

Supporting Growth

Redhills Arterial Transport Network

Urban Design Evaluation

December 2022

Version 1.0



Document Status

Version	Responsibility	Name
2020 Draft	Author	S Bowden E Chen
	Reviewer	Matthew Kerr-Ridge
1.0	Author	Stuart Bowden
	Approver	Bridget O'Leary

Revision Status

Version	Date	Reason for Issue
1.0	December 2022	Final for lodgement

Table of Contents

1	Introduction.....	2
1.1	Purpose and scope of this evaluation	2
2	The Design Context	4
2.1.1	National Policy Statement on Urban Development 2020 (NPS:UD)	5
2.1.2	Auckland Council.....	5
3	Project Description	6
3.1	RATN Form and Function.....	6
3.2	Existing Environment.....	6
3.2.1	Urban Features.....	6
3.2.2	Physical Features	7
3.2.3	Future Receiving Environment.....	7
4	Urban Design Evaluation and Recommendations.....	9
4.1	Introduction	9
4.2	Evaluation against the Design Framework Principles	9
4.3	Summary of urban design evaluation and recommendations for the RATN	14

Tables

Table 1: Redhills Arterial Transport Network – Projects and Notice Reference	2
Table 2: Urban Design Evaluation.....	9

Figures

Figure 1: Redhills Arterial Transport Network Context and Extent.....	3
Figure 3: RATN N-S Project and E-W Project Indicative Typical Cross-section.....	6
Figure 3: AUP:OP zoning for the RATN Project Area	8
Figure 4: E-W Project Urban Design Outcomes Sought	17
Figure 5: N-S Project Urban Design Outcomes Sought	18

Acronyms

Acronym/Term	Description
AT	Auckland Transport
AUP:OP	Auckland Unitary Plan Operative in Part 2016
E-W Project	East-West Arterial Transport Corridor
N-S Project	North-South Arterial Transport Corridor
RATN	Redhills Arterial Transport Network
SH16	State Highway 16
SH18	State Highway 18
THAB	Terrace Housing and Apartment Buildings Zone
The Design Framework	Te Tupu Ngātahi Design Framework
Waka Kotahi	Waka Kotahi NZ Transport Agency

1 Introduction

The Supporting Growth Programme was established to investigate, plan and protect the transport corridors needed to support Auckland’s future urban growth areas over the next 30 years.

In collaboration with key programme partners Auckland Transport (**AT**), Waka Kotahi NZ Transport Agency (**Waka Kotahi**), Manawhenua, Auckland Council and KiwiRail, the Supporting Growth project teams will be informing and guiding the transport investment, business case and route protection processes for each of the Supporting Growth Programme corridors over the next five years.

This urban design framework and evaluation provides an overview of the urban design considerations and inputs that applied during option development and refinement and the identification of future transport and land use integration opportunities for the Redhills Arterial Transport Network (**RATN**).

The projects in the RATN are listed in Table 1, with an illustration of the RATN context and extent shown in **Error! Reference source not found.**

Table 1: Redhills Arterial Transport Network – Projects and Notice Reference

Notice	Project	Description	Requiring Authority
NoR1	Redhills North-South Arterial Transport Corridor	New urban arterial transport corridor and upgrade of Don Buck and Royal Road intersection.	AT
NoR2a	Redhills East-West Arterial Transport Corridor – Dunlop Road	New urban arterial transport corridor that intersects with Fred Taylor Drive and connects to the remaining East-West connection (NoR2c) at the intersection with the Redhills North-South arterial corridor.	AT
NoR2b	Redhills East-West Arterial Transport Corridor – Baker Lane	New urban arterial transport corridor that intersects with Fred Taylor Drive and connects to the intersection of the remaining East-West connection and Dunlop Road (NoR2a).	AT
NoR2c	Redhills East-West Arterial Transport Corridor – Nixon Road Connection	New urban arterial transport corridor that intersects with the Redhills East West Arterial Corridor – Dunlop Road. This includes the upgrade of the existing Red Hills Road / Nelson Road / Nixon Road intersection, and the existing Nixon Road / Henwood Road intersection.	AT

1.1 Purpose and scope of this evaluation

This urban design evaluation (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 RATN.

This UDE has been prepared to inform the Assessment of Effects on the Environment (AEE) Notices of Requirement (NoRs) being sought by Auckland Transport (AT) for the Project under the Resource Management Act 1991 (RMA).

This UDE 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.

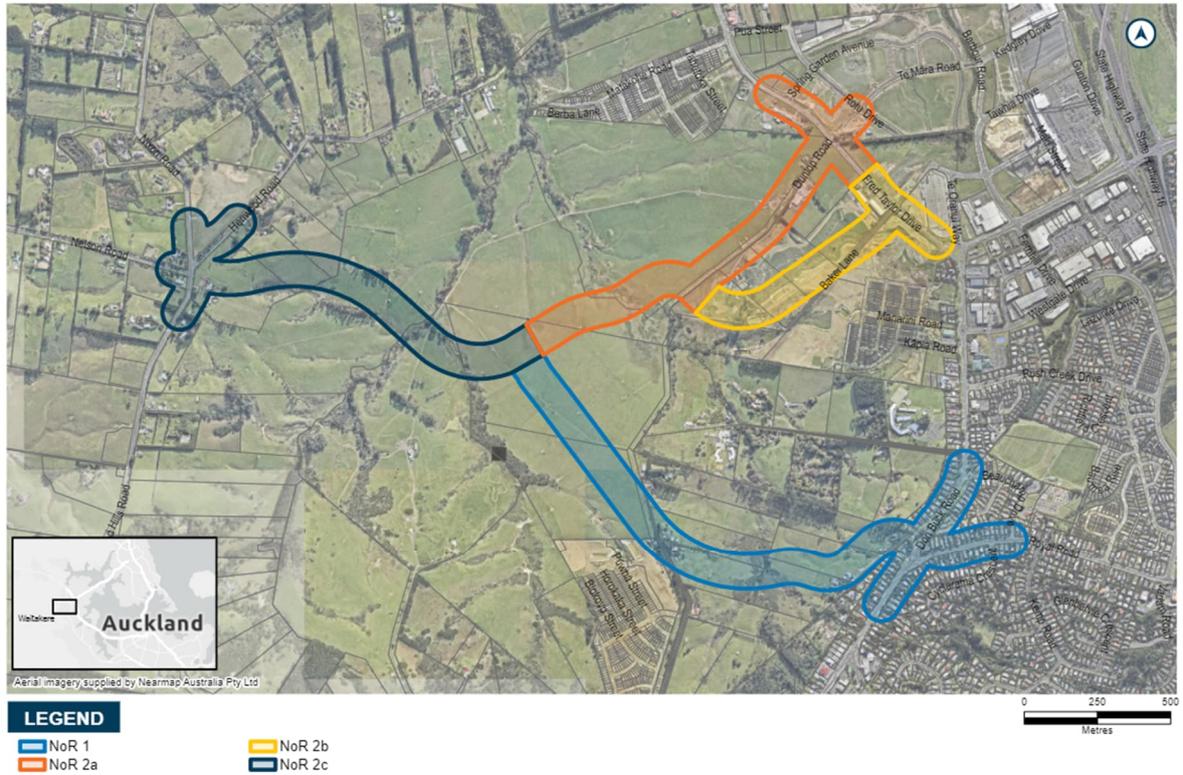


Figure 1: Redhills Arterial Transport Network Context and Extent

2 The Design Context

This evaluation which has been prepared for the combined NoRs is based on the guidance and principles established in the Te Tupu Ngātahi programme wide document – Te Tupu Ngātahi Design Framework (Design Framework or Design Framework Principles).

The Design Framework takes a systems approach as the basis on which urban areas are organised and understood and pulls these apart as a series of layers; environment, social, built form, movement and land use, with cultural and sustainability values underpinning and spanning across these. In this way transport networks are not seen in isolation 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 the Te Tupu Ngātahi Supporting Growth Programme 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
- 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, Auckland Transport Code of Practice).

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

2.1.1 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.

2.1.2 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 (E38: Urban Subdivision);
- 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 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

3.1 RATN Form and Function

The RATN consists of an East-West and a North-South arterial transport corridor (referred to as the E-W Project and the N-S Project respectively), each with capacity for a two-lane arterial standard carriageway and new footpaths and dedicated cycleways on both sides of the road. The corridors are:

- A new East-West corridor from the intersection of Nixon, Nelson and Red Hills Roads in the west to Fred Taylor Drive in the east;
- A split of the East-West corridor on approach to Fred Taylor Drive into a connection via Baker Lane and a public transport prioritised route that meets Dunlop Road; and
- A new North-South corridor from the intersection of Don Buck and Royal Roads intersection in the south and connecting to a new intersection with the new E-W Project in the North.

To safely tie into the existing road network, the RATN also includes the upgrade of existing intersections where the new corridors will connect, as follows:

- Signalisation of the intersection at Fred Taylor Drive and Dunlop Road;
- Signalisation of the intersection at Fred Taylor Drive and Baker Lane;
- Signalisation of the intersection at Don Buck and Royal Roads; and
- A new roundabout at the intersection of Red Hills, Nelson and Nixon Roads.

The RATN also provides a footprint for new stormwater wetlands for the treatment and attenuation of stormwater from the new corridors.

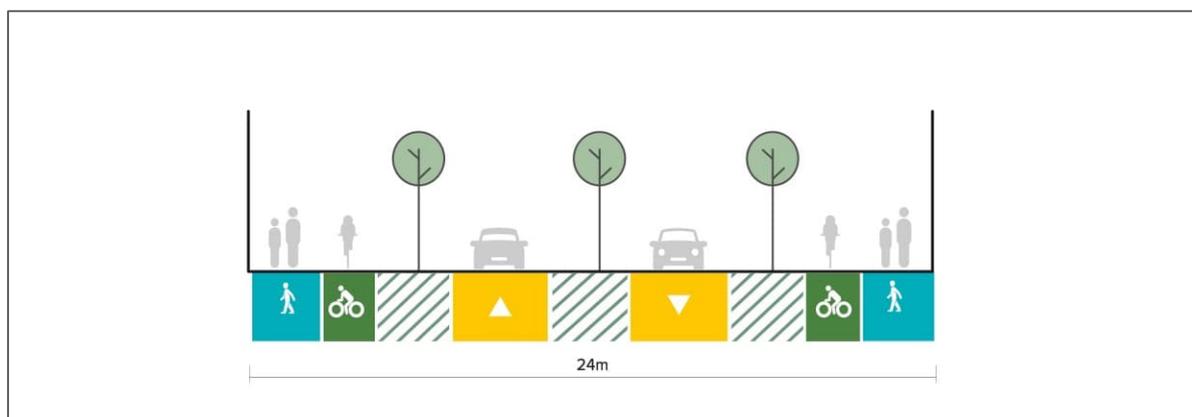


Figure 2: RATN N-S Project and E-W Project Indicative Typical Cross-section

3.2 Existing Environment

3.2.1 Urban Features

The current Redhills environment is typified as a transitional landscape on the periphery of the current extent of the urban environment of North West Auckland. The area is generally characterised by a range of rural and urban land uses, including areas of developing or recently developed urban land use (Figure 1).

Key features within and surrounding the RATN area include:

- Westgate Metropolitan Centre is approximately 1.3km to the north-east of the RATN area providing a range of commercial and retail land uses (e.g. the NorthWest Mall and Westgate shopping area) as well as community facilities and open space.
- State Highway 16 (**SH16**) is accessible from Royal Road approximately 1km to the east, providing a connection to the Auckland CBD. State Highway 18 (**SH18**) is accessible from Fred Taylor Drive approximately 1km to the north east of the RATN area.
- Westgate and Massey are immediately east of the RATN area and are characterised by suburban residential land uses in the form of single detached housing.
- A commercial and retail strip is located at the Red Hills Road and Don Buck Road intersection, which includes a takeaway, petrol station, doctors office and pet grooming centre.

The majority of the Redhills area is greenfield and rural in character. This rural land is predominantly in the form of open pasture for farming and grazing and consists of a range of rural residential properties, larger lifestyle blocks and a larger farming operation owned by a developer. These properties vary in size with the majority containing rural/semi-rural dwellings and/or farm accessory buildings.

The lower northern portion of the Redhills area bordering Fred Taylor Drive is currently undergoing urban development. The wider Redhills area is zoned for a range of residential and business land uses under the AUP:OP, and this urban development is set to continue on the balance of land in general accordance with the Redhills Precinct Plan.

Land use along the eastern extent of the RATN area is generally more urban, characterised by predominantly low-density, single detached residential development along Don Buck Road and Royal Road.

3.2.2 Physical Features

The Redhills area is a natural amphitheatre shape, with Red Hills Road traversing the prominent ridgeline along the western and southern perimeter of the RATN area and connecting with Don Buck Road along the eastern fringe to create a bowl-shape that is accessible along the entire perimeter.

The landform within the RATN area is dominated by rolling and undulating topography and a network of riparian corridors and associated overland flow paths. While there are tracts of native and exotic vegetation distributed through the central/southern areas, open pasture is the most prevalent land cover. The landscape is also notably modified, including re-shaped and realigned natural watercourses and the presence of an existing Transpower 11kv transmission line running in a north-west to south-east direction through the centre of Redhills.

3.2.3 Future Receiving Environment

Both the current residential and business zonings under the AUP:OP and the provisions of the Redhills Precinct Plan clearly indicate future land use changes for the RATN (Figure 2). The key land use features that will comprise the future urban environment include:

- Future residential areas (Single House, Mixed Housing Suburban, Mixed Housing Urban and Terrace Housing and Apartment Buildings (**THAB**) zones);
- Transitioning residential areas (including areas in the north eastern portion of the RATN currently being developed);

Urban Design Evaluation

- Existing residential areas that are experiencing infill and greater density (for example along Don Buck Road);
- Business zoned areas including the central Redhills zone, and along the eastern boundary of the Redhills Precinct at Don Buck Road.

The Business - Local Centre zoned land in the centre of the Redhills Precinct is proposed to form the heart and focal point for the Redhills community. The AUP:OP/Precinct Plan proposes:

- Corridors that intersect at the centre and enhance its use by passing traffic and public transport, walking and cycling;
- Support more intensive development surrounding the centre;
- Support the creation of a safe and accessible environment for pedestrians, cyclists and public transport; and
- Create a low speed, main street environment with active frontages to key public interfaces.

The Business Local Centre zoned land adjacent to Don Buck Road is predominantly occupied by low-density residential housing, similar to the surrounding land use. However, in the future this is expected to be further developed as a business zone due to its location along an arterial corridor and its close proximity to SH16, SH18 and the Westgate Metropolitan Centre.

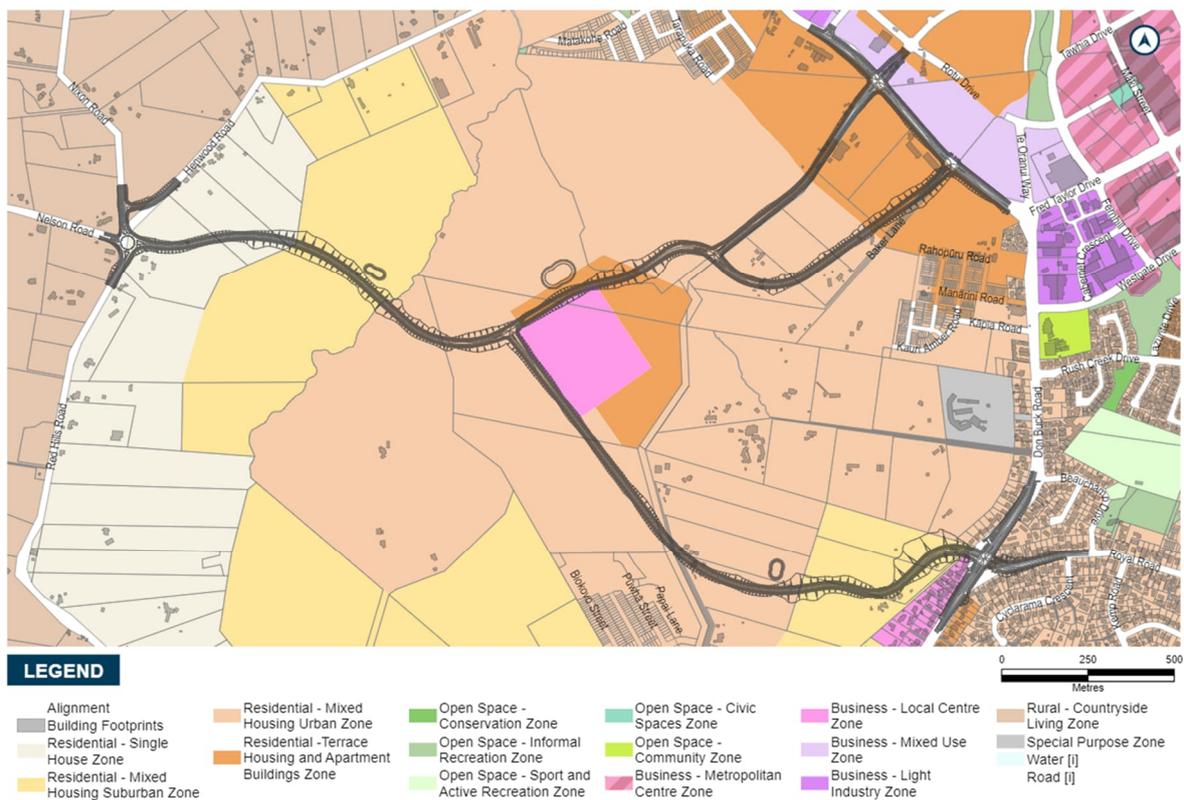


Figure 3: AUP:OP zoning for the RATN Project Area

4 Urban Design Evaluation and Recommendations

4.1 Introduction

This section evaluates urban design matters across the RATN 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 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.

4.2 Evaluation against the Design Framework Principles

Table 2: Urban Design Evaluation

ENVIRONMENT		
Principle	Explanation	Application to the RATN corridors
<p>1.1 Support and enhance ecological corridors and biodiversity</p>	<p>Mitigate the effects on or enhance existing ecological corridors through the placement and design of movement corridors.</p>	<ul style="list-style-type: none"> The proposed RATN corridor cross sections inherently supports a range of options to preserve or enhance existing natural systems (at a range of scales), for example berm widths and edge conditions that can accommodate vegetation types that support and reinforce ecological restoration strategies. The proposed RATN corridor arrangement and alignment provides spatial provisions (at boundaries and within berms) that have the potential to support ecological connectivity and biodiversity in the local environment by providing contiguous space for diverse planting responses and alignments that minimise stream interruptions. The crossings of the Redhills Stream, Waiteputa Stream and Ngongetepara Stream on the E-W Project have the potential to incorporate bridging structures, where they might serve to reinforce broader connectivity outcomes for ecology, water quality and cross corridor walking and cycling facilities.
<p>1.2 Support water conservation and enhance water quality in a watershed</p>	<p>Take into account and work with the existing watershed as part of a whole system.</p>	<ul style="list-style-type: none"> The proposed typical RATN corridor cross section provides spatial provisions (up to 6m width in aggregate) to adopt the use of natural drainage and treatment systems to address water quality and reduce hard engineering solutions. The adopted spatial provisions within the proposed typical cross section supports the use of in corridor stormwater management systems, for example linear swale treatment and raingardens.

<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 E-W Project concept demonstrates a close and connected alignment to the existing landform, generally balancing earthworks while minimising unnecessary disturbance and materials. • The E-W Project demonstrates an efficient alignment in relation to existing property boundaries in the Dunlop Road / Baker Lane portions to the east, minimising land impacts and inefficient residual land portions. • The N-S Project traverses across undulating land and culverted stream tributaries before climbing steeply at 8% for approximately 325m and connecting with Don Buck Road at the intersection with Royal Road. This alignment requires significant fill to achieve a compliant longitudinal approach geometry and intersection grading with Don Buck Road. The corridor alignment and grading are designed to minimise the required earthworks by maximising the allowable longitudinal grading on approach to the intersection. User accessibility, land use integration and visual mitigation strategies to address this section of corridor are described under the response to Principles 2.4 and 2.5.
<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 climatic environment of future places and streets.</p>	<ul style="list-style-type: none"> • The RATN corridor designs, including crossings of the Redhills Stream, Waiteputa Stream and Ngongetepara Stream, adopts a vertical geometry that accommodates stormwater events including the applied climate change factors as stated in the Auckland Council Stormwater Code of Practice. • The RATN corridor designs provide for street tree planting zones that, when delivered, will contribute to reducing urban heat island effects in the more intensively urbanised environment of Redhills. • The RATN corridors provide for active modes and accommodates prioritised public transport options to support modal shift and reduce transport related climate change contributions.
<p>SOCIAL</p>		
<p>Principle</p>	<p>Explanation</p>	<p>Application to the RATN corridors</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>	<ul style="list-style-type: none"> • The RATN corridors pass through a largely existing rural edge environment and while this is planned to change to mixed and more intense land uses, the flexible cross-section potentially provides space for any new identity drivers that may be established in adjacent development sites, for example place specific pavement treatments, planting types or street furniture. • Broader land development character drivers for the local centre and zones along both RATN corridors are largely unknown but the inherent spatial flexibility afforded by the indicative typical cross section is capable of responding to a range of identity drivers that may arise from urban centre or higher density land

		uses. This includes active edges, permeable access edges, vegetation scaled to low and medium scaled built form, natural landscape identity drivers or more urbanised hard urban space qualities.
2.2 Respect culturally significant sites and landscapes	Acknowledge significant sites and features in the layout of movement corridors including ridgelines or horizons.	<ul style="list-style-type: none"> Overall, the RATN corridors will not affect any identified sites of significance to Manawhenua under the AUP:OP, however there are features of value to Manawhenua in the wider Redhills area, which have been acknowledged through hui (i.e. streams). These will be addressed through designation conditions which provide for preparation of Cultural Advisory Reports, Cultural Monitoring Plans, and mana whenua input into the Urban and Landscape Design Management Plan. There are no early European archaeological sites recorded within or in close proximity to the RATN corridors. The nearest sites are more than 400m away (including a plane crash site during World War II, a gum diggers' camp and hut site, a 1930's Post Office and historic dwelling).
2.3 Adaptive corridors	Corridors should demonstrate flexibility to respond to changes in their function and physical interfaces. Consider an adaptive approach in the way strategic corridors are designed to be able to respond to changes in land use, the way we move around or utilise technology over time.	<ul style="list-style-type: none"> The typical RATN corridor cross section presents a flexible, re-configurable and adaptable environment for changing transport needs, for example future bus priority measures at intersections, bus stops and future expansion of any walking and cycling networks within the grain of adjacent development. The RATN cross section provides space for several modes, with spatial provisions at the corridor edges that accommodate active frontages, provide permeability for access to adjacent land use types and movement corridors.
2.4 Social cohesion	Provide clear, effective and legible connectivity between community and social functions.	<ul style="list-style-type: none"> The RATN corridor alignments and function deliver a positive contribution to the sense of belonging and participation, as well as community resilience by supporting direct access to the location of the proposed Redhills local centre as shown on the Redhills Structure Plan and connecting (via stream crossing locations) to the potential open space network within the future Redhills area. The flexibility inherent in the proposed RATN corridor cross section supports the creation of spaces where people can seamlessly connect through a permeable interface at the corridor boundary. Where the N-S Project climbs to meet Don Buck Road, the combination of the road grading and potential significant fill embankments may limit or preclude vehicular access (but not pedestrian and cycle access) from adjacent mixed housing suburban zoned land to the N-S Project. The future establishment of an urban integration strategy that is focused on integration with built form= and character of adjacent development should be prepared to address and manage this interface.

<p>2.5 Safe corridors</p>	<p>Provide a safe and convenient network of routes accessible to people of all ages and abilities.</p>	<ul style="list-style-type: none"> • The RATN corridors deliver a greater level of access and movement to future local communities that will promote a sense of personal safety. • The proposed active travel solutions are proposed as fully segregated and prioritised, for example with signalised intersections at Fred Taylor Drive and Don Buck Road. • The proposed E-W Project facilities, configuration and alignment accommodates the universal design approach and accessibility to all parts of user journeys. • The existing topography and longitudinal grading of the proposed N-S Project require a maximum of 8% gradient on the approach to Don Buck Road. This physical environment will potentially pose a barrier to some users with disabilities or other physical ability limitations (for example, children, the elderly). Future design stages should include the demonstration of an access alternatives strategy that addresses universal access needs for the N-S Project.
---	--	--

BUILT FORM

Principle	Explanation	Application to the RATN corridors
<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>	<ul style="list-style-type: none"> • The proposed RATN corridor alignments and arrangement provides an even and easy access network for all proposed growth areas within Redhills. • The RATN corridors directly address (skirts the proposed zoned areas) the local centre and THAB zoning at the centre of Redhills and the THAB zoning along Fred Taylor Drive.
<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>	<ul style="list-style-type: none"> • The RATN corridor configurations and scale provide an appropriate response to the potential needs of the adjacent precinct functions, for example through efficient localised movement, alignment with higher density living (THAB zones) and the provision of mixed mode travel. • The corridor alignment acknowledges and accommodates lodged precinct planning and private development land use proposals of major landholders in the north east and eastern portions of Redhills.
<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 RATN corridor cross sections provides a flexible platform to address the opportunity for place as well as movement function, for example separated pedestrian and cycle facilities, potential road median spaces. • The corridor cross section provides flexibility in supporting appropriate public private interfaces and connectivity at a fine grain (pedestrian) level, for example direct pedestrian access from THAB or other higher density living is accommodated and encouraged by placing pedestrian circulation closest to the corridor boundary.

		<ul style="list-style-type: none"> Direct new private vehicular access is not accommodated, however a pedestrian permeable interface or active frontage interface is supported where adjacent to the future THAB zone (or where required). The RATN corridor cross sections provides clear and flexible allocation of street space between competing uses by allowing for separated modes.
MOVEMENT		
Principle	Explanation	Application to the RATN Corridors
4.1 Connect nodes	Provide tangible connectivity between identified activity nodes.	<ul style="list-style-type: none"> The corridor alignment provides tangible and direct connectivity between complementary destinations, for example the proposed local urban centre / THAB zones in the centre of Redhills to the Westgate and Northwest town centres and transport hub, regional open space facilities in Westgate and the potential public transport interchanges and Royal Road / SH16.
4.2 Connect modes	Provide for choice in travel and the ability to connect at interchanges between modes.	<ul style="list-style-type: none"> The RATN corridors provide simple but complete connectivity for all modes (walking, cycling, public transport and private vehicle). The E-W Project provides a direct and potentially prioritised active mode and public transport connection to the future transport interchange at Westgate. The N-S Project provides a direct and convenient connection to Royal Road (at Don Buck Road) that will serve as the direct link to a potential public transport interchange on SH16.
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 alignment provides direct and legible access to employment centres at Westgate and via regional transport networks (SH16 and SH18) to regional employment centres throughout the North West of Auckland.
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 RATN corridor cross sections accommodate high-quality active travel facilities, for example separated pedestrian and cycle pathways.
4.5 Support inter-regional connections and strategic infrastructure	Consider the location and alignment of significant movement corridors and placement of infrastructure (power, wastewater, water) to the network.	<ul style="list-style-type: none"> The proposed N-S Project will run in close proximity to two Transpower transmission lines (110kv and 220kv). The alignment is located as close as possible to the Transpower grid, reducing visual and physical land fragmentation issues and allowing for flexible future land use opportunities in the surrounding land.

<p>4.6 Support legible corridor function</p>	<p>Consider how areas can be clearly navigated and understood by users moving from place to place.</p>	<ul style="list-style-type: none"> The RATN typical corridor cross section accommodates a range of modes and inherently flexibly supports future community connectivity, mobility and choice.
<p>LANDUSE</p>		
<p>Principle</p>	<p>Explanation</p>	<p>Application to the RATN corridors</p>
<p>5.1 Public transport directed and integrated into centres</p>	<p>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.</p>	<ul style="list-style-type: none"> The E-W Project alignment accommodates a direct public transport connection along Dunlop Road between the Redhills local centre and Westgate town centre. The N-S Project facilitates a direct public transport connection (as part of a local bus route loop) between the Redhills urban centre and the public transport interchange potentially located at Royal Road / SH16.
<p>5.2 Strategic corridors as urban edges</p>	<p>Strategic corridors as potential definers of a land use edge.</p>	<ul style="list-style-type: none"> This principle is not relevant to the RATN corridors.

4.3 Summary of urban design evaluation and recommendations for the RATN

Overall, the proposed RATN corridor design and configuration is generally supportive of the Design Framework principles. A summary of the recommended urban design outcomes and opportunities are outlined below and illustrated in Figure 4 and Figure 5. These are recommended to form a part of the Urban and Landscape Design Management Plan (ULDMP) in future delivery stages. This is to ensure the detailed design of the corridor responds appropriately to the principles and the project specific urban design outcomes sought.

The ULDMP should address the following Project specific outcomes:

ENVIRONMENT

- A landscape plan that considers recommendations from the landscape and visual, 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 Redhills Stream, Waiteputa Stream and Ngongetepara Stream 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 stormwater raingardens, ponds 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 incorporating street trees and other corridor landscaping in future urbanised areas, supporting modal shift and accounting for flood hazard risks.

SOCIAL

- In future design stages, Manawhenua shall be invited to provide input into relevant cultural, landscape and design matters including how desired outcomes reflect their identity and values.
- The identification, development and integration of key local community and identity drivers for the RATN should be demonstrated. Key RATN local identity community functions to be addressed include:
 - Business – Local Centre Zone;
 - Links to the adjacent Westgate Metropolitan Centre to the east of Fred Taylor Drive;
 - Links to the Local centre zoning along Don Buck Drive.
- Key RATN distinctive landscape character qualities of open spaces, stream and conservation zones include;
 - Open space linkages along Redhills Stream, Waiteputa Stream and Ngongetepara Stream; and
 - Linkages and crossing points with the Recreation Open Space network indicated in the Redhills Precinct: Precinct Plan 1.Kellaway Drive 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 the RATN to be addressed include:
 - Linkages and crossing points with the Recreation Open Space network indicated in the Redhills Precinct: Precinct Plan 1.Kellaway Drive Reserve;
 - Rongomai Park / recreational reserve; and
 - Barry Curtis Park.
- A CPTED review of the RATN should address, at a minimum, any identified CPTED risks including:
 - Any proposed underpass environments resulting from the project response to topographical constraints; and
 - Under bridge environments at the Redhills Stream, Waiteputa Stream and Ngongetepara Stream overbridges or 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 any proposed local, neighbourhood and town centres and enables buildings and spaces to positively address and integrate with the RATN;
- 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; and
- 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.

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:
 - Across the RATN corridors at the proposed local centre;
 - Coinciding with stream or recreation open space interfaces with the RATN; and
 - At any proposed bus station locations along the RATN.
- Legibility, connectivity demands, safety and modal priority for active modes should be addressed for intersections within the RATN. Demonstration of specific intersection responses to ensure connectivity between the proposed high density residential, local centres and other community facilities should include the intersections of the RATN and:
 - Red Hills Road and NoR2c
 - NoR1 and NoR 2c;
 - NoR1 and Don Buck Road;
 - Dunlop Road and Fred Taylor Drive;
 - Fred Taylor Drive and Baker Lane; and
 - Dunlop Road and Baker Lane.

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 local centre and higher density zones.

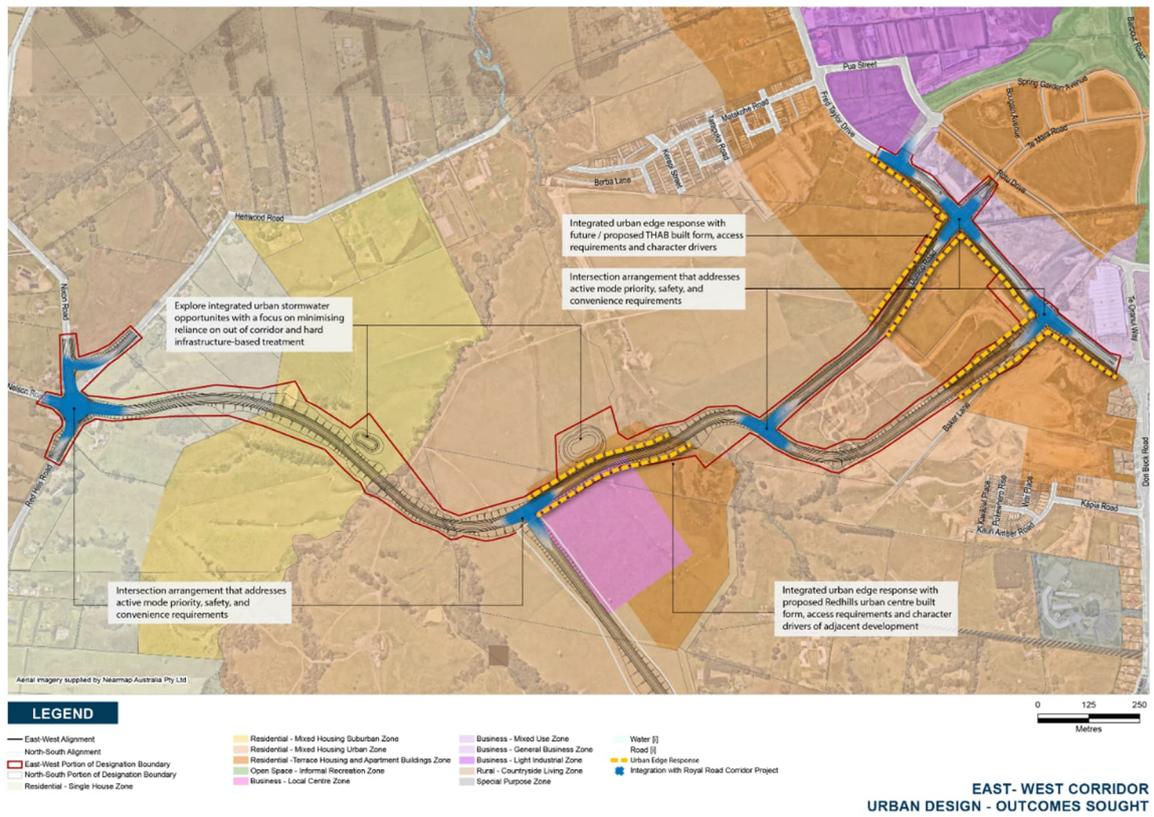


Figure 4: E-W Project Urban Design Outcomes Sought

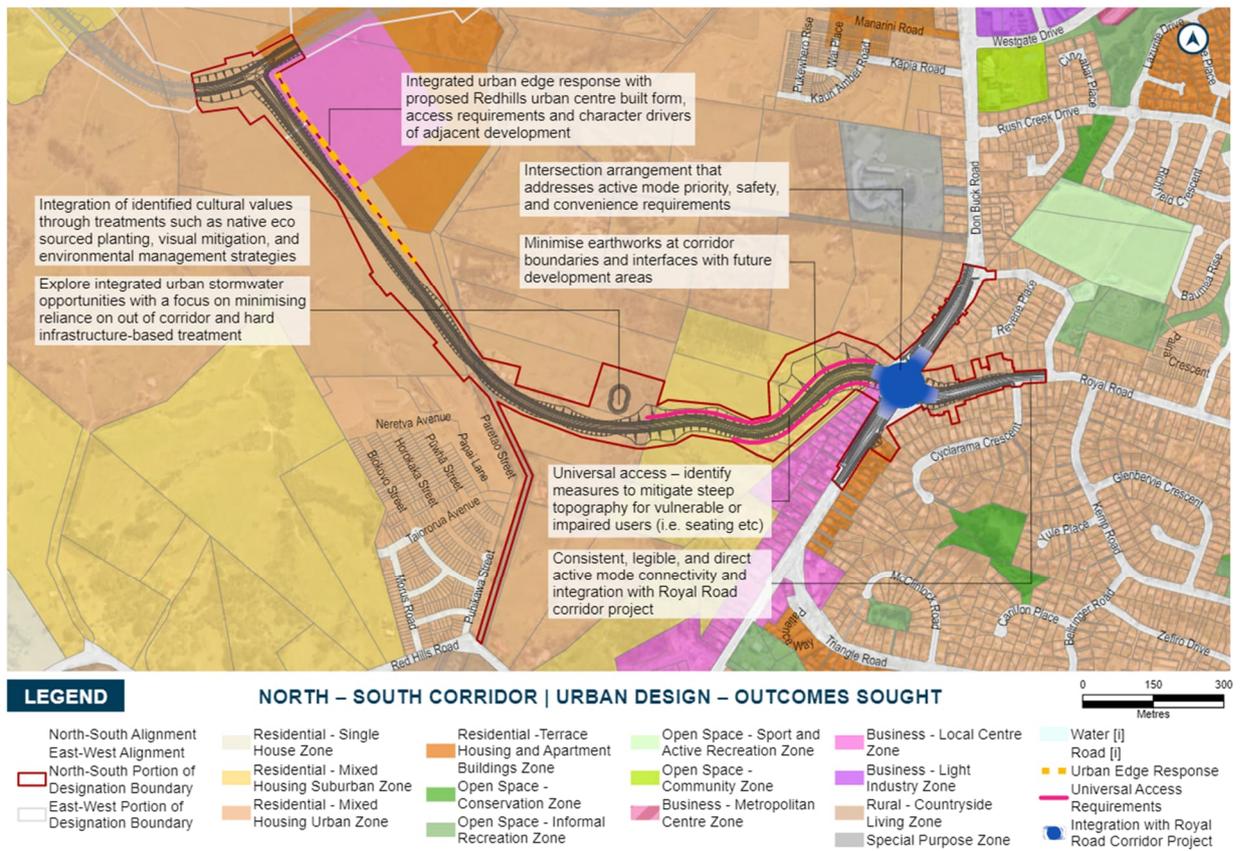


Figure 5: N-S Project Urban Design Outcomes Sought