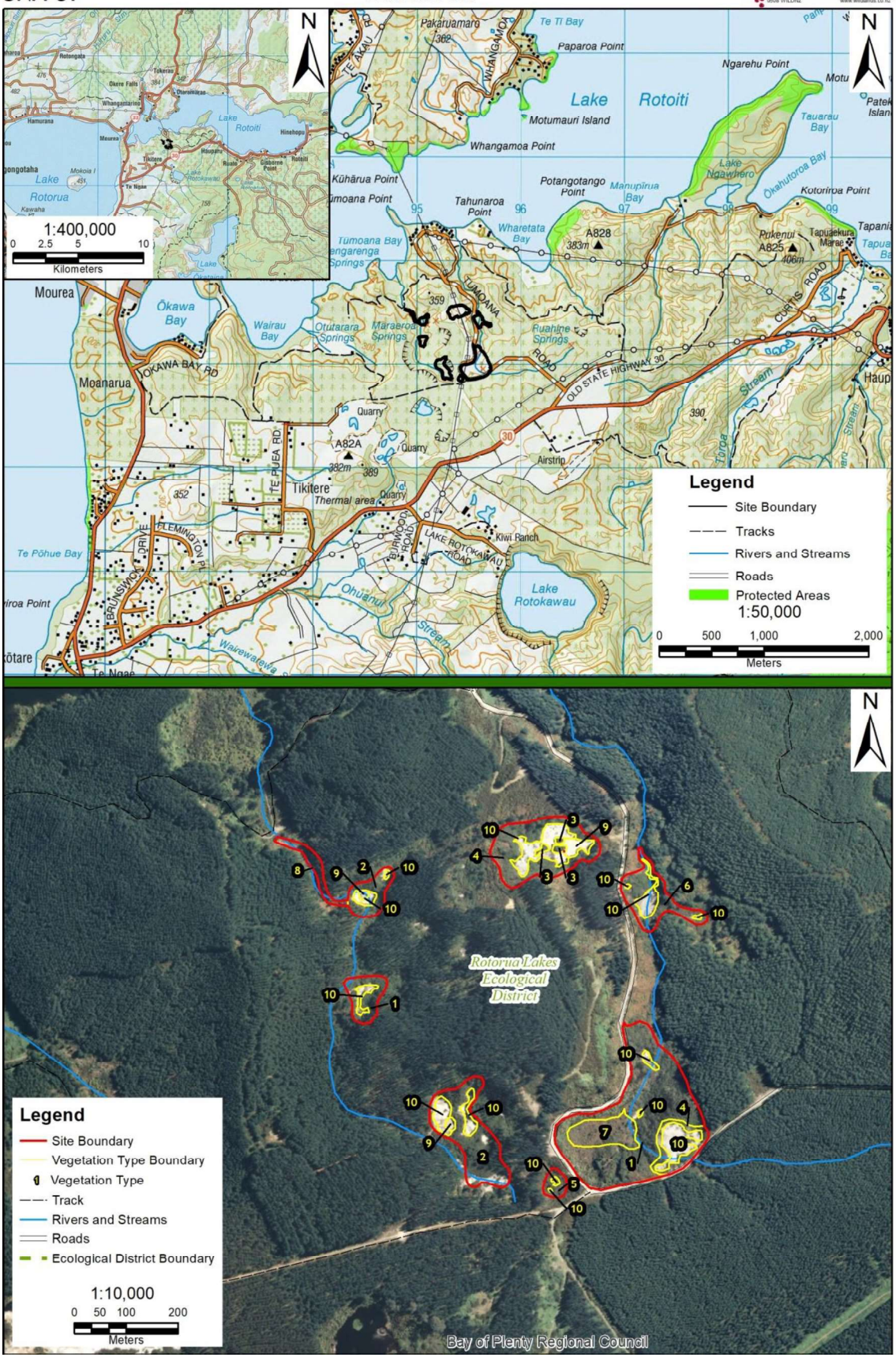
SNA 37

Maraeroa



Maraeroa[1]

Site Number: 37
Ecological District: Rotorua Lakes
Source of Information: Fieldwork 2016, Shaw and Beadel (1998); Wildland Consultants (2005c)
Digital Scale: 1:5,000
Data Source: Bay of Plenty 0.25m Rural Aerial Photos (2015-17)
Regional Council: Bay of Plenty
1998 Site Number: Maraeroa: NHS No. 37; Tumoana Road Scrub: SNA169; not identified as a site in Shaw and Beadel (1998)
Current Tenure: Unprotected
Site Area: 13.24 ha
Altitude Range: 300-350 m
Bioclimatic Zone: Lowland
Grid Reference: NZTM E1895578, N5783062

VEGETATION		LANDFORM	EXTENT
CODE	TYPE		
1	**Radiata pine/kanuka/mingimingi forest** An area of plantation radiata pine forest with some geothermal features. Kanuka, mingimingi and bracken are also common.	Hillslope	1.9 ha
2	**Mingimingi-bracken-manuka scrub** Mingimingi, bracken and manuka are the dominant species in this vegetation type which appears to have undergone a great deal of change in recent times as part of forestry operations. Radiata pine trees have been planted in the geothermal vegetation. Several patches of geothermal kanuka and occasional turutu and *Histiopteris incisa* are present.	Hillslope, gully	2.1 ha
3	**Geothermal kanuka-manuka-bracken shrubland** A mixed shrubland with areas dominated by geothermal kanuka, manuka and bracken. Occasional lodgepole pine and maritime pine are present. Gorse is common on margins.	Hillslope	<0.1 ha
4	**Mingimingi-geothermal kanuka shrubland** A shrubland with geothermal kanuka dominant on heated soils and mingimingi more prominent on margins. Occasional radiata pine present. Gorse is common on margins.	Hillslope	1.6 ha
5	**Manuka/gorse-creeping bent (*Agrostis stolonifera*)/unvegetated raw-soilfield shrubland** A small area of vegetation on soils that have been geothermally active in the recent past. Manuka dominates this area with patches of raw-soilfield, and grassland comprising of narrow-leaved carpet grass and creeping bent. Several plants of *Juncus edgariae* and *Juncus effusus* are present on moist soils. Gorse is particularly common on margins and several radiata pine are present.	Hillslope	0.2 ha
6	**Kanuka-mingimingi-bracken shrubland** A shrubland surrounding a very active area of geothermal features and hot springs. Dominated by kanuka and mingimingi with isolated areas of bracken. Several pine trees are present in this type including one large tree which is *c.*20 m tall. Gorse becomes more common on margins. Occasional wheki present.	Stream margins	0.8 ha
7	**Wheki/bracken fernland** A bracken dominant fernland with abundant emergent wheki.	Gully	0.7 ha

[1] Name first used in Cody 1994.

VEGETATION CODE	VEGETATION TYPE	LANDFORM	EXTENT
	Radiata pine and gorse are also common.		
8	***Histiopteris incisa*-mingimingi-bracken fernland** A hot water stream surrounded by *Histiopteris incisa*, mingimingi and bracken, with occasional manuka, wheki, turutu, *Hypolepis ambigua*, blackberry, kiokio, gorse and radiata pine (<2 m tall).	Hillslope	0.3 ha
9	**Geothermal water** Geothermally influenced water with several hot springs and geothermally heated streams.	Geothermal water	0.2 ha
10	**Nonvegetated raw-soilfield** Sinter, heated soil, hot springs and occasional fumaroles.	Flat, gently sloping	1.6 ha
11	**Kānuka-gorse-whekī-(mānuka-mingimingi) scrub and forest** Kānuka (*Kunzea robusta*), gorse, whekī, mingimingi, mānuka and bracken scrub, with some areas of kānuka forest and occasional kāmahi on the margins. Some tall radiata pines have been controlled.	Hillslope	1.19 ha
12	**Wilding pine/mānuka-kānuka-bracken-(whekī)-(gorse) scrub** Occasional wilding pine is present amongst mānuka, kānuka, bracken, whekī, and gorse. Local patches of bracken fernland and gorse shrubland are within this area.	Hillslope	2.65 ha

Indigenous Flora: A small population of geothermal kanuka ('At Risk-Naturally Uncommon' in de Lange *et al.* 2013) - an endemic species restricted to geothermal sites is present. Other indigenous species typical of geothermal habitats are present, including mingimingi, manuka, kanuka, turutu, *Histiopteris incisa*, and bracken.

Clarkson *et al.* (1990) recorded *Lycopodium cernua* at this site, however it was not seen during the 1996 or 2005 inspections.

Fauna: Australasian harrier, New Zealand pipit ('At Risk - Declining' in Robertson *et al*. 2013), grey warbler, fantail, chaffinch, goldfinch, and pheasant were recorded at the site in 2005.

Notes on Overall Condition: This site includes early successional indigenous and exotic scrub and forest on either side of an unnamed stream that flows through a geothermal area. This area was farmed in the recent past. Some small parts of the site have been damaged during forestry operations. Radiata pines have also been planted close to geothermal features. The remaining areas have a higher component of indigenous species and are in a moderate condition, with some pest plants present.

Change Relative to Shaw and Beadel (1998): The quality of geothermal vegetation has decreased at this site following harvesting of plantation forest since 1996 (Beadel *et al.* 1996a). Changes in quality of the non-geothermal areas is unknown; likely to have improved as the vegetation recovers from past clearance.

Threats/Modification/ Vulnerability: ***Invasive Exotic Plants***: Much of the geothermal vegetation is surrounded by plantation forestry, mostly radiata pine. Wilding pines including radiata pine, maritime pine and lodgepole pine are present and have spread into the geothermal vegetation (1-5% cover). Planted trees may damage the geothermal vegetation if they are felled into these areas.Some wilding radiata pines at the southern end of this site, close to the geothermal vegetation, have been controlled. Some of the site is also dominated by exotic plant species (including gorse).

Human Impacts: Radiata pines have been planted on the margins of the site (all were small trees during the 2005 survey). Past forestry operations have caused damage to geothermal vegetation. Several formed and unformed tracks occur around geothermal areas. One of the springs has been altered to provide bathing facilities. Some litter has been dumped into geothermal features.

All or parts of these areas are threatened by clearance for establishment of pine plantations, damage during logging operations of adjacent pine plantations, fertiliser and herbicide applications to adjacent pine plantations.

It is thought that the Tikitere Geothermal Field may be linked to the Taheke Field, for which a geothermal power plant is being considered. If there is a link then Maraeroa could be threatened by this proposal.

Risk Assessment: Pest plants: Risk to site - medium; Timeframes - low.

Forestry operations: Risk to site - medium; Timeframes - medium.

Significance Level: Regional (Appendix 8 - Table 1 - Criteria 3.1, 3.2, 3.4, 3.8, 3.10 (and 3.11, 3.12, 3.13 for parts of site); Table 2 - Factors R6, R9, R12).

Significance Justification: This site is of regional significance because it contains a population of geothermal kanuka ('At Risk-Naturally Uncommon'). This species forms the dominant cover in places and, while this vegetation type is degraded in quality, it is nevertheless a relatively large example of an under-represented vegetation type (geothermal kanuka). This site includes vegetation on either side of a stream that drains from the Maraeroa geothermal area (SNA 37; Maraeroa). It helps to buffer the geothermal habitats from the effects of plantation forestry, though wilding conifer spread is occurring.

Field Work Required: No fieldwork is required.

Notes: Tumoana Road Scrub (Site number 169) has been amalgamated with existing Maraeroa (SNA 37). The Trust land that this site is on was farmed in the past; the surrounding land now mostly comprises plantation forestry.

References: Beadel *et al.* (1996b), Clarkson *et al*. (1990); Given (1978); Wildland Consultants (2005c); Wildland Consultants (2009).