NORTHERN LAKES LANDSCAPE ASSESSMENT

:: JUNE 2010

DESTINATION ROTORUA

Rotorua District Council Contact Details

Email: mail@rdc.govt.nz
Phone: +64 7 348 4199
After hours: +64 7 348 4195
Fax: +64 7 346 3143
Post: Rotorua District Council
Private Bag 3029
Rotorua Mail Centre
Rotorua 3046
New Zealand
Street Address: Rotorua District Council,
Civic Centre
1061 Haupapa Street
Rotorua
New Zealand

Prepared for

Rotorua District Council

PROFESSIONAL SERVICES CONTRACT NO. 06/100

by

Boffa Miskell Limited

U:\Auckland\2007\A07141_RdL_Rotorua_Southern_Lakes_Landscape_Assessment\Graphics\A07141_001_Northern_Lakes.indd

Contents

Executive Summary

Landscape Types and Landscape Character Areas

Outstanding Natural Features and Landscapes

Appendices

EXECUTIVE SUMMARY

Northern Lakes Landscape Assessment

Introduction

This report documents the Northern Lakes Landscape Assessment commissioned by Rotorua District Council in 2007 (Professional Services Contract No. 06/100). Similar assessments have been undertaken for the Lake Rotorua Catchment, Southern Lakes / Rural Areas and Eastern Lakes study areas. The study boundary for the Northern Lakes Landscape Assessment is shown as Figure 1.

The Landscape Types and Landscape Character Areas that are described in this report represent a spatial framework of landscape character within the Rotorua Northern Lakes Landscape Assessment study area . The descriptions should be read in conjunction with the Landscape Types and Landscape Character Areas map and the base resource maps (Appendix 1: Study Area Resource Map Book – Maps 1 – 14) that have been used to assist in defining the Landscape Types and Landscape Character Areas (refer methodology section below for definitions) .

The assessment methodology for this study has firstly involved a Landscape Character Assessment process that then provided a framework for the second stage, which has involved identifying "Outstanding Natural Features and Landscapes" (ONFL).

The *"protection of outstanding natural features and landscapes from inappropriate subdivision use and development"* is a matter of national importance under Part II Section 6(b) of the Resource Management Act 1991 (the RMA). The identification of such features and landscapes and the provision of appropriate objectives, policies and methods for their recognition and protection is a responsibility of District Councils. The RMA does not define 'landscape' or 'outstanding'. However, the standard dictionary definition of 'outstanding' to mean 'eminent especially by excellence', and 'conspicuous' are generally adopted to provide guidance to the determination of outstanding natural features and landscapes.

Section 6(b) relates to other matters of national importance such as Section 6(a) in regard to the preservation of the natural character of wetlands and lakes and rivers and their margins and the protection of them from inappropriate subdivision, use and development.

Cultural landscapes of significance to Maori were also identified through a consultative process. These have been mapped and are referred to throughout this assessment and in the section on cultural landscapes.

Landscape Management Issues are also identified for each of the forty-one (41) Landscape Character Areas. These issues identify specific landscape management outcomes that are desirable within each Landscape Character Area. When an application for resource consent is made in a specific Landscape Character Area, it is intended that an applicant will refer to these issues and incorporate measures into the design of the proposal or assessment of effects that align with the management of these issues where these are relevant to the site and / or application.

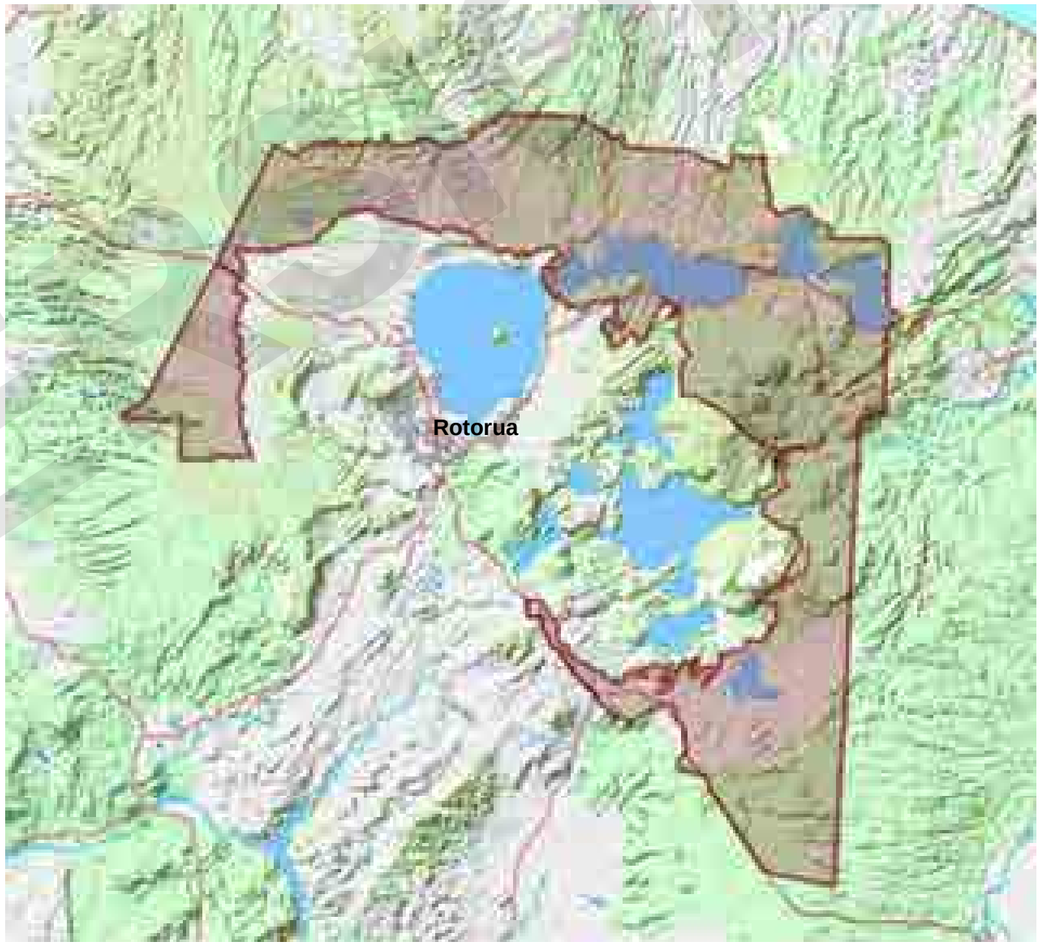


Figure 1: Study boundary for the Northern Lakes Landscape Assessment

Uses of Landscape Character Assessment

Landscape Character Assessment is a means of enabling Council, landowners and communities to understand what the landscape is like now, how it came to be the way it is and how it may change in the future.

In this way the Lake Rotorua Catchment Landscape Assessment aims to assist Council, landowners and communities to understand landscape change, its drivers and the threats and vulnerabilities to the existing landscape. Once the landscape characteristics and values of the Lake Rotorua catchment landscape are understood, guidance in relation to appropriate forms of protection, productive land use, development, enhancement or rehabilitation can be provided.

Ways in which Landscape Character Assessment can help achieve integrated land use planning and management include:

Land Use Planning

- Providing a spatial framework for informing strategic policy development at the District wide (District Plan and LTCCP), structure planning, community planning and asset management planning at the local level.
- Studies of development potential, i.e. to help in identifying appropriate areas for managed development / growth on the urban fringes and in rural environments.
- Informing the siting, scale and design of particular forms of development, such as cluster housing or rural residential development.
- Contributing to landscape capacity studies relating to the supply of land for housing, rural activities and forestry use.
- Providing a cohesive integrated landscape resource document to assist landowners/applicants in preparing assessments of environmental effects and applications for resource consent.
- Providing a spatial framework for planning consistency with wider regional and national policy instruments and initiatives such as Rotorua Lakes Protection and Restoration Action Programme.
- Providing a base line against which future landscape change and the affect of landscape protection and management measures in the District Plan can be monitored.

Landscape Management

- Providing a basis for the identification of landscape management issues, objectives and the preparation of appropriate landscape management strategies including protection, development, altered forms of production, enhancement or rehabilitation.
- Providing a strategic spatial framework for inter-agency co-operation and initiatives (Environment Bay of Plenty [EBOP], Department of Conservation [DoC]).
- Informing work on special areas including areas for designation, mapping of boundaries, justifications for special application of policies.
- Helping to guide land use in positive integrated ways to ensure the efficient use of natural and physical resources and to promote landscape integrity - the idea of integrated land use planning and management within the context of sustainable management and the RMA.

The principal expected outcomes of this Lake Rotorua Catchment Landscape Evaluation project are therefore:

- To inform decision making at Council, landowner stakeholder and community levels,
- To provide for the recognition and appropriate protection of outstanding natural features and landscapes (RMA Section 6(b)),
- To assist in the formulation of strategic landscape policy provisions,
- To guide land use change, and the siting, carrying capacity and form of future development,
- To provide a basis for the formulation of landscape management strategies and plans,
- To facilitate community landscape enhancement initiatives, and
- To provide a framework and basis for ongoing studies.

What is “Landscape”?

Landscape is a physical resource that is the result of natural and cultural processes occurring over time. All landscape has undergone past change and will continue to be modified by both natural processes and cultural activities. The landscape that we see is influenced by our own individual cultural heritage and perceptions. People with an urban upbringing will see and experience rural landscapes or the relative wilderness of natural areas differently to the people who live within and make their living from the rural landscape.

Councils have a statutory responsibility to protect outstanding natural landscapes and features (Section 6 RMA) as well as the more general amenity values of landscape (Section 7 RMA). It is, however, landowners who have the ultimate responsibility for land management and the husbandry or stewardship of the landscape resource.

Landscape in its broadest context incorporates a range of characteristics and attributes including the following:

- Geomorphological – underlying geological processes, structure and resultant topography,
- Hydrological – the patterns of water movement and collection,
- Ecological – dynamic organic components and processes,
- Transient – ephemeral, seasonal, temporal and atmospheric,
- Aesthetic – coherence, vividness, naturalness,
- Legal / Economic – patterns of ownership, use and productivity,
- Community/Social – scenic, shared and recognised values,
- Cultural – tangata whenua values and associations,
- Historic – sites, areas, buildings, features, elements and events.

These attributes together contribute to our perception, understanding and appreciation of landscapes.

Methodology

This report is based on a landscape characterisation methodology that delineates and describes an integrated spatial framework of 'landscape types' and 'landscape character areas' that provide a means of understanding the varied landscape character within the study area.

This framework can be thought of as a number of ordered sets of interconnected landscapes from large to small each with their own distinct landscape characteristics that are "nested" together.

Landscape Types are derived from the underlying geology / topography. They are:

- Generic
- Allow different landscapes to be compared
- Have similar characteristics in different areas

Landscape Character Areas are derived from the combination of landform, land cover and land use. They are:

- Unique areas;
- Geographically / space specific;
- Have individual identity but can share generic character with other areas

In applying this method of landscape character assessment the smaller the scale the greater the level of assessment detail needed. The above approach is demonstrated in the following diagram (page 5) that illustrates the idea of a nested hierarchy of landscape areas and the landscape management techniques that can be applied at each scale of the landscape.

The approach and methodology adopted for this study has been based on desktop (GIS) and field surveys (road / public walkway access). For those parts of the study area where terrain and public road access limited ground based fieldwork, desktop analysis has been supplemented by aerial (helicopter) survey.

The following GIS based datasets have been used in the analysis:

- NZMS 260 Topographic Series
- Aerial Photography (Rotorua District Council, 2001 and 2006)
- Elevation (NZMS 260 and Rotorua District Council)
- Underlying Geology (New Zealand Land Resource Inventory)
- River Environments Classifications of New Zealand (NIWA)
- Land Cover Data Base (Landcare Research)
- Land Use Capability Units (Landcare Research) (see Appendix 2 for an explanation of Land Use Capability)
- Archaeological Sites and Geopreservation Sites (New Zealand Archaeological Association and Environment Bay of Plenty)
- Rotorua Cultural Landscapes (Boffa Miskell)
- Land areas previously identified by Environment Bay of Plenty as outstanding natural features and landscapes (Environment Bay of Plenty, 1997)
- Department of Conservation (DoC) Reserves
- Operative Rotorua District Plan and Planning Maps

Summary of Results

This report identifies and describes 9 Landscape Types and 41 individual Landscape Character Areas within those larger Landscape Types. These areas have been defined and mapped on the basis of:

- underlying geology and associated topography;
- existing landcover;
- land use capability;
- natural drainage patterns;
- existing cultural land uses; and
- settlement patterns.

Ten ONFLs have been identified in the study area (see Assessment Criteria Worksheets) and Appendix 1: Map 13:

- Mangorewa Forest (2.5)
- Lake Rotoiti (4.1)
- Lake Rotokawau (4.7)
- Lake Rotoehu (5.1)
- Lake Rotoma and Caldera (6.1)
- Rotoma Forest (6.6)
- Makatiti Dome North Eastern Slopes (8.1)
- Tarawera Ridge (8.3)
- Lake Rerewhakaaitu (9.1)
- Rainbow Mountain – Maungakakaramea (9.6)

Integrating landscape assessment and planning processes

Boffa Miskell

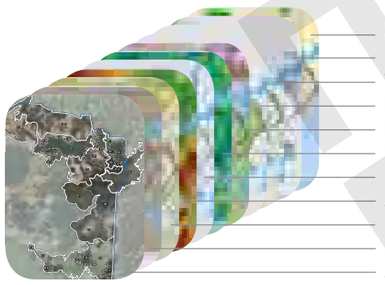
Selected Study Area: Northern Lakes

One of four study areas in the District.

Lake Rotorua Catchment
Rotorua District Council Boundary

RESOURCE EVALUATION: Document One

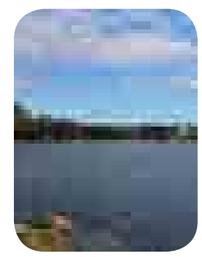
Landscape Analysis & Assessment Process: GIS Data Sets , Fieldwork & Consultation



Zoning
Underlying Geology
Topography
Elevation
Drainage Patterns
Land Cover
Land Use Capability
Archeological Sites
Protected Natural Areas
DoC Reserves
Aerial Photography

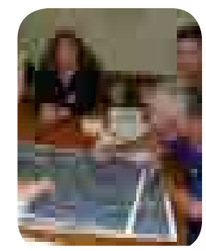
GIS Data Sets

+



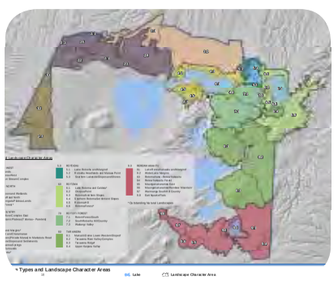
Fieldwork

+

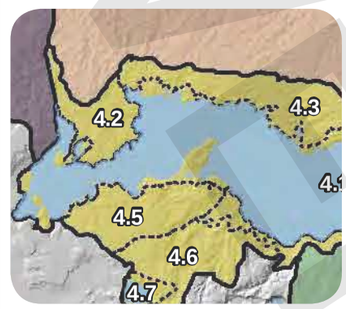


Consultation

The Development of an Integrated Spatial Framework of Landscape Areas



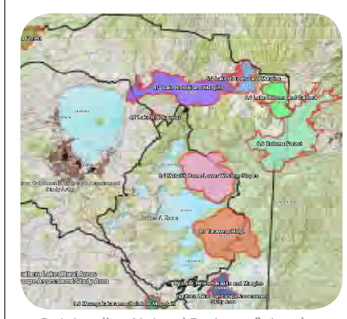
Identification of Landscape Types & Landscape Character Areas



Landscape Types:
- First order delineation based on geomorphology/landform
- Define areas of broad similarity

Landscape Character Areas:
- Based on landform, landcover and land use
- Homogenous areas with distinctive landscape characteristics
- Sub areas of a landscape type

Applying Specific Assessment Criteria



eg. Outstanding Natural Features & Landscapes

LANDSCAPE MANAGEMENT: Document Two

Structure Planning

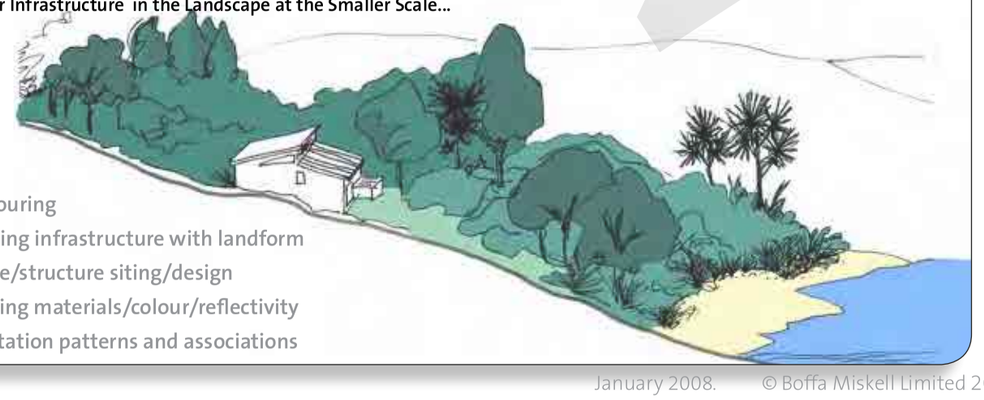
Recognising Landscape Character at the Broader Landscape Scale to inform...

Landscape Analysis & Planning at the Site Specific Scale

Development outcomes that do not work with landscape attributes and character

Development outcomes that work with landscape attributes and character

...Design Guidelines for the Placement & Integration of Earthworks, Buildings, Access and other Infrastructure in the Landscape at the Smaller Scale...



- Contouring
- Aligning infrastructure with landform
- House/structure siting/design
- Building materials/colour/reflectivity
- Vegetation patterns and associations

LANDSCAPE TYPES AND LANDSCAPE CHARACTER AREAS

Landscape Types and Landscape Character Areas

1.0 MAMAKU PLATEAU WEST

- 1.1 Plateau Wetlands
- 1.2 Mamaku Plateau West
- 1.3 Takapuhurihuri Stream Complex

2.0 MAMAKU PLATEAU NORTH

- 2.1 Te Pu
- 2.2 Mamaku Lagoon and Wetlands
- 2.3 Te Waerenga Road North
- 2.4 Kaharoa/Rotongata Plateau Lands
- 2.5 Mangorewa Forest

3.0 NORTHERN HILL COUNTRY

- 3.1 Mangorewa River Complex East
- 3.2 Northern Volcanic Plateau (Tokerau – Paretero)

4.0 ROTOITI

- 4.1 Lake Rotoiti and Margins
- 4.2 Te Akau Point and Otaramarae
- 4.3 Northern Slopes (Pikiao Marae) to Maniatutu Road
- 4.4 Southern Shore Slopes and Settlements
- 4.5 Ruahine/Maraeroa Springs
- 4.6 Rotokawau Surrounds
- 4.7 Lake Rotokawau

5.0 ROTOEHU

- 5.1 Lake Rotoehu and Margins
- 5.2 Rotoehu Headlands and Maraua Point
- 5.3 Southern Lakeside Slopes and Shores

6.0 ROTOMA

- 6.1 Lake Rotoma and Caldera
- 6.2 Okopua Point
- 6.3 Rotoma Northern Slopes
- 6.4 Southern Rotoma Settlement Slopes
- 6.5 Rotoma Hill
- 6.6 Rotoma Forest

7.0 ROTOITI FOREST

- 7.1 Rotoiti Forest South
- 7.2 South Rotoehu Hill Country
- 7.3 Waitangi Valley

8.0 TARAWERA

- 8.1 Makatiti Dome North Eastern Slopes
- 8.2 Tarawera River Valley Complex
- 8.3 Tarawera Ridge
- 8.4 Upper Kaipara Valley

9.0 REREWHAKAAITU

- 9.1 Lake Rerewhakaaitu and Margins
- 9.2 Wider Lake Margins
- 9.3 Rotomahana – Rerewhakaaitu
- 9.4 Rerewhakaaitu Forest
- 9.5 Maungakakaramea East
- 9.6 Maungakakaramea/Rainbow Mountain
- 9.7 Waimangu South Hill Country
- 9.8 Earthquake Flats

1.1

Plateau Wetlands

0 0.5 1 km

1:20,000 Aerial Source: Rotorua District Council: 2001, 2006.

Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

1.0 MAMAKU PLATEAU WEST

Landscape Character Area 1.1 : Plateau Wetlands

Area Defined by:

- Northern boundary of DoC Stewardship Area (Unnamed state forest).
- Rotorua District boundary to South Waikato District and QEII Area / unnamed scenic reserve boundary (adjoining Mamaku Forest) to the west.
- SH 5 to the south.
- Contiguous areas of pastureland to the east.

Area Characterised by:

- Rolling and strongly rolling terrain predominating surrounded to the north, south and east by more undulating topography. Reflective of underlying dominant volcanic parent material (see Map 5) with Class 4 land dominant particularly in the south, some Class 6 wetness limitation land in the north (see Map 8).
- Volcanic rock and volcanic tor features.
- Upper catchment and origins of Mangorewa River system (see Map 6) that drains to the north and north east through Mangorewa Forest (Scenic Reserve and Ecological Reserve) including wetland environments with significant areas of herbaceous freshwater vegetation included within the Copella Road Wetland complex.
- Relatively extensive areas of indigenous vegetation to the north including areas contiguous with lowland primary and secondary hardwood and podocarp forests (QEII covenant & DoC lands) to the west and northwest (see Map 10).
- Indigenous landcover predominates in the north with pasture intermixed with gorse and broom to the south. These areas are separated by a relatively small forestry plantation to the east (see Map 7).

Local Character Areas:

- Northern Indigenous Forests and Copella Road Wetland
- Southern Pasturelands

Landscape Management Issues:

- Management of forest / wetland and pasture margins and areas of predominantly indigenous character to preserve, protect, and enhance existing representative habitats.
- Consideration of land use activities that enable the preservation, protection, and enhancement of a variety of representative habitat types.
- Preservation/protection and enhancement of volcanic tor features of varying scale and value within the working rural landscape.
- Recognition of established primary industry sponsored, Regional Council and National Government Agency environmental programmes and initiatives in relation to the sustainable management of existing rural land use activities. In particular “best practice” pastoral land use management in relation to soil conservation/protection and water quality protection.
- Management of upper catchment wetland areas in relation to the wider Mangorewa River system.
- Identification and protection of culturally significant Tor features.

1.2

Mamaku Plateau west

0 0.5 1 km

1:30,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

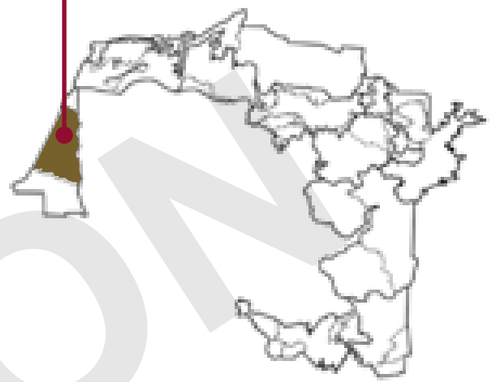
Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

1.0 MAMAKU PLATEAU WEST

Landscape Character Area 1.2: Mamaku Plateau West



Area Defined by:

- SH 5 to the north.
- The Rotorua District boundary with South Waikato District and cleared plantation forestry land to the west (in part adjoining the Arahiwi Scenic Reserve).
- The Mangakotaha Stream system to the south.
- The western Lake Rotorua Catchment boundary (Maraeroa Road) to the east.

Area Characterised by:

- Undulating to rolling western volcanic plateau lands Class 3 and 4 dominant with areas of Class 6 particularly towards the south in proximity to the Mangakotaha complex and Class 7 and Class 8 land within the deeply incised Mangakotaha corridor itself (see Map 8).
- Areas of strongly to steep hill country in the south with some more varied and broken volcanic terrain also present south of Amoore Road.
- Numerous volcanic rock and volcanic tor outcrops.
- Drainage patterns characterised by the west draining upper catchment plateau areas of the Mangakotaha, Mangatapu and Waipare stream systems. Numerous small pond water bodies feature within southern pasture land south of Patetere Scenic Reserve.
- Predominant landcover pasture with a number of significant indigenous protected and unprotected forest remnants including Patetere Scenic Reserve south of Cecil Road, Arahiwi Railway Scenic Reserve (see map 10), Mamaku Scenic Reserve and lowland hardwood forest remnants protected by QEII covenant. Unprotected areas include Mamaku South Road Bush and areas within the Mangakotaha Stream corridor in the south as well as a number of smaller indigenous forest remnants in the north-west and north of Amoore Road (see Map 7).
- Settlement patterns include outlying areas of Mamaku Township and individual rural residential and farm utility buildings.

Local Character Areas:

- Northern Plateau Lands (north of Cecil Road)
- Arahiwi rural pasture land (south of Cecil Road)

Landscape Management Issues:

- Preservation, protection and enhancement of "unprotected" indigenous vegetation and other smaller vegetation remnants (particularly in the Northern Plateau Lands) from stock browsing/camping and associated damage.
- Preservation, protection and enhancement of volcanic tor features of varying scale and value within a working rural landscape.
- Recognition of established primary industry sponsored, Regional Council and National Government Agency environmental programmes and initiatives in relation to the sustainable management of existing rural land use activities. In particular "best practice" pastoral land use management in relation to soil conservation/protection and water quality protection.
- Identification and protection of culturally significant tor features.
- Recognition of significant Maori land holdings.

1.3

Takapuhurihuri Stream Complex

0 0.5 1 km

1:30,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

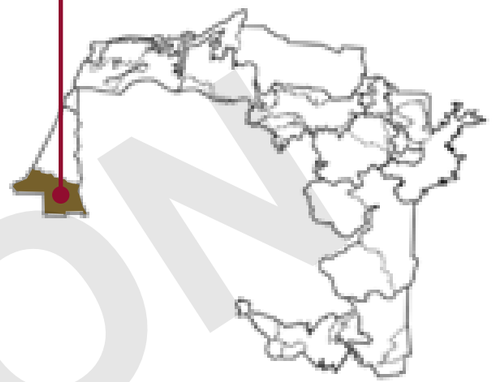
Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

1.0 MAMAKU PLATEAU WEST

Landscape Character Area 1.3: Takapuhurihuri Stream Complex



Area Defined by:

- Mangakotaha Stream corridor to the north.
- Rotorua District boundary with South Waikato District to the west.
- District boundary and Horohoro Forest to the south.
- Lake Rotorua Catchment study area boundary to the east (following the alignment of South Road).

Area Characterised by:

- Steep to very steeply dissected (26+ degrees) upper catchment drainage patterns of the northwest draining Takapuhurihuri, Oraka, Waione and Mangakotaha Stream complexes on upper volcanic plateau underlying geology (see Maps 4, 5 and 6).
- Class 7 and 8 erosion limitation lands predominate through steep drainage gullies with more moderate Class 6 land dominant in the east as well as a significant area of Class 4 (production forestry) land north of Cochrane Road (see Map 8).
- Production pine forestry dominates landcover with the exception of significant areas of indigenous vegetation associated with steep natural drainage corridors. Some limited pastoral land to the east. Areas of production pine forestry to the north of Oraka Stream have been recently harvested.
- Indigenous forest cover includes parts of the Mamaku Forest Stewardship Area (DoC) particularly within the Waione and Mangakotaha stream corridors, the latter also including the Mangakotaha Stream Scenic Reserve and QEII covenant areas of lowland modified primary forest (see Map 10).

Local Character Areas:

- Stream Corridors with associated patterns of remnant indigenous vegetation
- Exotic Pine Plateau Lands

Landscape Management Issues:

- Protection of indigenous vegetation within the Oraka and Takapuhurihuri stream complexes contiguous with the Horohoro Forest to the south.
- Exotic production forestry best practice and application of industry / Regional Council (Environment BOP) guidelines in relation to soil and water quality management (sedimentation) at harvest.
- Protection, preservation and enhancement of vegetated areas of Takapuhurihuri stream upper catchment within pasture lands west of South Road.

Te Pu

0 0.5 1 km

1:50,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

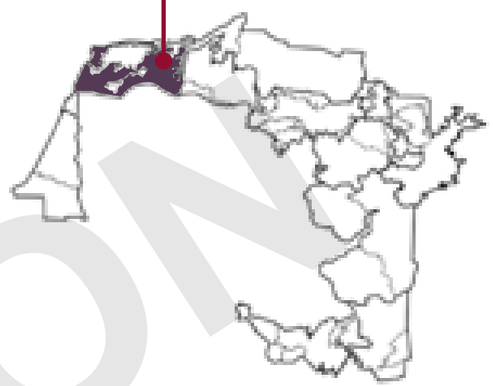
Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

2.0 MAMAKU PLATEAU NORTH

Landscape Character Area 2.1: Te Pu



Area Defined by:

- Mangorewa River and forest to the north.
- Rotorua District boundary with Western Bay of Plenty District and eastern extent of Gammons Block Conservation Area to the west.
- Lake Rotorua Catchment area boundary to the south.
- Mangapouri Stream corridor to the east.

Area Characterised by:

- Undulating to rolling northern volcanic plateau lands characterised by northeast draining lands dissected by steep to very steep Class 6, 7 and 8 land that follows the natural drainage patterns of the Mangorewa/Ohaupara stream complexes (See Maps 6 and 8).
- Predominantly Class 4 land dominated by production forestry west of Roy Road (off the Tauranga Direct Road SH 36) and pasture land with smaller scattered patches of indigenous vegetation to the east particularly within the upper catchment areas of the Mangapouri Stream including the Mangapouri Scenic Reserve and an unnamed Crown Land Stewardship Area (see Map 10).
- Area surrounds Lagoon Road lake system (Refer Character Area 2.2 Mamaku Lagoon and wetlands).
- Utuhina fossil geothermal site (geopreservation site) Dudley Road.
- Numerous volcanic hillock landforms with a variety of landcover that feature more visibly in the east.
- Settlement patterns include low density residential farm and farm utility buildings.

Local Character Areas:

- Western Forestry
- Eastern Pastoral Farm Land

Landscape Management Issues:

- The preservation, protection and enhancement of areas of existing indigenous vegetation, in particular isolated patches within productive pastureland.
- Management of accelerated erosion from stock on steeper topographical features.
- Management of significant upper catchment areas of the Mangorewa/Ohaupara stream systems.
- Adoption of best practice harvesting principles for exotic production forestry areas.
- Recognition of existing rural character and amenity in relation to Tauranga Direct Road (now SH 36) as a principal regional route and a significant northern gateway.

2.2

Mamaku Lagoon and Wetlands

0 0.5 1 km

1:20,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

2.0 MAMAKU PLATEAU NORTH

Landscape Character Area 2.2: Mamaku Lagoon and Wetlands

Area Defined by:

- Series of upper catchment basins, small lakes and stream tributaries of the Mangorewa River contained and defined by surrounding undulating terrain (Character Area 2.1 Te Pu).

Area Characterised by:

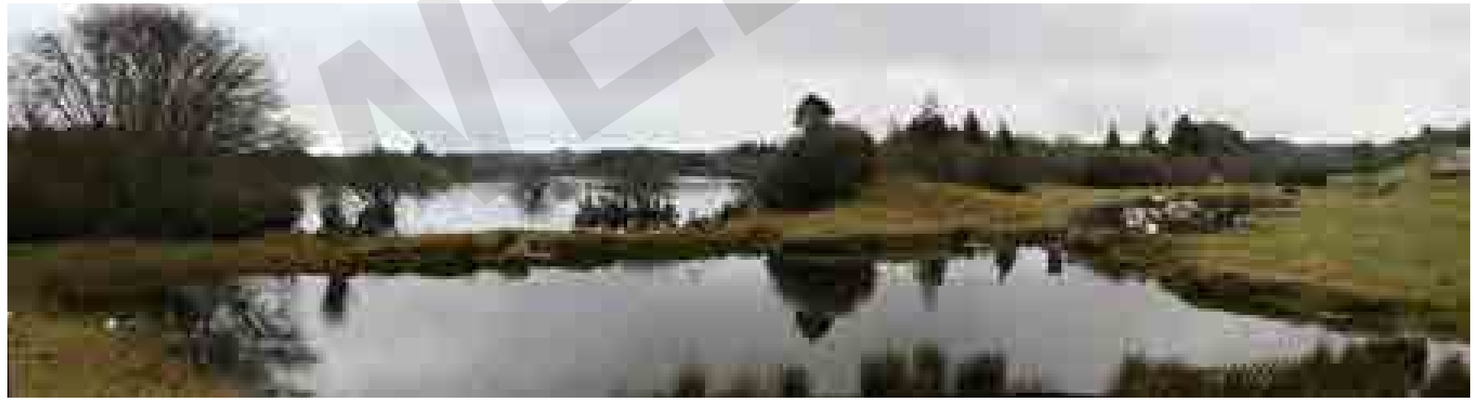
- Open water bodies of high potential amenity landscape value that are part of the wider Mamaku Plateau wetland complex.
- Areas of pastoral grazing within water body margins.
- Lagoon margin areas of indigenous forest, herbaceous freshwater vegetation and areas of manuka and/or kanuka of ecological significance (see Map 7).
- Surrounding areas of plantation pine forestry.
- Mangorewa Forest Stewardship Area (see Map 10).

Local Character Areas:

- Mamaku Lagoon
- Lagoon Road Wetland and Forest

Landscape Management Issues:

- Preservation, protection and enhancement of a variety of areas of existing indigenous vegetation and habitats.
- Stock exclusion from lagoon wetland and contiguous indigenous vegetation areas.
- Prevention of dumping of domestic refuse.
- Management of any artificial lagoon drainage.
- Management of freshwater and wetland habitat quality.
- Integration and management of productive land uses and rural activities with sensitive natural systems to enable improved environmental and landscape outcomes.



2.3

Te Waerenga Road North

0 0.5 1 km

1:30,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

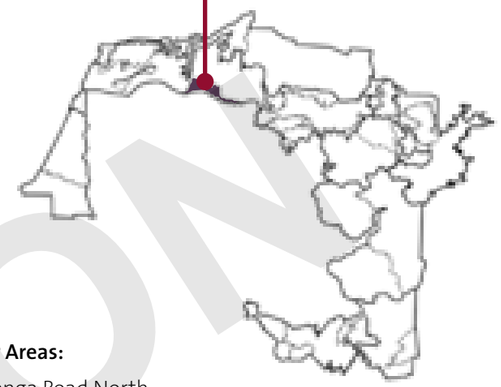
Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

2.0 MAMAKU PLATEAU NORTH

Landscape Character Area 2.3: Te Waerenga Road North



Area Defined by:

- Lower parts of the north draining Kaharoa–Rotongata Northern Volcanic Plateau to the north, west and east.
- Lake Rotorua Catchment study boundary (Te Waerenga Road) to the south.

Area Characterised by:

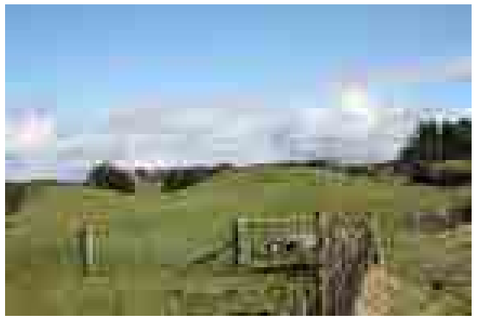
- Higher elevated flat to rolling terrain on a mix of dissected volcanic and older ash parent material characterised by a steeper escarpment to the north (see Map 4 and 5).
- Moderate terrain predominating in the west easing to more dissected and broken terrain in the east in proximity to the transition between the Lake Rotorua caldera in the south and the upper catchment drainage patterns and associated gully systems of the Hururu Stream to the north.
- Drainage patterns characterised by first order stream tributaries and the wider Hururu and Onaia Stream systems that drain to the north (see Map 6).
- The variety of soil/substrate parent materials is reflected in a range of land use capability classifications with Class 3 and 4 predominant in the west and Class 6 with some Class 4 in the east (see Map 8).
- Landcover is almost exclusively pastoral in the east and predominantly pastoral in the west with scattered and isolated patches of indigenous vegetation in the west particularly between Kaharoa and the summit mapped as Urekohua. These western patches include QEII covenant areas of remnant lowland podocarp forest (see Map 7).
- Pastoral landcover with grazing land uses predominating .
- Low density settlement patterns characterised by both traditional farm dwellings and buildings on established sites; newer dwellings in more prominent elevated locations and less established sites with views south across Lake Rotorua.
- Settlement patterns strongly aligned with existing roading and access.

Local Character Areas:

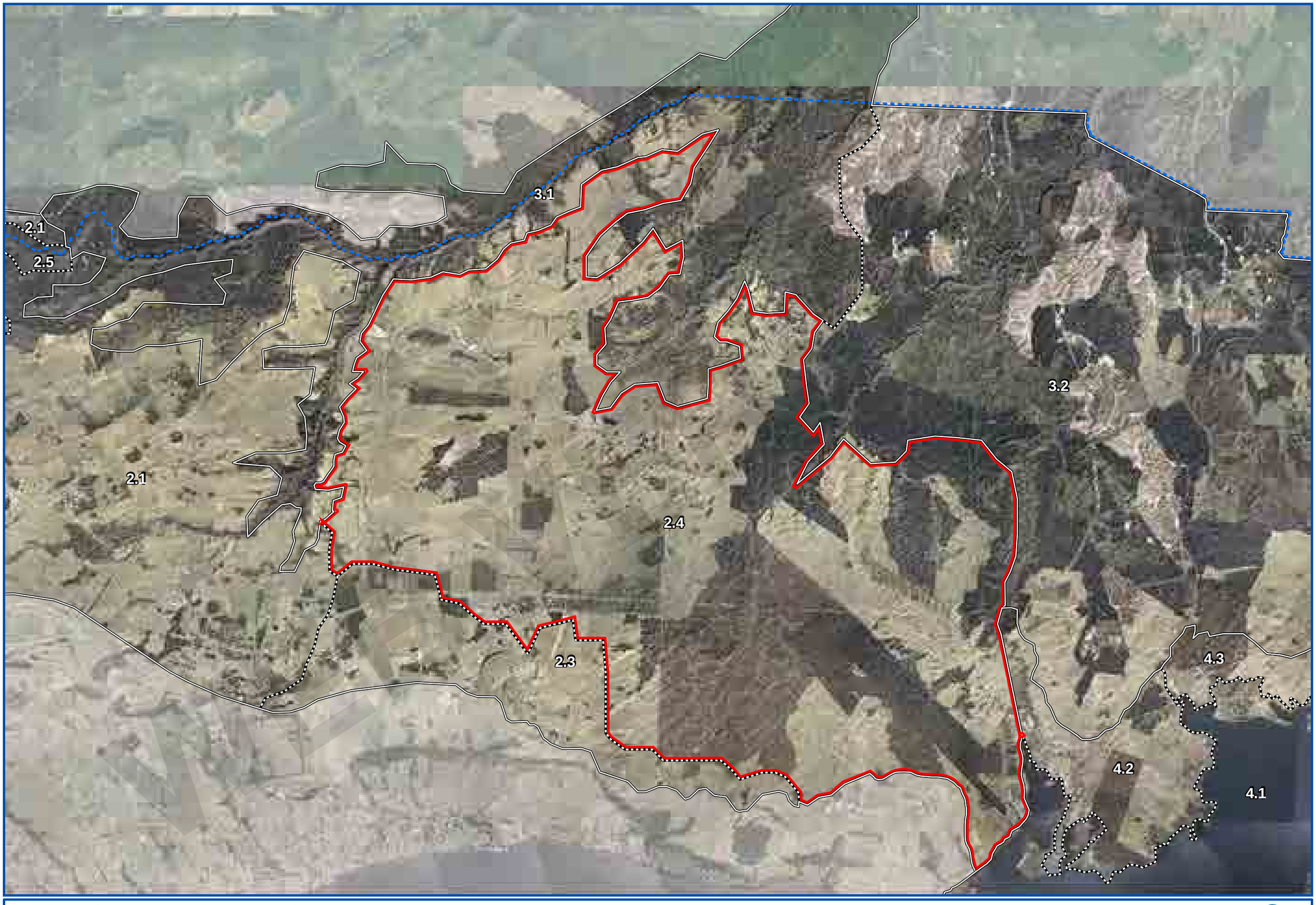
- Te Waerenga Road North
- Hoko Road

Landscape Management Issues:

- Preservation, protection and enhancement of existing areas of indigenous vegetation particularly isolated patches on steeper slopes.
- Stabilisation of steep erosion prone slopes particularly the steeper northern escarpment, including management or stock numbers relative to season/climate conditions, for example the Penny Road Gully.
- Consideration of location, scale, bulk and form of new residential buildings in prominent elevated locations. Development of structural vegetation patterns to give new buildings context and reinforce rural open space and rural landscape amenity values.



2.4



Kaharoa/Rotongata Plateau Lands

0 0.5 1 km

1:50,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

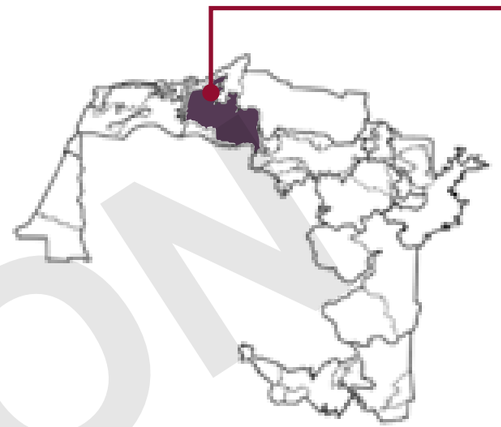
Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

2.0 MAMAKU PLATEAU NORTH

Landscape Character Area 2.4: Kaharoa/Rotongata Plateau Lands



Area Defined by:

- Mangorewa River and Onaia Stream corridors to the north.
- Mangapouri Stream corridor to the west.
- Te Waerenga Road uplands (and Lake Rotorua Caldera) to the south.
- Kaituna River and Hururu Stream corridors to the east.

Area Characterised by:

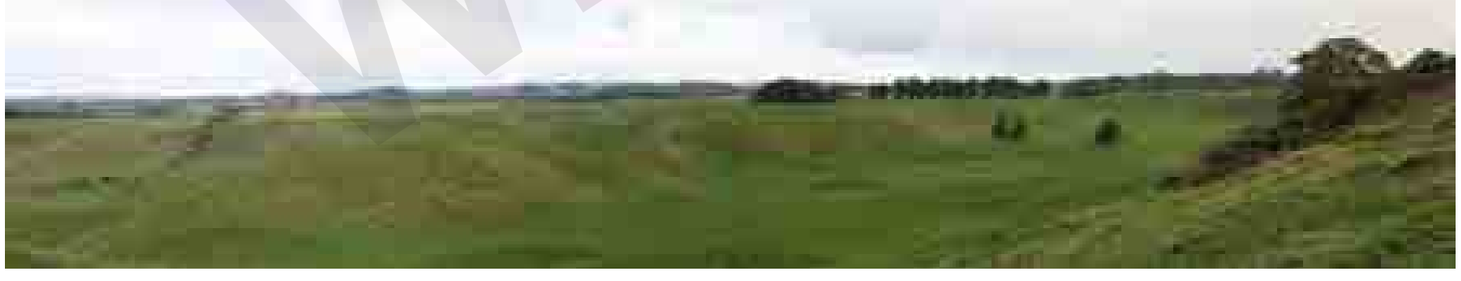
- Harder volcanic parent material particularly in the west with more unconsolidated breccias in the east reflected in predominant Class 6 erosion limitation land and limited areas of better Class 3 land in proximity to Kapukapu Road (see Map 5 and Map 8).
- Steeper areas of broken terrain to the east within the upper sub-catchments of the Hururu Stream with more undulating to rolling terrain within the Onaia Stream upper sub-catchments (see Map 6).
- Landcover to the west characterised by grassland with isolated patches of indigenous vegetation ranging from less than 10ha to approximately 90ha including the Penny Road Scenic Reserve. The majority of these indigenous forest patches are less than 15 ha in area with a limited number of larger unprotected patches.
- Land cover to the east characterised by exotic plantation forestry particularly within the steeper broken terrain of the upper Hururu catchment as well as pasture land concentrated within Class 6 land. Similar to the Onaia upper catchments, the Hururu upper catchments also contain numerous unprotected, isolated and fragmented indigenous forest patches (See Map 7).
- Significant Maori land holdings in the east.
- Settlement patterns characterised by Okere Falls and Whangamarino in the east and isolated rural farm dwellings and buildings aligned with existing road networks most notably Kapukapu Road, Kaharoa Road and Penny Road.
- Limited archaeological sites south of Okere Falls (see Map 9).

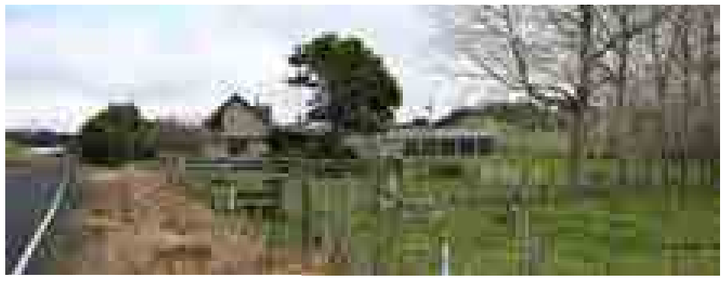
Local Character Areas:

- Onaia Pastureland Upper Sub-Catchments
- Hururu Forestland Upper Sub-Catchments

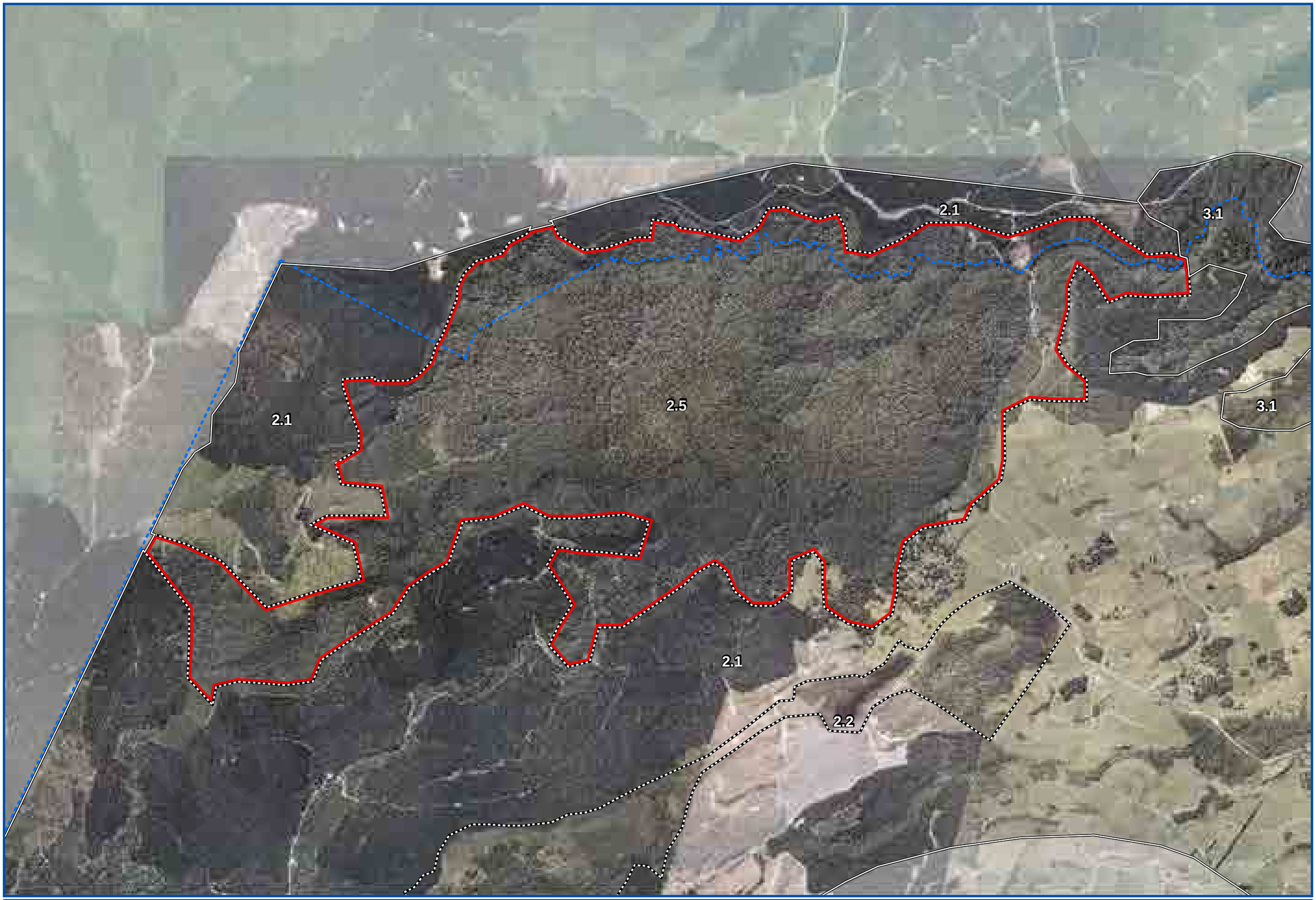
Landscape Management Issues:

- Recognition of pastoral rural land use best practice in relation to soil and water quality particularly on steeper land Classes (Class 6+). Management of stocking regimes related to season/ climate and pasture cover.
- Recognition of established primary industry sponsored, Regional Council and National Government Agency environmental programmes and initiatives in relation to the sustainable management of existing rural land use activities including production forestry management practices to reduce short term sedimentation and erosion issues (e.g. New Zealand Forestry Owners Association guidelines) .
- Preservation, protection and enhancement of remnant of isolated indigenous forest patches.





2.5



Mangorewa Forest

0 0.5 1 km

1:30,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

2.0 MAMAKU PLATEAU NORTH

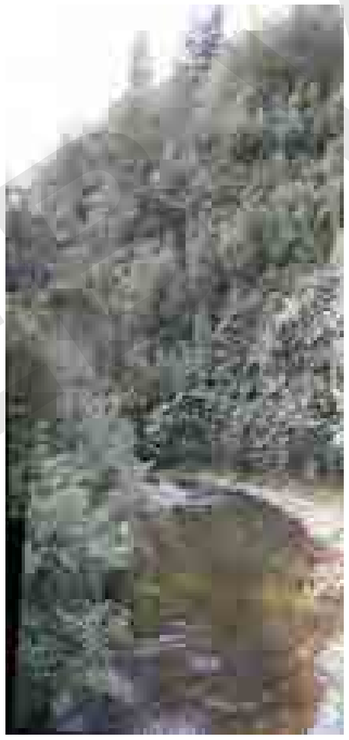
Landscape Character Area 2.5: Mangorewa Forest

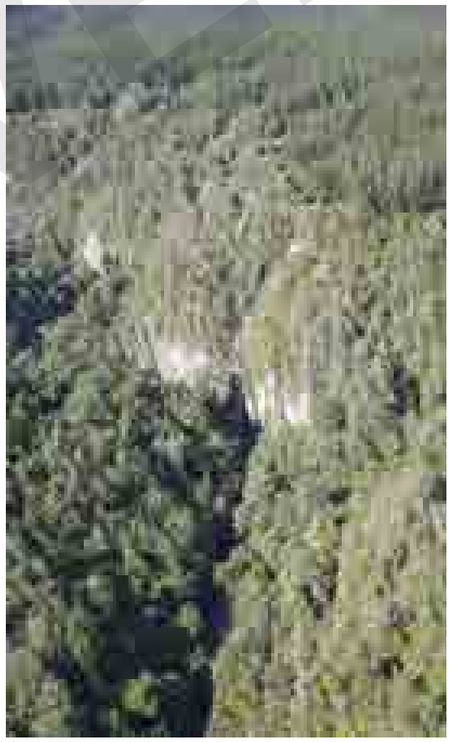
Area Defined by:

- Ohaupara Stream corridor and Western Bay of Plenty District boundary to the north.
- Plantation forestry and pasture land to the west.
- Pasture land of Character Area 2.2 (Mamaku Lagoon and Wetlands) to the south.
- Mangorewa River Gorge east of Tauranga Direct Road to the east .

Area Characterised by:

- Older consolidated volcanic parent material associated with undulating to rolling Class 4 land between Class 7 and 8 steeplands aligned with the Ohaupara Stream corridor to the Mangorewa River Gorge to the south (see Map 5).
- Deeply incised drainage patterns with moderately steep to very steep river corridor escarpments (see Map 4 and 6).
- Mangorewa River.
- Significant areas of indigenous vegetation including the Mangorewa Forest and Te Matai Forest Reserves (DoC) in alignment of Mangorewa River corridor and areas of indigenous forest to the west of, and contiguous with, Mangorewa Forest (Mangorewa Forest Accord) (see Map 7 and Map 10).
- Fragmented indigenous forest margins in relation to areas of adjoining pasture and exotic forest .





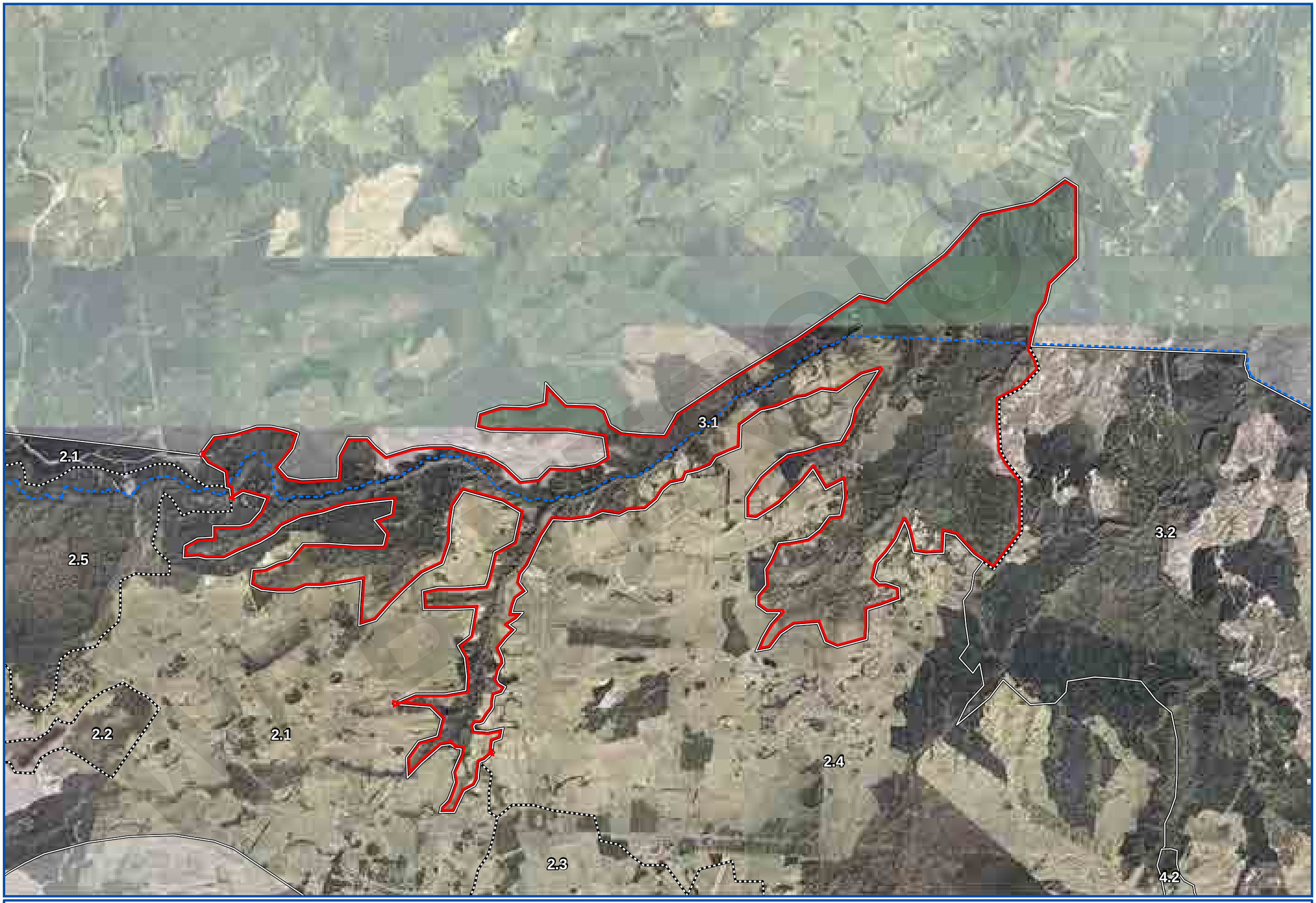
Local Character Areas:

- Mangorewa Forest Uplands
- River and Stream Gorges

Landscape Management Issues:

- Protection, preservation and enhancement of conservation estate areas.
- Appropriate management of productive rural land uses on indigenous forest/remnant margins particularly to the south.
- Scenic and landscape amenity opportunities in relation to the management of the Tauranga Direct Road corridor.

3.1



Mangorewa River Complex East

0 0.5 1 km

1:50,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

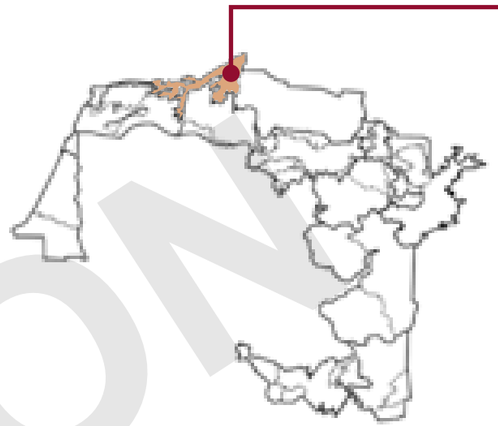
Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

3.0 NORTHERN HILL COUNTRY

Landscape Character Area 3.1: Mangorewa River Complex East



Area Defined by:

- Mangorewa River corridor including the Mangorewa River Gorge east of Tauranga Direct Road and the Pipikarihi Stream, lower Mangapouri Stream, Ruato Stream and lower Onaia Stream corridors and subcatchments.

Area Characterised by:

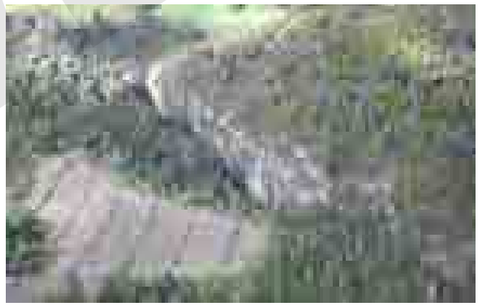
- Strongly rolling to very steep stream and river corridor escarpments, cliffs and gullies characterised by volcanic base material with some unconsolidated breccia parent material between the Ruato Stream and Onaia Stream corridors (see Map 4 and 5).
- Dominated by Class 7 and 8 erosion limitation land characterised by indigenous vegetation landcover (see Map 8 and 7).
- Te Matai Forest, Kaharoa Forest, areas of unnamed Crown Land Stewardship Areas (Onaia Stream and Pipikarihi Stream corridors), as well as a 33 ha regenerating semi-coastal forest type remnant in QEII covenant south of the Onaia Stream and adjoining the Kaharoa Forest.
- Fragmented indigenous forest edges in relation to existing pasture.
- Areas of exotic plantation forestry in relation to Mangorewa River Gorge particularly north of Pipikarihi Stream.
- High concentration of archaeological features associated with Maori settlement of Onaia Stream and Mangorewa River (see Map 9).

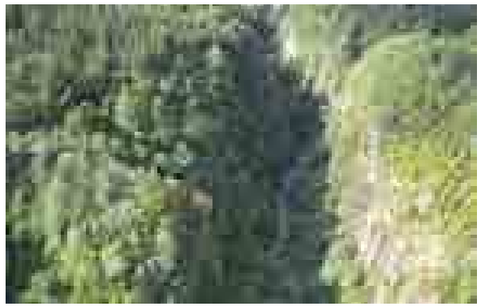
Local Character Areas:

- Steep River and Stream Corridor Gullies and Gorges
- Pastoral and Forestry Margins and Edges

Landscape Management Issues:

- Integrated management of private rural land uses and the margins of DoC Conservation Estate (Te Matai Forest and Kaharoa Forest) .
- Protection, preservation and enhancement of areas of existing indigenous vegetation that adjoin or are contiguous with significant areas of Conservation Estate named above.





Northern Volcanic Plateau (Tokerau – Paretero)

0 0.5 1 km

1:100,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

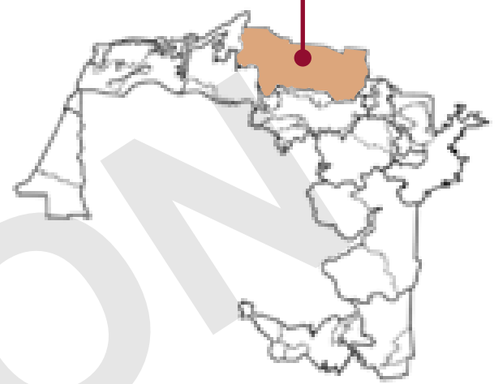
Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

3.0 NORTHERN HILL COUNTRY

Landscape Character Area 3.2: Northern Volcanic Plateau (Tokerau – Paretero)



Area Defined by:

- Rotorua District boundary with Western Bay of Plenty District Boundary to the north.
- The Kaituna River and lower Hururu Stream sub-catchments to the west.
- Maniatutu Road to the south.
- Rotoehu Road to the east.

Area Characterised by:

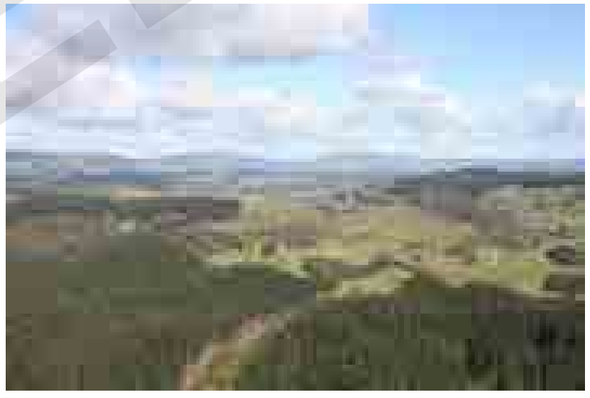
- Extensive volcanic plateau land characterised by unconsolidated breccias with limited areas of older volcanic material to the west (near Onepu Stream) (see Map 5).
- Rolling to steep broken and dissected terrain aligned with complex upper catchment drainage patterns (see Map 6).
- Predominantly Class 6 erosion limitation land characterised by more deeply incised areas of Class 7 land aligned with north draining stream patterns as described above.
- Upper catchment stream drainage patterns of the Kaituna River, Pokopoko, Pongaponga and Oeutehuehue Stream complexes (see Map 6), the majority (excluding the Kaituna River system) of which drain to the Little Waihi Estuary on the Bay of Plenty coast to the distant north.
- Landcover dominated by production plantation forestry to the west with significant patches of indigenous forest particularly near the confluence of the Kaituna River and Hururu Stream (912ha patch) including part of the Kaharoa Forest.
- East of Pokopoko Stream system, land cover is characterised by relatively contiguous areas of pasture within which are three limited small isolated indigenous forest patches as well as large unprotected significant patches of indigenous forest cover (Tokerau – 1086ha). These indigenous forest areas also include Rotoehu Forest West (DoC) and a lowland hardwood forest remnant (165ha) under QEII covenant (see Map 8 and 10).
- Some exotic plantation forestry also features to the east near Rotoehu Road.
- Numerous archaeological features particularly immediately east of Kaituna River corridor (see Map 9).
- Limited rural settlement.

Local Character Areas:

- Western Plantation Forest Lands
- Central Pasture Land
- Eastern Mixed Exotic/Native Forest Land

Landscape Management Issues:

- Protection and enhancement of significant areas of unprotected indigenous vegetation.
- Rural land use best practice in relation to soil and water quality.
- Recognition of significant Maori land holdings in the east.



4.1

Lake Rotoiti and Margins

0 0.5 1 km

1:50,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

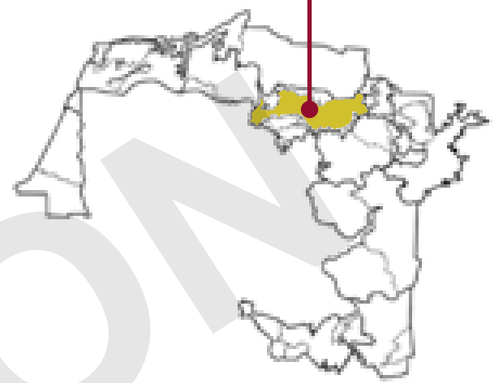
Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

4.0 ROTOITI

Landscape Character Area 4.1: Lake Rotoiti and Margins



Area Defined by:

- Entire lake waters and margins including areas of contiguous naturally occurring vegetation and prominent landform features such as vegetated headlands and points (e.g. Motuoha Point and Ngarehu Point). Excludes settlement areas.
- Rural pastoral and forestry lands to the north (south of Maniatutu Road).
- Otaramarae, Motutawa Point and Te Akau Point on lake edges to the west.
- SH30 and lake side settlement to the south and south east.
- Matawhaura North Scenic Reserve and Lake Rotoiti Scenic Reserve to the north east and Tamatea Road to the south east.

Area Characterised by:

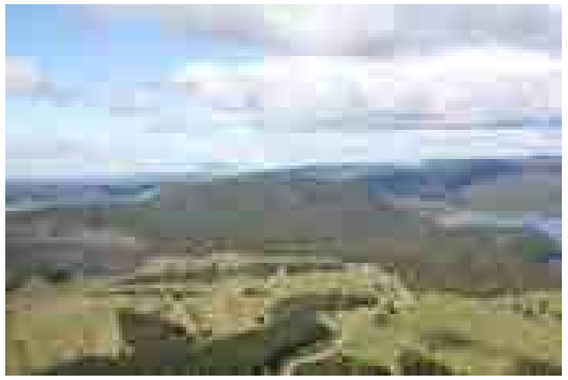
- Expansive open water.
- Volcanic lake feature contained by areas of steep to very steep lake margin terrain (cliffs and banks) particularly on the northern lake margins east of Otaramarae and moderately sloping lake margin terrain at the western (Okawa Bay) and eastern lake ends (Hinehopu). Topography relates to varied parent materials/geology (see Map 2, Map 4 and Map 5).
- Class 7 and 8 land predominates on the northern lake margin with areas of Class 3 land adjoining Rotoiti settlement and at the eastern lake extent. Class 6 and 7 land predominates to the west of Rotoiti settlement (see Map 8).
- Lake margins also characterised by indented lake edges, enclosed bays, embayment and headland features.
- Small isolated patches and larger contiguous areas of indigenous vegetation (see Map 7).
- Lakeside margins incorporate suburban residential areas and recreational and amenity open space.
- Significant cultural landscapes and features including Lake Rotoiti, Matawhaura, lake islands, rock outcrops and bays (see Map 12).
- Lake bed ownership with Te Arawa Lakes Trust.

Local Character Areas:

- Lake Waters and Immediate Margins
- Northeast Reserve Lands

Landscape Management Issues:

- Maintaining lake water quality based on the proposed Lakes Rotorua and Rotoiti Action Plan (Rotorua Lakes Protection and Restoration Programme)
- Management of amenity landscape resources (community and public) in relation to ongoing lake access and scenic protection.
- Management of recreational lake use.
- Recognition of cultural landscape values in relation to the lake waters and associated features.
- Management of tangata whenua expectations to settle and build homes on ancestral lands adjacent to Lake Rotoiti through structure planning and District Plan zoning.



Te Akau Point and Otaramarae

0 0.5 1 km

1:20,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

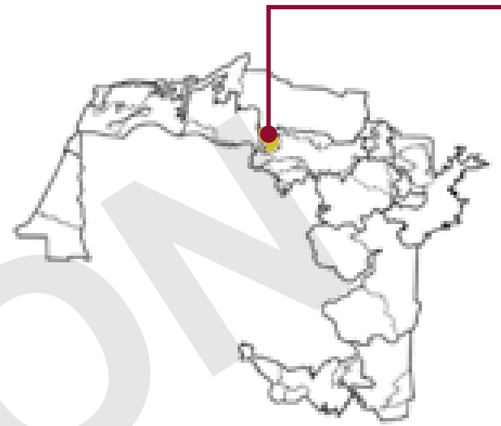
Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

4.0 ROTOITI

Landscape Character Area 4.2: Te Akau Point and Otaramarae



Area Defined by:

- SH 33 to the north.
- Te Akau Point inlet to the west.
- Lake Rotoiti to the south.
- Te Karaka Bay and Te Ti Bay to the east.

Area Characterised by:

- Gently undulating to rolling Class 6 dominant terrain on unconsolidated breccias. Includes steep to very steep lake margin cliffs and slopes, as well as upland feature of Paparumaro (see Map 2, Map 4 and Map 8).
- Lake margin characterised by Te Akau Point headland feature (Class 7 land), Te Weta Bay, and the indented margin of Lake Rotoiti including Kaharua Point, Whangamoa Point, Paparoa Point, Matawhao Point and Te Rerengaotemokai Point.
- Pastoral landcover predominates particularly in the north (east of Te Akau) with a limited area of plantation forestry present east of Te Weta Bay extending to Paparumaro (see Map 7).
- Lake margin also characterised by isolated patches of indigenous vegetation including Lake Rotoiti Scenic Reserve, an unnamed Recreation Reserve (Te Akau Point North) as well as areas of contiguous indigenous vegetation at Te Ti Bay and Te Weta Bay.
- Settlement patterns are characterised by lakeside settlement (Rural E zone) development patterns, Reserve A zone (Public) and Reserve B zone (Private and Community) zoned land including the eastern Okere Falls / Te Heke Road, Te Akau, and Whangamoa Drive, and Otaramarae communities (see Map 11).
- Traditional lakeside bach and local community architecture and access patterns, as well as emerging trend of more recent residential dwellings of varying scale and form.
- Archaeological features including numerous pa sites (see Map 9 and Map 12) .

Local Character Areas:

- Te Heke Road
- Te Akau Point
- Whangamoa Drive
- Otaramarae

Landscape Management Issues:

- Management of amenity and scenic landscape resources including existing public, private and community reserve lands, open space and linkages.
- Management of Rural E subdivision and development in relation to existing and emerging settlement character, scenic protection, and the protection, preservation and enhancement of existing patterns of indigenous vegetation.
- Recognition and protection of cultural landscape values.

Northern Slopes (Pikiao Marae) to Maniatutu Road

0 0.5 1 km

1:30,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

4.0 ROTOITI

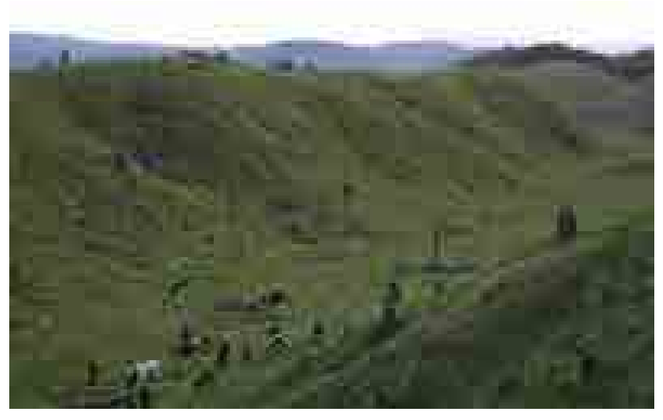
Landscape Character Area 4.3: Northern Slopes (Pikiao Marae) to Maniatutu Road

Area Defined by:

- Maniatutu Road in the north.
- SH 33 in the west.
- Lake Rotoiti and margins in the south.
- Lake Rotoiti Scenic Reserve in the east.

Area Characterised by:

- Class 6 and 7 dominant with Class 7 lands in proximity to the lake margins demonstrating a more varied and broken landform of strongly rolling to steep terrain easing to more undulating land immediately east and southeast of Pikiao Marae (see Map 4 and Map 8).
- This terrain reflects a mix of parent materials with unconsolidated breccias dominating in the west and, east of Pikiao Marae, a mix of breccias, older ashes and unconsolidated clays, silts and sands (see Map 5).
- Drainage patterns characterised by a number of smaller stream systems to the west and the Lake Te Hapua system to the east in association with contiguous areas of indigenous vegetation (see Map 6 and Map 7).
- Landcover is predominantly characterised by pasture land that is defined by significant areas of production exotic forestry.
- Exotic forestry areas feature in the west.
- Area includes a 7.6ha indigenous forest named as Maniatutu Rd A as well as exotic forest adjoining Pikiao Marae.
- Areas of indigenous forest in the east include 87ha of indigenous forest about Rotoehu Road and 4.8ha near Lake Te Hapua as well as other smaller unprotected and isolated indigenous forest patches.
- Limited rural settlement at Tokerau Bay.
- Predominantly Maori land holdings.
- Cultural landscape features of bays, promontories, pa sites, rock outcrops and indigenous forest (see Map 12).

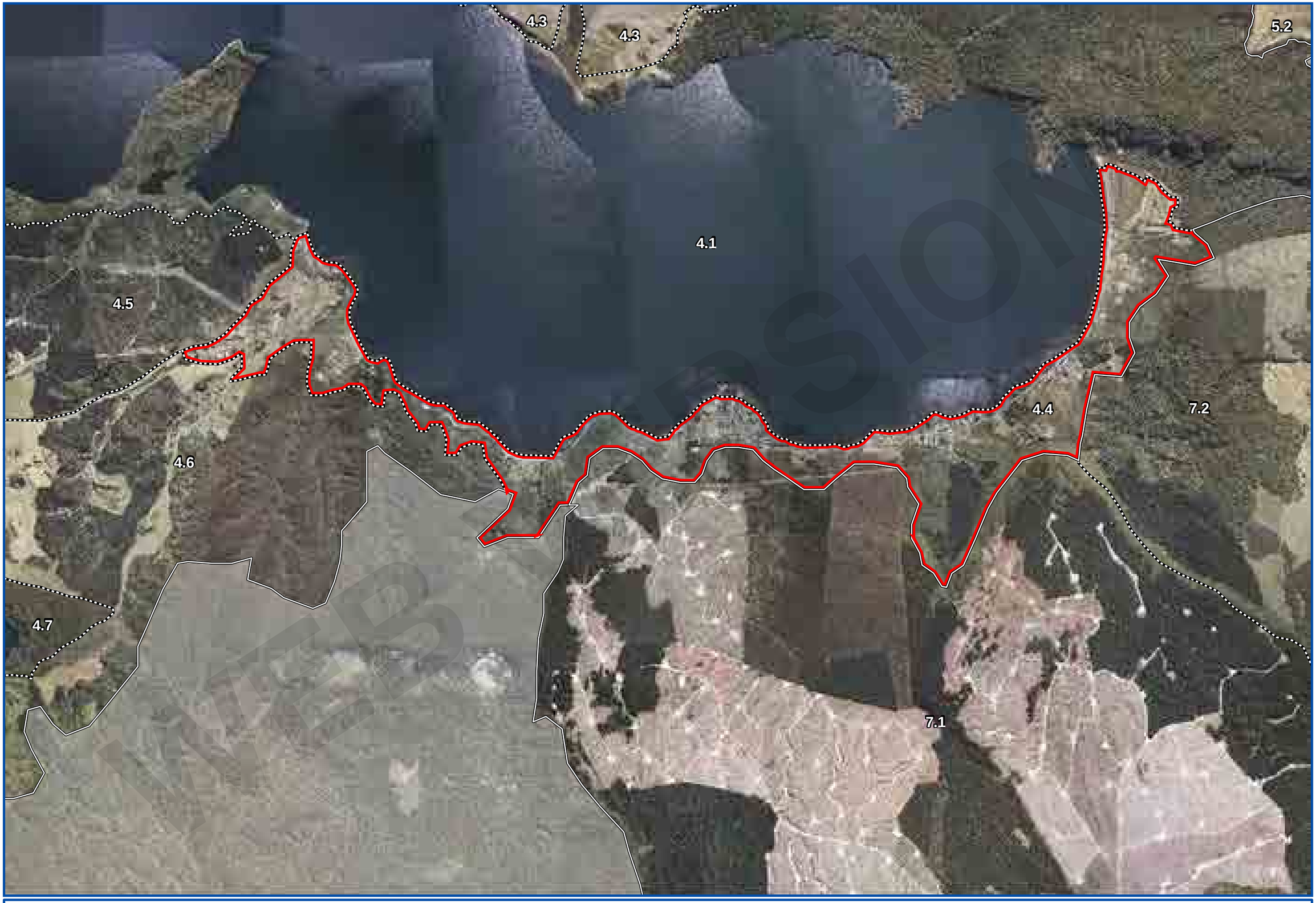


Local Character Areas:

- Rural Pasture Land
- Rural Forest Land (exotic and indigenous)

Landscape Management Issues:

- Management of rural land use activities and adoption of industry best practice in relation to soil and water quality issues particularly in relation to Lake Te Hapua systems.
- Recognition of cultural landscapes in relation to ongoing landscape management.



Southern Shore Slopes and Settlements

0 0.5 1 km

1:30,000 Aerial Source: Rotorua District Council: 2001, 2006.

Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

4.0 ROTOITI

Landscape Character Area 4.4: Southern Shore Slopes and Settlements

Area Defined by:

- Lake Rotoiti to the north.
- Tapaniau Point / Motuoha Point to the west.
- Rotoiti upland slopes to the south.
- Hinehopu valley (east of Hinehopu settlement) to the east (Tamatea Street).

Area Characterised by:

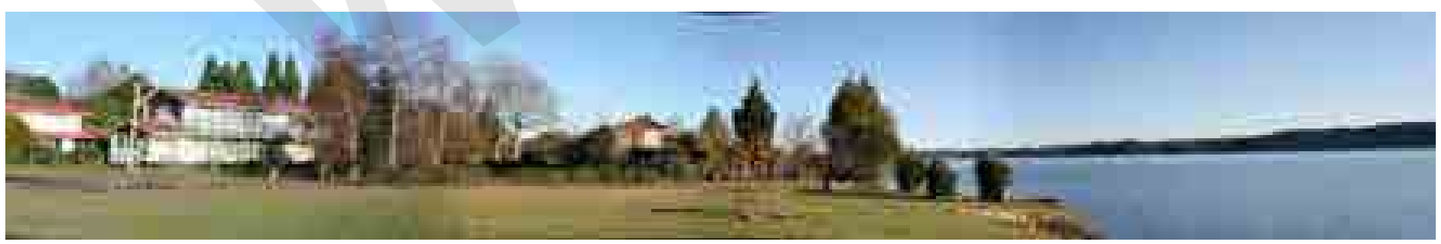
- Drainage patterns incorporating north draining systems including the Te Toroa, Hauparu, Waiteti, Tawhakarere, Tapuaeharuru, and Taupo Stream systems as well as several other unnamed streams and associated sub-catchments (see Map 2 and Map 6).
- Indented shoreline margins particularly in the east including enclosed bays and smaller lakeside embayment areas west of Gisborne Point easing to sweeping lakeside bays to the east towards Hinehopu.
- Variety of volcanic parent materials from harder volcanic materials associated with areas of steep to very steep cliff, bluff and slope features and lake margins to more unconsolidated tephra and alluvium associated with flat to undulating shoreline terrain. Limited areas of flat to rolling terrain associated with older ash deposits (see Map 5).
- Contrasting parent material is also reflected in variety of Land Use Capability classifications with wetness and soil limitation Class 3 lands in areas of more moderate slope particularly to the east and Class 7 and some Class 8 land associated with the steepest lake margins. The exception to this pattern is an area of steeper rolling hill country (Class 6) to the east of Gisborne Point (see Map 8).
- Land cover is characterised by a pattern of lower density suburban settlement defined by contiguous areas of forest both exotic and indigenous and some limited areas of pasture in the south east. This landcover pattern predominates from Gisborne Point east with exotic forested landcover dominant to the west (see Map 7).
- Areas of indigenous forest include several areas including lake Okataina Scenic Reserve Extension (northern) and parts of the Maungawhakamana-Hinehopu Scenic Reserve extension as well as the lake Rotoiti Scenic Reserve (see Map 10).
- Settlement patterns characterised by the smaller contained bay communities (Rural E lakeside settlement zone) of Hauparu and Ruato to the west, the headland community of Gisborne Point and the more dispersed shoreline communities of Rotoiti and to the east with Hinehopu at the lakes eastern most shoreline.
- Numerous Local Purpose Reserves (private, public and community) and open spaces (see Map 11).
- Architectural style and built form is represented by a variety of older, modest community and bach housing, community and Marae facilities as well as an emerging trend of larger more recent permanent dwellings on existing sites.
- Predominantly Maori land holdings.
- Significant cultural landscapes and features including Tapuaeharuru. (Beach), rock outcrops, bays and maunga (see Map 12).

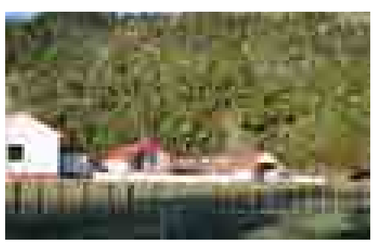
Local Character Areas:

- Hauparu/Ruato
- Gisborne Point
- Rotoiti
- Hinehopu

Landscape Management Issues:

- Recognition of identified lake water quality issues (Proposed Lakes Rotorua and Rotoiti Action Plan).
- Management of the scenic protection and amenity landscape resources including local/community open spaces and reserve (for example golf course area clearance adjoining DOC reserve).
- Protection and enhancement of existing indigenous vegetation patterns and the integration of existing and re-developing settlement areas with those patterns.
- Location, scale, form and style of residential re-development in relation to existing neighbourhood structure that recognises, reflects and reinforces existing amenity and scenic qualities.
- Appropriate recognition of cultural and community landscape features.
- Management of tangata whenua expectation to settle and build homes on ancestral lands adjacent to lake Rotoiti through structure planning and District Plan zoning.





4.5

Ruahine/Maraeroa Springs

0 0.5 1 km

1:20,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

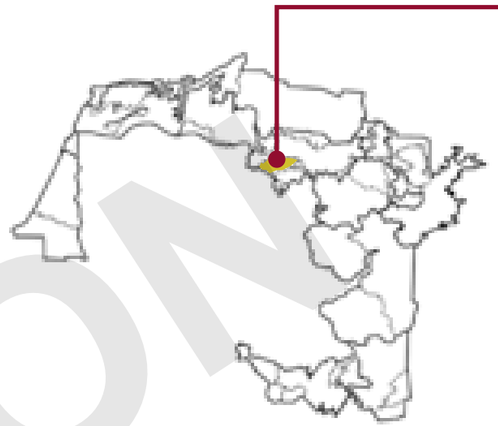
Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

4.0 ROTOITI

Landscape Character Area 4.5: Ruahine / Maraeroa Springs



Area Defined by:

- Lake Rotoiti to the north.
- Lake Rotorua catchment boundary to the west.
- SH 30 to the south.
- Tapaniau Point to the east.

Area Characterised by:

- Characterised by two contrasting underlying parent materials with unconsolidated to moderately consolidated flow tephra to the west reflecting a more broken and dissected and generally steeper terrain and a significant areas of unconsolidated material to the southeast with a more undulating terrain (see Map 5).
- Class 6 and 7 erodibility subclass land predominates in the east with more moderate Class 3 and 4 land in the southeast (see Map 8).
- Landcover is characterised by production plantation forestry in various stages of the harvest cycle from mature to recently harvested.
- Ruahine Maraeroa indigenous forest areas and Otutarara spring complexes including associated drainage patterns (see Map 6 and Map 7).
- Recognised cultural landscape features including Maupirua, Ruahine, Maraeroa, Otutarara, Waihunuhunu and Te Rei hot springs and eastern edge of Tikitere geothermal field (see Map 9 and Map 12).

Local Character Areas:

- Springs Features.
- Production Forest Lands.

Landscape Management Issues:

- Recognition of identified Lake water quality issues (Proposed Lakes Rotorua and Rotoiti Action Plan).
- Recognition of established primary industry sponsored, Regional Council and National Government Agency environmental programmes and initiatives in relation to the sustainable management of existing rural land use activities including forestry best practice in relation to rural land use actives on steep erosion prone slopes (New Zealand Forest Owners Association).
- Protection of spring features and integration of the management of these with wider Lake Action Plan proposals.
- Management of recognised cultural landscape features.

4.6

Rotokawau Surrounds

0 0.5 1 km

1:20,000 Aerial Source: Rotorua District Council: 2001, 2006.

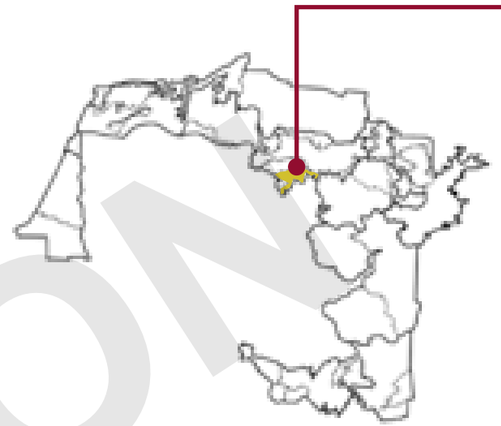
Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz © Boffa Miskell 2007

4.0 ROTOITI

Landscape Character Area 4.6: Rotokawau Surrounds



Area Defined by:

- SH30 to the north.
- Lake Rotokawau and the Lake Rotorua catchment boundary to the west.
- Lake Okataina Reserve and Lakes A zone to the south.
- Lakes A Zone (Okataina Road west) to the east.

Area Characterised by:

- Class 7 dominant lands reflecting the underlying geology of older breccias material – (erosion limited particularly gully erosion where vegetation on ash mantel is broken). Limited areas of Class 6 and some Class 3 land to the west (see Map 5 and Map 8).
- Steep to very steep dissected terrain to the east easing to flat to undulating upland terrace areas to the west (see Map 4).
- Eastern steeplands include north to north east draining stream and gully patterns of the upper and middle Te Toroa and Hauparu catchment that drain to Hauparu and Tapaniau Point bays.
- Landcover aligned with landform with eastern steeplands generally in exotic and indigenous forest cover and high producing grassland to the west on the more flat terrain (see Map 7).
- Indigenous forest areas contain Lake Okataina Scenic Reserve extension and Titoki farm forest areas (see Map 10).

Local Character Areas:

- Western Upland Terrace
- Eastern Steeplands

Landscape Management Issues:

- Monitor further development of significant areas of production forestry on steep erosion prone slopes in areas previously mapped as indigenous forest as a key indicator of landscape change.
- Recognition of established primary industry sponsored, Regional Council and National Government Agency environmental programmes and initiatives in relation to the sustainable management of existing rural land use activities. In particular “best practice” pastoral land use management in relation to soil conservation/protection and water quality protection.
- Preservation and enhancement of existing indigenous forest patches.

4.7

Lake Rotokawau

0 0.5 1 km

1:10,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

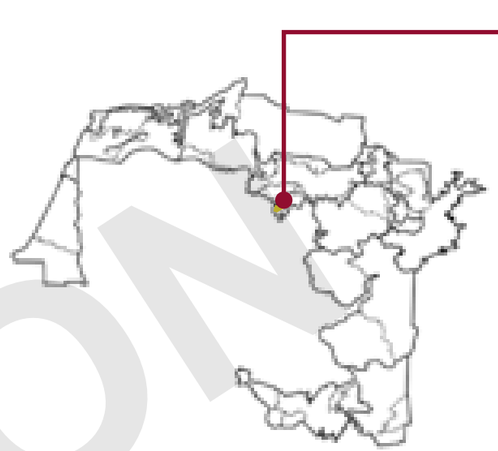
Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

4.0 ROTOITI

Landscape Character Area 4.7: Lake Rotokawau



Area Defined by:

- Contained Lake Catchment boundary slopes and associated indigenous vegetation to the east.

Area Characterised by:

- Small crater lake with open waters and margins (see Map 3).
- Steep to very steep lake rim slopes and scarps.
- Small enclosed sandy beach to the north.
- Flat to rolling upland terrace to the east.
- Indigenous forest landcover (see Map 7).
- Drainage patterns that drain to the west via the Waiohewa / Ohuanui Stream systems.
- Areas of indigenous forest within the Waimata stream corridor contiguous with the Lake Okataina Scenic Reserve to the south (see Map 7, Map 6 and Map 10).
- High scenic and amenity landscape values.
- Limited residential / recreational re-development.

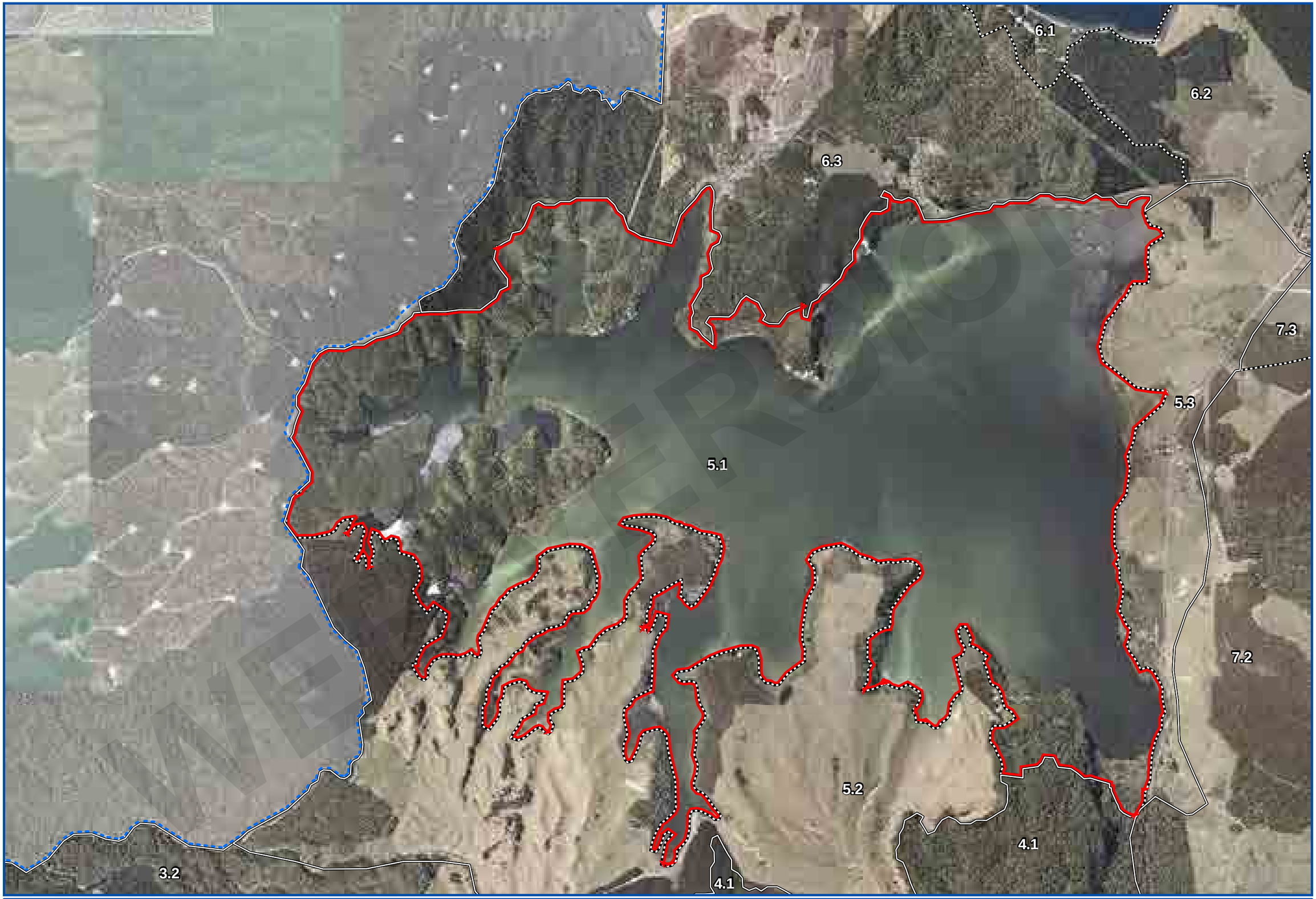
Local Character Areas:

- Crater Rim
- Eastern Bush Terrace

Landscape Management Issues:

- Integration of recreational and residential re-development in relation to existing natural character.
- Enhancement of existing patterns of indigenous vegetation in regard to habitat qualities/values.
- Management of potential recreational and amenity landscape resource (Rural A – General zone).

5.1



Lake Rotoehu and Margins

0 0.5 1 km

1:20,000 Aerial Source: Rotorua District Council: 2001, 2006.

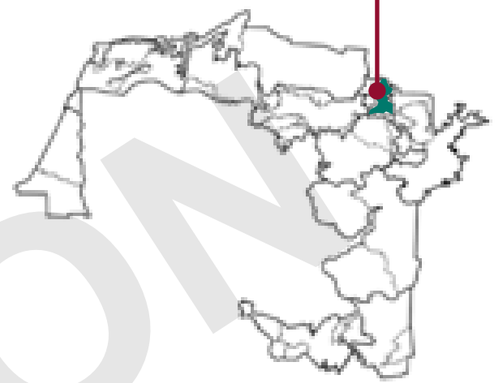
Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz © Boffa Miskel 2007

5.0 ROTOEHU

Landscape Character Area 5.1: Lake Rotoehu and Margins



Area Defined by:

- Pongakawa Valley Road to the north.
- Lakeside headland and embayment features with associated pastoral slopes to the west.
- Pastoral flats to the south.
- Forested (exotic and indigenous) lake catchment slopes to the east.

Area Characterised by:

- Open water of volcanic crater lake including numerous enclosed bay features defined by distinct headland landforms particularly on the western shoreline (see Map 2).
- Prominent series of headland landform features including northern headlands that are characterised exclusively by indigenous vegetation (Lake Rotoehu Scenic Reserve) (see Map 4, and Map 7).
- Unconsolidated parent material to the north reflecting Class 7 steeper narrow headland terrain easing to more moderate terrain and tephra flow pumice geology to the south (Class 3 and 4 predominant) (see Map 5 and Map 8).
- Steep western and eastern lakeside forested margin slopes as well as more moderately sloping pastoral lake margins including lake edge and reed lands / wetlands and fresh water margin habitats.
- Areas of development at Otautu Bay (Rural E zone - Lakeside Settlement) characterised by small scale residential settlement structure and modest residential architecture that does not detract from existing dominant natural character (see Map 11).
- Cultural landscape features including rock outcrops at Waipuia Point, northern and western bays (see Map 12).

Local Character Areas:

- Lake Waters
- Northern Forested Headlands
- Lakeside Margins

Landscape Management Issues:

- Recognition of identified Lake water quality issues (Proposed Lake Rotoehu Action Plan).
- Protection, preservation and enhancement of existing areas of indigenous vegetation and wetland habitat.
- Integration of rural land use activities in association with industry best practice (i.e. stock exclusion and sediment control).
- Scenic protection and amenity landscape protection in relation to subdivision use and development, particularly location, siting, built form, scale and architectural style that reflect existing settlement character and that do not detract from dominant natural character landscape values.
- Recognition of cultural landscape values and significant Maori land holdings, lake bed ownership with Te Arawa Lakes Trust.

5.2

Rotoehu Headlands and Maraua Point

0 0.5 1 km

1:20,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

5.0 ROTOEHU

Landscape Character Area 5.2: Rotoehu Headlands and Maraua Point

Area Defined by:

- Pongakawa Valley Road to the north.
- Rotoehu Road to the west.
- Matawhaura North Scenic Reserve to the south.
- Lake Rotoehu to the east.

Area Characterised by:

- Prominent pastoral headland features to the west of Lake Rotoehu (Rural A – General zoning) (see Map 2 and 11).
- Underlying geology characterised by both older breccias and unconsolidated material both susceptible to gully erosion (see Map 5).
- Steep dissected gully and ridge systems that drain individual headland features easing to more moderately sloping rolling terrain inland and to the northwest.
- Pastoral landcover dominant with small (2 – 6 ha) isolated indigenous forest patches to the northwest as well as indigenous forest headland/lake margins (see Map 7).
- Te Hiwi o Marama maunga in south east (see Map 12).

Local Character Areas:

- Northern Rolling Hills
- Southern Headland Steeplands

Landscape Management Issues:

- Recognition of identified Lake water quality issues (Proposed Lake Rotoehu Action Plan).
- Management of lake headland features in relation to the dominant national character of Lake Rotoehu.
- Erosion and sediment control in regard to pastoral land use activities – industry best practice and guidelines.
- The protection, preservation and enhancement of existing areas of indigenous vegetation.
- Integrated landscape management of headland features in relation to Lake water bodies.
- Providing access to lake and the management of amenity and recreational landscape resources.

5.3

Southern Lakeside Slopes and Shores

0 0.5 1 km

1:10,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

5.0 ROTOEHU

Landscape Character Area 5.3: Southern Lakeside Slopes and Shores

Area Defined by:

- Lake Rotoehu to the north.
- Lake Rotoiti Scenic Reserve to the west.
- SH 30 to the south.
- Pongakawa Valley Road to the east.

Area Characterised by:

- Pastoral flats south of Lake Rotoehu on predominantly volcanic alluvium parent material resulting in a well defined area of flat to undulating north facing terrain.
- Indented lake shoreline margins that contain Te Wairoa Bay and Te Pohue Bay including the very steep south facing escarpments of Lake Rotoiti Scenic Reserve that define the northern margins of Te Pohue Bay out to the north-eastern point of southern Matawhaura Bay headland (see Map 2).
- Class 3 and 4 dominant with limited areas of Class 6 land to the west (Te Ahau Point) and east (Te Wairoa Bay) (see Map 8).
- Landcover predominated by high producing exotic grassland with limited areas of indigenous vegetation to the west adjoining the Lake Rotoiti Scenic Reserve and significant (>8ha) herbaceous wetland on the lake margins to the east.
- Settlement patterns include limited areas of existing residential development on Morehu Road (Rural E – lakeside settlement) and stand alone farm dwellings and buildings within the General Rural Zone (Rural A) (see Map 11).
- Waitangi hot water springs feature (see Map 9).

Local Character Areas:

- Morehu Road Settlement
- Lakeside Rural

Landscape Management Issues:

- Recognition of identified Lake water quality issues (Proposed Lake Rotoehu Action Plan).
- Protection, preservation and enhancement of existing areas of indigenous vegetation.
- Integration of existing settlement patterns of Morehu Rd and surrounding indigenous vegetation.
- Protection and enhancement of areas of existing wetland habitat and wetland habitat potential.
- Rural land use industry best practice in the recognition of soil and water quality issues.
- Scenic protection on SH 30 corridor.
- Recognition of community amenity and recreational landscape resources – Waitangi Springs.

6.1

Lake Rotoma and Caldera

0 0.5 1 km

1:30,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

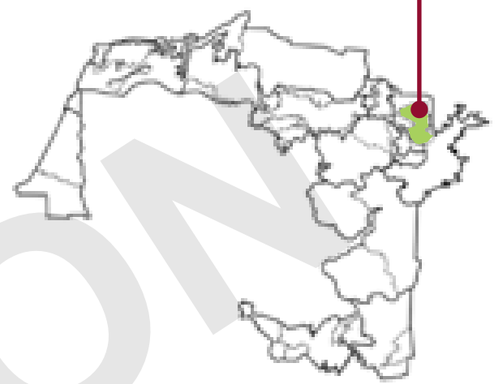
Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

6.0 ROTOMA

Landscape Character Area 6.1: Lake Rotoma and Caldera



Area Defined by:

- Manawahe Road to the north.
- Okopua Point / Headland to the west.
- SH30 to the south.
- Steep indigenous lakeside slopes to the east.

Area Characterised by:

- Open (deep) waters of volcanic crater lake.
- Several open lakeside bays and beaches of recreational value as well as the more contained Whangaroa Bay that extends to the west and is defined by Okapu Point headland (see Map 2 and Map 3).
- Lake shoreline also defined by minor headland features and associated indigenous forest landcover (Otumarokura and Patarata Points) that reflect the volcanic lake forming processes.
- Onewhero, Whakarewarewa and Matahi Lagoon features (see Map 2 and Map 3).
- Underlying surrounding lakeside geology characterised by older breccias material reflecting broken steep to very steep terrain particularly in the north.
- Landcover dominated by indigenous forest and herbaceous freshwater vegetation with strong existing patterns of wetland vegetation in association with lagoon features (see Map 7).
- Indigenous forested slopes include extensive areas of the Lake Rotoma Scenic Reserve (DoC) (see Map 10).
- Cultural landscape and features including Lake Rotoma, bays, promontories, lagoons and Motu a Tara (Island) (see Map 12).

Local Character Areas:

- Lake Open Waters
- Forested Lake Margins

Landscape Management Issues:

- Preserving and protecting existing high levels of lake water quality.
- Preserving, protecting and enhancing existing surrounding areas of indigenous vegetation in particular wetland lagoon vegetation areas.
- Management of existing amenity and recreational landscape values.
- Recognition of cultural landscape values.
- Scenic protection on SH 30 corridor.

6.2

Okopua Point

0 0.5 1 km

1:10,000 Aerial Source: Rotorua District Council: 2001, 2006.

Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz © Boffa Miskel 2007

6.0 ROTOMA

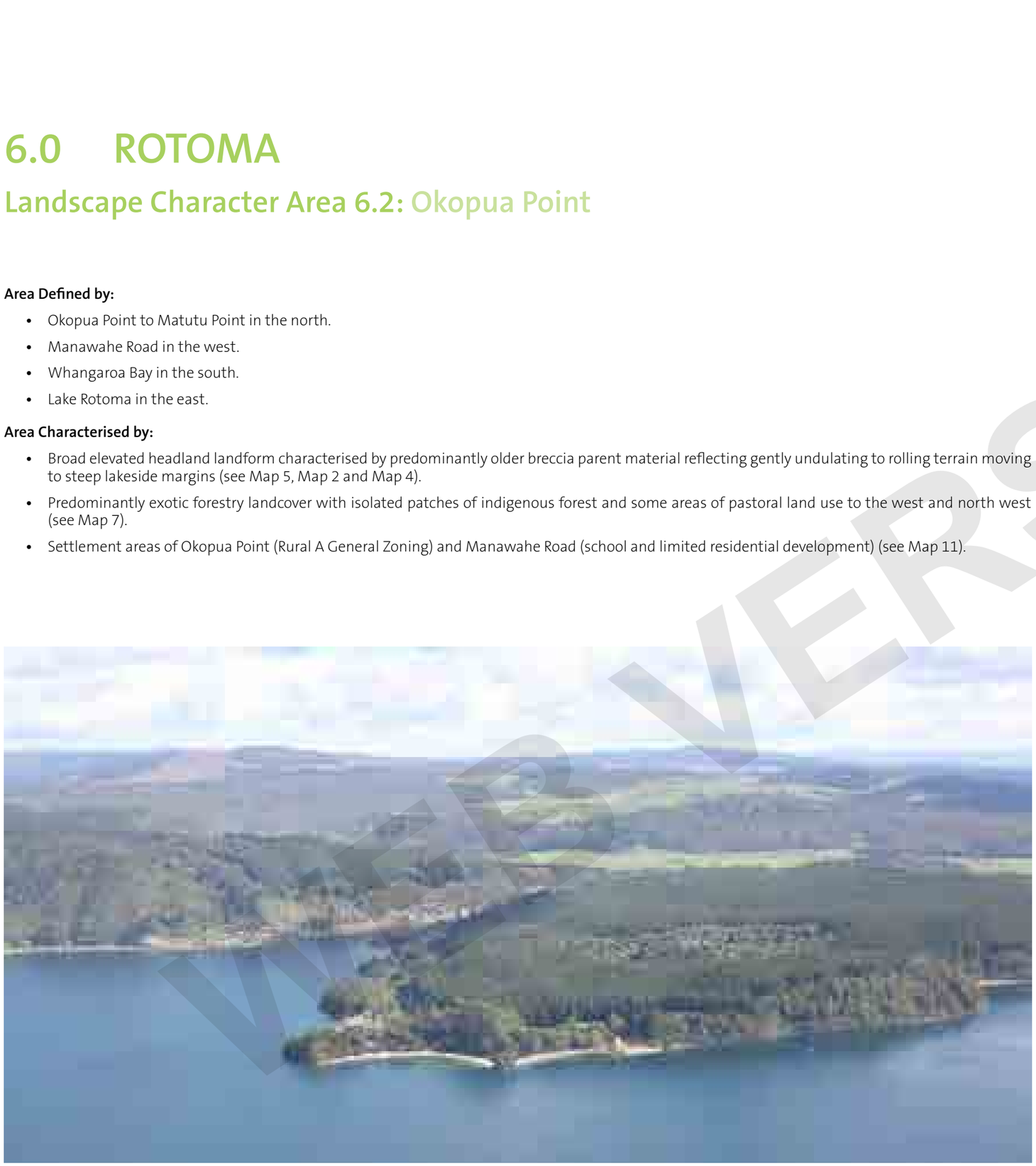
Landscape Character Area 6.2: Okopua Point

Area Defined by:

- Okopua Point to Matutu Point in the north.
- Manawahe Road in the west.
- Whangaroa Bay in the south.
- Lake Rotoma in the east.

Area Characterised by:

- Broad elevated headland landform characterised by predominantly older breccia parent material reflecting gently undulating to rolling terrain moving to steep lakeside margins (see Map 5, Map 2 and Map 4).
- Predominantly exotic forestry landcover with isolated patches of indigenous forest and some areas of pastoral land use to the west and north west (see Map 7).
- Settlement areas of Okopua Point (Rural A General Zoning) and Manawahe Road (school and limited residential development) (see Map 11).



Local Character Areas:

- Headland Forest
- Lakeside Margins

Landscape Management Issues:

- Preserving and protecting existing high levels of lake water quality.
- Preserving, protecting and enhancing existing surrounding areas of indigenous vegetation including wetland vegetation areas.
- Integration of existing patterns of indigenous vegetation with existing lakeside development.
- Recognition of regionally identified outstanding landscape values in relation to lakeside development of Okopua point.
- Recognition of established primary industry sponsored, Regional Council and National Government Agency environmental programmes and initiatives in relation to the sustainable management of existing rural land use activities including recognition of Forestry best practice in relation to rural land use actives (New Zealand Forest Owners Association).

6.3

Rotoma Northern Slopes

0 0.5 1 km

1:30,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

6.0 ROTOMA

Landscape Character Area 6.3: Rotoma Northern Slopes

Area Defined by:

- District boundary with Western Bay of Plenty District in the north.
- Lake Rotoehu to the west.
- Lake Rotoma to the south.
- District boundary with Whakatane District in the east.

Area Characterised by:

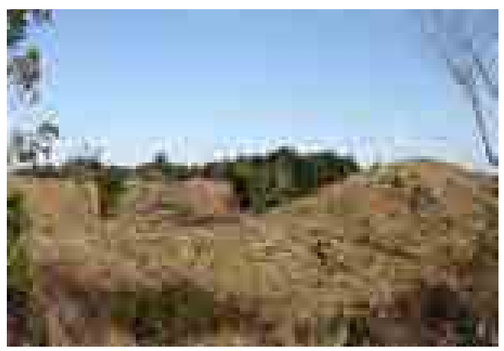
- Underlying geology of breccias older than Taupo breccia of unconsolidated to moderately consolidated tephra material that is described as a relatively stable landform but susceptible to severe gully erosion as a result of vegetation disturbance (see Map 5).
- Erosion susceptibility is reflected in the Class 6 and 7 land use capability classifications for this area and associated erosion subclass classifications (see Map 8).
- Landcover is predominantly characterised by plantation forestry particularly north of Lake Rotoma with limited areas of pasture land to the east of the lake in the southeast of this character area.
- A significant area of indigenous forest (332.65ha) between Lakes Rotoma and Rotoehu (see Map 7).
- North of Manawahe Road streams drain in a northerly direction away from Lake Rotoma through the Rotoehu Forest. Eastern lake margin areas however do drain into the Lake (see Map 6).
- Landcover is also characterised by smaller isolated patches of indigenous forest, for example, the contiguous lowland modified primary tawa-kamahi-rewarewa forest, currently under QEII covenant, north of Otautu Bay (see Map 10).

Local Character Areas:

- Northern Pine Forest
- Indigenous Forest Land (between Rotoma and Rotoehu)
- South-eastern Pasture Land

Landscape Management Issues:

- Erosion and sediment control of forestry harvest operations following industry best practice and environmental guidelines.
- Preservation and protection and enhancement of existing areas of indigenous vegetation in particular wetland.
- Recognition of established primary industry sponsored, Regional Council and National Government Agency environmental programmes and initiatives in relation to the sustainable management of existing rural land use activities In particular "best practice" rural land use activities on the eastern pastoral slopes to protect soil and lake water quality. (e.g. Environment Bay of Plenty Environmental Farm Plan guidelines).



Southern Rotoma Settlement Slopes

0 0.5 1 km

1:20,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

6.0 ROTOMA

Landscape Character Area 6.4: Southern Rotoma Settlement Slopes

Area Defined by:

- Lake Rotoma to the north.
- Lake Rotoma Scenic Reserve (part) and Whangaroa Bay to the west.
- Waitangi Valley ridgeline and Rotoma Hill to the south.
- Indigenous vegetation contiguous with Rotoma Forest and Rotoma Scenic Reserve to the east.

Area Characterised by:

- Harder volcanic parent material reflected in predominantly strongly rolling to very steep and varied southern Lake margin terrain particularly in the east and on the northern toe slopes of Rotoma Hill (see Map 4 and Map 5).
- Areas of flat to undulating terrain characterising the immediate lake margin settlement areas particularly at the mouth of Whangaroa Bay (Rotoma settlement), Anaputa point and SH30 through to Matahi Lagoon (see Map 2 and Map 3).
- Drainage patterns include the north draining Rere Stream as well as several other unnamed north draining streams that flow through areas of indigenous vegetation (see Map 6).
- Lake margin landcover characterised by significant areas of indigenous vegetation.
- Exotic plantation forestry south of eastern indigenous forest areas to the Waitangi Valley ridgeline.
- Existing settlement patterns characterised by a small clustered neighbourhood area in the west (Oxford Road) and ribbon settlement patterns aligned with SH30 for the remainder (Rural E – Lakeside settlement). Includes public amenity, open space and reserve areas.
- Modest scale, form, architectural style and character of residential dwellings.

Local Character Areas:

- Western Neighbourhoods
- Eastern Ribbon Neighbourhoods

Landscape Management Issues:

- Protection and maintenance of high lake water quality (in accordance with Lake Rotorua Action Plan as initiated by working party).
- Sediment and erosion control of exotic production forestry areas at harvest.
- Protection and enhancement of areas of existing indigenous vegetation.
- Scenic protection and landscape amenity values along the SH 30 corridor.
- Management of community amenity, recreational and open space areas.

6.5

Rotoma Hill

0 0.5 1 km

1:20,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

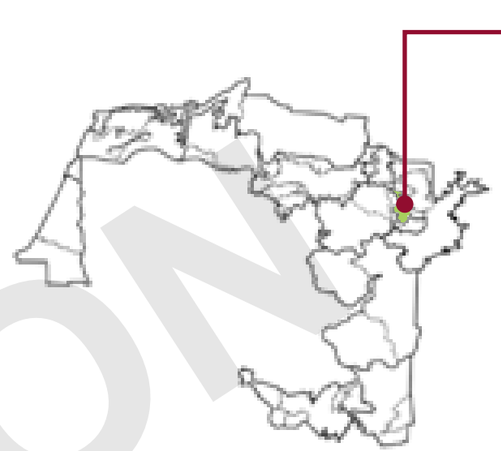
Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

6.0 ROTOMA

Landscape Character Area 6.5: Rotoma Hill

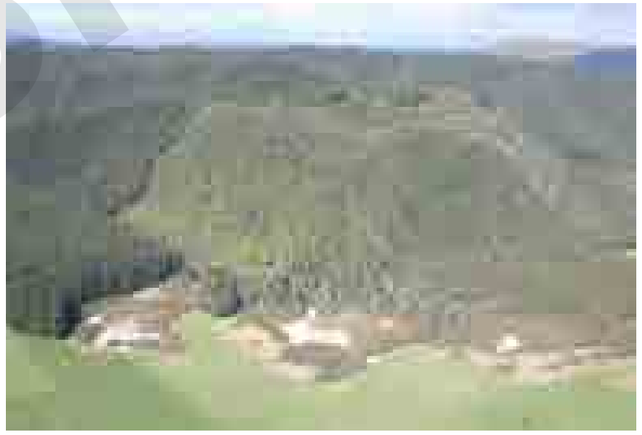


Area Defined by:

- Lake Rotoma settlements and SH30 to the north.
- Waitangi Valley to the west.
- Upper Kaipara Valley to the south.
- Southern north draining lake slopes to the east.

Area Characterised by:

- Elevated volcanic uplift and prominent dome landform feature to the west (see Map 4).
- Class 7 erosion susceptible land featuring steeply dissected ridgeline systems and land of broken and varied steeply rolling to very steep terrain (see Map 8).
- Rere Stream draining to the north, with numerous other unnamed streams draining west to the Waitangi Valley, east to Anaputa Point and south to the Tarawera River system (see Map 6).
- Landcover in a mix of forest types both exotic and indigenous with indigenous predominating on the northern and north eastern slopes (Lake Rotoma Scenic Reserve extension) and on the western dome (Maungawhakamana-Hinehopu Scenic Reserve extension) see Map 7 and Map 10).

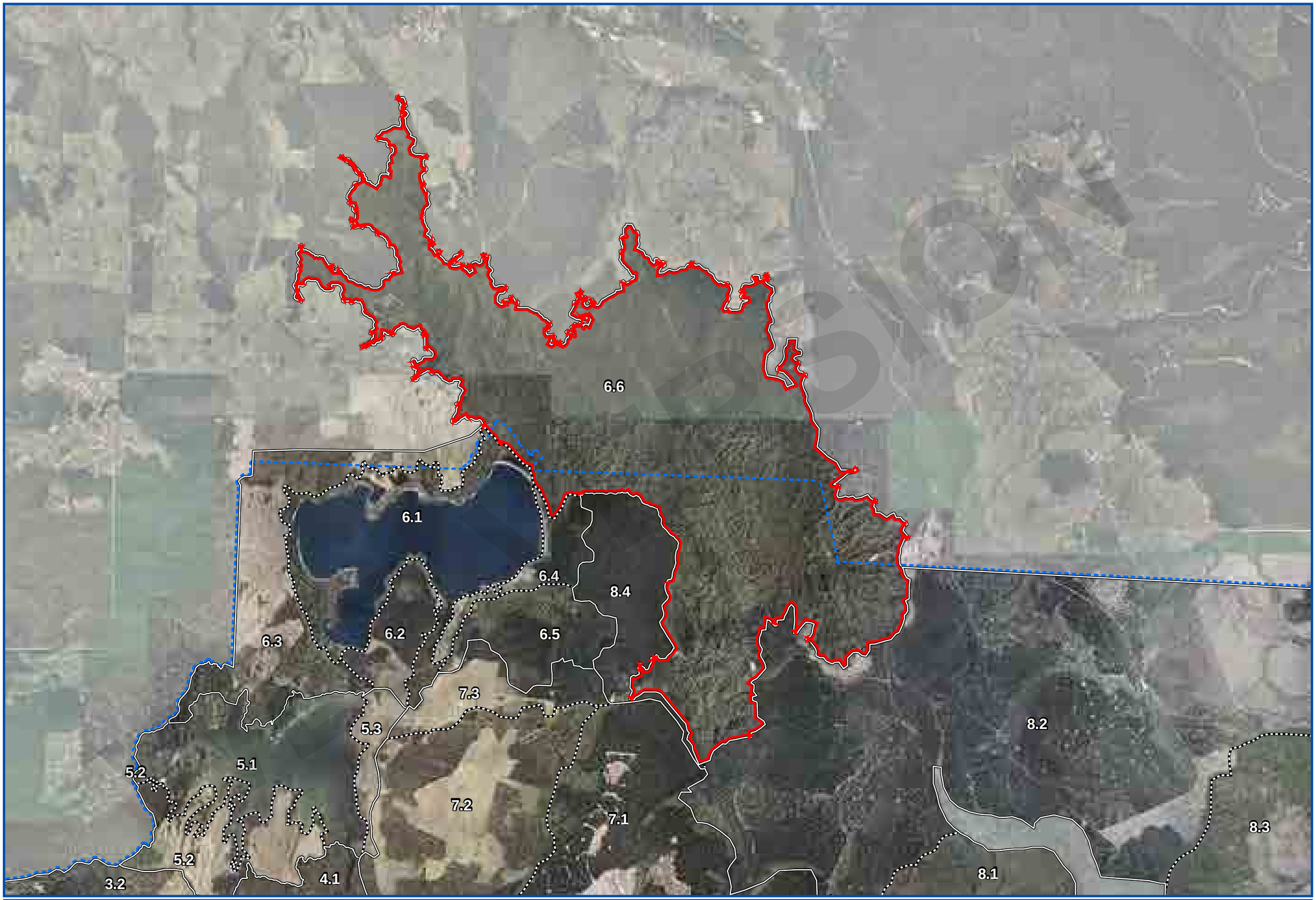


Local Character Areas:

- Pine Lands
- Bush Lands

Landscape Management Issues:

- Protection of areas of indigenous vegetation.
- Recognition of established primary industry sponsored, Regional Council and National Government Agency environmental programmes and initiatives in relation to the sustainable management of existing rural land use activities.



Rotoma Forest

0 0.5 1 km

1:75,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

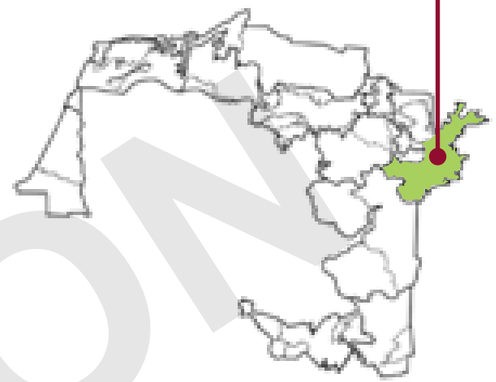
Landscape Type
Landscape Character Area
Rotorua District Council Boundary

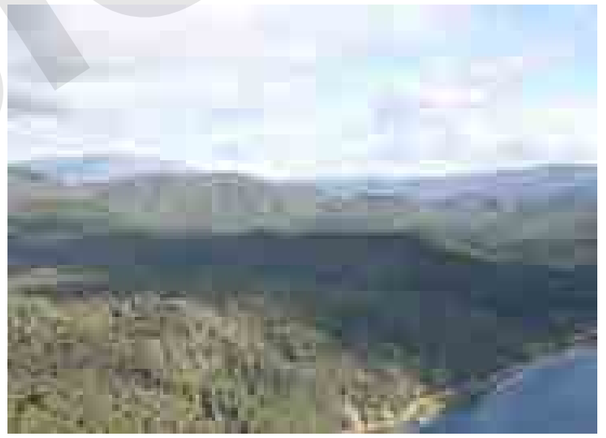
DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

6.0 ROTOMA

Landscape Character Area 6.6: Rotoma Forest





Area Defined by:

- Waitangi Valley plateau to the north.
- Tarawera River complex to the west and south.
- District boundary with Whakatane District to the east.

Area Characterised by:

- Predominantly steep to very steep area of dissected upland terrain of volcanic origin with contiguous naturally occurring vegetation cover (see Map 4 and Map 5).
- Land cover dominated by indigenous forest includes Maungawhakamana indigenous forest and Maungawhakamana Tasman Forest Accord Reserve and Maungawhakamana-Hinehopu Scenic Reserve extension (see Map 7).
- Extends to the northeast beyond the District boundary to include Rotoma Forest, part of Rotoma Scenic Reserve and Mangaone Scenic Reserve (see Map 10).
- Numerous lowland and semi coastal indigenous forest types (rimu / tawa dominant) as well as areas of manuka shrubland and kanuka forest. The area is at a transitional zone for many coastal species and forms part of a natural area corridor to the coastal foothills to the north east.
- High ecological and habitat values.
- SH 30 road corridor.

Local Character Areas:

- N/A

Landscape Management Issues:

- Protection and preservation of indigenous forest areas.

7.1

Rotoiti Forest South

0 0.5 1 km

1:50,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

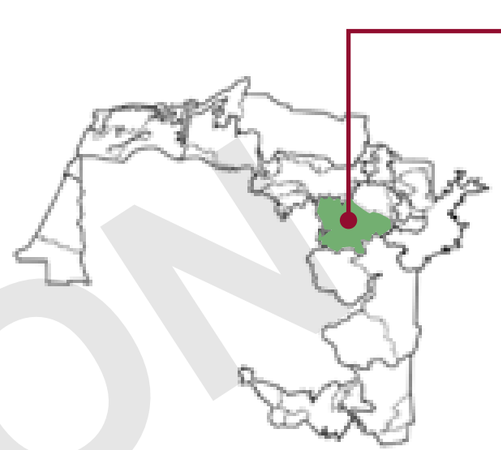
Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

7.0 ROTOITI FOREST

Landscape Character Area 7.1: Rotoiti Forest South



Area Defined by:

- Lake Rotoiti margins to the north.
- Lakes A Zone boundary to the west.
- Tarawera River upper catchment to the south.
- Waitangi Valley to the east.

Area Characterised by:

- Underlying volcanic geology and associated landforms derived from a range of base rock types with older ash material dominating in the south and harder volcanic material to the north. With grassed and forested older ash based landforms being generally stable when less than 20 degrees and prone to sheet erosion when greater than 20 degrees slope (see Map 5).
- Landforms also characterised by undulating to strongly rolling terrain (4 - 21 degrees slope) particularly to the north with Class 6 land dominant and associated erosion limitation sub-classes (see Map 8).
- Landform is also characterised by several prominent knoll features to the south including Haroharo (817m asl), Pukerimu (800m asl), Tuahu (665m asl) and an unnamed knoll (651m asl) (see Map 4 and Map 2).
- Drainage patterns include upper catchments of numerous unnamed stream systems that drain north through Rotoiti settlement areas to Lake Rotoiti as well as the named Tawhakarere and Waiteti Stream systems. Knoll features also drain south to the upper Mangakotukutuku Stream catchments that are part of the wider Tarawera River system (see Map 6).
- Landcover dominated by production forestry with areas of indigenous vegetation associated with steep to very steep knoll slopes and upper stream gullies in the south and lower stream corridors in the north. Majority of indigenous forest areas represent potential ecological values and include Haroharo, Okataina Scenic Reserve extension (eastern), Lake Okataina Scenic Reserve extension (northern), and parts of the Maungawhakamana-Hinehopu Scenic Reserve extension areas (see Map 7 and Map 10).

Local Character Areas:

- Northern Slopes
- Southern Knolls

Landscape Management Issues:

- Securing the protection and preservation of existing areas of indigenous vegetation.
- Recognition of established primary industry sponsored, Regional Council and National Government Agency environmental programmes and initiatives in relation to the sustainable management of existing rural land use activities including Forestry management practices that recognise soil and water quality issues at harvest, particularly within Lake Rotoiti catchment.
- Strengthening of patterns of indigenous vegetation within riparian corridors.
- Predominantly Maori land holdings.

7.2

South Rotoehu Hill Country

0 0.5 1 km

1:30,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

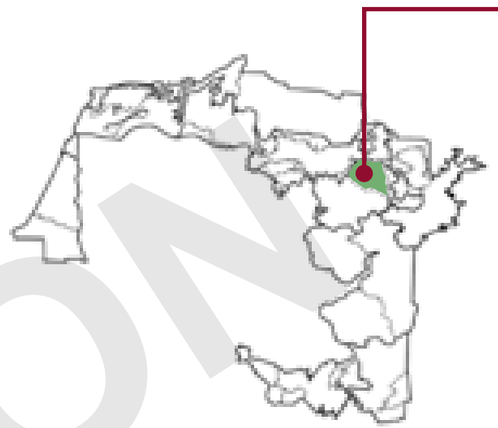
Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

7.0 ROTOITI FOREST

Landscape Character Area 7.2: South Rotoehu Hill Country



Area Defined by:

- SH 30 to the north.
- Tawhakarere Stream to the west and south.
- Waitangi Valley to the east.

Area Characterised by:

- Underlying geology and associated landforms characterised by harder volcanic material to the south easing to older breccia material to the north with this northern parent material resulting in landforms more susceptible to severe gully erosion (see Map 5).
- Class 6 land dominant to the south with limited areas of Class 7 in the north reflecting undulating to rolling terrain in the south and more strongly rolling steep and dissected terrain in the north and northwest (see Map 8)
- Drainage and subcatchment hill slope patterns characterised by the Tawhakarere, Taupo and Maero Stream systems that drain north to both Lake Rotoiti and Lake Rotoehu via the Waitangi Valley (see Map 6).
- Landcover dominated by pastoral land uses with isolated patches of exotic forestry to the south and north. The majority of the pastoral land drains north to Lake Rotoehu.
- Significant areas of indigenous vegetation including the Tawhakarere Stream corridor Maungawhakamana-Hinehopu Scenic Reserve extension that are contiguous with the Maungawhakamana indigenous forest to the south and Lake Rotoiti to the north. Other areas of indigenous vegetation include three patches of the Matawhaura forest (see Map 7 and Map 10).

Local Character Areas:

- Northwestern Bush Hills
- Southern Pastureland

Landscape Management Issues:

- Water quality and pastoral / rural land use activities that recognise the proposed Lake Rotoehu Action Plan.
- Securing the long term protection of existing areas of indigenous vegetation particularly within key riparian corridors.
- Pastoral land use and stock management in relation to the management of fragmented and isolated indigenous forest patches.
- Predominantly Maori land Holdings.

7.3

Waitangi Valley

0 0.5 1 km

1:20,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

7.0 ROTOITI FOREST

Landscape Character Area 7.3: Waitangi Valley

Area Defined by:

- SH30 to the north.
- South Rotoehu hill country to the west.
- Upper North Tarawera Plateau to the south.
- Rotoma Hill South to the east.

Area Characterised by:

- Volcanic alluvium parent material susceptible to tunnel gully, stream bank and sheet erosion (see Map 5 and Map 4).
- Class 3 land of flat to undulating terrain (see Map 8).
- Drainage patterns characterised by unnamed overland stream and underground flow paths (see Map 2 and Map 6).
- Dominated by pastoral landcover with small isolated patches of indigenous forest in the north west that include the Rotoma Recreation Reserve extension and Rotoma Recreation Reserve.
- Areas of plantation forestry on the eastern valley floor contiguous with a larger plantation associated with Rotoma Hill South (see Map 7).
- Parts of the Maungawhakamana-Hinehopu Scenic Reserve extension to the south east.

Local Character Areas:

- Rotoma Recreation Reserve
- Pastoral Valley Floor

Landscape Management Issues:

- Water quality and pastoral / rural land use activities that recognise the proposed Lake Rotoehu Action Plan.
- Protection of isolated and fragmented indigenous forest remnants.
- Predominantly Maori land holdings.

8.1

Makatiti Dome North Eastern Slopes

0 0.5 1 km

1:50,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

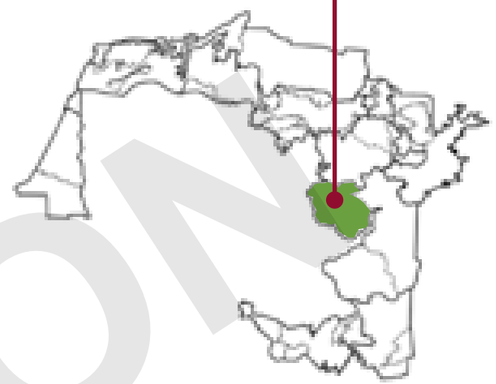
Landscape Type
Landscape Character Area
Rotorua District Council Boundary
Study Area Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

8.0 TARAWERA

Landscape Character Area 8.1: Makatiti Dome North Eastern Slopes



Area Defined by:

- Rotoiti Forest to the north.
- Lakes A Zone boundary to the west.
- Tarawera River to the south.
- Tarawera River and associated subcatchments to the east.

Area Characterised by:

- Portion of north-eastern slopes of a prominent and outstanding volcanic landform characterised by a small knoll and associated sloping landforms of the upper Mangakotukutuku Stream (see Map 4).
- Class 7 and 8 land in the south with steep to very steep terrain with more undulating and rolling terrain associated with the Class 6 land of the northern knoll - excluding steep knoll slopes (see Map 8).
- Areas of exotic and indigenous forest that include the Makatiti Dome extension and the Okataina Scenic Reserve extension (eastern) (see Map 7).
- Drainage patterns include smaller streams of the upper Mangakotukutuku Stream in indigenous forest cover in the north and smaller streams associated with the subcatchments of the lower Mangakotukutuku Stream system in the south (see Map 6).
- Recognised cultural landscape values (see Map 12).

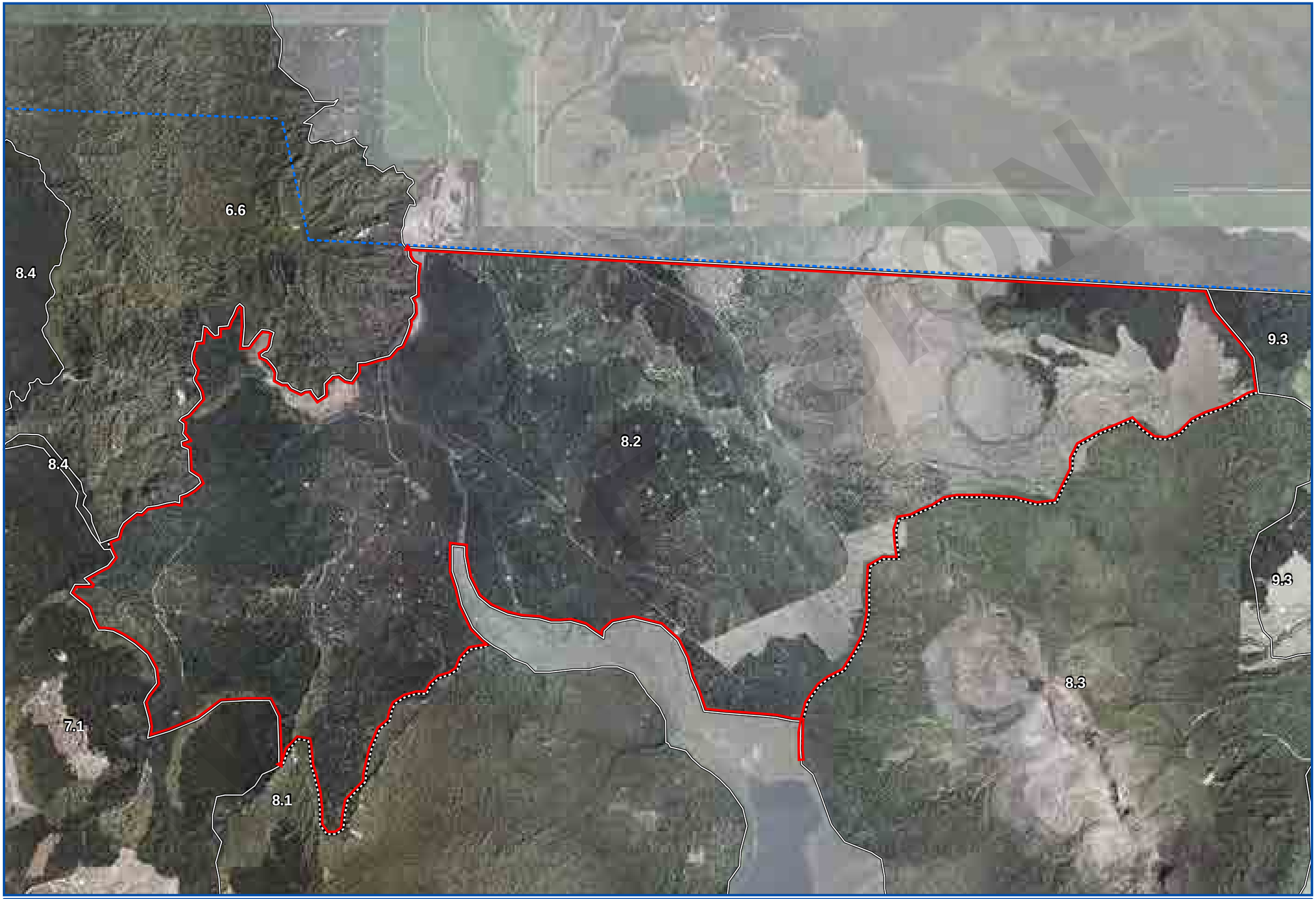
Local Character Areas:

- Knoll Pine Forest
- Indigenous Forest Slopes

Landscape Management Issues:

- Protection of areas of indigenous vegetation.
- Recognition of established primary industry sponsored, Regional Council and National Government Agency environmental programmes and initiatives in relation to the sustainable management of existing rural land use activities including forestry management practices that recognise soil and water quality issues.
- Large Maori land holdings.

8.2



Tarawera River Valley Complex

0 0.5 1 km

1:50,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

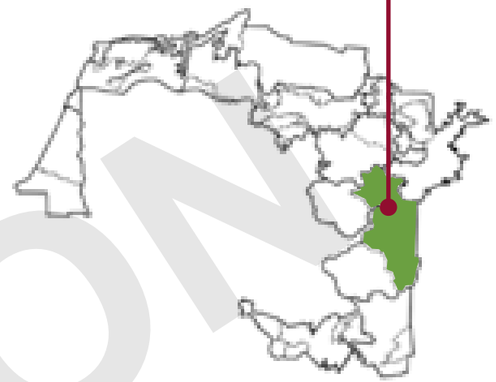
Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

8.0 TARAWERA

Landscape Character Area 8.2: Tarawera River Valley Complex



Area Defined by:

- Rotoiti and Rotoma Forests to the north.
- Makatiti Dome to the west.
- Mount Tarawera to the south.
- Rotorua District boundary with Whakatane District to the east.

Area Characterised by:

- Variety of underlying landform parent materials with a complex mix of harder volcanic and softer ash and breccia material in the northern Tarawera River subcatchments that include Class 6 and 7 dissected steep to rolling land in the upper catchment areas and Class 4 undulating land in the valley floors (see Map 5 and Map 8).
- Older breccia and soft tephra material in the Waiauta Stream subcatchments characterised by predominantly Class 4 undulating land in the west and steeper more dissected Class 6 and 7 land in the east (see Map 8).
- Older ash material dominating in the Waiwhakapa Stream sub-catchments characterised by Class 4 undulating to rolling land that also includes a Class 6 and 7 land volcanic knoll features.
- Drainage pattern characterised by the Kaipara, Te Haehaenga and Mangakotukutuku Stream sub-catchments in the north, the Waiauta Stream sub-catchments and Upper Waiwhakapa Stream sub-catchments in the south all of which drain to the Tarawera River through Kawerau and on to Awaateatua Beach east of Matata (see Map 6).
- Land cover is dominated by production forestry with limited areas of indigenous vegetation.
- Indigenous forest areas are characterised by small and isolated patches associated with the Mangakotukutuku Stream system, parts of the Kaipara Stream system and fragmented and isolated patches with the Waiauta Stream system including areas identified as Tarawera River and tributary stream margins and Tarawera Scarp (see Map 6 and Map 7).
- Isolated indigenous forest patches of the upper subcatchments of the upper Waiwhakapa Stream system identified as Tarawera Scarp indigenous forest areas.
- Extensive forestry access road and track network.

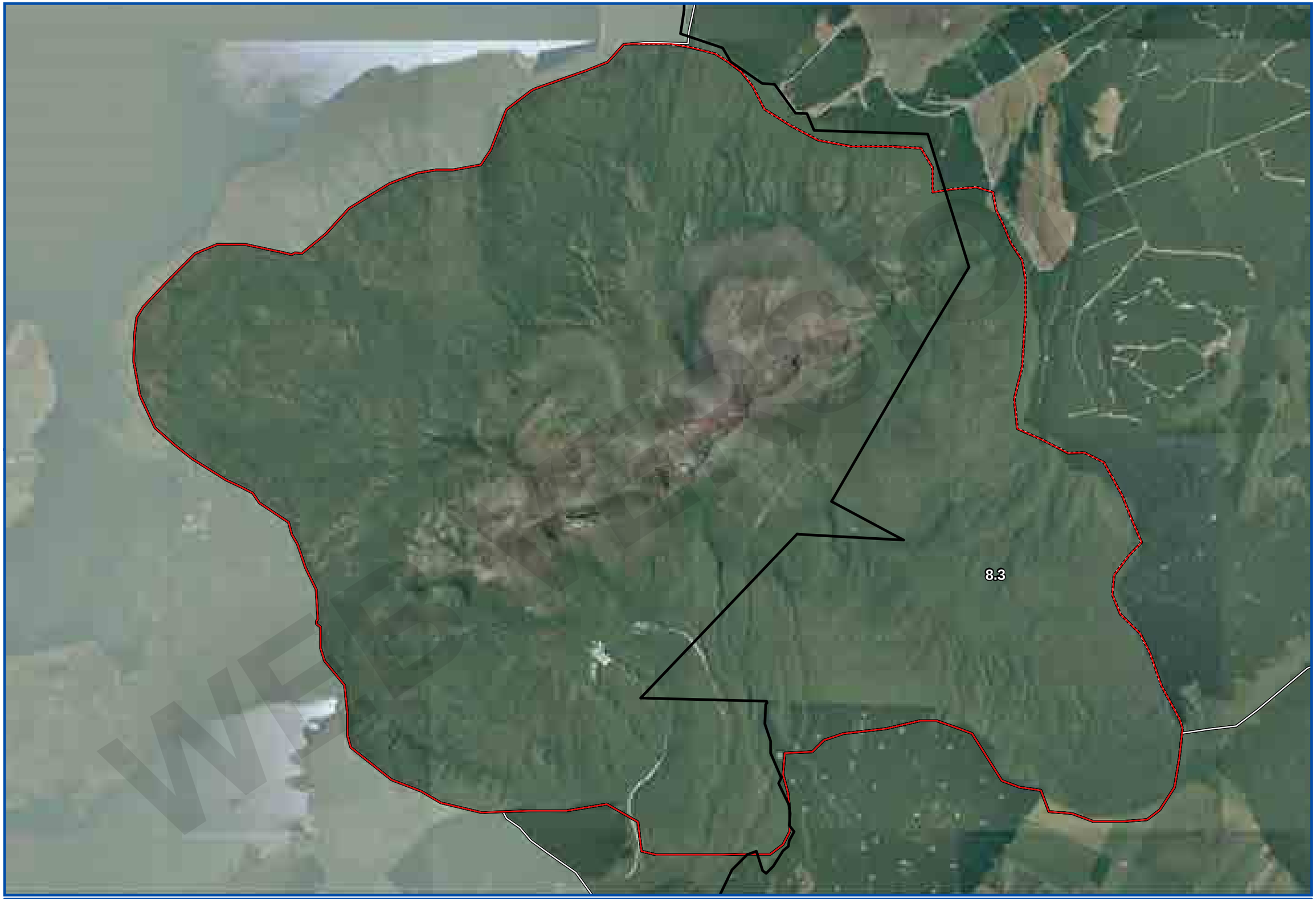
Local Character Areas:

- Northern Sub-catchments
- Mid Sub-catchments
- Southern Sub-catchments

Landscape Management Issues:

- Recognition of established primary industry sponsored, Regional Council and National Government Agency environmental programmes and initiatives in relation to the sustainable management of existing rural land use activities including forestry management practices that recognise soil and water quality issues.
- The management of visual and amenity landscape effects of clear felling exotic forestry operations in relation to ONFLs.

8.3



Tarawera Ridge

0 0.5 1 km

1:33,175 **Aerial Source: Rotorua District Council: 2001, 2006.**

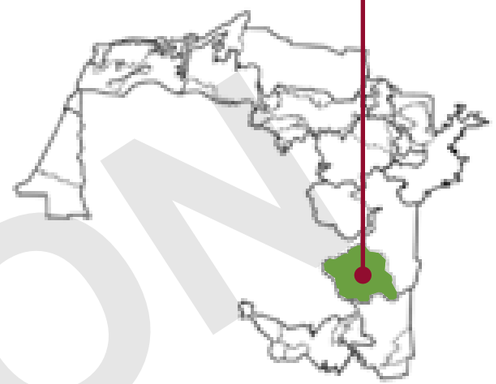
Landscape Type
Landscape Character Area
Rotorua District Council Boundary
Study Area Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

8.0 TARAWERA

Landscape Character Area 8.3: Tarawera Ridge



Area Defined by:

- Mount Tarawera summit to the north.
- Lakes A Zone boundary to the west.
- Eastern Rerewhakaaitu flats to the south.
- Upper sub-catchments of the Waiwhakapa Stream system to the east.

Area Characterised by:

- Broad volcanic ridge derived from harder parent material that is part of the Mount Tarawera volcanic landform (see Map 5).
- Ridge dome feature (830m asl) (see Map 2 and Map 5).
- Undulating to strongly rolling broad ridge terrain with areas of steep to very steep land associated with incised gullies to the north and transitional scarps in the south.
- Drainage patterns characterised by the upper Waiwhakapa tributaries that drain to the north and unnamed tributaries of the Lake Rerewhakaaitu that drain to the south (see Map 6).
- Landcover dominated by indigenous forest that includes part of the Mount Tarawera Forest Accord in the north, Tarawera indigenous forest areas and DoC Stewardship Area (Crater Block Crown Land) (see Map 7 and Map 10)
- Cultural landscape of Mount Tarawera and lake edge settlements (see Map 12)
- Large Maori land holdings.

Local Character Areas:

- Tarawera Ridge

Landscape Management Issues:

- Protection and preservation of indigenous vegetation associated with outstanding natural landscape.
- Management of and access to recreational and amenity landscape open space resources outside of the DoC land.
- The integration of recreational and working landscape (forestry) activities.

8.4

Upper Kaipara Valley

0 0.5 1 km

1:20,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

8.0 TARAWERA

Landscape Character Area 8.4: Upper Kaipara Valley

Area Defined by:

- Rotoma Hill South to the north.
- South Rotoehu Hill Country to the west.
- Rotoma Forest to the south and east.

Area Characterised by:

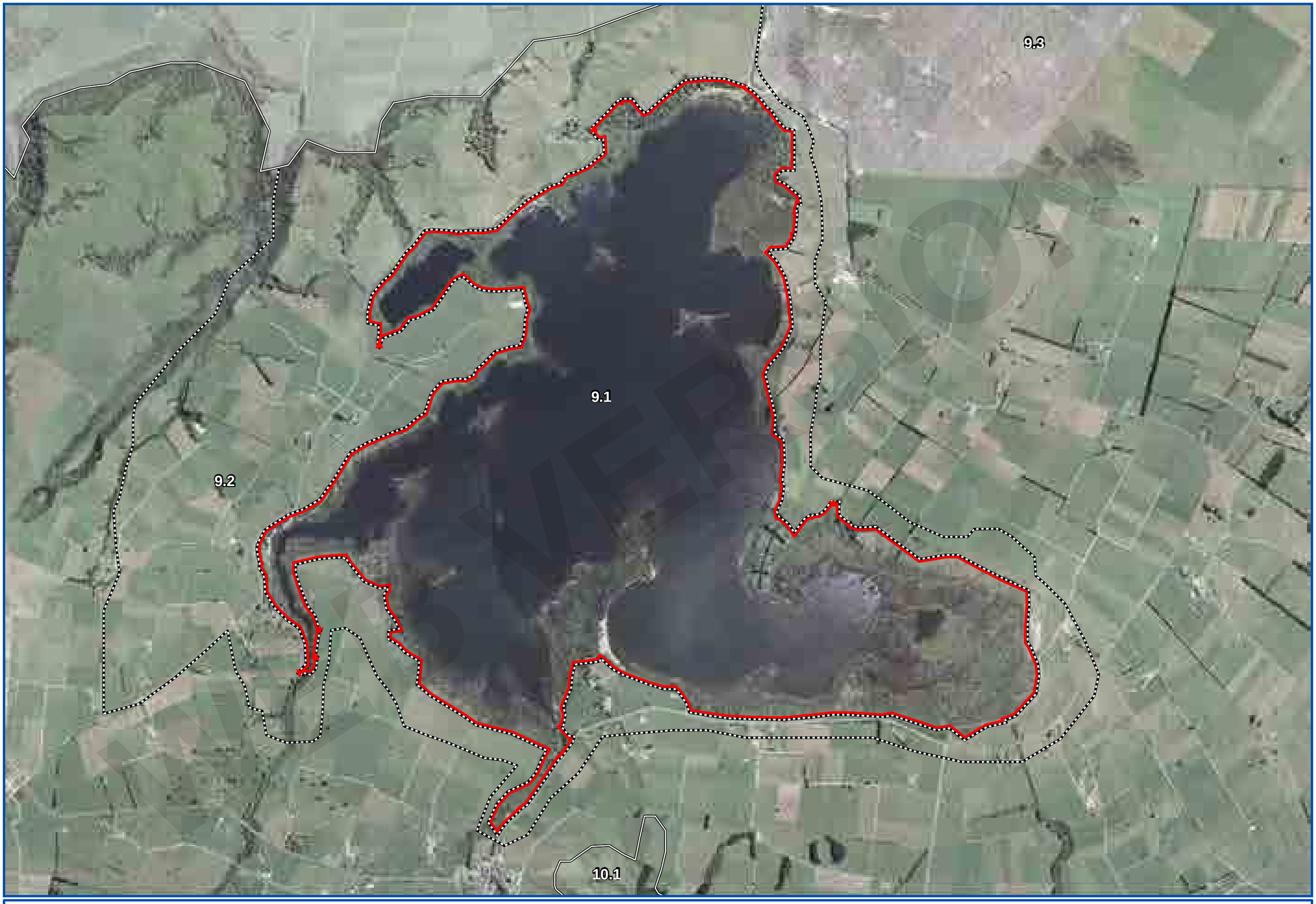
- Elevated and contained valley feature characterised by alluvial volcanic parent material that has a high susceptibility to gully erosion surrounded by harder volcanic base rock (see Map 5 and Map 4).
- Class 3 and 4 land of flat to rolling terrain that drains south to the Kaipara Stream through the Rotoma Forest and on to the Tarawera River (see Map 8 and Map 6).
- Landcover dominated by production forestry (see Map 7).

Local Character Areas:

- N/A

Landscape Management Issues:

- Recognition of established primary industry sponsored, Regional Council and National Government Agency environmental programmes and initiatives in relation to the sustainable management of existing rural land use activities including forestry management practices that recognise soil and water quality issues.



Lake Rerewhakaaitu and Margins

0 0.5 1 km

1:20,000 Aerial Source: Rotorua District Council: 2001, 2006.

Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

9.0 REREWHAKAAITU

Landscape Character Area 9.1: Lake Rerewhakaaitu and Margins

Area Defined by:

- Brett Road hills to the north and west.
- Undulating to rolling Rerewhakaaitu farm land to the south.
- Ash Pit Road flat lands to the east.

Area Characterised by:

- Open water body and bays and wetlands including Awaatua Bay in the north and Half Moon Bay in the south and a flooded explosion crater feature in the northwest (see Map 2 and Map 3).
- Small lake island features and wetland margins.
- Prominent headland features and beaches including Raepuku Point.
- Wider lakeside margins characterised by predominantly volcanic alluvium material particularly in the east and south with some areas of older ash to the south west and harder volcanic material in proximity to the Brett Road hills.
- Underlying geology is reflected in associated land use capability classifications with flat to undulating Class 3 and 4 land to the east and south and marginal steeper toe slopes of Class 6 land to the west (see Map 8) .
- Drainage patterns principally characterised by Mangakino and Awaroa Stream systems that drain from the Northern Boundary Road area to the north, the lake itself draining to the east via the Mangaharakeke Stream system in times of high lake water level. Connected to lake Rotomahana via water seepage (see Map 6).
- Landcover characterised by indigenous vegetation on the immediate lake margin with some larger patches on headland features. Also includes areas of herbaceous wetland vegetation particularly to the south west. Pasture land dominates the surrounding lake margin areas (see Map 7).
- Entire lake and margins represent potential ecological values (Lake Rerewhakaaitu Reserve) as well as DoC recreation reserve (Lake Rerewhakaaitu Recreation Reserve) (see Map 10).
- Features recreational, amenity landscape and lake access facilities (car parking, toilets and tracks).

Local Character Areas:

- Lakeside Recreation Reserves (Reserve A (Public) Zoning)

Landscape Management Issues:

- Maintaining and enhancing lake water quality. .
- Management of recreational and amenity landscape resources including ongoing lake access and associated facilities (car parking, toilets and tracks).
- Scenic protection and the appropriate management of visual landscape amenity in association with the existing dominant natural character of the lake and surrounds.
- Protection, preservation and enhancement of existing areas of indigenous and wetland vegetation.

9.2

Wider Lake Rerewhakaaitu Margins

0 0.5 1 km

1:20,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

9.0 REREWHAKAAITU

Landscape Character Area 9.2: Wider Lake Rerewhakaaitu Margins

Area Defined by:

- Brett Road Hills to the north east of Bainbridge Road.
- Lake Rerewhakaaitu shoreline.
- Rerewhakaaitu to the south.
- Pasture land to the west of Ash Pit Road to the east.

Area Characterised by:

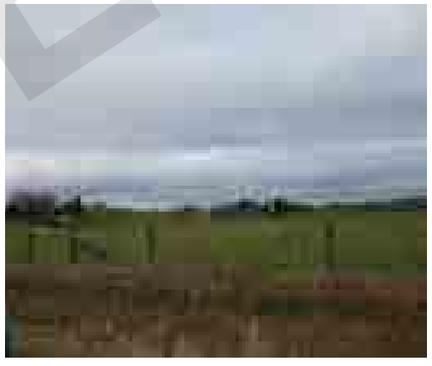
- Pastoral flats and pastoral hill country having flat to undulating Class 3 and 4 land to the east and south and steeper rolling to strongly rolling slopes of Class 6 land to the west (see Map 8).
- Pastoral headland feature south of lake explosion crater (see Map 2 and Map 4).
- Drainage patterns principally characterised by Mangakino and Awaroa Stream systems.
- Pastoral landcover predominates with limited areas of indigenous vegetation associated with the north draining gullies of the Brett Road Hills. These areas are of potential ecological value in association with Lake Rotomahana (see Map 7 and Map 6).
- Limited rural farm dwellings and associated farm buildings (see Map 3).

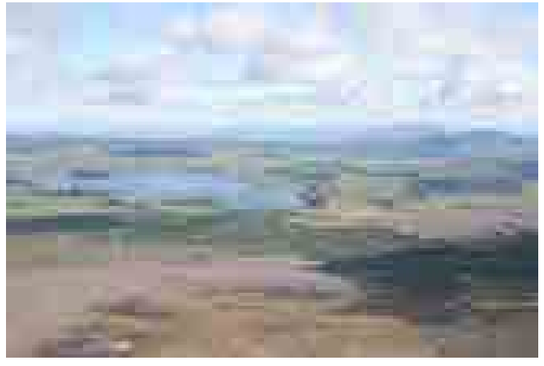
Local Character Areas:

- Explosion Crater Headland.
- Brett Road Hills.
- Wider Lake Margins.

Landscape Management Issues:

- Maintaining lake water quality and the consideration of integrated land use planning to enhance water quality.
- Consideration of siting, scale, form, architecture and finishing of new buildings on elevated and prominent locations in relation to Lake Rerewhakaaitu and protection of scenic and visual amenity.
- Protection and enhancement of existing patterns of indigenous vegetation.
- Recognition of established primary industry sponsored, Regional Council and National Government Agency environmental programmes and initiatives in relation to the sustainable management of existing rural land use activities that recognise soil and water quality issues.





Rotomahana – Rerewhakaaitu

0 0.5 1 km

1:75,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

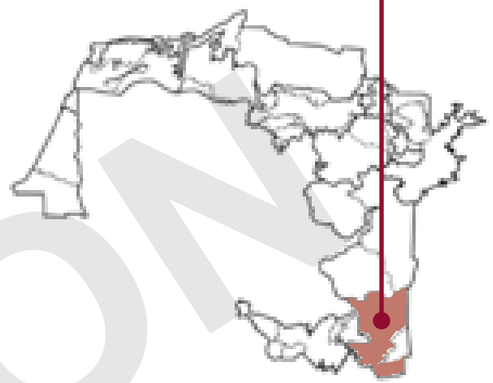
Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

9.0 REREWHAKAAITU

Landscape Character Area 9.3: Rotomahana – Rerewhakaaitu



Area Defined by:

- Lakes A Zone and Mount Tarawera in the North.
- Earthquake Flats to the west.
- Rainbow Mountain and Northern Kaingaroa Plateau to the south.
- District boundary with Whakatane District to the east.

Area Characterised by:

- Extensive areas of flat to undulating terrain that characterise a variety of underlying softer volcanic parent materials (see Map 4).
- Class 4 land predominating in areas of more moderate slope with Class 6 land dominating in areas of increased slope (see Map 8).
- Pastoral landcover dominant with an area of exotic plantation forestry to the northeast associated with the southern toe slopes of Mount Tarawera.
- Drainage patterns include mid catchment areas of the Mangakino and Awaroa Stream systems in association with Lake Rerewhakaaitu and limited upper catchment areas of the Haumi Stream system in the west in association with Lake Rotomahana. Also includes unnamed flowpaths from the southern Mount Tarawera slopes that drain to Lake Rerewhakaaitu (see Map 2 and Map 6).
- Settlement patterns characterised by limited rural farm dwellings and associated farm buildings aligned with principal road networks particularly around Rerewhakaaitu and Rotomahana.
- Timber mill on SH38 in the west.

Local Character Areas:

- Rotomahana
- Rerewhakaaitu

Landscape Management Issues:

- Recognition of established primary industry sponsored, Regional Council and National Government Agency environmental programmes and initiatives in relation to the sustainable management of existing rural land use activities (e.g. Environment Bay of Plenty Environmental Farm Management Plans, and pastoral land use activities.
- Improved visual amenity in relation to existing timber mill and SH38 corridor.

Rerewhakaaitu Forest

0 0.5 1 km

1:20,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

9.0 REREWHAKAAITU

Landscape Character Area 9.4: Rerewhakaaitu Forest

Area Defined by:

- Gavin Road and Ngamotu Road farm land to the north.
- Republican Road farm land to the west.
- North Boundary Road farm land to the south.
- Rotorua District boundary with Whakatane District to the east.

Area Characterised by:

- Steep and dissected upper catchment gully system associated with wider more extensive Mangaharakeke Stream system that drains to the east (see Map 6) .
- Variety of volcanic parent materials with softer tephra in the valley floors and hard volcanic material featuring to the north. Softer tephra material representing an erosion susceptibility subclass.
- Steep to very steep scarp terrain features within gully sub-catchments with flat to undulating terrain in valley floors reflecting two contrasting land use capability classifications from Class 7 on the steeper scarps and Class 3 on the valley floors (see Map 4 and Map 8).
- Landcover characterised by production pine forest throughout excluding a contiguous indigenous riparian margin strip (see Map 7).
- Extensive network of production forestry tracks.
- Identified as unnamed crown land stewardship area.

Local Character Areas:

- Valley Floors and Riparian Margins
- Steep Valley Scarps

Landscape Management Issues:

- Protection of existing areas of indigenous vegetation in relation to ongoing forestry operations.
- Public access and recreational / open space management in relation to Crown Land.

Maungakakaramea East

0 0.5 1 km

1:10,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

9.0 REREWHAKAAITU

Landscape Character Area 9.5: Maungakakaramea East

Area Defined by:

- Rotomahana pasture land to the north.
- Maungakakaramea summit to the west.
- Waikokomuka Stream corridor to the south.
- North eastern tributary of the Waikokomuka Stream to the east.

Area Characterised by:

- Elevated (605m asl) and prominent volcanic dome landform feature associated with previously identified ONFL (Maungakakaramea – Rainbow Mountain to the west) (see Map 2 and Map 5).
- Class 6 land dominates with erosion susceptibility sub-class (see Map 8).
- Landcover characterised by a mix of pine dominant exotic production forest species.
- Drainage patterns include numerous unnamed first order tributaries that drain north to Lake Rotomahana and south via the Waikokomuka Stream system (see Map 2 and Map 6).

Local Character Areas:

- North Facing slopes.
- South Facing Slopes.

Landscape Management Issues:

- Forestry management in relation to sediment control for soil and water quality.
- Land use management of north facing steep upper catchment areas in relation to function of natural drainage patterns in particular the Haumi Stream complex and adjoining Waimangu Geothermal area and Lake Rotomahana (previously identified as outstanding natural landscapes by Environment Bay of Plenty).
- Forestry harvest staging and regimes in relation to visual amenity and scenic values associated with adjoining outstanding natural landscape and SH38 corridor.

Maungakakaramea/Rainbow Mountain

0 0.5 1 km

1:20,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

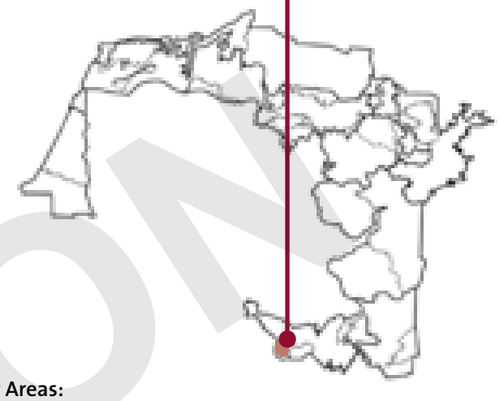
Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

9.0 REREWHAKAAITU

Landscape Character Area 9.6: Maungakakaramea / Rainbow Mountain



Area Defined by:

- SH 38 to the north and west.
- Waikaremoana Road to the south.
- Maungakakaramea east (Landscape Character Area 9.5) to the east

Area Characterised by:

- Elevated (743m asl) and prominent volcanic landform feature of harder volcanic material (see Map 4).
- Class 7 land use capability classification dominant with limited areas of Class 6 land on northern toe slopes. Strongly rolling to very steep terrain throughout.
- Drains both to Lake Rotomahana in the north and as well as to the south via the Hakereteke Stream system (see Map 2 and Map 6) .
- Active geothermal areas and lakes including Opal and Rotowhero Lakes (see Map 9).
- Indigenous forest cover throughout identified as Rainbow Mountain Scenic Reserve (DoC) including tracks and summit lookout (see Map 2 and Map 7 and Map 10).
- Recognised significant cultural landscape values (see Map 12).

Local Character Areas:

- Geothermal Lakes
- Steep Slopes and Summit

Landscape Management Issues:

- Management of Rainbow Mountain Scenic Reserve.
- Provision, maintenance and management of recreational and open space facilities.
- Scenic protection and visual landscape amenity in relation to SH5 and SH38 corridors.
- Management of recognised cultural landscape values.

Waimangu South Hill Country

0 0.5 1 km

1:20,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

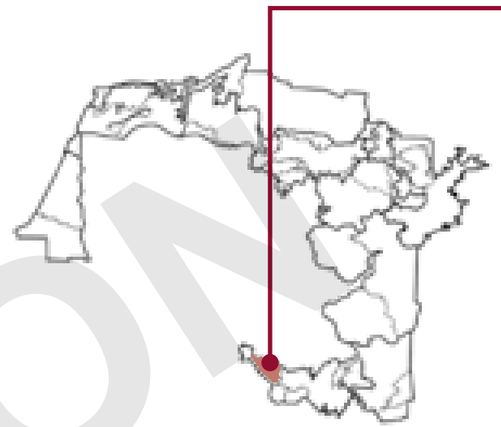
Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

9.0 REREWHAKAAITU

Landscape Character Area 9.7: Waimangu South Hill Country



Area Defined by:

- Lakes A Zone boundary to the north (Lake Rotomahana and Waimangu Valley).
- SH 5 and the Tutehu Hill complex to the southwest.
- Earthquake flats to the west.
- Maungakakaramea (Rainbow Mountain) to the east.

Area Characterised by:

- Complex of broken and dissected Class 6 land hill country characterised by numerous flat to undulating terrace areas defined by more predominant steep to very steep hill slopes and scarps (see Map 4 and Map 8).
- Hill country terrain representative of extensive area of unconsolidated to moderately consolidated underlying older breccia parent material that includes tephra older than the flow tephra of the Taupo Pumice Formation. This material characteristically results in relatively stable landforms but is prone to severe gully erosion if vegetation on mantling ash is broken (see Map 5).
- Dissected upper sub-catchment gullies of the Hakereteke Stream complex that drains to the south. Also includes upper sub-catchments of the Haumi Stream complex that drain to Lake Rotomahana (see Map 6).
- Pastoral landcover dominates with limited patches of exotic forestry and small (0.5 to 3 ha) indigenous forest patches (see Map 7). The larger of these patches are identified as Pareheru Reserve.

Local Character Areas:

- SH5 Corridor
- Pastoral Farm Hill Country

Landscape Management Issues:

- Protection of isolated indigenous forest patches.
- Strengthening of natural patterns and processes and visual landscape amenity in relation to SH5 corridor and existing rural character.
- Management of pastoral land use activities in relation to soil and water quality, particularly within Lake Rotomahana sub-catchments.

Earthquake Flats

0 0.5 1 km

1:10,000 **Aerial Source: Rotorua District Council: 2001, 2006.**

Landscape Type
Landscape Character Area
Rotorua District Council Boundary

DESTINATION ROTORUA

Boffa Miskell
www.boffamiskell.co.nz

9.0 REREWHAKAAITU

Landscape Character Area 9.8: Earthquake Flats

Area Defined by:

- Tumunui toe slopes to the north.
- Tumunui Hill to the west.
- Waikorapa Hill (696m asl) and Tutehu Hill (601m asl) to the south.
- Hill 85312 (555m asl) and crater rim slope series to the east.

Area Characterised by:

- Large explosion crater rim and crater floor landform (see Map 5).
- Underlying geology characteristic of unconsolidated parent material on the crater floor and older breccia material on the rim slopes to the south and east with harder volcanic material on the western rim (see Map 5).
- Generally steeper rim slopes to the west and more rolling to strongly rolling slopes to the east reflecting the land use capability classifications of Class 7 to the west and Class 6 to the east (see Map 8).
- Pastoral landcover dominates.
- SH5 corridor characterised by sequential driving experience through contained topographic features.
- Active earth deformation features; including volcanic Quaternary Volcano, craters and fault swarm features, scarps, faults and fissures - faults are c.13000 years old and cut across the Earthquake Flat eruptive centre (c.42-55000 years old) as discrete steps (see Map 9).
- Numerous small (< 2000m2) pond / water body features.
- Closed drainage patterns characterised by smaller streams that drain the crater. No overland drainage connection mapped to wider systems (see Map 2).

Local Character Areas:

- Crater Rim Slopes.
- Crater Floor.

Landscape Management Issues:

- Management of pastoral land use activities in relation to soil and water quality.
- The management of future land use activities that may potentially result in significant landform modification (for example, quarrying) in relation to scenic amenity values of the crater when viewed from SH5.

OUTSTANDING NATURAL FEATURES AND LANDSCAPES

Outstanding Natural Features and Landscapes

Introduction

The project brief requires the identification of outstanding natural features and landscapes. This work is being undertaken to meet the Council's obligations under Part II of the Resource Management Act (the RMA), being:

> *Section 6(b)*
>
> *"The protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development."*

As stated previously the RMA does not define "outstanding" or provide guidance as to how outstanding natural features and landscapes are to be identified. Outstanding natural features and landscapes in this study have been identified as both features and landscapes with exceptional physical qualities and characteristics and/or features that are highly valued for one or more attributes.

ONFLs have been identified and mapped as part of this study. Landscape management issues in relation to identified ONFLs should be considered within the wider integrated framework of the Landscape Types and Landscape Character Areas described in Part I of this report.

While the focus of this study is Section 6(b) of the RMA, it is also recognised that the study will assist Council to meet its obligations under other sections of Part II of the RMA – particularly Section 7(c) and 7(f). These sections of the RMA, which are other matters to which regard is to be given, include the maintenance and enhancement of amenity values and the quality of the environment.

Amenity Values are defined in the Act as follows:

> *"those natural or physical qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes".*

The Environment Court, primarily through decisions in relation to the Queenstown Lakes District Plan, has indicated the following three distinctions between landscapes being:

- Section 6(b) landscapes: outstanding natural features and landscapes;
- Section 7 landscape: amenity landscapes being those landscapes with important visual amenity values;
- Those other landscapes with no significant resource management issues.

Section 6(b) relates to other matters of national importance such as Section 6(a) in regard to the preservation of the natural character of wetlands and lakes and rivers and their margins and the protection of them from inappropriate subdivision, use and development.

The adoption of an assessment methodology that identifies and describes Landscape Types and Landscape Character Areas prior to the specific identification of ONFLs provides a framework to assist Council, landowners and communities to manage landscape change in an integrated way depending on the particular landscape qualities and issues within each Landscape Character Area.

Assessment Criteria

The assessment criteria used in the identification of the ONFLs of the study area have been adopted from the Environment Bay of Plenty Regional Policy Statement (RPS) (the criteria were introduced through Variation 1). These criteria are in turn drawn from decisions of the Environment Court in firstly the Pigeon Bay and then the Wakatipu Environmental Society Inc and others v Queenstown-Lakes District Council (C 180/99) decisions (otherwise known as 'WESI' criteria). The criteria adopted for the assessment of the ONFLs are as follows:

Natural Science Factors comprising the following three criteria:

Representativeness

Natural features and landscapes are clearly and recognisably characteristic of the district. The key components of the landscape will be present in a way that more generally defines the character of the place, but which distils this character and essence.

Natural features in a good state of preservation are representative and characteristic of the natural geological processes and diversity of the district.

Research and Education

Natural features and landscapes that are valued for the contribution they make to research and education.

Rarity

Natural features that are unique or rare in the district, region or nationally, and few comparable examples exist.

Aesthetic Values comprising the following four criteria:

Coherence

The patterns of land cover and land use are largely in harmony with the underlying natural pattern of the landform of the area and there are no significant discordant elements of land cover or land use.

Vividness

Natural features and landscapes are widely recognised across the community and beyond the local area and remain clearly in the memory; striking landscapes that are symbolic of an area due to their recognisable and memorable qualities.

Naturalness

Natural features and landscapes that appear largely uncompromised by modification and appear to comprise natural systems that are functional and healthy.

Intactness

Natural systems that are intact and aesthetically coherent and do not display significant visual signs of human modification, intervention or manipulation; visually intact and highly aesthetic natural landscapes.

Expressiveness (Legibility)

Natural features and landscapes that clearly demonstrate the natural processes that formed them. Examples of natural process in landscape exemplify the particular processes that formed that landscape.

Transient Values

The consistent occurrence of transient features (for example the seasonal flowering of Pohutukawa or seasonal habitats of migratory birds) or active geothermal features that contribute to the character, qualities and values of the landscape; landscapes that are widely recognised for their transient features and the contribution these make to the landscape.

Shared and Recognised Values

Natural features and landscapes that are widely known and valued by the immediate and wider community for their contribution to a sense of place leading to a strong community association with or high public esteem for the place.

Maori Values

Natural features and landscapes that are clearly special or widely known to tangata whenua and influenced by their connection to the Maori values inherent in the place.

Historical Associations

Natural features and landscapes that are clearly and widely known to the community and influenced by their connection to the historical values inherent in the place.

Environment Bay of Plenty has prepared a 'user guide' ("proposed Change No.1 to the Bay of Plenty Regional Policy Statement (Heritage Criteria) User Guide 29 November 2005) that provides further description and examples in relation to the application and interpretation of the above criteria.

Selection Process Methodology

The identification of potential ONFLs has been derived from the Landscape Types and Landscape Character Areas documented in the preceding section.

The decision as to whether a particular natural feature or landscape qualified as outstanding was based on an initial assessment against the ONFL criteria. The professional judgement and expertise of three experienced Landscape Architects was used to evaluate the areas identified through preliminary assessment to determine whether a natural feature or landscape met the criteria for identification as "outstanding".

Community landscape values were also assessed as far as possible through the consultation processes including general public and Tangata Whenua consultation. The record of the assessment against criteria is set out in the worksheets in the following section. The decision on "ranking" is recorded in the assessment sheets attached to provide transparency for consultation, and baseline for any future reviews.

The ranking system adopts a 3 tier scoring system: L = low, M = moderate, H = high in relation to the extent to which the values of the subject ONFL meet the particular criterion.

It is important to recognise that the assessment against the criteria leading to the determination as to whether a particular landscape or feature is outstanding is not additive. This means that the method is not a scoring system that requires scores for individual criteria to be added to gain one overall score based on which the determination is made. A landscape or feature may achieve the status of outstanding due to the way in which it meets a single criterion such as, for example, "expressiveness".

Alternatively, an area can be determined to be 'outstanding' due to the way in which it meets a combination of criteria. This method of evaluation is as intended in the RPS. Therefore while each criterion has a ranking, a landscape or feature that "rates" moderate or even low in relation to some criteria may still achieve recommended "outstanding" status due to the way in which it exceptionally meets the attributes of a particular single criterion.

Whilst this landscape study identifies the ONFLs within the study area, a significant portion of the study area remains outside of such a delineation. These 'amenity' and 'other' landscapes are nevertheless important to the overall character and quality of the landscape as a whole. It is important that these landscapes are also managed to work with, enhance and protect their inherent landscape values.

The study enables the Council to meet its obligations under Section 6(b) matters of national importance as well as other sections of Part II of the RMA, particularly Section 7(c). This is important in an area such as the Northern Lakes catchments where the majority of the land area is not identified as outstanding but where the working rural landscape is important to the overall character of the district and the community's identity. These natural and rural landscape values and the amenity of the working rural landscape are also of value to visitors and tourists.

The tourism industry is also important to Rotorua's economy and the wider impression of New Zealand as a rural, quality destination. It is important to recognise that working landscapes change seasonally and over time as different techniques of rural land management and production regimes change and diversify. Such change is inherent within the working rural landscape and should be accommodated without hindrance where significant landscape values are not undermined. In addition, opportunities for enhancement can result from rural landscape change.

Identification of Outstanding Natural Features and Landscapes

Ten outstanding natural features and landscapes (ONFL) have been identified in the Northern Lakes catchment study area (refer Map 13, Appendix 1). These are:

- Mangorewa Forest
- Lake Rotoiti
- Lake Rotokawau
- Makatiti Dome – North Eastern Slopes
- Mount Tarawera – Tarawera Ridge
- Rainbow Mountain – Maungakakaramea
- Lake Rerewhakaaitu
- Lake Rotoehu
- Lake Rotoma and Caldera
- Rotoma Forest

The location and extent of the above ONFLs are shown within the Study Areas Resource Map Book: Map13.

All of the features and landscapes identified in this study as outstanding have been previously identified through a regional assessment of outstanding natural features and landscapes. This regional study was originally undertaken in 1997 and updated and revised in 2007 using the RPS criteria. Both these studies were undertaken by Boffa Miskell for Environment Bay of Plenty.

Acknowledgement: *"Natural Heritage of the Rotorua District" (1998) Shaw. W.B, and Beadel. S. M., (Wildlands Consultants) has been used as a general reference in the preparation of the following assessments in regard to natural heritage values.*

ASSESSMENT CRITERIA WORKSHEETS

ONFL name: Mangorewa Forest		
Description: Extensive area of contiguous, indigenous vegetation associated with Mangorewa River system and gorge. Includes Mangorewa Forest, Mangorewa Ecological Area and Mangorewa Scenic Reserve (DoC), and adjoining Mangorewa Forest Accord area, contains virgin remnants of the Mangorewa podocarp-tawa-beech forest complex, with contrasting virgin forest types without beech. Includes gorge bluff and cliffs.		
CRITERIA	**RANKING**	**COMMENT**
Natural Science Factors		
Representativeness Natural features and landscapes are clearly and recognisably characteristic of the area, district or region. The key components of the landscape will be present in a way that more generally defines the character of the place, but which distils this character and essence.	H	Part of the northern volcanic plateau forest continuum that defines the landscape character of the District's northern boundary. Extensive area of representative indigenous forest of high natural science value.
Natural features in a good state of preservation are representative and characteristic of the natural geological processes and diversity of the region.	H	Good state of preservation.
Research and Education Natural features and landscapes are valued for the contribution they make to research and education.	M	Ecological values associated with significant upland forest area.
Rarity Natural features are unique or rare in the region or nationally, and few comparable examples exist.	H	Extensive steepland forest area, and associated steep dissected river gorges, nationally unique.
Aesthetic Values		
Coherence The patterns of land cover and land use are largely in harmony with the underlying natural pattern of the landform of the area and there are no significant discordant elements of land cover or land use.	H	Highly cohesive forested hill country contrasting with surrounding production land.
Vividness Natural features and landscapes are widely recognised across the community and beyond the local area and remain clearly in the memory; striking landscapes are symbolic of an area due to their recognisable and memorable qualities.	H	Symbolic landscape vivid and memorable.
Naturalness Natural features and landscapes appear largely uncompromised by modification and appear to comprise natural systems that are functional and healthy.	H	Dominant indigenous forest natural character largely uncompromised by modification or built form.
Intactness Natural systems are intact and aesthetically coherent and do not display significant visual signs of human modification, intervention or manipulation; visually intact and highly aesthetic natural landscapes.	H	Extensive areas of functioning natural systems visually intact uplands and river gorges.
Expressiveness (Legibility)		
Natural features and landscapes clearly demonstrate the natural processes that formed them. Examples of natural process in landscape exemplify the particular processes that formed that landscape.	H	Volcanic uplands and dissected river gorges.
Transient Values		
The consistent occurrence of transient features (for example the seasonal flowering of pohutukawa) contributes to the character, qualities and values of the landscape; landscapes are widely recognised for their transient features and the contribution these make to the landscape.	M	Transient aesthetic qualities in relation to scenic values.
SUMMARY OF LANDSCAPE ASSESSMENT	H	Outstanding indigenous forest continuum.
Shared and Recognised Values		
Natural features and landscapes are widely known and valued by the immediate and wider community for their contribution to a sense of place leading to a strong community association with or high public esteem for the place.	L	Not widely known and valued due to limited community settlement and activity, visual and travelling distance from settlements.
Maori Values		
Natural features and landscapes are clearly special or widely known and influenced by their connection to the Maori values inherent in the place.	L	Boundary of Tauranga and Rotorua hapu. One of the traditional access points to coast. No clear evidence of long term occupation and settlement.
Historical Associations		
Natural features and landscapes are clearly and widely known and influenced by their connection to the historical values inherent in the place.	L	No obvious important events or activities that contribute to the history of the district, region or NZ
OVERALL ASSESSMENT	H	Key indigenous forest continuum inclusive of Mangorewa River gorge and surrounds. Outstanding Natural Landscape.
Note: The ranking system adopts a 3 level scoring system: L = low, M = moderate, H = high in relation to the extent to which the values of the subject ONFL meet the particular criterion.		

ONFL name: Lake Rotoiti		
Description: Entire lake including areas of contiguous naturally occurring vegetation and prominent landform features such as vegetated headlands and points (e.g. Motuoha Point, Motutawa Point and Te Akau Point on lake edges). Excludes areas of lakeside settlement and development (such as Otaramarae, Gisborne Point and Hinehopu), as well as areas of forestry and exotic trees. Includes Lake Rotoiti Scenic Reserve in the northwestern lake edge to semi coastal bioclimatic zone featuring a variety of forest types dominated by rimu/tawa with pohutukawa, kohekohe and kamahi and tawari forest and cliff vegetation. Landforms include undulating to steep slopes and scarps flatlands and wetlands. Areas of High cultural significance such as Matawhaura.		
CRITERIA	**RANKING**	**COMMENT**
Natural Science Factors		
Representativeness Natural features and landscapes are clearly and recognisably characteristic of the area, district or region. The key components of the landscape will be present in a way that more generally defines the character of the place, but which distils this character and essence.	M	Lake and intact vegetation patterns are representative of wider volcanic lake patterns that are clearly and recognisably characteristic of the district. Representative of the landscape elements and patterns that characterise modified volcanic lake environments that still exhibit a dominant natural and rural character.
Natural features in a good state of preservation are representative and characteristic of the natural geological processes and diversity of the region.	M	Modified rural environments with the lake catchment including large areas of modified pastureland. Lake edge characterised by medium to low density settlement as well as headland and upland areas of high natural character.
Research and Education Natural features and landscapes are valued for the contribution they make to research and education.	M	Possible water quality research values in relation to agricultural land uses and forestry activities.
Rarity Natural features are unique or rare in the region or nationally, and few comparable examples exist.	M	Not rare or unique. Characteristic of more modified lake landscapes.
Aesthetic Values		
Coherence The patterns of land cover and land use are largely in harmony with the underlying natural pattern of the landform of the area and there are no significant discordant elements of land cover or land use.	H	Extensive lake water body and intact lake edges characterised by indented lake edge, enclosed bays and headland features.
Vividness Natural features and landscapes are widely recognised across the community and beyond the local area and remain clearly in the memory; striking landscapes are symbolic of an area due to their recognisable and memorable qualities.	H	Widely recognised as a modified yet symbolic landscape.
Naturalness Natural features and landscapes appear largely uncompromised by modification and appear to comprise natural systems that are functional and healthy.	H	Unsettled lake edge largely uncompromised.
Intactness Natural systems are intact and aesthetically coherent and do not display significant visual signs of human modification, intervention or manipulation; visually intact and highly aesthetic natural landscapes.	M	Areas of modification and settlement occur within the wider lake catchment compared with lake edge headland and upland bush areas (particularly in the north east) that are more intact.
Expressiveness (Legibility)		
Natural features and landscapes clearly demonstrate the natural processes that formed them. Examples of natural process in landscape exemplify the particular processes that formed that landscape.	M	Lake form (shape) less expressive of other contained volcanic lake forms – still expressive.
Transient Values		
The consistent occurrence of transient features (for example the seasonal flowering of pohutukawa) contributes to the character, qualities and values of the landscape; landscapes are widely recognised for their transient features and the contribution these make to the landscape.	M	Lake water transient values.
SUMMARY OF LANDSCAPE ASSESSMENT	M	Outstanding volcanic lake landscape.
Note: The ranking system adopts a 3 level scoring system: L = low, M = moderate, H = high in relation to the extent to which the values of the subject ONFL meet the particular criterion.		

Shared and Recognised Values		
Natural features and landscapes are widely known and valued by the immediate and wider community for their contribution to a sense of place leading to a strong community association with or high public esteem for the place.	M	Visually prominent for travellers along State Highway 33. One of thirteen lake beds vested with Te Arawa Lakes Trust.
Maori Values		
Natural features and landscapes are clearly special or widely known and influenced by their connection to the Maori values inherent in the place.	H	Clear associations with eponymous and founding ancestors of Te Arawa, archaeological evidence of high concentrations of settlement along lake margins, continuous Maori occupation and settlement
Historical Associations		
Natural features and landscapes are clearly and widely known and influenced by their connection to the historical values inherent in the place.	M	Association with founding ancestors of Te Arawa tribe.
OVERALL ASSESSMENT	H	Outstanding Natural landscape of high cultural significance including Matawhaura on the lakes north-eastern shores.

ONFL name: Lake Rotokawau		
Description: Small crater lake and bays surrounded by steep crater rim slopes. Includes scarps in indigenous vegetation and a small enclosed sandy beach to the north. Lake drains to the west via the Waiohewa / Ohuanui Stream system and is fed in part from the Waimata stream within the Lake Okataina Scenic Reserve to the south.		
CRITERIA	**RANKING**	**COMMENT**
Natural Science Factors		
Representativeness Natural features and landscapes are clearly and recognisably characteristic of the area, district or region. The key components of the landscape will be present in a way that more generally defines the character of the place, but which distils this character and essence.	H	Caldera / crater lake representative of the variety of lakes within the region of volcanic origin.
Natural features in a good state of preservation are representative and characteristic of the natural geological processes and diversity of the region.	H	Demonstrates characteristics of crater lakes in good state of preservation particularly in association with surrounding indigenous vegetation and wider drainage patterns.
Research and Education Natural features and landscapes are valued for the contribution they make to research and education.	M	Natural science values – outdoor recreation education.
Rarity Natural features are unique or rare in the region or nationally, and few comparable examples exist.	M	Crater lake feature not rare but scale is locally unique example.
Aesthetic Values		
Coherence The patterns of land cover and land use are largely in harmony with the underlying natural pattern of the landform of the area and there are no significant discordant elements of land cover or land use.	H	High natural character values with coherent patterns of land form and indigenous land cover with out significant discordant land use elements.
Vividness Natural features and landscapes are widely recognised across the community and beyond the local area and remain clearly in the memory; striking landscapes are symbolic of an area due to their recognisable and memorable qualities.	H	Symbolic crater lake feature.
Naturalness Natural features and landscapes appear largely uncompromised by modification and appear to comprise natural systems that are functional and healthy.	H	Limited rural residential modification to the northwest. Lake is a good example of volcanic drainage systems – patterns.
Intactness Natural systems are intact and aesthetically coherent and do not display significant visual signs of human modification, intervention or manipulation; visually intact and highly aesthetic natural landscapes.	H	Intact and coherent.
Expressiveness (Legibility)		
Natural features and landscapes clearly demonstrate the natural processes that formed them. Examples of natural process in landscape exemplify the particular processes that formed that landscape.	H	Highly expressive of underlying volcanic land forming processes at a comprehendible spatial scale.
Transient Values		
The consistent occurrence of transient features (for example the seasonal flowering of pohutukawa) contributes to the character, qualities and values of the landscape; landscapes are widely recognised for their transient features and the contribution these make to the landscape.	M	Transient aesthetic qualities in relation to scenic values.
SUMMARY OF LANDSCAPE ASSESSMENT	H	Coherent representative volcanic crater lake landscape.
Note: The ranking system adopts a 3 level scoring system: L = low, M = moderate, H = high in relation to the extent to which the values of the subject ONFL meet the particular criterion.		

Shared and Recognised Values		
Natural features and landscapes are widely known and valued by the immediate and wider community for their contribution to a sense of place leading to a strong community association with or high public esteem for the place.	L	Low level of community association with the lake.
Maori Values		
Natural features and landscapes are clearly special or widely known and influenced by their connection to the Maori values inherent in the place.	M	A crater lake that was the focus of traditional harvesting and hunting
Historical Associations		
Natural features and landscapes are clearly and widely known and influenced by their connection to the historical values inherent in the place.	L	No known distinct and significant association or contribution to the history of New Zealand, the region and district.
OVERALL ASSESSMENT	H	Outstanding crater lake landscape of high aesthetic value

ONFL name: Makatiti Dome – North Eastern Slopes		
Description: Large contiguous area of native bush over a large volcanic dome on northeast edge of Lake Tarawera. Includes the Makatiti Dome Scenic Reserve. A complete vegetation sequence from lake shore to dome top. High altitude forests providing a baseline for successional progress of the high altitude vegetation of Mount Tarawera. This reserve is part of a large area of indigenous vegetation contiguous with Okataina Scenic Reserve.		
CRITERIA	**RANKING**	**COMMENT**
Natural Science Factors		
Representativeness Natural features and landscapes are clearly and recognisably characteristic of the area, district or region. The key components of the landscape will be present in a way that more generally defines the character of the place, but which distils this character and essence.	H	Key component of the Lake Tarawera and wider volcanic lakes system landscape.
Natural features in a good state of preservation are representative and characteristic of the natural geological processes and diversity of the region.	H	Good state of preservation and exemplifies underlying geological processes.
Research and Education Natural features and landscapes are valued for the contribution they make to research and education.	H	Natural science values in regard to forest types and associated successional processes.
Rarity Natural features are unique or rare in the region or nationally, and few comparable examples exist.	H	Nationally rare particularly as an integral landscape element in relation to surrounding outstanding landscapes and features.
Aesthetic Values		
Coherence The patterns of land cover and land use are largely in harmony with the underlying natural pattern of the landform of the area and there are no significant discordant elements of land cover or land use.	H	Strong coherence between underlying landform and a transition of landcover types and associated ecological communities
Vividness Natural features and landscapes are widely recognised across the community and beyond the local area and remain clearly in the memory; striking landscapes are symbolic of an area due to their recognisable and memorable qualities.	H	Recognisable beyond the local community as part of a wider volcanic lake landscape - recognised as a distinct landscape element within the local area.
Naturalness Natural features and landscapes appear largely uncompromised by modification and appear to comprise natural systems that are functional and healthy.	H	Uncompromised by human modification – forestry on the eastern flanks and access road to dome summit.
Intactness Natural systems are intact and aesthetically coherent and do not display significant visual signs of human modification, intervention or manipulation; visually intact and highly aesthetic natural landscapes.	H	Strongly aesthetically coherent – highly aesthetic natural landscape.
Expressiveness (Legibility)		
Natural features and landscapes clearly demonstrate the natural processes that formed them. Examples of natural process in landscape exemplify the particular processes that formed that landscape.	H	Highly expressive of the variety of volcanic landforms within the surrounding context of the volcanic lakes systems as well as a good example of particular landform type.
Transient Values		
The consistent occurrence of transient features (for example the seasonal flowering of pohutukawa) contributes to the character, qualities and values of the landscape; landscapes are widely recognised for their transient features and the contribution these make to the landscape.	M	Transient aesthetic qualities in relation to scenic values.
SUMMARY OF LANDSCAPE ASSESSMENT	H	Significant upland volcanic dome and associated indigenous vegetation.
Note: The ranking system adopts a 3 level scoring system: L = low, M = moderate, H = high in relation to the extent to which the values of the subject ONFL meet the particular criterion.		

Shared and Recognised Values		
Natural features and landscapes are widely known and valued by the immediate and wider community for their contribution to a sense of place leading to a strong community association with or high public esteem for the place.	L	Low level of shared and recognised values due to low intensity of community use, distance from major settlements and low density.
Maori Values		
Natural features and landscapes are clearly special or widely known and influenced by their connection to the Maori values inherent in the place.	M	Prominent maunga with associations with descent groups. Associated with occupation and burial areas.
Historical Associations		
Natural features and landscapes are clearly and widely known and influenced by their connection to the historical values inherent in the place.	L	Low level of historic significance due to low density of settlement and use.
OVERALL ASSESSMENT	H	Outstanding natural landscape of high natural science and aesthetic value

ONFL name: Mount Tarawera – Tarawera Ridge		
Description: Entire volcanic mountain landscape feature including all surrounding contiguous indigenous vegetation (includes Crater Block Stewardship Area with various forest types present mainly new growth following 1886 eruption of considerable scientific interest) and un-vegetated scree slopes, scarps terraces and crater rim features and ridgelines. Comprises 17 km long series of explosion craters. Culturally significant.		
CRITERIA	**RANKING**	**COMMENT**
Natural Science Factors		
Representativeness Natural features and landscapes are clearly and recognisably characteristic of the area, district or region. The key components of the landscape will be present in a way that more generally defines the character of the place, but which distils this character and essence.	H	Key component of the volcanic lakes landscape.
Natural features in a good state of preservation are representative and characteristic of the natural geological processes and diversity of the region.	H	Highly characteristic and representative of geological processes.
Research and Education Natural features and landscapes are valued for the contribution they make to research and education.	H	Natural science values and cultural interpretation values.
Rarity Natural features are unique or rare in the region or nationally, and few comparable examples exist.	H	Nationally rare.
Aesthetic Values		
Coherence The patterns of land cover and land use are largely in harmony with the underlying natural pattern of the landform of the area and there are no significant discordant elements of land cover or land use.	H	Highly coherent landforms and landcover with some forestry on the southern flanks.
Vividness Natural features and landscapes are widely recognised across the community and beyond the local area and remain clearly in the memory; striking landscapes are symbolic of an area due to their recognisable and memorable qualities.	H	Widely recognisable and memorable as a landscape and volcanic feature as well as within the context of surrounding landscape areas and lakes.
Naturalness Natural features and landscapes appear largely uncompromised by modification and appear to comprise natural systems that are functional and healthy.	H	Dominant natural character with some forestry to the south.
Intactness Natural systems are intact and aesthetically coherent and do not display significant visual signs of human modification, intervention or manipulation; visually intact and highly aesthetic natural landscapes.	H	Aesthetically coherent and a highly aesthetic natural landscape.
Expressiveness (Legibility)		
Natural features and landscapes clearly demonstrate the natural processes that formed them. Examples of natural process in landscape exemplify the particular processes that formed that landscape.	H	Highly expressive of past and ongoing natural processes.
Transient Values		
The consistent occurrence of transient features (for example the seasonal flowering of pohutukawa) contributes to the character, qualities and values of the landscape; landscapes are widely recognised for their transient features and the contribution these make to the landscape.	M	Transient aesthetic qualities in relation to scenic values.
SUMMARY OF LANDSCAPE ASSESSMENT	H	Significant volcanic landscape.
Note: The ranking system adopts a 3 level scoring system: L = low, M = moderate, H = high in relation to the extent to which the values of the subject ONFL meet the particular criterion.		

Shared and Recognised Values		
Natural features and landscapes are widely known and valued by the immediate and wider community for their contribution to a sense of place leading to a strong community association with or high public esteem for the place.	H	Tarawera is a highly recognised landscape feature popular in national and international tourism marketing. Tarawera and the former Pink and White Terraces are well known and recognised landscape features.
Maori Values		
Natural features and landscapes are clearly special or widely known and influenced by their connection to the Maori values inherent in the place.	H	Tarawera is a well known and recognised maunga of significance, with associations with eponymous ancestors of Te Arawa. There is clear archaeological evidence of occupation and settlement.
Historical Associations		
Natural features and landscapes are clearly and widely known and influenced by their connection to the historical values inherent in the place.	H	Long and continuous Maori occupation settlement and use until the Tarawera eruption in 1886. This was a major disaster of national significance.
OVERALL ASSESSMENT	H	Outstanding natural landscape of high natural science and aesthetic value

ONFL name: Rainbow Mountain – Maungakakaramea		
Description: Volcanic feature and associated lakes and wetlands including "Opal Lake" and "Green Lake". Includes active geothermal areas and scarp features. Area is defined by State Highway 5 and 38 and by surrounding production forestry and farm land. Vegetation is a complex mixture of types many of which relate to thermal activity with subsequent cooling and successional processes after burning**.**		
CRITERIA	**RANKING**	**COMMENT**
Natural Science Factors		
Representativeness Natural features and landscapes are clearly and recognisably characteristic of the area, district or region. The key components of the landscape will be present in a way that more generally defines the character of the place, but which distils this character and essence.	M	Upland volcanic feature representative of district and region.
Natural features in a good state of preservation are representative and characteristic of the natural geological processes and diversity of the region.	H	Representative of past and active geological processes.
Research and Education Natural features and landscapes are valued for the contribution they make to research and education.	H	Significant in botanical and scientific terms, containing a complex mixture of plant species, some of which are rare and unique to geothermal areas (DoC).
Rarity Natural features are unique or rare in the region or nationally, and few comparable examples exist.	M	Not rare but locally distinct particularly in association with active geothermal features.
Aesthetic Values		
Coherence The patterns of land cover and land use are largely in harmony with the underlying natural pattern of the landform of the area and there are no significant discordant elements of land cover or land use.	H	Indigenous landcover in association with upland volcanic landform result in a highly coherent landscape.
Vividness Natural features and landscapes are widely recognised across the community and beyond the local area and remain clearly in the memory; striking landscapes are symbolic of an area due to their recognisable and memorable qualities.	H	Widely recognisable particularly in relation to the alignment of State Highway 5.
Naturalness Natural features and landscapes appear largely uncompromised by modification and appear to comprise natural systems that are functional and healthy.	H	Largely uncompromised particularly in relation to surrounding forestry production.
Intactness Natural systems are intact and aesthetically coherent and do not display significant visual signs of human modification, intervention or manipulation; visually intact and highly aesthetic natural landscapes.	H	No significant signs of human modification.
Expressiveness (Legibility)		
Natural features and landscapes clearly demonstrate the natural processes that formed them. Examples of natural process in landscape exemplify the particular processes that formed that landscape.	H	Highly expressive upland volcanic landscape and associated geothermal and water features.
Transient Values		
The consistent occurrence of transient features (for example the seasonal flowering of pohutukawa) contributes to the character, qualities and values of the landscape; landscapes are widely recognised for their transient features and the contribution these make to the landscape.	L	Transient aesthetic qualities in relation to scenic values.
SUMMARY OF LANDSCAPE ASSESSMENT	H	Significant volcanic cone landscape with volcanic feature and associate indigenous vegetation.
Note: The ranking system adopts a 3 level scoring system: L = low, M = moderate, H = high in relation to the extent to which the values of the subject ONFL meet the particular criterion.		

Shared and Recognised Values		
Natural features and landscapes are widely known and valued by the immediate and wider community for their contribution to a sense of place leading to a strong community association with or high public esteem for the place.	M	Maungakakaramea is well known for its walking tracks that provide access to spectacular 360 views and native regenerating bush and geothermal areas.
Maori Values		
Natural features and landscapes are clearly special or widely known and influenced by their connection to the Maori values inherent in the place.	M	Traditional origins associated with Maungapohatu, and formerly used as a place of refuge.
Historical Associations		
Natural features and landscapes are clearly and widely known and influenced by their connection to the historical values inherent in the place.	L	No known significant events or activities that contribute to important parts of NZ history.
OVERALL ASSESSMENT	H	Outstanding natural landscape of high aesthetic value.

ONFL name: Lake Rerewhakaaitu		
Description: Entire water body and islands including contiguous naturally occurring vegetation, wetlands, prominent headland landscape features (Raepuku Point) and bays and explosion crater. Includes Lake Rerewhakaaitu Recreation Reserve. Surface outflows occur only during high lake levels and drains to Mangaharakeke stream, a tributary of the Rangitaiki River. The impacts of existing and future rural developments are concerns as surface water run-off and groundwater seepage from pastoral land uses may be adversely affecting the water quality of the lake. Lake Rerewhakaaitu is a site of special wildlife interest. It supports breeding populations of dabchicks, scaup and the largest breeding population of banded dotterel in the Rotorua Ecological District (DoC). Includes recreational (camping and boating) facilities.		
CRITERIA	**RANKING**	**COMMENT**
Natural Science Factors		
Representativeness Natural features and landscapes are clearly and recognisably characteristic of the area, district or region. The key components of the landscape will be present in a way that more generally defines the character of the place, but which distils this character and essence.	H	Key component of the wider volcanic lakes landscape.
Natural features in a good state of preservation are representative and characteristic of the natural geological processes and diversity of the region.	H	Includes explosion crater feature.
Research and Education Natural features and landscapes are valued for the contribution they make to research and education.	H	Natural science research and educational values.
Rarity Natural features are unique or rare in the region or nationally, and few comparable examples exist.	M	Unique combination of lake / island/ wetland / headland and water body features (explosion crater to the northwest).
Aesthetic Values		
Coherence The patterns of land cover and land use are largely in harmony with the underlying natural pattern of the landform of the area and there are no significant discordant elements of land cover or land use.	H	Landcover and landform largely representative of a coherent landscape pattern of high natural character. Includes modified recreational facilities.
Vividness Natural features and landscapes are widely recognised across the community and beyond the local area and remain clearly in the memory; striking landscapes are symbolic of an area due to their recognisable and memorable qualities.	M	Widely recognised across the community and beyond as a recreational and amenity landscape resource.
Naturalness Natural features and landscapes appear largely uncompromised by modification and appear to comprise natural systems that are functional and healthy.	H	Dominant natural character largely uncompromised.
Intactness Natural systems are intact and aesthetically coherent and do not display significant visual signs of human modification, intervention or manipulation; visually intact and highly aesthetic natural landscapes.	M	Limited human modification in relation to recreational facilities.
Expressiveness (Legibility)		
Natural features and landscapes clearly demonstrate the natural processes that formed them. Examples of natural process in landscape exemplify the particular processes that formed that landscape.	H	Highly expressive volcanic lake landscape. Good example of the range of volcanic landscape elements within a contained volcanic lake catchment.
Transient Values		
The consistent occurrence of transient features (for example the seasonal flowering of pohutukawa) contributes to the character, qualities and values of the landscape; landscapes are widely recognised for their transient features and the contribution these make to the landscape.	M	Transient values associated with wildlife.
SUMMARY OF LANDSCAPE ASSESSMENT	H	Outstanding volcanic lake landscape.
Note: The ranking system adopts a 3 level scoring system: L = low, M = moderate, H = high in relation to the extent to which the values of the subject ONFL meet the particular criterion.		

Shared and Recognised Values		
Natural features and landscapes are widely known and valued by the immediate and wider community for their contribution to a sense of place leading to a strong community association with or high public esteem for the place.	M	Popular recreational camping and boating destination. One of thirteen lakes vested with the Te Arawa Lakes Trust.
Maori Values		
Natural features and landscapes are clearly special or widely known and influenced by their connection to the Maori values inherent in the place.	M	Areas adjoining lake associated with inter tribal battles and a long standing rahui on fishing.
Historical Associations		
Natural features and landscapes are clearly and widely known and influenced by their connection to the historical values inherent in the place.	n/a	None known
OVERALL ASSESSMENT	H	Outstanding natural landscape of high natural character. High aesthetic values.

ONFL name: Lake Rotoehu		
Description: Entire lake including areas of contiguous naturally occurring vegetation and prominent, steep, lake peninsula / ridgelines landform features defined by deeply indented narrow shoreline bays. Includes Lake Rotoehu Scenic Reserve on the lakes northern shores and slopes which contains a good example of secondary vegetation contiguous with lake edge reedlands and wetlands. Excludes areas of development (Otautu Bay) and lake edge upland pastureland and forestry areas.		
CRITERIA	**RANKING**	**COMMENT**
Natural Science Factors		
Representativeness Natural features and landscapes are clearly and recognisably characteristic of the area, district or region. The key components of the landscape will be present in a way that more generally defines the character of the place, but which distils this character and essence.	H	Key component of the Rotoiti / Rotoehu lake system. Representative of volcanic lakes with modified landcover (pasture / forestry and indigenous vegetation matrix).
Natural features in a good state of preservation are representative and characteristic of the natural geological processes and diversity of the region.	H	Rotoehu Scenic Reserve in a good state of preservation, representative of the variety of natural geological processes – deeply indented narrow bays in particular.
Research and Education Natural features and landscapes are valued for the contribution they make to research and education.	M	Natural science values – outdoor recreation education.
Rarity Natural features are unique or rare in the region or nationally, and few comparable examples exist.	M	Not rare or unique. Characteristic of modified lake landscapes – indented bays locally unique.
Aesthetic Values		
Coherence The patterns of land cover and land use are largely in harmony with the underlying natural pattern of the landform of the area and there are no significant discordant elements of land cover or land use.	M	Modified pasture and forestry represent discordant landscape patterns in relation to areas of contiguous bush and associated landform – particularly to the north.
Vividness Natural features and landscapes are widely recognised across the community and beyond the local area and remain clearly in the memory; striking landscapes are symbolic of an area due to their recognisable and memorable qualities.	M	Locally recognisable and memorable.
Naturalness Natural features and landscapes appear largely uncompromised by modification and appear to comprise natural systems that are functional and healthy.	M	Extensive areas of agricultural modification excluding Scenic Reserve areas to the north.
Intactness Natural systems are intact and aesthetically coherent and do not display significant visual signs of human modification, intervention or manipulation; visually intact and highly aesthetic natural landscapes.	M	Variable aesthetic coherence in relation to modified landscape patterns in contrast to, but complementary with, areas of contiguous indigenous vegetation and lake landforms to the north.
Expressiveness (Legibility)		
Natural features and landscapes clearly demonstrate the natural processes that formed them. Examples of natural process in landscape exemplify the particular processes that formed that landscape.	H	Expressive of wider volcanic lake processes.
Transient Values		
The consistent occurrence of transient features (for example the seasonal flowering of pohutukawa) contributes to the character, qualities and values of the landscape; landscapes are widely recognised for their transient features and the contribution these make to the landscape.	N/A	None known.
SUMMARY OF LANDSCAPE ASSESSMENT	H	Outstanding volcanic crater lake.
Note: The ranking system adopts a 3 level scoring system: L = low, M = moderate, H = high in relation to the extent to which the values of the subject ONFL meet the particular criterion.		

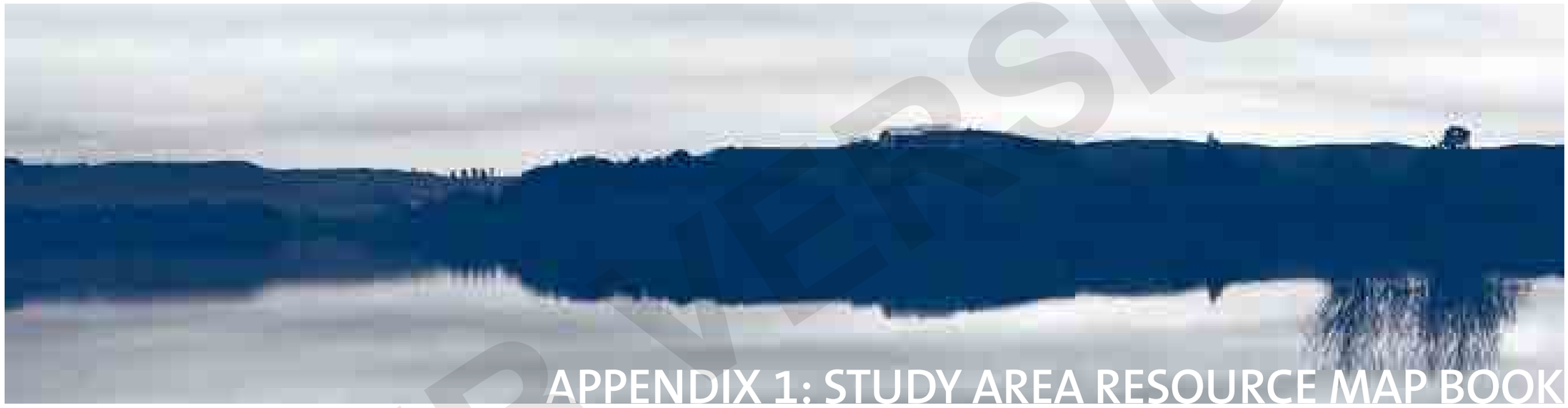
Shared and Recognised Values		
Natural features and landscapes are widely known and valued by the immediate and wider community for their contribution to a sense of place leading to a strong community association with or high public esteem for the place.	M	One of the thirteen lakes to be vested with Te Arawa Lakes Trust Board
Maori Values		
Natural features and landscapes are clearly special or widely known and influenced by their connection to the Maori values inherent in the place.	H	Intense occupation and settlement of the lake foreshore, particularly western side. Association with eponymous ancestors of hapu descent groups.
Historical Associations		
Natural features and landscapes are clearly and widely known and influenced by their connection to the historical values inherent in the place.	M	Archaeological evidence of long occupation and defended settlement on banks and promontories overlooking lake.
OVERALL ASSESSMENT	H	Outstanding natural landscape of high natural science value

ONFL name: Lake Rotoma and Caldera		
Description: Entire water body including areas of contiguous native bush, wetlands, prominent headland landscape features and adjacent lagoons and bays. Excludes lakeside development of Lake Rotoma settlement to the southwest. The Rotoma eruption created a caldera comprising of two basins, one on the northern side and the other on the southern side. The lake is drained via subsurface outflows. Issues concerning the water quality of the lake include the effects of stock entering the lake for drinking water as well as the existing and future septic tank installations. Formed by the Rotoma eruptions, this eastern-most lake has two distinct basins. The lake has a small outflow through porous pumice substrate to Lake Rotoehu, and has some outflow to groundwater. Lake Rotoma is the cleanest of all the Rotorua Lakes, with around 11 metres depth water clarity and no invasive lake weeds. This is likely to be because only 15% of the catchment is in pasture, and this is not intensively farmed. However, the lake has a high risk of lake weed infestation from nearby Lake Rotoehu or other lakes.		
CRITERIA	**RANKING**	**COMMENT**
Natural Science Factors		
Representativeness Natural features and landscapes are clearly and recognisably characteristic of the area, district or region. The key components of the landscape will be present in a way that more generally defines the character of the place, but which distils this character and essence.	H	Key component of the wider volcanic lakes landscape and recognisably characteristic of the area. High water quality distils character of lake water bodies.
Natural features in a good state of preservation are representative and characteristic of the natural geological processes and diversity of the region.	H	Representative of underlying geological processes – good example with two caldera basins.
Research and Education Natural features and landscapes are valued for the contribution they make to research and education.	H	Water quality research values.
Rarity Natural features are unique or rare in the region or nationally, and few comparable examples exist.	H	Rare in the region in relation to water quality.
Aesthetic Values		
Coherence The patterns of land cover and land use are largely in harmony with the underlying natural pattern of the landform of the area and there are no significant discordant elements of land cover or land use.	H	Strong coherence of landform and landcover in relation to scenic reserve lands surrounding the lake margins that extend to the Rotoma Forest uplands to the southeast.
Vividness Natural features and landscapes are widely recognised across the community and beyond the local area and remain clearly in the memory; striking landscapes are symbolic of an area due to their recognisable and memorable qualities.	H	Memorable in relation to water quality.
Naturalness Natural features and landscapes appear largely uncompromised by modification and appear to comprise natural systems that are functional and healthy.	H	Limited development at Rotoma Settlement – appearance of functional and healthy natural systems in relation to water quality.
Intactness Natural systems are intact and aesthetically coherent and do not display significant visual signs of human modification, intervention or manipulation; visually intact and highly aesthetic natural landscapes.	M	Aesthetic coherence higher in the un- developed lake margins and associated slopes.
Expressiveness (Legibility)		
Natural features and landscapes clearly demonstrate the natural processes that formed them. Examples of natural process in landscape exemplify the particular processes that formed that landscape.	H	Highly expressive of natural land / lake forming processes.
Transient Values		
The consistent occurrence of transient features (for example the seasonal flowering of pohutukawa) contributes to the character, qualities and values of the landscape; landscapes are widely recognised for their transient features and the contribution these make to the landscape.	M	Potential wildlife values.
SUMMARY OF LANDSCAPE ASSESSMENT	H	Outstanding volcanic crater lake landscape.
Note: The ranking system adopts a 3 level scoring system: L = low, M = moderate, H = high in relation to the extent to which the values of the subject ONFL meet the particular criterion.		

Shared and Recognised Values		
Natural features and landscapes are widely known and valued by the immediate and wider community for their contribution to a sense of place leading to a strong community association with or high public esteem for the place.	M	One of thirteen lakes vested with Te Arawa Lakes Trust
Maori Values		
Natural features and landscapes are clearly special or widely known and influenced by their connection to the Maori values inherent in the place.	M	Associated with eponymous ancestors of hapu descent groups. Long periods of defended settlement and occupation of lake and surrounding areas.
Historical Associations		
Natural features and landscapes are clearly and widely known and influenced by their connection to the historical values inherent in the place.	M	Archaeological evidence of defended settlements on promontories and areas adjacent to lake.
OVERALL ASSESSMENT	H	Outstanding natural landscape of high aesthetic value.

ONFL name: Rotoma Forest		
Description: Predominantly steep dissected area of upland of volcanic origin with contiguous naturally occurring vegetation cover. Adjoins south-eastern edge of Lake Rotoma where a finger of bush extends north-east along a scarp slope. Includes Rotoma Forest, part of Rotoma Scenic Reserve and Mangaone Scenic Reserve, Tasman Maungawhakamana Tasman Forest Accord. Lake Rotoma Scenic Reserve area includes rimu / tawa dominant forest types and is at a transitional zone for many coastal species - is part of a natural area corridor to the coastal foothills to the north east.		
CRITERIA	**RANKING**	**COMMENT**
Natural Science Factors		
Representativeness Natural features and landscapes are clearly and recognisably characteristic of the area, district or region. The key components of the landscape will be present in a way that more generally defines the character of the place, but which distils this character and essence.	H	Key upland landscape component that defines the both the wider upland setting for both Rotoma and Kawarau.
Natural features in a good state of preservation are representative and characteristic of the natural geological processes and diversity of the region.	H	Significant area of contiguous indigenous vegetation.
Research and Education Natural features and landscapes are valued for the contribution they make to research and education.	M	Natural science research values.
Rarity Natural features are unique or rare in the region or nationally, and few comparable examples exist.	H	Few comparable examples that cover a number of ecological districts.
Aesthetic Values		
Coherence The patterns of land cover and land use are largely in harmony with the underlying natural pattern of the landform of the area and there are no significant discordant elements of land cover or land use.	H	Strong alignment between steep dissected hill country and indigenous vegetation landcover.
Vividness Natural features and landscapes are widely recognised across the community and beyond the local area and remain clearly in the memory; striking landscapes are symbolic of an area due to their recognisable and memorable qualities.	H	Recognisable and symbolic.
Naturalness Natural features and landscapes appear largely uncompromised by modification and appear to comprise natural systems that are functional and healthy.	H	Largely uncompromised – contiguous area of indigenous vegetation.
Intactness Natural systems are intact and aesthetically coherent and do not display significant visual signs of human modification, intervention or manipulation; visually intact and highly aesthetic natural landscapes.	H	Little sign of human modification. Production forestry on foothill margins.
Expressiveness (Legibility)		
Natural features and landscapes clearly demonstrate the natural processes that formed them. Examples of natural process in landscape exemplify the particular processes that formed that landscape.	H	Highly expressive of underlying natural processes – volcanic upland areas and ongoing functional landscape structure.
Transient Values		
The consistent occurrence of transient features (for example the seasonal flowering of pohutukawa) contributes to the character, qualities and values of the landscape; landscapes are widely recognised for their transient features and the contribution these make to the landscape.	M	Transient aesthetic values in relation to scenic qualities – light, weather conditions.
SUMMARY OF LANDSCAPE ASSESSMENT	H	Outstanding upland indigenous forest landscape.
Note: The ranking system adopts a 3 level scoring system: L = low, M = moderate, H = high in relation to the extent to which the values of the subject ONFL meet the particular criterion.		

Shared and Recognised Values		
Natural features and landscapes are widely known and valued by the immediate and wider community for their contribution to a sense of place leading to a strong community association with or high public esteem for the place.	n/a	None known
Maori Values		
Natural features and landscapes are clearly special or widely known and influenced by their connection to the Maori values inherent in the place.	n/a	None known
Historical Associations		
Natural features and landscapes are clearly and widely known and influenced by their connection to the historical values inherent in the place.	L	Archaeological evidence of defended settlement and occupation area in north east.
OVERALL ASSESSMENT	H	Outstanding natural landscape of high natural science and aesthetic value.



APPENDIX 1: STUDY AREA RESOURCE MAP BOOK

Landscape Type and Character Area Definitions

Map 1: Landscape Types and Landscape Character Areas

Natural and Physical Resources

Map 2: NZMS 260 Topographic Series

Map 3: Aerial Photography

Map 4: Elevation

Map 5: Underlying Geology (New Zealand Land Resource Inventory)

Map 6: River Environments Classifications of New Zealand (NIWA)

Map 7: Land Cover Data Base (Landcare Research)

Landscape Assets

Map 8: Land Use Capability Units (Landcare Research) (see Appendix 2 for an explanation of Land Use Capability)

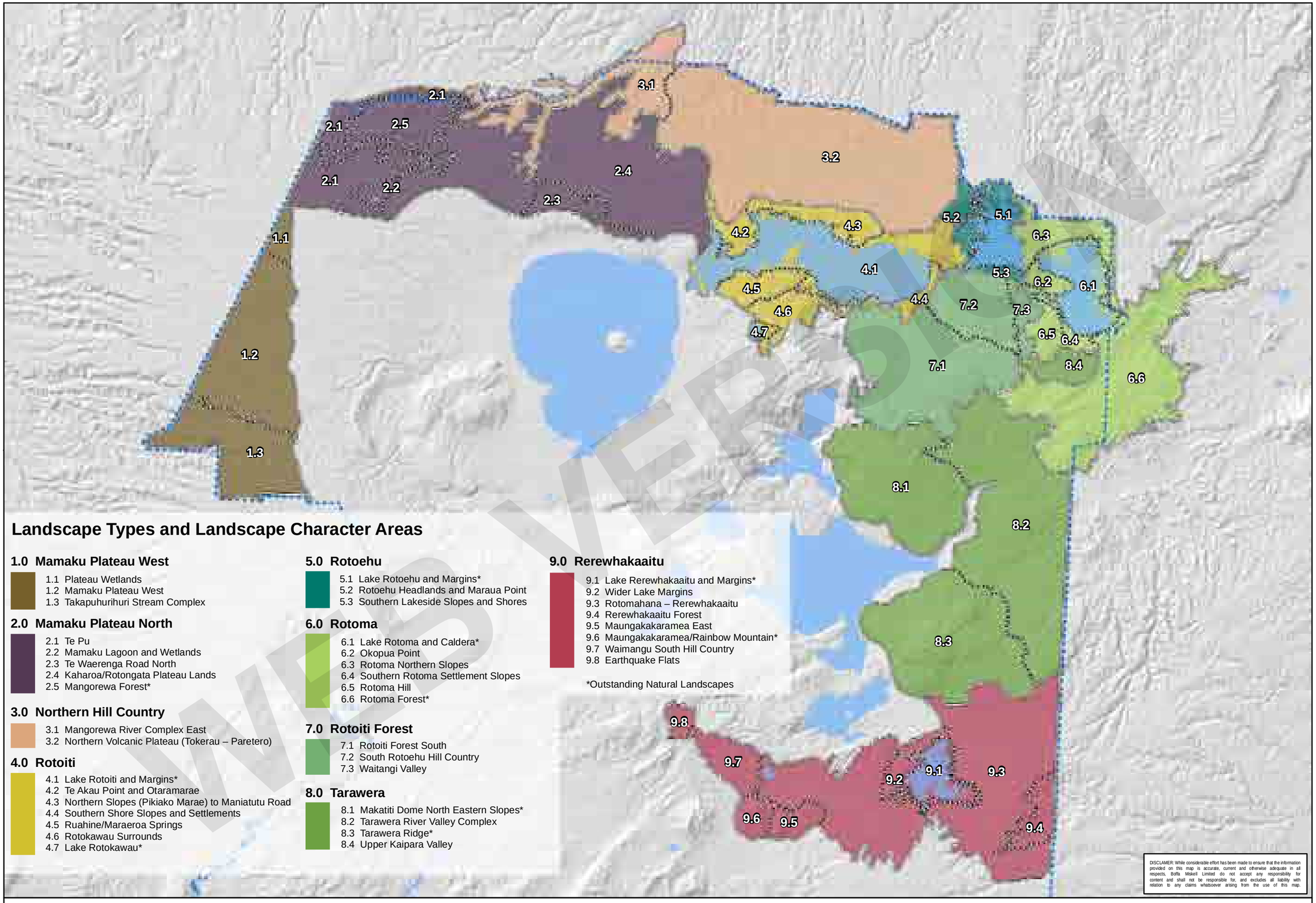
Map 9: Archaeological Sites and Geopreservation Sites

Map 10: Department of Conservation Reserves and QEII Covenants

Map 11: Rotorua District Council Zoning

Map 12: Rotorua Cultural Landscapes (Boffa Miskell 2007)

Map 13: Outstanding Natural Features and Landscapes



Landscape Types and Landscape Character Areas

1.0 Mamaku Plateau West
- 1.1 Plateau Wetlands
- 1.2 Mamaku Plateau West
- 1.3 Takapuhurihuri Stream Complex

2.0 Mamaku Plateau North
- 2.1 Te Pu
- 2.2 Mamaku Lagoon and Wetlands
- 2.3 Te Waerenga Road North
- 2.4 Kaharoa/Rotongata Plateau Lands
- 2.5 Mangorewa Forest*

3.0 Northern Hill Country
- 3.1 Mangorewa River Complex East
- 3.2 Northern Volcanic Plateau (Tokerau – Paretero)

4.0 Rotoiti
- 4.1 Lake Rotoiti and Margins*
- 4.2 Te Akau Point and Otaramarae
- 4.3 Northern Slopes (Pikiako Marae) to Maniatutu Road
- 4.4 Southern Shore Slopes and Settlements
- 4.5 Ruahine/Maraeroa Springs
- 4.6 Rotokawau Surrounds
- 4.7 Lake Rotokawau*

5.0 Rotoehu
- 5.1 Lake Rotoehu and Margins*
- 5.2 Rotoehu Headlands and Maraua Point
- 5.3 Southern Lakeside Slopes and Shores

6.0 Rotoma
- 6.1 Lake Rotoma and Caldera*
- 6.2 Okopua Point
- 6.3 Rotoma Northern Slopes
- 6.4 Southern Rotoma Settlement Slopes
- 6.5 Rotoma Hill
- 6.6 Rotoma Forest*

7.0 Rotoiti Forest
- 7.1 Rotoiti Forest South
- 7.2 South Rotoehu Hill Country
- 7.3 Waitangi Valley

8.0 Tarawera
- 8.1 Makatiti Dome North Eastern Slopes*
- 8.2 Tarawera River Valley Complex
- 8.3 Tarawera Ridge*
- 8.4 Upper Kaipara Valley

9.0 Rerewhakaaitu
- 9.1 Lake Rerewhakaaitu and Margins*
- 9.2 Wider Lake Margins
- 9.3 Rotomahana – Rerewhakaaitu
- 9.4 Rerewhakaaitu Forest
- 9.5 Maungakakaramea East
- 9.6 Maungakakaramea/Rainbow Mountain*
- 9.7 Waimangu South Hill Country
- 9.8 Earthquake Flats

*Outstanding Natural Landscapes

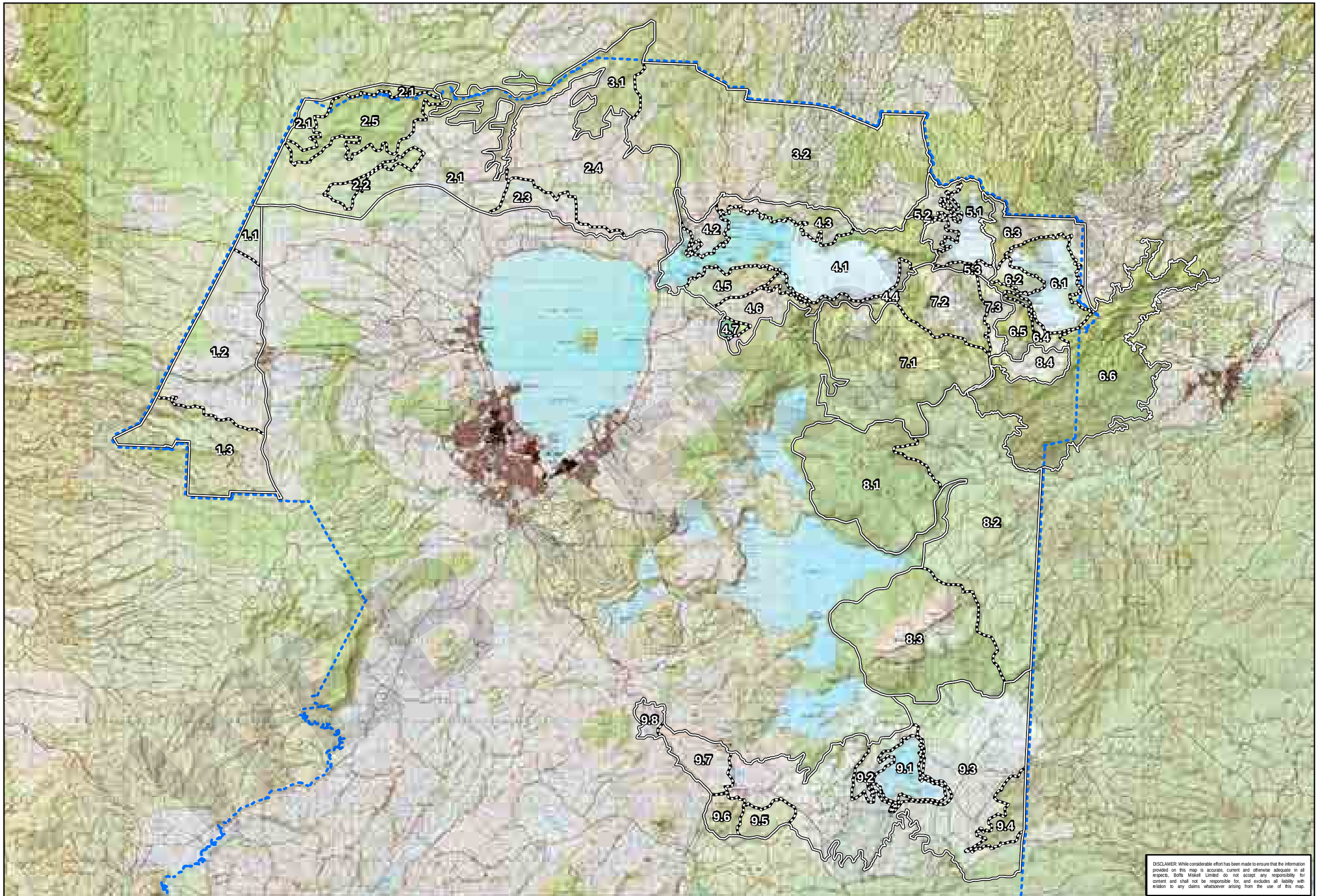
Map 1. Landscape Types and Landscape Character Areas

Rotorua District Council Boundary
Landscape Character Area
Landscape Type
Lakes

Date: February 2010 Data Sources: Boffa Miskell Ltd, Terralink International Administrative Boundaries
File: U:\Auckland\2006\A06355_Rdl_Northern lakes\GIS\Map_book_appendix\A06355_map_1_north_20100211.mxd

1:200,000 @ A3
0 1.25 2.5 km

Boffa Miskell
PO BOX 91 250 | LEVEL 3, IBM CENTRE | 82 WYNDHAM STREET | AUCKLAND
www.boffamiskell.co.nz



Map 2. NZMS260 Topographic Series

Rotorua District Council Boundary Landscape Character Area

Landscape Type

Date: February 2009 Data Sources: Boffa Miskell Ltd, Land Information New Zealand (LINZ) New Zealand Map Series 260 (NZMS260)

File: U:\Auckland\2006\A06355_Rdl_Northern lakes\GIS\Map_book_appendix\A06355_map_2_north_20090211.mxd

1:200,000 @ A3

0 1.25 2.5 km

Boffa Miskell

PO BOX 91 250 | LEVEL 3, IBM CENTRE | 82 WYNDHAM STREET | AUCKLAND

www.boffamiskell.co.nz

Map 3. Aerial Photography

Rotorua District Council Boundary Landscape Character Area

Landscape Type

Date: February 2009 Data Sources: Boffa Miskell Ltd, Rotorua District Council ortho-rectified aerial photography 2001, Land Information New Zealand (LINZ) ortho-rectified aerial photography 1996-2006

File: U:\Auckland\2006\A06355_Rdl_Northern lakes\GIS\Map_book_appendix\A06355_map_3_north_20090223.mxd

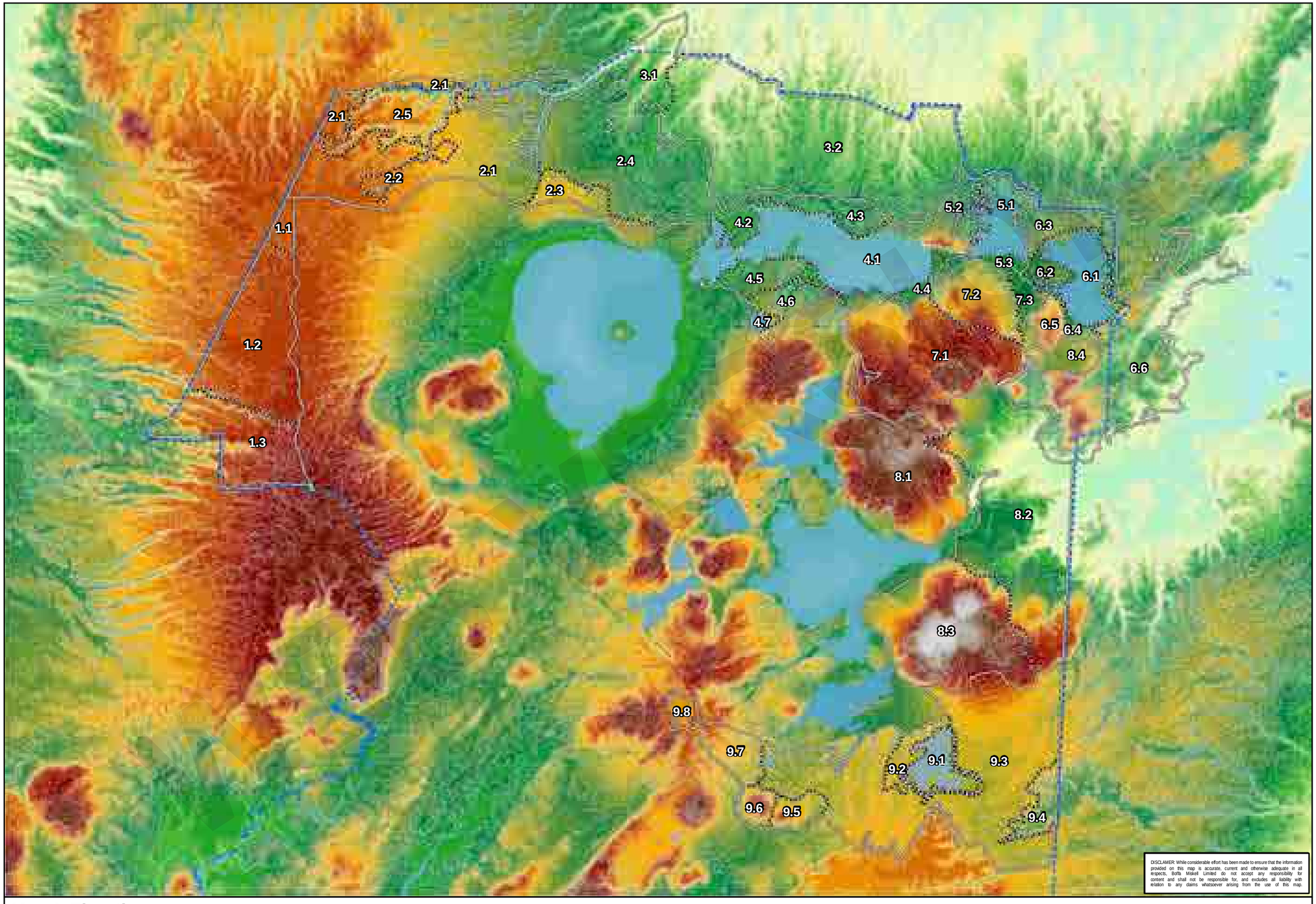
1:200,000 @ A3

0 1.25 2.5 km

Boffa Miskell

PO BOX 91 250 | LEVEL 3, IBM CENTRE | 82 WYNDHAM STREET | AUCKLAND

www.boffamiskell.co.nz



DISCLAIMER: While considerable effort has been made to ensure that the information provided on this map is accurate, current and otherwise adequate in all respects, Boffa Miskell Limited do not accept any responsibility for content and shall not be responsible for, and excludes all liability with relation to any claims whatsoever arising from the use of this map.

Map 4. Elevation

Rotorua District Council Boundary
Landscape Character Area
20m Contours
Landscape Type
Lakes

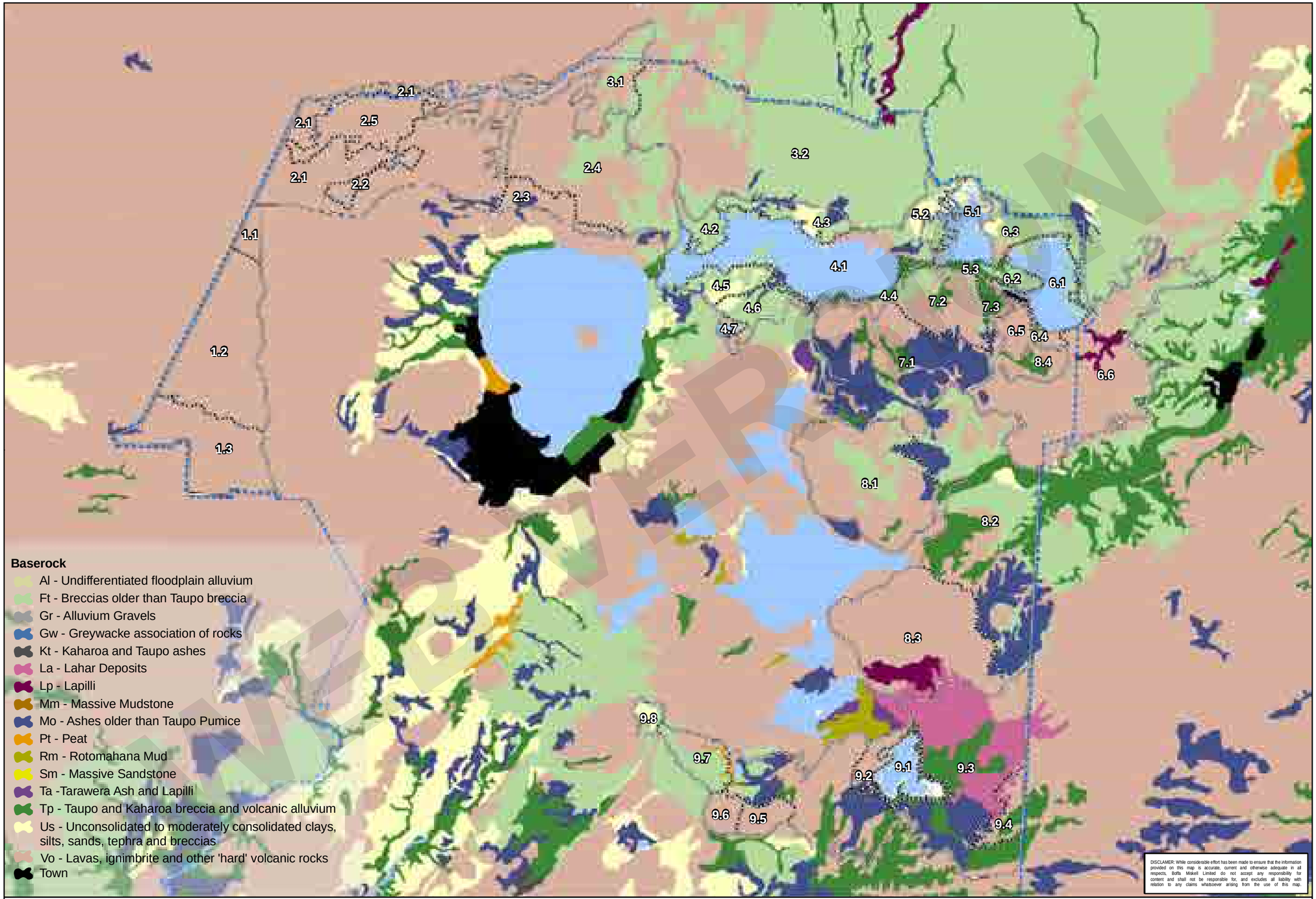
Elevation (metres)

20 - 40
40.1 - 60
60.1 - 80
80.1 - 100
100.1 - 120
120.1 - 140
140.1 - 160
160.1 - 180
180.1 - 200
200.1 - 220
220.1 - 240
240.1 - 260
260.1 - 280
280.1 - 300
300.1 - 320
320.1 - 340
340.1 - 360
360.1 - 380
380.1 - 400
400.1 - 420
420.1 - 440
440.1 - 460
460.1 - 480
480.1 - 500
500.1 - 520
520.1 - 540
540.1 - 560
560.1 - 580
580.1 - 600
600.1 - 620
620.1 - 640
640.1 - 660
660.1 - 680
680.1 - 700
700.1 - 720
720.1 - 740
740.1 - 760
760.1 - 780
780.1 - 800
800.1 - 820
820.1 - 840
840.1 - 860
860.1 - 880
880.1 - 900
900.1 - 920
920.1 - 940
940.1 - 960
960.1 - 980
980.1 - 1,000
1,000.1 - 1,020
1,020.1 - 1,040
1,040.1 - 1,060
1,060.1 - 1,080
1,080.1 - 1,100

Date: February 2009 Data Sources: Boffa Miskell Ltd, Land Information New Zealand (LINZ) lakes & 20m contours (elevation derived from 20m contours)
File: U:\Auckland\2006\A06355_Rdl_Northern lakes\GIS\Map_book_appendix\A06355_map_4_north_20090211.mxd

1:200,000 @ A3
0 1.25 2.5 km

Boffa Miskell
PO BOX 91 250 | LEVEL 3, IBM CENTRE | 82 WYNDHAM STREET | AUCKLAND
www.boffamiskell.co.nz



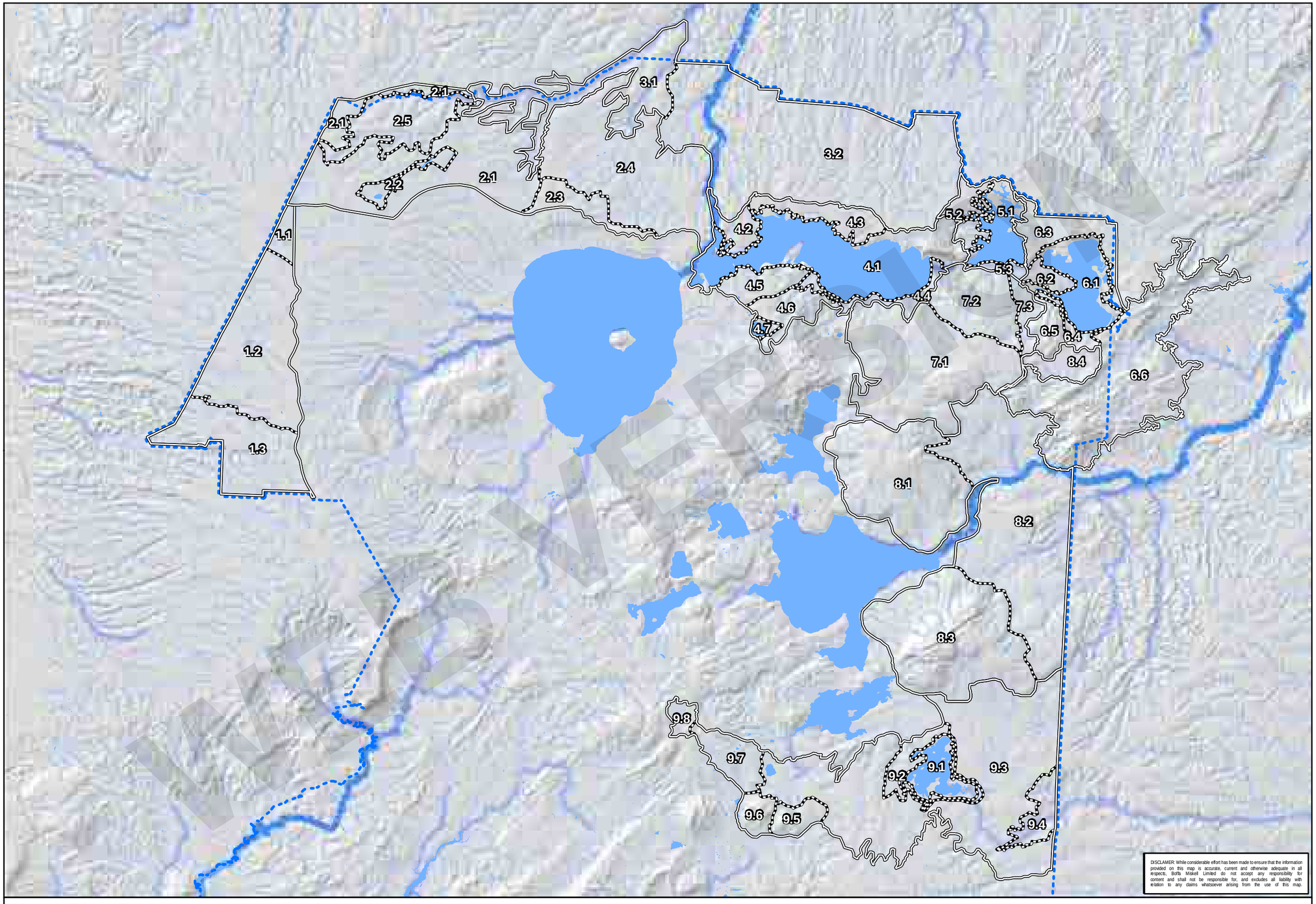
Map 5. Underlying Geology

Rotorua District Council Boundary
Landscape Character Area
Landscape Type
Lakes

Date: June 2010 Data Sources: Boffa Miskell Ltd, Landcare Research Ltd, New Zealand Land Resource Inventory (NZLRI) geology
File: U:\Auckland\2006\A06355_Rdl_Northern lakes\GIS\Map_book_appendix\A06355_map_5_north_20100614.mxd

1:200,000 @ A3
0 2 4 km

Boffa Miskell
PO BOX 91 250 | LEVEL 3, IBM CENTRE | 82 WYNDHAM STREET | AUCKLAND
www.boffamiskell.co.nz



Map 6. River Environment Classification of New Zealand

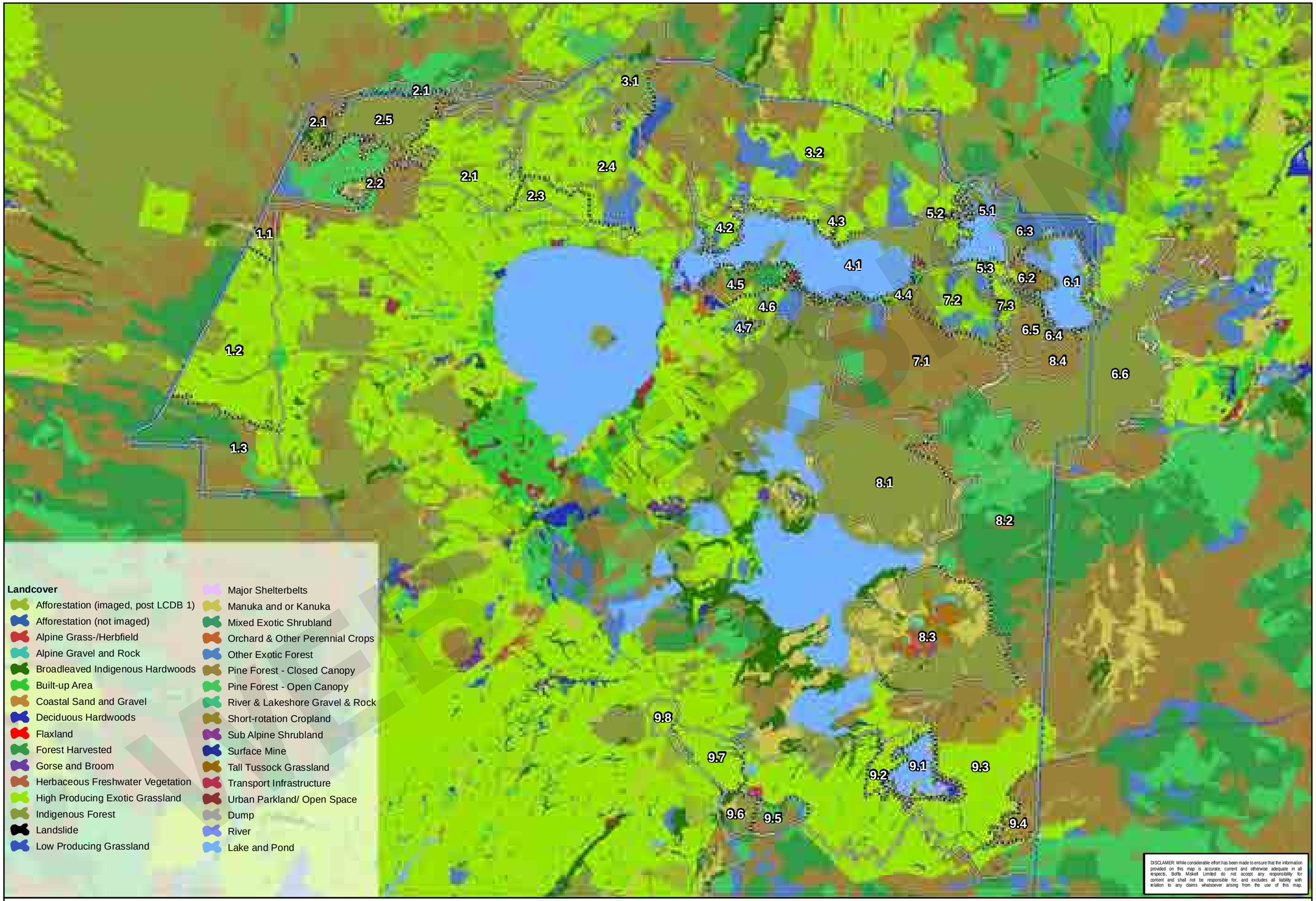
Rotorua District Council Boundary
Landscape Character Area
Stream Order
Landscape Type
Lakes

1 2 3 4 5 6

Date: February 2009 Data Sources: Boffa Miskell Ltd, Landcare Research Ltd, Land Information New Zealand (LINZ) lakes, National Institute of Water and Atmospheric Research (NIWA) River Environment Classification (REC) rivers
File: U:\Auckland\2006\A06355_Rdl_Northern lakes\GIS\Map_book_appendix\A06355_map_5_north_20090211.mxd

1:200,000 @ A3
0 1.25 2.5 km

Boffa Miskell
PO BOX 91 250 | LEVEL 3, IBM CENTRE | 82 WYNDHAM STREET | AUCKLAND
www.boffamiskell.co.nz



Map 7. Land Cover

Rotorua District Council Boundary

Landscape Character Area

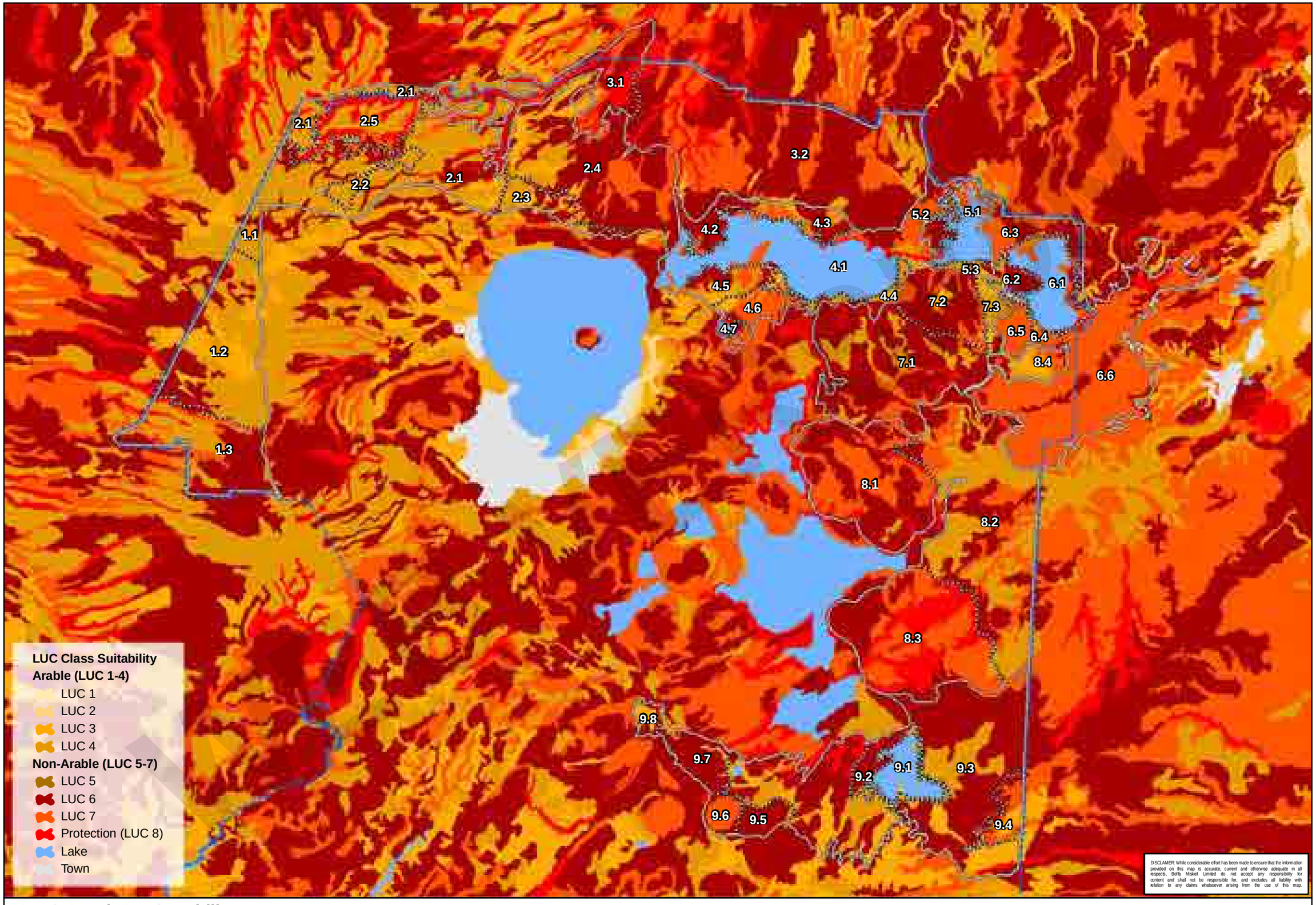
Landscape Type

Date: February 2009 Data Sources: Boffa Miskell Ltd, Landcare Research Ltd, Land Information New Zealand (LINZ) lakes, Landcare Research Ltd, Landcover Database 2 (LCDB2)
File: U:\Auckland\2006\A06355_Rdl_Northern lakes\GIS\Map_book_appendix\A06355_map_5_north_20090223.mxd

1:200,000 @ A3

0 1.25 2.5 km

Boffa Miskell
PO BOX 91 250 | LEVEL 3, IBM CENTRE | 82 WYNDHAM STREET | AUCKLAND
www.boffamiskell.co.nz



Map 8. Land Use Capability

Rotorua District Council Boundary Landscape Character Area

Landscape Type

Date: February 2009 Data Sources: Boffa Miskell Ltd, Land Information New Zealand (LINZ) lakes, Landcare Research Ltd, Land Use Capability (LUC) as part of the New Zealand Land Resource Inventory (NZLRI) dataset

File: U:\Auckland\2006\A06355_Rdl_Northern lakes\GIS\Map_book_appendix\A06355_map_8_north_20090223.mxd

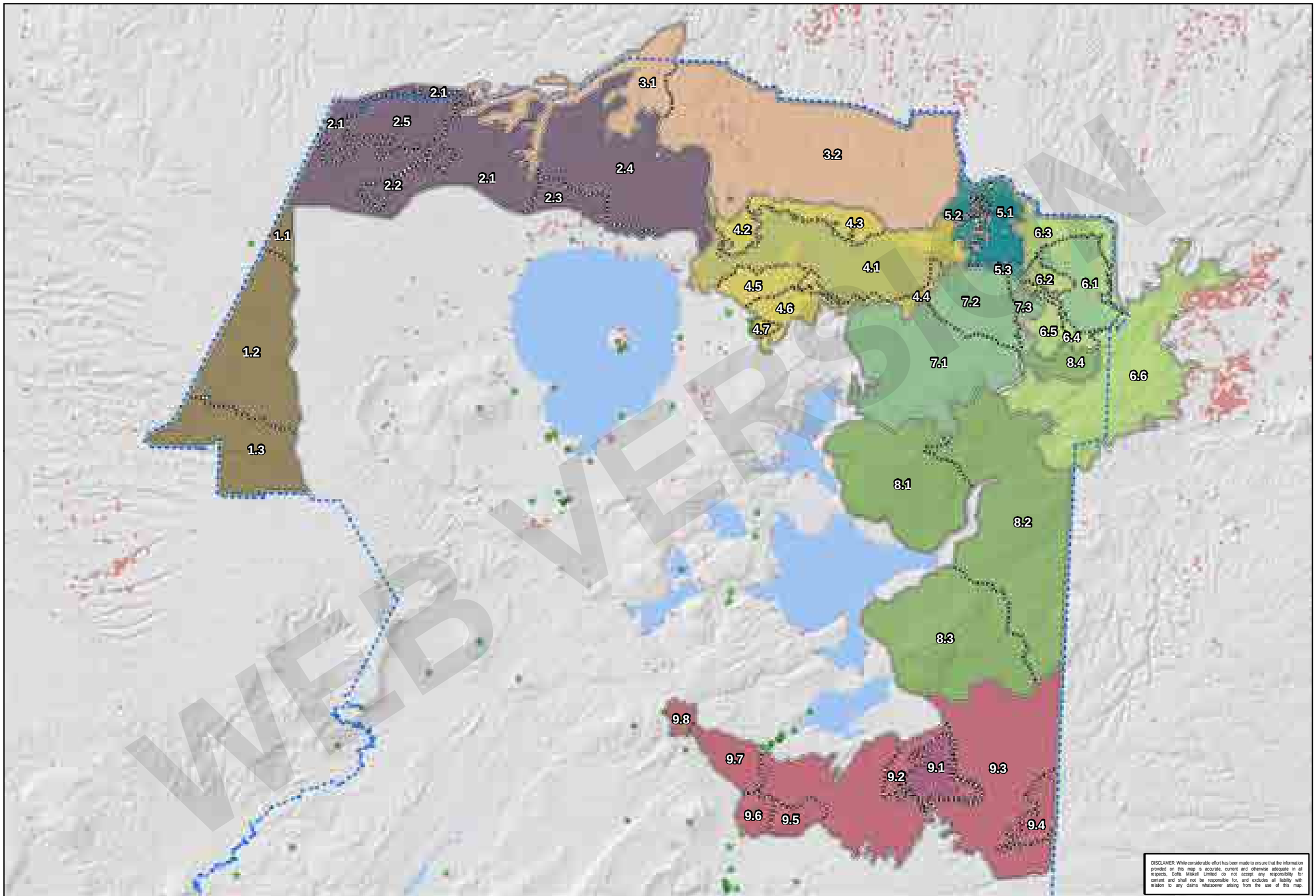
1:200,000 @ A3

0 1.25 2.5 km

Boffa Miskell

PO BOX 91 250 | LEVEL 3, IBM CENTRE | 82 WYNDHAM STREET | AUCKLAND

www.boffamiskell.co.nz



Map 9. Archaeological and Geopreservation Sites

Rotorua District Council Boundary | Landscape Character Area | Geopreservation Sites

Landscape Type | Lakes | Archaeological Sites

Date: February 2009 Data Sources: Boffa Miskell Ltd, Land Information New Zealand (LINZ) lakes, Rotorua District Council Geopreservation Sites, New Zealand Archaeological Association (NZAA) Central Index of New Zealand Archaeological Sites (CINZAS)

File: U:\Auckland\2006\A06355_Rdl_Northern lakes\GIS\Map_book_appendix\A06355_map_9_south_20090211.mxd

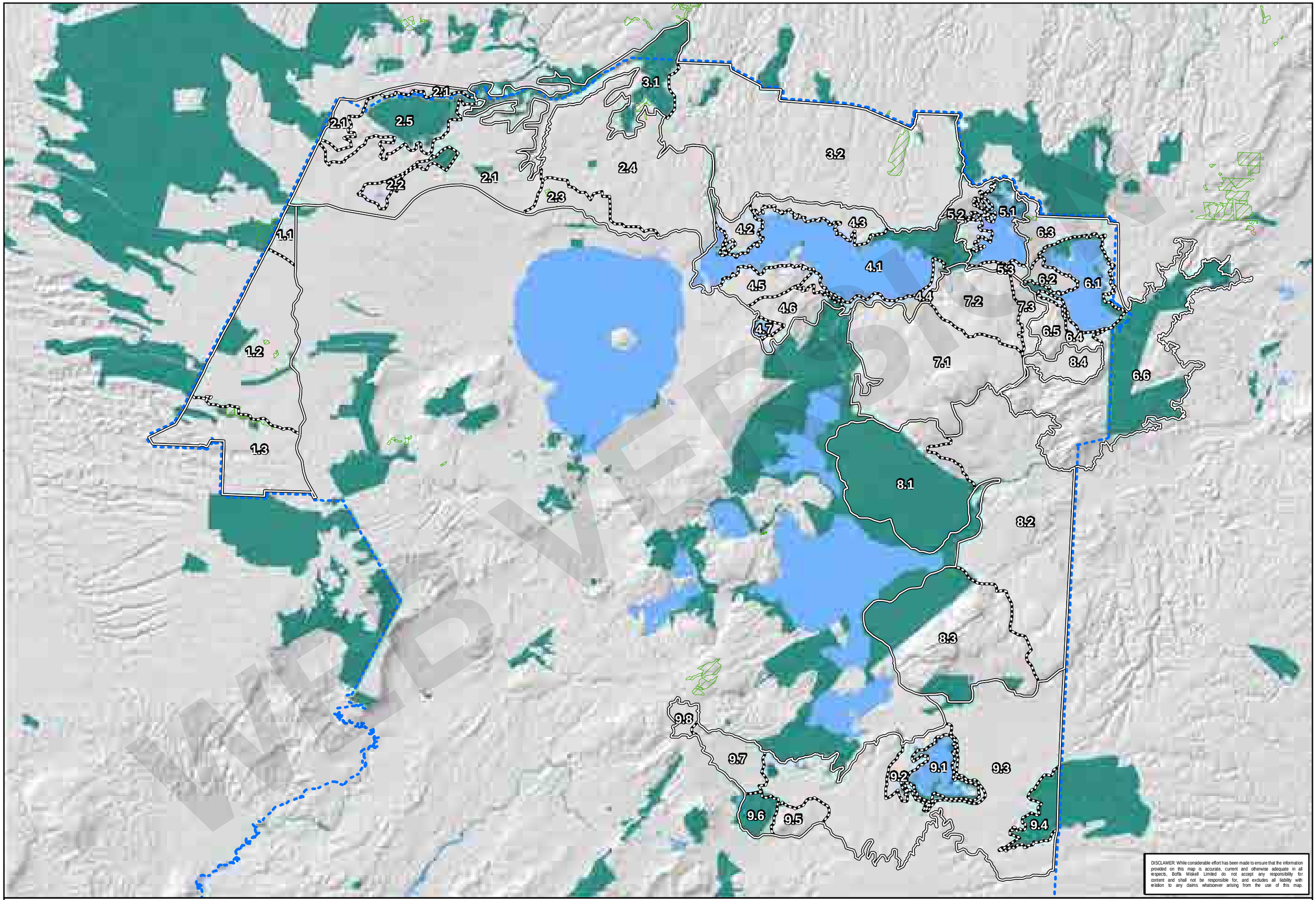
1:200,000 @ A3

0 1.25 2.5 km

Boffa Miskell

PO BOX 91 250 | LEVEL 3, IBM CENTRE | 82 WYNDHAM STREET | AUCKLAND

www.boffamiskell.co.nz



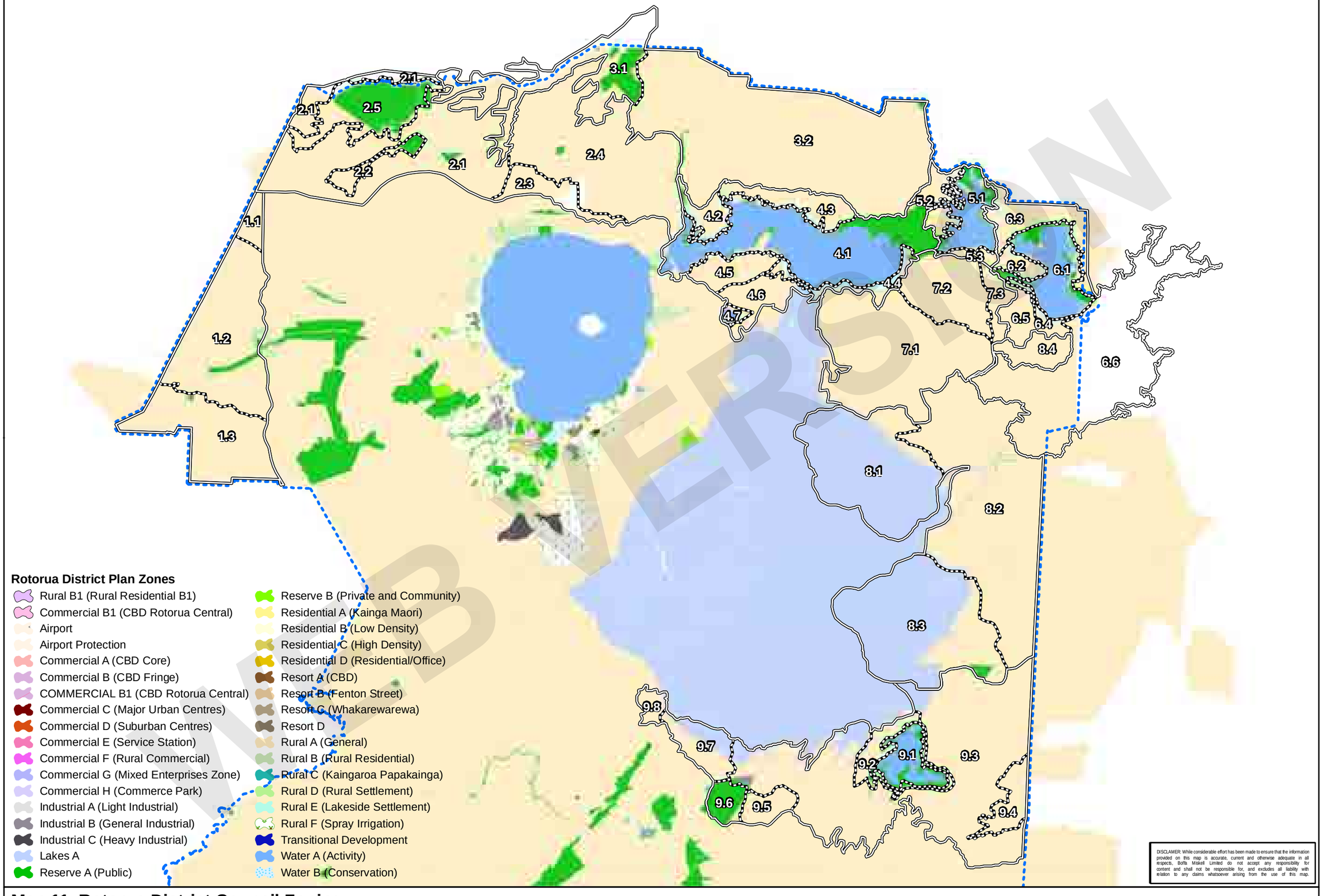
Map 10. Department of Conservation Units and QEII Covenants

Rotorua District Council Boundary
Landscape Character Area
Department of Conservation Units
Landscape Type
Lakes
QEII Covenants

Date: February 2009 Data Sources: Boffa Miskell Ltd, Land Information New Zealand (LINZ) lakes, Department of Conservation (DOC) Units, Queen Elizabeth II (QEII) Trust Covenants
File: U:\Auckland\2006\A06355_Rdl_Northern lakes\GIS\Map_book_appendix\A06355_map_10_north_20090211.mxd

1:200,000 @ A3
0 1.25 2.5 km

Boffa Miskell
PO BOX 91 250 | LEVEL 3, IBM CENTRE | 82 WYNDHAM STREET | AUCKLAND
www.boffamiskell.co.nz



Rotorua District Plan Zones

- Rural B1 (Rural Residential B1)
- Commercial B1 (CBD Rotorua Central)
- Airport
- Airport Protection
- Commercial A (CBD Core)
- Commercial B (CBD Fringe)
- COMMERCIAL B1 (CBD Rotorua Central)
- Commercial C (Major Urban Centres)
- Commercial D (Suburban Centres)
- Commercial E (Service Station)
- Commercial F (Rural Commercial)
- Commercial G (Mixed Enterprises Zone)
- Commercial H (Commerce Park)
- Industrial A (Light Industrial)
- Industrial B (General Industrial)
- Industrial C (Heavy Industrial)
- Lakes A
- Reserve A (Public)
- Reserve B (Private and Community)
- Residential A (Kainga Maori)
- Residential B (Low Density)
- Residential C (High Density)
- Residential D (Residential/Office)
- Resort A (CBD)
- Resort B (Fenton Street)
- Resort C (Whakarewarewa)
- Resort D
- Rural A (General)
- Rural B (Rural Residential)
- Rural C (Kaingaroa Papakainga)
- Rural D (Rural Settlement)
- Rural E (Lakeside Settlement)
- Rural F (Spray Irrigation)
- Transitional Development
- Water A (Activity)
- Water B (Conservation)

Map 11. Rotorua District Council Zoning

Rotorua District Council Boundary Landscape Character Area

Landscape Type

Date: February 2009 Data Sources: Boffa Miskell Ltd, Rotorua District Council Zoning

File: U:\Auckland\2006\A06355_Rdl_Northern lakes\GIS\Map_book_appendix\A06355_map_11_north_20090211.mxd

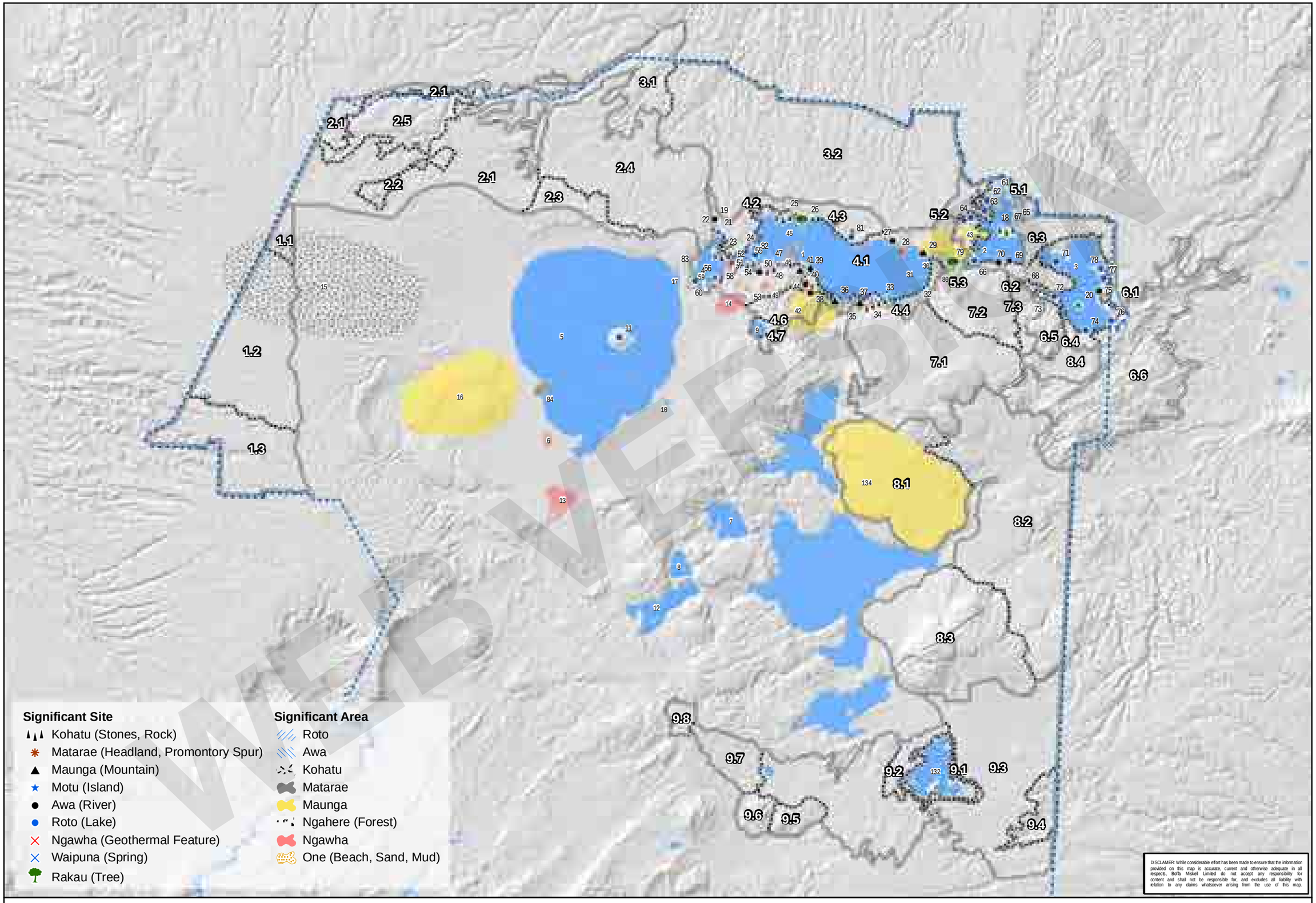
1:200,000 @ A3

0 1.25 2.5 km

Boffa Miskell

PO BOX 91 250 | LEVEL 3, IBM CENTRE | 82 WYNDHAM STREET | AUCKLAND

www.boffamiskell.co.nz



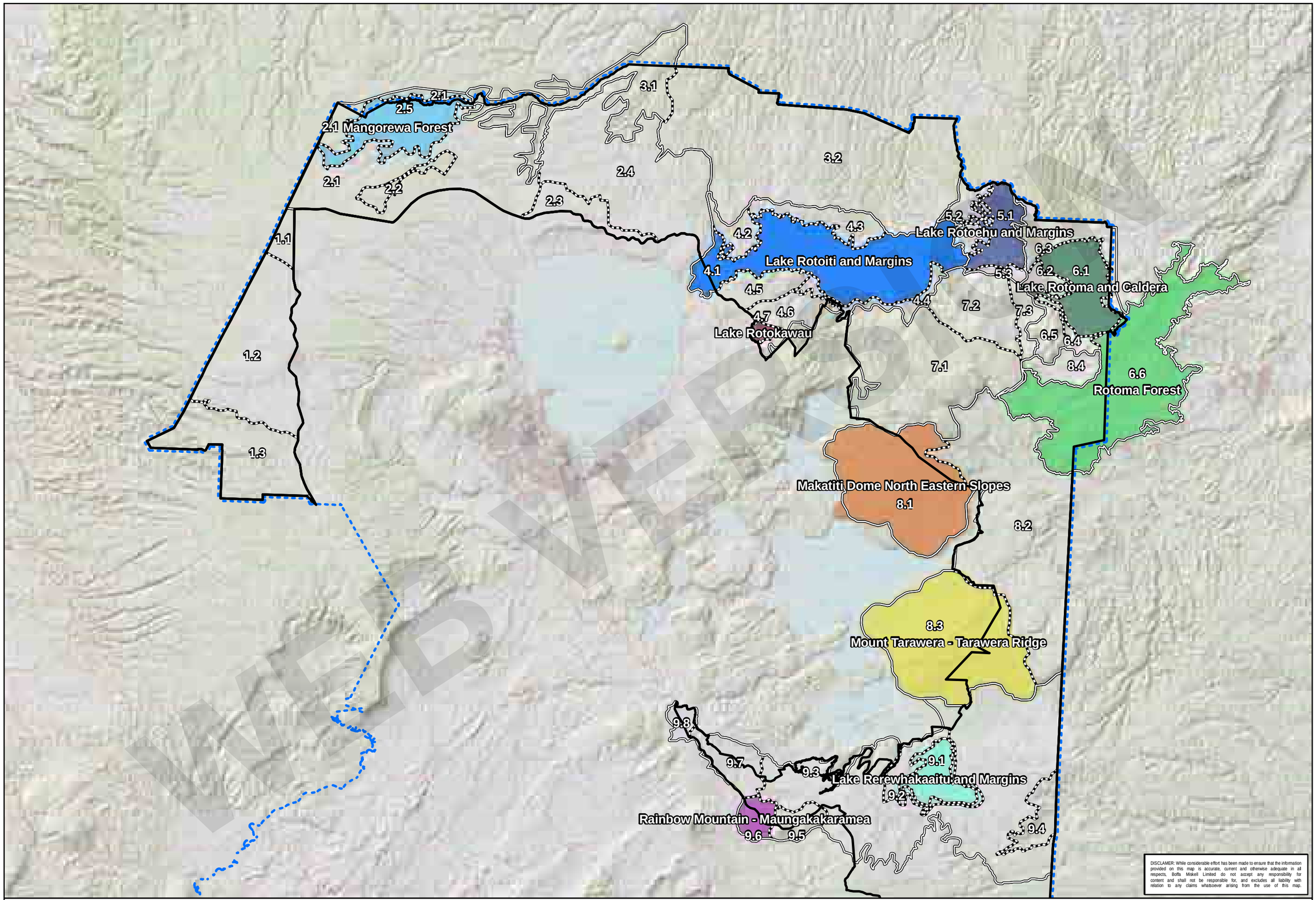
Map 12. Rotorua Cultural Landscapes

Rotorua District Council Boundary
Landscape Character Area
Landscape Type
Lake

Date: February 2009 Data Sources: Boffa Miskell Ltd Cultural Landscapes, Land Information New Zealand (LINZ) lakes
File: U:\Auckland\2006\A06355_Rdl_Northern lakes\GIS\Map_book_appendix\A06355_map_12_north_20090223.mxd

1:200,000 @ A3
0 1.25 2.5 km

Boffa Miskell
PO BOX 91 250 | LEVEL 3, IBM CENTRE | 82 WYNDHAM STREET | AUCKLAND
www.boffamiskell.co.nz



Map 13. Outstanding Natural Features and Landscapes

Rotorua District Council Boundary
Study Area Boundary
Landscape Type
Landscape Character Area

Date: April 2010 Data Sources: Boffa Miskell Ltd Landscape Types and Character Areas, Outstanding Natural Features and Landscapes (ONFL), Land Information New Zealand (LINZ) NZMS260
File: U:\Auckland\2006\A06355_Rdl_Northern lakes\GIS\Map_book_appendix\A06355_map_13_north_20100407.mxd

1:200,000 @ A3
0 1.5 3 km

Boffa Miskell
PO BOX 91 250 | LEVEL 3, IBM CENTRE | 82 WYNDHAM STREET | AUCKLAND
www.boffamiskell.co.nz

APPENDIX 2:
NEW ZEALAND LAND RESOURCE INVENTORY TERMS AND EXPLANATIONS

New Zealand Land Resource Inventory (NZLRI)

The NZLRI is a spatial database containing similar information to that in the NZLRI worksheets. There are about 100,000 polygons (map units) within the NZLRI, each of which describes a parcel of land in terms of five characteristics or attributes (rock, soil, slope, erosion, vegetation). These are contained on about 400 worksheets or maps covering the whole of New Zealand. Scientists at Landcare Research are upgrading the vegetation component of the NZLRI using satellite images to identify where changes have occurred during the past 20 years or so. The NZLRI also contains very useful Land Use Capability (LUC) assessments for each of the polygons described.

Computerised Resource

New Zealand is fortunate in having access to the computerised New Zealand Land Resource Inventory (NZLRI). It is a powerful tool for managing land, planning resource use, or environmental research. The foundation layers of Landcare Research's GIS consist of physical resource information derived from the NZLRI.

The main features are:

1. An inventory of five physical factors controlling land use—rock, soil, slope, erosion and vegetation
2. Land Use Capability (LUC) assessments. These are shown as map units or land 'parcels' that are essentially uniform with respect to physical characteristics (i.e., the factors described in 1.).
3. Fundamental Data Layers (FDLs) which contain data for 16 key soil attributes for all New Zealand soils.
4. Pastoral and forestry production parameters, plus administrative and natural boundaries.

These allow comparative land use studies within a wide range of national or regional areas.

Land Use Capability Assessments

In addition to the inventory code described above, each map unit also contains a coded Land Use Capability (LUC) assessment of the land's capacity for sustained productive use taking into account physical limitations, soil conservation needs and management requirements. Land Use Capability assessment, while being extremely versatile in its applications, is only one of many interpretations that could be based on the land inventory information. This assessment should not be confused with recommended land use or present land use. The Land Use Capability assessment has three basic components—class, subclass and unit. Class is the most general, classifying land from I (the most versatile and productive class) to VIII (the class with most limitations to use). Subclass groups units with the same kind of limitation or hazard. Only the dominant limitation is recorded in symbol form on the worksheets, but other limitations are recorded in the land use capability extended legend. The four kinds of limitations recognised are

5. e erodibility
6. c climate
7. w wetness
8. s soil limitation within the rooting zone

The Unit, which is represented by a number, indicates the particular LUC and denotes similar management and conservation requirements.

Slope

Slope is expressed in degrees in the following way:

0-3°	Flat to gently undulating
4-7°	Undulating
8-15°	Rolling
16-20°	Strongly rolling
21–25°	Moderately Steep
26-35°	Steep
>35°	Very Steep

Source: http://www.landcareresearch.co.nz/databases/nzlri.asp

APPENDIX 3: ROTORUA CULTURAL LANDSCAPES

The following list of natural features and landscapes of cultural significance to Maori has been sourced from a number of publications, statutory documents, legislation and mapping references. In particular Don Stafford's *Te Arawa* (1967) and *Landmarks of Te Arawa (1994/1996*), *Bateman Historical Atlas (1997)*, the *Te Arawa Lakes Settlement Act* 2006 and the *Waitangi Tribunal: He Maunga Rongo - Report on Central North Island Claims Wai1200 (2007)* have been used. These areas are mapped and can be found within the Study Area Resource Map Book: Map 12

Consultation with the Te Arawa Lakes Trust, Te Pumautanga o Te Arawa, local marae and the Te Arawa Standing Committee of Rotorua District Council, have provided verification, additions and valuable amendments.

The significance of cultural features and landscapes has been determined using a tiered scale of significant, highly significant and outstanding. Significant items have been identified by traditional name and are of local significance. Highly significant items have been identified by name, have an association with local hapu, specific ancestors and important events. Outstanding items are often associated with eponymous ancestors of the iwi and hapu, important to the cultural identity and well-being of the iwi, well known and recognised.

Key

Awa	river, stream
Kohatu	rock, outcrop
Maunga	ancestral mountain, peak, range
Ngawha	hot spring or pool
Roto	Lake
Waipuna	freshwater spring

Ref	Traditional Name	Other Name	Category	Rating	Source
1	Te Rotokite a Ihenga i ariki ai Kahu	Te Roto iti kite a Ihenga	Roto	Outstanding	Stafford:1996:139,142, Te Arawa Lakes Settlement Act 2006:Schedule 1 & 4
2	Rotoehu		Roto	Highly Significant	Stafford:1967:56,93,96, Te Arawa Lakes Settlement Act 2006:Schedule 1
3	Rotoma		Roto	Highly Significant	Te Arawa Lakes Settlement Act 2006:Schedule 1, Waitangi Tribunal: He Maunga Rongo - Report on Central North Island Claims (Wai1200):2007:71
4	Okawa	Te wai mimi o Kawatapuarangi	Roto	Highly Significant	Stafford:1996:70,169
5	Te Rotorua nui a Kahumatamomoe	Lake Rotorua	Roto	Outstanding	Stafford:1994:109
6	Kuirau	Taokahu	Ngawha	Highly Significant	Stafford:1994:41
7	Okareka		Roto	Highly Significant	Te Arawa Lakes Settlement Act 2006:Scheldue 3

Ref	Traditional Name	Other Name	Category	Rating	Source
8	Tikitapu	Blue Lake	Roto	Highly Significant	Te Arawa Lakes Settlement Act 2006:Scheldue 1 & 4
9	Rotokawau		Roto	Significant	Stafford:1994:179
10	Rotokawa		Roto	Significant	Stafford:1994:109
11	Te Motutapu a Tinirau	Mokoia	Roto	Outstanding	Stafford:1994:51
12	Rotokakahi	Green Lake	Roto	Highly Significant	
13	Te Whakarewarewatanga o te ope taua a Wahiao	Whakarewarewa	Ngawha	Outstanding	Stafford:1994:148-149
14	Tikitere		Ngawha	Outstanding	Stafford:1994:124-125
15	Mamaku Volcanic Outcrops		Kohatu	Highly Significant	Hui at Parua Marae:2006
16	Ngongotaha		Maunga	Outstanding	Stafford:1967:34-35
17	Ohau		Awa	Highly Significant	Stafford:1996:65
18	Te Tikitiki a Tamiuru		Kohatu	Highly Significant	Stafford: 1996:120,173
19	Okere	Kaituna	Awa	Outstanding	Stafford:1996:70,144
20	Motu a Tara		Motu	Highly Significant	Stafford:1996:52,175
21	Motu o hiwa		Motu	Significant	Stafford:1996:53,144
22	Motutapu		Motu	Significant	Stafford:1996:54, 144
23	Te Upoko o Te Kahu		Kohatu	Significant	Stafford:1996, 124
24	Motumauri		Motu	Significant	Stafford:1996:52,146
25	Te Upoko o Te Rangiwawahia		Kohatu	Significant	Stafford:1996:124,148
26	Te Kokopu o te oranga		Rakau	Significant	Stafford:1996:35,149
27	Pararaki		Awa	Significant	Stafford:1996:87,154
28	Te Mokoroa		Matarae	Significant	Stafford:1996:52,154
29	Matawhaura (point)		Maunga	Outstanding	Stafford:1996:49-50,155
30	Matawhaura		Maunga	Outstanding	Stafford:1996:49-50,155
31	Tapuaeharuru		One	Outstanding	Stafford:1996:112-114,156
32	Te Rere a Kupe		Waipuna	Highly Significant	Stafford:1996:99,157
33	Te Pohui o Tawake		Kohatu	Highly Significant	Stafford:1996:89,159
34	Raepahu		Kohatu	Significant	Stafford:1996:97,159
35	Te Korokoro o Ngaki		Waipuna	Significant	Stafford:1996:39,161
36	Oturawaru		Maunga	Significant	Stafford:1996:79,161
37	Ngahainga		Maunga	Significant	Stafford:1996:58,160
38	Pakautara		Awa	Significant	Stafford:1996:83,162
39	Tokopa		Awa	Significant	Stafford:1996:122,162,163
40	Mangakopikopiko		Awa	Significant	Stafford:1996:43,163
41	Pukenui		Maunga	Significant	Stafford:1996:163
42	Te Hiwi o te patiti		Maunga	Significant	Stafford:1996:24-25,163
43	Te Hiwi o marama	Paekura	Maunga	Significant	Stafford:1996:24,172
44	Omarukaka		Ngahere	Significant	Stafford:1996:73,163
45	Paehinahina		Matarae	Highly Significant	Stafford:1996:81:164-165
46	Ngawhero		Roto	Significant	Stafford:1996:63,165
47	Manupirua		Ngawha	Highly Significant	Stafford:1996:43-44,166
48	Turanga a Rakeiao		Kohatu	Highly Significant	Stafford:1996:123,166
49	Ruahine		Ngawha	Highly Significant	Stafford:1996:101,120,166
50	Waiharuru		Awa	Significant	Stafford:1996:125,166
51	Waihunuhunu		Ngawha	Significant	Stafford:1996:125, 167
52	Tumoana		Matarae	Highly Significant	Stafford:1996122,167

Ref	Traditional Name	Other Name	Category	Rating	Source
53	Waitupapaku		Ngawha	Significant	Stafford:1996:167
54	Maraeroa		Ngawha	Significant	Stafford:1996:167
55	Te Rewarewa		Kohatu	Significant	Stafford:1996:100,167
56	Motuhara		Motu	Significant	Stafford:1996:168
57	Te Rei		Ngawha	Significant	Stafford:1996:99,168
58	Otutatara		Ngawha	Significant	Stafford:1996:168
59	Motutawa		Matarae	Highly Significant	Stafford:1996:54-56,169
60	Te Waitohinga a Rangiteaorere		Waipuna	Highly Significant	Stafford:1996:70:169
61	Haupapa		Roto	Highly Significant	Stafford:1996:21,170
62	Wainikau		Roto	Significant	Stafford:1996:126,170
63	Omarupoto		Roto	Significant	Stafford:1996:73,170
64	Whangaroa		Roto	Significant	Stafford:1996:136,170
65	Otautu	Ngatautu	Roto	Highly Significant	Stafford:1996:78,171
66	Te Pohue	Te Pohuewhakawerewere a Hinehopu	Roto	Highly Significant	Stafford:1996:89,172
67	Whakaihupuku		Kohatu	Highly Significant	Stafford:1996:133,173
68	Waitangi		Ngawha	Highly Significant	Stafford:1996:129,173
69	Rakaumakere	Te Waharoa	Awa	Significant	Stafford:1996:97,173
70	Te Maero	Te Wairoa/Te Whare o Turaki	Awa	Significant	Stafford:1996:40,173
71	Te Rotoiti		Roto	Significant	Stafford:1996:174
72	Whangaroa		Roto	Highly Significant	Stafford:1996:136,174
73	Tuara o Matata		Ngawha	Significant	Stafford:1996:122:174
74	Te Oneroa		Roto	Significant	Stafford:1996:74,175
75	Te Muriwai		Awa	Significant	Stafford:1996:58,175
76	Te Waiheru o Te Rarau		Roto	Significant	Stafford:1996:175
77	Onewhero		Roto	Significant	Stafford:1996:175
78	Whakarewa		Roto	Significant	Stafford:1996:175
79	Te rakau tipua a Hinehopu		Rakau	Highly Significant	Stafford:1996:23-24
80	Te Whakamaru ra o Hinehopu	Te Tahuna/Omatatahuna	Ngahere	Highly Significant	Stafford:1996:98,
81	Te Hapua		Roto	Highly Significant	Stafford:1996:20,151
82	Te Awa i takapuhaia		Roto	Highly Significant	Stafford:1996:18,179
83	Te Whakahiakai		Waipuna	Significant	Stafford:1994:146-147,177
84	Kawaha		Matarae	Highly Significant	Stafford:1994:32-34,163
132	Rerewhakaaitu	Lake Rerewhakaaitu	Roto	Highly Significant	Te Arawa Lakes Settlement Act 2006:Scheldue 3, Stafford:1967:171,174
134	Makatiti	Makatiti Dome	Maunga	Highly Significant	Waitangi Tribunal: He Maunga Rongo - Report on Central North Island Claims (Wai1200):2007:15, Stakeholders Workshop:12.10.2007

APPENDIX 4: RURAL LAND USE MANAGEMENT RESOURCES

AGRESEARCH

www.agresearch.co.nz

Soil Characteristics Important to Management.

Information for farmers on soil characteristics to assist them manage their soil effectively: texture, structure, organic matter content, porosity and water-holding capacity and some aspects of chemical fertility and fertiliser management.

Vision - To be the pre-eminent organisation in New Zealand for promoting and enabling the sustainable management and development of the water environment

AGRIQUALITY

www.agriquality.co.nz

AgriBase

This is a national database or central index of farm ownership, location and management throughout New Zealand. It lists both agricultural and horticultural properties (around 100,000 in total), each with a unique identification code and links farm business units to land-based information. Through the creation of maps based on geographic information systems it has the capability for a wide range of uses.

BIODIVERSITY

Biodiversity New Zealand

http://www.biodiversity.govt.nz/index.html

This site provides information about Aotearoa New Zealand's native biodiversity, what is being done to help conserve and manage it, and who is involved. The information and work programmes covered in this site are part of New Zealand's long-term commitment to conserve its natural heritage under the New Zealand Biodiversity Strategy

The Department of Conservation and the Ministry for the Environment are working with Local Government New Zealand and other agencies to deliver a package of measures for protecting indigenous biodiversity on private land (i.e. areas outside public conservation lands), under the New Zealand Biodiversity Strategy (NZBS).

The package includes contestable funds to help land managers improve the condition of biodiversity on private land, with both advice and financial support. It also includes ensuring that the regulatory framework assigns responsibilities and supports the protection of biodiversity on private land.

To guide local bodies and land managers in their decision-making on land use and protection, there is a programme of guidance about biodiversity protection on private land.

Further guidance for resource management planners about indigenous biodiversity is available on the quality planning website.

CROP AND FOOD

www.crop.cri.nz/

Sustainable land and water use

We develop crop production systems to enhance productivity in balance with environmental needs. Clients need practical solutions that meet consumer expectations for health, safety and quality while minimising the impact of intensive use on our land, water and air.

We work with New Zealand's land-based industries to develop the knowledge and systems they need to make optimum use of their land and water resources.

The Sustainable Crop Production program

The aim was to produce Recommended Best Management Practices (RBMPs) for the production of process tomatoes, maize and sweet corn in the North Island of New Zealand.

Soil Quality Management System (SQMS)

SQMS is a decision-support system designed to help farmers monitor and manage changes in soil quality to enhance the productivity and environmental sustainability of mixed-cropping farms on the Canterbury Plains, New Zealand

www.crop.cri.nz/home/products-services/crop-production/sqms/index.htm

DAIRY FARMING

Fonterra

http://www.fonterra.com

Dairy Industry Strategy for Sustainable Environmental Management,

Pastoral Greenhouse Gas Research Consortium

Dairying and Clean Streams Accord

Fencepost.com

http://www.fencepost.com

Website for farmers includes weather forecasts and full access to farming information and services. Login and share your views and questions with other farmers from all around NZ - Discussion Groups Search more than 350 Fencepost Expert Farming articles in - Knowledge Base

Dexcel

http://www.dexcel.co.nz

Dairy Industry Strategy for Sustainable Environmental Management (2006)

A strategy put together by dairy farming leaders has created a way for New Zealand dairying to change its environmental impact while maintaining productivity.

Effluent Management

A Guide to Managing Farm Dairy Effluent - WAIKATO (2007)

This booklet for farmers provides the best management practices and regional rules for the main effluent systems currently operating in the Waikato.

Waterway Management

Bay of Plenty:

- Clean Streams
- A Guide to Managing Waterways on Bay of Plenty Farms.
- This booklet provides guidelines for managing waterways on farms in the Bay of Plenty Region.

Dairying and the Environment (DEC Manuals 2006)

These manuals contain fundamental information for the management of environmental issues on dairy farms in New Zealand. They have been designed to assist dairy farmers and those advising dairy farmers with practical, effective and safe solutions to manage potential environmental impacts. These manuals are intended to promote voluntary uptake of best management practices.

Riparian Management

Information on the set-up and management of riparian margins.

Planning an Effluent Treatment System.

Things to think about if you are planning a new effluent treatment system.

enviroDirect

This is part of the Dexcel's Farm4Tomorrow programme. enviroDIRECT provides practical information resources on environmental issues faced on New Zealand dairy farms, and, can put you in touch with service providers operating in your region. Its aim is to provide simple and fast answers to any environmental. EnviroDIRECT is a FREE service is brought to you by Dexcel, with the support of the Ministry for the Environment, Dairy InSight, Environment Waikato, New Zealand Landcare Trust and Fonterra.

Land Application

Information regarding the set-up and management of the land application of effluent.

Limiting Pugging and Compaction Damage.

Management tips for the prevention of pugging and compaction damage.

DEERESEARCH

http://www.deeresearch.org.nz/index.asp

The New Zealand deer industry's major research website.

This website provides information on DEEResearch and, for registered users, allows unlimited access to hundreds of research papers and a large amount of other deer research information.

ENVIRONMENT BAY OF PLENTY

http://www.ebop.govt.nz

Dairy Effluent Deficit Irrigation Report

This guideline summary provides some help to farmers about what types of treatment and disposal systems would be appropriate dependant on the sensitivity of the receiving environment.

Included in the guidelines are other dairy farm activities that have potential to impact on the environment i.e. silage pits, calf-rearing facilities, and dairy feed pads/loafing pads.

Farm Dairy Fact Sheets

Environment Bay of Plenty produces fact sheets that relate to various areas of our responsibilities. These fact sheets provide information on specific topics and are very useful resources for Bay of Plenty residents.

- FD02 - Land based systems
- FD03 - Discharges to surface water
- FD04 - Feed pads, loafing pads and farm races
- FD05 - Silage stacks and bales
- FD06 - Disposal of waste milk

Land

- Land Monitoring
- Pest Animals
- Pest Plants
- Land Management
- Dairy Effluent
- Detention Dams and Drop Structures

Farm Dairy Fact Sheets

- Farm Tracks
- How to Plant
- Run off Pasture Management
- Shelter Belts
- Stream Crossings
- Willow Species Uses And Management
- Weed Control
- Woodlot Production
- Woodlot Species
- Stock Water Supply
- Revegetation Projects

Establishment techniques for revegetation projects.

Describes plant selection, site preparation, planting methods, fertiliser and post planting care for revegetation projects.

ENVIRONMENT WAIKATO

http://www.ew.govt.nz/

Waikato Farm Environment Awards Trust, 2003:

A Practical Guide to Low Impact Tracks and Races.

Waikato Farm Environment Awards Trust.

Trees on Farms

Planting trees gives many returns – financial, providing habitat for native species and creating a landscape we can all enjoy. The secret of successful results is to match the tree to the use and locality, and manage it in the right way.

'Trees on Farms: a guide with local experience of growing trees in the Waikato Region' covers a range of aspects of selection, establishment and care of trees on farms. It also includes comments and case studies from landowners who attended one of four 'Trees on Farms' workshops, sharing a range of different local experiences. You can view or print the report from this page in PDF file format.

http://www.ew.govt.nz/enviroinfo/land/treesonfarms.htm

Environment Waikato - River Management Guidelines

Good river management protects our property and land from damage

What to Plant in Maungatautari Ecological District

Environment Waikato local area planting guide series 1, Janice Amoore, Karen Denyer

Guide to Managing Farm Dairy Effluent

View the document on website

Areas of Significant Indigenous Vegetation and Habitats of Indigenous Fauna in the Waikato Region : Guidelines to Apply Regional Criteria and Determine Level of Significance

TR 2002/15, Karen Denyer, Wildland Consultants Limited

Clean Streams: A Water Body Enhancement Strategy for Environment Waikato

This document sets out proposals for the operation of a project to support the protection of water body margins in the Waikato Region. It sets out the background to the project, its objectives and priorities, and focuses in particular on its implementation. It is intended as a guide to Environment Waikato staff and Councillors to ensure that the project is consistently managed and as effective as possible in achieving improvements in the management of water body margins.

Environment Waikato Best Practice Guidelines for Waterways Crossings

(TR 2006/25, David Speirs, Greg Ryan)

31 page document

View the document on website

Managing Waterways on Farms

4 page booklet

Environmental indicators

Environment Waikato has environmental indicators that help tell us about the quality of, and any changes in, the Waikato region's environment.

LAND AND SOIL

- Biodiversity
- Land
- Soil

INLAND WATER

- Groundwater
- Lakes
- Rivers and Streams
- Wetlands

Map of River Management Catchments and Zones

Environment Waikato has divided the Waikato Region into nine river management catchments and zones. The scheme assets include conservation fencing, land retired from grazing use, plantings of trees and structures including bridges, erosion control flumes and crossings.

FERTRESEARCH

www.fertresearch.org.nz

Fertiliser Code of Practice.

The Code of Practice for Fertiliser Use is funded by the New Zealand Fertiliser Manufacturers' Research Association (NZFMRA) and promoted under the Association's brand name, Fert Research. It is an industry-wide document founded on the principles of sustainable land management. Its non-prescriptive approach provides for the safe, effective and responsible use of fertiliser on a site-specific basis.

The Code is intended to be a living document and it has undergone practical evaluation and review since its initial launch in 1998. In 2002 addenda were added to address issues and trends that had emerged in the four years since launch, and minor changes were made to incorporate new information into the Code document. The Code will continue to undergo practical evaluation and review by appropriate groups to ensure it remains relevant.

A training programme has been developed to ensure advisors and end users are provided with sufficient guidance in the use of the Code to achieve its objectives.

Applying Farm Dairy Effluent to Land

This information sheet highlights the benefits of applying effluent to land, the nutrients it contains and examples of how to calculate nitrogen loading rates and effluent application rates.

Nitrogen Fertiliser in Sustainable Farming.

Discusses the relationship between clover and nitrogen fertiliser, good practice for N applications and recommended rates of application.

NIWA

www.niwa.cri.nz

Guidelines for Constructed Wetland Treatment of Farm Dairy Wastewaters in New Zealand.

This document provides practical guidance on the use of constructed wetlands to improve the quality of discharges from farm dairy waste ponds.

SHMAK

The New Zealand Stream Health Monitoring and Assessment Kit

http://www.landcare.org.nz/SHMAK/index.html

This kit enables non-scientists to:

- collect consistent, scientifically valid information from small rural streams
- to use that information to make assessments of stream health

FORESTRY

NZ Forest Owners Assn (NZFOA)

www.nzfoa.org.nz

New Zealand Forest Owners Association - Environmental Research Database.

"The largest database of New Zealand forestry environmental literature ever compiled." The Forests Environmental Research Group has compiled a database of over 830 pieces of environmental literature and developed an invaluable resource for the New Zealand forest and related sectors. While primarily developed for forest industry managers involved in the resource management field, the New Zealand -specific information also has much wider application for consultants, local and central government, and other land based industries such as agriculture and mining.

The New Zealand Forest Accord

A commitment by forest companies and conservationists to value, protect and conserve New Zealand's indigenous forests. The Accord was signed in 1991 by representatives of four industry organisations and 10 conservation groups. It recognises the importance of commercial plantation forestry both as an economic activity and an alternative to the depletion of natural forests.

Forestry Stewardship Council

http://www.fsc.org/en/

FSC is an international not-for-profit membership-based organization that brings people together to find solutions to the problems created by bad forestry practices and to reward good forest management.

HORTICULTURE AND FOOD RESEARCH INSTITUTE OF NEW ZEALAND LTD (HORTRESEARCH)

http://www.hortresearch.co.nz/

HortResearch is a Government-owned world-class fruit science company. We use our unique resources in fruit, plants and environmentally sustainable production systems to produce innovative fruit and food products. We assist industry by developing innovative solutions and future plans.

Sustainable Land Use Research Initiative (SLURI)

http://www.sluri.org.nz/

Sustainable Land Use Research Initiative (SLURI)

A national centre for maintaining and managing our soils SLURI will:

- carry out research on the sustainable management of land
- develop new tools for regulators and land managers
- fully involve key stakeholders and other research organisations.

LAND CARE GROUPS (LAND CARE TRUST - ICM PROJECT)

http://www.landcare.org.nz/integrated_catchment_management

ICM aims to integrate the management of land, water and related biological resources in order to achieve their sustainable and balanced use. ICM brings together those involved in primary production, environmental conservation, land and water planning, research, environmental rehabilitation and other aspects of natural resource management at a catchment scale. ICM is based on a systematic effort to understand, through interpretation and analysis, the linkages between ecosystems, resources and people. It is a strategic approach to the management of environmental problems and involves the bringing together of a diversity of perspectives, disciplines and practices.

This is a Ministry for the Environment's Sustainable Management Fund project aimed at sharing community level best practice in Integrated Catchment Management (ICM) nationally.

This Ministry for the Environment Sustainable Management Fund project is aimed at sharing community level best practice in Integrated Catchment Management (ICM) nationally. The purpose of the project is to establish a network of Integrated Catchment Management practitioners and participants involved at the community level, and to provide opportunities for these people to share experiences, tools and approaches throughout New Zealand.

Landcare CRI

www.landcareresearch.co.nz

Protecting and Restoring our Natural Heritage - a Practical Guide

This guidebook provides information on protection, management and restoration of native ecosystems – why it is needed, how it can be done and where you can obtain further information. The material is presented in the order in which you need to proceed for any management or restoration project. Mark Davis – freelance ecologist and Dr. Colin Meurk – Landcare Research plant ecologist.

Land Information New Zealand

http://www.linz.govt.nz/home/index.html

LINZ holds authoritative information about land surveys and ownership, topographic maps and nautical charts. We make sure that the rating valuation system is fair and consistent and oversee the buying and disposal of Crown land.

SUSTAINABLE ADVANCING SUSTAINABLE MANAGEMENT SYSTEMS IN AGRICULTURE AND HORTICULTURE

http://www.samsn.org.nz/

Deer Farming

Deer Industry New Zealand

http://www.nzgib.org.nz

New Zealand Deer Farmers Landcare Manual

This document provides best management practices for New Zealand Deer Farmers. It includes information on management strategies to minimise negative environmental impacts e.g. erosion, water quality.

MEAT & WOOL NEW ZEALAND

http://www.meatnz.co.nz

MINISTRY OF AGRICULTURE AND FORESTRY

http://www.maf.govt.nz/mafnet/rural-nz/

The best means to achieve excellence in rural New Zealand...

- Sustainability
- Best practices
- Biodiversity
- Climate
- Irrigation
- Land
- Native forests
- Organics
- Resources
- Water

MAF - Sustainable Farming Fund.

The purpose of the Sustainable Farming Fund (the Fund) is to support projects that will contribute to improving the financial and environmental performance of the land-based productive sectors.

The Fund aims to help the land based sectors solve problems and take up opportunities to overcome barriers to economic, social and environmental viability. Funded projects are listed at this site.

Best Practice Dairying Catchments for Sustainable Growth.

This project is an initiative by the dairy industry to integrate environmentally safe practices into dairy farming. The project will encourage the adoption of best management practices that meet industry and regulatory authority requirements and address local issues.

Total Energy Indicators of Agriculture Sustainability

The aim of this study was to determine baseline data on total energy inputs, as indicators of the sustainability of the dairy production sector. Indicators were based on energy consumption, together with other indicators for land, water use, social effects and financial performance.

MINISTRY FOR THE ENVIRONMENT (MfE)

http://www.mfe.govt.nz/

State of the environment publications

http://www.mfe.govt.nz/publications/ser/index.html

Best practice guides and guidelines

Ministry for the Environment, 2001: Managing Waterways on Farms:

A guide to sustainable water and riparian management in rural New Zealand.

Best Practice Land Management Systems for Deer Farming.

The project is an initiative of the NZ Deer Farmers Association to produce a Landcare Manual to meet environmental responsibilities in deer farming. The aim is to be both simple and practical and describe best practice methods enabling deer farmers to meet any statutory, market and ethical requirements for the long-term environmental sustainability of their deer farming operations.

Landcare Resource Kit

Development and Distribution. MFE SMF funded project - To develop and distribute a landcare group resource kit. This will address the issues facing any person, group or agency trying to work collectively to address sustainable management of resources issues.

Ecological Footprint.

The Ecological Footprint is the total amount of land it takes to support a lifestyle. This is calculated on the basis of the products that a person consumes. This page provides background information on the concept and a model to calculate an individuals footprint.

Soil Conservation – Technical Handbook

This handbook provides best current practice in the field of soil conservation. June 2001,

Environmental Farm Plans

Environmental farm plans are used by a number of Regional Councils to encourage best environmental management practices on rural land.

- Waikato RC Environmental Farm Plans; Riparian Management Plans.
- Bay of Plenty RC Environmental Programmes.
- Hawkes Bay RC Soil Conservation Plans; Erosion Control Plans.
- Manawatu-Wanganui RC Environmental Plans.
- Taranaki RC Riparian Management Plans; Conservation Farm Plans; Agroforestry Farm Plans; Comprehensive Farm Plans.

Dairying and Clean Streams Accord.

In 2003 MAF, MFE, Fonterra and Local Govt NZ signed an Accord which aims to minimise the impact of dairying on New Zealand's streams, rivers, lakes and wetlands so that they are suitable, where appropriate, for fish, drinking by stock and swimming. The Accord specifies targets to keep dairy cattle out of streams, lakes and wetlands, to treat farm effluent, and to manage the use of fertilisers and other nutrients. Many of the implementation details will be fleshed out in regional action plans to be prepared by Fonterra and regional councils by June 2004.

Managing Waterways on Farms: A guide to sustainable water and riparian management in rural New Zealand.

This publication provides background information about the sources, causes and processes involved with the deterioration of streams in farmed catchments and the consequences of that deterioration. It is aimed at those who provide advice to farmers about how they manage their land, and to those farmers who wish to enhance their properties and reduce the impacts of their farming operations. July 2001, Ref. ME385

PARLIAMENTARY COMMISSIONER FOR THE ENVIRONMENT

http://www.pce.govt.nz/

The Parliamentary Commissioner for the Environment (PCE) aims to maintain and improve the quality of New Zealand's environment. The central focus is on environmental sustainability - how we can live within the ecological limits of the planet today and into the future.