



Rotorua Draft Future Development Strategy

Technical Report

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B&A
Urban & Environmental

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Rotorua Lakes Council

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Appendices

- Appendix 1: Thematic Mapping
- Appendix 2: Advantages/ disadvantages assessment of Spatial Scenarios
- Appendix 3: Growth Area Assessment
- Appendix 4: Market Economics Capacity report
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- Appendix 6: Summary of Consultation and Engagement Report

1.0 Purpose

The purpose of this report is to provide an overview of the methodology and analysis undertaken to prepare the draft Rotorua Future Development Strategy (**the FDS**) for Rotorua, including identifying and evaluating potential future growth areas that informed the preparation of the draft FDS.

This report will be updated following public consultation on the draft FDS to address any matters arising from submissions on the draft FDS.

2.0 Background

2.1 Statutory Requirements

2.1.1 The Resource Management Act 1991

The FDS is a Resource Management Act 1991 (**RMA**) planning document. The purpose of the RMA, is the sustainable management of natural and physical resources. In achieving this purpose, matters of national importance must be recognised and provided for (section 6 matters).

These matters of national importance are summarised as follows:

- The preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and protection from inappropriate development (s6(a));
- The protection of outstanding natural features and landscapes;
- The protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna;
- The maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers;
- the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga;
- The protection of historic heritage from inappropriate subdivision, use, and development;
- The protection of protected customary rights; and
- The management of significant risks from natural hazards.

There are a range of other matters that must also be considered and these are listed in Section 7 of the RMA. They include kaitiakitanga, the ethic of stewardship, the efficient use and development of resources, the maintenance and enhancement of amenity values and the quality of the environment, the intrinsic values of ecosystems and the effects of climate change. The RMA also requires us to take into account the principles of the Te Tiriti o Waitangi.

These matters have directly informed the draft FDS, through the outcomes of the draft FDS, the framework used to guide evaluation of the spatial scenarios, and the way in which the draft FDS has been prepared, including the approach to engagement with iwi and hapū.

2.1.2 Local Government Act 2002

The NPSUD requires the Councils to use the special consultative procedure in section 83 of the Local Government Act 2002 (LGA) when preparing an FDS. This procedure sets out detailed consultation requirements. This requires the Council to identify and analyse the reasonably practicable options that are relevant to the proposal. The Technical Report below sets out the reasonably practicable growth options for Rotorua and evaluates them in detail. The evaluation is based on a comprehensive range of technical data. This evaluation takes into account the relationship of Māori and their culture and traditions with their ancestral land, water, sites, waahi tapu, valued flora and fauna, and other taonga. The Technical Report below details the outcomes of engagement with iwi and hapū to date.

2.1.3 National Policy Statement on Urban Development 2020

National Policy Statement on Urban Development 2020 (NPSUD) ([view here](#)) sets out the requirements for preparing an FDS. The FDS must be progressed using the Special Consultative Procedure under the Local Government Act 2002 (as required by section 3.15(1) in the NPSUD with the process set out in section 83 of the LGA).

The Rotorua urban environment is identified as a Tier 2 urban environment by the NPSUD. The NPSUD sets out specific requirements for Tier 2 urban environments and local authorities, with Policy 1, 2 and 5 being particularly relevant. These require the Council to plan for a well-functioning urban environment, provide for at least sufficient development capacity to meet demand over the short, medium and long term, and enable heights and densities commensurate with levels of accessibility or relative demand in any given area.

The NPSUD specifies that following planning periods which are relevant for the FDS:

- Short term – three years.
- Medium term – ten years.
- Long term – 30 years.

Tier 1 and Tier 2 local authorities are required to prepare a FDS every six years, and update them every three years, to strategically plan for growth.

As set out in the NPSUD, the purpose of the FDS is:

- (a) to **promote long-term strategic planning** by setting out how a local authority intends to:
 - (i) achieve **well-functioning urban environments** in its existing and future urban areas; and
 - (ii) **provide at least sufficient development capacity**..., over the next 30 years to meet expected demand; and
- (b) assist the **integration of planning decisions** under the Act with **infrastructure** planning and funding decisions.

Objective 1 of the NPSUD is that New Zealand has ‘well-functioning urban environments’ that enable all people and communities to provide for their social, economic, and cultural wellbeing, and for their health and safety, now and into the future.

Policy 1 defines a ‘well-functioning urban environment’:

...urban environments that, as a minimum:

(a) have or enable a variety of homes that:

(i) meet the needs, in terms of type, price, and location, of different households; and

(ii) enable Māori to express their cultural traditions and norms; and

(b) have or enable a variety of sites that are suitable for different business sectors in terms of location and site size; and

(c) have good accessibility for all people between housing, jobs, community services, natural spaces, and open spaces, including by way of public or active transport; and

(d) support, and limit as much as possible adverse impacts on, the competitive operation of land and development markets; and

(e) support reductions in greenhouse gas emissions; and

(f) are resilient to the likely current and future effects of climate change

2.1.3.1 Core content requirements

The FDS is required to identify:

- Broad locations where development capacity will be provided.
- The development infrastructure¹ and additional infrastructure² required to support or service the capacity, including general location of corridors and other sites for infrastructure.
- Constraints on development. Along with constraints on development, this draft FDS also identifies opportunities as these are important to consider when identifying broad locations for growth.

The NPSUD also requires the FDS to include clear statements of hapū and iwi values and aspirations for urban development.

¹ **development infrastructure** is defined by the NPSUD and means the following, to the extent they are controlled by a local authority or a Council Controlled Organisation (as defined in section 6 of the Local Government Act 2002):

(a) network infrastructure for water supply, wastewater, or stormwater

(b) land transport (as defined in section 5 of the Land Transport Management Act 2003)

² **additional infrastructure** is defined by the NPSUD and means:

(a) public open space

(b) community infrastructure as defined in section 197 of the Local Government Act 2002

(c) land transport (as defined in the Land Transport Management Act 2003) that is not controlled by local authorities

(d) social infrastructure, such as schools and healthcare facilities

(e) a network operated for the purpose of telecommunications (as defined in section 5 of the Telecommunications Act 2001)

(f) a network operated for the purpose of transmitting or distributing electricity or gas

2.1.4 Informing the draft FDS

The NPSUD requires that the FDS be informed by those matters set out in section 3.14 of the NPSUD. More detail for each of these is provided as follows:

The most recent applicable HBA

The Council have an updated HBA which was adopted in February 2022 and which has been used as the basis for the draft FDS.

View the Rotorua District Council HBA [here](#).

An additional economic assessment has been prepared that assesses the capacity provided by the different growth scenarios that have been identified in the draft Rotorua FDS (see Appendix 4).

A consideration of the advantages and disadvantages of different spatial scenarios for achieving the purpose of the FDS

A number of spatial scenarios (broad locations for growth) have been considered as part of the development of the FDS. These spatial scenarios, along with the advantages and disadvantages of each are set out in the report below.

The relevant long-term plan and its infrastructure strategy, and any other relevant strategies and plans

The Council's 2021 – 2023 Long Term Plan (LTP) and infrastructure strategy have been taken into account in preparing this FDS. One of the key drivers of the FDS, as reflected in the purpose, is to integrate planning decisions with infrastructure planning and funding. Taking stock of the Council's infrastructure planning has been critical to ensuring the overall growth strategy makes the most efficient use of existing and committed infrastructure. Engineers from the council have contributed to the development of the spatial scenarios and evaluation of potential growth areas, as well as identifying strategic development infrastructure. This has included identifying (broadly) the infrastructure necessary to support the spatial scenarios assessed.

Other relevant strategies that have been considered in the preparation of this draft FDS includes plans and strategies that relate to planning for growth and these are referenced where relevant in the report below.

Māori, and in particular tangata whenua, values and aspirations for urban development

We have worked with iwi and hapū to develop the draft FDS, and the outcome of this is reflected in the draft FDS document itself. We have had ongoing korero, engagement and hui with iwi and hapū who wanted to be involved. This occurred across a number of project stages and involved identifying strategic issues for growth, identifying potential areas for growth that reflect iwi and hapū aspirations, and inputting to the evaluation of the spatial scenarios. Engagement with iwi and hapū will be on-going throughout the consultation period on the draft FDS.

The consultation report at Appendix 6 sets out the process for working with iwi and hapū, and the outcomes of this engagement so far.

Feedback received through the consultation and engagement required by clause 3.15

Clause 3.15 of the NPSUD requires the council to use the 'Special Consultative Procedure' (SCP) set out in section 83 of the Local Government Act 2002. The SCP requires the council to make the draft FDS available to the public and seek the public's views on it. This is the stage that the FDS

preparation is currently at. The council is seeking written feedback on this draft through submissions, and submitters will also have the opportunity to speak to their submission at a hearing. The FDS will then be updated in response to feedback received through this statutory consultation SCP process.

Prior to this, clause 3.15 also requires the Council to engage with the following in preparing the draft FDS:

- Other local authorities with whom there are significant connections relating to infrastructure or community
- Relevant central government agencies
- Relevant hapū and iwi
- Providers of additional infrastructure
- Relevant providers of nationally significant infrastructure
- The development sector (to identify significant future development opportunities and infrastructure requirements).

This engagement occurred throughout 2022 and early 2023 and included discussions with the following parties:

- Bay of Plenty Regional Council (as a partner to the Rotorua FDS).
- Taupō District Council, Whakatāne District Council, South Waikato District Council, Western Bay District Council and Tauranga City Council.
- Government agencies including the Ministry of Housing and Urban Development, Waka Kōtahi, Ministry of Education and Kāinga Ora.
- Iwi and hapū groups as set out above.
- Other infrastructure providers, including Unison, First Gas and the Council's team responsible for open space and recreation.
- Various operators in the residential, retirement and commercial development sector as well as real estate and planning / other consultants working in the development sector locally and within the wider Bay of Plenty region.

We undertook this in a range of settings, including online and in person workshops, one-on-one meetings and direct correspondence. Throughout 2022, this engagement was combined with discussions on Rotorua's Housing Plan Change (**Plan Change 9**).

A Technical Advisory Group was established for the project with representation from Bay of Plenty Regional Council, Ministry for Housing and Urban Development, Waka Kotahi, Kāinga Ora, Ministry of Education, Ministry for the Environment, Te Tatau o Te Arawa and the Te Arawa Lakes Trust. The group met on a monthly to six weekly basis to discuss/workshop key issues.

The consultation summary report at Appendix 6 provides further details on the consultation undertaken to develop the draft FDS.

Every other National Policy Statement under the Act, including the New Zealand Coastal Policy Statement

The draft FDS has also been informed by the policy set in the following national policy statements³:

- New Zealand Coastal Policy Statement 2010 (**NZCPS**)
- National Policy Statement for Freshwater Management 2020 (**NPSFM**)
- National Policy Statement on Electricity Transmission 2008 (**NPSET**)
- National Policy Statement for Highly Productive Land 2022 (**NPSHPL**)

We are aware that the Government is likely to soon release a national policy statement for Indigenous Biodiversity (**NPSIB**) however, as this has not been released, it has not been considered in detail. It will need to be addressed when it is gazetted.

More detail on how these national policy statements have informed the draft FDS and the supporting evaluation process are set out in the sections below.

2.1.5 Resource Management (Enabling Housing Supply and Other Matters) Amendment Act and the Rotorua Housing Plan Change (Plan Change 9)

On 14 March 2022 the Resource Management (Territorial Authorities Required to Prepare and Notify Intensification Planning Instruments) Regulations 2022 were made to incorporate Rotorua Lakes Council in the requirements of the Resource Management (Enabling Housing Supply and Other Matters) Amendment Act 2021. Rotorua has been identified as an area of acute housing need and therefore it is now considered a “specified territorial authority” under the Amendment Act. Under the new s77G of the RMA, specified territorial authorities are required to amend the district plan to:

- Give effect to Policy 5 of the NPS-UD; and
- Incorporates the Medium Density Residential Zone Standards (“MDRS”) into relevant residential zones unless a qualifying matter exists.

To implement this, the Council has notified Plan Change 9 to the operative District Plan, which is scheduled for a hearing in August 2023. Plan Change 9 amongst other things, makes changes to introduce the MDRS to the Residential 1 zone (the main residential zone). It also provides for increased heights within the urban centres and the Residential 2 zone (the high density residential zone). It also proposes to expand the spatial extent of the Residential 2 zone.

The Plan Change has formed the basis for the urban residential component of the draft FDS and has informed the density assumptions used. Opportunities for land use change and further intensification have also been considered. This is set out in the discussion on spatial scenarios in the report below.

³ Note that the other NPS, are not considered to have any particular relevance to this draft FDS and have not informed the preparation of the draft report.

2.2 Study Area

The FDS must cover the urban environment at a minimum, but may also apply to a wider environment. For this FDS, the urban environment has been defined as Rotorua and those areas immediately bordering Rotorua as identified in **Figure 1** below have formed the core area of study and consideration.

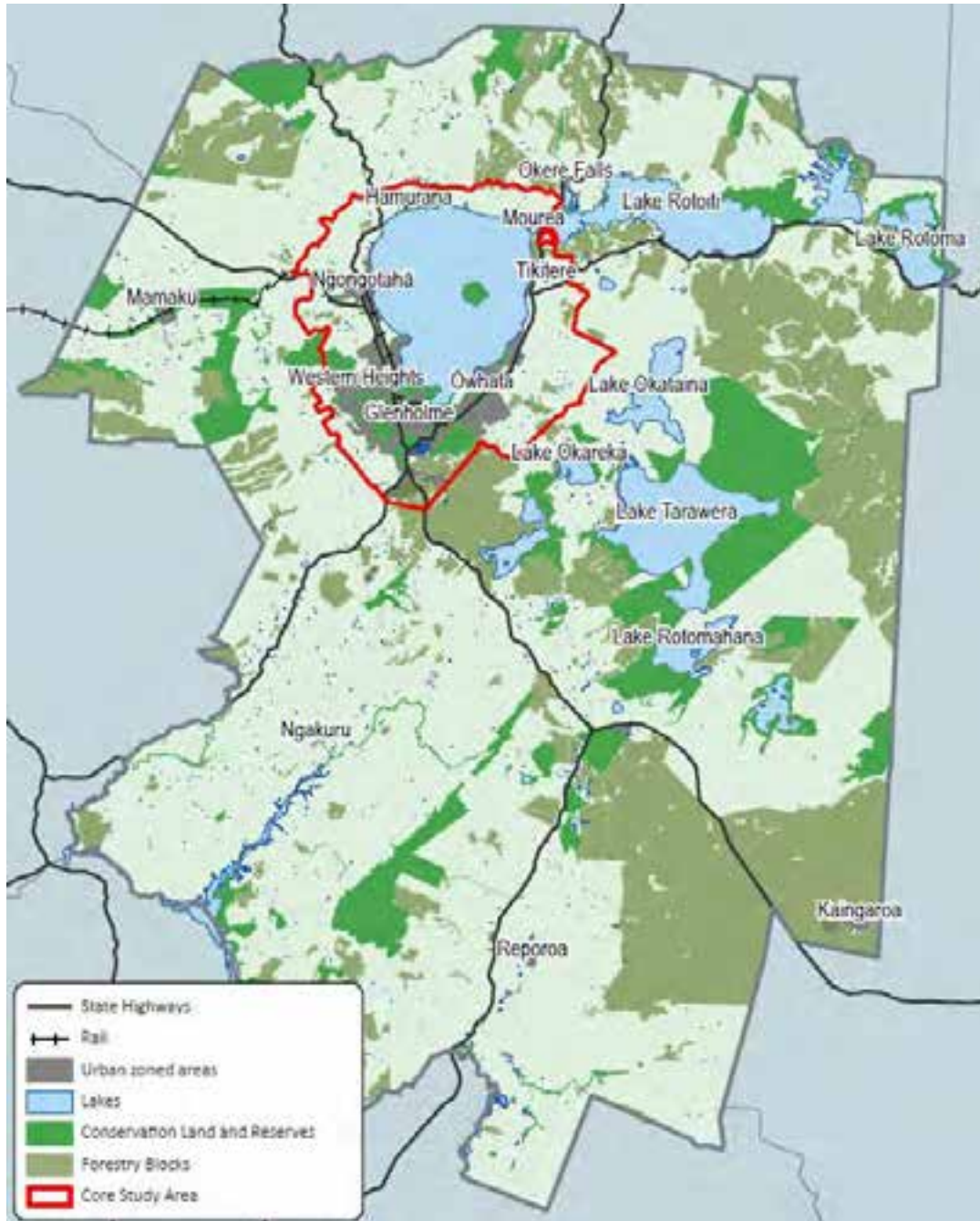


Figure 1: FDS Boundary

3.0 FDS outcomes

A series of outcomes have been developed to guide the direction of the FDS, inform the assessment of broad spatial scenarios and provide a framework for implementation. The draft outcomes have been prepared taking into consideration:

- o Part 2 of the RMA and national direction (e.g. NPSUD, NPSHPL, NPSFM)
- o The four wellbeings (social, economic, environmental and cultural) of the Local Government Act 2002
- o Feedback from Councilors
- o Feedback from key stakeholders
- o Feedback from the community
- o Input from iwi and hapū

The outcomes are short guiding statements. They are aspirational, and the FDS sets out to achieve them as a whole. The outcomes are interrelated and will need to be considered as a package. At times this will require trade-offs between sometimes competing outcomes. The overall growth strategy and the growth opportunities identified may not be able to satisfy all of the outcomes, or similarly, achieving one outcome may mean that another outcome is compromised.

The table below illustrates how the FDS outcomes align with the Council priorities and the Te Arawa 2050 goals in particular.

FDS Outcomes	Council Priorities (2022 – '25)	Te Arawa 2050 Goals
Culture - Te Arawa reo, tikanga and values are woven into our communities and influence how our communities grow	<i>Community (Place-making)</i> -Enhances community wellbeing for all (Urban and Rural, young, old, Maori and Non Maori -Safe and proud communities	- <i>Te Arawatanga (culture)</i> : Our future has Te Arawa reo, tikanga and values woven into the everyday of our people, our partners and the communities in our rohe - <i>Te Arawa Rangatiratanga (leadership and influence)</i> : Our future has the best leaders making and effectively implementing the best decisions about our resources to continuously achieve the best outcomes for our people. We lead, create and shape korero, partnerships and opportunities that bring about positive change on kaupapa that affect us
Choice - We have a range of housing choices to meet the diverse needs of our existing and future community	<i>Housing (Planning)</i> -Planning and consenting to provide for enough housing options -Ensure homes are healthy and fit for purpose	- <i>Te Arawa Tangata (people)</i> : Our future has all Te Arawa uri in peak physical, emotional, spiritual and mental condition and we prosper and flourish across all measures of wellbeing – health, education, welfare and employment

FDS Outcomes	Council Priorities (2022 – '25)	Te Arawa 2050 Goals
Access - Our people live in a compact city where they can easily access jobs, services, education and quality open spaces	<i>Community (Place-making)</i> -Enhances community wellbeing for all (urban and rural, young, old, Maori and Non Maori) -Safe and proud communities	- <i>Te Arawa Tangata (people)</i> : Our future has all Te Arawa uri in peak physical, emotional, spiritual and mental condition and we prosper and flourish across all measures of wellbeing – health, education, welfare and employment - <i>Te Arawa Takiwa (place)</i> : Our future is one that recognises that the wellbeing of taiao is intimately connected to our own wellbeing. Our wai and our whenua are restored and healthy - providing the food and resources we need to sustain us, and we are actively engaged with our taiao.
Connection - Our thriving inner city is our social and economic hub – supported by local centres that meet local needs	<i>Community (Place-making)</i> -Enhances community wellbeing for all (Urban and Rural, young, old, Maori and Non Maori) -Safe and proud communities	- <i>Te Arawa Tangata (people)</i> : Our future has all Te Arawa uri in peak physical, emotional, spiritual and mental condition and we prosper and flourish across all measures of wellbeing – health, education, welfare and employment - <i>Te Arawa Ohanga (enterprise and economy)</i> : Our future is one where we work together to increase our commercial success, which is the vehicle that continues our people's wellbeing.
Prosperity – A strong economy will provide opportunities for our people to thrive. We enable businesses to grow in locations that meet their needs, and the needs of our growing population	<i>Economy (Visioning)</i> -Enable and attract smart investment -Confidence and vibrant reputation -World class tourism destination -Revitalised Inner City and Fenton Street Corridor	- <i>Te Arawa Ohanga (enterprise and economy)</i> : Our future is one where we work together to increase our commercial success, which is the vehicle that continues our people's wellbeing
Environment - The wellbeing of our taiao is connected to the wellbeing of our communities. We are committed to protecting and enhancing our environment	<i>Community (Place-making)</i> -Enhances community wellbeing for all (Urban and Rural, young, old, Maori and Non Maori) -Safe and proud communities <i>Infrastructure (Delivery)</i> -Safe and reliable -Resilient to Climate Change -Enabling Targeted Growth -Protect and restore our natural environment	- <i>Te Arawa Takiwa (place)</i> : Our future is one that recognises that the wellbeing of taiao is intimately connected to our own wellbeing. Our wai and our whenua are restored and healthy - providing the food and resources we need to sustain us, and we are actively engaged with our taiao
Resilient – We actively look for opportunities to reduce our environmental impact. Our communities are resilient to the effects of climate change and significant natural hazards	<i>Infrastructure (Delivery)</i> -Safe and reliable -Resilient to Climate Change -Enabling Targeted Growth -Protect and restore our natural environment	<i>Te Arawa Takiwa (place)</i> : Our future is one that recognises that the wellbeing of taiao is intimately connected to our own wellbeing. Our wai and our whenua are restored and healthy - providing the food and resources we need to sustain us, and we are actively engaged with our taiao
Investment – We prioritise smart investment in safe and	<i>Infrastructure (Delivery)</i> -Safe and reliable -Resilient to Climate Change	- <i>Te Arawa Ohanga (enterprise and economy)</i> : Our future is one where we work together to increase

FDS Outcomes	Council Priorities (2022 – '25)	Te Arawa 2050 Goals
<i>reliable infrastructure to enable and support growth, where and when it is needed</i>	-Enabling Targeted Growth -Protect and store our natural environment	our commercial success, which is the vehicle that continues our people's wellbeing

4.0 Development Constraints (s3.13(2)(c))

4.1 Introduction

There is no specific guidance as to what needs to be displayed in order to satisfy the requirements of the NPSUD. However, Policy 1 and Section 3.32 of the NPSUD do provide some indirect guidance as to the types of matters that may be relevant when identifying constraints on development for the purpose of developing an FDS. These are identified below along with their relevant statutory references:

- Current and future effects of climate change (e.g. coastal inundation) (NPSUD Policy 1(f));
- Coastal environment, wetlands, lakes and rivers (NPSUD Section 3.32(1)(a)/RMA s(6)(a); NPSUD Section 3.32(1)(b) – NPSFM);
- Outstanding natural features and landscapes (Section 3.32(1)(a) – RMA s(6)(b));
- Areas of significant indigenous vegetation and significant habitats of indigenous fauna (NPSUD Section 3.32(1)(a) – RMA s(6)(c); NPSUD s3.32(1)(b)/ NPSIB;
- Culturally significant lands, water, sites and wahi tapu (NPSUD Section 3.32(1)(a)/ RMA s(6)(e));
- Historic heritage (NPSUD Section 3.32(1)(a)/ RMA s(6)(f));
- Natural hazards (e.g. flooding, land stability) (NPSUD Section 3.32(1)(a)/ RMA s(6)(h));
- Highly productive land (NPSUD Section 3.32(1)(b)/ NPSHPL); and
- Nationally significant infrastructure (e.g. electricity transmission corridors) (NPSUD Section 3.32(1)(c) and (e)).

4.2 Approach to Mapping

The FDS spatial mapping work has drawn on the matters identified above and has been structured in a similar way to the 'Urban Form and Transport Initiative' (UFTI) constraints mapping undertaken for Tauranga City Council, Western Bay of Plenty District Council and the Bay of Plenty Regional Council as part of the development of their FDS. The UFTI work was structured in a similar way to the Hamilton to Auckland (H2A) Corridor Plan, where the mapping project was carried out by Waikato Regional Council. It also draws on data provided by Rotorua Lakes Council.

This methodology will allow for alignment with neighbouring FDS' and spatial plans and may help assist in the future production of Regional Spatial Strategies (RSS) as may be required by future Spatial Planning legislation.

Similar to UFTI, this spatial mapping work has identified:

1. No go areas (or Areas for Protection) – areas that should not be considered for future urban development.
2. Go carefully areas (or Areas Sensitive to Development) – areas where additional consideration is required if urban development is contemplated. This includes areas which would likely include risk reduction and mitigation of any natural hazard susceptibility.

Thematic mapping prepared to support the formulation and analysis within the FDS is set out in Appendix 1.

4.3 Development Constraints Summary

‘No go’ constraints and **Areas for Protection** are based on natural hazards, significant ecological sites and protected areas and generally related to Matters of National Importance identified under s6 of the Resource Management Act 1991.

Under each of these ‘no go’ spatial limits are a number of attributes. The various attributes and reasons why they have been classified ‘no go’ areas are explained in the following sections of this document.

We have deemed some areas ‘no go’ because they are either unsafe to develop or have significant values to protect.

‘Go carefully’ constraints and **Areas Sensitive to Development** highlight the need for additional consideration in an area prior to any urban development.

We interpret ‘go carefully’ as those attributes where natural hazard susceptibility has been identified but where further assessment undertaken as part of future growth planning, and the application of mitigation options, can be applied to reduce risk.

Areas sensitive to development include those areas where some restrictions on the extent of development may be justified to protect identified values (e.g. building set-backs). These areas would not, on the whole, be unsuitable for development but rather greater care would be required to ensure an appropriate design solution is implemented.

Go carefully attributes also have the potential to impact on development if not carefully planned for, or engineered around. Attributes vary depending on location and some areas contain multiple attributes that, when combined, could render an area unsuitable or unfeasible for development.

4.4 No Go Constraints and Areas for Protection

4.4.1 Natural Hazards

We have used the best available data to inform constraints mapping for the district and it is current as at the end of 2022.

4.4.1.2 Fault Lines / Fault Avoidance Zone

The Council previously commissioned GNS Science to locate active faults and to provide recommendations for best practice management in high-risk areas. GNS Science produced an updated active fault map of the Rotorua District and compiled information that is relevant to active fault hazards and these are included within the District Plan. The two main hazards directly related to active faulting in Rotorua District are strong ground shaking and surface deformation.

In the Rotorua District, there are at least 45 major active faults that are capable of generating large earthquakes (Mw 5.5 to 6.9) that will produce strong ground shaking. The likelihood of ground shaking in the area is high because of the large number of faults. Seismic hazard maps define the probability that a certain level of ground shaking will be exceeded in a certain time interval.

Ground deformation associated with surface fault rupture only occurs along active fault traces. However, Rotorua District has the largest density of active faults in New Zealand, and thus large areas of the district are likely to be affected by surface rupture (ground deformation) hazard. Although faults can often be located accurately (to within a few metres), there is no currently technology to prevent earthquake damage to buildings built across faults (Kerr et al., 2003). For this reason, we recommend the use of the Ministry for the Environment guidelines to avoid building across hazardous faults (Kerr et al., 2003).

4.4.1.3 Flooding

The Rotorua urban area and its surrounding environment is subject to two main types of flooding events – fluvial flooding (i.e. rises in lake or river levels following sustained rainfall over a period of time) and pluvial flooding (i.e. isolated events when extreme rainfall can exceed infiltration capacity of the surrounding area and may or may not be associated with a nearby waterbody).

For the purposes of the FDS, fluvial flooding associated with Lake Rotorua has been identified as a 'no go' constraint. The Operative District Plan identifies the 2% AEP Lake Flood Level and all buildings are required to be located above this level.

4.4.2 Ecological Areas

A site of ecological significance is an area that has been assessed for its high ecological and/or biodiversity value. Different terms are used to describe these areas across the region. The term Significant Natural Area (**SNA**) has been used in the Rotorua District Plan and RPS. In addition, RLC has identified a number of 'Recommended Areas for Protection' (**RAP**) which fall within the area controlled by the Lakes A section of the District Plan. The RAP share similar qualities to SNAs.

No go / Areas for Protection ecological layers identified include:

- Significant Natural Areas
- Recommended Areas for Protection
- Wetlands

4.4.2.1 Significant Natural Areas and Recommended Areas of Protection

Section 6(c) of the RMA requires local authorities to protect areas of significant indigenous vegetation and significant habitats of indigenous fauna. The Council has done this through SNAs which are included within the District Plan and were last updated in 2018 via Plan Change 3. It is noted that the majority of significant indigenous vegetation and habitat is located on public land administered by the Department of Conservation.

4.4.2.2 Wetlands

All regional councils are required to identify and map wetlands in accordance with the National Environmental Standards for Freshwater Regulations 2020 (**NES-FW**). The NES-FW contains a number of provisions which heavily restrict or prohibit development in and around wetlands.

Wetland data was sourced from the Ministry for the Environment and was based on analysis undertaken in 2013. The current and predicted pre-human extent of wetlands were mapped at 1:50,000 to a minimum size of 0.5ha. Seven classes of wetlands were mapped according to their function. Fuzzy expert rules were used to identify: bog, fen, inland saline, marsh, pakihi/gumland, seepage, and swamp. Ephemeral wetlands, saltmarsh, and shallow water wetlands were not mapped.

The historic extent was predicted from the national Fundamental Soil Layers (**FSL**) database, and refined using a 15m digital elevation model derived from digital 20m contours. Geographical Information System (GIS) rules were used to identify wetland soils based on the soil survey descriptions that included drainage properties, presence of peat, and the presence of wetland vegetation. Soil drainage is divided into five classes in the FSL, from poorly drained (class 1) to well-drained soils (class 5). Soils in classes three to one were considered to have a high probability of having been wetland.

The current extent was mapped using 26 Landsat Enhanced Thematic Mapper (**ETM+**) satellite imagery and wetland point and polygon data collated from recent surveys, field work or photo-interpretation held by local and central government. Point and polygon data were checked against the satellite imagery and the wetland boundaries corrected or delineated using the imagery.

4.4.3 Protected Areas

The protected areas spatial limit consists of areas that have national, regional, and/or local protected status and are therefore not suitable or available for development.

NO GO layers include:

- DOC – Public Conservation areas
- QE II national trust covenants
- Outstanding natural features and landscapes (**ONFLs**)

4.4.3.1 Conservation Land

This Protected Area Layer contains land areas, most of which are administered by the Department of Conservation Te Papa Atawhai (**DOC**) and are protected by the Conservation, Reserves, National Parks, Marine Mammal and Marine Reserves Acts. All of the areas have been identified spatially. The attributes in this dataset are derived from the National Property and Land Information System (**NaPALIS**), which is a centralised database for all DOC and LINZ administered land.

The dataset includes reserves but it is not a complete set. Privately owned reserves are excluded from the dataset as they are not crown land. Also, the dataset does not contain a complete list of reserves “vested” in Local Authorities or “controlled and managed” by other organisations

4.4.3.2 QEII Covenants

A QEII covenant is a legal agreement between the Queen Elizabeth II National Trust and a landowner to protect a special open space feature in perpetuity - it is entered into voluntarily by the landowner. The area for protection is spatially defined and a covenant is registered against the title of the property specifying the values to be protected and a set of actions which are prohibited in order to maintain the stated values. Covenants ‘run with the title’ and therefore bind all future owners - by buying a property with a covenant on the title the new owner is automatically bound by the covenant agreement.

The spatial extent of QEII covenants has been sourced from the Queen Elizabeth II National Trust.

4.4.3.3 Outstanding Natural Features and Landscapes

Outstanding Natural Features and Landscapes (**ONFLs**) have been sourced from the District Plan and were last updated in 2014. The majority of this information is based on a Boffa Miskell study from 2012.

There are 37 ONFLs scattered across the District with a large portion of these concentrated in the Lakes A area and around other lake areas including Rotorua, Rotoiti and Rotomā.

4.5 Go Carefully Constraints

In **Figure 3**, the Go Carefully layers that are included on the map are:

- Natural Hazards (including geothermal, liquefaction and flooding);
- Steep land that may be susceptible to landslides;
- Highly Productive Land (Land Use Capability (**LUC**) Classes 2&3);
- Peat Soils/ Soft Ground;
- Māori Land;
- Cultural Factors;
- Strategic Infrastructure;
- Economic Constraints; and
- Other.

These are explained further below.

4.5.1 Natural Hazards

4.5.1.1 Geothermal

There are 20 geothermal systems recognised across the Rotorua District. Within a geothermal system, a variety of features can be present, ranging from hot crater lakes to boiling springs and geysers, small springs, hot and warm pools, steam vents and mud pots and streams. Gas can also be discharged from the geothermal system.

There is a low risk to accidental burns to people who live and work in thermal areas, and the emission of toxic gases can present a danger in certain circumstances. The most significant hazard is (infrequent) hydrothermal eruptions and collapse of unstable hot ground.

Underground services through geothermal areas will be subject to higher-than-normal temperatures and acidic conditions and require special material, design, installation and maintenance which may impact on feasibility of development.

To reduce risks from geothermal activity, zoning and/ or restrictions on development are necessary. These can impact on potential yields and the viability of a development.

Geothermal resources are also regarded as taonga by the iwi and hapū of Te Arawa and were used in various ways. Hot pools (ngawha, puia, waiariki) provided hot water for cooking and bathing. Hot ground was used for cooking holes and ovens. Mud from some pools had medicinal properties,

especially in the treatment of skin infections such as ngerengere. Paint and dyestuffs such as kokowai (red ochre) were obtained from hydro-thermally altered ground. Many hot pools had well-known therapeutic qualities in the treatment of muscular disorders, rheumatic and arthritic ailments, as well as skin conditions. Some had other qualities and were known as wāhi tapu, for example, a place for ritual cleansing after battle, or other spiritual qualities linked to medicinal or therapeutic use, or incidents of the past. Some had a particular tohunga associated with them. Some were burial places. Many hot pools are still regarded as wāhi tapu, or sacred places.⁴

4.5.1.2 Liquefaction

A 2017 study by Tonkin + Taylor (T+T) was commissioned by BoPRC to provide a region-wide liquefaction vulnerability assessment to identify areas of land susceptible to liquefaction as required in the RPS. Liquefaction is a natural process where earthquake shaking increases the water pressure in the ground in some types of soil, resulting in temporary loss of soil strength. Liquefaction can give rise to significant land and building damage through, for example, the ejection of sediment to the ground surface, differential settlement of the ground due to volume loss in liquefied soil and lateral movement of the ground (known as lateral spreading).

The T+T assessment was made at a broad scale across the entire region and is intended to approximately describe the typical range of liquefaction vulnerability across neighbourhood-sized areas. It is not intended to precisely describe liquefaction vulnerability at individual property scale.

The potential for liquefaction is unlikely to make development inappropriate however it does impact on building and infrastructure design and can therefore impact on development cost and feasibility. As such, it is considered appropriate to identify this as a “Go Carefully” constraint.

4.5.1.3 Flooding

RLC and BoPRC have undertaken several stormwater and flood modelling exercises covering the Rotorua urban area and its immediate surrounds. The hazard maps that have been produced from this modelling work demonstrate flooding during a 1% AEP event (allowing for climate change to 2100 under the high emissions IPCC RCP8.5 scenario). The hazard maps are only broadly indicative of flooding potential and are considered appropriate for the high-level analysis required to support the preparation of the FDS. They are not suitable for a property-specific analysis and further stormwater and flood modelling work would likely be required for any future plan change or resource consent process (where relevant).

Additional flood modelling was commissioned to cover the river and stream catchments around Ngongotahā. The scenario used to develop the flood model for Ngongotahā differs from the majority of Rotorua and utilises the 1% AEP event (allowing for climate change to 2130 with a 3.7⁰ temperature rise).

Generally, speaking the potential presence of flood risk may not mean that an area is unsuitable for development. However, it can impact on the nature, scale and cost of development (e.g. flood mitigation measures, reduction in developable areas). In addition, new development has the potential to help fund or deliver improvements to existing infrastructure to help reduce flood risk for existing communities.

⁴ Bay of Plenty Regional Policy Statement.

4.5.1.4 Steep Land/ Landslide Susceptibility

Slope gradient is a key factor in influencing the relative stability of a slope. It determines the degree to which gravity acts upon a soil mass. Slopes are often irregular and complex, with gradients varying greatly throughout a given area.

Landslide susceptibility is assessed on the basis of a model that includes slope from the LINZ NZMS260 DEM 20-metre contour information with a pixel size of 30 m by 30 m as well as rock/soil information from the best geological maps available. This method provides an indication of the susceptibility to moderate and large landslides. Susceptibility to smaller landslides such as those that could result from excavations undertaken in subdivision development are only possible when more detailed elevation data is available. Five susceptibility classes are developed for every geological unit- from Very Low to Very High.

The information is provided as a guide only to indicate the susceptibility of an area to large landslides as well as potential impacts on development feasibility. The information does not replace the need for a site inspection and geotechnical assessment to assess potential suitability for development.

4.5.2 Highly Productive Land

The National Policy Statement on Highly Productive Land (**NPS-HPL**) came into force on 17 October 2022. As part of requirements, every regional council must map as highly productive land any land in its region that:

- (a) is in a general rural zone or rural production zone; and
- (b) is predominantly LUC 1, 2, or 3 land; and
- (c) forms a large and geographically cohesive area.

The NPS-HPL also notes that small, discrete areas of LUC 1, 2, or 3 land need not be included if they are separated from any large and geographically cohesive area of LUC 1, 2, or 3 land.

Data on highly productive land has been sourced from the New Zealand Land Resource Inventory as at February 2022. The data has been refined to exclude areas of LUC 1, 2, or 3 land which have current urban or rural lifestyle zonings.

The Rotorua District does not have any LUC 1 land. Highly productive LUC 3 land is scattered across the District with a notable concentration around Reparoa. There is also approximately 297 Ha of LUC 2 land concentrated to the east of State Highway 30 near Ōwhata. It is noted that highly productive land around parts of Rotorua is highly fragmented and may not meet the NPS-HPL requirement of being considered a “large and geographically cohesive area”. There are also exemptions related to Māori land as well as areas identified for future development within the 2018 Rotorua Spatial plan. In addition, nutrient limits for land-uses within the Lake Rotorua catchment may impact on the long-term viability of uses of highly productive land and may make their protection inappropriate when balanced with other growth requirements. Much of the land at the periphery of Rotorua meets a number of potential exemptions under NPS-HPL, therefore, it is considered more appropriate to consider these as a ‘Go Carefully’ development constraint rather than a ‘No Go’ constraint.

LUC 4, 5 and 6 are not relevant for urban development as most limitations or difficulties identified for agriculture/horticulture use can be mitigated to enable urban development. LUC 7 and 8 is

generally very steep and unproductive land that would render it unsuitable for development. For these reasons this land has not been included in the maps consistent with the approach of UFTI.

4.5.3 Ground Conditions

4.5.3.1 Peat Soil

Peat soil data, was sourced from Landcare Research's S-map digital soil spatial information system for New Zealand - as at February 2022.

S-map provides consistent and comprehensive national soil data layers to support applications at local, and regional to national scales. It builds on previous soil mapping by filling gaps with new mapping, and upgrading the information content and associated database to meet a new national standard.

Peat forms from the build-up of partially rotted plant material in wet environments. Peat, in its natural state, contains excessive amount of water due to its low physiography and water holding capacity of 20 to 30 times its own weight. Consequently, aeration is poor and bulk density is very low. Upon drainage, peat will undergo irreversible drying and extensive subsidence to levels below surrounding water bodies. This will result in the requirement of ongoing drainage by pumping.

Also, when drained for development, the carbon in peat becomes exposed to air. The carbon is then able to bind with oxygen (**O₂**) in the air (oxidation) to form carbon dioxide gas (**CO₂**), and may support increases in greenhouse gas emissions.

4.5.3.2 Soft Ground

Soft ground data has been sourced from the Rotorua District Plan and is based on investigations undertaken by GNS Science in 2010. The GNS investigations identified soft and very soft sediments as a potential geological hazard across the District because when additional loads are applied (e.g. by fill placement or building construction) they can produce differential settlements. This has damaged and has the potential to damage buildings and other infrastructure founded on these materials.

This investigation identified four different zones. Zones A, B and C only have a little soft or very soft ground or none at all. Zone D contains extensive areas of soft ground, but probably also contains areas of better ground. Only the mapped area of Zone D has been included as a potential development constraint. Further refinement of Zone D to reduce the area of potentially soft ground is possible and this could be more appropriately considered at the time of a future plan change or resource consent.

4.5.4 Māori Land

Māori Land has been identified as a "Go Carefully" constraint due to identified challenges which can create practical barriers to urban redevelopment. However, it is also acknowledged that the significant Māori land holdings in close proximity to Rotorua offer significant opportunities to help fulfil iwi and hapū aspirations for urban development.

The Māori Land layer has been sourced from the Māori Land Spatial Dataset is a combination of the spatial data available in the map search section of the Māori Land Online website and static data containing information about management structures that may be associated with those land parcels.

The source data forms part of the public permanent record of the Court as described in rule 7.19 of the Māori Land Court Rules 2011 and it has been released publicly under the authority of rule 7.21(1) of the Māori Land Court Rules 2011.

This data does not include any information about lands that may have been returned under (or are subject to) any Treaty of Waitangi Settlement process – unless settlement legislation specifically requires the land become Māori Freehold Land or a Māori Reservation.

4.5.5 Cultural Features

There are several features relating to mana whenua across the District which are potentially sensitive to the impacts of new development. These include Marae and the Residential 3 zone at Ngāpuna, Ōhinemutu and Wakarewarewa. These features may also provide opportunities to support the development aspirations of iwi and hapū. In this regard iwi and hapū have also expressed a desire to retain the Residential 3 zone in Ngāpuna, Ōhinemutu and Wakarewarewa and they are identified as a qualifying matter in Plan Change 9.

4.5.5.1 Maraes & Marae Height Restrictions

Marae have been identified across the District and these are included within the District Plan. The District Plan also applies a Marae Protection Overlay to adjacent sites that limits building heights (and therefore development potential) to ensure the Marae remain a visually prominent feature in the District and that culturally significant events can continue to be undertaken without undue overlooking or privacy impacts. This data has been sourced from RLC.

4.5.5.2 Residential 3 Zone

The purpose of the Residential 3 Zone in the District Plan is to recognise and protect the cultural significance of these villages. This recognition and protection is provided for through separate standards, which include a lowered maximum building height, increased density, decreased front yards and a lowered site coverage.

Through recent engagement, iwi and hapū have confirmed the cultural values and significance associated with the Te Arawa villages, and they have advised that the operative Residential 3 provisions appropriately reflect those values.

The values and characteristics of Ōhinemutu, Whakarewarewa and Ngāpuna are considered to be a s6(e) matter of national importance and provides for the relationship of Maori and their culture and traditions with their ancestral, lands, water, sites, waahi tapu and other taonga.

4.5.6 Strategic Infrastructure

There are several pieces of locally and regionally significant infrastructure located in and around Rotorua that have the potential to constrain future development. This includes the:

- Rotorua Airport
- Rotorua Wastewater Treatment Plant
- Rotorua Landfill; and
- Energy Transmission Infrastructure (transmission lines and substations).

4.5.6.1 Rotorua Airport

Rotorua Airport has two principal controls which act as a constraint on existing and future urban development. These controls support the ongoing use of the Airport and include:

- Air Noise Contours; and
- Obstacle Limitation Surfaces (OLS).

Air Noise Contours can limit the type of development that can occur within these areas as well as impact on development costs (e.g. higher acoustic attenuation). Air Noise contours covering areas subject to airport related noise levels of between 50dBA and 65dBA have been identified extending north and south from Rotorua's airport runway.

Obstacle limitation surfaces are designed to ensure the protection of aircraft flight paths and act to restrict the height of development in these locations. The OLS forms part of the Designation (RDC-501) for which Rotorua Airport is the designating authority. Areas under the OLS where development is restricted to less than 12m in height has been identified.

4.5.6.2 Wastewater Treatment Plant

The Rotorua Wastewater Treatment Plant (**WWTP**) is located near Ngāpuna. The separation distance from the WWTP to the nearest sensitive receptor in a Residential 3 zone is much smaller than the recommended separation distance. Future residential development in close proximity to the WWTP could be a further constraint the operation of these facilities or alternatively may be viewed as an undesirable place by the market for new development.

The location and extent of the WWTP has been sourced from its Designation within the Rotorua District Plan.

4.5.6.3 Landfill

The Rotorua Landfill has been identified as a potential “Go Carefully” constraint due to potential impact associated with residual odour emissions that a landfill typically creates. New development in close proximity to the landfill has the potential to give rise to reverse sensitivity impacts which could adversely impact on the necessary operations of the landfill to support existing and future growth. The location and extent of the landfill along State Highway 30 has been sourced from its Designation within the Rotorua District Plan.

4.5.6.4 Energy Transmission

Transmission lines have been identified from the LINZ dataset ‘NZ Powerline Centrelines (Topo, 1:50k)’. This layer is a component of the Topo50 map series and was most recently updated in September 2020. In addition, power stations and any associated controls within the District have been identified. These include Ohakuri Hydroelectric Power Station and Ohaaki Power Station.

A buffer of 12m from centre line of transmission lines was created. This is known as the National Grid Yard (**NGY**). Transpower seeks to keep the NGY free of buildings and structures and to manage land use and activities that could pose a risk to your safety or to the safe and efficient operation of the National Grid. In any location (urban or rural), Transpower does not support any new or extended sensitive activities within the NGY. Sensitive activities include residential dwellings, educational facilities and healthcare facilities. Some types of development (e.g. industrial) remain appropriate within the NGY, albeit subject to some restrictions around buildings and construction methodologies. As such, it has been identified as a “Go Carefully” constraint.

First Gas' primary natural gas transmission network has also been identified as a "Go Carefully" Constraint which is confined to the southern portion of the District with distribution to urban Rotorua managed via a distribution station adjacent to State Highway 5. Whilst it does not prevent development outright there are certain restrictions and buffer distances that must be adhered, which can impact on the nature and extent of future development opportunities on land where the natural gas transmission network passes.

4.5.7 Economic Constraints

4.5.7.5 Forestry Layer

Forestry is a key export industry for both Rotorua and wider region. The Bay of Plenty features the largest area of plantation forestry in New Zealand. In Rotorua, just over 72,000 hectares of land were used for forestry purposes in 2016, serving as the largest land use purpose in the District. Between 2000 and 2016, forestry operations grew significantly, increasing by 47 percent. Land in plantation forestry has the potential to generate adverse effects that could impact on any future urban development, especially during harvesting around noise, heavy vehicle generation. As such, there is a need to ensure any future growth is carefully considered in close proximity to identified plantation forests.

4.5.7.6 Heavy Industry Layer

There are several existing Heavy Industrial uses located in close proximity to, and within the Rotorua urban environment. Operation of these activities include the discharge of combustion gases, volatile organic compounds (VOCs) and particulate matter (PM), which can adversely impact on sensitive land uses (e.g. residential). These industrial activities are often associated with wood processing and the District's forestry sector. As such, there is a need to retain existing industrial infrastructure to support key economic sectors within the District. This layer currently includes the existing sawmills at Fairy Springs (Claymark) and Whakarewarewa (Red Stag). Henderson Quarry at Mt Ngongotaha has also been included within this layer.

In addition, there are several other significant sites across the District, which contain heavy industrial uses important for the local economy, including timber processing sites in Kaingaroa and Ohaaki and the Fonterra factory in Reparoa. A noise contour extending approximately 500m from the Fonterra factory is identified within the District Plan.

4.5.8 Other considerations

4.5.8.7 Site specific Constraints

In addition to the other "Go Carefully" considerations above, regard was also given to Heritage Sites/ Areas and Archaeological Areas. These are generally discrete areas not closely aligned with the larger-scale strategic growth opportunities across Rotorua. As such, they are generally more relevant for future planning processes such as plan changes or resource consents. They have been considered, where relevant, but are not determinative for assessing the appropriateness of potential growth areas as part of the FDS.

4.5.8.8 Accessibility Analysis

An accessibility analysis has been undertaken to help inform assessments of each site and ensure the draft FDS is consistent with the NPSUD policy framework of establishing well-functioning urban environments. This analysis takes into account an area's access to a wide range of destinations

including schools, parks, jobs, retail centres, public transport and other social facilities. This accessibility analysis was also used as the basis for the intensification strategy set out within Plan Change 9.

4.5.8.9 Job Density & Commuter Flows

In addition to an area's accessibility, 2018 Census data was reviewed to understand the existing distribution of jobs across the Rotorua urban area as well as patterns of existing commuter flows. This information was developed to provide general context on the existing structure of Rotorua's urban environment and to understand how the broad spatial scenarios could build upon / respond to these patterns of development.

5.0 Framework for evaluation of spatial scenarios and growth areas

5.1 Introduction

The evaluation of the overall strategy, including the spatial scenarios and potential growth areas, was completed in three stages with stages 2 and 3 being an iterative process that was informed by one another.

- (1) Stage 1 involved a review of existing council plans and strategies related to growth and to undertake a high-level assessment of development opportunities and constraints. This analysis was then used to form draft spatial scenarios for engagement with Council staff, elected officials and key stakeholders. The purpose of this round of engagement was to identify potential issues with the spatial scenarios, understand potential infrastructure requirements and to refine the scenarios prior to more detailed analysis.
- (2) Stage 2 involved an evaluation of a series of broad spatial scenarios for accommodating growth in Rotorua. This includes an analysis of the advantages and disadvantages of each spatial scenario (as required by the NPSUD) at a strategic level, which is informed by the opportunities and constraints mapping analysis, along with the FDS outcomes. This analysis was also supported by further technical analysis regarding development capacity and VKT/ Greenhouse Gas Emissions analysis. Refer to **Appendix 5** for this evaluation.
- (3) Stage 3 involved a more granular evaluation of potential growth areas within and close to Rotorua that make up the different spatial scenarios. This is explained in more detail in the report below but broadly involved the identification of 38 individual growth areas (23 residential and 15 business). These were then assessed using a 'traffic light' evaluation against the draft FDS outcomes and their indicators. Additional areas identified through ongoing engagement were also included within this assessment and assessed against the same framework.

It is intended that any growth areas within the study area that were not initially assessed but are subsequently suggested through submissions will also be evaluated against the outcomes using the same assessment process.

5.1.1 Assessment of growth areas

The process used to identify and assess the individual growth areas followed the process below:

- (1) **Identify** potential individual growth areas. These were derived drawing on a range of factors including whether the site was contiguous with the existing urban area, whether the site broadly fell within the areas identified within the draft spatial scenarios, feedback from key stakeholders (e.g. the development community, mana whenua), discussions with Council planning staff on where there was known interest in development based on pre-application discussions or lodged resource consents, and consideration of the opportunities and constraints mapping.
- (2) **Map** growth areas using GIS. The growth area boundaries are deliberately 'blobby'. This is because the growth area boundaries are indicative only and not property specific. More defined boundaries, for example at the stage of rezoning land will be determined at the plan change/District Plan review stage. At this stage the boundaries follow a logical extent based on the surrounding environment, ground truthing through site visits and council staff input, and opportunities and constraints mapping. Each growth area has been assigned a label.
- (3) Set out **assumptions** for each growth area including the size of the growth area, typology and density of future development and the potentially realisable yield. Market Economics were commissioned to assess the potential yield from each growth area. A copy of this assessment is provided at **Appendix 4**.
- (4) Undertake a **qualitative evaluation** of each growth area against each outcome/criteria. This qualitative assessment used a traffic light approach:
 - (a) Green: the growth area aligns with/can align with the outcome/criteria.
 - (b) Orange: the growth area partially aligns outcome/criteria.
 - (c) Red: the growth area does not or is unlikely to align with the outcome/criteria.

In addition to red/orange/green a 'no-go' category has been included in the evaluation. 'No-go' indicates the growth area is considered inappropriate with respect to the outcome/criteria and should be excluded from further consideration. The opportunities and constraints mapping was taken into account when drawing the growth site boundaries. This means that several sites have been drawn to deliberately avoid significant growth constraints such as highly productive land.

For this stage it is noted that:

- o In evaluating each growth area site-specific information was used where it was available (e.g. a developer provided masterplan or capacity figures).
- o The qualitative traffic light assessment against the outcome/criteria was undertaken by the project team, council officers (including subject matter experts where available), and members of the Technical Advisory Group.
- o At this stage, no outcome was given primacy, and the outcomes were not ranked in order of importance. Therefore, other than in relation to no-go assessments, no single evaluation was given a greater weighting.
- o Some outcomes had more than one category that was evaluated, for example, 3-waters, transport and 'other' community infrastructure had all been evaluated individually. In other cases, for example in relation to the natural hazards and climate change outcomes, the scoring was combined into one category. For this reason, the number of red/orange/green scores that a particular site received was not necessarily indicative of

the overall appropriateness or otherwise of the site for inclusion in the draft FDS. The framework was simply a tool to inform how growth areas scored relative to each other for each category and to better understand the potential advantages and disadvantages of development in that location.

- o One additional category that was not directly linked to a particular outcome has been included for ‘other significant constraints’, to allow the assessment of whether the growth area has any other potential development constraints that is not closely aligned with the FDS outcomes and assessment criteria. Examples include constraints associated with Rotorua Airport and the presence of transmission lines.
- (5) Once all sites were evaluated, a **review** of the growth areas with respect to the broad spatial scenario options was completed and an overall sense check undertaken.
- (6) Initial outputs of the evaluation was then shared with members of the Technical Advisory Group for comment. As a result of this, further sensitivity testing was undertaken for the assessment of individual growth areas. This sensitivity testing included numerical scoring on a scale of 0-4 under each criteria, as well as assigning a greater weighting to natural hazard/ climate change related criterion.

The evaluation of growth areas against the outcome was not be the sole determinant of whether a site was ultimately included or excluded from the draft FDS, as in some cases the combined qualitative assessment may not cohere to the rational and integrated strategic approach to growth and development that the FDS seeks to achieve.

6.0 Spatial Scenarios

6.1 Introduction

Spatial scenarios are broad options for how Rotorua will grow to accommodate the projected population increase. They visually show strategic growth options for Rotorua that:

- Provide **capacity**;
- Provide **choice**;
- Incorporate strategic supporting **infrastructure**; and
- Contribute to achieving the **outcomes** of the FDS.

Along with the outcomes, the spatial scenarios assist in identifying and understanding trade-offs at a strategic level and working out how new growth areas and sites considered for growth can be/are distributed.

The starting point for establishing spatial scenarios was to understand what existing strategies or plans Rotorua have adopted. These would establish a “base case” from which to help benchmark and assess further spatial scenarios. In addition to the base case, four broad spatial scenarios were developed following the development of the draft FDS outcomes and interrogation of the opportunities and constraints mapping. These scenarios illustrate the range of housing and business typologies anticipated, the likely capacity provided and the strategic supporting infrastructure required to enable growth in identified areas. Further refinement of the spatial scenarios was undertaken and considered as part of the overall assessment of advantages and disadvantages.

The spatial scenarios evaluated have focused primarily on the urban environment and expanding into the existing rural nodes as this is where the most capacity is required to be found to meet growth projections.

6.2 NPSUD requirements

The NPSUD requires that the advantages and disadvantages of different spatial scenarios are evaluated as part of preparing an FDS. The NPSUD does not specify what a spatial scenario is. It is considered that the spatial scenarios assist in responding to the following requirements of the NPSUD:

- Distribution of residential and commercial growth and related capacity estimates (Part 3.13(1)(a)(ii))
- Anticipated housing and business types at a high level (Part 3.13(1)(a)(i), and the definition of a well-functioning urban environment (Policy 2))
- Focus on accessibility, including public transport (Part 3.13(1)(a)(i), and the definition of a well-functioning urban environment (Policy 1))
- The spatial identification of development capacity, infrastructure and constraints (Part 3.13(2)(a)-(c)).

6.3 Developing spatial scenarios

A total of eight spatial scenarios were evaluated for Rotorua:

- Base Case A – Operative District Plan controls + Plan Change 9 Intensification.
- Base Case B – Base Case A + greenfield growth areas identified in the 2018 Rotorua Spatial Plan.
- Scenario 1 – Ngongotahā Growth Node.
- Scenario 2 – Multi-nodal Intensification.
- Scenario 3 – State Highway 36 Growth Corridor.
- Scenario 4 – Eastside Growth Corridor.
- Scenario 5 – Multi-nodal Intensification A (Refined Scenario 2 with some limited greenfield growth around Ngongotahā).
- Scenario 6 – Multi-nodal Intensification B (Refined Scenario 2 with some limited greenfield growth around Eastside).

These scenarios were used to help inform the spatial distribution of growth and help inform an understanding of how identified growth areas could contribute to the identified outcomes and meeting housing capacity requirements over the next 30 years.

6.4 Spatial Scenarios evaluated as part of the FDS preparation

6.4.1 Base Cases

Three elements contributed to forming an understanding of the “base case” for future growth in Rotorua.

- (1) Operative District Plan provisions;
- (2) 2018 Rotorua Spatial Plan; and
- (3) Proposed Plan Change 9 – Housing for Everyone.

The Housing and Business Capacity Assessment undertaken for Rotorua in 2021 found that housing capacity under the Operative District Plan and 2018 Rotorua Spatial Plan was not sufficient to meet all projected urban dwelling demand through to 2050 (inclusive of a required competitiveness margin of an additional 20% in the short and medium term and 15% in the long term). In the short term, the total shortfall is nearly 1,900 dwellings, with insufficient RER capacity for all detached and attached dwelling demand. This short-term result is exacerbated by the inclusion of latent demand for new housing Rotorua of 1,500 dwellings. A key requirement of the FDS is to identify where at least sufficient housing capacity will be accommodated over the next 30-years.

As set out in the report above, to help address some of the immediate and long-term housing issues identified in Rotorua, Rotorua Lakes Council notified Proposed Plan Change 9 - Housing for Everyone. Proposed Plan Change 9 introduces the Medium Density Residential Standards (MDRS) as set out within the Resource Management (Enabling Housing Supply and Other Matters) Amendment Act 2021. The MDRS are intended to apply to the current operative Residential 1 and Residential 2 zones, which covers most of the Rotorua urban area. Proposed Plan Change 9 also proposes additional rules in the Residential 2 zone, just south of the City Centre to enable higher-density residential development. A summary of these changes is shown in **Figure 2** below.



Figure 2 - Plan Change 9 Summary Map

Base Case A considered the impact of Plan Change 9 in addition to the Operative District Plan. Housing capacity assessment found that over the long-term that the levels of intensification enabled by Plan Change 9 could enable at least sufficient (or just below) development capacity across Rotorua equivalent to approximately 9,700 dwellings. However, short to medium-term challenges remain and there remains uncertainty as to the level of uptake for more intensive housing typologies within the Rotorua market given that they are not currently an established form of housing.

Base Case B also considered inclusion of greenfield areas identified within the 2018 Rotorua Spatial Plan (refer to **Figure 3**). Under the 2018 Spatial Plan, potential development capacity for around 4,700 new dwellings in greenfield areas around Rotorua could be enabled. This growth was proposed to be focused around Ngongotahā and Eastside. Release of greenfield land would likely have an impact on the realisation of intensification enabled by Proposed Plan Change 9, however Base Case B could deliver sufficient housing and business capacity over the next 30-years. Base Case B was therefore used to help identify the potential location of future growth areas as part of the more detailed spatial scenario assessment consistent with new national direction including the

National Policy Statement on Urban Development and National Policy Statement on Highly Productive Land release subsequent to 2018.

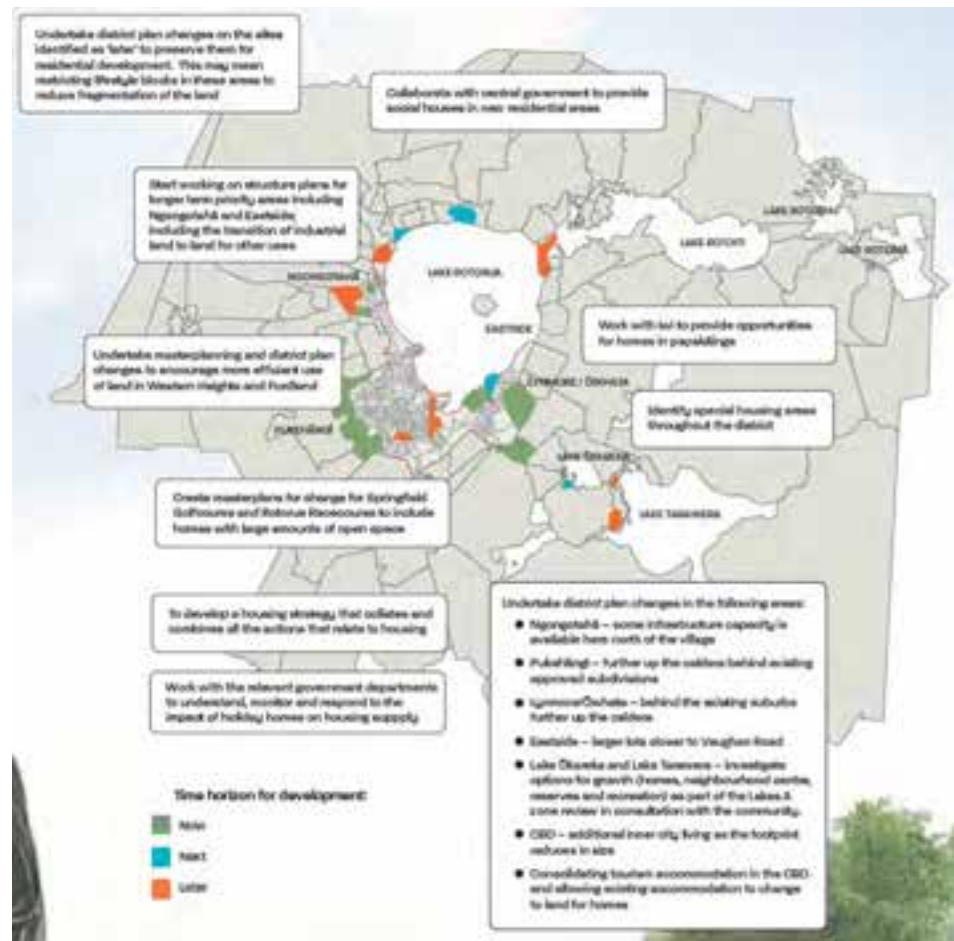


Figure 3 - 2018 Rotorua Spatial Plan Development Areas

6.4.2 Commonalities for new scenarios

In developing and assessing the spatial scenarios, the following elements were consistent across all scenarios:

- A baseline for intensification was adopted in line with the recommendations contained within Plan Change 9. In other words, intensification at levels below that proposed within Plan Change 9 was not considered. Within intensification areas, it was assumed that a range of housing typologies would be delivered (e.g. stand-alone, terraced and apartments).
- It was assumed that the existing zoned greenfield areas at Pukehangi Heights and Wharaenui Rise would be built out and develop at densities consistent with their existing masterplans rather than any increases that could be enabled by the implementation of the Medium Density Residential Standards. This would yield approximately 1,785 new dwellings.
- The HBA identified a number of underdeveloped or vacant parcels of zoned land across the existing urban area of Rotorua. Capacity testing indicates that these sites have the potential to yield approximately 1,000 new dwellings, which accounts for some of the constraints present on this land. For the purposes of this work, it was assumed that these sites would be developed over the next 30-years.

6.4.3 Spatial scenario #1: Ngongotahā Growth Node

The Ngongotahā Growth Node spatial scenario adopts the intensification proposed by Plan Change 9 but, in addition, seeks to provide for new residential greenfield growth and greater levels of intensification around Ngongotahā. New areas of business land were also identified along State Highways 5 and 36 to support residential growth in this area.

This scenario provides for a feasible/ realisable capacity for approximately 12,500 new dwellings. Key infrastructure that was considered likely to be required to support this growth include potentially a new school/optimisation of the school network in Ngongotahā, increased bus frequencies and upgrades to transport, wastewater and potable water infrastructure (e.g. pump stations).

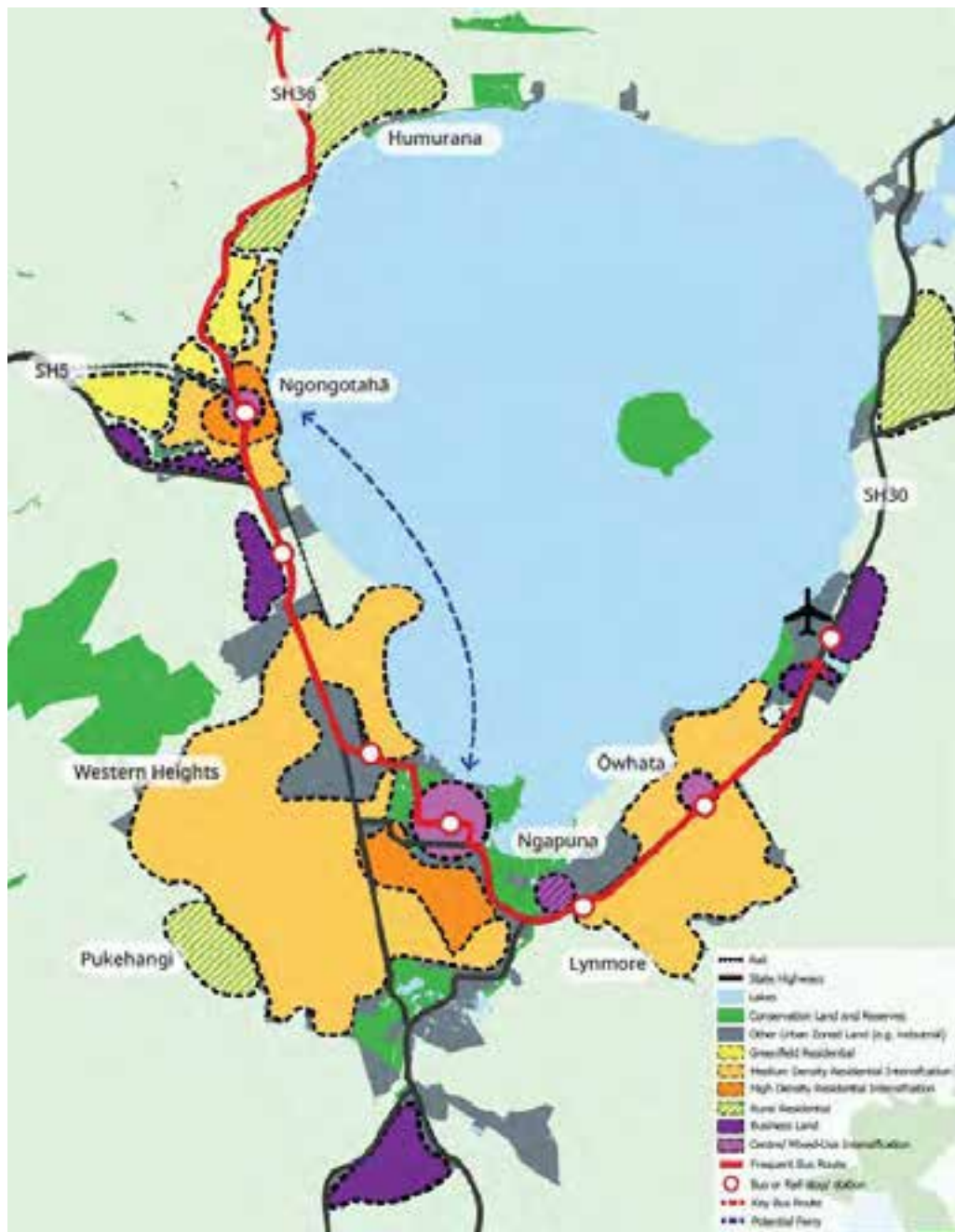


Figure 4 - Ngongotahā Growth Node Schematic

6.4.4 Spatial scenario #2: Multi-nodal Intensification

The Multi-nodal Intensification spatial scenario adopts the intensification proposed by Plan Change 9 as well as more expansive areas of high-density residential housing around Glenholme South and a number of key nodes/ centres such as Western Heights and Lynmore. New areas of business land were also identified along State Highways 5 and 30 to support residential growth in the nodes of Ngongotahā and Ōwhata. No new greenfield areas were considered as part of this scenario.

This scenario provides for a feasible/ realisable capacity for approximately 10,800 new dwellings. Key infrastructure that was considered likely to be required to support this growth include increased bus frequencies and upgrades to transport, wastewater and potable water infrastructure (e.g. pump stations).

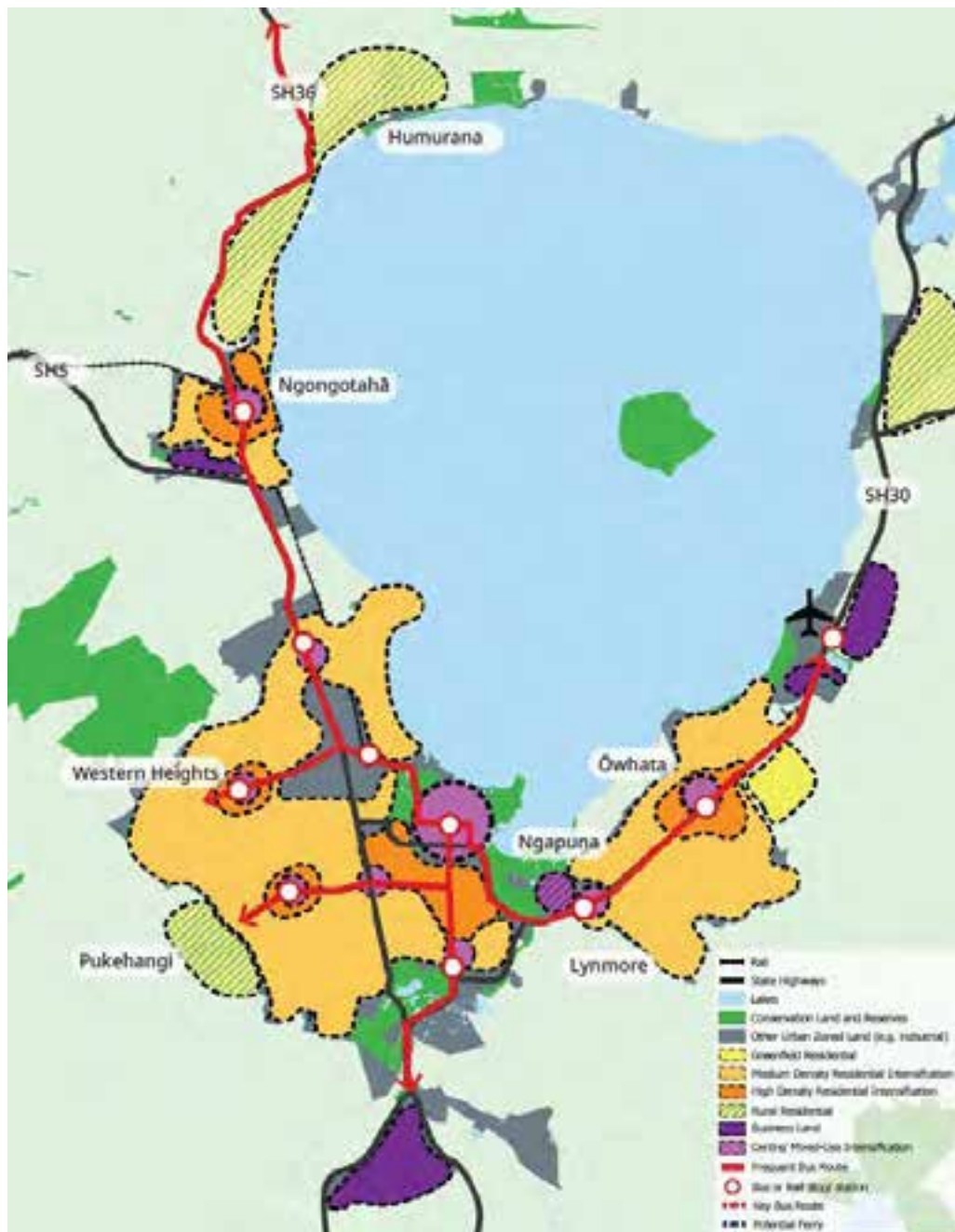


Figure 5 - Multi-nodal Intensification Schematic

6.4.5 Spatial scenario #3: State Highway 36 Growth Corridor

The State Highway 36 Growth Corridor spatial scenario adopts the intensification proposed by Plan Change 9 but, in addition, seeks to provide a corridor of new residential greenfield residential and business growth on land between Fairy Springs and Hamurana.

This scenario provides for a feasible/ realisable capacity for approximately 14,500 new dwellings. Key infrastructure that was considered likely to be required to support this growth include potentially two new schools/optimised school network, increased bus frequencies, potential ferries, and upgrades to transport, wastewater and potable water infrastructure (e.g. pump stations).

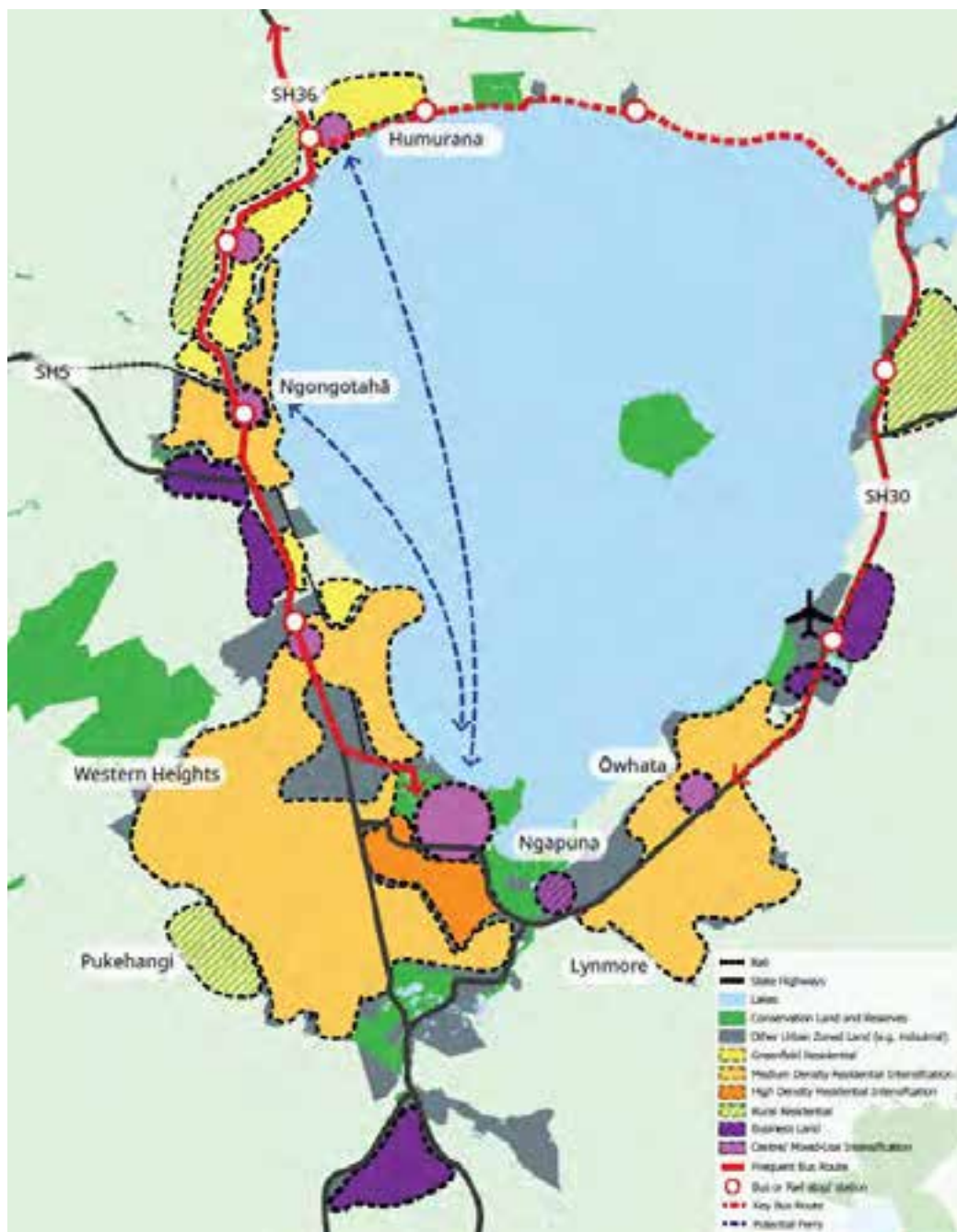


Figure 6 - State Highway 36 Growth Schematic

6.4.6 Spatial scenario #4: Eastside Growth Corridor

The Eastside Growth Corridor spatial scenario adopts the intensification proposed by Plan Change 9 but, in addition, seeks to provide for new residential greenfield growth and greater levels of intensification around Ōwhata. New areas of business land were also identified along State Highways 30 in and around the Airport to support residential growth in this area.

This scenario provides for a feasible/ realisable capacity for approximately 9,500 new dwellings. Key infrastructure that was considered likely to be required to support this growth included increased bus frequencies and upgrades to transport, wastewater and potable water infrastructure (e.g. pump stations).

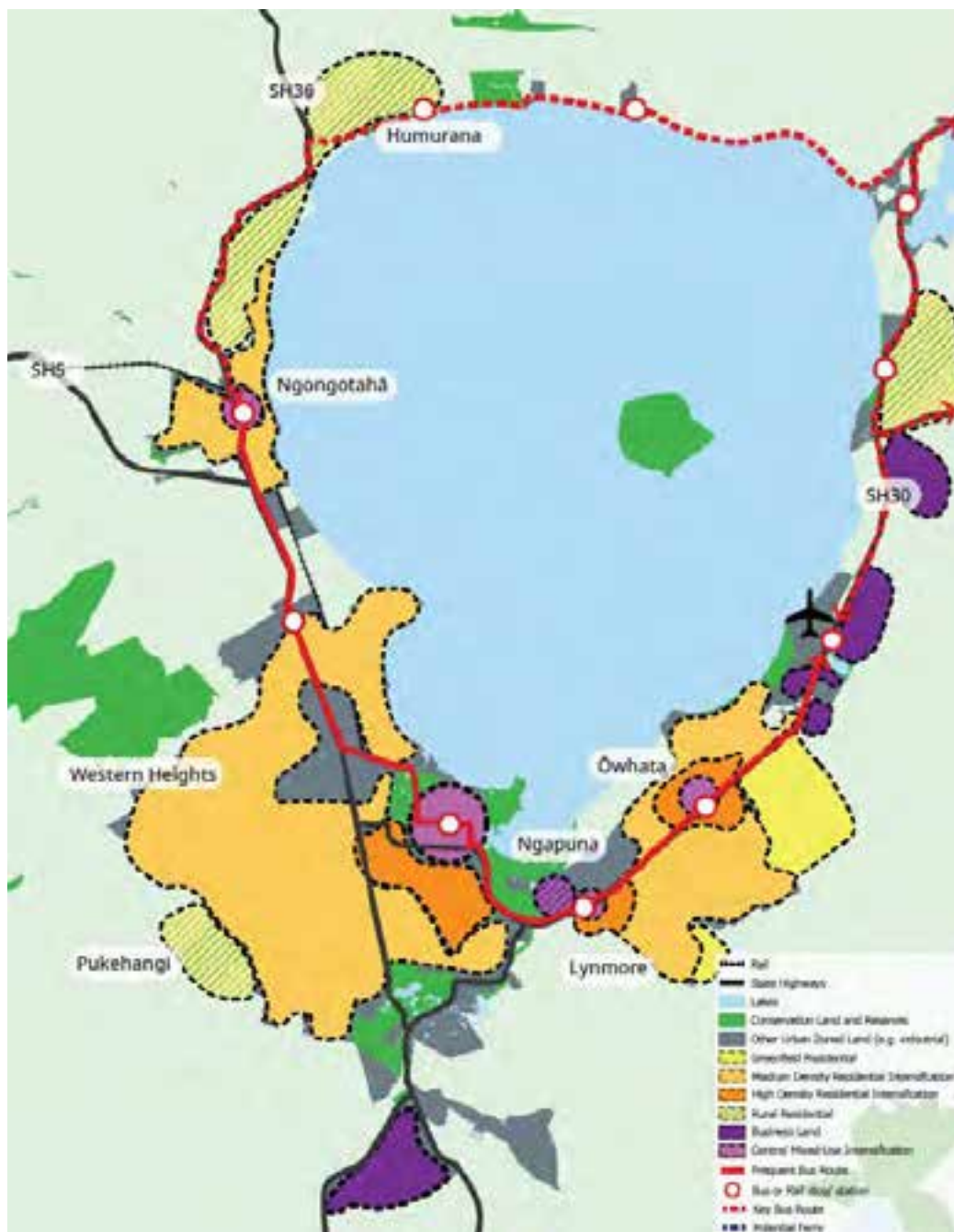


Figure 7 - Eastside Growth Corridor Schematic

6.5 Calculating housing capacity for the spatial scenarios

Understanding of the feasible or likely housing capacity of potential growth areas and spatial scenarios is a critical component of the development of an FDS. Capacity estimates serve three important functions for the development of the FDS:

- To inform the analysis of the advantages and disadvantages of each spatial scenario in terms of how individual growth areas or groups of growth areas contribute to providing for sufficient housing capacity over the long-term identified within the HBA;
- To inform the assessment and evaluation of potential FDS areas; and
- To inform a high-level analysis on the potential implications on existing infrastructure, the potential future infrastructure required to support them and a rough order of costs for providing this. Key infrastructure corridors and other supporting infrastructure is required to be identified as part of the FDS.

Market Economics were engaged to complete theoretical capacity testing to determine potential residential plan enabled and commercially feasible capacity for each of the spatial scenarios – refer to Appendix 4 for the report.

6.5.1 Uptake/ Realisation of Intensification

Based on feedback received during engagement with stakeholders, refinements to estimated housing capacity numbers were made to try and account for the nature of intensification and infill development. There are several factors which may impact on overall uptake of intensification opportunities in Rotorua including:

- The willingness of a landowner to develop – in other words, just because a site is commercially feasible to redevelop it does not mean that a landowner will redevelop that property;
- Planning frameworks are enabling. This is to say that there is nothing to compel someone to develop to a site's maximum potential. They could opt to add an additional dwelling to the rear of the property or they could demolish their existing house and replace it with a half-a-dozen terraced houses.
- The maturity of the attached housing market. The majority of existing dwellings in Rotorua are made up with detached dwellings on larger lots. As such there are likely to be existing capacity constraints within the building industry to construct more intensive housing typologies and there is also a degree of uncertainty as to market demand for more intensive housing products which may result in a slower uptake of more intensified housing typologies.
- Alternative tenure and housing models (e.g. social housing, build-to-rent) have different commercial drivers than typical market housing. As such, these tenures or housing models may be more feasible in the shorter term.
- Locational attributes of particular sites, not entirely reflected by land prices, may make intensification more desirable in some places (e.g. proximity to schools or open spaces).
- Proximate greenfield development may undermine delivery of intensification opportunities as they may provide more competitive housing products in terms of price and amenity.

There is no empirical evidence for Rotorua as to what this may look like so a number of assumptions were developed to refine the commercially feasible intensification capacity numbers

provided by M.E. However, understanding how intensification may be delivered over the 30-year lifespan of the FDS is important for understanding potential infrastructure implications as well as the scale and nature of greenfield land release that may be required.

Intensification Uptake/ Market Attractiveness

Commercially feasible intensification numbers were provided by M.E. at the parcel level across the Rotorua urban area. These numbers were then aggregated to larger blocks (somewhere between SA1 and SA2 in size) which broadly reflect suburbs across Rotorua and were broad assumptions around market attractiveness and uptake could be applied. Parcels of ‘underutilised urban land’ were excluded from these aggregated blocks as development of these parcels is more closely aligned with more traditional greenfield development.

M.E. also provided detailed analysis setting out the level of capacity uptake required to meet projected brownfield housing demand (Capacity Outputs, Nov 16 2022). In the long term, and depending on different feasibility scenarios, these uptake rates range from 9% to 29% of commercially feasible opportunities (i.e. 29% of commercially feasible sites would need to be redeveloped to their maximum potential to meet demand).

To understand the potential implications of this on the overall growth strategy, we have applied varied uptake rates to different areas based on several factors. This is intended to provide consistency across all spatial scenarios considered and attempt to reflect some of the real world issues that impact on housing development. The factors considered include:

- (a) **Land Values** - Existing land values were used as a proxy for demand for intensification and in theory, reflect areas with higher amenity that can better support intensification. Where higher existing land values are observed relative to other parts of Rotorua (e.g. Glenholme, Koutu, Lynmore) it has been assumed that intensification is more likely to occur at higher levels over the longer term.
- (b) **Kāinga Ora Landholdings** - Where Kāinga Ora have large landholdings (e.g. Glenholme South and Fordlands) we have assumed a higher uptake of intensification opportunities as Kāinga Ora are not driven by the same commercial imperatives as private developers (e.g. profit margin).
- (c) **Proximity to proposed greenfield land release** - Where intensification is located in close proximity to areas where greenfield land is / or will be released it has been assumed that there will be a lower uptake of intensification as it is less likely to be competitive in terms of amenity/ price.

The result of the above considerations led to adoption of varied intensification uptake rates across the Rotorua urban area of between 10 and 33%.

Greenfield Development Capacity

For greenfield sites, M.E. provided theoretical dwelling capacity based on proposed or existing planning provisions. For example, if a site would be zoned for medium density housing, capacity results have assumed high level of attached dwellings and /or detached dwellings on smaller sites reflective of what the District Plan would enable. These theoretical figures were benchmarked against existing masterplans as well as stakeholder feedback to reflect that the planning provisions are enabling and ultimate development densities would largely be market driven.

For example, the M.E. modelling suggested that the entirety of the existing Wharenui Block could accommodate up to 4,000 new homes if built out to the Proposed Plan Change 9 / MDRS provisions. The Wharenui Road East area had a similarly high theoretical commercially feasible development potential for ca. 2,500 homes. However, Ngati Whakaue indicating the type of development / density they were targeting in these areas was in line with the existing masterplan for the area. This indicated that the Wharaenui Block would more realistically only deliver around 1,000 new homes while Wharenui Road East could deliver around 600 homes at a similar density. All theoretical capacity of greenfield sites proposed for inclusion within the Draft FDS underwent a similar sense-check to provide realistic estimates to aid in discussions around infrastructure provision.

6.6 Advantages and disadvantages of spatial scenarios

As noted above, the NPSUD requires that the advantages and disadvantages of different spatial scenarios be evaluated as part of preparing an FDS. A high-level evaluation of the four different scenarios considered has been completed with respect to the following key matters, including:

- Cultural Values;
- Mana whenua development opportunities;
- Housing and business demand;
- Access to services;
- Greenhouse gas emissions;
- Natural hazards and climate change resilience;
- Highly productive land;
- Biodiversity and freshwater values; and
- Infrastructure provision.

An overall summary of how each scenario performed against these criteria (considering both advantages and disadvantages) is set out in the Table below with Red = Poor, Amber = Moderate, and Green = Good.

Criteria	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Cultural Values	Green	Green	Amber	Green
Mana Whenua Development Aspirations	Green	Amber	Green	Green
Housing Capacity/ Affordability	Green	Amber	Green	Red
Housing Demand	Green	Amber	Green	Amber
Business Suitability	Amber	Amber	Amber	Green
Business Demand	Amber	Amber	Amber	Green
Transport Accessibility	Amber	Green	Red	Amber
GHG Reductions	Amber	Green	Red	Green
Natural Hazards/ Climate Change	Amber	Green	Amber	Green
Highly Productive Land	Amber	Green	Amber	Red
Biodiversity	Green	Green	Green	Green
Te mana o te Wai	Green	Green	Green	Green
Infrastructure – 3 waters	Red	Green	Red	Green
Infrastructure – Transport	Amber	Green	Red	Amber
Infrastructure - Other	Amber	Amber	Amber	Amber
Other Significant Constraints	Green	Green	Green	Amber
Overall	Amber	Green	Red	Amber

The full evaluation of each spatial scenario identifying advantages and disadvantages is set out in **Appendix 2**. Key findings from the spatial scenario assessment included:

- (1) Intensification alone is unlikely to be sufficient in accommodating Rotorua's future housing needs (quantity and affordability) – especially in the short to medium term.
- (2) There are identified infrastructure capacity constraints (water, education, open space) for significant growth around Ngongotahā.

- (3) New greenfield residential growth has the potential to help address/ fund improvements to existing issues (flooding, open space deficit).
- (4) There are potential infrastructure capacity constraints (water, power, education) for significant growth along Eastside.
- (5) Existing industrial and airport operations does place some development constraints over significant residential growth along the Eastside Corridor.
- (6) All growth scenarios will result in an increase in GHG emissions/ vehicle kilometres travelled assuming existing travel patterns remain. Even with high levels of intensification, further investment and improvement to both public and active transport networks will be required to help support a reduction in GHG emissions.

Overall, **Scenario 2 – Multi-nodal Intensification** was assessed as performing the best when considering all potential advantages and disadvantages under each of the criteria identified. However, a key issue identified with Scenario 2 is that intensification alone is unlikely to be sufficient in accommodating Rotorua's future housing needs (in terms of both quantity and affordability) especially in the short to medium term. Other issues identified include the availability of suitable business land and its responsiveness to mana whenua development aspirations.

6.7 Refinement of Scenarios

Following assessment of the broad spatial scenarios, further refinement to Scenario #2 – Multi-nodal Growth was undertaken to address some of the identified disadvantages and draw on some of the advantages identified within scenarios 1 and 4. These two refined scenarios are identified below.

- **Scenario 5 – Multi-nodal Intensification A**

This was a refined Scenario 2 with some limited greenfield residential and business growth provided for around Ngongotahā. This had a corresponding drop in the levels of intensification provided for around nodes in Ngongotahā, Fairy Springs, Western Heights and Glenholme.

- **Scenario 6 – Multi-nodal Intensification B**

This was also a refinement on Scenario 2 with a slight reduction in the levels of intensification provided for under Scenario 2 and some limited business greenfield growth around Eastside.

6.7.1 Feedback from Stakeholders on refined Scenarios

Spatial scenarios were presented to key stakeholders (including the TAG) for feedback. Feedback received as part of this process included:

- An over-reliance on intensification may necessitate an increase in land values to assist with commercial feasibility and this may ultimately impact on affordability in the city;
- The above, was counteracted with a concern that excess greenfield land release could reduce the feasibility/ uptake of intensification opportunities on existing brownfield sites;
- The limited greenfield residential development opportunities are under the control of existing greenfield developers so this may not result in a more competitive/ response land supply market.

- Targeted greenfield could support and help fund the development priority wetland restoration areas which are considered important for improving the water quality of Lake Rotorua;
- Any significant growth at Ngongotahā (either through intensification, greenfield development or a combination of both) would place significant pressure on the school network;
- New business and industrial land would be most suitably located along the State Highway 30 corridor near the Airport to provide the most convenient links to the Port of Tauranga; and
- New residential opportunities along Eastside would be important to support future business/ industrial growth in this corridor.

As a result of the evaluation process and feedback received, the spatial scenarios were further refined to a preferred spatial scenario.

6.8 Preferred spatial scenario for consultation

The draft FDS provides potential capacity for about 12,300 new houses in and around Rotorua and is shown overleaf in **Figure 8**. More housing is provided for than the projected demand of 9,740 Rotorua that is required to accommodate this demand over the next 30 years. As such, it is unlikely that the full 12,300 signalled would (or could be) be realised over the life of this draft FDS.

However, we propose to provide additional capacity over and above the projected demand due to the uncertainty on how the market will respond to the existing geotechnical constraints, intensification opportunities (including the potential to redevelop Arawa Park), and uncertainty around the densities achieved through new greenfield development.

It is estimated that the draft FDS will provide capacity for **new houses** across Rotorua as follows:

- Central: about 1,350 (11%)
- Westside: about 4,450 (36%)
- Eastside: about 3,350 (27%)
- Ngongotahā: about 3,150 (26%)

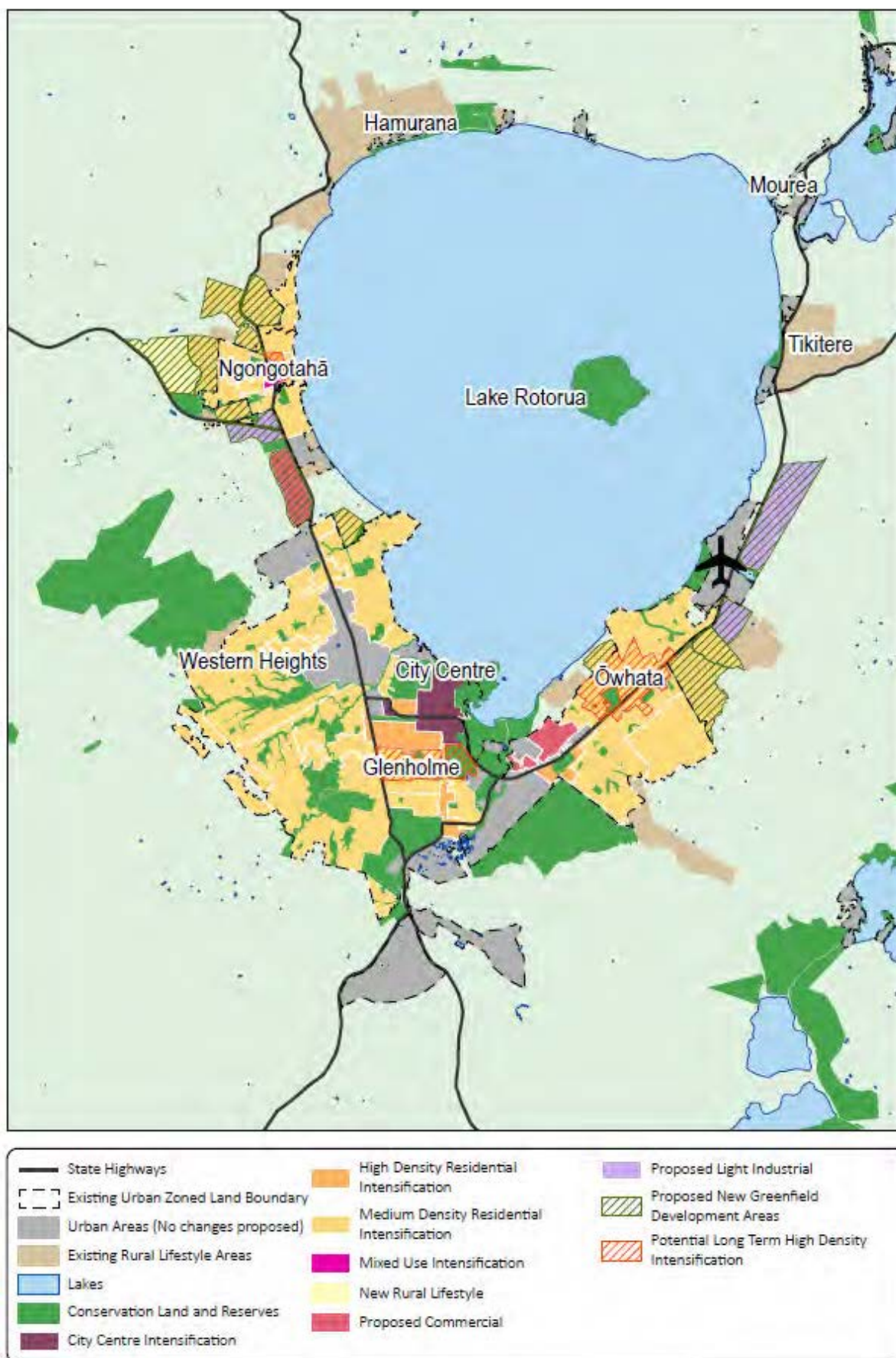


Figure 8 - Preferred Spatial Scenario for Consultation

6.8.1 Intensification

Up to 7,000 new homes are anticipated to be provided for via intensification over the life of the FDS. In line with the methodology set out in Section 6.5.1, the following assumptions have been made around the uptake of intensification opportunities within the preferred scenario.

- (a) The preferred Spatial Scenario includes potential for around 2,000 new greenfield dwellings near/ around Ngongotahā. As such, it is assumed that only 10% of commercially feasible intensification opportunities in and around Ngongotahā would be realised over the next 30-years. This is equivalent to around 300 dwellings.
- (b) Both Fordlands and Glenholme South have areas with concentrated Kāinga Ora ownership. As such, it has been assumed that the equivalent of 33% of commercially feasible opportunities could be realised with the majority of this being delivered by Kāinga Ora via terraced and walk-up apartment typologies. This is equivalent to around 800 dwellings.
- (c) Glenholme, Koutu and Lynmore are characterised by relatively high land values compared with other areas of Rotorua. These areas are notable for their proximity to the City Centre, natural amenity (e.g. lake views) and proximity to other amenities (e.g. schools). As such, it has been assumed that an uptake rate of 25% of commercially feasible opportunities over the 30-year horizon could be achieved in these areas.
- (d) Within the City Centre, an uptake rate of 10% has been assumed. This is equivalent to around 660 dwellings. The ME modelling indicated up to 6,600 apartment dwellings were commercially feasible. However, overall demand for apartment living across Rotorua is projected at approximately 1,000 homes. In addition, city centre residential development needs to compete with commercial, hospitality and visitor accommodation.
- (e) For all other areas, varied uptake rates of between 15-17.5% have been applied to neighbourhoods to reflect their varying proximity to the City Centre and other greenfield development opportunities.

6.8.2 Greenfield Residential

A total of 5,300 new homes could be provided via greenfield residential development.

Approximately 1,700 of these would be delivered through the existing zoned development areas at Pukehāngi Heights and Wharenui Rise.

Of the remaining 3,600 new homes, 2,250 are located around the periphery of Ngongotahā. 1,250 of these homes are located around the Leonard Road/ Dalbeth Road area and are proposed to come forward for development in the longer term if intensification uptake is lower than anticipated. 1,000 new homes on greenfield sites adjacent to the existing urban area of Ngongotahā have been identified in the short-to-medium term.

1,350 new homes are identified on greenfield sites in Eastside. The majority of these (1,050) are located adjacent to the existing Wharenui Rise development on land under the control of Ngati Whakauae. It is anticipated that development of these areas would not occur until the completion of the Wharenui Rise development

6.8.3 Business

The draft FDS identifies approximately 195 hectares of additional land that may be suitable for a range of business uses.

This includes approximately 32ha of land adjacent to and adjoining the Eastgate Business Park and Rotorua Airport and an additional 92ha north of the Eastgate Business Park along State Highway 30. This area is of a significant scale and would be suitable for a range of industrial and business activities, subject to more detailed market and design investigations, and discussions with affected iwi and hapū.

A total of 25ha of new light industrial land has been identified around Ngongotahā to support potential residential growth (both employment and services) in this area. It also provides the opportunity to relocate existing industrial activities in Wīkaraka Street to make room for more intensive mixed-use development close to the centre. A further 46ha of land has been identified east of State Highway 5 for general commercial uses with a tourism focus.

The capacity provided for industrial activities set out above, exceeds demand over the next 30 years. This is intended to encourage industrial activities in the urban area (at Ngapuna and Fairy Springs) to relocate to more appropriate locations on the fringes of the city.

6.8.4 Infrastructure

Key strategic infrastructure requirements that will likely be required to support the growth identified in the FDS include:

- In the short term, implementation of the refreshed bus network proposed by BoPRC. In the longer term, further increases in bus frequencies and extensions to the bus network to service greenfield areas in Ngongotahā and Ōwhata;
- Network wide improvements to cycling infrastructure (e.g. new segregated routes, improved lighting, priority crossings);
- Potentially a new primary school/optimised school network in Ngongotahā;
- New neighbourhood centres (to support small-scale retail/ convenience type uses) near Eastgate and Leonard Road to support proposed residential and employment growth in these areas;
- New open spaces in Ngongotahā and Ōwhata (including new sport and recreations hubs);
- New or upgraded open spaces in Central, Western and Eastern Rotorua;
- Stormwater and flood protection works (including the creation of new wetlands) in various catchments around Rotorua.

7.0 Growth areas

A total of 31 sites encompasses approximately 2,300 Ha of land around urban Rotorua were identified for more detailed assessment and consideration as part of the evaluation of the advantages and disadvantages for different spatial scenarios.

Sites were selected for assessment based on a combination of factors. These included:

- Existing Council plans and strategies (e.g. 2018 Spatial Plan) were reviewed to understand where growth opportunities had previously been identified;
- Stakeholder feedback was sought from mana whenua, developers and Council staff as to where they saw development opportunities, had aspirations or where there had been known demand for new development (e.g. previous consent applications);
- The initial opportunity and constraints analysis identified broad areas that were relatively less constrained than other areas and may be more suitable/ easier to develop. Constraints such as risks from natural hazards, the presence of wetlands, and highly productive land were not used to discount the consideration of sites at the initial site selection stage;
- The constraints analysis also identified “no-go” areas such as conservation land and outstanding natural features/ landscapes where new urban development was considered inappropriate;
- The sites relationship with the existing urban zoned boundary. Generally, land parcels that were contiguous with existing urban areas were identified in preference to “leap-frogging” rural land to create new areas of urban development; and
- Alignment with the broad spatial scenarios (scenarios 1-4).

The boundary of all sites used for the initial detailed assessment was initially determined based on cadastral boundary data sourced from LINZ. Final boundaries of sites assessed were modified throughout the assessment process where significant constraints were identified (e.g. flood plains).

A summary of the sites assessed as part of the development of the FDS are set out in Table 1 below.

Table 1 - Growth Areas Assessed

Name	Area (Ha)	Uses Considered	Included in Draft FDS
Stembridge Road	22.25	Light industrial, commercial, residential	Yes
Tamarahi	12.27	Light industrial, commercial	Yes
Agrodome	26.10	Light industrial, commercial	No
State Highway 5 East	30.84	Light industrial, commercial	No
State Highway 5 South	28.10	Light industrial, commercial	Yes
State Highway 5 West	72.21	Light industrial, commercial	Yes

Gee Road West	43.08	Light industrial, residential	Yes
Eastgate South	4.24	Light industrial, commercial	Yes
Eastgate North	142.26	Light industrial, commercial	Yes
Puarenga	55.85	Heavy industrial	No
Tikitere	185.64	Light industrial, commercial, residential	No
Tarukenga	100.65	Heavy industrial	No
Brake Road West	94.44	Rural residential	Yes
31 Ngongotahā Road	31.00	Residential	Yes
Leonard Road	54.92	Residential	Yes
Oturoa Road West	83.17	Rural Residential	No
Dalbeth Road East	69.78	Residential	No
Dalbeth Road West	34.60	Residential	No
Wharenuui Road East	108.32	Residential	Yes
Wharaenui Road South	121.90	Residential, rural residential	No
Tihiotonga West	140.82	Residential	No
Owhata Lakefront	102.86	Residential	Yes
Hamurana	252.55	Residential, centre	No
Tarimano	126.76	Residential	No
Hamurana Lakefront	32.29	Residential	No
Bonnington Farm (Aquarius Drive)	28.82	Residential	Yes
Oturoa Road North	36.82	Residential, rural residential	No
Oturoa Road South	41.26	Residential	No
Brake Road East	53.93	Residential	Yes
Heritage Farm	14.06	Residential	Yes
McFeteridge Road	77.35	Rural residential	No

The location of these sites relative to the existing urban area is identified in **Figure 9** and **Figure 10** below. A detailed summary of how each site was assessed is provided in **Appendix 3**.



Figure 9 - Ngongotahā Growth Areas assessed

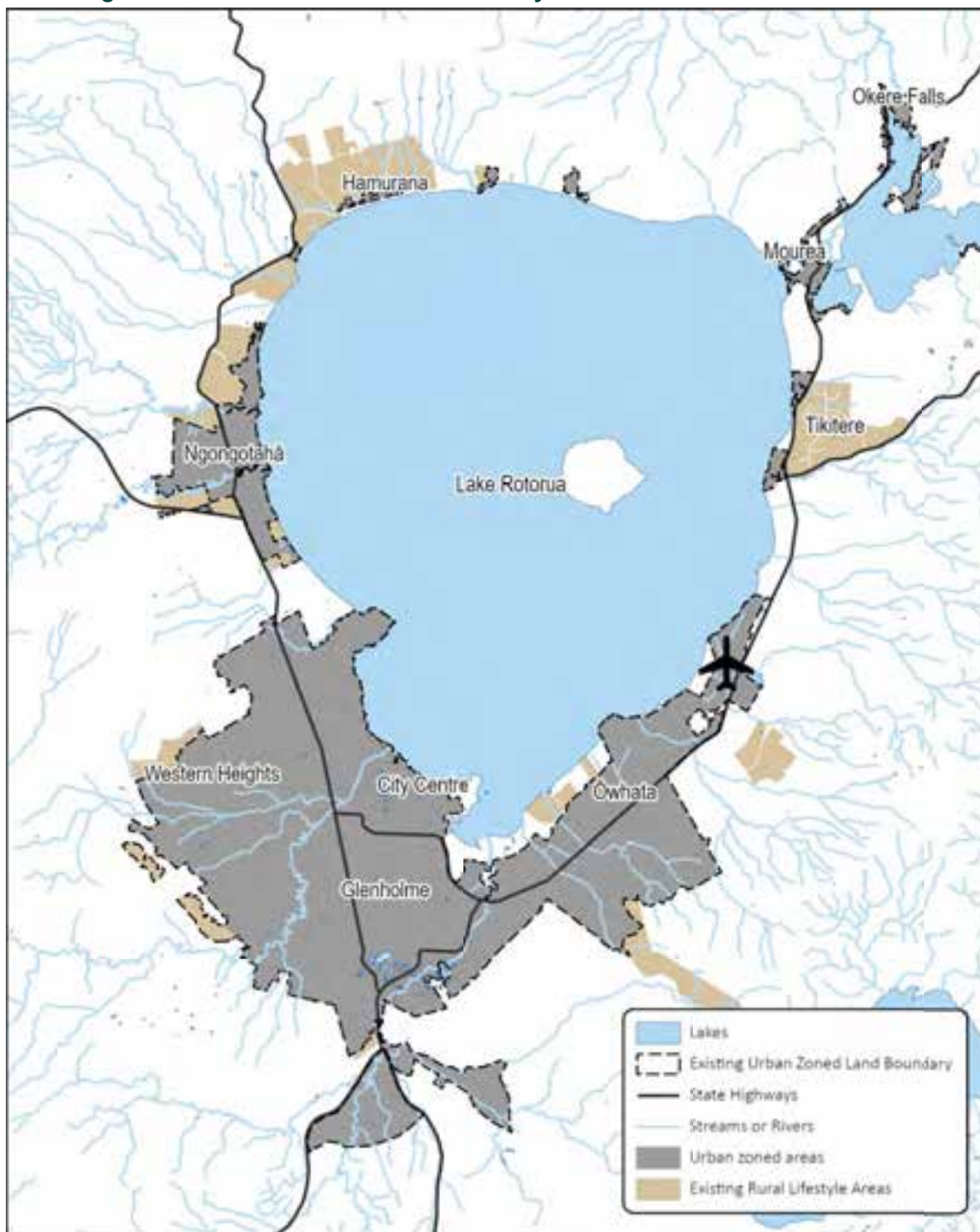


Figure 10 - Eastside and Southern Growth Areas assessed

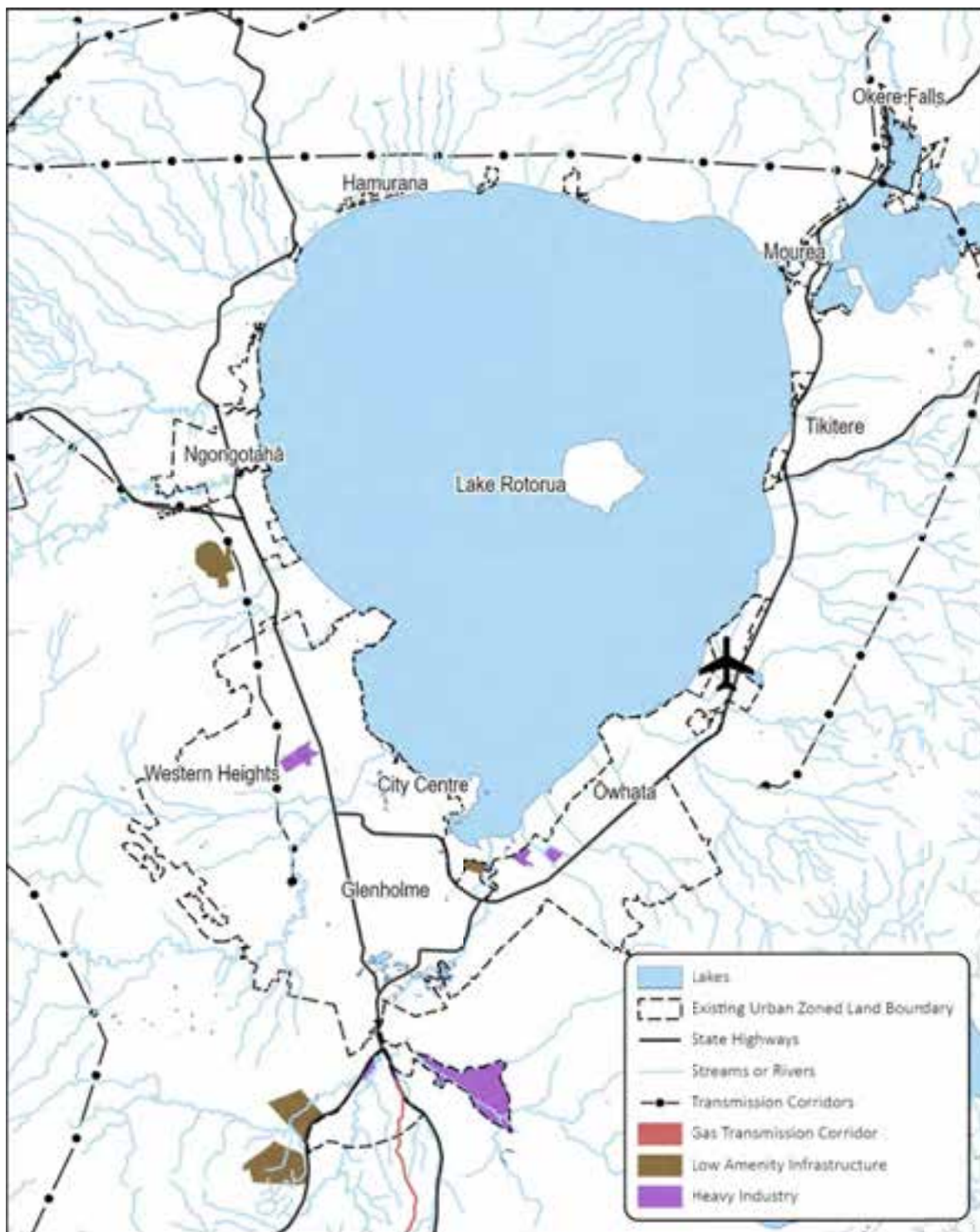
8.0 Appendices

Appendix 1 – Thematic Mapping

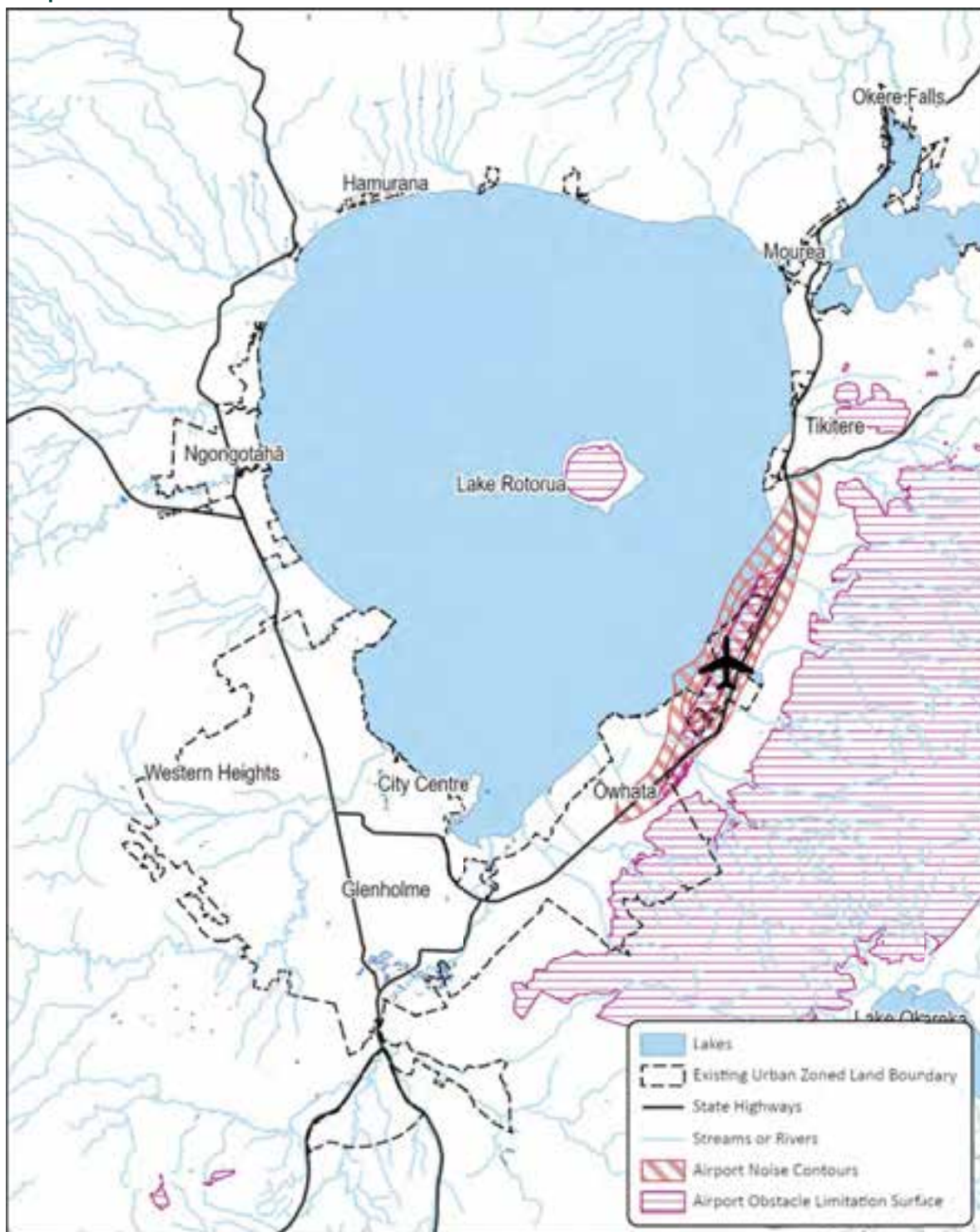
Existing Urban Areas and Rural Lifestyle Areas



Infrastructure



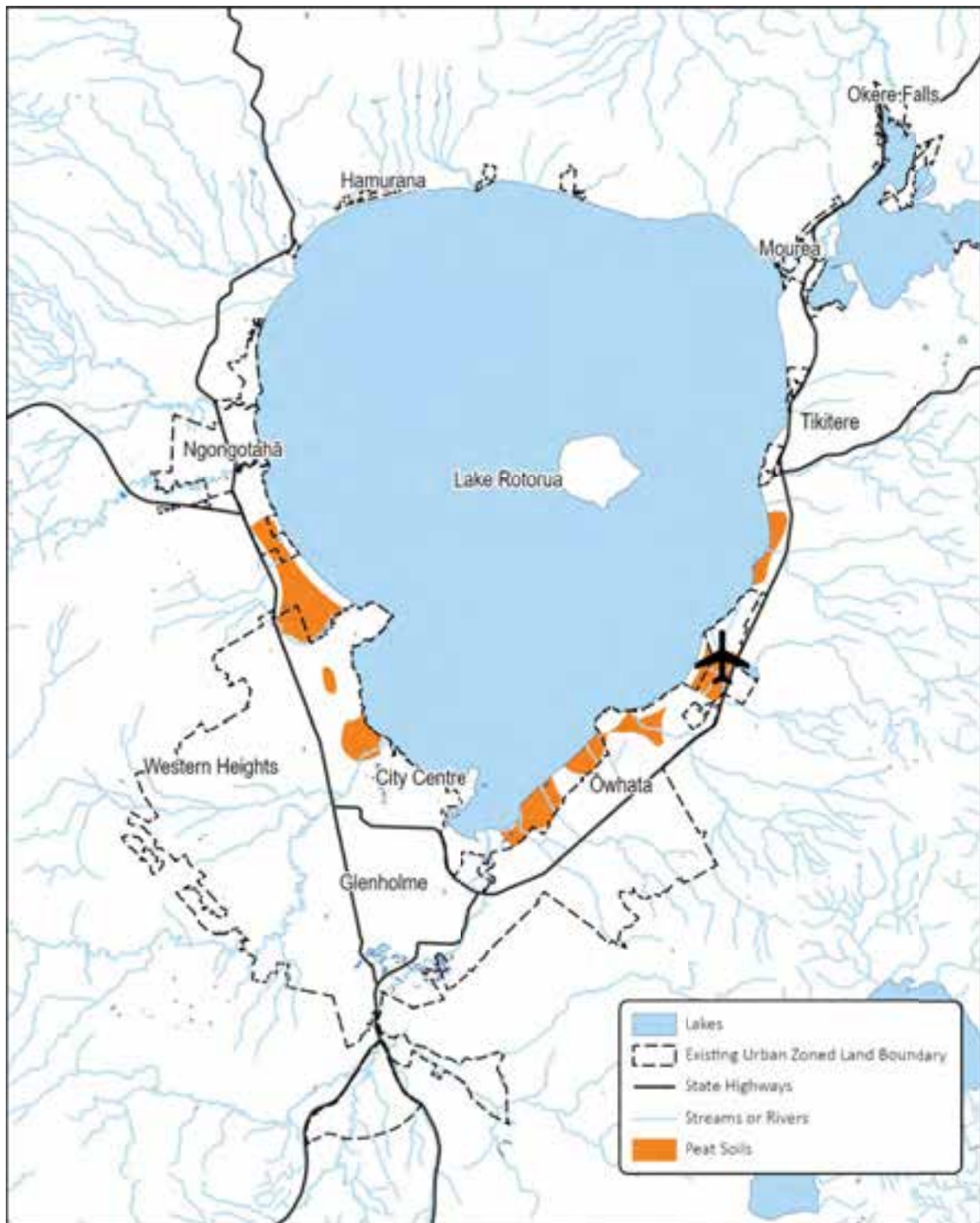
Airport Constraints



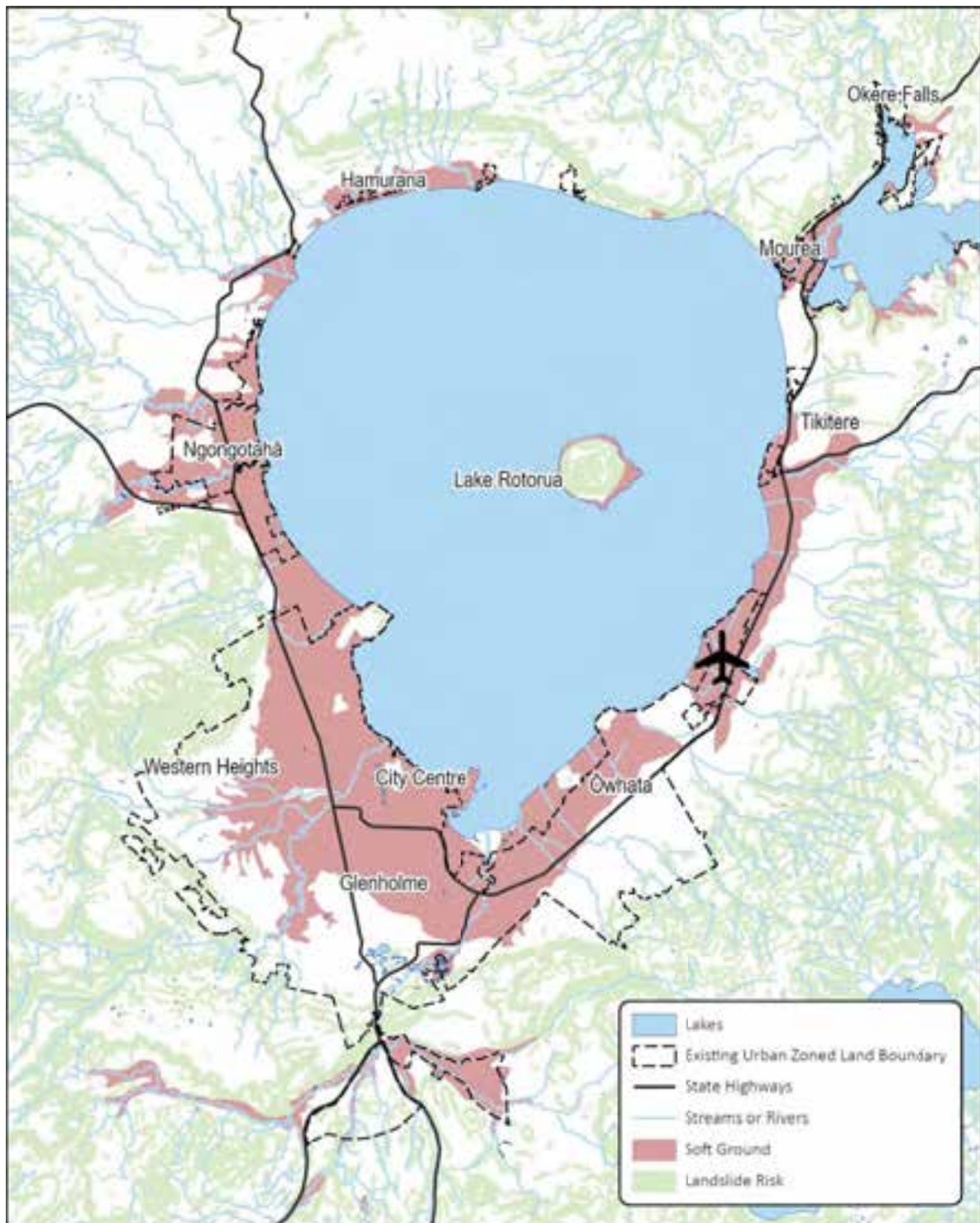
Highly Productive Land (LUC 2 and LUC 3)



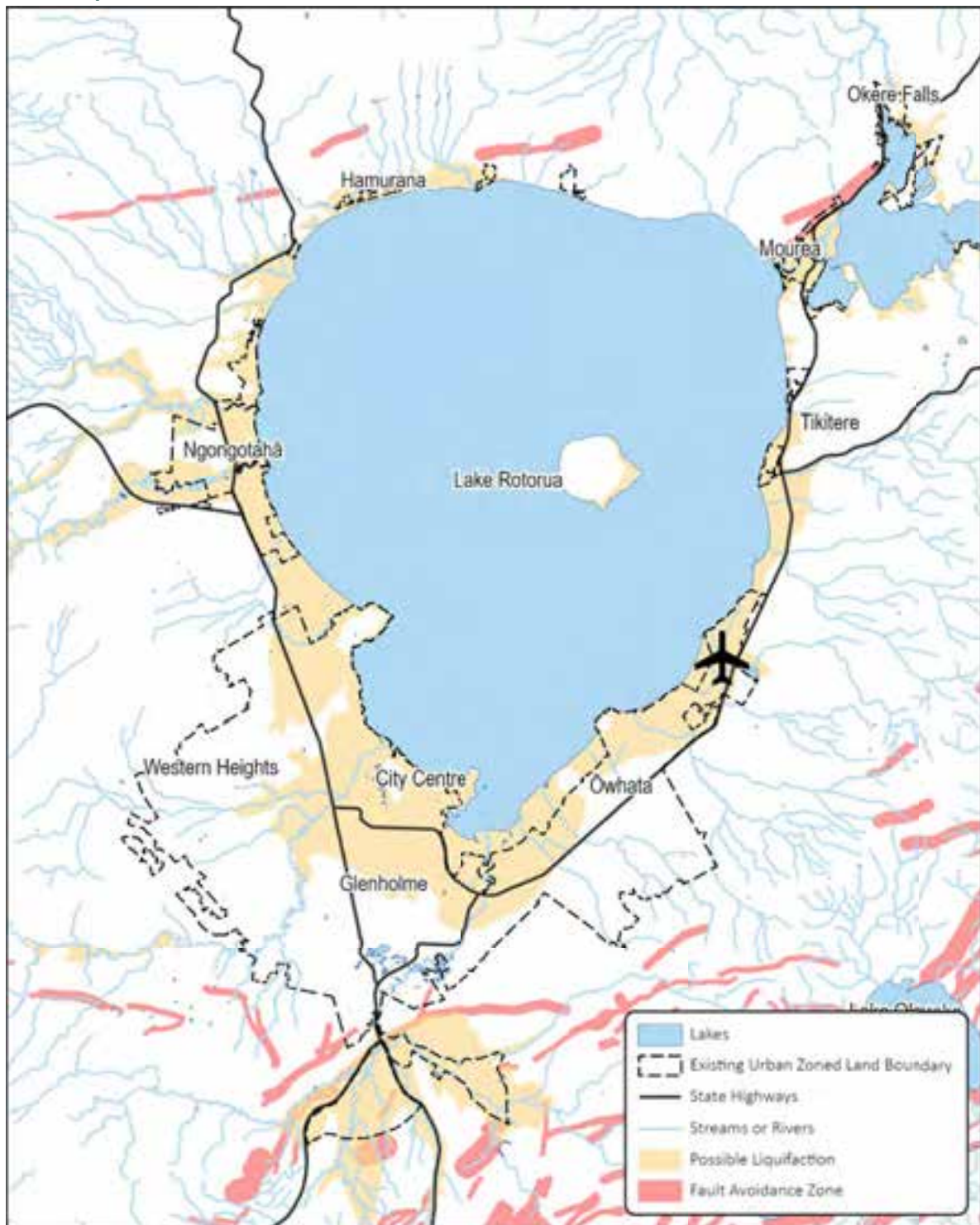
Peat Soils



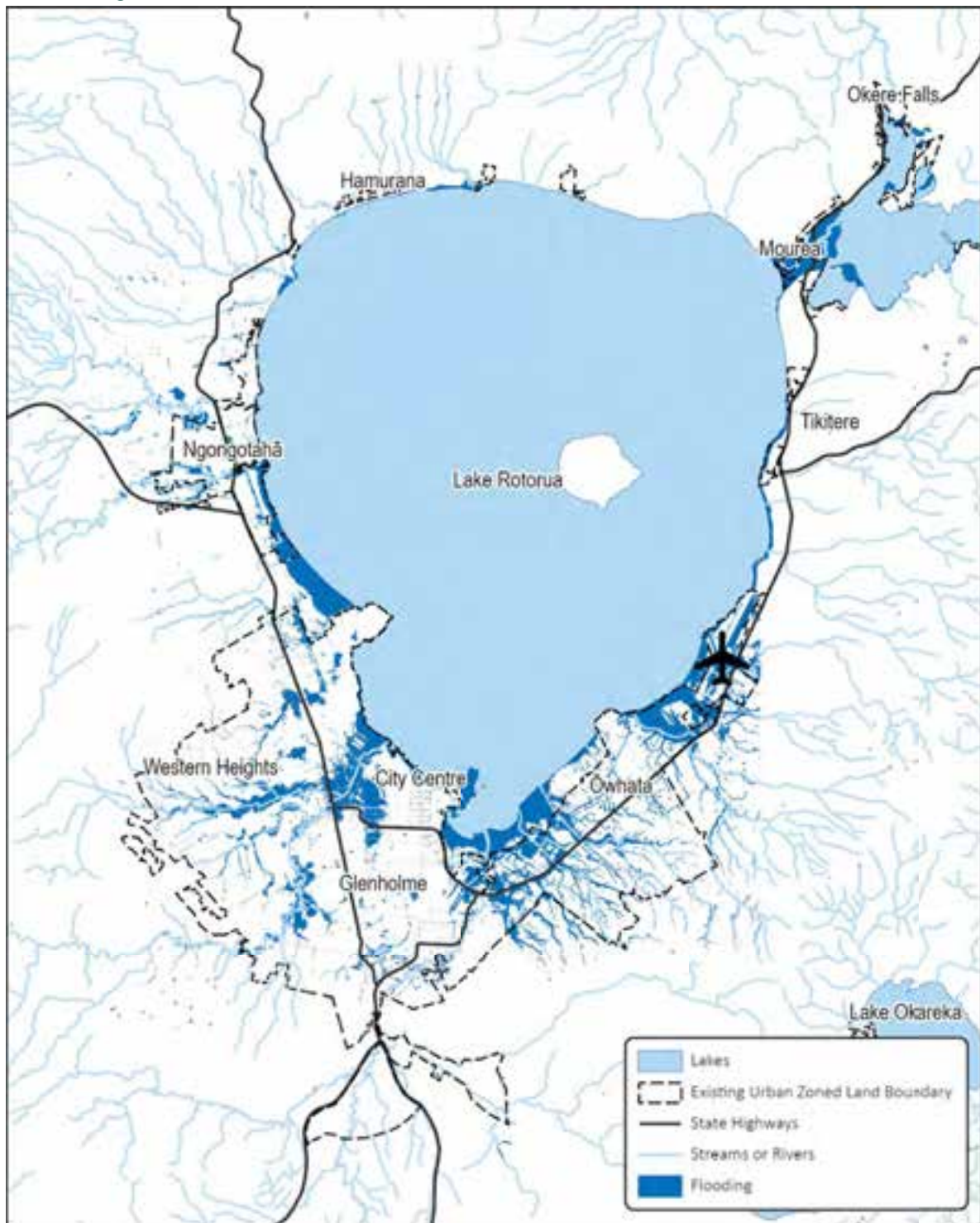
Ground Constraints



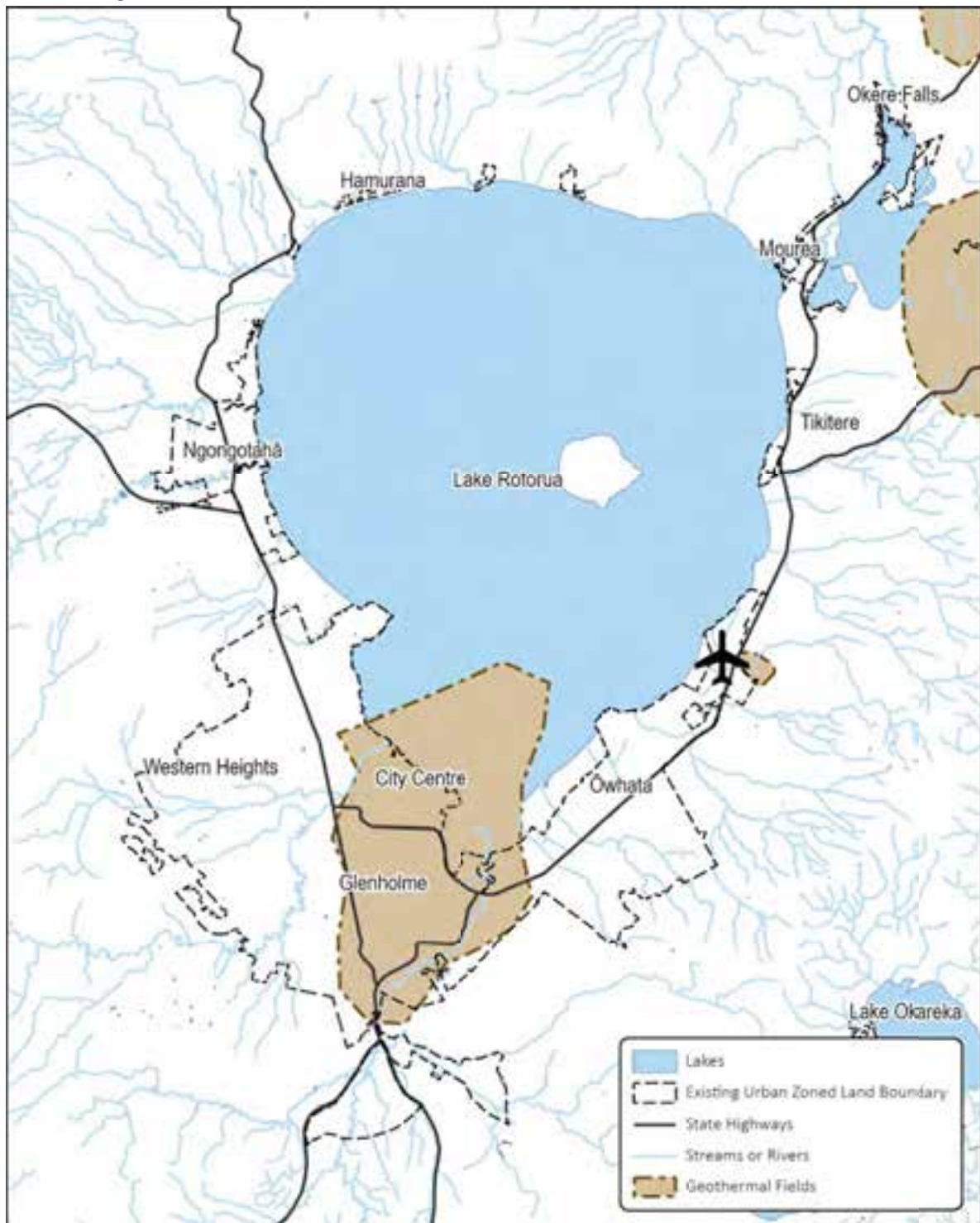
Earthquake Risks



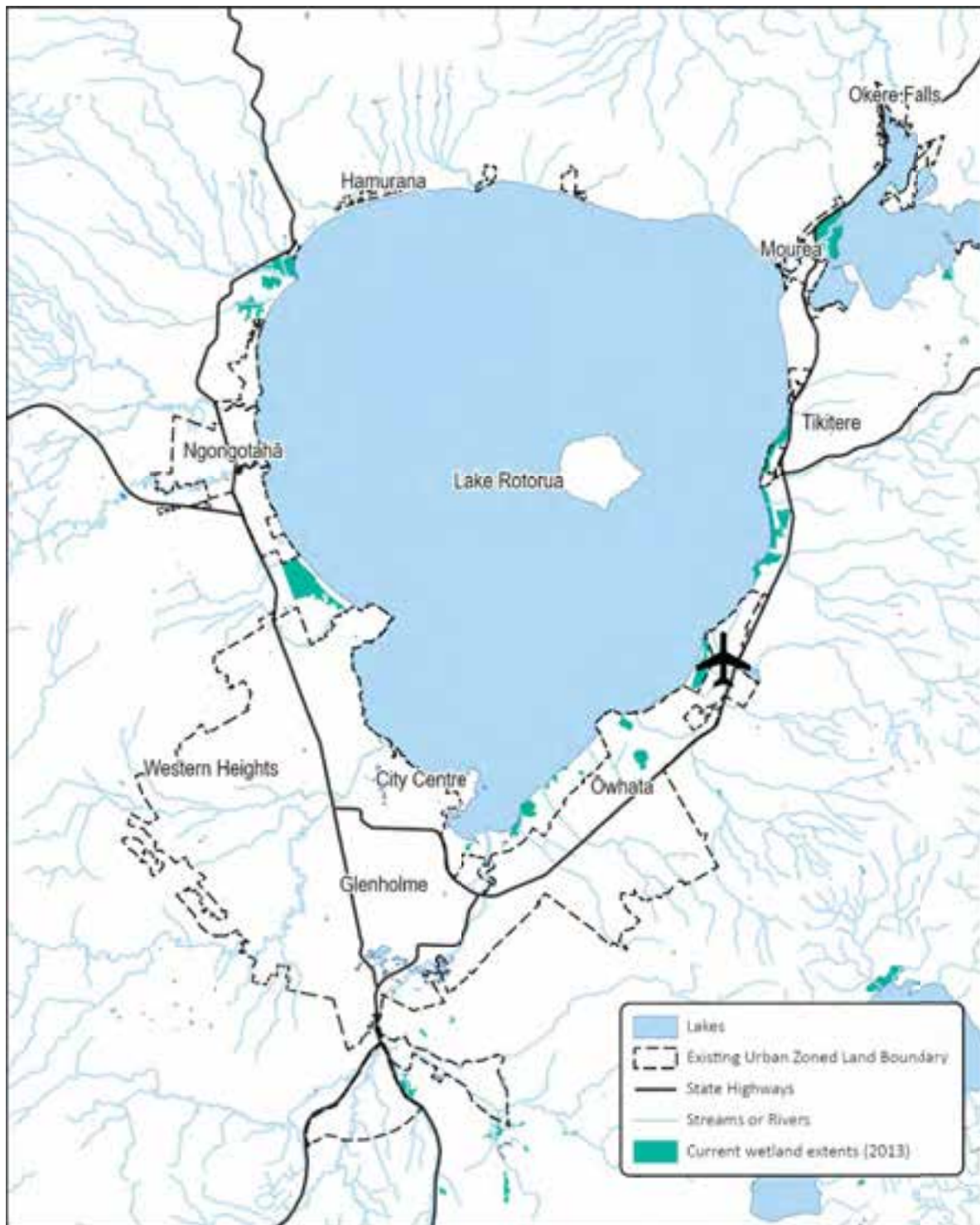
Flooding



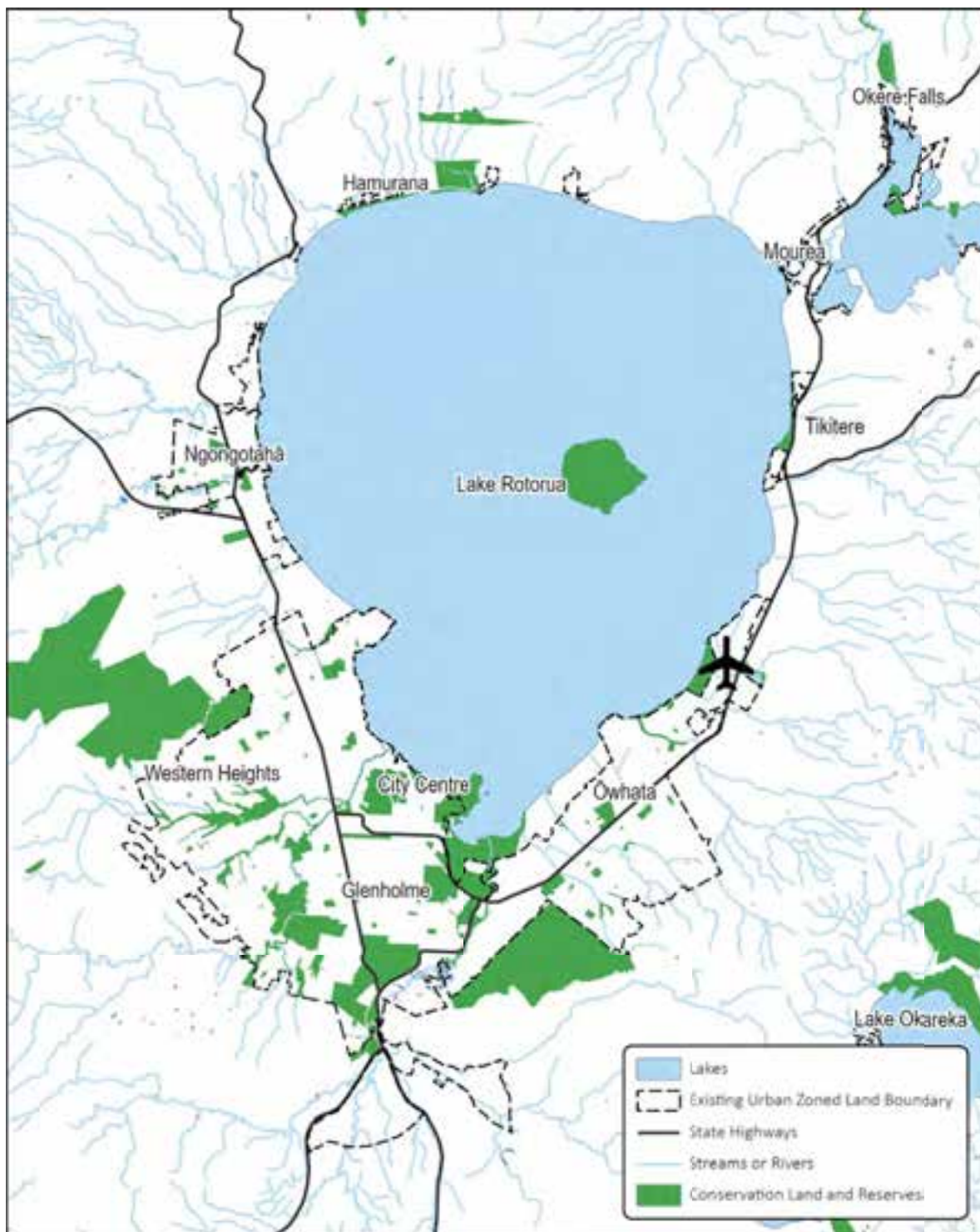
Flooding



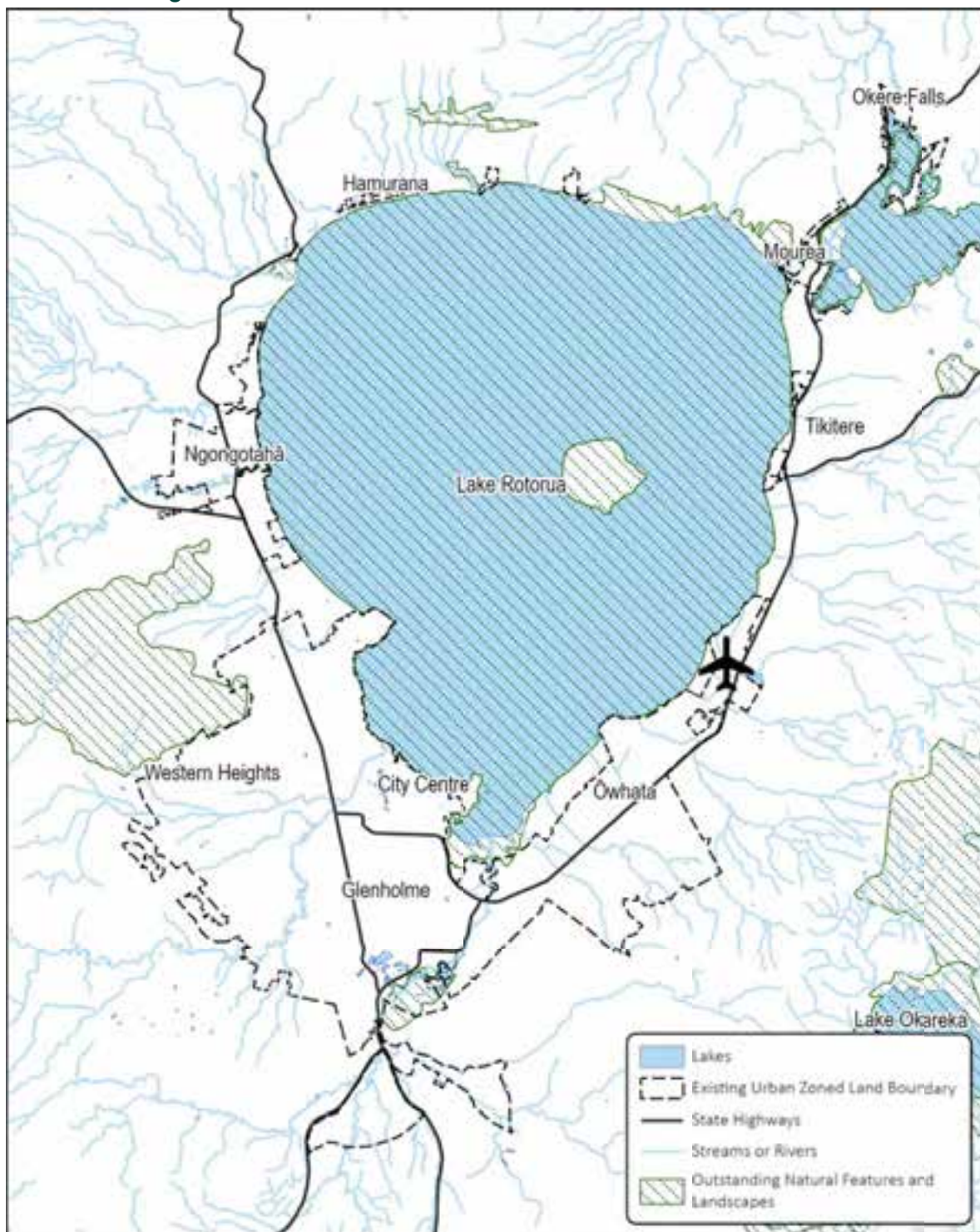
Wetlands



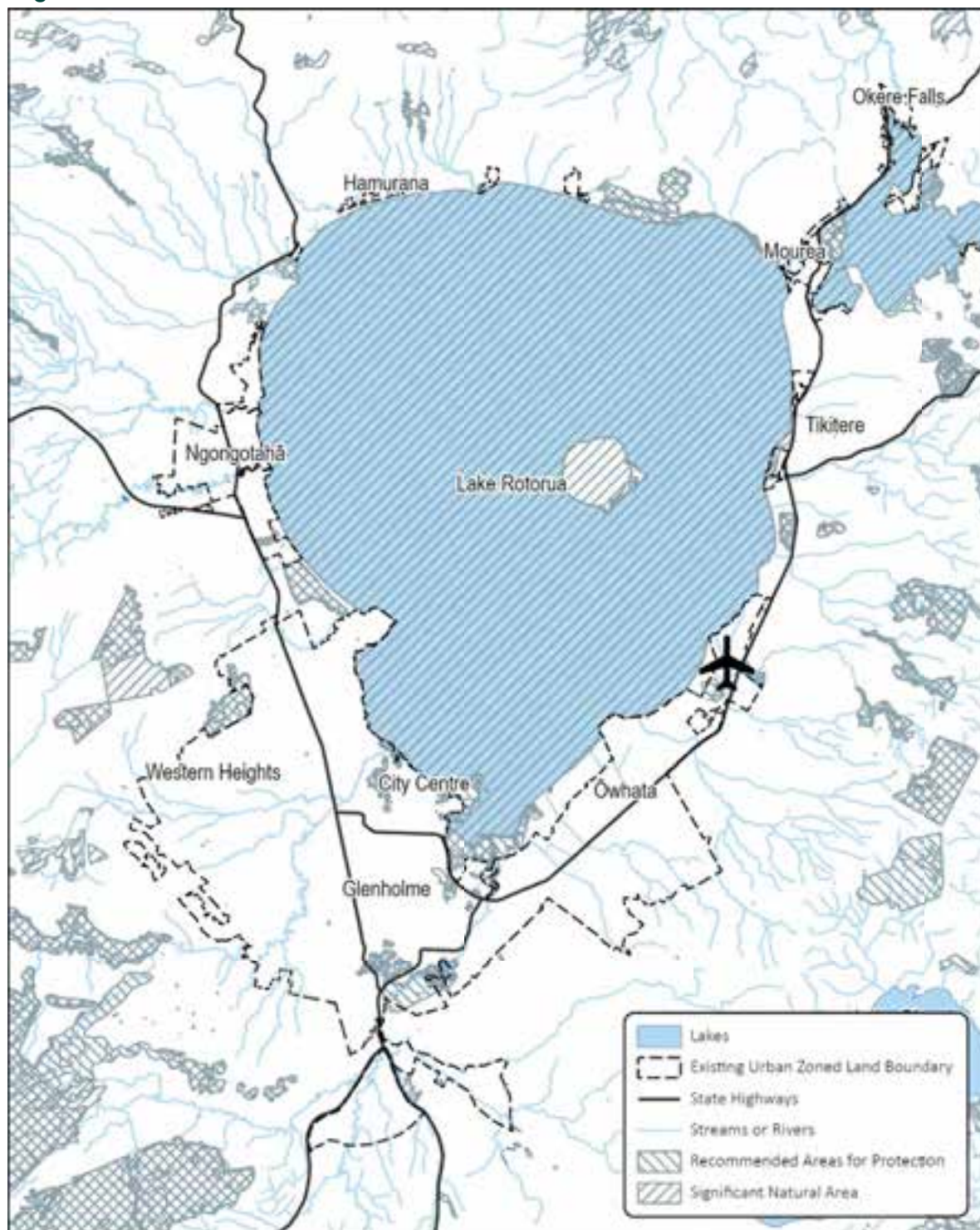
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Outstanding Natural Features



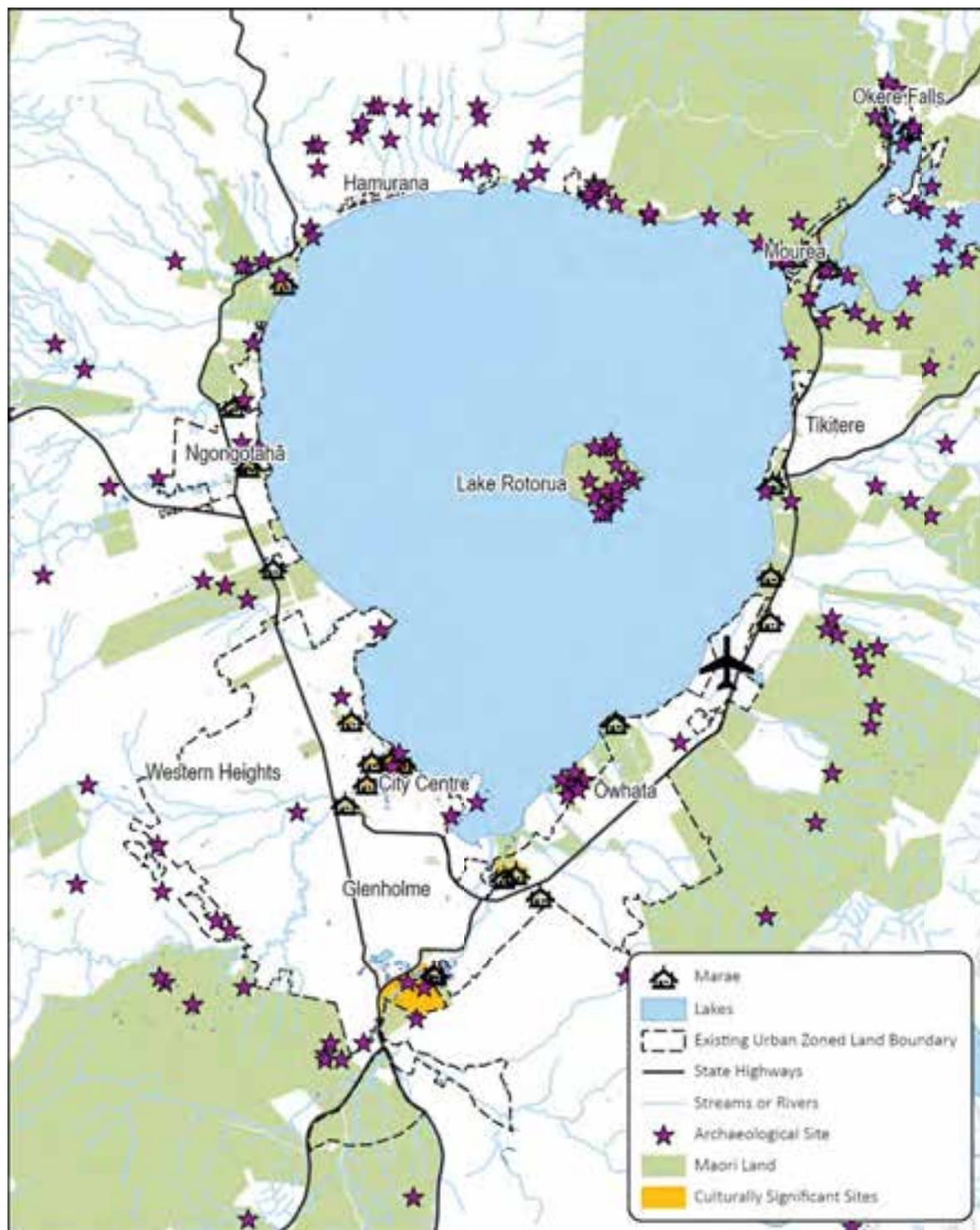
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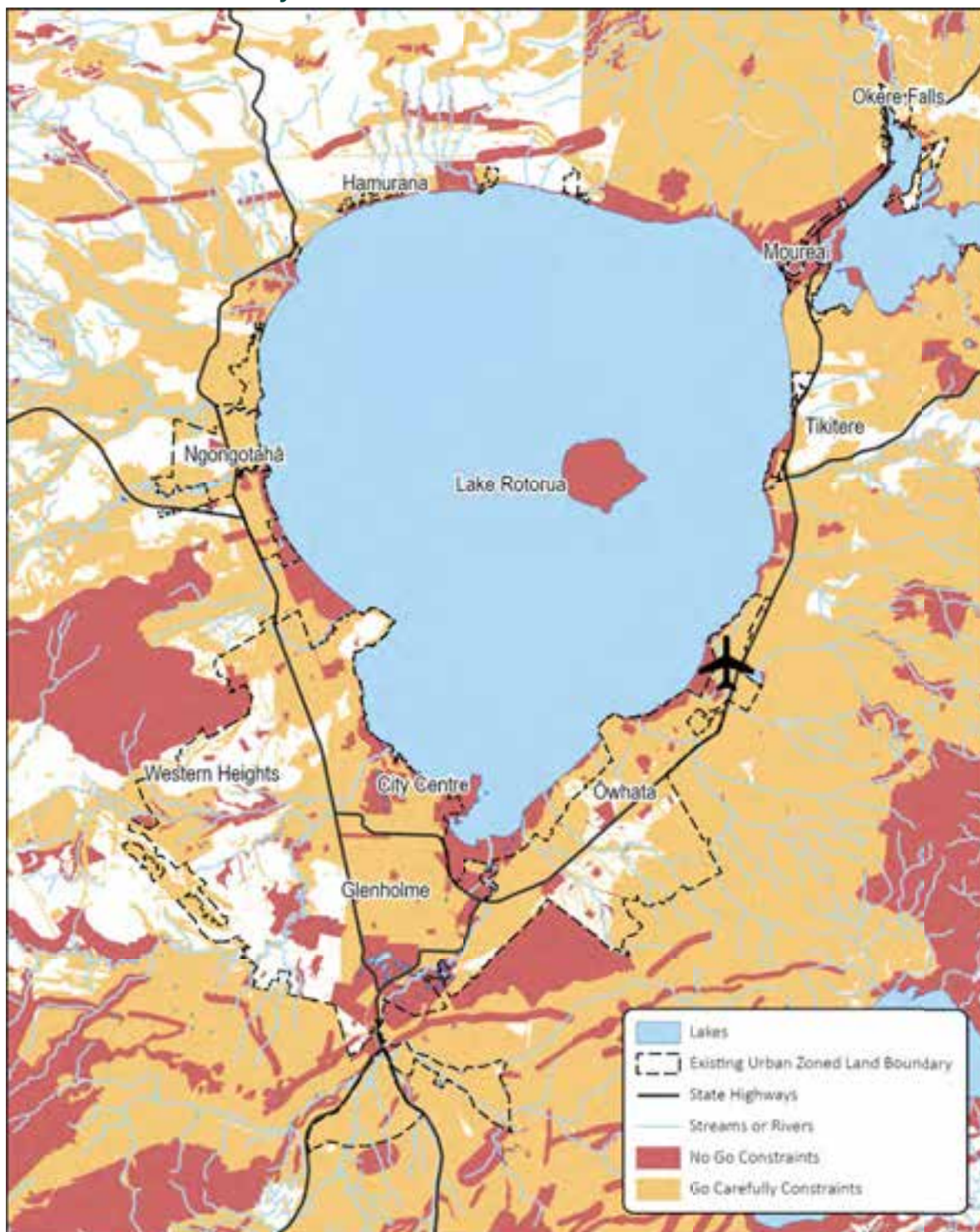
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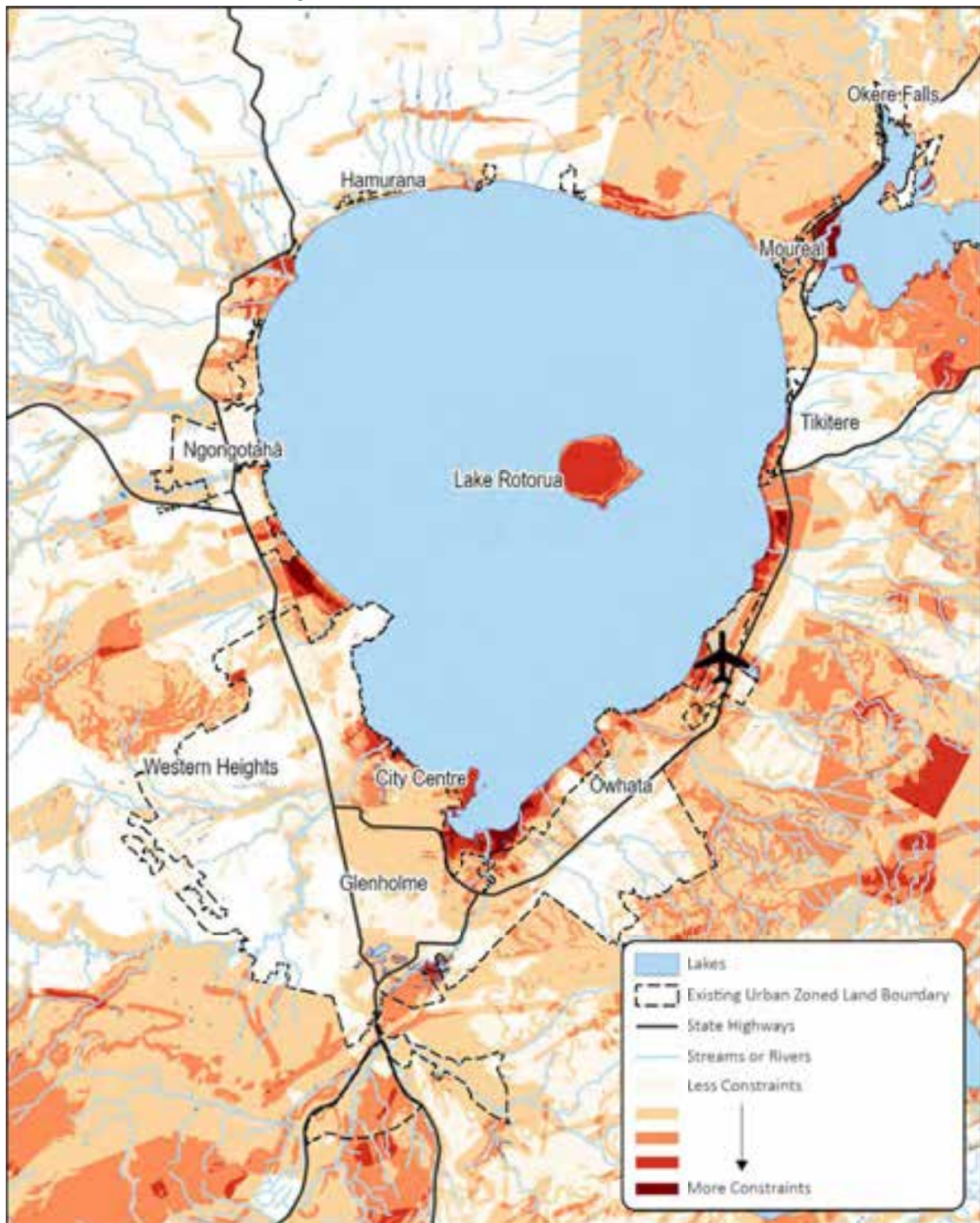
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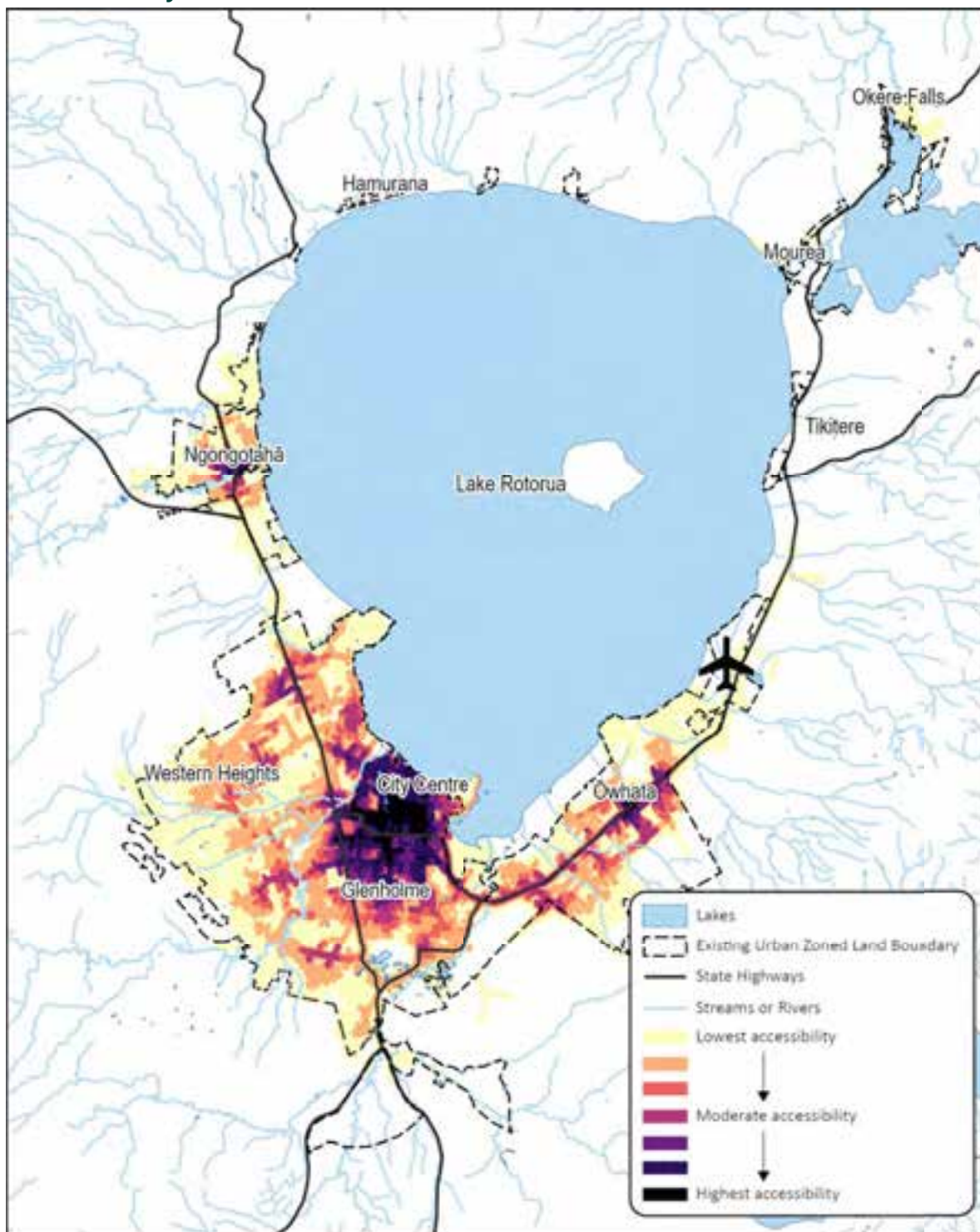
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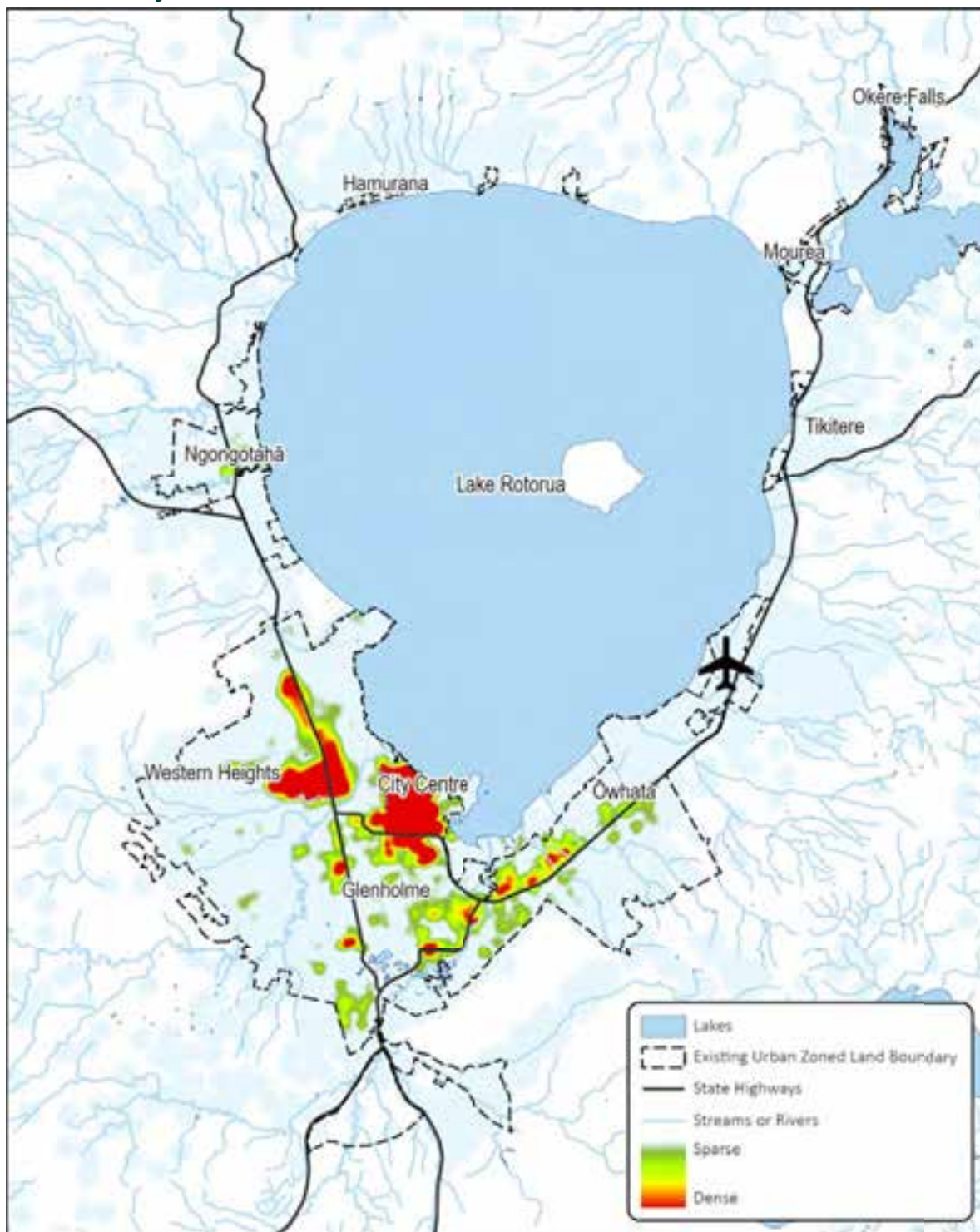
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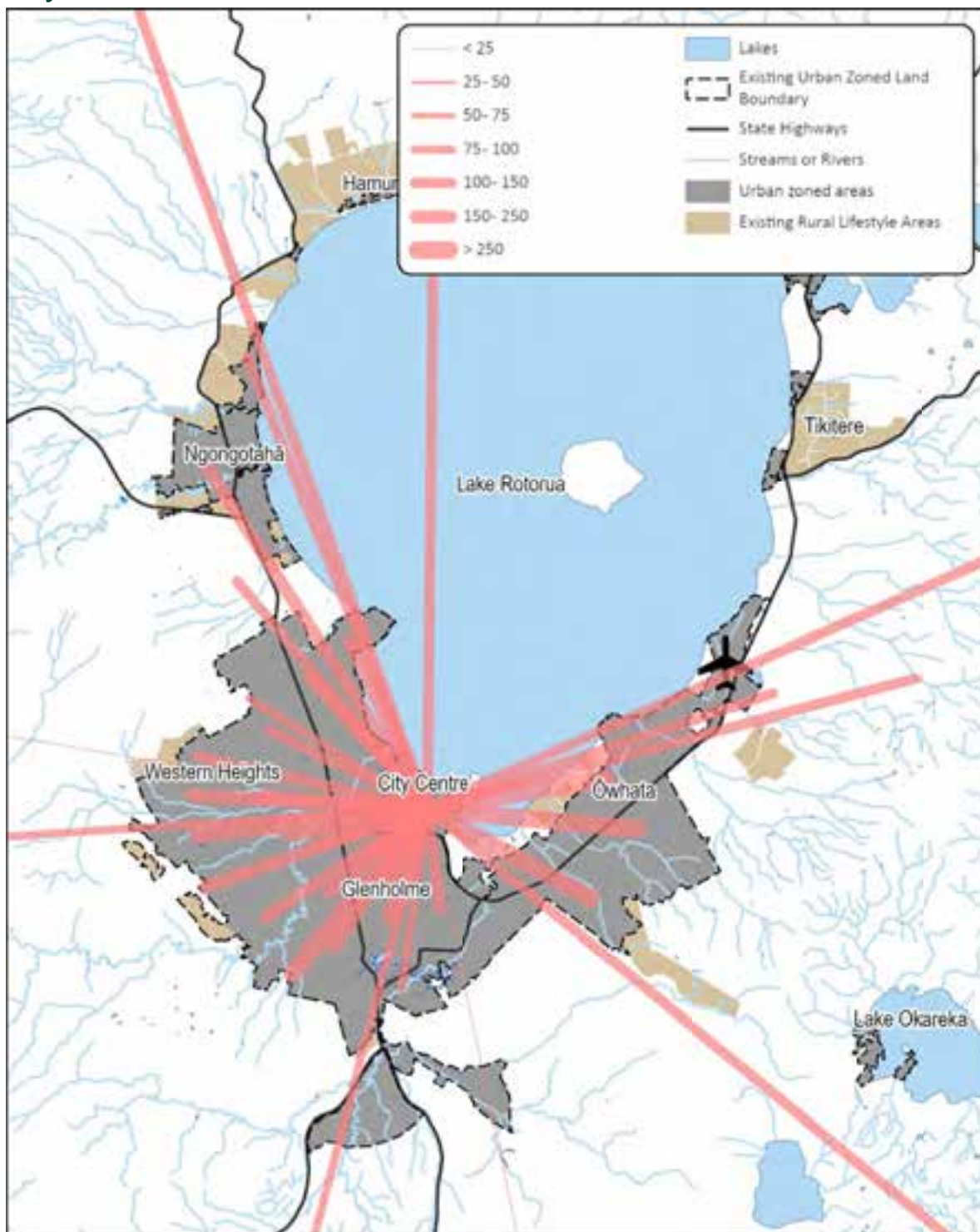
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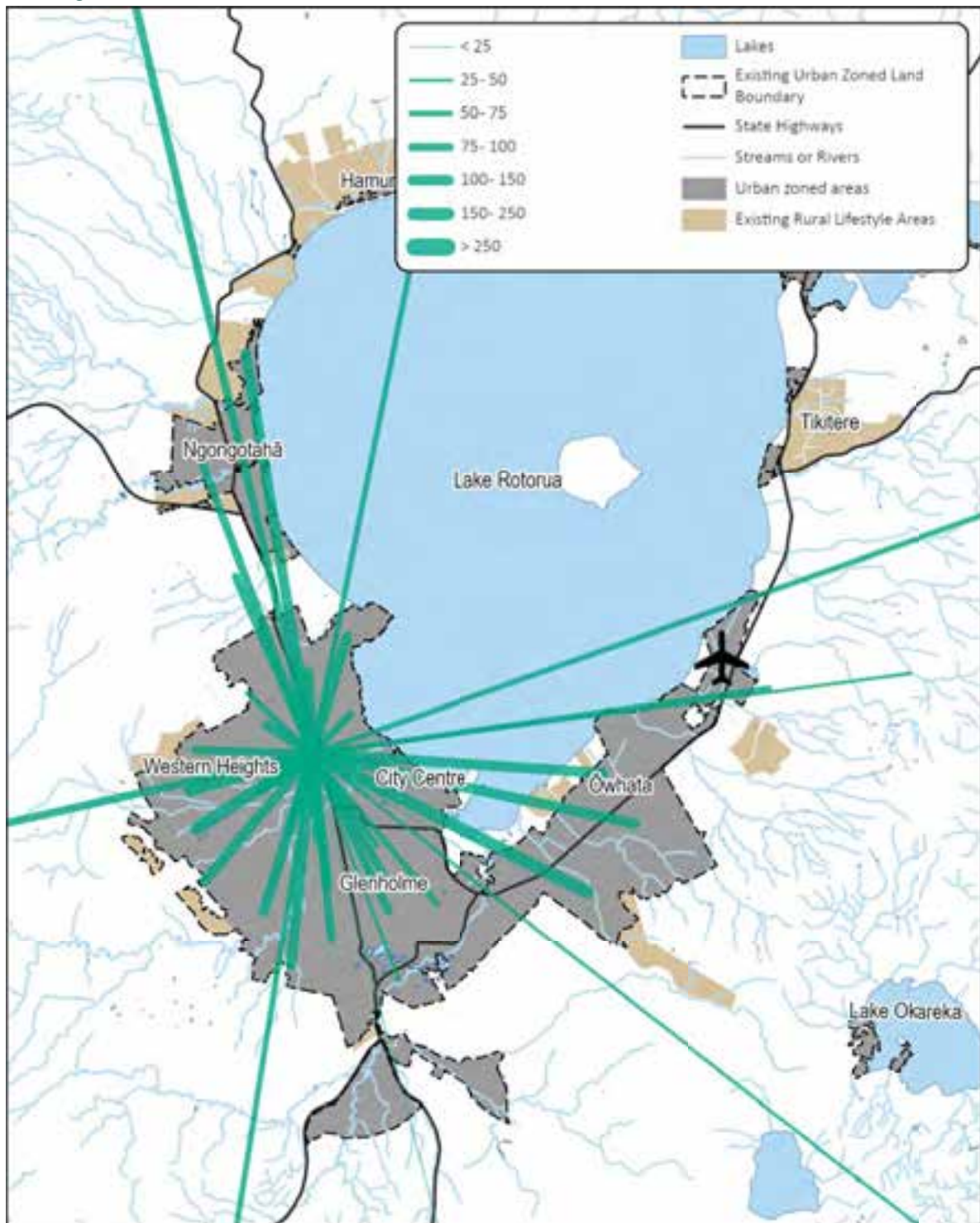
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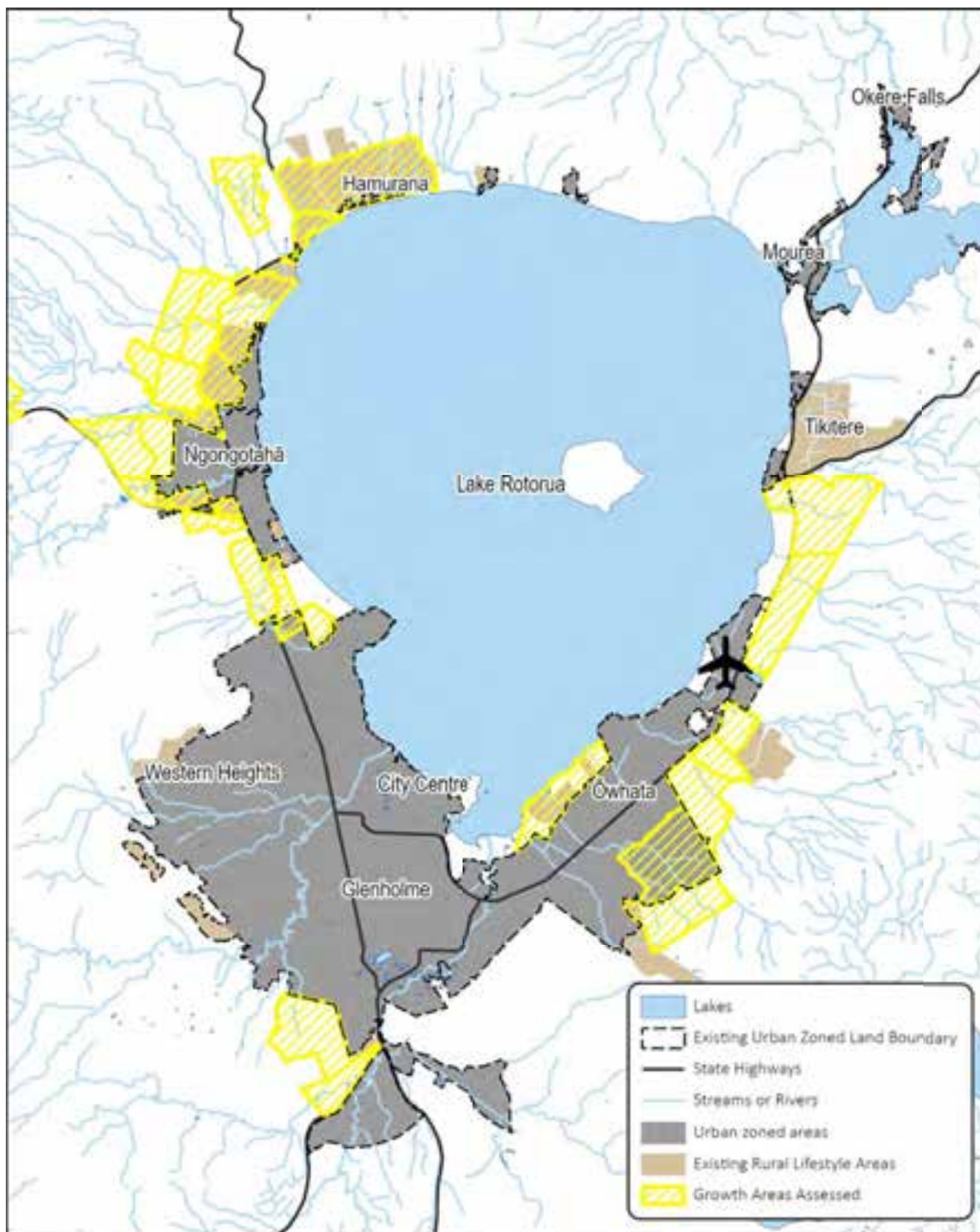
City Centre Commuter Flows



Mangakakahi Commuter Flows



Growth Areas Assessed



Appendix 2 - Advantages/ Disadvantages Assessment of Spatial Scenarios

Statutory links and considerations		Scenario 1: Ngongotahā Growth
Cultural Values	s6(e) , Ob5/Pol9 NPSUD	Advantages - - No specific issues or concerns were raised around growth in this area during engagement. Disadvantages - - Growth in this area would be located in a sensitive receiving environment so stormwater management would need to be carefully considered during design and consenting.
Mana Whenua development aspirations	s6(e) , Ob5/Pol9 NPSUD	Advantages - - Ngati Whakaue Tribal Lands Inc have aspirations for commercial and residential development on several sites in and around Ngongotahā.
Housing Demand	NPSUD Policy 1, 2 and 5	Advantages - - This scenario provides sufficient housing capacity as a result of large scale land release. - Could support a more competitive greenfield land development market and more affordable housing to help address short-to-medium term housing shortages. - Land owners and developers have identified Ngongotahā as an attractive area for residential development. Disadvantages - - Some existing greenfield opportunities are under ownership of existing greenfield developers so this may not result in a more competitive/ response land supply market. - Excess greenfield land release could reduce the feasibility/ uptake of intensification opportunities on existing brownfield sites.
Business Demand	NPSUD Policy 1, 2 and 5	Advantages - - Sufficient, appropriately sized/ flat business land available that could accommodate the relocation of existing industrial uses in Fairy Springs and Ngongotahā centre (Wīkaraka Street) Disadvantages - - Business land is located away from key freight corridor and route to the Port of Tauranga.
Accessibility	NPSUD Policy 5	Advantages - - Some areas of potential growth are already located in close proximity to a range of commercial and community services via active modes. Disadvantages - - Significant new areas of housing growth are located away from the major employment nodes of the City Centre and Ngapuna.
GHG reduction	NPSUD Policy 1(e) and Carbon Emissions Reduction Plan	Advantages - - New development could better support the development of more local commercial and community services helping to over time reduce trip lengths. Disadvantages - - Performs 2nd worst in terms of VKT/ Carbon emissions of scenarios assessed. - Urbanisation of peat soils and existing pasture can release trapped carbon.
Natural hazards / Climate change resilience	s6(h) and National Adaptation Plan	Advantages - - Development could help fund measures to address existing flooding issues within the Ngongotahā Catchment. Disadvantages - - New development located near areas with identified flood hazard risk. - New development could give rise to further downstream flooding impacts on existing communities. - May see development on soft ground subject to liquefaction risks.
HPL	NPSHPL objectives and policies	Advantages - - Most new development would occur on land already zoned for rural lifestyle development. - Productivity of existing highly productive land is limited to a degree by existing nitrogen limits. Disadvantages - - Would require development on some isolated pockets of LUC3 that are still currently in use for productive uses.
Biodiversity	section 6(c)	Advantages - - Development has the potential to support and develop priority wetland restoration areas. - Avoids development in or around significant natural areas.
Te mana o te Wai	NPSFM objectives and policies	Advantages - - Change of land-uses from rural to urban could help to improve water quality through a reduction in nutrients and introduction of at source water quality treatment. Disadvantages - - Existing brownfield areas that undergo redevelopment could result in the introduction of better at source attenuation and treatment of stormwater. - There may be more efficient/ cost-effective means to improve water quality issues than urbanisation (e.g. purchasing and retiring farms).
Infrastructure (three waters)	NPSUD Objective 6(a), s7(b)	Advantages - - Some capacity in existing water and wastewater network to accommodate growth. - Development could help facilitate/ fund stormwater and flooding mitigation works. Disadvantages - - Major capacity constraints on potable water for significant growth in this area. - Will require extension/ upgrades to water network to adequately service which could slow down or hinder upgrades required to support intensification. - Will still require localised upgrades to support intensification across the existing urban area.
Infrastructure (transport)	NPSUD Objective 6(a), s7(b)	Advantages - - An existing dedicated/ segregated cycling route to the City Centre already exists. Disadvantages - - May require upgrades to intersection of the State Highway as well as wider upgrades through to Ngongotahā . - Projected growth numbers may not be sufficient to support high frequency public transport.
Infrastructure (other)	NPSUD Objective 6(a), s7(b)	Advantages - - New development provides an opportunity to help fund and deliver new open spaces to address existing shortfall and support further residential growth. Disadvantages - - Growth in this area will have significant impacts on the one existing school in Ngongotahā which is under considerable existing pressure and Western Heights High School. Significant development anticipated here would likely require at least one new primary school in this area. - Ngongotahā already features a large open space deficit. New development could exacerbate this.
Other significant constraints	Section 6(b for ONLs & ONFs	Advantages - - No other significant development constraints identified.

Statutory links and considerations		Scenario 2: Multi-nodal Growth (Intensification)
Cultural Values	s6(e) , Ob5/Pol9 NPSUD	Advantages - - No specific issues or concerns were raised during engagement.
Mana Whenua development aspirations	s6(e) , Ob5/Pol9 NPSUD	Disadvantages - - Could make additional opportunities for mana whenua to realise their development aspirations on their own land outside the existing urban area more challenging.
Housing Demand	NPSUD Policy 1, 2 and 5	Advantages - - Will promote the development of a greater variety of more intensive housing typologies. - Could better support redevelopment of underutilised urban land. Disadvantages - - Requires a high uptake of feasible intensification opportunities that is unlikely to be realistic in the short to medium term. - Unlikely to help address the short term housing deficit in Rotorua. - Concern from some parts of the community over the extent of change/ intensification required to meet housing demand as the impact on housing affordability is there are very limited greenfield options.
Business Demand	NPSUD Policy 1, 2 and 5	Advantages - - Sufficient, appropriately sized/ flat business land available. - Business land is located along the key freight corridor and route to the Port of Tauranga. - Sufficient, suitable business land that could accommodate the relocation of existing industrial uses in Ngapuna. Disadvantages - - New business land would be located in close proximity to sensitive neighbours and may require the inclusion of buffers, landscaping and restriction of some activities to be suitable.
Accessibility	NPSUD Policy 5	Advantages - - Future growth and development is prioritised in areas with the greatest accessibility to a range of commercial services and amenities.
GHG reduction	NPSUD Policy 1(e) and Carbon Emissions Reduction Plan	Advantages - - Results in the lowest level of VKT/ Carbon emissions relative to other scenarios. Disadvantages - - Could still result in an increase in VKT/ Carbon emissions, without additional investment in public transport and walking and cycling improvements (and other measures to influence mode shift).
Natural hazards / Climate change resilience	s6(h) and National Adaptation Plan	Advantages - - Avoids greenfield development upstream of existing urban areas (helping to avoid exacerbating downstream flooding effects). Disadvantages - - Some areas suitable for intensification around the City Centre are subject to flooding and geothermal hazards (particularly the Central Area where intensification is anticipated to be most feasible)
HPL	NPSHPL objectives and policies	Advantages - - Does not propose any further expansion from the existing urban area and therefore does not impact on any identified High Productive Land.
Biodiversity	section 6(c)	Advantages - - Avoids development in or around significant natural areas.
Te mana o te Wai	NPSFM objectives and policies	Advantages - - Existing brownfield areas that undergo redevelopment could result in the introduction of better at source attenuation and treatment of stormwater. Disadvantages - - Could reduce opportunities to retire high-nutrient leaching land-uses in the surrounding environment.
Infrastructure (three waters)	NPSUD Objective 6(a), s7(b)	Advantages - - Does not require the extension of reticulated water networks. Disadvantages - - Will still require localised upgrades to support intensification.
Infrastructure (transport)	NPSUD Objective 6(a), s7(b)	Advantages - - Increased residential densities could better support the viability of public transport. - Concentrating growth within the existing urban area could better support shorter, more frequent public transport routes.
Infrastructure (other)	NPSUD Objective 6(a), s7(b)	Advantages - - Is better able to utilise existing services and facilities (e.g. library). - Intensification could increase utilisation/ viability of existing services and facilities. Disadvantages - - Some existing open space capacity issues identified within the existing urban area and it is a challenge to find new areas to address this within the existing urban environment.
Other significant constraints	Section 6(b for ONLs & ONFs	Advantages - - No other significant development constraints have been identified.

Statutory links and considerations		Scenario 3: SH36 Growth
Cultural Values	s6(e) , Ob5/Pol9 NPSUD	Advantages - - In general no specific issues or concerns were raised around growth along this corridor. Disadvantages - - Growth in this area would be located in a sensitive receiving environment so stormwater management would need to be carefully considered during design and consenting. There are some sites of significance located along or near the Awahou Stream which could be impacted if inappropriate development was to occur.
Mana Whenua development aspirations	s6(e) , Ob5/Pol9 NPSUD	Advantages - - Ngati Whakaue Tribal Lands Inc. and Ngati Rangiwewehi have aspirations for commercial, residential, community and papakainga development on several sites along this growth corridor. Disadvantages - - Multiple owned Maori land is located in several areas throughout the growth corridor, which creates challenges for certain types of development.
Housing Demand	NPSUD Policy 1, 2 and 5	Advantages - - This scenario provides the greatest potential for housing capacity as a result of large scale land release. - It would likely support the most competitive greenfield land development market and more affordable housing to help address short-to-medium term housing shortages. Disadvantages - - It is likely to reduce the feasibility/ uptake of intensification opportunities on existing brownfield sites. - Highly fragmented landholdings would make the delivery of integrated urban areas more challenging.
Business Demand	NPSUD Policy 1, 2 and 5	Advantages - - Sufficient, appropriately sized/ flat business land available that could accommodate the relocation of existing industrial uses in Fairy Springs and Ngongotahā centre (Wikaraka Street) Disadvantages - - Business land is located away from key freight corridor and route to the Port of Tauranga.
Accessibility	NPSUD Policy 5	Disadvantages - - Locates a significant portion of new growth in existing rural areas with limited access to a range of commercial and community services via active or sustainable modes of transport. This scenario promotes the least efficient development pattern.
GHG reduction	NPSUD Policy 1(e) and Carbon Emissions Reduction Plan	Disadvantages - - Results in the greatest increase in VKT/ Carbon emissions relative to other scenarios. - Development would be isolated from major employment nodes in Rotorua. - Urbanisation of peat soils and existing pasture can release trapped carbon.
Natural hazards / Climate change resilience	s6(h) and National Adaptation Plan	Advantages - - Development could help fund measures to address existing flooding issues within the Ngongotahā Catchment. Disadvantages - - New development could give rise to further downstream flooding impacts on existing communities. - May see development on soft ground subject to liquefaction risks.
HPL	NPSHPL objectives and policies	Advantages - - Productivity of existing highly productive land is limited to a degree by existing nitrogen limits. Disadvantages - - Would require development on some isolated pockets of LUC3 that are still currently in use for productive uses.
Biodiversity	section 6(c)	Advantages - - Development has the potential to support and develop priority wetland restoration areas. Disadvantages - - The scenario would result in some development around or near significant ecological areas.
Te mana o te Wai	NPSFM objectives and policies	Advantages - - Change of land-uses from rural to urban could help to improve water quality through a reduction in nutrients and introduction of at source water quality treatment. Disadvantages - - Existing brownfield areas that undergo redevelopment could result in the introduction of better at source attenuation and treatment of stormwater. - There may be more efficient/ cost-effective means to improve water quality issues than urbanisation (e.g. purchasing and retiring farms).
Infrastructure (three waters)	NPSUD Objective 6(a), s7(b)	Advantages - - Some capacity in existing water and wastewater network to accommodate growth. - Development could help facilitate/ fund stormwater and flooding mitigation works. Disadvantages - - Major capacity constraints on potable water for significant growth in this area. - Will require extension/ upgrades to water network to adequately service growth, which could slow down or hinder upgrades required to support intensification. - Will still require localised upgrades to support intensification across the existing urban area.
Infrastructure (transport)	NPSUD Objective 6(a), s7(b)	Disadvantages - - This scenario will likely require upgrades/ urbanisation of the State Highway as well as wider upgrades through to Ngongotahā . - The dispersed nature of growth makes it a challenge to be efficiently and feasibly served with public transport (bus or ferries).
Infrastructure (other)	NPSUD Objective 6(a), s7(b)	Advantages - - New development provides an opportunity to help fund and deliver new open spaces to address existing shortfall and support further residential growth. Disadvantages - - Growth in this area will have significant impacts on the one existing school in Ngongotahā, which is under considerable existing pressure and Western Heights High School. Significant development anticipated here would likely to require at least one new Primary School in this area.
Other significant constraints	Section 6(b for ONLs & ONFs	Advantages - - No other significant development constraints have been identified.

Statutory links and considerations		Scenario 4: Eastside Growth
Cultural Values	s6(e) , Ob5/PoI9 NPSUD	Disadvantages - - Some growth areas are adjacent to the Ngapuna wetlands and includes a number of cultural sites which could be sensitive to new development.
Mana Whenua development aspirations	s6(e) , Ob5/PoI9 NPSUD	Advantages - - Ngati Whakaue Tribal Lands Inc. and Ngati Rangiteaore have aspirations for commercial, residential, community and papakainga development on several sites along this growth corridor. Disadvantages - - Multiple owned Maori land is located in several areas throughout the growth corridor which creates challenges for certain types of development.
Housing Demand	NPSUD Policy 1, 2 and 5	Advantages - - Could support a more competitive greenfield land development market in part and help address short-to-medium term housing shortages. Disadvantages - - Unlikely to meet the required housing capacity targets for Rotorua. - Some existing greenfield opportunities are under ownership of existing greenfield developers so this may not result in a more competitive/ response land supply market. - Highly fragmented landholdings in parts of potential growth areas could make the delivery of integrated urban areas more challenging. - Excess greenfield land release could reduce the feasibility/ uptake of intensification opportunities on existing brownfield sites.
Business Demand	NPSUD Policy 1, 2 and 5	Advantages - - Sufficient, appropriately sized/ flat business land available. - Business land is located along the key freight corridor and route to the Port of Tauranga. - Sufficient, suitable business land that could accommodate the relocation of existing industrial uses in Ngapuna. Disadvantages - - New business land would be located in close proximity to sensitive neighbours and may require the inclusion of buffers/ landscaping and restriction of some activities to be suitable.
Accessibility	NPSUD Policy 5	Advantages - - Some areas of potential growth are already located in close proximity to a range of commercial and community services as well as employment opportunities via active modes and public transport. - New areas of business land would be located in close proximity to new housing.
GHG reduction	NPSUD Policy 1(e) and Carbon Emissions Reduction Plan	Advantages - - New development could better support the development of more local commercial and community services helping to reduce trip lengths. - Performs 2nd best in terms of VKT/ Carbon emissions of scenarios assessed. This scenario would locate new housing close to existing or new major employment areas. Disadvantages - - Urbanisation of peat soils and existing pasture can release trapped carbon.
Natural hazards / Climate change resilience	s6(h) and National Adaptation Plan	Advantages - - Development could help fund measures to address existing flooding issues within the Waingaehe Catchment. Disadvantages - - New development could give rise to further downstream flooding impacts on existing communities. - May see development on soft ground subject to liquefaction risks.
HPL	NPSHPL objectives and policies	Advantages - - Productivity of existing highly productive land is limited to a degree by existing nitrogen limits. Disadvantages - - Would require development on areas of LUC2 and 3 land that are still currently in use for productive uses.
Biodiversity	section 6(c)	Advantages - - Development has the potential to support and develop priority wetland restoration areas. Disadvantages - - Would result in some development around or near significant ecological areas.
Te mana o te Wai	NPSFM objectives and policies	Advantages - - Change of land-uses from rural to urban could help to improve water quality through a reduction in nutrients and introduction of at source water quality treatment. - Existing brownfield areas that undergo redevelopment could result in the introduction of better at source attenuation and treatment of stormwater. Disadvantages - - There may be more efficient/ cost-effective means to improve water quality issues than urbanisation (e.g. purchasing and retiring farms).
Infrastructure (three waters)	NPSUD Objective 6(a), s7(b)	Advantages - - Spare capacity in the wastewater network which has been upgraded/ designed to support future growth. - Some capacity in existing water network to accommodate some growth. Disadvantages - - Would require extensions to reticulated water networks. - Existing water sources may not have sufficient capacity to support significant growth.
Infrastructure (transport)	NPSUD Objective 6(a), s7(b)	Advantages - - Existing walking/ cycling/ capacity upgrades to the State Highway have been completed. - Further transport infrastructure investment has been signalled by Central Government. - Growth is located in closer proximity to the City Centre and could be more efficiently served by more frequent public transport connections. Disadvantages - - Increased residential traffic, cycling and pedestrian movements may conflict with increased heavy vehicle movements associated with increased business land provision in the area.
Infrastructure (other)	NPSUD Objective 6(a), s7(b)	Disadvantages - - Growth in this area could place significant pressure on the existing eastern school network (Owhata / Lynmore area), where utilisation is already high. - Power supply is constrained. Additional investment in capacity may impact on the feasibility of new development.
Other significant constraints	Section 6(b for ONLs & ONFs	Disadvantages - - Requires further development in areas subject to noise and building constraints from Airport operations.

	Statutory links and considerations	Scenario 5: Multinodal A Growth <i>(increased density above PC9, around key nodes. Reduced densities in Ngongotahā and Fairy Springs from original scenario)</i>
Cultural Values	s6(e) , Ob5/Pol9 NPSUD	Advantages - - The majority of growth would be located in areas where there was no specific issues or concerns were raised from a cultural perspective. Disadvantages - - Some greenfield residential and industrial growth would still be located in sensitive receiving environments so stormwater management would need to be carefully considered during design and consenting.
Mana Whenua development aspirations	s6(e) , Ob5/Pol9 NPSUD	Advantages - - Supports some urban development aspirations of mana whenua by including their landholdings. Disadvantages - - Mana whenua aspirations likely exceed Rotorua's long-term housing demand.
Housing Demand	NPSUD Policy 1, 2 and 5	Advantages - - This scenario provides sufficient housing capacity. - Will promote the development of a greater variety of more intensive housing typologies. - Could support a more competitive greenfield land development market and more affordable housing to help address short-to-medium term housing shortages. - Land owners and developers have identified Ngongotahā as an attractive area for residential development. Disadvantages - - Some existing greenfield opportunities are under ownership of existing greenfield developers so this may not result in a more competitive/ responsive land supply market. - Excess greenfield land release could reduce the feasibility/ uptake of intensification opportunities on existing brownfield sites.
Business Demand	NPSUD Policy 1, 2 and 5	Advantages - - Sufficient, appropriately sized/ flat business land available. - Business land is located along the key freight corridor and route to the Port of Tauranga. - Sufficient, suitable business land that could accommodate the relocation of existing industrial uses in Ngapuna as well as the relocation of existing industrial uses in Fairy Springs and Ngongotahā centre (Wakaraka Street). Disadvantages - - New business land would be located in close proximity to sensitive neighbours and may require the inclusion of buffers/ landscaping and restriction of some activities to be suitable.
Accessibility	NPSUD Policy 5	Advantages - - The majority of future growth will be enabled/ directed in areas with good accessibility to a range of commercial and community services. Disadvantages - - New greenfield growth is located in areas with moderate to low accessibility to existing commercial and community services.
GHG reduction	NPSUD Policy 1(e) and Carbon Emissions Reduction Plan	Advantages - - Would minimise VKT/ Carbon emissions relative to other scenarios (whilst responding to other policy directives). Disadvantages - - Could still result in an increase in VKT/ Carbon emissions without additional investment in public transport and walking, cycling improvements (and other measures to influence mode shift).
Natural hazards / Climate change resilience	s6(h) and National Adaptation Plan	Advantages - - Development could help fund measures to address existing flooding issues within the Ngongotahā Catchment. Disadvantages - - New development located near areas with identified flood hazard risk. - New development could give rise to further downstream flooding impacts on existing communities. - May see development on soft ground subject to liquefaction risks. - Some areas suitable for intensification around the City Centre are subject to flooding and geothermal hazards.
HPL	NPSHPL objectives and policies	Advantages - - Would limit urban development to a small, isolated pocket of LUC3. - Productivity of existing highly productive land is limited to a degree by existing nitrogen limits.
Biodiversity	section 6(c)	Advantages - - Development has the potential to support and develop priority wetland restoration areas. Disadvantages - - Would result in some development around or near significant ecological areas.
Te mana o te Wai	NPSFM objectives and policies	Advantages - - Existing brownfield areas that undergo redevelopment could result in the introduction of better at source attenuation and treatment of stormwater. - Provides some opportunities to retire existing pasture and provide at source treatment/ detention of stormwater.
Infrastructure (three waters)	NPSUD Objective 6(a), s7(b)	Advantages - - Requires reduced extensions/ upgrades to reticulated water networks. Disadvantages - - Will still require localised upgrades to support intensification create potential prioritisation issues in delivery.
Infrastructure (transport)	NPSUD Objective 6(a), s7(b)	Advantages - - An existing dedicated/ segregated cycling route to the City Centre already exists. - Increased residential densities could better support the viability of public transport. - Concentrating growth within the existing urban area could better support shorter, more frequent public transport routes. Disadvantages - - May require upgrades to intersection of the State Highway as well as wider upgrades through to Ngongotahā. - Projected growth numbers may not be sufficient to support higher frequency public transport.
Infrastructure (other)	NPSUD Objective 6(a), s7(b)	Advantages - - Is better able to utilise existing services and facilities (e.g. library). - Intensification could increase utilisation/ viability of existing services and facilities. - New development provides an opportunity to help fund and deliver new open spaces to address existing shortfall and support further residential growth. Disadvantages - - Any growth in this area will have significant impacts on the one existing school in Ngongotahā which is already under considerable existing pressure and Western Heights High School.
Other significant constraints	Section 6(b) for ONLs & ONFs	Advantages - - Avoids development where other significant constraints may be present.

Criteria	Statutory links and considerations	Scenario 6: Multi-nodal B <i>(Limited new residential greenfield on Eastside. Increased density above PC9, around key nodes. Reduced densities in Glenholme, Ngongotahā and Fairy Springs from original scenario)</i>
Cultural Values	s6(e) , Ob5/Pol9 NPSUD	Advantages - - The majority of growth would be located in areas where there was no specific issues or concerns were raised from a cultural perspective. Disadvantages - - Some greenfield residential and industrial growth would still be located in sensitive receiving environments so stormwater management would need to be carefully considered during design and consenting.
Mana Whenua development aspirations	s6(e) , Ob5/Pol9 NPSUD	Disadvantages - - Does not support Mana whenua development aspirations beyond what is currently enabled.
Housing Demand	NPSUD Policy 1, 2 and 5	Advantages - - Will promote the development of a greater variety of more intensive housing typologies. - Could better support redevelopment of underutilised urban land. Disadvantages - - Still requires a high uptake of feasible intensification opportunities that is unlikely to be realistic in the short to medium term. - Unlikely to help address the short term housing deficit in Rotorua. - Concern from some parts of the community over the extent of change/ intensification required to meet housing demand.
Business Demand	NPSUD Policy 1, 2 and 5	Advantages - - Sufficient, appropriately sized/ flat business land available. - Business land is located along the key freight corridor and route to the Port of Tauranga. - Sufficient, suitable business land that could accommodate the relocation of existing industrial uses in Ngapuna as well as the relocation of existing industrial uses in Fairy Springs and Ngongotaha centre (Wikaraka Street). Disadvantages - New business land would be located in close proximity to sensitive neighbours and may require the inclusion of buffers/ landscaping and restriction of some activities to be suitable.
Accessibility	NPSUD Policy 5	Advantages - - The majority of future growth will be enabled/ directed in areas with good accessibility to a range of commercial and community services. Disadvantages - - New greenfield growth is located in areas with moderate to low accessibility to existing commercial and community services.
GHG reduction	NPSUD Policy 1(e) and Carbon Emissions Reduction Plan	Advantages - - Would minimise VKT/ Carbon emissions relative to other scenarios (whilst responding to other policy directives). Disadvantages - - Could still result in an increase in VKT/ Carbon emissions without additional investment in public transport and walking, cycling improvements (and other measures to influence mode shift).
Natural hazards / Climate change resilience	s6(h) and National Adaptation Plan	Advantages - - Avoids greenfield development upstream of existing urban areas (helping to avoid exacerbating downstream flooding effects). Disadvantages - - Some areas suitable for intensification around the City Centre are subject to flooding and geothermal hazards.
HPL	NPSHPL objectives and policies	Advantages - - Does not proposed any further expansion from the existing urban area and does not impact on any identified Highly Productive Land.
Biodiversity	section 6(c)	Advantages - - Development has the potential to support and develop priority wetland restoration areas. Disadvantages - - Would result in some development around or near significant ecological areas.
Te mana o te Wai	NPSFM objectives and policies	Advantages - - Existing brownfield areas that undergo redevelopment could result in the introduction of better at source attenuation and treatment of stormwater. - Provides some opportunities to retire existing pasture and provide at source treatment/ detention of stormwater.
Infrastructure (three waters)	NPSUD Objective 6(a), s7(b)	Advantages - - Requires reduced extensions/ upgrades to reticulated water networks. Disadvantages - - Will still require localised upgrades to support intensification create potential prioritisation issues in delivery.
Infrastructure (transport)	NPSUD Objective 6(a), s7(b)	Advantages - - Increased residential densities could better support the viability of public transport. - Concentrating growth within the existing urban area could better support shorter, more frequent public transport routes.
Infrastructure (other)	NPSUD Objective 6(a), s7(b)	Advantages - - Is better able to utilise existing services and facilities (e.g. library). - Intensification could increase utilisation/ viability of existing services and facilities. Disadvantages - - Some existing open space capacity issues identified within the existing urban area. Difficult to find new areas to address this within the existing urban environment.
Other significant constraints	Section 6(b for ONLs & ONFs	Advantages - - Avoids development where other significant constraints may be present.

Appendix 3 - Growth Area Assessment

Assessment: Scoring:	Green 3 or 4	Orange 1 or 2	Red -1	No go Not scored / Area ruled out
The table below applies to scoring for individual residential sites. These scores were then totalled to provide an indication of how a site performs relative to one another to assist in an overall understand of the potential advantages and disadvantages of development in these locations. At that point a number of strategic considerations were assessed at a city-wide level e.g. whether the scenario provided sufficient capacity, NPS-HPL considerations, affordability considerations and balance/collocation of residential to employment. The FDS outcomes were used to guide this stage of the assessment.				
Statutory links and considerations	Infrastructure (transport) NPSUD Objective 6(a, s7(b)	GHG reduction NPSUD Policy 1(e and Carbon Emissions Reduction Plan	Natural hazards / Climate change resilience s6(h) and National Adaptation Plan	Biodiversity section 6(c)
Assessment considerations	Green = the growth area can be efficiently serviced by existing walking, cycling and public transport infrastructure and/or only minor upgrades are required.	Green = Best performing in VKT/ emissions relative to each other	Green = the site growth area is not subject to risk from natural hazards, or the risk from natural hazards is low. In the case of flooding, this includes considering effects upstream and downstream of the area.	Green = the growth area does not contain HPL as per the NPS-HPL definition.
	Orange = the growth area can be serviced by existing walking, cycling and public transport infrastructure with moderate upgrades required to service the growth area (e.g. extension of bus route/ capacity increase).	Orange= Moderately performing relative to each other	Orange = the site is subject to some risk from natural hazards but the risk can be mitigated. In the case of flooding, this includes considering effects upstream and downstream of the area.	Orange = the growth area features some areas of fragmented HPL and/ or nutrient limits impact on viability of ongoing farming. Or can otherwise meet the exemptions in clause 3.8, 3.9 and 3.10 of NPS-HPL
	Red = Limited transport infrastructure is available and significant investment will be required to service/ unlock the growth area (e.g. state highway capacity upgrade).	Red= Worst performing in VKT emissions relative to other areas	Red = the site is subject to significant risk from natural hazards that cannot be mitigated (no go constraint in this case). In the case of flooding, this includes considering effects upstream and downstream of the area.	Red = the growth area features large, contiguous areas of HPL and would not comply with the exemptions in the NPS-HPL
Sub-Areas to Assess				
Stembridge Road	2 - New roading and cycle connections or minor upgrades may be required due to the nature and scale of potential development and would be funded by the developer(s). This would include enhancement to east-west connectors with the town centre and potentially north over Ngongotaha stream. Wider PT frequency upgrades and/ or new routes may be required to support wider growth around Ngongotaha.	2 - Development would result in moderate increases of VKT/ Carbon emissions when compared with other greenfield options. Less potential for mode shift that could contribute to reductions due to distances from city centre.	1 - Identified flood hazard affects some area but not with significant hazard ratings, except small areas close to the stream. Flood protection works planned but residual risk remains. As its part of the wider Ngongotaha catchment, downstream flooding impacts would also need to be taken into account in any site design. Some liquefaction/ soft ground risks are identified on the site and could be managed through design/ impact feasibility. Evacuation routes would need to be considered in the northern portion of the site due to overland flow paths. Reduced densities or rural residential type uses may reduce this risk and increase score to a 2.	4 - Existing Rural Residential Zoned Area and identified within 2018 Spatial Plan.
Brake Road West	3 - No local transport infrastructure currently in place. New roading connections or minor upgrades may be required due to the nature and scale of potential development and would be funded by the developer(s).	1 - Development would result in moderate-to-high increases of VKT/ Carbon emissions when compared with other greenfield options. Less potential for mode shift due to that could contribute to reductions due to distances from city centre and density of development.	4 - Sits in the catchment of the Ngongotaha Stream, downstream flooding impacts would need to be taken into account in site design. Parts of the site sit within a floodplain but proposed rural residential density will provide much greater flexibility to manage flooding risk and potentially provide some opportunity to help manage downstream impacts in urban areas of Ngongotaha. Moderate risk of landslides due to steep topography in parts. Impact can be limited through low density residential uses.	2 - Small, fragmented pockets of LUC3 land in the north and south-east portions of site. Some land identified within 2018 Spatial Plan
31 Ngongotaha Road (location of proposed MHUD development)	2 - Enhancement to north/south connections along State Highway and potentially south over rail corridor required to support growth. Wider PT frequency upgrades and/ or new routes may be required to support wider growth around Ngongotaha. Speed reductions along SH36 (which are currently under review) are likely required to support urbanisation in this area.	2 - Development would result in moderate increases of VKT/ Carbon emissions when compared with other greenfield options. Less potential for mode shift that could contribute to reductions due to distances from city centre.	2 - Fairly large portion of area affected by flooding with higher flood hazard levels which may be unsuitable for development. Some areas closer to Ngongotaha Road are free of hazard and is where development is proposed. On-site detention will be required to manage downstream impacts. Soft ground and liquefaction risk have been identified on the site and would need to be managed through appropriate design.	2 - Majority of the site currently zoned for rural residential uses. Western portion features an area of LUC3 land associated with the wider Tupapakura Stream system. Some land identified within 2018 Spatial Plan
Leonard Road	2 - Enhancement to north/south connections and potential capacity upgrades along State Highway required to support growth (including extension of shared path network). New roading connections and minor upgrades to connect into existing road network would be required due to the nature and scale of potential development and would be funded by the developer(s). Speed reductions along SH36 (which are currently under review) are likely required to support urbanisation in this area.	2 - Development would result in moderate high increases of VKT/ Carbon emissions when compared with other greenfield options. Proximity to City Centre, employment nodes and public transport provides potential for mode shift.	3 - Some potential flooding issues and liquefaction risk localised around the streams. There may also be other old stream locations with high liquefaction potential extending to higher elevations across the site. Due to proximity to the Lake, it is assumed there are no significant risk down stream however on-site detention will still likely be required.	4 - Existing Rural Residential Zoned Area
Oturoa Road West	1 - Enhancement to north/south connections and potential capacity upgrades along State Highway required to support growth (including extension of shared path network). New roading connections and minor upgrades to connect into existing road network would be required due to the nature and scale of potential development and would be funded by the developer(s). Speed reductions along SH36 (which are currently under review) are likely required to support urbanisation in this area.	1 - Development would result in moderate-to-high increases of VKT/ Carbon emissions when compared with other greenfield options. Low potential for mode shift due to that could contribute to reductions due to distances from city centre.	4 - Parts of the site sit within a floodplain but proposed rural residential density will provide much greater flexibility to manage flooding risk and potentially provide some opportunity to help manage downstream impacts if wider urbanisation of the area is proposed.	0 - The majority of the site is covered by LUC3 land and is currently in productive uses. Maori Freehold land in the north may provide an avenue for urbanisation.
Dalbeth Road East	1 - Enhancement to north/south connections and potential capacity upgrades along State Highway required to support growth (including extension of shared path network). New roading connections and minor upgrades to connect into existing road network would be required due to the nature and scale of potential development and would be funded by the developer(s). Speed reductions along SH36 (which are currently under review) are likely required to support urbanisation in this area.	2 - Development would result in moderate increases of VKT/ Carbon emissions when compared with other greenfield options. Low potential for mode shift due to that could contribute to reductions due to distances from city centre.	3 - The southern portion of the site is largely contained within identified floodplains and is unlikely to be suitable for development. The balance of the site is largely risk free except for some landslide risk above the floodplain. However, urbanisation could create downstream flood risks. On-site detention will be required to manage downstream impacts.	3 - Portions of LUC3 land bordering the Tupapakura Stream and adjacent to Dalbeth Road. These are largely contained to an identified flood plain so are unlikely to be developed.
Dalbeth Road West	3 - No local transport infrastructure currently in place. New roading connections or minor upgrades may be required due to the nature and scale of potential development and would be funded by the developer(s).	1 - Development would result in moderate-to-high increases of VKT/ Carbon emissions when compared with other greenfield options. Less potential for mode shift due to that could contribute to reductions due to distances from city centre and density of development.	3 - The southern portion of the site near the stream features areas of potential flood hazard and liquefaction. The balance of the site is largely risk free. On-site detention will be required to manage downstream impacts.	1 - Portions of LUC3 land bordering the Tupapakura Stream and adjacent to Dalbeth Road.
Wharenui Road East	3 - Cycling infrastructure linking Wharenui to the City Centre currently under development. This would need to be extended further to serve this area. New roading connections and upgrades to key intersection of the State Highway may be required due to the nature and scale of potential development and would be funded by the developer(s). Significant growth in this area and Eastside more broadly would likely need support from increased bus frequencies and/ or new bus routes.	4 - Development would result in lower increases of VKT/ Carbon emissions when compared with other greenfield options. Proximity to City Centre, employment nodes and public transport provides potential for mode shift.	2 - No flood hazard mapping is available for the site but likely to be limited on-site due to elevation/ topography. There are some potential areas of landslide susceptibility in some steeper portions of the site which may impact development potential. Some liquefaction risks in lower portion of the site although not extensive. Known downstream flooding impacts west of the state highway would need to be considered with on-site detention required - existing development may limit options for how this occurs. Residual flooding risks for areas behind flood defences.	4 - Urbanisation identified within 2018 spatial Plan. LUC2 and LUC3 land located east of the Waingaehe Stream. The site is currently in use for pasture/ grazing.
Wharenui Road South	3 - No local transport infrastructure currently in place. New roading connections or minor upgrades may be required due to the nature and scale of potential development and would be funded by the developer(s).	1 - Development would result in moderate-to-high increases of VKT/ Carbon emissions when compared with other greenfield options. Low potential for mode shift due to that could contribute to reductions due to distances from city centre and limited potential for public transport services.	2 - No flood hazard mapping is available for the site but likely to be limited due to elevation/ topography. Steep topography of the site create areas of landslide susceptibility.	4 - No LUC1, 2 or 3 land identified within this area.
Thiotonga West	0 - Would primarily be accessed via Otonga Road. The potential number of dwellings the site could accommodate could create access issues along this local road. New roading connections and upgrades to connect into existing road network would be required, due to the nature and scale of potential development, and would be funded by the developer(s). The topography could make delivery of a resilient and efficient street and/ or public transport network challenging.	2 - Development would result in moderate increases of VKT/ Carbon emissions when compared with other greenfield options. Low potential for mode shift due to that could contribute to reductions due to distances from city centre and limited potential for public transport services.	2 - No flood hazard mapping is available for the site but likely to be limited due to elevation/ topography - residual risk would remain for downstream properties following urbanisation. Steep topography of the site create areas of landslide susceptibility. Portions of the site fall within the Faultline Avoidance Zone and further investigation would be required. Overall hazard risk is likely to be reduced if boundaries/ development densities are reduced.	4 - No LUC1, 2 or 3 land identified within this area.
Owhata Lakefront	2 - Heavily reliant on Owhata Rd to service/ access. Vaughan Road can be an issue and would require upgrading to support growth. The next stage of Te Ngae upgrade may reduce existing pressures on the road network. New roading connections and minor upgrades may be required due to the nature and scale of potential development and would be funded by the developer(s) along with enhancement to the public transport network.	3 - Development would result in lower increases of VKT/ Carbon emissions when compared with other greenfield options. Proximity to City Centre, employment nodes and public transport provides potential for mode shift.	1 - The area features a high water table which can be difficult to manage in parts. Some areas are subject to flooding from the stream and near lake edge from high lake levels however these would likely be incorporated into reserves/ stormwater management areas if development was to occur. Flood risk over the northern portion of the site is unknown. There are known risks from soft ground/ liquefaction, which would need to be addressed in design. Geothermal gases may affect the south-western portion of the site and create issues around the deterioration of buildings. Upstream dams PIC assessments would need to be reconsidered if new residential development is to occur on this site.	2 - Pockets of LUC 2 and 3 visible across the site. These are fragmented by the existing urban area and rural residential zoned land. Identified within 2018 Spatial Plan.
Hamurana	0 - Existing roading network is limited and it may be challenging to deliver an efficient network due to existing land fragmentation. New roading connections would need to be funded by the developer(s). May require an upgrade to intersection of State Highway as well as wider upgrades through to Ngongotaha if nearby sites are also signalled for development. Challenging to efficiently serve with public transport (bus or ferries).	0 - Development would result in the highest levels of VKTs/ Carbon emissions. Very low potential for mode shift due to distances from city centre and other employment nodes and limited potential for feasible or time competitive public transport services.	1 - No flood hazard mapping is available for the site but likely to be limited at the northern end due to elevation/ topography. Overland flow paths would need to be protected/ maintained to help manage potential flood risk. Some steep topography of the site create areas of landslide susceptibility and there are several streams which traverse the site. Potential downstream flooding impacts would need to be considered as part of any development.	4 - Existing Rural Residential Zoned Area.
Gee Road West	3 - Cycling infrastructure linking Wharenui to the City Centre currently under development. This would need to be extended further to serve this area. New roading connections and upgrades to key intersection of the State Highway may be required due to the nature and scale of potential development and would be funded by the developer(s). Significant growth in this area and Eastside more broadly would likely need support from increased bus frequencies and/ or new bus routes.	3 - Development would result in lower increases of VKT/ Carbon emissions when compared with other greenfield options. Proximity to City Centre, employment nodes and public transport provides potential for mode shift.	2 - No flood hazard mapping is available for the site but flooding is likely to be limited due to the elevation/ topography. There are some potential areas of landslide susceptibility in some steeper portions of the site which may impact on development potential. There are some liquefaction risks in the lower portion of the site although not extensive. Known downstream flooding impacts west of the state highway would need to be considered with on-site detention required. Residual flooding risks for areas behind flood defences.	3 - Identified within 2018 Spatial Plan. Northern portion of the site identified as containing some LUC3 land.
Tarimano	2 - Enhancement to north/south connections and potential capacity upgrades along State Highway required to support growth (including extension of shared path network). New roading connections and minor upgrades to connect into existing road network would be required due to the nature and scale of potential development and would be funded by the developer(s). Speed reductions along SH36 (which are currently under review) are likely required to support urbanisation in this area.	1 - Development would result in moderate-to-high increases of VKT/ Carbon emissions when compared with other greenfield options. Low potential for mode shift due to that could contribute to reductions due to distances from city centre and limited potential for public transport services.	2 - Some flooding issues localised around the stream that pass through and are adjacent to the site. Potential liquefaction risk closer to the lake and around streams.	4 - Existing Rural Residential Zoned Area.
Hamurana Lakefront	0 - New roading connections would need to be funded by the developer(s). May require an upgrade to intersection of State Highway as well as wider upgrades through to Ngongotaha if nearby sites are also signalled for development. Challenging to efficiently serve with public transport (bus or ferries).	0 - Development would result in the highest levels of VKTs/ Carbon emissions. Very low potential for mode shift due to that could contribute to reductions due to distances from city centre and other employment nodes and limited potential for feasible or time competitive public transport services.	1 - Identified lake flooding near stream otherwise no detailed flood hazard mapping available. The site is low lying at the confluence of two streams which may create a flood hazard risk.	4 - Existing Rural Residential Zoned Area
Bonnington Farm (Aquarius Drive)	3 - The site is served by proximate bus routes and lies adjacent to the key north/south cycling route to the City Centre. Minor upgrades and new road would need to be funded by the developer(s). Provides a potential to improve cycle path infrastructure (e.g. surface, lighting).	4 - Development would result in lower increases of VKT/ Carbon emissions when compared with other greenfield options. Proximity to City Centre, employment nodes and public transport provides potential for mode shift.	1 - High water table and identified liquefaction potential. Some overland flow pass through the site which would need to be retained to reduce flood risk. The site is low lying and has potential access and evacuation issue in a potential flooding event.	1 - Entire site enclosed within LUC3 land. This forms part of a larger pocket of fragmented LUC3 land which sites between the lakefront and State Highway on currently undeveloped land.
Oturoa Road North	1 - Enhancement to north/south connections and potential capacity upgrades along State Highway required to support growth (including extension of shared path network). New roading connections and minor upgrades to connect into existing road network would be required due to the nature and scale of potential development and would be funded by the developer(s). Speed reductions along SH36 (which are currently under review) are likely required to support urbanisation in this area.	0 - Development would result in the highest levels of VKTs/ Carbon emissions. Very low potential for mode shift due to that could contribute to reductions due to distances from city centre and other employment nodes and limited potential for feasible or time competitive public transport services.	4 - Some potential flooding issues and liquefaction risk localised around the streams. There may also be other old stream locations with high liquefaction potential extending to higher elevations across the site. Due to proximity to the Lake, it is assumed there are no significant risk down stream however on-site detention will still likely be required.	4 - No LUC1, 2 or 3 land identified within this area.
Oturoa Road South	1 - Enhancement to north/south connections and potential capacity upgrades along State Highway required to support growth (including extension of shared path network). New roading connections and minor upgrades to connect into existing road network would be required due to the nature and scale of potential development and would be funded by the developer(s). Speed reductions along SH36 (which are currently under review) are likely required to support urbanisation in this area.	1 - Development would result in moderate-to-high increases of VKT/ Carbon emissions when compared with other greenfield options. Very low potential for mode shift due to that could contribute to reductions due to distances from city centre and limited potential for public transport services.	3 - Some potential flooding issues and liquefaction risk localised around the streams. There may also be other old stream locations with high liquefaction potential extending to higher elevations across the site. Due to proximity to the Lake, it is assumed there are no significant risk down stream however on-site detention will still likely be required as well as increased culvert capacity under the state highway.	0 - The majority of the site is covered by LUC3 land and is currently in productive uses.
Brake Road East	2 - No local transport infrastructure currently in place. New roading connections or intersection upgrades may be required due to the nature and scale of potential development and would be funded by the developer(s). Could be served by public transport if wider expansion around Ngongotaha occurs.	2 - Development would result in moderate increases of VKT/ Carbon emissions when compared with other greenfield options. Very low potential for mode shift due to that could contribute to reductions due to distances from city centre.	2 - The site area is in the catchment of the Ngongotaha Stream so downstream flooding impacts would need to be taken into account in any site design. Some larger areas of land towards the railway has been identified as having some flood hazard risk (which may be impacted on by the culvert capacity beneath the railway).	2 - Small, fragmented pockets of LUC3 land along Rail corridor and south-east portion of site.
Pukehangi (Current Greenfield)	2 - No local transport infrastructure currently in place. New roading connections or minor upgrades may be required due to the nature and scale of potential development and would be funded by the developer(s). Wider upgrades to public transport and cycling routes with major employment areas may be required to support alternative modes of travel.	2 - Development would result in moderate increases of VKT/ Carbon emissions when compared with other greenfield options. Very low potential for mode shift due to that could contribute to reductions due to distances from city centre and limited potential for public transport services.	4 - Development live zoned with significant works and investment required to address stormwater issues.	4 - Existing Urban Zoned Area
Heritage Farm	3 - The site is served by proximate bus routes and lies adjacent to the key north/south cycling route to the City Centre. Minor upgrades and the new road would need to be funded by the developer(s). Provides a potential to improve cycle path infrastructure (e.g. surface, lighting).	4 - Development would result in lower increases of VKT/ Carbon emissions when compared with other greenfield options. Proximity to City Centre, employment nodes and public transport provides potential for mode shift.	2 - High water table and identified liquefaction potential. Some overland flow pass through the site which would need to be retained to reduce flood risk.	4 - Existing Urban Zoned Area
Tiketere residential	0 - New roading and cycle connections would need to be funded by the developer(s). It may require an upgrade to intersection of the State Highway depending on access arrangements. It will be a challenge to efficiently serve this area with public transport.	1 - Development would result in moderate-to-high increases of VKT/ Carbon emissions when compared with other greenfield options. Low potential for mode shift due to that could contribute to reductions due to distances from city centre and limited potential for public transport services.	2 - There is no detailed flood mapping available for the site. Stream/ overland flows pass through the site which may create some risk. There is limited down stream flood risk due to proximity with the lake. Steeper portions of the site may be subject to landslide susceptibility. These could be addressed through more detailed analysis and design.	2 - Large areas of contiguous pieces of LUC 2 and 3 soils are visible across the site. The area was identified within 2018 Spatial Plan as potentially suitable for urban development. Wai development aspirations may also provide an avenue for urbanisation of the site.
McFetridge Road	3 - No local transport infrastructure is currently in place. New roading connections or minor upgrades may be required due to the nature and scale of potential development and would be funded by the developer(s).	0 - Development would result in the highest levels of VKTs/ Carbon emissions. Very low potential for mode shift due to that could contribute to reductions due to distances from city centre and other employment nodes and limited potential for feasible or time competitive public transport services.	2 - There is no detailed flood mapping available for the site. Stream/ overland flows pass through the site which may create some risk. There is limited down stream flood risk due to proximity with the lake. Steeper portions of the site may be subject to landslide susceptibility. These could be addressed through more detailed analysis and design and could be avoided due to the density of likely development.	2 - Small, fragmented pockets of LUC3 land in the northern portion of the site.

Assessment: Scoring:		Green 3 or 4	Orange 1 or 2	Red -1	No-go Not scored / area ruled out	
		The table below applies to scoring for individual residential sites. These scores were then totalled to provide an indication of how a site performs relative to one another to assist in an overall understand of the potential advantages and disadvantages of development in these locations. At that point a number of strategic considerations were assessed at a city-wide level e.g. whether the scenario provided sufficient capacity, NPS-HPL considerations, affordability considerations and balance/colocation of residential to employment. The FDS outcomes were used to guide this stage of the assessment.				
Statutory links and considerations		Cultural Values s6(e), Obs/Poi9 NPSUD	Mana Whenua development aspirations s6(e), Obs/Poi9 NPSUD	Housing NPSUD Policy 1, 2 and 5	Accessibility NPSUD Policy 5	
Assessment considerations	Green = The growth area does not adversely affect sites of cultural significance or has a positive effect on sites of cultural significance	Green = The growth area will support iwi and hapu to realise their development aspirations.	Green= the growth area can deliver a significant number of houses	Green = the growth area is located in area of high demand.	Green = the growth area has good accessibility by public and active modes of transport.	
	Orange = The growth area may impact sites of cultural significance but has support from iwi and hapu		Orange= the growth area can deliver a moderate number of houses	Orange = the growth area is located in area of moderate demand.	Orange = the growth area has moderate accessibility by public and active modes of transport and/or only moderate upgrades required to service the growth area (e.g. extension of existing bus route/ capacity increase)	
	Red = The growth area adversely affects a site of cultural significance (e.g. wahi tapu/wahi tupuna/other cultural landscape) and is not supported by iwi and hapu (no go constraint in this case)		Red= the growth area can deliver a small number of houses	Red = the growth area is located in area of low demand.	Red = the growth area has poor accessibility by public and active modes of transport and/ or would require significant capital investment in new transport infrastructure to support.	
Sub-Areas to Assess						
31 Ngongotahā Road (location of proposed MHUD development)	Stembridge Road	3 - No specific issues or concerns raised during engagement. Falls within the statutory acknowledgement for Ngongotahā stream and has a sensitive receiving environment. Development potentially provides an opportunity to help address strowamter and water quality issues.	4 - Ngāti Whakaue Tribal Lands Inc. have aspirations for residential development (similar to that currently being developed in Manawa Gardens). Flooding/ stormwater issues key to unlocking development potential of the site.	2 - Land under single ownership (Ngāti Whakaue) of one of the main greenfield land developers in Rotorua. Potential capacity for approximately 200-300 dwellings although could be impacted by known flood hazards.	3 - Ngāti Whakaue have indicated a desire to undertake residential development on this land. Discussions with other landowners (incl. pre-app requests) indicates high demand for development in the wider location.	2 - Proximate to amenities/ services available from Ngongotahā Town Centre as well as existing PT and segregated cycling network.
	Brake Road West	3 - No specific issues or concerns were raised during engagement. However, the stream network through the site drains into Waiteti stream (a statutory acknowledgement area) and sensitive receiving environment so stormwater management would need to be carefully considered.	n/a	0 - Potential capacity for approximately 80 rural residential lots.	2 - Discussions with landowners (incl. pre-app requests) indicates some demand for rural residential type development in this location..	0 - Southern portion of site has access to existing infrequent bus services. Rural in nature. no dedicated walking and cycling infrastructure currently available to services/ amenities in Ngongotahā .
	Leonard Road	2 - Falls within the statutory acknowledgement for the Waiteti stream. Ngāti Rangiwewehi expressed some concerns over development in this area mainly around water quality. MHUD is actively engaging with iwi and hapu as part of development proposals for the site.	n/a	3 - MHUD scheme identifies potential for 350 dwellings on-site in a range of typologies and tenures. Land under single ownership.	4 - Land recently purchased by MHUD for a medium density comprehensive development. Schemes pitched by previous landowners for development.	3 - Proximate to amenities/ services available from Ngongotahā Town Centre as well as existing PT and segregated cycling network.
	Oturoa Road West	2 - Adjacent to Waiteti Marae and the Ngongotahā Pa site at 49 Waiteti Rd (U15/41) Discussions with iwi on this block - check recent article of development close to Waiteti stream.	4- Partly multiple owned Maori land covers a significant portion of the site. Aspirations for developing papakainga and residential on their land expressed during engagement.	1 - Potential capacity for approximately 1,000 dwellings. Underlying landownership creates complexities in bringing the land to the market.	2 - Discussions with landowners (incl. pre-app requests) indicates demand for development in this location. Adjacent to existing residential development as well as land with plans for future residential development.	3 - Proximate to amenities/ services available from Ngongotahā Town Centre as well as existing PT and segregated cycling network. Enhancement to north/south connections along State Highway required to support growth.
	Dalbeth Road East	2 - No specific issues or concerns raised during engagement although a discussion around water quality issues for development in this area would be required if development is advanced. Water allocation limits - no consideration to exceed water supply. Note comments/concerns around water conservation.	Some multiple owned Maori land at northern end, no clear aspirations for development based on discussions with iwi.	0 - Potential capacity for approximately 60 rural residential lots.	2 - Discussions with landowners (incl. pre-app requests) indicates demand for rural residential type development in this location as an alternative to rural uses. Existing evidence of rural residential subdivision occurring in this location.	0 - Majority of site is rural in nature and therefore has limited proximate access via walking and cycling to important amenities and services. No Public transport currently available to serve the site.
	Dalbeth Road West	3 - No specific issues or concerns were raised during engagement. However, the stream network through the site drains into Waiteti stream (a statutory acknowledgement area) and sensitive receiving environment so stormwater management would need to be carefully considered.	n/a	3 - Potential capacity for around 600 new dwellings. Some existing land fragmentation into large rural residential lots.	2 - Discussions with landowners (incl. pre-app requests) indicates demand for development in this location. Adjacent to land with plans for residential development.	0 - Majority of site is rural in nature and therefore has limited proximate access via walking and cycling to important amenities and services. No Public transport currently available to serve the site.
	Wharenui Road East	4 - No specific issues or concerns raised during engagement.	4 - Strong desire from Ngāti Whakaue Tribal Lands Inc. for developing the Wharenui Road East area, likely after the Manawa Gardens development and at a similar density and scale. Development of this area at least a decade away.	2 - Potential capacity for approximately 2,000 dwellings. Underlying landownership creates complexities in bringing the land to the market.	2 - Elevated, north-west views over Lake Rotorua. Residential subdivision and development already occurring in close proximity.	3 - Proximate to cycling and PT network along State Highway as well as amenities and services in Owihata town centre and surrounding environment.
	Wharaenui Road South	4 - No specific issues raised during engagement.	No specific aspirations identified by Ngāti Whakaue during engagement.	1 - Potential for around 140 dwellings. Some topographical constraints may reduce practical yield. Underlying landownership creates complexities in bringing the land to the market.	3 - Elevated, north-west views over Lake Rotorua. Residential subdivision and development already occurring in close proximity.	0 - Majority of site is rural in nature and therefore has limited proximate access via walking and cycling to important amenities and services. No Public transport currently available to serve the site. Likely to remain relatively isolated from key amenities and services long term due to its location at the edge of the Rotorua urban area.
	Tihitonga West	3 - No specific issues or concerns raised during engagement. The Tihitonga fence line (U16/42) identified within the site. Ngāti Kea Ngāti Tuara were involved in SMP for Pukehangi Heights and may have similar issues relevant to this area.	4 - Ngāti Whakaue Tribal Lands investigating a number of uses including solar farm, retirement village and some residential.	2 - Potential capacity for approximately 1,500 - 2,000 dwellings. Underlying landownership creates complexities in bringing the land to the market.	3 - Elevated northern aspect over Lake Rotorua. Immediately adjacent to existing residential properties with high land values relative to the wider Rotorua urban area.	0 - Majority of site is rural in nature and therefore has limited proximate access via walking and cycling to important amenities and services. No Public transport currently available to serve the site. Likely to remain relatively isolated from key amenities and services long term due to its location at the edge of the Rotorua urban area.
	Owhata Lakefront	2 - Adjacent to the Ngapuna wetlands and includes a number of cultural sites (U16-50, U16-48, U16-47, U16-46, U16, 52, U16-49, U16-53, U16-51) which could be sensitive to new development.	Some multiple owned Maori land in this area. No clear aspirations for development based on discussions with iwi at this stage.	1 - Theoretical potential for approximately 1,500 dwellings. However, the high degree of land fragmentation although some large, consolidated landholdings present, including Kāinga Ora. Site constraints (e.g. hazards) may impact realisable yield upon detailed design.	4 - Attractive lakefront location, close to amenities. Several consents previously lodged along with pre-application meetings for development proposals on residentially zoned portions of the area.	3 - Relatively proximate to amenities/ services available from Owihata Town Centre as well as the Redwood Centre, existing public transport and segregated cycling network. Also close to employment nodes at Ngapuna and Eastgate/ Airport.
	Hamurana	3 - No specific issues or concerns raised during engagement. However, the Kaituna river and Awahou stream formed the main travelling track between iwi and hapu of the matamata Waikato area through to Rotorua. There is a strong connection between the Ngāti Rangiwewehi and this river.	n/a	1 - Theoretical potential for up to approximately 3,500 dwellings. However, very challenging to comprehensively develop due to high levels of land fragmentation. Some smaller scale development still has the ability to occur on undeveloped parcels under current zone provisions.	3- Market attractive area for development based on developer/ landowner feedback and elevated lakefront location.	0 - Majority of site is rural in nature and therefore has limited proximate access via walking and cycling to important amenities and services. No Public transport currently available to serve the site.
	Gee Road West	4- No specific issues raised during engagement.	4 - Potential residential uses being considered by Ngāti Whakaue Tribal Lands Inc. in addition to a further extension of Eastgate Business Park for commercial / industrial uses	2 - Potential capacity for approximately 900 dwellings. Underlying landownership creates complexities in bringing the land to the market.	2 - Elevated, westerly views over Lake Rotorua. Potential for some longer term demand in this location.	1 - Proximate to amenities/ services available from Owihata Town Centre and direct access to existing PT network.
	Tarimano	2 - No specific issues or concerns raised during engagement. However, the Kaituna river and Awahou stream (which lies adjacent to this site) formed the main travelling track between iwi and hapu of the matamata Waikato area through to Rotorua. There is a strong connection between the Ngāti Rangiwewehi and this river. There are significant sites and stories in this area including Tarimano Marae and Awahou Pa sites at northern end of the site.	4- Partly multiple owned Maori land covers a significant portion of the site with Tarimano Marae at northern end. Ngāti Rangiwewehi noted hapu aspirations for developing papakainga on their land whilst there are also aspirations to open a school in this area.	1 - Potential capacity for approximately 700 dwellings. However, underlying landownership creates complexities in bringing the majority of land to the market. Some existing land fragmentation into large rural residential lots immediately adjacent to urban area.	3 - Discussions with landowners (incl. pre-app requests) indicates high demand for development in this location. Lakefront/ wetland location would be market attractive and could also support papakainga development.	0 - Majority of site is rural in nature and therefore has limited proximate access via walking and cycling to important amenities and services. No Public transport currently available to serve the site.
	Hamurana Lakefront	2 - The Awahou Pa sites (U15-48, U15/92) are located within and adjacent to this area	Some multiple owned Maori land in this area along the lakefront. No clear aspirations for development based on discussions with iwi at this stage.	2 - Some existing land fragmentation although reasonably large landholdings remain with overall capacity for approximately 400 dwellings.	3 - Market attractive area for development based on developer/landowner feedback and elevated lakefront location.	0 - Majority of site is rural in nature and therefore has limited proximate access via walking and cycling to important amenities and services. No Public transport currently available to serve the site.
	Bonnington Farm (Aquarius Drive)	3 - No specific issues raised during engagement. However, some interface with the Waiohiro wetland at lake front edge and Owihoro stream which may have knowledge that Ngāti Whakaue can contribute to.	n/a	2 - Potential for up to approximately 300 dwellings. Land under single ownership and could support comprehensive development.	4 - Market attractive location with lakefront aspect. Landowner currently in talks with RLC around potential residential development.	2 - Direct access to segregated cycling network linking Ngongotahā with City Centre as well as PT network via Koutu. Enhancement to east/ west connections to key social amenities such as schools would support growth in this area.
	Oturoa Road North	2 - No specific issues or concerns raised during engagement. However, the Kaituna river and Awahou stream (which lies adjacent to this site) formed the main travelling track between iwi and hapu of the matamata Waikato area through to Rotorua. There is a strong connection between the Ngāti Rangiwewehi and this river. There are significant sites and stories in this area (links with Tainui and Tarimano). Water quality and waterways need to be improved and development may provide an opportunity for this.	Some multiple owned Maori land at the northern end. No clear aspirations for development based on discussions with iwi.	3 - Potential capacity for around 300 new dwellings. Some existing land fragmentation into large rural residential lots may create challenges for integrated development.	2 - Discussions with landowners (incl. pre-app requests) indicates demand for residential development in this location as an alternative to rural uses.	0 - Majority of site is rural in nature and therefore has limited proximate access via walking and cycling to important amenities and services. No Public transport currently available to serve the site.
Oturoa Road South	2 - No specific issues or concerns raised during engagement. However, the Kaituna river and Awahou stream (which lies near this site) formed the main travelling track between iwi and hapu of the Matamata Waikato area through to Rotorua. There is a strong connection between the Ngāti Rangiwewehi and this river. There are significant sites and stories in this area (links with Tainui and Tarimano). Water quality and waterways need to be improved and development may provide an opportunity for this.	n/a	2 - Potential capacity for around 380 new dwellings. Some existing land fragmentation into large rural residential lots may create challenges for integrated development.	2 - Discussions with landowners (incl. pre-app requests) indicates demand for residential development in this location as an alternative to rural uses.	0 - Majority of the site is rural in nature and therefore has limited proximate access via walking and cycling to important amenities and services. No Public transport is currently available to serve the site.	
Brake Road East	3 - No specific issues or concerns were raised during engagement. However, the stream network through the site drains into Waiteti stream (a statutory acknowledgement area) and sensitive receiving environment so stormwater management would need to be carefully considered. Ngongotahā Pa (U15/89) is also located in the vicinity of at 114 Western Road within the area and would impact on development potential.	n/a	4 - The site is currently in single landownership and could deliver between 800 to 1200 dwellings depending on development densities.	2 - Discussions with landowners (incl. pre-app requests) indicates demand for residential and rural lifestyle development in the wider location, as an alternative to rural uses.	0 - Majority of the site is rural in nature and therefore has limited proximate access via walking and cycling to important amenities and services. No Public transport is currently available to serve the site.	
Pukehangi (Current Greenfield)	4 - Currently zoned to enable residential development. Known archaeological sites, wetland and streams on-site which require management when development occurs.	n/a	4 - Current masterplans would deliver approximately 800 new dwellings across three different landholdings.	4 - Rezoned as part of the Pukehangi Plan Change. Significant investment already undertaken by landowners to enable development.	0 - Majority of site is rural in nature and therefore has limited proximate access via walking and cycling to important amenities and services. No Public transport currently available to serve the site.	
Heritage Farm	4 - Currently zoned for commercial development. Landowner in discussions with TALT around wastewater/ water quality issues.	n/a	1 - Potential for around 270 units as part of an integrated residential development/ retirement village.	4 - Site purchased for development of a retirement village. Landowner currently investigating consenting pathways.	2 - Direct access to segregated cycling network linking Ngongotahā with City Centre as well as PT network via Koutu. Enhancement to east/ west connections to key social amenities such as schools would support growth in this area.	
Tiketere residential	4 - No issues raised by Ngāti Uenukukopako in meeting on 3/2/23. A wetland restoration project is currently underway over part of this area.	4 - Strong aspirations of Ngāti Rangiteaorere for papakainga and residential development on the site.	2 - Current masterplan indicates development potential for around 1,000 dwellings across a range of typologies and tenures. Underlying landownership creates complexities in bringing the majority of land to the market.	4 - Reasonably high demand given lakefront views and location. Known landowner interest in development with investigations and masterplanning undertaken.	0 - Majority of site is rural in nature and therefore has limited proximate access via walking and cycling to important amenities and services. No Public transport currently available to serve the site.	
McFeteridge Road	3 - No specific issues or concerns on nearby sites were raised during engagement. However, the Kaituna river and Awahou stream formed the main travelling track between iwi and hapu of the matamata Waikato area through to Rotorua. There is a strong connection between the Ngāti Rangiwewehi and this river.	n/a	0 - Potential capacity for approximately 90 rural residential lots.	3 - Known landowner interest in development with investigations and pre-application meetings with Council undertaken.	0 - Majority of site is rural in nature and therefore has limited proximate access via walking and cycling to important amenities and services. No Public transport currently available to serve the site.	

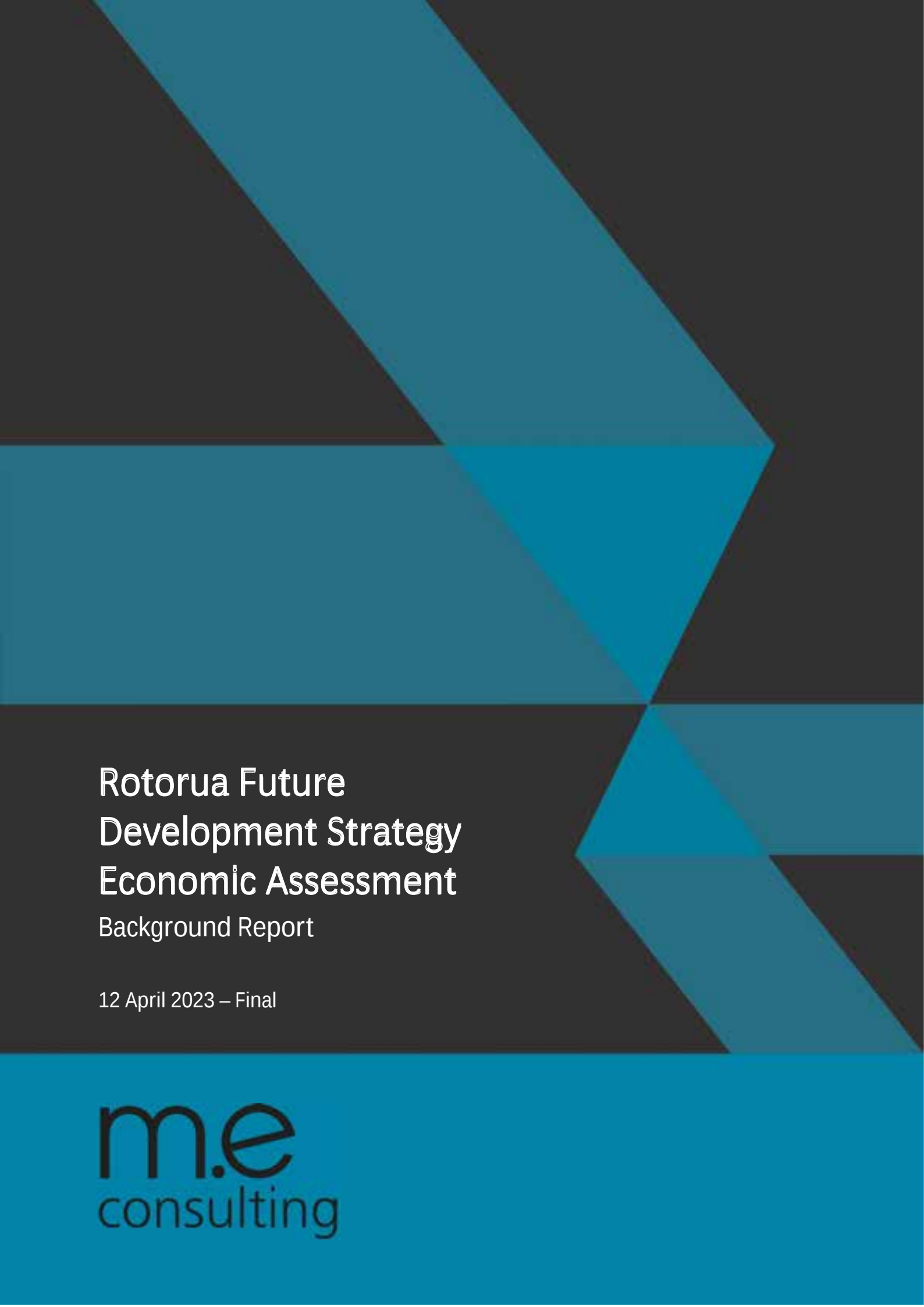
Assessment: Scoring:	Green 3 or 4	Orange 1 or 2	Red -1	No-go Not scored / area ruled out
The table below applies to scoring for individual residential sites. These scores were then totalled to provide an indication of how a site performs relative to one another to assist in an overall understanding of the potential advantages and disadvantages of development in these locations. At that point a number of strategic considerations were assessed at a city-wide level e.g. whether the scenario provided sufficient capacity. NPS-HPL considerations, affordability considerations and balance/colocation of residential to employment. The PDS outcomes were used to guide this stage of the assessment.				
Statutory links and considerations	Te mana o te Wai NPSFM objectives and policies	Infrastructure (three waters) NPSUD Objective 6(a), 6(b)	Infrastructure (other) NPSUD Objective 6(a), 6(b)	Other significant constraints Section 6(b) for ONLs & ONFs
Assessment considerations	Green = the growth area has none to low impacts on freshwater and the impact can be managed or freshwater values can be improved.	Green = the growth area can be serviced by existing three-waters infrastructure and/or only minor upgrades are required (e.g. developer funded).	Green = the growth area can be serviced by other infrastructure and/or only minor upgrades are required	Green = the growth area has no other constraints
	Orange = the growth area has a moderate impact on freshwater and the impact can be managed	Orange = the growth area can be serviced by existing three-waters infrastructure with some moderate upgraded/ extensions required to service the growth area (e.g. increased capacity at WWTP).	Orange = the growth area can be serviced by other infrastructure with moderate upgrades required to service the growth area	Orange = the growth area is moderately constrained
	Red = the growth area has potentially significant negative impacts on freshwater that cannot be mitigated	Red = no infrastructure is available and significant investment (e.g. new WWTP) will be required to service the growth area.	Red = no other infrastructure is available and significant investment will be required to service the growth area (e.g. new sub-station or pump).	Red = the growth area is significantly constrained
Sub-Areas to Assess				
Stembridge Road	3 - Potential benefits in improved water quality through removal of stock from the site. Urbanisation has the potential to generate additional contaminants but these could be managed through appropriate on-site treatment prior to discharge.	3 - Water supply: within Ngongotaha water supply area (source: Taniwha Spring; current consent = 7,000 m3/day; Average Daily use: 3,200 m3; Peak Factor: 1.5). Some spare capacity in the source. Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. Local upgrade might be required. Wastewater: Outside current WW service area but adjacent to WW catchment 139 (Gravity system). Some spare capacity in the network. Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. New pump station within the development area and local upgrade to reticulation might be required. Stormwater: Assume stormwater management by on site detention. A 3m deep x 20m wide pit that will take flood water in 100 year event planned towards back end of site.	3 - Open Space - Existing deficit of 9.5ha of parkland in Ngongotaha catchment. Improved Sport and Recreation hub in Ngongotaha (~7ha required). Deficit of 3-4 local play opportunities. Priority area for action south of Beaumont Road - 2.3 new neighbourhood parks recommended. Development may provide opportunities to help address this existing shortfall.	3 - Pylon and transmission line will impact on potential yield. Within the Eplanade Priority Acquisition Waterbody Overlay.
Brake Road West	3 - Potential benefits in improved water quality through removal of stock from the site. Rural lifestyle development may provide opportunities for slope stabilisation and treatment of stormwater run-off.	4 - Assume on site water supply and wastewater servicing. Otherwise, connect to Brake road east if system capacity permits. Stormwater: Assume stormwater management by on site detention. The Western Road culvert limits downstream stormwater capacity.	4 - Rural residential development with limited growth potential. Minimal pressure on existing services. However, there is an existing deficit of 9.5ha of parkland in the Ngongotaha catchment. Development may provide opportunities to help address this existing shortfall.	3 - Within the Caldera Rim (less sensitive landscape area). Also within the Eplanade Priority Acquisition Waterbody Overlay.
31 Ngongotaha Road (location of proposed MHU development)	3 - Potential benefits in improved water quality through removal of stock from the site. Urbanisation has the potential to generate additional contaminants but these could be managed through appropriate on-site treatment prior to discharge.	3 - Water supply: Within Ngongotaha water supply area (source:Taniwha Spring). Some spare capacity in the source. Connection of this area to Ngongotaha water supply is subject to Iwi agreement. Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. Wastewater: Outside current WW service area but adjacent to catchment 134 - Gravity system. Area partly covered in the 2021 master plan. Some spare capacity in the gravity network. Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. New pump station and local upgrade might be required. Stormwater: Assume stormwater management by on site detention. Downstream effects cannot be fully mitigated on site.	2 - Open Space - Existing deficit of 9.5ha of parkland in Ngongotaha catchment. Improved Sport and Recreation hub in Ngongotaha (~7ha required). Deficit of 3-4 local play opportunities. New development would need to incorporate some of these requirements. Schools - Growth in this area will have significant impacts on the one existing school in Ngongotaha which is under considerable existing pressure. Pressure would also be created on Western Heights High School. Significant development anticipated here would likely to require at least one new Primary School in this area (this may already be required due to the current pressures that exist). Open Space - Existing deficit of 9.5ha of parkland in Ngongotaha catchment. Improved Sport and Recreation hub in Ngongotaha (~7ha required). Deficit of 3-4 local play opportunities.	3 - Within the Eplanade Priority Acquisition Waterbody Overlay.
Leonard Road	2 - Urbanisation has the potential to generate additional contaminants but these could be managed through appropriate on-site treatment prior to discharge.	3 - Water supply: within Ngongotaha water supply area (source:Taniwha Spring). Some spare capacity in the source. Connection of this area to Ngongotaha water supply is subject to Iwi agreement. Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. Wastewater: Outside current WW service area but adjacent to existing gravity reticulation network and Keith Road pump station. Some spare capacity in the network. Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. Stormwater: Assume stormwater management by on site detention.	2 - Schools - Growth in this area will have significant impacts on the one existing school in Ngongotaha which is under considerable existing pressure. Pressure would also be created on Western Heights High School. Significant development anticipated here would likely to require at least one new Primary School in this area (this may already be required due to the current pressures that exist). Open Space - Existing deficit of 9.5ha of parkland in Ngongotaha catchment. Improved Sport and Recreation hub in Ngongotaha (~7ha required). Deficit of 3-4 local play opportunities.	4 - No other constraints identified.
Oturoa Road West	4 - Potential benefits in improved water quality through removal of stock from the site and removal of a higher-leaching dairy farm. Left-over nitrogen allocation could be used for the WWTP to support long-term population growth.	3 - Water supply: within Ngongotaha rural water supply area (source: Taniwha Spring). Spare capacity in the source. Connection of this area to Ngongotaha water supply is subject to Iwi agreement. Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. Local upgrade might be required. Wastewater: Outside current WW service area. Assume on site wastewater servicing. Spare capacity of the pressure sewer network would still be assessed. Stormwater: Assume stormwater management by on site detention.	4 - Rural residential development with limited growth potential. Minimal pressure on existing services.	4 - No other constraints identified.
Dalbeth Road East	3 - Potential benefits in improved water quality through removal of stock from the site. Urbanisation has the potential to generate additional contaminants but these could be managed through appropriate on-site treatment prior to discharge.	2 - Water supply: within Ngongotaha water supply area (source:Taniwha Spring). Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. Connection of this area to Ngongotaha water supply is subject to Iwi agreement. Network connection will require upgrade to local reticulation. Wastewater: Outside current WW service area but adjacent to existing gravity reticulation network and Keith Road pump station. Some spare capacity in the network. Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. New pump station and local upgrade might be required. Stormwater: Assume stormwater management by on site detention.	2 - Schools - Growth in this area will have significant impacts on the one existing school in Ngongotaha which is under considerable existing pressure. Pressure would also be created on Western Heights High School. Significant development anticipated here would likely to require at least one new Primary School in this area (this may already be required due to the current pressures that exist). Open Space - Existing deficit of 9.5ha of parkland in Ngongotaha catchment. Improved Sport and Recreation hub in Ngongotaha (~7ha required). Deficit of 3-4 local play opportunities.	4 - No other constraints identified.
Dalbeth Road West	3 - Potential benefits in improved water quality through removal of stock from the site. Urbanisation has the potential to generate additional contaminants but these could be managed through appropriate on-site treatment prior to discharge.	3 - Servicing dependent on Dalbeth road east development. Water supply: within Ngongotaha water supply area (source:Taniwha Spring). Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. Connection of this area to Ngongotaha water supply is subject to Iwi agreement. Network connection will require upgrade to local reticulation. Wastewater: Outside current WW service area but adjacent to existing gravity reticulation network and Keith Road pump station. Some spare capacity in the network but could utilise on-site servicing depending on detention. Stormwater: Assume stormwater management by on site detention.	4 - Rural residential development with limited growth potential. Minimal pressure on existing services. Development may provide opportunities to help address the existing shortfall of open space around Ngongotaha.	4 - No other constraints identified.
Wharerau Road East	3 - Potential benefits in improved water quality through removal of stock from the site. Urbanisation has the potential to generate additional contaminants but these could be managed through appropriate on-site treatment prior to discharge.	3 - Part of the 2021 Master plan, water and sewer connection available. Stormwater: assumed storm flow management through onsite detention. Water supply availability is subject to roll over of current consent (Waipa Spring existing consent: 9,504 m3/day). Average daily use: 4,800 m3. Peak factor 1.7.	1 - Schools - Growth in this area could place significant pressure and potential impacts on the existing eastern school network (Owhata - Lynmore area), where utilisation is already high. Power - Heavily constrained power supply, may not be sufficient to accommodate existing scale of development already enabled.	2 - Located within the Rotorua Caldera Rim Overlay - Less Sensitive Landscape Area and Noise Contour - 55 dBA Airport Noise Contour, and 60 dBA Airport Noise Contour. These constraints can be addressed through a combination of landscape design and acoustic treatment of new dwellings.
Wharerau Road South	2 - Some benefits in improved water quality through removal of stock from the site. Rural lifestyle development may provide opportunities for slope stabilisation and treatment of stormwater run-off.	1 - Small area part of the 2021 Master plan, water and sewer connection available. Stormwater: assumed storm flow management through onsite detention. Water supply availability is subject to roll over of current consent (Waipa Spring existing consent: 9,504 m3/day). Average daily use: 4,800 m3. Peak factor 1.7. Most of the area will be difficult to serve, no existing infrastructure and particularly area is on high elevation.	2 - Schools - Growth in this area could place significant pressure and potential impacts on the existing eastern school network (Owhata - Lynmore area), where utilisation is already high. Power - Heavily constrained power supply, may not be sufficient to accommodate existing scale of development already enabled.	2 - Designation - RDC-221 (Eastern No.3 Reservoir Site - Water Supply Utilities: Reservoirs 5000m³) located on the site and it also sits within the Rotorua Caldera Rim Overlay - Sensitive Landscape Area.
Thiotonga West	3 - Potential benefits in improved water quality through removal of stock from the site. Urbanisation has the potential to generate additional contaminants but these could be managed through appropriate on-site treatment prior to discharge.	9 - Higher elevations will have issues for water supply (pumping). New reservoir may be needed - Cost estimated at about \$10 million. Stormwater solution likely to involve detention (use of some developable land but general conditions on this area likely to create challenges for disposal. Waste water is not a problem for site feasibility for residential development may be a concern if development occurs at a lower density, due to constraints.	3 - Open Space - Existing deficit of 13 ha of parkland in Western Catchment, increasing to (at least) 26.2 by 2040 (based on current population growth figures). Additional 10ha required for land for sport. Development has the potential to exacerbate this, while land within the site may be required to address open space deficits.	2 - RNZ communications site (see designation RNZ-001) located within this area. Also falls within the Rotorua Caldera Rim Overlay - Caldera Rim and Sensitive Landscape Area.
Owhata Lakefront	2 - Urbanisation has the potential to generate additional contaminants but these could be managed through appropriate on-site treatment prior to discharge.	2 - Water supply: limited additional capacity in existing water take consent at source (Waipa Springs). Supply could be an issue if current consented take is reduced and/or the consent at Hemo Spring (another source @2,230 m3/day currently not utilised) is cancelled. Infrastructure Planning to provide capacity information. Consent being reviewed in Dec 23. Wastewater: Spare capacity in the network. Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. Stormwater: Area adjacent to lake, could have multiple discharge point to lake assuming required treatment is complied.	2 - Schools - Growth in this area could place significant pressure and potential impacts on the existing eastern school network (Owhata - Lynmore area), where utilisation is already high. Power - Heavily constrained power supply, may not be sufficient to accommodate existing scale of development already enabled. Reserves - TALT have aspirations for public linkages around the lakefront.	1 - Outstanding Natural Feature or Landscape along the lakefront. Significant Natural Area in the southwest area. Development would need to avoid these areas.
Hamurana	3 - Many existing lifestyle lots in this area are not being managed appropriately.Comprehensive redevelopment of this area could provide positive water quality outcomes but may be difficult to fully realise due to land fragmentation.	1 - Water supply: Iwi own the water source (Rewarewa Spring) and current consented take (3,200 m3/day) not enough to supply significant development (current average daily use ~2,200 m3). Pending Iwi agreement a new agreement with Iwi and no certainty over that outcome. Wastewater: Unlikely to be a constraint, existing pressure sewer system was designed to allow intensification (i.e. plan change). However, effect to overall capacity downstream of the network has to be confirmed considering all other potential developments. Stormwater: Mostly not reticulated. Road network is the stormwater flow path depending towards the lake. Multiple discharge points direct to the lake. Could require upgrade of culverts in Hamurana road. Assume management of stormwater flow by on site detention.	2 - Open Space - Given the dispersed population in the rural areas of Rotorua, there is a high supply of recreation parks and sports facilities (no existing deficit). There is no identified need for additional open space, however if growth was to be concentrated in a specific area, additional open space would be required. Schools - Significant development anticipated here would likely to require at least one new Primary School in this area (this may already be required due to the current pressures that exist).	3 - Transmission lines run through the northern portion of the site impacting development potential in these locations.
Gee Road West	3 - Potential benefits in improved water quality through removal of stock from the site. Urbanisation has the potential to generate additional contaminants but these could be managed through appropriate on-site treatment prior to discharge.	3 - Part of the 2021 Master plan, water and sewer connection available. Stormwater: assumed storm flow management through onsite detention. Water supply availability is subject to roll over of current consent (Waipa Spring existing consent: 9,504 m3/day). Average daily use: 4,800 m3. Peak factor 1.7.	1 - Schools - Growth in this area could place significant pressure and potential impacts on the existing eastern school network (Owhata - Lynmore area), where utilisation is already high. Power - Heavily constrained power supply, may not be sufficient to accommodate existing scale of development already enabled, further investment required.	2 - Within the Eplanade Priority Acquisition Waterbody Overlay and Rotorua Caldera Rim Overlay - Less Sensitive Landscape Area. Also falls within the Noise Contours - 55 dBA Airport Noise Contour. This can be addressed through acoustic treatment of new buildings.
Tarimano	3 - Potential benefits in improved water quality through removal of stock from the site. Urbanisation has the potential to generate additional contaminants but these could be managed through appropriate on-site treatment prior to discharge and could support expansion of the existing wetland features on site.	3 - Water supply: served by Taniwha Spring - Ngongotaha water supply area. Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. Wastewater: Pressure sewer reticulation area. Partly reticulated. Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. Might require local reticulation upgrade. Stormwater: Lakeside area, can discharge direct to the lake with appropriate treatment through multiple discharge point. On site detention/ treatment could be applied.	2 - Schools - Growth in this area will have significant impacts on the one existing school in Ngongotaha which is under considerable existing pressure. Pressure could also be created on Western Heights High School. Significant development anticipated here would likely to require at least one new Primary School in this area (this may already be required due to the current pressures that exist). Open Space - Existing deficit of 9.5ha of parkland in Ngongotaha catchment. Improved Sport and Recreation hub in Ngongotaha (~7ha required). Deficit of 3-4 local play opportunities. Development may provide opportunities to help address the existing shortfall of open space around Ngongotaha and help deliver aspirations for continuous lakefront reserves.	2 - Several additional constraints which may impact development potential of the site. This includes a Significant Natural Area in northern area the site. Tarimano Mare and Mare Protection Area Overlay, the Outstanding Natural Feature or Landscape where adjoining Lake Rotorua and the Eplanade Priority Acquisition Waterbody Overlay. Development may help to achieve/enhance some of these values.
Hamurana Lakefront	3 - Potential benefits in improved water quality through removal of stock from the site. Urbanisation has the potential to generate additional contaminants but these could be managed through appropriate on-site treatment prior to discharge.	2 - Water supply: Iwi own the water source (Rewarewa Spring) and current consented take (3,200 m3/day) not enough to supply significant development. Any additional take would require a new agreement with Iwi and no certainty over that outcome. Wastewater: Unlikely to be a constraint. The existing pressure sewer system was designed to allow intensification (i.e. plan change) however the effect to overall capacity downstream of the network has to be confirmed considering all other potential developments. Stormwater: Mostly not reticulated. Road network is the stormwater flow path depending towards the lake. Multiple discharge points direct to the lake. Could require upgrade of culverts in Hamurana road. Assume management of stormwater flow by on site detention.	2 - Schools - Growth in this area will have significant impacts on the one existing school in Ngongotaha which is under considerable existing pressure. Pressure would also be created on Western Heights High School. Significant development anticipated here would likely to require at least one new Primary School in this area (this may already be required due to the current pressures that exist). Reserves - TALT aspirations for public linkages around the lakefront.	2 - Several additional constraints which may impact on the development potential of the site. This includes Designation - RDC-207 (Desert Street Reserve - Sport and Recreation), Designation - RDC-425 (Hamurana Lakeshore Reserve - Destination), the Outstanding Natural Feature or Landscape and a Significant Natural Area (both along the lake side and in the south).
Borromington Farm (Aqarius Drive)	3 - Potential benefits in improved water quality through removal of stock from the site. Urbanisation has the potential to generate additional contaminants but these could be managed through appropriate on-site treatment prior to discharge.	2 - Water supply: Could either be served from the Central supply source (Karamu-Takina Springs) or the Ngongotaha rural water supply source (Taniwha Spring). Spare capacity in the source to be confirmed. Connection of this area to the Ngongotaha water supply is subject to Iwi agreement. Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. Wastewater: Outside current WW service area but adjacent to wastewater 110 (gravity system) or could connect to Parawaka rising main. Spare capacity in the network to be assessed. Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. New pump station likely to be required in the development. Local upgrade to gravity reticulation could be required. Stormwater: Assume stormwater management by on site detention.	3 - Open Space - Existing deficit of 13 ha of parkland in Western Catchment, increasing to (at least) 26.2 ha by 2040 (based on current population growth figures). Additional 10ha of land required for sport as well as 12 play spaces. Development may provide opportunities to help address some of the existing shortfall of open spaces in this area.	3 - Designation - 602 (Aqarius Drive Stream Reserve - Green Space) passes through a small portion of the site.
Oturoa Road North	4 - Potential benefits in improved water quality through removal of stock from the site and removal of a higher-leaching dairy farm. Left-over nitrogen allocation could be used for the WWTP to support long-term population growth.	2 - Water supply: within Ngongotaha rural water supply area (source:Taniwha Spring). Spare capacity in the source to be confirmed. Connection to this area to the Ngongotaha supply is subject to Iwi agreement. Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. Wastewater: Outside current WW service area but near existing WW reticulation network. Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. Connection TSC by Infrastructure Planning. Local upgrade to pressure main might be required. Stormwater: Assume stormwater management by on site detention.	2 - Schools - Growth in this area will have significant impacts on the one existing school in Ngongotaha which is under considerable existing pressure. Pressure would also be created on Western Heights High School. Significant development anticipated here would likely to require at least one new Primary School in this area (this may already be required due to the current pressures that exist).	3 - Within the Eplanade Priority Acquisition Waterbody Overlay.
Oturoa Road South	4 - Potential benefits in improved water quality through removal of stock from the site and removal of a higher-leaching dairy farm. Left-over nitrogen allocation could be used for the WWTP to support long-term population growth.	2 - Water supply: within Ngongotaha rural water supply area (source:Taniwha Spring). Spare capacity in the source to be confirmed. Connection to this area to the Ngongotaha supply is subject to Iwi agreement. Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. Wastewater: Outside current WW service area but near existing WW reticulation network, is in the transition between pressure sewer system and gravity system. Spare capacity in the network to be assessed. Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. Local upgrade might be required. Stormwater: Assume stormwater management by on site detention.	2 - Schools - Growth in this area will have significant impacts on the one existing school in Ngongotaha which is under considerable existing pressure. Pressure would also be created on Western Heights High School. Significant development anticipated here would likely to require at least one new Primary School in this area (this may already be required due to the current pressures that exist). Open Space - Existing deficit of 9.5ha of parkland in Ngongotaha catchment. Improved Sport and Recreation hub in Ngongotaha (~7ha required). Deficit of 3-4 local play opportunities.	4 - No other constraints identified.
Brake Road East	3 - Potential benefits in improved water quality through removal of stock from the site. Rural lifestyle development may provide opportunities for slope stabilisation and treatment of stormwater run-off.	2 - Water supply: Outside Ngongotaha water supply area (source:Taniwha Spring) but it is adjacent to a reticulated area. Some spare capacity in the source. Connection of this area to the Ngongotaha water supply is subject to Iwi agreement. Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. Might require local reticulation upgrade. Wastewater: Outside current WW service area but near existing reticulation (catchments 172, 185 & 146). Some spare capacity in the WW gravity network. Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. New pump station and local upgrade might be required. Stormwater: Assume stormwater management by on site detention - Western Road culvert a potential capacity constraint.	2 - Schools - Growth in this area will have significant impacts on the one existing school in Ngongotaha, which is under considerable existing pressure. Pressure would also be created on Western Heights High School. Significant development anticipated here would likely to require at least one new Primary School in this area (this may already be required due to the current pressures that exist). Open Space - Existing deficit of 9.5ha of parkland in Ngongotaha catchment. Improved Sport and Recreation hub in Ngongotaha (~7ha required). Deficit of 3-4 local play opportunities. This site could potentially incorporate this.	4 - No other constraints identified.
Pukehangi (Current Greenfield)	3 - Potential benefits in improved water quality through removal of stock from the site. Rural lifestyle development may provide opportunities for slope stabilisation and treatment of stormwater run-off.	3 - Part of the 2021 Master plan, water and sewer connection available. Stormwater: assumed storm flow management through onsite detention. Water supply availability is subject to roll over of current consent (Karamu/Takina Spring, existing consent: 38,360 m3/day). Average daily use: 23,000 m3. Peak factor 1.5.	3 - Open Space - Existing deficit of 13 ha of parkland in Western Catchment, increasing to (at least) 26.2 ha by 2040 (based on current population growth figures). Additional 10ha of land required for sport as well as 12 play spaces. Development may provide opportunities to help address some of the existing shortfall of open spaces in this area.	3 - Historic building on 153 Pukehangi Road. Falls within the Rotorua Caldera Rim Overlay - Less Sensitive Landscape Area and also features Designation RDC-207 (Matapo No.1 Reservoir Site - Water Supply Utilities: Reservoirs 4,864m³).
Heritage Farm	2 - Urbanisation has the potential to generate additional contaminants but these could be managed through appropriate on-site treatment prior to discharge.	2 - Water supply: Could either be served from the Central supply source (Karamu-Takina Springs) or the Ngongotaha rural water supply source (Taniwha Spring). Spare capacity in the source to be confirmed. Connection of this area to Ngongotaha water supply is subject to Iwi agreement. Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. Wastewater: Outside current WW service area but adjacent to wastewater 110 (gravity system) or could connect to Parawaka rising main. Spare capacity in the network to be assessed. Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. New pump station likely to be required in the development. Local upgrade to gravity reticulation could be required. Stormwater: Assume stormwater management by on site detention. Downstream stormwater infrastructure capacity limited at Railway and Barnard Road culvert.	3 - Open Space - Existing deficit of 13 ha of parkland in Western Catchment, increasing to (at least) 26.2 ha by 2040 (based on current population growth figures). Additional 10ha of land required for sport as well as 12 play spaces. Development may provide opportunities to help address some of the existing shortfall of open spaces in this area.	3 - Within the Eplanade Priority Acquisition Waterbody Overlay.
Tiketere residential	2 - There are potential benefits in improved water quality through removal of stock from the site. Urbanisation has the potential to generate additional contaminants but these could be managed through appropriate on-site treatment prior to discharge.	1 - Water supply: Outside Eastern water supply area. Supply is subject to current consent roll over (Waipa Spring: 9,504 m3/day and Hemo Spring current consent: 2,230 m3/day not being cancelled). Spare capacity in supply TSC by Infrastructure Planning. Connection to network if supply okay could require a trunk main upgrade. Consent being reviewed in Dec. 23. The Hamurana water source (Rewarewa Spring) is the potential future source to supply the Eastside. This will be dependent on Iwi agreement. Wastewater: Could connect to Eastern sewer trunk main. Stormwater: There is the potential to direct discharge to the lake assuming the required treatment is complied with.	2 - Power - Heavily constrained power supply that may not be sufficient to accommodate existing scale of development already enabled. Open Space - There is no identified need for additional open space, however if growth was to be concentrated in a specific area, additional open space would be required. Schools - Significant development anticipated here would likely to require at least one new Primary School in this area (this may already be required due to the current pressures that exist).	3 - There are several potential constraints, which could impact on development. These include Outstanding Natural Features or Landscapes (along the lakefront), Significant Natural Area (along lake front and in the middle of the site) and within the Eplanade Priority Acquisition Waterbody Overlay. Development has the potential to support or enhance the values associated with these constraints.
McFetridge Road	4 - Potential benefits in improved water quality through removal of stock from the site and removal of a higher-leaching dairy farm. Left-over nitrogen allocation could be used for the WWTP to support long-term population growth.	4 - Assume on site water supply and wastewater servicing. Assume stormwater management by on site detention.	2 - Open Space - Given the dispersed population in the rural areas of Rotorua, there is a high supply of recreation parks and sports facilities (no existing deficit). There is no identified need for additional open space, however if growth was to be concentrated in a specific area, additional open space would be required. Schools - Significant development anticipated here would likely to require at least one new Primary School in this area (this may already be required due to the current pressures that exist).	3 - Transmission lines run through the northern portion of the site.

Statutory link Assessment considerations	Cultural values s6(e , Ob5/PoI9 NPSUD	Mana Whenua development aspirations s6(e , Ob5/PoI9 NPSUD	Accessibility NPSUD Policy 5	GHG reduction NPSUD Policy 1(e and Carbon Emissions Reduction Plan	Reverse sensitivity Policy1(b
	Green = The growth area does not adversely affect sites of cultural significance	Green = The growth area will support iwi and hapu to realise their development aspirations.	Green = the growth area has good accessibility by public and active modes of transport.	Green=	Green = the growth area is not proximate to residential, educational or public open space uses and the potential for reverse sensitivity effects in the future is very low.
	Orange = The growth area may impact sites of cultural significance but has support from iwi and hapu		Orange = the growth area has moderate accessibility by public and active modes of transport.	Orange=	Orange = the growth area may have reverse sensitivity effects in the future but can be managed e.g. through appropriate controls in the District Plan.
	Red = The growth area adversely affects a site of cultural significance (e.g. wāhi tapu/wāhi tupuna/other cultural slandscape) and is not supported by iwi and hapu (no go constraint in this case)		Red = the growth area has poor accessibility by public and active modes of transport.	Red=	Red = the growth area will give rise to adverse reverse sensitivity effects that would mean business could not operate efficiently.
Stembridge Road	3 - No specific issues or concerns raised during engagement. Falls within the statutory acknowledgement for Ngongotahā stream and has a sensitive receiving environment. Development potentially provides an opportunity to help address strowamter and water quality issues.	Ngāti Whakaue Tribal Lands Inc have aspirations for residential development (similar to that currently being developed in Manawa Gardens) on this site.	2 - Proximate to a local residential population as well as existing PT and segregated cycling network.	1 - Development would result in moderate increases of VKT/ Carbon emissions when comapred with other greenfield business options. Less potential for a reduction in VKT due to separation from the City Centre and other industrial areas in Eastside.	2 - Adjoins existing residential areas. Controls may be required in terms of building bulk, traffic and noise to reduce reverse sensitivity effects.
Tamarahi	3 - No specific issues or concerns raised during engagement. Falls within the statutory acknowledgement for Ngongotahā stream and has a sensitive receiving environment. Development potentially provides an opportunity to help address strowamter and water quality issues.	4 - Ngāti Whakaue Tribal Lands Inc have aspirations for a mixed-use development provision for light industry and supermarket.	2 - Proximate to a local residential population as well as existing PT and segregated cycling network.	1 - Development would result in moderate increases of VKT/ Carbon emissions when comapred with other greenfield business options. Less potential for a reduction in VKT due to separation from the City Centre and other industrial areas in Eastside.	2 - Adjoins existing residential areas. Controls may be required in terms of building bulk, traffic and noise to reduce reverse sensitivity effects.
Agrodome	3 - No specific issues or concerns raised during engagement. Falls within the statutory acknowledgement for Ngongotahā stream and has a sensitive receiving environment. Development potentially provides an opportunity to help address strowamter and water quality issues.	n/a	1 - Proximate to a local residential population.	1 - Development would result in moderate increases of VKT/ Carbon emissions when comapred with other greenfield business options. Less potential for a reduction in VKT due to separation from the City Centre and other industrial areas in Eastside.	2 - Adjoins existing residential areas. Controls may be required in terms of building bulk, traffic and noise to reduce reverse sensitivity effects.
State Highway 5 East	3 - No specific issues or concerns raised during engagement. Waikuta Marae located within this site.	Ngāti Whakaue Tribal Lands Inc. have long-term aspirations for some residential development on this site.	3 - The site is served by proximate bus routes and lies adjacent to the key north/south cycling route to the City Centre. Minor upgrades and new road would need to be funded by the developer(s). Provides potential to improve cycle path infrastructure (e.g. surface, lighting).	2 - Development would result in moderate increases of VKT/ Carbon emissions when comapred with other greenfield business options. Less potential for a reduction in VKT due to separation from the City Centre and other industrial areas in Eastside.	2 - Includes existing residential areas. Controls may be required in terms of building bulk, traffic and noise to reduce reverse sensitivity effects.
State Highway 5 South	4 - No specific issues or concerns raised during engagement.	Ngāti Whakaue Tribal Lands Inc. have no specific aspirations for development of this site currently.	2 - Proximate to a local residential population as well as existing PT and segregated cycling network.	1 - Development would result in moderate increases of VKT/ Carbon emissions when comapred with other greenfield business options. Less potential for a reduction in VKT due to separation from the City Centre and other industrial areas in Eastside.	3 - Small portions are adjacent to existing residential areas. Controls may be required in terms of building bulk, traffic and noise to reduce reverse sensitivity effects.
State Highway 5 West	3 - No specific issues raised during engagement. However, the interface with an existing Cemetary / urupua would need to be managed. Fairy Springs Pa (U16/80) located on the western edge of the site.	4 - Ngāti Whakaue Tribal Lands Inc. have a range of commercial and residential aspirations for use of this land.	2 - Proximate to a local residential population as well as existing PT and segregated cycling network.	2 - Development would result in moderate increases of VKT/ Carbon emissions when comapred with other greenfield business options. Less potential for a reduction in VKT due to separation from the City Centre and other industrial areas in Eastside.	3 - Small portions are adjacent to existing residential areas. Controls may be required in terms of building bulk, traffic and noise to reduce reverse sensitivity effects.
Gee Road West	4- No specific issues raised during engagement.	4 - Potential residential uses being considered by Ngāti Whakaue Tribal Lands Inc. in addition to a further extension of Eastgate Business Park for commercial / industrial uses	2 - Proximate to amenities/ services available from Owkata Town Centre and direct access to existing PT network. Close to potential employee base.	3 - Development would result in lower increases of VKT/ Carbon emissions when comapred with other greenfield options. Synergies with existing industrial development at Eastgate/ Airport and located on main freight route through to the Port.	2 - Adjoins existing residential areas. Controls may be required in terms of building bulk, traffic and noise to reduce reverse sensitivity effects.
Eastgate South	4- No specific issues raised during engagement.	4 - Potential residential uses being considered by Ngāti Whakaue Tribal Lands Inc. in addition to a further extension of Eastgate Business Park for commercial / industrial uses.	2 - Proximate to amenities/ services available from Owkata Town Centre and direct access to existing PT network. Close to potential employee base.	3 - Development would result in lower increases of VKT/ Carbon emissions when comapred with other greenfield options. Synergies with existing industrial development at Eastgate/ Airport and located on main freight route through to the Port.	2 - Adjoins existing residential areas. Controls may be required in terms of building bulk, traffic and noise to reduce reverse sensitivity effects.
Eastgate North	2 - No specific issues raised during engagement. Existing papakāinga and marae located in this area could be impacted by industrial development.	n/a	1 - Proximate to a local residential population.	2 - Development would result in moderate increases of VKT/ Carbon emissions when comapred with other greenfield business options. Synergies with existing industrial development at Eastgate/ Airport and located on main freight route through to the Port.	2 - Adjoins existing rural residential areas, school and marae. Controls may be required in terms of building bulk, traffic and noise to reduce reverse sensitivity effects. Strong desire to avoid heavy indusitral uses on the site.
Puarenga	4- No specific issues raised during engagement.	n/a	1 - Proximate to a local residential population.	2 - Development would result in moderate increases of VKT/ Carbon emissions when comapred with other greenfield business options. Synergies with Peka Block and Waipa Mill.	4 - Not located in close proximity to sensitive land-uses. Unlikely to give rise to any reverse sensitivity effects.
Airport Future Development Precinct (already zoned industrial)	4- No specific issues raised during engagement.	n/a	1 - Proximate to amenities/ services available from Owkata Town Centre and direct access to existing PT network.	3 - Development would result in lower increases of VKT/ Carbon emissions when comapred with other greenfield options.	4 - Located west of the runway at the airport. No sensitive uses in close proximity now or in the future.
Airport Precinct A - (already zoned industrial)	4- No specific issues raised during engagement.	n/a	2 - Proximate to amenities/ services available from Owkata Town Centre and direct access to existing PT network.	3 - Development would result in lower increases of VKT/ Carbon emissions when comapred with other greenfield options.	3 - Located adjacent to operational airport. Limited additional reverse sensitivity effects likely to be generated.
Airport Precinct B - (already zoned industrial)	4- No specific issues raised during engagement.	n/a	2 - Proximate to amenities/ services available from Owkata Town Centre and direct access to existing PT network.	3 - Development would result in lower increases of VKT/ Carbon emissions when comapred with other greenfield options.	3 - Located adjacent to operational airport. Limited additional reverse sensitivity effects likely to be generated.
Tikitere	4 - No issues raised by Ngāti Uenukukopako in meeting on 3/2/23. A wetland restoration project is currently underway over part of this area.	Strong aspriations by Ngāti Rangiteaorere for papakāinga and residential development on the site rather than industrial.	0 - Majority of site is rural in nature and therefore has limited proximate access via walking and cycling to important amenities and services. No Public transport currently available to serve the site and located away from employee base.	1 - Development would likely result in moderate-to-high increases of VKT/ Carbon emissions when compared with other greenfield options.	2 - Adjoins existing rural residential areas and marae. Controls may be required in terms of building bulk, traffic and noise to reduce reverse sensitivity effects.
Tarukenga	4- No specific issues raised during engagement.	n/a	0 - Majority of site is rural in nature and therefore has limited proximate access via walking and cycling to important amenities and services. No Public transport currently available to serve the site and located away from employee base.	0 - Significant development would likely result in high increases of VKT/ Carbon emissions when compared with other greenfield options.	3 - Located adjacent to Marae. Limited additional reverse sensitivity effects likely to be generated and opportunities exist to adequately manage these on-site.

Assessment: Scoring:	Green 3 or 4	Orange 1 or 2	Red -1	No-go Not scored / area ruled out	
	The table below applies to scoring for individual business sites. These scores were then totalled to provide an indication of how a site performs relative to one another to assist in an overall understand of the potential advantages and disadvantages of development in these locations. At that point a number of strategic considerations were assessed at a city-wide level e.g. whether the scenario provided sufficient capacity, NPS-HPL considerations, affordability considerations and balance/colocation of residential to employment. The FDS outcomes were used to guide this stage of the assessment.				
Statutory link Assessment considerations	Feasibility and site suitability NPSUD Policy 1, 2 and 5		Natural hazards / climate change resilience s6(h) and National Adaptation Plan	HPL NPSHPL objectives and policies	Biodiversity section 6(c)
	Green = the growth area is relatively flat and is suitable for business use.	Green = the growth area is of a strategic scale or location with the ability to grow over time.	Green = the site growth area is not subject to risk from natural hazards, or the risk from natural hazards is low.	Green = the growth area does not contain HPL.	Green = the growth area will not result in any loss of an SNA, impacts on other biodiversity can be managed, and the growth area may support increased vegetation cover.
	Orange = the growth area is moderately sloping or otherwise can be engineered at reasonable cost to be suitable for business use.	Orange = the growth area is moderately sized with some ability to grow over time.	Orange = the site is subject to some risk from natural hazards but the risk can be mitigated.	Orange = the growth area features some areas of fragmented HPL and/ or nutrient limits impact on viability of ongoing farming.	Orange = the growth area will result in some loss of an SNA, or impacts on other biodiversity can be managed, and the growth area may support increased vegetation cover.
	Red = the growth area has steeper terrain or has other site characteristics that make it unsuitable for business use.	Red = the growth area is small or otherwise has limited ability to grow over time.	Red = the site is subject to significant risk from natural hazards that cannot be mitigated.	Red = the growth area features large, contiguous areas of HPL	Red = the growth area will result in significant loss of an SNA, impacts on other biodiversity are unlikely to be avoided or mitigated.
embridge Road	4 - Largely flat, unfragmented landholdings suitable for large scale development.	2 - The growth area is moderately sized for industrial development and would have limited ability to grow over time due to site constraints.	1 - Identified flood hazard affects some area but not with significant hazard ratings except small areas close to the stream. Flood protection works planned but residual risk remains. As its part of the wider Ngongotahā catchment, downstream flooding impacts would also need to be taken into account in site design. Some liquification/ soft ground risks are identified on the site and could be managed through design/ impact feasibility.	4 - Existing Rural Residential Zoned Area and Identified within 2018 Spatial Plan.	3 - Potential biodiversity improvements from urbanisation including on-site stormwater treatment and stream margin planting to improve habitat/ shading of Ngongotahā Stream.
	4 - Largely flat, unfragmented landholdings suitable for large scale development.	2 - The growth area is moderately sized for industrial development and would have limited ability to grow over time due to site constraints.	2 - Some liquification/ soft ground risks are identified on the site and could be managed through design/ impact feasibility. Low risk flood potential but downstream impacts would need to be managed.	4 - Existing Rural Residential Zoned Area and Identified within 2018 Spatial Plan.	3 - Potential biodiversity improvements from urbanisation including on-site stormwater treatment and further stream margin planting to improve habitat/ shading of the Ngongotahā Stream tributary that passes through the site.
Agrodome	4 - Largely flat, unfragmented landholdings suitable for large scale development.	2 - The growth area is moderately sized for industrial development and would have limited ability to grow over time due to site constraints.	1 - Identified flood hazard affects some of the area but not with significant hazard ratings, except for small areas close to the stream. Flood protection works are planned but residual risk remains. As its part of the wider Ngongotahā catchment, downstream flooding impacts would also need to be taken into account in site design. Some liquification/ soft ground risks are identified on the site and could be managed through design/ impact feasibility.	4 - Existing Rural Residential Zoned Area and Identified within 2018 Spatial Plan.	3 - Potential biodiversity improvements from urbanisation including on-site stormwater treatment and stream margin planting to improve habitat/ shading of Ngongotahā Stream.
Highway 5 East	3 - Largely flat land suitable for large scale development. However, some fragmentation in landholdings could make comprehensive development difficult in parts.	3 - The growth area is moderately sized for industrial development and would have some ability to grow as it is largely absent of constraints.	2 - Some liquification/ soft ground risks are identified on the site and could be managed through design/ impact feasibility. Low risk flooding potential identified on-site.	1 - Site falls entirely within LUC3 land although majority of the site is not in productive use.	3 - Part of the site is a drained former wetland. The site is adjacent to an existing wetland and in an area which is currently a priority area for potential large constructed wetlands to be put in. Development of the site provides an option for funding/ delivering the wetland.
Highway 5 South	4 - Largely flat, unfragmented landholdings suitable for large scale development.	4 - The site is of a strategic scale and location. Has ability grow over the long term as demand increases.	3 - No significant flooding risk but some downstream risks remain within the catchment. Potential landslide and runout risk but otherwise unconstrained (Note: could redraw the boundary to exclude steeper area if area is deemed suitable).	2 - Small, fragmented pockets of LUC3 land in the eastern portion of the site.	2 - Subdivision of the site provides a limited opportunities to enhance biodiversity values. Neutral impact from future development.
Highway 5 West	2 - Some land fragmentation and topography challenges in parts.	3 - The growth area is moderately sized for industrial development and would have some ability to grow as it is largely absent of constraints.	3 - No significant flooding risk but some downstream risks remain within the catchment. Potential landslide and runout risk but otherwise unconstrained (Note: could redraw the boundary to exclude steeper area if general area is deemed suitable).	1 - Large, contiguous of LUC3 land in the eastern portion of the site. Iwi development aspirations may also provide an avenue for urbanisation of the site.	3 - Potential biodiversity improvements from urbanisation including on-site stormwater treatment and stream margin planting to improve habitat/ shading of stream and overland flow paths passing through the site.
See Road West	4 - Largely flat, unfragmented landholdings suitable for large scale development.	4 - The site is of a strategic scale and location. Has some ability grow over the long term as demand increases.	3 - No flood hazard mapping is available for the site but likely to be limited due to elevation/ topography. There are some potential areas of landslide susceptibility in some steeper portions of the site which may impact development potential. Some liquefaction risks in lower portion of the site although not extensive. Known downstream flooding impacts west of the state highway would need to be considered with on-site detention required.	3 - Identified within 2018 Spatial Plan. Northern portion of the site identified as containing some LUC3 land.	2 - Subdivision of the site provides a limited opportunity to ensure remaining stream margins and overland flow paths can be planted and protected. Neutral biodiversity benefits from urbanisation.
astgate South	4 - Largely flat, unfragmented landholdings suitable for large scale development.	4 - The site is of a strategic scale and location. Has some ability grow over the long term as demand increases.	3 - Limited flooding constraints but development may give rise to downstream residual risk. Known downstream flooding impacts west of the state highway would need to be considered with on-site detention required. Soft ground has been identified on the site and would need to be managed through appropriate design.	1 - The site is currently in use for pasture/ grazing. LUC2 and LUC3 land located across the site although fragmented by surrounding urban and rural residential uses. Iwi development aspirations may also provide an avenue for urbanisation of the site.	2 - Subdivision of the site provides a limited opportunity to ensure remaining stream margins and overland flow paths can be planted and protected. Neutral biodiversity benefits from urbanisation.
astgate North	3 - Largely flat land suitable for large scale development. However, some fragmentation in landholdings could make comprehensive development difficult in parts.	4 - The site is of a strategic scale and location. Has ability grow over the long term as demand increases.	3 - Limited flooding constraints but development may give rise to downstream residual risk. Soft ground has been identified on the site and would need to be managed through appropriate design.	1 - The site is currently in use for pasture/ grazing. LUC2 and LUC3 land located across the site although fragmented by surrounding urban and rural residential uses. Iwi development aspirations may also provide an avenue for urbanisation of the site.	3 - Subdivision of the site provides opportunity to ensure stream margins can be planted and protected. Potential to further enhance SNA at the southern boundary of the site.
Puarenga	2 - Land is largely unfragmented but there are topography challenges in parts that would limit the extent of developable area and would require modification to support industrial development.	2 - The growth area is moderately sized for industrial development but is constrained in places limiting its long term growth potential.	0 - Several known hazards include landslip susceptibility, soft ground and fault avoidance zone. Unlikely that these can be overcome sufficiently to enable any meaningful development.	4 - No LUC1, 2 or 3 land identified within this area.	3 - Site is currently a mixture of pasture and forestry. Redevelopment could provide further opportunities to enhance biodiversity values along the Puarenga stream corridor.
Airport Future Development Precinct (already zoned industrial)	4 - Largely flat, unfragmented landholdings suitable for large scale development.	3 - The growth area is moderately sized for industrial development and would have some ability to grow as it is largely absent of constraints.	3 - Some risk from lake inundation so development would need to avoid this area. Soft ground and liquefaction risk have been identified on the site and would need to be managed through appropriate design.	4 - Existing Urban Zoned Area	3 - Site currently grassed as part of wider airport precinct. Redevelopment provides an opportunity to enhance the biodiversity values along the lake edge.
port Precinct A - (already zoned industrial)	4 - Largely flat, unfragmented landholdings suitable for large scale development.	3 - The growth area is moderately sized for industrial development and would have some ability to grow as it is largely absent of constraints.	3 - Soft ground and liquefaction risk have been identified on the site and would need to be managed through appropriate design.	4 - Existing Urban Zoned Area	3 - Airport wetland located centrally within the site. This will need to be retained. Redevelopment provides an opportunity to enhance the biodiversity values associated with this area.
port Precinct B - (already zoned industrial)	4 - Largely flat, unfragmented landholdings suitable for large scale development.	1 - The growth area is of a small scale and would suit a limited range of industrial or commercial uses.	3 - Soft ground and liquefaction risk have been identified on the site and would need to be managed through appropriate design.	4 - Existing Urban Zoned Area	2 - Minimal opportunities for enhancement to biodiversity values. Neutral impact.
Tikitere	2 - Land is largely unfragmented but there are topography challenges in parts that would need to be addressed to enable industrial development.	4 - The site is of a strategic scale and location. Has ability grow over the long term as demand increases.	2 - No detailed flood mapping available for the site. Stream/ overland flows pass through the site which may create some risk. Limited down stream flood risk due to proximity with the lake. Parts of the site have identified liquefaction risk while steeper portions of the site may be subject to landslide susceptibility. These could be addressed through more detailed analysis and design.	2 - Large areas of contiguous pieces of LUC 2 and 3 soils present across the site. Identified within 2018 Spatial Plan as potentially suitable for urban development. Iwi development aspirations may also provide an avenue for urbanisation of the site.	4 - Two significant natural areas and large wetlands located within and adjacent to this potential development area. Site is currently used for a mixture of pasture and cropping/ horticulture. Redevelopment has the potential to enhance/ expand the biodiversity benefits that could be realised on this site.
Tarukenga	2 - Land is largely unfragmented but there are topography challenges in parts that would need to be addressed to enable industrial development.	1 - The site is of a strategic scale but is isolated from existing complimentary land use activities. Not on a strategic route which links the site with the Port of Tauranga.	3 - Limited flooding impacts within the substation area. Likely to be good soils for development. Relatively unconstrained and site size provides room for detention.	3 - Some LUC 3 land identified on the site but this is largely concentrated in and around the substation.	3 - Sites adjacent to the Kōmutumutu Stream SNA. Development would need to avoid this and has the potential to enhance biodiversity values through further stream margins planting.

Assessment:	Green	Orange	Red	No-go	
Scoring:	3 or 4	1 or 2	-1	Not scored / area ruled out	
	The table below applies to scoring for individual business sites. These scores were then totalled to provide an indication of how a site performs relative to one another to assist in an overall understand of the potential advantages and disadvantages of development in these locations. At that point a number of strategic considerations were assessed at a city-wide level e.g. whether the scenario provided sufficient capacity, NPS-HPL considerations, affordability considerations and balance/colocation of residential to employment. The FDS outcomes were used to guide this stage of the assessment.				
Statutory link Assessment considerations	Te mana o te Wai NPSFM objectives and policies	Infrastructure (three waters) NPSUD Objective 6(a, s7(b)	Infrastructure (transport) NPSUD Objective 6(a, s7(b)	Infrastructure (transmission/ energy) NPSUD Objective 6(a, s7(b)	Other significant constraints Section 6(b) for ONLs & ONFs
	Green = the growth area has none to low impacts on freshwater and the impact can be managed	Green = the growth area can be serviced by infrastructure is readily available and/or only minor upgrades are required	Green = the growth area has good access to the strategic freight network with no or minimal upgrades in place.	Green = the growth area can be serviced by infrastructure and/or only minor upgrades are required	Green = the growth area has no other constraints
	Orange = the growth area has has a moderate impact on freshwater and the impact can be managed	Orange = the growth area can be serviced by infrastructure with moderate upgrades required to service the growth area	Orange = the growth area has moderate access to the strategic freight network, with upgrades in place.	Orange = the growth area can be serviced by infrastructure with moderate upgrades required to service the growth area	Orange = the growth area is moderately constrained
	Red = the growth area has potentially significant negative impacts on freshwater that cannot be mitigated	Red = no infrastructure is available and significant investment will be required to service the growth area	Red = the growth area has poor access to the strategic freight network and/or is otherwise prohibitively expensive to service.	Red = no infrastructure is available and significant investment will be required to service the growth area (e.g. new sub-station)	Red = the growth area is significantly constrained
Stembridge Road	3 - Potential benefits in improved water quality through removal of stock from the site. Urbanisation has the potential to generate additional contaminants but these could be managed through appropriate on-site treatment prior to discharge.	3 - Water supply: within Ngongotahā water supply area (source - Taniwha Spring: current consent = 7,000 m3/day; Average Daily use: 3,200 m3; Peak Factor: 1.5). Some spare capacity in the source. Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. Local upgrade might be required. Wastewater (WW): Outside current WW service area but adjacent to WW catchment 139 (Gravity system) . Some spare capacity in the network. Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. New pump station within the development area and local upgrade to reticulation might be required. Stormwater: Assume stormwater management by on site detention. A 3m deep x 20m wide pit that will take flood water in 100 year event planned towards back end of site.	2 - New roading connections or minor upgrades may be required to the State Highway (SH5) due to the nature and scale of potential commercial development and would need to be funded by the developer.	4 - No know issues with transmission infrastructure in this location.	3 - Pylon and transmission line will impact on potential yield. Within the Esplanade Priority Acquisition Waterbody Overlay.
Tamarahi	3 - Potential benefits in improved water quality through removal of stock from the site. Urbanisation has the potential to generate additional contaminants but these could be managed through appropriate on-site treatment prior to discharge.	3 - Water supply: within Ngongotahā water supply area (source:Taniwha Spring). Some spare capacity in the source. Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. Local upgrade to reticulation might be required. Wastewater: Outside current WW svce area but adjacent to WW catchments 117 & 120 (Gravity system) . Some spare capacity in the network. Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. New pump station and local upgrade might be required. Stormwater: Assume stormwater management by on site detention	2 - New roading connections or minor upgrades may be required to the State Highway due to the nature and scale of potential commercial development and this would need to be funded by the developer.	4 - No know issues with transmission infrastructure in this location.	4 - No other constraints identified.
Agrodome	3 - Potential benefits in improved water quality through removal of stock from the site. Urbanisation has the potential to generate additional contaminants but these could be managed through appropriate on-site treatment prior to discharge.	3 - Water supply: Outside Ngongotahā water supply area (source:Taniwha Spring) but near existing network. Some spare capacity in the source. Supply to this area subject to iwi agreement. If no agreement from iwi option is independent water supply. Connection to reticulation network TBC by Infrastructure Planning, local upgrade might be required. Wastewater: Existing WW connection to Agrodome (catchment 146 - Gravity system). Some spare capacity in the network for development expansion. Connection TBC by Infrastructure Planning, local upgrade might be required. Stormwater: Assume stormwater management by on site detention	2 - New roading connections or minor upgrades may be required to the State Highway due to the nature and scale of potential commercial development and would need to be funded by the developer.	4 - No know issues with transmission infrastructure in this location.	3 - Pylon and transmission line will impact on potential yield. Within the Esplanade Priority Acquisition Waterbody Overlay.
State Highway 5 East	2 - Minimal opportunities for enhancement to water quality. Neutral impact. On-site treatment/ detention will be required.	4 - Water supply: Area between the boundaries of the Central and Ngongotahā supply area. (source:Karamu Takina Spring and Taniwha Spring) but near trunk main connecting Ngongotahā and Central network. Some spare capacity in the sources. Connection to this area to the Ngongotahā supply or central supply is subject to iwi agreement. Connection to reticulation network TBC by Infrastructure Planning (Ngongotahā or Central?). Wastewater: Outside current WW service area but adjacent to WW catchment 112 & 178 (Gravity system). Some spare capacity in the network. Connection TBC by Infrastructure Planning, new pump station and local upgrade might be required. Stormwater: Assume stormwater management by on site detention	1 - New roading connections or minor upgrades may be required to the State Highway due to the nature and scale of potential commercial development and would need to be funded by the developer. Potential to tie in with existing bus route between Ngongotahā and Rotorua.	4 - No know issues with transmission infrastructure in this location.	4 - No other constraints identified.
State Highway 5 South	3 - Potential benefits in improved water quality through removal of stock from the site. Urbanisation has the potential to generate additional contaminants but these could be managed through appropriate on-site treatment prior to discharge.	4 - Water supply: Outside the Ngongotahā water supply area (source:Taniwha Spring) but near existing network. Some spare capacity in the source. Connection of this area to Ngongotahā water supply is subject to iwi agreement. Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. Local upgrade might be required. Wastewater: Adjacent to WW catchment 112 & 139 (Gravity system). Some spare capacity in the network. Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. New pump station & local upgrade might be required. Stormwater: Assume stormwater management by on site detention	1 - New roading connections or minor upgrades may be required to the State Highway due to the nature and scale of potential commercial development and would need to be funded by the developer.	4 - No know issues with transmission infrastructure in this location.	3 - Pylon and transmission line will impact on potential yield.
State Highway 5 West	3 - Potential benefits in improved water quality through removal of stock from the site. Opportunities for slope stabilisation through planting and treatment of stormwater run-off.	3 - Water supply: Outside the supply area between the boundaries of the Central and Ngongotahā supply area. (source:Karamu Takina Spring and Taniwha Spring) but near trunk main connecting Ngongotahā and Central network. Some spare capacity in the sources. Connection of this area to either Ngongotahā or Central water supply is subject to iwi agreement. Connection to reticulation network TBC by Infrastructure Planning (Ngongotahā or Central?). Wastewater: Adjacent to WW catchment 112 & 178 (Gravity system). Some spare capacity in the network. Connection TBC by Infrastructure Planning, new pump station and local upgrade might be required. Stormwater: Assume stormwater management by on site detention	1 - New roading connections or minor upgrades may be required to the State Highway due to the nature and scale of potential commercial development and would need to be funded by the developer. Potential to tie in with existing bus route between Ngongotahā and Rotorua.	4 - No know issues with transmission infrastructure in this location.	3 - Pylon and transmission line will impact on potential yield.
Gee Road West	3 - Potential benefits in improved water quality through removal of stock from the site. Urbanisation has the potential to generate additional contaminants but these could be managed through appropriate on-site treatment prior to discharge.	3 - Part of the 2021 Master plan, water and sewer connection available. Stormwater: assumed storm flow management through onsite detention. Water supply availability is subject to roll over of current consent (Waipa Spring existing consent: 9,504 m3/day). Average daily use: 4,800 m3, Peak factor 1.7.	3 - Cycling infrastructure linking Whareniui to the City Centre currently under development. This would need to be extended further to serve this area. New roading connections and upgrades to key intersection of the State Highway may be required due to the nature and scale of potential development and would be funded by the developer(s). Significant growth in this area and Eastside more broadly would likely need support from increased bus frequencies and/ or new bus routes.	2 - Heavily constrained power supply, may not be sufficient to accommodate existing scale of development already enabled.	3 - Within the Esplanade Priority Acquisition Waterbody Overlay and Rotorua Caldera Rim Overlays - Less Sensitive Landscape Area.
Eastgate South	3 - Potential benefits in improved water quality through removal of stock from the site. Urbanisation has the potential to generate additional contaminants but these could be managed through appropriate on-site treatment prior to discharge.	3 - Part of the 2021 Master plan, water and sewer connection available. Stormwater: assumed storm flow management through onsite detention. Water supply availability is subject to roll over of current consent (Waipa Spring existing consent: 9,504 m3/day). Average daily use: 4,800 m3, Peak factor 1.7.	3 - Cycling infrastructure linking Whareniui to the City Centre currently under development. This would need to be extended further to serve this area. New roading connections and upgrades to key intersection of the State Highway may be required due to the nature and scale of potential development and would be funded by the developer(s). Significant growth in this area and Eastside more broadly would likely need support from increased bus frequencies and/ or new bus routes.	2 - Heavily constrained power supply, may not be sufficient to accommodate existing scale of development already enabled.	3 - Within the Esplanade Priority Acquisition Waterbody Overlay.
Eastgate North	3 - Potential benefits in improved water quality through removal of stock from the site. Urbanisation has the potential to generate additional contaminants but these could be managed through appropriate on-site treatment prior to discharge.	3 - Part of the 2021 Master plan, water and sewer connection available. Stormwater: assumed storm flow management through onsite detention. Water supply availability is subject to roll over of current consent (Waipa Spring existing consent: 9,504 m3/day). Average daily use: 4,800 m3, Peak factor 1.7.	2 - New roading connections or minor upgrades may be required to the State Highway, due to the nature and scale of potential commercial development and would need to be funded by the developer. May be able to be served by public transport if significant growth eventuates in this area.	2 - Heavily constrained power supply, may not be sufficient to accommodate existing scale of development already enabled.	3 - Within the Esplanade Priority Acquisition Waterbody Overlay.
Puarenga	2 - Minimal opportunities for enhancement to water quality. Neutral impact. On-site treatment/ detention will be required.	2 - Potential efficiencies in servicing due to proximity to Peka Block. More detailed assessment required.	2 - New roading connections or minor upgrades may be required to the State Highway due to the nature and scale of potential commercial development and would need to be funded by the developer.	4 - No know issues with transmission infrastructure in this location.	4 - No other constraints identified.
Airport Future Development Precinct (already zoned industrial)	2 - Minimal opportunities for enhancement to water quality. Neutral impact. On-site treatment/ detention will be required.	3 - Part of the 2021 Master plan, water and sewer connection available. Stormwater: assumed storm flow management through onsite detention. Water supply availability is subject to roll over of current consent (Waipa Spring existing consent: 9,504 m3/day). Average daily use: 4,800 m3, Peak factor 1.7.	2 - New roading connections or minor upgrades may be required to the State Highway due to the nature and scale of potential commercial development and would need to be funded by the developer.	2 - Heavily constrained power supply, may not be sufficient to accommodate existing scale of development already enabled.	3 - Some restrictions on building height to avoid OLS.
Airport Precinct A - (already zoned industrial)	2 - Minimal opportunities for enhancement to water quality. Neutral impact. On-site treatment/ detention will be required.	3 - Part of the 2021 Master plan, water and sewer connection available. Stormwater: assumed storm flow management through onsite detention. Water supply availability is subject to roll over of current consent (Waipa Spring existing consent: 9,504 m3/day). Average daily use: 4,800 m3, Peak factor 1.7.	2 - New roading connections or minor upgrades may be required to the State Highway due to the nature and scale of potential commercial development and would need to be funded by the developer.	2 - Heavily constrained power supply, may not be sufficient to accommodate existing scale of development already enabled.	3 - Some restrictions on building height to avoid OLS.
Airport Precinct B - (already zoned industrial)	2 - Minimal opportunities for enhancement to water quality. Neutral impact. On-site treatment/ detention will be required.	3 - Part of the 2021 Master plan, water and sewer connection available. Stormwater: assumed storm flow management through onsite detention. Water supply availability is subject to roll over of current consent (Waipa Spring existing consent: 9,504 m3/day). Average daily use: 4,800 m3, Peak factor 1.7.	2 - New roading connections or minor upgrades may be required to the State Highway due to the nature and scale of potential commercial development and would need to be funded by the developer.	2 - Heavily constrained power supply, may not be sufficient to accommodate existing scale of development already enabled.	3 - Some restrictions on building height to avoid OLS.
Tikitere	2 - Potential benefits in improved water quality through removal of stock from the site. Urbanisation has the potential to generate additional contaminants but these could be managed through appropriate on-site treatment prior to discharge.	1 - Water supply: Outside Eastern water supply area. Supply is subject to current consent roll over (Waiupa Spring: 9,504 m ³ /day & Hemo Spring current consent: 2,230 m ³ /day not being cancelled). Specific requirement to enable connection to reticulation network will be confirmed as part of the resource consent application process. Connection to network if supply okay could require trunk main upgrade. Consent being reviewed in Dec 23. Hamurana water source (rewarewa Spring) potential future source to supply the Eastside. This will be dependent on iwi agreement. Wastewater: Could connect to Eastern sewer trunk main. Stormwater: potential direct discharge to lake assuming required treatment is complied.	0 - New roading and cycle connections would need to be funded by the developer(s). May require an upgrade to intersection of State Highway depending on access arrangements. Challenging to efficiently serve with public transport.	2 - Heavily constrained power supply, may not be sufficient to accommodate existing scale of development already enabled.	3 - Several potential constraints which could impact on development. These include Outstanding Natural Feature or Landscape (along the lakefront), and within the Esplanade Priority Acquisition Waterbody Overlay. Development has the potential to support or enhance the values associated with these constraints. Some restrictions on building height to avoid OLS.
Tarukenga	3 - Potential benefits in improved water quality through removal of stock from the site. Urbanisation has the potential to generate additional contaminants but these could be managed through appropriate on-site treatment prior to discharge.	2 - Standalone systems for water and wastewater (onsite) are likely to be more feasible than extending reticulation. Not potentially a major issue depending on specific type of industry.	0 - New roading and cycle connections would need to be funded by the developer(s). May require an upgrade to intersection of State Highway depending on access arrangements. Unlikely to ever be served with public transport.	4 - No know issues with transmission infrastructure in this location.	2 - Existing substation and several transmission corridors pass through the site. This would impact on site layout, building heights and potential uses.

Appendix 4 – Market Economics Capacity Report



Rotorua Future Development Strategy Economic Assessment

Background Report

12 April 2023 – Final

m.e
consulting



Rotorua Future Development Strategy Economic Assessment

Background Report

Prepared for
Rotorua Lakes Council

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1 Introduction

Market Economics (M.E) have been commissioned by Rotorua Lakes Council (RLC or Council) to undertake an economic assessment of potential land use changes intended to provide for long-term residential and business growth across the district (spatial growth scenarios). This is required to inform the Rotorua Future Development Strategy (FDS), which is being developed in accordance with the National Policy Statement – Urban Development 2020 (NPS-UD)¹. The spatial growth scenarios have been identified by RLC, supported by Barker & Associates (B&A).

RLC (a tier 2 territorial authority) is required to provide at least sufficient development capacity to meet anticipated projected *urban* demand for residential dwelling and business growth over the long-term (i.e. a 30 year outlook), including an allowance for an additional margin of demand of 15% over the long-term to help ensure a competitive urban land market. This requirement is set out in policy 2 of the NPS-UD. Under the RMA, section 31(aa), all territorial authorities need to ensure that there is sufficient development capacity in respect of housing and business land to meet the expected demands of the district overall, and not limited to the urban environment. A FDS can therefore respond to both these requirements.

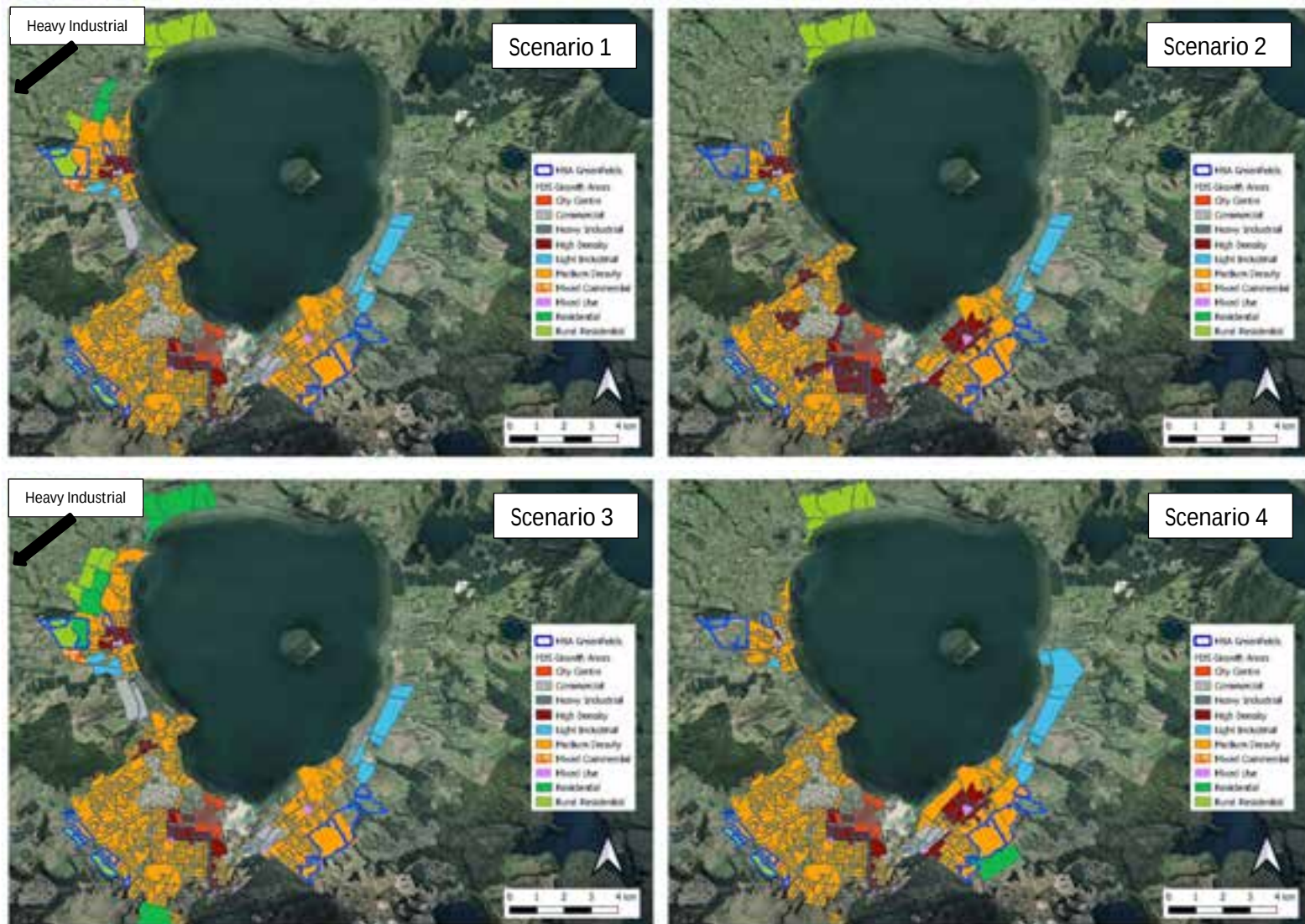
RLC have developed 4 preliminary long-term spatial growth scenarios that identify growth areas for business and residential development (in different combinations). These have been supplied to M.E for the purpose of this report. The scenarios are mapped in Figure 1-1 below.² It is understood that the preferred spatial growth scenario selected for the Draft FDS (for public consultation) may be a variation of one of these preliminary spatial growth scenarios, and therefore one that M.E has not specifically tested at the time of preparing this report.

The main aim of this report is to assess how the 4 preliminary FDS spatial growth scenarios impact long-term development capacity, relative to the development capacity estimated at the time of RLC's Housing and Business Capacity and Demand Assessment 2021 (HBA 2021) which was based on a combination of operative zoning and future growth areas identified in the 2018 Spatial Plan. In doing so, M.E is able to assess how the preliminary FDS spatial growth scenarios are likely to remedy any long-term shortfalls of capacity previously identified in the HBA. The assessment builds off the existing base of capacity and demand modelling undertaken by M.E for the HBA 2021 (and subsequent Housing for Everyone – Plan Change 9 (PC9)).

¹ NPS-UD Clause 3.12 and Clause 4.1.

² Note, the extent mapped in Figure 1-1 does not show existing heavy industrial zones south of the urban environment.

Figure 1-1 – Summary of Preliminary FDS Spatial Growth Scenarios by Zone



1.1 Executive Summary

This report considers the 4 preliminary spatial growth scenarios separately for business and residential areas. Key metrics for these scenarios are summarised in Table 1-1. They include comparisons of plan enabled housing capacity (that is, net additional dwellings theoretically able to be delivered over the long-term by a combination of operative, proposed and FDS identified growth areas). The plan enabled capacity in each scenario has been calculated in the same way as in the HBA 2021 and is a significant increase on plan enabled capacity estimated at the time of the HBA report. A large portion of this increase is attributed to the capacity subsequently enabled by PC9 and the addition of the Medium Density Residential Standards (MDRS). The FDS spatial growth scenarios contribute additional long-term capacity over and above PC9 and the MDRS.

Another key metric included in this assessment is commercially feasible capacity (that is, the amount of plan enabled capacity that is estimated to be profitable to deliver by a commercial (profit driven) developer). This assessment applies the same methodology as used in the HBA 2021, but with some more conservative assumptions applied based on input from key stakeholders. The final key metric assessed is vacant development capacity for business land uses (measured in hectares). Unlike housing, this is not influenced by PC9 and the spatial growth scenario generate substantial additional capacity for business growth over the long-term compared with the situation at the time of the HBA 2021 (which relied on the 2018 Spatial Plan for long-term identified growth areas).

Table 1-1 – Summary of Key Long-Term Capacity Results for Housing and Business by Scenario

	HBA 2021	Scenario 1	Scenario 1	Scenario 1	Scenario 1
Long-Term (2020-2050) Plan Enabled Capacity (Net Additional Dwellings)					
Max Infill or Redevelopment	21,500	141,800	203,200	145,500	154,100
Total Greenfield	8,300	10,700	7,900	18,700	13,100
Total Capacity	29,800	152,500	211,100	164,200	167,200
Long-Term (2020-2050) Commercially Feasible Capacity (Net Additional Dwellings)*					
Max Infill or Redevelopment		34,100	34,800	34,100	33,700
Total Greenfield		8,300	4,200	12,800	6,100
Total Capacity		42,400	39,000	46,800	39,800
Long-Term (2020-2050) Business Land Capacity (Ha) **					
Commercial	37	85-98	44	98-111	54-67
Retail	13	45-50	26	53-57	35-40
Industrial	57	247-263	150	278-296	220-237
Tourist Accommodation	7	7	7	7	7
Total	115	384-411	226	454	333

* Based on more conservative Model Run B feasibility assumptions developed for this FDS assessment. Not directly comparable with HBA 2021 results.

** Based on Alternative Capacity Scenarios. Ranges relate to different approaches for the Ngapuna Business Area.

FDS spatial growth scenario housing capacity includes the contribution made by PC9 and MDRS which has been applied subsequent to the HBA 2021.

In addition to assessing each of the spatial growth scenarios against these key metrics, this report includes assessment of the implied sufficiency of each scenario to meet long-term demand for housing and business growth (i.e. demand relative to capacity). This is key to understanding how the scenarios address issues of insufficiency identified in the HBA 2021. While the approach applied for business land sufficiency mirrors that used for the HBA 2021, sufficiency for housing capacity is not directly comparable and is more



indicative - based on assessment of 'the reasonableness' of the take-up rates of plan enabled and commercially feasible capacity required to meet demand by location and dwelling type rather than a detailed assessment of infrastructure served and reasonably expected to be realised capacity (as required for HBAs). We note that while the timing of planned infrastructure in greenfield areas has been carried over from the HBA 2021 (where still relevant), infrastructure capacity in existing urban areas for the growth scenarios is being assessed separately by Council.

Brief commentary is also provided in the report on the urban form and housing affordability implications of the spatial growth scenarios and the high-level suitability of the identified business growth areas for development.

1.1.1 Spatial Growth Scenarios – Business Land

The business growth areas identified for the spatial growth scenarios represent mainly new greenfield areas outside the current urban environment boundary, as well as some long-term changes (relative to how they were assessed in the HBA 2021) to operative business zones (which would require large-scale redevelopment) and growth areas previously identified in the 2018 Spatial Plan.

The long-term capacity of all areas to accommodate future employment growth depends on the zoning indicatively assigned to each growth area (as it provides for industrial, commercial, retail and tourist accommodation activities), as well as the vacant developable land area. For greenfield areas, this includes a reduction in the gross zone area to account for future roads and other non-developable land areas. For areas previously modelled for the HBA 2021, this includes the vacant sites identified as at January 2020, some of which may since have been taken up by development. As capacity is still being compared with demand for business land area with a 2020 base year (from the HBA), this maintains a consistent comparison as agreed with Council, but it is acknowledged the analysis is not a snapshot as at today.

The spatial growth scenarios provide for a range of new business locations and choice in the market and will increase the competitiveness of the market by bringing in new landowners. The indicative zoning assumptions assigned to each area respond well to the key finding from the HBA 2021, including the need to identify more land suitable for industrial activities, as well as trade retail and other LFR. The scenarios achieve this through a combination of more mixed business areas, light industrial areas and an additional heavy industrial area (Tarukenga) in two of the scenarios (complemented by some additional City Entranceway Tourism zone).

The quantum of capacity provided is an improvement on the current 2018 Spatial Plan greenfield growth areas, and in some cases provides a large increase in long-term capacity for industrial land use, depending on which areas are included in each preliminary spatial growth scenario. Some spatial growth scenarios include Māori Land which may impact their development potential in the long-term and scenarios which rely on these locations without also providing fee-simple growth areas may risk providing insufficient capacity to meet projected demand.

Scenarios 1 and 3 would provide at least sufficient long-term capacity to ensure that demand for all categories of business land use can be met in future. This includes providing sufficient capacity to cater for the potential transfer of some heavy industrial activities currently located in Light Industrial Zones *and* provide for some further heavy industrial demand growth.



Scenario 4 provides much less capacity for business growth compared to Scenarios 1 and 3, but relatively more than Scenario 2. However, it includes a large share of Māori land and if this capacity is removed for analysis purposes (to be conservative) it may result in insufficient capacity for long-term commercial land demand, and only marginally sufficient capacity for long-term retail demand across the urban environment. Because Scenario 4 does not provide any new Heavy Industrial Zone capacity, it would not facilitate the redevelopment of the Ngapuna business area (or allow for the likes of the Fairy Springs sawmill to relocate). For these combined reasons, Scenario 4 is not recommended in its current form.

Scenario 2 provides the least capacity for growth and while indicatively providing sufficient capacity for retail, tourist accommodation and industrial land demand, the surplus for retail demand is very low and with the exclusion of the small amount of Māori land in this scenario, would trigger insufficient capacity for commercial land demand in the long-term (if being conservative). Scenario 2 also excludes any net additional Heavy Industrial Zone capacity and while this scenario does not include any change in the Ngapuna Business area that may incentivise existing heavy industrial businesses to relocate, the operative Heavy Industrial Zone may still not be sufficient or suitable to allow the Fairy Springs Sawmill to relocate and provide for any long-term growth in heavy industrial employment. For these combined reasons, Scenario 2 is also not recommended in its current form.

The scale of the net surplus of industrial capacity provided by spatial growth Scenarios 1 and 3, relative to long-term demand for total industrial activity, may provide scope to remove *some* greenfield growth areas in the refining of the scenarios for the FDS 2024. This could focus on reduction in areas providing for light industrial activities as careful consideration would need to be given to any reductions in Heavy Industrial Zone capacity to ensure that at least sufficient fee-simple capacity is provided to achieve a more desirable concentration of current and future heavy industrial activities while also providing capacity for long-term growth.

1.1.2 Spatial Growth Scenarios – Residential Land

The residential growth areas identified for the spatial growth scenarios represent a mix of greenfield and up-zoned areas outside the current urban environment boundary, as well as some long-term changes (relative to how they were assessed in the HBA 2021 or Plan Change 9 (PC9)) to operative residential and business zones (which would require large-scale redevelopment), and greenfield growth areas previously identified in the 2018 Spatial Plan (both up-zoned and down-zoned). A key feature of the spatial growth scenarios for residential land use, is provision for further long-term intensification of existing urban areas over and above the intensification achieved by PC9 in the short-medium term.

The long-term capacity of all areas to accommodate future dwelling growth depends on the zoning indicatively assigned to each growth area (as it provides for different dwelling typologies), the infill or redevelopment land area in those zones, and the count of existing dwellings. For greenfield (and under-utilised urban land) areas, this includes a reduction in the gross zone area to account for future roads and other non-developable land areas. For areas previously modelled for the HBA 2021, this includes the vacant sites for infill and greenfield development as estimated at the time of the HBA 2021. It is acknowledged that some of that land may since have been taken up by residential development. This minor limitation does not impact on conclusions of this assessment. Capacity is compared with demand for residential dwellings with a 2021 base year (up from a 2020 base year applied in the HBA).



The spatial growth scenarios provide for a range of new residential locations (including densities by location) and choice in the market, and will increase the competitiveness of the market by bringing in new landowners. As with PC9 and the introduction of the MDRS to general suburban residential areas, the indicative zoning assumptions assigned to each area in the FDS spatial growth scenarios respond well to the key findings from the HBA 2021, including the need to provide at least sufficient development capacity to meet dwelling demand and identify more land suitable for attached housing typologies in the long-term.

All spatial growth scenarios provide a substantially greater net increase in long-term plan enabled brownfield capacity compared with the impact of the 2018 Spatial Plan thanks to further upzoning and intensification (although PC9 also contributes to this net change). The intensification patterns created by some spatial growth scenarios (but especially Scenario 2) are widespread, with High Density Residential zoning occurring across multiple nodes. Relative to demand for high density residential dwellings in the long-term, this may unduly dilute the take up these redevelopment opportunities with associated opportunity costs for a well-functioning urban environment. Such outcomes are discussed further in M.E's economic assessment for PC9. M.E supports spatial growth scenarios that concentrate most high density intensification around the CBD.

The quantum of dwelling capacity provided across the spatial growth scenarios is also an improvement on the current 2018 Spatial Plan greenfield areas in all but Scenario 2 (which reduces long term greenfield capacity in lieu of greater intensification of the existing urban area). In all cases, the preliminary spatial growth scenarios provide a large increase in total long-term housing capacity in combination with PC9 and MDRS, and in net.

If residential supply over the long-term is strongly weighted towards urban expansion areas (greenfield and including under-utilised existing urban land), Scenario 2 may potentially provide insufficient capacity for this pattern of demand in the long-term (based on capacity that is considered commercially feasible). However, under more balanced demand scenarios, or supply weighted towards intensification opportunities, Scenario 2 may also prove to be sufficient. On balance, Scenario 2 is not recommended in its current form as there may be some need for further greenfield land in the long-term on the basis of ensuring choice and location options.

1.2 Report Structure

The assessment contained within this report is structured as follows:

- Section 2 examines how the preliminary spatial growth scenarios provide for long-term urban business growth.
- Section 3 examines how they provide for long-term urban housing growth.
- Section 4 considers demand and capacity for rural lifestyle properties. We note that this was not previously addressed in the HBA as the scope of the HBA was limited to the urban environment only.
- Section 5 considers demand and capacity for rural villages and lakeside settlements. Again, this was not previously addressed in the HBA.



The analyses in sections 4 and 5 are not in response to the 4 preliminary spatial growth scenarios (like in sections 2 and 3) but relate to work carried out by M.E early in the FDS project, and before the preliminary spatial growth scenarios were developed. The purpose was to provide some initial guidance to Council on the potential scope of the FDS for areas outside the urban environment, indicating whether additional capacity might be needed to serve these communities. They are copied here for completeness.

Appendix 1 contains maps of the business growth areas/zones modelled in the capacity analysis for Section 2.

2 Providing for Urban Business Growth

This section sets out the modelling carried over from the HBA 2021 and the new modelling and assessment carried out using consistent approaches to the HBA 2021 of 15 indicative long-term business greenfield growth areas identified as part of the FDS development. Those long-term growth areas have been combined into 4 preliminary spatial growth scenarios, which variously turn some areas on and turn others off. An update of the HBA 2021 sufficiency analysis that incorporates the preliminary FDS spatial growth scenarios instead of the Spatial Plan 2018 long-term growth areas previous modelled is included. The 15 indicative FDS growth areas have also been assessed for suitability in the Multi Criteria Analysis (MCA) Framework developed for the HBA 2021.

2.1 Demand for Additional Business Land 2020-2050

The approach and assumptions for estimating demand for additional business in Rotorua's urban environment between 2020 and 2050 is set out in Section 11 of the HBA 2021 and is not repeated here. Key results are summarised in Table 2-1 below.

Table 2-1: Projected Land Demand in Urban Business Zones by Land Use Category 2020-2050³

Category	Developable Land Demand (ha)					
	Cumulative			Cumulative with Competitiveness Margin		
	2020-2023	2020-2030	2020-2050	2020-2023	2020-2030	2020-2050
	Short Term	Medium Term	Long Term	Short Term	Medium Term	Long Term
Retail	1.8	5.0	9.2	2.2	6.0	10.8
Commercial	4.4	13.4	35.1	5.2	16.1	41.0
Accommodation	1.0	2.9	5.2	1.2	3.4	6.2
Industrial	7.6	18.0	30.7	9.2	21.6	36.2
Total	14.8	39.3	80.2	17.7	47.1	94.1

Source: M.E Rotorua Urban Business Land Demand Model (HBA 2021)

Projected demand within business enabled zones in defined urban environment only (as defined by SA1 2018)

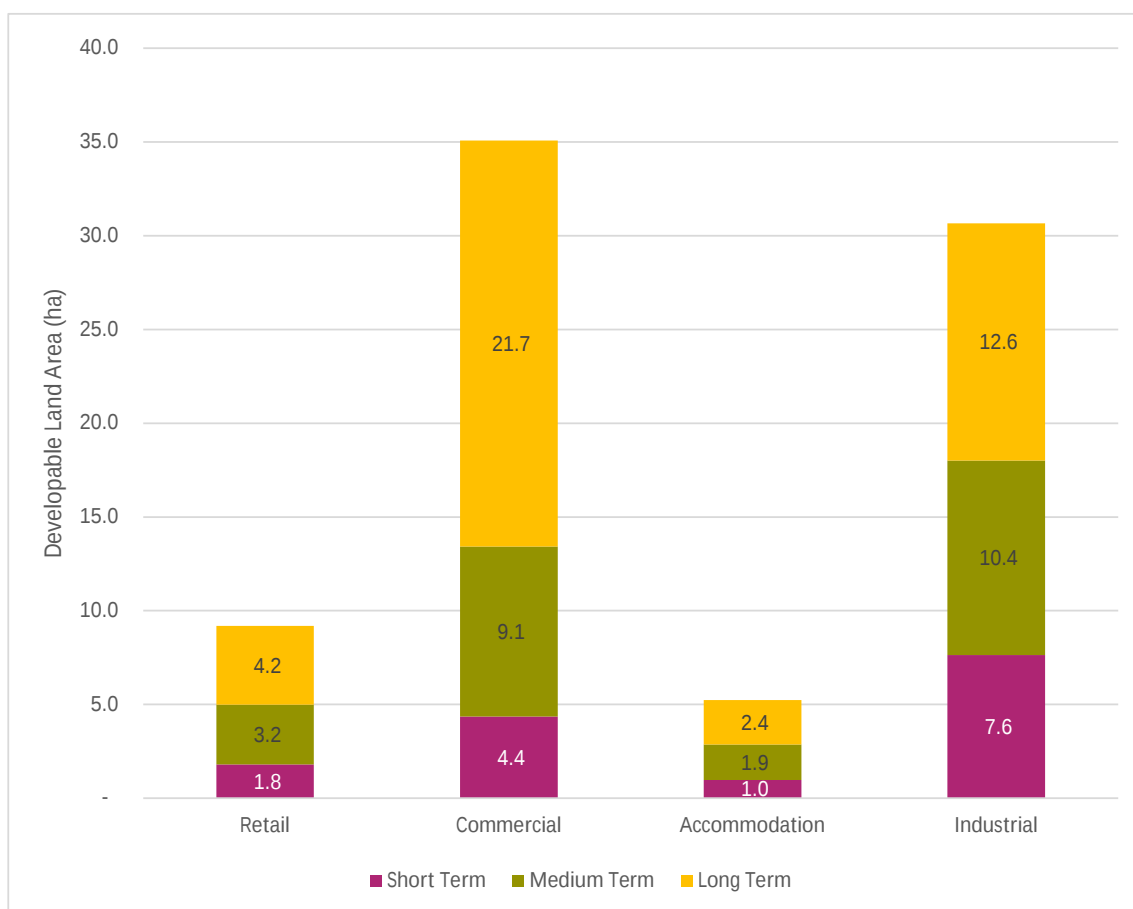
The combined demand for zoned land to accommodate growth of retail shop space in the urban environment is estimated at 9.2ha over the long-term excluding the competitiveness margin, and 10.8ha including the competitiveness margin. Demand for land to accommodate growth in all types of commercial activity is 35.1ha by 2050 (excluding the margin), and 41.0ha including the margin. This is followed closely by total industrial land use demand of 30.7ha (excluding the margin), and 36.2ha including the margin. Last,

³ Copied from Table 11.4 in the HBA 2021 Report.

demand for anticipated growth in tourist accommodation is estimated at 5.2ha in the long-term (excluding the margin), and 6.2 including the margin.

These results (excluding the margin) are also summarised in Figure 2-1 which highlights where the demand is focussed in the short, medium and long term in Rotorua's urban business zones, with industrial land being of greatest demand in the short term, industrial and commercial land being of greatest demand in the medium term and commercial land being the greatest overall demand in the long term.

Figure 2-1 - Projected Land Demand in Urban Business Zones by Land Use Category (Excl. Margin)⁴



A few key points to note in interpreting the demand analysis from the HBA 2021:

- The demand for additional business land area should be considered in terms of developable zone area and not gross zone area as the ratios applied relate to site coverage and exclude public land (roads and landscape/reserve areas). This is particularly relevant as new zone area is often (but not always) created as greenfield land in what was previously rural zoning. When planning for new business zoning to help meet projected demand (such as for the FDS), Council must consider that developable land area equates to around 70% of gross zone area if the land has not already undergone land development. Account has been taken of this in the subsequent capacity assessment to ensure a like-for-like comparison of capacity the HBA demand projections.

⁴ Refer Figure 11.6 in the HBA 2021 Report.

- It is important to note that the HBA demand analysis does not dictate specifically which zones are needed to accommodate projected demand. Across the business enabled zones in the urban environment there are options available to accommodate a mix of building typologies / land uses depending on the rules of the District Plan and the nexus between activities and the typologies used in M.E's model. The capacity analysis below also takes this into account by indicatively applying existing zoning provisions to the long-term business areas identified in the FDS and matching the activities plan enabled in those zones with land use/building typologies that can be aggregated to retail, commercial, tourist accommodation and industrial, as set out in the demand analysis referred to above.

2.2 HBA Long-term Business Capacity

The method for quantifying the developable area of vacant business land in urban business zones is set out in the HBA 2021 and is not repeated here. Vacant capacity was estimated as at June 2021 (when field surveying was completed) for the HBA. This 'snapshot' is most relevant for short-term capacity as this is based on operative zoned land. Due to the fact that Council did not have a proposed district plan (or notified plan changes) at the time of preparing the HBA 2021, short-term business land capacity is also applied for in the medium-term. While the vacant land was surveyed in 2021, it was treated as capacity as at 2020, which was the base year of the demand modelling.

Long-term vacant business capacity in the HBA 2021 was a combination of:

- Medium term capacity in operative zones carried through.
- Some vacant business land zoned in the Operative District Plan that is only plan enabled in the long term. These include the:
 - Residential to Light Industrial Transitional Zone in Fairy Springs. The HBA 2021 assumed this zone remains in residential use in the short-medium term, so only provides business capacity in the long term (assuming redevelopment).
 - Future Community Asset Reserve - Pukehangi Future Community Asset Reserve. As a Future Urban Zone, this would require a zone change to enable (commercial) development, and as such, can only be included in the long term in accordance with NPS-UD guidance.
 - Land that was identified in the Spatial Plan 2018 but not currently zoned for urban development (or had a different operative zone currently). These included:
 - Fenton Entranceway Residential, Visitor Accommodation, Commercial⁵ (providing retail and/or commercial and/or tourist accommodation capacity)
 - Neighbourhood Centres - Eastside Future Neighbourhood Centre Small and Large⁶ – these two centres relate to the greenfield residential area in the Upper Eastside (Ngati Whakaue land) that was identified in the Spatial Plan. The presumption in the past has been that this residential

⁵ This zone is currently Commercial Zone 4 in the ODP. This same area is now subject to rezoning under Plan Change 9 (which gives effect to the shift in land use anticipated by the Spatial Plan).

⁶ This land is currently Rural Working Zone in the ODP.



growth area would potentially be served by two neighbourhood centre zones (providing capacity for retail and/or commercial development).

- Ngongotahā South – classified as City Entranceway Mixed Use Zone for the purpose of the HBA 2021 (providing retail and/or commercial and/or industrial capacity).
- Eastside Future Business Park – classified Eastgate Business Park Zone for the purpose of the HBA 2021 (providing retail and/or commercial and/or industrial capacity).

2.3 FDS Changes to Long-term Business Capacity

This section sets out the assumptions used to quantify the developable business land capacity of indicative long-term growth areas identified as part of the FDS. There are 15 discrete business areas⁷ that have been identified by B&A and Council⁸ that are associated with material changes in land use and development. These are combined into 4 different preliminary spatial growth scenarios (i.e. four different directions for where long-term business (and residential) growth could occur). The maps for these scenarios are included in Appendix 1 of this report.

Even though the purpose of the FDS is to replace the Spatial Plan 2018 as a long-term growth strategy, some of the Spatial Plan locations that were modelled as long-term capacity in the HBA 2021 listed above have been retained in this FDS capacity modelling for the long-term. This is because they have not been specifically referred to as part of the preliminary FDS spatial growth scenarios (in relation to business land) but M.E has assumed that they would still to be retained in the overall FDS growth strategy. The Spatial Plan 2018 long-term growth areas that we retain in this FDS long-term capacity modelling include:

- Fenton Entranceway Residential, Visitor Accommodation, Commercial⁹ (providing retail and/or commercial and/or tourist accommodation capacity)¹⁰.
- Neighbourhood Centres - Eastside Future Neighbourhood Centre Small and Large.

The remaining two long-term only greenfield growth areas that were identified in the 2018 Spatial Plan and original HBA capacity modelling *are* however affected by the FDS business scenarios. These are:

- Ngongotahā South – classified as City Entranceway Mixed Use Zone for the purpose of the HBA (providing retail and/or commercial and/or industrial capacity).
- Eastside Future Business Park – classified Eastgate Business Park Zone for the purpose of the HBA (providing retail and/or commercial and/or industrial capacity).

As it happens, both of these areas have been selected as potential future growth areas within the spatial growth scenarios (in relation to business land):

⁷ The names assigned to these areas are shown in bold in this section.

⁸ And supplied to M.E in the form of polygons in GIS files.

⁹ This zone is currently Commercial Zone 4 in the ODP. This same area is now subject to rezoning under Plan Change 9 (which gives effect to the shift in land use anticipated by the Spatial Plan).

¹⁰ Plan Change 9 includes intensification of the Fenton Street corridor (essentially giving effect to the rezoning assumptions that were applied for the purpose of the HBA).

- Ngongotahā South is renamed to **Tamarahi** and assigned a Light Industrial Zone instead for modelling purposes (providing retail and/or commercial and/or industrial capacity).
- Eastside Future Business Park is renamed **Eastgate South**, has a smaller extent, but switches to Light Industrial Zone for modelling purposes (providing retail and/or commercial and/or industrial capacity).¹¹

The FDS spatial growth scenarios include some new potential greenfield business growth areas that go beyond those identified in the Spatial Plan 2018. These are all net additional potential capacity (noting that the different preliminary spatial growth scenarios for the FDS include some but not others (and they should not be interpreted as all potentially providing capacity at the same time)¹². The new growth areas included in long-term capacity modelling are (by reporting area¹³):

Eastern Reporting Area:

- **Eastgate North** – assigned Light Industrial Zone for modelling purposes (providing retail and/or commercial and/or industrial capacity)
- **Tikitere** – in one scenario assigned Light Industrial Zone for modelling purposes (providing retail and/or commercial and/or industrial capacity)
- **Airport Precinct A** – assigned Light Industrial Zone for modelling purposes (providing retail and/or commercial and/or industrial capacity)¹⁴
- **Airport Precinct B** – assigned Light Industrial Zone for modelling purposes (providing retail and/or commercial and/or industrial capacity)

Ngongotahā Reporting Area:

- **Agrodome** – assigned Eastgate Business Park Zone for modelling purposes (providing retail and/or commercial and/or industrial capacity)
- **Stembridge Road** – assigned Light Industrial Zone for modelling purposes (providing retail and/or commercial and/or industrial capacity)
- **State Highway 5 South** – assigned Light Industrial Zone for modelling purposes (providing retail and/or commercial and/or industrial capacity)
- **Stage Highway 5 West** – assigned City Entranceway Tourism Zone (providing retail and/or commercial capacity)

¹¹ The smaller size of the vacant land in this location has a minor effect on its overall scoring in the updated MCA (discussed further below), mainly due to the critical mass of businesses that can co-locate in the zone (with larger areas offering more business advantages than smaller areas – all else being equal).

¹² FDS scenarios are still being refined and may differ from scenarios 1-4 assessed for this report.

¹³ Reporting areas are explained further in the HBA 2021 – the four sub-areas of the urban environment.

¹⁴ Airport Precinct A spans areas zoned a mix of City Entranceway Mixed Use, Light Industrial and Rural in the Operative District Plan. However, any vacant capacity in the two business zones was excluded from the HBA 2021 on the basis that the land would not be available for general commercial/industrial development. Vacant land in FDS Precinct A (and B) is now included based on advice given to M.E that the land could be available for the general market to occupy and is not limited to airport services. No capacity is double counted from the HBA based on this approach.

- **State Highway 5 East** – assigned City Entranceway Tourism Zone (providing retail and/or commercial capacity)
- **Tarukenga** – assigned Heavy Industrial Zone for modelling purposes (providing retail and/or commercial and/or industrial capacity)

Last, the FDS considered changes to one operative Light Industrial Zones in the long-term as follows:

- Light Industrial Ngāpuna – under the FDS scenarios, this is considered for rezoning to provide more of a mixed business area (named **Ngāpuna Business** and assigned the Eastgate Business Park Zone for the purpose of modelling). In the HBA 2021, this existing zone has a small amount of vacant land (8.0ha net developable area). This may be expected to develop in accordance with the new zone, but on its own, the rezoning may not change land use in the rest of the established areas of the zone. However, for the purpose of the capacity modelling, it is assumed that portions of the existing developed area could be redeveloped in the long-term in addition to the vacant capacity. This scenario implies that some current businesses would relocate to take up capacity in other zones to facilitate this redevelopment.¹⁵ Three cumulative variations are modelled:
- One where just the vacant land is developed under the new zone and all other existing businesses stay in place. 60% of this (4.8ha) is estimated to be vacant capacity for industrial activities¹⁶ and the remaining 40% contributes to commercial and retail capacity according to M.E Eastgate Business Park Zone take up assumptions (Alternative Capacity Scenario).
- Second, selected heavy industrial sites relocate elsewhere (this is a transfer of 26.8ha of heavy industrial developable area, but a net transfer of 10.7ha of total industrial capacity).
- The third is where both heavy and light industrial sites relocate elsewhere (this is a transfer of 26.8ha to heavy industrial zoned capacity and 16.4ha to light industrial zoned capacity (sub-total 43.2ha), although 60% of that relinquished capacity might be able to stay in an Eastgate Business Park Zone, so the net transfer of total industrial activity equates to 17.3ha transferred in total).

It is possible that if existing businesses were required to relocate to a different light or heavy industrial zone elsewhere, they may take the opportunity to occupy a larger site than they do now. As such, the transfer of capacity is the minimum required for those businesses to remain in Rotorua (and may be conservative).

The preliminary FDS spatial growth scenarios included a number of business zone locations that are already operative and therefore included in the HBA 2021 as short, medium and long-term vacant capacity (if containing vacant sites). The spatial growth scenarios did not assume any material change in zone provisions for these locations in some or all scenarios. As such, those areas were carried through in the capacity modelling, unless there were other reasons to make adjustments¹⁷. This included the:

¹⁵ In reality, the Eastgate Business Zone rules allow for some light industrial activities, and so some could be retained/re-establish in the rezoned area. The Capacity Model assumes that 60% of the take up of the Eastgate Business Zone will be by light industrial activities. The modelling therefore only relocates the net capacity.

¹⁶ Compared to an assumption of 80% under the Light Industrial Zone.

¹⁷ The Airport Future Development Precinct area identified in the FDS was also excluded from scope on the basis that it would be restricted to airport expansion and would not provide land for the general market to occupy.

- **Puarenga Heavy Industrial** – this is currently modelled as Heavy Industrial Peka Block in the HBA. It is included in all four preliminary FDS scenarios and the modelling for this area is unchanged from the HBA.
- **Waikaraka Street Light Industrial** – this is currently modelled as Light Industrial Ngongotahā Central in the HBA and has a small amount of remaining vacant land (0.3ha developable land area). Under FDS scenarios 1-3 this land is considered for redevelopment for residential purposes. Similar to the Ngāpuna Business rezoning, this could displace the 10.9ha of existing developed sites to alternative light industrial development capacity – allowing the land to be cleared for redevelopment. In scenario 4, the zone is retained as Light Industrial Zone, so all existing businesses stay in place, and just the current vacant capacity is counted in the model as it was in the HBA.
- Suburban centres or City Centre commercial zones (variously named in the HBA 2021 modelling) are not changed in the FDS scenarios in terms of business provisions. M.E has excluded specific mention of them in this report (but their capacity contributes to long-term results as they did in the HBA).

As indicated, in order to model FDS related changes in long-term vacant business land capacity (compared to the original HBA 2021 long-term modelling), an indicative operative zone was assigned by M.E to each FDS growth area. These zoning allocations were agreed to by the wider FDS project team, and are noted in the text above. In this way, the same methodology and assumptions were applied to estimate vacant developable land area for different activities and land uses in each location. For the Alternative Capacity Scenario, this includes assumptions around what share of vacant capacity in different zones is available for industrial, commercial, retail and tourist accommodation development.

Table 2-2 provides a summary of the 15 main FDS business growth / rezoning areas included in the capacity modelling. It shows the gross area of the land identified, and the estimated net developable area, which excludes any sites that can't be developed, and where applicable for large greenfield sites, excludes 30% of gross land area to account for future roading and other landscaping areas. In total, the 15 areas have a gross area of around 690ha and a net developable area of around 526ha based on M.E estimates and assumptions¹⁸. This does however depend on which scenario is being modelling, including which variation is being modelled for Ngāpuna Business.

Table 2-2 also shows the estimated share of the net developable area that is located on Māori Land. On average, 37% of the areas identified and modelled are on Māori Land. The Tikitere future growth area is 100% Māori owned land. The impact of Māori Land on the feasibility of being developed is discussed in the HBA 2021 and is not repeated here. In summary though, it has a greater or lesser impact depending on the zone it is attributed.

¹⁸ This includes assumptions on the land parcels to be included in each area, where the boundary defined by the FDS team did not follow existing parcel boundaries. As discussed for Ngāpuna Business, some of this capacity is redevelopment capacity and not vacant infill capacity.

Table 2-2 – Summary of Gross and Estimated Developable Land Area in FDS Growth Areas That Have Key Changes in Zoning/Land Use

FDS Growth Area****	Gross Area Vacant Area	Estimated Net Developable Vacant Area	Estimated Share on Maori Land	Included in Scenario 1	Included in Scenario 2	Included in Scenario 3	Included in Scenario 4
Agrodome	25.5	17.8	0%	1		1	
Airport Precinct A	21.3	14.9	0%	1	1	1	1
Airport Precinct B	3.2	2.2	0%	1	1	1	1
Eastgate North	139.6	97.7	1%	1	1	1	1
Eastgate South	39.7	27.8	0%	1	1	1	1
Ngapuna Business **	54.3	51.3	12%	1		1	1
Puarenga (aka Heavy Industrial Peka Block)	9.1	9.1	31%	1	1	1	1
State Highway 5 East	24.6	17.3	58%			1	
State Highway 5 South	28.3	19.8	0%			1	
State Highway 5 West	73.6	51.5	45%	1		1	
Stembridge Road	21.4	15.0	0%	1	1	1	
Tamarahi	12.3	8.6	0%	1	1	1	1
Tarukenga *	90.1	90.1	54%	1		1	
Tikitere Business	146.6	102.6	100%				1
Wakaraka Street (aka Light Industrial Ngongotaha Central) ***	0.5	0.3	0%				1
Total Area (Including Maori Land)	690.0	526.0	37%	386.1	175.3	423.1	314.5
Ngapuna Business - Existing Vacant Capacity	11.0	8.0	75%	1		1	1
Ngapuna Business - Selected Heavy Industry Sites	26.8	26.8	0%	1		1	1
Ngapuna Business - Existing Light Industry Sites	16.4	16.4	0%	1		1	1
Ngapuna Business - Total	54.3	51.3	12%	1		1	1
Wakaraka - Existing Vacant Capacity	0.5	0.3	0%				1
Wakaraka - Existing Light Industry Sites	10.9	10.9	0%	Relevant for Scenarios 1-3 where rezoned residential.			
Wakaraka - Total	11.4	11.1	0%				

Source: M.E, Barkers & Associates, RLC

* M.E has not reduced the gross area to account for roading given heavy industrial land use, and existing road frontage which may result in limited internal road area.

** Total existing business area (existing vacant and developed in operative Light Industrial Zone). Scenarios 1, 3 and 4 rezone different portions of this land Eastgate Business Park Zone (i.e. mixed business/commercial) depending on model settings, which cause some existing activities to relocate to other heavy/light industrial capacity as a consequence.

*** Existing vacant sites in Operative Light Industrial Zone. Note only Scenario 4 retains these sites as Light Industrial Zone.

**** Long term capacity results are not limited to these 15 key identified FDS growth areas.

Last, Table 2-2 shows how the different areas are turned on and off to create the four preliminary spatial growth scenarios. None of the spatial growth scenarios include all areas at once, although Scenario 3 includes the most, and Scenario 2 includes the least. As discussed, further work is expected after the completion of this report on the development and refinement of the spatial growth scenarios. It is anticipated that the analysis of the preliminary spatial growth scenarios provides Council with sufficient information to understand the likely implications of further changes to these scenarios (i.e. new scenarios).

2.4 Long Term Capacity Results by Preliminary Scenario

The following results are for the Alternative Capacity Scenario which is the preferred scenario for understanding potential capacity to cater for projected growth (refer to discussion in relation to the HBA). The results are arranged by preliminary FDS spatial growth scenario, which show long-term vacant developable land (or re-developable land area in some cases) by land use category (ha) by zone, and then summarised by reporting area. Because of the variations modelled in the Ngāpuna Business area, there are three sets of results for each scenario. The red rows show the gross relocations as they apply to Wakaraka Street (scenarios 1-3) and Ngāpuna Business (scenarios 1, 3, 4), but some of the relocation is offset by additional redevelopment capacity in the rezoned Ngāpuna Business land (indicatively Eastgate Business Park Zone), so the totals at the bottom of each table are the net capacity figures.

2.4.1 Scenario 1

Compared with the long-term capacity of urban business land modelled in the HBA 2021, preliminary scenario 1 under the FDS increases capacity by¹⁹:

- Between 47-60ha for commercial development across a range of zone types.
- Between 32-36ha for retail development across a range of zone types.
- Between 217-200ha for industrial development across a range of zone types.
- No change in capacity for tourist accommodation.

Long-term Rezoning in Ngāpuna Business Applies Only to Existing Vacant Land

Table 2-3 – Net Long-term Capacity by Category & Zone – Scenario 1 No Relocation of Existing Businesses in Ngāpuna Business Rezoning

Zone (Includes Indicative Long-term Zones)	Vacant Developable Land by Land Use Category (Ha)			
	Commercial	Retail	Industrial	Accommodation
City Entranceway Accommodation	-	-	-	3.2
City Entranceway Mixed Use	4.3	2.0	2.0	0.6
City Entranceway Tourism	34.3	17.2	17.2	-
Community Asset Reserve *	-	-	-	-
Compact Commercial Centres	0.1	0.1	-	-
Destination Reserve *	-	-	-	-
Eastgate Business Park	12.1	4.5	30.0	-
Fenton Entranceway Residential, Visitor Accommodation, Commercial **	0.9	0.6	-	0.9
Future Community Asset Reserve **	4.7	-	-	-
Heavy Industrial	-	-	99.2	-
Light Industrial	22.6	19.4	135.4	-
Mid City	4.2	0.0	-	2.7
Neighbourhood Centres	0.3	0.8	-	-
Ngongotahā Centre	-	-	-	-
Northern Edge	-	-	-	-
PC 2 Commercial Precincts	0.8	0.5	-	-
Residential to Light Industrial **	0.1	0.1	1.1	-
Scion Innovation Park *	-	-	-	-
Southern City	-	-	-	-
Southern Edge Commercial Centre	-	-	-	-
Waipa Business Park *	-	-	-	-
Reduction - Heavy Industrial ¹			-	
Reduction - Light Industrial ²			-	
Reduction - Light Industrial Ngongotahā ³			-	10.9
Total Urban Environment	84.5	45.3	274.0	7.3

Source: M.E Business Capacity Model 2021 - FDS Version Scenario 1.

* Assumed no vacant capacity for purpose of HBA. ** Long term capacity only.

Alternative Capacity Scenario (Excludes floorspace overlap of capacity between enabled categories. Includes some land area overlap in certain zones to account for a change of likely use on upper floors)

¹⁹ The range depends on the variations modelled in Ngāpuna Business.

Table 2-4 – Net Long-term Capacity by Category & Reporting Area – Scenario 1 No Relocation of Existing Businesses in Ngāpuna Business Rezoning

Reporting Area	Vacant Developable Land by Land Use Category (Ha)			
	Commercial	Retail	Industrial	Accommodation
Central	5.3	0.9	0.7	3.6
Eastern	23.6	18.9	134.7	-
Western	8.7	2.2	16.6	3.7
Ngongotahā	46.9	23.3	132.8	-
Reduction - Heavy Industrial ¹			-	
Reduction - Light Industrial ²			-	
Reduction - Light Industrial Ngongotahā ³			- 10.9	
Total Urban Environment	84.5	45.3	274.0	7.3

Source: M.E Business Capacity Model 2021 - FDS Version Scenario 1.

Alternative Capacity Scenario (Excludes floorspace overlap of capacity between enabled categories. Includes some land area overlap in certain zones to account for a change of likely use on upper floors)

¹ Ngapuna Business FDS transfer of Heavy Industrial businesses

² Ngapuna Business FDS transfer of Light Industrial businesses

³ Ngongotaha transfer of Light Industrial businesses

The additional long-term capacity created by FDS scenario 1 is concentrated in the Eastern and Ngongotahā reporting areas. This applies to all scenarios (and is not repeated).

Long-term Rezoning in Ngāpuna Business Applies to Existing Heavy Industrial Sites and Vacant Land

Table 2-5 – Net Long-term Capacity by Category & Zone – Scenario 1 Relocation of Heavy Industrial Activities in Ngāpuna Business Rezoning

Zone (Includes Indicative Long-term Zones)	Vacant Developable Land by Land Use Category (Ha)			
	Commercial	Retail	Industrial	Accommodation
City Entranceway Accommodation	-	-	-	3.2
City Entranceway Mixed Use	4.3	2.0	2.0	0.6
City Entranceway Tourism	34.3	17.2	17.2	-
Community Asset Reserve *	-	-	-	-
Compact Commercial Centres	0.1	0.1	-	-
Destination Reserve *	-	-	-	-
Eastgate Business Park	20.1	7.2	46.1	-
Fenton Entranceway Residential, Visitor Accommodation, Commercial **	0.9	0.6	-	0.9
Future Community Asset Reserve **	4.7	-	-	-
Heavy Industrial	-	-	99.2	-
Light Industrial	22.6	19.4	135.4	-
Mid City	4.2	0.0	-	2.7
Neighbourhood Centres	0.3	0.8	-	-
Ngongotahā Centre	-	-	-	-
Northern Edge	-	-	-	-
PC 2 Commercial Precincts	0.8	0.5	-	-
Residential to Light Industrial **	0.1	0.1	1.1	-
Scion Innovation Park *	-	-	-	-
Southern City	-	-	-	-
Southern Edge Commercial Centre	-	-	-	-
Waipa Business Park *	-	-	-	-
Reduction - Heavy Industrial ¹			- 26.8	
Reduction - Light Industrial ²			-	
Reduction - Light Industrial Ngongotahā ³			- 10.9	
Total Urban Environment	92.6	48.0	263.3	7.3

Source: M.E Business Capacity Model 2021 - FDS Version Scenario 1.

* Assumed no vacant capacity for purpose of HBA. ** Long term capacity only.

Alternative Capacity Scenario (Excludes floorspace overlap of capacity between enabled categories. Includes some land area overlap in certain zones to account for a change of likely use on upper floors)

Table 2-6 – Net Long-term Capacity by Category & Reporting Area – Scenario 1 Relocation of Heavy Industrial Activities in Ngāpuna Business Rezoning

Reporting Area	Vacant Developable Land by Land Use Category (Ha)			
	Commercial	Retail	Industrial	Accommodation
Central	5.3	0.9	0.7	3.6
Eastern	31.7	21.6	150.8	-
Western	8.7	2.2	16.6	3.7
Ngongotahā	46.9	23.3	132.8	-
Reduction - Heavy Industrial ¹			- 26.8	
Reduction - Light Industrial ²			-	
Reduction - Light Industrial Ngongotahā ³			- 10.9	
Total Urban Environment	92.6	48.0	263.3	7.3

Source: M.E Business Capacity Model 2021 - FDS Version Scenario 1.

Alternative Capacity Scenario (Excludes floorspace overlap of capacity between enabled categories. Includes some land area overlap in certain zones to account for a change of likely use on upper floors)

¹ Ngāpuna Business FDS transfer of Heavy Industrial businesses

² Ngāpuna Business FDS transfer of Light Industrial businesses

³ Ngongotaha transfer of Light Industrial businesses

Long-term Rezoning in Ngāpuna Business Applies to All Existing and Vacant Land

Table 2-7 – Net Long-term Capacity by Category & Zone – Scenario 1 Relocation of Heavy and Light Industrial Activities in Ngāpuna Business Rezoning

Zone (Includes Indicative Long-term Zones)	Vacant Developable Land by Land Use Category (Ha)			
	Commercial	Retail	Industrial	Accommodation
City Entranceway Accommodation	-	-	-	3.2
City Entranceway Mixed Use	4.3	2.0	2.0	0.6
City Entranceway Tourism	34.3	17.2	17.2	-
Community Asset Reserve *	-	-	-	-
Compact Commercial Centres	0.1	0.1	-	-
Destination Reserve *	-	-	-	-
Eastgate Business Park	25.1	8.8	56.0	-
Fenton Entranceway Residential, Visitor Accommodation, Commercial **	0.9	0.6	-	0.9
Future Community Asset Reserve **	4.7	-	-	-
Heavy Industrial	-	-	99.2	-
Light Industrial	22.6	19.4	135.4	-
Mid City	4.2	0.0	-	2.7
Neighbourhood Centres	0.3	0.8	-	-
Ngongotahā Centre	-	-	-	-
Northern Edge	-	-	-	-
PC 2 Commercial Precincts	0.8	0.5	-	-
Residential to Light Industrial **	0.1	0.1	1.1	-
Scion Innovation Park *	-	-	-	-
Southern City	-	-	-	-
Southern Edge Commercial Centre	-	-	-	-
Waipa Business Park *	-	-	-	-
Reduction - Heavy Industrial ¹			- 26.8	
Reduction - Light Industrial ²			- 16.4	
Reduction - Light Industrial Ngongotahā ³			- 10.9	
Total Urban Environment	97.5	49.6	256.7	7.3

Source: M.E Business Capacity Model 2021 - FDS Version Scenario 1.

* Assumed no vacant capacity for purpose of HBA. ** Long term capacity only.

Alternative Capacity Scenario (Excludes floorspace overlap of capacity between enabled categories. Includes some land area overlap in certain zones to account for a change of likely use on upper floors)

Table 2-8 – Net Long-term Capacity by Category & Reporting Area – Scenario 1 Relocation of Heavy and Light Industrial Activities in Ngāpuna Business Rezoning

Reporting Area	Vacant Developable Land by Land Use Category (Ha)			
	Commercial	Retail	Industrial	Accommodation
Central	5.3	0.9	0.8	3.6
Eastern	36.6	23.2	160.6	-
Western	8.7	2.2	16.6	3.7
Ngongotahā	46.9	23.3	132.8	-
Reduction - Heavy Industrial ¹			- 26.8	
Reduction - Light Industrial ²			- 16.4	
Reduction - Light Industrial Ngongotahā ³			- 10.9	
Total Urban Environment	97.5	49.6	256.7	7.3

Source: M.E Business Capacity Model 2021 - FDS Version Scenario 1.

Alternative Capacity Scenario (Excludes floorspace overlap of capacity between enabled categories. Includes some land area overlap in certain zones to account for a change of likely use on upper floors)

¹ Ngapuna Business FDS transfer of Heavy Industrial businesses

² Ngapuna Business FDS transfer of Light Industrial businesses

³ Ngongotaha transfer of Light Industrial businesses

2.4.3 Scenario 2

Compared with the long-term capacity of urban business land modelled in the HBA 2021, preliminary scenario 2 under the FDS increases capacity by:

- 7ha for commercial development across a range of zone types.
- 12ha for retail development across a range of zone types.
- 93ha for industrial development across a range of zone types.
- No change in capacity for tourist accommodation.

Table 2-9 – Net Long-term Capacity by Category & Zone – Scenario 2 No Rezoning of Ngāpuna Business

Zone (Includes Indicative Long-term Zones)	Vacant Developable Land by Land Use Category (Ha)			
	Commercial	Retail	Industrial	Accommodation
City Entranceway Accommodation	-	-	-	3.2
City Entranceway Mixed Use	4.3	2.0	2.0	0.6
City Entranceway Tourism	-	-	-	-
Community Asset Reserve *	-	-	-	-
Compact Commercial Centres	0.1	0.1	-	-
Destination Reserve *	-	-	-	-
Eastgate Business Park	5.7	1.9	13.0	-
Fenton Entranceway Residential, Visitor Accommodation, Commercial **	0.9	0.6	-	0.9
Future Community Asset Reserve **	4.7	-	-	-
Heavy Industrial	-	-	9.1	-
Light Industrial	22.6	19.4	135.4	-
Mid City	4.2	0.0	-	2.7
Neighbourhood Centres	0.3	0.8	-	-
Ngongotahā Centre	-	-	-	-
Northern Edge	-	-	-	-
PC 2 Commercial Precincts	0.8	0.5	-	-
Residential to Light Industrial **	0.1	0.1	1.1	-
Scion Innovation Park *	-	-	-	-
Southern City	-	-	-	-
Southern Edge Commercial Centre	-	-	-	-
Waipa Business Park *	-	-	-	-
Reduction - Heavy Industrial ¹			-	
Reduction - Light Industrial ²			-	
Reduction - Light Industrial Ngongotahā ³			-	10.9
Total Urban Environment	43.8	25.5	149.8	7.3

Source: M.E Business Capacity Model 2021 - FDS Version Scenario 2.

* Assumed no vacant capacity for purpose of HBA. ** Long term capacity only.

Alternative Capacity Scenario (Excludes floorspace overlap of capacity between enabled categories. Includes some land area overlap in certain zones to account for a change of likely use on upper floors)

Table 2-10 – Net Long-term Capacity by Category & Reporting Area – Scenario 2 No Rezoning of Ngāpuna Business

Reporting Area	Vacant Developable Land by Land Use Category (Ha)			
	Commercial	Retail	Industrial	Accommodation
Central	5.3	0.9	0.7	3.6
Eastern	22.6	18.1	128.5	-
Western	8.7	2.2	16.6	3.7
Ngongotahā	7.2	4.4	14.9	-
Reduction - Heavy Industrial ¹			-	
Reduction - Light Industrial ²			-	
Reduction - Light Industrial Ngongotahā ³			- 10.9	
Total Urban Environment	43.8	25.5	149.8	7.3

Source: M.E Business Capacity Model 2021 - FDS Version Scenario 2.

Alternative Capacity Scenario (Excludes floorspace overlap of capacity between enabled categories. Includes some land area overlap in certain zones to account for a change of likely use on upper floors)

¹ Ngapuna Business FDS transfer of Heavy Industrial businesses

² Ngapuna Business FDS transfer of Light Industrial businesses

³ Ngongotaha transfer of Light Industrial businesses

2.4.5 Scenario 3

Compared with the long-term capacity of urban business land modelled in the HBA 2021, preliminary scenario 3 under the FDS increases capacity by:

- Between 61-74ha for commercial development across a range of zone types.
- Between 40-44ha for retail development across a range of zone types.
- Between 221-238ha for industrial development across a range of zone types.
- No change in capacity for tourist accommodation.

Long-term Rezoning in Ngāpuna Business Applies Only to Existing Vacant Land

Table 2-11 – Net Long-term Capacity by Category & Zone – Scenario 3 No Relocation of Existing Businesses in Ngāpuna Business Rezoning

Zone (Includes Indicative Long-term Zones)	Vacant Developable Land by Land Use Category (Ha)			
	Commercial	Retail	Industrial	Accommodation
City Entranceway Accommodation	-	-	-	3.2
City Entranceway Mixed Use	4.3	2.0	2.0	0.6
City Entranceway Tourism	45.8	22.9	22.9	-
Community Asset Reserve *	-	-	-	-
Compact Commercial Centres	0.1	0.1	-	-
Destination Reserve *	-	-	-	-
Eastgate Business Park	12.1	4.5	30.0	-
Fenton Entranceway Residential, Visitor Accommodation, Commercial **	0.9	0.6	-	0.9
Future Community Asset Reserve **	4.7	-	-	-
Heavy Industrial	-	-	99.2	-
Light Industrial	24.6	21.4	151.2	-
Mid City	4.2	0.0	-	2.7
Neighbourhood Centres	0.3	0.8	-	-
Ngongotahā Centre	-	-	-	-
Northern Edge	-	-	-	-
PC 2 Commercial Precincts	0.8	0.5	-	-
Residential to Light Industrial **	0.1	0.1	1.1	-
Scion Innovation Park *	-	-	-	-
Southern City	-	-	-	-
Southern Edge Commercial Centre	-	-	-	-
Waipa Business Park *	-	-	-	-
Reduction - Heavy Industrial ¹			-	
Reduction - Light Industrial ²			-	
Reduction - Light Industrial Ngongotahā ³			-	10.9
Total Urban Environment	98.0	53.0	295.6	7.3

Source: M.E Business Capacity Model 2021 - FDS Version Scenario 3.

* Assumed no vacant capacity for purpose of HBA. ** Long term capacity only.

Alternative Capacity Scenario (Excludes floorspace overlap of capacity between enabled categories. Includes some land area overlap in certain zones to account for a change of likely use on upper floors)

Table 2-12 – Net Long-term Capacity by Category & Reporting Area – Scenario 3 No Relocation of Existing Businesses in Ngāpuna Business Rezoning

Reporting Area	Vacant Developable Land by Land Use Category (Ha)			
	Commercial	Retail	Industrial	Accommodation
Central	5.3	0.9	0.7	3.6
Eastern	23.6	18.9	134.7	-
Western	8.7	2.2	16.6	3.7
Ngongotahā	60.4	31.1	154.4	-
Reduction - Heavy Industrial ¹			-	
Reduction - Light Industrial ²			-	
Reduction - Light Industrial Ngongotahā ³			-	10.9
Total Urban Environment	98.0	53.0	295.6	7.3

Source: M.E Business Capacity Model 2021 - FDS Version Scenario 3.

Alternative Capacity Scenario (Excludes floorspace overlap of capacity between enabled categories. Includes some land area overlap in certain zones to account for a change of likely use on upper floors)

¹ Ngapuna Business FDS transfer of Heavy Industrial businesses

² Ngapuna Business FDS transfer of Light Industrial businesses

³ Ngongotaha transfer of Light Industrial businesses

Long-term Rezoning in Ngāpuna Business Applies to Existing Heavy Industrial Sites and Vacant Land

Table 2-13 – Net Long-term Capacity by Category & Zone – Scenario 3 Relocation of Heavy Industrial Activities in Ngāpuna Business Rezoning

Zone (Includes Indicative Long-term Zones)	Vacant Developable Land by Land Use Category (Ha)			
	Commercial	Retail	Industrial	Accommodation
City Entranceway Accommodation	-	-	-	3.2
City Entranceway Mixed Use	4.3	2.0	2.0	0.6
City Entranceway Tourism	45.8	22.9	22.9	-
Community Asset Reserve *	-	-	-	-
Compact Commercial Centres	0.1	0.1	-	-
Destination Reserve *	-	-	-	-
Eastgate Business Park	20.1	7.2	46.1	-
Fenton Entranceway Residential, Visitor Accommodation, Commercial **	0.9	0.6	-	0.9
Future Community Asset Reserve **	4.7	-	-	-
Heavy Industrial	-	-	99.2	-
Light Industrial	24.6	21.4	151.2	-
Mid City	4.2	0.0	-	2.7
Neighbourhood Centres	0.3	0.8	-	-
Ngongotahā Centre	-	-	-	-
Northern Edge	-	-	-	-
PC 2 Commercial Precincts	0.8	0.5	-	-
Residential to Light Industrial **	0.1	0.1	1.1	-
Scion Innovation Park *	-	-	-	-
Southern City	-	-	-	-
Southern Edge Commercial Centre	-	-	-	-
Waipa Business Park *	-	-	-	-
Reduction - Heavy Industrial ¹			- 26.8	
Reduction - Light Industrial ²			-	
Reduction - Light Industrial Ngongotahā ³			- 10.9	
Total Urban Environment	106.1	55.7	284.9	7.3

Source: M.E Business Capacity Model 2021 - FDS Version Scenario 3.

* Assumed no vacant capacity for purpose of HBA. ** Long term capacity only.

Alternative Capacity Scenario (Excludes floorspace overlap of capacity between enabled categories. Includes some land area overlap in certain zones to account for a change of likely use on upper floors)

Table 2-14 – Net Long-term Capacity by Category & Reporting Area - Scenario 3 Relocation of Heavy Industrial Activities in Ngāpuna Business Rezoning

Reporting Area	Vacant Developable Land by Land Use Category (Ha)			
	Commercial	Retail	Industrial	Accommodation
Central	5.3	0.9	0.7	3.6
Eastern	31.7	21.6	150.8	-
Western	8.7	2.2	16.6	3.7
Ngongotahā	60.4	31.1	154.4	-
Reduction - Heavy Industrial ¹			- 26.8	
Reduction - Light Industrial ²			-	
Reduction - Light Industrial Ngongotahā ³			- 10.9	
Total Urban Environment	106.1	55.7	284.9	7.3

Source: M.E Business Capacity Model 2021 - FDS Version Scenario 3.

Alternative Capacity Scenario (Excludes floorspace overlap of capacity between enabled categories. Includes some land area overlap in certain zones to account for a change of likely use on upper floors)

¹ Ngapuna Business FDS transfer of Heavy Industrial businesses

² Ngapuna Business FDS transfer of Light Industrial businesses

³ Ngongotaha transfer of Light Industrial businesses

Long-term Rezoning in Ngāpuna Business Applies to All Existing and Vacant Land

Table 2-15 – Net Long-term Capacity by Category & Zone – Scenario 3 Relocation of Heavy and Light Industrial Activities in Ngāpuna Business Rezoning

Zone (Includes Indicative Long-term Zones)	Vacant Developable Land by Land Use Category (Ha)			
	Commercial	Retail	Industrial	Accommodation
City Entranceway Accommodation	-	-	-	3.2
City Entranceway Mixed Use	4.3	2.0	2.0	0.6
City Entranceway Tourism	45.8	22.9	22.9	-
Community Asset Reserve *	-	-	-	-
Compact Commercial Centres	0.1	0.1	-	-
Destination Reserve *	-	-	-	-
Eastgate Business Park	25.1	8.8	56.0	-
Fenton Entranceway Residential, Visitor Accommodation, Commercial **	0.9	0.6	-	0.9
Future Community Asset Reserve **	4.7	-	-	-
Heavy Industrial	-	-	99.2	-
Light Industrial	24.6	21.4	151.2	-
Mid City	4.2	0.0	-	2.7
Neighbourhood Centres	0.3	0.8	-	-
Ngongotahā Centre	-	-	-	-
Northern Edge	-	-	-	-
PC 2 Commercial Precincts	0.8	0.5	-	-
Residential to Light Industrial **	0.1	0.1	1.1	-
Scion Innovation Park *	-	-	-	-
Southern City	-	-	-	-
Southern Edge Commercial Centre	-	-	-	-
Waipa Business Park *	-	-	-	-
Reduction - Heavy Industrial ¹			- 26.8	
Reduction - Light Industrial ²			- 16.4	
Reduction - Light Industrial Ngongotahā ³			- 10.9	
Total Urban Environment	111.0	57.4	278.3	7.3

Source: M.E Business Capacity Model 2021 - FDS Version Scenario 3.

* Assumed no vacant capacity for purpose of HBA. ** Long term capacity only.

Alternative Capacity Scenario (Excludes floorspace overlap of capacity between enabled categories. Includes some land area overlap in certain zones to account for a change of likely use on upper floors)

Table 2-16 – Net Long-term Capacity by Category & Reporting Area – Scenario 3 Relocation of Heavy and Light Industrial Activities in Ngāpuna Business Rezoning

Reporting Area	Vacant Developable Land by Land Use Category (Ha)			
	Commercial	Retail	Industrial	Accommodation
Central	5.3	0.9	0.8	3.6
Eastern	36.6	23.2	160.6	-
Western	8.7	2.2	16.6	3.7
Ngongotahā	60.4	31.1	154.4	-
Reduction - Heavy Industrial ¹			- 26.8	
Reduction - Light Industrial ²			- 16.4	
Reduction - Light Industrial Ngongotahā ³			- 10.9	
Total Urban Environment	111.0	57.4	278.3	7.3

Source: M.E Business Capacity Model 2021 - FDS Version Scenario 3.

Alternative Capacity Scenario (Excludes floorspace overlap of capacity between enabled categories. Includes some land area overlap in certain zones to account for a change of likely use on upper floors)

¹ Ngapuna Business FDS transfer of Heavy Industrial businesses

² Ngapuna Business FDS transfer of Light Industrial businesses

³ Ngongotaha transfer of Light Industrial businesses

2.4.7 Scenario 4

Compared with the long-term capacity of urban business land modelled in the HBA 2021, preliminary spatial growth scenario 4 under the FDS increases capacity by:

- Between 17-29ha for commercial development across a range of zone types.
- Between 22-26ha for retail development across a range of zone types.
- Between 162-180ha for industrial development across a range of zone types.
- No change in capacity for tourist accommodation.

Long-term Rezoning in Ngāpuna Business Applies Only to Existing Vacant Land

Table 2-17 – Net Long-term Capacity by Category & Zone – Scenario 4 No Relocation of Existing Businesses in Ngāpuna Business Rezoning

Zone (Includes Indicative Long-term Zones)	Vacant Developable Land by Land Use Category (Ha)			
	Commercial	Retail	Industrial	Accommodation
City Entranceway Accommodation	-	-	-	3.2
City Entranceway Mixed Use	4.3	2.0	2.0	0.6
City Entranceway Tourism	-	-	-	-
Community Asset Reserve *	-	-	-	-
Compact Commercial Centres	0.1	0.1	-	-
Destination Reserve *	-	-	-	-
Eastgate Business Park	6.7	2.7	19.3	-
Fenton Entranceway Residential, Visitor Accommodation, Commercial **	0.9	0.6	-	0.9
Future Community Asset Reserve **	4.7	-	-	-
Heavy Industrial	-	-	9.1	-
Light Industrial	31.4	28.2	205.7	-
Mid City	4.2	0.0	-	2.7
Neighbourhood Centres	0.3	0.8	-	-
Ngongotahā Centre	-	-	-	-
Northern Edge	-	-	-	-
PC 2 Commercial Precincts	0.8	0.5	-	-
Residential to Light Industrial **	0.1	0.1	1.1	-
Scion Innovation Park *	-	-	-	-
Southern City	-	-	-	-
Southern Edge Commercial Centre	-	-	-	-
Waipa Business Park *	-	-	-	-
Reduction - Heavy Industrial ¹			-	
Reduction - Light Industrial ²			-	
Reduction - Light Industrial Ngongotahā ³			-	
Total Urban Environment	53.6	35.1	237.2	7.3

Source: M.E Business Capacity Model 2021 - FDS Version Scenario 4.

* Assumed no vacant capacity for purpose of HBA. ** Long term capacity only.

Alternative Capacity Scenario (Excludes floorspace overlap of capacity between enabled categories. Includes some land area overlap in certain zones to account for a change of likely use on upper floors)

Table 2-18 – Net Long-term Capacity by Category & Reporting Area – Scenario 4 No Relocation of Existing Businesses in Ngāpuna Business Rezoning

Reporting Area	Vacant Developable Land by Land Use Category (Ha)			
	Commercial	Retail	Industrial	Accommodation
Central	5.3	0.9	0.7	3.6
Eastern	33.9	29.1	216.8	-
Western	8.7	2.2	16.6	3.7
Ngongotahā	5.8	2.9	3.1	-
Reduction - Heavy Industrial ¹			-	
Reduction - Light Industrial ²			-	
Reduction - Light Industrial Ngongotahā ³			-	
Total Urban Environment	53.6	35.1	237.2	7.3

Source: M.E Business Capacity Model 2021 - FDS Version Scenario 4.

Alternative Capacity Scenario (Excludes floorspace overlap of capacity between enabled categories. Includes some land area overlap in certain zones to account for a change of likely use on upper floors)

¹ Ngapuna Business FDS transfer of Heavy Industrial businesses

² Ngapuna Business FDS transfer of Light Industrial businesses

³ Ngongotaha transfer of Light Industrial businesses

Long-term Rezoning in Ngāpuna Business Applies to Existing Heavy Industrial Sites and Vacant Land

Table 2-19 – Net Long-term Capacity by Category & Zone – Scenario 4 Relocation of Heavy Industrial Activities in Ngāpuna Business Rezoning

Zone (Includes Indicative Long-term Zones)	Vacant Developable Land by Land Use Category (Ha)			
	Commercial	Retail	Industrial	Accommodation
City Entranceway Accommodation	-	-	-	3.2
City Entranceway Mixed Use	4.3	2.0	2.0	0.6
City Entranceway Tourism	-	-	-	-
Community Asset Reserve *	-	-	-	-
Compact Commercial Centres	0.1	0.1	-	-
Destination Reserve *	-	-	-	-
Eastgate Business Park	14.8	5.4	35.4	-
Fenton Entranceway Residential, Visitor Accommodation, Commercial **	0.9	0.6	-	0.9
Future Community Asset Reserve **	4.7	-	-	-
Heavy Industrial	-	-	9.1	-
Light Industrial	31.4	28.2	205.7	-
Mid City	4.2	0.0	-	2.7
Neighbourhood Centres	0.3	0.8	-	-
Ngongotahā Centre	-	-	-	-
Northern Edge	-	-	-	-
PC 2 Commercial Precincts	0.8	0.5	-	-
Residential to Light Industrial **	0.1	0.1	1.1	-
Scion Innovation Park *	-	-	-	-
Southern City	-	-	-	-
Southern Edge Commercial Centre	-	-	-	-
Waipa Business Park *	-	-	-	-
Reduction - Heavy Industrial ¹			- 26.8	
Reduction - Light Industrial ²			-	
Reduction - Light Industrial Ngongotahā ³			-	
Total Urban Environment	61.7	37.8	226.5	7.3

Source: M.E Business Capacity Model 2021 - FDS Version Scenario 4.

* Assumed no vacant capacity for purpose of HBA. ** Long term capacity only.

Alternative Capacity Scenario (Excludes floorspace overlap of capacity between enabled categories. Includes some land area overlap in certain zones to account for a change of likely use on upper floors)

Table 2-20 – Net Long-term Capacity by Category & Reporting Area – Scenario 4 Relocation of Heavy Industrial Activities in Ngāpuna Business Rezoning

Reporting Area	Vacant Developable Land by Land Use Category (Ha)			
	Commercial	Retail	Industrial	Accommodation
Central	5.3	0.9	0.7	3.6
Eastern	41.9	31.8	232.9	-
Western	8.7	2.2	16.6	3.7
Ngongotahā	5.8	2.9	3.1	-
Reduction - Heavy Industrial ¹			- 26.8	
Reduction - Light Industrial ²			-	
Reduction - Light Industrial Ngongotahā ³			-	
Total Urban Environment	61.7	37.8	226.5	7.3

Source: M.E Business Capacity Model 2021 - FDS Version Scenario 4.

Alternative Capacity Scenario (Excludes floorspace overlap of capacity between enabled categories. Includes some land area overlap in certain zones to account for a change of likely use on upper floors)

¹ Ngāpuna Business FDS transfer of Heavy Industrial businesses

² Ngāpuna Business FDS transfer of Light Industrial businesses

³ Ngongotaha transfer of Light Industrial businesses

Long-term Rezoning in Ngāpuna Business Applies to All Existing and Vacant Land

Table 2-21 – Net Long-term Capacity by Category & Zone – Scenario 4 Relocation of Heavy and Light Industrial Activities in Ngāpuna Business Rezoning

Zone (Includes Indicative Long-term Zones)	Vacant Developable Land by Land Use Category (Ha)			
	Commercial	Retail	Industrial	Accommodation
City Entranceway Accommodation	-	-	-	3.2
City Entranceway Mixed Use	4.3	2.0	2.0	0.6
City Entranceway Tourism	-	-	-	-
Community Asset Reserve *	-	-	-	-
Compact Commercial Centres	0.1	0.1	-	-
Destination Reserve *	-	-	-	-
Eastgate Business Park	19.7	7.0	45.2	-
Fenton Entranceway Residential, Visitor Accommodation, Commercial **	0.9	0.6	-	0.9
Future Community Asset Reserve **	4.7	-	-	-
Heavy Industrial	-	-	9.1	-
Light Industrial	31.4	28.2	205.7	-
Mid City	4.2	0.0	-	2.7
Neighbourhood Centres	0.3	0.8	-	-
Ngongotahā Centre	-	-	-	-
Northern Edge	-	-	-	-
PC 2 Commercial Precincts	0.8	0.5	-	-
Residential to Light Industrial **	0.1	0.1	1.1	-
Scion Innovation Park *	-	-	-	-
Southern City	-	-	-	-
Southern Edge Commercial Centre	-	-	-	-
Waipa Business Park *	-	-	-	-
Reduction - Heavy Industrial ¹			- 26.8	
Reduction - Light Industrial ²			- 16.4	
Reduction - Light Industrial Ngongotahā ³			-	
Total Urban Environment	66.6	39.5	219.9	7.3

Source: M.E Business Capacity Model 2021 - FDS Version Scenario 4.

* Assumed no vacant capacity for purpose of HBA. ** Long term capacity only.

Alternative Capacity Scenario (Excludes floorspace overlap of capacity between enabled categories. Includes some land area overlap in certain zones to account for a change of likely use on upper floors)

Table 2-22 – Net Long-term Capacity by Category & Reporting Area – Scenario 4 Relocation of Heavy and Light Industrial Activities in Ngāpuna Business Rezoning

Reporting Area	Vacant Developable Land by Land Use Category (Ha)			
	Commercial	Retail	Industrial	Accommodation
Central	5.3	0.9	0.8	3.6
Eastern	46.9	33.5	242.7	-
Western	8.7	2.2	16.6	3.7
Ngongotahā	5.8	2.9	3.1	-
Reduction - Heavy Industrial ¹			- 26.8	
Reduction - Light Industrial ²			- 16.4	
Reduction - Light Industrial Ngongotahā ³			-	
Total Urban Environment	66.6	39.5	219.9	7.3

Source: M.E Business Capacity Model 2021 - FDS Version Scenario 4.

Alternative Capacity Scenario (Excludes floorspace overlap of capacity between enabled categories. Includes some land area overlap in certain zones to account for a change of likely use on upper floors)

¹ Ngāpuna Business FDS transfer of Heavy Industrial businesses

² Ngāpuna Business FDS transfer of Light Industrial businesses

³ Ngongotaha transfer of Light Industrial businesses

2.5 Long Term Sufficiency Results by Scenario

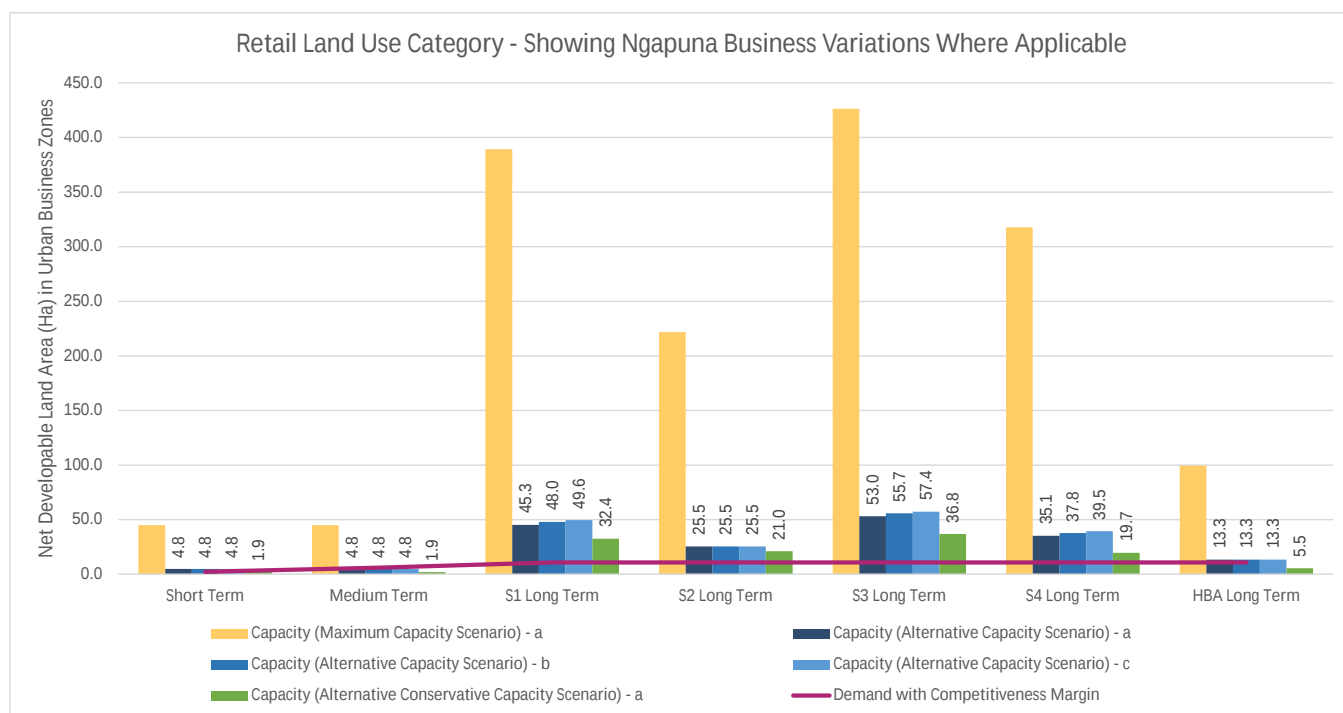
This section shows how the preliminary FDS scenarios impact sufficiency of business land to meet projected demand in the long-term (as modelled in the HBA 2021 and summarised above), and compared with the long-term capacity that was modelled under the 2018 Spatial Plan in the HBA 2021. In most (but not all) cases, the preliminary FDS scenarios provide a marked improvement in sufficiency, ensuring a surplus of capacity by 2050 (although we understand that the scenarios are still being modified and so any final scenarios will still need to be tested against long-term demand).

The sufficiency graphs below show a summary of the preliminary FDS scenarios by land use category for the three capacity scenarios tested in the HBA. This includes the:

- **Maximum Capacity scenario** (little weight should be given to this scenario because it can double or triple count vacant land capacity where zones enabling more than one category of land use). Refer discussion in the HBA. Yellow columns.
- **Alternative Capacity scenario** – recommended, but does include Māori Land which may not be commercially feasible/suitable for development relative to fee-simple vacant land. Blue columns. We have shown the effect of the three variations around the Ngāpuna Business area, as discussed above, and in the same order as discussed. These are notated as variations a, b, c to save space in the graphs.
- **Alternative Conservative scenario** – recommended, and excludes Māori Land. Green columns. Note, there would be variations of this capacity scenario also as a result of the assumptions around Ngāpuna Business area, but we have not shown them to avoid cluttering the graphs. Readers could however infer the effect of the variation based on the same effect on the Alternative Capacity scenario shown.

For completeness, sufficiency in the short and medium-term is also shown on the graphs – carried over from the HBA 2021.²⁰ While sufficiency outcomes are improved (in most cases), you will still see some insufficiency in the medium term that was reported and discussed in the HBA 2021. The FDS modelling does not assist with any shortfalls in the medium term, but it's certainly possible that some of the FDS growth areas could get zoned sooner rather than later to help cater for medium term demand if required.

Figure 2-2 – Retail Demand Relative to Retail Capacity – Impact of FDS Scenarios on Long Term Sufficiency

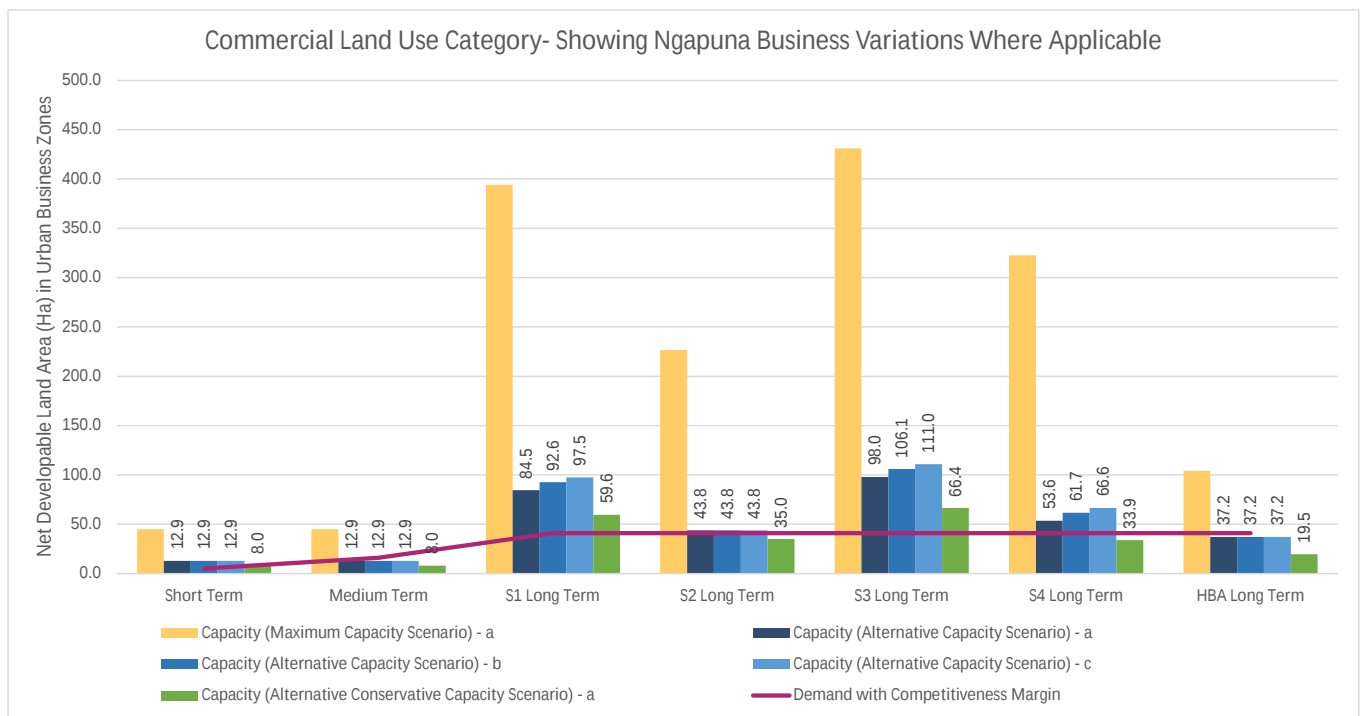


Key observations from the perspective of demand and capacity for retail land use:

- As in the HBA, the anticipated likely capacity available for retail activity (Alternative Capacity Scenario) is significantly less than the Maximum Capacity plan enabled, by the time competing land uses are accounted for.
- Refer discussion in the HBA on the modelled shortfall of capacity in the medium and long term. The same caveats will apply to the current modelling.
- All preliminary FDS scenarios provide more capacity in the long-term than was previously modelled in the HBA 2021 based on the operative zones and the Spatial Plan.
- Sufficiency is satisfied in all preliminary scenarios, although scenarios 2 and 4 provide a relatively lower surplus, especially when Māori land is excluded (Alternative Conservative Capacity).

²⁰ This FDS analysis does not update that short and medium-term vacant capacity to remove any sites that have been taken up since then, although we noted in the HBA 2021 that 6.8ha of vacant business land was under construction at the time, so technically, those sites may not be vacant now if construction is complete and the buildings are occupied.

Figure 2-3 – Commercial Demand Relative to Retail Capacity – Impact of FDS Scenarios on Long Term Sufficiency



Key observations from the perspective of demand and capacity for commercial land use:

- As in the HBA, the anticipated likely capacity available for commercial activity (Alternative Capacity Scenario) is significantly less than the Maximum Capacity plan enabled, by the time competing land uses are accounted for.
- Refer discussion in the HBA on the modelled shortfall of capacity in the medium and long term. Under the Alternative Conservative Scenario. The same caveats will apply to the current modelling.
- All preliminary FDS scenarios provide more capacity in the long-term than was previously modelled in the HBA 2021 based on the operative zones and the Spatial Plan.
- Sufficiency is satisfied in all preliminary scenarios under the Alternative Capacity scenario, although scenario 2 provide only a marginal surplus.
- When Māori land is excluded (Alternative Conservative Capacity), scenario 2 provides insufficient long-term capacity, and this may not be resolved with further redevelopment of the Ngāpuna Business area under current rezoning assumptions. Scenario 4 is also insufficient under this capacity scenario, but redeveloping the full the area of Ngāpuna Business may just result in sufficient capacity for commercial demand based on M.E assumptions.

Figure 2-4 – Accommodation Demand Relative to Retail Capacity – Impact of FDS Scenarios on Long Term Sufficiency

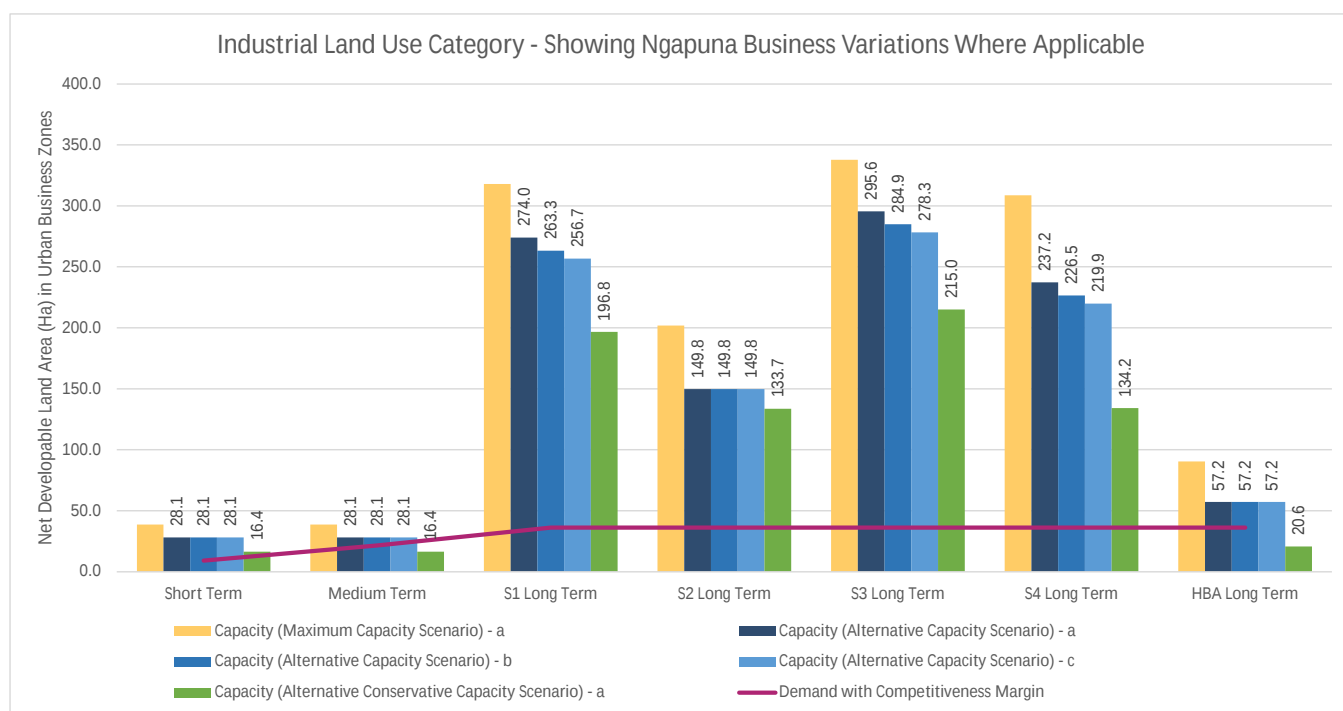


Key observations from the perspective of demand and capacity for tourist accommodation land use:

- As in the HBA, the anticipated likely capacity available for tourist accommodation activity (Alternative Capacity Scenario) is only moderately less than the Maximum Capacity plan enabled, by the time competing land uses are accounted for. This is because of largely dedicated zones for tourism accommodation in the operative plan.²¹
- Because of the zoning assumptions applied to the preliminary FDS spatial growth scenarios, there is no change to long-term capacity to that already modelled in the HBA 2021.
- Sufficiency is satisfied in all preliminary scenarios under the Alternative Capacity scenario, and Alternative Conservative Capacity scenario, as it was in the HBA.

²¹ Tourist Accommodation sufficiency may be further influenced by PC9. Such changes would be reassessed in the next HBA update.

Figure 2-5 – Industrial Demand Relative to Retail Capacity – Impact of FDS Scenarios on Long Term Sufficiency



Key observations from the perspective of demand and capacity for total²² industrial land use:

- As in the HBA, the anticipated likely capacity available for industrial activity (Alternative Capacity Scenario) is only moderately less than the Maximum Capacity plan enabled, by the time competing land uses are accounted for. This is because of largely dedicated zones for industrial activity in the operative plan, particularly the current Heavy Industrial Zone which is modelled as being taken up 100% by industrial activity in the Alternative Capacity Scenario. The model also assumes that 80% of the Light Industrial Zone will be taken up by industrial activity despite some allowances for certain retail and commercial activities.
- Refer discussion in the HBA on the modelled shortfall of capacity in the long-term under the Alternative Capacity Scenario and in the medium and long-term under the Alternative Conservative Scenario. The same caveats will apply to the current modelling.
- All preliminary FDS scenarios provide significantly more capacity in the long-term than was previously modelled in the HBA 2021 based on the operative zones and the Spatial Plan.
- Sufficiency is satisfied with large surpluses in all preliminary scenarios, including when Māori land is also excluded.
- The scale of the net surplus in these preliminary scenarios relative to long-term demand for total industrial activity does provide scope to remove *some* greenfield growth areas in the refining of the scenarios for the FDS. Significant changes should be retested for sufficiency. Care is also needed in ensuring an appropriate mix of heavy and light industrial capacity, as a significant

²² Being combined heavy and light industrial land uses.

supply of heavy industrial land relative to light industrial land will not necessarily cater for the expected nature of demand. This is discussed in more detail in the following section.

Fairy Springs Saw Mill

For clarity, we are aware that Council are considering the effect of the heavy industrial saw mill currently operating in the Light Industrial Zone relocating to a Heavy Industrial Zone and freeing up the land (we presume) for more appropriate light industrial activities as intended by the zone provisions. This was not identified as an FDS redevelopment area (like Ngāpuna Business or Wīkaraka Street was) and was not identified in any of the preliminary FDS scenarios supplied to M.E. Unlike Ngāpuna Business, any relocation is not linked with a 'rezoning' proposal and the business would simply need to be incentivised to move. The results above for industrial capacity and sufficiency do not take account of the effect of including the saw-mill site in future relocations – although the net effect would only be minor. We discuss the saw mill site below in regards to heavy industrial considerations.

2.6 Heavy Industrial Considerations

M.E have been asked to consider the demand, capacity and sufficiency of zoning for Heavy Industrial activity and the potential impact of the FDS scenarios on that. Importantly, the HBA modelling of demand does not distinguish demand for heavy or light industrial activity – rather it is combined. The HBA capacity modelling does distinguish capacity according to Heavy and Light Industrial only because the zones themselves allow us to do that. They were however reported as a single 'industrial' category.

Table 2-23 – Existing and Preliminary FDS Heavy Industrial Zone Capacity – Alternative & Alternative Conservative Capacity Scenario.

	Total Area (Developable Vacant) - Deduct 100% from Industrial Alternative Scenario	Maori Land Parcel Area	Maori Land Share	Conservative Scenario Area - Deduct from Conservative Scenario
Tarukenga Heavy Industrial Area (Vacant Developable Land Area)	90.1	48.6	54%	41.5
Puarenga Heavy Industrial Area (Vacant Developable Land Area) (Peka Block in ODP)	9.1	2.9	31%	6.2
Total	99.2	51.4	52%	47.8

Table 2-23 shows that, at the time of the HBA 2021 vacant land survey, there was an estimated 9.1ha of vacant land in the Puarenga Heavy Industrial Zone, of which 6.2ha was located on fee-simple (non-Māori) land. The FDS also indicatively identified an industrial growth area called Tarukenga north-west of Ngongotahā that was assigned Heavy Industrial Zone for the purpose of modelling capacity. It had an estimated net developable area of 90.1ha, or 41.5ha once Māori land was excluded. This capacity only applies in the long-term, while Puarenga applies in the short-long term. Total Heavy Industrial Zone

capacity could therefore be 99.2ha in the long-term in an FDS scenario that included the Tarukenga site (Alternative Capacity Scenario), or 47.8ha under the Alternative Conservative Scenario.

While the HBA anticipates that a portion of future employment growth will be for heavy industrial activities, that portion, and the land area required to meet that growth, is unknown (and the modelling for the FDS retains that limitation). However, as discussed above, in addition to growth, the FDS also includes some preliminary scenarios that would encourage existing heavy industrial activity to relocate from their current zone (Light Industrial Zone) into a Heavy Industrial Zone. These are the selected heavy industrial sites in the Ngāpuna Business area (Figure 2-6), totalling 26.8ha currently.

Figure 2-6 – Selected Heavy Industrial Sites in the Ngāpuna Business Area (Source: Barker & Associates)

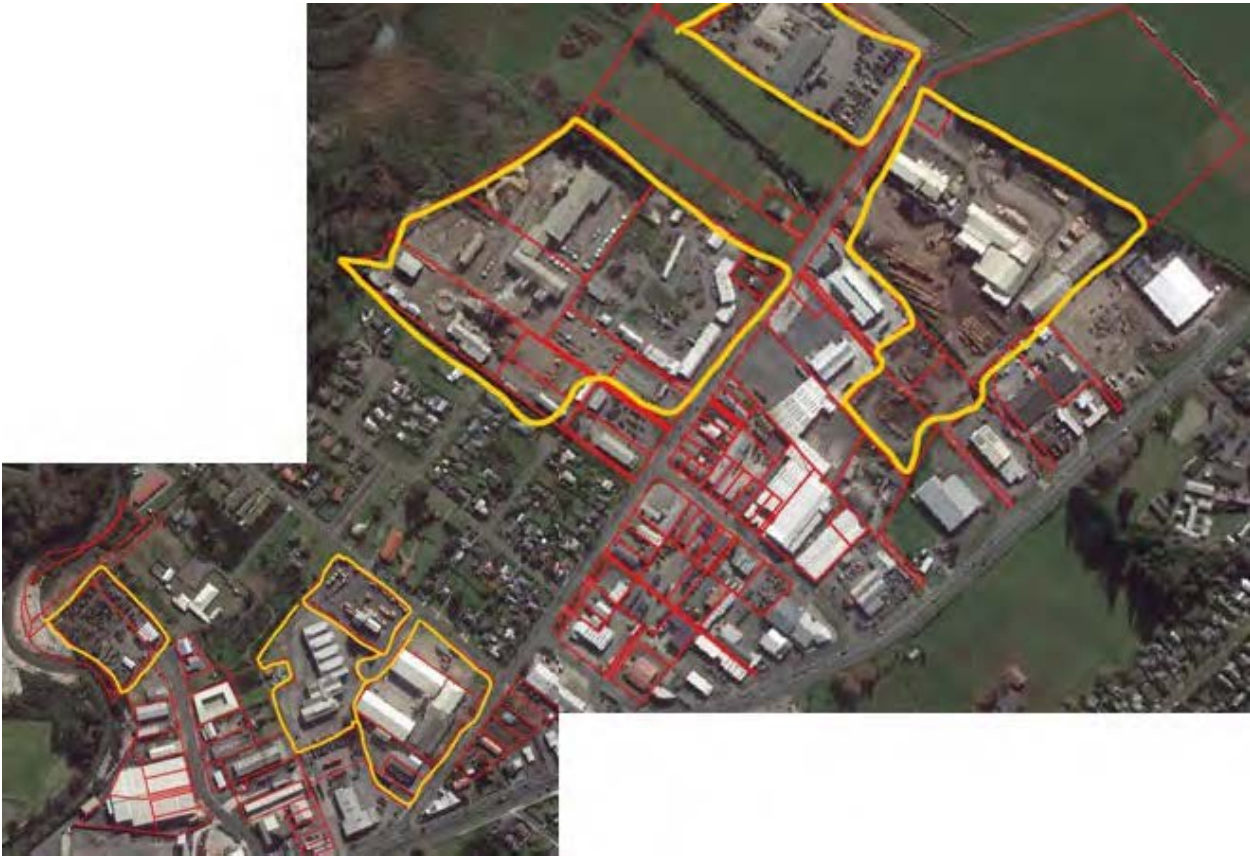


Table 2-24 below applies the vacant capacity of the existing Heavy Industrial Zone in the short-medium and long term, and adds the capacity of the indicative Taurekenga Heavy Industrial Zone in the long term in accordance with the preliminary FDS scenarios (i.e. scenarios 1 and 3). The top table shows the Alternative Capacity Scenario and the bottom table shows the Alternative Conservative Capacity Scenario.

The transfer of the selected heavy industrial sites from the Ngāpuna Business area (which applies indicatively in preliminary scenario 1, 3 and 4) is then shown (as negative values), and the residual capacity after that transfer is calculated. Achieving a positive residual capacity is important to cater for some (but unknown) future demand growth of heavy industrial activities. Based on the Alternative Capacity Scenario, FDS Scenario 4 is already insufficient to accommodate all of the Ngāpuna Business transfer, never mind any future growth that may seek a heavy industrial zone. This is because the amount leaving Ngāpuna Business area is larger (even just retaining current site area) than the estimated vacant capacity in the existing

Puarenga Heavy Industrial Zone. Preliminary Scenarios 1 and 3 both show sufficiency because of the additional capacity they provide. Scenario 2 is only sufficient because that scenario does not re-zone Ngāpuna Business (and therefore the presumption is that the heavy industrial sites would stay in place²³), although it is not known if 9.1ha of heavy industrial capacity is in fact sufficient to cater for projected long-term demand for heavy industrial zoning because of the limitations of the current demand modelling (so sufficiency is implied, but not certain). Under the Alternative Conservative Capacity Scenario – the pattern of results is the same, but the residual amounts are considerably less.

Table 2-24 – Net Long-Term Vacant Heavy Industrial Zone Capacity Once Relocations are Accounted For

Alternative Capacity Scenario

	HBA			FDS Scenarios			
	Short term	Medium term	Long term	S1	S2	S3	S4
Vacant Heavy Industrial	9.1	9.1	9.1	99.2	9.1	99.2	9.1
Ngapuna Transfer*				-26.8	0.0	-26.8	-26.8
Residual left to cater for growth				72.4	9.1	72.4	-17.7
Saw mill (Fairy Springs) Transfer				-8.0	-8.0	-8.0	-8.0
Residual left to cater for growth				64.4	1.1	64.4	-25.7

*Same amount deducted from Heavy Industrial for both testing scenarios

Conservative Capacity Scenario (assumes that transferred businesses will not occupy Maori Land)

	HBA			FDS Scenarios			
	Short term	Medium term	Long term	S1	S2	S3	S4
Vacant Heavy Industrial	6.2	6.2	6.2	47.8	6.2	47.8	6.2
Ngapuna Transfer*				-26.8	0.0	-26.8	-26.8
Residual left to cater for growth				20.9	6.2	20.9	-20.6
Saw mill (Fairy Springs) Transfer				-8.0	-8.0	-8.0	-8.0
Residual left to cater for growth				12.9	-1.8	12.9	-28.6

*Same amount deducted from Heavy Industrial for both testing scenarios

As discussed above, Council are also interested in understanding the effect of relocating the saw mill in Fairy Springs to a Heavy Industrial Zone. This site is shown in Figure 2-7 below. We know from the aerial photos that they are also utilizing some space in the parcel to the east, but this parcel also includes Pinex Road. They don't appear to be using that land intensively. Rather, the three parcels M.E has selected include built structures (we presume the factory is the most offensive activity) and the raw log storage area. These three parcels are therefore indicative of the land area they might require if they shifted (and sum to 8ha).

Table 2-24 shows the cumulative effect of transferring the saw-mill site (at its current size) into the residual Heavy Industrial Zone capacity. This further reduces the surplus of capacity to cater for future growth in the Alternative Capacity Scenario, such that an estimated 64ha hectares remains vacant in Scenarios 1 and 3 to cater for long-term demand growth. Scenario 2 would leave just 1ha of vacant capacity to cater for long-term growth and M.E consider this insufficient for that purpose. Scenario 4 was already insufficient, so the transfer of the saw mill exacerbates the shortfall (and would not be possible)²⁴.

²³ M.E note that relocating the heavy industrial activities may still be desirable and achievable even if the Light Industrial Zoning is unchanged by the FDS. However, for simplicity, the modelling ties any relocation to the indicative rezoning proposal.

²⁴ This will depend on timing. In Scenario 4, some (but not all) of the Ngāpuna Business heavy industrial activities could shift or the saw mill could shift – it really depends who goes first.

Under the Alternative Conservative Capacity Scenario, both Scenario 2 and 4 would be insufficient to allow all heavy industrial activities to shift and allow for future growth in demand. It is not known if 12.9ha of residual capacity in Scenarios 1 and 3 would be sufficient in practice to cater for long-term demand growth if limited to fee-simple land. It is however, double the capacity currently available under operative zoning (6.2ha, Table 2-24).

Figure 2-7 – Approximate Extent of the Saw Mill in Fairy Springs Light Industrial Zone



The logical finding from this high-level analysis is that encouraging heavy industrial activities that are located in the Light Industrial Zone to relocate will only be possible if the FDS provides suitable new Heavy Industrial Zone land for them to move too. The land area that relocating businesses require may be larger than what they currently occupy and has been modelled here, so some additional buffer of capacity should be factored in.

The FDS then needs to provide some additional Heavy Industrial Zone capacity to cater for future growth over the long-term. While the operative District Plan provides some vacant capacity (available in the short term), it is constrained in part by Māori owned land and its relative suitability for development will be evaluated by the market in the long-term if one (or more) alternative locations are also provided by the FDS. In other words, if Heavy Industrial Zone sites identified by the FDS prove to be more suitable (attractive) overall than the Puarenga Heavy Industrial Zone (discussed further below), the FDS site(s) may need to be sufficient in size to cater for all future demand growth on its own to avoid the risk of Puarenga not attracting any further development. Given that that demand growth has not been quantified and is unknown at present, identifying a site as part of the FDS that is large, or that is smaller but has potential for future expansion (if needed), would be optimal.



2.7 Suitability of Long Term FDS Growth Areas

This section briefly sets out the update of the MCA included in the HBA 2021 report for vacant business land to include each of the business growth areas identified in preliminary FDS scenarios. The modelling is not sensitive to the scenarios, rather it includes all growth areas identified to show how suitable they are for retail, commercial and industrial development respectively relative to long-term vacant area already zoned in the District Plan²⁵.

2.7.1 Scoring Approach

The indicative long-term growth areas were scored against the same criteria for industrial, commercial and retail development (as applicable to the zoning assigned to each location) as in the original MCA. For further detail of the criteria (and weighting), refer to the HBA 2021 report/technical report as we do not repeat it here. The same approach to scoring was adopted, including scoring relative to all other locations enabling that category of land use (and irrespective of whether they have remaining vacant capacity or not). Scores previously given to locations in the original MCA have not been revisited or changed. The ranking of all areas was extended to include the scores of the new FDS growth areas.

2.7.2 Results - Interpretation

The following graphs are consistent with those in the HBA 2021, but for simplicity, exclude business zone locations that have no vacant capacity remaining. Hence the graphs show the relative scores (and available vacant developable land area) of just locations that could cater for new business growth.

The MCA shows the vacant developable land area (which in most greenfield areas excludes 30% of land for roading and other landscaping areas) and assigns that capacity to retail, commercial or industrial development as applicable to what activities are permitted, controlled or restricted discretionary in the assigned zone. This approach reflects NPSUD guidance and is referred to in the HBA as the Maximum Capacity Scenario in that the same land capacity is shown against multiple land use categories. This double or even triple counts the vacant capacity.

In reality, any lot of land can only be developed for one purpose (unless multi storey development is enabled and you could then get retail on the ground floor and commercial on upper floors for example). However, the Maximum Capacity Scenario does not make any assumptions about what category of land use will take up vacant land. As such, a zone that has 10ha say of Light Industrial Zoning, could be developed as up to 10ha of industrial use, up to 10ha of commercial use (limited to what commercial activities are anticipated in the zone) and up to 10ha of retail use (again limited to what retail activities are anticipated in the zone)²⁶.

The majority of the FDS growth areas are indicatively assigned Light Industrial Zone or Eastgate Business Park Zone (in keeping with the greatest type of demand growth) and one is assigned Heavy Industrial Zone

²⁵ Note, none of the zoning assumptions for the FDS growth areas enable tourist accommodation, so there is no change to the MCA for tourist accommodation to that presented in the HBA 2021 report.

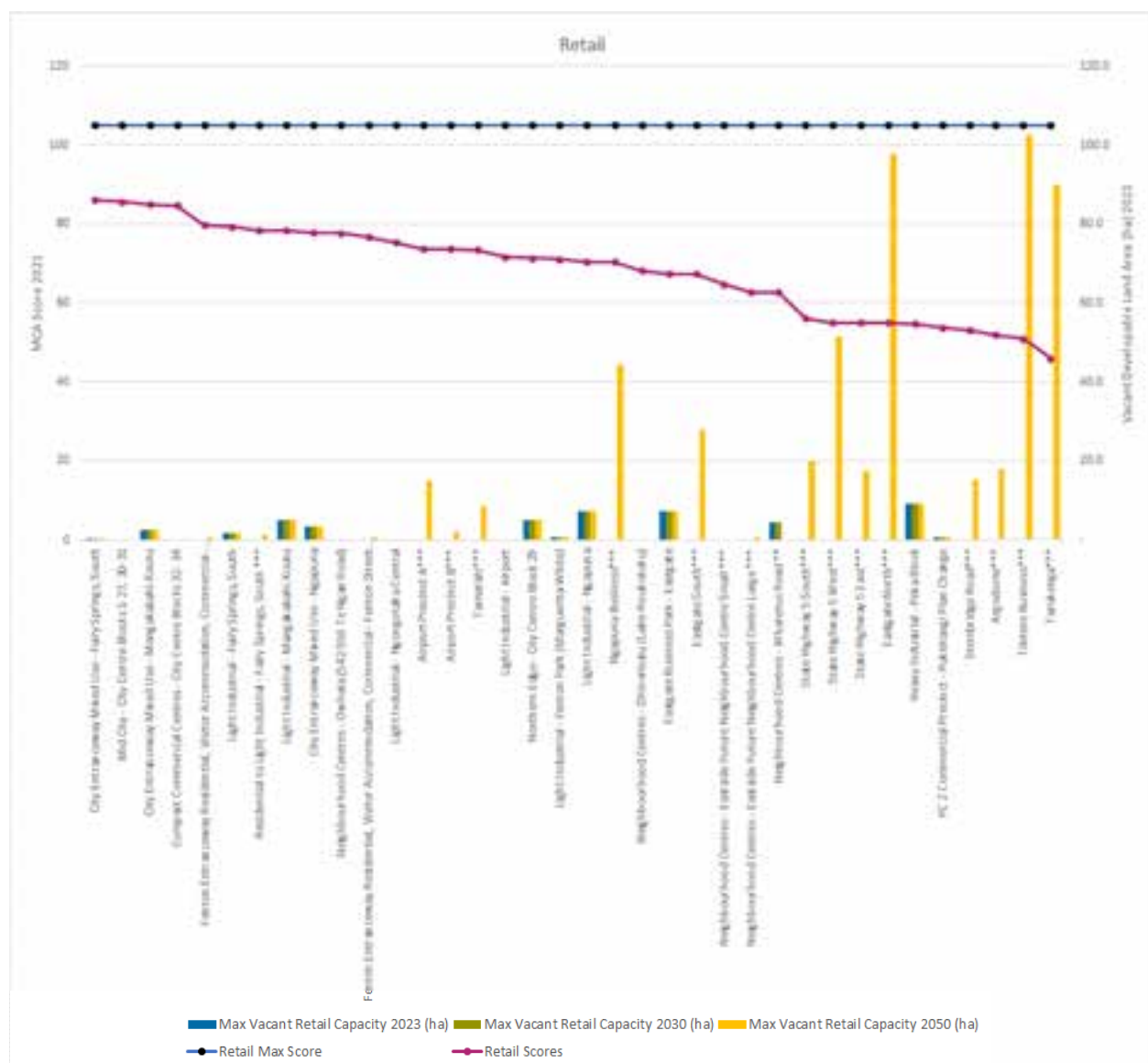
²⁶ The Alternative Capacity Scenario in the HBA 2021 provides an estimate of the most likely mix of development by category to take up vacant land. That scenario removes the double/triple counting of vacant land area. Refer the HBA 2021 report for assumptions by zone type.



2.7.3 Results – Suitability

Figure 2-8 shows the results for all zone locations that enable some form of retail activity and have vacant land capacity. Note, they do not all provide for the same sorts of retail activity – but they have been scored relative to their suitability for their respective enabled retail activities. Long-term only growth areas are shown with *** which includes but is not limited to the FDS growth areas (as discussed above).

Figure 2-8 - Updated MCA Including New Long Term Growth Areas in FDS Scenarios – Retail Land Use



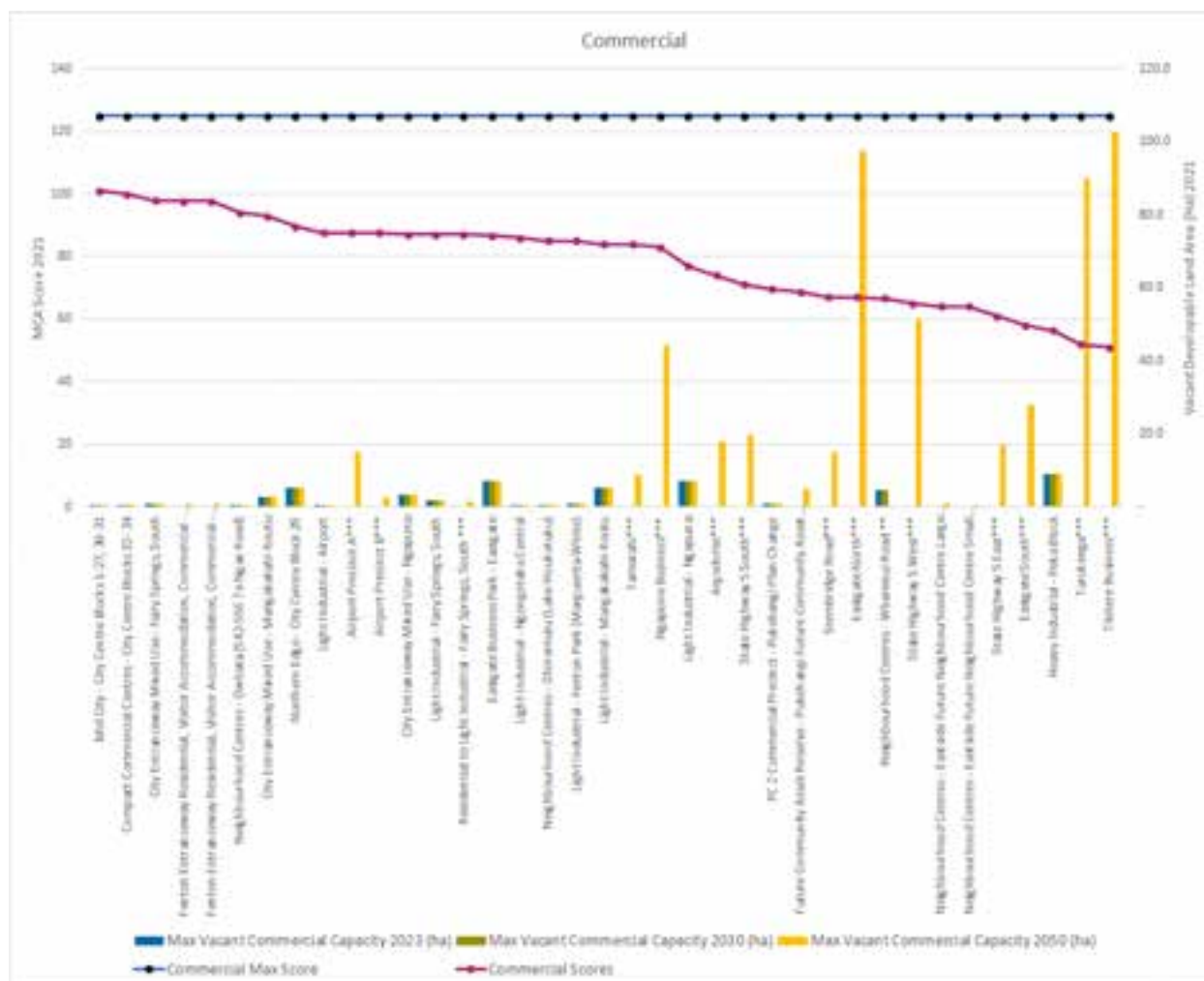
Some key findings:

- The **Airport Precinct A & B** score relatively well for retail suitability, driven mainly by the airport workforce to the rear of the sites. The precincts also score well due to their proximity to the existing Eastgate Business Park and any other FDS areas that could be provided in the vicinity, which could have a cumulative effect (i.e. **Eastgate North** on the opposite side of the road). While the same could apply in reverse (i.e. **Eastgate North** retail being suitable to cater for nearby Airport employment), the long extent of that growth area to the north puts much of that land further away for external customers, hence it achieves a lower relative score.
- The **Tamarahi** growth area also scores relatively better than other FDS growth areas identified in the general vicinity. The key factors driving this higher relative suitability include adjoining residential areas along two out of three external boundaries and more advanced planning for infrastructure. It is also closer to the Ngongotahā town centre so offers good potential as a complementary retail area.
- The **Ngāpuna Business Area** (aka Light Industrial - Ngāpuna) scores relatively higher than other long-term only growth areas for retail activity. This is driven mainly by its proximity to a dense residential population as well as other employment areas; a greater ability to be nearby complementary business activities thanks to the neighbouring City Entranceway Mixed Use Zone as well as the Redwood centre; and also the fact that service infrastructure²⁷ is in place (although being within the geothermal field it means that upgrading and ongoing maintenance of infrastructure is a local factor). The zone area lacks profile/exposure for retailers as it does not adjoin the main arterial road, so this constrained its overall score, along with relatively more traffic congestion in the local area and relatively less parking availability (particularly on-street parking).
- **Eastgate South** scores the same as for the existing Eastgate Business Park for retail suitability (within the context of the zone rules). The net score is only marginally less than for the Ngāpuna Business area on account of having relatively less population/employment within walking distance and being smaller in size (less critical mass), but scoring relatively better in terms of traffic congestion in the immediate locality, profile/exposure and more maintenance free infrastructure.
- All other FDS growth areas (excluding Tarukenga) have a similar and somewhat lower relative score for retail suitability. This is not unexpected given that the majority score poorly on having infrastructure in place (this is a score that can change over time), have limited or no public transport services (again, something that can change), and being greenfield fringe locations, don't have dense residential or other employment areas nearby. They all score relatively well on profile/exposure; accessibility; and low congestion though as they flank key arterial roads on the fringe of the existing urban area.
- **Tarukenga** scores low for retail suitability but it is inconsequential as any retail will be likely limited to food and beverage for servicing an industrial development workforce and so may be self-sustaining.

²⁷ Excludes consideration of stormwater infrastructure.

Figure 2-9 shows the results for all zone locations that enable some form of commercial activity and have vacant land capacity. Note, they do not all provide for the same sorts of commercial activity – but they have been scored relative to their suitability for their respective enabled commercial activities. Long-term only growth areas are shown with *** which includes but is not limited to the FDS growth areas (as discussed above).

Figure 2-9 - Updated MCA Including New Long Term Growth Areas in FDS Scenarios – Commercial Land Use



Some key findings:

- The **Airport Precinct A & B**, **Ngāpuna Business** (if redeveloped) and **Tamarahi** areas score well in terms of suitability for commercial development (according to their respective zone type), and as well as some existing zoned vacant land sites in the vicinity, so would be expected to be competitive with those alternate options. Between these areas, the scores against different criterion differ, even though their net scores are similar. For example, the **Airport precincts** score highly for infrastructure being in place, freehold land and being free of natural hazards although has limited residential population within walking distance. **Ngāpuna** is close to both residential areas and employment/other business areas (which offer co-location benefits) but has more congestion and some infrastructure constraints (including some pockets of Māori land). **Tamarahi**



is freehold, close to residential areas but may have some natural hazard constraints (along with many other parts of Ngongotahā).

- The **Agrodome** and **State Highway 5 South** areas are the next most suitable greenfield locations for commercial development. As the growth areas get further from the existing urban area boundary, they have less resident population or workforce nearby²⁸. It is estimated that **State Highway 5 South** has marginally better outcomes for current public transport services (benefiting from services that currently travel to Ngongotahā), while **Agrodome** has marginally better outcomes for versatility of commercial development under the Eastgate Business Park zone relative to the Light Industrial Zone assigned to **State Highway 5 South**.
- **Stembridge Road, Eastgate North, and State Highway 5 West** all have the next best suitability, and similar overall scores. There is some variability between the areas on certain criteria. For example, **State Highway 5 West** scores relatively higher for (current) public transport services, and exposure/profile although lower on the area of freehold land, while **Stembridge Road** has the most existing resident population in walking distance compared with the other two locations and is wholly freehold, but is potentially constrained by natural hazards. **Eastgate North** is mainly freehold land and unconstrained by natural hazards, but otherwise scores similarly on other criteria.
- **State Highway 5 East** scores relatively less than the site on the west of the highway only because it contains more Māori Land which is considered a potential (but not certain) constraint to feasible commercial development.
- **Eastgate South** is wholly Māori land and has some natural hazard/stormwater constraints, but otherwise is more advanced in terms of planned infrastructure relative to some FDS growth areas.
- **Tikitere** is considered the least suitable for commercial development given its remoteness from the urban area and Māori land ownership. This implies that any development under the Light Industrial Zoning would be more focused on industrial activity than commercial opportunities.

Figure 2-10 shows the results for all zone locations that enable some form of industrial activity and have vacant land capacity. Note, they do not all provide for the same sorts of industrial activity (some are light industrial and Puarenga (aka the 'Peka Block')/Tarukenga are heavy industrial – but they have been scored relative to their suitability for their respective enabled commercial activities. Long-term only growth areas are shown with *** which includes but is not limited to the FDS growth areas (as discussed above).

Some key findings:

- The **Airport Precinct A and B** score highly relative to all other areas enabling industrial development that have vacant capacity (and close to the maximum score). Contributing attributes include accessible, high profile/exposure, serviced, flat, relatively unfragmented and an ability to complement adjacent airport related businesses.
- **Tamarahi, Eastgate North, State Highway 5 South and Eastgate South** have similar overall scores and are ranked the next most suitable industrial development locations. **Eastgate South** scores low on the ownership structure (tenure) on account of being wholly Māori Land, while the other

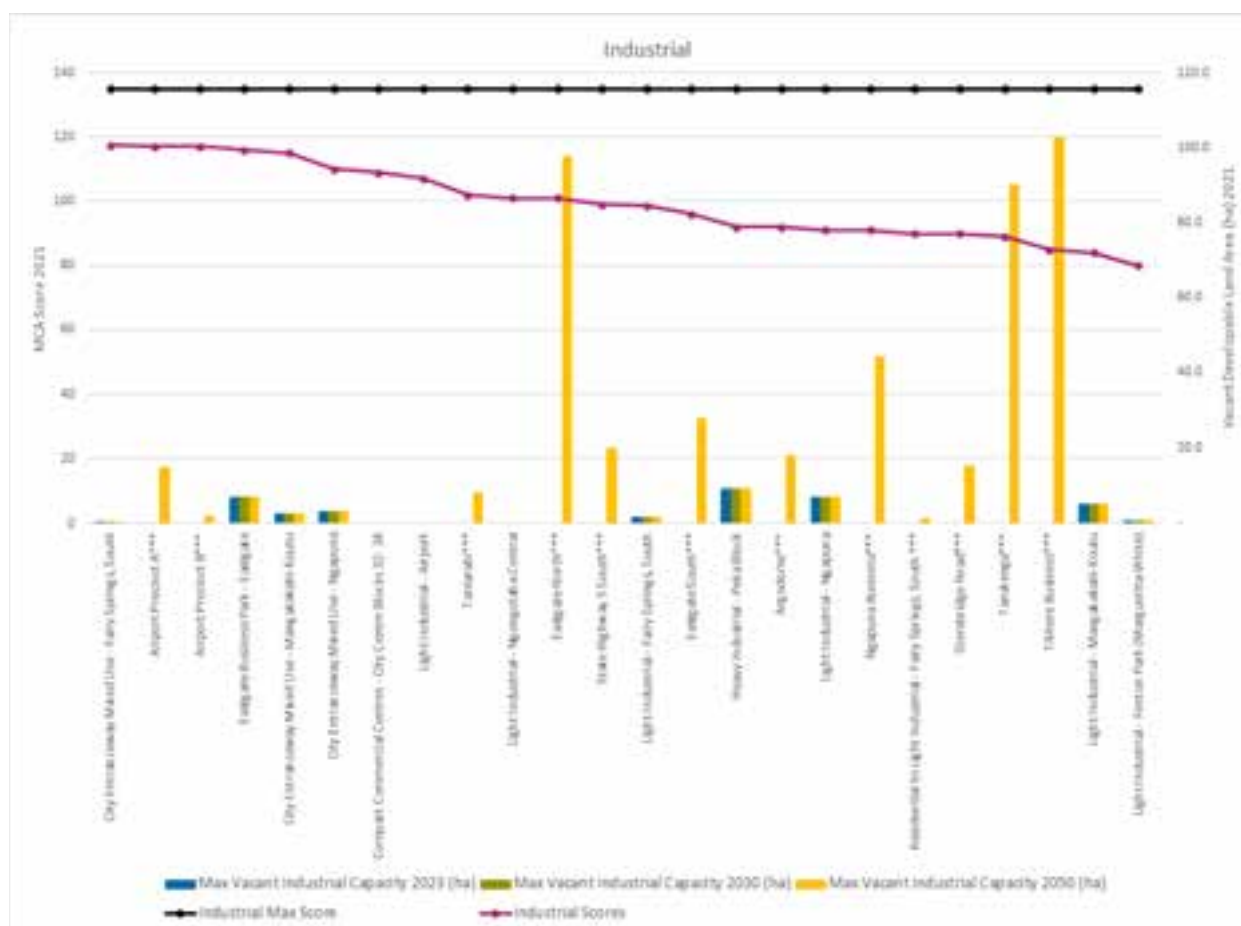
²⁸ Note, in part this may be addressed by residential growth areas being included in close proximity. This MCA update has not considered the preliminary residential growth area scenarios.



areas are wholly or nearly fully freehold land. Both **State Highway 5 South** and **Eastgate North** score lower for service infrastructure (with no water infrastructure currently planned). Both **Eastgate North and South** score relatively higher on co-location with complementary business activities (as they border the Eastgate Business Park and are near the airport). Only **Eastgate North** is free of natural hazard constraints. **Tamarahi** scores slightly less on its ability to buffer adverse effects from residential and sensitive activities (on account of having residential areas on its border already).

- **Tikitere Business** area scores relatively lower for industrial suitability, but only slightly so. It is slightly further to access for the urban labour force, the shape of the area means that relatively few businesses would benefit from the good profile/exposure to the state highway

Figure 2-10 - Updated MCA Including New Long Term Growth Areas in FDS Scenarios – Industrial Land Use



2.8 Discussion

2.8.1 FDS Scenarios in Context of HBA Findings and Recommendations

The indicative greenfield growth areas identified for future business development so far in the FDS development process that have been supplied to M.E for assessment provide for a range of new business locations and choice in the market and will increase the competitiveness of the market by bringing in new



landowners. The quantum of capacity provided is an improvement on the current 2018 Spatial Plan greenfield growth areas, and in some cases provides a large increase in long-term capacity, depending on which areas are included in each preliminary spatial growth scenario. Scenario 2 provides for the least area of growth and may be too conservative in light of projected demand to provide at least sufficient long-term development capacity.

The indicative zoning assumptions assigned to each area respond well to the key finding from the HBA 2021, including the need to identify more land suitable for industrial activities, as well as trade retail and other LFR. The scenarios achieve this through a combination of more mixed business areas, light industrial areas and an additional heavy industrial area (complemented by some additional City Entranceway Tourism zone).

Some areas are more suitable for their intended (indicative) development than others, and many are comparable to existing zoned vacant capacity. The nature of urban expansion is that greenfield areas are on the urban fringe. This inevitably means that they are less accessible than older more central business zones in terms of customers and labour. This is however inevitable and can be supported by the integrated location of future residential zones. In some cases, a fringe location will offer a number of benefits in terms of less reverse sensitivity effects (particularly for industrial activities).

As with the operative business zones, many of the indicative FDS growth areas identified at the time of this report are impacted by Māori Land. The widespread nature of Māori Land is a relatively unique character of Rotorua District. As in the HBA 2021, M.E supports providing long-term urban development opportunities on Māori Land so long as the constraints to realising development on those land parcels (which may improve over time) are taken into account (by identifying additional fee-simple land) to minimise the risk of demand not being met in future.

M.E understands that work on identifying suitable business growth areas (and combining them into different growth pathways/scenarios) is ongoing. Substantial changes to the preliminary scenarios tested in this report may need further evaluation to check sufficiency in particular. However, minor refinements to the preliminary scenarios are not likely to materially change our conclusions.



3 Providing for Urban Dwelling Growth

This section firstly sets out the housing demand and capacity modelling completed for the HBA 2021 and subsequently updated for the Housing for Everyone - PC9. This existing capacity modelling forms the latest medium-term baseline against which the long-term housing capacity of the 4 preliminary FDS spatial growth scenarios can be added. The spatial growth scenarios for residential land comprise different combinations of indicative long-term growth areas within the existing urban environment and on the urban fringe. Comparisons of development capacity under the FDS spatial growth scenarios with demand for residential dwellings provides an indication of whether the preliminary spatial growth scenarios are likely to provide at least sufficient housing capacity to meet long-term growth, as required by the NPS-UD.

3.1 Demand for Additional Residential Land 2020-2050

The approach and assumptions for estimating demand for additional dwellings in Rotorua's urban environment between 2020 and 2050 is set out in Section 2.7 of the Rotorua HBA 2021 and then further elaborated and refined²⁹ in the [M.E report](#) prepared to support the s32 evaluation of PC9³⁰ and is not repeated in detail here.

While at the time of drafting, PC9 has yet to go to hearing or become operative, the demand projections modified to reflect greater opportunities for higher density housing in Rotorua's urban environment are applied here as the baseline of demand for this FDS assessment, rather than the original HBA 2021 growth projections. We note however, the total urban dwelling growth is the same across both reports. That is, **demand for 3,550 additional dwellings in the short-term, increasing to 6,240 in the medium-term and 9,740 in the long-term.**³¹

The key difference in the PC9 demand projections is the mix of demand for attached and detached dwellings in each time-period. This relates to both preference shifts towards more attached housing as well as greater potential for substitution of demand between similar dwelling types, discussed below. We also note that while the FDS is for the 2023-2053 time horizon, the 2020-2050 demand projections still provide a sufficient basis for planning that is consistent with past economic assessment.

The demand assessment ultimately estimates the likely future demand for different types of dwelling typologies that correspond to different types of location across the urban environment. It includes both latent demand and the competitiveness margin. The analysis considers both the total dwelling demand base as well as the net increase in demand (i.e. growth in each time period). The total market size provides

²⁹ To model the further market shift that may occur through the introduction of intensification planning provisions and market constraints.

³⁰ July 2022.

³¹ Refer Housing Bottom Lines, HBA 2021, Section 2.8.



a picture of the total market size (i.e. existing plus future projected demand), while the net increase shows the growth within the market.

Demand has been estimated for the following dwelling typologies:

- Higher density attached dwellings – these range from higher density terraced housing up to vertically attached apartments.
- Other attached dwellings – these range from lower density attached dwellings, such as duplex pairs and one-level attached units, up to terraced housing.
- Detached dwellings – these range from larger standalone houses on full sites, up to smaller standalone houses on much smaller sites that could potentially occur under higher density provisions.

Importantly, the assessment recognises that there is likely to be a level of overlap between different types of dwelling demand. Demand for one type of dwelling could potentially be met through dwelling supply in a different market segment. Households typically make trade-offs between price, size and location, which often results in demand substitution between different dwelling typologies. Furthermore, underlying demand preferences may not correspond to final dwelling choices based on consumer constraints such as household budget or travel efficiency. For instance, a household may have an underlying preference for a standalone dwelling on a full site. However, they may instead choose to occupy a similar sized attached dwelling on a smaller site in a more accessible location.

Compared with the operative district plan provisions, the introduction of intensification provisions in PC9 (including the addition of the central government's Medium Density Residential Standards (MDRS)), are likely to result in greater diversity of the future dwelling stock offered by the market in Rotorua as different types of supply become viable. These are likely to enable the potential for greater substitution of demand where a greater range of housing options are available for consumers than would otherwise have been the case. The modelling analyses the levels of market demand substitution that have occurred in other urban economies and estimates how this may occur within the Rotorua context. Two scenarios of demand growth over the long-term were created for the PC9 assessment – a Low Substitution Scenario and a High Substitution Scenario.

Key results by dwelling type and urban reporting area³² are summarised in Table 3-1 and Table 3-2 below.

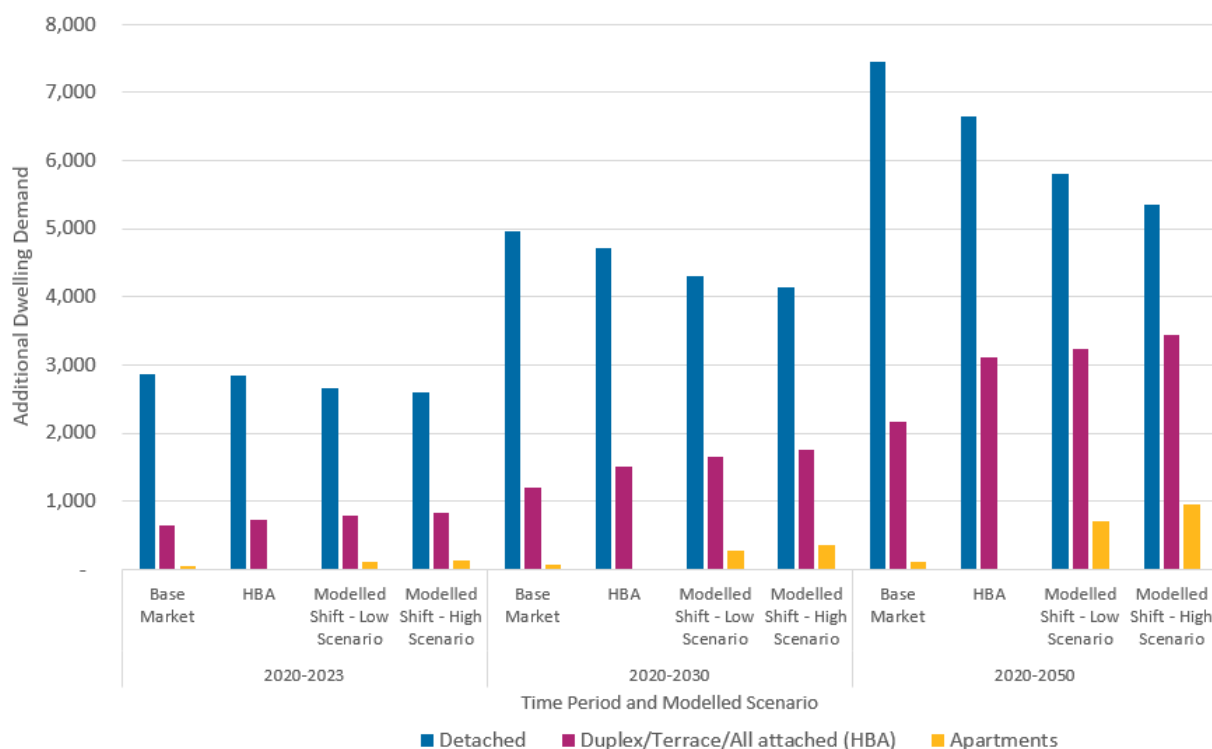
For clarity, Figure 3-1 shows the evolution of the demand projections across M.E assessments, beginning with:

- the Base Market (growth projections in the HBA excluding a minor preference shift to attached housing);
- the HBA demand projections which included a minor preference shift (note, the HBA demand projections did not split out apartments from attached dwelling types, so are not directly comparable with the way that attached housing is shown in the graph for other projection series);
- the PC9 Low Substitution Scenario; and

³² Reporting area boundaries are mapped in the HBA 2021.

- the PC9 High Substitution Scenario.

Figure 3-1 – Comparison of Rotorua Urban Dwelling Projection Series - HBA to PC9/FDS



Source: M.E Residential Intensification Analysis, 2022 and M.E Rotorua Residential Demand and Affordability Model, 2021.

The modelled scenarios show a gradual shift in demand toward more intensive types of dwellings. Under these scenarios, attached dwellings account for between one-fifth and one-quarter (22%-23%) of total long-term dwelling demand. They account for 32% to 40% of the total net increase in demand (2020-2050), with the share increases over time to reach 57% to 65% of the net increase across the long-term (2030-2050).

Within these shifts, there is a greater modelled shift toward apartment dwellings. The apartment market is currently small within Rotorua and only accounts for around 1% of total demand. This is modelled to increase to around 3% by 2050 under these scenarios. Over the long-term 2020-2050, apartment demand is modelled to account for 7% to 10% of total demand increase, and 12% to 17% of the net increase that occurs within the long-term (2030-2050). This is similar to the patterns of new dwelling development that are currently occurring across a number of higher growth New Zealand urban economies.

Further analysis of the modelled patterns of demand is contained within the [M.E report](#) prepared for the PC9 Section 32 assessment.

Table 3-1: Projected Net Change in Demand by Typology and HBA Catchment: Low Substitution Scenario

Demand Substitution Scenario: LOW SUBSTITUTION SCENARIO								
	DWELLING TYPOLOGY							
	Detached	Duplex/Terrace	Apartments	TOTAL	Detached	Duplex/Terrace	Apartments	TOTAL
Catchment	Projected Demand				Share of Demand Type			
	2020-2023				2020-2023			
Central	600	400	70	1,100	22%	49%	60%	30%
Western	1,300	300	30	1,600	48%	33%	28%	44%
Eastern	500	90	10	600	21%	11%	7%	18%
Ngongotahā	200	50	10	300	9%	6%	5%	9%
Total Urban Environment	2,700	800	100	3,600	100%	100%	100%	100%
	2020-2030				2020-2030			
Central	1,000	800	200	1,900	24%	46%	57%	31%
Western	1,900	600	80	2,600	45%	34%	29%	41%
Eastern	900	200	20	1,200	22%	13%	9%	19%
Ngongotahā	400	100	20	600	10%	7%	6%	9%
Total Urban Environment	4,300	1,700	300	6,200	100%	100%	100%	100%
	2020-2050				2020-2050			
Central	1,500	1,400	400	3,300	27%	44%	54%	34%
Western	2,200	1,100	200	3,500	38%	33%	29%	36%
Eastern	1,400	500	80	2,000	24%	15%	11%	20%
Ngongotahā	600	300	40	900	11%	8%	6%	9%
Total Urban Environment	5,800	3,200	700	9,700	100%	100%	100%	100%

Source: M.E Residential Intensification Analysis, 2022 and M.E Rotorua Residential Demand and Affordability Model, 2021.

Table 3-2: Projected Net Change in Demand by Typology and HBA Catchment: High Substitution Scenario

Demand Substitution Scenario: HIGH SUBSTITUTION SCENARIO								
	DWELLING TYPOLOGY							
	Detached	Duplex/Terrace	Apartments	TOTAL	Detached	Duplex/Terrace	Apartments	TOTAL
Catchment	Projected Demand				Share of Demand Type			
	2020-2023				2020-2023			
Central	600	400	80	1,100	22%	47%	59%	30%
Western	1,200	300	40	1,600	48%	35%	28%	44%
Eastern	500	100	10	600	21%	12%	7%	18%
Ngongotahā	200	60	10	300	9%	7%	5%	9%
Total Urban Environment	2,600	800	100	3,600	100%	100%	100%	100%
	2020-2030				2020-2030			
Central	1,000	800	200	1,900	24%	43%	56%	31%
Western	1,800	600	100	2,600	45%	36%	29%	41%
Eastern	900	200	30	1,200	22%	14%	9%	19%
Ngongotahā	400	100	20	600	10%	7%	6%	9%
Total Urban Environment	4,100	1,800	400	6,200	100%	100%	100%	100%
	2020-2050				2020-2050			
Central	1,400	1,400	500	3,300	27%	41%	53%	34%
Western	2,000	1,200	300	3,500	38%	34%	29%	36%
Eastern	1,300	600	100	2,000	25%	17%	12%	20%
Ngongotahā	600	300	60	900	11%	8%	6%	9%
Total Urban Environment	5,300	3,500	1,000	9,700	100%	100%	100%	100%

Source: M.E Residential Intensification Analysis, 2022 and M.E Rotorua Residential Demand and Affordability Model, 2021.



3.2 HBA 2021 Residential Capacity (Original Baseline)

A discussion of plan enabled dwelling capacity results from the HBA 2021 can be found in section 5.3 of that report and is not repeated in detail here. Results (net additional dwellings) by reporting area are shown below for the short (and medium) term which are based on operative zone areas (Table 3-3). Results for the long-term are shown in Table 3-4 and are based on both operative zones and greenfield and brownfield growth areas identified in the 2018 Spatial Plan. These included further urban expansion in the outer areas of the city (Ngongotahā and Eastern reporting areas).

The HBA 2021 plan enabled capacity analysis showed that operative zones enabled an estimated 23,700 additional dwellings in the short-term through a combination of (the maximum of) infill development and redevelopment and the development of greenfield areas (Table 3-3). As there were no proposed changes to the District Plan at the time, the medium-term capacity is the same as the short-term capacity.

The HBA 2021 plan enabled capacity analysis also showed that there were very limited changes to housing capacity within Rotorua's existing urban area in the long-term (i.e. excluding greenfield areas). Net increases in long-term capacity are largely limited to very minor operative future urban zones that can be included in long-term capacity and increases in the height limits along Fenton Street (which provides for apartment development), as included in the 2018 Spatial Plan (i.e. indicative upzoning of that area in the long-term). The Spatial Plan also identified new long-term greenfield land (in Ngongotahā and Eastern Rotorua³³), which substantially increases plan enabled capacity of greenfield land compared with the short (and medium term) zoning pattern, but makes only a moderate difference to total urban dwelling capacity.

Under the Spatial Plan 2018, and in combination with operative zoning, the HBA 2021 showed total long-term dwelling capacity of 29,800, a net increase over the short-medium term of 6,100 dwellings or 26% (Table 3-4).

While the HBA 2021 showed a large quantum of plan enabled residential capacity, by the time reasonably expected to be realised capacity was considered in the short, medium and long-term the HBA concluded that there was a likely shortfall of housing capacity in the short-term of -1,890 dwellings, a shortfall of -1,400 dwellings in the medium-term and a short-fall of between -320 and -3,630 in the long-term.³⁴ The intensification plan change and FDS (discussed below), both respond³⁵ to the conclusions of the HBA 2021 (both the shortfalls and impacts of planning generally), and not the plan enabled capacity results per se. The plan enabled capacity results from the HBA 2021 are included here to show how capacity is changing over time in response to regulatory changes and new strategic growth planning.

³³ It is noted that all of the long-term additional greenfield capacity identified in the Spatial Plan in the Eastern area (half of the total additional greenfield capacity) is on Māori land.

³⁴ Refer section 9 of the HBA 2021 Main Report for a full discussion.

³⁵ Irrespective of the findings of the HBA 2021, the intensification plan change was required to respond to Policy 5 of the NPS-UD. It had the additional benefit of providing a planning response to medium-term capacity shortfalls identified in the HBA.

Table 3-3 – Short to Medium Term Plan Enabled Dwelling Capacity in the Rotorua Lakes District Urban Environment (HBA 2021)

Reporting Area		Plan Enabled Capacity														
		Infill				Redevelopment				Max Infill or Redevelopment	Greenfield				Combined Total	
		Standalone House	Duplex / Terrace	Apartments	MAX	Standalone House	Duplex / Terrace	Apartments	MAX		Standalone House	Duplex / Terrace	Apartments	MAX	Greenfield and Max Infill	Greenfield and Max Infill or Redevelopment
Eastern	Brownfield	800	-	-	800	1,800	-	10	1,800	1,800	-	-	-	-	800	1,800
Eastern	Underutilised Urban Land	1,300	-	-	1,300	1,700	-	-	1,700	1,700	-	-	-	-	1,300	1,700
Eastern	Greenfield	-	-	-	-	-	-	-	-	-	2,100	-	70	2,200	2,200	2,200
Eastern	Total	2,100	-	-	2,100	3,500	-	10	3,500	3,500	2,100	-	70	2,200	4,200	5,700
Central	Brownfield	300	10	600	900	800	1,300	8,100	10,000	10,000	-	-	-	-	900	10,000
Central	Underutilised Urban Land	40	90	-	90	40	90	-	90	90	-	-	-	-	90	90
Central	Greenfield	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Central	Total	300	100	600	1,000	800	1,300	8,100	10,100	10,100	-	-	-	-	1,000	10,100
Western	Brownfield	1,900	-	-	1,900	3,900	-	300	4,300	4,500	-	-	-	-	1,900	4,500
Western	Underutilised Urban Land	400	-	-	400	400	-	-	400	400	-	-	-	-	400	400
Western	Greenfield	-	-	-	-	-	-	-	-	-	1,500	-	-	1,500	1,500	1,500
Western	Total	2,300	-	-	2,300	4,400	-	300	4,700	4,900	1,500	-	-	1,500	3,800	6,400
Ngongotahā	Brownfield	600	-	-	600	1,200	-	90	1,300	1,300	-	-	-	-	600	1,300
Ngongotahā	Underutilised Urban Land	300	-	-	300	300	-	-	300	300	-	-	-	-	300	300
Ngongotahā	Greenfield	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ngongotahā	Total	800	-	-	800	1,500	-	90	1,500	1,600	-	-	-	-	800	1,600
TOTAL Urban Env.	Existing Urban	3,600	10	600	4,200	7,600	1,300	8,600	17,300	17,600	-	-	-	-	4,200	17,600
TOTAL Urban Env.	Underutilised Urban Land	2,000	90	-	2,000	2,400	90	-	2,500	2,500	-	-	-	-	2,000	2,500
TOTAL Urban Env.	Greenfield	-	-	-	-	-	-	-	-	-	3,500	-	70	3,600	3,600	3,600
TOTAL Urban Env.	Total	5,500	100	600	6,200	10,100	1,300	8,600	19,800	20,100	3,500	-	70	3,600	9,800	23,700

Source: M.E RLDC Capacity Model 2021.

Table 3-4 - Long Term Plan Enabled Dwelling Capacity in the Rotorua Lakes District Urban Environment (HBA 2021)

		Plan Enabled Capacity														
		Infill				Redevelopment					Greenfield				Combined Total	
Reporting Area	Area Type	Standalone House	Duplex / Terrace	Apartments	MAX	Standalone House	Duplex / Terrace	Apartments	MAX	Max Infill or Redevelop ment	Standalone House	Duplex / Terrace	Apartments	MAX	Greenfield and Max Infill	Greenfield and Max Infill or Redevelop ment
Eastern	Brownfield	800	-	-	800	1,800	-	10	1,800	1,800	-	-	-	-	800	1,800
Eastern	Underutilised Urban Land	1,300	-	-	1,300	1,700	-	-	1,700	1,700	-	-	-	-	1,300	1,700
Eastern	Greenfield	-	-	-	-	-	-	-	-	-	4,400	-	-	4,400	4,400	4,400
Eastern	Total	2,100	-	-	2,100	3,500	-	10	3,500	3,500	4,400	-	-	4,400	6,500	7,900
Central	Brownfield	300	10	700	1,000	800	1,300	9,600	11,400	11,400	-	-	-	-	1,000	11,400
Central	Underutilised Urban Land	40	90	-	90	40	90	-	90	90	-	-	-	-	90	90
Central	Greenfield	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Central	Total	300	100	700	1,100	800	1,300	9,600	11,500	11,500	-	-	-	-	1,100	11,500
Western	Brownfield	1,900	-	-	1,900	3,900	-	300	4,300	4,500	-	-	-	-	1,900	4,500
Western	Underutilised Urban Land	400	-	-	400	400	-	-	400	400	-	-	-	-	400	400
Western	Greenfield	-	-	-	-	-	-	-	-	-	1,600	-	-	1,600	1,600	1,600
Western	Total	2,300	-	-	2,300	4,300	-	300	4,700	4,900	1,600	-	-	1,600	3,900	6,400
Ngongotahā	Brownfield	600	-	-	600	1,200	-	90	1,300	1,300	-	-	-	-	600	1,300
Ngongotahā	Underutilised Urban Land	300	-	-	300	300	-	-	300	300	-	-	-	-	300	300
Ngongotahā	Greenfield	-	-	-	-	-	-	-	-	-	2,300	-	-	2,300	2,300	2,300
Ngongotaha	Total	800	-	-	800	1,500	-	90	1,500	1,600	2,300	-	-	2,300	3,200	3,900
TOTAL Urban Env.	Existing Urban	3,600	10	700	4,300	7,600	1,300	10,000	18,700	19,000	-	-	-	-	4,300	19,000
TOTAL Urban Env.	Underutilised Urban Land	2,000	90	-	2,000	2,400	90	-	2,500	2,500	-	-	-	-	2,000	2,500
TOTAL Urban Env.	Greenfield	-	-	-	-	-	-	-	-	-	8,300	-	-	8,300	8,300	8,300
TOTAL Urban Env.	Total	5,500	100	700	6,300	10,000	1,300	10,000	21,200	21,500	8,300	-	-	8,300	14,600	29,800

Source: M.ERLDC Capacity Model 2021.

3.3 HBA Capacity Modified by MDRS and Plan Change 9 (New Baseline)

For PC9, and using the HBA 2021 plan enabled capacity discussed above as a base, an updated capacity assessment modelled the capacity for higher density development through applying the proposed higher density planning provisions and zone extents in the medium-term in key accessibility areas as well as MDRS provisions across the residential areas of the urban environment. Four options for intensification were modelled, with Option 2 being the preferred option notified for PC9.

The following summary results for the total urban environment (excluding greenfield areas) are copied from the Economic Assessment Report for PC9. With the MDRS provisions taking immediate effect, the 'MDRS Applied to ODP Zones' scenario forms the new short-term dwelling capacity (substantially increasing plan enabled capacity compared with the short-term capacity applied in the HBA 2021 and discussed above) (Table 3-5). Total dwelling capacity excluding greenfield areas increases to 71,100 due to MDRS alone. Option 2 further increases urban dwelling capacity to 129,500 net additional dwellings. The largest shares of increase occur in attached dwellings, with sizeable increases also occurring within detached dwellings.

Table 3-5 – Rotorua Existing Urban Area Total Plan Enabled Capacity as Modified by MDRS and PC9

Modelled Scenario	INFILL CAPACITY				REDEVELOPMENT CAPACITY				Max Infill + Redevelopment
	Detached Dwellings	Horizontally Attached Dwellings	Apartments (vertically attached)	Max Infill	Detached Dwellings	Horizontally Attached Dwellings	Apartments (vertically attached)	Max Redevelopment	
	Net Additional Dwellings								
HBA Capacity	5,500	100	600	6,200	10,100	1,300	8,600	19,800	20,100
MDRS Applied to ODP Zones	12,100	15,300	4,500	19,900	42,100	59,000	8,700	68,700	71,100
Option 2 (PC9)	12,400	22,100	5,000	26,600	41,500	106,200	25,200	127,500	129,500
	Net Change in Capacity from Previous Modelled Scenario								
MDRS Applied to ODP Zones	6,600	15,200	4,000	13,700	32,100	57,700	100	48,900	51,000
Option 2 (PC9)	300	6,800	400	6,800	-600	47,100	16,500	58,900	58,300

Source: M.E Rotorua MDRS Residential Capacity Model, 2022.

The effect of the Residential 3 Zone qualifying matter on the PC9 Option 2 capacity is shown in Table 3-6. This removes MDRS provisions for the Residential 3 zone. It has a minor impact, reducing plan enabled capacity by 0.8% (-1,000 dwellings) from 129,500 to 128,500 net additional dwellings (Table 3-6).

Table 3-6 – Effect of Residential 3 Zone Qualifying Matter on Rotorua Existing Urban Area Total Plan Enabled Capacity

Modelled Scenario	INFILL CAPACITY				REDEVELOPMENT CAPACITY				Max Infill + Redevelopment
	Detached Dwellings	Horizontally Attached Dwellings	Apartments (vertically attached)	Max Infill	Detached Dwellings	Horizontally Attached Dwellings	Apartments (vertically attached)	Max Redevelopment	
Option 2 (MDRS Applied to Res 3 Zone)	12,400	22,100	5,000	26,600	41,500	106,200	25,200	127,500	129,500
Option 2 (MDRS Not Applied to Res 3 Zone)	12,300	21,700	5,000	26,400	41,400	104,600	25,200	126,600	128,500
Net Change in Additional Dwellings	0	-400	0	-200	-100	-1,500	0	-1,000	-1,000
Percentage Change in Additional Dwellings	-0.3%	-2.0%	0.0%	-0.9%	-0.1%	-1.4%	0.0%	-0.8%	-0.8%

Source: M.E Rotorua MDRS Residential Capacity Model, 2022.

'Option 2 as modified by proposed qualifying matters' for PC9 (plan enabled capacity for 128,500 net additional dwellings) forms (for the purpose of this report) the medium-term baseline against which the long-term capacity of the preliminary FDS spatial growth scenarios can be added (along with other long-term only residential capacity that was operative and included in the HBA 2021 and not impacted by the FDS spatial growth scenarios).

3.4 FDS Changes to Long-term Residential Capacity

This assessment models 4 preliminary spatial growth scenarios (Scenarios 1 to 4) considered for the FDS. These cover both the existing urban area as well as greenfield areas for future urban expansion.

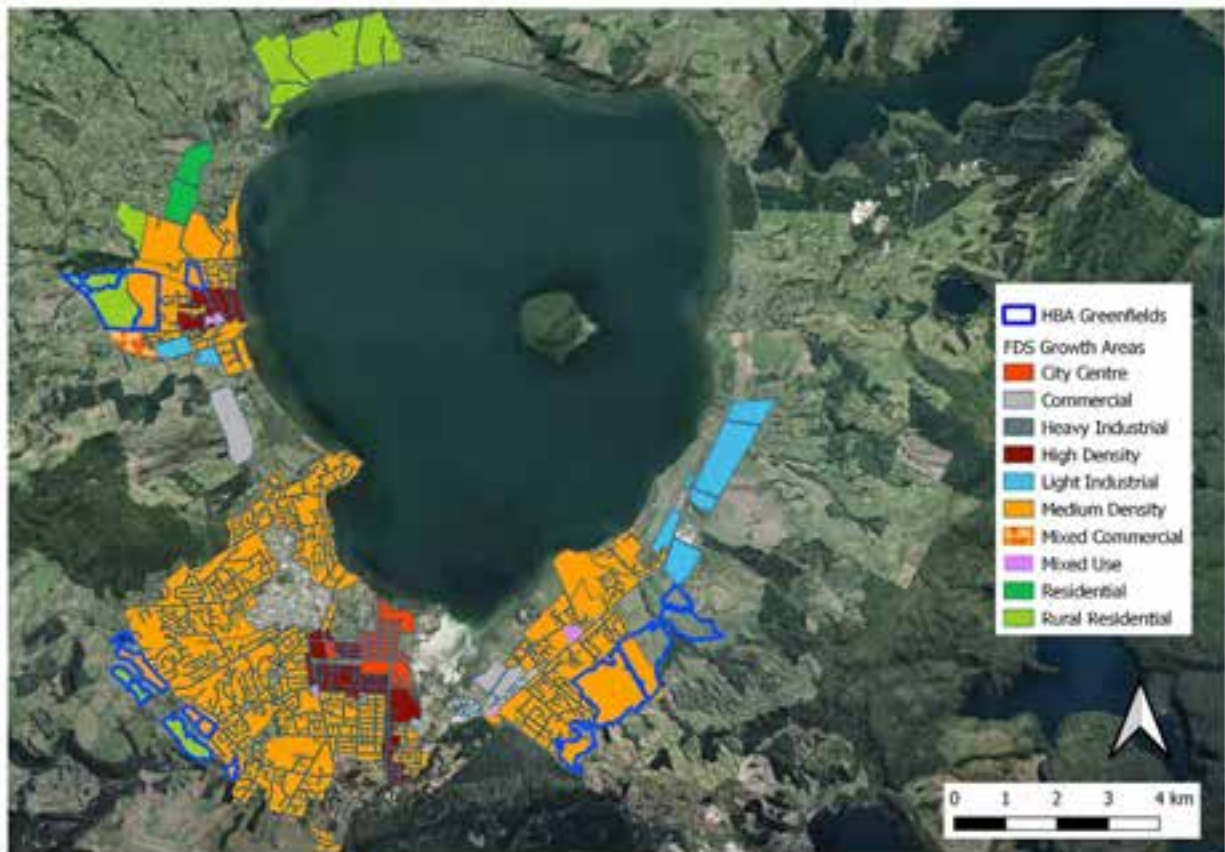
The greenfield areas contain a combination of existing zoned areas modelled under the HBA (including some Spatial Plan 2018 growth areas) as well as further potential areas of future greenfield urban expansion. There are some greenfield areas modelled under the HBA 2021 that are not included within individual FDS spatial growth scenarios as set out below.

The scenarios have different patterns of provisions across the existing urban and greenfield areas. These encourage different growth patterns both at the wider city spatial economic structural scale as well as at the localised level within different parts of the urban environment. At the former scale, the scenarios each have different proportions of growth encouraged across different broad areas of the urban environment. At the localised level, they encourage different levels of concentration of more intensive growth patterns into core nodes of accessibility.

The following sub-sections describe the FDS spatial growth scenarios 1 to 4 as supplied to M.E for this report. Maps of each spatial growth scenario are included. Short and medium-term and long-term residential greenfield areas (which included Spatial Plan 2018 future residential areas) modelled in the HBA 2021 are included for context in the maps. Rural Residential zones are shown but are not included in urban residential capacity (or projected urban housing demand).

3.4.1 Scenario 1

Figure 3-2 – Residential Zoning – Preliminary Spatial Growth Scenario 1

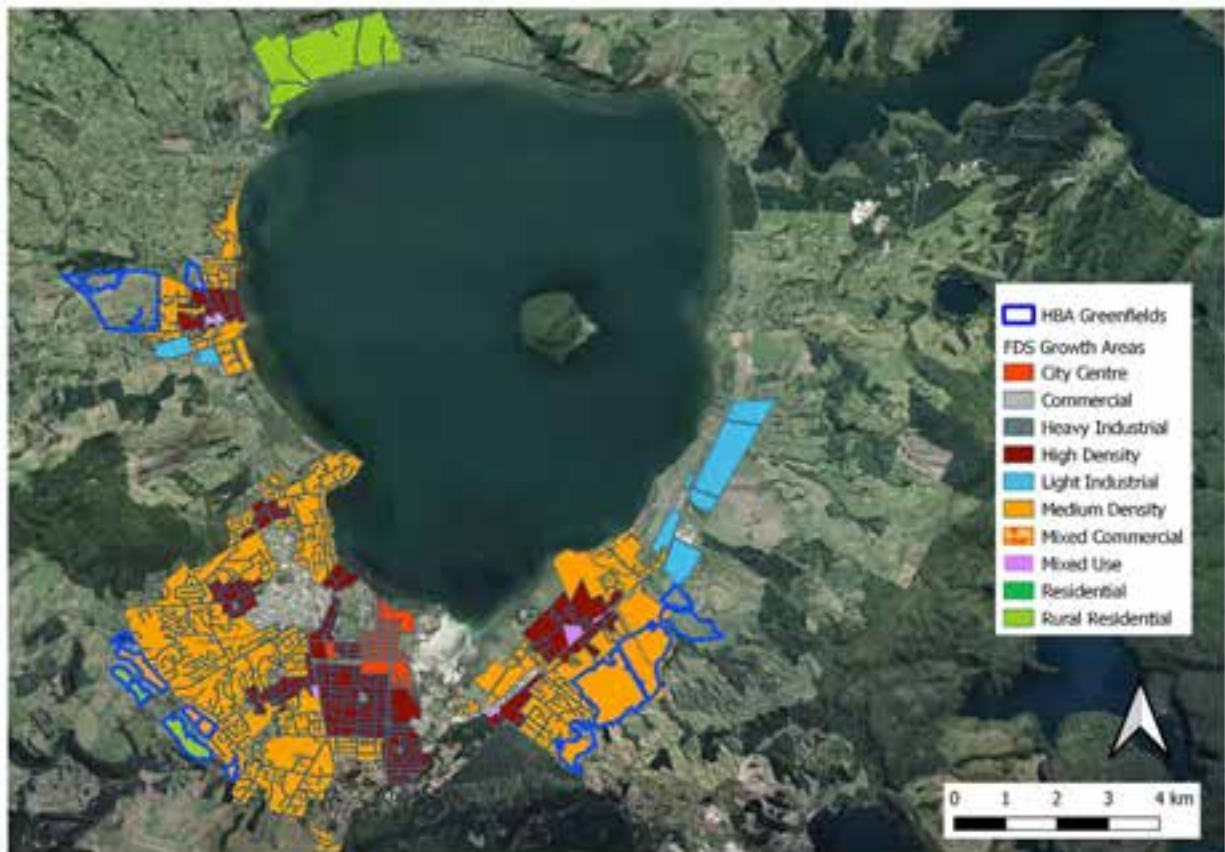


This scenario (illustrated in Figure 3-2) enables intensification across Rotorua’s existing urban area through the application of a Medium Density Residential Zone. Within this, it encourages the strengthening of the City Centre main node, with a surrounding High Density Residential Zone to a similar extent as applied under proposed Option 2 of PC9. In addition to this, it encourages development of Ngongotahā as a node with the application of a High Density Residential Zone within this location.

At the city spatial structure scale, it has a moderate focus on long-term growth out towards Ngongotahā. In addition to the High Density Residential Zone, it has the largest level of Medium Density Provision in the areas surrounding the Ngongotahā town centre. Part of this involves upzoning a portion of the HBA greenfield areas to Medium Density Residential, from the general suburban scale Residential Zone. A more peripheral part of the same greenfield area is also downzoned to the Rural Residential Zone.

3.4.2 Scenario 2

Figure 3-3 – Residential Zoning – Preliminary Spatial Growth Scenario 2



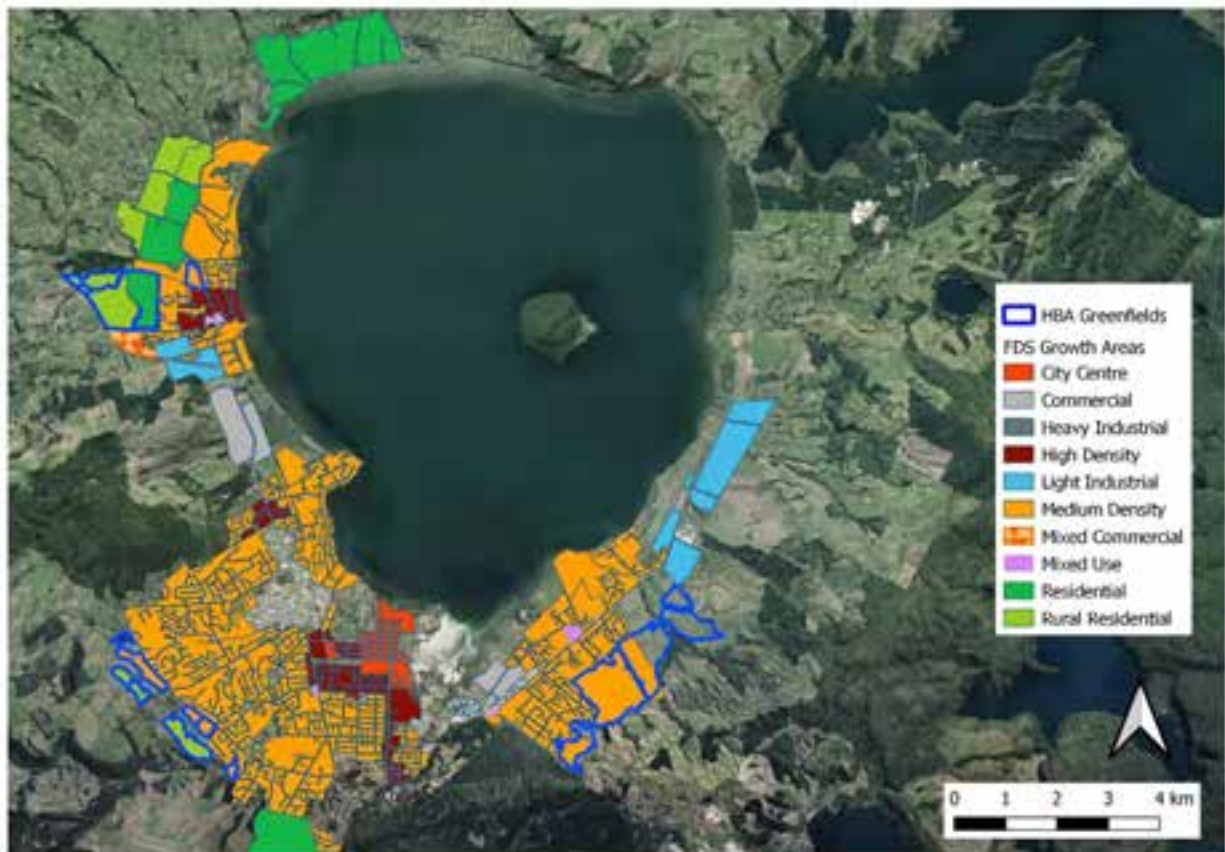
Scenario 2 (illustrated in Figure 3-3_ has the largest focus on urban intensification within the existing urban area. It has an expanded High Density Residential Zone applied across much of the Central Reporting Area extending outwards from the City Centre.

The High Density Residential Zone is also applied in a substantial way to encourage the long-term development of outer suburban nodes within the Ngongotahā and Eastern (Owhata) areas. The zone is also applied around other commercial centre nodes and corridors within the existing urban area.

This scenario has a lower focus on greenfield urban expansion. The spatial extent of the greenfield provision is lowest under this scenario. Within Ngongotahā, it has been reduced from that provided under the HBA. However, within the greenfield areas, the land has been upzoned to Medium Density Residential (consistent across all scenarios for these areas) from the general suburban scale Residential Zone applied under the HBA.

3.4.3 Scenario 3

Figure 3-4 – Residential Zoning – Preliminary Spatial Growth Scenario 3

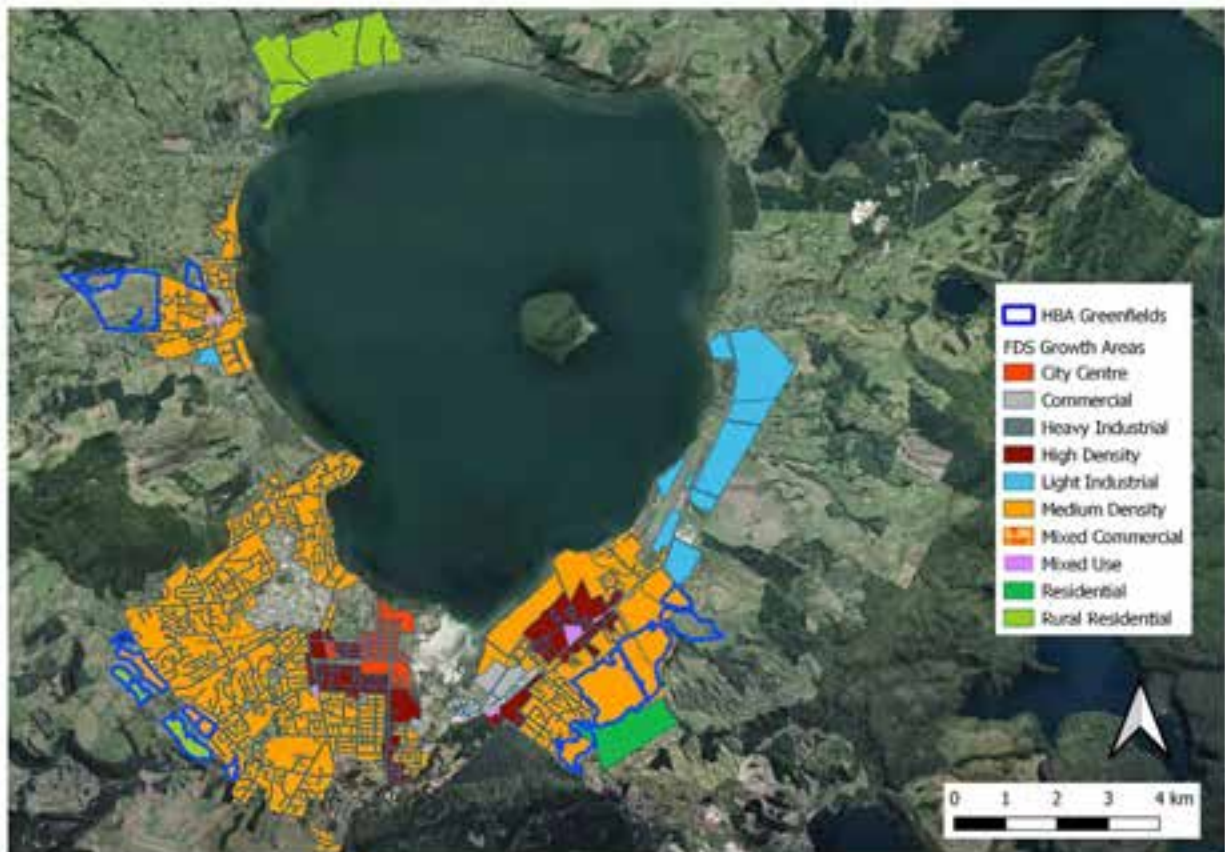


Scenario 3 (illustrated in Figure 3-4) has the greatest focus on long-term greenfield future urban expansion. It has the largest provision for greenfield growth, with a main focus occurring up the State Highway 36 corridor. In addition to large greenfield provision around Ngongotahā, there is further greenfield provision through upzoning the lifestyle property area in Hamurana to general suburban scale residential zoning.

Within the existing urban area, this scenario has a similar pattern to that of Scenario 1, where a moderate application of the High Density Residential Zone is used to support the City Centre as the main urban node, as well as intensification around the Ngongotahā town centre to support the additional balance of growth encouraged in this broad location. A further area of High Density Residential Zone is also provided around the Fairy Springs central commercial area, which is also located along the main access route to the north western branch of the urban environment.

3.4.4 Scenario 4

Figure 3-5 – Residential Zoning – Preliminary Spatial Growth Scenario 4



Scenario 4 (illustrated in Figure 3-5) contains a balance between urban intensification and greenfield future urban expansion, with a greater focus on the eastern edge of the urban environment.

This scenario has the greatest provision for greenfield growth within the eastern area. It includes upzoning of the HBA greenfield areas within this location from general suburban scale residential development to the Medium Density Residential Zone. In addition, it has further provision for greenfield expansion beyond the HBA areas, at a general suburban scale intensity (Residential Zone).

Within the existing urban area, Scenario 4 encourages long-term growth around the City Centre as the main node, through the moderate application of a High Density Residential Zone. It also applies this zone extensively around the Owata commercial centre, and corridor, within the Eastern Reporting Area to support the greater focus of growth within this part of the urban environment under this scenario.

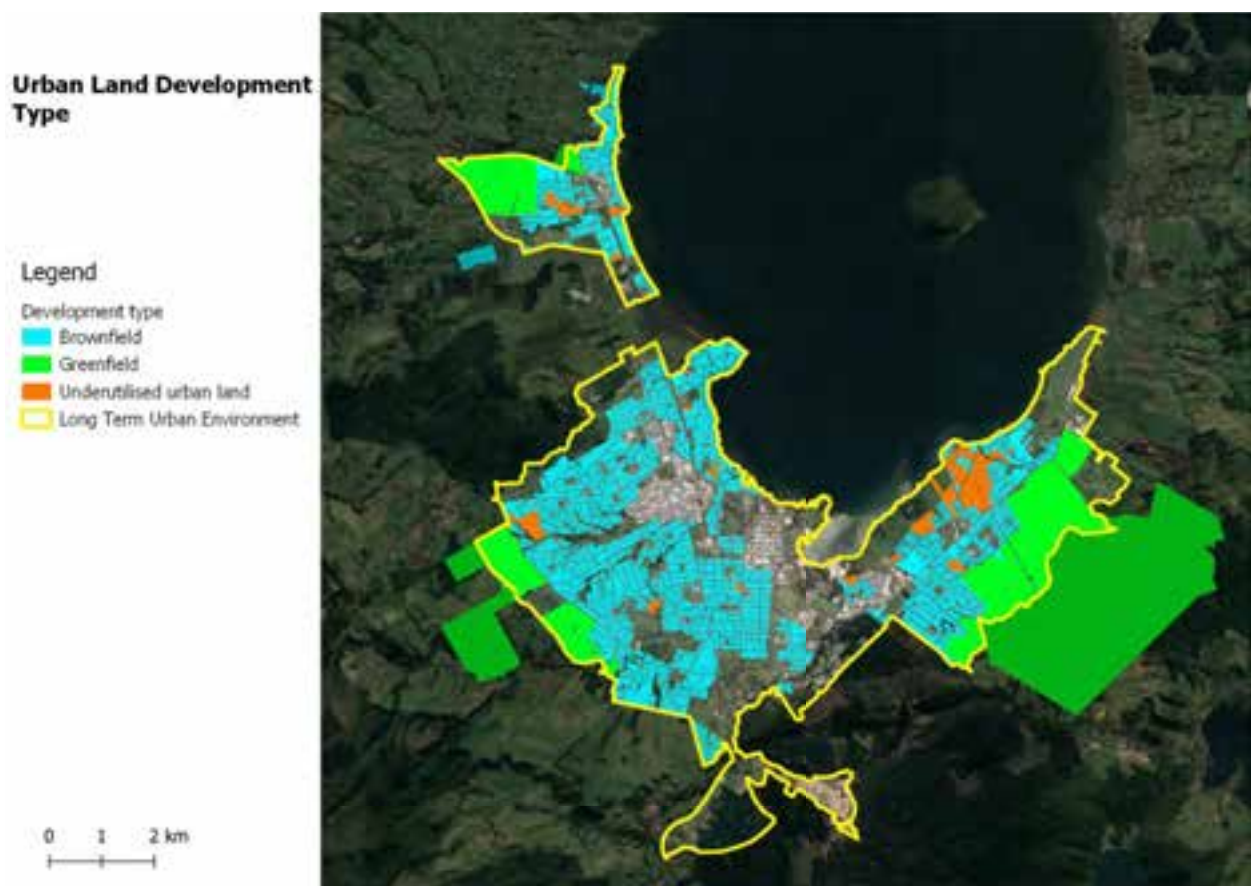
3.5 Long-term Plan Enabled Capacity Results by Spatial Growth Scenario

This section shows the results of the additional long-term capacity modelling that has been carried for this report on the preliminary FDS spatial growth scenarios.

The capacity modelling within this section shows the plan enabled capacity modelled within both the existing urban area, as well as the greenfield areas. Capacity within the existing urban areas is calculated from the zoning applied to these areas under each of the modelled FDS spatial growth scenarios. This includes the application of the MDRS (within the existing urban area) with qualifying matters (carried over from the medium-term). The spatial boundary of the existing urban area is consistent with that applied within the HBA 2021.

Capacity within the existing urban area has been divided into brownfield vs. underutilised urban land. There are large areas of vacant or underutilised land (identified by Council) within the existing urban extent of Rotorua (Figure 3-6). Each of these are large areas of land that could be developed at scale and are therefore likely to contribute differently to capacity than the redevelopment potential from smaller individual parcels. The potential for large-scale development patterns on these areas of land mean they have been analysed together with greenfield capacity within this assessment. This is consistent with the approach taken in the HBA 2021. It is acknowledged that there are some constraints on these sites that will influence the timing of development and the likely yield.

Figure 3-6 – Brownfield, Underutilised Land and Greenfield Land – HBA 2021



Greenfield capacity has been modelled on areas included within the FDS growth areas contained within each of the spatial growth scenarios. This includes most of the greenfield areas contained within the HBA 2021 (i.e. Figure 3-6). However, it excludes any HBA 2021 greenfield areas from the Spatial Plan 2018 that are not featured in the FDS spatial growth scenarios.



To remain conservative, the MDRS has not been applied within the greenfield areas³⁶. It has been assumed that the capacity within these areas is instead more likely to be reflected by development patterns at the minimum lot size provisions³⁷. This helps to ensure that the likely capacity within greenfield areas is not over-stated.

The following sub-section briefly outlines the structure of the capacity outputs contained within this section.

3.5.1 Structure of Capacity Outputs

The modelled capacity is expressed as the net additional dwellings that can be accommodated within each zone and location across the district's urban areas. These are potential net additional dwellings to the existing dwelling stock. The methodology used to calculate net additional dwelling capacity is the same as applied in the HBA 2021 (and subsequently M.E's report for PC9). That methodology is not repeated here, but is described in detail in section 6 of the HBA 2021 Technical Report.

The model operates at the parcel level, calculating the different potential dwelling yields across a range of development options. Both plan enabled and commercially feasible capacity are calculated at the parcel level, meaning that both assessments reflect the individual parcel attributes and individually test each option. The results are then aggregated up to the reporting areas. There are two modelled development pathways within the existing urban area: infill capacity and redevelopment capacity.

Dwelling Typologies

A range of dwelling typologies have been modelled on each parcel within each of the above development pathways (detached/standalone dwellings, attached dwellings, terraced housing and vertically attached apartments). More detail on the description of these dwelling types can be found in M.E's PC29 report.

The capacity results include maximums (across the four modelled typologies) of each of infill and redevelopment capacity within the existing urban area. A maximum combination total is also included within the greenfield areas of the existing urban area. Here, the model returns the greatest yield for each parcel out of the infill and redevelopment capacity options. Under the plan enabled capacity, the maximum redevelopment option will almost always represent the greatest yield. However, under the commercially feasible capacity (Section 3.6) often only a subset of the development options will be feasible (e.g. infill detached dwellings). This means that the model selects the highest yield from this subset (i.e. feasible dwellings), often resulting in smaller feasible maximums on a parcel than plan enabled maximums.

Each of the modelling dwelling typologies have different site size requirements. They also have different relationships between dwelling size and land area, where smaller sites can generally be developed more efficiently with attached dwellings (than detached dwellings).

Each of the output tables contains results for the existing urban area and greenfield areas separately. The left half of each table relates to the existing urban area, which contains outputs for both the infill and

³⁶ This is an agreed assumption with RLDC.

³⁷ For example, an average lot size of 450sqm in the Residential 1 Zone and a minimum lot size of 350sqm in the Residential 2 Zone. Rules vary within Development Areas.



redevelopment pathways. These are not additive, but maximum combination columns ('Max Infill or Redevelopment') have been provided to show the maximum total yield for the existing urban area.

The right half of the tables contains the outputs for the greenfield areas. These are the full extent of the greenfield areas modelled under each of the FDS spatial growth scenarios but have been divided into areas that occur within the HBA 2021 and then additional areas included only within the FDS spatial growth scenarios.

The following sub-sections contain the modelled capacity outputs for each of the FDS scenarios.

3.5.2 Scenario 1

The long-term plan enabled capacity modelled under FDS spatial growth Scenario 1 is shown in **Error! Reference source not found.** This scenario enables up to 141,800 additional dwellings within the existing urban area. Most of this occurs through redevelopment capacity where the intensification provisions enable existing developed sites to be redeveloped at significantly higher intensities.

Within the existing urban area, most (91%) of the capacity occurs within brownfield sites, with 9% occurring on areas of underutilised urban land. There is an estimated capacity for around 13,400 dwellings underutilised urban land. This is based on the potentially enabled more intensive medium-density development patterns. However, the realised yield on these sites is likely to be lower with development occurring at densities lower than that enabled under the proposed provisions.

Around two-thirds of the existing urban capacity is concentrated within the central parts of Rotorua in the Central and Western reporting areas.

Under spatial growth Scenario 1, there is a total plan enabled greenfield capacity for an additional 10,700 dwellings. Around two-thirds (64%) of this occurs within the existing HBA areas and is distributed across the Eastern, Ngongotahā and Central reporting areas. There is a further substantial greenfield provision around Ngongotahā in FDS greenfield areas beyond those included within the HBA 2021.

3.5.3 Scenario 2

The long-term plan enabled capacity under FDS spatial growth Scenario 2 is shown in **Error! Reference source not found.** This scenario has the largest capacity, potentially enabling up to an additional 211,100 dwellings. Almost all (96%) of this occurs within the existing urban area through the large-scale increases to the enabled level of intensification. The more widespread application of the High Density Residential Zone under this scenario significantly increases the capacity for higher density, vertically-attached apartment dwellings, which account for the largest proportion of the difference in capacity under this scenario compared to Scenario 1.

This spatial growth scenario has a plan enabled capacity for an additional 7,900 dwellings within the greenfield areas. This is the lowest greenfield capacity out of the four spatial growth scenarios due to the reduced greenfield areas within this modelled scenario.

Table 3-7 – Long-Term Rotorua Urban Plan Enabled Dwelling Capacity: FDS Spatial Growth Scenario 1

Reporting Area Land Type		INFILL					REDEVELOPMENT					Max Infill or Redevelopment	GREENFIELD (HBA AREAS)					GREENFIELD (Additional FDS Areas)					Total Greenfield (HBA + FDS)	Total Capacity
		Standalone	Attached	Apartment	Vertical Apartments	Max Infill	Standalone	Attached	Apartment	Vertical Apartments	Max Redevelopment		Standalone	Attached	Apartment	Vertical Apartments	Max Greenfield	Standalone	Attached	Apartment	Vertical Apartments	Max Greenfield		
Eastern	Brownfield	1,600	2,600	2,600	-	2,600	7,100	18,400	18,400	10	18,400	18,600	-	-	-	-	-	-	-	-	-	-	-	18,600
	Underutilised Urban Land	1,400	4,100	4,100	-	4,100	2,400	7,200	7,200	-	7,200	7,200	-	-	-	-	-	-	-	-	-	-	-	7,200
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	4,400	4,400	4,400	-	4,400	-	-	-	-	-	-	4,400
	Total	3,000	6,700	6,700	-	6,700	9,500	25,600	25,600	10	25,700	25,800	4,400	4,400	4,400	-	4,400	-	-	-	-	-	4,400	30,200
Central	Brownfield	600	1,000	1,000	400	1,100	4,200	13,100	13,100	28,100	36,500	36,500	-	-	-	-	-	-	-	-	-	-	-	36,500
	Underutilised Urban Land	50	100	100	400	400	50	100	100	400	400	400	-	-	-	-	-	-	-	-	-	-	-	400
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	700	1,100	1,100	800	1,600	4,300	13,200	13,200	28,600	37,000	37,000	-	-	-	-	-	-	-	-	-	-	-	37,000
Western	Brownfield	6,400	9,500	9,500	70	9,500	22,000	52,600	52,600	1,800	53,900	54,600	-	-	-	-	-	-	-	-	-	-	-	54,600
	Underutilised Urban Land	700	2,000	2,000	-	2,000	700	2,100	2,100	-	2,100	2,300	-	-	-	-	-	-	-	-	-	-	-	2,300
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	900	900	900	-	900	60	60	60	-	60	1,000	1,000
	Total	7,000	11,500	11,500	70	11,500	22,800	54,800	54,800	1,800	56,100	56,800	900	900	900	-	900	60	60	60	-	60	1,000	57,800
Ngongotaha	Brownfield	1,300	2,100	2,100	100	2,200	4,800	12,800	12,800	8,200	18,600	18,700	-	-	-	-	-	-	-	-	-	-	-	18,700
	Underutilised Urban Land	100	400	400	600	800	400	1,300	1,300	3,200	3,500	3,500	-	-	-	-	-	-	-	-	-	-	-	3,500
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	1,500	1,500	1,500	-	1,500	3,800	3,800	3,800	-	3,800	5,300	5,300
	Total	1,400	2,600	2,600	700	3,000	5,200	14,200	14,200	11,400	22,100	22,200	1,500	1,500	1,500	-	1,500	3,800	3,800	3,800	-	3,800	5,300	27,500
Total Urban Environment	Brownfield	9,900	15,100	15,100	600	15,400	38,100	97,000	97,000	38,100	127,400	128,300	-	-	-	-	-	-	-	-	-	-	-	128,300
	Underutilised Urban Land	2,200	6,700	6,700	1,000	7,400	3,600	10,800	10,800	3,700	13,300	13,400	-	-	-	-	-	-	-	-	-	-	-	13,400
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	6,900	6,900	6,900	-	6,900	3,800	3,800	3,800	-	3,800	10,700	10,700
	Total	12,100	21,800	21,800	1,600	22,700	41,700	107,800	107,800	41,800	140,800	141,800	6,900	6,900	6,900	-	6,900	3,800	3,800	3,800	-	3,800	10,700	152,500

Source: M.E Rotorua MDRS Residential Capacity Model, 2022.

Table 3-8 - Long-Term Rotorua Urban Plan Enabled Dwelling Capacity: FDS Spatial Growth Scenario 2

Reporting Area Land Type		INFILL					REDEVELOPMENT					Max Infill or Redevelopment	GREENFIELD (HBA AREAS)					GREENFIELD (Additional FDS Areas)					Total Greenfield (HBA + FDS)	Total Capacity
		Standalone	Attached	Apartment	Vertical Apartments	Max Infill	Standalone	Attached	Apartment	Vertical Apartments	Max Redevelopment		Standalone	Attached	Apartment	Vertical Apartments	Max Greenfield	Standalone	Attached	Apartment	Vertical Apartments	Max Greenfield		
Eastern	Brownfield	2,000	3,700	3,700	300	3,700	7,400	19,800	19,800	18,700	33,300	33,400	-	-	-	-	-	-	-	-	-	-	-	33,400
	Underutilised Urban Land	1,400	4,100	4,100	5,900	8,100	2,400	7,200	7,200	10,700	14,500	14,500	-	-	-	-	-	-	-	-	-	-	-	14,500
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	5,600	5,600	5,600	-	5,600	1,200	1,200	1,200	-	1,200	6,900	6,900
	Total	3,300	7,800	7,800	6,200	11,900	9,800	27,100	27,100	29,400	47,900	48,000	5,600	5,600	5,600	-	5,600	1,200	1,200	1,200	-	1,200	6,900	54,800
Central	Brownfield	600	1,100	1,100	900	1,400	4,200	13,600	13,600	55,400	57,100	57,100	-	-	-	-	-	-	-	-	-	-	-	57,100
	Underutilised Urban Land	50	100	100	400	400	50	100	100	400	400	400	-	-	-	-	-	-	-	-	-	-	-	400
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	700	1,200	1,200	1,300	1,800	4,300	13,800	13,800	55,800	57,500	57,600	-	-	-	-	-	-	-	-	-	-	-	57,600
Western	Brownfield	6,400	9,600	9,600	100	9,600	22,000	53,600	53,600	26,000	71,900	72,500	-	-	-	-	-	-	-	-	-	-	-	72,500
	Underutilised Urban Land	700	2,000	2,000	-	2,000	700	2,100	2,100	1,100	2,900	3,000	-	-	-	-	-	-	-	-	-	-	-	3,000
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	900	900	900	-	900	60	60	60	-	60	1,000	1,000
	Total	7,000	11,600	11,600	100	11,600	22,800	55,800	55,800	27,100	74,800	75,500	900	900	900	-	900	60	60	60	-	60	1,000	76,500
Ngongotaha	Brownfield	1,300	2,100	2,100	100	2,200	4,800	12,800	12,800	8,200	18,600	18,700	-	-	-	-	-	-	-	-	-	-	-	18,700
	Underutilised Urban Land	100	400	400	600	800	400	1,300	1,300	3,200	3,500	3,500	-	-	-	-	-	-	-	-	-	-	-	3,500
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	1,400	2,600	2,600	700	3,000	5,200	14,200	14,200	11,400	22,100	22,200	-	-	-	-	-	-	-	-	-	-	-	22,200
Total Urban Environment	Brownfield	10,200	16,400	16,400	1,400	16,900	38,500	99,900	99,900	108,200	180,900	181,700	-	-	-	-	-	-	-	-	-	-	-	181,700
	Underutilised Urban Land	2,200	6,700	6,700	6,900	11,400	3,600	10,800	10,800	15,500	21,400	21,500	-	-	-	-	-	-	-	-	-	-	-	21,500
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	6,600	6,600	6,600	-	6,600	1,300	1,300	1,300	-	1,300	7,900	7,900
	Total	12,500	23,100	23,100	8,400	28,300	42,100	110,700	110,700	123,700	202,300	203,200	6,600	6,600	6,600	-	6,600	1,300	1,300	1,300	-	1,300	7,900	211,100

Source: M.E Rotorua MDRS Residential Capacity Model, 2022.



Most (83%) of the greenfield capacity is contained within the existing HBA 2021 areas, with a further 1,300 dwelling capacity provided within an expansion of greenfield land in the Eastern Reporting Area under this scenario. The greenfield capacity contained within the Eastern Reporting area HBA area is higher under this scenario than that of scenario 1 and 3 due to the upzoning of this area to the Medium Density Residential Zone.

3.5.4 Scenario 3

The long-term plan enabled capacity under FDS spatial growth Scenario 3 is shown in **Error! Reference source not found.** Under this scenario, there is a total plan enabled capacity for an additional 164,200 dwellings.

This spatial growth scenario has the largest additional greenfield provision out of the four modelled scenarios. There is a total plan enabled capacity for an additional 18,700 dwellings within the greenfield areas. The largest share of this occurs within further areas of greenfield expansion within the FDS, beyond those included within the HBA 2021 modelled areas. These areas have a modelled capacity for an additional 12,300 dwellings, beyond the existing 6,400 dwelling capacity within the HBA areas.

The main area of additional FDS greenfield provision occur within the Ngongotahā reporting area (including the area in Hamurana). There is also a sizeable increase in greenfield capacity within the Western reporting area under this spatial growth scenario through the provision of an additional area of suburban scale (Residential Zone) greenfield area on the southern edge of the city.

There is also large potential for urban intensification within the existing urban area under this scenario. This occurs across all areas, with the concentration of intensification around the edge of the City Centre and Ngongotahā Town Centre through the application of the High Density Residential Zone.

3.5.5 Scenario 4

The long-term plan enabled capacity under FDS spatial growth Scenario 4 is shown in **Error! Reference source not found.** There is a total plan enabled capacity for an additional 167,200 dwellings under this scenario. Most (92%) of this capacity occurs within the existing urban area where there is large provision for urban intensification.

Within the existing urban area, there is an increased plan enabled capacity within the Eastern reporting area. This occurs largely through the higher density, vertically-attached apartment dwellings as a result of the application of the High Density Residential Zone around the edge of the Owhata commercial centre.

Under this spatial growth scenario, there is a total greenfield capacity for an additional 13,100 dwellings. This is the second largest greenfield provision out of the four modelled scenarios and is the result of upzoning of existing HBA 2021 greenfield areas together with substantial further greenfield capacity provided within the greenfield areas added through this scenario.

The greenfield provision is concentrated into the Eastern reporting area under this spatial growth scenario, with more limited provision in other locations. The existing HBA 2021 areas have been upzoned to Medium Density Residential Zone from general scale suburban densities (Residential Zone).

Table 3-9 – Long-Term Rotorua Urban Plan Enabled Dwelling Capacity: FDS Spatial Growth Scenario 3

		INFILL					REDEVELOPMENT					Max Infill or Redevelopment	GREENFIELD (HBA AREAS)					GREENFIELD (Additional FDS Areas)					Total Greenfield (HBA + FDS)	Total Capacity
		Standalone	Attached	Apartment	Vertical Apartments	Max Infill	Standalone	Attached	Apartment	Vertical Apartments	Max Redevelopment		Standalone	Attached	Apartment	Vertical Apartments	Max Greenfield	Standalone	Attached	Apartment	Vertical Apartments	Max Greenfield		
Reporting Area Land Type																								
Eastern	Brownfield	1,600	2,600	2,600	-	2,600	7,100	18,400	18,400	10	18,400	18,600	-	-	-	-	-	-	-	-	-	-	18,600	
	Underutilised Urban Land	1,400	4,100	4,100	-	4,100	2,400	7,200	7,200	-	7,200	7,200	-	-	-	-	-	-	-	-	-	-	7,200	
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	4,400	4,400	4,400	-	4,400	-	-	-	-	4,400	4,400	
	Total	3,000	6,700	6,700	-	6,700	9,500	25,600	25,600	10	25,700	25,800	4,400	4,400	4,400	-	4,400	-	-	-	-	-	4,400	30,200
Central	Brownfield	600	1,000	1,000	400	1,100	4,200	13,100	13,100	28,100	36,500	36,500	-	-	-	-	-	-	-	-	-	-	36,500	
	Underutilised Urban Land	50	100	100	400	400	50	100	100	400	400	400	-	-	-	-	-	-	-	-	-	-	400	
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Total	700	1,100	1,100	800	1,600	4,300	13,200	13,200	28,600	37,000	37,000	-	-	-	-	-	-	-	-	-	-	37,000	
Western	Brownfield	6,400	9,500	9,500	70	9,500	22,000	52,900	52,900	6,600	57,500	58,200	-	-	-	-	-	-	-	-	-	-	58,200	
	Underutilised Urban Land	700	2,000	2,000	-	2,000	700	2,100	2,100	-	2,100	2,300	-	-	-	-	-	-	-	-	-	-	2,300	
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	900	900	900	-	900	2,900	2,900	2,900	-	2,900	3,800	
	Total	7,000	11,500	11,500	70	11,500	22,800	55,000	55,000	6,600	59,600	60,400	900	900	900	-	900	2,900	2,900	2,900	-	2,900	3,800	64,200
Ngongotaha	Brownfield	1,300	2,100	2,100	100	2,200	4,800	12,900	12,900	8,200	18,700	18,800	-	-	-	-	-	-	-	-	-	-	18,800	
	Underutilised Urban Land	100	400	400	600	800	400	1,300	1,300	3,200	3,500	3,500	-	-	-	-	-	-	-	-	-	-	3,500	
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	1,100	1,100	1,100	-	1,100	9,400	9,400	9,400	-	9,400	10,500	
	Total	1,400	2,600	2,600	700	3,000	5,200	14,300	14,300	11,400	22,200	22,300	1,100	1,100	1,100	-	1,100	9,400	9,400	9,400	-	9,400	10,500	32,800
Total Urban Environment	Brownfield	9,900	15,200	15,200	600	15,400	38,100	97,300	97,300	42,900	131,100	132,000	-	-	-	-	-	-	-	-	-	-	132,000	
	Underutilised Urban Land	2,200	6,700	6,700	1,000	7,400	3,600	10,800	10,800	3,700	13,300	13,400	-	-	-	-	-	-	-	-	-	-	13,400	
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	6,400	6,400	6,400	-	6,400	12,300	12,300	12,300	-	12,300	18,700	
	Total	12,100	21,800	21,800	1,600	22,800	41,800	108,200	108,200	46,600	144,500	145,500	6,400	6,400	6,400	-	6,400	12,300	12,300	12,300	-	12,300	18,700	164,200

Source: M.E Rotorua MDRS Residential Capacity Model, 2022.

Table 3-10 - Long-Term Rotorua Urban Plan Enabled Dwelling Capacity: FDS Spatial Growth Scenario 4

		INFILL					REDEVELOPMENT					Max Infill or Redevelopment	GREENFIELD (HBA AREAS)					GREENFIELD (Additional FDS Areas)					Total Greenfield Id (HBA + FDS)	Total Capacity
		Standalone	Attached	Apartments	Vertical Apartments	Max Infill	Standalone	Attached	Apartments	Vertical Apartments	Max Redevelopment		Standalone	Attached	Apartments	Vertical Apartments	Max Greenfield	Standalone	Attached	Apartments	Vertical Apartments	Max Greenfield		
Reporting Area Land Type																								
Eastern	Brownfield	1,600	2,600	2,600	300	2,700	7,100	18,800	18,800	18,700	32,300	32,400	-	-	-	-	-	-	-	-	-	-	32,400	
	Underutilised Urban Land	1,400	4,100	4,100	5,900	8,100	2,400	7,200	7,200	10,700	14,500	14,500	-	-	-	-	-	-	-	-	-	-	14,500	
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	6,300	6,300	6,300	-	6,300	5,500	5,500	5,500	-	5,500	11,800	
	Total	3,000	6,700	6,700	6,200	10,800	9,500	26,000	26,000	29,400	46,800	46,900	6,300	6,300	6,300	-	6,300	5,500	5,500	5,500	-	5,500	11,800	58,700
Central	Brownfield	600	1,000	1,000	400	1,100	4,200	13,100	13,100	28,100	36,500	36,500	-	-	-	-	-	-	-	-	-	-	36,500	
	Underutilised Urban Land	50	100	100	400	400	50	100	100	400	400	400	-	-	-	-	-	-	-	-	-	-	400	
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Total	700	1,100	1,100	800	1,600	4,300	13,200	13,200	28,600	37,000	37,000	-	-	-	-	-	-	-	-	-	-	37,000	
Western	Brownfield	6,400	9,500	9,500	70	9,500	22,000	52,600	52,600	1,800	53,900	54,600	-	-	-	-	-	-	-	-	-	-	54,600	
	Underutilised Urban Land	700	2,000	2,000	-	2,000	700	2,100	2,100	-	2,100	2,300	-	-	-	-	-	-	-	-	-	-	2,300	
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	900	900	900	-	900	60	60	60	-	60	1,000	
	Total	7,000	11,500	11,500	70	11,500	22,800	54,800	54,800	1,800	56,100	56,800	900	900	900	-	900	60	60	60	-	60	1,000	57,800
Ngongotaha	Brownfield	1,300	2,100	2,100	-	2,100	4,500	11,900	11,900	90	12,000	12,100	-	-	-	-	-	-	-	-	-	-	12,100	
	Underutilised Urban Land	100	400	400	-	400	400	1,300	1,300	-	1,300	1,300	-	-	-	-	-	-	-	-	-	-	1,300	
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	400	400	400	-	400	400	
	Total	1,400	2,500	2,500	-	2,500	4,900	13,200	13,200	90	13,300	13,400	-	-	-	-	-	400	400	400	-	400	400	13,800
Total Urban Environment	Brownfield	9,900	15,200	15,200	800	15,400	37,800	96,400	96,400	48,700	134,700	135,600	-	-	-	-	-	-	-	-	-	-	135,600	
	Underutilised Urban Land	2,200	6,700	6,700	6,300	11,000	3,600	10,800	10,800	11,200	18,400	18,500	-	-	-	-	-	-	-	-	-	-	18,500	
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	7,200	7,200	7,200	-	7,200	5,900	5,900	5,900	-	5,900	13,100	
	Total	12,100	21,800	21,800	7,100	26,400	41,400	107,200	107,200	59,800	153,100	154,100	7,200	7,200	7,200	-	7,200	5,900	5,900	5,900	-	5,900	13,100	167,200

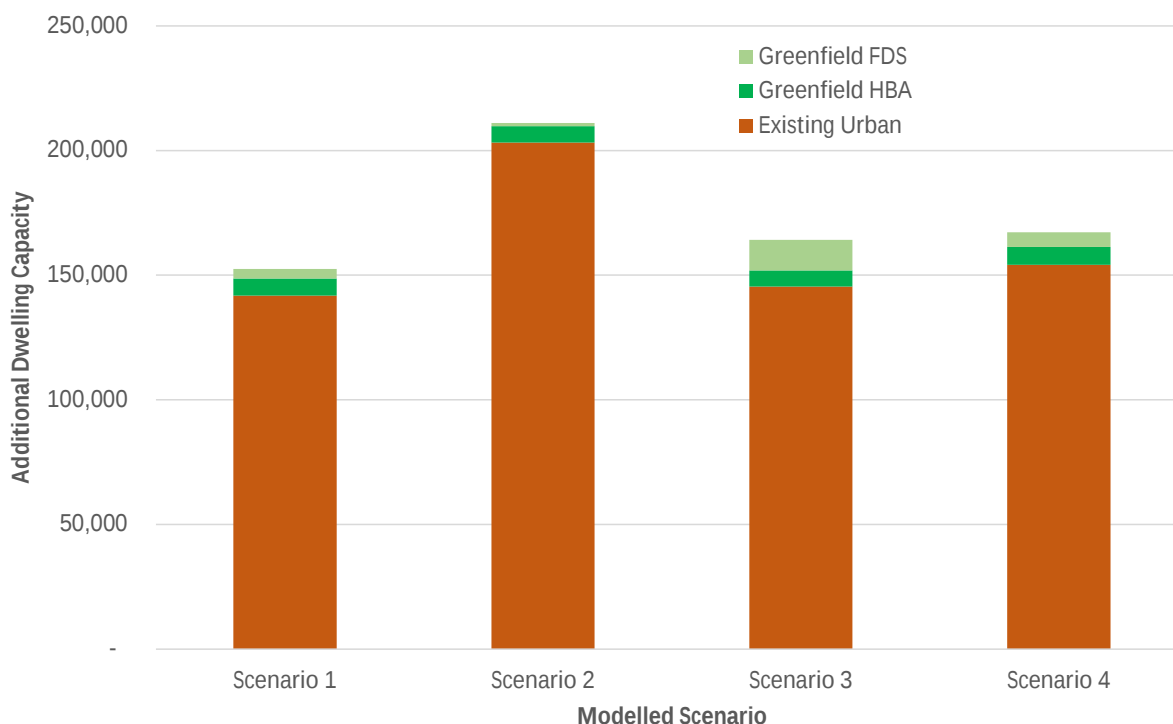
Source: M.E Rotorua MDRS Residential Capacity Model, 2022.

3.5.6 Discussion

The preliminary FDS spatial growth scenarios enable different levels of total capacity and, more importantly, encourage different patterns of growth across Rotorua's existing and potential future urban environment.

The total long-term capacity enabled under each of the FDS spatial growth scenarios is compared in Figure 3-7, noting that the medium-term baseline capacity accounts for 128,500 additional dwellings already (excluding greenfield areas), with the net effect of the FDS spatial growth scenarios added to that. It shows the total long-term capacity enabled within the existing urban area (including on underutilised urban land) as well as the proportions of capacity on the original HBA and additional FDS identified greenfield areas.

Figure 3-7: Long-Term Plan Enabled Capacity by Modelled FDS Spatial Growth Scenario



Source: M.E Rotorua MDRS Residential Capacity Model, 2022.

Figure 3-7 shows that spatial growth Scenario 2 has the largest total long-term dwelling capacity, with similar levels of total capacity enabled across the other scenarios. Despite the higher capacity within spatial growth Scenario 2, it has the lowest capacity enabled within the greenfield areas where the scenario instead has a focus on urban intensification. Most of the enabled capacity under this scenario occurs within the existing HBA areas, with little further capacity provided within FDS identified areas.

While the existing urban area share of capacity dominates the total capacity in Figure 3-7, the relative proportions of growth between the existing urban and future greenfield areas are likely to be more evenly distributed. Therefore, the level of greenfield capacity provided (together with its type and location) also represents important differences between the spatial growth scenarios.

Figure 3-7 shows that Scenario 3 has the largest provision for greenfield capacity of the four modelled spatial growth scenarios. Within this scenario, there is a greater focus on the greenfield capacity provided through the additional FDS expansion areas than the existing areas modelled under the HBA. In comparison, other scenarios provided a smaller amount of additional greenfield capacity under the further FDS areas, but generally have greater levels of upzoning on the existing HBA areas. Much of this occurs through upzoning these areas to the Medium Density Residential Zone from the existing lower density general suburban scale (Residential 1 Zone) density within these areas.

The spatial growth scenarios also result in different distributions of capacity across each of the reporting areas within Rotorua's urban environment. This reflects the different focuses of the proposed scenarios in relation to the intended broad growth pattern across the city.

The share of capacity by type and location is shown in Table 3-11. It shows how the capacity is distributed across the reporting areas within both the existing urban area and the greenfield areas for future urban expansion under each of the modelled scenarios.

There are greater levels of consistency in the distribution of growth within the existing urban area across the modelled scenarios. The main differences within this area occur in response to the spatial extent and location of the High Density Residential Zone application.

All spatial growth scenarios reinforce the role of the City Centre as the main node within Rotorua's urban environment with large opportunity provided for intensive residential development within its surrounding areas. The extent is larger within Scenario 2, where high density development is provided for across much of the central area. This may disperse the level of intensification across a larger area than that immediately surrounding the City Centre under the other scenarios.

There is greater variation in the spatial distribution of greenfield capacity between the scenarios. Scenarios 2 and 4 heavily concentrate greenfield capacity into the Eastern reporting area, which is combined with sizeable potential for urban expansion in this location under Scenario 4. In contrast, Scenarios 1 and 3 have a greater share of growth occurring within the north-western part of the city around Ngongotahā, extending up the State Highway 36 corridor under Scenario 3.

Table 3-11 – Long-Term Plan Enabled Capacity by Modelled FDS Scenario and Reporting Area Location

Reporting Area	Existing Urban				Greenfield				Total			
	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Plan Enabled Capacity (Net Additional Dwellings)												
Eastern	25,800	48,000	25,800	46,900	4,400	6,900	4,400	11,800	30,200	54,800	30,200	58,700
Central	37,000	57,600	37,000	37,000	-	-	-	-	37,000	57,600	37,000	37,000
Western	56,800	75,500	60,400	56,800	1,000	1,000	3,800	1,000	57,800	76,500	64,200	57,800
Ngongotaha	22,200	22,200	22,300	13,400	5,300	-	10,500	400	27,500	22,200	32,800	13,800
Total Urban Environment	141,800	203,200	145,500	154,100	10,700	7,900	18,700	13,100	152,500	211,100	164,200	167,200
Share of Plan Enabled Capacity by Location												
Eastern	18%	24%	18%	30%	41%	88%	24%	90%	20%	26%	18%	35%
Central	26%	28%	25%	24%	0%	0%	0%	0%	24%	27%	23%	22%
Western	40%	37%	42%	37%	9%	12%	20%	7%	38%	36%	39%	35%
Ngongotaha	16%	11%	15%	9%	50%	0%	56%	3%	18%	11%	20%	8%
Total Urban Environment	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: M.E Rotorua MDRS Residential Capacity Model, 2022.



3.6 Long-term Commercially Feasible Capacity Results by Spatial Growth Scenario

3.6.1 Approach

Full detail on the approach to modelling commercial feasibility can be found in the HBA 2021 (including the Technical supporting document, Section 7) and is not repeated in detail here. In summary though, M.E has modelled two different commercial feasibility scenarios. The first was consistent with the HBA 2021, with the base year of prices and costs adjusted to 2021 instead of 2020.³⁸ As per the HBA 2021, holding 2021 prices/costs constant over all time periods was tested, as well as an allowance for market growth (with projected price and cost changes year on year).

An allowance for market growth forms an important part of understanding the likely feasible capacity within Rotorua over the long-term. Over time, a greater range of development options and densities are likely to become feasible in different locations with market growth. This is particularly important within the Rotorua context where the proposed intensification provisions (MDRS and PC9) enable new types of capacity in the short and medium-term which have not previously been enabled within Rotorua. The market for these types of dwellings are consequently not yet well established, but are likely to gradually become more established through time. This is consistent with the generally observed patterns in other urban economies.

In consultation with industry stakeholders (i.e., TAG members), a second commercial feasibility model was also requested.³⁹ This generally provided a more conservative market picture, reflecting the lower parts of the market. The key changes M.E made for this model were:

A reduction in potential sales price.

- A lowering of the development density achieved within the medium-density attached dwellings typology. M.E applied larger average site sizes within this typology to reflect a broader spread of dwelling types. The implied densities would range from single-level attached townhouses, up to more intensive terraced housing.
- Modelling of price changes through time rather than just providing two scenarios for the long-term (2021 market vs. 2051 market). By this, we mean that the short, medium and long-term results are in 2024, 2031 and 2051 prices respectively. In the original commercial feasibility scenario, we had held the market constant at 2021 levels, meaning that there would be no growth in demand for different dwelling types other than in the long-term market growth scenario result. Allowing for the market changes through time is important for this scenario as it allows for the growth in different typologies through time that may be less feasible within the current (2021) market due to their lower level of established demand but that are likely to grow in both absolute and relative terms through time.

³⁸ For reference, this was called Model Run A.

³⁹ For reference, this was called Model Run B.

- In response to information provided by Kāinga Ora, the construction costs for vertically-attached apartment dwellings was also increased for this model of commercial feasibility. The implication of this change means that there are no feasible vertically-attached apartments in the short or medium-term, and a lower number that are feasible in the long-term. These are predominantly located within the City Centre. It should be noted though that through time, there are vertically-attached apartments that are estimated to be feasible at lower margins of between 5% and 20%.

The main differences to the results between the two commercial feasibility models (Model Run A and B respectively) are:

- A lower amount of feasible capacity within the existing urban area. This is, of course, expected if you decrease the prices. It is important to note too that part of this decrease occurs due to the change in yields on the parcel with the application of a larger land area per dwelling input.
- The structure of feasible capacity changes. In the short-term, most of the feasible capacity is for standalone dwellings, while attached dwellings increase in feasibility through time and make up much larger relative shares of capacity in the long-term. This aligns with the current market favouring existing well-established market patterns within Rotorua in the short-term, with market growth occurring through time in medium-density dwellings.
- There is lower feasibility particularly within the short to medium-term, with market growth through time increasing feasible options to a much larger extent relative to demand in the long-term.
- As above, there is lower feasibility of vertically-attached apartments under the more conservative feasibility model.

Importantly, commercially feasible capacity should not be confused with growth or the level of development able to be sustained or delivered by the market. It is instead a measure of the potentially feasible capacity development options, some of which is likely to get taken up by the market with growth. The modelled feasible capacity represents the likely maximum size of the potential development opportunity for private commercial developers. It shows the proportion of plan enabled capacity that may represent feasible development options for developers if it were available to the market. In the feasibility model, the status of the land (fee simple versus leasehold) has a key impact on what is considered feasible for commercial developers. Consistent with the approach taken in the HBA 2021, plan enabled capacity on leasehold land administered by the Māori Land Court (multiple-owner Māori land) is excluded from commercially feasible capacity.⁴⁰

Only a portion of final commercially feasible capacity is likely to be taken up, which is likely to be more closely aligned with the level of long-term demand.

3.6.2 Structure of Capacity Outputs

The following sub-sections show the results tables for the more conservative commercial feasibility model only (Model Run B).⁴¹ This model run forms the basis of the assessment to remain conservative in assessing

⁴⁰ This is discussed in more detail in section 7.5 of the HBA 2021 Technical Report.

⁴¹ All results from the different feasibility models have been provided separately to Council.



the adequacy of the long-term capacity within Rotorua's urban environment, as provided for under the different spatial growth scenarios.

The structure of the capacity output tables are largely consistent with that of the plan enabled capacity in Section 3.5, including using the same dwelling typology structure and maximum yield combinations. However, the spatial structure of the greenfield outputs differs slightly to that presented in the plan enabled results. Results have been produced progressively across the greenfield areas in relation to the classification of the land as it relates to potential for development. The outputs have been disaggregated to show greenfield capacity progressively across the following three categories:

- i. Feasible capacity on HBA zoned areas that are served by infrastructure.
- ii. Feasible capacity on the total HBA zoned areas without infrastructure constraints applied. These results therefore include capacity on land served by infrastructure (i.e. category i above) as well as zoned land that is not within the future planned spatial extent of the infrastructure networks (at the time of the HBA 2021 report).
- iii. Feasible capacity on the total FDS areas under each spatial growth scenario. This therefore includes feasible capacity on areas i and ii above together with feasible capacity on the additional areas of FDS greenfield land identified beyond those modelled in the HBA 2021.

3.6.3 Scenario 1

The modelled projected long-term feasible capacity under FDS spatial growth Scenario 1 is shown in Table 3-12. In total, there is an estimated feasible capacity of an additional 42,400 dwellings.

Most of the feasible capacity occurs within the existing urban area where there is an estimated feasible capacity of 34,100 dwellings. This amounts to around one-quarter of the plan enabled capacity for this scenario. The shares of plan enabled capacity that are feasible are higher for detached dwellings, and lower for attached dwellings and apartments.

There is an estimated feasible capacity for an additional 4,400 dwellings within the greenfield areas served by infrastructure in the long-term, and a total of 5,700 additional dwellings across the extent of the HBA areas when infrastructure constraints are not applied.

This suggests that around four-fifths of the zoned areas within the HBA assessed areas are likely to represent feasible development areas. The remaining areas that are not feasible occur within the Eastern reporting area where feasibility is constrained by the leasehold land ownership status.

The modelling shows that feasible greenfield capacity increases further to 8,300 additional dwellings when analysed across the extent of the FDS identified areas for this scenario. The increase occurs through the additional greenfield land provided within the Ngongotahā reporting area under this scenario.

3.6.4 Scenario 2

The modelled projected long-term feasible capacity under FDS spatial growth Scenario 2 is shown in Table 3-13. There is a total projected feasible capacity of 39,000 dwellings under this scenario.

Table 3-12 - Long-Term Rotorua Urban Commercially Feasible Dwelling Capacity: FDS Scenario 1

Reporting Area Land Type		INFILL					REDEVELOPMENT					Max Infill or Redevelopment	GREENFIELD (HBA AREAS WITH INFRASTRUCTURE)					GREENFIELD (ALL HBA AREAS)					GREENFIELD (TOTAL FDS AREAS)					Total Existing Urban + Greenfield
		Standalone	Attached	Apartments	Vertical Apartments	Max Infill	Standalone	Attached	Apartments	Vertical Apartments	Max Redevelopment		Standalone	Attached	Apartments	Vertical Apartments	Max Greenfield	Standalone	Attached	Apartments	Vertical Apartments	Max Greenfield	Standalone	Attached	Apartments	Vertical Apartments	Max Greenfield	
Eastern	Brownfield	1,200	1,300	1,600	-	1,600	1,700	2,400	2,900	-	3,100	3,800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,800	
	Underutilised Urban Land	500	500	500	-	500	700	700	700	-	700	700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	700	
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	3,200	3,200	3,200	-	3,200	3,200	3,200	-	3,200	3,200	3,200	3,200	-	3,200	3,200	
	Total	1,600	1,800	2,000	-	2,100	2,400	3,100	3,600	-	3,800	4,500	3,200	3,200	3,200	-	3,200	3,200	3,200	3,200	-	3,200	3,200	3,200	3,200	-	3,200	7,700
Central	Brownfield	400	500	600	-	600	900	1,400	2,000	6,800	8,900	9,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9,100	
	Underutilised Urban Land	50	50	50	-	50	50	50	50	-	50	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Total	400	500	600	-	600	900	1,500	2,100	6,800	8,900	9,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9,100	
Western	Brownfield	4,700	5,200	6,300	-	6,300	5,900	11,200	13,200	-	14,000	16,300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16,300	
	Underutilised Urban Land	700	700	700	-	700	700	700	700	-	700	800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	800	
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	900	900	900	-	900	900	900	-	900	1,000	1,000	1,000	-	1,000	1,000	
	Total	5,400	5,900	7,000	-	7,000	6,600	11,900	13,900	-	14,700	17,100	900	900	900	-	900	900	900	900	-	900	1,000	1,000	1,000	-	1,000	18,000
Ngongotaha	Brownfield	700	800	1,000	-	1,000	1,700	2,000	2,400	90	2,600	3,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,000	
	Underutilised Urban Land	100	100	100	-	100	400	400	400	-	400	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	400	
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	300	300	300	-	300	1,500	1,500	1,500	-	1,500	4,100	4,100	4,100	-	4,100	4,100
	Total	900	1,000	1,200	-	1,200	2,100	2,400	2,800	90	3,000	3,400	300	300	300	-	300	1,500	1,500	1,500	-	1,500	4,100	4,100	4,100	-	4,100	7,500
Total Urban Environment	Brownfield	7,000	7,900	9,500	-	9,500	10,100	17,000	20,500	6,900	28,500	32,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32,100	
	Underutilised Urban Land	1,300	1,300	1,300	-	1,300	1,900	1,900	1,900	-	1,900	1,900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,900	
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	4,400	4,400	4,400	-	4,400	5,600	5,600	5,600	-	5,600	8,300	8,300	8,300	-	8,300	8,300
	Total	8,300	9,200	10,800	-	10,800	12,000	18,900	22,400	6,900	30,400	34,100	4,400	4,400	4,400	-	4,400	5,600	5,600	5,600	-	5,600	8,300	8,300	8,300	-	8,300	42,400

Source: M.E Rotorua MDRS Residential Capacity Model, 2022.

Table 3-13 - Long-Term Rotorua Urban Commercially Feasible Dwelling Capacity: FDS Scenario 2

Reporting Area Land Type		INFILL					REDEVELOPMENT					Max Infill or Redevelopment	GREENFIELD (HBA AREAS WITH INFRASTRUCTURE)					GREENFIELD (ALL HBA AREAS)					GREENFIELD (TOTAL FDS AREAS)					Total Urban + Greenfield
		Standalone	Attached	Apartments	Vertical Apartments	Max Infill	Standalone	Attached	Apartments	Vertical Apartments	Max Redevelopment		Standalone	Attached	Apartments	Vertical Apartments	Max Greenfield	Standalone	Attached	Apartments	Vertical Apartments	Max Greenfield	Standalone	Attached	Apartments	Vertical Apartments	Max Greenfield	
Eastern	Brownfield	1,200	1,300	1,600	-	1,600	1,700	2,400	2,900	-	3,100	3,800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,800
	Underutilised Urban Land	500	500	500	-	500	700	700	700	-	700	700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	700
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	3,200	3,200	3,200	-	3,200	3,200	3,200	-	3,200	3,200	3,200	3,200	-	3,200	3,200	3,200
	Total	1,600	1,800	2,000	-	2,100	2,500	3,100	3,600	-	3,800	4,500	3,200	3,200	3,200	-	3,200	3,200	3,200	3,200	-	3,200	3,200	3,200	3,200	-	3,200	7,700
Central	Brownfield	400	500	600	-	600	900	1,400	2,000	7,600	9,600	9,800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9,800
	Underutilised Urban Land	50	50	50	-	50	50	50	50	-	50	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	400	500	600	-	600	900	1,500	2,100	7,600	9,700	9,900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9,900
Western	Brownfield	4,700	5,200	6,300	-	6,300	5,900	11,200	13,200	-	14,000	16,300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16,300
	Underutilised Urban Land	700	700	700	-	700	700	700	700	-	700	800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	800
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	900	900	900	-	900	900	900	-	900	1,000	1,000	1,000	-	1,000	1,000	1,000
	Total	5,400	5,900	7,000	-	7,000	6,600	11,900	13,900	-	14,700	17,100	900	900	900	-	900	900	900	900	-	900	1,000	1,000	1,000	-	1,000	18,000
Ngongotaha	Brownfield	700	800	1,000	-	1,000	1,700	2,000	2,400	90	2,600	3,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,000
	Underutilised Urban Land	100	100	100	-	100	400	400	400	-	400	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	400
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	900	1,000	1,200	-	1,200	2,100	2,400	2,800	90	3,000	3,400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,400
Total Urban Environment	Brownfield	7,000	7,900	9,500	-	9,500	10,100	17,000	20,500	7,700	29,300	32,900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32,900
	Underutilised Urban Land	1,300	1,300	1,300	-	1,300	1,900	1,900	1,900	-	1,900	1,900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,900
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	4,100	4,100	4,100	-	4,100	4,100	4,100	-	4,100	4,200	4,100	4,100	-	4,200	4,200	4,200
	Total	8,300	9,200	10,800	-	10,800	12,000	18,900	22,400	7,700	31,200	34,800	4,100	4,100	4,100	-	4,100	4,100	4,100	4,100	-	4,100	4,200	4,100	4,100	-	4,200	39,000

Source: M.E Rotorua MDRS Residential Capacity Model, 2022.



The existing urban area feasible capacity increases to 34,800 dwellings under this scenario, up from 34,100 under Scenario 1. The increase occurs as a result of the additional provision for higher density development under this spatial growth scenario. However, the level of increase in feasible capacity is considerably smaller than the increase to the spatial extent of the High Density Residential Zone between the two scenarios. There is some growth in feasibility within the central areas, with no increase in feasibility within the other main locations of the zone.

There is an estimated feasible capacity for 4,200 additional dwellings within the greenfield areas under Scenario 2. This lower feasible capacity reflects the reduction in plan enabled greenfield areas under this spatial growth scenario, with feasibility also being limited within the Eastern reporting area as a result of the leasehold ownership status of the land.

3.6.5 Scenario 3

The modelled projected long-term feasible capacity under FDS spatial growth Scenario 3 is shown in **Error! Reference source not found.** Under this scenario, there is a total feasible projected capacity of 46,800 dwellings. This is higher than Scenarios 1 and 2 as a result of the additional capacity enabled within the greenfield areas under this scenario.

There is a total projected feasible capacity of around 12,800 dwellings within the greenfield areas under Scenario 3. Approximately one-third (34%; 4,400 dwellings) of this occurs within the infrastructure-served areas modelled under the HBA. The largest share of feasible greenfield capacity occurs within the additional areas identified for this spatial growth scenario around Ngongotahā.

The feasible capacity within the existing urban area is projected at around 34,100 dwellings. This is similar to Scenarios 1 and 2 due to similar types of provision within the existing urban area within the feasible locations.

3.6.6 Scenario 4

The modelled projected long-term feasible capacity under FDS spatial growth Scenario 4 is shown in **Error! Reference source not found.** There is a total projected feasible capacity of 39,800 dwellings under this scenario.

At an estimated 33,700 dwellings, the feasible capacity within the existing urban area is similar to that under Scenarios 1 to 3.

The main difference occurs within the greenfield area, with a total feasible capacity of 6,100 additional dwellings. Most of the feasible capacity within this scenario occurs within the infrastructure-served areas modelled within the HBA. Similar to Scenarios 1 to 3, the feasibility of greenfield capacity within the Eastern reporting area is limited by the leasehold ownership status of the land.

While additional greenfield capacity is provided within the Eastern reporting area by this spatial growth scenario, much of this still occurs on leasehold land. As a result, none of the additional greenfield capacity provided in this location is projected to be commercially feasible to develop by a private, profit-driven developer.

Table 3-14 - Long-Term Rotorua Urban Commercially Feasible Dwelling Capacity: FDS Scenario 3

		INFILL					REDEVELOPMENT					Max Infill or Redevelopment	GREENFIELD (HBA AREAS WITH INFRASTRUCTURE)					GREENFIELD (ALL HBA AREAS)					GREENFIELD (TOTAL FDS AREAS)					Total Urban + Greenfield
		Standalone	Attached	Apartment	Vertical Apartments	Max Infill	Standalone	Attached	Apartment	Vertical Apartments	Max Redevelopment		Standalone	Attached	Apartment	Vertical Apartments	Max Greenfield	Standalone	Attached	Apartment	Vertical Apartments	Max Greenfield	Standalone	Attached	Apartment	Vertical Apartments	Max Greenfield	
Reporting Area Land Type																												
Eastern	Brownfield	1,200	1,300	1,600	-	1,600	1,700	2,400	2,900	-	3,100	3,800	-	-	-	-	-	-	-	-	-	-	-	-	-	3,800		
	Underutilised Urban Land	500	500	500	-	500	700	700	700	-	700	700	-	-	-	-	-	-	-	-	-	-	-	-	-	700		
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	3,200	3,200	3,200	-	3,200	3,200	3,200	-	3,200	3,200	3,200	3,200	-	3,200	3,200	
	Total	1,600	1,800	2,000	-	2,100	2,400	3,100	3,600	-	3,800	4,500	3,200	3,200	3,200	-	3,200	3,200	3,200	3,200	-	3,200	3,200	3,200	3,200	-	3,200	7,700
Central	Brownfield	400	500	600	-	600	900	1,400	2,000	6,800	8,900	9,100	-	-	-	-	-	-	-	-	-	-	-	-	-	9,100		
	Underutilised Urban Land	50	50	50	-	50	50	50	50	-	50	50	-	-	-	-	-	-	-	-	-	-	-	-	-	50		
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	Total	400	500	600	-	600	900	1,500	2,100	6,800	8,900	9,100	-	-	-	-	-	-	-	-	-	-	-	-	-	9,100		
Western	Brownfield	4,700	5,200	6,300	-	6,300	5,900	11,200	13,200	-	14,000	16,300	-	-	-	-	-	-	-	-	-	-	-	-	-	16,300		
	Underutilised Urban Land	700	700	700	-	700	700	700	700	-	700	800	-	-	-	-	-	-	-	-	-	-	-	-	-	800		
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	900	900	900	-	900	900	900	-	900	1,600	1,600	1,600	-	1,600	1,600	
	Total	5,400	5,900	7,000	-	7,000	6,600	11,900	13,900	-	14,700	17,100	900	900	900	-	900	900	900	900	-	900	1,600	1,600	1,600	-	1,600	18,700
Ngongotaha	Brownfield	700	800	1,000	-	1,000	1,700	2,100	2,400	90	2,600	3,000	-	-	-	-	-	-	-	-	-	-	-	-	-	3,000		
	Underutilised Urban Land	100	100	100	-	100	400	400	400	-	400	400	-	-	-	-	-	-	-	-	-	-	-	-	-	400		
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	300	300	300	-	300	1,100	1,100	1,100	-	1,100	7,900	7,900	7,900	-	7,900	7,900
	Total	900	1,000	1,200	-	1,200	2,100	2,500	2,800	90	3,000	3,400	300	300	300	-	300	1,100	1,100	1,100	-	1,100	7,900	7,900	7,900	-	7,900	11,300
Total Urban Environment	Brownfield	7,000	7,900	9,500	-	9,500	10,200	17,100	20,500	6,900	28,600	32,100	-	-	-	-	-	-	-	-	-	-	-	-	-	32,100		
	Underutilised Urban Land	1,300	1,300	1,300	-	1,300	1,900	1,900	1,900	-	1,900	1,900	-	-	-	-	-	-	-	-	-	-	-	-	-	1,900		
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	4,400	4,400	4,400	-	4,400	5,200	5,200	5,200	-	5,200	12,800	12,700	12,700	-	12,800	12,800
	Total	8,300	9,200	10,800	-	10,800	12,100	18,900	22,400	6,900	30,400	34,100	4,400	4,400	4,400	-	4,400	5,200	5,200	5,200	-	5,200	12,800	12,700	12,700	-	12,800	46,800

Source: M.E Rotorua MDRS Residential Capacity Model, 2022.

Table 3-15 - Long-Term Rotorua Urban Commercially Feasible Dwelling Capacity: FDS Scenario 4

Reporting Area Land Type		INFILL					REDEVELOPMENT					Max Infill or Redevelopment	GREENFIELD (HBA AREAS WITH INFRASTRUCTURE)					GREENFIELD (ALL HBA AREAS)					GREENFIELD (TOTAL FDS AREAS)					Total Urban + Greenfield
		Standalone	Attached	Apartment	Vertical Apartments	Max Infill	Standalone	Attached	Apartment	Vertical Apartments	Max Redevelopment		Standalone	Attached	Apartment	Vertical Apartments	Max Greenfield	Standalone	Attached	Apartment	Vertical Apartments	Max Greenfield	Standalone	Attached	Apartment	Vertical Apartments	Max Greenfield	
Eastern	Brownfield	1,200	1,300	1,600	-	1,600	1,700	2,400	2,900	-	3,100	3,800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,800	
	Underutilised Urban Land	500	500	500	-	500	700	700	700	-	700	700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	700	
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	3,300	3,300	3,300	-	3,300	3,300	3,300	-	3,300	4,800	4,800	4,800	-	4,800	4,800	
	Total	1,600	1,800	2,000	-	2,100	2,400	3,100	3,600	-	3,800	4,500	3,300	3,300	3,300	-	3,300	3,300	3,300	-	3,300	4,800	4,800	4,800	-	4,800	9,300	
Central	Brownfield	400	500	600	-	600	900	1,400	2,000	6,800	8,900	9,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9,100	
	Underutilised Urban Land	50	50	50	-	50	50	50	50	-	50	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Total	400	500	600	-	600	900	1,500	2,100	6,800	8,900	9,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9,100	
Western	Brownfield	4,700	5,200	6,300	-	6,300	5,900	11,200	13,200	-	14,000	16,300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16,300	
	Underutilised Urban Land	700	700	700	-	700	700	700	700	-	700	800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	800	
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	900	900	900	-	900	900	900	-	900	1,000	1,000	1,000	-	1,000	1,000	
	Total	5,400	5,900	7,000	-	7,000	6,600	11,900	13,900	-	14,700	17,100	900	900	900	-	900	900	900	-	900	1,000	1,000	1,000	-	1,000	18,000	
Ngongotaha	Brownfield	700	800	1,000	-	1,000	1,400	1,700	2,100	40	2,200	2,600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,600	
	Underutilised Urban Land	100	100	100	-	100	400	400	400	-	400	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	400	
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	400	400	400	-	400	400	
	Total	900	1,000	1,200	-	1,200	1,800	2,200	2,500	40	2,600	3,000	-	-	-	-	-	-	-	-	-	400	400	400	-	400	3,400	
Total Urban Environment	Brownfield	7,000	7,900	9,500	-	9,500	9,800	16,700	20,200	6,900	28,200	31,800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31,800	
	Underutilised Urban Land	1,300	1,300	1,300	-	1,300	1,900	1,900	1,900	-	1,900	1,900	4,300	4,200	4,200	-	4,300	4,300	4,200	4,200	-	4,300	6,100	6,100	6,100	-	6,100	
	Greenfield	-	-	-	-	-	-	-	-	-	-	-	4,300	4,200	4,200	-	4,300	4,300	4,200	4,200	-	4,300	6,100	6,100	6,100	-	6,100	
	Total	8,300	9,200	10,800	-	10,800	11,700	18,600	22,100	6,900	30,100	33,700	4,300	4,200	4,200	-	4,300	4,300	4,200	4,200	-	4,300	6,100	6,100	6,100	-	6,100	39,800

Source: M.E Rotorua MDRS Residential Capacity Model, 2022.



3.6.7 Discussion

All of the modelled FDS spatial growth scenarios have relatively high levels of projected long-term feasible capacity within Rotorua's current and potential future urban environment under the conservative feasibility model (Model Run B). The intensification provisions (which includes those provided by the application of MDRS and PC9) significantly raise feasibility across the existing urban area and increase the viability of redevelopment options.

Part of the increased level of feasibility occurs directly as a result of the additional plan enabled provision, while part is also due to the increased viability of development options on existing lots. This occurs through a combination of the greater yields enabled on parcels, the ability to develop lots to a higher intensity and the ability to form smaller lots to accommodate a dwelling. These aspects respond to the factors challenging feasibility identified within the HBA 2021.

Within the existing urban area, the largest areas of feasibility are projected to occur within the medium-density level of development. This reflects a combination of the development of smaller detached dwellings on smaller lot sizes and medium density attached dwellings.

While there is currently a predominant market focus on detached dwellings, the level of feasibility for medium density attached dwellings is projected to increase through time as the market becomes more established. There is a level of demand substitution likely to occur across these dwelling types as households make trade-offs between dwelling type, location and size. The increased level of development enabled upon sites means that they can be developed to a higher density where smaller sites are able to accommodate larger dwellings, increasing the potential for market substitution.

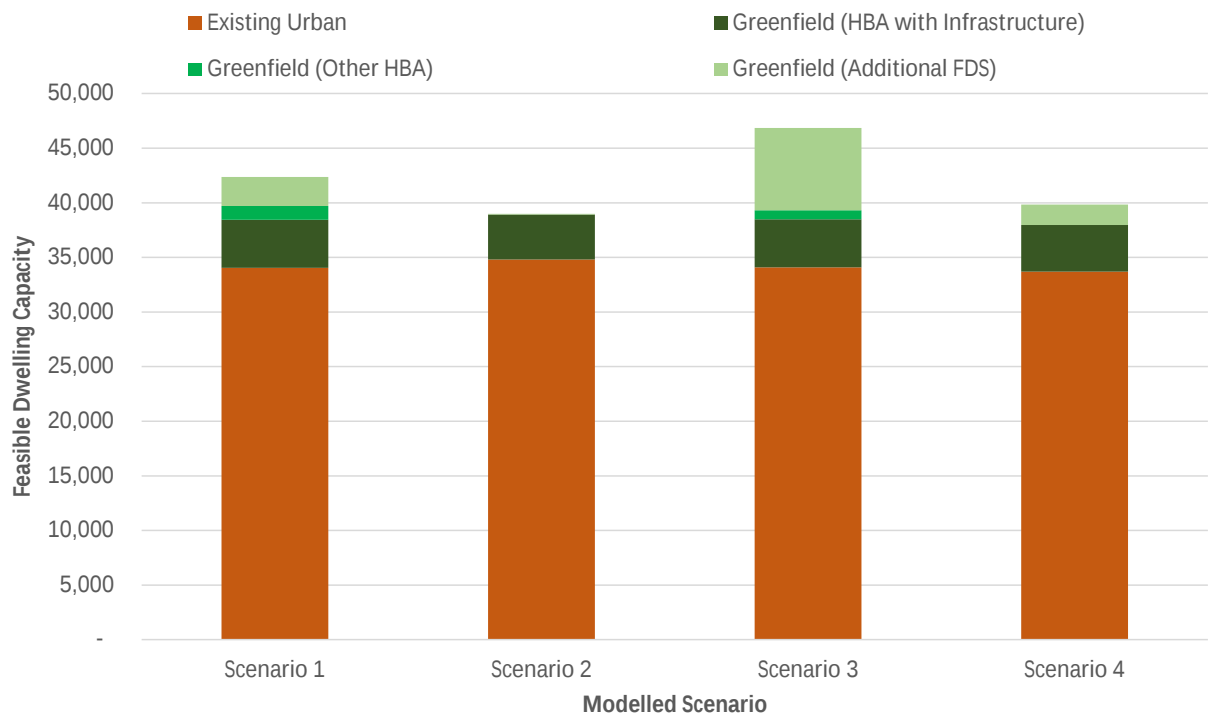
There is less variation between the spatial growth scenarios in response to the differences in provision for higher density development. This is largely due to the limited feasibility of this development option beyond central areas.

The level of feasible capacity is compared across the modelled scenarios within Figure 3-8. The modelled FDS spatial growth scenarios have varying levels of long-term projected feasible capacity. As above, there is limited variation in the level of feasible capacity within the existing urban area with most of the variation occurring in relation to the level of greenfield areas provided.

Within the greenfield areas, there is a similar level of feasible capacity within the infrastructure-served areas modelled under the HBA. The feasibility of capacity in these areas is mainly limited by the leasehold ownership status of land, which removes much of the variation between scenarios seen in the plan enabled capacity of these areas. The largest variation in feasible capacity instead occurs within the additional greenfield areas enabled under the FDS beyond those modelled within the HBA.

Scenario 3 has the largest feasible greenfield capacity, corresponding with its focus on greenfield urban expansion. Conversely, Scenario 2 has the smallest feasible greenfield capacity corresponding with its focus on urban intensification.

Figure 3-8 – Long-Term Commercially Feasible Capacity by Modelled FDS Spatial Growth Scenario



Source: M.E Rotorua MDRS Residential Capacity Model, 2022.

The geographic distribution across the HBA reporting areas of long-term projected feasible capacity across Rotorua’s current and potential future urban environment is shown in Table 3-16. This reflects the different focuses of the proposed spatial growth scenarios in relation to the intended broad growth pattern across the city.

As described above, the distribution of feasible capacity within the existing urban area across the reporting areas is similar across all modelled scenarios. The main difference occurs within the greenfield areas due to the variation in the spatial extent of the enabled areas.

Scenarios 1 and 3 have a higher share of feasible greenfield capacity within the Ngongotahā area, raising their overall share of capacity toward this part of the city. This is higher under Scenario 3 due to the increased level of provision. In contrast, Scenarios 2 and 4 have a greater level of greenfield capacity within the Eastern report area.

Table 3-16 - Long-Term Commercially Feasible Capacity by Modelled FDS Scenario and Reporting Area Location

Reporting Area	Existing Urban				Greenfield (Total FDS Areas)				Total			
	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 1	Scenario 2	Scenario 3	Scenario 4
	Commercially Feasible Capacity (Net Additional Dwellings)											
Eastern	4,500	4,500	4,500	4,500	3,200	3,200	3,200	4,800	7,700	7,700	7,700	9,300
Central	9,100	9,900	9,100	9,100	-	-	-	-	9,100	9,900	9,100	9,100
Western	17,100	17,100	17,100	17,100	1,000	1,000	1,600	1,000	18,000	18,000	18,700	18,000
Ngongotaha	3,400	3,400	3,400	3,000	4,100	-	7,900	400	7,500	3,400	11,300	3,400
Total Urban Environment	34,100	34,800	34,100	33,700	8,300	4,200	12,800	6,100	42,400	39,000	46,800	39,800
Reporting Area	Share of Commercially Feasible Capacity by Location											
	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 1	Scenario 2	Scenario 3	Scenario 4
	Share of Commercially Feasible Capacity by Location											
Eastern	13%	13%	13%	13%	39%	77%	25%	78%	18%	20%	16%	23%
Central	27%	28%	27%	27%	0%	0%	0%	0%	22%	25%	19%	23%
Western	50%	49%	50%	51%	12%	23%	13%	16%	43%	46%	40%	45%
Ngongotaha	10%	10%	10%	9%	50%	0%	62%	6%	18%	9%	24%	8%
Total Urban Environment	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: M.E Rotorua MDRS Residential Capacity Model, 2022.

3.7 Indicative Long-term Sufficiency by Spatial Growth Scenario

It is important to understand whether the capacity provided within the proposed FDS spatial growth scenarios are able to adequately meet the future projected urban growth of the city. This section analyses the potential for the projected dwelling growth to be accommodated within Rotorua's current and potential future urban environment.

Only a portion of the projected feasible capacity (Section 3.6) is likely to be taken up by the market and delivered as additional dwelling supply (i.e. reasonably expected to be realised capacity). Planning provision is one of many factors that affect the availability of capacity to the market and the feasibility of development on parcels that are available to the market. The level of take-up of capacity is instead likely to occur up to the level of long-term urban demand projected for the district.

This section assesses whether there is sufficient capacity enabled within the preliminary spatial growth scenarios to meet the projected long-term growth for dwellings. It considers this separately across the existing urban area and greenfield areas, recognising that it is important to provide different options (e.g. greenfield vs. intensification) to accommodate growth.

3.7.1 Approach

The key stages to our approach are set out below.

Projected Long-Term Demand

The projected dwelling growth within the HBA 2021 forms the most recent of Council's urban dwelling projections for the district. We consequently test whether this projected growth can be accommodated by the capacity modelled under the proposed spatial growth strategies. Our assessment applies a long-term competitiveness margin (as set out in the NPS-UD) to remain conservative and ensure that there is sufficient additional capacity to maintain competitiveness of supply within the market. An allowance has also been made to accommodate an existing unmet latent demand estimated within the 2021 HBA.



In total, there is a projected long-term demand for an additional 9,700 dwellings within Rotorua's urban areas (refer Section 3.1). This includes both an allowance for latent demand and a long-term competitiveness margin. It is important to note that, of this, only around 8,200 dwellings would need to be constructed to meet long-term demand, where the additional 1,500 dwellings is formed by the margin.

Existing Urban vs. Greenfield Development Patterns

This indicative sufficiency analysis tests three different potential future growth (demand) patterns within Rotorua in relation to the distribution of growth across the existing urban and greenfield areas (and within the context of capacity that is plan enabled and commercially feasible to develop). These reflect an urban expansion scenario, an urban intensification scenario and a baseline scenario consistent with that applied within the 2021 HBA. The development of the urban expansion and intensification scenarios (which assume higher/lower levels of outward expansion/intensification) are informed by examining development patterns in other urban economies.

Each scenario allocates a different share of demand to these areas, with the total allocated demand remaining the same across all three scenarios. The analysis considers underutilised land together with greenfield land as these are large undeveloped areas within the urban extent that can be developed at scale in a similar way to greenfield development. Many of these areas are land areas that are not yet urbanised but fall within the spatial extent of the existing urban edge.

It is important to understand the sufficiency of the proposed provisions within the context of different potential growth scenarios to provide a more conservative assessment.

The tested scenarios are:

- An **urban expansion** scenario where a high share of projected demand is allocated to the greenfield/underutilised urban land areas. This assumes that 65% of the total demand (2021-2051) is met in greenfield/underutilised urban land areas. This actually equates to a 76% of medium-term (2024-2031) demand and 67% of long-term (2031-2051) demand met in the greenfield/underutilised urban land areas as the share is lower in the short-term due to an assumption around the current constraints of infrastructure-served greenfield land.
- An **urban intensification** scenario where a higher share of demand is allocated to the existing urban (brownfield) areas. This assumes that 58% of the total long-term demand (2021-2051) is met within brownfield areas through intensification and 42% within the greenfield/underutilised urban land areas. This is below the shares currently being observed in some of the larger urban economies.
- A scenario consistent with that used in the 2021 HBA, which sits in between the above two scenarios. This scenario assumes that over the long-term (2021-2051), 55% of the demand is met within the greenfield/underutilised urban land areas.

The calculated net demand (including a margin) is then tested for its ability to be accommodated within each of the greenfield/underutilised urban land and existing urban capacities of each spatial growth scenario.



Greenfield and Underutilised Urban Land Take-Up

The likely share of greenfield land taken up (supplied) by future urban development has been estimated based on a combination of the feasibility of the land and its infrastructure provision. The analysis above in Sections 3.5 and 3.6 disaggregates greenfield land by these categories.

The areas of greenfield land assumed to contribute to meeting this demand include zoned areas that are planned to be served by infrastructure. These areas are therefore a sub-set of the areas modelled under the HBA 2021 as the additional areas identified by the FDS spatial growth scenarios do not yet have planned infrastructure provision.

Within these areas, only capacity on greenfield land that was projected to be feasible to develop has been included. Therefore, any areas of leasehold are excluded from contributing to this long-term demand as they are not projected to be commercially feasible.

Furthermore, within these final areas, it has been assumed that development is more likely to occur at lower densities than those enabled under the MDRS. The contributing yield is therefore much lower than enabled, reflecting the lower end of the capacity estimated formed by the detached dwelling yield.

The potential contribution of areas of underutilised urban land to meeting long-term demand was also estimated. Capacity was included from areas that were estimated to be commercially feasible, which therefore also excludes capacity on leasehold land. A conservative estimate of capacity on these areas of underutilised land has been applied through using the lower yield generated from detached dwelling development.

Comparison of Demand to Greenfield and Underutilised Urban Land

The assessment then compared the level of demand allocated to the greenfield areas (based on the growth scenarios outlined above) with the capacity estimated that is likely to contribute to meeting the demand.

Existing Urban Area

The above demand allocation process estimates the level of demand likely to be needed to be met within the existing urban area. The assessment considers the share of plan enabled and commercially feasible capacity that would be needed to be taken up (supplied) to meet this projected demand through intensification within the existing urban area. This approach considers the adequacy of provisions through ensuring that they do not rely on unreasonably large shares of capacity take up to meet demand.

3.7.2 Comparison of Capacity with Demand: Greenfield and Underutilised Urban Land

The assessment of the sufficiency of the greenfield and underutilised urban land is summarised in Figure 3-99. The figure compares the modelled capacity with the projected demand occurring within the greenfield/underutilised urban land areas under each FDS spatial growth and demand scenario. The graph shows the modelled capacity and demand within each time period (short-term: 2021-2024, medium-term: 2021-2031, long-term: 2021-2051) and modelled spatial growth scenario (Scenarios 1 to 4).



Interpretation

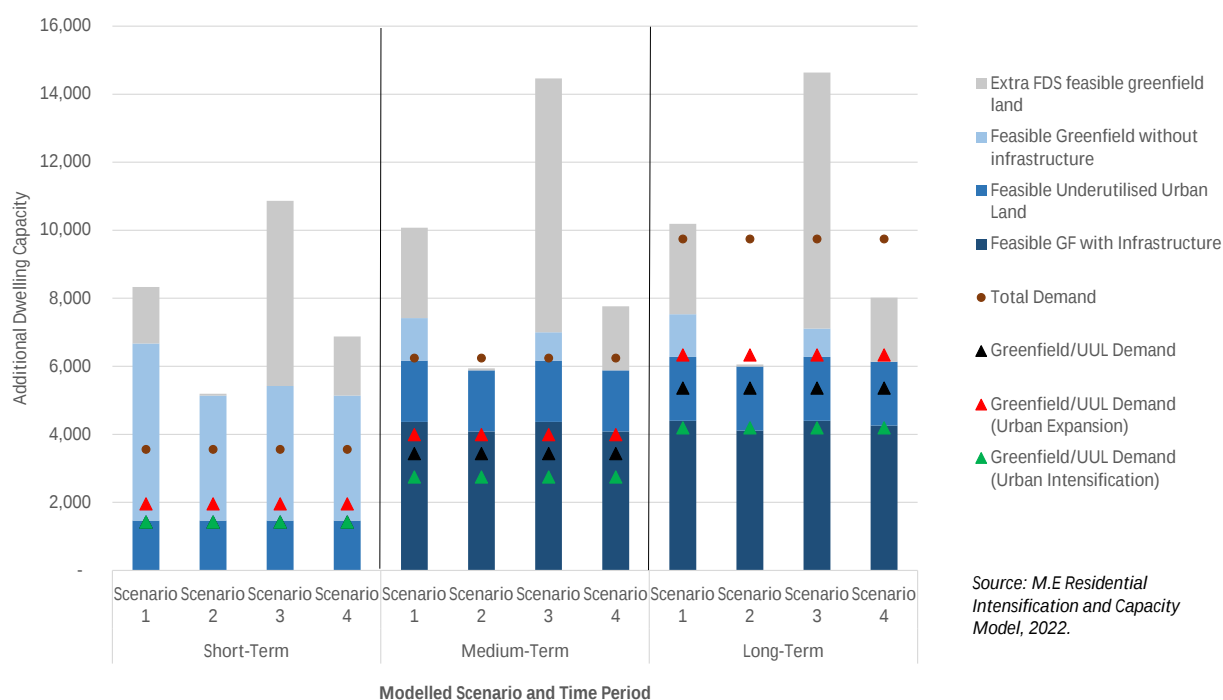
The bars on the graph show the modelled capacity. This is shown progressively by type to demonstrate the type of capacity that would need to be relied on to meet demand. These are all additive, with the totals at each stage defined by the height of the bar after each capacity type. The capacity shown within the bars is structured as follows:

- The first component of capacity is shown in the dark blue bars. This is the commercially feasible greenfield capacity that is served by infrastructure. This is limited to the currently zoned areas used in the 2021 HBA. It excludes capacity on leasehold land as this is not commercially feasible.
- The middle blue bars show the estimated feasible capacity on the areas of underutilised urban land. These are additive to the greenfield feasible capacity. A conservative approach has been taken here through the use of the standalone dwelling yield from these areas rather than the maximum yield. This is about 40% of the max yield and assumes that most of these areas would be developed at rates of average section sizes of around 300m² per dwelling within the Medium Density Residential areas.
- The light blue bars then show the additional capacity that would be feasible within the HBA greenfield areas if it were served by infrastructure (and also therefore excludes leasehold land). Note that much of this capacity transfers into the dark blue bars (i.e. infrastructure-served feasible capacity) through time as infrastructure extensions occur. The HBA 2021 infrastructure extensions and timing have been applied. These bars indicate the additional feasible capacity on the existing HBA areas if infrastructure were added.
- Finally, the grey bars show the commercially feasible capacity on the additional growth areas identified under the FDS spatial growth scenarios beyond the areas already covered by the HBA areas. These exclude Māori owned land and are of course not served by infrastructure.

The demand is shown on the graphs as the dots. These show the estimated greenfield/underutilised urban land demand for each time period and are the same across all scenarios, but increase with time. The dots are colour coded in the following way:

- Red = urban expansion scenario;
- green = urban intensification scenario; and
- black = mid-scenario consistent with the 2021 HBA.

Figure 3-9 – Comparison of Greenfield/Underutilised Urban Land with Demand by Modelled Scenario and Time Period: Rotorua Urban Environment



Key Findings

The analysis suggests that in most cases there is likely to be sufficient greenfield/underutilised urban land within the modelled scenarios to meet projected demand. There may be limited support for providing further greenfield areas beyond those included within the HBA 2021 (taking into account their FDS scenario zoning changes). This may take into account other factors (such as land ownership concentration) that affect the viability of the capacity beyond the information included within the modelling.

The greatest potential requirement for additional land may occur within the long-term if a higher urban expansion growth pattern (outlined above) were to occur. The assessment also indicates constraints within the short-term, although this is largely the result of short-term infrastructure provision in accordance with the NPS-UD conventions.

The key findings for the medium and long-term include (noting that the FDS is focussed on long-term outcomes):

- **Medium-term:** The assessment indicates there is likely to be sufficient capacity. The greenfield capacity alone exceeds the demand. In addition, there is further capacity on underutilised urban land.
- **Long-term:** Together the greenfield and underutilised urban land capacity exceed the projected demand under the urban intensification and baseline scenarios. These scenarios are more likely within the context of the intensification plan change. It is noted that this capacity is likely to be conservative as the MDRS provisions have not been applied within the greenfield areas, meaning there may be more capacity in some of these areas.



The modelling suggests that the feasible, infrastructure-served greenfield areas are able to meet around about 42%-45% of the long-term total demand (incl. a margin). With the inclusion of the underutilised urban land areas, they can meet around 62-64% of the long-term total demand (incl. a margin).

The urban expansion scenario does exceed the combined capacity in most of the FDS spatial growth scenarios, and in Scenarios 2 and 4, also exceeds the greenfield feasible capacity that is not served by infrastructure. Under these spatial growth scenarios, the HBA 2021 non-infrastructure-served feasible capacity out at Ngongotahā has been removed.

It is noted that the demand figures also include latent demand and the competitiveness margin. This means that there is provision within the assessment for the demand to include an overall margin of around 17%. If this were excluded, then there is sufficient greenfield and underutilised urban land to meet long-term demand under all spatial growth scenarios.

3.7.3 Comparison of Capacity with Demand: Existing Urban Area

The share of capacity required to be taken up within the existing urban environment to meet the projected long-term existing urban area demand is shown in Table 3-17. The required capacity take-up (supply) is shown for both the plan enabled capacity and the commercially feasible capacity across each of the modelled FDS spatial growth scenarios. The upper part of the table shows the share of capacity required to meet only demand (incl. latent demand), while the lower portion of the table shows the required take-up if a competitiveness margin is also included with demand.

The reasonableness of the required level of capacity take-up is considered within the local economic context and within the context of the urban intensification development pathway. Generally, it is reasonable to rely on significantly lower shares of take-up within the existing urban area than within greenfield areas due to the greater range of factors affecting market availability and the smaller scale of development. In comparison, greenfield areas typically develop at scale and have a higher level of likelihood of development if infrastructure is supplied.

It is important to consider both the share of feasible capacity and plan enabled capacity. These provide different indications in relation to whether there is likely to be a planning constraint or whether there may be other non-planning factors affecting the availability of capacity. Within the Rotorua local market, the required levels of plan enabled capacity are very low, but commercially feasible take-up rates are reasonably high within the short to medium-term as this type of development is not yet well established within the local market.

Key Findings

- The analysis suggests that there is more pressure in the short-term in accommodating demand within the existing urban environment. There is a high share of feasible capacity that needs to be taken up within the short-term to accommodate the projected existing urban demand, as well as in the medium-term.
- However, this is not a planning issue within the existing urban environment. The assessment of capacity shows that there is a large plan enabled allowance across the existing urban environment within each of the scenarios that provides for a wide range of densities in a wide range of locations. This indicates that there is large flexibility provided for the market.

- The shares of feasible capacity required to meet demand decrease across the medium to long-term. This occurs as greater proportions of the enabled medium-density capacity is projected to become feasible through time with market growth as the market becomes more established.
- In the long-term, between 9% and 15% of the feasible capacity is required to meet demand within the existing urban area. Only 2% to 4% of the plan enabled capacity would be required to meet demand. This suggests that there is likely to be sufficient capacity enabled by the proposed provisions to meet the projected long-term demand within the existing urban area.

Table 3-17 – Share of Existing Urban Brownfield Capacity Uptake Required to Meet Projected Long-Term Existing Urban Demand

Demand Type and Scenario		SHARE OF BROWNFIELD CAPACITY REQUIRED TO MEET EXISTING URBAN DEMAND					
		PLAN ENABLED CAPACITY			COMMERCIALY FEASIBLE CAPACITY: MODEL RUN B		
		Short-Term	Medium-Term	Long-Term	Short-Term	Medium-Term	Long-Term
DEMAND (Latent + No Margin)							
Baseline	SCENARIO 1	1%	2%	3%	49%	32%	12%
	SCENARIO 2	1%	1%	2%	49%	32%	11%
	SCENARIO 3	1%	2%	3%	49%	32%	12%
	SCENARIO 4	1%	2%	3%	52%	34%	12%
Urban Expansion	SCENARIO 1	1%	1%	2%	37%	26%	9%
	SCENARIO 2	1%	1%	2%	37%	26%	9%
	SCENARIO 3	1%	1%	2%	37%	26%	9%
	SCENARIO 4	1%	1%	2%	39%	27%	9%
Urban Intensification	SCENARIO 1	1%	2%	4%	49%	40%	15%
	SCENARIO 2	1%	2%	3%	49%	40%	14%
	SCENARIO 3	1%	2%	4%	49%	40%	15%
	SCENARIO 4	1%	2%	3%	52%	42%	15%
DEMAND (Latent + With Margin)							
Baseline	SCENARIO 1	2%	2%	3%	59%	39%	14%
	SCENARIO 2	1%	2%	2%	59%	39%	13%
	SCENARIO 3	2%	2%	3%	59%	39%	14%
	SCENARIO 4	2%	2%	3%	63%	40%	14%
Urban Expansion	SCENARIO 1	1%	2%	3%	45%	31%	11%
	SCENARIO 2	1%	1%	2%	44%	31%	10%
	SCENARIO 3	1%	2%	3%	45%	31%	11%
	SCENARIO 4	1%	2%	3%	47%	32%	11%
Urban Intensification	SCENARIO 1	2%	3%	4%	59%	48%	17%
	SCENARIO 2	1%	2%	3%	59%	48%	17%
	SCENARIO 3	2%	3%	4%	59%	48%	17%
	SCENARIO 4	2%	3%	4%	63%	50%	17%

Source: M.E Rotorua MDRS Residential Capacity Model, 2022.

3.7.4 Discussion

The analysis suggests that the projected long-term demand is likely to be able to be met within the existing urban area under all of the modelled scenarios. The densities enabled by the proposed provisions (i.e. MDRS, PC9 and spatial growth scenarios) within the existing urban area are higher than the development patterns being delivered by the commercial market in many larger urban economies. Issues are instead more likely to be related to non-planning factors and the levels of prices able to be paid relative to the cost of actually constructing the dwellings, as well as the time taken to better establish the medium-density market for developers in Rotorua (this is likely to increase through time).

As identified within the HBA 2021, there is an issue in the short-term within the greenfield area relating to infrastructure. There are no greenfield areas with currently provided/planned infrastructure in the short-term. However, there are areas of underutilised urban land which could be developed – if most/all of these



were taken up, then projected short-term greenfield demand could be accommodated, but with little flexibility and a high reliance on market availability.

Despite the indicated greenfield shortfall in the short-term, there is limited indication that this will continue as a constraint in to the medium-term. This is because there is a lot more infrastructure-served greenfield capacity provided within the medium-term, with some limited further provision in the long-term under the FDS spatial growth scenarios.

The assessment suggests that there is likely to be sufficient greenfield/underutilised urban land to accommodate long-term growth. However, it may be appropriate for the FDS to consider further provision of non-leasehold infrastructure-served greenfield land in the long-term to take account of a potential urban expansion focused growth pattern. Further provision may be appropriate on the basis of locational choice options or due to other factors affecting capacity that are not included within the assessment.

It is unlikely that the provision of further greenfield land will have any material difference in land costs. Most of the cost of the land is associated with the urbanisation process, which is generally a constant across different landowners (assuming land has a similar magnitude of cost to develop in each location). The raw rural cost of the land is only a small component of the urbanised land cost.

While the proposed medium-density changes (via PC9 and the FDS spatial growth scenarios) are likely to address some of the affordability issue through the provision for smaller, cheaper dwellings, the affordability issue is still likely to persist. There is no indication to suggest that this is a planning issue, but is instead related to the ability for households to actually pay for the cost of constructing a dwelling. Demand for most of the lower value bands is likely to continue to be met through the rental sector, and other parts of the market (e.g. social housing).

3.8 FDS Scenarios in Context of HBA Findings

The indicative brownfield and greenfield growth areas identified for future residential development/intensification so far in the FDS development process that have been supplied to M.E for assessment provide for a range of new residential locations (including densities by location) and choice in the market and will increase the competitiveness of the market by bringing in new landowners.

The quantum of capacity provided is an improvement on the current 2018 Spatial Plan brownfield growth areas in all spatial growth scenarios. In the existing urban area (excluding greenfield capacity), the maximum infill and redevelopment capacity increased by just 1,400 plan enabled dwellings between the medium-term and the long-term in the HBA 2021. This was driven by a combination of long-term only operative zones (i.e. future urban zones) and brownfield changes identified in the Spatial Plan 2018. While the medium-term plan enabled capacity is now substantially higher under a PC9 baseline (with MDRS), the maximum infill and redevelopment capacity of the four FDS spatial growth scenarios increases by between 13,300 plan enabled dwellings (Scenario 1) and 74,700 plan enabled dwellings (Scenario 2) between the medium and long-term – a substantially greater net increase in long-term plan enabled brownfield capacity compared with the impact of the Spatial Plan.

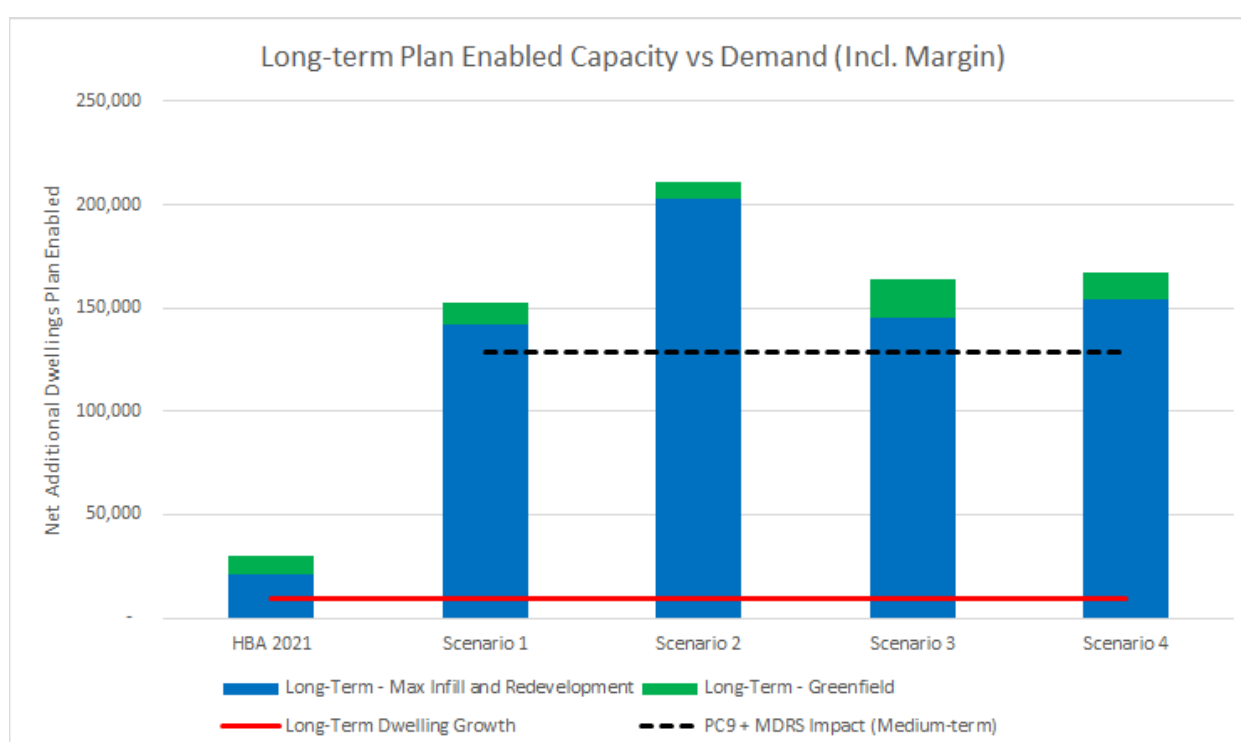


The quantum of capacity provided is an improvement on the current 2018 Spatial Plan greenfield areas in all but Scenario 2 (which reduces long term greenfield capacity in lieu of greater intensification of the existing urban area).

In all cases, the preliminary spatial growth scenarios provide a large increase in total long-term capacity in combination with PC9 and MDRS, and in net terms. If residential supply over the long-term is strongly weighted towards urban expansion areas (greenfield and including under-utilised existing urban land), Scenario 2 may potentially provide insufficient capacity for this pattern of demand in the long-term (and based on capacity that is considered commercially feasible). However, under more balanced demand scenarios, or supply weighted towards intensification opportunities, Scenario 2 may also prove to be sufficient.

To highlight the cumulative impact of the MDRS, PC9 and the preliminary FDS spatial growth scenarios, Figure 3-10 compares long-term plan enabled capacity with the long-term capacity quantified for the HBA 2021. While the black dashed line shows the contribution of the MDRS and PC9 to infill and redevelopment capacity in existing urban areas, the net impact of the spatial growth scenarios in the long-term is also clear. The long-term dwelling demand (plus margin) is shown by the red line for context only - noting that under the HBA 2021, the plan enabled capacity was insufficient for this amount of long-term demand by the time reductions are made for commercial feasibility, infrastructure constraints and reasonably expected to be realised development patterns. Hence the importance of significantly increasing plan enabled capacity if long-term shortfalls are to be avoided.

Figure 3-10 – Long-term Plan Enabled Capacity HBA 2021 vs FDS Spatial Growth Scenarios



While not graphed here, a comparison of long-term commercially feasible capacity under each of the preliminary FDS spatial growth scenarios shows a similar pattern as seen in Figure 3-10. That is, substantial



increases in long-term feasible capacity relative to the HBA 2021, even based on conservative feasibility assumptions.

The indicative zoning assumptions assigned to each FDS long-term growth area respond well to the key findings from the HBA 2021, including the need to provide at least sufficient development capacity to meet dwelling demand and identify more land suitable for attached housing typologies in the long-term. Most spatial growth scenarios also meet the requirement to enable more feasible greenfield capacity. The scenarios variously achieve this through a combination of more brownfield capacity (intensification over and above PC9/MDRS), up-zoning greenfield areas already identified in the HBA 2021 and identifying new greenfield growth areas.

As with the operative residential zones and Spatial Plan 2018 long-term growth areas, some of the growth areas identified in the preliminary FDS spatial growth scenarios at the time of this report are impacted by Māori Land. As in the HBA 2021, and noted in Section 2, M.E supports providing long-term urban development opportunities on Māori Land so long as the constraints to realising development on those land parcels (which may improve over time) are taken into account (by identifying additional fee-simple land) to minimise the risk of demand not being met in future.

M.E understands that work on identifying suitable long-term residential growth areas (and combining them into different spatial growth scenarios) is ongoing. Substantial changes to the preliminary spatial growth scenarios tested in this report may need further evaluation to check sufficiency in particular. However, minor refinements to the preliminary scenarios are not likely to materially change our conclusions.



4 Providing for Rural Residential Growth

The purpose of this section⁴² is to provide analysis to inform RLC and the wider FDS project team of the demand and capacity, and therefore potential sufficiency, of the operative Rural 2 Zone to cater for future growth. This is directly relevant for the FDS, as any shortfall of capacity could be considered as part of the district wide growth planning. The analysis can also be used to understand the loss of capacity arising from options that up-zone any existing Rural 2 Zone areas for urban development⁴³.

4.1 Capacity for Residential Lifestyle Growth

4.1.1 Approach

The analysis of capacity is based on a relatively simple approach of determining which parcels in the Rural 2 Zone have further subdivision potential once minimum lot sizes are applied.

Key assumptions underpinning this assessment include:

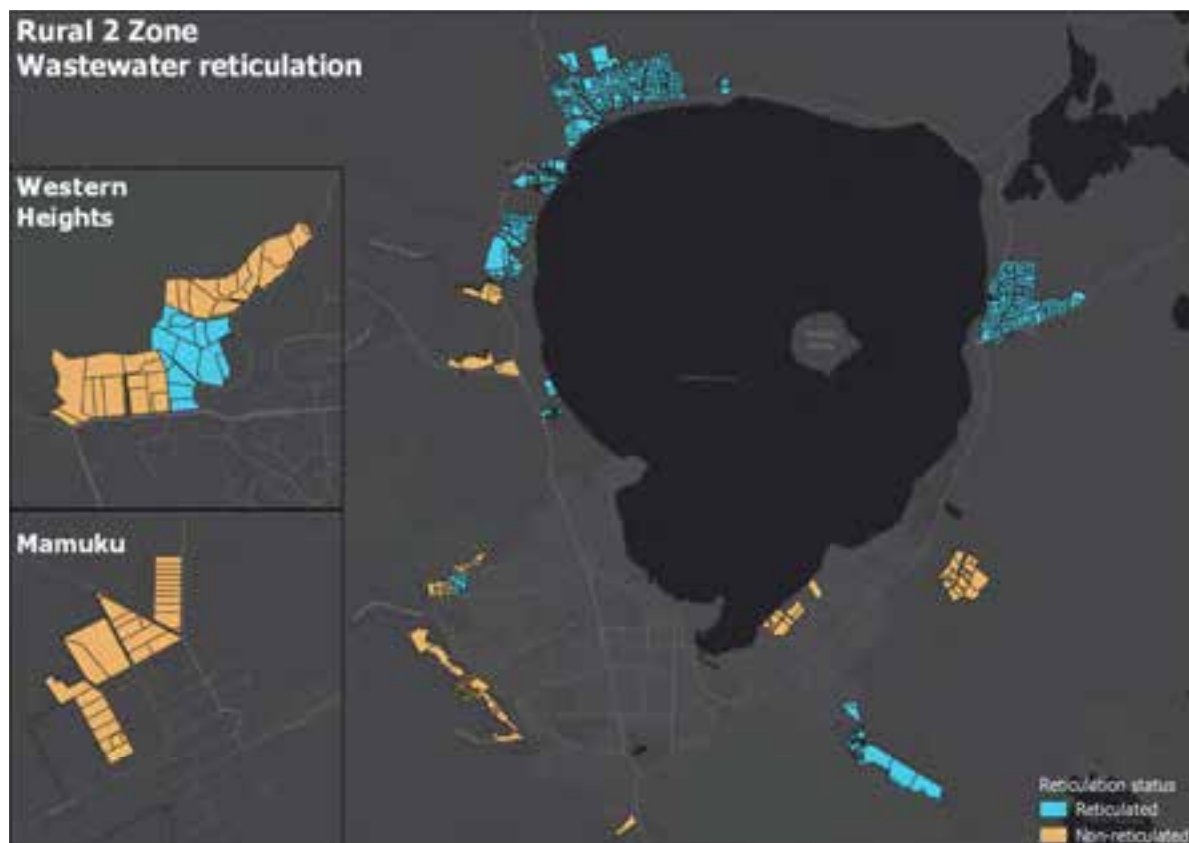
1. That Parcel boundaries are based on the latest LINZ primary parcel data. We have trimmed parcels to just the area within the Rural 2 Zone. These are then referred to as parent parcels/lots for the purpose of this analysis.
2. Where Significant Natural Areas (SNAs) overlap the Rural 2 Zone, SNAs have been excluded from the area with subdivision potential (i.e., removed from the parent parcel area). This is a conservative approach that avoids fragmentation of SNAs. In practice, we assume an SNA could form part of the minimum lot area so long as an appropriate building platform is still available outside of the SNA.
3. This analysis does not take into account the additional subdivision entitlement that is available to landowners who covenant (protect) an SNA, protect gullies or margins of water bodies or reduce nutrient run-off. Any such capacity would be net additional to the findings of this analysis.
4. That a maximum 20m esplanade setback is applied from relevant streams and the lake itself (for relevant properties where an esplanade reserve has not already been applied). The esplanade area has been excluded from the area with subdivision potential (i.e., removed from the parent parcel area).
5. That any Outstanding Natural Features or Landscapes (ONFLs) and Sensitive Area overlays covered >50% of a parent parcel in order to be tagged to that parcel. We note, ONFLs and Sensitive Areas have not been treated as a constraint to subdivision in M.E's model per se but are tagged to parcels to provide additional context for Council.

⁴² The contents of this section were separately provided to RLC as a memo dated 19th May 2022.

⁴³ Given the final FDS scenario is still unknown, M.E has not run these calculations as part of this report.

6. The minimum lot size for subdivision in the Rural 2 Zone is 4,000sqm in reticulated areas and 8,000sqm in non-reticulated areas. Subdivision is a discretionary activity. The analysis does not consider the yield that may be achieved through boundary adjustments to increase the size of a parent lot.
7. The analysis assumes that if the subdividable area of the parent lot is equal or greater than twice the minimum lot size, that this qualifies for subdivision. M.E has not tested subdivision practicality of each site. Rather, it is assumed that the parent lots are sufficiently large to provide some flexibility of subdivision boundaries that work around existing dwellings.
8. This analysis relies on the Wastewater and Sewerage Scheme maps contained in the Long Term Plan (replicated by M.E in GIS visually off those published images) to inform which Rural 2 Zone areas are reticulated in the short term. No enquiry has been made on whether the reticulated areas (sewerage schemes) have additional capacity for growth or not. This may be a constraining factor – particularly in the Brunswick Sewerage Scheme areas which is a key area for net additional subdivision capacity under a 4,000sqm minimum lot size. The results may be overstated if infrastructure constraints apply.
9. In addition, Council has advised that the zone area along Tarawera Road is capable of being reticulated and as such has been treated as such in the short term for the modelling. Figure 4-1 shows the assumed reticulated and non-reticulated areas in the short term.

Figure 4-1 - Assumed reticulated and non-reticulated Rural 2 Zone Areas – Short Term

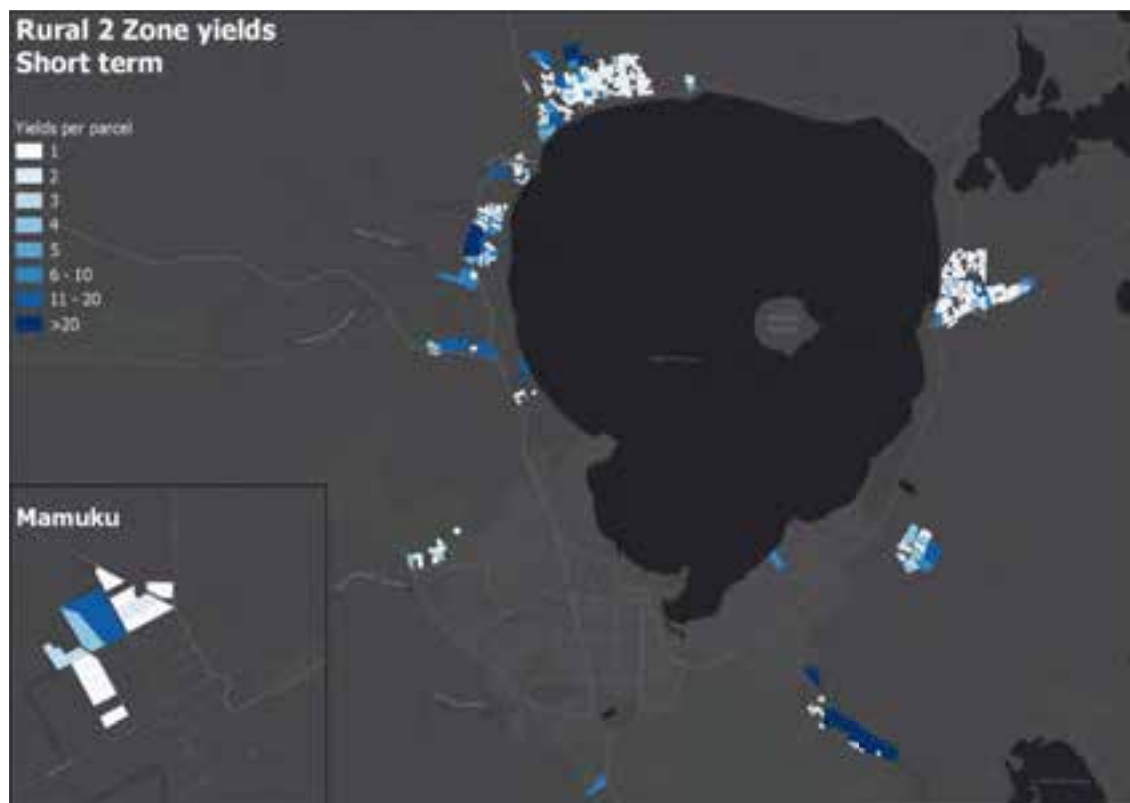


- 
10. In the HBA, M.E assumed that the Pukehāngi Development Area would be served by network expansions in the medium term (to the boundary). We have assumed that the Rural 2 Zone in the structure plan will be reticulated in addition to the Residential 1 Zone areas by the developer. There is no capacity included in the short term (even at un-reticulated densities) on the assumption that the site has yet to undergo necessary land development.
 11. Council have further advised that the zone area adjoining the Mamuku Village is identified for reticulation in the long term. As such the capacity in that location increases between the medium and long term as the minimum lot size changes (and assumes the subdivision is designed in the short and medium term with further subdivision in mind).
 12. The Ōwhatiura Development Area – while zoned Rural 2 Zone – does not identify any rural lifestyle lots in the District Plan, and as such, no subdivision yield is counted in that location.
 13. There are 2 noticeable existing subdivision plans in the Rural 2 Zone that include shared/common areas. One of these is Parkland Estate and the other is the North Riding Estate (Hamurana). There are a total of 59 lots already provided as part of those subdivisions. M.E has (conservatively) assumed that neither the common area or lots of those subdivisions could be further subdivided and are excluded.
 14. The Ōturoa Vista Development Area is located in the Rural 1 Zone and so is not picked up by our spatial analysis. However, the Development Plan provides for 50 rural residential lots. This capacity is assumed to still be available and is added manually to the final data tables.
 15. The analysis relies on current (latest) aerial imagery and building outlines (LINZ) as a cross check to current vacant lots (relevant for results for net additional dwelling capacity). The analysis did not consider any consents for dwellings or subdivision that may have been issued and not yet given effect to.
 16. The analysis has not deducted any land area for roading within large greenfield lots. This means that for the few sites that have a large net additional yield (refer maps), this may be slightly over-stated (as the yield would be less if roading was required within the site). For the significant majority of parent lots that qualify for subdivision, the net additional yield is relatively low and it has been assumed that little (if any) gross land area would be lost to provide suitable access to the new sites.
 17. Last, the Spatial Plan 2018 identified some long term urban areas (mainly around Ngongotahā) that are currently undeveloped Rural 2 Zones. Capacity in these zones is included in the short and medium term, but excluded in the long term (as evident in the maps and tables provided). They are shown in the Spatial Plan Future Urban column in the results table and included in the total column. This may over-state capacity in the short and medium term, as developing these zones for rural residential living may preclude them effectively achieving an urban density in the long term.

4.1.2 Key findings

The following maps show the results for net additional lots yielded by subdivision in the Rural 2 zone⁴⁴, based on the assumptions set out above.

Figure 4-2 - Net Additional Lot Yield in the Rural 2 Zone – Short Term



⁴⁴ The additional capacity of the Owhatiura Development Area is excluded from the maps as its based zone is Rural 1.



Figure 4-3 - Net Additional Lot Yield in the Rural 2 Zone – Medium Term

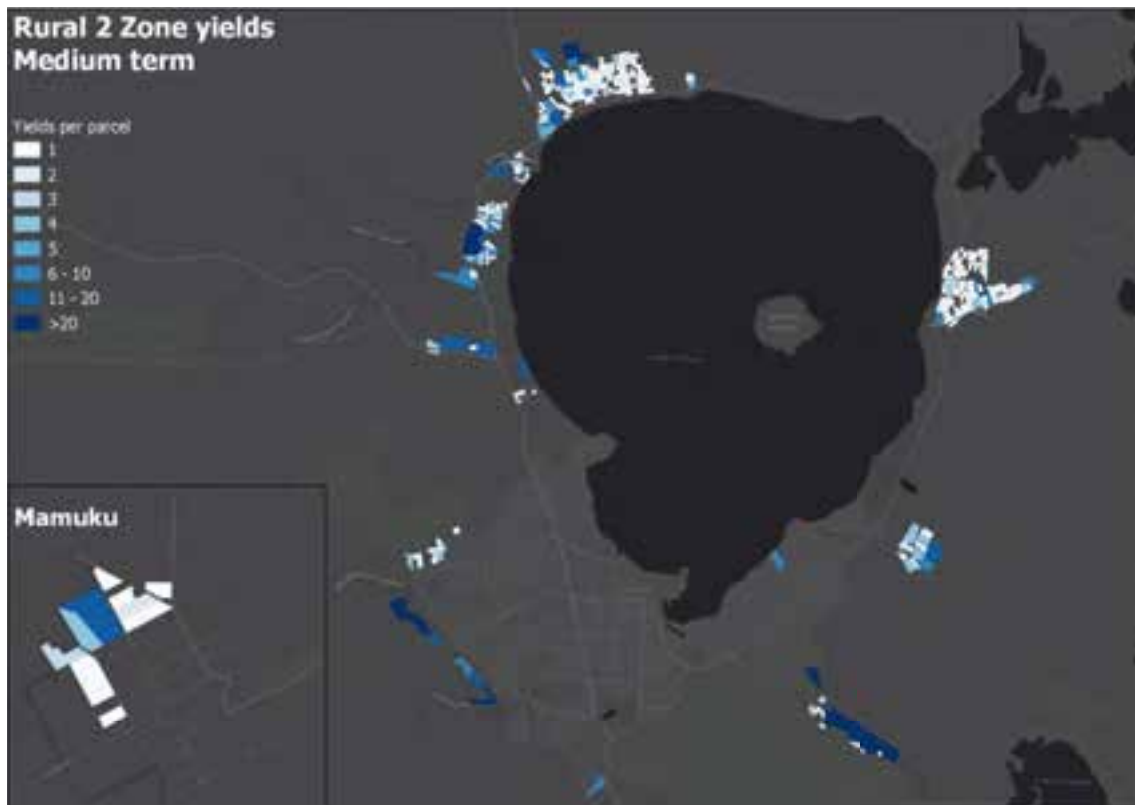


Figure 4-4 - Net Additional Lot Yield in the Rural 2 Zone – Long Term

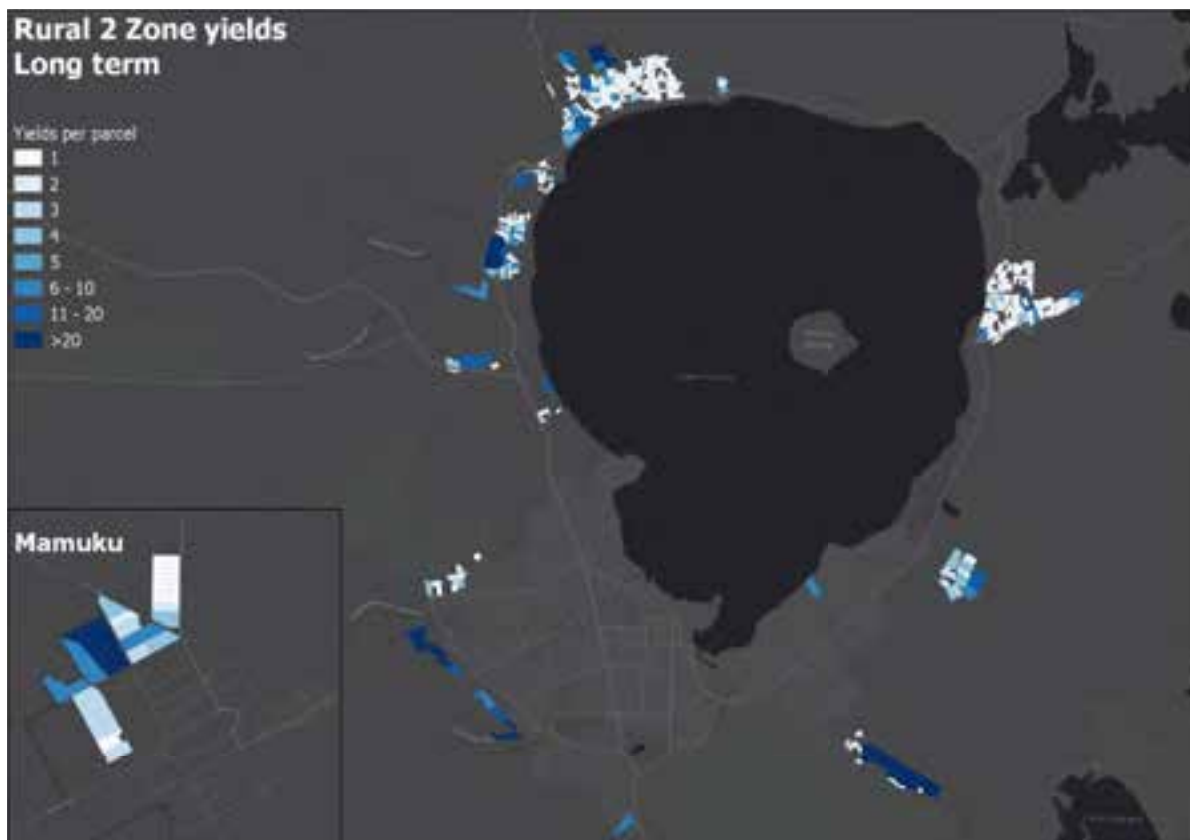




Table 4-1, below, records the net additional lot yields over time with regards to wastewater reticulation status and the two overlays of Sensitive Area and ONFL, and whether the zone area is within a 2018 Spatial Plan Future Urban area. In the short-term, there is estimated capacity for 1,144 net additional rural lifestyle lots increasing to 1,275 in the medium-term (largely driven by the addition of capacity in Pukehāngi Heights) and 1,294 in the long-term.

Into the long-term, this growth is a function of the expansion of the wastewater network into Mamuku. As the network expands into the rural village, the minimum subdividable lot size decreases from 8,000 sqm to 4,000 sqm. The smaller lot sizes naturally enable greater subdivision potential. This long-term increase is partially offset by the estimated loss of capacity for 23 net additional rural lifestyle lots if small areas around Ngongotahā are up-zoned in accordance with the Spatial Plan.

An estimated 778 net lots (68%) are unaffected (or unhindered) by any overlay in the short-term. This figure drops to 61% in the medium-term (778 lots) before rising to 63% in the long-term (818 lots). This change is driven by the introduction of the Pukehāngi Heights, where many lots are likely to fall within a Less Sensitive Area.

Looking at the pattern of wastewater reticulation status, the distribution of potential net additional lots is consistently in favour of the reticulated areas, which is to be expected given the smaller minimum lot size requirements. In the short-term, 972 of 1,144 (85%) potential additional lifestyle lots are located within the serviced areas. This percentage grows over the medium (87%) and long-term (91%) as the wastewater network is expanded to encompass the Rural 2 zones in Pukehāngi (medium-term) and Mamuku (long-term).

Table 4-1 - Summary of net additional rural lifestyle lots over time by overlay & status⁴⁵

	Sensitive Area	Less Sensitive Area	ONFL	Unaffected	Total	Spatial plan future urban ²
Short-term						
Reticulated	196	117	3	656	972	0
Non-reticulated	0	44	6	122	172	23
Total	196	161	9	778	1,144	23
Medium-term						
Reticulated	196	248	3	656	1,103	0
Non-reticulated	0	44	6	122	172	23
Total	196	292	9	778	1,275	23
Long-term						
Reticulated	196	227	3	749	1,175	0
Non-reticulated	0	44	6	69	119	0
Total	196	271	9	818	1,294	0

M.E have also considered the net additional dwellings that could be accommodated in the Rural 2 Zone (on the assumption of one dwelling per lot). This analysis assigns one lot to every net additional lot created by subdivision, but also identifies any parent lots qualifying for subdivision that do not already appear to contain a dwelling and any sites that do not qualify for subdivision that are still vacant. This net additional dwelling yield is the appropriate comparator for demand, as demand is dwelling focussed (Table 4-2).

⁴⁵ (footnote 2 in table) This column double counts values from the Sensitive Area, Less Sensitive Area, ONFL, and Unaffected columns, which are unique counts. Therefore, it is not included in the total count for each time step.

Table 4-2 - Summary of net additional rural lifestyle dwellings over time by overlay & status⁴⁶

	Sensitive Area	Less Sensitive Area	ONFL	Unaffected	Total	Spatial plan future urban ³
Short-term						
Reticulated	210	127	5	727	1,069	0
Non-reticulated	0	46	7	131	184	25
Total	210	173	12	858	1,253	25
Medium-term						
Reticulated	210	265	5	727	1,207	0
Non-reticulated	0	46	7	131	184	25
Total	210	311	12	858	1,391	25
Long-term						
Reticulated	210	244	5	822	1,281	0
Non-reticulated	0	46	7	74	127	0
Total	210	290	12	896	1,408	0

Overall, in the short-term, there is capacity for 1,253 net additional dwellings in the Rural 2 zone. This is 109 more than the net additional lot yield via subdivision, suggesting that there is still a moderate amount of vacant land parcels in the zone to accommodate growth. The capacity for additional dwellings in the zone if developed to its maximum density rises to 1,391 in the medium-term and to 1,408 in the long-term. As with the net additional lots, this increasing capacity pertains largely to both the addition of capacity in the Pukehāngi Heights, and the expansion of the wastewater network into Mamuku.

It is important to acknowledge (within the limitations of this analysis) that this estimated net additional capacity in the Rural 2 zone is the maximum potential capacity for growth. Ultimately, many owners of rural

⁴⁶ (footnote 3 in table) This column identifies how many dwellings in Ngongotahā are switched to the Future Urban zone under the Spatial Plan 2018.



lifestyle blocks may not be interested in reducing their land area and having closer neighbours. Some sites might have physical constraints that limit their potential lot/dwelling yield. Some of the sewerage schemes may not have capacity to sustain the subdivision potential identified. In practice, only a portion of this capacity may ever be realised. That portion is unknown.

4.2 Demand for Rural Lifestyle Properties

4.2.1 Approach

The projected future demand for rural lifestyle properties has been estimated for the Rotorua District. Lifestyle properties are a sub-set of the non-urban, rural environment demand component estimated in the HBA 2021. Other components of the rural environment demand include dwellings in minor settlements and rural dwellings on larger rural properties.

The Spatial Framework component of the base HBA 2021 Dwelling Demand Model disaggregates the rural environment demand across the above dwelling categories. The existing structure of rural environment dwellings has been estimated within the model through spatially integrating the parcel level dwellings estimate and descriptors within the Ratings Database with the District Plan zone layers.

The base structure of rural environment dwelling types has been projected forward within the model and equates to a medium growth outlook as preferred by Council in the HBA 2021⁴⁷. This has occurred as a function of the spatial distribution of base dwellings across the district. Within this process, these estimates have been factored to allow for an increased propensity for growth to occur within the urban environment⁴⁸, correspondingly reducing (slightly) the propensity for rural environment demand.

The final output from the rural environment demand modelling provides a projection of district demand for dwellings in minor settlements, rural lifestyle and rural dwellings.

4.2.2 Results

The total district demand by dwelling type is shown in Table 4-3 (with figures rounded to the nearest 100). It shows that in 2020, lifestyle properties accounted for around 8% of the district's total dwelling demand. This equates to around 2,400 dwellings and amounts to nearly half (46%) of the rural environment dwellings. The remainder of rural environment dwellings were in the minor settlements (2,500 dwellings) and on rural properties (400 dwellings).

Table 4-3 shows that demand for lifestyle dwellings is projected to increase by an additional 100 dwellings in the short-term (to 2023), by 300 dwellings in the medium-term (to 2030), and by 600 dwellings in the

⁴⁷ I.e., adopts the Infometrics medium projections for resident households at the district level, plus M.E estimates of non-resident dwellings.

⁴⁸ This approach allows the modelling to reflect generally faster rates of urbanisation within a district. It ensures that the sufficiency assessment within the HBA remains conservative through assuming a higher share of urban demand.

long-term (to 2050, medium growth outlook)⁴⁹. This equates to a total long-term lifestyle dwelling demand for around 3,000 dwellings in the long-term.

Lifestyle dwellings are projected to account for around 4% of the district's total short-term dwelling demand growth, and nearly half (45%) of the rural environment dwelling demand growth. This is projected to increase slightly to 5% of the projected medium and long-term total district demand growth and 46% of the long-term rural environment demand growth⁵⁰.

Table 4-3 - Projected Total District Dwelling Demand by Type: Short, Medium and Long-Term

Demand Type	Total Dwelling Demand				Net Change in Dwelling Demand		
	2020	2023	2030	2050	2020-2023	2020-2030	2020-2050
Urban Environment ¹	24,700	28,300	30,900	34,400	3,600	6,200	9,700
Rural Environment							
Minor Settlement	2,500	2,600	2,800	3,100	100	400	600
Lifestyle	2,400	2,500	2,800	3,000	100	300	600
Rural	400	400	400	400	20	50	90
<i>Total Rural Environment</i>	<i>5,200</i>	<i>5,500</i>	<i>6,000</i>	<i>6,600</i>	<i>300</i>	<i>800</i>	<i>1,300</i>
Total District	29,900	33,800	36,900	41,000	3,900	7,000	11,100

Source: M.E HBA Rotorua Dwelling Demand Model, 2021.

¹ Urban Environment demand includes latent demand and competitiveness margins.

4.3 Sufficiency of Rural Lifestyle Capacity

The total projected demand for lifestyle dwellings in the short, medium and long-term has been compared to the estimated capacity for net additional lifestyle dwellings within Rotorua's Rural 2 Zone (Table 4-2). This assesses the sufficiency of capacity to accommodate the projected future demand.

The sufficiency assessment of capacity across the short, medium and long-term is contained below in Table 4-4. The upper portion of the table shows the estimated capacity for additional lifestyle dwellings taken from Table 4-2 – but also rounded to the nearest 100. Capacity is disaggregated into parcels affected by sensitive areas and outstanding natural features ("affected capacity") and parcels unaffected by these potential constraints ("unaffected capacity"). This shows the extent to which sufficiency is reliant upon parcels affected by these features.

The middle portion of the table contains the projected demand for lifestyle dwellings across the short, medium and long-term. In addition to the base projected demand above, a further demand projection has been included that has a competitiveness margin applied⁵¹. While it is not an NPS-UD requirement to apply

⁴⁹ A subsequent and alternative growth projection approach was tested in Section 5, which indicates that demand growth for rural lifestyle properties could be higher again. This is discussed in Section 5.4 of this report, but does not alter the findings and recommendation of this section.

⁵⁰ Note that the shares of growth include latent demand and the competitiveness margin within the urban environment component. If these were excluded, then the lifestyle dwelling share would increase slightly to 6% of the total district in the medium and long-term. The net growth would remain the same as that stated in Table 4-3.

⁵¹ The margin is consistent with that applied to the urban environment dwelling demand in the Rotorua HBA 2021. It amounts to an additional 20% on the short and medium-term net increase in demand, and an additional 15% on the net increase in demand that occurs between the medium and long-term.

a competitiveness margin outside of the urban environment, this has been included as a sensitivity test of the sufficiency of capacity.

The lower portions of the table contain the sufficiency assessment. Here, the projected demand is subtracted from the estimated dwelling capacity. The figures represent the net difference between demand and capacity, where net dwelling figures greater than zero indicate the extent to which capacity exceeds demand. The sufficiency assessment has been conducted across both unaffected and total capacity as well as base demand and demand with an additional margin.

The final section of the table expresses the demand as a percentage of estimated dwelling capacity under each combination. The demand share of capacity excluding a margin on demand forms the most useful comparison as it is closer to the likely growth of lifestyle properties. The inclusion of a margin already makes some allowance within the sufficiency assessment for other factors affecting the availability or uptake of capacity.

Table 4-4 - Estimated Sufficiency of Capacity for Lifestyle Dwellings in Rotorua District: Short, Medium and Long-Term

	Short-Term (2020-2023)	Medium-Term (2020-2030)	Long-Term (2020-2050)
Type	Capacity (net additional dwellings)		
Unaffected	900	900	900
Affected	400	500	500
Total	1,300	1,400	1,400
Type	Demand (net additional dwellings)		
No Margin	100	300	600
Incl. Margin	200	400	700
Sufficiency			
	Net Difference: Capacity - Demand		
	Base Demand - No Margin		
Unaffected Capacity	700	500	300
Total Capacity	1,100	1,000	800
	Base Demand - With Margin		
Unaffected Capacity	700	400	200
Total Capacity	1,100	1,000	700
	Demand as % of Capacity		
	Base Demand - No Margin		
Unaffected Capacity	16%	40%	68%
Total Capacity	11%	25%	43%
	Base Demand - With Margin		
Unaffected Capacity	19%	48%	80%
Total Capacity	13%	30%	51%

Source: M.E Rural Lifestyle Capacity Analysis, 2022 and M.E Rotorua HBA Dwelling Demand Model, 2021.



Table 4-4 shows that the estimated capacity exceeds the projected demand for lifestyle dwellings across the short, medium and long-term. The capacity exceeds demand in terms of both unaffected capacity only, as well as with the inclusion of a margin on demand. In the short-term, there is an estimated capacity surplus of between 700 and 1,100 dwellings. In the medium-term, the surplus decreases to between 400 and 1,000 dwellings as demand increases. In the long-term, the surplus equates to between 200 and 800 dwellings. The smaller surplus occurs under the scenario of lowest capacity (i.e., unaffected capacity only) and highest demand (i.e., the inclusion of a margin).

In evaluating the calculated sufficiency, it is also important to take account of the share of capacity that is likely to be required to meet future projected demand. It is unlikely that all of the plan enabled capacity will become available for development or be taken up and developed as lifestyle properties.

The final section of Table 4-4 shows that in the short-term, around 11% of the total capacity would need to be taken up to meet demand, or 16% of capacity if affected sites were excluded. In the medium-term, this increases to one-quarter (25%) of total capacity, and two fifths (40%) of unaffected capacity. In the long-term, the rates are reasonably high at closer to half (43%) of total capacity and just over two-thirds (68%) of unaffected capacity. This assumes no margin is applied to demand.

Nearly half (44%) of the net additional lot capacity (31% of unaffected capacity) is on parcels of 5 ha or greater. This suggests that these areas are not yet subdivided into potential future lifestyle lots. As such, there is less certainty over the potential future subdivision intentions of the landowners. Around one-quarter (24%) of the net additional lot capacity is on lots that are up to 1 ha in size. A share of these are occur in lifestyle areas that have previously been developed at larger lot sizes, with capacity occurring through the potential for further subdivision. The ability for wastewater or other infrastructure networks to accommodate a higher density of development within these areas (when already reticulated or planned to be reticulated) has not been assessed.

4.4 Recommendation

The required rate of capacity uptake to meet long-term demand and the patterns of capacity indicate that it may be appropriate to consider providing additional capacity for rural lifestyle development within the FDS in the long-term. This is particularly relevant if Council consider that the actual potential capacity is lower than estimated here (for reasons unknown to M.E such as infrastructure constraints) and/or the FDS growth scenarios plan to include more areas of existing Rural 2 zone as future urban growth areas than already identified by the 2018 Spatial Plan. Doing so would remove some of the capacity identified in this analysis. A recalculation of capacity and sufficiency based on final FDS growth scenario can be carried out as an additional piece of work if this issue is likely to arise.



5 Providing for Rural Villages & Lakeside Settlements

The purpose of this section⁵² is to provide analysis to inform RLC and the wider FDS project team of the demand for housing in the operative Rural Village and Lakeside Settlement zones. This is directly relevant for the FDS, as any shortfall of capacity to provide for projected dwelling growth could be considered as part of the district wide growth planning.

This section should be read in conjunction with section 4 of this report on projected demand for rural lifestyle properties. The analysis for section 5 was carried out subsequent to the analysis of demand for rural lifestyle properties and this later approach to projections, while focussed on Rural Village and Lakeside Settlement demand, has potential implications for rural lifestyle demand projections documented above. This is discussed below where relevant.

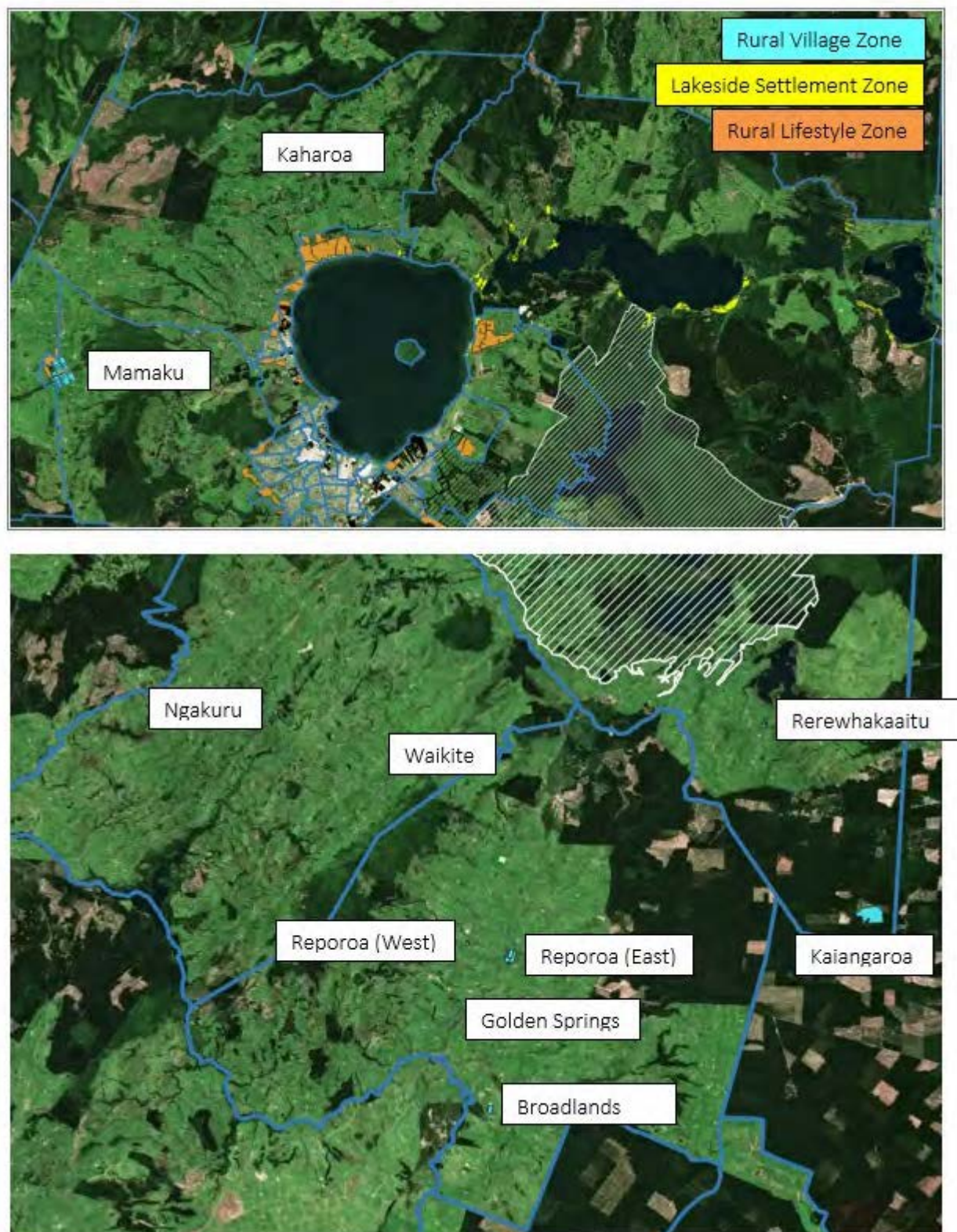
5.1 Relevant Zones and Locations

Figure 5-1 (with a northern and southern district image) shows both Rural Village Zone locations (labelled) and the Lakeside Settlement Zone, with the Rural 2 Zone (Lifestyle) shown for context. The Lakes A Zone is also included (although no detail is provided within this area). The Lakeside Settlement zone is located in isolated pockets on the northern and eastern shore of Lake Rotorua, the western and south-eastern shore of Lake Rotoiti, the eastern shore of Lake Rotoehu and the south-western shore of Lake Rotomā.

There are ten rural villages, although Reporoa is comprised of two distinct zone locations, referred to as Reporoa West and Reporoa East (the main settlement) for the purpose of this analysis. Some of the zones contain only a handful of dwellings. Rural schools are also often included in the zone area.

⁵² The content of the section was separately provided to RLC as a memo dated 20th June 2022.

Figure 5-1 - Operative Rural Village Zones (Labelled) and Lakeside Settlement Zones





5.2 Current (2020) Dwelling Counts⁵³

5.2.1 Approach

The current count of Rural Village and Lakeside Settlement dwellings has been estimated for the Rotorua District as at 2020. Rural Village and Lakeside Settlement properties are a sub-set of the non-urban, rural environment demand component estimated in the HBA 2021. Other components of the rural environment demand include lifestyle properties and rural dwellings on larger rural properties.

The Spatial Framework component of the base HBA 2021 Dwelling Demand Model disaggregates the rural environment housing across the above dwelling categories. The existing structure of rural environment dwellings has been estimated within the model through spatially integrating the parcel level dwellings estimate and descriptors within the Ratings Database with the District Plan zone layers.

While the 2020 counts by dwelling category in the rural environment are tied to the zones in which they occur, they are not necessarily the sum total of dwellings within those zones. This is because there are lifestyle properties occurring in Rural Village and Lakeside Settlement zones and spread throughout the Working Rural zone. The results discussed below for the Rural Village and Lakeside Settlement Zone therefore reflect the non-lifestyle properties in those zones (that is, properties more akin to densities enabled and anticipated in each zone) and exclude any lifestyle properties (as classified by the Ratings database). This memo refers to properties in the combined Lakeside Settlement, Lakes A and Rural Village zones as 'minor settlement' dwellings.

5.2.2 Results

The total rural environment demand by dwelling type is shown in Table 5-1 (with figures rounded to the nearest 10). It shows that in 2020, lifestyle properties accounted for around 8% of the district's total dwelling demand. This equates to around 2,410 dwellings and amounts to nearly half (46%) of the rural environment dwellings. The remainder of rural environment dwellings were in the minor settlements (2,480 dwellings) and on rural properties (360 dwellings). It estimated that Rural Village zones contain 360 dwellings in total (excluding lifestyle properties also located within the zone extents). These make up 7% of total rural environment dwellings and 1% of district dwellings. Across the various locations of Lakeside Settlement Zone (and including for the purpose of this analysis the dwellings within the Lakes A Zone) there are an estimated 2,120 dwellings (40% of all rural dwellings and 7% of the district dwellings).

⁵³ Parts of the text in this section duplicate/are consistent with text in the Rural 2 Zone section. Some additional detail is provided for this section.

Table 5-1 - Estimated Rural Environment Dwellings 2020 by Type

Property Type	2020 Estimated Total Dwellings **	2020 Share of Rural Environment Dwellings	2020 Share of Total District Dwellings
Sub-Total Lakeside *	2,120	40%	7%
Sub-Total Village *	360	7%	1%
Total Minor Settlements	2,480	47%	8%
Total Lifestyle	2,410	46%	8%
Total Rural	360	7%	1%
Total Rural Environment	5,250	100%	18%

Source: M.E HBA Rotorua Dwelling Demand Model, 2021. Values rounded to nearest 10.

* Includes Lakes A - Assigned to Lakeside

** Excludes Lifestyle properties with these zones.

M.E's previous analysis using the Rating Database described above did not include a breakdown of dwelling counts in each of the Rural Village zone locations. However, we understand that Council is looking to better understand projected demand in specific rural villages. As such, M.E has carried out a high-level allocation of 2018 dwellings in each SA1 of the rural environment (from the Census). This allocation considered the mix and relative area⁵⁴ of each zone type within the SA1s and so did not distinguish whether some of the dwellings in the Rural Village zones were lifestyle properties or not. This approach is not as accurate as the dwelling counts established as part of the HBA spatial framework modelling and is also not directly comparable. It has tended to over-estimate the number of dwellings in Rural Villages overall. That said, it provides a high-level percentage distribution which can be applied to the 2020 total dwelling estimate within Rural Villages.

The indicative results suggest that Mamaku Village Zone has the largest number of dwellings (just under 40% of the total (and excluding lifestyle properties)), followed by Kaingaroa (around 20% of the total) and then Reporoa (the main eastern zone area, with around 15% of the total). A further 6% (roughly) of the total dwellings in the Rural Village Zone (excluding lifestyle properties) are located in the western Reporoa zone area. The remaining villages (Broadlands, Golden Springs, Kaharoa, Ngakuru, Waikite and Rerewhakaaitu) are smaller again (with between 1-6% of the total). Please note, we have deliberately refrained from showing a count of estimated dwellings in each village in this section as the allocation approach is not considered robust enough to provide exact figures.

5.3 Recent Growth Trends

Prior to estimating future dwelling growth in each of the Rural Village zones and the total Lakeside Settlement Zone (inclusive of Lakes A Zone), M.E has analysed indicative patterns of recent growth in total dwellings (from the 2006, 2013 and 2018 Census). Again, this approach relies on apportioning SA1 level dwelling data to the respective zones present in each SA1 and summing the results. As discussed above, this approach also did not separate out lifestyle properties located in the zone so looks at total dwellings (of all types) in each zone area.

⁵⁴ This high level approach does not 'count' the dwellings per se.



The data shows:

- Over the total Lakeside Settlement Zone (including Lakes A Zone), total dwellings decreased⁵⁵ by an estimated annual average of 2 dwellings/year between 2006 and 2013. The zone is spread across 4 SA2s, not all of which showed a decrease. The main growth location in the 2006-13 period was Hamurana, and to a lesser extent the Kaingaroa-Whakarewarewa SA2. The Rotoiti-Rotoehu SA2 showed a decline of just over 30 dwellings (unexplained).
- Overall, the Lakeside Settlement zone showed positive estimated annual growth averaging 11 dwellings/year in the more recent period 2013-2018. The patterns of growth changed with nearly 85% of dwelling growth in Lakeside Settlements in the Rotoiti-Rotoehu SA2. This could have included replacement of the dwellings removed in the previous period (the net increase in dwellings between 2006 and 2018 was smaller at approximately 15. Growth in the Hamurana SA2 slowed down compared to the earlier inter-census period, but was still positive. Net growth 2006-2018 is estimated at just over 20 dwellings. While the Waiohewa SA2s showed very minor growth in dwellings 2013-2018, there was a reciprocal minor decrease in dwelling count in 2006-2013 – so is likely to represent replacement of dwellings before and after 2013. There was no net growth in this zone/SA2 location since 2006.
- Over the total Rural Village Zone, total dwellings increased by an estimated annual average of 6 dwellings/year between 2006 and 2013 and showed no growth in the period 2013-2018. However, this no net growth is influenced by a loss of around 30 dwellings in the data from the Kaingaroa Village in this period (cause not verified by M.E). This loss masks (cancels out) growth that occurred across some other villages during this period. Excluding the effect of the loss of dwellings in Kaingaroa Village, the average annual growth rate estimated for the period is again 6 dwellings/year.
- Not all Rural Villages have experienced growth in dwellings in recent years according to desktop data and M.E estimates. Broadlands, Kaingaroa⁵⁶, Kaharoa, Reporoa (East/main village) and Rerewhakaaitu are indicated as having no material dwelling growth between 2013 and 2018.
- Reporoa West was indicating a decrease of total dwellings during that period of around 1 dwelling/annum. As previously footnoted, decreases should be treated with care and may be a result of the approach used or minor variations in the Census data.
- Golden Springs Village was indicatively showing average growth of 1 dwelling/year between 2013 and 2018.
- Mamaku Village showed the strongest growth in the data according to the approach used. This was an average annual increase of 5 dwellings/year between 2013 and 2018.

⁵⁵ While increases in dwellings arise from new dwelling construction (and can be monitored via building consents), decreases in dwellings in the Census data is less easily explained. A decrease could (if reliably recorded) relate to dwellings that were destroyed (such as by fire) or removed and not rebuilt (if at all) till after the Census. A decrease could also arise if a dwelling was re-purposed as a business premises.

⁵⁶ Excluding effect of reduced dwellings.



Council may be best placed to gauge the accuracy (or otherwise) of these estimated recent dwelling trends using building consent data⁵⁷. We note that we were unable to use Google Street View to assess any evidence of new dwellings being built in most rural villages as there is no coverage of Street View in some rural locations. We did do some high-level cross checks on employment in and around each village and also looked at school role data in Reporoa and Mamaku but this was not conclusive (as the household structure within occupied dwellings affects the school age population for example).

In summary though, it appears that the Lakeside Settlements have been growing faster than the Rural Villages (combined) in recent years (since 2013) and this growth is focussed on zone areas within the Hamurana and Rotoiti-Rotoehu SA2s. The Rural Villages have not experienced any material demand growth in recent years with the exception of Mamaku – which is the largest and fastest growing village – followed by very minor incremental growth at Golden Springs (although this remains a very small settlement by 2018).

5.4 Estimated Future Growth Trends

Projecting future growth is always challenging, and particularly so when dealing with relatively small numbers and somewhat inconsistent spatial trends in recent years. Total rural environment dwelling growth has already been estimated as part of the HBA 2021 demand model and this analysis is guided by those overall growth figures in the short, medium and long-term (to 2050).

To project demand for additional dwellings in each Rural Village zone and across the Lakeside Settlement zone (in aggregate), M.E has adopted two different approach, but both using the 2020 base structure set out in Table 5-1 above.

The first approach is consistent with the method used in the Rural 2 Zone analysis (refer section 4.2). Table 4-3 shows total Minor Settlement demand growth of 100 dwellings in the short-term, 400 in the medium-term and 600 in the long-term (rounded to the nearest 100). When rounded to the nearest 10, these figures are 140, 360 and 630 respectively. While not shown in Table 4-3, the growth split between Lakeside Settlement Zone and Rural Village Zone is as follows:

- Lakeside Settlements (total): 120 short-term, 310 medium-term, 540 long-term.
- Rural Villages (total): 20 short-term, 50 medium-term, 90 long-term.

As discussed, this projection approach assumes that Lakeside Settlements will continue to account for 40% of total rural environment housing over the long-term, and Rural Villages will continue to account for 7% of total rural environment housing over the long-term. It assumes that all parts (and markets) of the rural environment grow evenly (i.e. by 25% over the long-term).

A limitation of this approach is that it does not reflect that recent growth has not been evenly distributed across zones and property types and is unlikely to be going forward. In short, not all areas in the rural environment will experience growth. The projected annual average growth rate for the Lakeside

⁵⁷ M.E recommends some cross checking by Council, particularly if these indicative desk-top results from M.E do not match Council's local understanding.



Settlements is also high under this approach relative to annual average growth rates in the recent past, especially in the short-medium term.

However, the projected annual average growth rate for combined Rural Villages under this approach is more consistent with recent trends, especially in the short-medium term on account of this zone showing more steady growth rates over time (Kaingaroa reduction in dwellings notwithstanding).

Under this approach, Golden Springs Village, Repora Village (East) and Reporoa Village (West) are projected to have very minor long-term dwelling growth (around 10 additional dwellings each by 2050). Kaingaroa Village would grow by around 20 dwellings by 2050 (despite no growth evident in recent years – so care is needed with this result). Mamaku Village – where continued growth is more likely based on past trends – would increase by 30 dwellings by 2050. This growth may in fact be slightly conservative relative to recent growth rates. The results for this growth projection approach – referred to as the High Growth Scenario – are summarised in Table 5-2 below.

M.E has tested an alternative growth projection approach for minor settlements. This approach takes the variable growth of projected total dwellings across rural SA2s (derived by SA2 level StatisticsNZ projections) and apportions that growth to rural zones within those SA2s based on the weighted average share of growth estimated between 2013 and 2018⁵⁸. In other words, this approach carries recent trends in the share of rural growth forward over the long-term.

This scenario – referred to as the Low Growth Scenario for this analysis – is also summarised in Table 5-2 below. Unlike the High Growth scenario, this approach assumes a changing structure of rural dwellings by type over time. This is driven by growth being concentrated in particular SA2s according to Statistics NZ projection data, which is applied to the zones specific to those growth areas. While the total rural environment is already projected to have 25% growth in dwellings over the long term, this approach sees growth in Lakeside Settlements increase by 11% over that period (off a high base) and Rural Villages (in total) increase by 47% (off a low base).

The quantum of projected growth between Lakeside Settlement Zone and Rural Village Zone is as follows:

- Lakeside Settlements (total): 70 short-term, 150 medium-term, 240 long-term.
- Rural Villages (total): 20 short-term, 60 medium-term, 170 long-term.

This approach still generates an annual average growth rate for the Lakeside Settlement zone that is faster than indicated in the recent past (since 2013) but is a closer rate than under the High Growth Scenario. The annual average growth rate for the Rural Village Zone is a very close match to the historical growth rate (since 2006).

Under this scenario, only Golden Springs Village, Ngakuru Village and Mamaku Village are projected to experience material growth in dwellings, with all other villages assumed to remain at (or very close) to 2020 dwelling counts. Mamaku Village – where continued growth is more likely based on past trends – would increase by 140 dwellings by 2050. Golden Springs and Ngakuru villages are projected to increase by just 10 dwellings each over the long-term.

⁵⁸ The base data is SA1 level dwelling trends 2013-2018 apportioned to rural zones within each SA1 and aggregated up to SA2s (weighted average).

Table 5-2 - Indicative Total Rural Environment Dwelling Projections by Property Type/Zone Location 2020-2050 – High and Low Growth Scenarios

Property Type	2020 Estimated Total Dwellings **	M.E Dwelling Growth Projections (n, rounded)			M.E Annual Average Dwelling Growth Projections (n)			M.E Annual Average Dwelling Growth Projections (n, rounded)			M.E Dwelling Growth Projections (%)		
		2020-2023 Short Term (n)	2020-2030 Medium Term (n)	2020-2050 Long Term (n)	Short Term (annual avg)	Medium Term (annual avg)	Long Term (annual avg)	Short Term (annual avg)	Medium Term (annual avg)	Long Term (annual avg)	Short Term (%)	Medium Term (%)	Long Term (%)
HIGH MINOR SETTLEMENT GROWTH SCENARIO - Pro-Rata Growth - 2020 Structure Held Constant													
Sub-Total Lakeside *	2,120	120	310	540	41	31	18	40	30	20	6%	14%	25%
Village - Broadlands	10	-	-	-	0.2	0.2	0.1	-	-	-	6%	14%	25%
Village - Ngakuru	10	-	-	-	0.3	0.2	0.1	-	-	-	6%	14%	25%
Village - Waikite	-	-	-	-	0.0	0.0	0.0	-	-	-	6%	14%	25%
Village - Golden Springs	20	-	-	10	0.4	0.3	0.2	-	-	-	6%	14%	25%
Village - Kaharoa	10	-	-	-	0.2	0.1	0.1	-	-	-	6%	14%	25%
Village - Kaingaroa	70	-	10	20	1	1	1	-	-	-	6%	14%	25%
Village - Mamaku	130	10	20	30	3	2	1	-	-	-	6%	14%	25%
Village - Reporoa	60	-	10	10	1	1	0.5	-	-	-	6%	14%	25%
Village - Reporoa (West)	20	-	-	10	0.5	0.3	0.2	-	-	-	6%	14%	25%
Village - Rerewhakaaitu	20	-	-	-	0.3	0.2	0.1	-	-	-	6%	14%	25%
Sub-Total Village *	360	20	50	90	7	5	3	10	10	-	6%	14%	25%
Total Minor Settlements	2,480	140	360	630	48	36	21	50	40	20	6%	14%	25%
Total Lifestyle	2,410	140	350	610	46	35	20	50	30	20	6%	14%	25%
Total Rural *	360	20	50	90	7	5	3	10	10	-	6%	14%	25%
Total Rural Environment	5,250	300	760	1,330	101	76	44	100	80	40	6%	14%	25%
LOW MINOR SETTLEMENT GROWTH SCENARIO - Variable Growth (SA2) - Applied to 2020 Base Structure ***													
Sub-Total Lakeside *	2,120	70	150	240	23	15	8	20	10	10	3%	7%	11%
Village - Broadlands	10	-	-	-	0.0	0.0	0.0	-	-	-	0%	2%	7%
Village - Ngakuru	10	-	-	10	0.5	0.4	0.2	-	-	-	10%	25%	41%
Village - Waikite	-	-	-	-	0.0	0.0	0.0	-	-	-	0%	2%	7%
Village - Golden Springs	20	-	10	10	1.5	0.8	0.3	-	-	-	21%	41%	43%
Village - Kaharoa	10	-	-	-	0.3	0.2	0.1	-	-	-	8%	23%	44%
Village - Kaingaroa	70	-	-	-	0.1	0.2	0.2	-	-	-	0%	2%	7%
Village - Mamaku	130	10	50	140	3	5	5	-	-	-	7%	34%	104%
Village - Reporoa	60	-	-	-	0.1	0.1	0.1	-	-	-	0%	2%	7%
Village - Reporoa (West)	20	-	-	-	0.0	0.1	0.1	-	-	-	0%	2%	7%
Village - Rerewhakaaitu	20	-	-	-	0.0	0.0	0.0	-	-	-	0%	2%	7%
Sub-Total Village *	360	20	60	170	6	6	6	10	10	10	5%	18%	47%
Total Minor Settlements	2,480	90	210	410	28	21	14	30	20	10	3%	8%	16%
Total Lifestyle	2,410	190	470	780	64	47	26	60	50	30	8%	20%	32%
Total Rural *	360	30	70	140	9	7	5	10	10	-	7%	21%	40%
Total Rural Environment	5,250	310	750	1,330	101	76	44	100	80	40	6%	14%	25%

Source: Statistics NZ, M.E. Total Rural Environment dwelling growth projections consistent with HBA assumptions (and draw on Informetrics medium growth projections with respect to resident household growth)

* Includes Lakes A - Assigned to Lakeside

** Excludes Lifestyle properties with these zones.

*** The difference between the Minor Settlement Growth in the Low scenario and the High scenario (circa 200 dwellings over the long term) would be expected to transfer to lifestyle property demand. Under this scenario, the demand projections for Lifestyle Properties in the Rural 2 Zone memo (xx May) which assumed a constant structure of Rural Environment dwellings by type over time would be conservative.

**** Includes all dwellings in zone including Lifestyle properties. Lifestyle properties may be contributing to growth rates and is not directly compatible to M.E growth projections which exclude rural lifestyle properties occurring in these zones.



An implication of using this projection approach is that it also implies higher growth for rural lifestyle properties than previously estimated in the Rural 2 Zone analysis (Section 4, which was based on the constant structure approach (or High Growth Scenario as referred to in this section)). The Rural 2 Zone analysis indicated total long-term demand for 600 rural lifestyle properties (610 less rounded) – excluding any margin on rural demand. Under the variable growth rate approach, rural lifestyle properties would grow at a faster rate (32% compared to a rural average growth rate of 25%) and increase by 780 dwellings by 2050. This is an increase in long-term growth of 170 more rural lifestyle properties than previously reported. However, this is within the estimated surplus of capacity over the long term and so this alternative projection does not alter the sufficiency results, or the conclusions of that section (which prompted consideration of providing some additional Rural 2 Zone in the rural environment to reduce the risk of long-term demand being constrained if not all estimated capacity is realised).

5.5 Capacity to Accommodate Dwelling Growth in Minor Settlements - Recommendations

Quantifying capacity of the Rural Village Zone or Lakeside Settlement Zone is outside the scope of this report (but could be scoped as an additional piece of work if needed for the FDS). However, given the generally very low rates of growth projected in the Rural Village Zone, and the presence of some rural lifestyle properties within the zone extents that offer further subdivision potential, and indications of some vacant lots, M.E anticipate that providing additional zoned land (or density) is unlikely to be required in most cases.

The potential exception, that warrants further investigation, is Mamaku. Mamuku Village is projected to have long-term growth of between 30 and 140 dwellings. This range is driven by which approach is applied (pro-rata share of total rural environment growth based on current share of dwellings versus continuation of recent growth rates respectively). Mamaku Village currently comprises a large number of lifestyle properties, so M.E estimates that even this upper growth requirement could be met largely through existing subdivision potential (infill). We note also that the adjoining Rural 2 Zone will enable more intensification of lifestyle properties once the waste-water reticulation is in place. This could help cater for some village demand (if redirected from the Village zone), or could help stimulate growth in the Village zone proper. If these desktop results for Mamuku align with Council's own understanding of demand and supply in that locality, then Mamuku Village could warrant some consideration in the FDS.

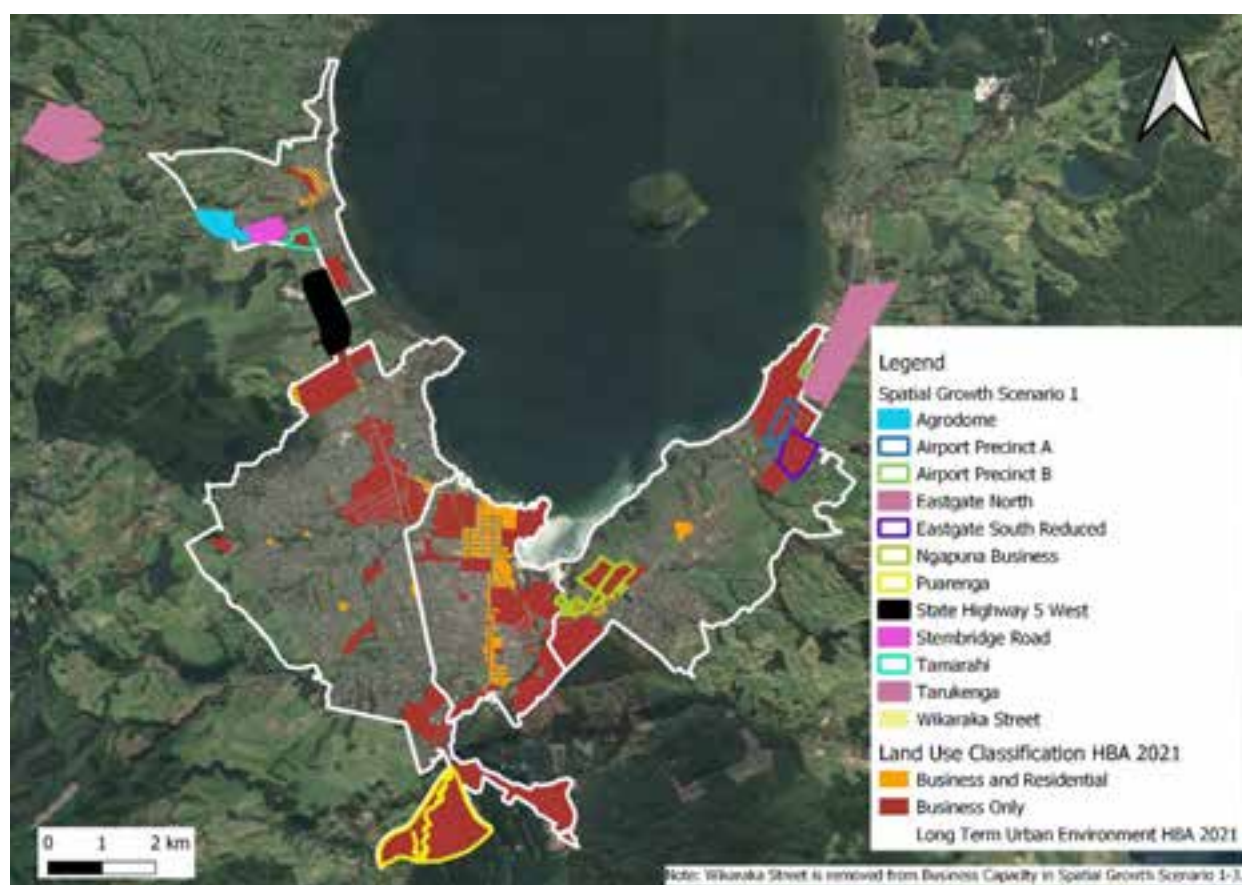
The total long-term demand for the Lakeside Settlement zone (including Lakes A Zone) ranges from 240 to 540 additional dwellings by 2050. As at 2020, there was an estimated 100 rural lifestyle properties in the zone that would in theory provide some further subdivision potential. This may help cater for some future demand. M.E advise that Council/the FDS team give further consideration as to whether providing additional land (or density) for the Lakeside Settlement Zone is appropriate in light of these high-level demand projections (and in relation to other constraints). This consideration could include a closer look at vacant/infill capacity.

Appendix 1 – Spatial Growth Scenarios for Business Land (Maps)

The following maps show the business growth areas identified for the FDS spatial growth scenarios in relation to the long-term business zones modelled in the HBA 2021 (which included Spatial Plan 2018 future business areas).

FDS growth areas with a solid fill are new to the capacity modelling and are all greenfield areas, and growth areas shown with an outline only reflect areas previously captured in the HBA 2021 but may encompass a different (smaller) extent⁵⁹, a different zoning assumption⁶⁰, or make no changes from the HBA⁶¹. These are a mix of greenfield and brownfield areas. The urban environment boundary from the HBA 2021 is included for context and helps show how different spatial growth scenarios expand the urban environment. Note, residential growth areas included in the same spatial growth scenarios are not mapped.

Spatial Growth Scenario 1 - Business

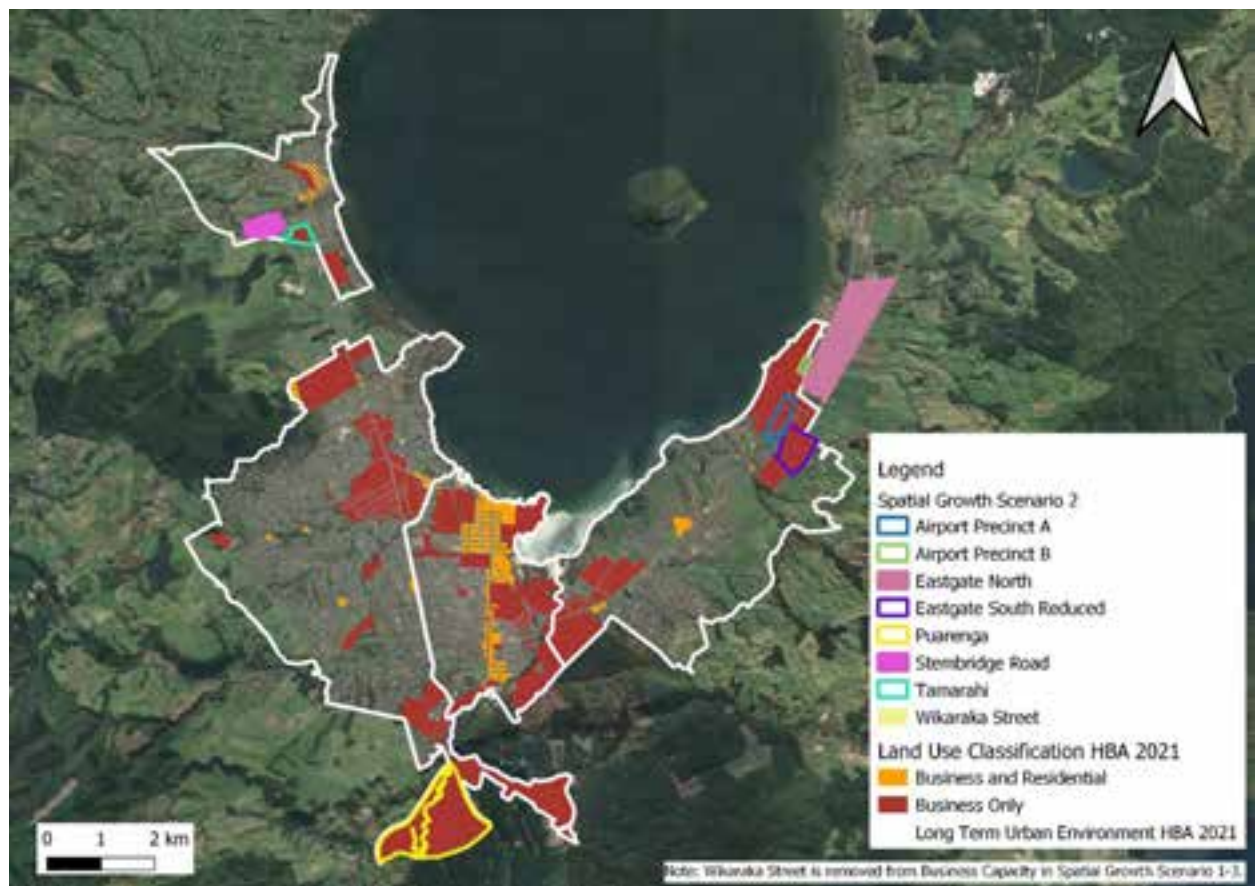


⁵⁹ E.g. Eastgate South.

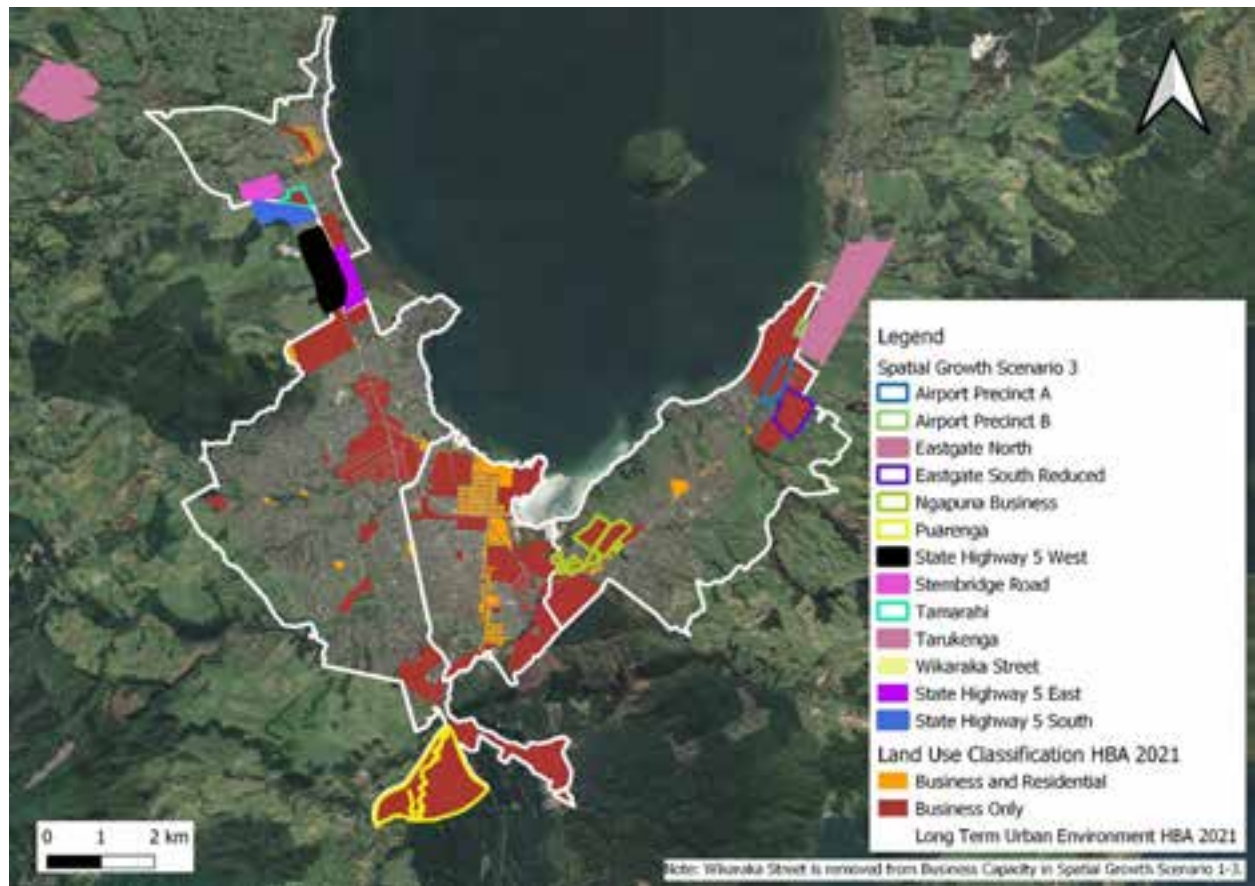
⁶⁰ E.g. Tamarahi and Eastgate South.

⁶¹ E.g. Puarenga.

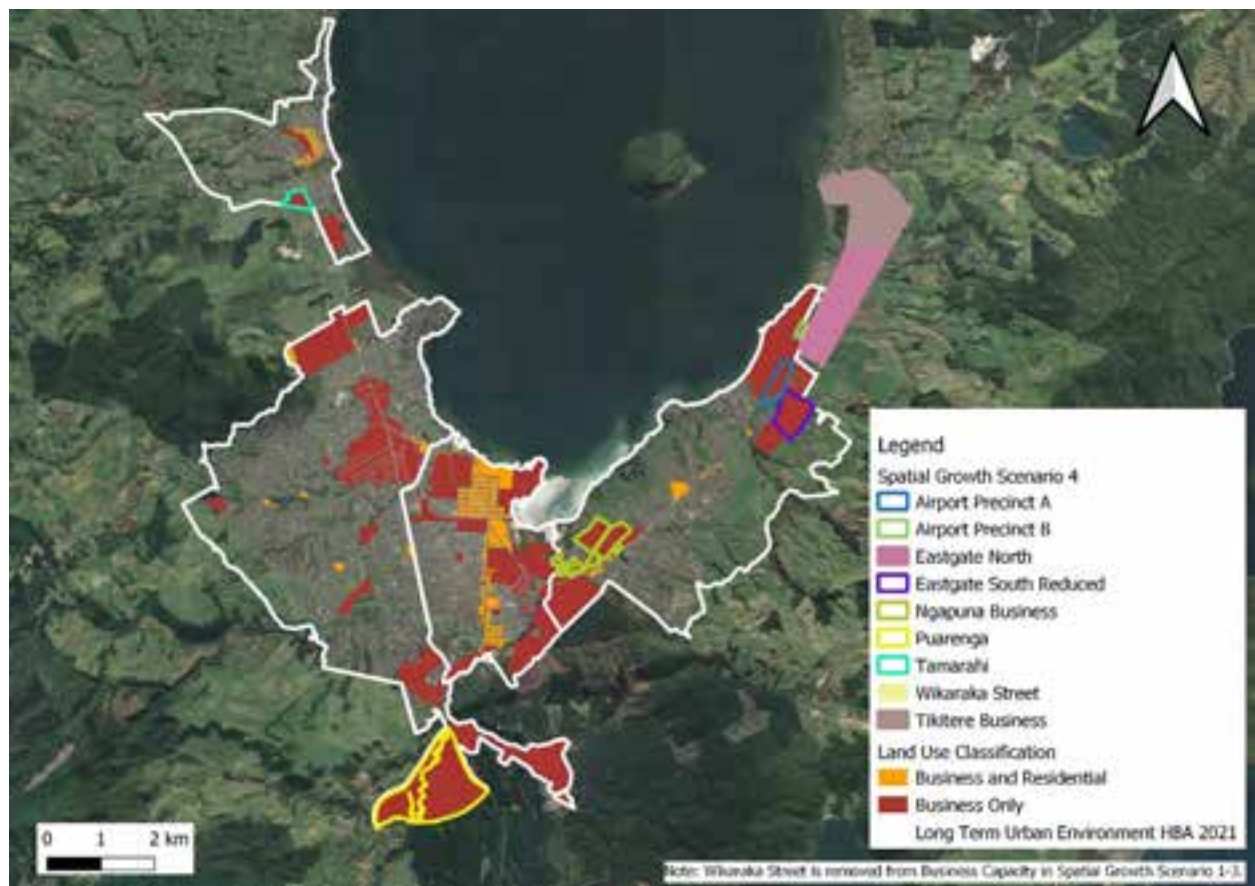
Spatial Growth Scenario 2 – Business



Spatial Growth Scenario 3 - Business



Spatial Growth Scenario 4 – Business



Appendix 5 – Beca Transport Impact Assessment Report



Transport Impact Assessment Report

For Rotorua Lakes Council Future Development Strategy

Prepared for Rotorua Lakes Council
Prepared by Beca Limited

22 May 2023



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better.

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Appendices

Appendix A – Base Year Calibration Results

Appendix B – Detailed Scenario Outputs

Revision History

Revision N°	Prepared By	Description	Date
1	Vicky Li	Draft report for internal review	28/04/2023
2	Vicky Li	Address internal review comments, draft for external review	02/05/2023
3	Vicky Li	Address external comments	22/05/2023

Document Acceptance

Action	Name	Signed	Date
Prepared by	Vicky Li		22/05/2023
Reviewed by	Craig Richards		17/05/2023
Approved by	Craig Richards		17/05/2023
on behalf of	Beca Limited		

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Executive Summary

Beca Ltd was commissioned by Rotorua Lakes Council (RLC) to provide transport evaluation services to inform the Future Development Strategy process.

The aim of this work was to assess potential transport outcomes between various land use scenarios and provide insight into the preferred land use scenario. To achieve this objective, a multimodal sketch planning tool has been adapted to Rotorua’s local conditions at a high-level. The tool is used to evaluate the potential transport outcomes between different land use scenarios for the RLC future development strategy.

The sketch planning tool was calibrated to reflect 2018 conditions for the base year scenario. For which, census data, traffic counts on key corridors, survey information and vehicle kilometre travelled data in the study area was available.

The assessment of scenarios are carried out in two phases, where **Phase 1** focused on testing of different land use scenarios, **Phase 2** focused on transport system sensitivity tests.

The four land use scenarios considered for the future year for **Phase 1** were:

1. Ngongotaha growth
2. Multi-nodal intensification
3. SH36 growth corridor (omitted during phase two testing)
4. Eastside growth corridor.

While the difference in VKT between scenarios are relatively small (6% between the least and biggest VKT scenarios), this is considered a relatively big impact considering the limitations in the input assumptions:

- All four scenarios had 18% population growth, with lower population to household ratio (i.e. more households than what would have been if the rates were similar to 2018).
- Only 4% of employment (all industrial) is being moved around the network between different scenarios.
- Land use scenarios were tested based on the same network assumptions initially.

To further understand the potential impact of these spatial plans, **Phase 2** involved testing of land use scenario 1, 2 and 4 in relation to the following transport system changes:

- Improved bus investments and frequency
- Travel demand management – parking charges
- Network wide walking and cycling improvements
- Increases in “work from home”.

By combining the likely changes, these tests were implemented on each of the three land use scenarios.

- Test 0. Base network with improved public transport services
- Test 1. Test 0 with increased parking cost
- Test 2. Test 1 with network wide walk and cycling improvements
- Test 3. Test 1 and 2 combined.

Overall, the results indicate that the multi-nodal intensification land use scenario is expected to increase the car travel demand the least comparing to the other scenarios. Consequently, it would have the least adverse impact on VKT and would best support a reduction in greenhouse gas emissions relative to other scenarios considered. With improvements to transport systems, the share of car trips can also reduce further, with trips shifting to other modes (up to 10%).

The cost of implementing the applied transport system improvements has not been quantified as part of this study, but it can be assumed that implementation costs would be higher in scenarios with a more disbursed

population as this would require longer cycleways, more bus infrastructure etc when compared with scenarios that have a more compact and central land use pattern.

In addition to the analysis listed in this report, the sketch planning tool could be further expanded in future to include assessment of embedded as well as enabled emission impacts and to inform future transport planning studies in Rotorua.

1 Introduction

Beca Ltd (Beca) was commissioned by Rotorua Lakes Council (RLC) to provide transport comparison and evaluation services as part of the Future Development Strategy (FDS) process.

The objective for this work was to evaluate the potential transport outcomes between different land use scenarios so to inform selection of a preferred land use scenario for the FDS. The transport outcomes include (at a high level suitable for scenario comparison testing) total travel measures (e.g. mode share, vehicle kilometres travelled and transport emissions).

To achieve this, Beca developed a multimodal sketch planning tool in excel. This tool can be used to estimate high-level travel demand by mode for the different land use and network scenarios.

The assessment of scenarios is carried out in two phases, where phase one focused on testing of different land use scenarios, phase two focused on transport system sensitivity tests.

This report:

- Documents the methodology (i.e. the base year adaptation process for the sketch planning tool)
- Lists the assumptions for phase 1 - the future land use scenarios
- Lists the assumptions for phase 2 - the future transport system sensitivity tests
- Discusses the findings from the land use scenarios and sensitivity tests
- Summarises the findings into a conclusion.

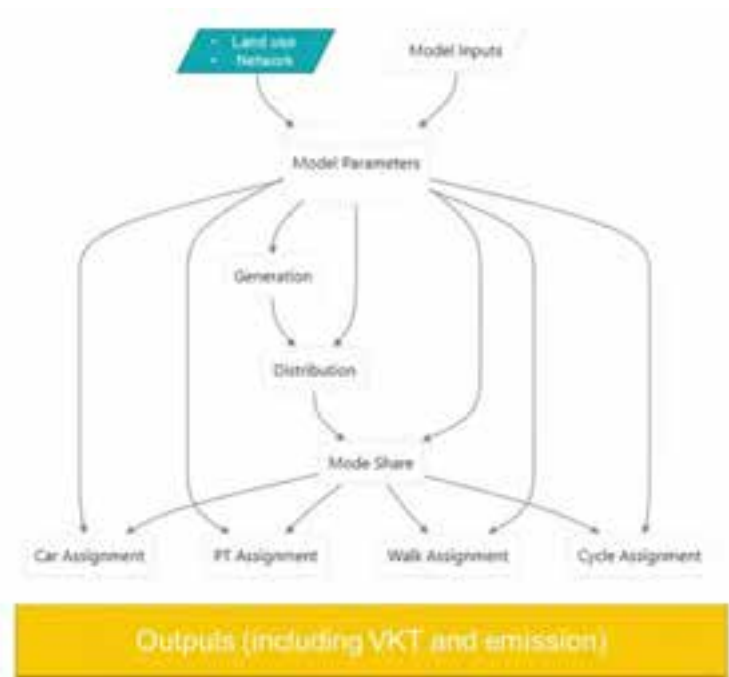
2 Assessment Methodology

2.1 Model Structure

Leveraging off an existing multimodal sketch planning tool, the Rotorua FDS tool follows similar structure as a traditional four-stage transport model.

The following diagram depicts the general model structure.

Figure 2-1: Model Structure



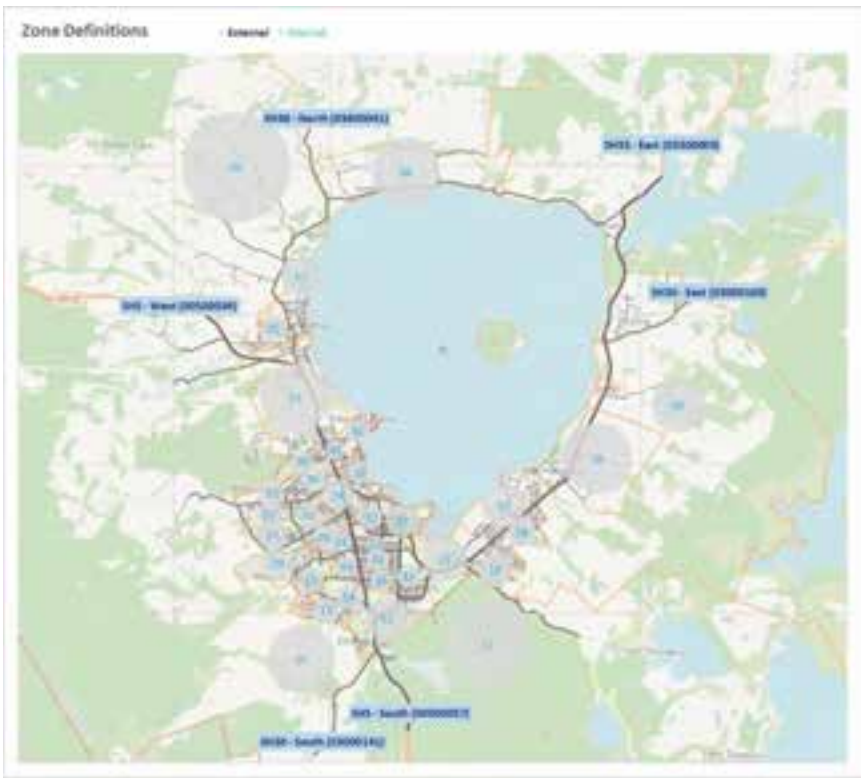
The tool can estimate transport outcomes from land use and network input data through the following four stages:

Model Stage	Functionality	Specifications
Generation	Calculate total trips produced by population and attracted to the activities (e.g. employment) within individual geographical areas (i.e. zone) by trip purposes.	Trip purposes: • Home based work, • Home based education, • Home based other, • Non-home based business, • Non-home based other, and • Trucks (a separate mode but modelled separately due to its unique behaviour from all other modes).
Distribution:	Spread production and attraction trips within individual zones to production and attraction zone pair based on accessibility between the zones.	Generalised cost components (for accessibility): • Travel time by mode (based on shortest path distance and travel speed between the zonal pair), • Vehicle operating cost (fuel and fleet composition), • Parking cost, and • Public Transport (PT) fare and service frequency.
Mode Share:	Distribute trips by trip purposes across different modes.	Modes: • Car, • PT, • Walking, and • Cycling.
Assignment:	Link (road) level assignment was not undertaken, high-level origin and destination level allocation (from production/attraction to origin/destination).	

2.2 Base Land Use Assumptions

Land use information for the study area is modelled by zones, based on statistical area 2 (SA2) units defined by Statistics New Zealand. Thirty-nine SA2 zones are included in the study area for this project. Six external zones are also modelled in the tool at the state highway entry points. The following map depicts the zones (boundary in orange and centroid as grey bubbles for internals, blue boxes for externals).

Figure 2-2: Zone Definitions



Census 2018 information for SA2s was used to create the base year land use information for each zone, which includes the following categories:

- Population and household
- Employment by industry type (agriculture, education, industry, retail and services)
- School by type (primary, secondary and tertiary).

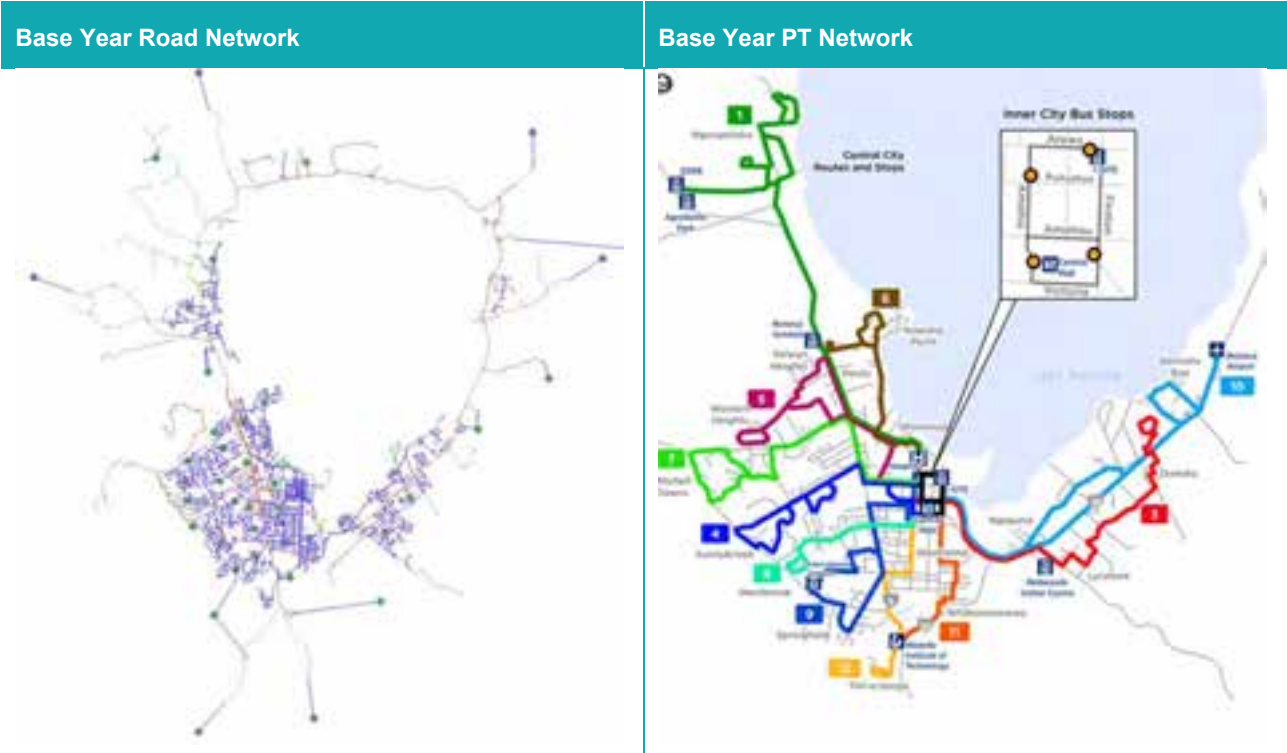
TMS traffic counts from Waka Kotahi are used to derive the production and attraction trips for external zones.

2.3 Base Network Assumptions

The ONRC (one network road classification) network from Waka Kotahi is used as the basis for the base year network input, with minor corrections to ensure connectivity (see Figure 2-3). Speed limit information from Waka Kotahi for the region is overlaid on the network and adjusted based on road classification to simulate operating speed. A shortest path algorithm is run between all origin and destination zone pairs on the network to derive distance, travel time and average speed information for:

- Car (with adjusted speed from posted speed information)
- Walk (with 5km/hr travelling speed)
- Cycle (with 15km/hr travelling speed)
- Public transport (same speed as car where there is a PT service with minimum service headway added onto the travel time, walking speed is assumed where there isn't, see Figure 2-3).

Figure 2-3: Road and PT Network



The travel time information between each origin and destination zone across all modes are then converted into generalised cost using the following assumptions.

Table 2-1: Generalised Cost Parameters

Parameter	Specification	
Value of Time (\$/hr) ¹	Home Based Work: \$29.67 Home Based Education: \$16.55 Home Based Other: \$16.55	Non-Home Based Business: \$69.70 Non-Home Based Other: \$16.55 Trucks: \$49.46
Fuel Consumption (L/100km) and Perceived Price (\$/L)	Consumption from the Vehicle Emission Prediction Model (VEPM), using average speed between each origin and destination pair. Price based on \$2.19 per litre for light and \$1.41 for heavy (based on historical fuel data from figure.nz). The overall fuel cost is reduced by a 50% perception factor for light and 25% for heavy.	
PT Fare (\$)	\$2.80 flat rate for PT generalised cost for all zonal pairs	
Perceived parking cost (\$)	City Centre (adjusted with assumed participation rate): - Home Based Work: \$3.00 - Home Based Education: \$1.80 - Other purposes: \$1.00	Airport (adjusted with assumed participation rate): - Work trips: \$5.72 - Education trips: \$3.43
ASC (Alternative Specific Constant) for non-car modes (mins)	All non-education trips: - PT: 0mins - Walk: 5mins - Cycle: 36mins	Education trips: - PT: 20mins - Walk: 0mins - Cycle: 20mins

¹ Based on other strategic model assumptions (Tauranga and Auckland) and further refined during calibration.

2.4 Base Model Calibration

The base year model is calibrated based on the following observed data:

- 2018 census journey to work and journey to education data
- Rotorua city centre survey
- National vehicle emission dataset (NVED) for 2018.

Using this information, relevant model parameters are tuned so that the model response for the following components is reflective of the observed data at a high-level:

- Traffic generation for home based work and home based education trips
- Model share for home based work and home based education trips
- Average trip length for home based work and home based education trips
- Vehicle kilometres travelled within the study area.



Appendix A lists the base year modelling outcome and compares it against observed data. For reporting purposes, zone level results are summarised into sectors depicted in the map above.

In summary, the base year model is considered reflective of the actual conditions in 2018. Model outputs are summarised in the list below.

- Commuter (including home based work and home based education) trips from internal zones have been calibrated to match with census journey to work (~44k) / education (~21k) total for Rotorua
- Over the entire network, just over 40% of total trips were work related trips (home based work and non-home based business). While no directly relevant observed data was available to calibrate the share of trip purposes, this loosely aligns with the Rotorua CBD survey, which found a similar share of business related trips for those surveyed.
- The majority of trips are generated by or attracted to the Rotorua urban region in the base year model.
- Mode shares for commuter trips match well with that from the census. Across all trip purposes, the model estimates 91% of journeys by car over the entire area. This is high comparing to the Rotorua CBD survey of 74%. It is considered acceptable given the survey extent only covers the CBD area and car share for trip legs in the region from historical Ministry of Transport data was high (>80%).
- For average trip lengths, the base year model replicated the observed well across all modes for commuter trips, except for education commute trips via public transport. It is considered acceptable considering the low share of PT education trips overall.
- Overall VKT estimated within the region is about 13% lower than that within the NVED dataset. This is considered acceptable given that previous comparisons between NVED and similar models for other cities indicated that modelled VKT tend to be 20% to 30% lower. Spot checks for traffic volumes on key corridors (e.g. SH5 and SH30) shows that the difference between modelled and observed is within 10% (equivalent of daily variation in reality).

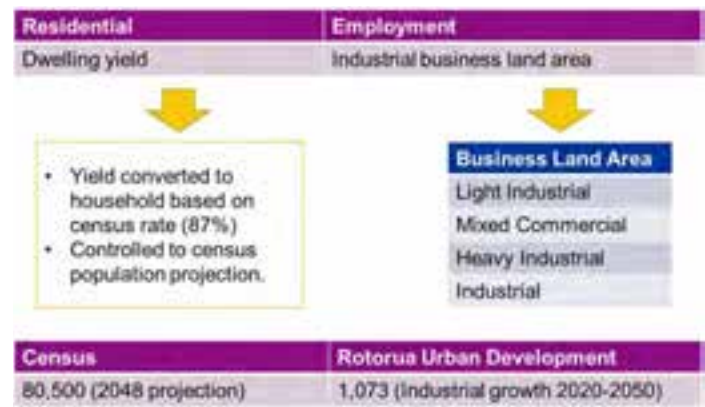
3 Phase 1 - Land Use Scenarios

Dwelling yield and industrial business land area information was provided for individual development areas for the following four land use scenarios:

- 1. Ngongotaha growth
- 2. Multi-nodal intensification
- 3. SH36 growth corridor
- 4. Eastside growth corridor.

These development areas were mapped to model zones, the following diagram depicts the conversion process to create the model land use.

Figure 3-1: Conversion process to create population and industrial job growth



While the dwelling yield information represents all population and household growth (approximately 18% increase from base year population), the business land area information only represents growth in industrial employment (approximately 4% increase from base year employment according to that stated in the Rotorua Urban Development plan for 2050).

The following background growth assumptions are also made to create the final future year land use for 2048.

- 34% employment growth for non-industrial jobs, based on urban development plan total growth for 2050;
- People per household fluctuate based on the total dwelling growth to ensure match with the population projection;
- School roll increased based on an overall 18% population increase
- Ngongataha region has a new primary school for scenarios 1 to 3.

Maps showing the final land use growth created for scenario 1, 2 and 4 can be found in **Appendix B**. Note that while scenario 3 (SH36 growth corridor) was modelled in phase one of project, it was deemed unlikely to go ahead and therefore excluded from further testing.

4 Phase 2 - Transport System Sensitivity Tests

The table below summarises the transport system sensitivity tests created for this project.

Table 4-1: Transport System Sensitivity Tests

Test ID	Test Description
Test 0	Base + Improved PT services Future PT routes are based on latest plans received from BOP regional council, with additional improvements to individual land use scenarios where major increase occurs. The following figure depicts the future PT route assumptions for scenario 2, with additional changes in scenario 1 and 4 available in the popup boxes. The headway referred to in the legend is the duration between buses for the route (i.e. a bus every 20 to 40mins).

Test ID	Test Description
	
Test 1	Test 0 + Increased parking cost, The perceived parking cost for both city centre and airport is doubled in relation to the value of time.
Test 2	Test 0 + Network wide walking and cycling improvements The network wide improvement is reflected as the reduction of ASC (see base year value defined in Table 2-1) for walking and cycling by 5mins and 20mins respectively.
Test 3	Test 1 + Test 2
Test 4 (Omitted)	Increased work from home (<i>Between the land use scenarios 1, 2 and 4, only industrial jobs are being shifted around the network. The likelihood of working from home making a major difference to the VKT outcome is low. Therefore, after discussion with RLC, we decided to remove this test in this phase of testing</i>).

The cost of implementing these improvements has not been quantified as part of this study, but it can be assumed that there would be a difference in implementation costs between the land use scenarios. Scenarios with a more dispersed population would require longer cycleways, more bus infrastructure etc and thus have a higher service cost when compared to more compact and central land use options.

5 Findings

As stated in the methodology, key transport outcomes reported from the land use and transport system sensitivity tests to assess transport impact include mode share, VKT and transport emissions. Detailed outputs can be found in **Appendix B**, the subsections below summarise the key findings.

5.1 Mode Share

Changes to transport system assumptions see the share of car trips drop by 2% to at most 10%. PT improvements were applied to all tests but only had an incremental mode shift of 2% from car trips. Tests with all system changes applied saw the most reduction in car trips, most of which went to cycle.

The test results indicate that mode share does not differ much between land use scenarios. For scenario 1, 2 and 4, the mode share is almost identical for the base and its sensitivity tests.

Figure 5-1: Mode Share Summary



5.2 VKT

The figure below summarises the total network light VKT for each land use scenarios and the corresponding sensitivity tests.

Figure 5-2: Light VKT Summary



In summary:

- If the business as usual (BAU) scenario for VKT is to have the same VKT per capita, based on the projected population growth in Rotorua, the BAU future VKT would be around 18% growth (highlighted by the dotted line in the chart).
- Of all scenarios tested, the Ngongotaha growth scenario without network improvements had the highest VKT increase (blue bar). Whereas multi-nodal intensification with all network improvements had the least VKT increase (red bar).
- While additional PT improvements were applied to regions with land use increase in scenario 1 and 4, it did not result in significant incremental reduction in overall VKT compared with the other network improvement schemes. This is possibly due to the low mode share for PT in the base and very significant increase in service frequency required to see the expected model response.

5.3 Emissions

The figure below summarises the total emission from light vehicles for each land use scenarios and the corresponding sensitivity tests.

Figure 5-3 Light Vehicle Emission Summary



Transport emissions follow a similar trend to the VKT for light vehicles. The scenarios with the least amount of light VKT increase also show least amount of light vehicle emission production.

6 Conclusions

A multimodal sketch planning tool has been adapted to Rotorua’s local conditions at a high-level to evaluate the potential transport outcomes between different land use scenarios for the RLC future development strategy.

Overall, the results indicate that the multi-nodal intensification land use scenario is expected to increase the car travel demand the least comparing to the other scenarios. Consequently, it would have the least adverse impact on VKT and emissions. With improvements to transport systems, the share of car trips can also reduce further, with trips shifting to other modes (up to 10%). Implementation cost is also likely to be lower for more central, compact scenarios.

In addition to the analysis listed in this report, the sketch planning tool could also be used in future for the following other purposes, such as:

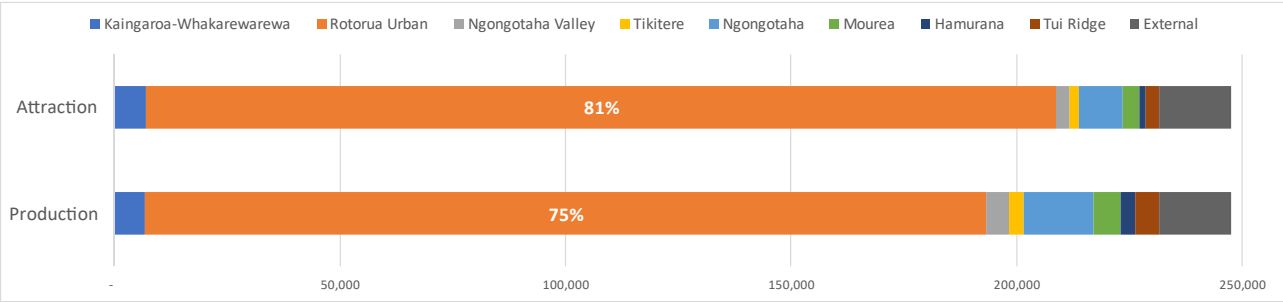
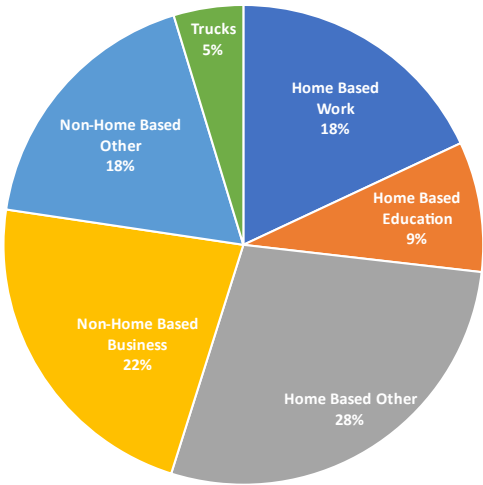
- Work from home module - model expansion required;
- Testing of different bus improvements;
- Testing of land use responsiveness;
- Economic assessment taking account of likely investment;
- Assessing transport and land use related emissions (e.g. embedded emission from horizontal infrastructures) – model expansion required.

We recommend RLC consider maintaining and applying the sketch planning tool for such future tasks.



Appendix A – Base Year Calibration Results

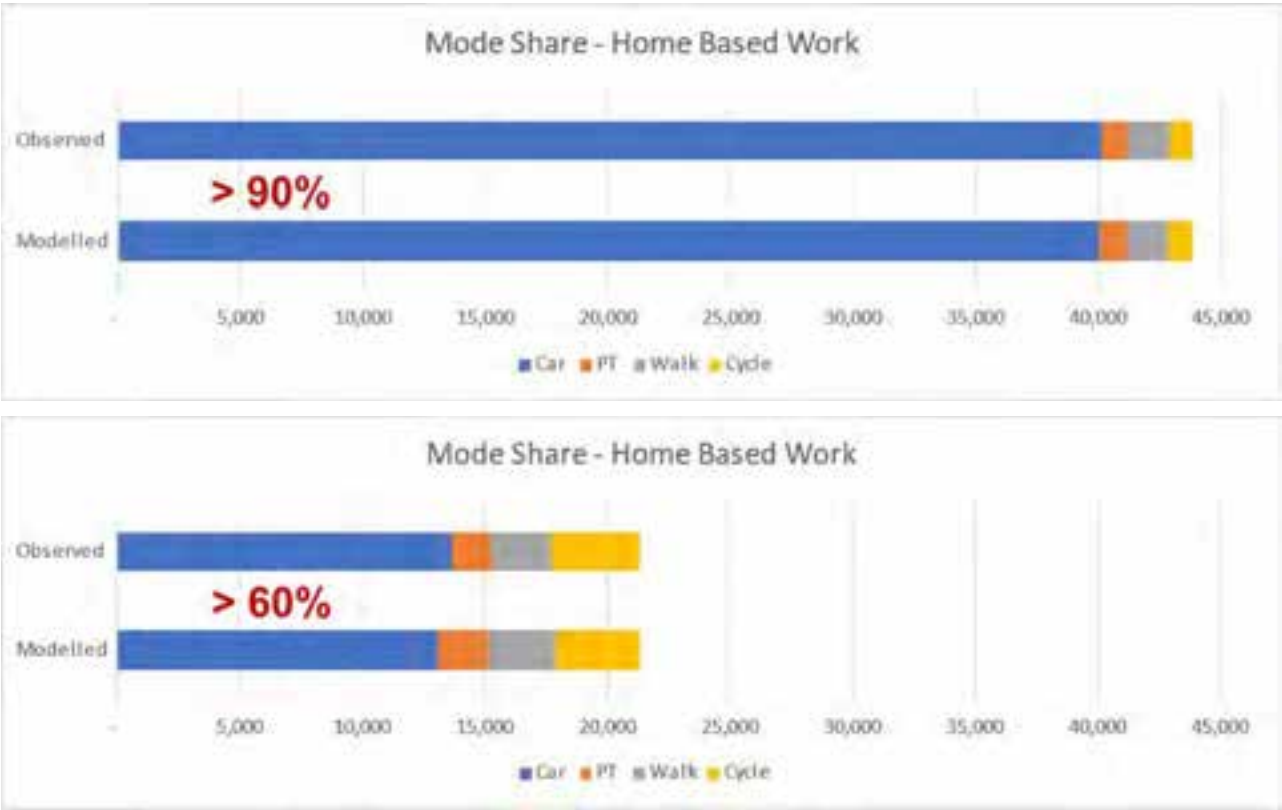
Generation



Distribution

	Kaingaroa-Whakarewareware	Rotorua Urban	Ngongotaha Valley	Tikitere	Ngongotaha	Mourea	Hamurana	Tui Ridge	External	Total - Origin
Kaingaroa-Whakarewareware	0%	2%	0%	0%	0%	0%	0%	0%	0%	2%
Rotorua Urban	2%	69%	1%	0%	2%	0%	0%	0%	3%	78%
Ngongotaha Valley	0%	1%	0%	0%	0%	0%	0%	0%	0%	1%
Tikitere	0%	1%	0%	0%	0%	0%	0%	0%	0%	1%
Ngongotaha	0%	3%	0%	0%	1%	0%	0%	0%	1%	5%
Mourea	0%	1%	0%	0%	0%	0%	0%	0%	1%	2%
Hamurana	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
Tui Ridge	0%	1%	0%	0%	0%	0%	0%	0%	0%	1%
External	0%	3%	0%	0%	0%	0%	0%	0%	2%	6%
Total - Destination	2%	81%	1%	1%	4%	1%	1%	1%	6%	100%

Mode Share



Trip Length



VKT

Vehicle Type	Modelled	% Difference
Light VKT	1,054,000	-13%
Heavy VKT	96,000	-13%

B

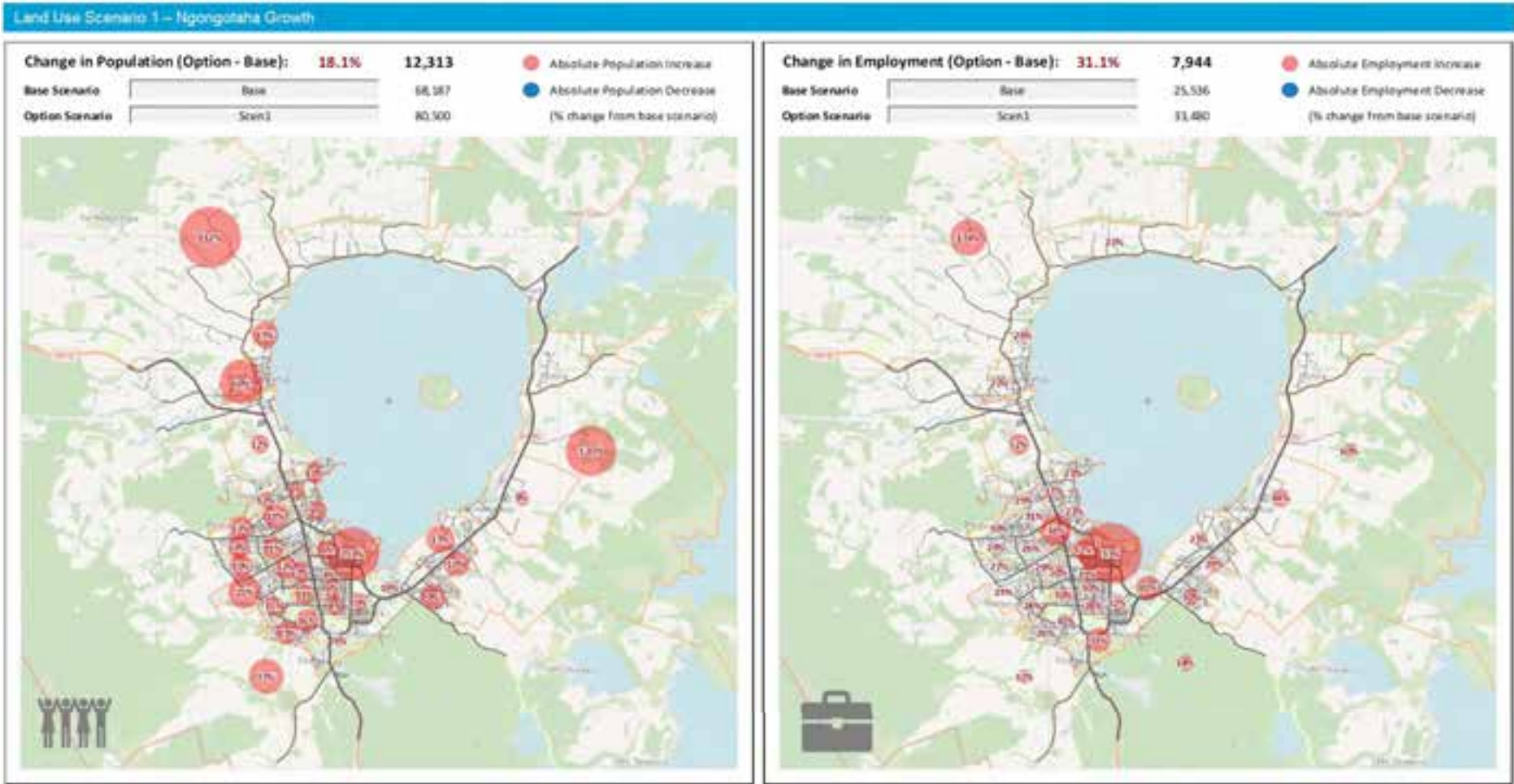
Appendix B – Detailed Scenario Outputs

Model Share Summary

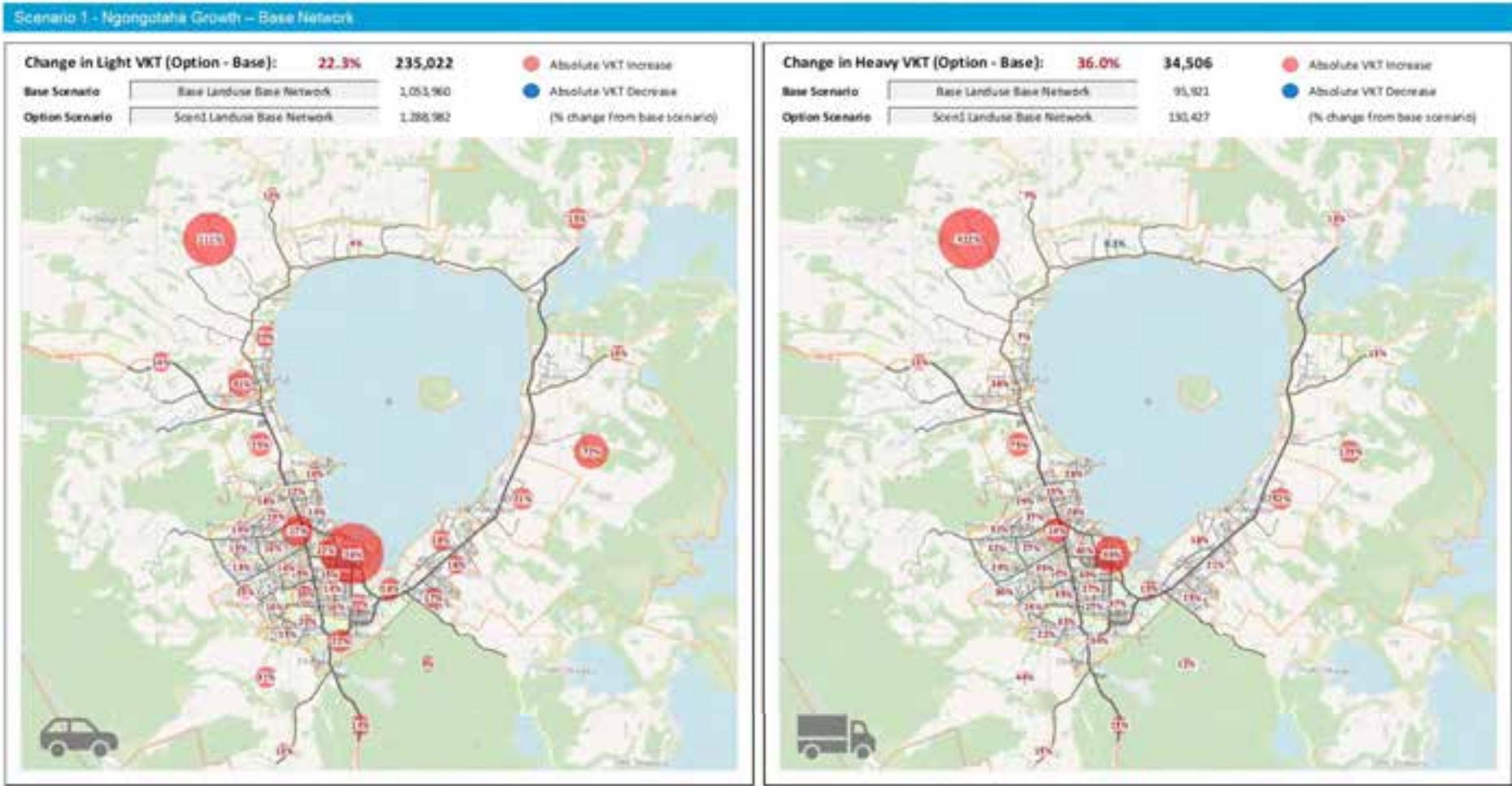
Mode Share Summary				
Scenario 1 - Ngongotaha Growth	Car	PT	Walk	Cycle
Base Network	92%	2%	4%	3%
Base + PT Improvements	90%	4%	4%	2%
Base + PT Improvements + Increased Parking Cost	88%	5%	4%	3%
Base + PT Improvements + Walking & Cycling Improvements	83%	4%	5%	8%
Base + All Network Improvements	81%	4%	5%	9%
Scenario 2 - Multi-nodal Intensification	Car	PT	Walk	Cycle
Base Network	91%	2%	4%	3%
Base + PT Improvements	89%	4%	4%	3%
Base + PT Improvements + Increased Parking Cost	88%	5%	4%	3%
Base + PT Improvements + Walking & Cycling Improvements	83%	4%	5%	9%
Base + All Network Improvements	81%	4%	5%	9%
Scenario 4 - Eastside Corridor Growth	Car	PT	Walk	Cycle
Base Network	91%	2%	4%	3%
Base + PT Improvements	89%	4%	4%	3%
Base + PT Improvements + Increased Parking Cost	88%	5%	4%	3%
Base + PT Improvements + Walking & Cycling Improvements	83%	4%	5%	9%
Base + All Network Improvements	81%	4%	5%	9%

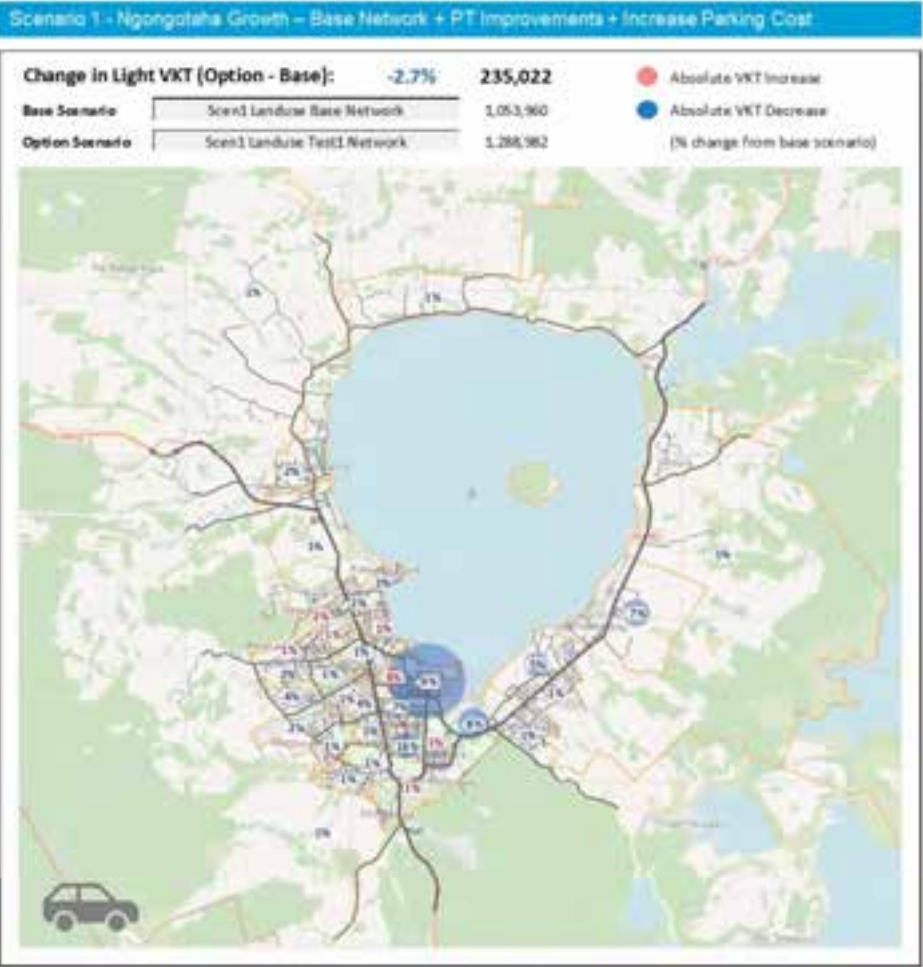
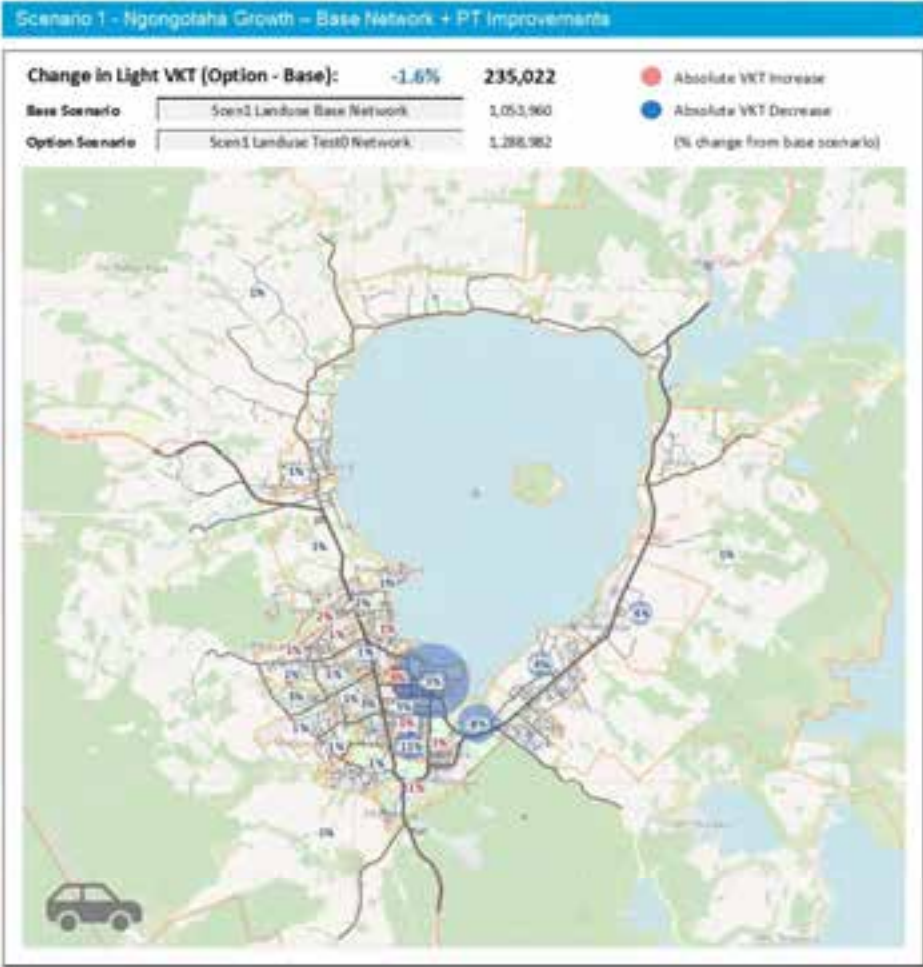
Scenario 1 – Ngongotaha Growth

Land Use Growth



VKT Growth





Scenario 1 - Ngongotaha Growth – Base Network + PT Improvements + W&C Improvements



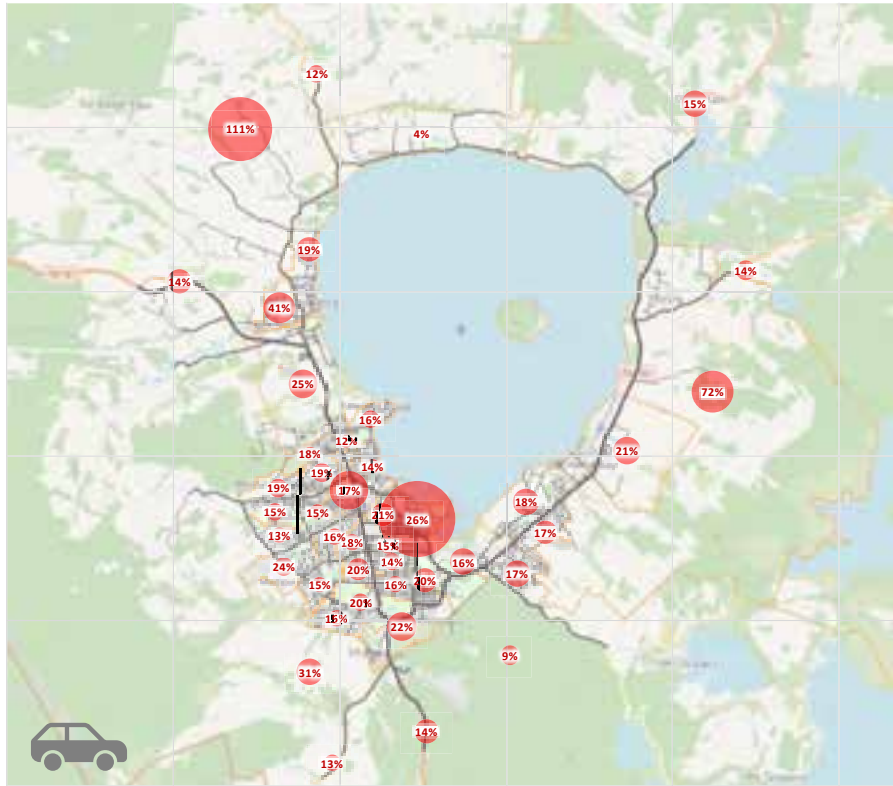
Scenario 1 - Ngongotaha Growth – Base Network + All Improvements



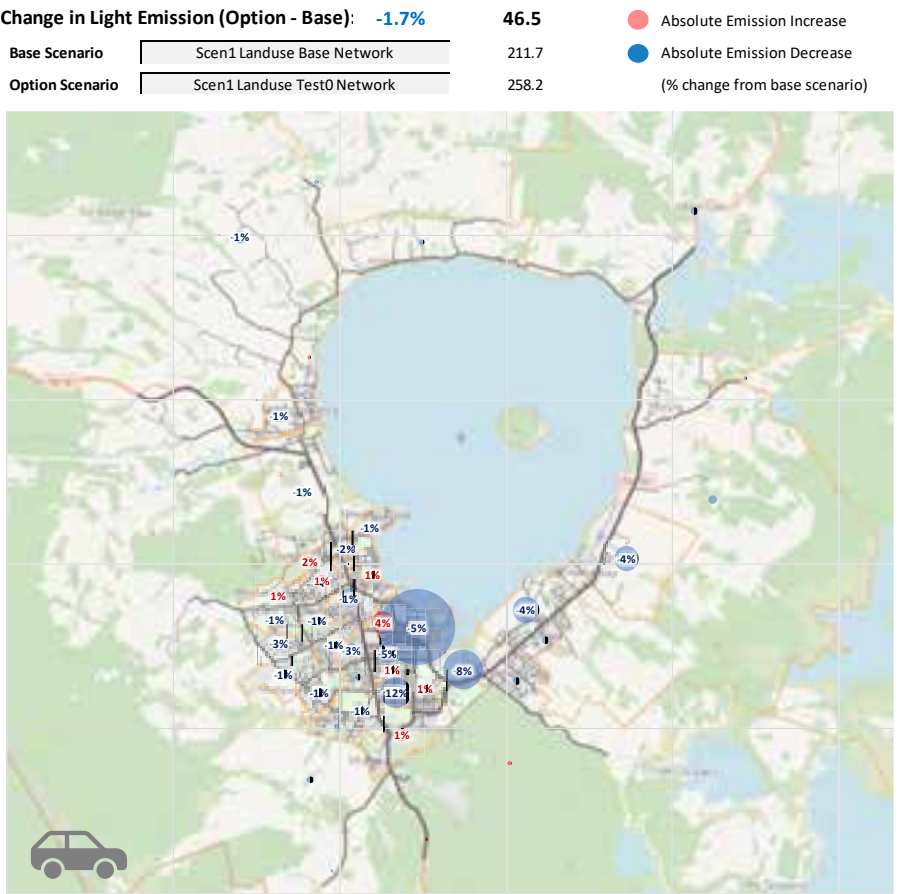
Emission Growth (CO2-e, kilo-tonnes)

Scenario 1 - Ngongotaha Growth – Base Network

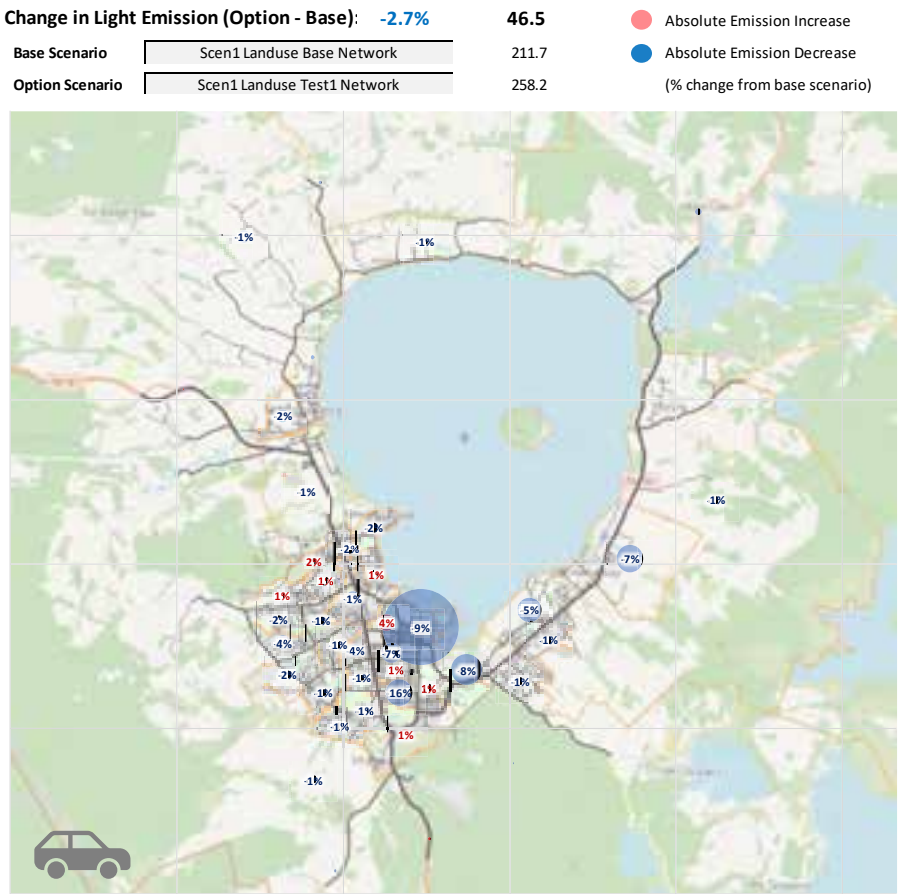
Change in Light Emission (Option - Base): 21.9%		46.5	● Absolute Emission Increase
Base Scenario	Base Landuse Base Network	211.7	● Absolute Emission Decrease
Option Scenario	Scen1 Landuse Base Network	258.2	(% change from base scenario)



Scenario 1 - Ngongotaha Growth – Base Network + PT Improvements



Scenario 1 - Ngongotaha Growth – Base Network + PT Improvements + Increase Parking Cost



Scenario 1 - Ngongotaha Growth – Base Network + PT Improvements + W&C Improvements

Change in Light Emission (Option - Base): **-7.3%**

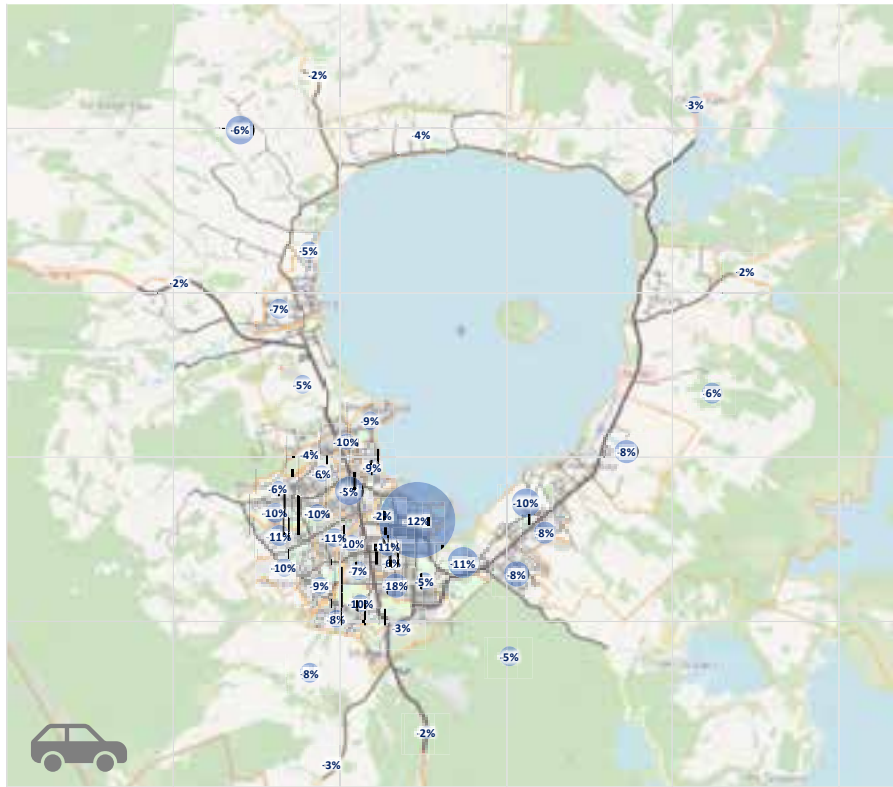
46.5

Absolute Emission Increase

Absolute Emission Decrease

(% change from base scenario)

Base Scenario	Scen1 Landuse Base Network	211.7
Option Scenario	Scen1 Landuse Test2 Network	258.2



Scenario 1 - Ngongotaha Growth – Base Network + All Improvements

Change in Light Emission (Option - Base): **-8.7%**

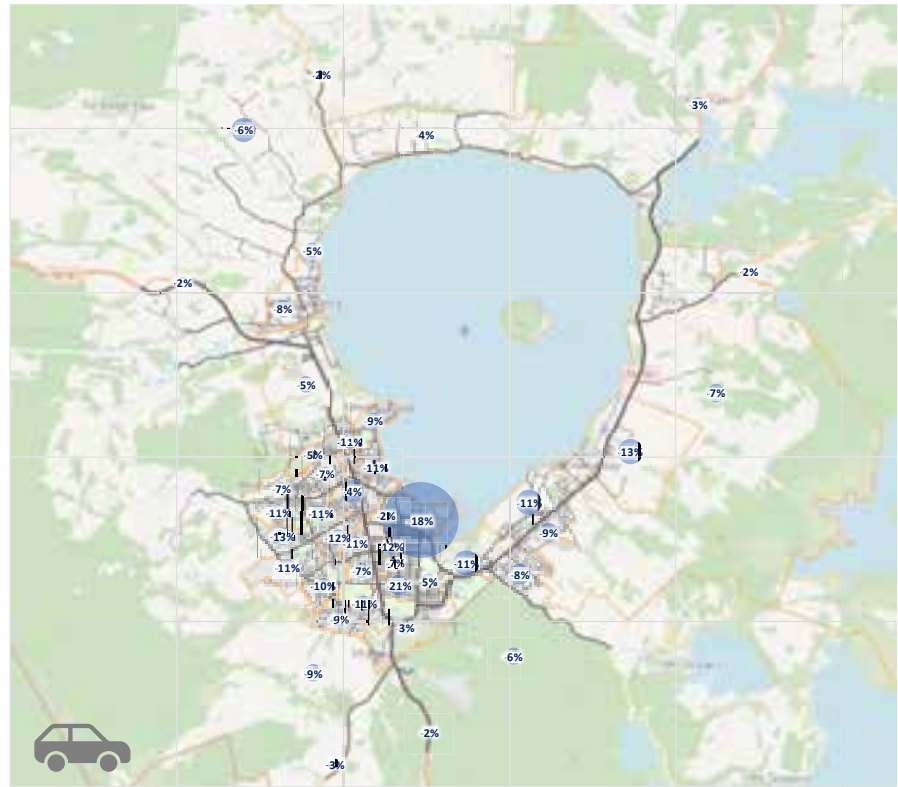
46.5

Absolute Emission Increase

Absolute Emission Decrease

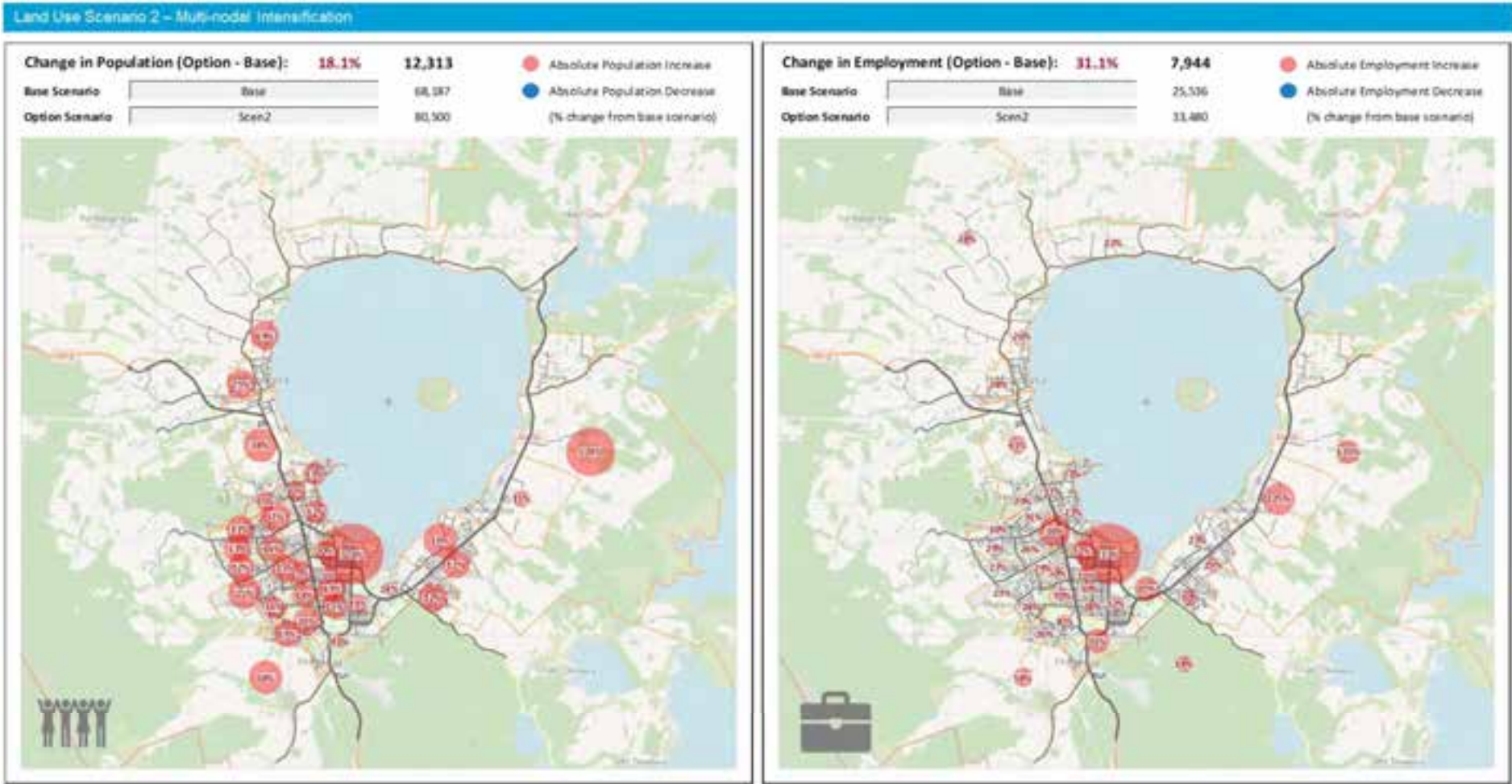
(% change from base scenario)

Base Scenario	Scen1 Landuse Base Network	211.7
Option Scenario	Scen1 Landuse Test3 Network	258.2

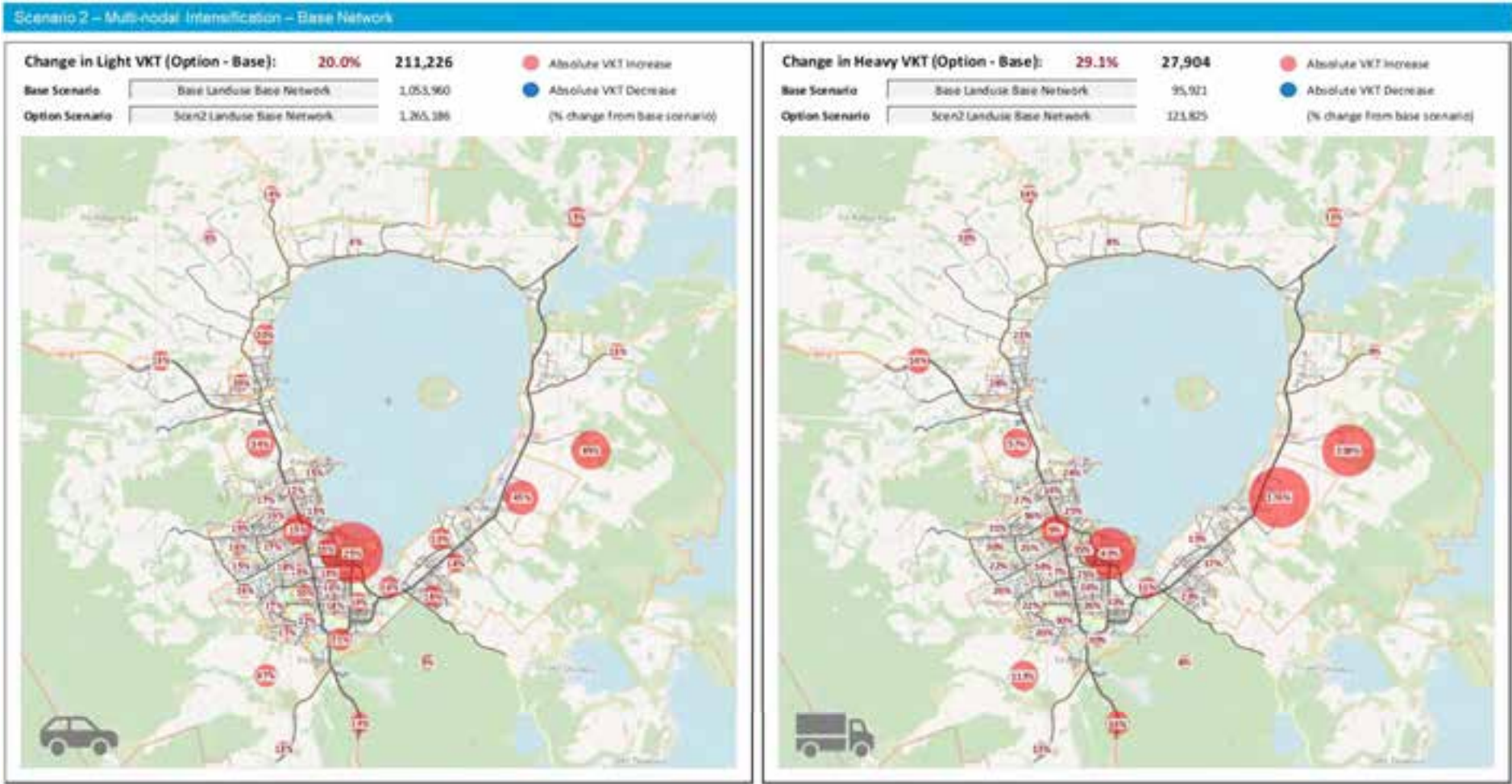


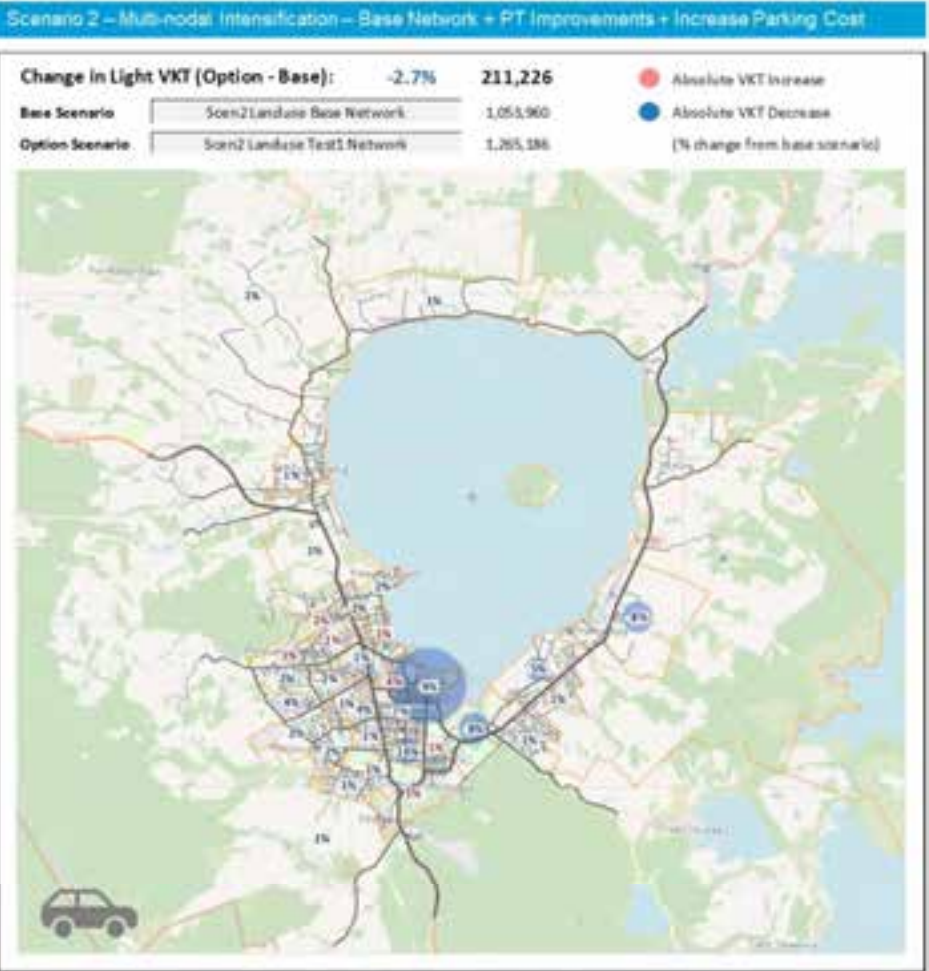
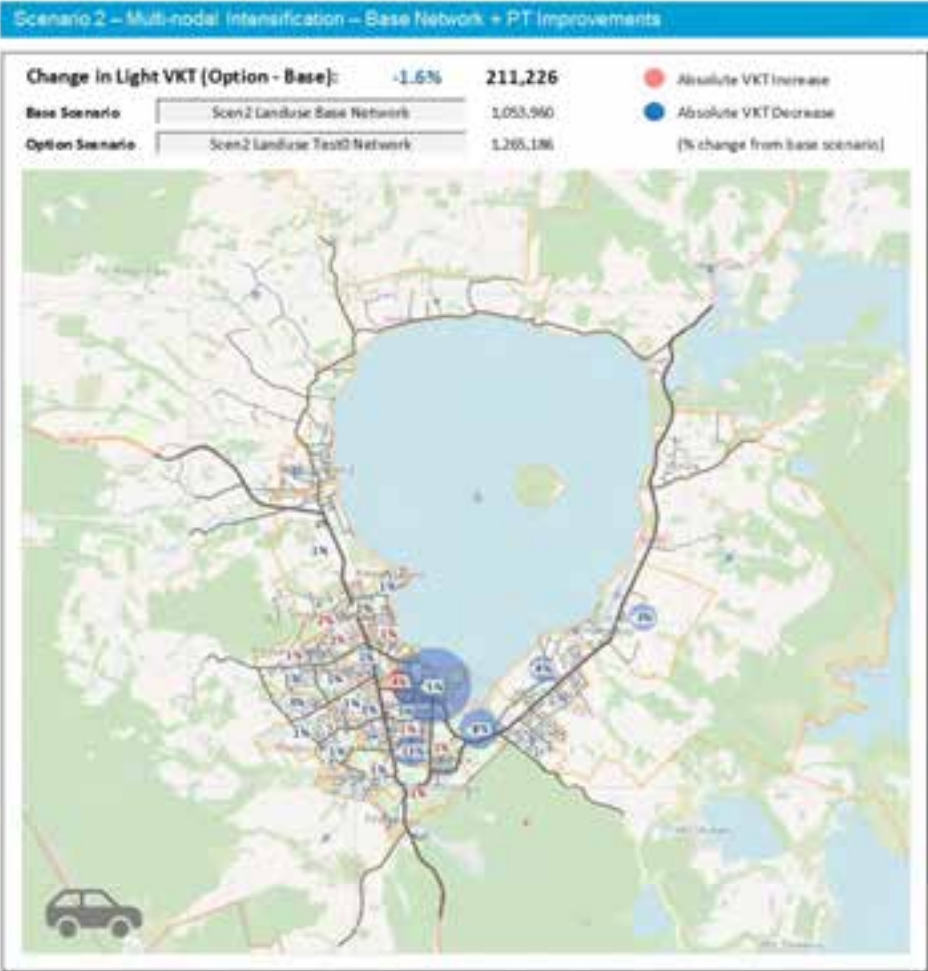
Scenario 2 – Multi-nodal Intensification

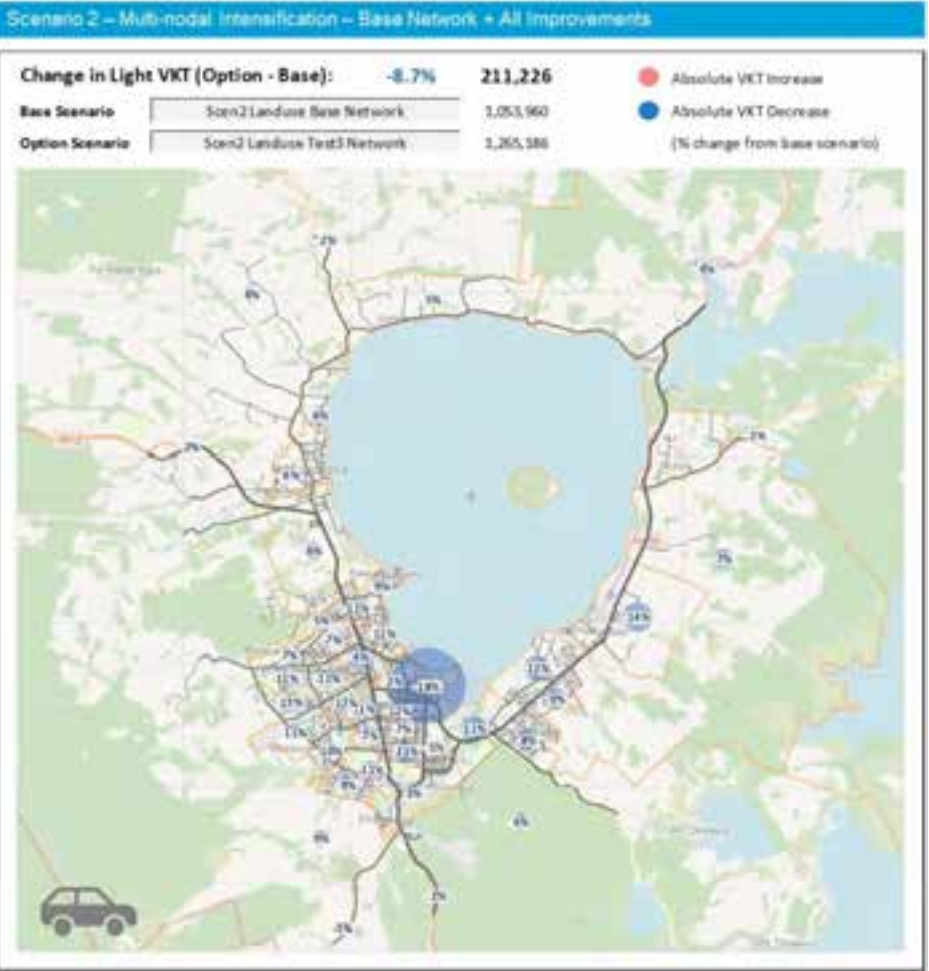
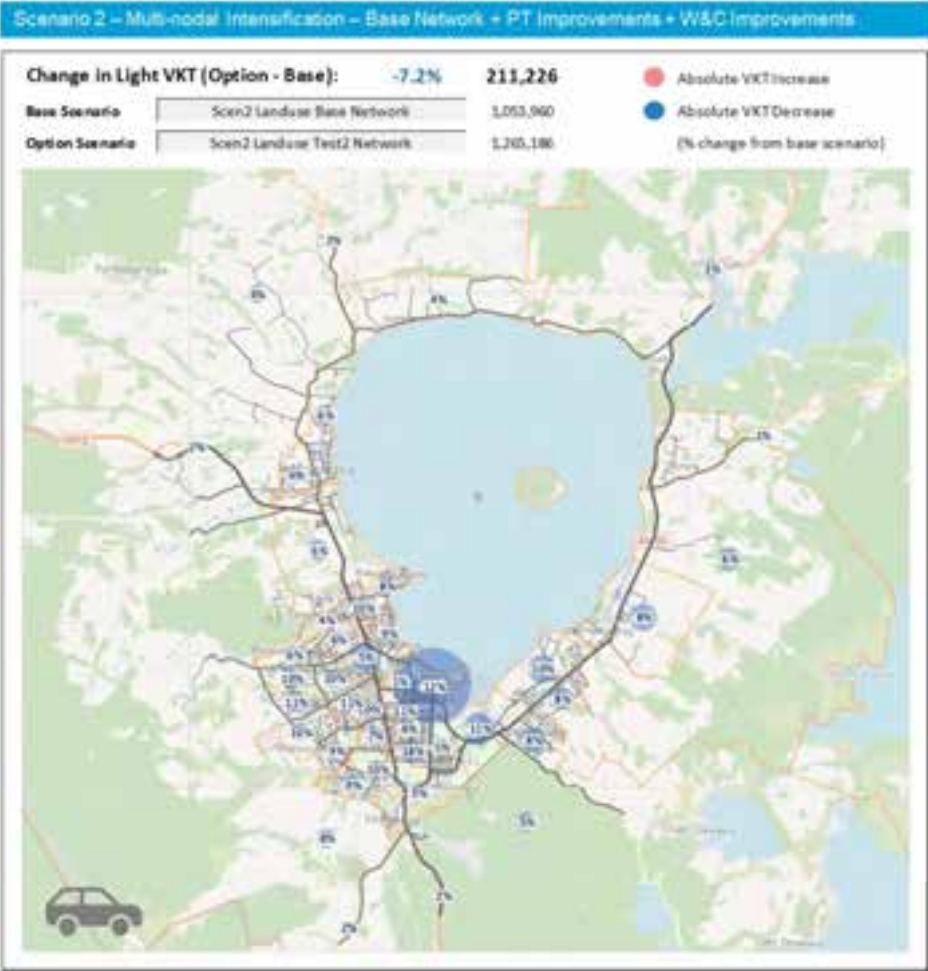
Land Use Growth



VKT Growth

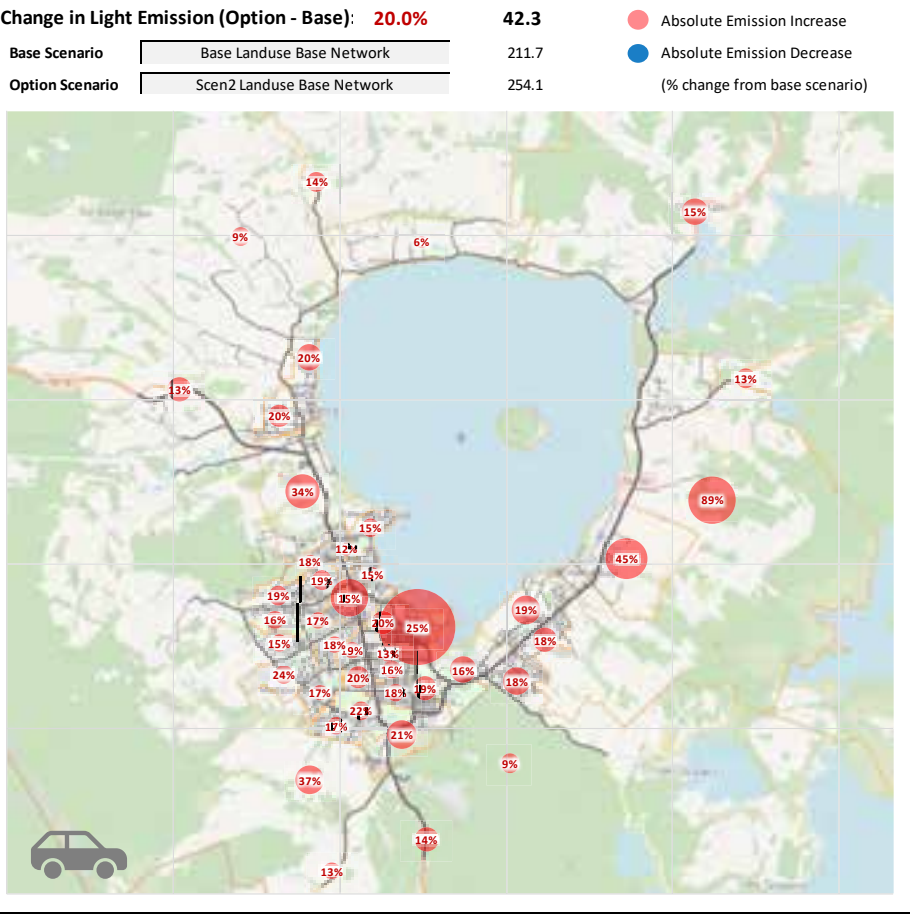




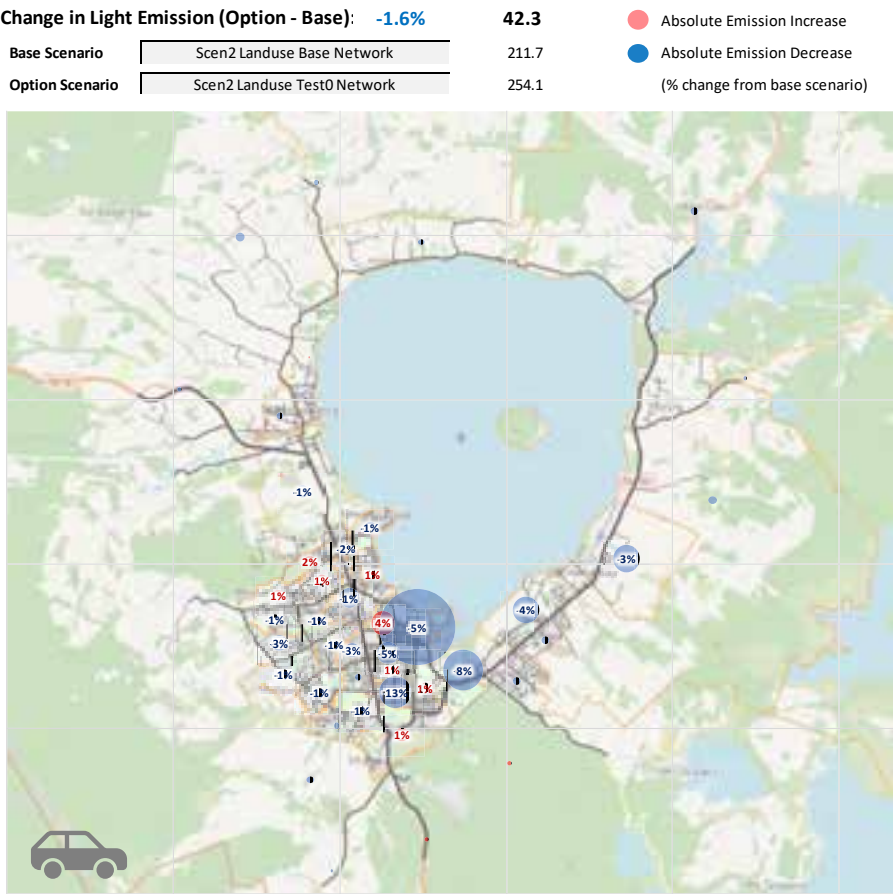


Emission Growth (CO2-e, kilo-tonnes)

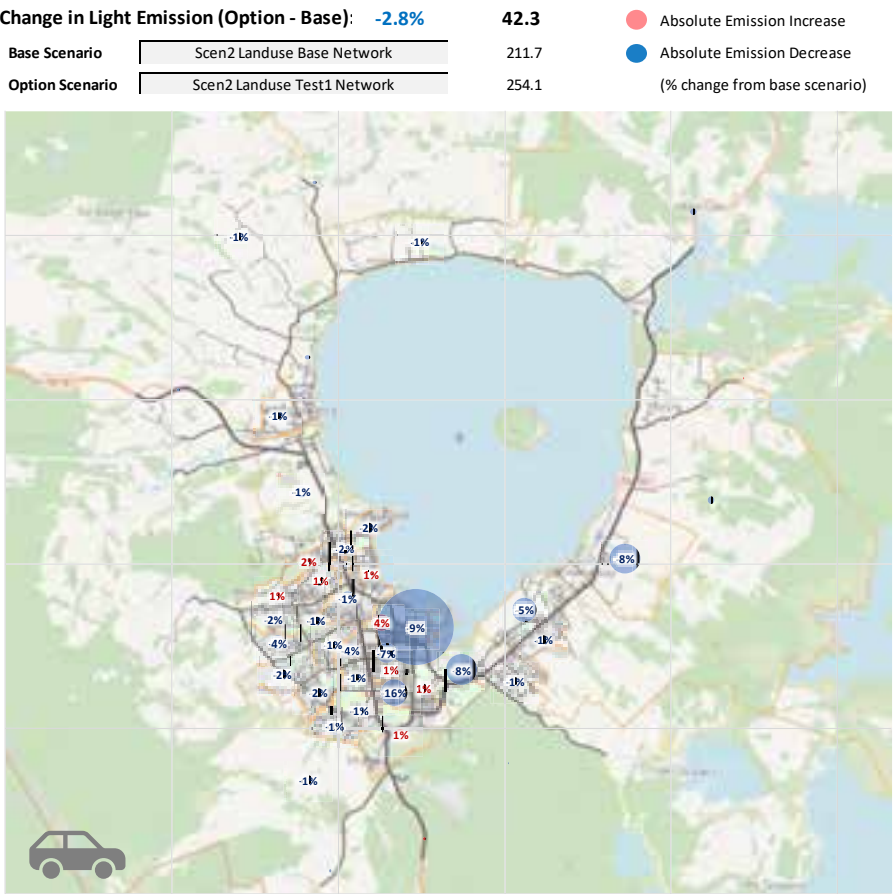
Scenario 2 – Multi-nodal Intensification – Base Network



Scenario 2 – Multi-nodal Intensification – Base Network + PT Improvements



Scenario 2 – Multi-nodal Intensification – Base Network + PT Improvements + Increase Parking Cost



Scenario 2 – Multi-nodal Intensification – Base Network + PT Improvements + W&C Improvements

Change in Light Emission (Option - Base): **-7.3%**

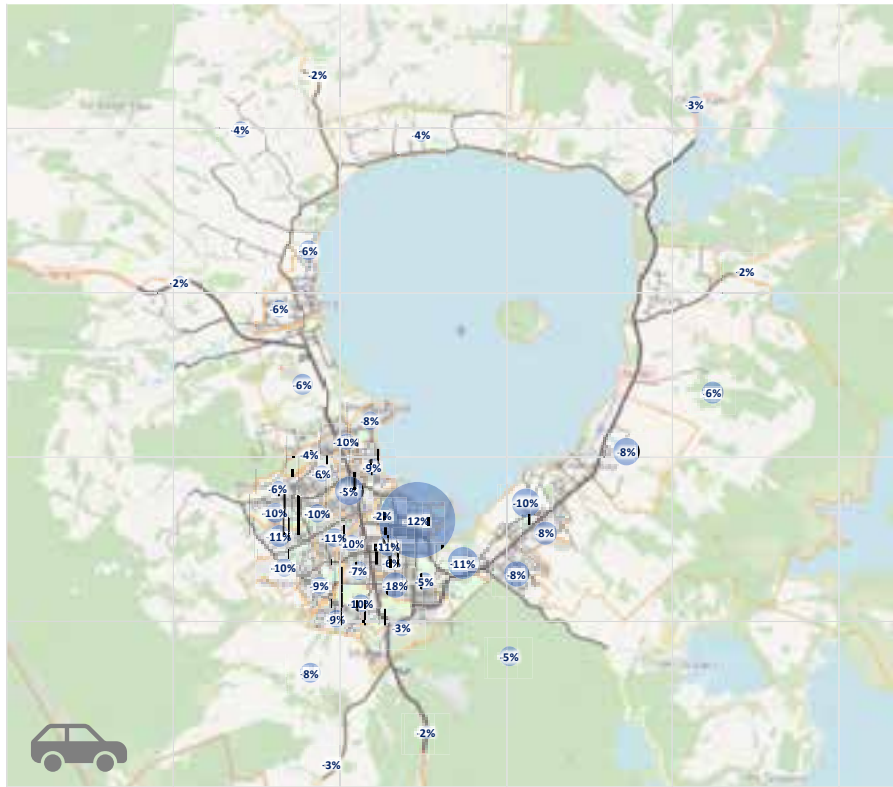
42.3

Absolute Emission Increase

Absolute Emission Decrease

(% change from base scenario)

Base Scenario	Scen2 Landuse Base Network	211.7
Option Scenario	Scen2 Landuse Test2 Network	254.1



Scenario 2 – Multi-nodal Intensification – Base Network + All Improvements

Change in Light Emission (Option - Base): **-8.8%**

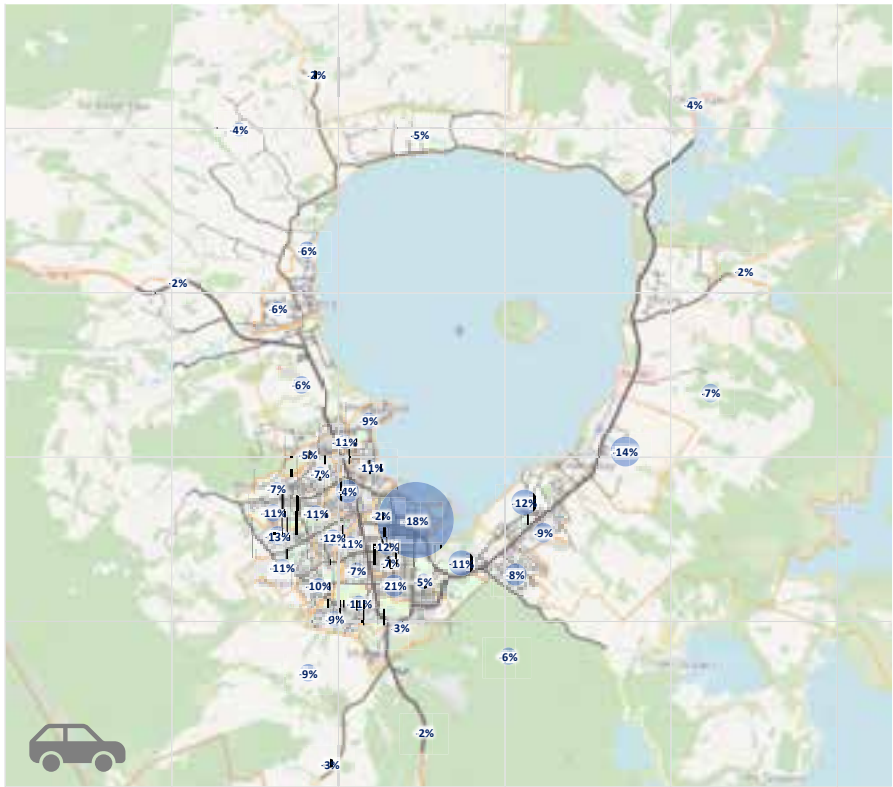
42.3

Absolute Emission Increase

Absolute Emission Decrease

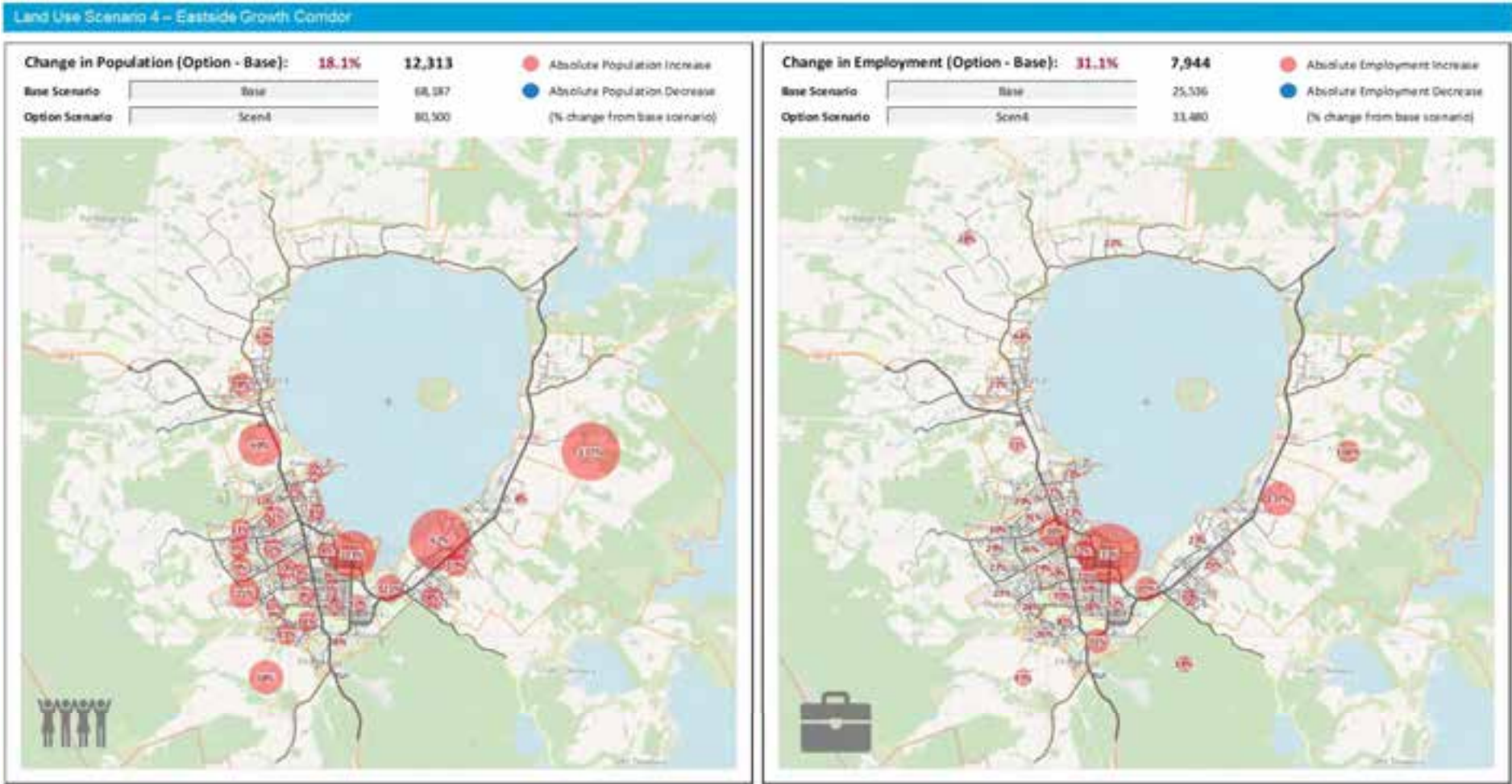
(% change from base scenario)

Base Scenario	Scen2 Landuse Base Network	211.7
Option Scenario	Scen2 Landuse Test3 Network	254.1

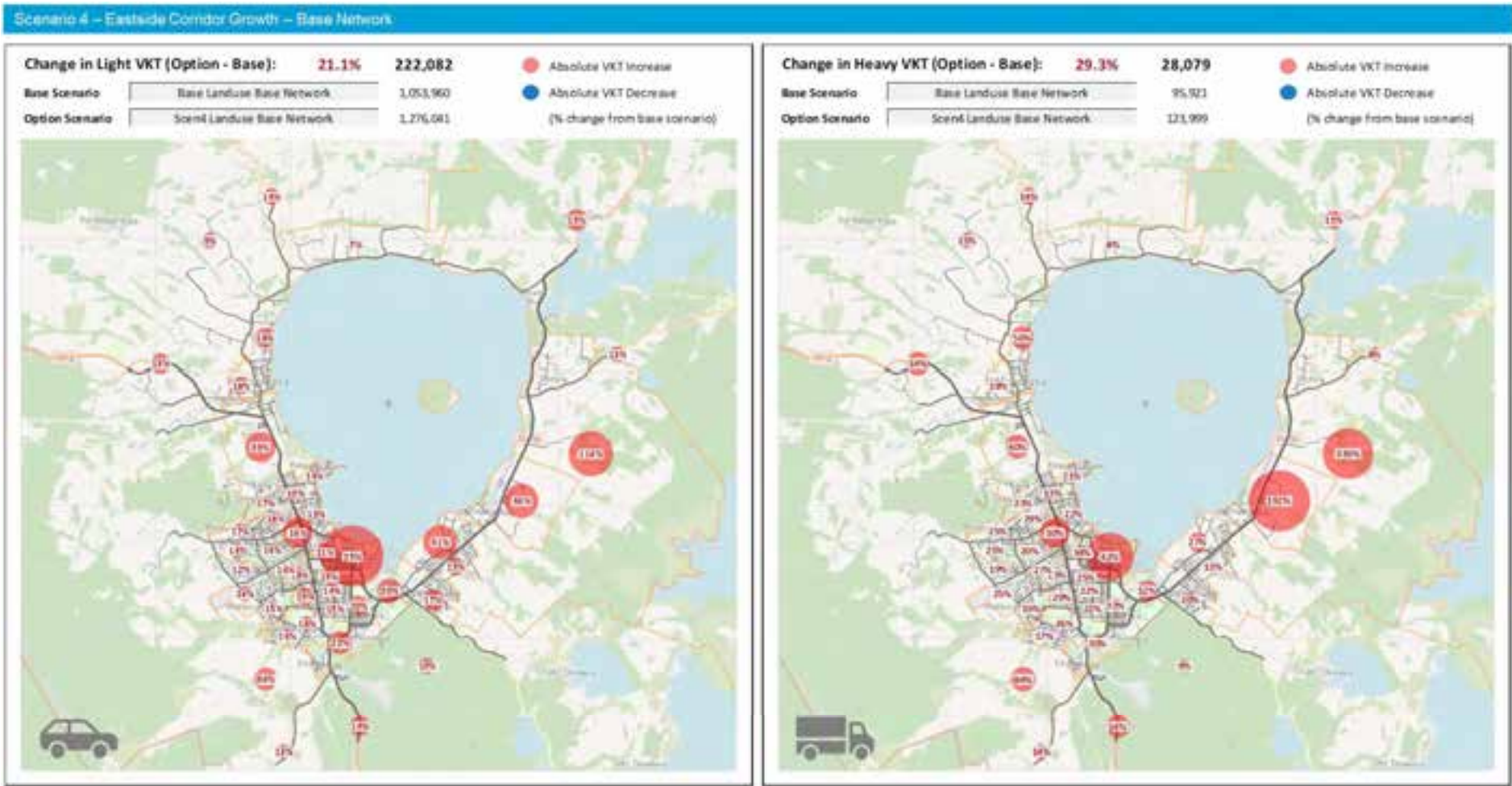


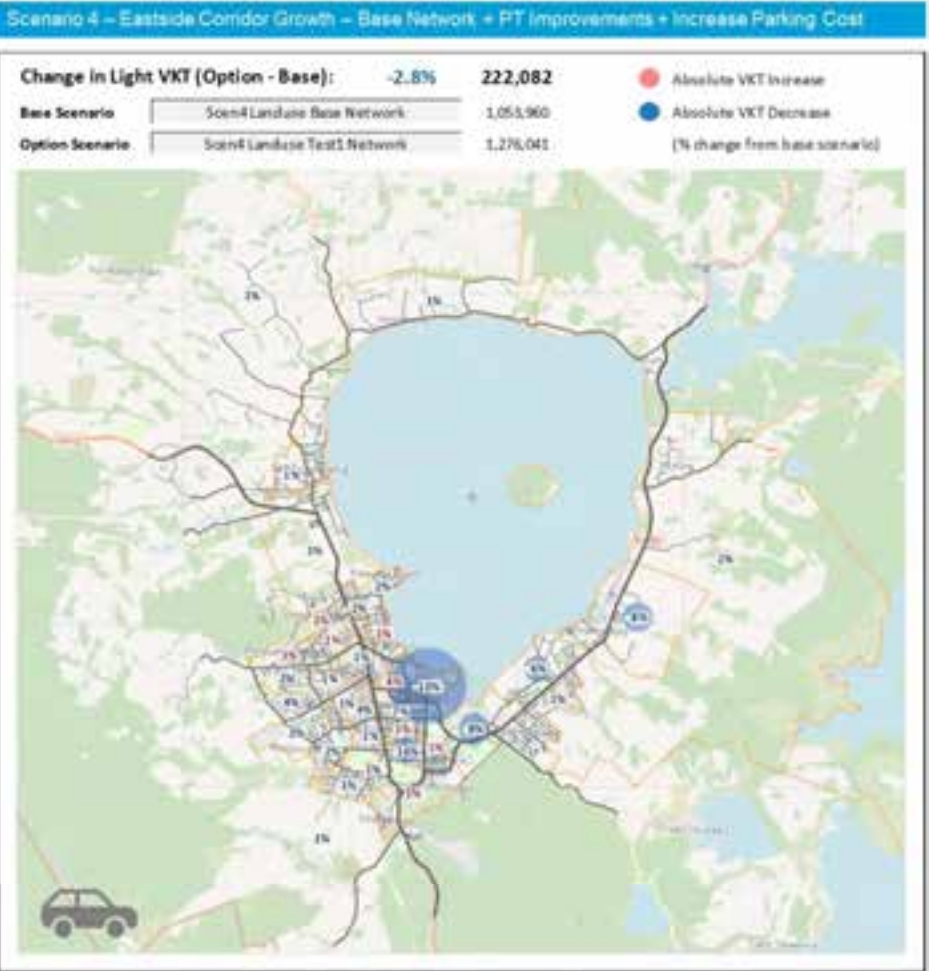
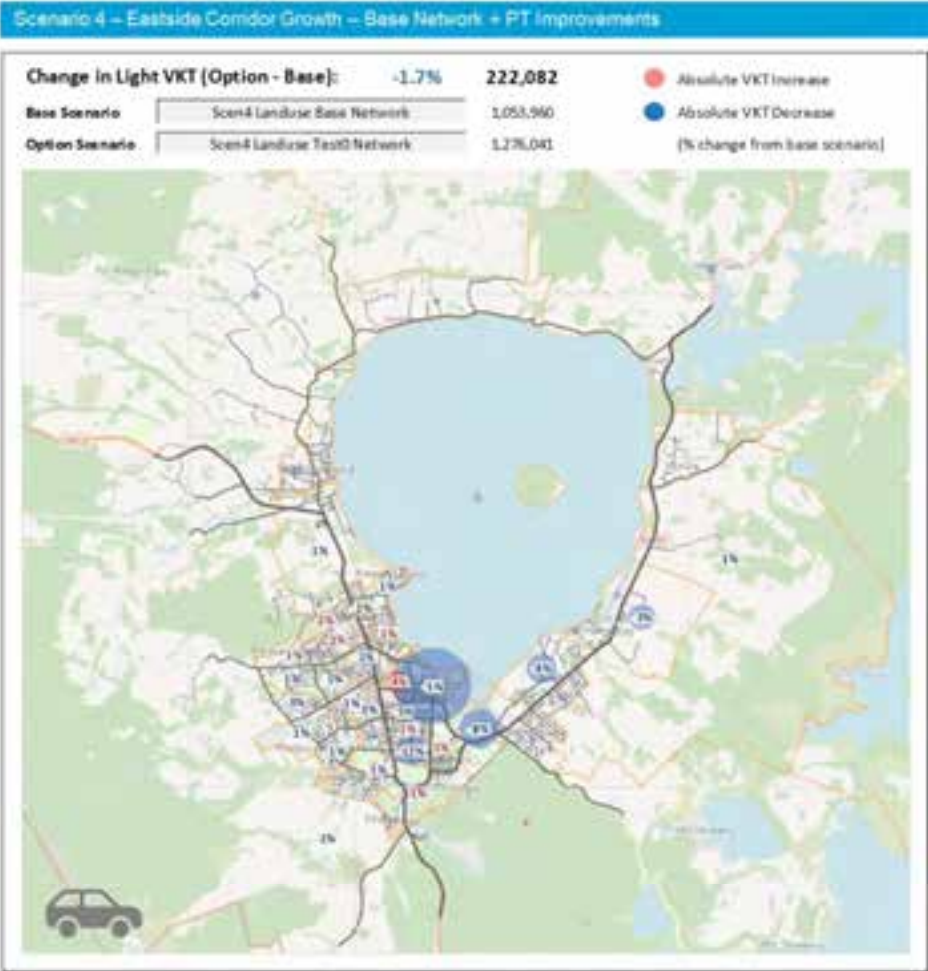
Scenario 4 – Eastside Corridor Growth

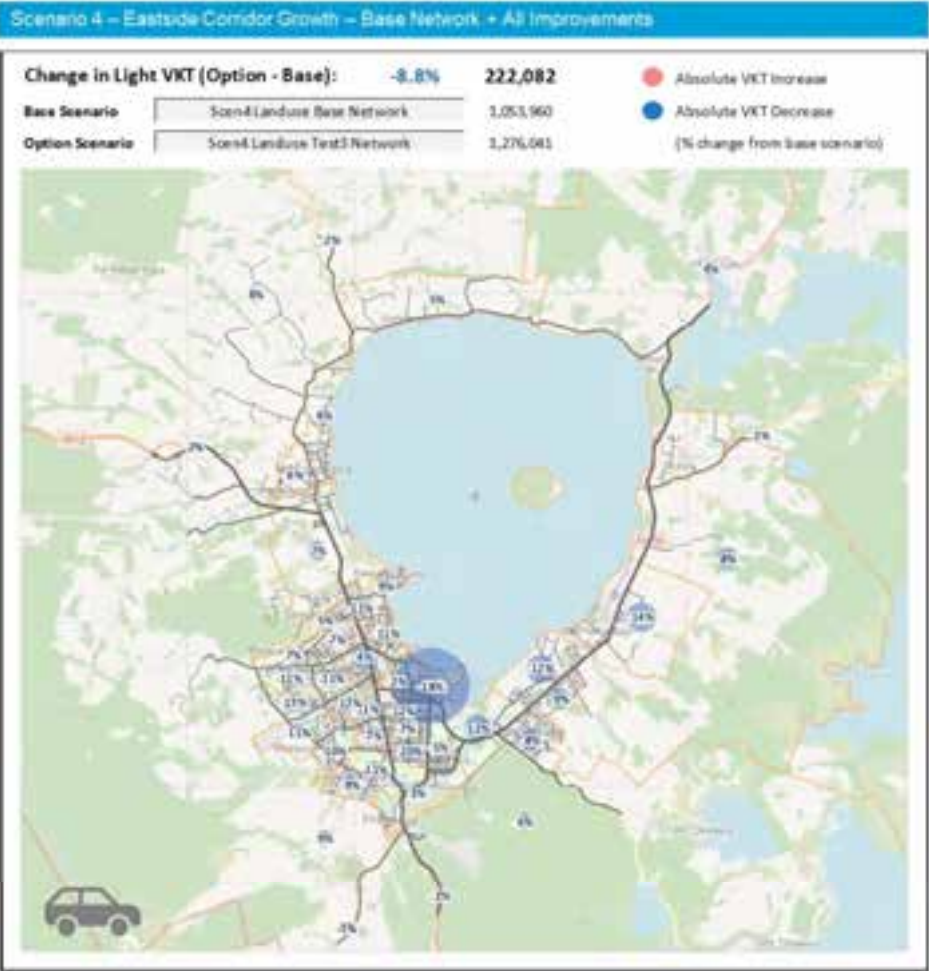
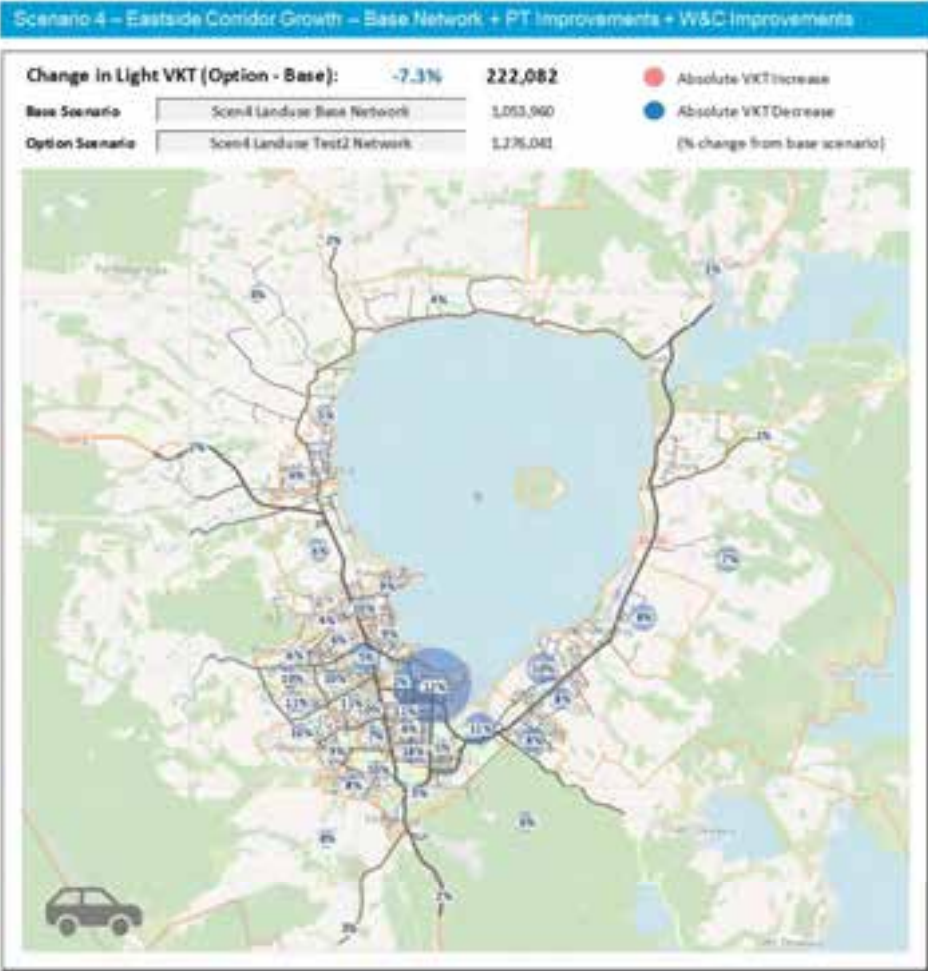
Land Use Growth



VKT Growth

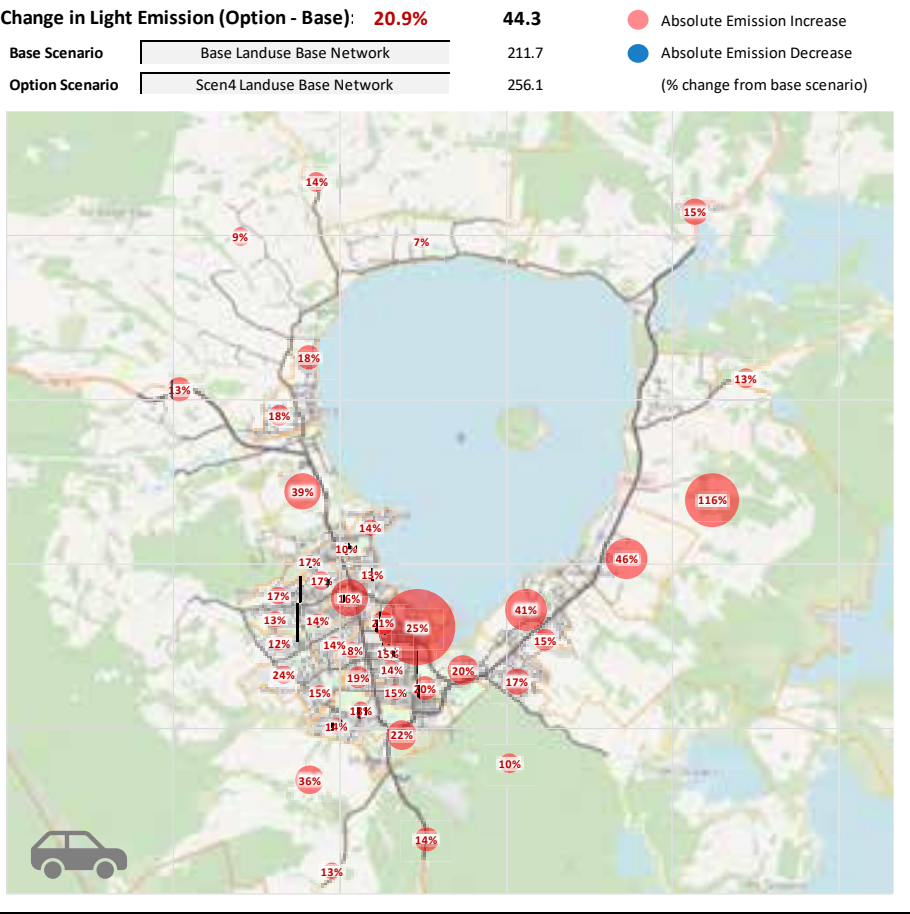






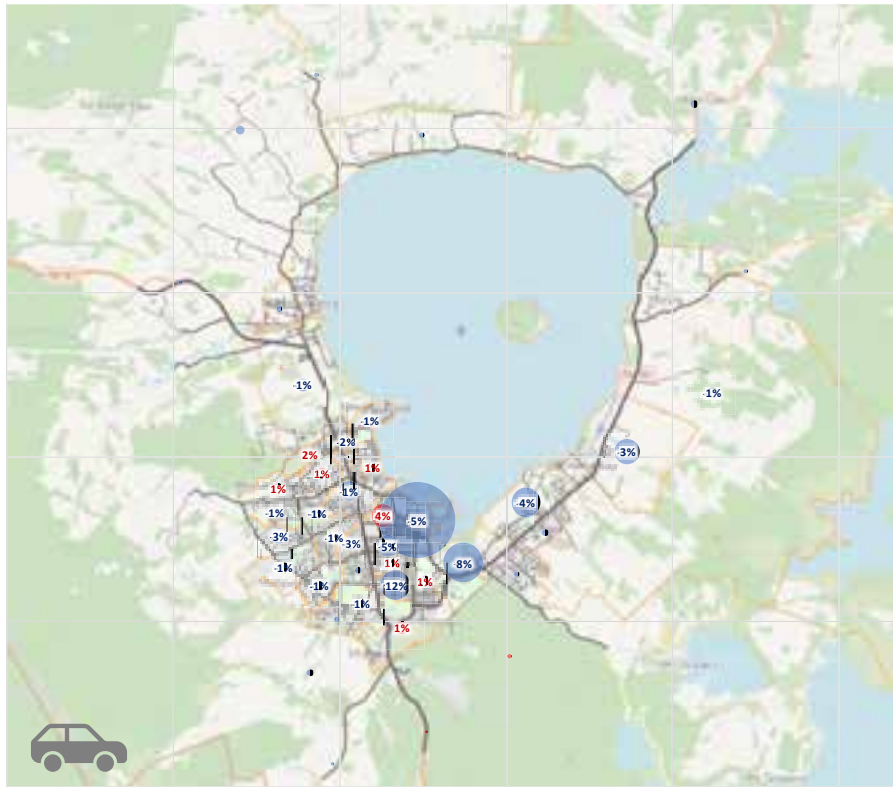
Emission Growth (CO2-e, kilo-tonnes)

Scenario 4 – Eastside Corridor Growth – Base Network



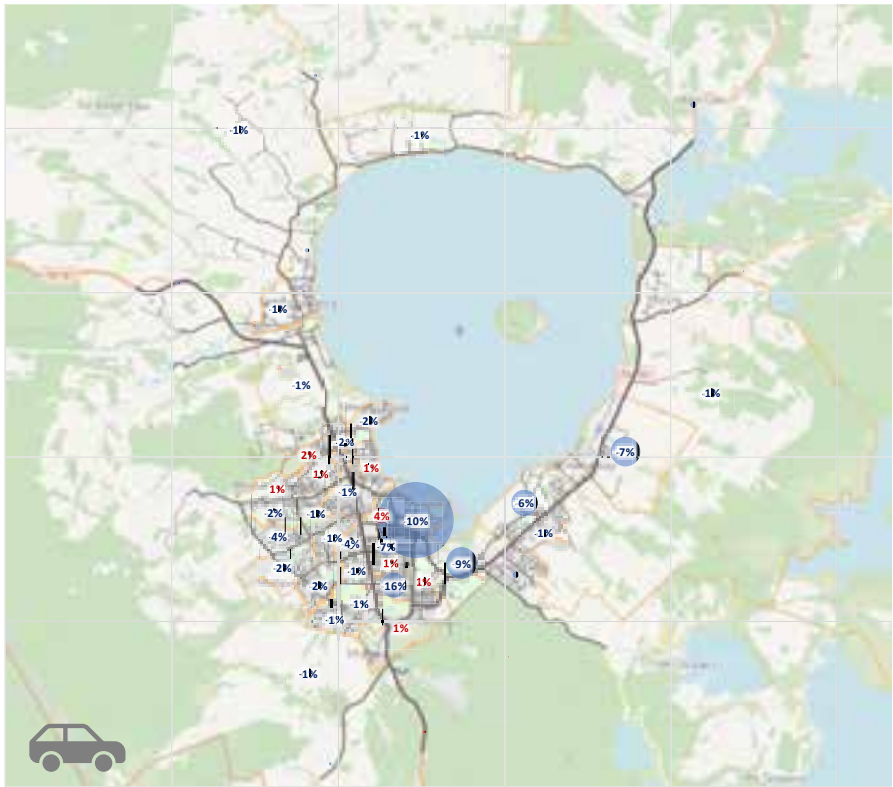
Scenario 4 – Eastside Corridor Growth – Base Network + PT Improvements

Change in Light Emission (Option - Base): -1.7% 44.3			● Absolute Emission Increase
Base Scenario	Scen4 Landuse Base Network	211.7	● Absolute Emission Decrease
Option Scenario	Scen4 Landuse Test0 Network	256.1	(% change from base scenario)



Scenario 4 – Eastside Corridor Growth – Base Network + PT Improvements + Increase Parking Cost

Change in Light Emission (Option - Base): -2.8% 44.3			● Absolute Emission Increase
Base Scenario	Scen4 Landuse Base Network	211.7	● Absolute Emission Decrease
Option Scenario	Scen4 Landuse Test1 Network	256.1	(% change from base scenario)



Scenario 4 – Eastside Corridor Growth – Base Network + PT Improvements + W&C Improvements

Change in Light Emission (Option - Base): **-7.4%**

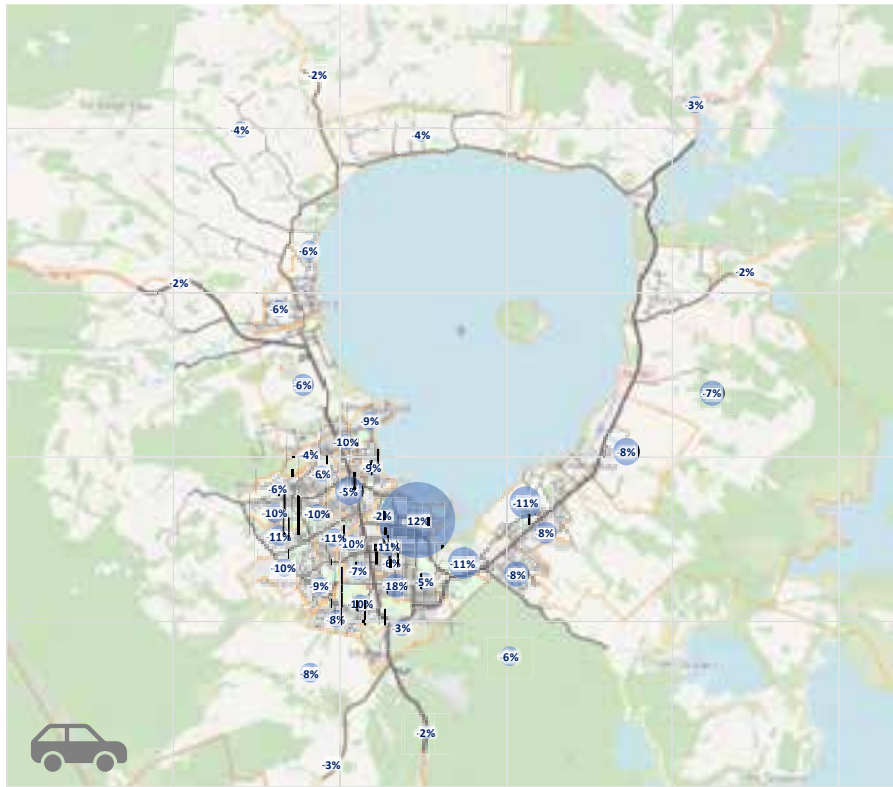
44.3

Absolute Emission Increase

Absolute Emission Decrease

(% change from base scenario)

Base Scenario	Scen4 Landuse Base Network	211.7
Option Scenario	Scen4 Landuse Test2 Network	256.1



Scenario 4 – Eastside Corridor Growth – Base Network + All Improvements

Change in Light Emission (Option - Base): **-8.9%**

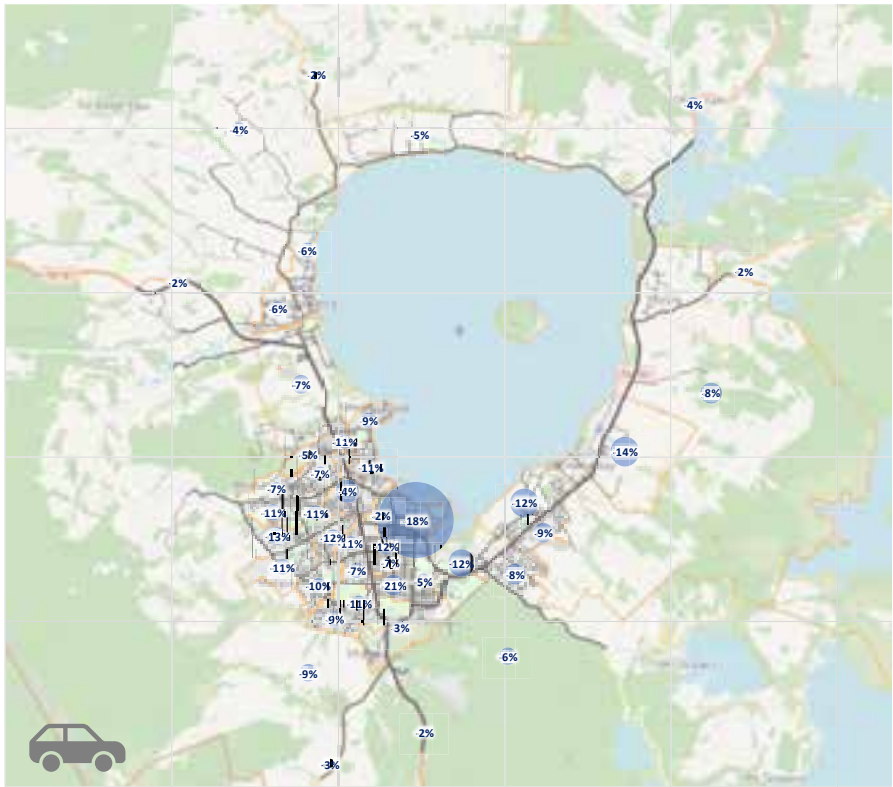
44.3

Absolute Emission Increase

Absolute Emission Decrease

(% change from base scenario)

Base Scenario	Scen4 Landuse Base Network	211.7
Option Scenario	Scen4 Landuse Test3 Network	256.1



Appendix 6 – Summary of Engagement and Consultation Report

Rotorua Future Development Strategy (FDS) Summary of Engagement and Consultation Report

1. Introduction & Approach

For the development of the Rotorua Future Development Strategy (“FDS”) and in accordance with the requirements of the National Policy Statement on Urban Development 2021 (“NPS-UD”), Rotorua Lakes Council (“RLC”) undertook a significant level of engagement and consultation with most sectors of the community including, elected members, tangata whenua, the business community including developers and local community groups. Over the course of the last 18 months, there have been three stages of engagement.

Consultation and engagement generally took place in the form of workshops and hui with the opportunity for discussions and questions throughout presentations. Workshops were held both onsite at Council but also throughout the community at various locations. Where possible, workshops were also offered outside of work hours to encourage availability of attendees. Due to COVID-19 restrictions and upon request, workshops were also held virtually.

2. Summary of Engagement

As mentioned above the consultation and engagement on the FDS was held with a wide variety of groups. The groups were identified based on their involvement in the community (i.e., how active they have been/ are) and the nature and relevance of their inputs to the FDS. Engagement occurred in three stages allowing for feedback to be incorporated and progress to occur before re- grouping.

The list below demonstrates the core groups that Council met with when engaging on the FDS:

- Technical Advisory Group (TAG) including Government organisations
- Tangata whenua
- Councillors and Elected Members
- Developers
- Local consultants
- Community groups
- School representatives
- Neighbouring Councils

2.2 Lecture Series and Public Open Day at Rotorua Public Library

Through the middle of 2022, Rotorua Lakes Council held a series of public lectures/ information series at the Rotorua Library, Te Aka Mauri. It was at these lectures where guest speakers were invited to discuss the current housing and infrastructure situation in Rotorua. Presentation topics ranged from climate change to housing opportunities for Mana Whenua. Council officers in attendance at these sessions also answered questions as to the current Council response to the housing issues faced by Rotorua residents. They also detailed the work being done on the FDS to address growth and change.

In June 2022 following one of the lectures Council staff held a public open day for members of the public to ask questions as to the work being done at the time on both Plan Change 9-Housing for Everyone and the FDS. Although publicly advertised on the Radio, Newspaper and Social media channels, attendance at the open day was lower than anticipated.

Key themes from the engagement included:

- Water conservation and water quality is key concern and consideration for future development
- The need for strong justification to support further greenfield expansion considering the level of development enabled by Plan Change 9
- The need to consider the impact on housing affordability/ supply if greenfield opportunities are limited i.e., if greenfield opportunities are limited then there could be upwards pressure on housing in the short to medium term
- Aspirations for Papakāinga development in several areas outside the urban area

2.2 Stage 1 - Early Engagement

The first stage of engagement began in early 2022. During the initial development stage of Plan Change 9 - Housing for Everyone, discussions were held with various groups where Council signalled that the Rotorua Future Development Strategy was starting to be advanced and that over the coming months Council would be meeting with all key stakeholders to discuss their vision and aspirations for Rotorua over the next 30-year period.

These sessions were predominantly held virtually and due to Covid. The focus of these meetings was to outline the FDS concept, establish how the FDS development was to occur and establish the most appropriate way to continue to engage with all key stakeholders.

In March, formal discussions with neighbouring territorial authorities were held, giving the Rotorua Lakes Council the opportunity to update them on the FDS work program. The Councils' involved in these discussions included the following:

- Tauranga City Council
- Whakatāne District Council
- Western Bay District Council
- South Waikato District Council
- Taupō District Council

2.3 Stage 2 – Update on progress and current thinking

In March 2022, a series of meetings/ workshops took place. The purpose of these initial meetings was to inform the community of the upcoming work commencing on the FDS and get their feedback on key issues and aspirations. It was at these workshops that

discussions were held as to the purpose of the FDS and the opportunities that it provided, in particular identifying key areas for growth in the district over the next 30 years through to 2053.

2.4 Stage 3-Assessment and Evaluation of growth scenarios and multi criteria analysis

During the Stage 3 engagement, RLC and relevant subject matter experts undertook a multi criteria analysis (“MCA”) whereby all potential growth areas were assessed to determine their suitability and appropriateness against a range of criteria. These MCA sessions were an opportunity to undertake a strategic assessment of the proposed areas and were evaluated based on their suitability for future residential, or business development.

At these sessions, the project team and relevant key experts worked through each area and discussed and agreed appropriate scoring against each criterion. Once the scoring was completed a strategic assessment of scenarios was undertaken summarising the advantages and disadvantages. This included strategic level commentary on whether the scenarios provided sufficient capacity overall.

The workshops with the key/subject matter experts (SME) were in relation to the following themes outlined below:

Theme	Expert	Date
Cultural Values	SME from Bay of Plenty Regional Council	7 February 2023
Natural hazards	SME from Bay of Plenty Regional Council)	2 February 2023
Biodiversity and Fresh Water	SME from Bay of Plenty Regional Council)	23 February 2023
Carbon Emissions/ Vehicle Kilometres Travelled (VKT) Transport Assessment	Work lead by Beca Consultants Limited with TAG group members	3 February 2023

3. Groups Engaged

1. Elected Members

Timeline of Meetings/Workshops with Elected Members

Invitees/Attendees	Date	Purpose/ Actions
Rotorua Lakes Council Elected Members (incl. Te Tatau o Te Arawa	22 February 2022	Briefing and introduction
	22 March 2022	Future Development Strategy content and project area
	6 April 2022	Constraints and opportunities to growth

and Community Boards)	1 June 2022	Draft spatial scenarios for growth
	February 2023	Outcome of evaluation of scenarios

3.2 Technical Advisory Group (TAG)

Early in 2022, the Rotorua Lakes Council established a Technical Advisory Group (“TAG”), which was initially made up of members of the Bay of Plenty Regional Council (“BOPRC”), Ministry for Housing and Urban Development (“MHUD”), Waka Kotahi (“WK”) and Kāinga Ora (“KO”). Ministry of Education (“MoE”), Ministry for the Environment (“MfE”), Te Tatau o Te Arawa and Te Arawa Lakes Trust (“TALT”) were later included.

This group was established to provide technical advice and ensure that the Rotorua FDS aligned with key Central and Regional policy direction and how Government agencies could support with implementation. Progress on the FDS was presented to this group that met monthly to every 6 weeks. A key function of this group was also to identify any relevant constraints that their organisations were aware of and to provide technical inputs. As a collective the group was a sounding board and functioned as an effective steering group for the FDS project.

The Bay of Plenty Regional Council has been key in ensuring all relevant constraints to development were identified particularly in relation to natural hazards and MHUD, KO and WK provided advice in relation to ‘accessibility’ mapping, housing choice, housing affordability and transport consideration. MOE ensured we considered the constraints on schools in the growth areas,

Timeline of Meetings/Workshops with TAG

Invitees/Attendees	Date	Purpose
Technical Advisory Group (“TAG”): - Plenty Regional Council (“BOPRC”), Ministry for Housing and Urban Development (“MHUD”) - Waka Kotahi (“WK”) Kainga Ora (“KO”). Ministry of Education (“MoE”)	22/02/2022	To discuss work programmes and scope of the FDS and Intensification PC (Plan Change) with the TAG group
	12/04/2022	Discuss progress of FDS, including the evidence base, opportunities and constraints analysis and next steps
	26/05/2022	Discuss Revised outcomes, spatial scenarios, evaluation framework, Plan Change 9 and TAG feedback in April
	24/08/2022	Future Development Strategy presentation was provided that outlined progress to date, key next Steps and November engagement
	21/10/2022	Future Development Strategy presentation was provided that outlined- progress since last TAG, the FDS outcomes and evaluation framework, a brief recap on the initial spatial scenarios, preliminary findings from the capacity analysis (residential), NPS-HPL

Invitees/Attendees	Date	Purpose
- Ministry for the Environment ("MfE") - Te Tatau o Te Arawa and Te Arawa Lakes Trust ("TALT") - Relevant RLC Staff		implications, VKT Analysis, Next steps and timeframes going forward
	24/11/2022	Future Development Strategy presentation was provided that outlined further refined scenarios and capacity, MCA of business sites, underutilised urban land analysis, TAG feedback received, questions and next steps
	FEB/MARCH 2023	The project team met with individual TAG group members to discuss specific aspects of the MCA analysis.
	22/02/2023	The key focus of the discussion was the MCA Evaluation of the Future Development Strategy
	14/04/2022	Future Development Strategy presentation was provided that outlined the outcome of MCA analysis and preferred growth scenario, assessment, outcome of Councillor workshop/direction, draft infrastructure/implementation approaches (key focus of TAG discussion), Next layer of detail e.g., centres hierarchy & long-term intensification and next Steps (incl. The FDS Public Engagement Process)

3.3 Developers

Early engagement and consultation was held with members of the Rotorua development community through 2022 and in early 2023. The focus of these discussions was on the current residential and commercial development potential in Rotorua and also their plans and expectations for the future residential development. A summary of these discussions and the feedback received is outlined in the table below.

Timeline of Meetings/Workshops with Developers

Invitees/Attendees	Date	Purpose/ Actions
Developers: - Classic Builders - Watchman Capital - Kainga Maha - Holmes Group - TPB Properties - R&B Consultants - Classic Developments	10/03/2022	To provide an overview of the development of the Future Development Strategy and to receive feedback from developers
	Mar-Apr 2022 (and through until early 2023)	Between March and April 2022, Council held one on one meetings with developers to discuss their perspective on growth and development and their aspirations

Invitees/Attendees	Date	Purpose/ Actions
- Owhata 2B - Nicholls Group - Te Arawa Group Holdings (TAGH) - Penny Homes 3 Dukes Homes - Oaks Property - Nicholls Group - Ngāti Whakaue Tribal Lands - CH Builders - Veros	5/05/2022	for Rotorua over the short, medium, and long term. Due to other competing commitments developers were unable to attend the session.

Summary of feedback received from Developers

Developers raised a variety of issues, considerations, opportunities, and insights in relation to future development for Rotorua. The key feedback from developers is summarised below:

- Geothermal and natural hazard constraints and current rules in the district plan are a key 'roadblock' at the resource consent stage. This also relates to Regional Council resource consents also.
- There is development interest in Ngongotahā, Fairy Springs, and parts of Owhata Lakefront
- There is concern about development on both State Highway 5 and State Highway 36 Corridors at once (due to the likely staged approach to state highway upgrades/ investment from Waka Kotahi)
- There is some interest in rural lifestyle development in Ngongotahā and Hamurana
- It is likely that it will take considerable time for the Rotorua market to deliver high density residential typologies. Areas in and around the city centre, proximate to the lakefront, was outlined as the most viable location/s for apartment development.
- The preference from business was to locate on east side along state highway 30 due to proximity to Tauranga Port. Limited interest was shown in relation to business opportunities in the western part of Ngongotahā e.g. Tarukenga
- Iwi expressed aspirations for commercial, residential and papakāinga development
- There was a mixed view from developers with respect to the potential uptake up of medium density housing once plan change 9 is implemented as the feeling was that market currently is not ready to deliver medium density typologies at scale. It is likely that medium density housing will become more viable in the longer term.
- FDS is a great opportunity to think well into the future for Rotorua with respect to the delivery of the ideal urban form outcome
- There is a need to consider housing affordability

- There is need for enabling rules to encourage the developers to come to Rotorua

3.4 Local Consultants

Discussions were held with members of the Rotorua Consultant community. Given their experience and understanding of residential and commercial development opportunities and constraints in Rotorua. The Council also took the opportunity to assess their thoughts and opinions with respect to future of development in the Rotorua district. A summary of these discussions and the feedback received is reflected below.

Timeline of Meetings/Workshops with Consultants

Invitees/Attendees	Date	Purpose/ Actions
Consultants: • Flaherty Survey and Mapping • Geomatic Surveys Ltd • Hayson Knell • Landhelp Limited • Lysaght • Mckenzie and Co • Sigma Consultants Ltd • Stamm Surveys Limited • Stratum Consultants Ltd • Surveyone Limited • The Property Group • Veros • AH Architectural Design & Drafting LTD • 7D Architecture Ltd • Black Bear Design Studio • Darin Grant Design • Stratum Rotorua • Cheal • Bishop Architecture • RPC Land Surveyors • Burton Consulting Ltd • DCA Architects	15/03/2022	An overview of the development of the Future Development Strategy was provided and feedback received. Following the workshop, the presentation was emailed, and another opportunity was given to provide feedback. One on one discussions with some consultants resulted from that.
	5/05/2022	A discussion was held on what has been developed to date regarding the FDS. The attendees were then taken through opportunities, constraints, issues, and options in relation to FDS.

Summary of feedback received from Consultants

- Concern was expressed about the current infrastructure constraints.
- Natural hazard concerns were also raised with respect to development in the geothermal field and with respect to the impact of flooding.
- There was a feeling that Council should encourage comprehensive residential infill.
- Industrial development was seen to be constrained by the under supply of land
- It was stated that Council should encourage mixed-use development within CBD to influence the development of greater vibrancy
- The prevailing view was that higher density residential development should only be around established shopping and commercial areas
- It was noted that the proposed high density zone extent shown in PC9 also has flooding constraints.
- Some consultants noted concern over the current lack of plan enabled greenfield land
- There was a view that public transport needs to be reliable to service an increase in demand.
- Some consultants outlined that there is currently high demand for medium density.
- It was noted that the racecourse offers immense opportunity for a comprehensively planned residential area for medium to high density development, should it become available.
- Consultants also indicated that the market responds better to freehold title rather than unit titles with fewer restrictions.
- It was argued that “Mum and Dad” developers are more likely to develop in line with the status quo resulting in low density infill – as multi-level construction costs are a lot higher.
- Council was asked to consider incentives for higher density developments.
- The feasibility constraints of higher density development e.g., 3 storey walk-ups to apartments, were noted
- Concerns were raised that sporadic high rise apartment buildings will be developed in areas with inadequate parking and insufficient transport infrastructure and services

4. Iwi and Hapū Engagement

The Rotorua District has a significant amount of Whenua Māori. Currently there are approximately 53 million hectares of Whenua Māori, which makes up almost 20 per cent of the district’s land area. Whenua Māori is largely rural. However, in Rotorua, 13 per cent of the urban area and 20 per cent of the rural area, is Whenua Māori. In total, there are 1,439 Whenua Māori blocks, varying in size from larger rural lots to smaller urban allotments.

A key function of the FDS and a requirement of the NPS-UD is to include a clear statement of iwi and hapū aspirations for urban development, which the Council must take into account. Therefore, over the last eighteen months, the Rotorua Lakes Council has worked closely with all relevant iwi groups within the Rotorua District to ensure the FDS clearly identifies and responds to the aspirations of mana whenua and iwi. The Rotorua Lakes Council met with the following Iwi groups and organisations.

In order to ensure that all relevant iwi within Rotorua were given the opportunity to engage, there were four targeted consultation Hui held. This was organised spatially in terms of Eastern, Central, Western (including Ngongotahā) and the rural area/s. Preceding this, several hui were held which all groups were invited to attend. This focussed on broad aspirations as well as issues and opportunities for future growth.

Where Iwi and Hapū representatives were unable to attend, standalone one on one hui were organised.

Timeline of Meetings/Workshops with Iwi and Hapū

Group	Date	Purpose/ Actions
Iwi and hapū - Ngāti Tura Ngāti Te Ngākau Hapū Trust - Ngāti Ngararanui Iwi Trust, Te Tahuu o Tawakeheimoa Trust - Te Maru o Ngāti Rangiwehē Iwi Authority - Raukawa Settlement Trust - Te Rūnanga o Ngāti Kea Ngāti Tuara - Tūhourangi Tribal Authority - Ngāti Roro o terangi Hapū Trust - Ngāti Uenukukopako Iwi Trust - Te Komiti Nui o Ngāti Whakaue - Ngāti Whakaue Tribal Lands Trust - Pukeroa Ōruawhata Trust	14/02/2022	The workshop discussed the key issues and concerns, and collectively discussed the objectives and high-level aspirations for urban growth and housing in Rotorua. The korero from this workshop will affect a range of Council planning projects that address how we facilitate sustainable urban growth; enable more housing choice through intensification; promote greater access to housing; ensure good housing outcomes and how we manage hazard risk (such as flooding).
	14/03/2022	Discussion at this session focussed on progress on the Future Growth Strategy and changes to the District Plan to enable housing (through plan change 9, PC9). A summary of the engagement and workshops on Growth and Housing that had been undertaken to date was given. This included the following: - The first hui in February was a first step in planning and delivering a work programme to support better urban growth and more homes (and types of homes) in Rotorua. - The second hui on 14 March discussed in more detail the FDS for

Group	Date	Purpose/ Actions
• Tiki Te Kohu Ruamano Ahu Whenua Trust • Ōwhatiura 1B2C Ahu Whenua Trust		Rotorua and the changes to the District Plan to enable housing. • We also held a papakāinga workshop to identify issues with the current papakāinga rules.
• Ōwhatiura South 5 Inc • Ōwhata 2B Ahu Whenua Trust • Ōwhata 7 Ahu Whenua Trust • Tauhara North Trust • Ōhinemutu Committee • Te Papaouru marae, Tunohopu marae • Te Kuirau marae • Hurungaterangi marae • Hinemihi marae • Owhata Marae • Tumahaurangi Marae • Waikuta Marae • Te Komiro • Tatau Pounamu-Eastside Collective • Te Tatau o Te Arawa • Te Arawa River Iwi Trust • Te Arawa Lakes Trust • Te Maru o Ngāti Rangiwewehi • Te Tahuhu o Tawakeheimoa Trust • Ngāti Rangiteaorere Koromatua Council • Ngāti Pikiao Iwi Trust	4/05/2022	The workshop focused on the development of Rotorua's FDS. It was explained that the FDS would indicate where Council expects new housing and business growth to be located, what kind of development (commercial, residential) is expected, and what infrastructure would be needed to support that growth. During this session it was discussed with attendees what their aspirations were with respect to the growth and development of our District over the next 30 years.

Group	Date	Purpose/ Actions
• Ngāti Rongomai Iwi Trust • Ngāti Makino Iwi Authority • Ngāti Tarawhai Iwi Trust • Te Runanga o Ngāti Kea Ngāti Tuara Trust • Te Mana o Ngāti Rangitihi • Ngāti Tahu Ngāti Whaoa Rūnanga Trust • Rotomā Inc • Tauhara North No 2 • Rotoiti 15 Trust		
Ngongotahā Hapu	7/07/2022	A presentation was given by RLC to discuss and get feedback on the draft spatial scenarios for the Future Development Strategy
Ngati Rangiwehewehi	30/09/2022	A presentation was given by RLC to discuss and get feedback on the draft spatial scenarios for the Future Development Strategy
Rotorua Iwi & Hapū located in the West	30/10/2022	A presentation was given by RLC to discuss and get feedback on the draft spatial scenarios for the Future Development Strategy
Uenukukopako Iwi Trust	7/12/2022	A presentation was given by RLC to discuss and get feedback on the draft spatial scenarios for the Future Development Strategy
Pukeroa Oruawhata	7/12/2022	A presentation was given by RLC to discuss and get feedback on the draft spatial scenarios for the Future Development Strategy
Ngāti Rangiteaorere	9/12/2022	A presentation was given by RLC to discuss and get feedback on the draft spatial scenarios for the Future Development Strategy
Peka Lands Trustees	15/12/2022	A presentation was given by RLC to discuss and get feedback on the draft spatial

Group	Date	Purpose/ Actions
		scenarios for the Future Development Strategy
Te Arawa Lakes Trust	10/02/2023	A discussion took place in relation to Iwi aspirations and cultural values for the FDS. Noting that TALT were involved in and invited to attend the additional technical sessions that evaluated the spatial scenarios.
Te Tatau o Te Arawa	14/02/2023	A discussion took place in relation to Iwi aspirations and cultural values for the FDS. Noting that Te Tatau were involved in and invited to attend the additional technical sessions that evaluated the spatial scenarios.
Ngāti Whakaue Tribal Lands	15/02/2023	A hui was held in relation to future plans for development of their whenua as they relate to the draft FDS and to get feedback on the draft spatial scenarios the FDS.

Summary of feedback received from Iwi and hapū

In general Iwi and hapū were supportive of the approach and general direction of the FDS. Many ideas and perspectives were shared during the engagement hui. Below are a few of the key points raised:

- Papakāinga aspirations throughout the district were shared, particularly in the rural areas.
- Restoration of water quality and awa was viewed as a priority.
- Character retention of cultural villages was outlined as being important – this was strong feedback received on PC9 as it related to the Residential 3 zone.
- There was a desire to enable housing and development that supports people to return to their whenua.
- The definition of papakāinga was expressed as being greater than providing a housing function
- Revitalisation of the city centre was viewed as important
- Iwi and hapū noted that the FDS needs to address the constraints around the feasibility for Iwi to develop their whenua. Noting also that initiatives like the development of a Papakāinga toolkit will assist in this regard
- Greater heights and densities proposed through PC9 were viewed as potentially undermining tikanga values however it was noted that smaller homes may not always be suitable for Māori families.
- Communal living was expressed as a way in which people are kept strong.
- It was noted that affected party approval from adjoining landowners is hard to get when Iwi are seeking to develop their land
- Wellbeing issues were outlined as being particularly important rather than just housing and business capacity issues
- It was asked that the FDS consider the potential unintended consequences of development for Maori

- A focus on the restoration, protection and growth of traditional areas was highlighted
- Iwi and hapū noted concerns in relation to growth and development and the impact of natural hazard risk due to global warming and climate change.
- An appeal was made for infrastructure provision in Tikitere to support housing development
- It was outlined that there is a need to upgrade overland flow paths.
- It was stated that there are infrastructure needs at Mamaku and potential risk to an aquifer
- General feedback was that the industrial and commercial development should not occur in the Māori villages
- Water sensitive green infrastructure was outlined as being important and should therefore not be included in development

5. Community Stakeholders

Online zoom workshops were held with members of various community groups and organisations. These workshops were held in the evenings after work hours and engagement online seemed to be preferred.

Timeline of Meetings/Workshops with Community Stakeholders

Group	Date	Purpose/ Actions
Advocacy & Information - Chamber of Commerce - Community Advisor at DIA - Grey Power Rotorua Inc.	15/03/2022	A presentation was given by RLC on the overview of the development of the FDS and feedback was received. Following the workshop, the presentation was emailed, and another opportunity was given to provide feedback.
Churches The Salvation Army		
Community Group - Age Concern Rotorua District - BOP (Rotorua) Indian Association - BOP Philippine Friendship Society Inc. - Cook Island - Fordlands Community Association - Ko Te Tuara Totara O Fordlands - Kaharoa Hall and Community Assn - Kaingaroa Forest Village Council Inc - Lake Okareka Community Assn Inc	5/5/2022	A presentation was given by RLC, and a discussion was held on what has been developed to date regarding the FDS. Attendees were taken through opportunities, constraints, issues, and options in relation to FDS.

Group	Date	Purpose/ Actions
• Lake Rotoiti Community Assn Inc • Lake Rotoma\Lake Rotoehu Community Assn Inc • Lake Tarawera Community Group Inc • Lakes Water Quality Society • Linton Park Community Centre • Mamaku Residents Association • Mokoia Community Assn Inc • Ngongotaha Community Forum • Progress Mamaku • Progress Ngongotaha Inc - Kokiri Ngongotaha • Rotoma & Rotoehu Community Assn • Rotorua Multicultural Council Inc • Rotorua/Taupō Federated Farmers • Te Koutu Community Action Group • Western Heights Community Assn Inc • Restore Rotorua • Evolve Rotorua • Kaitao Rotohokahoka Collective • Cook Island Community Hall • Tatou pounamu • Mokoia Community Association • Neighbourhood support Coordinators Resident & Ratepayer Groups • Hamurana & Awahou Ratepayers & Residents & Assn • Hannahs & Holdens Bay Residents & Ratepayers Assn		

Group	Date	Purpose/ Actions
• Lake Rerewhakaaitu Ratepayers & Residents • Lake Tarawera Ratepayers & Residents Assn. • Ngakuru & Waikite Valley Ratepayers Assn. • Rotorua District Residents & Ratepayers Inc • Tihi-o-tonga Ratepayers Assn Community Support • Rotorua Sustainable Business Charter • Rotorua Walking Festival • Toi te Ora Public Health Unit • Western Heights Medical Centre Family / Whanau / Children / Youth • Safe Rotorua		

Summary of feedback received from community groups

- There was broad support for medium density development, as long as it was established in the right locations, but attendees stressed that an increase in medium density would need to be balanced with suitable open space and access to other essential amenities
- It was emphasised that we need to ensure that our city is accessible from a transport/ walking and cycling perspective
- It was stated that it would be good to see a mix of housing typologies to suit various people's needs
- It was further outlined that consideration needs to be given to alternative ways to get people access to housing, for example tiny homes and Papakāinga.
- Concerns were raised around seeking more housing within the Lakes A Zone.
- Council was asked to ensure the community is well informed along the way i.e., “bring the community with you”
- It was noted that the FDS needs to consider school capacity and transport infrastructure
- It was outlined that connections between health of the environment, health of the city and the wellbeing of the people are important and that a holistic approach to development needs to be taken
- It was stressed that Council needs to ensure good design happens from the start/ outset of the development process
- Climate change adaptation and resilience
- There was a preference shown for creating greater densities in the city, as it encourages connection in space and walkability within higher density areas

6. Key Business Stakeholders

In October 2022 key business operators in the Rotorua District were identified and the Rotorua Lakes Council sought to engage with their representatives to discuss the plans for their businesses over the short, medium, and long term and get their feedback on the draft spatial scenarios for the FDS.

Timeline of Meetings/Workshops with Business Stakeholders

Invitees/Attendees	Date	Purpose/ Actions
Volobuild	26/10/2022	A presentation was given by RLC on the FDS outlining the growth scenario options. This was followed by a discussion to gain feedback.
Metlifecare	26/10/2022	A presentation was given by RLC on the FDS outlining the growth scenario options. This was followed by a discussion to gain feedback.
The New Zealand Geothermal Association	26/10/2022	A presentation was given by RLC on the FDS outlining the growth scenario options. This was followed by a discussion to gain feedback.
The Rotorua Chamber of Commerce	26/10/2022	A presentation was given by RLC on the FDS outlining the growth scenario options. This was followed by a discussion to gain feedback.
Rotorua Accommodation Network	27/10/2022	A presentation was given by RLC on the FDS outlining the growth scenario options. This was followed by a discussion to gain feedback.
Telfer Young	28/10/2022	A presentation was given by RLC on the FDS outlining the growth scenario options. This was followed by a discussion to gain feedback.
Patchell Group	31/10/2022	A presentation was given by RLC on the FDS outlining the growth scenario options. This was followed by a discussion to gain feedback.
Red Stag Timber	31/10/2022	A presentation was given by RLC on the FDS outlining the growth scenario options. This was followed by a discussion to gain feedback.
New Zealand Home Loans	31/10/2022	A presentation was given by RLC on the FDS outlining the growth scenario options. This was followed by a discussion to gain feedback.
Cetogenix	31/10/2022	A presentation was given by RLC on the FDS outlining the growth scenario options. This was followed by a discussion to gain feedback.
Scion	1/11/2022	A presentation was given by RLC on the FDS outlining the growth scenario options. This was followed by a discussion to gain feedback.
Transpower	9/11/2022	A presentation was given by RLC on the FDS outlining the growth scenario options. This was followed by a discussion to gain feedback.

Invitees/Attendees	Date	Purpose/ Actions
SOHO Group	22/11/2022	A presentation was given by RLC on the FDS outlining the growth scenario options. This was followed by a discussion to gain feedback.
Pukeroa Oruawhata Trust	16/12/2022	A presentation was given by RLC on the FDS outlining the growth scenario options. This was followed by a discussion to gain feedback.
Toi Te Ora Public Health	16/12/2022	A presentation was given by RLC on the FDS outlining the growth scenario options. This was followed by a discussion to gain feedback.

Summary of feedback received from business stakeholders

- Most business stakeholders noted that the east side was preferred for future growth and development due to the proximity along State Highway 30 through to the Port of Tauranga.
- It was outlined that there is currently limited commercial industrial space for existing businesses to expand in Rotorua.
- It was noted that there is a lack of plan enabled light industrial land available for business to establish or relocate to.
- It was further noted that any future zoned industrial needs to be located away from of residential land due issues experienced in locations like Ngāpuna
- Some businesses in town like the Fairy Springs area indicated that if more suitable land was available for onsite manoeuvring, logistics and co-location with similar business they would relocate. Some on the existing light industrial sites are getting congested
- It was stated that the cost of manufacturing is increasing. Input costs are increasing. Specialist labour is getting harder to find and the cost of labour is also increasing
- It was noted that efficiency is key to reducing costs i.e., reducing travel costs and wait times.

7. Engagement with Schools

As part of the community engagement, Council engaged with school representatives including principals, board members and teachers discussing with them their aspirations for Rotorua and its growth and development. These conversations were included in March to May 2022 community engagement sessions, but also included were some further informal discussions with principals.

Timeline of Meetings/Workshops with School (Principals) Representatives

Group	Date	Purpose/ Actions
Schools - Secondary • Bethlehem Chapman College • John Paul College • Murupara Area School	15/03/2022	RLC provided an overview of the development of the FDS and then received feedback. Following the workshop, the presentation was emailed, and

Group	Date	Purpose/ Actions
• Reporoa College • Rotorua Boys High School • Rotorua Girls High School • Rotorua Lakes High School • Te Kura Kaupapa Maori o Ruamata • Te Kura Kaupapa Maori o Te Koutu • Toi Ohomai Institute of Technology • Waiariki BOP Polytechnic • Western Heights High School • Rotorua Principals Association	5/5/2022	another opportunity was given to provide feedback. A presentation was given by RLC, and a discussion was held on what has been developed to date regarding the FDS. Attendees were taken through opportunities, constraints, issues, and options in relation to FDS.
Schools - Intermediate • John Paul College • Kaitao Intermediate School • Kea Street Specialist School • Mokoia Intermediate School • Reporoa College • Rotorua Intermediate School • Te Kura Kaupapa Maori O Te Koutu		
Schools - Primary • Aorangi Primary School • Broadlands School • Glenholme Primary School • Horohoro Primary School • Kaharoa Primary School • Kaingaroa Forest School • Kawaha Point Primary School • Kea Street Specialist School • Lake Rerewhakaaitu Primary School • Lake Rotoma School • Lynmore Primary School • Malfroy Primary School • Mamaku Primary School • Mihi Primary School • Ngakuru School • Ngongotaha School		

Group	Date	Purpose/ Actions
• Otonga Primary School • Owhata Primary School • Reporoa Primary School • Rotokawa Primary School • Rotorua Primary School • Rotorua Seventh-Day Adventist School • Selwyn School • St Mary's Catholic Primary School • St Michael's Catholic School • Sunset Primary School • Te Kura Kaupapa Maori o Hurungaterangi • Te Kura Kaupapa Maori o Te Rotoiti • Te Kura Kaupapa Maori o Ruamata • Te Kura Kaupapa Maori o Te Koutu • Upper Atiamuri School • Waikite Valley School • Westbrook School • Western Heights Primary School • Whakarewarewa School • Whangamarino School • Galatea School		
School • Te Rangihakahaka • Te Kura Kaupapa Māori o Huiarau • Te Kura Kaupapa Motuhake o Tawhiuau • Te Kura Toitu o Te Whaiti-nui-a-Toi • Te Wharekura o Ngāti Rongomai • Midland Stand • Rotorua Specialist School		

On 20 May 2022 RLC held workshops with Primary and Secondary School students where council staff ran various exercises to explain to the students the current FDS program and to hear their aspirations for Rotorua over the next 30 years. The schools were as follows: Aorangi School, Rotorua Intermediate, Otonga School, Rotorua Primary School, Lakes High School,

Rotorua Boys High, and Te Koutu Kura. This feedback assisted the project team in developing the FDS as it provided the perspective of the younger generation.

Timeline of Meetings/Workshops with School Students

Group	Date	Purpose/ Actions
Primary/Intermediate Schools: - Aorangi Primary School - Otonga Primary School - Rotorua Primary School - Rotorua Intermediate School High Schools: - Rotorua Lakes High School - Rotorua Boys High School - Te Kura Kaupapa Māori o Te Koutu	20/05/2022	Understand the aspirations of the younger generation for the future of Rotorua and how it should grow. RLC provide a presentation and then the students developed posters of a future Rotorua which they presented.

Feedback from these sessions included the following:

- There was general acknowledgment and understanding that medium density living is needed within Rotorua.
- A strong desire was expressed to address climate change through the way that we plan our city.
- They also expressed that they would like to see an increase in the number of parks, and activities within the parks.
- The connection of people to a healthy environment was outlined as being important.
- They indicated that they would like the public transport connections to be strengthened, including bus network, bike paths, and accessible and safe walking paths.
- A strong focus was placed on the creation of a community.
- They outlined that it is important that citizens are able to walk/bike everywhere.
- They felt that the public transport system should be strengthened and relied upon
- An emphasis was placed on responding to climate change and resilience.
- Greenspaces were viewed as important and mixed in with the residential land.
- A preference was for a graduation of housing heights moving back from the city centre where heights would be greatest to the suburbs where they would be lowest.
- It was outlined that it is important that there is a variety of housing types to suit everyone's needs.
- There was interest in smaller houses for the next generation.
- An emphasis was placed on the provision of affordable, dry, and healthy homes.