 Main Road

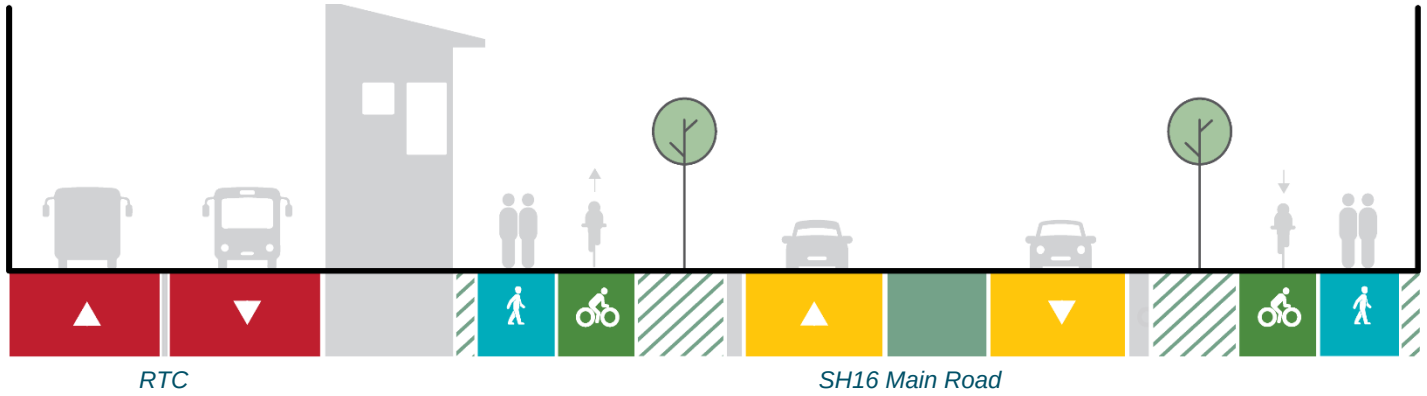


Figure 6-9: Typical Cross section – Rapid Transit Corridor at rear of urban block, SH16 Main Road on northern side and NAL on southern side (not shown)

6.2.1.2 Kumeū – Huapai Station Indicative Footprint

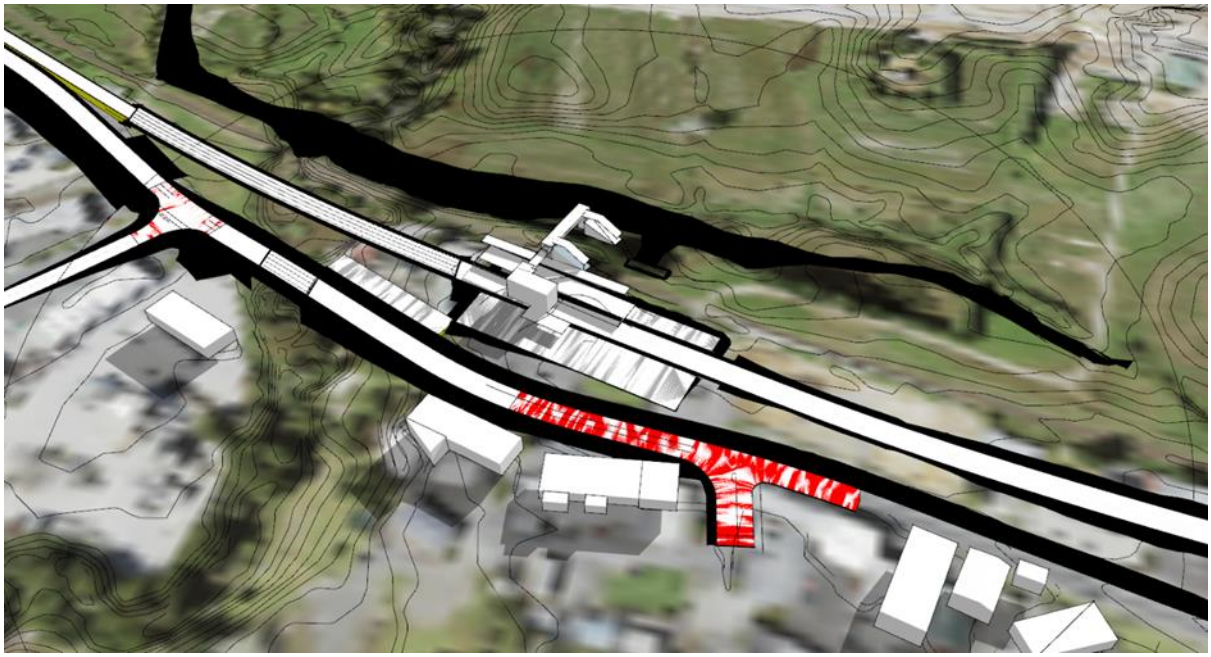


Figure 6-10: Kumeū RT Station indicative footprint

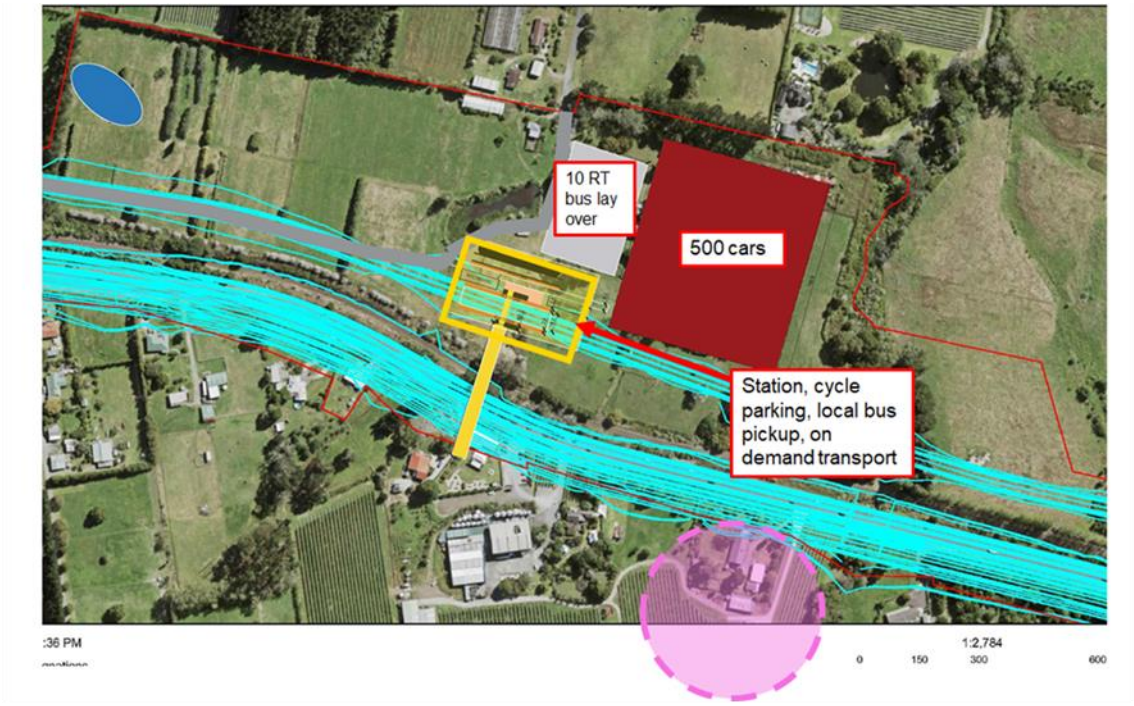


Figure 6-11: Huapai RT Station indicative footprint

6.3 NOR S3: Rapid Transit Corridor and Regional Active Mode Corridor; NoR KS: Kumeū Rapid Transit Station and NoR HS: Huapai Rapid Transit Station Kumeū Rapid Transit Station and NoR HS: Huapai Rapid Transist Station - Evaluation against the Design Framework Principles

This evaluation considers the application of the Te Tupu Ngātahi established Design Framework Principles against the proposed Rapid Transit Corridor including the Regional Active Mode Corridor; Kumeū Rapid Transit Station and Huapai Rapid Transit Station. It provides urban design focused commentary on the current design detail and recommends the framework for how and where any urban design outcomes should be considered in future design stages.

These recommendations can form the basis of an urban design specific designation condition to prepare an Urban and Landscape Design Management Plan (ULDMP) in future delivery.

The evaluation Table 6-1 below lists each of the twenty principles identified in the Te Tupu Ngātahi Design Framework and provides an explanation which are highlighted in light blue. A recommendation of how the principle is applied to the NoR Project area is provided below each principle.

Table 6-1: Urban Design Evaluation Rapid Transit Corridor and Regional Active Mode Corridor; NoR KS: Kumeū Rapid Transit Station and NoR HS: Huapai Rapid Transit Station

Principle	Explanation
ENVIRONMENT	
1.1 Support and enhance ecological corridors and biodiversity	Mitigate the effects on or enhance existing ecological corridors through the placement and design of movement corridors
Opportunity to enhance the ecology and biodiversity of the Kumeū River at the Boord Crescent Open Space - Conservation Zone and where the RTC crosses over the Kumeū River beside SH16 Main Road. Opportunity to create an ecological corridor between SH16 Main Road and the RTC from Kaipara River to the Ahukuramu Stream.	
1.2 Support water conservation and enhance water quality in a watershed	Take into account and work with the existing watershed as part of a whole system.
The proposed corridor cross section allows spatial provisions to provide natural drainage (swales) to direct stormwater to constructed wetlands (refer to preliminary construction drawings) as a way to address water quality and reduce hard engineering solutions. Water quality, detention / retention and discharge will be decided in future regional consents.	
1.3 Minimise land disturbance, conserve resources and materials	Respect the existing topography, landforms and urban structure in the placement of strategic corridors. Minimise the quantity of hard engineering materials required. Minimise, mitigate any adverse effects of activities on the environment.
The RTC and RAMC corridor is co-located with the ASH corridor in the rural section and located beside the existing NAL corridor through the urban section. This co-location of infrastructure will minimise land disturbance and limit effects to single corridors.	

Principle	Explanation
Opportunities to optimise land integration should be considered in the detailed design phase and refinement of the alignment through the urban section to maximise the spatial opportunity for adjacent land redevelopment.	
The alignment is likely to require a large volume of earthworks as the corridor extends through challenging terrain with undulating topography and elevation changes. The construction management approach will need to address any opportunities to minimise impact on rural land.	
1.4 Adapt to a changing climate and respond to the microclimatic factors of each area	Design for predicted future regional climatic impacts in the corridor location. Consider the positive contribution that the orientation of transport corridors can make to the local climatic environment of future places and streets.
The proposed corridor design adopts a vertical geometry that accommodates stormwater events including the applied climate change factors as stated in Auckland Council Stormwater Code of Practice.	
The proposed corridor design provides for street tree planting through the urban section that, when delivered, will contribute to the amenity of the area by providing shade and microclimatic cooling qualities.	
The detailed design phase should include a landscape and ecological strategy that incorporates the recommendations of the Landscape, Flooding and Visual and Ecological Assessments and a response to climate change factors.	
The proposed RAMC and the incorporation of cycling facilities at each of the RTC Stations will support modal shift and reduce transport related climate change contributions.	
SOCIAL	
2.1 Identity and place(s)	The identity or spirit of place is generally acknowledged as the unique amalgam of the inherent built, natural and cultural qualities of a place. Responding to identity in the location and type of new corridors can provide a sense of continuity and contribute to our collective memory.
Areas with extensive cut and fill batters along the ASH RTC and RAMC have the potential to impact on the local identity and character. Future design stages should integrate earthworks with the layout and character of the surrounding area, as far as practicable.	
Where the proposed corridor passes through a rural environment it should respond to adjacent land uses including; visual screening and separation, integration of fencing and any acoustic requirements, retention of existing high value trees and vegetation, the design of stormwater wetlands to integrate with natural flood plains and stream corridors and planting of existing stream corridors and flood plains to make the underlying landscape legible.	
Through the urban section, consideration of street tree selection and placement provides the opportunity to reflect and enhance the unique local character inherent in the built, natural and cultural qualities of the location.	
In future design stages, mana whenua will be invited to provide input into relevant cultural landscape and design matters including how desired outcomes reflect their identity and values.	
There are two historic heritage sites recorded in close proximity to the proposed RTC, the Huapai Tavern and Rail Shed and historic items, Railway Carriages. The Heritage Assessment recommends the Huapai Tavern (AUP 00482), Rail Shed (AUP004283) and Railway Carriages (CHI item #18493) be located in a heritage zone near the future Kumeū RTC Station. “The modification of the currently scheduled heritage area around the Huapai Tavern would allow to create a heritage precinct for additional heritage buildings, e.g. the Railway carriages and the Railway Goods Shed to be moved close to the Tavern. Additional buildings like the Pomona Hall and two residential buildings (from S1 and S3) could probably join them. The functions as Tavern, café and antiques shop could be retained and extended with additional heritage buildings in a heritage precinct.”	
2.2 Respect culturally significant sites and landscapes	Acknowledge significant sites and features in the layout of movement corridors including ridgelines or horizons.
There are no sites of significance to mana whenua under the AUP:OP that have been identified along or in close proximity to the proposed corridor.	

Principle	Explanation
The Kumeū River was part of significant waka portage for tangata whenua connecting the upper harbour with Kaipara Harbour. Future design should work with mana whenua to ensure appropriate acknowledgment of this awa.	
In future design stages, mana whenua will be invited to provide input into cultural landscape and design matters including how desired outcomes reflect their history and values. Throughout the corridor there is opportunity for the incorporation of cultural narratives and response to the local context through mahi toi design responses.	
2.3 Adaptive corridors	Corridors should demonstrate flexibility to respond to changes in their function and physical interfaces. Consider an adaptive approach in the way strategic corridors are designed to be able to respond to changes in land use, the way we move around or utilise technology over time.
The proposed corridor incorporates a regional active mode corridor that connects into SH16 Main Road connecting with future RT Stations at Kumeū and Huapai. The stations include overbridges (over NAL and SH16 Main Road) connecting the stations with future Town Centres and FUZ land.	
Kumeū RT Station is located adjacent to existing zoned Town Centre land and will support Council's Spatial Land Use Strategy to expand Kumeū Town Centre. It will also connect the Huapai Triangle (high density housing area) directly into the SH16 Main Road and Kumeū Town Centre.	
Huapai Station overbridge will tie into the Future Local Centre, (identified in the Spatial Land Use Strategy – Kumeū-Huapai, Riverhead and Redhills North), located to the south of SH16 in the FUZ.	
2.4 Social cohesion	Provide clear, effective and legible connectivity between community and social functions.
The RTC has the potential to reinforce localised severance issues for the existing community created by the NAL and SH16 being located between residential communities and the Kumeū Town Centre. Further design stages should ensure issues of severance are addressed by providing overbridges (as indicated in the preliminary design) to connect FUZ land uses with the SH16 Main Road active mode corridor.	
2.5 Safe corridors	Provide a safe and convenient network of routes accessible to people of all ages and abilities.
With the provision of fully segregated active travel solutions, the corridor can deliver a greater level of safety, access and movement to future local communities that will promote a sense of personal safety particularly for pedestrians and cyclists.	
Further design detail of safe prioritised active modes including crossings across the SH16 Main Road will be developed at subsequent detail design stages. Safety in Design and CPTED reviews will ensure a safe corridor for all users.	
BUILT FORM	
3.1 Align corridors with density	Locate stations/stops and corridors within walking distance of higher density development to facilitate modal shift, support commercial and mixed use centres and contribute to vibrant, active urban environments.
The corridor locates the RT stations adjacent to the existing Kumeū Town Centre and the proposed Huapai Future Local Centre. The location of RT Stations adjacent to local centres will be a catalyst for mixed use higher density development that connects the RT Stations with the Town Centres, SH16 Main Road and FUZ residential and employment areas. The Kumeū RT Station should be designed with a frontage addressing the SH16 Main Road.	
3.2 Corridor scaled to the surrounding context and urban structure	Align the speed, type and scale of transport corridors and infrastructure with the environment that it moves through (appropriate scale to the context).
The proposed Kumeū RT Station aligns with higher density living e.g. the Huapai Triangle and Kumeū Town Centre future mixed use development. The proposed Huapai RT Station, bus interchange and park and ride facility located at the western edge of the FUZ will provide a connection via an overbridge to the future Huapai local centre and FUZ land to the south.	

Principle	Explanation
3.3 Facilitate an appropriate interface between place and movement	Facilitate the opportunity for place as well as movement in corridors (people-oriented streets)
The Kumeū RT Station presents an opportunity to reinforce place making given its location beside the Kumeū River and Huapai Tavern, potential historic precinct. It fronts onto SH16 Main Road and connects with active modes. The Huapai RT Station includes a Park and Ride facility connecting via an overbridge (over the NAL) to the SH16 Main Road pedestrian and cycle facilities. The Huapai RT Station is located at the western edge of FUZ and provides an opportunity to signal the rural edge and identity of Huapai.	
MOVEMENT	
4.1 Connect nodes	Provide tangible connectivity between identified activity nodes.
The RAMC connects active mode facilities to the Upgrade of SH16 Main Road (NoR S2), which provides direct active mode connectivity to the proposed RT Stations, Kumeū Show Grounds and Huapai Domain. The RTC Stations support this connectivity through the provision of active mode connections (over bridges) across the NAL to SH16 Main Road.	
The provision of overbridges over SH16 Main Road provides convenient future community (FUZ land to the south) connection into the stations. Future design phase to ensure direct and convenient active mode routes that align with desire lines.	
4.2 Connect modes	Provide for choice in travel and the ability to connect at interchanges between modes.
The proposed corridor provides a regional active mode corridor that connects Kumeū-Huapai with Westgate, the North Western Shared Use Path (SUP) and Auckland City Centre. The RAMC will also connect to the upgraded SH16 Main Road which will have active mode facilities to connect to the RTC stations.	
4.3 Support access to employment and industry	Align the corridor location and typology to provide direct and efficient access to areas of employment and industry.
The proposed Kumeū RT Station provides direct access to the industrial and business employment zones opportunities within Kumeū.	
The proposed Huapai station is located in FUZ / adjacent to the proposed Future Local Centre, identified in the Spatial Land Use Strategy – Kumeū-Huapai, Riverhead and Redhills North, and the associated employment opportunities. Both RTC stations will provide a reliable and rapid connection for existing and future residents to employment opportunities as Westgate and Auckland City Centre, via the proposed City Centre to Westgate RTC.	
4.4 Prioritise active modes and public transport	Provision of quality active mode corridors and dedicated public transport corridors to enable a modal shift away from private vehicle use.
The proposed RAMC corridor provides active mode access to SH16 Main Road. The SH16 Main Road Upgrade (NoR S2) provides active mode connections to the proposed Kumeū and Huapai RT Stations.	
The RTC provides for dedicated public transport (Rapid Transport) to connect with the future town centres at Kumeū and Huapai.	
4.5 Support inter-regional connections and strategic infrastructure	Consider the location and alignment of significant movement corridors and placement of infrastructure (power, wastewater, water) to the network.
The proposed RTC and RAMC corridor is a strategic corridor connecting Kumeū-Huapai with Westgate, the North Western SUP and Auckland City Centre.	

Principle	Explanation
At Boord Crescent the existing level crossing across the NAL will be replaced with the local road elevated over the NAL and RTC. This will improve safety on the RTC. Bridges are proposed at the Kumeu and Huapai RTC stations providing safe access over the NAL, RTC corridor and SH16 (Huapai Station only).	
4.6 Support legible corridor function	Consider how areas can be clearly navigated and understood by users moving from place to place.
The proposed typical corridor cross section accommodates a range of modes with clear allocation of street spaces, and inherently supports future community connectivity, mobility and travel choice.	
Further development of the intersection crossings at the detailed design stage will provide safe, clear and legible cross corridor access and connectivity between areas of higher density.	
LAND USE	
5.1 Public transport directed and integrated into centres	Locate rapid transit interchanges within centres (local, town and metro) to support a mix of uses and provide modal choice to a larger number of users.
The Kumeū and Huapai RT Stations will be located adjacent to the existing and future Kumeū town centre and the future Huapai local centre. The RT Stations have the potential to make a significant place making contribution to Kumeū and Huapai, as focal points within the centres and as catalysts for urban intensification.	
The provision of bridges over SH16 Main Road provides convenient future community (FUZ land to the south) connection into the stations.	
5.2 Strategic corridors as urban edges	Strategic corridors as potential definers of a land use edge.
This principle is not relevant to this corridor.	

6.4 Summary of Urban Design Evaluation and Recommendations for Rapid Transit Corridor and Regional Active Mode Corridor: NoR KS: Kumeū Rapid Transit Station and NoR HS: Huapai Rapid Transit Station

Overall, the proposed Rapid Transit Corridor, Regional Active Mode Corridor and Kumeū and Huapai Rapid Transit Stations configuration is generally supportive of the Design Framework principles. A number of urban design outcomes are shown in blue in Figure 6-12 below. These are recommended to form a part of the Urban and Landscape Design Master Plan (ULDMP) in future delivery stages. This is to ensure the detailed design of the corridor responds appropriately to the principles and the project specific urban design outcomes sought.

The ULDMP should include the following Project specific outcomes as illustrated in Figure 6-12:

The ULDMP should be based on Waka Kotahi Urban design guideline “Bridging the Gap”, NZTA Landscape Guidelines and P39 Landscape Specifications.

Develop an urban interface approach within the corridor that:

- Recognises the transition from rural village to an urban town centre, incorporating RT stations by providing a corridor interface that supports permeable pedestrian access and responds to the changing built form interface and spatial character of adjacent future development.
- Enhances the identity for Kumeū and Huapai including consideration of landscape design drivers related to the Kumeū River, Huapai Recreation Reserve and the Kumeū Showgrounds and the creation of gateway elements at the eastern and western edges of the town.
- Provide and integrated environment / ecological and landscape strategy for stormwater that addresses water quality and cultural landscape values and includes landscape plans to incorporate the recommendations of the landscape and visual assessment and ecological assessments.
- Demonstrates how batter slopes and land within the designation can be integrated with the adjacent landform and land uses whilst mitigating visual amenity and character effects.
- Mana whenua will be invited to provide input into the development of the ULDMP, in particular relevant cultural landscape and design matters including how desired outcomes reflect their identity and values.
- Responds to land use and development opportunities associated with the location of the future RTC station between Harikoa Road and John McDonald Road.
- Integration of the proposed stormwater wetlands to ensure an appropriate interface with adjacent land uses.

Further urban design opportunities in the Project area have also been identified in Figure 6-12 and shown in orange. These opportunities are not required to mitigate the Project's urban design effects but could be considered by the requiring authority or other parties at future stages of design and development.

6.5 Rapid Transit Corridor; Regional Active Mode Corridor; Kumeū Rapid Transit Station and NoR HS: Huapai Rapid Transit Station - Urban Design Outcomes and Opportunities

The urban design outcomes that have been identified are shown in blue and summarised in section 6.4 above. Opportunities that have been identified are shown in orange below.

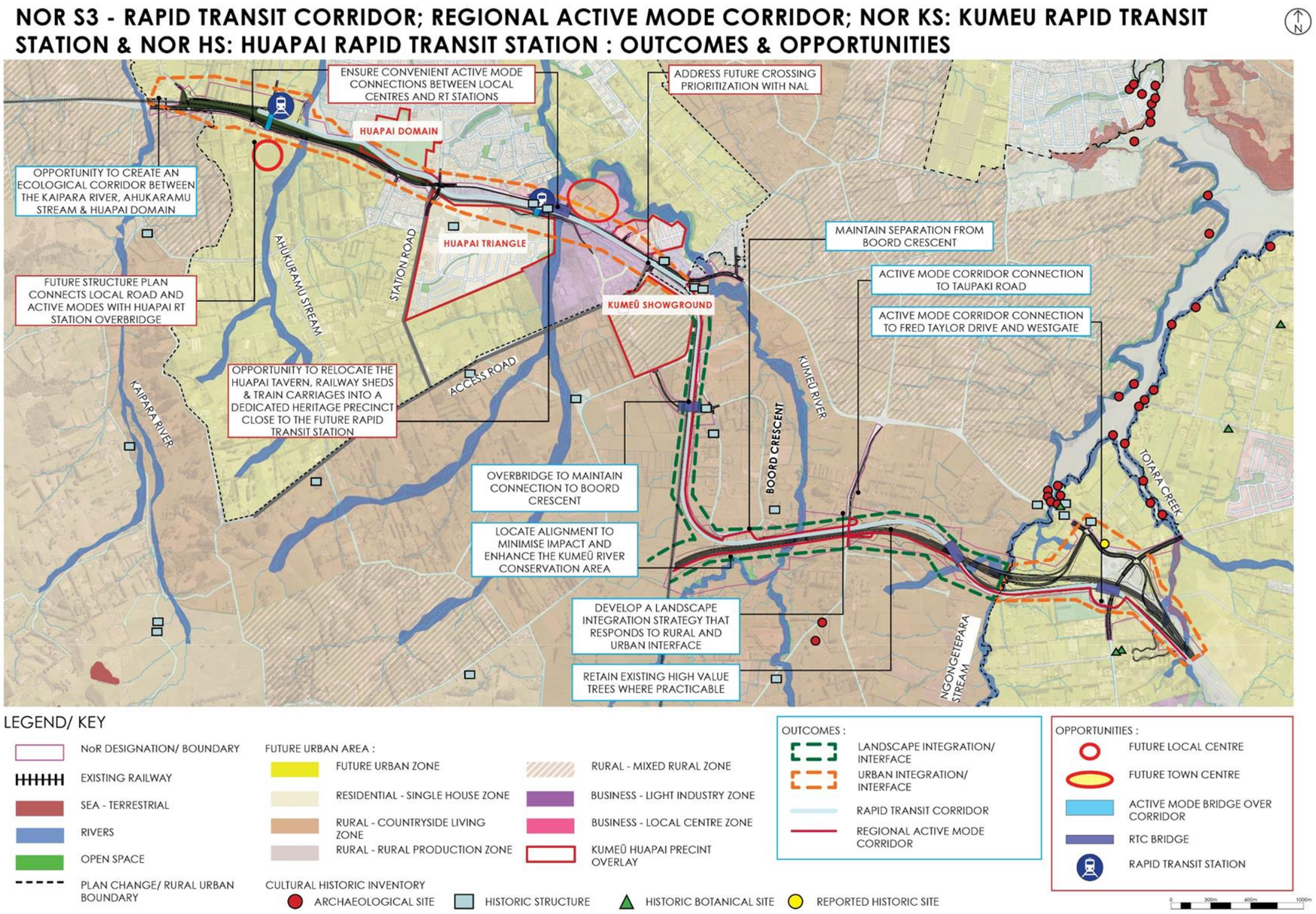


Figure 6-12: Rapid Transit Corridor; Regional Active Mode Corridor; NoR KS - Kumeu Station; and NoR HS – Huapai Station: urban design outcomes and opportunities

7 NoR S4 Access Road Upgrade

7.1 Access Road Upgrade Contextual Analysis

The Access Road / Tawa Road Upgrade is 2.8km in length linking Puke Road to SH16 Main Road at the entrance of Kumeū-Huapai township. It is currently a rural arterial corridor that runs along the eastern boundary of Kumeū- Huapai. The proposed upgrade extends from the intersection of Access Road with SH16 (and entry to the Kumeū-Huapai township) in the east and continues to Tawa Road to its intersection with Puke Road in the west.

Access Road is currently adjacent to Business and FUZ zoned areas and marks the RUB edge of Kumeū-Huapai township with countryside living zoning on the south-eastern side. The Access Road Upgrade plays a key role in connecting future residential communities to existing and likely future business zones and to both the RTC and ASH. It is aligned along the south-eastern boundary of the FUZ, providing an interface between rural and urban land uses.

It is proposed to widen the existing Access Road / Tawa Road corridor from its current width of 20m to accommodate a 30m wide four-lane cross-section. The cross-section of the corridor transitions from the rural edge cross-section to an urban cross-section at Wookey Lane intersection. Along the western section of Access Road, which is a low-speed rural section, the corridor has a rural southern edge (swales, typically 9m wide top width) with walking and cycling facilities along its northern urban edge. Through the business and industrial area, a generic 30m urban corridor is provided, including walking and cycling infrastructure along both sides of this eastern section.

An overview of the proposed design is provided in Figure 7-1 below:

Figure 7-1: Overview of Access Road Upgrade

The indicative alignment has been prepared for assessment purposes, and to indicate what the final design of the Project may look like. The final alignment will be refined and confirmed at the detailed design stage.

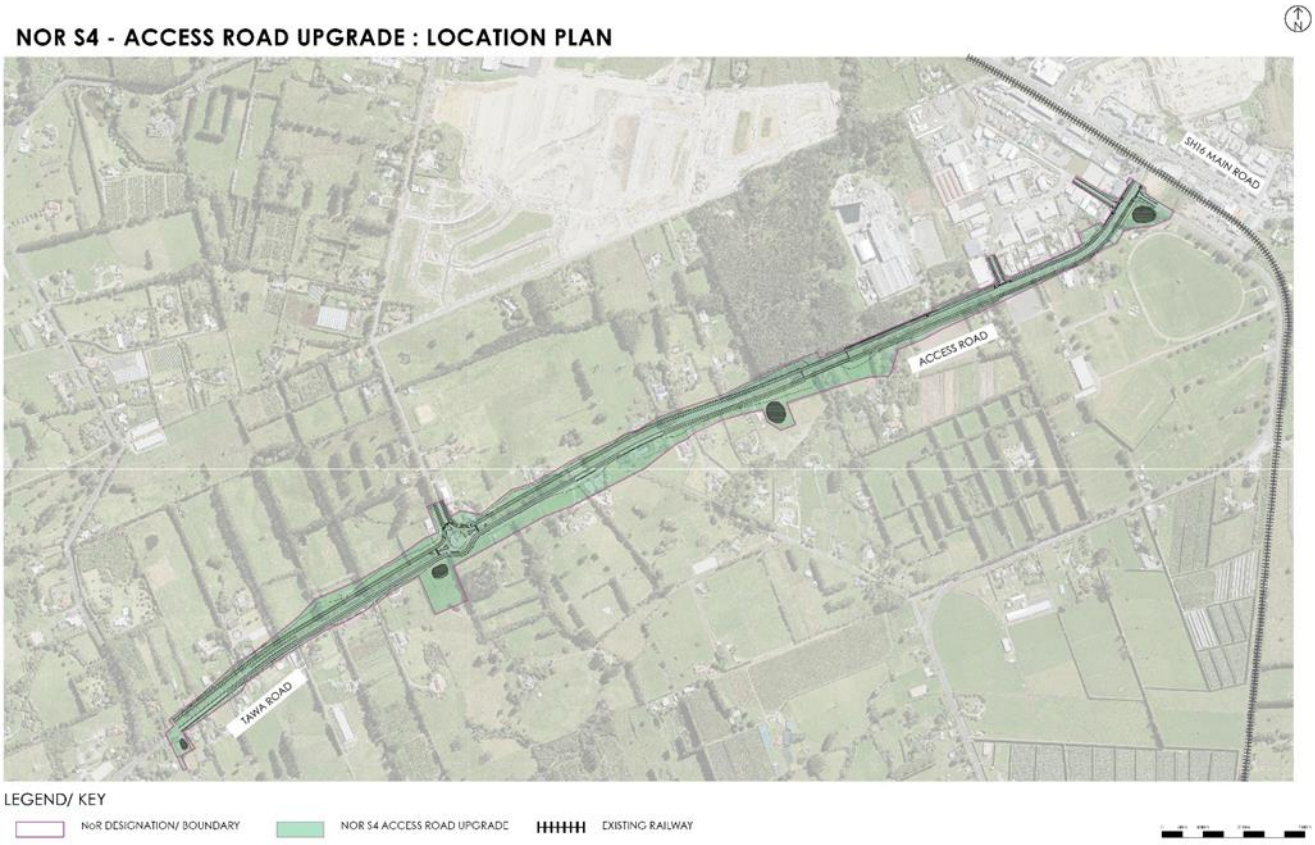


Figure 7-2: Overview Access Road Upgrade

7.1.1 Existing Environment Access Road Upgrade

7.1.1.1 Urban Features

Access Road is currently a local rural road extending from Puke Road in the south to join the SH16 Main Road in the north. It consists of a single lane in each direction with no provision for walking and cycling. The northern section between Wookey Lane and SH16 Main Road is more urban with residential dwellings and a mix or commercial properties fronting the western side of the road and the Kumeū Community Centre and Showgrounds defining the eastern edge of the road. Access Road crosses the NAL with an existing level crossing at the intersection with SH16.

7.1.1.2 Physical Features

Access Road extends through varied steep topography rising significantly from its southern end to join SH16 Main Road at its highest elevation. The southern section between Puke Road and Station Road follows a ridge before going through a valley formed by the Kumeū River and floodplain. North east of the gully the topography levels out as Access Road connects with the edge of Kumeū Village. Through the southern rural section, the road corridor is lined with trees and hedgerows that separate the adjacent property from the road corridor.

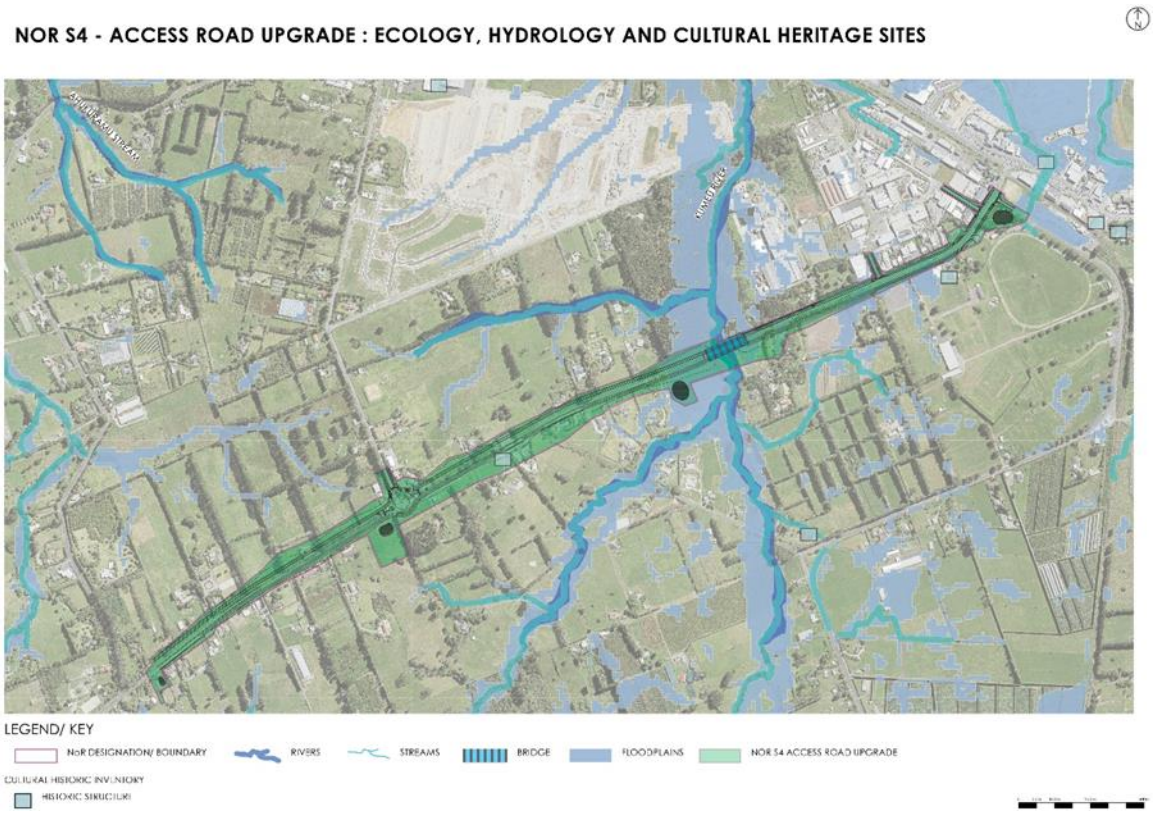


Figure 7-3: Access Road Upgrade, Ecology, Hydrology & Cultural Heritage Sites

7.1.2 Likely Future Environment Access Road Upgrade

Access Road will be an arterial road connecting the southern FUZ land to SH16 Main Road, Kumeū-Huapai township to the north and the ASH, Tawa Road interchange to the south.

Access Road includes Tawa Road at its southern end between Motu Road and Station Road where it merges with Access Road. Access Road aligns with the RUB, with the eastern side being zoned Rural and the western side FUZ and Business – Light industry at its northern end.

The existing industrial land use is anticipated to remain, expanding south to support the expanding urbanised area identified in the Spatial Land Use Strategy -North West (Kumeū-Huapai, Riverhead and Redhill) adopted by Auckland Council in May 2021. The FUZ land adjoins the Huapai Triangle high density residential precinct to the north and it likely that it will be developed for further residential and business uses.

The Upgrade of Access Road will provide separated active mode facilities to connect future residential areas with employment zones, the SH16 Main Road Upgrade, Kumeū Town Centre and RT Station.

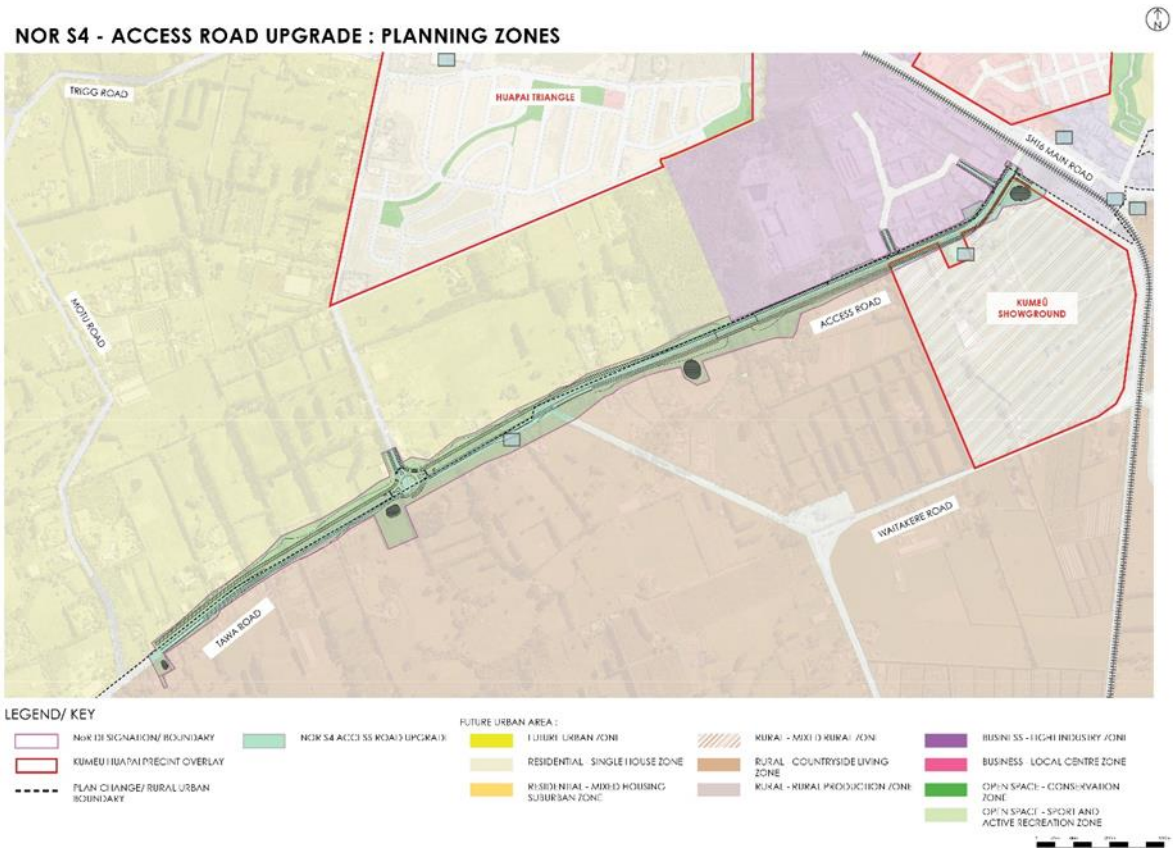


Figure 7-4: AUPOIP Zoning for Access Road Upgrade

7.2 Access Road Upgrade – Form and Function

Access Road marks the RUB edge and the eastern edge of FUZ and Business associated with Kumeū-Huapai township. Access Road will provide a local arterial road connecting the FUZ land and the SH16 Main Road / Town Centre with the ASH and associated active mode corridor. Once established the corridor will play a crucial role in balancing both movement and place priorities through the new growth area.

Key Features of the Access Road Upgrade include:

- Upgrading the existing Access Road corridor to a 30m wide four-lane arterial road with walking and cycling provisions (See Figure 7-5 and Figure 7-6)
- Swales typically with a 9m wide top width along the western section of Access Road on the southern edge.
- A posted speed limit of 60km/h through the urban FUZ-rural edge area and 50km/h through the business and industrial area.
- Tie-ins with existing roads, stormwater dry ponds, wetlands and culverts.
- Batter slopes to enable widening of the corridor, and associated cut and fill activities.
- Bridge over the Kumeū River and floodplain.
- Vegetation removal along the existing road corridor.
- Other construction related activities required outside the permanent corridor including the re-grade of driveways, construction traffic manoeuvring and construction laydown areas.

More detail of the proposed Upgrade is provided in the AEE.

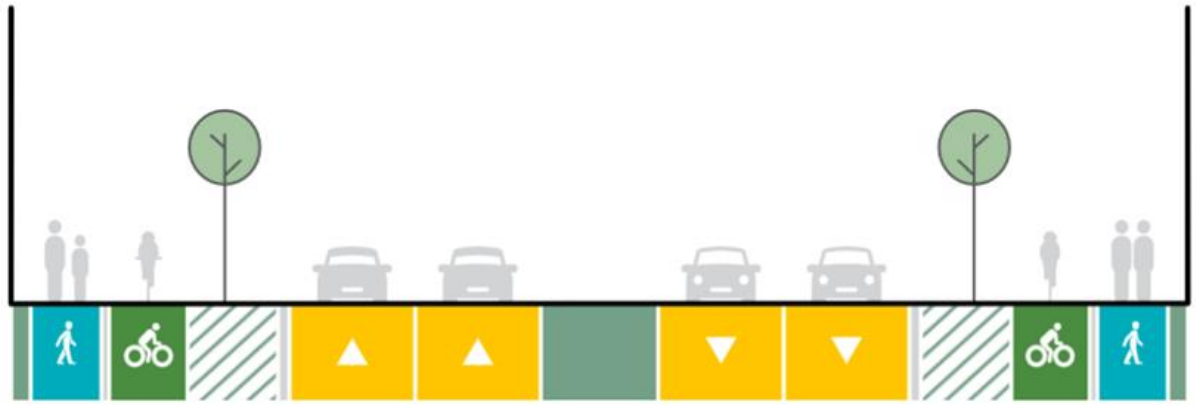


Figure 7-5: Typical urban cross section 30m – Access Road (north of Wookey Lane

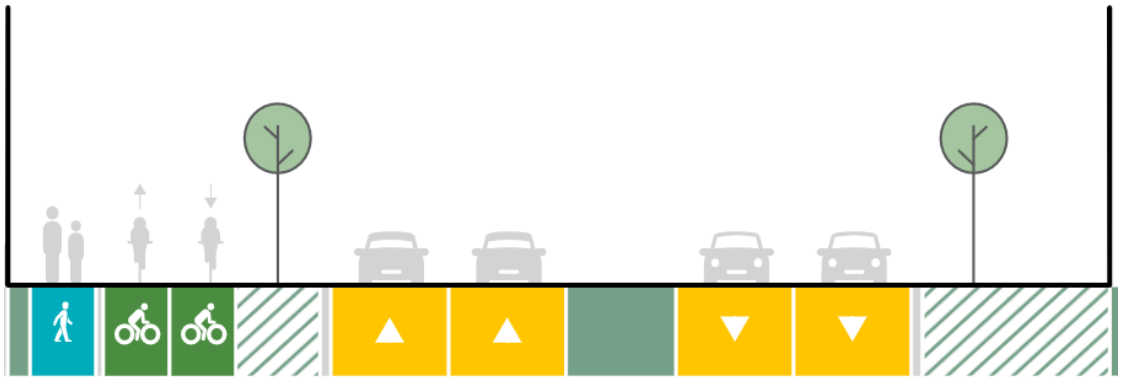


Figure 7-6: Typical rural cross section 35m – Access Road (south of Wookey Lane)

7.3 NOR S4: Access Road Upgrade - Evaluation against the Design Framework Principles

This evaluation considers the proposed Access Road Upgrade against the relevant Design Framework Principles. It provides urban design focused commentary on the current design detail and recommends the framework for how and where any urban design outcomes should be considered in future design stages. These recommendations can form the basis of an urban design specific designation condition to prepare an Urban and Landscape Design Master Plan (ULDMP) in future delivery stages, and where there is an overlap of urban design outcomes with other considerations (for example ecological, landscape, visual or water quality related recommendations) they can be integrated within the relevant specialist conditions.

The evaluation Table 7-1 below lists each of the twenty principles identified in the Te Tupu Ngātahi Design Framework and provides an explanation which are highlighted in light blue. A recommendation of how the principle is applied to the NoR Project area is provided below each principle.

Table 7-1: Urban Design Evaluation for the Access Road Upgrade

Principle	Explanation
ENVIRONMENT	
1.1 Support and enhance ecological corridors and biodiversity	Mitigate the effects on or enhance existing ecological corridors through the placement and design of movement corridors
A replacement and widened bridge crossing proposed on Access Road, over a tributary of the Kumeū River and flood plain provides an opportunity to enhance the ecological corridor of the river.	
Incorporate bridging structures to reinforce broader connectivity outcomes for ecology and water quality by minimising stream interruptions and ensuring a connected natural system.	
1.2 Support water conservation and enhance water quality in a watershed	Take into account and work with the existing watershed as part of a whole system.
The proposed typical corridor cross section allows spatial provisions to provide natural drainage to stormwater wetlands as a way to address water quality and reduce hard engineering solutions. Water quality and detention / retention will be decided in future regional consents.	
Further refinement of the wetlands during the detailed design stage is recommended to define the wetland's final form and how the wetland will interface with the surrounding land uses. For example, wetlands could be configured in a naturally shaped manner and fully integrated with existing natural drainage features and vegetation.	
1.3 Minimise land disturbance, conserve resources and materials	Respect the existing topography, landforms and urban structure in the placement of strategic corridors. Minimise the quantity of hard engineering materials required. Minimise, mitigate any adverse effects of activities on the environment.
The proposed corridor demonstrates a generally efficient alignment in relation to existing property boundaries along the corridor minimising land impacts and inefficient residual land portions.	
1.4 Adapt to a changing climate and respond to the microclimatic factors of each area	Design for predicted future regional climatic impacts in the corridor location. Consider the positive contribution that the orientation of transport corridors can make to the local climatic environment of future places and streets.
Adopt a vertical geometry that accommodates stormwater events including the applied climate change factors as stated in Auckland Council Stormwater Code of Practice.	
The proposed corridor design provides for street tree planting that, when delivered, will contribute to the amenity of the area by providing shade and microclimatic cooling qualities.	
The proposed corridor provides for active modes and prioritises public transport options to support modal shift and reduce transport related climate change contributions	
SOCIAL	
2.1 Identity and place(s)	The identity or spirit of place is generally acknowledged as the unique amalgam of the inherent built, natural and cultural qualities of a place. Responding to identity in the location and type of new corridors can provide a sense of continuity and contribute to our collective memory.
Access Road / Tawa Road is located on the edge of the RUB and FUZ. The typical cross sections illustrated in Figure 7-5 and Figure 7-6 above shows design integration with the rural character in the south utilising drainage swales adjoining the rural zone and a new urban form to the north will assist with developing the identity of the Kumeū-Huapai township.	

Principle	Explanation
Consideration of street tree selection and placement provides the opportunity to reflect and enhance the unique local character inherent in the built, natural and cultural qualities of the location.	
In future design stages, mana whenua will be invited to provide input into relevant cultural landscape and design matters including how desired outcomes reflect their identity and values.	
2.2 Respect culturally significant sites and landscapes	Acknowledge significant sites and features in the layout of movement corridors including ridgelines or horizons.
In future design stages, mana whenua will be invited to provide input into other relevant cultural landscape and design matters including how desired outcomes reflect their identity and values.	
2.3 Adaptive corridors	Corridors should demonstrate flexibility to respond to changes in their function and physical interfaces. Consider an adaptive approach in the way strategic corridors are designed to be able to respond to changes in land use, the way we move around or utilise technology over time.
The proposed typical corridor cross section has the spatial provisions to be flexible, re-configurable and adaptable for changing transport needs. For example, future bus priority measures at intersections, additional bus stops and future expansion of any walking and cycling networks can be accommodated within the corridor.	
The proposed cross section provides for all modes, with spatial provisions at the corridor edges that accommodate adjacent land use types and movement corridors adjoining urban and rural edge conditions.	
2.4 Social cohesion	Provide clear, effective and legible connectivity between community and social functions.
The proposed corridor should be designed to ensure severance issues are minimised and good access is maintained to community facilities.	
To enable local connectivity and cross corridor access further development at the detailed design stage should be undertaken to ensure safe crossing points at the roundabout at Station Road and across Access Road to the show grounds and community centre.	
2.5 Safe corridors	Provide a safe and convenient network of routes accessible to people of all ages and abilities.
The proposed corridor can deliver a greater level of access and movement to future local communities, with the provision of fully segregated active travel solutions.	
Further design detail of safe prioritised active modes crossings across multi-lane roundabouts should be addressed at subsequent detail design stages. Future design phases need to ensure safe crossing of the NAL.	
BUILT FORM	
3.1 Align corridors with density	Locate stations/stops and corridors within walking distance of higher density development to facilitate modal shift, support commercial and mixed use centres and contribute to vibrant, active urban environments.
The proposed cross sections for Access Road provides for active modes to access the SH16 Main Road active mode facilities which will connect to the proposed RAMC, proposed town centres and RTC Stations. Access Road will also connect to the active mode facilities on the proposed Alternative State Highway.	
3.2 Corridor scaled to the surrounding context and urban structure	Align the speed, type and scale of transport corridors and infrastructure with the environment that it moves through (appropriate scale to the context).
The corridor configuration and scale proposed provides an appropriate response to the potential needs of the adjacent area functions (access to and from adjacent built form and general spatial layout).	
The proposed Access Road Upgrade includes a speed reduction together with separated active modes. It includes a posted speed limit of 60km/h through the urban FUZ-rural edge area and 50km/h through the business and industrial area.	

Principle	Explanation
3.3 Facilitate an appropriate interface between place and movement	Facilitate the opportunity for place as well as movement in corridors (people-oriented streets)
The proposed corridor cross section provides a flexible platform to address the opportunity for place as well as movement function with clear allocation of street space, for example separated pedestrian and cycle facilities	
MOVEMENT	
4.1 Connect nodes	Provide tangible connectivity between identified activity nodes.
The proposed corridor alignment provides direct connectivity between the existing business / employment areas and community facilities located on the northern section of Access Road to the existing and expanded Kumeū Town Centre as proposed in Council's North West Spatial Land Use Strategy and the proposed Rapid Transit Station.	
4.2 Connect modes	Provide for choice in travel and the ability to connect at interchanges between modes.
The Access Road typical cross sections provide for separated active modes that connect to the proposed upgrade of SH16 Main Road, which in turn will connect to the Regional Active Modes Corridor. It is part of the North West Strategic package that provides future connectivity for all modes (walking, cycling, public transport and private vehicle).	
4.3 Support access to employment and industry	Align the corridor location and typology to provide direct and efficient access to areas of employment and industry.
The proposed corridor alignment provides direct and legible access to the business / employment areas in the Kumeū-Huapai township.	
4.4 Prioritise active modes and public transport	Provision of quality active mode corridors and dedicated public transport corridors to enable a modal shift away from private vehicle use.
The proposed corridor cross section accommodates active mode travel facilities to support a shift away from private vehicle use.	
4.5 Support inter-regional connections and strategic infrastructure	Consider the location and alignment of significant movement corridors and placement of infrastructure (power, wastewater, water) to the network.
Access Road is a key north south corridor in the eastern edge of the FUZ connecting the Town Centre with the ASH, Tawa Road Interchange.	
4.6 Support legible corridor function	Consider how areas can be clearly navigated and understood by users moving from place to place.
The proposed cross section for the corridor accommodates a range of modes with clear allocation of street spaces and inherently supports future community connectivity, mobility and travel choice.	
LAND USE	
5.1 Public transport directed and integrated into centres	Locate rapid transit interchanges within centres (local, town and metro) to support a mix of uses and provide modal choice to a larger number of users.
This principle is not relevant to the corridor.	
5.2 Strategic corridors as urban edges	Strategic corridors as potential definers of a land use edge.

Principle	Explanation
Access Road is not a strategic corridor, but it will reinforce the urban edge of Kumeū Huapai. The typical cross sections illustrated in Figure 7-5 and Figure 7-6 above show the design integration with the rural character in the south east with drainage swales adjoining the rural zone and active modes adjoining the FUZ side. The urban section of Access Road has an urban form with active modes and street trees on both sides of the to the corridor.	

7.4 Summary of Urban Design Evaluation and Recommendations for the Access Road Upgrade

Overall, the proposed Access Road Upgrade is generally supportive of the Design Framework principles. A number of urban design outcomes are shown in blue in Figure 7-7 below. These are recommended to form a part of the Urban and Landscape Design Master Plan (ULDMP) in future delivery stages. This is to ensure the detailed design of the corridor responds appropriately to the principles and the project specific urban design outcomes sought.

The ULDMP should include the following Project specific outcomes as illustrated in Figure 7-7:

Develop an urban interface approach within the corridor that:

- Addresses permeability of the corridor for active modes including cross corridor connectivity (midblock crossings), modal priority and permeable access to destinations such as open spaces and community facilities.
- Access Road / Tawa Road is located on the edge of the Rural Urban Boundary and adjoins the FUZ. At the detailed design stage further consideration should be given to minimising the impact on the established rural identity, form and layout of the southern side of the corridor.
- Responds to the changing built form interface, responds to the spatial character of adjacent development and access between the corridor and adjacent development.
- Further design details will need to be developed to demonstrate safe active mode crossings for a multi-lane roundabout and safe crossing of the NAL.
- Mana whenua will be invited to provide input into the development of the ULDMP, in particular, relevant cultural landscape and design matters including how desired outcomes reflect their identity and values.
- The earthworks batters for the proposed upgrade could potentially impact on heritage structure (CHI item16377) located at 211 Access Road which relates to sheds, railings and gates. Further design refinement is recommended at the next stage to reinstate the fence line.
- Landscape plans that considers recommendations from the landscape and visual, flooding and ecological assessments including street tree and stormwater wetland planting, construction compound and private property reinstatement, treatment of batter slopes. The landscape plans should also demonstrate integration with the Kumeū River. The landscape outcomes should reinforce the wider vegetation patterns of the local landscape and create connections to proposed Greenways and the wider walking and cycling network.

Further urban design opportunities in the Project area have also been identified in Figure 7-7 are shown in orange. These opportunities are not required to mitigate the Project's urban design effects but could be considered by the requiring authority or other parties at future stages of design and development.

7.5 Access Road Upgrade – Urban Design Outcomes and Opportunities

The urban design outcomes that have been identified are shown in blue and summarised in section 7.4 above.

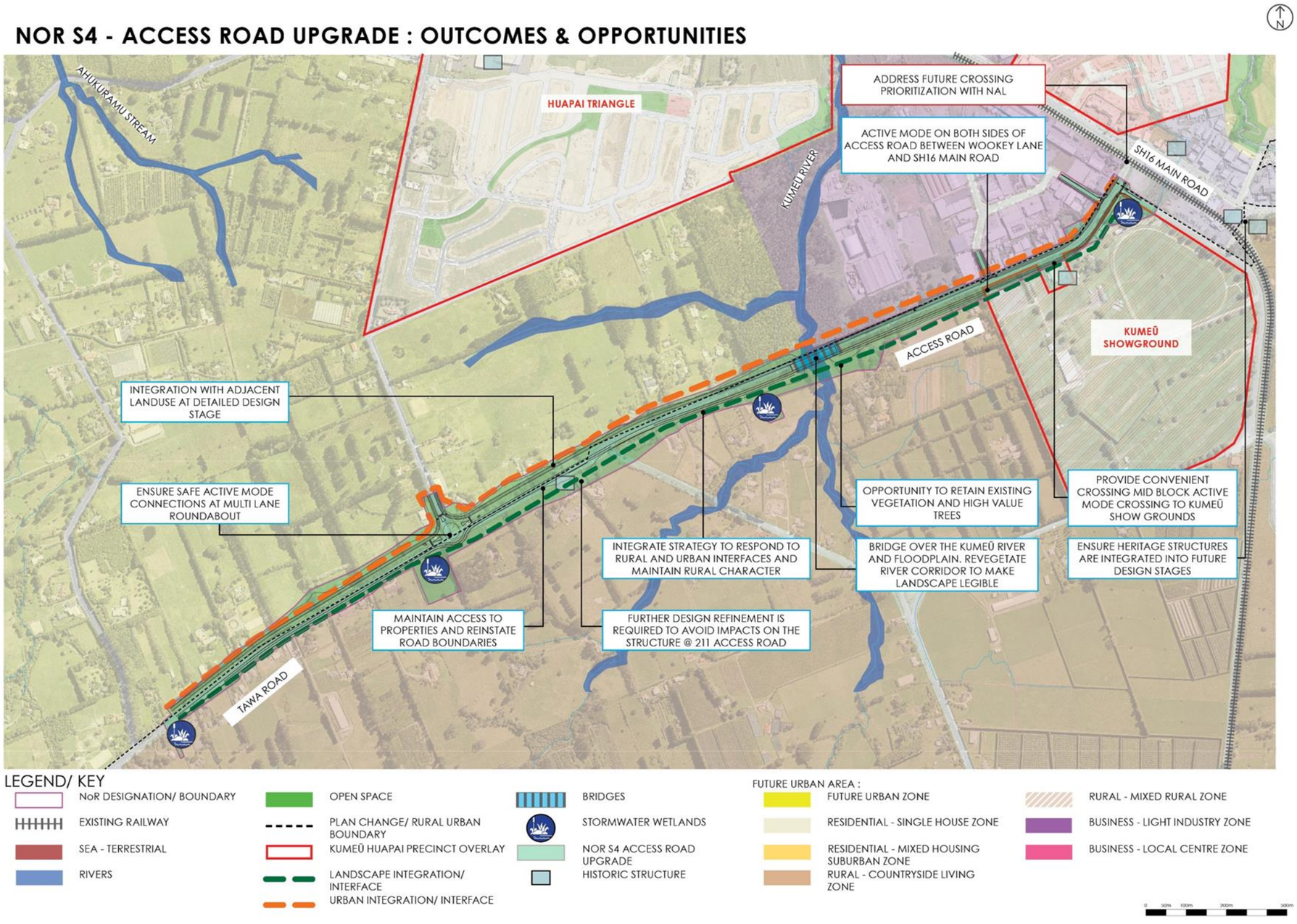


Figure 7-7: Access Road Upgrade urban design outcomes and opportunities