

VOLUME 4

Airport to Botany Urban Design Evaluation

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Glossary of Defined Terms and Acronyms

Acronym/Term	Description
AEE	Assessment of Effects on the Environment report
AUP:OP	Auckland Unitary Plan: Operative in Part
BRT	Bus Rapid Transit
CVA	Cultural Values Assessments
N/A	Not Applicable
NIMT	North Island Main Trunk railway
NoR	Notice of Requirement
NoR 1	Notice of Requirement 1: Airport to Botany Bus Rapid Transit (Botany Town Centre to Rongomai Park)
NoR 2	Notice of Requirement 2: Airport to Botany Bus Rapid Transit (Rongomai Park to Puhinui Station, in the vicinity of Plunket Avenue)
NoR 3	Notice of Requirement 3: Airport to Botany Bus Rapid Transit (Puhinui Station, in the vicinity of Plunket Avenue to SH20/20B Interchange)
NoR 4a	Notice of Requirement 4a: Airport to Botany Bus Rapid Transit (SH20/20B Interchange to Orrs Road)
NoR 4b	Notice of Requirement 4b: Alteration to NZ Transport Agency Designation 6717 – State Highway 20B
NPS:UD	National Policy Statement on Urban Development 2020
Programme partners	Te Ākitai Waiohū, Auckland Airport, Auckland Transport and Waka Kotahi
RCA	Road Controlling Authority
RMA	Resource Management Act 1991
RP	Regional Plan
RPS	Regional Policy Statement
SEA	Significant Ecological Area
SH1	State Highway 1
SH20	State Highway 20
SH20B	State Highway 20B
SSBC	Single Stage Business Case
SWGPP	Southwest Gateway Programme
Te Tupu Ngātahi	Te Tupu Ngātahi Supporting Growth
UDE	Urban Design Evaluation
ULDMP	Urban and Landscape Design Management Plan
Waka Kotahi	Waka Kotahi NZ Transport Agency

Executive summary

This Urban Design Evaluation (UDE) supports the Notices of Requirement (NoRs) for the Airport to Botany Bus Rapid Transit Project (the **Project**) lodged by Waka Kotahi NZ Transport Agency (**Waka Kotahi**) and Auckland Transport (**Auckland Transport**) as requiring authorities under the Resource Management Act 1991 (RMA). The notices of requirement propose four new designations and one alteration to an existing designation for State Highway 20B (SH20B).

Table 1: Outline of NoRs

Notice	Description	Requiring Authority
NoR 1	Bus Rapid Transit corridor and high quality walking and cycling facilities from Botany Town Centre to Rongomai Park	Auckland Transport
NoR 2	Bus Rapid Transit corridor and high quality walking and cycling facilities from Rongomai Park to Puhinui Interchange, in the vicinity of Plunket Avenue	Auckland Transport
NoR 3	Bus Rapid Transit corridor and high quality walking and cycling facilities from Puhinui Interchange, in the vicinity of Plunket Avenue to SH20/SH20B Interchange	Auckland Transport
NoR 4a	Bus Rapid Transit corridor and high quality walking and cycling facilities from SH20B/20 Interchange to Orrs Road	Auckland Transport
NoR 4b	Alteration to designation 6717 to provide for the widening of SH20B, including a southbound on-ramp onto SH20, high quality walking and cycling facilities and enable a Bus Rapid Transit corridor	NZ Transport Agency

This UDE contains an evaluation section for each NoR which has been prepared based on the guidance and principles established in the 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 focused commentary on the current design detail and recommends the framework for how and where any urban design opportunities should be considered in future design stages. These recommendations should 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 should be integrated within the relevant specialist conditions.

The recommendations are summarised as urban design outcomes sought and where additional urban design opportunities have been identified during the evaluation, they are also mapped for each NoR for consideration either by the requiring authorities or other parties at future stages of design and development of the Project. These opportunities are not however required to mitigate the anticipated urban design effects of the Project.

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 all NoRs to further develop the urban design outcomes recommended as summarised under each NoR evaluation.

Details of the urban design recommendations are included under each NoR and are not repeated in this summary for brevity.

1 Introduction

1.1 Purpose and scope of this evaluation

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 evaluation should be read alongside the AEE, which contains further details on the history and context of the Project. The AEE also contains a detailed description of works to be authorised within each NoR, and the typical 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 sections addressed for each project are outlined in Table 2.

Table 2: Report structure

Sections	Section number
The design context	2
Project description	3
Corridor form and function	3.1
Existing and likely future environment	3.2
Summary of urban design evaluation and recommendations	With each NoR section
Summary map of urban design outcomes and opportunities	With each NoR section and included in Appendix B
Evaluation against Te Tupu Ngātahi Design Framework principles	4.1, Appendix A

2 The design context

This evaluation which has been prepared for each of the NoRs is based on the guidance and principles established in the Te Tupu Ngātahi Programme Wide Design Framework / Design Framework Principles (refer to Appendix C).

As set out in the AEE, Manawhenua have been actively involved as partners in the Project (previous 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.

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 rather in terms of how they can contribute to the urban system as a whole.

There are twenty design principles that have been established (as part of the Design Framework) 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 the Projects within Te Tupu Ngātahi as they contribute to the understanding of the development of route options in terms of; 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 (**NPS**) on Urban Development, Government Policy Statement (**GPS**) on Land Transport, Medium Density Housing Standards (**MDRS**), NZ Transport Agency Bridging the Gap, Regional Land Transport Plan); and
- Local level (e.g. Auckland Plan 2050, Auckland Transport Alignment Project (**ATAP**), Auckland Transport Roads and Streets Framework, Transport Design Manual, Auckland Unitary Plan (**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.

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

The NPS:UD came into effect on 20 August 2020 and sets out a list of things that local authorities must do to give effect to the objectives and policies defined within the NPS:UD. The NPS:UD does not explicitly address or refer to urban design but sets out the characteristics and rationale for well-functioning urban environments that enable all communities to provide for their social, economic, and cultural well-being and for their health and safety, now and into the future. This includes, amongst other requirements, the enabling of increased commercial and residential activity around:

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

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

Auckland Council

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

- Regional Policy Statement B2: Urban Growth and Form;
- Regional Policy Statement B3: Infrastructure Transport and Energy;
- Regional Policy Statement B4: Natural Heritage;
- Chapter E38: Subdivision;
- Chapter H: Zones (including structure planned zones);
- Chapter I: Precincts (Puhinui Precinct, Manukau Precinct, Florence Carter Avenue Precinct, Flat Bush Precinct); and
- Chapter M: Appendix 1 Structure plan guidelines.

The specific urban design commentary within the corridor evaluations (outlined in the sections below) broadly address the objectives and policies of the relevant sections of the Regional Policy Statement and District Plan chapters of the AUP:OP as listed above.

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

3 Project description

The overall Project is proposed to be an 18 km fast, high capacity, reliable, and frequent Bus Rapid Transit (**BRT**) connection with twelve stations. It is part of Auckland's wider Rapid Transit Network (**RTN**) connecting Auckland Airport and its employment areas with major urban centres including Manukau and Botany.

As set out in the AEE, the UDE specifically relates to a portion of the overall Project (approximately 14.9 km) which extends from the Botany Town Centre in the vicinity of Leixle Lane to Orrs Road in the Puhinui peninsula, off SH20B. The Project primarily involves the upgrade and widening of existing transport corridors to provide for a dedicated BRT corridor and high-quality walking and cycling facilities.



Figure 1: Overview of the Project and NoR extents

To integrate with the surrounding, predominantly urban environment that the Project passes through, the Project has been split into four sections for urban design evaluation purposes:

- Botany Town Centre to Rongomai Park (NoR 1);
- Rongomai Park to Puhinui Station (NoR 2);
- Puhinui Station to SH20/20B Interchange (NoR 3); and
- SH20/20B Interchange to Orrs Road (NoRs 4a and 4b).

3.1 Corridor form and function

Section 3 of the AEE outlines the key physical elements of the Project across each of the NoR sections and how the different elements of the Project will operate once the Project is implemented.

The design of the Project is commensurate with the 'route protection' phase of the Project, as such, only a concept level of design has been undertaken. The design will be further refined through subsequent phases of the Project and will be undertaken within the scope of the designation conditions and future resource consent conditions. The detailed design of the Project will be undertaken prior to construction and reflected in the Outline Plan(s) which will be submitted to Council as set out in s176A of the RMA.

Nine BRT stations are proposed as part of the Project, these stations will facilitate off-board ticketing, level boarding and all-door boarding. These are situated in the following locations:

- Smales Road;
- Accent Drive;
- Ormiston Road – Botany Junction Shopping Centre;
- Dawson Road;
- Diorella Drive;
- Ronwood Avenue (Manukau Central);
- Manukau Station;
- Puhinui Road/Lambie Drive; and
- Puhinui Station.

Each NoR section is described in the AEE under the key feature headings:

- Bus Rapid Transit Corridor;
- Stations;
- Walking and Cycling Facilities;
- General Traffic;
- Access;
- Speed Environment;
- Signalised intersections; and
- Stormwater infrastructure.

3.2 Existing and likely future environment

Section 9 of the AEE outlines the key attributes of the existing and likely future environment of the Project across each of the NoR sections. Each section is described in the AEE under key features of:

- Current land use;
- Community and recreation facilities;
- Watercourses;
- Vegetation and recreational facilities;
- Historic heritage and archaeological values;
- Existing designations;
- Current zoning;

- Precincts;
- Other non-statutory features; and
- Likely future zoning.

3.3 Preparation for this evaluation

Work undertaken for this evaluation commenced in August 2022. In summary, the preparation for this work has included:

- Review of the Airport to Botany specialist briefing package, the Single Stage Business Case (**SSBC**) design drawings and the Te Tupu Ngātahi GIS viewer;
- A review of the statutory setting of the project and surrounding context;
- A review of the base map data such as contours and aerial photography;
- A detailed site visit including taking representative photographs along the route was undertaken on 7 September 2022 by Stuart Bowden and Nigel Parker to understand the nature of the receiving environment and its physical and visual relationship to the surrounding environment, as well as the context, character and urban setting from the wider area; and
- A site visit with Auckland Council representatives was undertaken on 11th September 2022 by Elaine Chen as part of the verification process.

4 All Airport to Botany Bus Rapid Transit NoRs

This section evaluates common or general urban design matters across the entire Project against the relevant Design Framework Principles. It provides urban design focused commentary on the current design detail and recommends the framework for how and where common urban design outcomes 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) these could be integrated with other relevant designation conditions.

4.1 Urban design matters common to all NoRs

Table 3: Common urban design matters

Principle	Explanation	Application common to all NoRs
ENVIRONMENT		
1.1 Support and enhance ecological corridors and biodiversity	Mitigate the effects on or enhance existing ecological corridors through the placement and design of movement corridors	<ul style="list-style-type: none"> It is noted that detailed water quality and detention / retention requirements for the corridor will be decided in the future consenting stage of the Project. The proposed corridor and associated designation boundary provide spatial provisions (within the cross section and wider boundary) that have the potential to support ecological connectivity and biodiversity in the local environment by providing contiguous space for diverse planting responses. Opportunities within the immediate landscape of the corridor to support and enhance indigenous biodiversity are detailed in the <i>Airport to Botany: Assessment of Ecological Effects</i>. There are multiple water courses that cross the corridor. Impacts on ecological features such as the stream alignment and indigenous vegetation are avoided or reduced where possible. There are two water course bridge crossings proposed along the corridor. Both crossings incorporate bridging structures to reinforce broader connectivity outcomes for ecology and water quality by minimising stream interruptions and ensuring a connected natural system. Stream crossings where existing culverts are to be upgraded or lengthened will be improved so that fish passage is provided.
1.2 Support water conservation and enhance water quality in a watershed	Take into account and work with the existing watershed as part of a whole system.	<ul style="list-style-type: none"> As set out in the AEE, a stormwater philosophy has been developed for the Project that identifies preferred treatment approaches along the Project corridor. This identifies a preference for the use of green infrastructure for new treatment devices across the corridor such as ponds, raingardens, linear treatment as well as the use

		<p>and / or enhancement of existing public stormwater treatment ponds.</p> <ul style="list-style-type: none"> • The proposed typical corridor cross section and designation boundary allows spatial provisions where adjacent to existing service lanes and other selected locations to provide natural drainage to stormwater raingardens to address water quality and reduce hard engineering solutions. • Further refinement of the raingarden configuration and arrangements during the detailed design stage is recommended to define the raingarden’s final form and interface with the surrounding land uses. For example, raingarden edges may be configured in a naturally shaped manner and fully integrated with existing natural drainage features and vegetation. • Future development and definition of the proposed stormwater treatment devices, swales and ponds is recommended to provide an appropriate interface with the surrounding context and amenity for the corridor.
<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 proposed corridor demonstrates a generally efficient alignment in relation to existing property boundaries along the corridor minimising land impacts and inefficient residual land portions. • The proposed corridor generally follows the vertical geometry of the existing corridor, minimising land disturbance. Further vertical integration adjacent to stream crossings and bridging structures should be developed in the future, at detailed design to allow an appropriate transition and interface to adjacent built form. • If practicable, opportunities should be explored at future detailed design stages to redefine and integrate residual land (following the construction of the Project) along the corridor frontage with the expected future land use function. • The proposed corridor cross section has the potential to impact tree and vegetation cover within the designation. An assessment of the potential losses and mitigation recommendations are outlined in the <i>Airport to Botany Assessment of Arboricultural Effects</i>, however further definition and design of the corridor landscape should be developed in future design stages and should address how the proposed corridor landscape: <ul style="list-style-type: none"> – Responds to pedestrian amenity outcomes; – Provides replacement and augmented canopy shading to the corridor; – Mitigates urban heat island effects within the environment of the corridor; – Contributes to biodiversity values within the corridor; and

		<ul style="list-style-type: none"> – Responds to and improves landscape character and values within the corridor.
<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 <i>Airport to Botany: Assessment of Flooding Effects</i> for the Project sets out how flooding effects can be appropriately managed through the future detailed design stage. The assessment has considered the sensitivity of the Project to increased rainfall as a result of climate change based on two scenarios. The designation boundaries allow for retention/detention devices which include some flood storage. However, the final geometric design of the Project which will be confirmed through future detailed design will consider a series of outcomes to not exacerbate existing flood effects. • The proposed corridor provides space for street tree planting that, when delivered, will contribute to the amenity of the area by providing shade and microclimatic cooling qualities. Further definition and design of the corridor landscape should be developed in future design stages. • The proposed corridor provides for active modes and prioritises public transport options to support modal shift and reduce transport related climate change contributions.
<p>SOCIAL</p>		
<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> <p>Local Identity</p> <p>Locate the station facilities to maximise the placemaking potential and enhance local identity.</p>	<ul style="list-style-type: none"> • The proposed corridor passes through a highly varied urban environment that is planned to change to mixed and denser residential land uses, the proposed cross section has spatial flexibility that is capable of responding to a range of characteristics (identity drivers) that may arise from this change. For example, the existing lower density Residential – Mixed Housing Suburban Zone land is subject to change under the requirements of Policy 3 of the NPS:UD to enable higher density development of at least 6 storeys (particularly around proposed BRT stations) – in these areas the cross section can provide support for active edges (where there is visual engagement between the built form and the street), permeable access for pedestrians, and vegetation appropriately scaled to built form. • In order to create a sense of identity and place, the future architectural design response of the stations and associated facilities will need to consider the underlying identity drivers of the surrounding context such as: <ul style="list-style-type: none"> – Cultural values and narratives of Manawhenua; – Any identified landscape character drivers of each station location; and – Urban space qualities of the surrounding high to medium density land uses. • There is opportunity to improve connectivity and interface with watercourse crossings to enhance their distinctive

		<p>landscape qualities (character drivers) for their local communities.</p> <ul style="list-style-type: none"> • 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. Manawhenua will be invited to provide input as Partners into relevant cultural landscape and design matters including how Project 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"> • Under the AUP:OP, there are no scheduled sites of significance to Manawhenua that have been identified along or in close proximity to the proposed corridor. • Through the NoR phase, Manawhenua have been involved in regular hui and site visits with the Project Team to share sites/areas that are of significance to Manawhenua and identify opportunities within and adjacent to the Project to acknowledge, respond, protect and incorporate their cultural landscape and values into the Project design. • As set out above, in future design stages, Manawhenua will be invited as Partners to provide input on the cultural landscape and design matters including how Manawhenua values and cultural narrative are incorporated through the Project outcomes. This could include but is not limited to: <ul style="list-style-type: none"> – Incorporating Manawhenua values and narrative through the form of the Project and associated structures; – Identifying opportunities to recognise the historic and cultural significance of the Puhinui Historic Gateway to the Airport; – Providing pou, art, sculpture, mahi toi or other public amenity features located on land within or adjoining the Project; and – Providing any other feature that represents the Māori history of the area and promotes a distinctiveness or sense of place appropriate for the wider heritage area.
<p>2.3 Adaptive corridors</p>	<p>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 and utilise technology over time.</p> <p>Future Growth</p>	<ul style="list-style-type: none"> • The proposed typical corridor cross section has the spatial provisions to be re-configurable and adaptable for changing transport needs. For example, modal changes, future bus priority measures at intersections, bus stations and future expansion of any walking and cycling networks can be accommodated within the corridor. • The proposed cross section provides space for all modes, with spatial provisions at the corridor edges that accommodate active frontages, provide permeability for access to adjacent land use types and movement corridors.

	<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>2.4 Social cohesion</p>	<p>Provide clear, effective and legible connectivity between community and social functions.</p>	<ul style="list-style-type: none"> • The proposed typical corridor cross sections supports the creation of spaces where seamless corridor access can be provided through a permeable interface at the corridor boundary. • The proposed corridor alignment and function can deliver a positive contribution to the sense of belonging and participation, as well as community resilience by supporting direct access to existing local, neighbourhood and town centres and open spaces. Refer to individual NoR sections for specific focus areas. • To enable equitable local connectivity and cross corridor access to commercial centres and areas of high density, further development at the detailed design stage should be undertaken of crossing points for multi-lane intersections and potential midblock crossings.
<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 proposed corridor will deliver a greater level of access and movement to future local communities, with the provision of fully segregated active travel solutions. • The proposed corridor accommodates the universal design approach and accessibility to all parts of user journeys. • The proposed functionality and configuration of the interchange provides for pedestrian access through the BRT station which supports a greater level of access and movement for future local communities, promoting a sense of personal safety for pedestrians and cyclists. • The future design and functional layout of the BRT stations as well as future corridor design stages should respond to and incorporate CPTED principles, including clear sightlines, good levels of lighting, passive surveillance, and avoidance of entrapment zones. • There is opportunity for future adjacent development to provide additional passive surveillance and activation improving CPTED outcomes for the project. • A CPTED audit of each NoR project should be carried out against the proposed design and should address, at a minimum, the current identified CPTED risks outlined in each NoR evaluation. • Future development and detailed design of the final crossing points of the station accessways is required to confirm and reinforce a sense of personal safety and provide for equitable local connectivity and access. • Further design detail of safe prioritised active modes crossings across the corridor and intersections should be addressed at subsequent detail design stages.

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 proposed BRT station locations will provide the core transport function of a new multi modal transport network that will support the requirements of Policies 1 and 3 of the NPS:UD for enabling increased development capacity adjacent to rapid transit networks. • The corridor prioritises public transport and active modes to provide direct access to both housing and employment areas at Botany, East Tamaki, Clover Park, Manukau City Centre, Papatoetoe, Wiri and ultimately Auckland Airport. The combination of the core corridor functions and alignment to key destinations will maximise the benefits of modal shift and provide a positive contribution to the vibrancy and activation of the varied urban environments along the corridor.
<p>3.2 Corridor scaled to the surrounding context and urban structure</p>	<p>Align the speed, type and scale of transport corridors and infrastructure with the environment that it moves 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>	<ul style="list-style-type: none"> • Approximately 7.5 km length of the existing corridor land uses (Mixed Housing Suburban and Mixed Housing Urban) are subject to change as a result of the increased development capacity requirements of the NPS:UD. The remainder of the corridor will remain as Light Industry, Local, Neighbourhood or Metropolitan Centre zoning. • The ongoing regional freight function of sections of the corridor including those in NoRs 1, 3 and 4, poses a potential conflict between placemaking aspirations within local communities and the scale and speed of the proposed movement function. Place specific responses to integrating these functions should be identified and addressed in future design states of the project. • Localised urban design commentary on corridor scaling is contained in each NoR section. • Overall, the proposed corridor configuration and scale provides an appropriate response to the potential needs of the adjacent area functions (access to and from adjacent built form and general spatial layout). Examples include efficient localised movement, alignment with known higher density housing land uses and the provision of mixed mode travel.
<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 provide a flexible platform to address the opportunity for place as well as movement function with clear allocation of street space, for example separated pedestrian and cycle facilities and potential road berm spaces that provide safe waiting zones for pedestrians. • In the absence of medians, signalised or legal crossings, spaced appropriately for the adjacent land-uses and pedestrian desire routes involved, should be considered.

		<ul style="list-style-type: none"> • Direct private vehicular access is generally not accommodated onto the corridor, however a pedestrian permeable interface or active frontage interface is supported at all locations along the corridor.
MOVEMENT		
4.1 Connect nodes	Provide tangible connectivity between identified activity nodes. Cross Corridor Connectivity Balance the functional access requirements across the Project corridor with the optimal location to provide connections into the surrounding area.	<ul style="list-style-type: none"> • The proposed corridor provides tangible and direct connectivity between existing industrial / employment areas, local communities and mixed-use centres. • 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. – Between open spaces and reserves along the wider blue-green network. • Refer to individual NoR sections for specific focus areas.
4.2 Connect modes	Provide for choice in travel and the ability to connect at interchanges between modes. Permeability Provide a level of permeability for stations that supports access into the surrounding streets/corridors.	<ul style="list-style-type: none"> • The proposed corridor provides simple but complete future connectivity for all modes (walking, cycling, public transport and private vehicles). • The corridor provides a direct and prioritised active mode and public transport connection to the proposed Manukau Central and existing bus and train stations at Puhinui and Manukau. • 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.
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.	<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 including: <ul style="list-style-type: none"> – South of Puhinui Road within NoRs 3 and 4a/4b; – Along Lambie Drive in NoR 3; – Manukau Central in NoR 2; and – West of Te Iirangi Drive between East Tamaki Road and Rongomai Park in NoR 1.
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.	<ul style="list-style-type: none"> • The corridor design and designation boundary provides access for active modes, and public transport through the provision of: <ul style="list-style-type: none"> – High quality walking and cycling facilities, space for cycle parking close to station locations. There is an opportunity to provide additional cycle parking in future design stages.

	<p>Walkability Locate the station and interchange facility within or in close proximity and walking distance of local activity hubs/town centres.</p> <p>Modal Priority Consider efficient connectivity between transport modes by:</p> <ul style="list-style-type: none"> • 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. • Minimising the interchange time and distance between transport modes by designing direct, safe and self-explaining linkages. • Minimising the conflicts between modes. 	<ul style="list-style-type: none"> – BRT stations adjacent to both housing, commercial and employment land and destinations along the corridor. • Further development of safe and prioritised active mode connections at intersections and the provision of mid-block crossings at the future detailed design stage will provide a higher level of service to active and micro modes and further encourage modal shift. • Potential priority conflicts between active modes / public transport and the ongoing freight function of sections of the corridor including those in NoRs 1, 3 and 4a/4b, 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"> • The corridor includes some of Auckland’s main industrial, warehousing and distribution areas. Multiple freight-related operations are located in the area due to the many competitive advantages that proximity affords, including shorter transit times to end destinations and improving overall supply chain efficiency. • NoR specific urban design commentary on the place / movement balance, modal priority aspirations and urban interfaces is included in the individual NoR evaluations.
<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 To achieve a positive and engaging street presence</p>	<ul style="list-style-type: none"> • The typical corridor cross section accommodates a range of modes with clear allocation of street spaces 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 stage will provide clear and legible cross corridor access and

	provide clear physical and visual connection between station and interchange facilities and surrounding corridors.	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 a direct and prioritised public transport connection as part of the BRT network that connects Botany and Manukau 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 NoR 1 – Botany Town Centre to Rongomai Park

This section considers the proposed NoR 1 – Botany Town Centre to Rongomai Park section against the relevant Design Framework Principles. It provides urban design focused commentary on the current design detail and recommends the framework for how and where any urban design outcomes should be considered in future design stages.

Table 4 in **Appendix A** only outlines urban design commentary specific to NoR 1. For commentary common to all NoRs refer to Table 3.

5.1 Summary of urban design evaluation and recommendations for NoR 1

Overall, the proposed NoR 1 corridor design and configuration is generally supportive of the Design Framework principles. A summary of the recommended urban design outcomes and opportunities for NoR 1 are outlined below and illustrated in Figure 2, Figure 3, Figure 4 and **Appendix B**. These are recommended to form a part of the ULDMP in future delivery stages. This is to ensure the detailed design of the corridor responds appropriately to the principles and the project specific urban design outcomes sought.

The ULDMP should address the following Project specific outcomes for NoR 1:

ENVIRONMENT

- A landscape plan that considers recommendations from the landscape and visual, arboriculture, flooding and ecological assessments including street tree and stormwater raingarden and wetland planting, construction compound and private property reinstatement and treatment of batter slopes. The landscape plan should also demonstrate integration of Otara Creek, Puhinui Creek and their tributaries where the corridor intersects with the existing Blue-Green Network. The landscape outcomes should support the principles of Auckland's Urban Ngahere Strategy and reinforce the wider vegetation patterns of the local landscape and create connections to proposed greenways and the wider walking and cycling network.
- Integration of the stormwater raingardens and wetlands to ensure an appropriate interface with adjacent land uses, specifically where wetlands are proposed in areas zoned high density.
- 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

- 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 NoR 1 should be demonstrated. Key NoR 1 local identity community functions to be addressed include:
 - Business – The General Business Zone, Business – Neighbourhood Centre Zone and Business – Light Industry Zone at Bishop Dunn Place;
 - Sancta Maria Catholic Primary School and College;

- Links to the adjacent Ormiston Town Centre (Business – Town Centre Zone) on Ormiston Road; and
- Botany Junction shopping centre (Business – Local Centre Zone) at 277 Te Irirangi Drive;
- Key NoR 1 distinctive landscape character qualities of open spaces, stream and conservation zones include;
 - Open space linkages along Otara Creek Reserve and Tributaries to Barry Curtis Park;
 - Kellaway Drive Reserve,
 - Savonna Park; and
 - Rongomai Park / Recreation Reserve.
- The proposed corridor alignment and function can deliver a positive contribution to the sense of belonging and participation, as well as community resilience by supporting direct access to existing local, neighbourhood and town centres, schools, community functions and open spaces. Key school, community and business functions within NoR 1 to be addressed include:
 - Sancta Maria Catholic Primary School and College;
 - Rongomai Park / recreational reserve; and
 - Barry Curtis Park.
- A CPTED review of the NoR 1 project should address, at a minimum, the current identified CPTED risks including:
 - The existing underpass environment at Kellaway Drive / Brinlack Drive;
 - Pedestrian overpasses at East Tamaki Drive and Whetstone Road; and
 - Under bridge environments at the Otara Creek tributary overbridge and culverts.

BUILT FORM

- Known or planned changes of land use and residential density that have the potential to alter the perceived scale and impact of the proposed corridor functions should be identified and addressed.
- Resolution of any potential conflict between placemaking aspirations within local communities and the scale and operating speed of the proposed movement functions of the corridor should be addressed.
- An urban interface approach within the corridor that:
 - Provides an appropriate interface to the existing local, neighbourhood and town centres and enables buildings and spaces to positively address and integrate with the NoR 1 corridor;
 - Responds to the spatial character of proposed centre environments and supports quality public realm infrastructure, ample pedestrian footpath width, frequent pedestrian crossing points and street trees for shade and amenity;
 - Demonstrates the proposed modal connections, modal hierarchy, built form interfaces and arrangements at the proposed NoR 1 BRT station locations at Smales Road, Accent Drive and Ormiston Road that support the requirements of Policies 1 and 3 of the NPS:UD for enabling increased development capacity adjacent to rapid transit networks;
 - Recognises the transition of densities from Residential – Terrace Housing and Apartment Building to Residential to Mixed Housing Suburban Zone and provides a corridor interface that supports permeable pedestrian access and responds to the changing built form interface and spatial character of adjacent future development; and

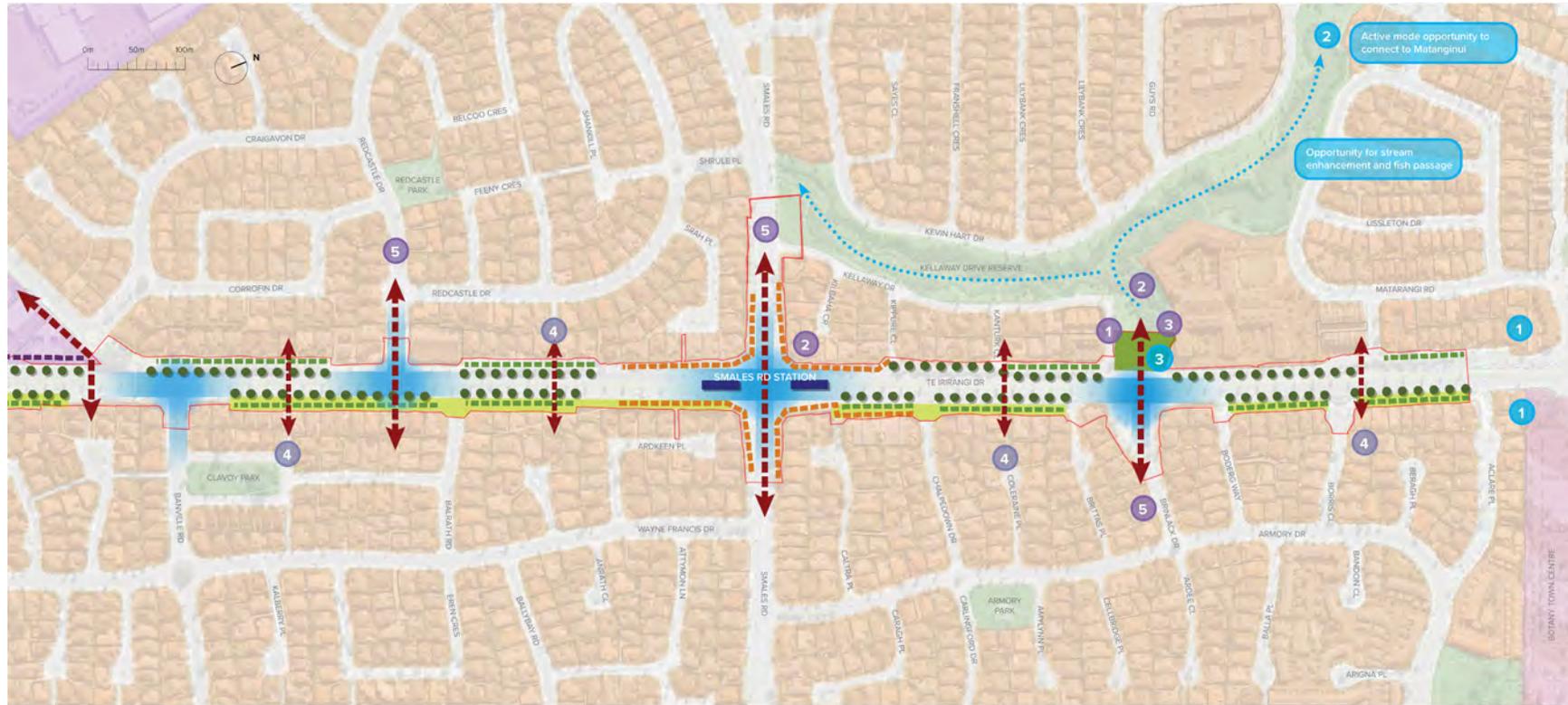
- Supports the integration of the proposed BRT stations and surrounding land uses.

MOVEMENT

- Permeability of the corridor 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. Demonstration of place specific active mode cross corridor solutions should include:
 - Kellaway Drive / Brinlack Drive (upgraded existing);
 - East Tamaki Road pedestrian crossing location (upgraded existing);
 - Vidiri Court pedestrian crossing (New); and
 - Whetstone Road pedestrian crossing (upgraded existing).
- Legibility, connectivity demands, safety and modal priority for active modes should be addressed for intersections within NoR 1. Demonstration of specific intersection responses to ensure connectivity between the proposed BRT facilities, local centres and other community facilities should include the intersections of Te Irirangi Drive and:
 - Brinlack Drive;
 - Smales Road;
 - Redcastle Drive;
 - Accent Drive;
 - Banville Road;
 - Bishop Dunn Place / Sancta Maria Way;
 - Ormiston Road;
 - Florence Carter Avenue; and
 - Whetstone Road.
- A modal integration strategy that addresses the potential conflict between the continued freight function of the corridor and placemaking opportunities arising from the introduction of the BRT stations along Te Irirangi Drive.

LANDUSE

- Demonstration of how any residual land portions following the construction of the Project are redefined and integrated with the expected future land use function, in particular areas immediately adjacent to the station locations.



NOR 1 - BOTANY TOWN CENTRE TO RONGOMAI PARK

● Outcomes ● Opportunities

- 1 **Ecological connectivity** - Landscape outcomes should reinforce the wider vegetation patterns of the local open spaces and support ecological connectivity and biodiversity in the local environment.
- 2 **Identity drivers** - Key local community, landscape and identity drivers should be identified, developed and integrated with the adjacent land use functions and future design response.
- 3 **CPTED** - Future design should incorporate CPTED principles including clear sightlines, good levels of lighting and passive surveillance.
- 4 **Active mode permeability** - Corridor permeability 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.
- 5 **Active mode legibility and priority** - Legibility, connectivity demands, safety and modal priority for active modes should be addressed at intersections.
- 6 **Bridges** - Consideration of visual integration, interface and sense of place for bridge structure.
- 1 **Residual land** - Opportunity to demonstrate how any residual land portions following the construction of the Project are redefined and integrated with the expected future land use function.
- 2 **Wider connectivity** - Opportunity to reinforce connections to the wider community and landscape features.
- 3 **Enhancement** - Opportunity for ecological enhancement and tree planting

OUTCOMES AND OPPORTUNITIES PLAN - SHEET 01 OF 03

OUTCOMES

- Stormwater management outcomes should demonstrate integration of the stormwater raingardens and wetlands within the corridor and ensure an appropriate interface with adjacent land uses.
- High density residential and mixed-use integration / interface that enables buildings and spaces to positively address and integrate with the corridor.
- Intersection arrangement that addresses multi-modal priority, safety and legibility.
- Cross corridor active mode connection.
- Landscape outcomes should provide replace and augment canopy shading to the corridor. Outcomes to reflect and enhance the local character inherent in the built, natural and cultural qualities of the location within the corridor.
- Interface and visual / landscape buffer considerations for retained industrial, business and mixed use zones
- Integrated lane for stormwater treatments and walking and cycling facilities

LEGEND

- Designation Boundary
- Residential - THAB
- Business - Light Industry Zone
- Business - Future Centre Zone
- Business - Metropolitan Centre Zone
- Business - General Business Zone
- Mixed Use
- Public Open Space
- Proposed Bus Rapid Transit Stop
- Train Station
- School

Figure 2: NoR 1 urban design outcomes and opportunities Sheet 01 of 03



NOR 1 - BOTANY TOWN CENTRE TO RONGOMAI PARK

- Outcomes
 ● Opportunities
- 1 **Ecological connectivity** - Landscape outcomes should reinforce the wider vegetation patterns of the local open spaces and support ecological connectivity and biodiversity in the local environment.
- 2 **Identity drivers** - Key local community, landscape and identity drivers should be identified, developed and integrated with the adjacent land use functions and future design response.
- 3 **CPTED** - Future design should incorporate CPTED principles including clear sightlines, good levels of lighting and passive surveillance.
- 4 **Active mode permeability** - Corridor permeability 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.
- 5 **Active mode legibility and priority** - Legibility, connectivity demands, safety and modal priority for active modes should be addressed at intersections.
- 6 **Bridges** - Consideration of visual integration, interface and sense of place for bridge structure.
- 1 **Residual land** - Opportunity to demonstrate how any residual land portions following the construction of the Project are redefined and integrated with the expected future land use function.
- 2 **Wider connectivity** - Opportunity to reinforce connections to the wider community and landscape features.
- 3 **Enhancement** - Opportunity for ecological enhancement and tree planting.

Opportunity to connect to Ormiston Town Centre & Ho-Guang Shian Buddhist Temple

OUTCOMES AND OPPORTUNITIES PLAN - SHEET 02 OF 03

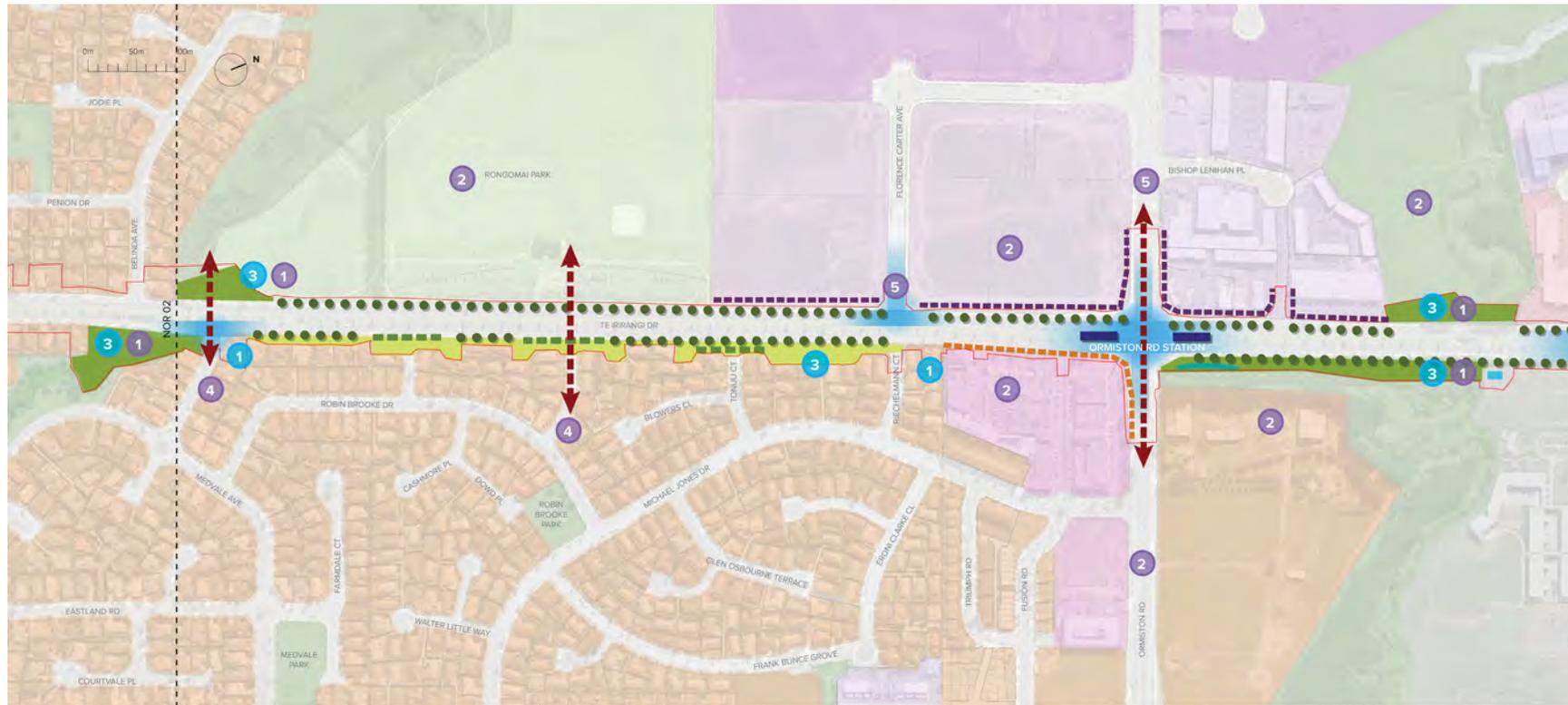
OUTCOMES

- Stormwater management outcomes should demonstrate integration of the stormwater raingardens and wetlands within the corridor and ensure an appropriate interface with adjacent land uses.
- High density residential and mixed-use integration / interface that enables buildings and spaces to positively address and integrate with the corridor.
- Intersection arrangement that addresses multi-modal priority, safety and legibility.
- ↔ Cross corridor active mode connection.
- Landscape outcomes should provide replace and augment canopy shading to the corridor. Outcomes to reflect and enhance the local character inherent in the built, natural and cultural qualities of the location within the corridor.
- Interface and visual / landscape buffer considerations for retained industrial, business and mixed use zones
- Integrated lane for stormwater treatments and walking and cycling facilities

LEGEND

- Designation Boundary
- Residential - THAB
- Business - Light Industry Zone
- Business - Future Centre Zone
- Business - Metropolitan Centre Zone
- Business - General Business Zone
- Mixed Use
- Public Open Space
- Proposed Bus Rapid Transit Stop
- Train Station
- School
- Proposed Stormwater Pond

Figure 3: NoR 1 urban design outcomes and opportunities Sheet 02 of 03



NOR 1 - BOTANY TOWN CENTRE TO RONGOMAI PARK

● Outcomes ● Opportunities

- 1 **Ecological connectivity** - Landscape outcomes should reinforce the wider vegetation patterns of the local open spaces and support ecological connectivity and biodiversity in the local environment.
- 2 **Identity drivers** - Key local community, landscape and identity drivers should be identified, developed and integrated with the adjacent land use functions and future design response.
- 3 **CPTED** - Future design should incorporate CPTED principles including clear sightlines, good levels of lighting and passive surveillance.
- 4 **Active mode permeability** - Corridor permeability 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.
- 5 **Active mode legibility and priority** - Legibility, connectivity demands, safety and modal priority for active modes should be addressed at intersections.
- 6 **Bridges** - Consideration of visual integration, interface and sense of place for bridge structure.
- 1 **Residual land** - Opportunity to demonstrate how any residual land portions following the construction of the Project are redefined and integrated with the expected future land use function.
- 2 **Wider connectivity** - Opportunity to reinforce connections to the wider community and landscape features.
- 3 **Enhancement** - Opportunity for ecological enhancement and tree planting.

OUTCOMES AND OPPORTUNITIES PLAN - SHEET 03 OF 03

OUTCOMES

- Stormwater management outcomes should demonstrate integration of the stormwater raingardens and wetlands within the corridor and ensure an appropriate interface with adjacent land uses.
- High density residential and mixed-use integration / interface that enables buildings and spaces to positively address and integrate with the corridor.
- Intersection arrangement that addresses multi-modal priority, safety and legibility.
- Cross corridor active mode connection.
- Landscape outcomes should provide replace and augment canopy shading to the corridor. Outcomes to reflect and enhance the local character inherent in the built, natural and cultural qualities of the location within the corridor.
- Interface and visual / landscape buffer considerations for retained industrial, business and mixed use zones
- Integrated lane for stormwater treatments and walking and cycling facilities

LEGEND

- Designation Boundary
- Residential - THAB
- Business - Light Industry Zone
- Business - Future Centre Zone
- Business - Metropolitan Centre Zone
- Business - General Business Zone
- Mixed Use
- Public Open Space
- Proposed Bus Rapid Transit Stop
- Train Station
- School
- Proposed Stormwater Pond

Figure 4: NoR 1 urban design outcomes and opportunities Sheet 03 of 03

6 NoR 2 – Rongomai Park to Puhinui Station

This section considers the proposed NoR 2 – Rongomai Park to Puhinui Station section against the relevant Design Framework Principles. It provides urban design focused commentary on the current design detail and recommends the framework for how and where any urban design outcomes should be considered in future design stages.

Table 5 in **Appendix A** outlines urban design commentary specific to NoR 2. For commentary common to all NoRs, refer to Table 3.

6.1 Summary of urban design evaluation and recommendations for NoR 2

Overall, the proposed NoR 2 corridor design and configuration is generally supportive of the Design Framework principles. A summary of the recommended urban design outcomes and opportunities for NoR 2 are outlined below and illustrated in Figure 5, Figure 6, Figure 7, Figure 8 and **Appendix B**. These are recommended to form a part of the ULDMP in future delivery stages. This is to ensure the detailed design of the corridor responds appropriately to the principles and the project specific urban design outcomes sought.

The ULDMP should address the following Project specific outcomes for NoR 2:

ENVIRONMENT

- A landscape plan that considers recommendations from the landscape and visual, arboriculture, flooding and ecological assessments including street tree and stormwater raingarden and wetland planting, construction compound and private property reinstatement and treatment of batter slopes. The landscape plan should also demonstrate integration of Otara Creek, Puhinui Creek and their tributaries where the corridor intersects with the existing Blue-Green Network. The landscape outcomes should support the principles of Auckland's Urban Ngahere Strategy and reinforce the wider vegetation patterns of the local landscape and create connections to proposed greenways and the wider walking and cycling network.
- Integration of the stormwater raingardens and wetlands to ensure an appropriate interface with adjacent land uses, specifically where wetlands are proposed in areas zoned high density.
- 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

- In future design stages, Manawhenua shall be invited as Partners to provide input on the cultural, landscape and design matters including how the Project outcomes reflect their identity and values.
- The identification, development and integration of key local community and identity drivers within NoR 2 should be demonstrated. Key NoR 2 local identity landscape, open space and community functions to be addressed include:
 - The Business – Local Centre Zone at Dawson Road;
 - Manukau Sports Bowl and Velodrome;
 - AUT South Campus (including addressing the objectives of the Manukau 2 Precinct);
 - Manukau Central (including addressing the objectives of the Manukau Precinct);

- Manukau Station;
 - Manukau Institute of Technology; and
 - Hayman Park.
- The proposed corridor alignment and function can deliver a positive contribution to the sense of belonging and participation, as well as community resilience by supporting direct access to existing local, neighbourhood and town centres, schools, community functions and open spaces. Key school, community and business functions within NoR 2 to be addressed include:
 - The Manukau Sports Bowl;
 - Redoubt North School (potential for direct access to the BRT station);
 - Puhinui School;
 - AUT South Campus (including addressing the objectives of the Manukau 2 Precinct);
 - Manukau Central (including addressing the objectives of the Manukau Precinct);
 - Manukau Rail Station and Bus Interchange;
 - Manukau Institute of Technology; and
 - Hayman Park.
 - A CPTED review of the NoR 2 project should address, at a minimum, the current identified CPTED risks including:
 - Under bridge environments at the Otara Creek tributary overbridge and culverts;
 - The Orlando Park frontage;
 - The public access walkway from Te Irirangi Drive to Townley Place;
 - The corridor interfaces (both east and west) on Te Irirangi Drive adjacent to the SH1 over bridge;
 - Hayman Park and it's interface with the Project corridor;
 - The public access walkway from Lambie Drive to Leith Court; and
 - The public access walkway from Puhinui Road to Fitzroy Street.

BUILT FORM

- Known or planned changes of land use and residential density have the potential to alter the perceived scale and impact of the proposed corridor functions should be identified and addressed.
- Resolution of any potential conflict between placemaking aspirations within local communities and the scale and operating speed of the proposed movement functions of the corridor should be addressed.
- An urban interface approach within the corridor that:
 - Provides an appropriate interface to the existing local, neighbourhood and town centres and enables buildings and spaces to positively address and integrate with the NoR 2 corridor;
 - Responds to the spatial character of proposed centre environments and supports quality public realm infrastructure, ample pedestrian footpath width, frequent pedestrian crossing points and street trees for shade and amenity;
 - Demonstrates the proposed modal connections, modal hierarchy, built form interfaces and arrangements at the proposed NoR 2 BRT station locations at:
 - Dawson Road;
 - Diorella Drive;
 - Ronwood Avenue (Manukau Central);

- Manukau Station; and
 - Puhinui Road/Lambie Drive,
- Support the requirements of Policies 1 and 3 of the NPS:UD for enabling increased development capacity adjacent to rapid transit networks;
 - Recognises the transition of densities from Residential Terrace Housing and Apartment Building Zone to Residential Mixed Housing Suburban Zone and provides a corridor interface that supports permeable pedestrian access and responds to the changing built form interface and spatial character of adjacent future development; and
 - Supports the integration of the proposed BRT stations and surrounding land uses; and
 - Supports vertical integration of bridging structures along the SH1 crossing to allow an appropriate transition and interface to adjacent built form.

MOVEMENT

- Permeability of the corridor 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. Demonstration of place specific active mode cross corridor solutions should include:
 - A potential mid-block crossing of Te Irirangi Drive between Titchmarsh Crescent and Penion Drive;
 - A potential mid-block crossing of Te Irirangi Drive at Leila Place;
 - Two mid-block crossings (one an upgrade to existing) on Ronwood Avenue at the Westfield shopping centre;
 - Upgrade of the existing mid-block crossing on Davies Avenue;
- Legibility, connectivity demands, safety and modal priority for active modes should be addressed for intersections within NoR 2. Demonstration of specific intersection responses to ensure connectivity between the proposed BRT facilities, local centres and other community facilities should include the intersections at:
 - Dawson Road;
 - Hollyford Road;
 - Diorella Drive;
 - Te Irirangi Drive and Great South Road;
 - Great South Road at the entry to Southpoint Shopping centre;
 - Great South Road and Ronwood Avenue;
 - Ronwood Avenue at Sharkey Way;
 - Ronwood Avenue and Davies Avenue;
 - Davies Avenue and Putney Way;
 - Davies Avenue and Manukau Station Road;
 - Manukau Station Road and Lambie Drive;
 - Lambie Drive and Ron wood Avenue;
 - Lambie Drive and Cavendish Drive;
 - Puhinui Road and Norman Spencer Drive;
 - Puhinui Road at Puhinui School; and
 - Puhinui Road and York Road / Grayson Avenue.

- A modal integration strategy that addresses the potential conflict between the continued freight function of the corridor and placemaking opportunities arising from the introduction of the BRT stations along the NoR 2 corridor.
- A modal integration strategy that addresses the functional layout of the Manukau station area to provide for legibility and clear wayfinding for active modes through and around the station area and between the rail, bus interchange and BRT station.

LANDUSE

- Demonstration of how any residual land portions following the construction of the Project are redefined and integrated with the expected future land use function.



NOR 2 - RONGOMAI PARK TO PUHINI STATION

Outcomes Opportunities

- 1 **Ecological connectivity** - Landscape outcomes should reinforce the wider vegetation patterns of the local open spaces and support ecological connectivity and biodiversity in the local environment.
- 2 **Identity drivers** - Key local community, landscape and identity drivers should be identified, developed and integrated with the adjacent land use functions and future design response.
- 3 **CPTED** - Future design should incorporate CPTED principles including clear sightlines, good levels of lighting and passive surveillance.
- 4 **Active mode permeability** - Corridor permeability 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.
- 5 **Active mode legibility and priority** - Legibility, connectivity demands, safety and modal priority for active modes should be addressed at intersections.
- 6 **Bridges** - Consideration of visual integration, interface and sense of place for bridge structure.
- 1 **Residual land** - Opportunity to demonstrate how any residual land portions following the construction of the Project are redefined and integrated with the expected future land use function.
- 2 **Wider connectivity** - Opportunity to reinforce connections to the wider community and landscape features.
- 3 **Enhancement** - Opportunity for ecological enhancement and tree planting

OUTCOMES AND OPPORTUNITIES PLAN - SHEET 01 OF 04

OUTCOMES

- Stormwater management outcomes should demonstrate integration of the stormwater raingardens and wetlands within the corridor and ensure an appropriate interface with adjacent land uses.
- High density residential and mixed-use integration / interface that enables buildings and spaces to positively address and integrate with the corridor.
- Intersection arrangement that addresses multi-modal priority, safety and legibility.
- Cross corridor active mode connection.
- Landscape outcomes should provide replace and augment canopy shading to the corridor. Outcomes to reflect and enhance the local character inherent in the built, natural and cultural qualities of the location within the corridor.
- Interface and visual / landscape buffer considerations for retained industrial, business and mixed use zones
- Integrated lane for stormwater treatments and walking and cycling facilities

LEGEND

- Designation Boundary
- Residential - THAB
- Business - Light Industry Zone
- Business - Future Centre Zone
- Business - Metropolitan Centre Zone
- Business - General Business Zone
- Mixed Use
- Public Open Space
- Proposed Bus Rapid Transit Stop
- Train Station
- School
- Proposed Stormwater Pond

Figure 5: NoR 2 urban design outcomes and opportunities Sheet 01 of 04