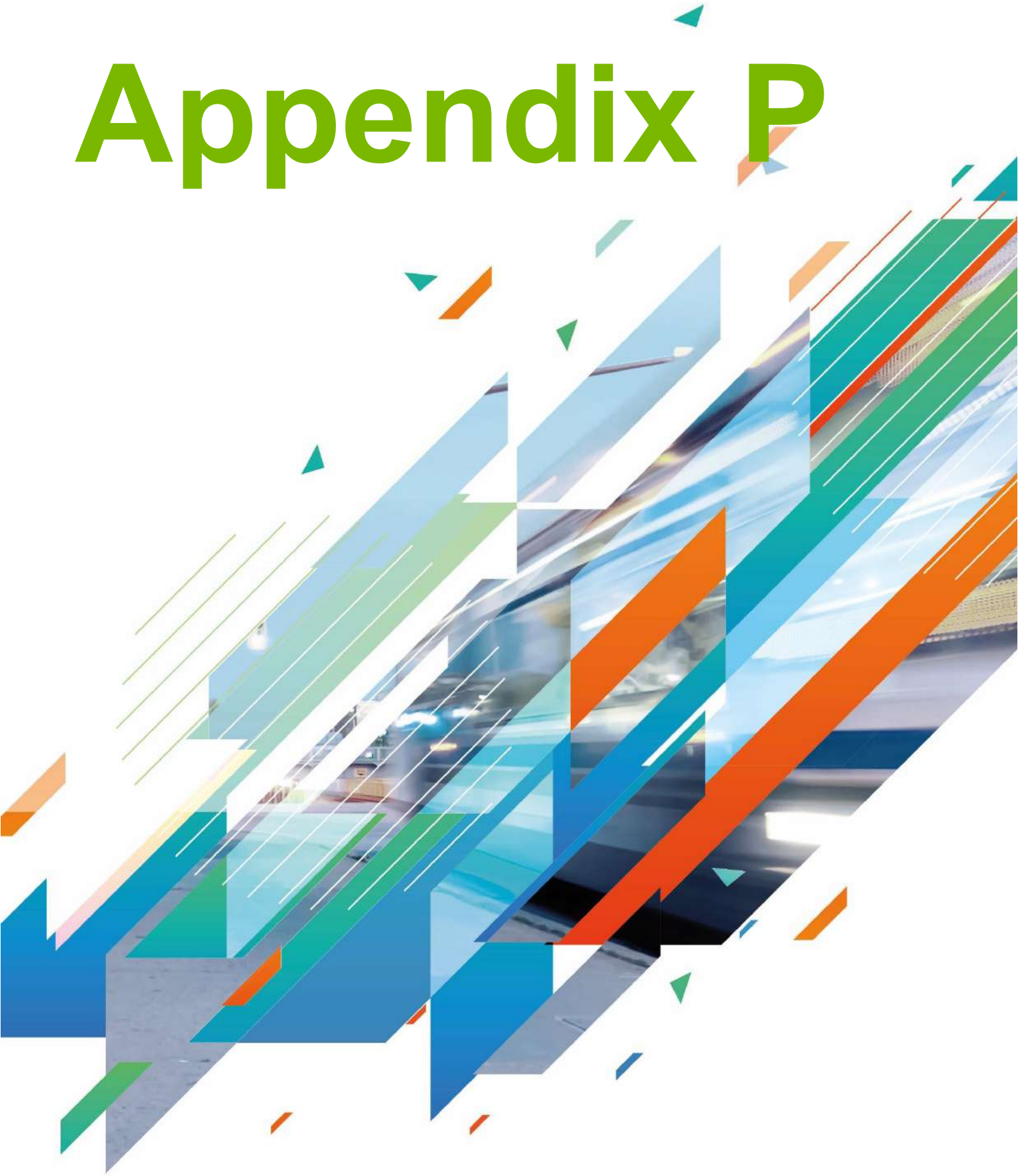
Appendix P



Corridor Strategy

Southwest Gateway - Corridor Strategy

Document Prepared by Jasmax
for Auckland Transport and Waka
Kotahi NZ Transport Agency

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Rev E

JASMAX

WAYFINDER
Landscape Planning & Strategy

aurecon

Revision history

Revision	Date	Changes	Notes
A	08 / 11 / 2019	First Draft	
B	18 / 11 / 2019	Update following Aurecon Review	
C	20 / 11 / 2019	Further update following Aurecon Review	
D	25 / 11 / 2019	Final update following Aurecon and Wayfinder Review	
E	15/04/2020	Final update following client feedback	

Contents

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Introduction

1.0

Southwest Gateway Programme

1.1 Background

Auckland Airport, Manukau and their surrounds are forecast for continuing job growth, while Botany / Howick and Manurewa / Drury will have more residents. Current services do not meet people's needs, limiting access, choice and the uptake of public transport.

In November 2017 work was completed on a programme business case which outlines a high-level programme for improving access in and around Auckland International Airport. The Southwest Gateway programme is an outcome of this work.

The programme aims to:

> *"Connect communities and support growth by ensuring it's possible to move increasing numbers of people. The efficiency of freight will be improved by providing greater travel choice, improving safety and in turn improving accessibility to jobs, education and social opportunities, reducing congestion and providing health and environmental benefits."*

The Southwest Gateway Programme consists of three projects, illustrated in Figure 1:

1. Airport to Botany Rapid Transit - will deliver a frequent Rapid Transit Network (RTN) between the airport, Manukau and Botany (led by Auckland Transport).
2. 20Connect - will improve journey reliability along State Highway 20, 20A and 20B and provide more choice when travelling around southwest Auckland, including to and from the airport (led by the Transport Agency).
3. Auckland Airport Precinct Improvements - the airport area will undergo a dramatic transformation over the next 30 years with a combined international and domestic terminal, new airfield infrastructure, second runway and upgraded departures and arrivals areas as well as upgrades to public transport, roading and walking infrastructure within the airport precinct (led by Auckland Airport).

The three Project Partners for the Southwest Gateway Programme are the Waka Kotahi NZ Transport Agency (the Transport Agency), Auckland Transport (AT) and Auckland International Airport (AIAL) (collectively referred to as 'the Project Partners').

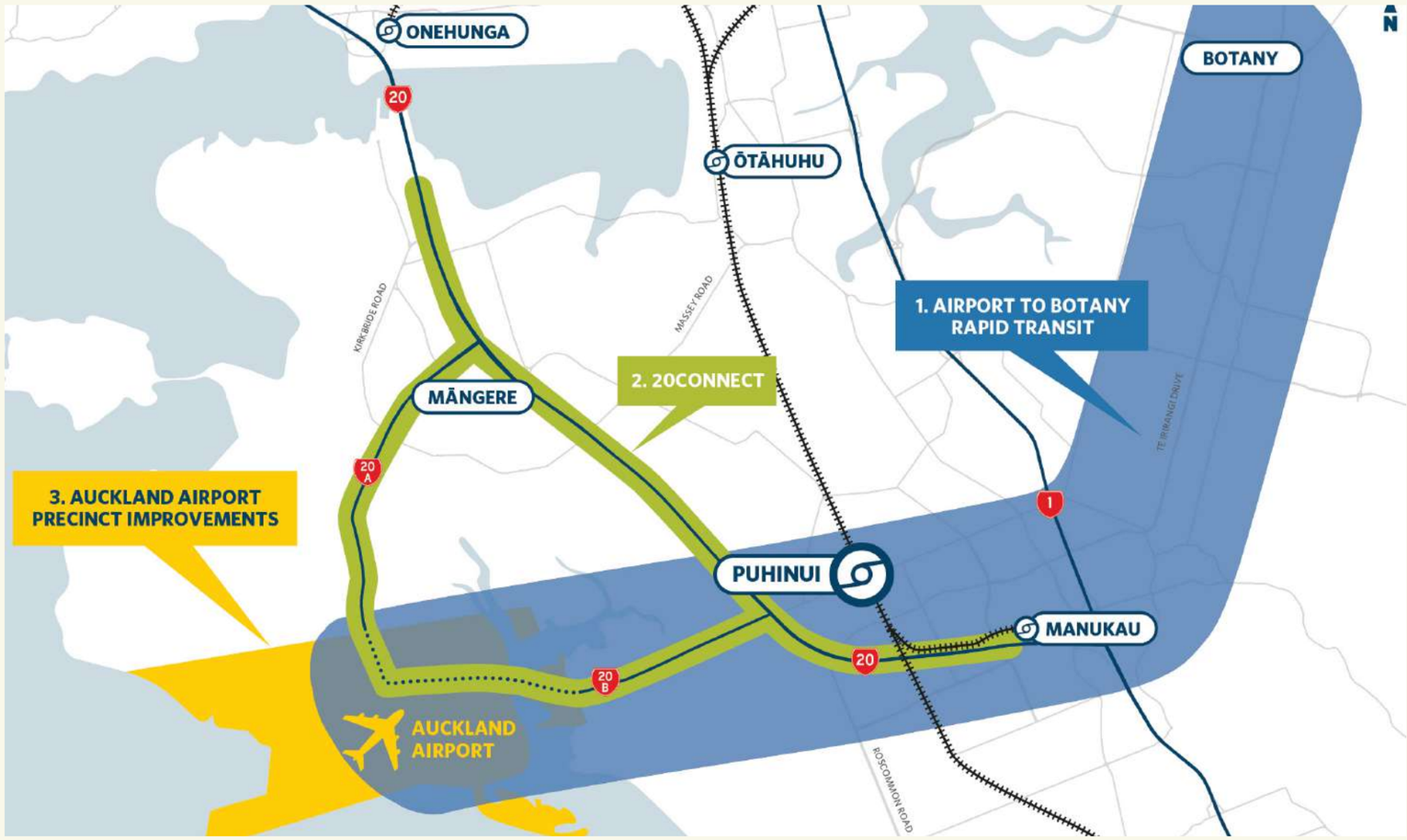


Figure 1 - Southwest Gateway project map

Not to scale

1.2 A2B and 20Connect - Preferred Options

The elements that form the preferred option for A2B and 20Connect are as follows, and illustrated in Figure 2.

A2B Preferred Option

The Airport to Botany Rapid Transit will deliver a frequent rapid transit system between Auckland Airport, Manukau and Botany. The Project will consist of the following elements:

- A dedicated Rapid Transit corridor from Auckland International Airport to Botany via:
  - Te Irirangi Drive (entire length)
  - Great South Road (between Te Irirangi Drive and Ronwood Avenue intersections)
  - Ronwood Avenue (From Te Irirangi Drive to Davies Avenue intersections)
  - Davies Avenue (entire length)
  - Manukau Station Road (from Lambie Drive to Davies Avenue intersection)
  - Lambie Drive (from Manukau Station Road intersection to Puhinui Road)
  - Puhinui Road (from Lambie Drive to SH20 interchange)
  - State Highway 20B (covered in the 20Connect project)
- Improved walking and cycling facilities along the roads above

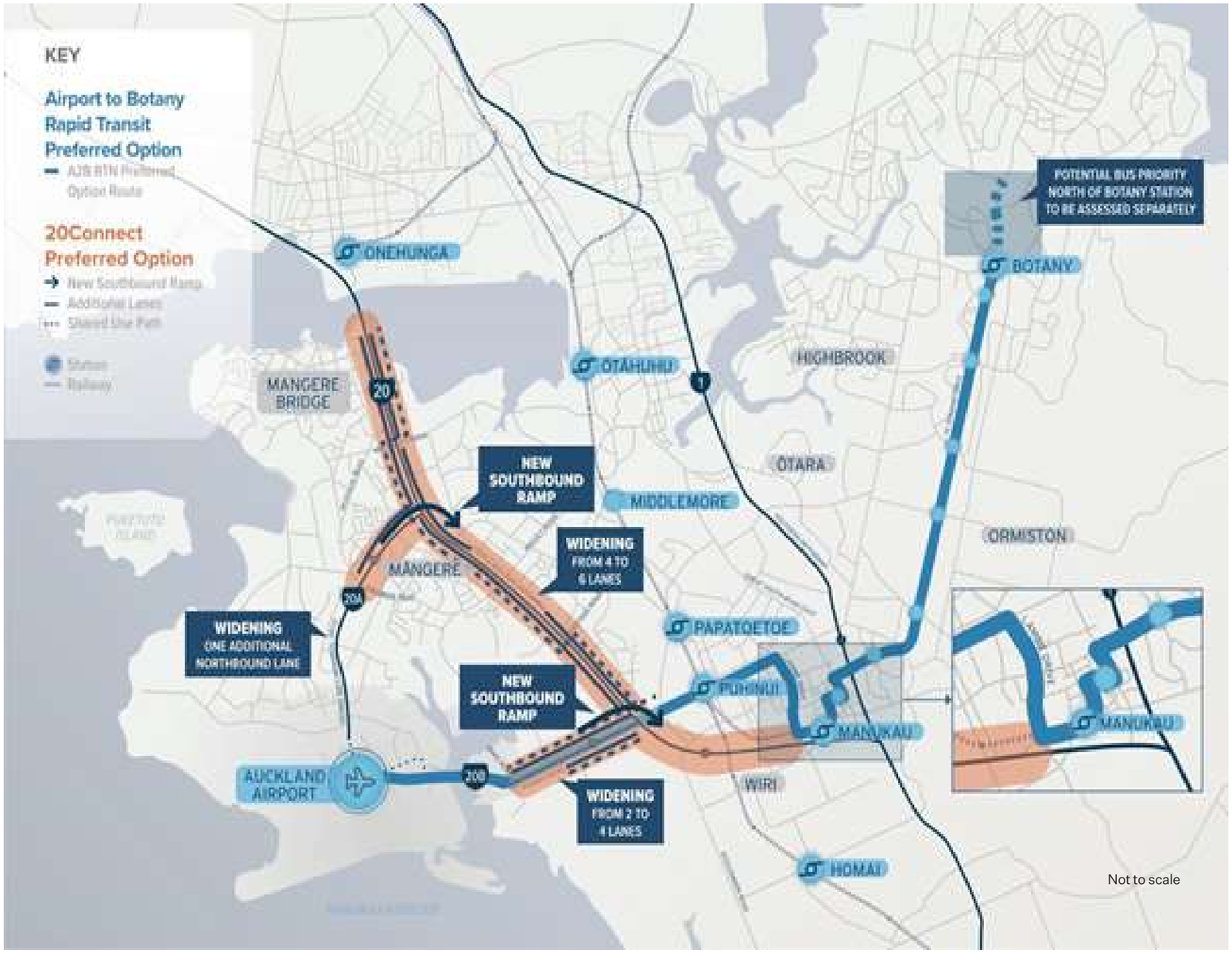
20Connect Preferred Option

20Connect will make additional infrastructure changes to the state highways to improve journey time reliability, network resilience and safety. These changes are:

- New SH20A to SH20 and SH20B to SH20 southbound on-ramps
- Widening of the SH20 between Manukau Harbour Crossing and SH20A (online at grade)
- Widening of SH20 between SH20A and SH20B (online at grade)

In addition to the A2B & 20Connect Preferred Options, there will be complementary Auckland Airport Precinct Improvements consisting of:

- Widening of Puhinui Road to four lanes (including over Pukaki Bridge) - (online at grade) providing for the continuation of the A2B corridor to the airport,
- The continuation of A2B corridor within airport's precinct, alongside two rapid transit stations.



Note: Airport Precinct indicative alignment only

Figure 2 - Southwest Gateway project elements

1.3 Document Purpose

The purpose of the Corridor Strategy is:

- To assist with future stakeholder engagement (including other project delivery entities and project partners such as mana whenua) in order to help 'tell the whole story' by presenting the 'context' of the corridor.
- To identify urban, environmental and transport projects with potential collective benefit of broader third-party project investment in the corridor environs (e.g. mode shift, liveability and urban development).
- To identify both high-level and site-specific constraints and opportunities (from an environmental and urban related perspective) within the corridor environs in order to inform any future planning and design work including any preliminary Urban & Landscape Design Framework (ULDF) for a particular corridor, or section of the network.
- To support the long-term Airport to Botany and 20Connect single-stage business cases (SSBC).

The Corridor Strategy will:

- Identify the urban context of this corridor – including the nodal / character of the area, community context and any important precincts and places of significance.
- Identify holistically the environmental and urban related constraints and opportunities prior to the next stage of the project (pre-implementation).
- Define high-level risks and opportunities in the transport and land use integration space prior to the next stage of the project (pre-implementation).
- Acknowledge the constraints and opportunities identified through this mapping alongside the High-Level Station and the Detailed Station Access Study (both prepared by MRCagney) as well as the Concept of Operations report (prepared by Aurecon).

Broadly, this Corridor Strategy should inform ensuing design phases of the Southwest Gateway projects.

The constraints and opportunities section (Section 3) draws from the context mapping section (Section 2) by identifying key elements to inform and influence subsequent phases of these projects. These ensuing design phases should aim to avoid or minimise impact on notable and significant features and respond appropriately to identified constraints. They should also aim to maximise the opportunities identified in Section 3.0 whilst also leveraging from the identified notable major projects identified in Section 2.4 of this document.

Visualisations showing potential station arrangements on Te Irirangi Drive, illustrating the dedicated transit corridor and multi-modal connections to the station.

Context

2.0

Purpose of this Section

The first element of this corridor strategy is to identify the urban context of this corridor – its place within metropolitan Auckland. This will consist of identifying the corridor context including the nodal / character of the area, community context and any important precincts and places of significance.

The specific purpose of Section 2.0 is:

- To assist with future stakeholder engagement (including other project delivery entities and project partners such as mana whenua) in order to help 'tell the whole story' by presenting the 'context' of the corridor.
- To identify urban, environmental and transport projects with potential collective benefit of broader third-party project investment in the corridor environs (e.g. mode shift, liveability and urban development).

Summary

The following pages present a series of illustrative maps that identify the various key social, environmental and cultural features along the route. Significant or notable elements are identified that will need careful design responses by subsequent design phases of the project. In addition, this context mapping helps to identify not only the existing urban character of the corridor, but to also inform any potential opportunities for positive change and urban growth along the route.

The notable constraints and opportunities drawn from the context maps are presented in Section 3 of this document, but the most significant are summarised below:

- The 20Connect project passes close to a number of key landscape, environmental and cultural features which will need to be carefully addressed, including:
  - Ngā Kapua Kohuora / Crater Hill and Pukaki lagoon volcanic features
  - Pukaki Creek and Waokauri Creek including CMA
  - Pukaki Marae Matukutureia cultural viewshaft (Puhinui Precinct Plan, Auckland Unitary Plan)
  - The regionally significant volcanic viewshaft (M4) to Mt Mangere (Auckland Unitary Plan)
- The A2B RTN passes right through the heart of Manukau city centre, one of Auckland's major metropolitan centres containing a number of existing social and community facilities, employment opportunities and high-density residential developments. Panuku and various Government departments are highly active in seeing further improvements and development in Manukau city. The A2B RTN can benefit significantly from this concentration of people and activity whilst also helping to catalyse some of these projects.
- Botany town centre also represents an opportunity for additional residential intensification which the A2B RTN could help unlock.

2.1 Land Use

Figure 3 shows the context of the Southwest Gateway projects with respect to land use, specifically the land use planning zones as defined by the Auckland Unitary Plan (Operative in Part, November 2016).

Notable elements:

- The A2B RTN passes through relatively low-density residential suburbs and low-density industrial zones, reflecting the historic car dependency which has shaped the built environment in this part of the city.
- Manukau city centre and Botany town centre are the notable exceptions, where more intensive residential planning zones are provided.
- Mangere town centre also provides for residential intensification.
- Large areas of light industrial zones exist along the route, typically providing relatively low-density employment.
- Land around Puhinui station is currently not zoned for intensification.
- Zoned light industrial and Future Urban land on Puhinui Peninsula which is alos included within the Puhinui Precinct.

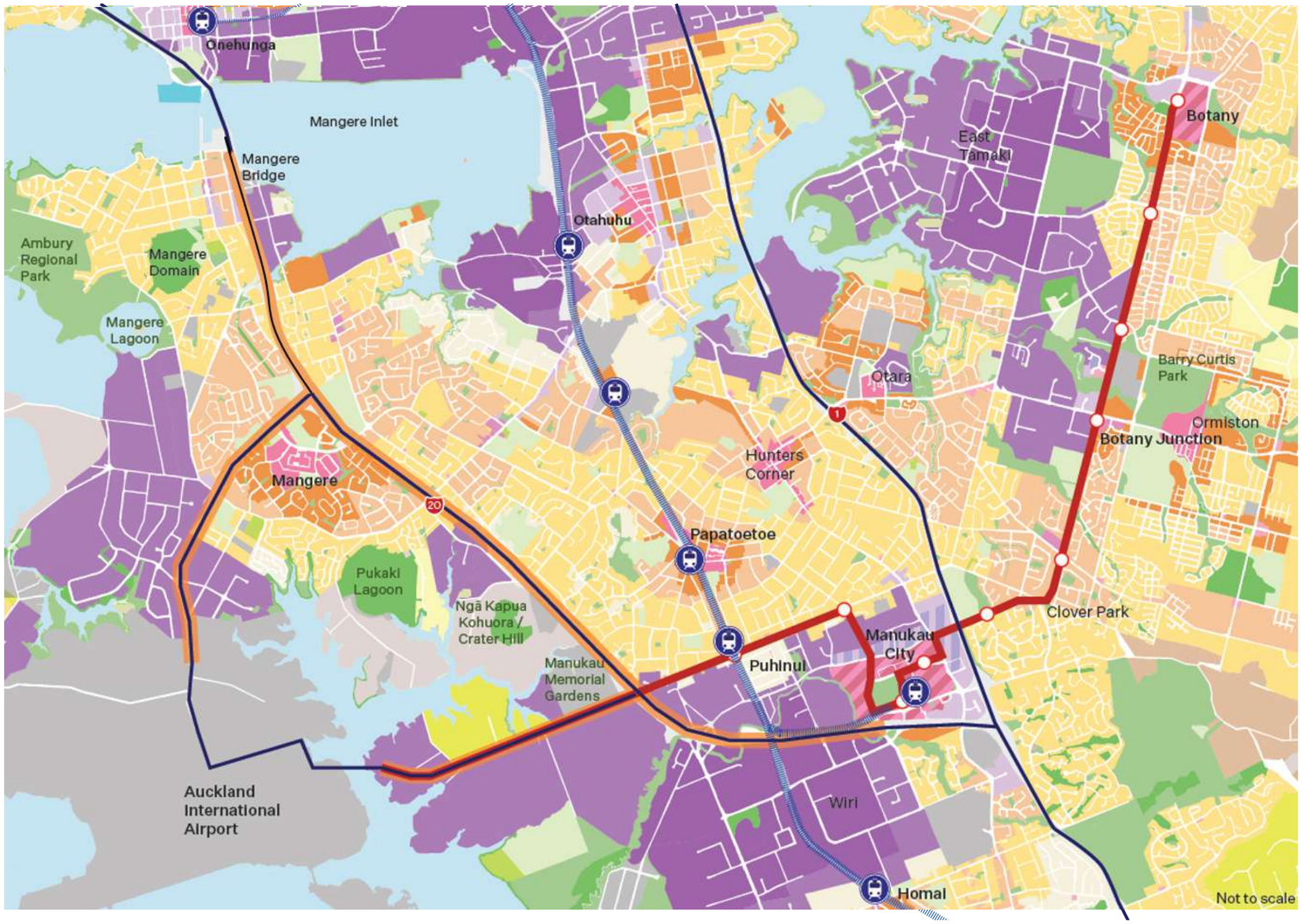


Figure 3 - Land use context

KEY UNITARY PLAN ZONES

- Residential - Large Lot
- Residential - Single House
- Residential - Mixed Housing Suburban
- Residential - Mixed Housing Urban
- Residential - Terrace Housing and Apartment Building
- Open Space - Conservation
- Open Space - Informal Recreation
- Open Space –Sports and Recreation
- Business - Metropolitan Centre
- Business - Town Centre
- Business - Local Centre
- Business–Heavy Industry
- Business–General Business
- Business - Mixed Use
- Business - Light Industry
- Special Purpose
- Rural Production

EXISTING

- State Highway
- Rail

PROPOSED TRANSPORT PROJECTS

- Airport to Botany RTN
- 20Connect

2.2 Community and Civic Facilities

Figure 4 shows the context of the Southwest Gateway projects with respect to civic facilities and amenities including schools, tertiary education facilities, libraries, major retail centres, hospitals and other major recreation destinations.

The information is sourced from Auckland Council Geomaps and Google maps.

The map shows an accurate 1km pedestrian walking catchment (ped-shed) around the proposed A2B stops/stations, which represents approximately 12-minute walk.

Notable elements:

- Manukau city contains a number of community and civic facilities which will benefit from the introduction of A2B RTN and reduce private car dependency.
- Botany - although a large retail centre, does not contain many other community or civic facilities.
- Conversely, Mangere town centre contains a wide range of community and civic facilities.
- Other than Manukau city, this part of southeast Auckland displays a dispersed pattern of community and civic facilities, recognising the dominance of the private car in its growth and development. A high quality RTN could help to change this to a more concentrated pattern where public transport becomes attractive.

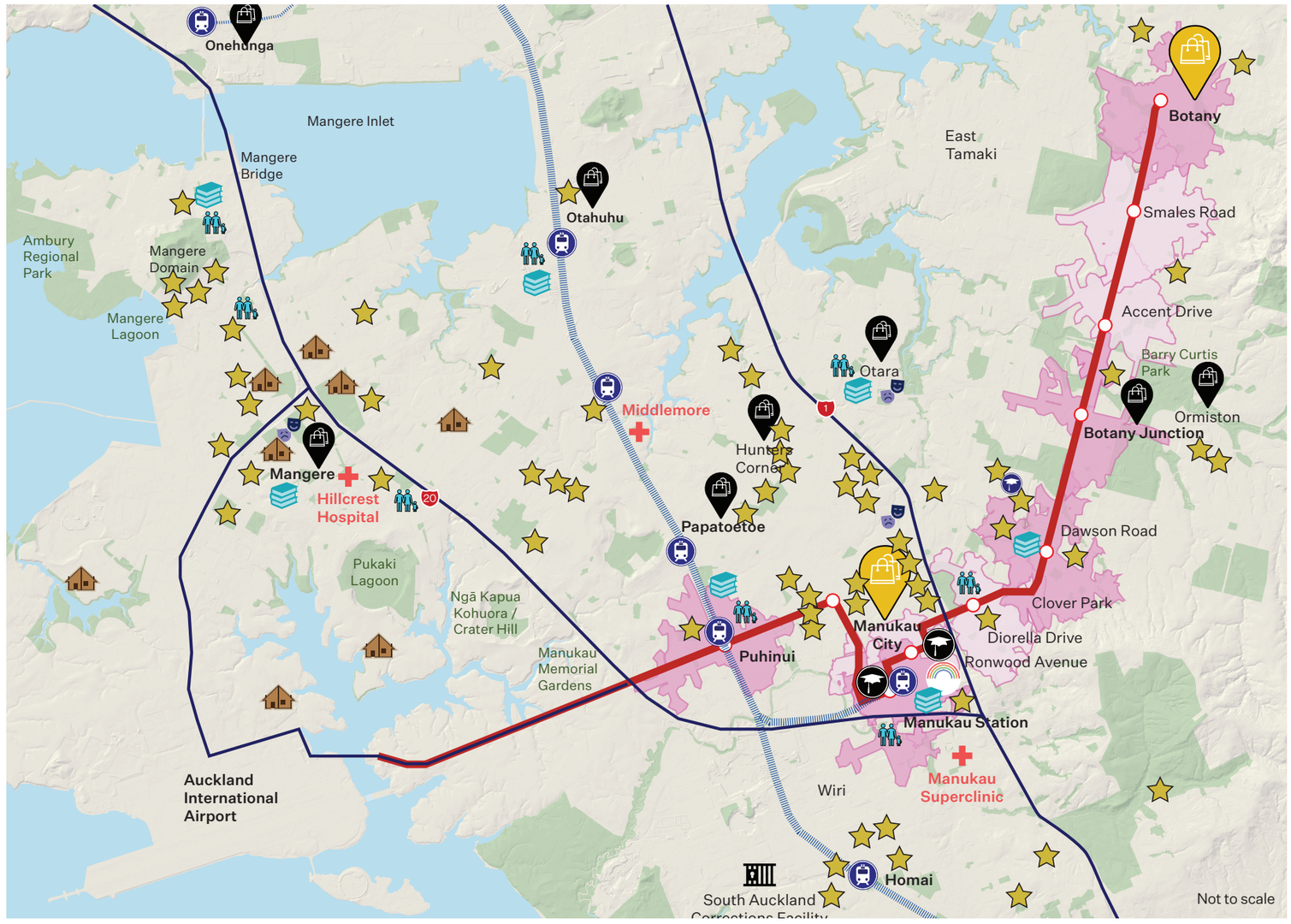


Figure 4 - Community and civic context

LEGEND

- 1000m Ped-sheds around A2B Stations
- Rail Stations
- Major Retail Centres
- Other Retail Centres
- Tertiary Education
- Primary and Secondary Schools
- Hospitals
- Corrections Facility
- Rainbow's End
- Marae
- Library
- Community Centre
- Arts Centre

EXISTING

- State Highway
- Rail

PROPOSED TRANSPORT PROJECTS

- Airport to Botany RTN
- 20Connect

2.3 Environment

Figure 5 shows the context of the Southwest Gateway projects with respect to key environmental, natural landscape features and areas of open space.

The information is sourced from Auckland Council Geomaps and Google maps.

Notable elements:

- 20Connect project passes close to a number of key landscape, environmental and cultural features which will need to be carefully addressed, including:
  - Ngā Kapua Kohuora / Crater Hill and Pukaki lagoon volcanic features
  - Pukaki Creek & Waokauri Creek including CMA
  - Pukaki Marae Matukutureia cultural viewshaft
- A2B route lies adjacent to a number of parks and open space areas including Hayman Park, Rongomai Park, Guys Reserve/ Whaka Maumahara reserve.
- As illustrated in Figure 5a, a network of rivers and streams flows through the Project area, traversing the preferred routes at a number of locations.

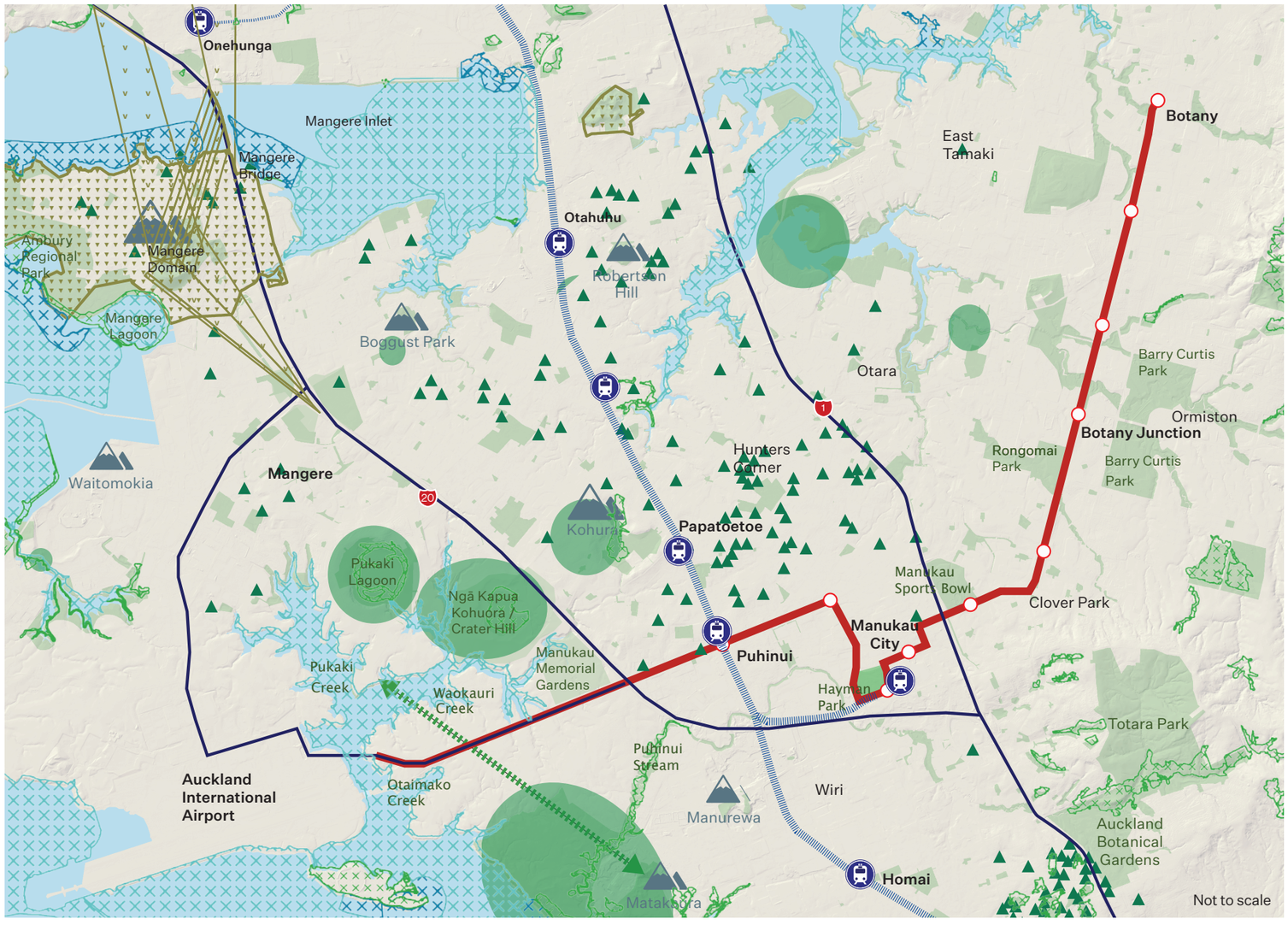


Figure 5 - Environmental context

LEGEND

Pukaki Marae Matukutureia Cultural Viewshaft (as identified in Puhinui Precinct Plan - Auckland Unitary Plan)

Outstanding Natural Landscape Protection

Volcanic Cones

Regional / Major Parks

Regionally significant volcanic viewshafts and height sensitive areas overlay (Auckland Unitary Plan)

Notable trees

Significant Ecological Areas Overlay (Auckland Unitary Plan)

Terrestial

Marine 1

Marine 2

EXISTING

State Highway

Rail

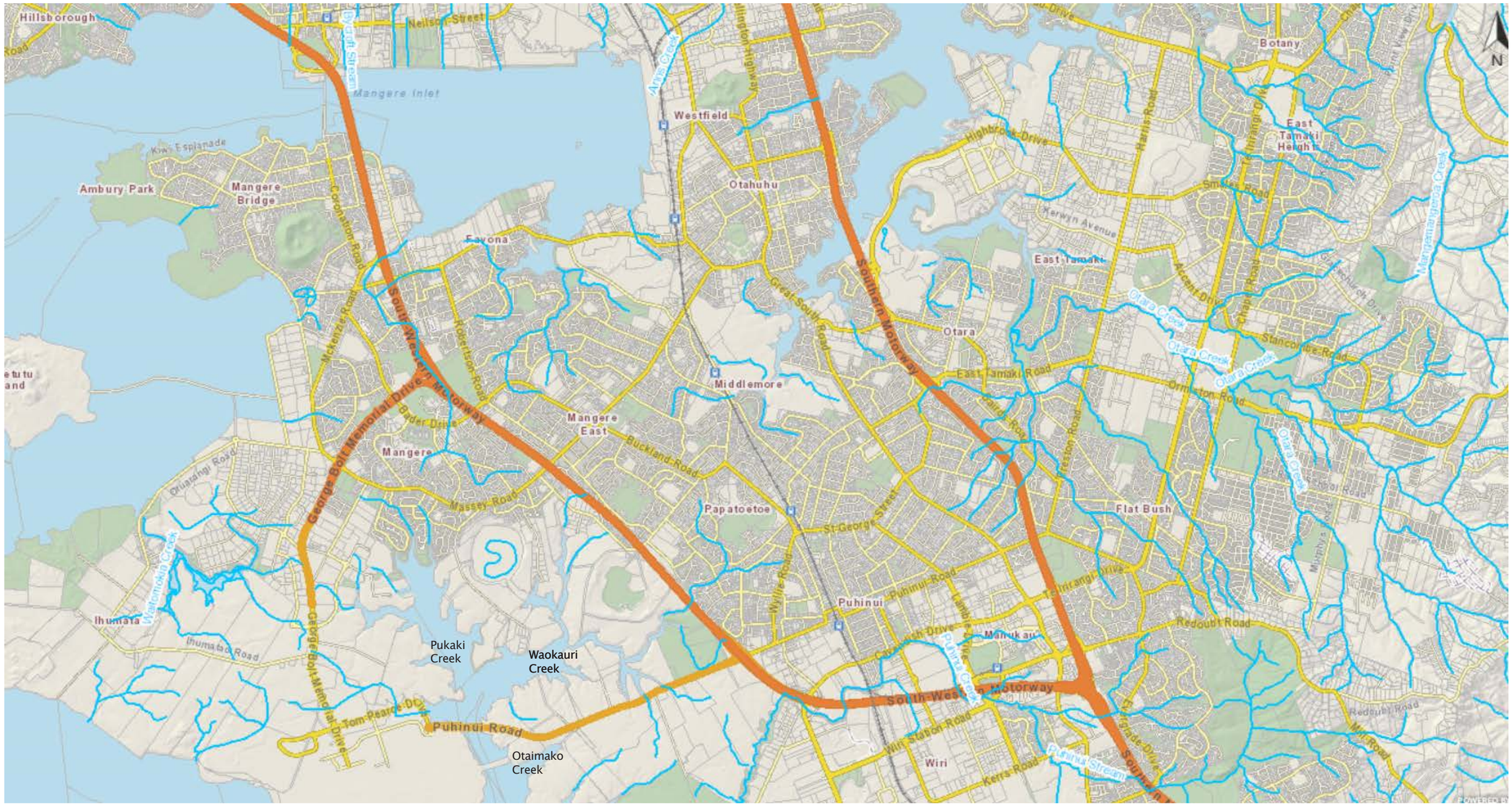
PROPOSED TRANSPORT PROJECTS

Airport to Botany RTN

20Connect

Figure 5a - Environmental context: Rivers and Streams

Spatial Data from Auckland Council GIS showing the network of rivers and stream within the Project area.



2.4 Heritage and Culture

Figure 6 shows the context of the Southwest Gateway projects with respect to key heritage and cultural features.

The information is sourced from Auckland Council Geomaps and Google maps.

Notable elements:

- 20Connect project passes close to a number of key heritage and cultural features which will need to be carefully addressed, including:
  - Ngā Kapua Kohuora / Crater Hill and Pukaki lagoon volcanic features
  - Pukaki Creek and Waokauri Creek including the CMA
  - Pukaki Marae Matukutureia cultural viewshaft
  - Other features within the Māori cultural landscape associated with the Puhinui Precinct, see Figure 6a
- Otherwise, the Southwest Gateway projects largely avoid sites and places of significance to mana whenua.

LEGEND

Volcanic Cones

Sites and Places of Significance to Mana Whenua *
(as identified in the Auckland Unitary Plan)

Regional / Major Parks

Marae

Pukaki Marae Matukutureia Cultural Viewshaft Protection
(as identified in Puhinui Precinct Plan - Auckland Unitary Plan)

Cultural Heritage Inventory (Public)

Archaeological Site

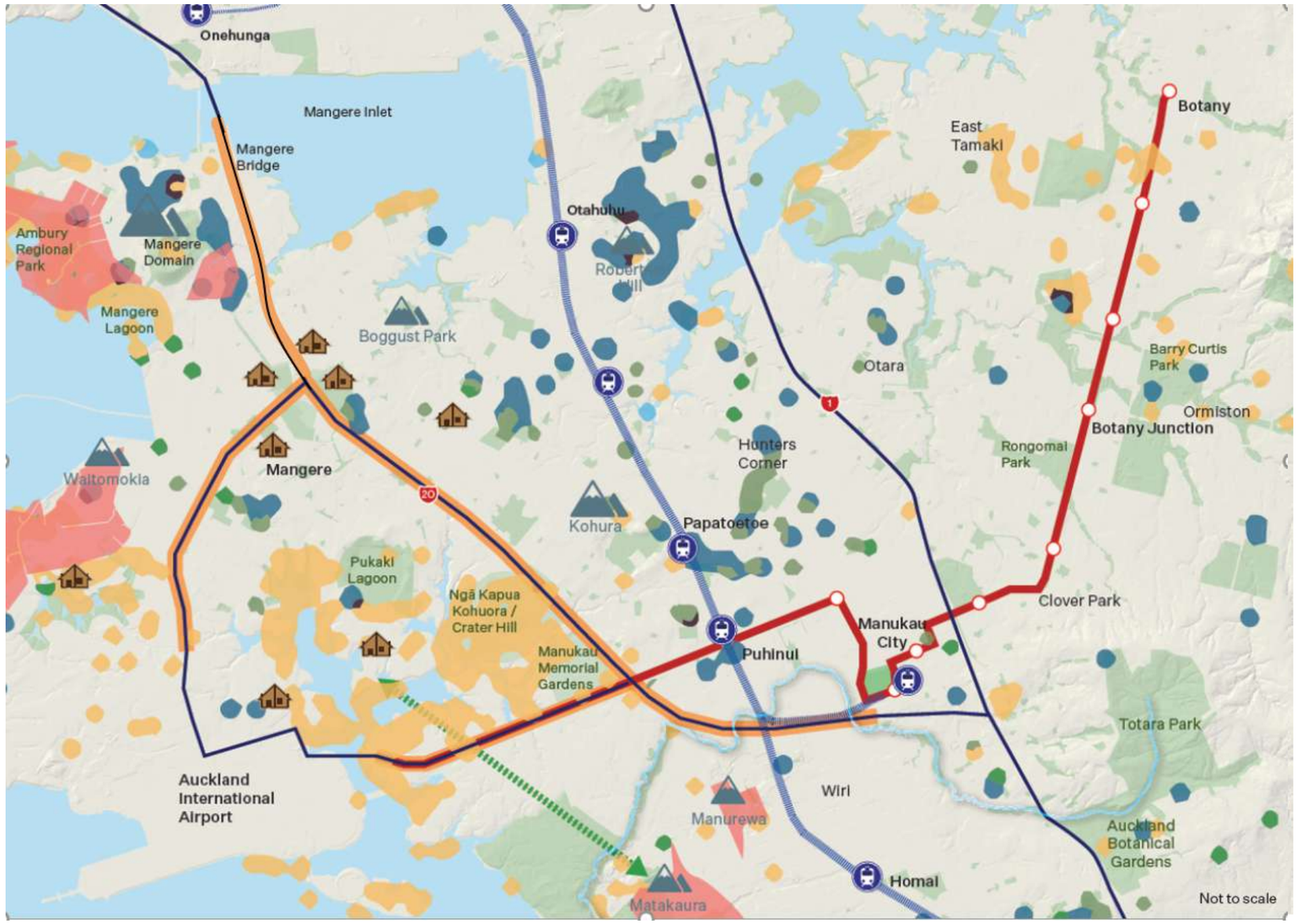
Historical Botanical Site

Historic Structure

Maritime Site

Reported Historic Site

* Note that multiple iwi have interest in various areas and that the project team are working with Mana Whenua to better understand these values and how to protect them.



EXISTING

State Highway

Rail

PROPOSED TRANSPORT PROJECTS

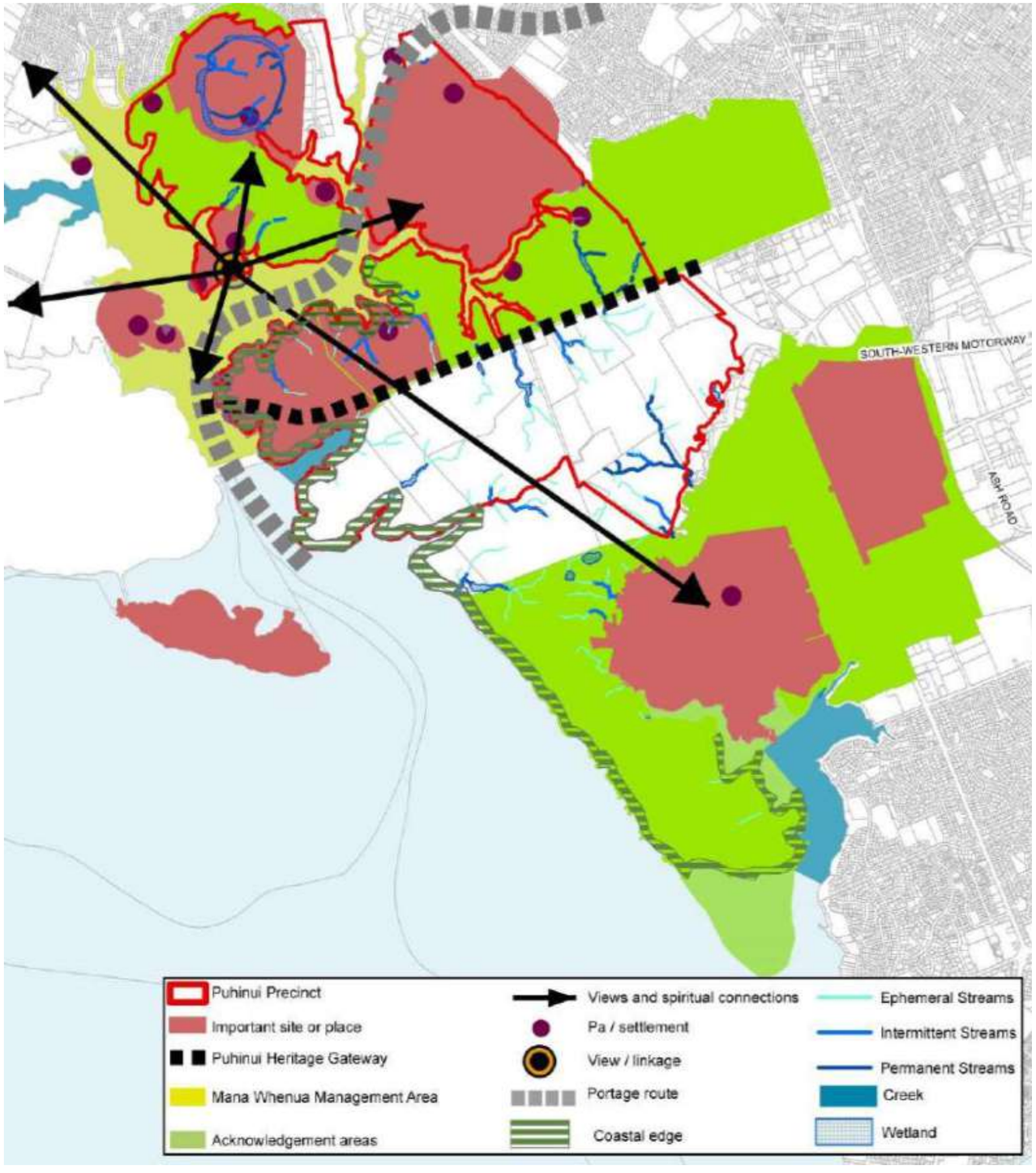
Airport to Botany RTN

20Connect

Figure 6 - Heritage and cultural context

Figure 6a – Heritage and cultural context : Māori cultural landscape associated with the Puhinui Precinct.

Source: Auckland Unitary Plan – I432.Puhinui Precinct.

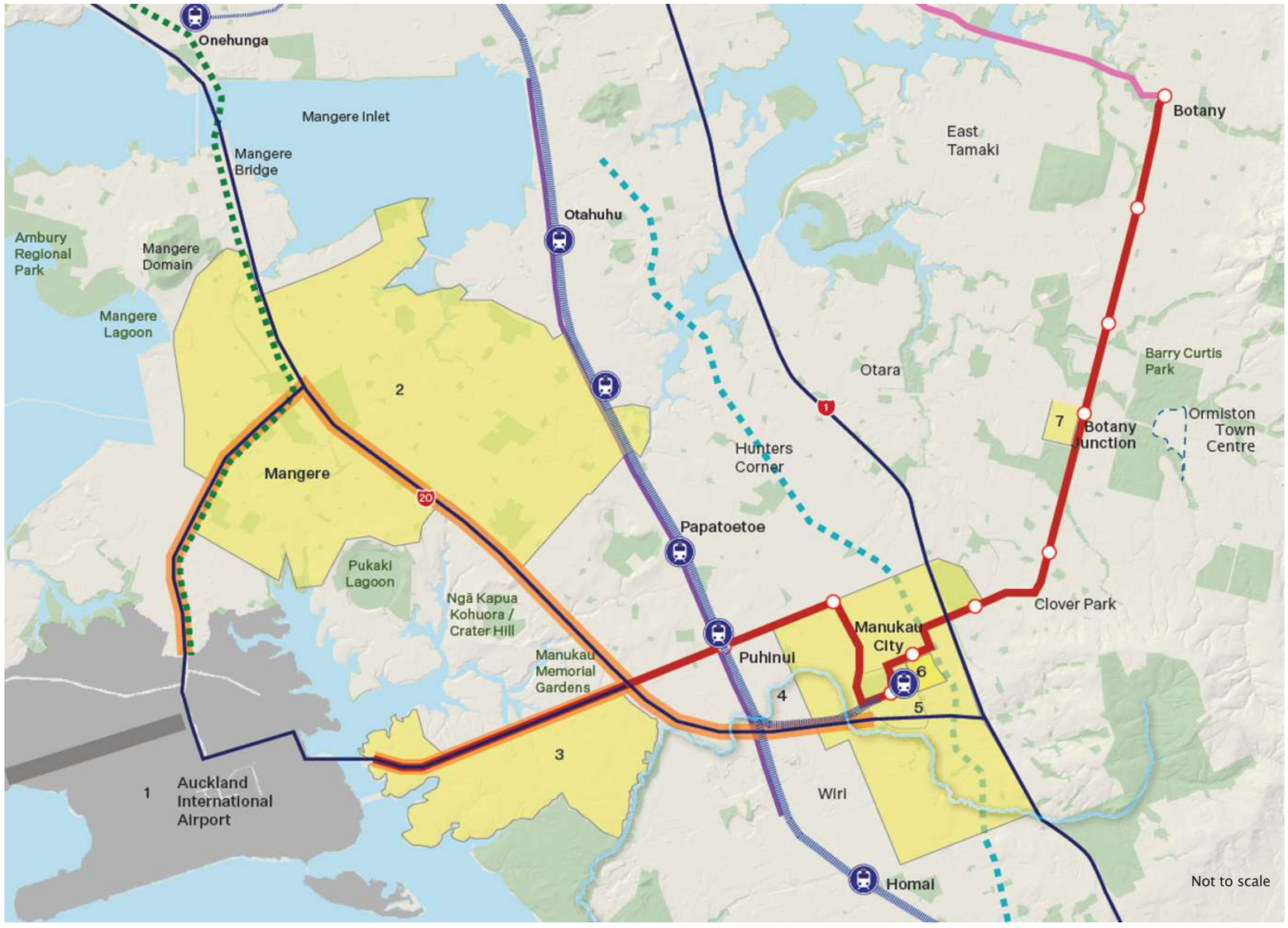


2.5 Notable projects within the corridor environs

Figure 7 shows notable major urban, environmental and transport projects from both the public and private sector within the environs of the Southwest Gateway Programme. These projects have been identified as they represent significant investment in the immediate area which can either help to further justify and assist the Southwest Gateway projects, or vice versa. In other words, projects have been identified in the Southwest Gateway environs that can have significant benefit for each other through increased patronage, modal-shift and liveability.

The number and scale of these projects illustrate the strategic significance of the corridor environs. Major public investment is proposed in the wider Mangere area through Kāinga Ora whilst Panuku Development Auckland (Auckland Council) is leading the transformation of Manukau city over the next 20 plus years.

Further details of each of these projects, and their potential signficance to the Southwest Gateway Programme are outlined on the following pages.



NOTABLE PROJECTS

1 Auckland International Airport Masterplan - Various Projects Including 2nd Runway

2 Kāinga Ora - Mangere Neighbourhood Spatial Framework
Stage 2 onwards

3 SH20B Business Park – part of the Puhinui Precinct

4 Puhinui Stream Upgrade

5 Transform Manukau - Manukau City Centre Transformation Project Panuku Development Auckland

6 Manukau Westfield mall upgrade (Scentre Group)

7 Ormiston Road Business Park

EXISTING

State Highway

Rail

PROPOSED TRANSPORT PROJECTS

Airport to Botany RTN

20Connect

Ormiston Town Centre – indicative location

OTHER PROPOSED MAJOR TRANSPORT PROJECTS

AMETI

Proposed 3rd Main - rail upgrade - Wiri to Westfield

City Centre to Mangere (CC2M) - proposed Light Rail - concept only

Great South Road - Connected Communities project - Priority Section

Figure 7 - Notable projects within corridor environs

2.5 Notable projects within the corridor environs

1. Auckland International Airport Ltd (AIAL) Masterplan

In 2014 Auckland Airport announced its 30-year vision to build the airport of the future. Implementation of that vision is now well underway, with AIAL investing more than $1 million every working day in aeronautical infrastructure to ensure that they can accommodate 40 million passengers and 260,000 flights by 2040. Projects include expanding and upgrading the international arrival and departure experience; building a 2nd runway; a new domestic terminal joined to the international terminal; new hotels and business districts; and a variety of investments in public transport, roading and walking projects.

As stated earlier in this document, the AIAL transport projects are one of the three major parts of the Southwest Gateway programme but nevertheless it is worth highlighting in this section the major investment proposed at the airport as this will have major impacts on both the other aspects of the Southwest Gateway programme – 20Connect and A2B. An extract from AIAL's 2014 Masterplan is shown in Figure 8.

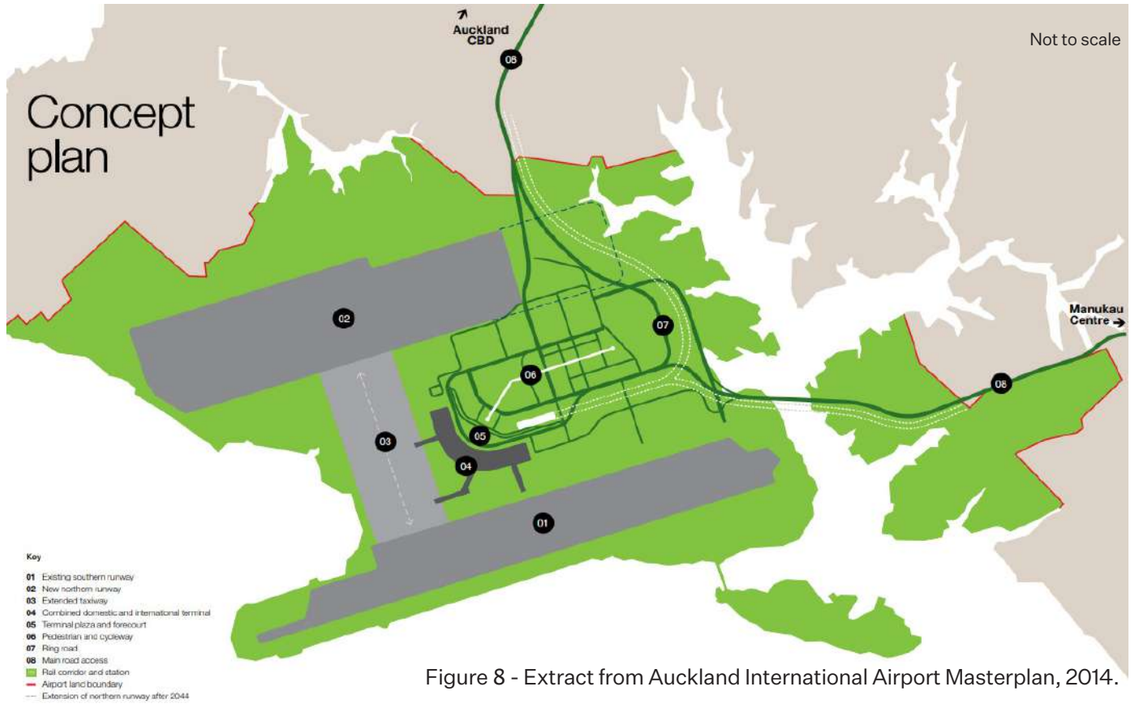


Figure 8 - Extract from Auckland International Airport Masterplan, 2014.

2. Kāinga Ora - Mangere Neighbourhood Spatial Framework

Early planning work is underway for the Mangere Development which will bring new warm, healthy homes to neighbourhoods throughout Mangere. Streets and parks will also be upgraded. The whole development will take 10-15 years and will see an estimated 2,500 state homes replaced with up to 10,000 homes including state, affordable and homes for the private market. This project covers a large area stretching from Mangere Bridge to Middlemore hospital, as illustrated in Figure 7.

The Southwest Gateway's project objectives tie in well with this urban transformation project as it aims to connect communities and support growth by ensuring it's possible to move these increasing numbers of people and provide greater access to jobs, education and social opportunities.

3. SH20B Future Business Park

An area of approximately 100 Ha has been zoned for business / industrial use along Puhinui Road between the airport and SH20. This could accommodate up to 5,000 employees. With a new high quality rapid transit network running along Puhinui Road, the opportunity exists to influence the density and mode-share of this large employment area. It is located within the Puhinui Precinct , see Figure 9.

4. Puhinui Stream Upgrade - Panuku

Another one of Panuku's key projects in the Manukau area is the restoration of the Puhinui stream, one of the last remaining natural assets in the area and an important link to Manukau's cultural and ecological heritage. Restoration of the stream would be a source of great community pride and a model of ecological, social, cultural and economic transformation. The stream will provide an important ecological and physical connection between Totara Park and the Auckland Botanic Gardens in the east, through Wiri and the Manukau Super Clinic site, through central Manukau and out to the Manukau harbour in the west.

The A2B RTN comes close to the line of the Puhinui stream in central Manukau, and could increase awareness and patronage of the upgraded stream corridor.

5. Transform Manukau - Manukau City Centre Transformation Project - Panuku Development Auckland

The Manukau Framework Plan sets out the approach for how Panuku and partners will transform Manukau over the next 20 to 25 years. It's an ambitious programme of change designed to cater for a growth in population from 6000 to 20,000, working closely with Manukau communities aiming to lead Manukau to its true transformation as the thriving heart of the south.

Panuku's plans for Manukau's transformation line up closely with The Southern Initiative, which aims to stimulate and support social change and community innovation in south Auckland. As with Kāinga Ora's plans for Mangere, the Southwest Gateway's project objectives tie in well with this urban transformation project.

One of the key sites within the Transform Manukau project area is the Manukau Sports Bowl, which is a a 21ha site to the northeast of Manukau City Centre, adjacent to SH1. It was originally built for the 1990 Commonwealth Games and lies within Panuku's Transformation project boundary. Owned by Auckland Council, upgrades for the Sports Bowl are proposed in the short/medium term. The site lies immediately adjoining the proposed A2B RTN route and a station/stop is proposed in the nearby vicinity. This could help to provide public transit options for patrons of the Sports Bowl, thus improving its attractiveness as a venue for a range of events.

The project area boundary is shown in Figure 10, along with property ownership within the project area, illustrating the amount of public / crown owned land.

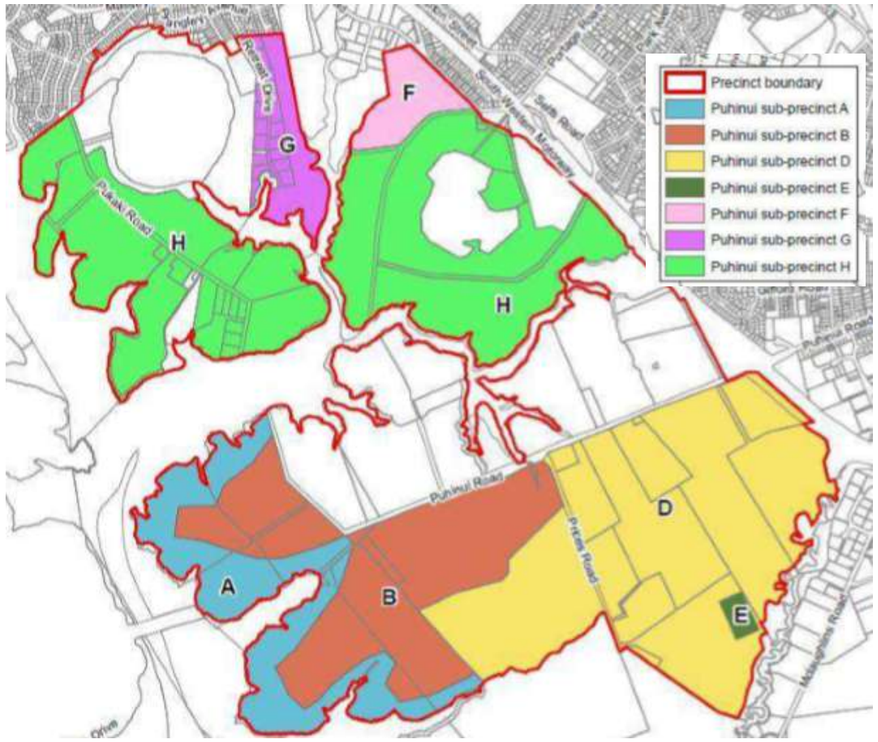


Figure 9- Extract from Auckland Unitary Plan Puhinui Precinct

2.5 Notable projects within the corridor environs

6. Manukau Westfield mall upgrade (Scentre Group)

Scentre Group (who own Westfield malls) have identified Manukau mall for a major upgrade in the near future. Along with Albany, St Lukes and Newmarket, Manukau is one of Scentre Group's four major shopping malls that sit within the top 5 performing shopping malls in New Zealand. Now in full control of the land on which the mall sits, Scentre Group plan a major upgrade of the mall. The A2B RTN will bring high quality rapid transit immediately alongside the mall and can therefore help determine the transport mode share to the shopping mall.

7. Ormiston Road Business Park (private)

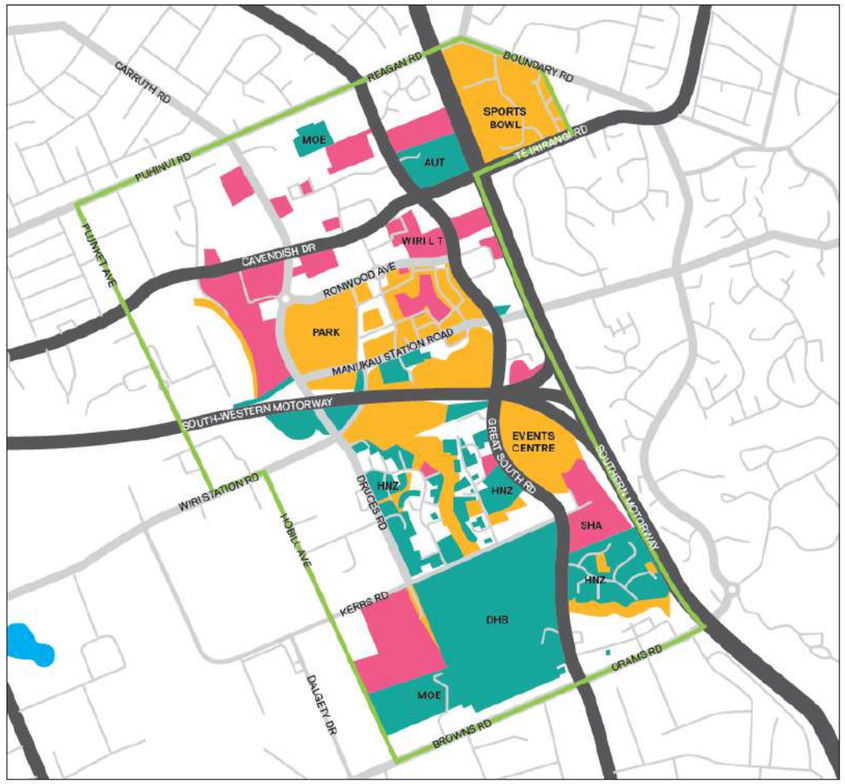
The 16ha site at the intersection of Ormiston Road and Te Irirangi Drive, opposite the Botany Junction retail centre, is a private venture to provide a new business park. With a proposed station/stop at Botany Junction as part of the A2B RTN, the opportunity exists for the business park to provide higher density employment and reduce car dependency.

AMETI

Auckland Manukau Eastern Transport Initiative (AMETI) Eastern busway will create a dedicated, congestion-free busway between Panmure, Pakuranga, and Botany town centres. It will significantly improve transport choices, reliability, and journey times in south-east Auckland and to other parts of the region.

Once the busway is completed, travel times between Botany and Britomart will be less than 40 minutes. The busway will be supported by 3 new stations at Panmure, Pakuranga, and Botany, new cycling and walking connections, urban design enhancements, and improvements for general traffic such as advanced signalling at important intersections.

A2B will connect with AMETI at Botany. It will be important to ensure as seamless and legible connection between the two projects as possible. The two projects together represent the opportunity to create a high quality transport interchange offering multiple strategic destinations.



Not to scale

Figure 10- Panuku Manukau City Centre Transformation Project area boundary and property ownership (Transform Manukau - High Level Project Plan, Panuku, April 2016)

Proposed 3rd Main – rail upgrade – Wiri to Westfield

The proposed third main, initially between Westfield and Wiri (and eventually further north and south), is a project to construct a third line alongside the two existing tracks on the North Island Main Trunk (NIMT) railway line. This section of rail line is one of the busiest for passengers and the busiest for rail freight in the country. A third line would help to segregate these two functions and deliver huge benefits for both.

The benefits tie in with the project objectives of the Southwest Gateway – connecting communities by ensuring it's possible to move increasing numbers of people, reducing congestion and providing for more efficient freight movements. Puhinui Station will become an increasingly important strategic transport interchange as part of A2B and will also benefit from any rail upgrades to the NIMT.

City Centre to Mangere (CC2M) Light Rail - Concept only

The City Centre to Māngere light rail will support Auckland's sustainable growth by creating an integrated public transport system of light rail, heavy rail, ferries, buses and busways.

It will connect communities along its route and improve people's access to jobs, education and recreation. It is expected to:

- Alleviate current and forecast bus capacity constraints in the city centre.
- Connect communities along the corridor including employment areas such as the city centre, Onehunga and Auckland Airport.
- Unlock significant growth potential along the corridor, especially around Māngere, Onehunga and Mt Roskill.

In this regard, the project ties in with the objectives of the Southwest Gateway programme.

Great South Road - Connected Communities - Priority Section

Connected Communities is an Auckland Transport network programme integrating movement, place and increasing movement density across multiple transport corridors within Auckland for Single Stage Business Case and subsequent pre-implementation phases. The programme aims to balance community and place with safety and mode share equity through an collaborative and integrated working environment between AT and multiple consortia.

A section of Great South Road (as illustrated on Figure 7) has been identified as a priority section.

Constraints & Opportunities

3.0

Section 2.0 of this Corridor Strategy document investigated the context within which the Southwest Gateway programme is located. The purpose of this context analysis was in part to be able to assist with stakeholder engagement by being able to tell the whole story and explain the context of the corridor. It was also to identify elements of the existing urban environment and future projects that may have an impact on the Southwest Gateway programme with respect to being either significant constraints, or opportunities which could influence, or be influenced by the projects.

These constraints and opportunities are presented in this Section of the Corridor Strategy document, with the purpose of identifying both high-level and site-specific constraints and opportunities (from an environmental and urban related perspective) within the corridor environs in order to inform any future planning and design work including any preliminary Urban & Landscape Design Framework (ULDF) for a particular corridor, or section of the network.

A number of the constraints and opportunities are non-site-specific – they apply generally across the whole project area. However, others are site-specific relating to particular elements along the project corridor which are described and also identified on a series of maps using a numbered system on the following pages. In order to present these at an appropriate scale. The corridor has been broken into three geographic sections – west, mid and north.

This Section of the Corridor Strategy in particular should be read in conjunction with the the High-Level Station Access Study and the Detailed Station Access Study (both prepared by MRCagney – both dated 11/10/2019). These documents present a set of high level design principles which apply across the A2B RTN stations as well as identifying site specific potential design interventions for each station. It is not the intention or purpose of this Corridor Strategy to go to such level of detail, and these very site specific potential interventions or opportunities are not repeated in this document.

Barriers

The following barriers have been identified as being relevant to all stations along the A2B MRT corridor.

Road space allocation
The present space allocation of roads around the A2B corridor favour car movement. A lack of space or an inadequate amount of space allocated to walking, cycling and public transport reduces the desirability of these modes. Furthermore a lack of self-evident street hierarchy has lead to all streets including local streets prioritising the private car.

Low levels of social safety/ security
In part because of the car-conducive land use, there are often low levels of social safety in the walking environment due to few eyes on the street. This is compounded by a general lack of human-scale street lighting, especially in public parks.

Urban form
The size of the station catchment is reduced by the presence of disconnected street network (winding cul-de-sacs) and long blocks.

Conflict points
There are frequent driveway entrances and side roads on many streets used for access to the A2B MRT stations, creating a multitude of potential conflict points for cyclists on their journeys. The impact of driveways could be lessened through design which avoids these conflicts or communicates cyclist priority.

Car-conducive land use
The local environment was built for motor vehicles. Land-uses that reduce walkability and increase car dependency include big box retail (wide streets, large building setbacks, surface car parks and macro blocks), heavy industry (that creates few walking trips) and parks which increase the distances between residents and the station.

Arterial severance
The wide arterial roads with high traffic volumes and speeds severs the network for pedestrians and cyclists to be able to travel across the arterial roads.

Lack of quality facilities
In some places, compromised facilities exist which reduce the accessibility of walking facilities. Aside from the physical issues created by poor or nonexistent facilities, there is also a psychological impact on the community's view of walking as a feasible/potential mode.

Legibility
Although not an existing barrier, legibility regarding navigation through neighbourhood streets will be instrumental in facilitating pedestrian access between neighbourhood streets and the stations for both locals and visitors to the area.

Figure 11 - Corridor wide barriers identified as being relevant to all stations along the A2B RTN route. Extract from MRC High Level Station Access Study (Oct 2019).

3.1 High level constraints and opportunities

Property Acquisition

There are several sections along the A2B RTN route where the existing road reserve will not be wide enough to accommodate the proposed cross section. This will therefore involve the acquisition of multiple residential and commercial properties where land is required and will involve a combination of both full and partial land acquisition. This represents both a constraint and a risk as there is likely to be significant public interest and potential to generate submissions and appeals.

However, this also represents a potential opportunity. Where partial acquisition is required, this presents the opportunity to improve boundary conditions and interface with the new RTN corridor. Where full acquisition is required, this presents an opportunity to enable reintegration of a more appropriate development typology, considering the adjacency to a high quality RTN. This could include more intensive residential and commercial development, but also represents an opportunity to introduce improved planting and landscape elements.

The acquisition of property can also assist with mitigating in respect of some visual amenity or access effects relating to residual land that may become redundant or have limited re-use. For example, undesirable property boundary outcomes in the form of solid 1.8m fence lines, noise walls or unusable open space.

Stormwater Management – West of Great South Road

West of Great South Road the project area is located within the Stormwater Management Area Control (Flow 1) and there are limited opportunities within the highly built up urban environment to provide stormwater treatment and management devices for the additional hard-stand surface areas proposed.

Stakeholder Engagement

The Southwest Gateway Programme represents an opportunity to positively engage with key stakeholders, particularly Local Board and Kainga Ora over the future and direction of some of these important communities.

Auckland Unitary Plan

This is in relation to current zoning/overlays which may not enable the opportunities identified under the 'property acquisition' heading. Examples include:

- an opportunity for regeneration may be identified in the vicinity of the Ormiston stop, however, adjacent light industrial zoning does not support residential use.
- the aircraft noise overlay has the potential to limit development activities in the western section of the route.

Inter-agency alignment

An important constraint / opportunity is the need to achieve alignment between different agencies in the delivery of housing intensification and transport improvements to enable best outcomes in terms of connected communities.

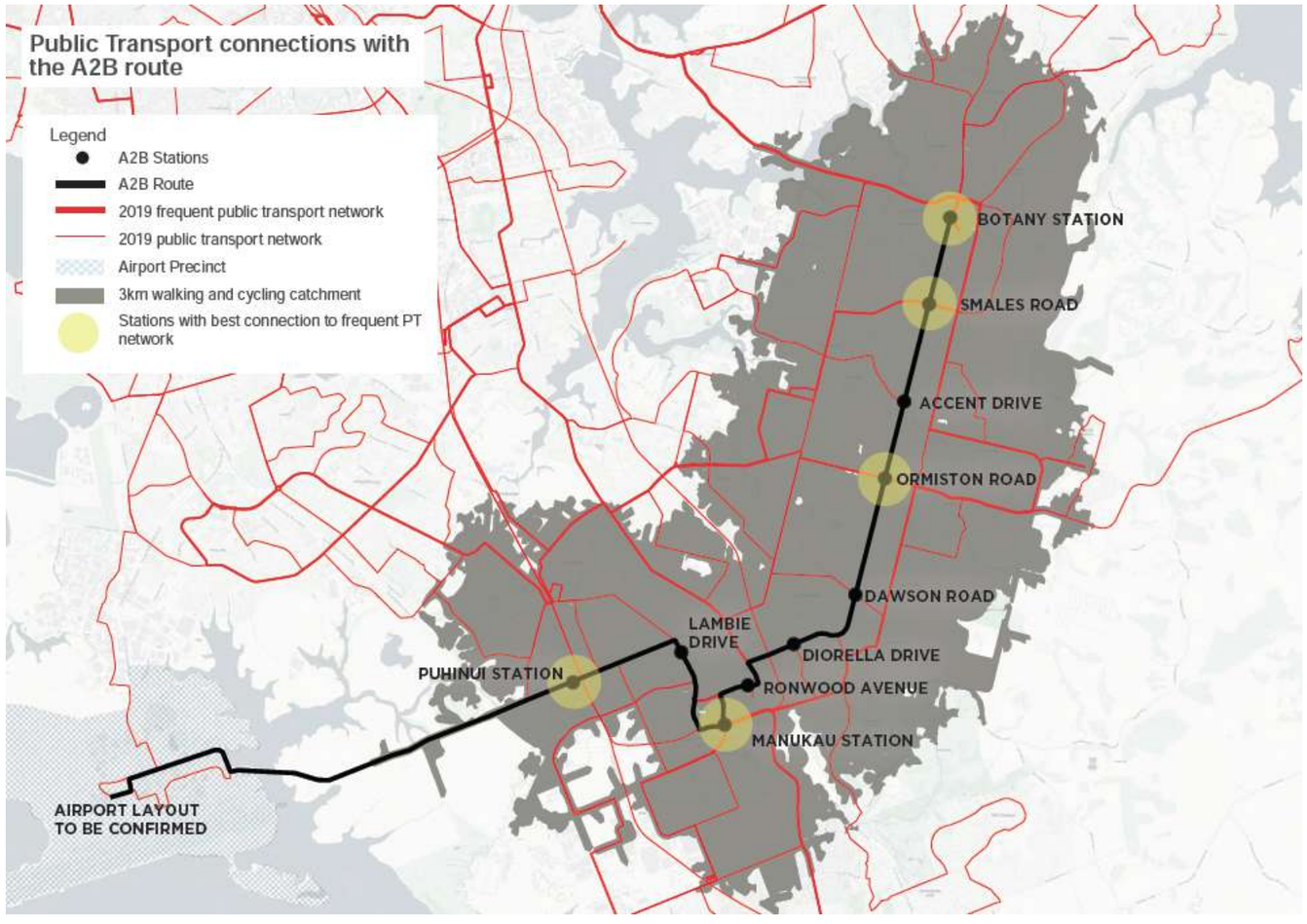
Multi-modal movement

The A2B and 20Connect projects will act as strategic spines and this provides both an opportunity and constraint in terms of linkages with the pedestrian and cycle network in the wider area. These projects can help further active mode interventions through extension into the surrounding communities.

A High Level Station Access Assessment (502334-0000-DTR-0078) is being undertaken, the purpose of which is to analyse the context of each A2B station (excluding those at the airport) and propose improvements for access to stations from the communities. This document will identify a proposed station access network, with improvement recommendations to be implemented as part of the A2B MRT programme of works, or as part of other local initiatives with other funding sources. The identified opportunities from this study, should not be seen in isolation to the Opportunities/Constraints of this Corridor Strategy.

Along the 20Connect corridor the existing bridges are sensible strategic connections. As such, these along with Project Interchanges will provide active mode connectivity between communities either side of the State Highway. Key matters for consideration will be ease of access to these via the local network. Opportunities for improved community connectivity arise with the Share Use Path (SUP). Increasing public access to the SUP and the location of community access points onto this facility needs detailed assessment.

For both projects, potential 'quick wins' could include enhancing existing pedestrian cut through links (eg. with lighting, landscaping, etc.). Consideration of improved access between Mangere Town Centre and the airport is also an opportunity for exploration.



3.2 Site specific constraints and opportunities - West Section - Airport to SH20

Numbers refer to Figure 12. Constraints in red - Opportunities in green

20Connect (excluding SH20B)

SH20 is located in a sensitive area with respect to landscape and cultural features and work associated with 20Connect could have the following impacts:

1. Potential to cause adverse effects on natural character due to the proximity of several identified landscapes and features, including Tararata Creek and Ngā Kapua Kohuora / Crater Hill. Ngā Kapua Kohuora is subject to an Outstanding Natural Feature Overlay which is impacted by the design.
2. Changes to the focal point of the Regionally Significant Viewshaft M4 toward Mangere Mountain due to the south facing ramp from SH20A to SH20.
3. Significant Ecological Area (SEA_M2) along parts of the coastal areas. The Project requires the crossing of and/or interaction with the CMA at the northern extent of the Project, near Mangere Bridge and Tararata Creek.
4. Archaeology – there is significant potential for archaeological material within the project area (the portion of SH20 between Puhinui Road and Massey Road runs through the extent of Ngā Kapua Kohuora / Crater Hill) .
5. Consultation and Engagement – There will be a need for ongoing engagement and consultation with mana whenua given the area is of significance to Mana Whenua and the location of the marae near the SH20/SH20A interchange

However, 20Connect also presents a number of opportunities with respect to the natural, built and cultural landscape:

- Deepening collaborative partnership relationships with Mana Whenua and AIAL through delivery of a shared vision for the area and Auckland.
- Undertaking works in the area in a way that facilitates the discovery and recording of archaeological information for the benefit of increasing Mana Whenua's knowledge of their rohe.
- Delivering a high quality and legible transport corridor that is easy for regular users and visitors to navigate.

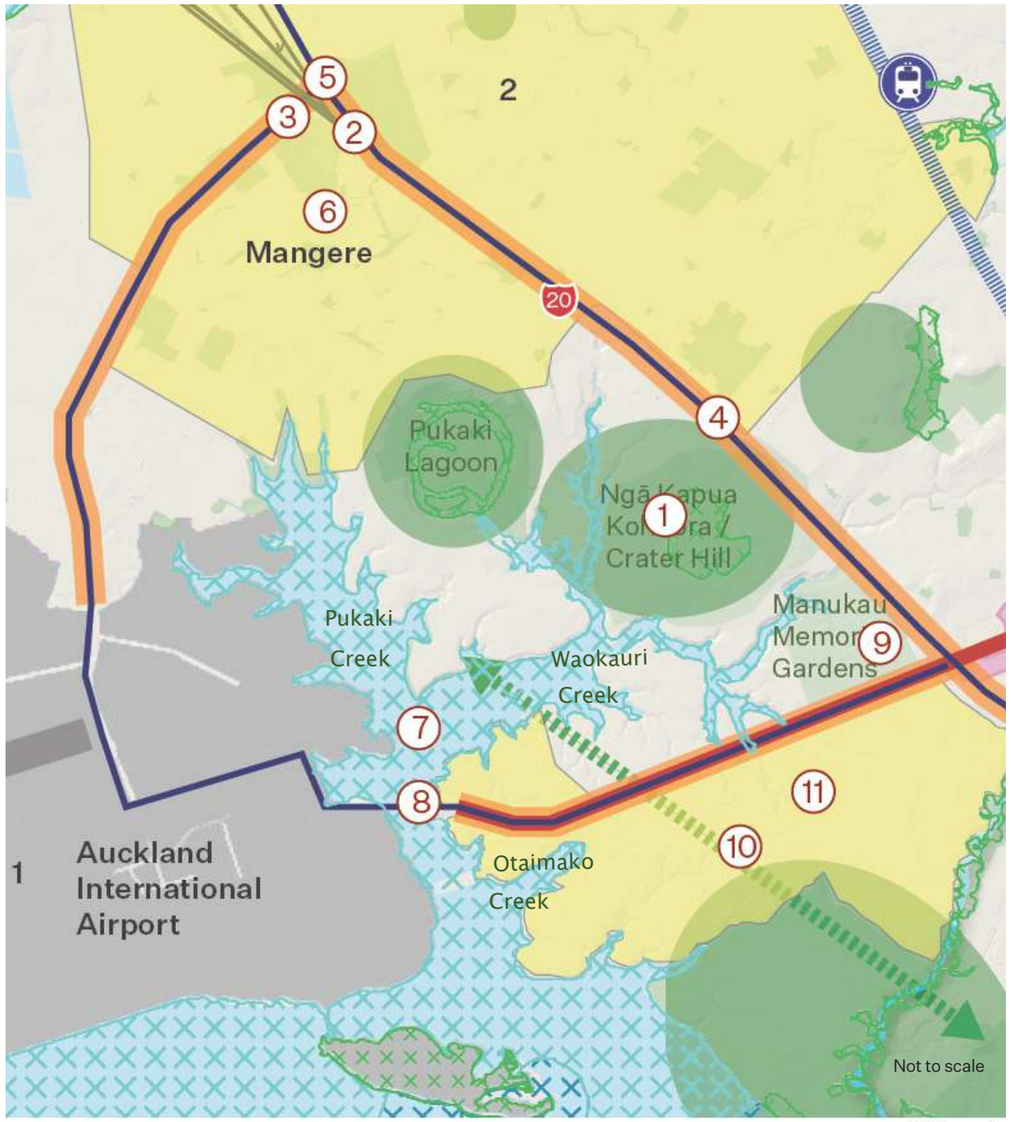
6. Mangere / Mangere town centre – Kāinga Ora. This project is part of Kāinga Ora's Auckland Housing Programme Project. It covers a large area stretching from Mangere Bridge to Middlemore hospital. The Southwest Gateway's project objectives tie in well with this urban transformation project as it aims to connect communities and support growth by ensuring it's possible to move these increasing numbers of people and provide greater access to jobs, education and social opportunities.

SH20B / Puhinui Road

The SH20B section of the project corridor is highly sensitive – it has identified archaeological sites, land with Māori Reserve status, is intersected by freshwater watercourses and extents of the Pukaki and Waokauri Creeks including CMA and contains extents of Significant Ecological Area – Marine and Sites of Significance to Mana Whenua. This presents the following constraints:

7. Special engagement would be needed under the Marine and Coastal Area (Takutai Moana) Act 2011 regarding Customary Marine Titles (CMT) and Protected Customary Rights (PCR) for proposals at Pukaki Creek.
8. The Pukaki Bridge over the CMA, is owned by AIAL and is a critical project element of 20Connect and A2B. Upgrades to this bridge will be delivered by AIAL as part of the Southwest Gateway Programme, the timing of which is critical to the delivery of this combined SH20B section.
   - However, the design and delivery of a replacement Pukaki Creek bridge present an opportunity to improve the impact on coastal processes resulting from the existing bridge and help to address some of the adverse effects identified by Mana Whenua.
9. The Manukau Memorial Gardens (Cemetery) is a sensitive cultural element which lies close to SH20B (and also to SH20). Care will need to be taken to minimise impact, whilst the opportunity exists to improve the entrance to the cemetery.
10. The Pukaki Marae Matukutureia viewshaft crosses SH20B which will need to be recognised in subsequent design work.
11. SH20B Future Business Park - An area of approximately 100 Ha has been zoned for business / industrial use along Puhinui Road between the airport and SH20. This could accommodate up to 5,000 employees. With a new high quality rapid transit network running along Puhinui Road, the opportunity exists to influence the density and mode-share of this large employment area.

Figure 12 - Constraints and opportunities - West Section



3.3 Site specific constraints and opportunities - Mid Section - SH20 to Manukau

Numbers refer to Figure 13. Constraints in red - Opportunities in green

1 Puhinui interchange

Puhinui Station will become an increasingly important strategic transport interchange as part of A2B and will also benefit from any rail upgrades to the North Island Main Trunk rail line. For many, it will represent the quickest way from Auckland central and South to the airport – particularly areas connected to the Southern Rail Line.
Currently it is zoned in the Auckland Unitary Plan for relatively low-density housing, but this does not recognise the new-found strategic importance of this location. The opportunity exists to re-zone around the station in order to help create the right conditions for high quality Transit Oriented Development, which can help to create more housing in more well-connected locations with good access to employment opportunities.

The construction of the new station and RTN corridor also presents an opportunity to enable walking and cycling connection improvements around the station, where historically the rail corridor has provided a degree of severance within this community.

Auckland Airport's Aircraft Noise Overlay covers this area, and has the potential to limit development activities in this area.

2 Puhinui Road corridor

Puhinui Road between SH20 and Manukau City represents the tightest section of existing road corridor. To accommodate the A2B RTN in a manner compatible with the project objectives, property purchase alongside the corridor will be required.

This represents a constraint as there is likely to be significant public interest and potential to generate submissions and appeals.

However, this also represents a potential enabling opportunity. Where partial acquisition is required, this presents the opportunity to provide improve boundary conditions and interface with the new RTN corridor. Where full acquisition is required, this presents an opportunity to enable a more appropriate development typology recognising the adjacency with a high quality RTN. This could include more intensive residential and commercial development.

3 Manukau City Centre – Transform Manukau

The Manukau Framework Plan sets out the approach for how Panuku and partners will transform Manukau over the next 20 to 25 years. It's an ambitious programme of change designed to cater for a growth in population from 6000 to 20,000, working closely with Manukau communities aiming to lead Manukau to its true transformation as the thriving heart of the south. Panuku's plans for Manukau's transformation line up closely with The Southern Initiative, which aims to stimulate and support social change and community innovation in south Auckland. As with Kāinga Ora's plans for Mangere, the Southwest Gateway's project objectives tie in well with this urban transformation project.

Projects within the Transform Manukau project boundary which could benefit from the introduction of a high quality rapid transit network connecting the airport to Botany include:

- MIT land purchase
- Bus interchange
- Barrowcliffe
- Wiri
- Superclinic site
- Hayman Park
- Manukau Sports Bowl

4 Manukau Westfield Mall

Scentre Group (who own Westfield malls) have identified Manukau mall for a major upgrade in the near future. Along with Albany, St Lukes and Newmarket, Manukau is one of Scentre Group's four major shopping malls that sit within the top 5 performing shopping malls in New Zealand. Now in full control of the land on which the mall sits, Scentre Group plan a major upgrade of the mall. The A2B RTN will bring high quality rapid transit immediately alongside the mall and can therefore help determine the transport mode share to the shopping mall.

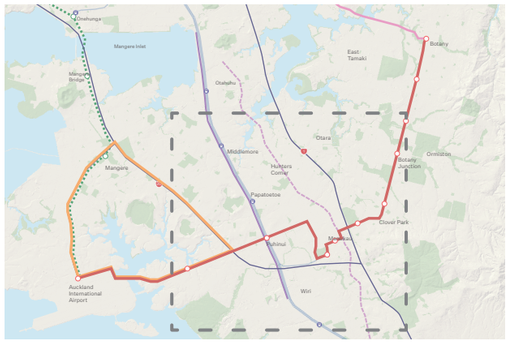
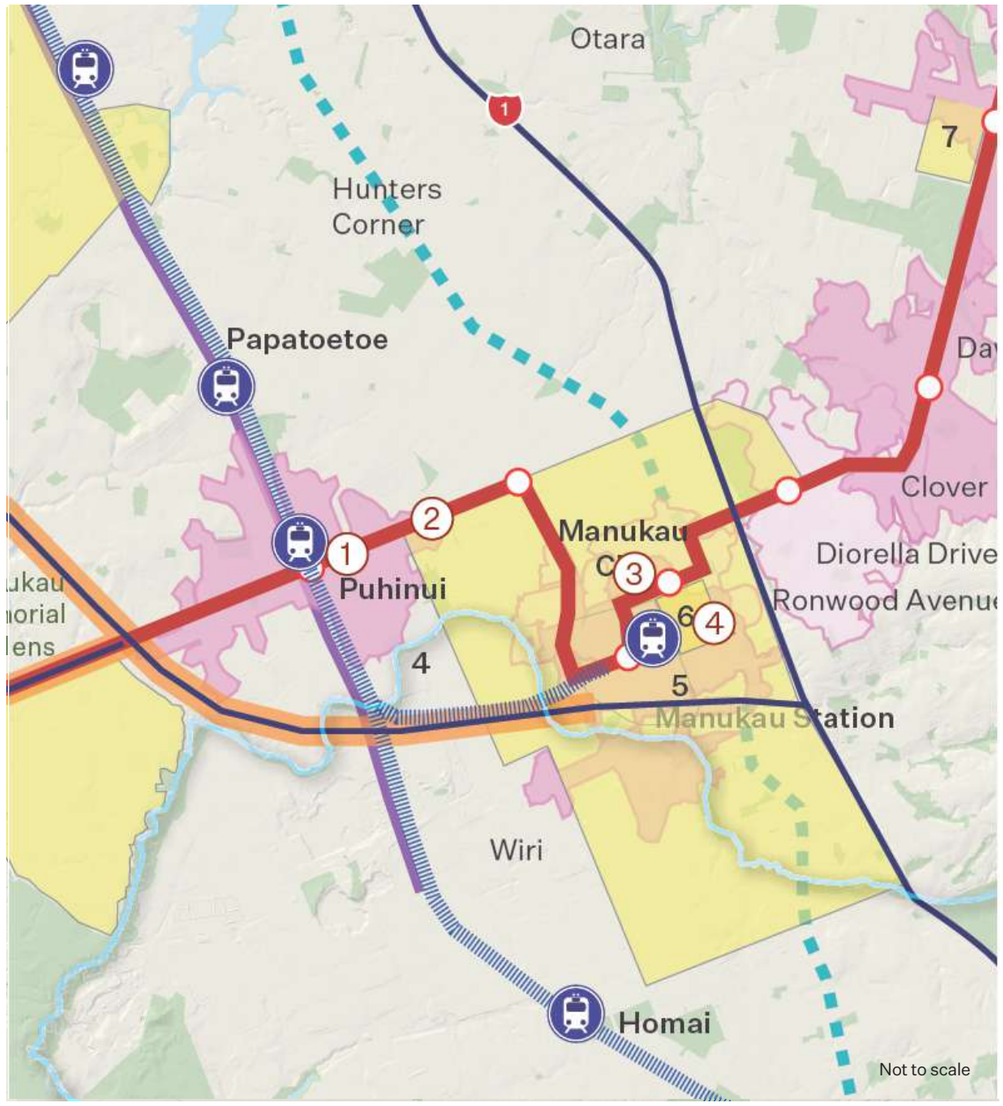


Figure 13 - Constraints and opportunities - Mid Section



3.4 Site specific constraints and opportunities - North Section - Manukau to Botany

Numbers refer to Figure 14. Constraints in red - Opportunities in green

1 Botany Town Centre

- Botany town centre represents both a constraint and an opportunity.
- The impact of the A2B RTN on Botany Town Centre will involve particularly sensitive property acquisition (and depending on the preferred option could involve land well beyond the town centre involving numerous property owners and occupiers.
- However, integrating public transport solution into the master planned future of the Botany Town Centre could result in a significantly positive place-making outcome. A fully integrated and highly accessible transport interchange to help modal shift away from private car as well as enabling further Transit Oriented Development (TOD) opportunities on residual land.
- Whaka Maumahara reserve is located immediately east of Te Irirangi Drive in Botany Town Centre close to the proposed station location. Although not significantly important from a usable amenity perspective, it does provide an attractive setting and visual amenity to the higher density terraced housing. Care will need to be taken to minimise impact.

2 Te Irirangi Drive

- Te Irirangi Drive contains a number of large mature trees, particularly down the central median, which gives the road a distinctive and attractive character, although most of these are non-native species. These are likely to be required for removal as part of A2B RTN and there will be limited opportunity for mitigation planting. This is likely to be contentious (although engagement with mana whenua indicates support for removal of exotic trees along Te Irirangi Drive).

3 Botany Junction, Ormiston Road Business Park and Ormiston Town Centre

- Botany Junction retail centre and the proposed Ormiston Road Business Park are both located at the intersection of Te Irirangi Drive and Ormiston Road where a station is proposed as part of the A2B RTN. Botany Junction has a high dependency on the private car and a high demand for parking. The introduction of an RTN will provide the opportunity to create high quality public transport alternative to help modal shift away from private car and could have a positive influence on the urban environment of Botany Junction centre and the emerging Business Centre, making them more pedestrian and people friendly places.

The larger scale Ormiston Town Centre is currently under construction and is located just over 800m to the east of Te Irirangi Drive. This will contain much larger and a greater range of stores than Botany Junction and will also contain several community buildings including library and aquatic centre. Although just over a 10 minute walk from the RTN on Te Irirangi Drive, there is still the opportunity to provide good pedestrian and cycle links to/from the Ormiston Town Centre to encourage use of the improved public transport provision.

4 Rongomai Park

- Rongomai Park is a popular and well used park immediately alongside Te Irirangi Drive close to Botany Junction. It is well used for formal sports by local sports clubs as well as casual users with good levels of car parking in close proximity to Te Irirangi Drive. Care will need to be taken to minimise impact. However, the provision of an RTN station close by could also help change travel behaviour to and from the park and make it more accessible to those without a car.

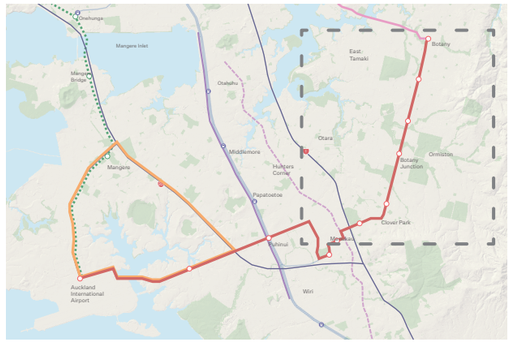
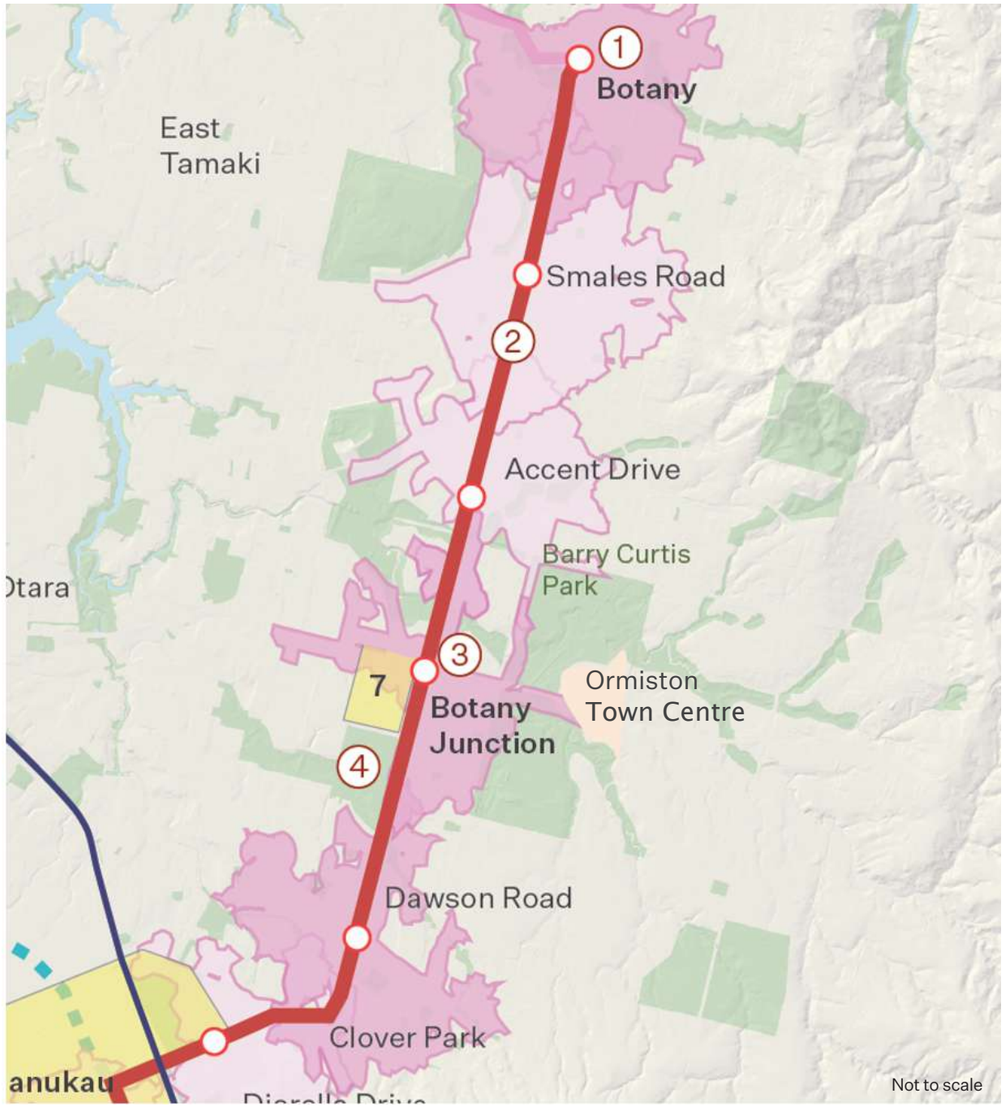


Figure 14 - Constraints and opportunities - North Section



4.0 Conclusion

The purpose of this document is

- To assist with future stakeholder engagement (including other project delivery entities and project partners such as mana whenua) in order to help ‘tell the whole story’ by presenting the ‘context’ of the corridor.
- To identify urban, environmental and transport projects with potential collective benefit of broader third-party project investment in the corridor environs (e.g. mode shift, liveability and urban development).
- To identify both high-level and site-specific constraints and opportunities (from an environmental and urban related perspective) within the corridor environs in order to inform any future planning and design work including any preliminary Urban & Landscape Design Framework (ULDF) for a particular corridor, or section of the network.
- To support the long-term Airport to Botany and 20Connect single-stage business cases (SSBC).

It is an inital excerise for the purposes of gathering existing context information and capturing high level opportunities and constraints for the Projects. More detailed work will be required through stakeholder engagement and analysis.

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