

VOLUME 4

South Frequent Transit Network Urban Design Evaluation (UDE)

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Version 1

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Appendices

Appendix A – Outcomes and Opportunities

Appendix B – Design Framework Principles

Glossary of defined terms and acronyms

We note that ‘Takaanini’ (with double vowels is used throughout the Report Acknowledging the ongoing kōrero and guidance from Manawhenua on the cultural landscape. ‘Takanini’ is used where reference is made to a specific and existing named place (e.g., Takanini Road, Takanini Town Centre etc.). Manawhenua is also used throughout the Report as while gifting the programme name as Te Tupu Ngātahi, Manawhenua confirmed this was an appropriate spelling (capital ‘M’ and one word). Notwithstanding this, the term is spelled as two words in other fora and the proposed designation conditions – Mana Whenua.

Acronym/Term	Description
AEE	Assessment of Effects on the Environment report
AT	Auckland Transport
AUP:OP	Auckland Unitary Plan: Operative in Part
CPTED	Crime Prevention through Environmental Design
Design Framework or Design Framework Principles	Te Tupu Ngātahi Design Framework
FTN	Frequent Transit Network
GSR	Great South Road
MDRS	Medium Density Residential Standards
N/A	Not Applicable
NIMT	North Island Main Trunk
NPS	National Policy Statement
NPS:UD	National Policy Statement on Urban Development
NoR	Notice of Requirement
NoR 1	Great South Road FTN Upgrade
NoR 2	Great South Road FTN Upgrade (Drury section)
NoR 3	Takaanini FTN – Weymouth Road, Alfriston Road and Great South Road Upgrades
NoR 4	Takaanini FTN – Porchester Road and Popes Road Upgrades
The Project / South FTN	South Frequent Transit Network
RMA	Resource Management Act 1991
SH1	State Highway 1
Te Tupu Ngātahi	Te Tupu Ngātahi Supporting Growth Alliance
THAB	Terrace House and Apartment Building zone
UDE	Urban Design Evaluation

Acronym/Term	Description
ULDMP	Urban Landscape and Design Management Plan
Waka Kotahi	Waka Kotahi New Zealand Transport Agency

Executive Summary

This Urban Design and Evaluation (**UDE**) has been prepared to support four Notices of Requirement (**NoR**) for the South Frequent Transit Network (**South FTN / the Project**) lodged by Auckland Transport (**AT**) as a requiring authority under the Resource Management Act 1991 (**RMA**). The NoRs seek to protect land to construct, operate and maintain transport infrastructure to enable FTN services along two routes as well as complementary (non-FTN) corridors.

Assessment Undertaken

This UDE contains an evaluation for common matters relating to the Project as a whole and for seven sections of the Project corridor defined by the urban context. These evaluations have been prepared based on the guidance and principles established in Te Tupu Ngātahi Supporting Growth (**Te Tupu Ngātahi**) programme wide document - Te Tupu Ngātahi Design Framework (**Design Framework or Design Framework principles**).

The UDE provides urban design commentary and recommends a framework for how and where urban design outcomes should be considered in future design stages. These recommendations may form the basis of an urban design condition or where there is overlap with other disciplines (for example ecological, landscape, visual or water quality related recommendations) could be integrated in the relevant specialist conditions.

The recommendations are summarised as urban design outcomes sought. Additional urban design opportunities outside of the NoR boundaries have also been identified for consideration either by the requiring authorities or other parties at future stages of design. These are locations where additional design development should be considered to further support and contribute to a well-functioning, positive urban environment. These are not required to mitigate the effects of the Project that are within the scope of the proposed NoRs and occur outside of the proposed designation boundaries, and therefore are not proposed to be implemented as part of these designations.

Summary of urban design outcomes sought

Overall, the Project has been found to be generally supportive of the Design Framework principles.

The preparation of an Urban and Landscape Design Management Plan (**ULDMP**) in future delivery stages is recommended for the Project to further develop the urban design outcomes recommended as summarised below.

ENVIRONMENT

The ULDMP should address the following specific outcomes within the NoR areas:

- A landscape plan that considers recommendations from the landscape and visual, arboriculture, flooding and ecological assessments including street tree and planting recommendations, water quality and stormwater treatment, private property reinstatement and treatment of embankments/retaining structures.

- The landscape plan should demonstrate integration of Puhinui Creek, Papakura Stream, Otūwairoa Stream, Hingaia Stream and their tributaries where the corridor intersects with the watercourses.
- The landscape plan should outline an approach that prioritises retention and protection of established mature native trees identified along Anderson Park, Central Park and Papakura Cemetery within NoR 1 and Tadmores Park within NoR 3 in the first instance.
- The landscape outcomes should support the principles of Auckland's Urban Ngāhere Strategy and reinforce the wider vegetation patterns of the local landscape and create connections to existing and proposed greenways and the wider walking and cycling network.
- Integration of existing and proposed stormwater systems to ensure an appropriate interface with adjacent land uses, specifically where wetlands are proposed in areas zoned for high density residential land use.
- Measures to demonstrate that the Project has adapted to the changing climate such as reducing urban heat island effects in future urbanised areas, supporting modal shift and accounting for flood hazard risks.

SOCIAL

The ULDMP should address the following specific outcomes within the NoR areas:

- In future design stages, Manawhenua shall be invited as Partners to provide input on the cultural landscape and design matters including how Project outcomes reflect their identity and values.
- The identification, development and integration of key local community and identity drivers within the NoRs should be demonstrated. The proposed corridor function can further deliver a positive contribution to the sense of belonging and participation, as well as community resilience by supporting local connectivity and direct access to these. Key local identity landscape, open space, and community functions to be addressed include:
 - The Neighbourhood Centres at Browns Road intersection and Grand Vue Road intersection within NoR 1;
 - Anderson Park including the row of established mature native trees along Great South Road (**GSR**) within NoR 1;
 - Manurewa Town Centre zone within NoR 3;
 - Manurewa Train Station and Bus Interchange within NoR 3;
 - Tadmores Park including the row of established mature native trees along GSR and the existing stream within NoR 3;
 - Te Mahia Train Station entrance adjacent NoR 1;
 - The First Presbyterian Church historic heritage site next to Coles Crescent at NoR 1;
 - Central Park including the row of established mature native trees along GSR and Ōpāheke Road within NoR 1;
 - Papakura Old Central School Hall historical heritage site within NoR 1;
 - The Papakura War Memorial at Ōpāheke Road intersection adjacent NoR 1;
 - Papakura Cemetery including the row of established mature native trees along GSR within NoR 1;
 - Kirks Bush significant ecological area (SEA) adjacent NoR 1;
 - Otūwairoa Stream within NoR 1;
 - Hingaia Stream within NoR 2;

- Gallaher Park within NoR 3;
- Manurewa East School adjacent to NoR 3;
- Alfriston Park within NoR 3;
- Papakura Stream within NoR 4; and
- Papakura Normal Primary School within NoR 4.

PROJECT RESPONSE TO BUILT FORM

The ULDMP should address the following specific outcomes within the NoR areas:

- Known or planned changes of residential density that have the potential to alter the perceived scale and impact of the proposed project functions should be identified and addressed.
- Develop an urban integration approach to address the following:
 - How the works will respond to the land use context, and support quality public realm infrastructure, ample footpath width, frequent pedestrian crossing points, and street trees for shade and amenity.
 - How an appropriate interface and integration of corridor functions to the existing local, neighbourhood and town centres could be provided to enable buildings and spaces to positively address and integrate with the corridors.
 - How any land that may no longer be required following the construction of the Project is integrated with land use.
 - Recognition of the transition of residential density adjacent to the Project areas, and how the interface supports pedestrian permeability and responds to the changing built form and spatial character of the corridors.
 - How an appropriate interface with proposed bridges, retaining walls, accessway arrangements and connections could be provided, particularly where the corridor interfaces with residential land use. Where there are retaining walls that interface with residential development there should be consideration of buffers and softening elements.
 - Demonstration of a positive interface with adjacent open spaces and parks including preservation of the spatial character, enhancement of the park edge and active modes connectivity into open spaces.
 - The balance of place as well as movement function should be addressed with clear allocation of street space within the NoRs, including modal conflict and priority, public private interfaces, and safe pedestrian waiting zones within the corridors.

MOVEMENT

The ULDMP should address the following specific outcomes within the NoR areas:

- Permeability of the corridors for active modes that addresses cross corridor connectivity (midblock crossings), modal priority and permeable access to destinations such as centres, transport interchanges, open spaces, and community facilities should be considered in specific locations. Such locations may include:
 - The entrance to Te Mahia Train Station in NoR 1;
 - Ōpāheke Road between Central Park and the War Memorial Site in NoR 1;

- GSR where it passes the Papakura Cemetery in NoR 1;
- The entrance to the future Drury Train Station on GSR in NoR 2; Weymouth Road at the entrance into Manurewa Train Station and near Beaumonts Way;
- Alfriston Road, particularly connections to Gallagher Park, and near Shifnal Drive in NoR 3;
- Porchester Road, near the Riverton Drive and Sheriff Place intersections and midway between Popes Road and Manuroa Road in NoR 4; and
- Existing school crossing points on Porchester Road and Walters Road from Papakura Normal Primary School in NoR 4.
- Legibility, connectivity demands, safety and modal priority for active modes should be addressed for intersections within the NoRs to ensure connectivity between the proposed FTN facilities, local centres, and other community facilities, as well as support the continuity of the primary active modes network. Demonstration of specific intersection responses to ensure connectivity between the proposed FTN facilities, local centres, and other community facilities, as well as support the continuity of the primary active modes network should include the intersections at:
 - GSR/Browns Road/Orams Road in NoR 1;
 - GSR/Grande Vue Road in NoR 1;
 - GSR/Weymouth Road/Alfriston Road in NoR 3;
 - GSR/Mcannalley Street in NoR 1;
 - GSR/Mahia Road in NoR 1;
 - GSR/Walter Strevens Drive/Taka Street in NoR 1;
 - GSR/Subway Road in NoR 1;
 - GSR/Wood Street in NoR 1;
 - GSR/Wellington Street/Ōpāheke Road in NoR 1;
 - GSR/Beach Road/Settlement Road in NoR 1;
 - GSR/Park Estate Road in NoR 1;
 - Weymouth Road/Selwyn Road in NoR 3;
 - Alfriston Road/Claude Road in NoR 3;
 - Alfriston Road/Scotts Road in NoR 3;
 - Alfriston Road/Magic Way in NoR 3;
 - Porchester Road/Popes Road in NoR 4;
 - Porchester Road/Manuroa Road/Berwyn Road in NoR 4;
 - Porchester Road/Airfield Road in NoR 4;
 - Porchester Road/Walters Road in NoR 4; and
 - Where the proposed FTN routes intersect with side roads/streets within the NoRs.

1 Introduction

1.1 Purpose and scope of this evaluation

This report has been prepared to inform the Assessment of Effects on the Environment (**AEE**) for Notices of Requirement (**NoR**) being sought by Auckland Transport for the South FTN under the RMA. Four NoRs are proposed to authorise transport upgrades along key sections of roads which fall within the South FTN network.

Specifically, this UDE provides an overview of the urban design considerations and inputs as well as an evaluation and identification of future transport and land use integration opportunities for the Project.

This report should be read alongside the AEE, which contains further details on the history and context of the of the Project and the NoRs. The AEE also contains a detailed description of works to be authorised within the NoR, and the typical construction methodologies that will be used to implement this work. These have been reviewed by the author of this evaluation and have been considered as part of this UDE. As such, they are not repeated here.

The key matters addressed in this report are as follows:

- (a) Identification of the current and future context of the South FTN relevant to the urban form;
- (b) An evaluation of the Project against the Design Framework principles;
- (c) Recommendation of urban design outcomes that will inform the designation conditions and identification of opportunities that should be considered as part of future design stages;
- (d) An overall summary of the urban design outcomes associated with the Project and whether the Project outcomes are supportive of the Design Framework principles; and
- (e) Urban design outcomes and opportunities maps (attached as **Appendix A**).

2 Project Description

2.1 Context – South FTN network

As described further in the AEE, the South FTN is one of the transport works packages proposed for South Auckland between Manukau and Drury as part of Te Tupu Ngātahi Supporting Growth (**Te Tupu Ngātahi**) programme.¹ The South FTN is in turn part of a wider planned multi-modal transport network intended to support growth and enable mode shift in South Auckland.

¹ The Programme is a collaboration between Auckland Transport (**AT**) and Waka Kotahi NZ Transport Agency (**Waka Kotahi**) to investigate, plan, and undertake route protection for the strategic transport networks needed to support Auckland's growth over the next 30 years.

The South FTN comprises a range of road upgrades including bus priority measures, new and upgraded active mode facilities, and intersection improvements along existing arterial road corridors in South Auckland. In particular, the proposed road upgrades provide for:

- Operation of high-quality FTN² bus services along GSR between Manukau and Drury (the GSR FTN route);
- Operation of high-quality FTN bus services along existing roads between Manurewa, Takaanini, and Papakura (the Takaanini FTN route); and
- Urbanisation of adjoining key connections to FTN routes – Popes Road West, and the Drury section of GSR between Waihoehoe Road and State Highway 1 (**SH1**).

The total extent of the South FTN network is shown in Figure 2-1.

2.2 The NoRs – proposed spatial extent

Of the full South FTN network extent shown in Figure 2-1, only a portion falls within the NoRs/Project (see Figure 2-2). This is because the proposed corridor upgrades do not always require additional land take, can be undertaken within the existing road reserve, and therefore do not require new designations³.

Accordingly, this assessment is focussed on the activities proposed to be authorised by the four NoRs. The NoRs seek generally to provide for road widening to accommodate bus priority measures, walking, and cycling facilities, key intersection upgrades, replacement of existing bridges and other associated works. These are described in more detail in Table 2-1, and the extents are shown in Figure 2-2.

Further detail on the proposed activities and works in each NoR are provided in the AEE.

Table 2-1: South FTN – Summary of NoRs

NoR reference	Project component	Description
NoR 1	Great South Road FTN Upgrade	<ul style="list-style-type: none"> • Road upgrades and transport upgrades providing for the Great South Road FTN route along Great South Road between Manukau and Drury. • NoR comprises eight separate areas along Great South Road (see Figure 2-2) providing for bus priority measures, walking and cycling facilities, key intersection upgrades, replacement of the existing Otūwairoa / Slippery Creek bridge, and stormwater management devices.
NoR 2	Great South Road Upgrade (Drury section)	<ul style="list-style-type: none"> • Road upgrades and transport upgrades providing for upgrade of a 520m section of Great South Road in Drury between Waihoehoe Road and the SH1 Drury Interchange.

² FTN services are defined in AT's Regional Public Transport Plan (RPTP) as bus routes operating at least every 15 minutes between 7am-7pm, 7 days-a-week, often supported by priority measures such as bus or transit lanes.

³ Some limited additional third-party land may be required in the future to provide for intersection upgrades between Takaanini and Ōpaheke. The relative cost-benefit assessment of these areas did not favour route protection at this time given the projected time scale for future urban growth in this area.

NoR reference	Project component	Description
		<ul style="list-style-type: none"> NoR enables road widening to provide for four lanes, active mode facilities, replacement of the existing Hingaia Stream bridge, and stormwater management devices.
NoR 3	Takaanini FTN – Weymouth, Alfriston, and Great South Road Upgrades	<ul style="list-style-type: none"> Road upgrades and transport upgrades providing for the Takaanini FTN route along Weymouth and Alfriston Roads between Selwyn Road and Saralee Drive; and for an adjoining section of the Great South Road FTN route between Halver Road and Myers Road. NoR enables road widening to accommodate bus priority measures, walking and cycling facilities, key intersection upgrades, replacement of existing bridges along Weymouth Road over the North Island Main Trunk (NIMT) and Alfriston Road over SH1, and stormwater management devices.
NoR 4	Takaanini FTN – Porchester Road and Popes Road Upgrades	<ul style="list-style-type: none"> Road upgrades and transport upgrades providing for the Takaanini FTN route along Porchester Road generally between Alfriston Road and Walters Road; and for the urbanisation of Popes Road generally between Takanini School Road and Porchester Road. NoRs provide for urbanisation of both corridors – two traffic lanes, walking and cycling facilities, key intersection upgrades, and stormwater management devices.

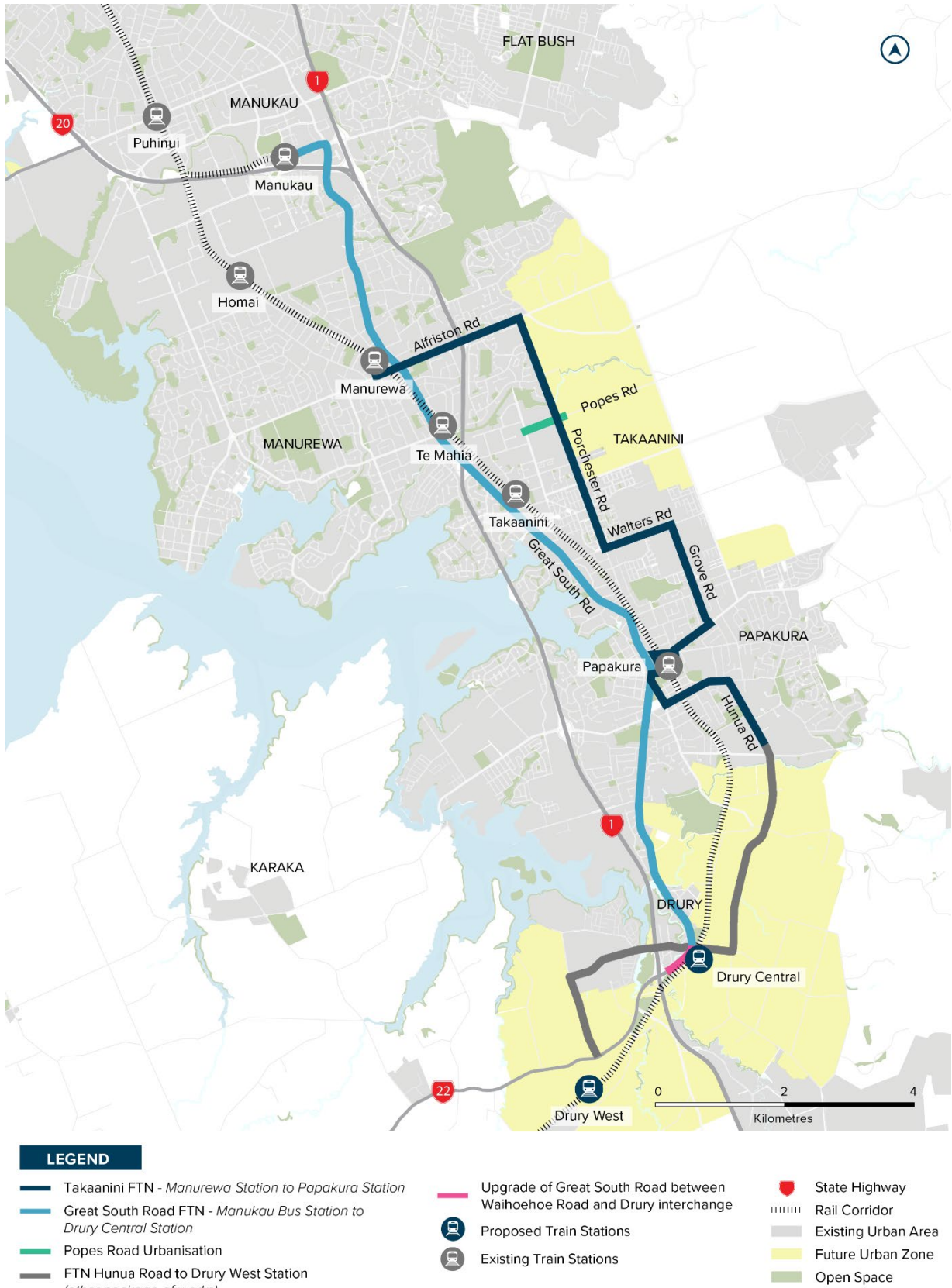


Figure 2-1: South FTN – overall Project extent



Figure 2-2: South FTN – proposed NoRs

2.3 Report and evaluation structure

2.3.1 Overview

In the case of this report and in order to provide a clear evaluation of the four proposed NoRs, the full Project extent (i.e., including interventions that do not fall within the boundaries of an NoR) has been evaluated to provide a fuller network context. While the AEE focuses on the activities authorised by the four proposed designations, an evaluation focused solely on where third-party land is required and geographically isolated would not adequately capture the broader urban design implications or considerations relevant to the South FTN and NoRs. The four NoRs are included within the wider Project extent, but are not in themselves representative of the broad corridor function, opportunities, benefits and potential implications. As such, a bespoke report and evaluation structure has been adopted for this UDE as described below.

2.3.2 Report structure

This report is structured to provide a Project-wide scale evaluation (as opposed to NoR-specific) and reflects the key matters listed above in Section 1.1. This report provides an evaluation of the common matters of the South FTN as an overall network in the first instance, which is followed by evaluations of the Project split into seven sections (defined in Section 2.3.3). Specific matters that pertain to each of the four NoRs will be identified within these evaluations.

2.3.3 Evaluation structure

The Project traverses a highly urbanised and varied urban morphology in southern Auckland. This stretches from Manukau to Drury and connects with the town centres of Manurewa, Takaanini and Papakura. For the purposes of this UDE, the overall Project has been evaluated in seven sections that reflect the existing urban morphology. This has facilitated an evaluation that addresses the corridors as integrated and connective elements. These interrelated sections are then able to be evaluated against the Urban Design Framework principles (refer to **Appendix B**) and looked at in relation to the broader urban context.

Where the Project is proposing corridor widening through the NoRs any localised urban design commentary within these areas is identified as outcomes to be considered as, or part of a designation condition. Outside of the designations, additional opportunities have been identified along the corridors which should be considered at future design stages and are not required to mitigate the Project within the scope of the four NoRs. The seven sections proposed for evaluation are described in Table 2-2 and shown in Figure 2-3 below:

Table 2-2: Proposed project sections for evaluation

Evaluation Section	Project Section	Description	Applicable NoR Reference
5	Great South Road 1	<ul style="list-style-type: none"> Manukau Station Road and the northern end of GSR to the Orams Road intersection. 	N/A
6	Great South Road 2	<ul style="list-style-type: none"> GSR from Orams Road to Coles Crescent. 	NoR 1 and NoR 3
7	Great South Road 3	<ul style="list-style-type: none"> GSR from the intersection with Beach Road/Settlement Road to the Drury interchange. 	NoR 1 and NoR 2
8	Alfriston Road	<ul style="list-style-type: none"> Weymouth Road and Afriston Road from the intersections with Selwyn Road to Porchester Road. 	NoR 3
9	Porchester & Popes Road	<ul style="list-style-type: none"> Porchester Road, Popes Road and Walters Road, along Bruce Pulman Park. 	NoR 4
10	Wider Papakura	<ul style="list-style-type: none"> Two sections of the Takaanini FTN including Grove Road to Clevedon Road, Settlement Road to Hunua Road. 	N/A
11	Papakura Central	<ul style="list-style-type: none"> GSR FTN and Takaanini FTN including portions of GSR, Clevedon Road, Railway Street West, Wood Street, Ōpāheke Road and Settlement Road. 	NoR 1

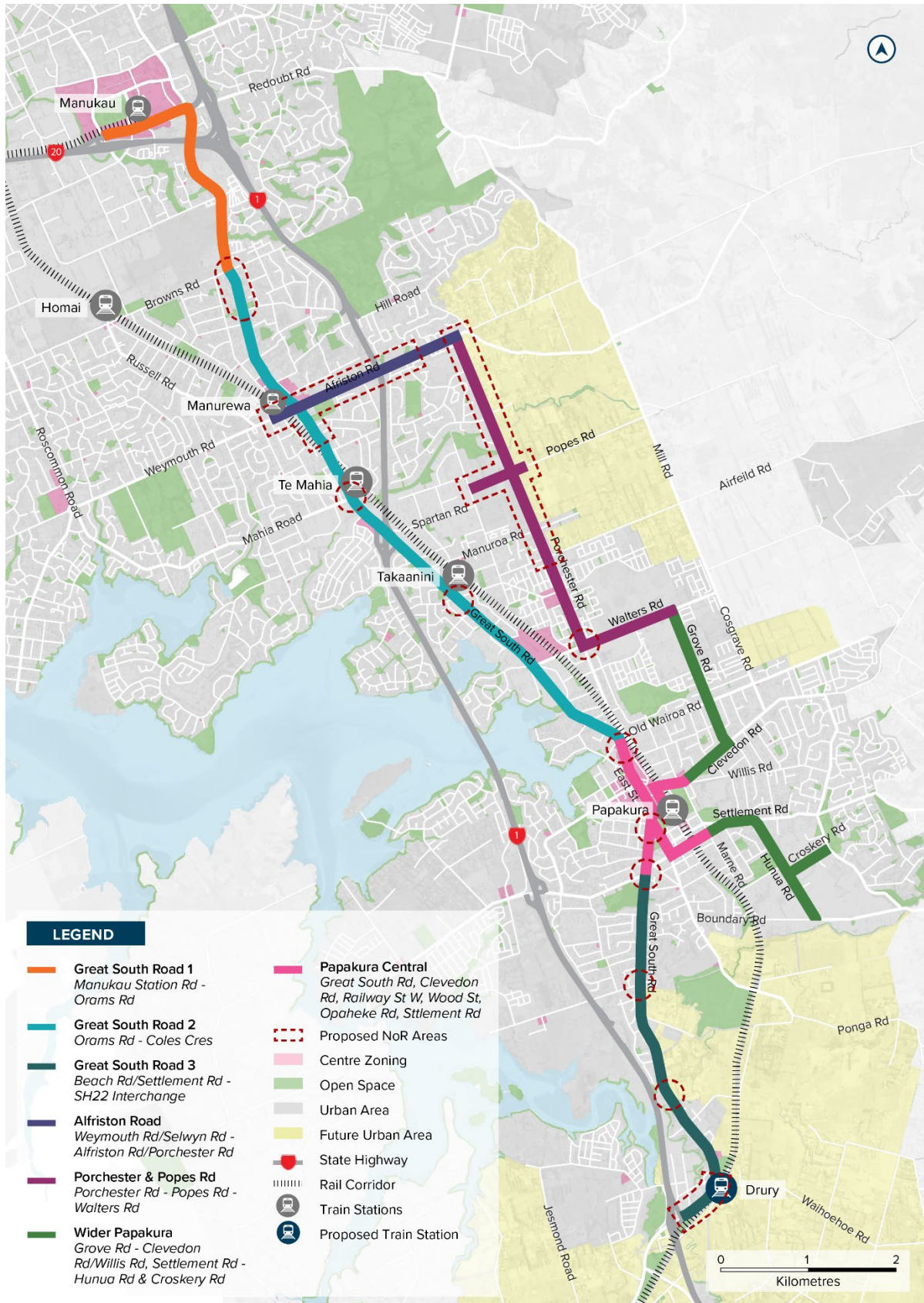


Figure 2-3: Urban Design Evaluation Sections

3 The design context and assessment methodology

3.1 Preparation for this evaluation

Work undertaken for this evaluation commenced in June 2023. In summary, the preparation for this work has included:

- Review of the South FTN specialist briefing package, the South FTN Detailed Business Case (DBC) design drawings (Revision A and Revision B);
- Site visit with members of the Project Team;
- Desktop study on the Project area and surrounding context; and
- technical specialist workshops.

3.2 Evaluation methodology – Te Tupu Ngātahi Design Framework

This UDE contains an evaluation section which has been prepared for the Project based on the guidance and principles established in Te Tupu Ngātahi Programme Wide Design Framework principles.

The 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, but 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 principles are relevant across Te Tupu Ngātahi Programme as they contribute to the understanding of the development of route options in terms of their place context, built form interfaces, movement functions and modal priorities. They also inform the design development of route options at each phase with specific urban design considerations including:

- Land use and corridor interface;
- Connectivity and access;
- Character and sense of place;
- Integration with future development; and
- Response to topography.

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. National Policy Statement on Urban Development (**NPS:UD**), Government Policy Statement on Land Transport, NZ Transport Agency Bridging the Gap, Regional Land Transport Plan, New Zealand Urban Design Protocol); and
- Local level (e.g. Auckland Plan 2050, ATAlignment Project, AT Roads and Streets Framework, AT Transport Design Manual, Auckland Unitary Plan: Operative in Part (AUP:OP), AT Sustainability Framework, AT 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.

As set out in the AEE, Manawhenua have also been actively involved as partners in the Project (both business case and current NoR phase). Through this partnership, project specific outcomes have been identified. These outcomes have informed this evaluation and corresponding recommendations as they relate to ongoing partnership and co-design with Manawhenua.

3.3 Existing and future environment

The approach to assessing the likely receiving environment section the AEE outlines the key attributes of the existing and likely future environment of the Project across each of the NoRs. This has been considered as part of this evaluation. Key attributes of relevance to this evaluation and covered in the corresponding AEE section include:

- Current land use and zoning;
- Community and recreation facilities;
- Watercourses;
- Significant Ecological Areas;
- Historic heritage and archaeological values;
- Areas of cultural value;
- Overlays;
- Likely future zoning; and
- Level of certainty of likely future zoning.

3.3.1 National Policy Statement on Urban Development 2020

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 policy statement. The NPS:UD does not explicitly address or refer to urban design but sets out the characteristics and rationale for “*well-functioning urban environments*” that enable all communities to provide for their social, economic, and cultural well-being and for their health and safety, now and into the future. This

includes, amongst other requirements, the enabling of density and development capacity through “up-zoning” and more enabling planning provisions:

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

In the context of the Project, the NPS:UD defines well-functioning urban environment, which is one that provides *“good accessibility for all people between housing, jobs, community services, natural spaces, and open spaces, including by way of public or active transport”*.

The NPS:UD also directs councils to enable building heights of six storeys or more within a walkable catchment of a rapid transit stops. This is aligned with the Design Framework principles of increasing density in and around centres and stations to create vibrant walkable/cyclable communities that is supported by public transport and a range of amenities and land uses.

A significant portion of both the GSR and Takaanini FTN corridors are within a walkable catchment of a train station including Manukau, Manurewa, Te Mahia, Takaanini and Papakura⁴ (see Figure 3-1). The NPS:UD policy therefore could have direct implications to the surrounding future urban environment and interface with these corridors. This has been identified in Auckland Council’s preliminary response zoning. The land use planning identified as part of this response has been used as a basis for the land use planning identified in the following commentary and maps.

The NPS:UD recognises that urban intensification, and planned urban built form to enable it, can result in significant changes in amenity values appreciated by some people but that the changes themselves cannot be considered, of themselves, to be adverse effects.

3.4 Auckland Council Guidance

At a local level, the key urban design considerations and provisions of the AUP:OP relevant to the Projects include:

- Regional Policy Statement B2: Urban Growth and Form;
- Regional Policy Statement B3: Infrastructure Transport and Energy;
- Chapter E38: Urban Subdivision;
- Chapter E26: Infrastructure; and
- Chapter H: Zones

The urban design specific commentary within the evaluations in the following sections broadly address the objectives and policies of the relevant sections of the Regional Policy Statement and Chapters of the AUP:OP as listed above.

⁴ Based on Auckland Councils Plan Change 78 GIS viewer at the time of writing, i.e., within 1200m.

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.

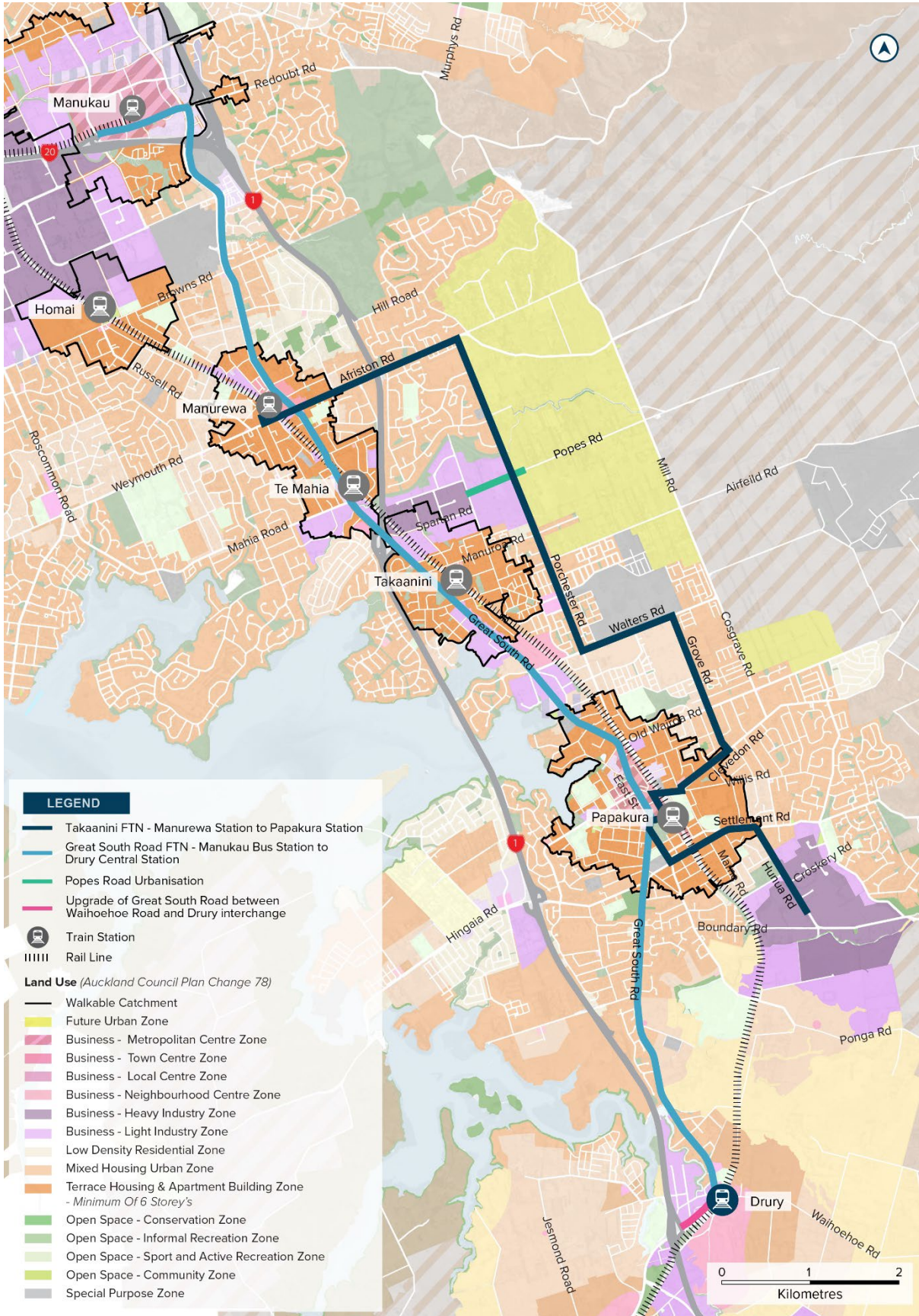


Figure 3-1: Likely future land use under Plan Change 78

4 South FTN – Overall network

This section evaluates common or general urban design matters relevant across the full extent of the South FTN. It measures these against the relevant Design Framework Principles and provides urban design focused commentary on the current design detail. This recommends common urban design outcomes within the scope of the NoRs that should be considered in future design stages. These recommendations could form the basis of an urban design specific designation condition, and where there is an overlap of urban design outcomes with other considerations (for example ecological, landscape, visual or water quality related recommendations) they could be integrated within the relevant specialist conditions. Table 4-1 below sets out the common urban design matters across the overall network.

Table 4-1: Common urban design matters

Principle	Explanation	Application common to all
ENVIRONMENT		
<p>1.1</p> <p>Support and enhance ecological corridors and biodiversity</p>	<p>Mitigate the effects on or enhance existing ecological corridors through the placement and design of movement corridors.</p>	<ul style="list-style-type: none"> The proposed Project corridors have the potential to impact or require the removal of existing tree and vegetation cover. This includes notable trees, notable groups of trees and a significant ecological area identified under the AUP:OP. Where the proposed designations overlap with these, specific commentary will be noted in individual evaluations below. Refer to the <i>South FTN Arboricultural Assessment and South FTN Assessment of Ecological Effects</i> for specific mitigation recommendations for where there are ecological impacts. However in general, further refinement of the corridor landscape should be undertaken as part of future detailed design stages and should address how the corridor: <ul style="list-style-type: none"> avoids or mitigates impact to existing landscape features of significance; responds to pedestrian amenity outcomes; provides replacement and increased canopy shading to the corridor; mitigates urban heat island effects within the environment of the corridor; contributes to biodiversity values within the corridor; and responds to and improves landscape character and values within the corridor. The proposed corridors including the proposed NoRs provide spatial provisions (within the cross section and wider boundary) that have the potential to support ecological connectivity and biodiversity in the local

Principle	Explanation	Application common to all
		<p>environment by providing contiguous space for diverse planting responses.</p> <ul style="list-style-type: none"> • Within each of the NoRs there are opportunities for future design stages to consider a landscape response that contributes to the ecological enhancement and biodiversity in the local environment. • There are multiple watercourses that interfaces with the corridor. Impacts on ecological features such as the stream alignment and indigenous vegetation are avoided or reduced where possible.
<p>1.2 Support water conservation and enhance water quality in a watershed</p>	<p>Take into account and work with the existing watershed as part of a whole system.</p>	<ul style="list-style-type: none"> • Due to the space constraints of the existing built up corridor the Project delivers varied water quality and stormwater solutions. Specific commentary relating to this will be elaborated on under the individual evaluations. • Future development and definition of proposed water quality treatment and stormwater devices within the NoRs is needed at future design stages. This should demonstrate an appropriate interface and integration with the surrounding context and amenity including a landscape response that provides amenity planting.
<p>1.3 Minimise land disturbance, conserve resources and materials</p>	<p>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.</p>	<ul style="list-style-type: none"> • The Project utilises existing corridors set within a highly urbanised area with minimal impact on topography. Further design investigation may be required to determine the extent of earthworks, that may be required at the future regional consenting phase. • If practicable, opportunities should be explored at future detailed design stages to redefine and integrate land post construction along the corridor frontage with the expected future land use function.
<p>1.4 Adapt to a changing climate and respond to the microclimatic factors of each area</p>	<p>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 climate of future places and streets.</p>	<ul style="list-style-type: none"> • The majority of the corridors provide space for street tree planting within the berms that, when delivered, will contribute to the amenity of the area by providing shade and microclimatic cooling qualities. • The Project provides active modes facilities, supports public transport connections and access to public transport facilities (i.e., five existing train stations and FTN bus services). This supports modal shift and reduction of transport related climate change contributions.

Principle	Explanation	Application common to all
		<ul style="list-style-type: none"> • Within the designation boundaries, there are opportunities for future design stages to consider a landscape and/or naturalised stormwater treatment response including amenity planting and water sensitive design elements. This demonstrates contribution to the local climatic environment and urban heat island effects.
SOCIAL		
<p>2.1 Identity and place</p>	<p>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.</p>	<ul style="list-style-type: none"> • The future design response should consider opportunities to incorporate underlying identity drivers of the surrounding context. This includes: <ul style="list-style-type: none"> • cultural values and narrative expressions in partnership with Manawhenua; and • addressing the existing and future amenity values of the surrounding area. • There is opportunity for incorporation of design narratives that could be considered in the arrangement of the corridor. For instance, through wayfinding and signage, natural landscape, bridges, and structural elements or where the corridor intersects with sites of historic heritage and community significance. • 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, Manawhenua will be invited to provide input into relevant cultural landscape and design matters including how desired outcomes reflect their identity and values.
<p>2.2 Respect culturally significant sites and landscapes</p>	<p>Acknowledge significant sites and features in the layout of movement corridors including ridgelines or horizons.</p>	<ul style="list-style-type: none"> • There are no specific sites of cultural significance under the AUP:OP that have been identified along the Project corridors including within the NoRs. However, Manawhenua have indicated the area and corridors in general hold deep historical and cultural significance with a challenging history and a high level of sensitivity. In future design stages, Manawhenua will be invited to provide input into relevant cultural landscape and design matters.
<p>2.3 Adaptive corridors</p>	<p>Corridors should demonstrate flexibility to respond to changes in their function and physical interfaces. Consider an adaptive</p>	<ul style="list-style-type: none"> • The proposed corridor cross sections and its ability to demonstrate flexibility to respond to change in function or support future interfaces and non-transport

Principle	Explanation	Application common to all
	<p>approach in the way strategic corridors are designed to be able to respond to changes in land use, the way we move around and utilise technology over time.</p> <p>Future Growth</p> <p>Consider the existing and future movement and place context that will be supported by the Project and the ability of the design to accommodate change over time.</p>	<p>functions is variable across the Project. This principle will be further elaborated on under each of the individual sections evaluated.</p>
<p>2.4</p> <p>Social cohesion</p>	<p>Provide clear, effective and legible connectivity between community and social functions.</p>	<ul style="list-style-type: none"> • The Project as a whole delivers a positive contribution to community and transport mobility resilience as well as the sense of belonging and participation. This is by supporting connectivity in the wider network to existing local/neighbourhood centres, community facilities and open spaces. It also provides diverse transport choices through the upgrade of public transport and active mode facilities that tie into urban centres and transport hubs. Refer to individual sections for specific focus areas. • As previously discussed, the majority of the existing Project corridors are highly urbanised and are built up in context. Due to this, the Project has had to balance between supporting the above outcomes and maintaining the integrity of the existing corridor by avoiding constraints. While the upgrades achieve an improvement from the existing situation, the ability to support the outcomes above have been reduced due to challenging existing constraints resulting in a lack of spatial provision. Refer to the individual section evaluations for specific commentary. • To enable equitable local connectivity and cross corridor access, further development at future design stages should be undertaken to demonstrate fine grain pedestrian access at crossings points for intersections and mid-block crossings. Refer to the individual section evaluations for specific locations to enable connectivity. • Future design stages should consider how the Project corridors can further deliver a positive contribution to the community. This could include opportunities for the following: <ul style="list-style-type: none"> • Multi-functional use and activation of spaces within the designated areas post construction;

Principle	Explanation	Application common to all
		<ul style="list-style-type: none"> • Extending existing open space or community functions that interface with the corridor; • Support or enhance existing natural landscape features in the designated areas; and • Supporting active mode movement into adjacent areas and transport hubs.
<p>2.5 Safety</p>	<p>Provide a safe and convenient network of routes accessible to people of all ages and abilities.</p> <p>Universal Access</p> <p>Focus on the needs of the customer by placing importance on the spatial requirements that provide for universally inclusive and safe facilities with good physical and visual links.</p>	<ul style="list-style-type: none"> • The Project will deliver a greater level of access and movement to future local communities, with the provision of upgraded active mode facilities. • The proposed corridors accommodate the universal design approach and accessibility to all parts of user journeys. • Within the designations further development is needed at future design stages of the final crossing points at intersections and mid-block crossings. Crossings should accommodate all active mode users using the universal design approach. This is required to confirm and reinforce a sense of personal safety and provide for equitable local connectivity and access. Outside the designations there is further opportunity to consider these crossings across the Project corridors.
BUILT FORM		
<p>3.1 Align corridors with density</p>	<p>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.</p> <p>Active Mode Catchments</p> <p>Locate stations and interchange facilities in places that align with areas of greater density and is centered on the active mode catchment.</p>	<ul style="list-style-type: none"> • The majority of the adjacent land use to the Project corridors is zoned Mixed Housing Suburban and Mixed Housing Urban under the AUP:OP. This is subject to change to Terrace Housing and Apartment Building Zone (THAB) as a result of the increased development capacity requirements of the NPS:UD and Medium Density Residential Standards (MDRS) which could yield an increase in density along the corridors. • The Project will provide a core transport function as key FTN routes and enabling connections within the South Auckland area which support the requirements of the NPS:UD and the MDRS. This includes supporting high density residential development and increased development capacity within a walkable catchment of Manukau, Manurewa, Te Mahia, Takaanini and Papakura Train Stations.
<p>3.2 Corridor scaled to the surrounding</p>	<p>Align the speed, type and scale of transport corridors and infrastructure with the environment that it moves</p>	<ul style="list-style-type: none"> • Overall, the proposed corridor configuration and scale provides an appropriate response to the potential needs of the adjacent area functions (access to and from built form and general spatial

Principle	Explanation	Application common to all
<p>context and urban structure</p>	<p>through (appropriate scale to the context).</p> <p>Respond to Land Use</p> <p>The size, design and location of the facilities should respond to the adjacent land use and respect natural features. This minimises any 'left over' spaces and disconnected pockets of land that need integration.</p>	<p>layout). Examples include efficient localised movement, alignment with known higher density housing land uses and the provision of mixed mode travel.</p>
<p>3.3 Facilitate an appropriate interface between place and movement</p>	<p>Facilitate the opportunity for place as well as movement in corridors (people-oriented streets).</p>	<ul style="list-style-type: none"> • The proposed corridor cross sections generally provide a flexible platform to address place as well as movement function with clear allocation of street space. For example, separated pedestrian and cycle facilities and potential road berm spaces that provide safe waiting zones for pedestrians. However, there are some sections of the corridor which are space constrained (due to challenging constraints as described earlier) which will be elaborated on in the individual evaluations. • An urban integration approach should be developed in future design stages to redefine and integrate land that may no longer be required post construction to support adjacent land use. It should also address interface issues with bridging structures, retaining walls, driveways, and side roads. This is particularly important to be considered where the corridor directly interfaces with residential areas. Things to consider include: <ul style="list-style-type: none"> • pedestrian permeability; • active frontages; • definition and re-integration of land post construction into adjacent land use; • public vs private interface including an appropriate landscape response; • maximising built form outcomes; • ability to support high density residential buildings; and • appropriate building setback.
<p>MOVEMENT</p>		
<p>4.1 Connect nodes</p>	<p>Provide tangible connectivity between identified activity nodes.</p> <p>Cross Corridor Connectivity</p>	<ul style="list-style-type: none"> • The proposed corridor provides tangible and direct connectivity between existing industrial / employment areas, local communities, mixed-use centres and areas of future high density development.

Principle	Explanation	Application common to all
	<p>Balance the functional access requirements across the Project corridor with the optimal location to provide connections into the surrounding area.</p>	<ul style="list-style-type: none"> • There are opportunities in the future development of the Project to provide further clear and direct connections across the corridor; <ul style="list-style-type: none"> • Between local, neighbourhood and town centre functions and the communities they serve; and • Between open spaces and reserves along the wider blue-green network. • Refer to individual sections for specific focus areas.
<p>4.2 Connect modes</p>	<p>Provide for choice in travel and the ability to connect at interchanges between modes.</p> <p>Permeability Provide a level of permeability for stations that supports access into the surrounding streets/corridors.</p>	<ul style="list-style-type: none"> • The corridor provides direct and prioritised active mode and public transport connections between existing bus and train stations at Manukau, Manurewa, Te Mahia, Takaanini and Papakura. • The corridor provides multi modal travel options and aims to reduce car dependency. However, where the corridor is space constrained flexibility to accommodate the transition between modes i.e. bus stops/shelters off the pathway, may be limited. Further refinement and detail is needed at future design stages to spatially locate and accommodate appropriate facilities to support connection of modes at interchanges. • Connectivity to the surrounding street network and access to the wider area is generally identified and accommodated, however it is recommended that further consideration in future design stages is given to the detailed connections to any future active mode network design.
<p>4.3 Support access to employment and industry</p>	<p>Align the corridor location and typology to provide direct and efficient access to areas of employment and industry.</p>	<ul style="list-style-type: none"> • The corridor prioritises public transport and active modes to provide direct access to and support for existing and planned commercial, industrial and employment areas. This includes: <ul style="list-style-type: none"> • Several mixed use and industrial areas alongside Great South Road including within NoR 1; • The northern Takaanini Industrial area which Porchester and Popes Road connect to through NoR 4; and • The light and heavy industrial area in eastern Papakura connected by Hunua Road.
<p>4.4 Prioritise active modes</p>	<p>Provision of quality active mode corridors and dedicated public transport corridors to enable a</p>	<ul style="list-style-type: none"> • The proposed corridor cross sections and NoRs generally provides space for high quality active modes facilities and public transport options. Further

Principle	Explanation	Application common to all
<p>and public transport</p>	<p>modal shift away from private vehicle use.</p> <p>Walkability</p> <p>Locate the station and interchange facility within or in close proximity and walking distance of local activity hubs/town centres.</p> <p>Modal Priority</p> <p>Consider efficient connectivity between transport modes by: Providing access that is aligned with the desired modal hierarchy; 1) pedestrians, 2) cyclists/micro-mobility, 3) public transport, 4) drop off/pick up/taxis, and 5) private vehicles / parking.</p> <p>Minimising the interchange time and distance between transport modes by designing direct, safe and self-explaining linkages.</p> <p>Minimising the conflicts between modes.</p>	<p>refinement and detail is needed at future design stages to spatially locate and accommodate appropriate facilities to support active mode and public transport patronage. For example, bus stops/shelters, cycle parking, seating, and rest areas.</p> <ul style="list-style-type: none"> • Within the NoRs, further development of active mode connections at intersections and the provision of mid-block crossings is needed at future detailed design stages. Crossings should be prioritised and adequately reflect the corridors primary active mode function by enabling equitable local connectivity and the continuity of the active mode network. Outside the designation there is further opportunity to consider these crossings across the Project corridors. • Potential priority conflicts between active modes / public transport and the ongoing freight function of sections of the corridor including those in NoRs 1, 2 and 3, should be further identified and addressed in the future design of the Project.
<p>4.5 Support inter-regional connections and strategic infrastructure</p>	<p>Consider the location and alignment of significant movement corridors and placement of infrastructure (power, wastewater, water) to the network.</p>	<ul style="list-style-type: none"> • Great South Road within NoR 1, 2 and 3 is a key north/south arterial corridor that connects existing industrial/commercial land use activities with the State Highway network. This corridor is currently classified as Level 1B between Takaanini interchange and Papakura in the AT Freight Plan, which is described as roads of the highest strategic value to freight movement. This is where efficient freight movements must be actively supported to maintain levels of service, where competing modes and land uses require active management. Under AT's Future connect, GSR is also identified as a regional – major in the active mode network, the highest levels of strategic importance.
<p>4.6 Support legible corridor function</p>	<p>Consider how the corridor can be clearly navigated and understood by users moving from place to place.</p> <p>Legible Connections</p> <p>To achieve a positive and engaging street presence</p>	<ul style="list-style-type: none"> • The Project as a whole accommodates a range of modes with clear allocation of street spaces where practicable that inherently supports future community connectivity, mobility and travel choice. • Further development of active mode midblock crossings and along the corridor at the detailed design

Principle	Explanation	Application common to all
	provide clear physical and visual connection between station and interchange facilities and surrounding corridors.	stage will provide clear and legible cross corridor access and connectivity between areas of high density, centres and community amenities.
LANDUSE		
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.	<ul style="list-style-type: none"> The corridor provides direct and prioritised public transport connection as part of the FTN network that connects Manukau, Manurewa, Takaanini, Papakura and Drury Town Centres as well as multiple local and neighbourhood centres along the corridor.
5.2 Strategic corridors as urban edges	Strategic corridors as potential definers of a land use edge.	<ul style="list-style-type: none"> This principle is not directly relevant to the Project as the corridor follows existing road corridors that are integrated with the urban environment.

5 Great South Road 1

5.1 Existing environment

This section of the Project utilises the predominantly 30m wide existing road reserve. It has a varied urban morphology including the connection to and interface with Manukau city centre. Key amenities the corridor interfaces with include:

- Manukau Train Station and Bus Terminal;
- Due Drop Events Centre;
- Woodside Bush;
- Puhinui Creek; and
- Manukau Superclinic.

There are two bridges in this section over State Highway 20 (**SH20**) and Puhinui Creek each providing four general traffic lanes and shared use paths.

5.2 Likely future environment

The surrounding context of this section of corridor is anticipated to change in the future where it has been zoned residential. The up-zoning of the residential blocks under Plan Change 78 (**PC78**), provides for future development with a minimum of six storeys within a walkable catchment of Manukau Train Station as seen in Figure 5-1 below.

This section of corridor provides an important role in the future active modes network and connections in the Manukau Metropolitan Centre. AT's Future Connect⁵ identifies it as part of the regional and primary network, meaning a significant level of strategic importance.

No designation for corridor widening has been proposed along this section where the majority of existing road reserves provide sufficient width to accommodate recommended corridor upgrades. This could include the rearrangement of corridor width to facilitate prioritised bus lanes and active mode facilities.

⁵Auckland Transport. Future Connect - Auckland Transport's Network Plan. <https://at.govt.nz/about-us/transport-plans-strategies/future-connect-auckland-transport-network-plan/>.

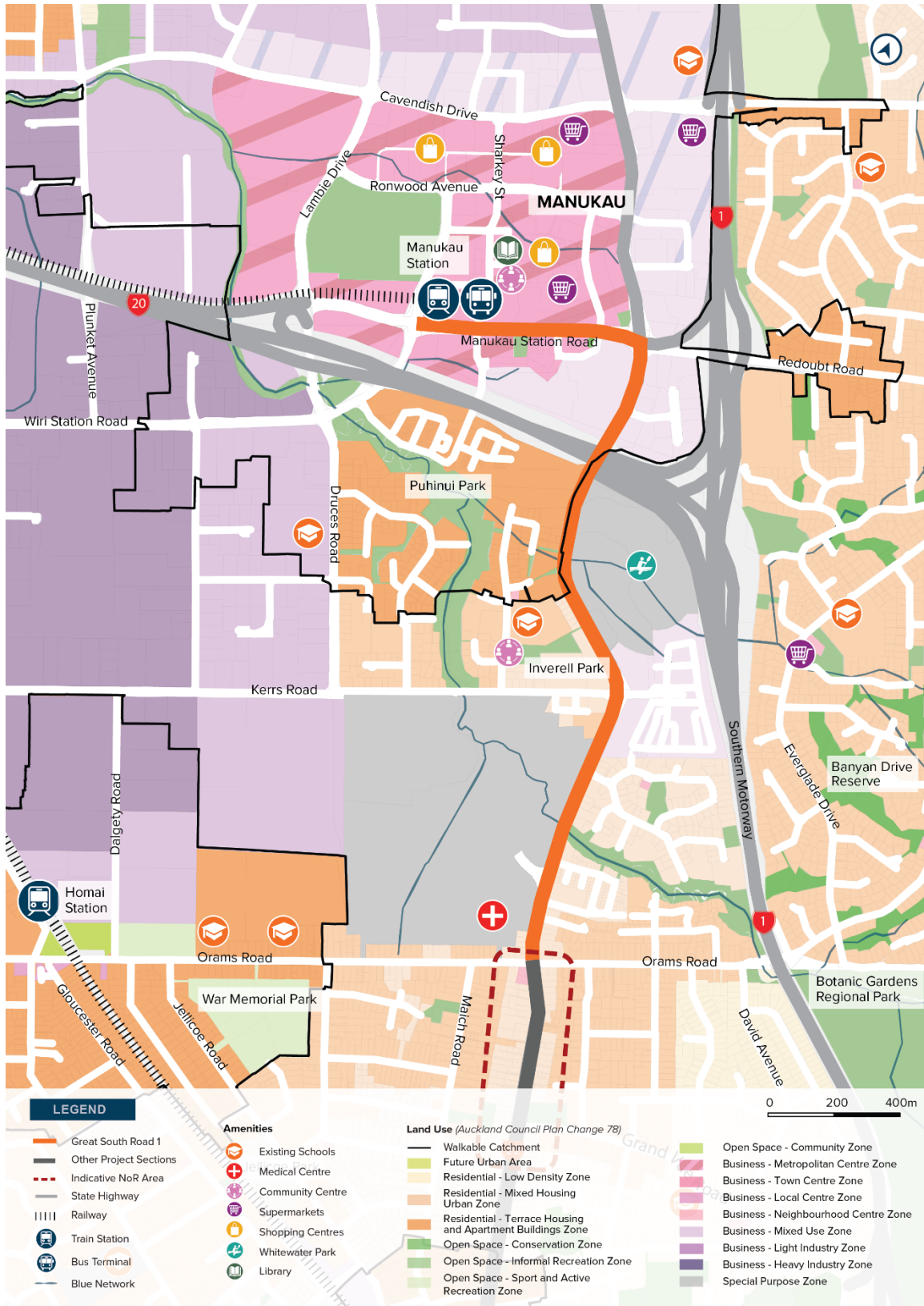


Figure 5-1: Likely Future Environment

5.3 Urban design evaluation – Great South Road 1

The evaluation in Table 5-1 below considers urban design commentary specific to GSR 1 not discussed above regarding the overall Project. In addition, the respective maps included as Appendix A illustrate the outcomes and opportunities for this section.

Table 5-1: Urban Design Evaluation for Great South Road 1

Principle	Application to Great South Road 1
1.1 Support and enhance ecological corridors and biodiversity	<ul style="list-style-type: none"> In future design stages there is opportunity to upgrade and reallocate space within the corridor to accommodate planting and support ecological outcomes. The corridor interfaces with several sections of reserve planting and open space alongside the road boundary. In future design stages opportunities for additional planting could be considered for restoration or enhancement, particularly around Puhinui Creek.
1.2 Support water conservation and enhance water quality in a watershed	<ul style="list-style-type: none"> This section does not designate additional land area to accommodate water quality treatment, for example wetlands. The corridor interfaces with an existing wetland within the Due Drop event centre, and Puhinui Creek. In future design stages opportunities to support or enhance water conservation within these areas could be considered.
1.3 Minimise land disturbance, conserve resources and materials	<ul style="list-style-type: none"> The corridor demonstrates an efficient alignment utilising the existing Manukau Station Road and Great South Road corridors and existing infrastructure.
1.4 Adapt to a changing climate and respond to the microclimatic factors of each area	<ul style="list-style-type: none"> The corridor supports the reduction of climate change impact with modal shift through the provision of active modes and public transport options. In future design stages there is opportunity to upgrade and reallocate space within the corridor to accommodate amenity planting and potential water sensitive design elements that would contribute towards mitigating urban heat island effects or micro climatic conditions.
2.1 Identity and place	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
2.2 Respect culturally significant sites and landscapes	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
2.3 Adaptive corridors	<ul style="list-style-type: none"> There is spatial provision within the existing road reserve to be flexible, re-configurable and adaptable for changing transport needs. For example, future bus priority measures and future expansion of walking and cycling networks can be accommodated within the corridor. However, there are several space constrained points along this section,

Principle	Application to Great South Road 1
	<p>particularly at the existing bridges. This results in a reduced level of service for active modes in those areas where a shared use path exists.</p> <ul style="list-style-type: none"> By maintaining the existing road reserve and configurations there is limited spatial allowance for non-transport functions such as ecological response or water management. However, as part of the detailed design, there are opportunities through a partially reconfigured cross section or in areas adjacent to the corridor to support this.
2.4 Social cohesion	<ul style="list-style-type: none"> This section delivers a positive contribution to transport network resilience by supporting connectivity in the wider network to Manukau Town Centre and Train Station, notable nearby amenities and high density residential development.
2.5 Safety	<ul style="list-style-type: none"> The corridor in this section has enough width within the road reserve to accommodate a configuration that supports a safe corridor environment for all modes. However, by maintaining the existing corridor configuration, appropriately sized berms / buffers to further support pedestrian and cyclist safety are not currently accommodated. Further detail and refinement is also needed to demonstrate a safe pedestrian environment within intersection arrangement, mid-block crossings or tie in into the surrounding network.
3.1 Align corridors with density	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
3.2 Corridor scaled to the surrounding context and urban structure	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
3.3 Facilitate an appropriate interface between place and movement	<ul style="list-style-type: none"> In future design stages there is opportunity to upgrade and reallocate space within the corridor to address the residential interface between Pacific Events Centre Dr and Orams Road on the eastern side of the corridor. This could include further consideration of privacy and fine grain access.
4.1 Connect nodes	<ul style="list-style-type: none"> The corridor directly connects to Manukau City Centre, Train Station and Bus Terminal.
4.2 Connect modes	<ul style="list-style-type: none"> Active mode connections into Davis Avenue and Osterley Way should be considered at future design stages to support connectivity to Manukau Train Station and Bus Terminal.
4.3 Support access to employment and industry	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.

Principle	Application to Great South Road 1
4.4 Prioritise active modes and public transport	<ul style="list-style-type: none"> This section of the corridor is identified as part of the regional active mode network. This is the highest strategic ranking, refer AT's Future Connect⁶ and has the most significant strategic importance of the project due to this. The section generally accommodates separated active mode facilities within the existing road reserve with the exception of some space constrained points as mentioned above.. Future design stages should address the appropriate and safe tie in of active mode facilities in these locations.
4.5 Support inter-regional connections and strategic infrastructure	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
4.6 Support legible corridor function	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
5.1 Public transport directed and integrated into centres	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
5.2 Strategic corridors as urban edges	<ul style="list-style-type: none"> This principle is not directly relevant to Great South Road 1.

⁶Auckland Transport. Future Connect - Auckland Transport's Network Plan. <https://at.govt.nz/about-us/transport-plans-strategies/future-connect-auckland-transport-network-plan/>.

6 Great South Road 2

6.1 Existing environment

This section of the Project is highly constrained in places with an existing road reserve of 20m but varies up to 30m. The urban morphology is also variable, shifting between residential, industrial, and centre zones. This section directly interfaces with the Manurewa and Takaanini town centres and includes the Takaanini SH1 interchange. Key amenities the corridor interfaces with include:

- Anderson Park;
- Manurewa Central School;
- Manurewa Town Centre;
- Te Mahia Train Station;
- Papakura Stream;
- Waiata Shores Esplanade Reserve;
- St Aidans Reserve; and
- Takaanini Town Centre.

There is one existing bridge in this section over Papakura Stream with four general traffic lanes and a narrow footpath on either side.

6.2 Likely future environment

The surrounding context of this section of corridor is anticipated to change in the future where it has been zoned residential. The up-zoning of the residential blocks under PC78, provides for future development with a minimum of six storeys within a walkable catchment of Te Mahia and Takaanini Train Station as seen in Figure 6-1 and Figure 6-2 below.

Corridor widening through designation is proposed at several intersections as part of NoR 1 and a stretch of corridor south of Manurewa town centre as part of NoR 3. This provides localised widening to accommodate improved active mode and public transport facilities along this section.

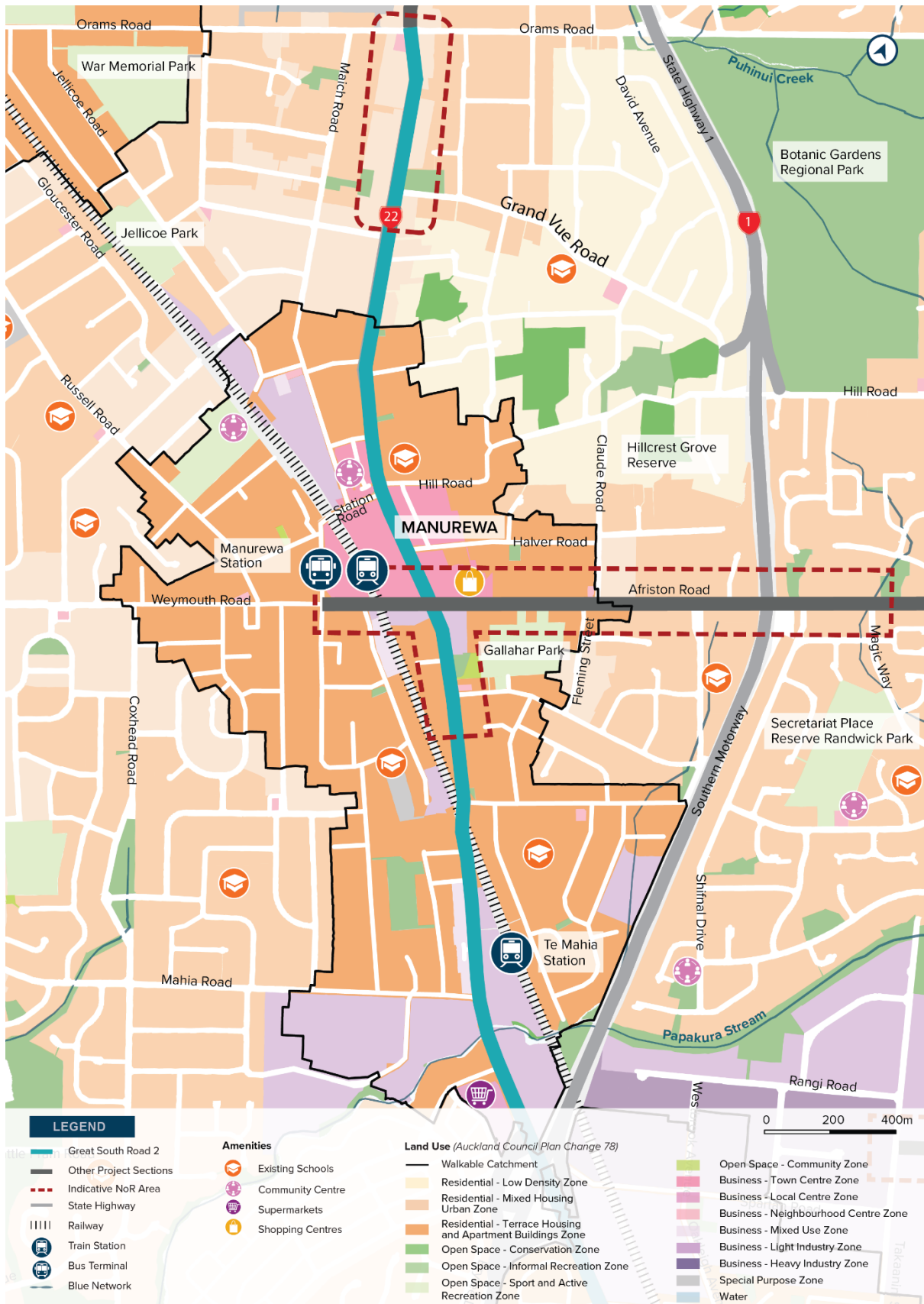


Figure 6-1: Likely Future Environment Part 1



Figure 6-2: Likely Future Environment Part 2

6.3 Urban design evaluation – Great South Road 2

The evaluation in Table 6-1 below considers urban design commentary specific to GSR 2 not discussed above regarding the overall Project. In addition, the respective maps included as Appendix A illustrate the outcomes and opportunities for this section.

Table 6-1: Urban Design Evaluation for Great South Road 2

Principle	Application to Great South Road 2
1.1 Support and enhance ecological corridors and biodiversity	<ul style="list-style-type: none"> There are approximately a dozen notable trees identified under the AUP:OP and groups of mature native trees that interface with this section of corridor. Refer to the <i>South FTN Arboricultural Assessment</i> for an assessment of effects and proposed mitigation where these are within NoR 1. There are rows of large mature native trees along Anderson Park within NoR 1 and along Tadmore Park within NoR 3 which have been identified as having considerable arboricultural value. Removal of these trees would have significant adverse environmental effects and loss to amenity and character of the areas. Future design stages should consider the requirement of a berm and accommodation of active mode facilities within the parks zoned open space to avoid or mitigate impact to these identified trees. Refer to the arboriculture report for further details.
1.2 Support water conservation and enhance water quality in a watershed	<ul style="list-style-type: none"> Due to the space constraints of the existing built up corridor, this section does not designate additional land area to provide for water quality treatment or stormwater and flood resilience. Future design stages will need to consider the need for water quality treatment/stormwater devices and opportunities for integration into the receiving environment.
1.3 Minimise land disturbance, conserve resources and materials	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
1.4 Adapt to a changing climate and respond to the microclimatic factors of each area	<ul style="list-style-type: none"> The corridor supports the reduction of climate change impact with modal shift through the provision of active modes and public transport options. However, the proposed corridor configuration has limited space for amenity planting and water sensitive design elements that would contribute towards mitigating urban heat island effects or micro climatic conditions. Future design stages could consider opportunities to support these outcomes on land that may no longer be required post-construction within NoR 1.
2.1 Identity and place	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
2.2 Respect culturally significant sites and landscapes	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
2.3 Adaptive corridors	<ul style="list-style-type: none"> The proposed design utilises and enhances an existing corridor, minimising significant engineering solutions and social disruption.

Principle	Application to Great South Road 2
	<ul style="list-style-type: none"> • However, due to the space constraints of the existing built up corridor, this section largely maintains the existing road reserve width. This has limited flexibility to accommodate non transport functions and allow for an appropriate interface response to future intensification under PC78. This is especially pertinent as this section of corridor is within a walkable catchment of three train stations (Manurewa, Te Mahia, and Takaanini).
<p>2.4 Social cohesion</p>	<ul style="list-style-type: none"> • The corridor provides diverse transport choices and connectivity between three centres and local amenities. However, in balancing the constraints of the existing environment, the level of service is reduced in some areas as corridor functions like a southbound bus lane or separated active mode facilities are not accommodated. This is especially important where the corridor connects to the Te Mahia and Takaanini train stations. While the proposed works will result in some overall improvement comparative to the existing situation, corridor configuration or width would need to be reconsidered to provide further support for this outcome. • NoR 1 proposes an upgraded corridor configuration from the western Te Mahia Train Station entrance to the Papakura Stream bridge, which connects to the Waiata Shores Esplanade Reserve and existing active mode paths. The Project utilises the existing corridor width and bridge across the Papakura Stream and works between the corridor and Te Mahia Station are not currently proposed as part of the Project. The connection is potentially significant for the community, however, the poor quality of the existing bridge and entrance to the station results in this principle not being fully provided for through this Project. Future design stages should consider the opportunity to upgrade the active mode facilities over the bridge and to tie in with the esplanade and wider network as well as the enhancement of the train station entrance. • NoR 1 designates two local centres on the corners of Browns Road/Orams/Road GSR and Grande Vue Road/GSR which impacts community resilience and local access to amenities. Future design stages need to demonstrate how these centres can be redeveloped or reintegrated post construction. At the Grande Vue Road centre there is insufficient space within the designation post construction to redevelop on the existing zoned site. There is the opportunity to accommodate a centre in the adjacent designated sites post construction.
<p>2.5 Safety</p>	<ul style="list-style-type: none"> • The proposed corridor configuration is limited in the provision of safe corridor outcomes due to the balancing of existing constraints. This includes limited allocation of berm or median space in sections resulting in a lack of separation between modes and refuge for pedestrians. To address this the corridor configuration or width would need to be reconsidered to provide support for these outcomes. • The Papakura Stream bridge and the Walters Road roundabout in particular, present challenges to support a safe active mode environment as upgrades are not proposed as part of this Project. Future design stages should consider opportunities to address intersection arrangement, active mode crossings and appropriate tie in into the surrounding network to improve the safety of the corridor. • Takaanini interchange is a point for Crime Prevention through Environmental Design (CPTED) concern, isolation, and an undesirable pedestrian environment. There is the opportunity for future design considerations to respond to and incorporate CPTED, including clear sightlines, appropriate planting, and good levels of lighting. • The Te Mahia station entrance off GSR which directly connects to NoR 1 is an undesirable pedestrian environment with safety concerns, including poor visibility to

Principle	Application to Great South Road 2
	the station, entrapment areas, and poor interface with the adjacent industrial properties. There is the opportunity to address this entry at future design stages which should seek to incorporate CPTED.
3.1 Align corridors with density	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
3.2 Corridor scaled to the surrounding context and urban structure	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
3.3 Facilitate an appropriate interface between place and movement	<ul style="list-style-type: none"> The potential corridor cross section presents a challenging environment throughout this section to enabling or supporting appropriate interfaces. This includes public-private interfaces along the corridor boundary and between competing modal uses with a lack of buffer or separation. The interface between GSR and Manurewa and Takanini Town Centres is currently undefined. There is the opportunity at future design stages to address an appropriate interface at these locations. This could consider active pedestrian frontages, connectivity at a fine grain pedestrian level and ability to support a people orientated street or streets as public spaces.
4.1 Connect nodes	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
4.2 Connect modes	<ul style="list-style-type: none"> This section provides connection to Te Mahia Train Station and Takaanini Train Station with NoR 1 directly connecting to the GSR entrance of Te Mahia. Future design stages should demonstrate convenient, safe, and legible active mode connectivity in these locations. Appropriate wayfinding, signage and landscape design could be considered to support and strengthen these connections.
4.3 Support access to employment and industry	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
4.4 Prioritise active modes and public transport	<ul style="list-style-type: none"> The corridor accommodates active modes and prioritised bus lanes. However, the corridor width does not allow for a bidirectional facility for both of these functions which potentially results in a lower level of service. The Papakura Stream bridge is not proposed for upgrade as part of the Project. The existing bridge does not currently support an appropriate active mode environment and disrupts the continuity and completeness of the network. Where NoR 1 and the proposed design ties in to the existing bridge, future design stages need to manage modal priority and conflict while addressing the safety aspects mentioned in Principle 2.5.
4.5 Support inter-regional connections and	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.

Principle	Application to Great South Road 2
strategic infrastructure	
4.6 Support legible corridor function	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
5.1 Public transport directed and integrated into centres	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
5.2 Strategic corridors as urban edges	<ul style="list-style-type: none"> This Principle is not directly relevant to GSR 2.

7 Great South Road 3

7.1 Existing environment

This section interfaces with mostly residential land use connecting Papakura to Drury centres. It is predominately constrained to a 21m existing road reserve. Key amenities the corridor interfaces with include:

- Kirks Bush - significant ecological area (**SEA**);
- Otūwairoa Stream / Slippery Creek; and
- Hingaia Stream.

There are two existing bridges in this section over Otūwairoa Stream and Hingaia Stream. The Otūwairoa Stream bridge has two existing general traffic lanes with a pedestrian footpath on the eastern side and a newly built share use path on the western side. The Hingaia Stream bridge also has two general traffic lanes with a single and narrow pedestrian path on the southern side.

7.2 Likely future environment

The surrounding context of this section of corridor is anticipated to change in the future where it has been zoned residential (see Figure 7-1). The up-zoning of the residential blocks under the Medium Density Residential Standards (**MDRS**) and the proposed zoning of the Drury-Ōpāheke Structure Plan provides for future high density development.

Corridor widening through designation is proposed at several intersections and at Otūwairoa Stream as part of NoR 1. This provides localised widening to accommodate improved active mode and public transport facilities along this section.

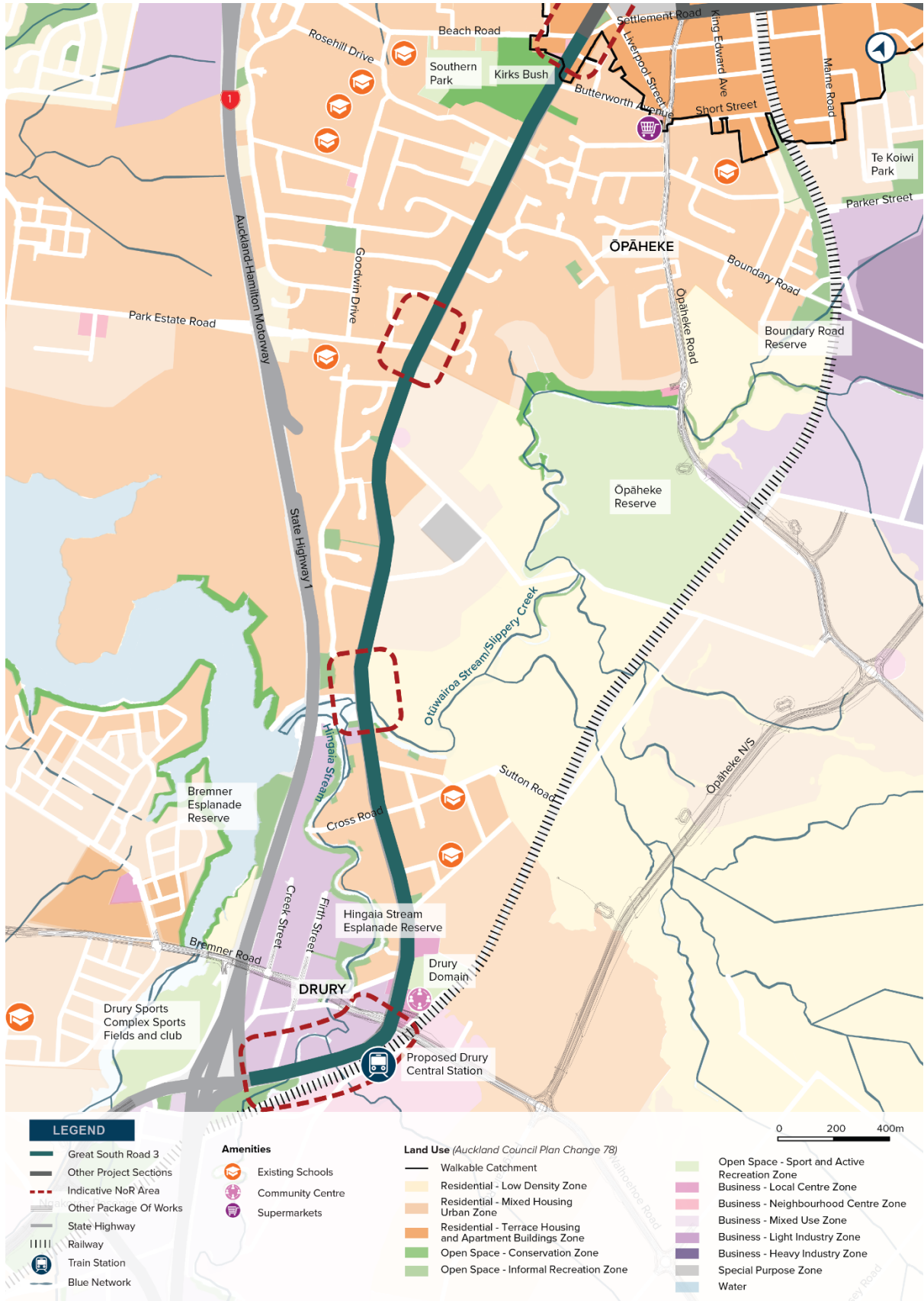


Figure 7-1: Likely Future Environment

7.3 Urban design evaluation – Great South Road 3

The evaluation in Table 7-1 below considers urban design commentary specific to GSR 3 not discussed above regarding the overall Project. In addition, the respective maps included as Appendix A illustrate the outcomes and opportunities for this section.

Table 7-1: Urban Design Evaluation for Great South Road 3

Principle	Application to Great South Road 3
1.1 Support and enhance ecological corridors and biodiversity	<ul style="list-style-type: none"> This section of corridor directly interfaces or overlaps with several notable trees/notable group of trees and one SEA at Kirks Bush identified under the AUP:OP. Two notable trees are within NoR 1 with Kirks Bush alongside the intersection with Butterworth Avenue. Future design stages should consider an intersection arrangement and configuration that avoids impact to these. Where new bridges are being proposed across Otūwairoa Stream and Hingaia Stream, there is opportunity within NoR 1 and NoR 2 to support ecological outcomes through planting within the contiguous space post construction.
1.2 Support water conservation and enhance water quality in a watershed	<ul style="list-style-type: none"> Due to the space constraints of the existing built up corridor this section does not designate additional land area to provide for water quality treatment or stormwater and flood resilience. Future design stages will need to consider the need for water quality treatment/stormwater devices and opportunities for integration into the receiving environment. There are two watercourse bridge crossings proposed along this section (i.e., Hingaia Stream and Slippery Creek). The Project proposes replacement bridging structures to reinforce broader connectivity outcomes for ecology and water quality by minimising stream interruptions and ensuring a connected natural system. NoR 1 should seek to avoid impact to existing wetlands near Otūwairoa Stream.
1.3 Minimise land disturbance, conserve resources and materials	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
1.4 Adapt to a changing climate and respond to the microclimatic factors of each area	<ul style="list-style-type: none"> The corridor supports the reduction of climate change impact with modal shift through the provision of active modes and public transport options. However, the proposed corridor configuration has limited space for amenity planting and water sensitive design elements that would contribute towards mitigating urban heat island effects or micro climatic conditions. Future design stages could consider opportunities on land that may no longer be required post construction within NoR 1 to support these outcomes, in particular around Otūwairoa Stream and Hingaia Stream.
2.1 Identity and place	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network. At future design stages consider visual integration, interface and sense of place considerations for the proposed bridge structures within NoR 1 across the Otūwairoa Stream and within NoR 2 across the Hingaia Stream.

Principle	Application to Great South Road 3
2.2 Respect culturally significant sites and landscapes	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
2.3 Adaptive corridors	<ul style="list-style-type: none"> The proposed design utilises and enhances an existing corridor, minimising significant engineering solutions and social disruption. However, due to the space constraints of the existing built up corridor, this section largely maintains the existing road reserve width. This has limited flexibility to accommodate non transport functions and allow for an appropriate interface response to future intensification under the MDRS.
2.4 Social cohesion	<ul style="list-style-type: none"> The corridor provides diverse transport choices and connectivity between centres and local amenities. However, the level of service is compromised in some areas as corridor functions like a southbound bus lane or separated active mode facilities are not accommodated. To address this the corridor configuration or width would need to be reconsidered to provide further support for this outcome.
2.5 Safety	<ul style="list-style-type: none"> The proposed corridor configuration is limited in the provision of safe corridor outcomes. This includes limited allocation of berm or median space in sections resulting in a lack of separation between modes and refuge for pedestrians. To address this the corridor configuration or width would need to be reconsidered to provide further support for these outcomes.
3.1 Align corridors with density	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
3.2 Corridor scaled to the surrounding context and urban structure	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
3.3 Facilitate an appropriate interface between place and movement	<ul style="list-style-type: none"> The potential corridor cross section presents a challenging environment throughout this section to enabling or supporting appropriate interfaces. This includes public private interfaces along the corridor boundary and between competing modal uses with a lack of buffer or separation.
4.1 Connect nodes	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
4.2 Connect modes	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
4.3 Support access to employment and industry	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.

Principle	Application to Great South Road 3
4.4 Prioritise active modes and public transport	<ul style="list-style-type: none"> The corridor accommodates active modes and prioritised bus lanes. However, the corridor width does not allow for a bidirectional facility for both of these functions which potentially results in a lower level of service.
4.5 Support inter-regional connections and strategic infrastructure	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
4.6 Support legible corridor function	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
5.1 Public transport directed and integrated into centres	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
5.2 Strategic corridors as urban edges	<ul style="list-style-type: none"> This Principle is not directly relevant to GSR 3.

8 Alfriston Road

8.1 Existing environment

This section of the Project functions as the major east/west link in the Manurewa area crossing State Highway 1 and connecting directly into Manurewa town centre and train station. The corridor is currently constrained with an existing road reserve of 20m in places and primarily has a residential interface. Key amenities the corridor interfaces with include:

- Manurewa Train Station and Bus Terminal;
- Manurewa town centre;
- Manurewa cosmopolitan club;
- Oranga Tamariki – Ministry for Children government office;
- Gallaher Park;
- ChoiceKids Childcare Alfriston Road;
- The Rainbow Corner Early Learning Centre; and
- Alfriston Park.

There are two bridges in this section over the rail line – NIMT and SH1 - each of these with two general traffic lanes and footpaths on either side.

8.2 Likely future environment

The surrounding context of this section of corridor is anticipated to change in the future where it has been zoned residential. The up zoning of the residential blocks under PC78 and the MDRS provides for future high density development along this section, including a minimum of 6 storeys within a walkable catchment of Manurewa Train Station (see Figure 8-1).

Corridor widening through designation is proposed along the majority of this section as part of NoR 3 from Weymouth Road/Rogers Road intersection to Magic Way. This provides widening to accommodate improved active mode and public transport facilities along this section including two additional lanes.

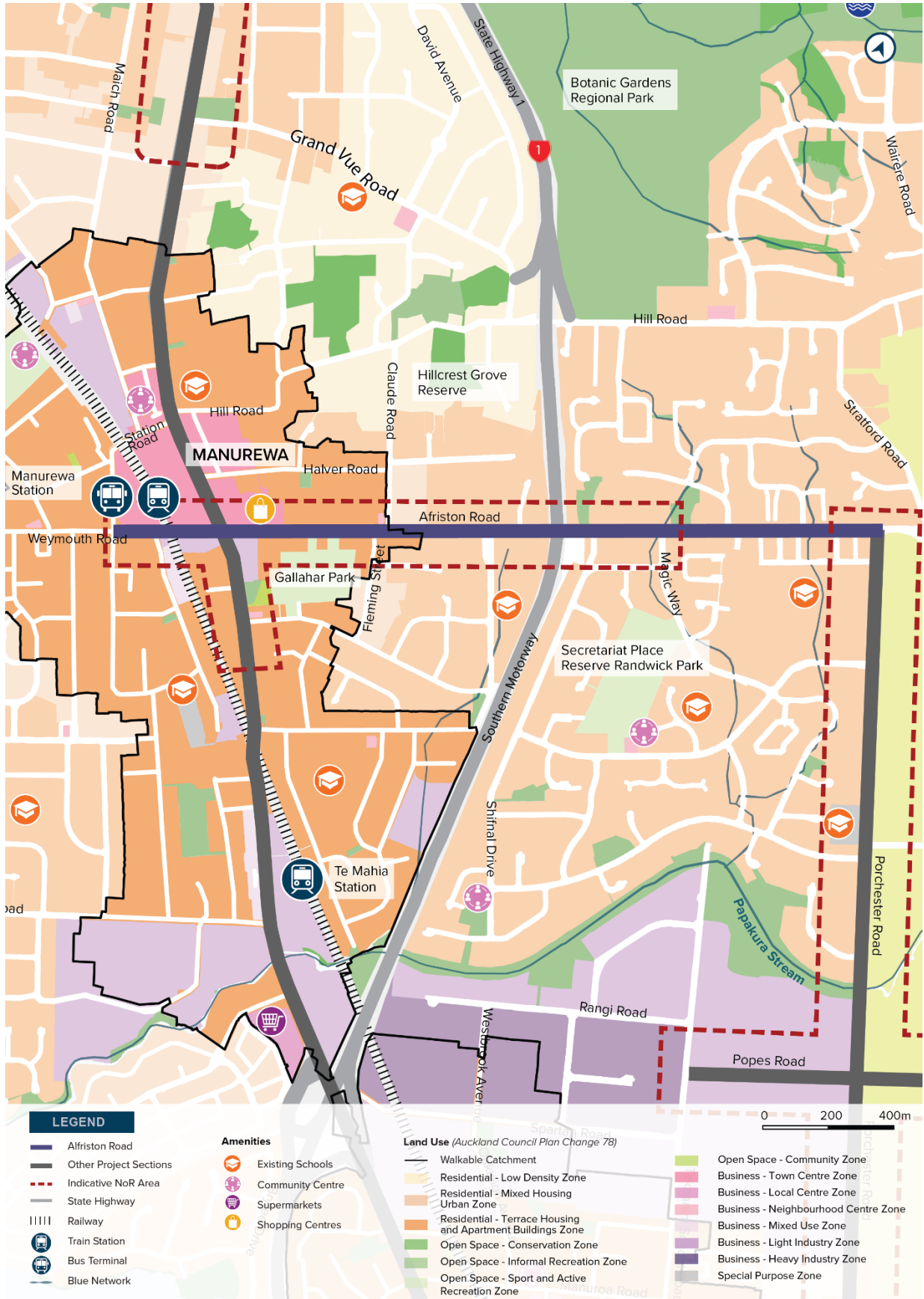


Figure 8-1: Likely Future Environment

8.3 Urban design evaluation – Alfriston Road

The evaluation in Table 8-1 below considers urban design commentary specific to Alfriston Road not discussed above regarding the overall Project. In addition, the respective maps included as Appendix A illustrate the outcomes and opportunities for this section.

Table 8-1: Urban Design Evaluation for Alfriston Road

Principle	Application to Alfriston Road
1.1 Support and enhance ecological corridors and biodiversity	<ul style="list-style-type: none"> The proposed upgrade of Alfriston Road bridge within NoR 3 has embankments in the build up to the bridge. In future design stages retaining walls instead of embankments should be considered to avoid impacting the existing wetlands and established planting to the north and south of the bridge.
1.2 Support water conservation and enhance water quality in a watershed	<ul style="list-style-type: none"> Four stormwater treatment devices have been proposed along this section and are within NoR 3. Future design stages should demonstrate an appropriate interface and integration with the surrounding context and amenity including a landscape response that provides amenity planting. One stormwater treatment device is proposed on the current Oranga Tamariki site and next to Gallaher Park. There is the opportunity to integrate the stormwater device with an existing stream through Tadmore Park as well as enhancement and restoration of the stream through daylighting and planting.
1.3 Minimise land disturbance, conserve resources and materials	<ul style="list-style-type: none"> This portion of the corridor utilises an existing corridor which limits earthworks. However, the proposed designation has the potential to have impacts on existing urban built form and therefore result in future demand for hard engineering materials. Within NoR 3 the proposed bridge over State Highway 1 shows embankments on either side. Future design stages should determine if wrap back retaining walls would be more appropriate to minimise extent of earthworks and increase opportunities for re-planting.
1.4 Adapt to a changing climate and respond to the microclimatic factors of each area	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
2.1 Identity and place	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network. At future design stages consider visual integration, interface and sense of place considerations for the proposed bridge structures within NoR 3 across the rail line and SH1.
2.2 Respect culturally significant sites and landscapes	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.

Principle	Application to Alfriston Road
2.3 Adaptive corridors	<ul style="list-style-type: none"> The proposed design utilises and enhances an existing corridor providing a key east west link supporting whole of life beneficial use. There is flexibility within the corridor through NoR 3 to appropriately respond to future changes in function or surrounding land use, for example, as the corridor densifies. There is flexibility and spatial provisions within this section of corridor and NoR 3 to respond to future interfaces and provide for non-transport functions. For example, ecological response, water management or community functions that would help to re-establish a positive sense of belonging and place context.
2.4 Social cohesion	<ul style="list-style-type: none"> The extent of works enabled through NoR 3 is likely to impact community resilience and cause social disruption through significant property impacts, loss of community amenities as well as impacting the grain of development in the area. However, this will be experienced during the construction period which will be temporary in nature. Future design stages need to consider the reintegration of land post construction, mentioned in Table 4-1, Principle 3.3. To enable equitable local connectivity and cross corridor access further development at future design stages should be undertaken for crossing points and potential midblock crossings. There is opportunity to extend Gallaher Park and support pedestrian connection from Alfriston Road through the existing Oranga Tamariki site.
2.5 Safety	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
3.1 Align corridors with density	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
3.2 Corridor scaled to the surrounding context and urban structure	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
3.3 Facilitate an appropriate interface between place and movement	<ul style="list-style-type: none"> There is enough width within the corridor to support clear allocation of street space and interface between modes. However, refinement and definition is required at future design stages to demonstrate an appropriate public private residential interface in NoR 3. In particular, this includes where existing built form is in close proximity to the proposed widened corridor. Further detail is also required to demonstrate a positive interface with adjacent open space and parks for example Gallaher Park and Alfriston Park. There is the opportunity to connect active mode pathways here and provide a landscape response that enhances the park edge.
4.1 Connect nodes	<ul style="list-style-type: none"> The corridor provides a key east/west link that directly connects to Manurewa town centre and train station.
4.2 Connect modes	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
4.3	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.

Principle	Application to Alfriston Road
Support access to employment and industry	
4.4 Prioritise active modes and public transport	<ul style="list-style-type: none"> • This Principle is broadly discussed above regarding the South FTN overall network.
4.5 Support inter-regional connections and strategic infrastructure	<ul style="list-style-type: none"> • This Principle is not directly relevant to Alfriston Road.
4.6 Support legible corridor function	<ul style="list-style-type: none"> • This Principle is broadly discussed above regarding the South FTN overall network.
5.1 Public transport directed and integrated into centres	<ul style="list-style-type: none"> • This Principle is broadly discussed above regarding the South FTN overall network.
5.2 Strategic corridors as urban edges	<ul style="list-style-type: none"> • This Principle is broadly discussed above regarding the South FTN overall network.

9 Porchester Road / Popes Road

9.1 Existing environment

This section of the Project largely services the residential areas of Manurewa, Takaanini and the northern end of Papakura. Porchester Road primarily interface with rural land to the east , while Walters Road interfaces with Bruce Pulman Park. Key amenities the corridor interfaces with include:

- Alfriston College;
- Papakura Stream;
- Papakura Normal Primary School; and
- Bruce Pulman Park.

There is one bridge in this section over Papakura Stream which has two general traffic lanes and a separate shared use path bridge on the western side and no active mode facilities on the eastern side.

9.2 Likely future environment

The surrounding context of this section of corridor is anticipated to change in the future where it has been zoned residential (see Figure 9-1). The up-zoning of the residential blocks under the MDRS provides for future high density development along this section.

Corridor widening through designation is proposed along the majority of this section as part of NoR 4. This provides widening to accommodate improved active mode facilities along this section as well as a stormwater response.

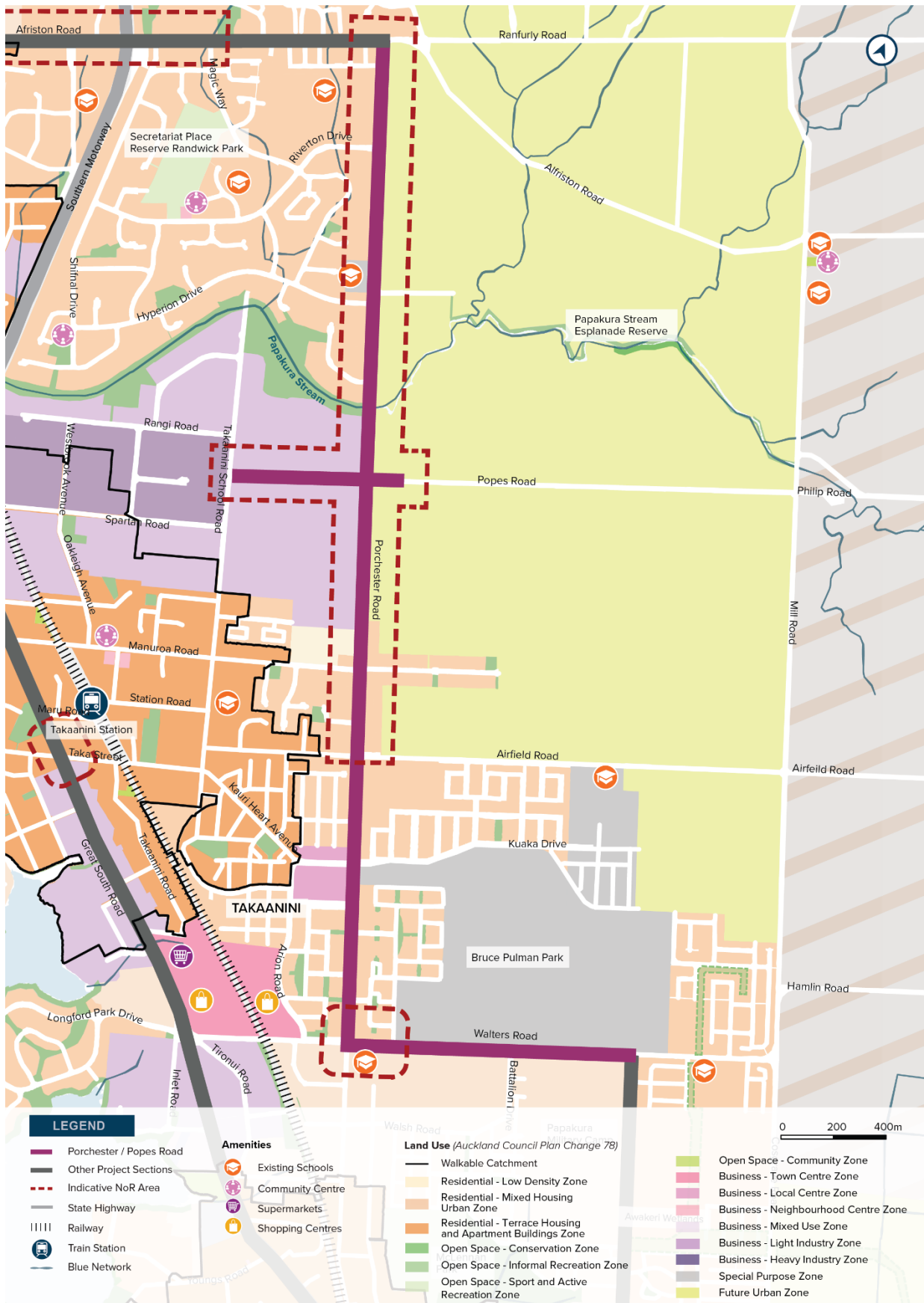


Figure 9-1: Likely Future Environment

9.3 Urban design evaluation – Porchester Road / Popes Road

The evaluation in Table 9-1 below considers urban design commentary specific to Porchester Road / Popes Road not discussed above regarding the overall Project. In addition, the respective maps included as Appendix A illustrate the outcomes and opportunities for this section.

Table 9-1: Urban Design Evaluation for Porchester Road / Popes Road

Principle	Application to Porchester Road / Popes Road
<p>1.1</p> <p>Support and enhance ecological corridors and biodiversity</p>	<ul style="list-style-type: none"> • There is space within NoR 4 near the bridge over Papakura Stream that provides an ideal area to provide additional planting and support ecological outcomes.
<p>1.2</p> <p>Support water conservation and enhance water quality in a watershed</p>	<ul style="list-style-type: none"> • Water quality treatment systems have been proposed in this section of corridor within NoR 4, including potential treatment ponds near Papakura Stream and swales along Popes Road to enhance and support water quality. • Within NoR 4 along Porchester Road there are existing stormwater conveyance channels that are proposed to be retained or reaccommodated. Future design stages will need to consider a corridor arrangement that doesn't impact the function of the existing channel particularly around the Popes and Porchester intersection. • Further refinement of the proposed swale or raingarden configuration and arrangements along Porchester Road and Popes Road during the detailed design stage is recommended to define its form and interface. For example, raingarden edges may be configured in a naturally shaped manner and fully integrated with existing natural drainage features and vegetation. • There is an existing exotic wetland that is directly alongside Porchester Road and north of Papakura Stream which is partially within NoR 4. Further detail is required to demonstrate how to preserve or mitigate any impact to this, of which there is space within the designation to do so. There is an opportunity to connect the wetland to the proposed stormwater treatment pond, or further enhance and support the wetland through additional planting.
<p>1.3</p> <p>Minimise land disturbance, conserve resources and materials</p>	<ul style="list-style-type: none"> • Further detail and refinement is needed at future design stages to determine the extent of earthworks and infrastructure required to address the stormwater treatment throughout this section.
<p>1.4</p> <p>Adapt to a changing climate and respond to the microclimatic factors of each area</p>	<ul style="list-style-type: none"> • This Principle is broadly discussed above regarding the South FTN overall network.
<p>2.1</p>	<ul style="list-style-type: none"> • This Principle is broadly discussed above regarding the South FTN overall network.

Principle	Application to Porchester Road / Popes Road
Identity and place	<ul style="list-style-type: none"> At future design stages consider visual integration, interface and sense of place considerations for the proposed active modes bridge structure within NoR 4 across Papakura Stream.
2.2 Respect culturally significant sites and landscapes	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
2.3 Adaptive corridors	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
2.4 Social cohesion	<ul style="list-style-type: none"> Cross corridor connectivity is currently undefined, and will need to be addressed in future design stages to address cross corridor access to community facilities and open spaces, in particular into Bruce Pulman Park.
2.5 Safety	<ul style="list-style-type: none"> The proposed dual lane roundabout between Porchester Road and Popes Road within NoR 4 presents challenges to support a safe active mode environment. Future design stages need to consider a safe intersection arrangement that may include signalised pedestrian crossings points and appropriate setback. NoR 4 interfaces with Papakura Primary School at the Walters Road intersection. Future design stages need to demonstrate within the designation a safe intersection upgrade from the existing roundabout and maintaining the current pedestrian school crossings in support of safe pedestrian environments.
3.1 Align corridors with density	<ul style="list-style-type: none"> This Principle is not directly relevant to Porchester Road / Popes Road.
3.2 Corridor scaled to the surrounding context and urban structure	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
3.3 Facilitate an appropriate interface between place and movement	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
4.1 Connect nodes	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
4.2 Connect modes	<ul style="list-style-type: none"> Further detail and refinement is needed within this section of the Project to demonstrate appropriate modal connections. For example, the accommodation of bus stops / shelters along the FTN or connectivity into surrounding active modes network.
4.3	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.

Principle	Application to Porchester Road / Popes Road
Support access to employment and industry	
4.4 Prioritise active modes and public transport	<ul style="list-style-type: none"> NoR 4 includes enough flexibility to include the provision of a separated active modes bridge across the Papakura Stream on the eastern side. This will support the continuity and completeness of the network and provide better access to the east of Porchester Road. The corridor accommodates fully separated active mode pathways. However, public transport is not prioritised through the use of dedicated bus lanes within this section of the Project and is proposed to use existing vehicular lanes. Future design stages will need to demonstrate how public transport facilities will be accommodated within the corridor where required i.e. bus stops/bus bays. It is noted that the function of Popes Road within the network is not as a public transport corridor.
4.5 Support inter-regional connections and strategic infrastructure	<ul style="list-style-type: none"> This principle is not directly relevant to Porchester Road / Popes Road.
4.6 Support legible corridor function	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
5.1 Public transport directed and integrated into centres	<ul style="list-style-type: none"> This Principle is not directly relevant to Porchester Road / Popes Road.
5.2 Strategic corridors as urban edges	<ul style="list-style-type: none"> This Principle is not directly relevant to Porchester Road / Popes Road.

10 Wider Papakura

10.1 Existing environment

This section of the Project covers two parts of the Takaanini FTN including Grove Road to Clevedon Road and Settlement Road to Hunua Road. These sections cover the wider residential and industrial area outside of the Papakura centre. Key amenities the corridor interfaces with include:

- Papakura Military Camp;
- Awakeri Wetlands;
- Papakura Intermediate School;
- Papakura Marae; and
- Otūwairoa Stream / Slippery Creek.

10.2 Likely future environment

The surrounding context of this section of corridor is anticipated to change in the future where it has been zoned residential (see Figure 10-1). The up-zoning of the residential blocks under Plan Change 78 and the MDRS provides for future high density development along this section, including a minimum of 6 storeys within a walkable catchment of Papakura Train Station.

This section of corridor provides an important role in the future active modes network and connections in the Papakura Metropolitan Centre. Through Settlement Road and Hunua Road it directly connects the Drury Arterials Project designation (part of another Te Tupū Ngatahi package of works) and completes this link into the Papakura Centre.

No designation for corridor widening has been proposed along this section where the majority of existing road reserves provide sufficient width to accommodate recommended corridor upgrades. This could include the rearrangement of corridor width to facilitate upgraded active mode facilities.

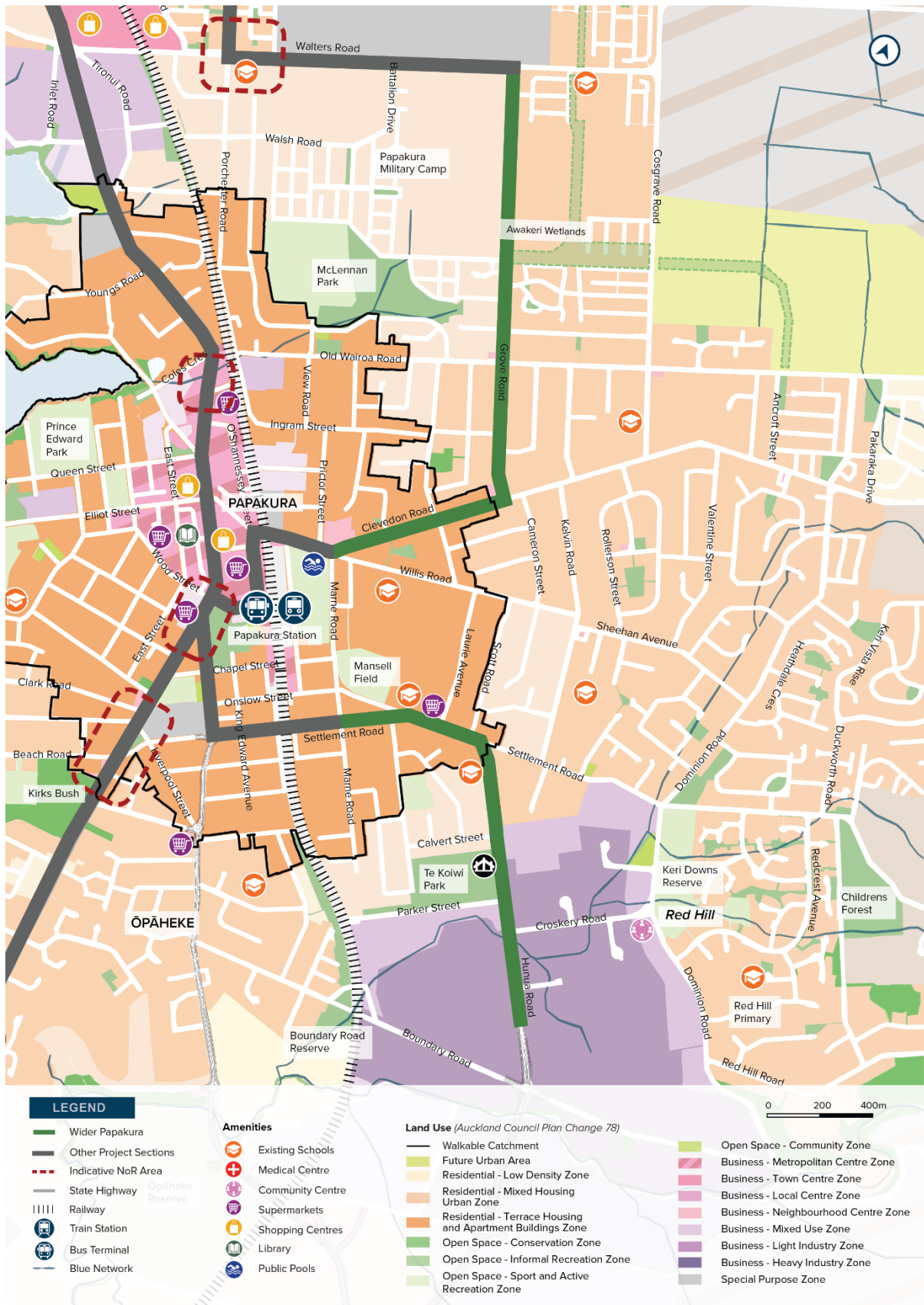


Figure 10-1: Likely Future Environment

10.3 Urban design evaluation – Wider Papakura

The evaluation in Table 10-1 below considers urban design commentary specific to Wider Papakura not discussed above regarding the overall Project. In addition, the respective maps included as Appendix A illustrate the outcomes and opportunities for this section.

Table 10-1: Urban Design Evaluation for Wider Papakura

Principle	Application to Wider Papakura
1.1 Support and enhance ecological corridors and biodiversity	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
1.2 Support water conservation and enhance water quality in a watershed	<ul style="list-style-type: none"> Due to the space constraints of the existing built up corridor this section does not designate land area to provide for water quality treatment or stormwater and flood resilience. Future design stages will need to consider the need for water quality treatment/stormwater devices and opportunities for integration into the receiving environment.
1.3 Minimise land disturbance, conserve resources and materials	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
1.4 Adapt to a changing climate and respond to the microclimatic factors of each area	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
2.1 Identity and place	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
2.2 Respect culturally significant sites and landscapes	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
2.3 Adaptive corridors	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
2.4 Social cohesion	<ul style="list-style-type: none"> Cross corridor connectivity is currently undefined and will need to be addressed in future design stages to address cross corridor access to community facilities and open spaces.

Principle	Application to Wider Papakura
2.5 Safety	<ul style="list-style-type: none"> Further detail and refinement is required for intersection arrangements to demonstrate safe crossings for active modes, particularly at proposed roundabouts or mid-block crossing points to support safe pedestrian environments.
3.1 Align corridors with density	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
3.2 Corridor scaled to the surrounding context and urban structure	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
3.3 Facilitate an appropriate interface between place and movement	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
4.1 Connect nodes	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
4.2 Connect modes	<ul style="list-style-type: none"> Further detail and refinement is needed to demonstrate appropriate modal connections, for example the accommodation of bus stops / shelters along the FTN or connectivity into surrounding active modes network.
4.3 Support access to employment and industry	<ul style="list-style-type: none"> This section supports direct connectivity to the Papakura industrial area along Hunua Road.
4.4 Prioritise active modes and public transport	<ul style="list-style-type: none"> The corridor accommodates fully separated active mode pathways. However, public transport is not prioritised through the use of dedicated bus lanes within this section of the Project and is proposed to use existing vehicular lanes. Future design stages will need to demonstrate how public transport facilities will be accommodated within the corridor where required i.e. bus stops/bus bays.
4.5 Support inter-regional connections and strategic infrastructure	<ul style="list-style-type: none"> This Principle is not directly relevant to Wider Papakura.
4.6 Support legible corridor function	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
5.1 Public transport directed and	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.

Principle	Application to Wider Papakura
integrated into centres	
5.2 Strategic corridors as urban edges	<ul style="list-style-type: none"><li data-bbox="448 365 1082 394">• This Principle is not directly relevant to Wider Papakura.

11 Papakura Central

11.1 Existing environment

This section of the Project covers both GSR FTN and Takaanini FTN including portions of GSR, Clevedon Road, Railway Street West, Wood Street, Ōpāheke Road and Settlement Road. This section includes the town centre and high density residential zoning of Papakura, and also directly interfaces with the Papakura train station/bus interchange. Key amenities the corridor interfaces with include:

- First Presbyterian Church (listed heritage site);
- Massey Park Pool;
- Papakura Town Centre;
- Papakura Train Station and Bus Terminal;
- Papakura Central Park;
- Papakura Old Central School Hall (listed heritage site);
- Papakura War Memorial (listed heritage site);
- Papakura Community Hall;
- Papakura Playcentre;
- Willis Bush Reserve; and
- Papakura Cemetery.

There are two bridges in this section at Clevedon Road and Settlement Road, both crossing the NIMT. Each of these has two general traffic lanes with footpaths on both sides of the Clevedon Road bridge but only the northern side of the Settlement Road bridge.

11.2 Likely future environment

The surrounding context of this section of corridor is anticipated to change in the future where it has been zoned residential (see Figure 11-1). The up-zoning of the residential blocks under Plan Change 78 provides for future high density development along this entire section with a minimum of 6 storeys within a walkable catchment of Papakura Train Station.

This section of corridor provides an important role in the future active modes network and connections in the Papakura Metropolitan Centre. Through Settlement Road and Hunua Road it directly connects the Drury Arterials Project designation (part of another Te Tupū Ngatahi package of works) and completes this link into the Papakura Centre.

Corridor widening through designation is proposed at several intersections as part of NoR 1. This provides localised widening to accommodate improved active mode and public transport facilities along this section.



Figure 11-1: Likely Future Environment

11.3 Urban design evaluation – Papakura Central

The evaluation in Table 11-1 below considers urban design commentary specific to Papakura Central not discussed above regarding the overall Project. In addition, the respective maps included as Appendix A illustrate the outcomes and opportunities for this section.

Table 11-1: Urban Design Evaluation for Papakura Central

Principle	Application to Papakura Central
1.1 Support and enhance ecological corridors and biodiversity	<ul style="list-style-type: none"> There are several notable trees/notable group of trees identified under the AUP:OP and rows of mature native trees that interface with this section of corridor or are within NoR 1. Refer to the <i>South FTN Arboricultural Assessment</i> for an assessment of effects and proposed mitigation where these are within NoR 1. In particular there are rows of large mature native trees within NoR 1 along Central Park and Papakura Cemetery which have been identified as having considerable value. Removal of these trees would have significant adverse environmental effects and loss to the amenity and character of Papakura. Future design stages should consider the requirement of a berm and accommodation of active mode facilities within the park zoned open space or cemetery zone special purpose to avoid or mitigate impact to these. Refer to the arboriculture report for further details.
1.2 Support water conservation and enhance water quality in a watershed	<ul style="list-style-type: none"> Due to the space constraints of the existing built up corridor this section does not designate additional land area to provide for water quality treatment or stormwater and flood resilience. Future design stages will need to consider the need for water quality treatment/stormwater devices and opportunities for integration into the receiving environment.
1.3 Minimise land disturbance, conserve resources and materials	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
1.4 Adapt to a changing climate and respond to the microclimatic factors of each area	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
2.1 Identity and place	<ul style="list-style-type: none"> This section of the corridor directly interfaces with several sites of historical heritage as identified under the AUP:OP. Further detail is required to demonstrate how the corridor can respectfully interface with these sites. Assessment of these features is further undertaken in the <i>South FTN Archaeology and Historic Heritage Assessment</i>. NoR 1 partially designates the historic stonework entrance of the Papakura Old Central School site. Future design stages need to consider a corridor configuration that avoids impacting the site. A corridor configuration with a narrowed shared use path and removal of the berm should be considered.

Principle	Application to Papakura Central
2.2 Respect culturally significant sites and landscapes	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
2.3 Adaptive corridors	<ul style="list-style-type: none"> The proposed design demonstrates the utilisation and enhancement of existing corridors. There is enough space in the existing road reserve along the corridor and at intersections within NoR 1 to provide for an adaptive and flexible space function. However, the two bridges across the rail line at Clevedon Road and Settlement Road do not provide any flexibility to change in function, nor do they adequately accommodate active modes or public transport, or respond to future land use. To address this new or widened bridges would need to be considered.
2.4 Social cohesion	<ul style="list-style-type: none"> Cross corridor connectivity is currently undefined and will need to be addressed in future design stages. Consider local and equitable access to community facilities and open spaces.
2.5 Safety	<ul style="list-style-type: none"> The corridor does not adequately support a safe active modes environment at the existing Clevedon Road and Settlement Road bridges. This includes no accommodation for cycle paths, no buffer between modes on Clevedon Road, and no pathway on the southern side of the Settlement Road bridge. To address this new or widened bridges would need to be considered. There is also a lack of detail for intersection arrangement to demonstrate safe cross corridor connectivity. This is, particularly at the Settlement Road bridge where there is no crossing point before the bridge, and the existing environment fails to address universal accessibility. In the interim before adequate active mode facilities can be addressed on the bridge, future design stages should consider crossing points before it to allow access to the existing pathway on the northern side. There is also the opportunity to tie the crossings location into the existing pathways that lead into the railway reserve.
3.1 Align corridors with density	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
3.2 Corridor scaled to the surrounding context and urban structure	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
3.3 Facilitate an appropriate interface between place and movement	<ul style="list-style-type: none"> There is space within the corridor to support clear allocation of street space and interface between modes, however, this excludes the existing Clevedon Road and Settlement Road bridges where there is a lack of space to do so. To address this, new or widened bridges would need to be considered to provide appropriate allocation of area to support these outcomes. The interface between the Project corridors including GSR, Clevedon Road, Railway Street West, Wood Street and Ōpāheke Road with the and Papakura Town Centre is currently undefined. There is the opportunity at future design stages to address an appropriate interface at these locations. This could consider active pedestrian frontages, connectivity at a fine grain pedestrian level and ability to support a people orientated street or streets as public spaces. Particularly important is the interface and

Principle	Application to Papakura Central
	connectivity into the Papakura Train Station and grade separated pedestrian accessway.
4.1 Connect nodes	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
4.2 Connect modes	<ul style="list-style-type: none"> Further detail and refinement is needed to demonstrate appropriate modal connections. At a minimum the following needs to be addressed: <ul style="list-style-type: none"> accommodation of bus stops / shelters along the FTN routes; accommodation of the existing bus layover on Ōpāheke Road; connectivity of active modes facilities into the surrounding network; and active mode tie in into Papakura Train Station and Bus Terminal. Further consideration and refinement is needed to demonstrate how buses will efficiently access the station and bus interchange.
4.3 Support access to employment and industry	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
4.4 Prioritise active modes and public transport	<ul style="list-style-type: none"> The corridor does not accommodate separated active mode pathways in the bridges mentioned above or along Great South Road through the Papakura town centre, which disrupts the continuity and completeness of the network. This is particularly an issue where separated active mode paths terminate at the Settlement Road bridge where no other facilities are provided. To address this the corridor configuration or width would need to be reconsidered and a new bridge would need to be provided to allow appropriate allocation of area to support these outcomes. Public transport is not prioritised through the use of dedicated bus lanes within this section of the Project and is proposed to use existing vehicular lanes. Future design stages will need to demonstrate how public transport facilities will be accommodated within the corridor where required i.e. bus stops/bus bays.
4.5 Support inter-regional connections and strategic infrastructure	<ul style="list-style-type: none"> This Principle is not directly relevant to Central Papakura.
4.6 Support legible corridor function	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.
5.1 Public transport directed and integrated into centres	<ul style="list-style-type: none"> This Principle is broadly discussed above regarding the South FTN overall network.

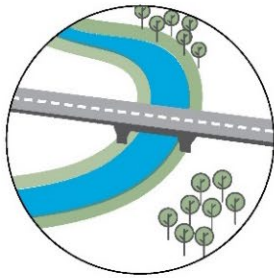
Principle	Application to Papakura Central
5.2 Strategic corridors as urban edges	<ul style="list-style-type: none">This Principle is not directly relevant to Central Papakura.

1 Appendix A – Outcomes and Opportunities

2 Appendix B – Design Framework Principles

The adopted Design Framework principles, outcomes and measures are summarised here for reference and have been extracted from the full Te Tupu Ngātahi Design Framework.

ENVIRONMENT



1.1 Support and enhance ecological corridors and biodiversity

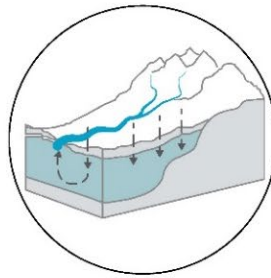
In the placement and design of movement corridors mitigate the effects on or enhance existing ecological corridors.

Outcome:

- The preservation of the biosphere, continuity of natural systems (at a range of scales) and contribution to climate change mitigation through emissions uptake.
- Contribution to the legibility of an area, open space corridors for movement and community use and increased community connection to natural habitats.
- Supports and rehabilitates the natural landscape.

Measure:

- Continuity/ severance of ecological corridors and enhanced biodiversity.
- Protection and enhancement of significant ecological areas (SEAs).



1.2 Support water conservation and enhance water quality in a watershed

Take into account and work with the existing watershed and aquifers as part of a whole system.

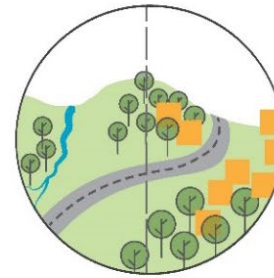
It is important that the mauri of waterways is restored, maintained and preserved for future generations. Connection to the Māori world view is described in the Te Aranga Principles - Mauri Tu: Environmental Health

Outcome:

- Use of natural systems to support design outcomes, reduces hard engineering solutions and thereby carbon emissions.
- Supports natural water cycles that the biosphere and communities depend on.
- Reduces the cost of water quality treatment.
- Supports and restores the coastal landscape.

Measure:

- Continuity/ severance of watershed.
- Allocation of land area for water quality treatment.
- Water quality treatment systems - swales, rain gardens, bioswales and wetlands are to be located within the corridor and not reliant on out of corridor treatment



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.

Landforms and built heritage including movement networks can embody a history and create a distinctive sense of place. They help to provide an understanding and connection to the former natural and cultural history.

Connection to the Māori world view is described in the Te Aranga Principles - Tohu: The wider cultural landscape

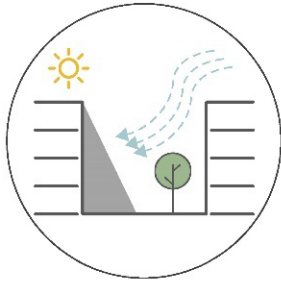
Outcome:

- Reduces carbon emissions, waste of resources and impact on the biosphere.
- Protection of elite soils that support food production.

Measure:

- Works with/ against land, topography or urban structure.
- Utilisation of existing corridors to minimise land disturbance.

SOCIAL



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.

Outcome:

- Long term planning in regard to climate change such as sustainable management of resources and development and adoption of renewable energy.
- Maintains key corridors and infrastructure resilience.
- Creates a streetscape environment that considers the quality of the experience for people. Supports and encourages foot traffic to local destinations.

Measure:

- Corridor provides for active modes and public transport options to support modal shift and reduce climate change impacts.
- Consideration of future flood levels.
- Responds to the microclimatic conditions and characteristics of the area.
- Accommodates amenity measures such as space for shade, trees, wind protection, orientation of connections.



2.1 Identity and place

The identity or spirit of place is generally acknowledged as the unique amalgam of the inherent built, natural and cultural qualities of a place.

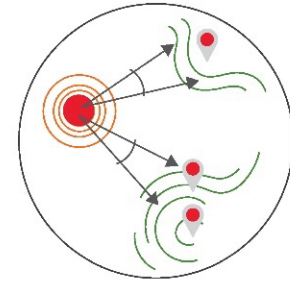
Responding to identity in the location and type of new corridors can provide a sense of continuity and contribute to our collective memory.

Outcome:

- Supports social cohesion, sense of belonging and pride in an area through clear connection to history and identity of a place.
- Supports outstanding natural landscapes and features.

Measure:

- Considers, respects and/or enhances the established identity/ form/ layout of a place.
- Preserves the amenity values and quality of a place.
- Responds to the underlying topography and natural characteristics of a place.
- Contributes to the placemaking drivers of its context.



2.2 Respect culturally significant sites and landscapes

Acknowledge significant sites and features in the layout of movement corridors including ridgelines or horizons.

Protecting or featuring these vistas or landmarks acknowledges the wider cultural or natural landscape and provides context and orientation for people who are either moving through or living within an area.

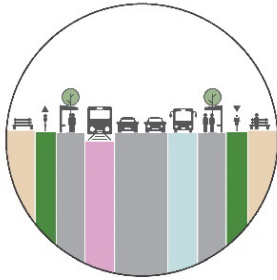
Connection to the Māori world view is described in the Te Aranga Principles - Tohu: The wider cultural landscape.

Outcome:

- Supports the cultural context of places.

Measure:

- Location of strategic corridor considers, respects and/or enhances significant sites and features.
- Establishes or acknowledges viewshafts and terminating vistas.



2.3 Adaptive corridors

Corridors should demonstrate flexibility to respond to changes in their function and physical interfaces.

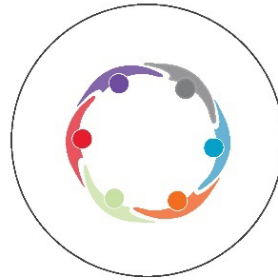
Consider an adaptive approach in the way strategic corridors are designed to be able to respond to changes in land use, the way we move around or utilise technology over time.

Outcome:

- Look to preserve, repurpose existing corridors over time to support long term whole of life beneficial use.
- Reduce the need to update and replace corridors, saving emissions and materials
- Minimise social disruption.
- Minimise significant and permanent engineering interventions/solutions.

Measure:

- Utilisation and adoption of existing corridors.
- Corridor configuration that does not preclude active modes or public transport.
- Accommodate variations and future changes in noise levels generated by corridor function.
- Provision of space function for non transport functions such as ecological diversity, water management and recreation.



2.4 Social cohesion

Provide clear, effective and legible connectivity between community and social functions.

Outcome:

- Deliver a positive contribution to the sense of belonging and participation, as well as community resilience.
- Establish and support a positive spatial relationship to the grain of future development.
- Supports the creation of spaces where people can seamlessly connect.
- Support modal shift to allow a diversity of choices to more of the population.

Measure:

- Address potential severance issues between areas through the network layout and providing universal access.
- Avoid isolated or fragmented areas of Future Urban Zones.
- Provision of modal choices.
- Provides connectivity and equitable access to community facilities and open spaces.



2.5 Safe corridors

Provide a safe and convenient network of routes accessible to people of all ages and abilities.

Outcome:

- Supporting a greater level of movement that promotes a sense of personal safety.
- Provide safe crossings for people crossing roads and railways.
- Illustrates the universal design approach and accessibility in to all parts of user journeys.
- Reduce deaths and injuries on the road network.

Measure:

- Support personal safety in the environment (CPTED) in the layout or colocation of different modes/ land uses.
- Clear and legible mixed modal zones.
- Grade separated crossings for pedestrians and cyclists.
- Corridor configuration that supports safe pedestrian environments.

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.

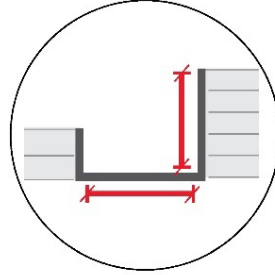
Density (and a diversity of housing choices) gives people the opportunity to live in neighbourhoods that meet their lifestyle preferences and economic means. Residents should be provided with the choice to live in amenity-rich neighbourhoods where they are a short walk or bike ride away from shopping, parks, schools and cafés and are encouraged to take public transport to work and regional destinations.

Outcome:

- Provides opportunity for greater housing diversity and choice.
- Reduces car dependency and emissions, linear servicing infrastructure and climate change impacts.
- Align appropriate corridor typologies with public private interfaces that support density.

Measure:

- Corridors aligned/ not aligned to areas of higher density.
- Corridors located near/through interchanges and centres.



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).

Corridor configuration should respond to contextual drivers and support different functional requirements at a regional, sub-regional and neighbourhood scale. Corridor functions should support efficient movement, higher density living, mixed mode travel and placemaking.

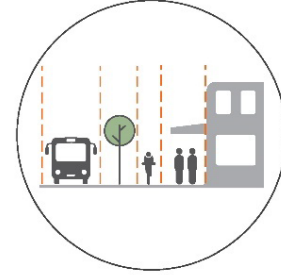
Refer to Locational Principles in Appendix E.

Outcome:

- Corridors should demonstrate support for economic outcomes through efficient regional movement.
- Corridors should enable mass rapid transit and multi modal options that contribute to climate change mitigation.
- Maintain or improve amenity of the environment through which the corridor passes.
- Corridor should minimise impacts of widening in relation to existing land use patterns.

Measure:

- Scale is/ isn't appropriate to the surrounding context.
- Corridor arrangement supports adjacent land use and provides an appropriate interface.



3.3 Facilitate an appropriate interface between place and movement

Facilitate the opportunity for place as well as movement in corridors (people oriented streets)

Corridors should deliver street typologies scaled to the adjoining land use that provide a clear movement function as well as an appropriate interface to built form.

Refer to Locational Principles Appendix E.

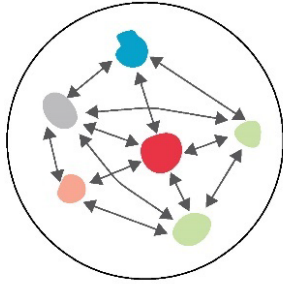
Outcome:

- Social cohesion and economic benefit for local businesses.
- Opportunity for people oriented streets, potential for streets as public spaces.
- Supports connectivity and interface to open spaces and public spaces.

Measure:

- Supports appropriate public private interfaces.
- Appropriate allocation of street space between competing uses.
- Provides connectivity at a fine grain (pedestrian) level
- Appropriate and positive influence on future urban form.

MOVEMENT



4.1 Connect nodes

Provide tangible connectivity between identified activity nodes.

Corridors should provide direct and legible connections between key destinations.

Corridors should consider connectivity for all modes (walking, cycling, public transport, freight transport and private vehicle). Connect between areas as well as through central corridors.

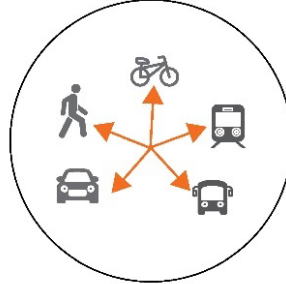
Corridors should accommodate any identified cross connections between nodes outside of strategic corridors.

Outcome:

- Provides community connectivity, mobility and choice.
- Reduces car dependency and emissions as well as climate change impacts.
- Reduces travel times between destinations.

Measure:

- Provides clear and tangible connectivity between complementary destinations.



4.2 Connect modes

Provide for choice in travel and the ability to connect at interchanges between modes.

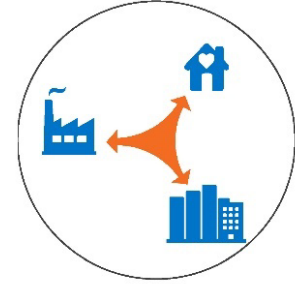
Provide access to multiple travel modes. Corridors can contribute to outcomes for a wider cross section of the community (including elderly, children and mobility-impaired users) when they support safe, comfortable and attractive multi-modal transport for all users.

Outcome:

- Provides community connectivity, mobility and choice.
- Provides economic benefit at interchanges.
- Reduces car dependency and emissions as well as climate change impacts.

Measure:

- Modal connections and interchange is/ isn't accommodated.
- Transition between modes is easy, convenient, safe and smooth,
- Clear and legible interchanges.



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.

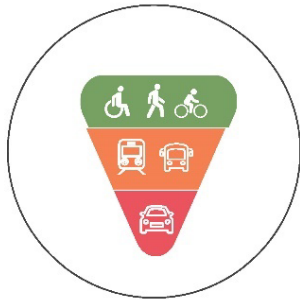
Outcome:

- Supports the efficient movement of resources.
- Provision of modal choices to enable equitable access to areas of employment and industry.

Refer to Locational Principles in Appendix E.

Measure:

- Provides tangible connectivity to areas of employment and industry.



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.

Dedicated and connected active mode networks provide choices for people walking and cycling, reduces land consumption, and improves overall network efficiency.

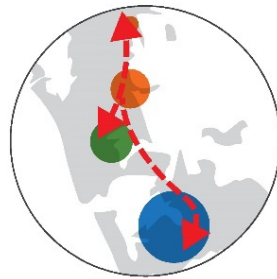
Dedicated and efficient public transport corridors provide modal choice to a larger number of users and reduces the impact on the environment.

Outcome:

- Supports community connectivity, mobility and choice.
- Reduction of car dependency and emissions, reduces climate change impacts.
- Supporting healthy lifestyles of the community by replacing short motor vehicle trips by alternative modes.
- Reduce environmental impact of travel.

Measure:

- Connectivity and quality of active paths.
- Prioritised network for public transport.



4.5 Support inter-regional connections and strategic infrastructure

Consider the location and alignment of significant movement corridors and placement of infrastructure (power, waste water, water) to the network.

Locate significant infrastructure in appropriate locations and away from primarily residential areas.

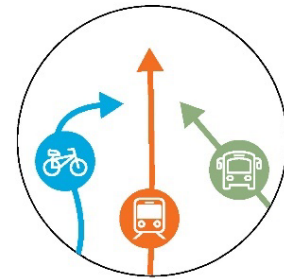
Identify corridor hierarchies and functions to allow for differentiation between inter-regional trips and local trips.

Outcome:

- Supports strategic infrastructure planning.
- Considers a coordinated approach between freight and passenger rail services.

Measure:

- Alignment of significant infrastructure along strategic corridors.
- Provide direct connections to rail, port and airport.
- Minimise the number of local trip movements from inter-regional routes.



4.6 Support legible corridor function

Consider how areas can be clearly navigated and understood by users moving from place to place.

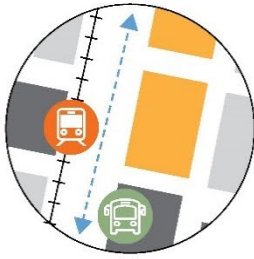
Outcome:

- Corridors designed and developed to suit the corridor function.
- Supports community connectivity, mobility and choice.

Measure:

- Provides clear gateways into areas.
- Provides direct connections between destinations.
- Corridor configuration provides clear modal interactions and priorities.

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.

Bringing public transport into a centre that has a higher level of density will cater for a greater number of users as well as providing accessible and viable alternatives to private vehicles.

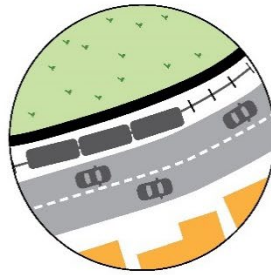
Refer to Locational Principles in Appendix E.

Outcome:

- Supports community connectivity, mobility and choice.
- Supports higher densities in and around interchanges and centres.
- Reduction of car dependency and emissions, reduces climate change impacts.

Measure:

- Public transport is/ isn't directed and integrated into centres.
- Interchanges are located in centres.
- Clear modal interactions at interchanges.



5.2 Strategic corridors as urban edges

Strategic corridors as potential definers of a land use edge.

Providing an edge that supports the containment of land use and restricts unwanted development outside of the identified urban areas.

Outcome:

- Supports connectivity but restricts unwanted development.
- Minimises land take, disturbance and biodiversity impacts.

Measure:

- Enables/ does not enable a land use edge.
- Provides appropriate corridor configuration with limited access.