



Rotorua Caldera Rim

Caldera Rim Rural Character Design Guideline

October 2012





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Executive Summary

This report investigates the rural character and amenity of the Lake Rotorua Caldera landscape and identifies areas which are sensitive to land use change. The Rotorua Landscape Study found that in addition to areas that were identified as Outstanding Natural Features and Landscapes (ONFLs) there were other areas within the Lake Rotorua Caldera that were of value to the community for its rural character and amenity.

Pressures on this rural character and amenity of the Rotorua Caldera include urban growth, rural subdivision and changes to land use. The latter is an important environmental outcome identified in the BOP Regional Policy Statement as they aim to improve lake water quality by reducing nutrient loading. Similarly, the Economic Growth Strategy requires land within the Lake Rotorua Caldera Rim to be released for future growth.

In order to provide clear direction on how to integrate future growth and land use change into the Lake Rotorua Caldera landscape, this study assessed the Caldera landscape and identified landscape features that have rural character and amenity values which contribute to the working rural landscape. The key underlying issue is the management of land use change and subdivision to ensure it is compatible with the natural landform patterns and processes of the rural landscape and its rural character.

An analysis using a desktop GIS assessment along with 'on the ground' field work identified the visual catchment and visually prominent areas of the Caldera. Assessment of the Caldera found that the visually prominent landform does not include all of the elevated land within the caldera rim. The rural character of the lower slopes are less sensitive to land use change as there are areas of existing development and approved subdivisions (for future development) along the visual catchment..

The prominent areas of the Caldera were identified as "Sensitive Rural Areas ", being land located along the higher slopes and escarpments, providing a rural backdrop to Rotorua and being sensitive to land use change. The visually prominent areas of the Caldera are primarily zoned rural with one residential suburb of Tihi-O-Tonga located within this area. This and other residential zones have been accepted as part of the existing environment and have been excluded from the study area.

As a result five Sensitive Rural Areas were identified with the remaining areas in the Caldera Rim identified as Less Sensitive Rural Areas having no special rural landscape value. Both the future growth area and areas eligible for transferrable development rights (to improve lake water quality) as identified in the proposed District Plan, are located within the less sensitive rural area.

Development and land use change is possible in both the Sensitive and Less Sensitive Rural Areas, however those areas identified as sensitive require a guided approach to ensure the rural character is maintained. Those areas identified as Less Sensitive are subject to the planning provisions to the applicable Rural Zone and no special guidance is provided. The Design Guideline, in Part Two of this Report, provides appropriate methods for subdivision and development within the Sensitive Rural Areas. This includes direction on managing site selection, subdivision layout, building site location, earthworks, access, infrastructure, landscaping and building design.

The Design Guideline does not prescribe the type of development that would be allowed for e.g. density, residential or the like. These are controlled under the underlying zoning of the land through activity and subdivision performance standards. The Design Guidelines provide a framework to assess the suitability of proposed developments or changes in land use within the sensitive rural backdrop to Lake Rotorua.

As a result planning provisions have also been recommended for inclusion into the District Plan and include:

- Performance standards for future buildings within Sensitive Rural areas that are established within their existing development rights (Rural Zone).
- Assessment criteria against which any land use change, development or subdivision on land located within the Sensitive Rural Areas can be assessed. The application of the Design Guideline will be used as a reference document when assessing applications.
- The Design Guide can be referred to for managing development in the Less Sensitive Rural Areas however no further planning provisions above those for the Rural Zone are necessary for these areas.

PART ONE :: LANDSCAPE ANALYSIS

Introduction

This assessment has been prepared as part of the Rotorua District Council's review of its District Plan. The objective of the study is to develop a best practice subdivision and building design guide for future buildings on the Lake Rotorua Caldera Rim.

The focus of the study is to identify those areas of the Lake Rotorua Caldera landscape which form a key part of the rural backdrop to the city of Rotorua. The objective of the study is to identify what approach development should take within these areas.

Rotorua District Council has identified areas for future growth and this study looks at the ability for these areas to accommodate land use change. The study considers the proposed classification and potential change in character of the rural landscape. It identifies the rural areas that are sensitive to land use change. The Design Guideline provides a method for designing and assessing appropriate land use change within these sensitive areas whilst retaining the rural character.

By considering the rural character and visual amenity the study draws upon Section 7(c) of the Resource Management Act (RMA) 1991.

Approach

The Draft District Plan (*Draft Plan*) and Bay of Plenty Regional Policy Statement (*RPS*) identify Outstanding Natural Features and Landscapes in response to Section 6(b) of the RMA. The management of rural character and natural heritage are provided for through the provisions found under the Rural chapter within the Draft Plan. Special provisions are provided for the management of the natural and cultural landscapes for the Lakes A Zone, comprising a design guide for subdivision and built development.

The rural landscape which surrounds Rotorua City comprises a large part of the Lake Rotorua Caldera and the Caldera Rim itself. This assessment has taken into account the entire rural landscape within the caldera and focuses on the Caldera Rim itself.

The study approach builds upon the previous study work undertaken, by following these key phases:

1. Reconfirm the landscape character of the Lake Rotorua Caldera, already identified in the Lake Rotorua Catchment Landscape Assessment¹;
2. Identification of the Caldera Rim as the outer extent of the study area;
3. Identification of the Caldera Rim and its slopes;
4. Identification of sensitive rural landscapes comprising highly visible landscapes with dominant rural character;
5. Identification of threats to these landscapes from development;
6. Identification of areas of proposed development and the impacts upon the rural character;
7. Development of a subdivision and building design guide;
8. Development of planning provisions for inclusion into the Proposed District Plan.

The Lake Rotorua Catchment Landscape Assessment identified and defined its interpretation of "Landscape". This assessment identified the Lake Rotorua Caldera as a landscape that contributed to rural amenity values.

Scoping and Familiarisation

Building upon the June 2010 Lake Rotorua Catchment Landscape Assessment, the project team undertook a desktop analysis of the existing information relating to the Lake Rotorua Caldera. A series of maps were produced taking into account the natural and cultural (man made) elements and patterns of the study area.

Following this work, the study team undertook site visits traversing the Rotorua Caldera landscape. The landscape characteristics were identified and visual prominence of the Caldera Rim observed from numerous public viewpoints.

¹ Lake Rotorua Catchment Landscape Assessment, June 2010, Boffa Miskell Ltd.



Study Area

Parts of the Lake Rotorua Caldera have been identified as being Outstanding Natural Features and Landscapes ('ONFL') as part of an earlier study prepared by Boffa Miskell Ltd in June 2010. The three ONFL's within the Lake Rotorua Caldera Study area were identified as being the Hamurana Ridge, Mount Ngongotaha and the Whakarewarewa Geothermal area. Together these comprise a small proportion of the wider caldera landscape context including the 72 kilometre perimeter of the Caldera Rim.

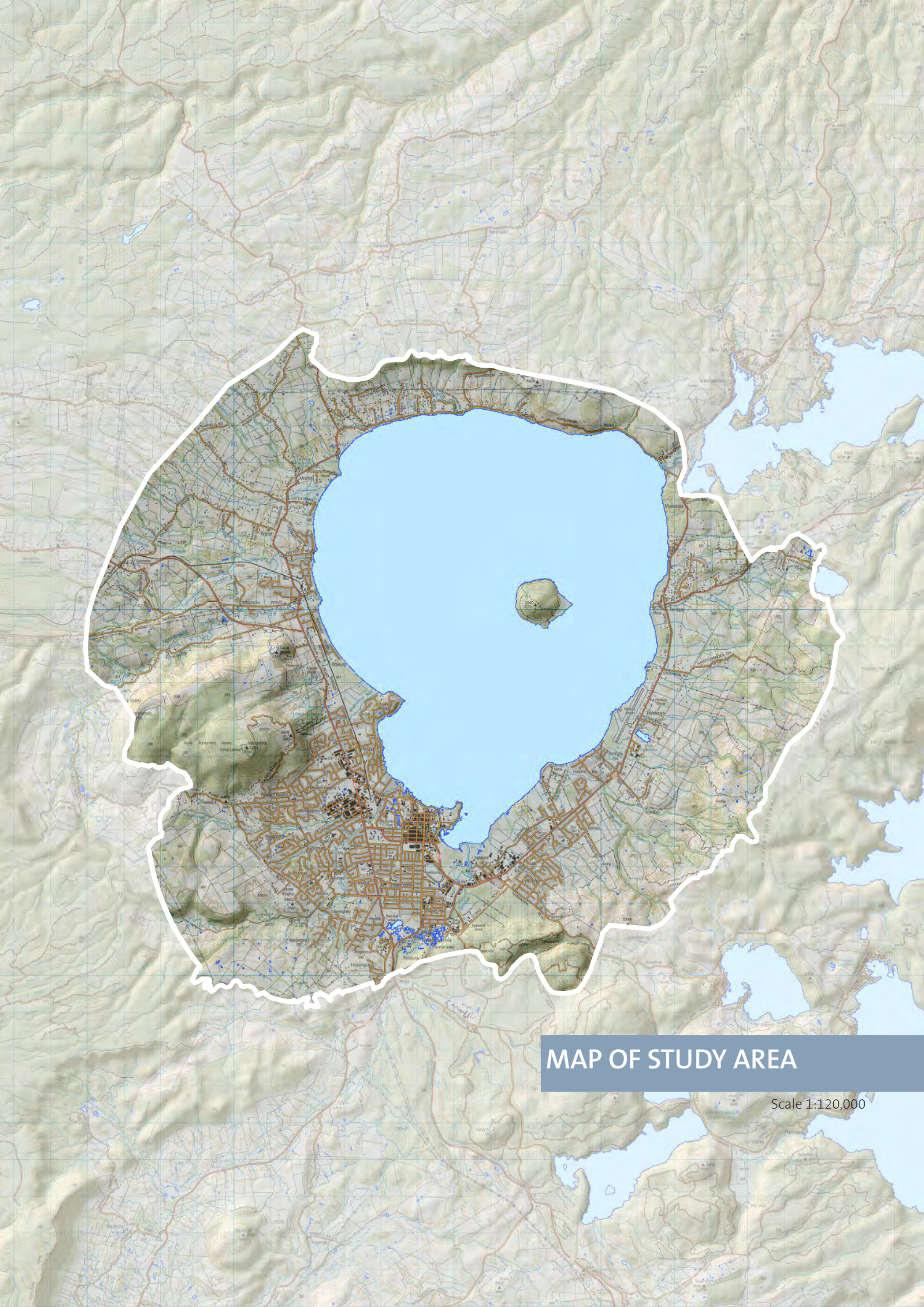
The study area has been identified by mapping the area of the Caldera from its ridgeline to the waters edge of Lake Rotorua. Further analysis was then applied to consider the:

- Existing Landscape Character Areas¹;
- Applicable zones being Rural, Reserve and Maori land; and
- Exclusion of Residential, Commercial and Industrial zones.

It is important to note that the Caldera itself comprises Lake Rotorua and its margins. The 'Rim' is considered to be the mid to upper slopes of the Caldera. The lowland plains and foothills residing within the study area are not distinctively part of the Caldera Rim feature.



¹ Lake Rotorua Catchment Landscape Assessment, June 2010, Boffa Miskell Ltd



MAP OF STUDY AREA

Scale 1:120,000

Landscape Character

The Lake Rotorua Catchment Landscape Assessment identified eleven (11) landscape types within the Lake Rotorua catchment. Within these 39 character areas were also identified demonstrating unique or binding characteristics that defined one area from another. These areas cross the boundary of the Caldera Rim as some areas across the study area display the same characteristics.

Specific landscape management outcomes were identified within each of these Landscape Character Areas (LCA's). Within the study area all 39 character areas are, to varying degrees, part of the Caldera Rim.

The Lake Rotorua Caldera itself is characterised by its rural productive land use. The rolling to very steep scarps form a dominant backdrop to the lake and residential settlement patterns. Throughout the Caldera landform dominates the skyline, with some areas comprising built development and productive forestry.

Subdivision of rural land has been clustered within broader landscapes and, up until now, has located itself on the mid to lower slopes of the Caldera Rim. Views from public roads present views of the lake with a rural backdrop. Residential development is settled on the lower slopes with the rural land use emphasising the natural landform and patterns of the upper slopes.

The key underlying management issue is the management of subdivision in the rural landscape that is respondent to the natural landform, patterns, and processes. Similarly the spatial context of built development in a rural environment forms an important part of the rural character, whereby large open areas of rural productive land use are maintained along with the distinctive natural features which dominate the Rotorua Caldera Rim and the skyline.

Key characteristics and management issues identified within the Lake Rotorua Catchment Landscape Study (June 2010) comprise:

Characteristics

- Limited areas of moderately steep to very steep terrain with Class 6 soils.
- Land cover is dominated by pasture and limited areas of cropping and production forestry.
- Land use mainly pastoral with some forestry and cropping
- Vegetated caldera scarp including a RAP and PNA.
- Settlement patterns are low density with rural residential patterns adjoining SH33 and Brunswick Drive.
- Streams flowing into vegetated and then open drains.
- Indigenous vegetation mostly in association with stream systems.

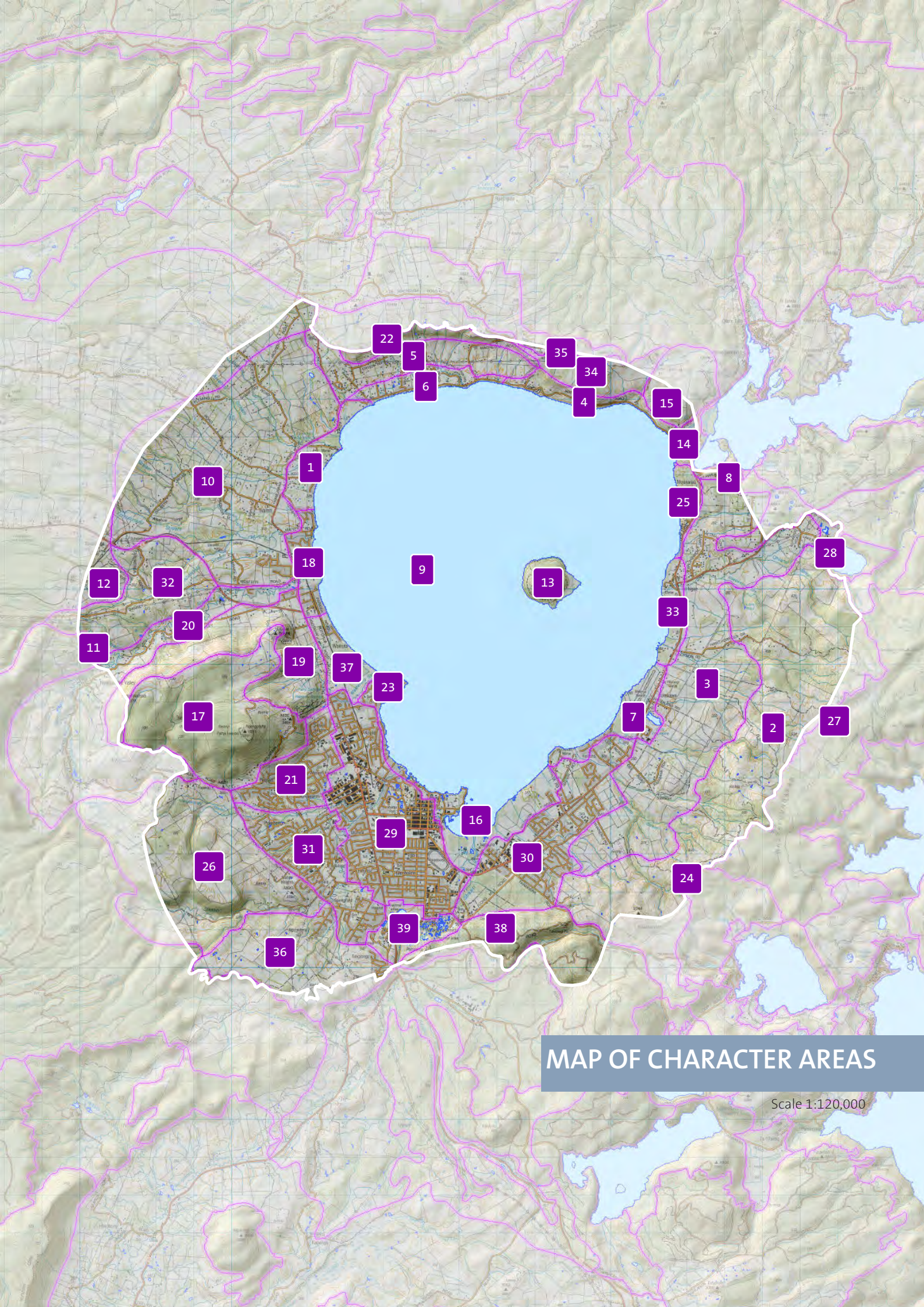
Management Issues

- Slope stabilisation.
- Loss of rural character from subdivision and potential landscape change in relation to elevated pastoral hill slopes.
- Protection of caldera topographic feature and rim / skyline.
- Protection of indigenous vegetation.
- Siting, access and scale of buildings in relation to existing topography features, drainage patterns and patterns of vegetation.
- Management of rural character in relation to road corridors.
- Loss of rural character on steep slopes.
- Siting and design of buildings in relation to existing topographic features and natural landform.

Landscape Character Area (percentage of area within Study Area)

1	Awahou (100%)	15	Mourea Hill (35%)	29	Rotorua City and Suburbs (100%)
2	Eastern Rural Hills (83%)	16	Ngapuna (100%)	30	South-eastern Suburbs (100%)
3	Eastern Rural Terrace (98%)	17	Ngongotaha Domes (100%)	31	South-western Suburbs (100%)
4	Hamurana East (100%)	18	Ngongotaha Lakeside (100%)	32	Tarukenga East (93%)
5	Hamurana North (100%)	19	Ngongotaha Scarp and Lower Slopes (92%)	33	Te Ngae (100%)
6	Hamurana West (100%)	20	Ngongotaha Valley (24%)	34	Te Waerenga (35%)
7	Hannahs Bay (100%)	21	Northern Caldera Scarp (100%)	35	Te Waerenga Road North (4%)
8	Lake Rotoiti and Margins (0%)	22	North-western Suburbs (100%)	36	Tihi-o-tonga (85%)
9	Lake Rotorua Waters (100%)	23	Ohinemutu / Kawaha Point (100%)	37	Waikuta (100%)
10	Lower Plateau Slopes (95%)	24	Okareka Northwestern Hills (2%)	38	Waipa Hills (12%)
11	Mamaku Forestlands (1%)	25	Pohue Bay (100%)	39	Whakarewarewa (99%)
12	Mamaku Rural (4%)	26	Pukehangi (71%)		
13	Mokoia Island (100%)	27	Pukepoto - Whakapoungakau Hills (9%)		
14	Mourea / Okawa Bay (28%)	28	Rotokawau Surrounds (0%)		

Table 1



MAP OF CHARACTER AREAS

Scale 1:120,000

Analysis

In order to identify those parts of the rural landscape along the Caldera Rim which comprise visually sensitive rural landscapes further assessment was undertaken. A detailed review of the landform, elevation, slope, aspect, visibility and vegetation cover assisted to identify those areas with higher levels of visual rural amenity.

Areas identified as comprising higher levels of visual rural amenity were determined by:

- Determining the extent of the Caldera landscape by the combination of the elevation and slope data sets.
- Analysing the visual prominence of the Caldera landscape using the intervisibility, aspect and field assessment data.
- Reviewing the Landscape Management Issues identified in the Lake Rotorua Catchment Landscape Study.

Elevation

The Lake Rotorua Caldera edge varies from a visually distinctive escarpment and ridgeline to sloping hillsides with visually undeterminable ridgeline. To the north of Lake Rotorua, at Hamurana, the Caldera Rim is well defined with a steeply rising escarpment and clear ridgeline.

To the east the Caldera Rim falls into a river plain completely to meet the Ohau Channel that connects Lake Rotorua and Lake Rotoiti. Further south the Caldera Rim moves eastward away from the lake edge. Low wetland and rolling foothills extend eastward to meet the toe of the Caldera Rim. The Caldera Rim rises from 280m at its northeastern edge to 757m above sea level along the eastern ridge.

To the south the ridgeline becomes more fragmented and gradually drops in elevation. At the southern edge the Whakarewarewa Geothermal area resides immediately at the foot of the Caldera Rim.

To the west, alongside Pukehangi Road, the Caldera Rim rises in two steeper terraces to form an intermediary ridge before rising again to the upper Caldera Rim. Mount Ngongotaha, whilst a separate mountain, forms part of the Caldera and in turn provides a ridgeline for the Caldera Rim. To the northwest, immediately north of Mount Ngongotaha, the Caldera Rim takes a gradual ascent toward the Mamakau Ranges. It is here where the elevation was used to generate the extent of the study area. The Hamurana ridgeline was extended along this elevation into the Mamakau plateau to generate a logical extent of the Caldera Rim,

as a feature.

Slope

Identifying the Caldera Rim relies upon the combination of elevation and slope. The distinctive elements of the Rim comprises the steeper slopes, escarpments and cliff faces. To determine those parts of the Caldera Rim with less ability to absorb change the slopes greater than 7 degrees were identified as generally being within the 'Caldera Rim'. Those parts of the Rim where the slopes greater than 15 degrees the Caldera Rim are generally more visible.

Aspect

Aspect is an important component in determining the visibility of a landscape. Aspect can be thought of as slope direction. The values shown on the map are the compass direction of the aspect, grouped into four azimuth categories. For example, a slope calculated as facing 65 degrees (measured clockwise from north) will be classed as an "East-facing slope." The mapping of the aspect for the Lake Rotorua Caldera is relatively predictable, however it does assist to identify the extent of visibility of the Caldera Rim and the subtleties of the slope surface.

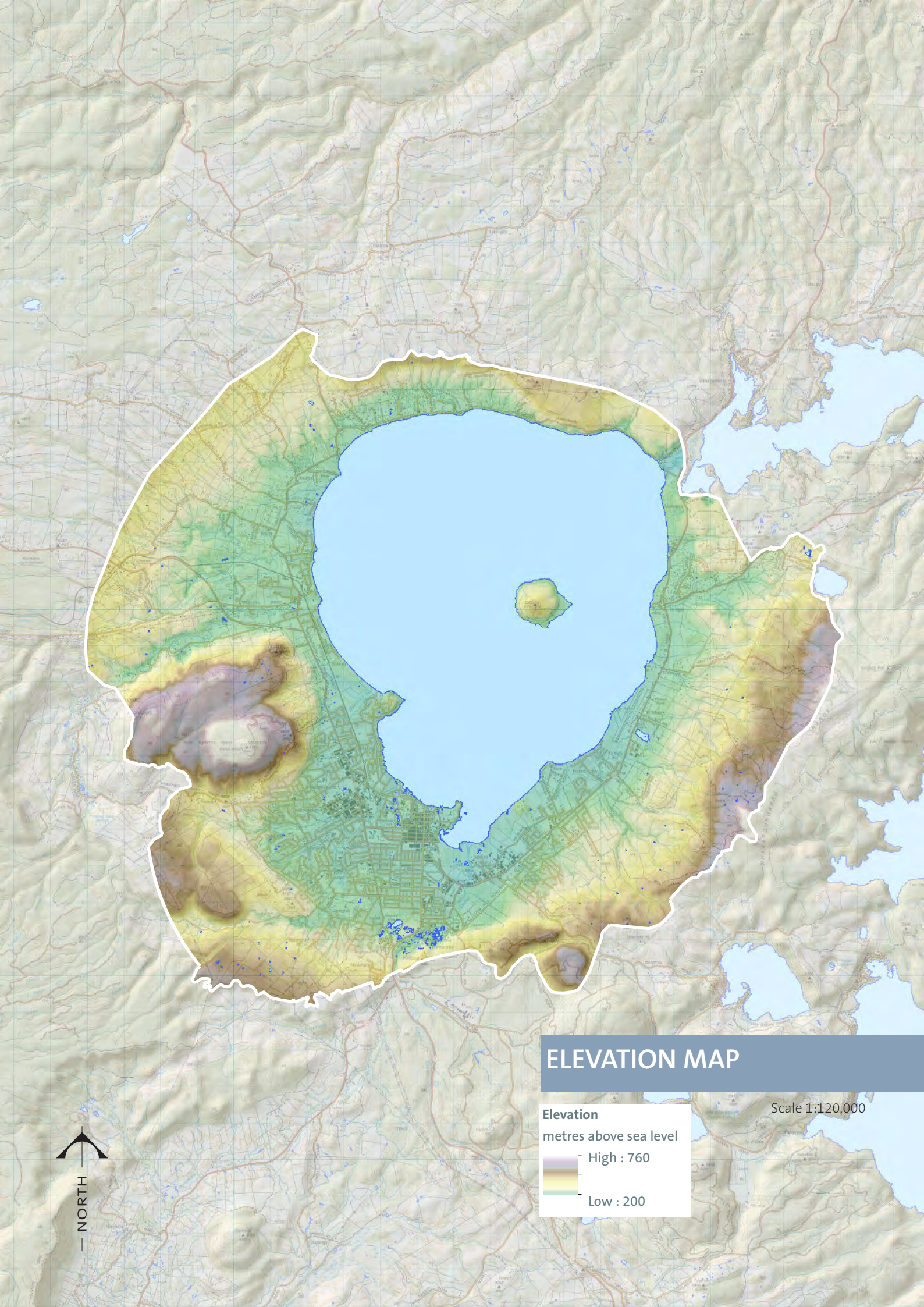
Intervisibility

The intervisibility analysis used an amalgamation of several viewshed, or 'line of sight' calculations, taken from 8275 viewpoints placed on the lake's surface at a regular 100m grid. When added together, the resultant inter-visibility map determines the degree to which parts of the landscape surrounding Lake Rotorua are visible from the lake surface. Or conversely, which parts of the surrounding landscape have a view of the lake, and how much of the lake surface is visible. This analysis provided key information in determining which parts of the Caldera Rim were highly visible and dominant.

Parcel

The parcel analysis describes the current landscape in terms of its parcel sizes. The permitted baseline of rural development on existing smaller parcels has been considered along with the potential effects further subdivision may have on the rural character and its amenity values.

Identification of these parts of the Caldera Rim as part of the analysis phase has resulted in four large Sensitive Rural Areas.



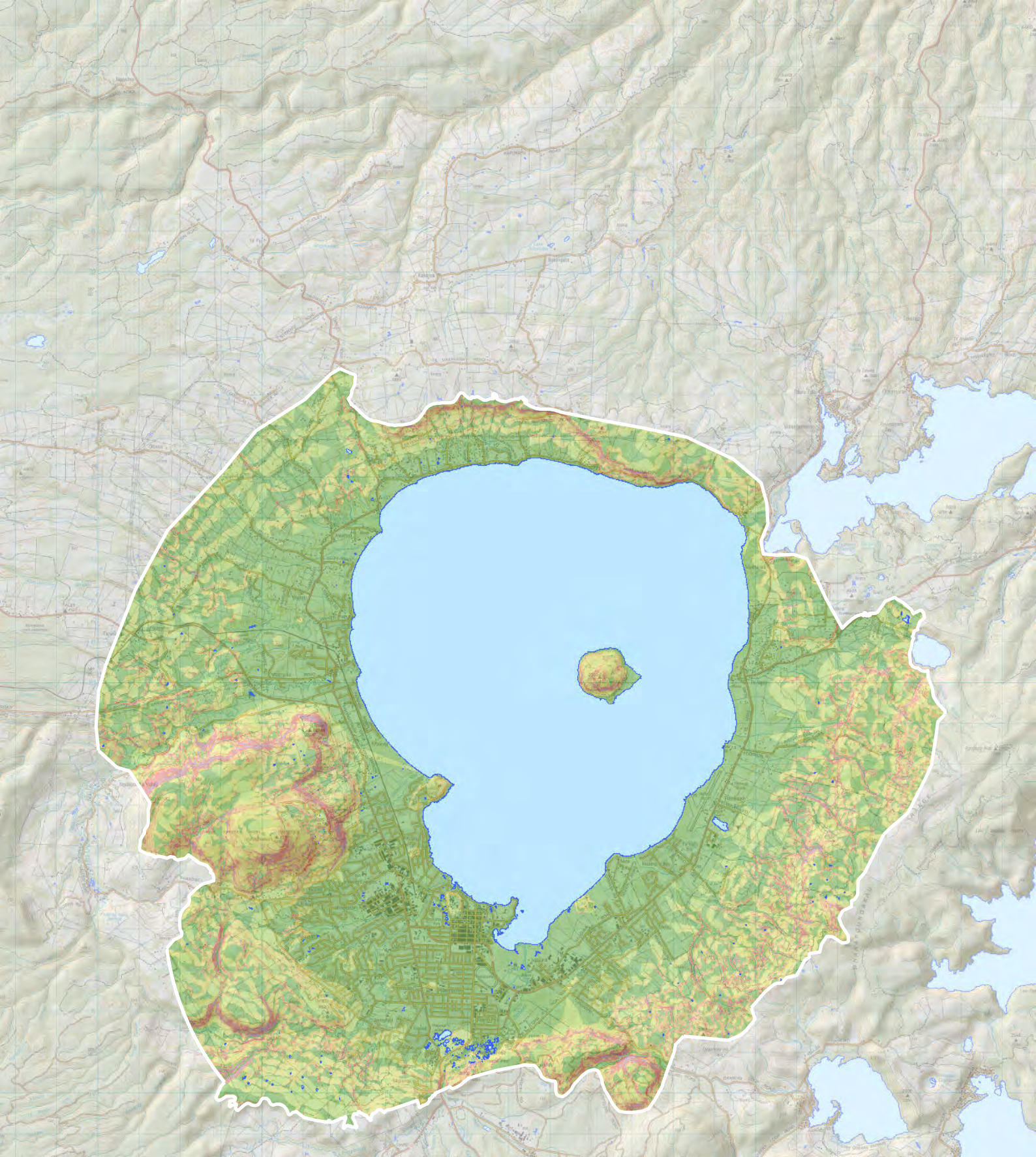
ELEVATION MAP

Scale 1:120,000

Elevation
metres above sea level

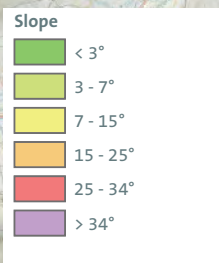
High : 760
Low : 200

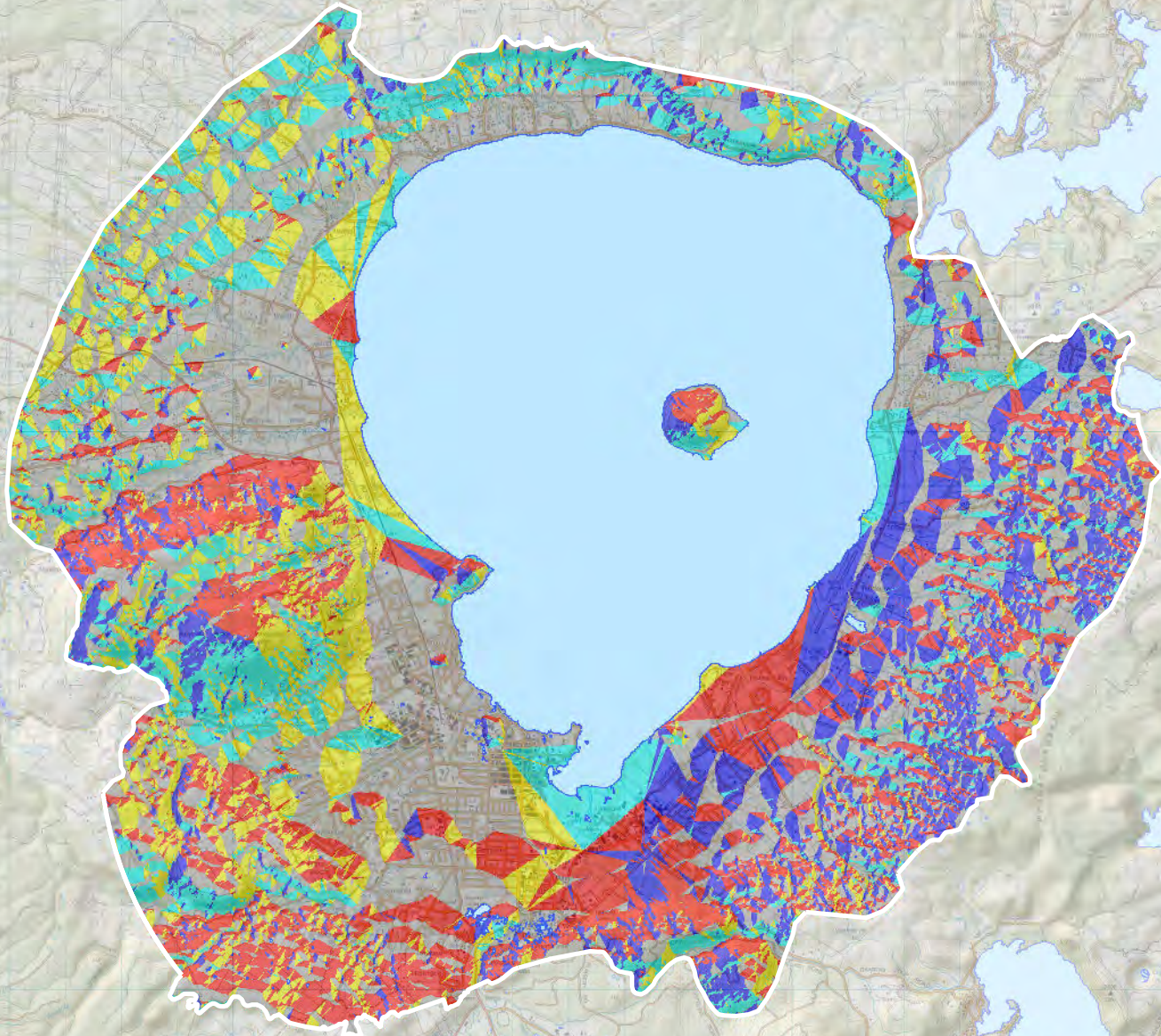




SLOPE MAP

Scale 1:120,000

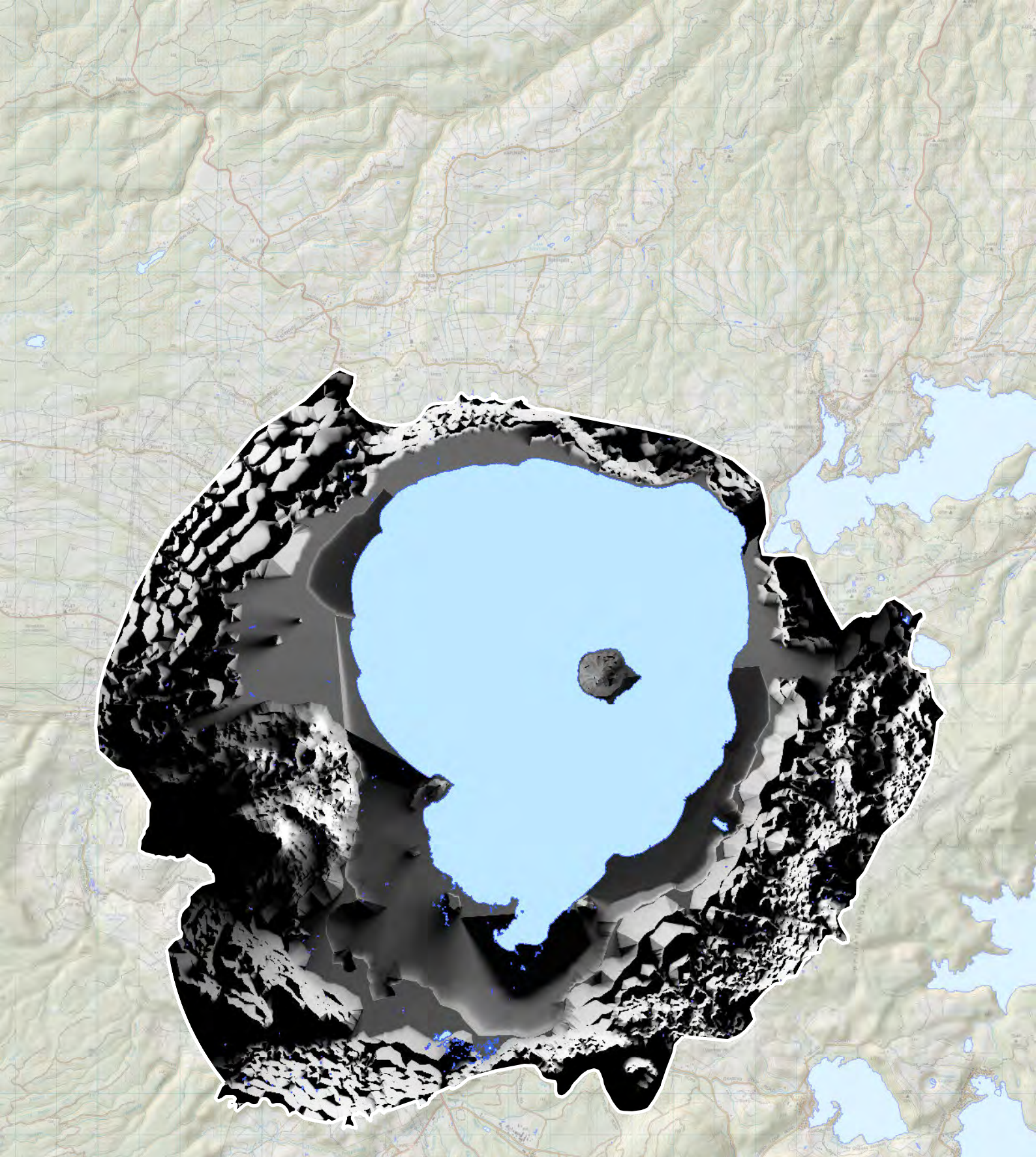




ASPECT MAP

Scale 1:120,000

Aspect	
degrees clockwise from north	
Flat	Grey
North (315°-45°)	Red
East (45°-135°)	Yellow
South (135°-225°)	Cyan
West (225°-315°)	Dark Blue



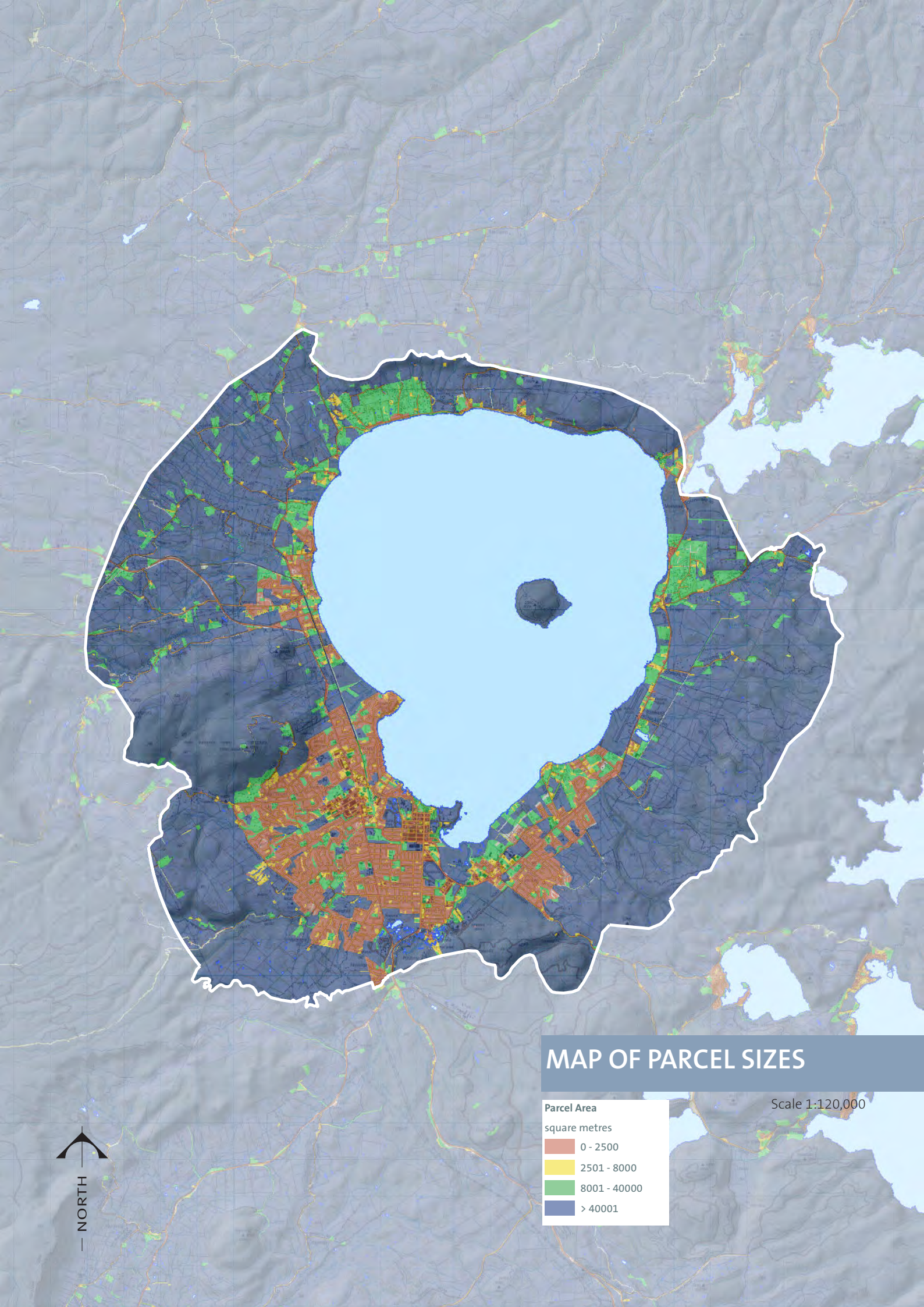
MAP OF INTERVISIBILITY

Scale 1:120,000

Intervisibility
Proportion of Lake Visible

High
Low





MAP OF PARCEL SIZES

Parcel Area
square metres

0 - 2500
2501 - 8000
8001 - 40000
> 40001

Scale 1:120,000

Defining the Caldera Rim Feature

As a result of the analysis the inner edge of the Caldera Rim has been mapped. This indicates the refined study area in which the assessment of the rural amenity attributes has been applied.

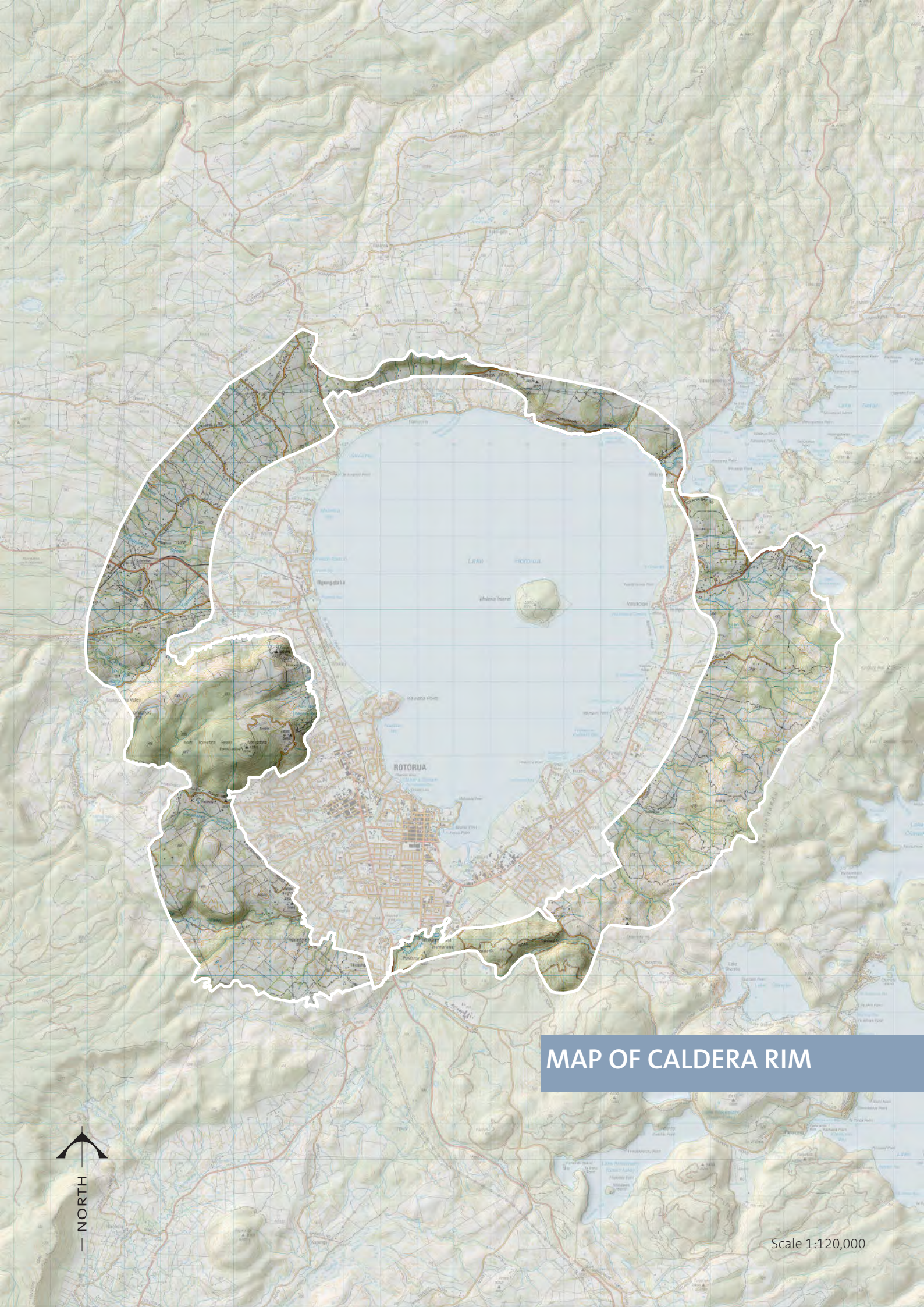
Defining the Caldera Rim used a combination of the following criteria:

- Slope - where the gradient of the slope transitions from 7 degrees to 15 degrees.
- Geomorphology - where the Caldera Rim is distinctive and representative.
- Zones - Only areas which are zoned as Rural, Reserve or Maori Land. All existing residential zones have been excluded.

By refining the Caldera Rim to exclude the lower slopes, the Caldera Rim itself is clearly identified. Whilst not within the refined study area, the lower areas of the caldera within the rural zone, will still require consideration of rural amenity. However these areas have different qualities and attributes to that of the Caldera Rim.

The following Design Guideline does not place specific weight on those areas outside the identified Caldera Rim. The methods for managing rural character are not without merit in these areas and can be applied. However these areas are less sensitive and have an increased ability to visually integrate land use change.





MAP OF CALDERA RIM



Scale 1:120,000

Sensitive Rural Areas

Areas where the rural landscape is highly sensitive to landscape change have been mapped as part of the identification of the Outstanding Natural Features and Landscapes (ONFLs), within the June 2010 Landscape Study. Development in these areas require further consideration of the assessment criteria set out in the Regional Policy Statement and in turn the Rotorua District Plan.

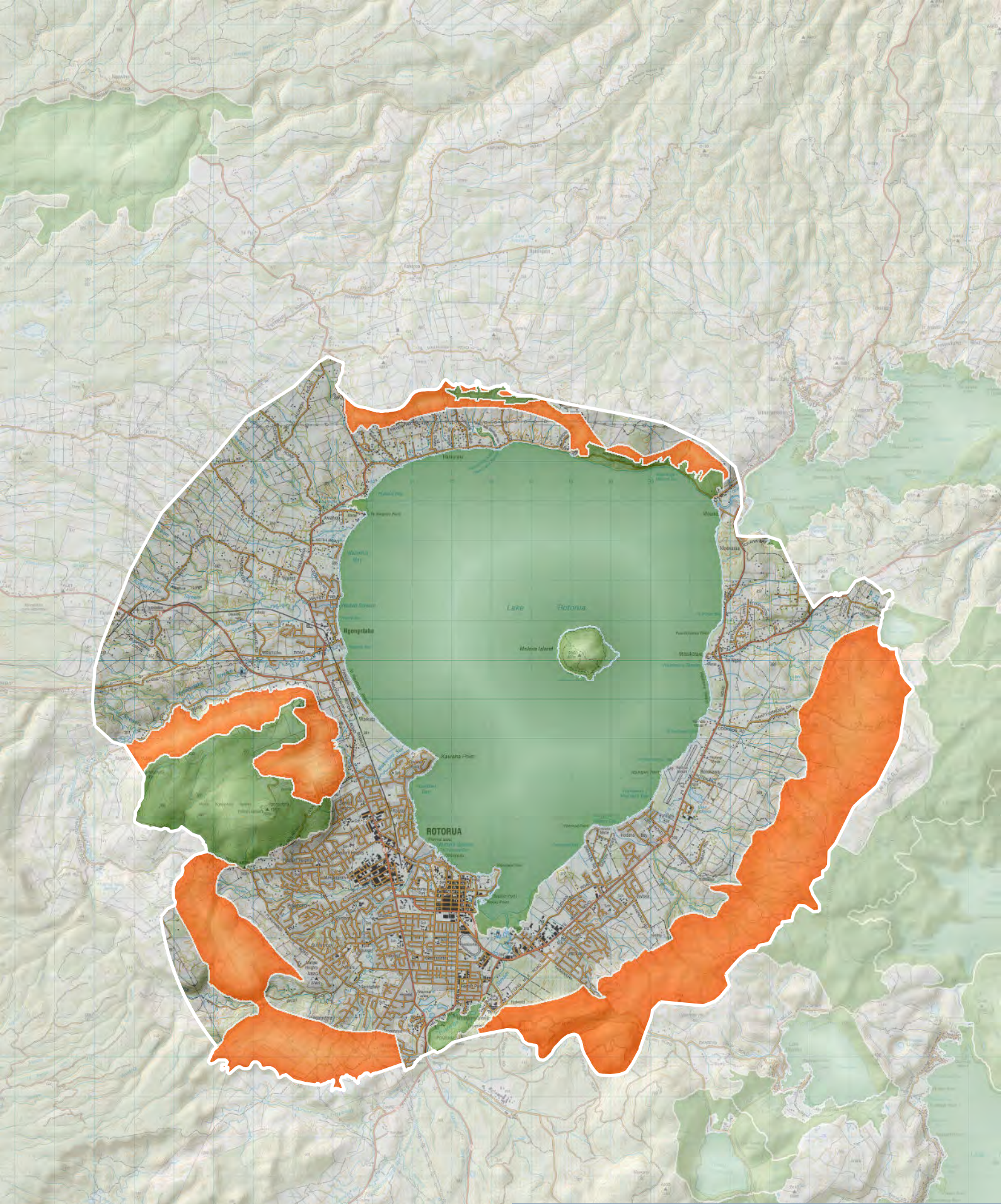
The identification of the Rotorua Caldera Rim as a separate landscape area denotes the importance of this landform has to the District. The elevated position of the Caldera, its landform and representativeness of the volcanic geomorphology is an important component of Rotorua's landscape character.

The rural landscape of the Caldera Rim varies around Lake Rotorua, but it is largely within pasture with pocketed areas of rural residential subdivision. The Caldera Rim varies in landform and landcover, with the lower less steep slopes of the Caldera Rim containing more extensive vegetation cover, including forestry. The steeper slopes, conversely, are largely void of significant vegetation cover.

Identification of the prominent and highly visible parts of the Caldera Rim has resulted in the mapping of four Sensitive Rural Areas. They are representative of the natural patterns and processes which have shaped the land. They are largely void of built form and the landform dominates the skyline. They contribute strongly to the character and amenity of the rural landscape of the Rotorua Caldera.


The Design Guideline outlines the key methods for management of change in these sensitive landscapes. Similarly these methods can be used in other areas of the rural landscape within the Caldera.





MAP OF SENSITIVE RURAL AREAS

Scale 1:120,000

-  Sensitive Rural Areas
-  ONFL Areas



Less Sensitive Rural Areas

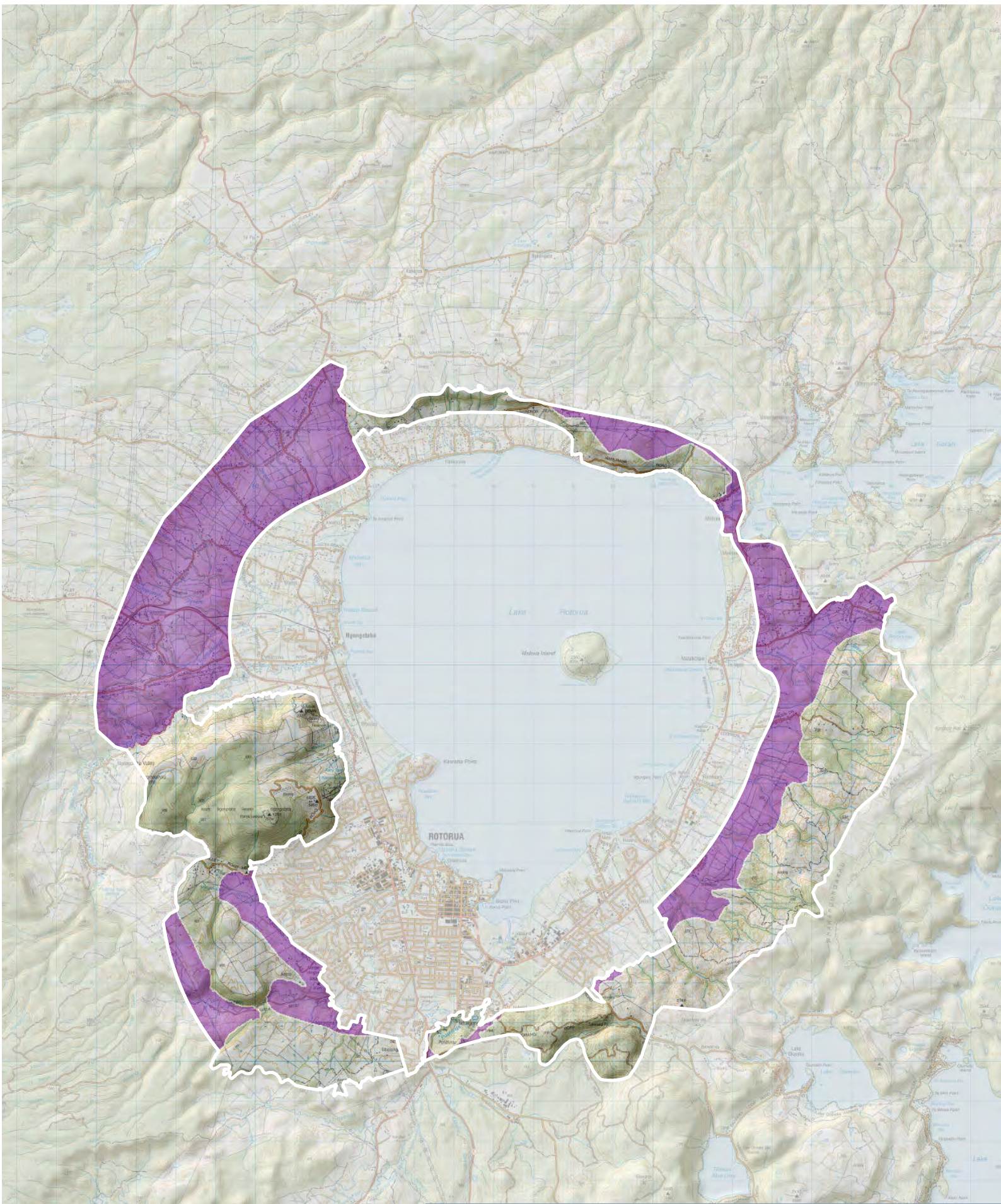
The remaining areas sited outside those identified Sensitive Rural Areas are considered to still contain rural character and amenity values.

Rural amenity is still considered important, however these areas have a greater ability to accommodate change due to a number of factors:

- Low foothills that are undulating with a number of low lying ridgelines and valleys.
- Existing native and exotic vegetation cover.
- Areas less visible from wider public viewpoints.

These areas form part of the Caldera Rim and are important as part of the continuous rural landscape. Rural amenity continues to be considered for these areas through District Plan provisions. However the extent of controls in place are not as detailed as those with identified Sensitive Rural Areas.





MAP OF LESS SENSITIVE RURAL AREAS

 Less Sensitive Rural Areas

Scale 1:120,000



Case Study: Pukehangi Sensitive Rural Area

Within each of the Sensitive Rural Areas ('SRA') there are subtleties of landform and vegetation patterns that contribute to the prominence and, conversely, screening of features.

An example of these subtleties can be seen within the Pukehangi Sensitive Rural Area, where the slope analysis identifies unique variations in landform. The steeper slopes, identified as blue and purple, are areas where access becomes difficult to naturally achieve and building upon these slopes often results in prominent structures.

Within these sensitive landscapes the gully and their steep slopes can be utilised for native vegetation cover. This can reinforce the natural patterns of the landform and assist to integrate built form into the landscape.

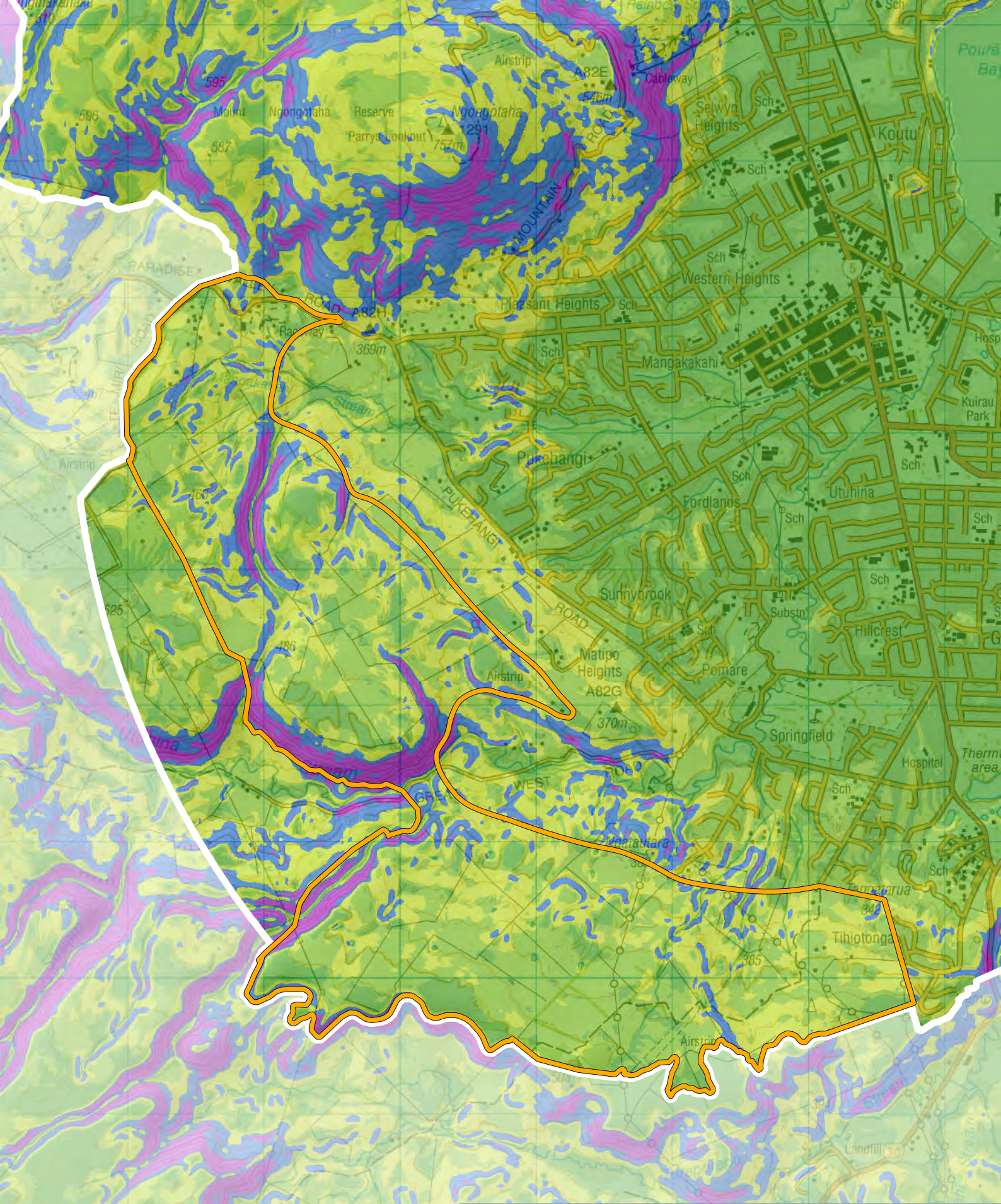
A detailed slope analysis of the Pukehangi Sensitive Rural Area shows there are some gullies and escarpments which can be utilised. However this analysis shows that the key main gullies are orientated away from the main viewing catchment of Rotorua City and Lake Rotorua,

The lower slopes of the Pukehangi SRA have capability to incorporate vegetation cover which can provide a backdrop to built development at the very eastern edge of the slope. This may provide further ability for the lower slopes to accommodate built development greater than expected within a Rural Zone, however specific analysis of all landscape factors would be required with any proposal.

The visibility and connectivity of this feature is important to the recognition of the Rotorua Caldera Rim. The mid and upper slopes and terraces of this part of the Caldera Rim provide a prominent and contiguous backdrop to Rotorua City. This area is representative of the Caldera Rim and is visually prominent. The rural character and amenity of this landscape contributes positively to the wider Rotorua Caldera landscape.

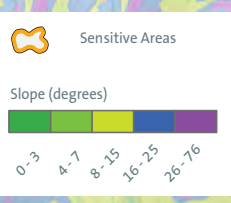


Sensitive Rural Area - View looking west toward Pukehangi



PUKEHANGI 'SRA' - SLOPE ANALYSIS

Scale 1:35,000



Proposed Residential Areas

As part of the preparation of the Proposed District Plan a number of proposals have been proffered. These include Residential and Rural development.

Some of these particular proposals are sited within the identified Sensitive Rural Areas. Areas which contribute to the rural amenity of the Rotorua Caldera and are landforms strongly representative of the Caldera Rim's geomorphology. The Sensitive Rural Areas are not considered Outstanding Natural Features or Landscapes. However the key objective in managing these particular landscape areas is the maintenance of rural amenity and rural character.

The qualities, attributes and values of these landscape features have been identified and design methods for appropriate development in these areas proposed. There are four areas where the proposed development may extend into the identified Sensitive Rural Areas:

1. Pukehangi Road extension
2. South of State Highway 33
3. The area to the east of Iles Road
4. Hamurana, adjoining an existing residential settlement.

1. Pukehangi Road Extension

The landform provides a rural backdrop to the urban subdivision and Pukehangi Road forms the zone boundary. This area is highly visible and the open rural character accentuates the natural landform and geomorphology of the Caldera Rim. This area also connects visually to Mount Ngongotaha reinforcing the Caldera Rim as a feature.

There are two prominent terraces within this Sensitive Rural Area. The lower terraces having more visual connection to the urban residential development. It is a long wide terrace that visually dominates this part of the Caldera Rim with the upper terrace forming the top third of the Caldera Rim.

Development in this area should take into account the rural character and amenity values. Density within this area should be in keeping with the rural amenity values and protect the Caldera ridgeline from built development. The lower slopes of this area have some ability to create connections with surrounding residential development, however above the RL385 contour the rural character of the site should be maintained.

2. South of State Highway 33

This area has been identified as being part of the Caldera Rim and the lower rural plains between the Caldera Rim and lake edge. The proposed development area traverses both the Sensitive Rural Area and Less Sensitive Rural Areas. Development in this area would still require consideration of the rural amenity through application of the guidelines. The visual prominence of the Less Sensitive Areas on the wider Rotorua visual catchment is diminished due to the undulating landform and intensive land cover found throughout the area.

The upper extent of the proposed development area is located within the Sensitive Rural Area. Development in this area is considered highly sensitive and must take into account maintenance of the low density, open space, and existing built development patterns. The landform and geomorphology of this area is very important to the rural character and should be maintained when considering future development.

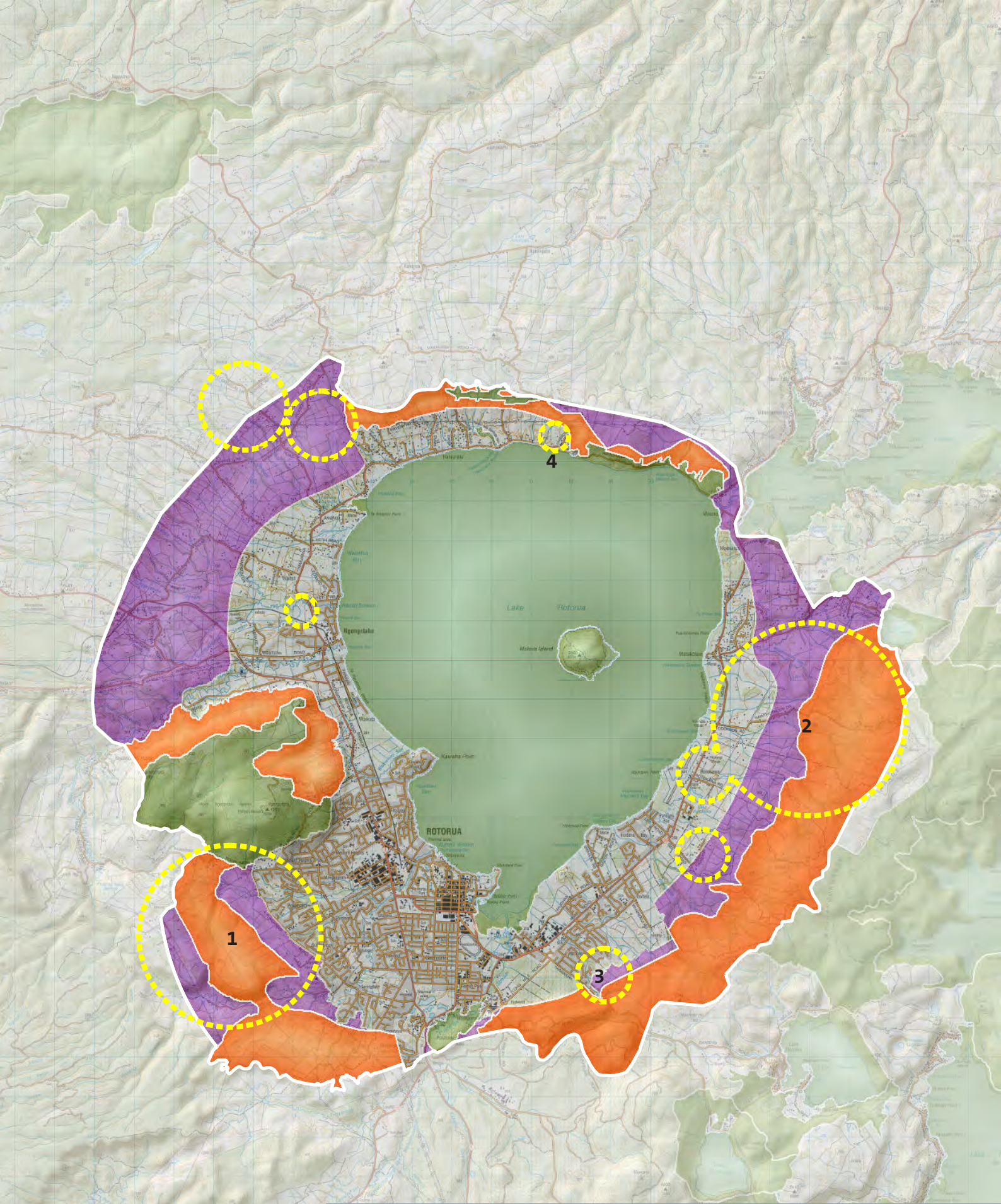
3. Area to the East of Iles Road.

This area is located in a visually prominent rural site with open pastoral rural character. The landform steeply rises above the urban development and forms a dominant rural backdrop to Rotorua city. The landform is representative of the natural processes which formed it and the land use further accentuates these patterns.

There are a series of terraces immediately behind the Iles Road area which create a number of plateau. These areas are connected to the wider rural landscape and any development in these areas should consider the highly sensitive nature of this landscape. Adjoining this area, Tarawera Road creates a gateway between the Lakes A Zone and Rotorua town. Views from this road down across Lake Rotorua are significant and dramatic. Development should be low key in nature and responsive to the dominant rural amenity values of this area.





4. Hamurana Rural Residential Extension

This area adjoins an existing rural residential development along the Lake edge. It is located outside the Caldera Rim Sensitive Rural Area. Rural Residential Development is dominant in this area and is bounded by the change in landform. Development should be responsive to the rural amenity values and the natural patterns of this landscape.



MAP OF AREAS FOR PROPOSED DEVELOPMENT



-  Proposed Development Areas
-  Sensitive Areas
-  Less Sensitive Areas
-  ONFL Areas

Scale 1:120,000

PART TWO :: DESIGN GUIDELINE
Guide for Subdivision in the Caldera Rim Sensitive Rural Areas

Purpose of Design Guidelines

The purpose of these design guidelines is to provide techniques and methods for developing appropriate development in the identified Sensitive Rural Areas.

Caldera Rim Attributes

The key attributes and qualities of the Lake Rotorua Caldera are largely the same across each of the identified Sensitive Rural Areas. These attributes are found throughout most of the rural areas within a Rural 1 Zone plan areas. The distinctive landform and visibility of these landscapes reduces the ability for a change in land use to be visually absorbed.

These attributes comprise:

Landform: The open rural landscape of the Caldera Rim forms a wide buffer between the urban settlements and the wider rural landscape. The landform is moderately to extremely steep and has a series of ridgelines that create the broader Caldera Rim ridgeline.

Open Space: The rural open space dominated by open grazing paddocks with pockets of indigenous vegetation line the Caldera Rim. The spatial arrangement of buildings in this landscape forms the rural character and contributes to the rural amenity enjoyed by those viewing and living within the area.

Built Form: The Caldera Rim is low density in its development creating opportunity for the landform to dominate the view. For the most part, housing along the Caldera Rim ridgeline is minimal creating a built free skyline. Buildings are generally low key and of typical small to medium scaled rural housing style.

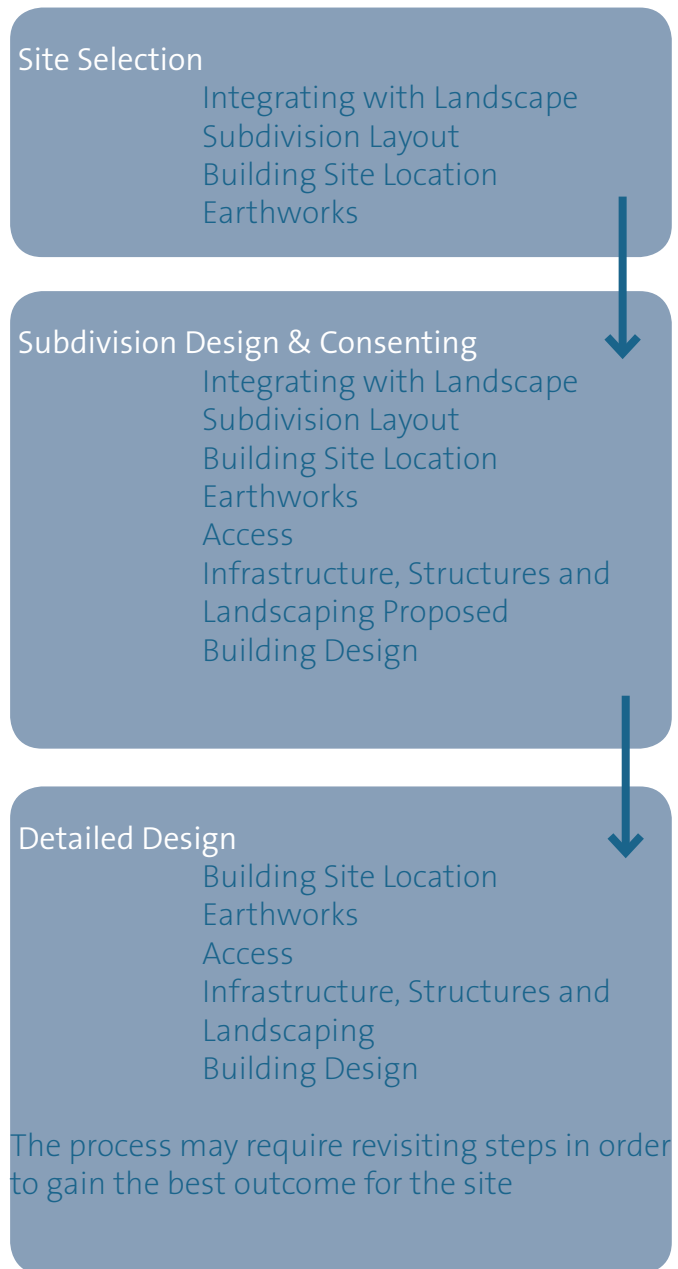
Land Cover: The land use directly corresponds to the type of land cover. The Sensitive Rural Areas are largely void of vegetation cover, with some pockets of remnant native vegetation in the valleys. Large open pastoral paddocks extend across the landscape accentuating the landform underneath.

How to Use the Guidelines

The application of the guidelines is intended for consideration of all matters relating to rural character and amenity. It is not a 'tick box' or 'pick and choose' exercise. Each component of the guideline should be considered and addressed following a design process.

The 'appropriateness' of a development within these sensitive rural landscapes is driven firstly by recognition of the attributes the landscape contains that need to be maintained. Consideration of not only the proposed site but the wider context is crucial for successful integration into a rural landscape.

By applying the guidelines at the key stages the following process should be undertaken:



Integrating with Landscape

Selecting a site for development within an identified Sensitive Rural Area must take into account the subtleties of the site. The natural and cultural patterns of the landscape are key attributes to work with for sensitive design. Select a site that provides opportunities for development to integrate with the existing landscape patterns.

Any subdivision within the Sensitive Rural Areas should be low in density and highly responsive to the rural character of the landscape. Typical residential subdivision is considered inappropriate in the Sensitive Rural Areas.

Approach

Seek out parts of the site that are able to accommodate and visually absorb development. These are generally on the lower slopes of the Caldera Rim and are less visible. They can have existing vegetation and development occurring near to or on the site.

Avoid:

- The upper parts of the Caldera Rim escarpments.
- Prominent features of the Caldera Rim landform.
- Steep slopes requiring extensive earthworks.
- Open pasture landscapes with no development.
- The dominant Caldera Rim ridgeline and skyline.



By Selecting Sites that:

- Have flat areas and low rolling foothill slopes.
- Area located on the toe of the main caldera ridge.
- Are set back against the escarpment on plateau.
- Have vegetation cover and existing development surrounding it.
- Retain the productive land use of the rural landscape.
- Can contribute to restoration of indigenous vegetation.



Subdivision Layout

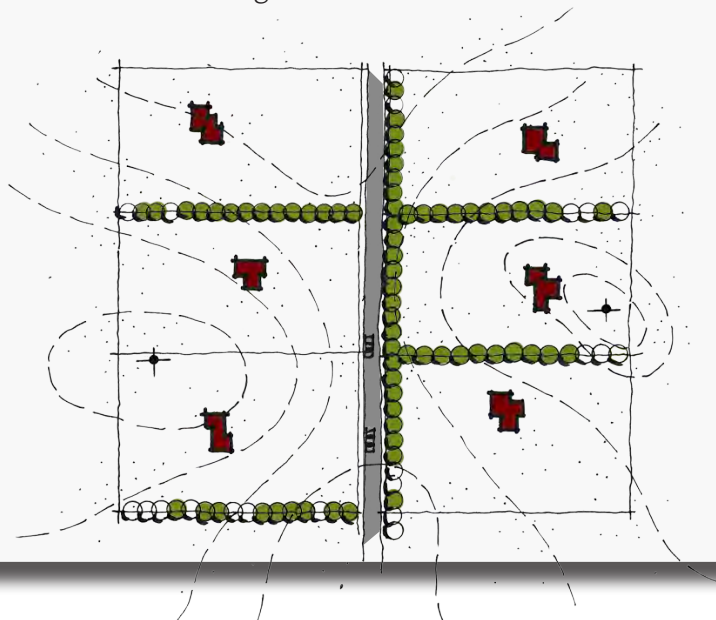
Subdivision layout is the key factor in determining the appropriate density, spatial proportions, earthworks and infrastructure required.

Approach

Design a subdivision layout that clusters building sites and responds to the natural underlying landform. Use the natural landform and features to nestle the development against. Identify the important features on the site and avoid these areas.

Avoid:

- Grid like patterns that are in contrast to the natural patterns of the landform and land cover.
- Spreading building sites evenly across a site breaking the spatial proportions.
- Dense patterns of subdivision that will dominate the landscape.
- Lot boundary alignments that 'divide' the natural patterns by application of boundary fencing and planting.
- Avoid ridgelines of spurs as boundary locations.
- Subdivision within 50 vertical metres of the Caldera Rim ridgeline.



By Designing Layouts that:

- Limit densities to integrate with the existing development patterns.
- Create distances between building areas that reflect the spatial distance already found within the Sensitive Rural Areas.
- Cluster building sites together to retain productive land use and open space qualities.
- Align boundaries to natural patterns, streams, valleys and stands of nonproductive vegetation.
- Protect areas of natural vegetation, springs and wetlands.
- Use gully systems to locate vegetation along steep escarpments, creating a vegetation network that can provide screening of built form.



Building Site Location

After deciding upon the subdivision layout the placement of buildings into each lot is the next step to creating a development that integrates with the landscape. Placing buildings immediately near or on the Caldera Rim ridgeline and skyline is inappropriate. Also the spatial distances between house sites and the extent of remaining open space will reflect the density of development and, in turn, affect the character of the Sensitive Rural Area.

Approach

Select building sites that require minimal disruption to the landscape. Use natural flat areas to locate house sites, avoiding ridgelines and nestle buildings into the landscape. Use the natural landform to create a backdrop rather than the skyline as a backdrop.

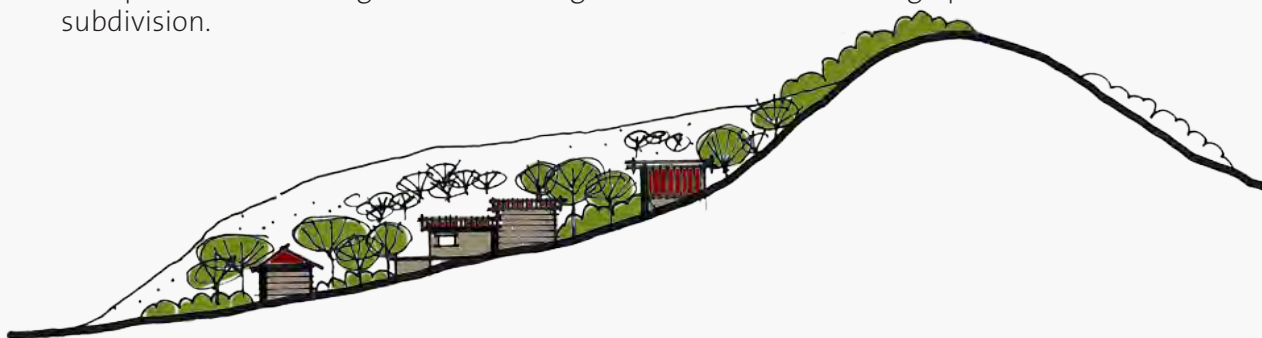
Avoid:

- The Caldera Rim ridgeline and buildings that interrupt the skyline.
- Siting buildings in a prominent location and at the edge of a plateau.
- Buildings sites that require excessive earthworks (cut and fill).
- Buildings sites that dominate the road frontage.
- Spreading buildings evenly across a site creating a 'cluttered' landscape.
- Avoid building sites that require extensive access requirements (i.e. earthworks, bridges, retaining, etc)
- House sites that have extensive curtilage and ancillary buildings (eg. Garden sheds, garage, etc).
- That block open views from public roads and viewpoints of the rural landscape.



By Designing House Sites that:

- Use the landform as a backdrop.
- Are placed at the mid to lower slopes of the Sensitive Rural Areas.
- Are clustered together to maximise the open rural landscape between.
- Are nestled into the landscape, using landform changes, valleys, gully sides and lower terraces.
- Are set back from the road similar to other buildings within the rural landscape.
- Are set well back from the edge of hillsides, knolls and plateaux to minimise the prominence of the building.
- Group or attach buildings within a lot together to minimise building 'spread' and clutter in the lot and subdivision.



Earthworks

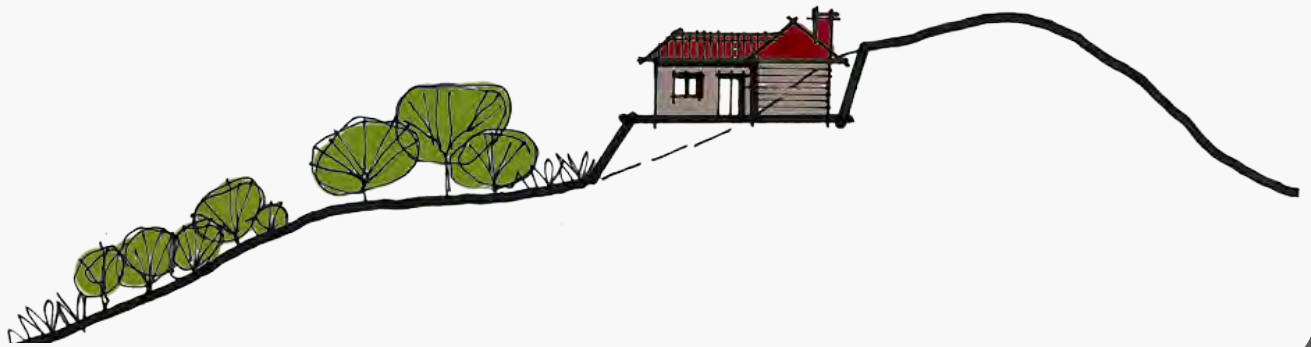
Avoiding earthworks on hillsides in the Sensitive Rural Areas is difficult. However earthworks can significantly alter the natural patterns and processes which occur on a landscape. Poorly designed earthworks can result in a scarring effect on a landscape. Working with the natural patterns and process in the early design stages is crucial to minimising the extent of earthworks required.

Approach

Identify natural flat areas and patterns to minimise earthworks throughout the site. Identify prominent features to avoid within the site and natural processes, including waterways to protect.

Avoid:

- Extensive and invasive earthworks that will permanently scar the landscape.
- Creating vertical faces and slopes that are incongruent with the surrounding landform gradients.
- Even and linear earth shaping patterns.
- Large cut batters that are difficult to maintain or return to productive land use.
- Any earthworks along the ridgeline of the Sensitive Rural Areas and prominent features within.
- Creating accessways and roads that excessively cut across a hillside or into a slope.



By:

- Locating house sites and access roads that require minimal earthworks.
- Using naturally flat areas to locate house sites.
- Using the natural landform to locate accessways that require minimal earthworks and retaining.
- Using cut and fill material is reshaped to 'marry into' the surrounding landform.
- Rehabilitate cut batters / embankments with vegetation or grass.
- Minimising retaining structures and visually obscuring them from view.
- Minimise vertical cut faces to no greater than 1.5m in height.



Access

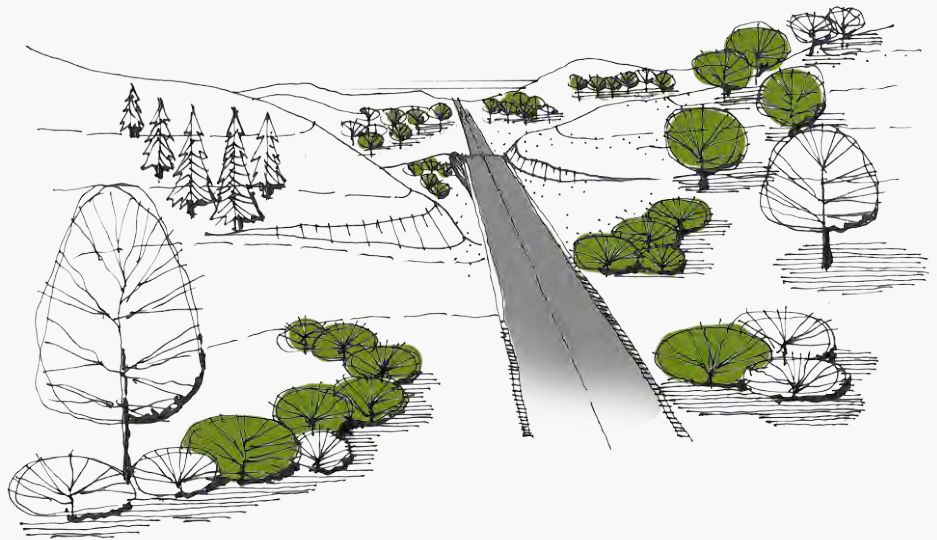
Access into and through a site can work with the natural landform creating minimal disruption. Conversely, accessways that do not respond to the natural landform tend to create scarring and highlight the accessway itself.

Approach

Design an accessway network that works with the natural landform and minimises the amount of accessway required. This is where clustering of house sites can be beneficial.

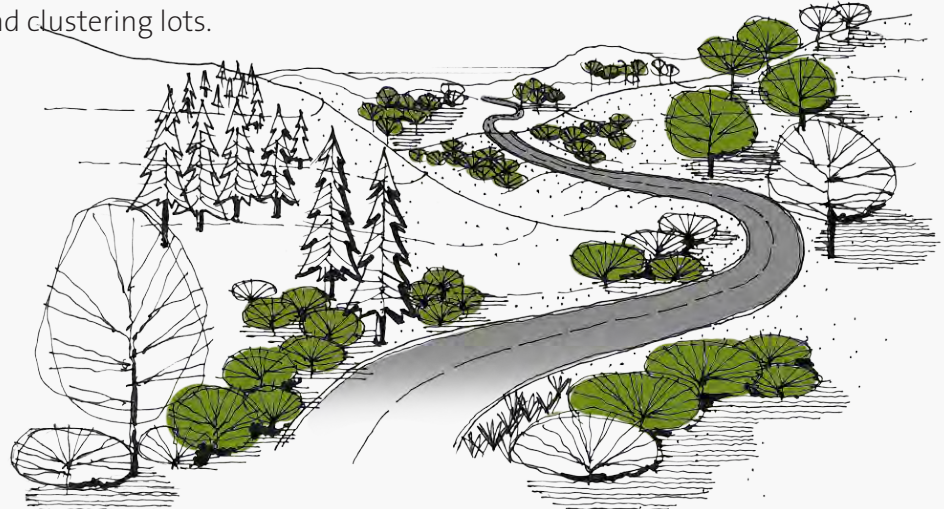
Avoid:

- Locating accessways across or over ridgelines.
- Cut through a landscape and a linear pattern or direct route, despite the landform.
- Urban roading standards e.g. vertical kerb and channel etc.
- Wide roads requiring excessive earthworks.
- Locating accessways in the upper third of the rim face within the Sensitive Rural Areas.
- Numerous entrances off a public road.



By:

- Following the contours of the landform to hide accessways behind landform features.
- Following natural vegetation patterns.
- Minimising distance of accessways required by having multiple access points from one access road.
- Using low impact stormwater design such as open swale systems.
- Using 'rural' roading methods, narrow roads, flat kerb, mountable or no formed kerb and channel.
- Using shared driveways and clustering lots.



Infrastructure, Structures and Landscaping

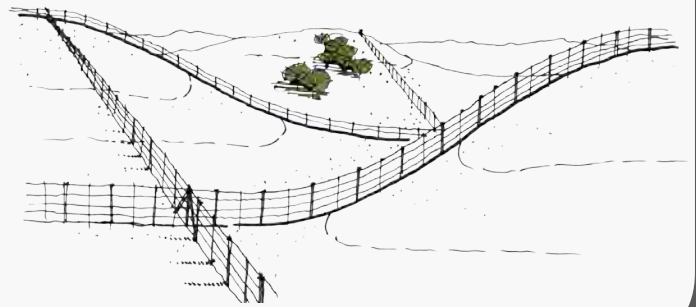
Structures and landscaping across a site and within individual lots form the characteristics of the rural environment. For the Caldera Rim Sensitive Rural Areas, the frequency, type and location of these features collectively form the character of these areas. Servicing development requires a number of underground services. Overhead servicing in new subdivisions is rarely found and is not considered appropriate within the Sensitive Rural Areas. Planting itself is not a sole method that can be applied for integrating development. Poor placement of planting can detract from the natural and cultural patterns of the rural landscape.

Approach

Following on from the subdivision and building site designs which follow the natural landscape patterns, locating infrastructure should continue this approach. Review the existing elements of the Sensitive Rural Area. Design the location, density and scale of the proposed structures and landscaping to work and integrate with the surrounding elements.

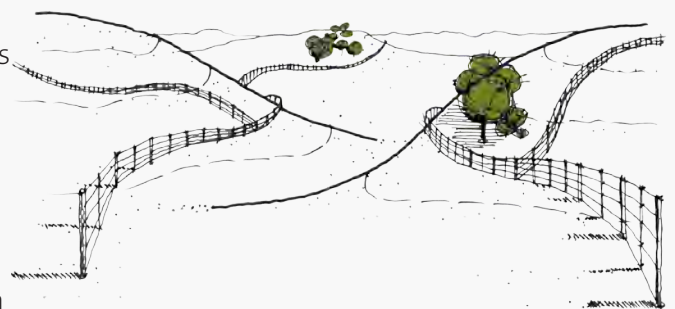
Avoid:

- Locating pump stations, water tanks or similar buildings on prominent locations and avoid the Caldera Rim ridgeline.
- Stormwater management that avoids working with the natural watershed patterns.
- Cutting across cultural and natural landscape patterns.
- Creating isolated planted areas around separate house sites.
- Avoid urban planting design within the street area and alongside roads.
- Clearing existing vegetation patterns.
- Creating fencelines that cut across landscapes.
- Urban entranceways or gateways.
- Urban style fencing e.g. solid post and panel close boarded fences.
- Lighting of rural roads and outdoor areas.
- Exposed retaining structures along the face of the slopes.



By:

- Installing all services underground.
- Locating pump stations, water tanks off ridgelines and off the Caldera Rim ridgeline.
- Integrating low impact design methods for stormwater management. Integrating with the natural features of the site.
- Locating fencelines to follow natural contours.
- Creating connected vegetation patterns that link sites together and connect to the natural vegetation patterns and landform.
- Use rural style fencing that is visually unobtrusive and permeable e.g. low post and rail, post and wire.
- Use indigenous vegetation or large scaled rural trees, matching trees found within the immediate vicinity.
- Keep entranceways low key, avoiding grand entranceways or gateways. Use natural materials such as wood or stone to reflect the rural character. Avoid plastered fences or gateways.
- Limiting outdoor areas to immediately around the building, using the remaining lot to create a visually shared open rural landscape.
- Integrate earth retaining into the natural contours, screening exposed retaining walls from view. Use natural materials, avoiding finishes that reflect urban style retaining and fencing.



Building Design - Building Form

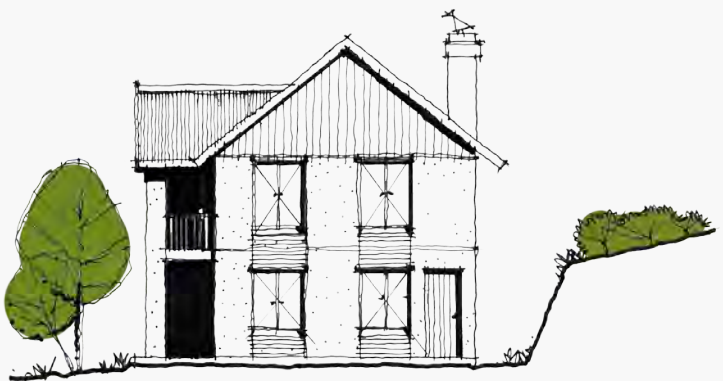
Following the appropriate placement of a building site into the rural landscape, the design of a building has the ability to attract or detract from the rural character of that environment. Smaller scale buildings have the ability to nestle into a landscape and blend with the environment.

Approach

Design the building to reduce the visual prominence the building may have within that landscape. Review the landform surrounding the site and design a building that responds to the natural and cultural patterns of the rural landscape.

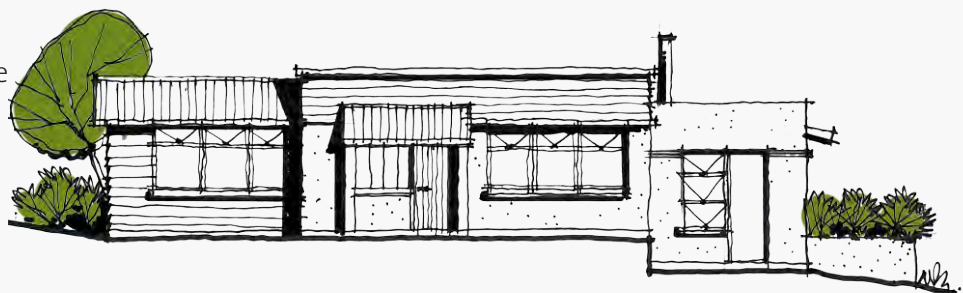
Avoid:

- Large scale buildings that are strongly vertical and incongruent with the natural landform patterns.
- Building designs that are out of character with the rural character of the Sensitive Rural Areas.
- Urban buildings and architectural styles that mimic foreign architectural styles rather than respond to the natural environment of the site.
- Roof lines that are in contrast to the natural landform.
- Building form that is large in scale and has no modulation¹.
- Large areas of prominent glazing and mirror glazing.
- With buildings on steep slopes the exposure of basements and foundations is common.
- Avoid creating large basements that increase the bulk of the building.



By:

- Designing single storey buildings within the Sensitive Rural Areas.
- Designing buildings that have a dominant horizontal profile and are single storey.
- Designing roofs that integrate buildings into the landscape and using a sheltering form with deep overhangs.
- Using *building modulation*² to break the length of a building facade by changing direction, stepping in and out of the main facade, balconies, eaves, pergolas and other structures.
- Recessing large areas of glazing below wide eaves and dividing glazing with walls, pergolas and the like.
- Use of tinted glass, but not mirror glazing.
- Buildings that keep in style with the architectural styles of the New Zealand rural landscape and those found within the rural areas of Rotorua Caldera Rim.
- Designing buildings that utilise natural materials.
- Integrate exposed basement walls into the facade design by extending the materials right to the ground or using planting to screen the basement.
- Carefully integrating chimneys, aerials, satellite dishes and solar panels with the overall building and roof design.



Building Design - Colour and Materials

Colour and material selection has the ability to either integrate or contrast a building to its surrounding natural environment. The Caldera Rim Sensitive Rural Areas are largely void of vegetation cover, therefore selection of materials is critical to the integration of built form within this environment.

Approach

Design the building to reduce the visual prominence the building may have within that landscape by using recessive building colours and materials that are sympathetic to the colour of the surrounding natural environment. As a primarily pastoral landscape the Sensitive Rural Areas, comprise green to brown colourings and therefore any colour selection or materials should be sympathetic to this colour palette.

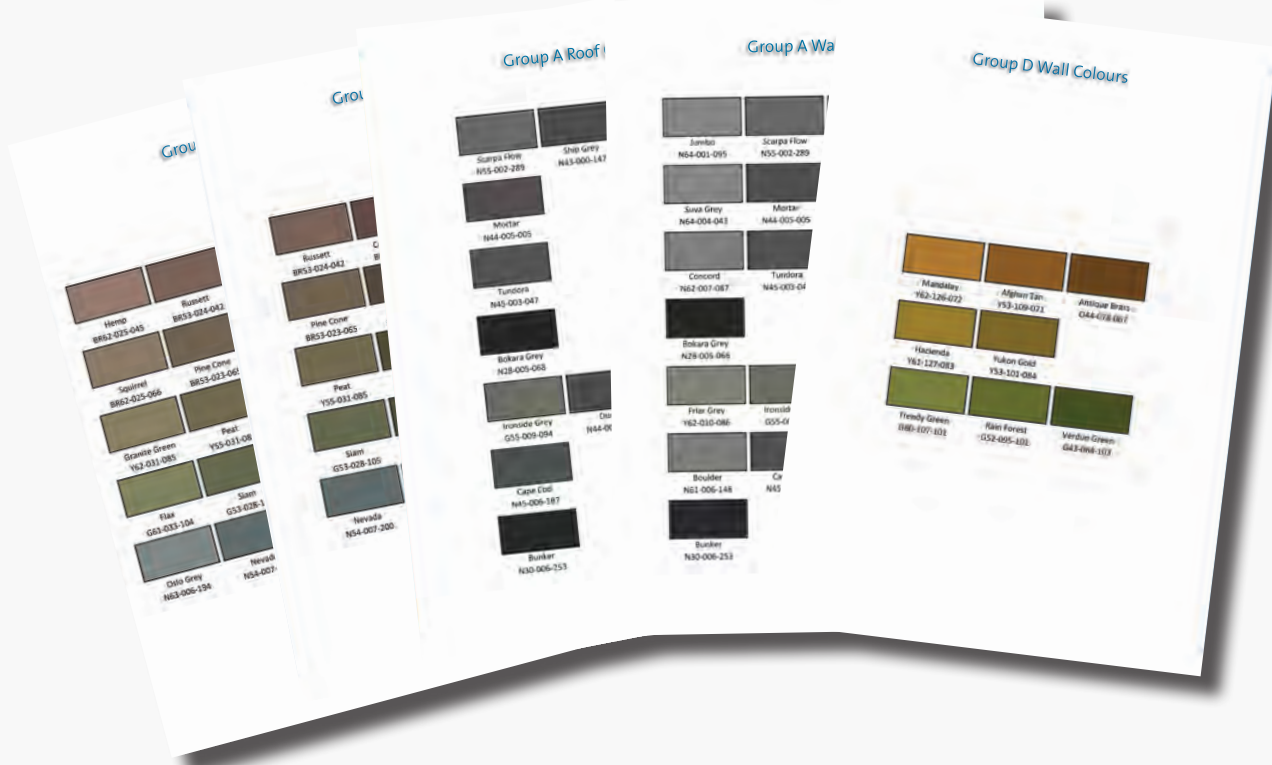
Before finalising the colour palette consider the change of seasons to ensure the building materials and colour work in all seasons.

Avoid:

- Materials that are smooth and create a high level of reflectivity.
- Extensive use of materials that are dominant in the urban environment, i.e. brick and tile, plastered finishes. Some use is suitable but balanced with the selection of materials and colours that are responsive to the natural environment.
- Use of colour on weatherboard, plaster finishes, roofing and detailing (gutters, window sills, etc.) that is higher than 37% in reflectivity.

By:

- Selecting materials that respond to the rural landscape and native vegetation immediately surrounding the subject site.
- Selecting colour palettes that have a reflectance value of less than 37% roofs and walls (Refer to the Resene British Standard 5252 Range as a guide).
- Using natural material finishes such as stone and timber which will weather naturally.
- Applying dark oxide colouring to concrete materials to reduce reflectivity of the material.



REFERENCES

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APPENDIX 1
SENSITIVE RURAL AREA
PHOTOGRAPHIC MONTAGE



View South-West from Rotorua Museum towards Ngatautara



Mt Ngongotaha ONFL

View North-West from Rotorua Museum towards Pukehangi



View South-East from Rotorua Museum towards lynmore

Viewpoint Details

NZTM Easting : 1 885 650 mE Approx.
 NZTM Northing : 5 774 154 mN Approx.
 Elevation : 297.5m Approx.
 Date of Photography : 12:56pm, 11 October 2012
 Data source: Photography from Rotorua District Council

Horizontal Field of View: 59° (Rectilinear)
 Optimum viewing distance of image @ A3 is 349mm

CALDERA RIM DESIGN GUIDELINES

Sensitive Rural Area - Lynmore

| Date: 17 October 2012 | Revision: 0 |

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