

Spatial Mapping Report

Rotorua Future Development Strategy

10 October 2022

B&A
Urban & Environmental

Prepared for:
Rotorua Lakes Council

B&A Reference:

19079

Status:

Draft Revision 1

Date:

10 October 2022

Prepared by:

A handwritten signature in black ink, appearing to read 'Cam Wallace', with a stylized, flowing script.

Cam Wallace

Partner, Barker & Associates Limited

Contents

1.0	Introduction	4
1.1	Background	4
1.2	Purpose	4
1.3	Strategic Planning Act & Regional Spatial Strategies	4
1.4	Project Structure	5
2.0	Spatial Scope	5
2.1	Rotorua District	5
2.2	Rotorua Urban Environment	6
3.0	Development Constraints Summary	7
4.0	No Go Constraints	9
4.1	Natural Hazards	9
4.2	Ecological Areas	9
4.3	Protected Areas	10
5.0	Go Carefully Constraints	11
5.1	Natural Hazards	12
5.2	Highly Productive Land	13
5.3	Ground Conditions	14
5.4	Māori Land	14
5.5	Cultural Features	15
5.6	Strategic Infrastructure	15
5.7	Economic Constraints	17
5.8	Other considerations	17

1.0 Introduction

1.1 Background

The Rotorua Future Development Strategy (FDS) is a 30-year growth strategy for the Rotorua Lakes Council (RLC). The Rotorua FDS needs to meet the legislative requirements of the National Policy Statement Urban Development 2020 (NPS-UD). This report supports the development of the Rotorua FDS by identifying spatial elements required to support urban development and growth in accordance with the NPS-UD.

1.2 Purpose

Section 3.13(2) of the NPS-UD requires that all FDS' must spatially identify:

- (a) the broad locations in which development capacity will be provided over the long term, in both existing and future urban areas, to meet the requirements of clauses 3.2 and 3.3; and
- (b) the development infrastructure and additional infrastructure required to support or service that development capacity, along with the general location of the corridors and other sites required to provide it; and
- (c) any constraints on development.

The focus of this report is on item (c) above, however elements of (a) and (b), where relevant, are also considered.

Development constraints and other relevant considerations identified in this report are informed by established or emerging policy direction (e.g. National Policy Statement on Highly Productive Land, the Bay of Plenty Regional Policy Statement, and Rotorua District Plan). These constraints will be used to inform the development and assessment of different spatial scenarios for growth required by the NPS-UD.

The best available data which has informed this work has been drawn from a range of sources held by RLC, Bay of Plenty Regional Council (BoPRC), national agencies and infrastructure providers.

1.3 Strategic Planning Act & Regional Spatial Strategies

The Randerson Report¹ sets out the likely requirements for Regional Spatial Strategies (RSS). Of relevance to this component of the FDS, spatially related requirements include:

- (1) Areas to be protected due to economic, environmental or cultural value;
- (2) Areas to be avoided or managed due to constraints such as natural hazards and coastal inundation;
- (3) Areas where significant land use change is required for climate change mitigation and adaptation;
- (4) Areas where significant land use change is required to reduce impacts of activities on lakes, rivers, wetlands and the marine environment;

¹ New Directions for Resource Management in New Zealand (2020), pages 142-143

- (5) Identify areas suitable for future development and intensification;
- (6) Identify the need for new infrastructure corridors, major social infrastructure and other strategic investment - or opportunities to make better use of existing infrastructure (note could use the LTP as a base and identify any new strategic projects that might be needed if we identify any new development areas);
- (7) Illustrate options or scenarios (with indicative costs and timing) that reconcile these different opportunities and challenges.

Of note, matters (1) – (3) above are addressed as part of the constraints analysis which is a core requirement of an FDS under the NPS-UD. Matters (5) and (6) are also key outputs of the FDS while matter (7) must be developed to help inform the FDS.

1.4 Project Structure

The FDS spatial mapping work has been structured in a similar way to the 'Urban Form and Transport Initiative' (UFTI) constraints mapping undertaken for Tauranga City Council (TCC), Western Bay of Plenty District Council (WBoPDC) and BoPRC 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. 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 required by the Spatial Planning Bill 2022.

Similar to UFTI, this spatial mapping work has identified:

1. No go areas – areas that should not be considered for future urban development.
2. Go carefully areas – 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.

2.0 Spatial Scope

2.1 Rotorua District

In terms of the spatial scope of the FDS, it will broadly cover the entire Rotorua Lakes District. However, the nature of existing urban development patterns within the district and likely growth pressures mean that a core area around Rotorua, along with key infrastructure connections to neighbouring areas will need to form the primary focus of the FDS.

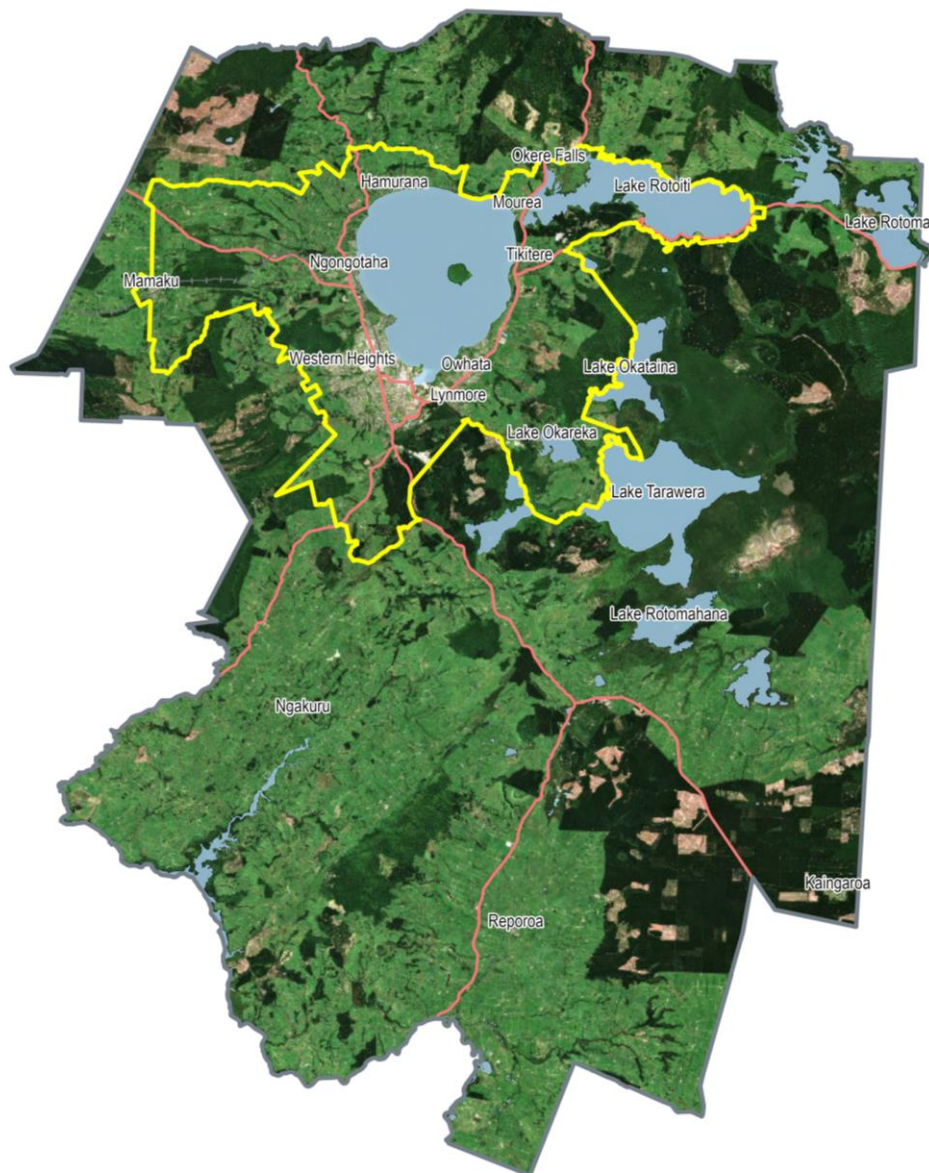


Figure 1 - Rotorua District (Functional Urban Area defined in yellow)

2.2 Rotorua Urban Environment

One of the primary purposes of an FDS under the NPS-UD is to promote long-term strategic planning by setting out how a local authority intends to achieve well-functioning urban environments in its existing and future urban areas.

As such, the core focus of the assessment and analysis contained within the FDS will be on the Rotorua Urban environment. Under the NPS-UD, this is defined as any area of land (regardless of size, and irrespective of local authority or statistical boundaries) that:

- is, or is intended to be, predominantly urban in character; and
- is, or is intended to be, part of a housing and labour market of at least 10,000 people.

For the purposes of the FDS, the core study area is on Rotorua's Functional Urban Area (FUA). FUAs are based on the linkages between where a person lives and where they work, shop, access health

care, and recreate – what can be called a person's activity space.² According to the OECD, 'a functional urban area consists of a city and its commuting zone. Functional urban areas therefore consist of a densely inhabited city and a less densely populated commuting zone whose labour market is highly integrated with the city.'

The boundaries of a FUA are based of Statistical Area 1 Units (SA1). For the purposes of analysis within the FDS, the rural SA1s without any urban or rural lifestyle zonings have been refined based on meshblock data and is shown in Figure 2 below.

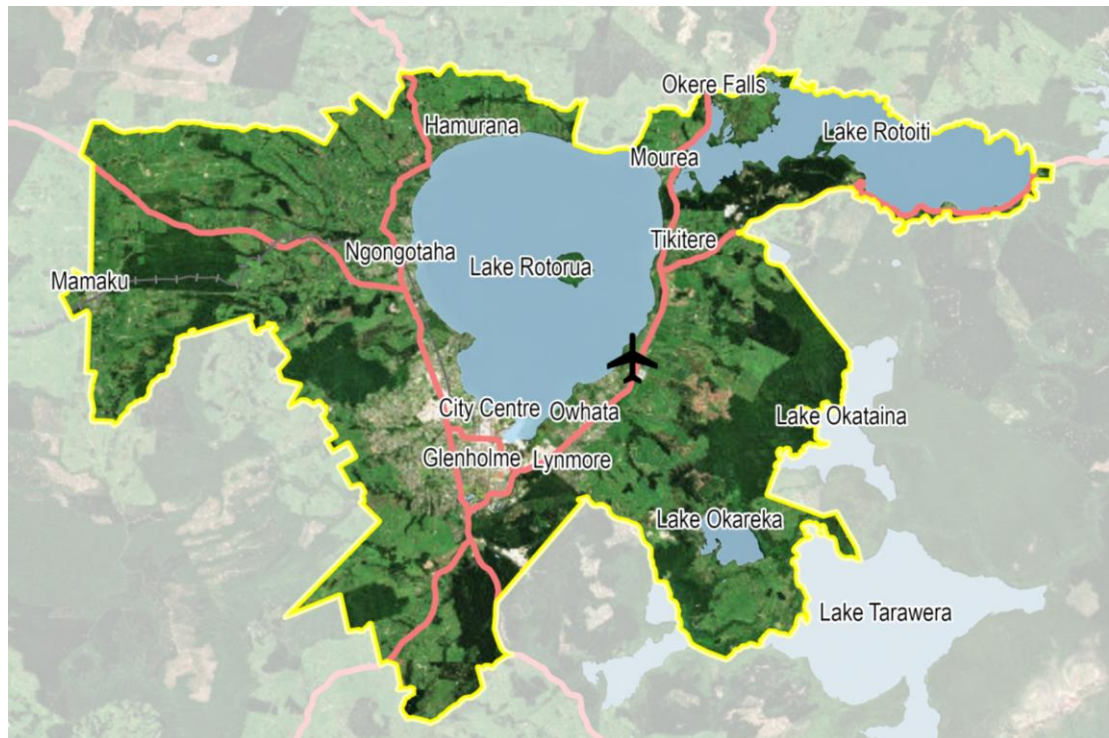


Figure 2 - Core FDS Study Area

3.0 Development Constraints Summary

'No go' constraints 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' attributes highlight the need for additional consideration in an area prior to any urban development.

² Stats NZ (2021). *Functional urban areas – methodology and classification*. Retrieved from www.stats.govt.nz.

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.

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.

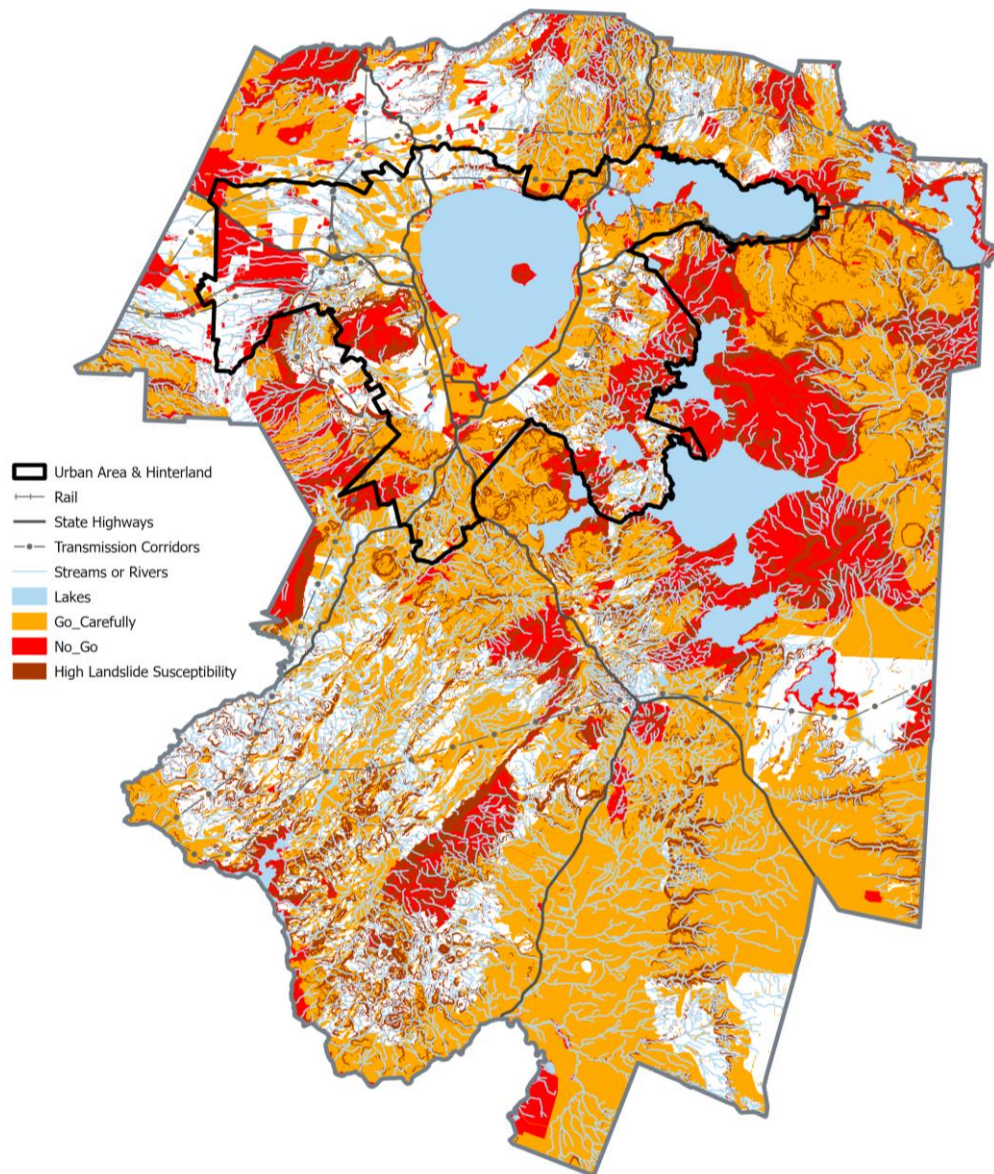


Figure 3 - Rotorua FDS Development Constraints Summary Map

In addition to the above, 'Base layers' have been included with the mapping to provide viewing context for the various attributes. Base layers were not included in the analysis for the overall polygons. These are self-explanatory so additional information is not included, for example these include state highways and rail lines.

4.0 No Go Constraints

Refer to Appendix 1 for the table documenting the sources of information for the No Go layers.

4.1 Natural Hazards

We have used the best available data to inform constraints mapping for the district. RLC is currently progressing more detailed flood hazard assessment and new data is expected in late 2022 which may impact on identified development constraints.

4.1.1 Fault Lines / Fault Avoidance Zone

RLC 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 (MfE) guidelines to avoid building across hazardous faults (Kerr et al., 2003).

4.1.2 Flooding

TBC based on results of Ngongotaha flood modelling.

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 ecological layers identified include:

- Significant Natural Areas
- Recommended Areas for Protection
- Wetlands

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. RLC have 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.

4.2.2 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.

4.3 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)

4.3.1 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

4.3.2 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.

4.3.3 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 Rotoma.

5.0 Go Carefully Constraints

Refer to Appendix 1 for the table documenting the sources of information for the Go Carefully layers.

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

- Natural Hazards (including geothermal, liquifaction 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.

5.1 Natural Hazards

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.³

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.

³ BoP RPS

5.1.3 Flooding

To be completed when info received.

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 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. Very Low to Very High, only High and Very High included.

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 development.

5.2 Highly Productive Land

The National Policy Statement on Highly Productive Land (NPS-HPL) comes 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.

5.3 Ground Conditions

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.

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.

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.

5.5 Cultural Features

There are several features relating to mana whenua across the District which have the potential to act as a “Go Carefully” constraint on development. These include Marae and the Residential 3 zone.

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 continue discussions with RLC on the Residential 3 zone provisions, and this will occur following notification of Plan Change 9 and will help inform development of the FDS.

5.5.1 Maraes & Marae Height Restrictions

Marae have been identified across the District and theses 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.

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, for the reasons outlined below.

5.6 Strategic Infrastructure

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

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

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 ("OLS") are designed to ensure the protection of aircraft flight paths and act to restrict the height of development in these locations. The OLS form part of the Designation (RDC-501) for which Rotorua Airport is the designating authority.

5.6.2 Wastewater Treatment Plant

The Rotorua Wastewater Treatment Plant (WWTP) is located near Ngāpuna along with an associated compost facility. The compost is made up of biosolids from the treatment plant, greenwaste, grass, bark and wood waste.

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 and compost facility could further constraint the operation of these facilities.

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

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.

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 doesn’t prevent development outright there are certain restrictions and buffer distances that must be adhered to which can impact on the nature and extent of future development opportunities on land where the natural gas transmission network passes.

5.7 Economic Constraints

5.7.1 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.

5.7.2 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.

5.8 Other considerations

In addition to the other “Go Carefully” considerations above, regard is also had to Heritage Sites/ Areas and Archaeological Areas. These are generally discreet 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.

Appendix 1 – Data Sources

Layer Name	Data Source	Attribution	Notes
Conservation Land	https://data.linz.govt.nz/layer/53564-protected-areas/	LINZ/ Department of Conservation	
Māori Land	https://maorilandcourt.govt.nz/your-maori-land/maori-land-data-service/#spatial-data	Ministry of Justice and Ministry for Primary Industries	
Transmission Lines	https://services3.arcgis.com/AkUq3zcWf7TVqyR9/arcgis/rest/services/TransmissionLines/FeatureServer/0	Transpower/ LINZ	NZ Powerline Cent (Topo, 1:50k)
Substation	https://services3.arcgis.com/AkUq3zcWf7TVqyR9/arcgis/rest/services/Sites/FeatureServer/0	Transpower	
Geothermal Field	http://geospatial.boprc.govt.nz/arcgis/rest/services/Public/MapServer/5	Bay of Plenty Regional Council	
Wetlands	https://data.mfe.govt.nz/layer/52676-current-wetland-extent-2013/	Ministry for the Environment	

QEII Covenants	https://services1.arcgis.com/3JjYDyG3oajxU6HO/arcgis/rest/services/QEII_National_Trust_Covenants/FeatureServer	Queen Elizabeth II National Trust	QEII_NationalTrust
Natural Gas Transmission	https://services2.arcgis.com/vt6XjJLPQlpWay7/arcgis/rest/services/Corridor/FeatureServer/0	First Gas	