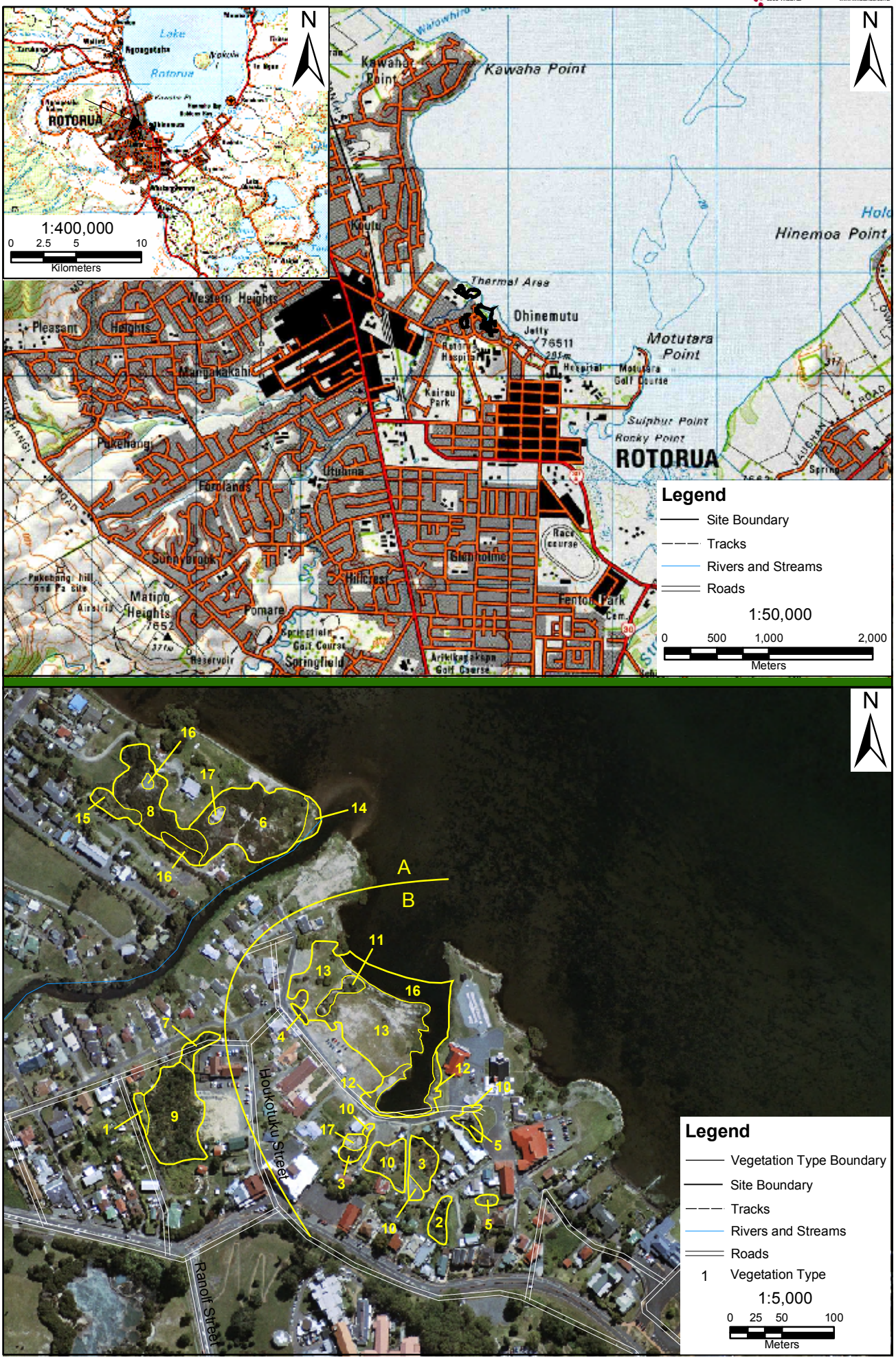
SNA 109 Ohinemutu



Ohinemutu

Site Number: SNA109
Ecological District: Rotorua Lakes
Source of Information: Wildland Consultants (2005c) – Geothermal Site No. 3
Digital Scale: 1:2,000
Data Source: RDAM 2006
Regional Council: Bay of Plenty
1998 Site Number: NHS 109
Current Tenure: Unprotected
Site Area: 3.6 ha
Altitude Range: 290 m
Bioclimatic Zone: Lowland
Grid Reference: NZTM E1884624, N5774999

VEGETATION		LANDFORM	EXTENT
CODE	TYPE		
1	Arrow bamboo scrub Dense arrow bamboo (*Pseudosasa japonica*) scrub to 3 m.	Hillslope	<0.1 ha
2	Arrow bamboo-manuka scrub A mixed unit of arrow bamboo with manuka common on margins. Patches of blue morning glory (*Ipomoea indica*), *Nephrolepis cordifolia*, *Hypolepis ambigua*, grape vine (*Vitis vinifera*), and Japanese honeysuckle (*Lonicera japonica*) are present. Occasional pohutukawa present.	Hillslope	<0.1 ha
3	Prostrate kanuka/narrow-leaved carpet grass shrubland Prostrate kanuka scrub inter-mixed with patches of narrow-leaved carpet grass. Small patches of raw-soilfield and open water are present. Some *Schoenoplectus tabernaemontani* plants occur in wet areas. Mercer grass, *Hypolepis ambigua*, blue morning glory and *Nephrolepis cordifolia* are common. Occasional manuka present.	Flat	0.1 ha
4	Prostrate kanuka-manuka shrubland A small unit with common prostrate kanuka and manuka	Flat	<0.1 ha
5	Prostrate kanuka-*Hypolepis ambigua* shrubland A small unit of vegetation surrounding a hot spring. Prostrate kanuka, *Hypolepis ambigua*, *Lycopodiella cernua*, manuka, Japanese honeysuckle, narrow-leaved carpet grass were common.	Flat	<0.1 ha
6	Prostrate kanuka/sweet vernal shrubland Prostrate kanuka to 2 m forms an open canopy over sweet vernal and raw-sandfield. Several adventive garden escapes occur amongst the prostrate kanuka including prickly pear (*Opuntia vulgaris*), *Nephrolepis cordifolia*, canna lily (*Canna indica*), and lantana (*Lantana camara*). Occasional banksia (*Banksia integrifolia*) is present by stream margins. The patches of open grass between shrubs are dominated by sweet vernal with common wild serradella (*Ornithopus perpusillus*), lotus, Japanese honeysuckle, and patches of narrow-leaved carpet grass.	Flat	0.6 ha
7	Manuka shrubland Manuka dominates this wetland with common Japanese honeysuckle, *Cyperus ustulatus*, *Carex virgata*, *Schoenoplectus tabernaemontani*, prostrate kanuka, *Baumea juncea*, *Isolepis distigmatosa* and Mercer grass. Occasional pampas, *Hypolepis ambigua* and harakeke present. Some areas of open water and sinter.	Geothermal wetland	<0.1 ha

VEGETATION CODE	VEGETATION TYPE	LANDFORM	EXTENT
8	Manuka-prostrate kanuka shrubland Manuka forms an open canopy surrounding geothermal pools. Common species occurring beneath manuka include *Carex virgata, Baumea juncea.* Raupo becomes common at western end. Prostrate kanuka is common in dry areas.	Geothermal wetland	0.3 ha
9	Manuka-harakeke shrubland Manuka and harakeke dominate this wetland with common, *Schoenoplectus tabernaemontani*, *Baumea juncea*, *Isolepis distigmatosa, Carex virgata,* wheki, and *Cyperus ustulatus*. Occasional silver birch present. Chinese privet (*Ligustrum sinense*) becomes common at eastern end. Arrow bamboo and Mercer grass are common on margins.	Geothermal wetland	0.4 ha
10	Narrow-leaved carpet grass grassland Narrow-leaved carpet grass and fumaroles.	Flat	0.2 ha
11	Narrow-leaved carpet grass-exotic garden plants grassland A unit dominated by rank exotic grasses and planted exotic garden plants surrounding a warm geothermal pool. Exotic grasses include narrow-leaved carpet grass, summer grass (*Digitaria sanguinalis*), buffalo grass (*Stenotaphrum secundatum*), and Mercer grass. Patches of *Cyperus involucratus* and *Cyperus ustulatus* are common on pool margins. Scattered garden plants occur throughout the site including *Watsonia* sp., ivy, canna lily, and agave (*Agave* sp). Occasional plants of manuka, harakeke, *Hypolepis ambigua*, wild ginger (*Hedychium gardnerianum*), flowering cherry (*Prunus* sp.) Chinese mugwort , broom, and black wattle are present.	Flat, hot stream margins	<0.1 ha
12	(Manuka)-(mingimingi)/narrow-leaved carpet grass grassland Scattered shrubs are common over a narrow-leaved carpet grass grassland. Shrubs that are common include prostrate kanuka and manuka. A small area of *Campylopus* mossfield is present. Blue morning glory (*Ipomoea indica)* and Japanese honeysuckle are common. One silver wattle tree is present. Several hot springs with associated sinter occur in this vegetation type. *Lycopodiella cernua* is common on margins of one hot spring. One patch of *Cyperus involucratus* is present. Parrot's feather (*Myriophyllum aquaticum*) is common in lake margins.	Lake margins	0.1 ha
13	Narrow-leaved carpet grass-wild serradella grassland Narrow-leaved carpet grass and scattered patches of raw-soilfield. Common species present include wild serradella, yellow serradella (*Ornithopus pinnatus*), summer grass, and white clover (*Trifolium repens*).	Gently sloping	0.8 ha
14	Mercer grass-narrow-leaved carpet grass grassland The cover is dominated by Mercer grass and narrow-leaved carpet grass. A small wetland (too small to map) occurs in this vegetation type comprising of raupo and *Schoenoplectus tabernaemontani*. One black wattle present.	Flat	<0.1 ha
15	Raupo-*Schoenoplectus tabernaemontani*-Japanese honeysuckle reedland A raupo reedland with common *Schoenoplectus tabernaemontani*-Japanese honeysuckle, blackberry, harakeke, *Cyperus ustulatus*, tradescantia, and Chinese privet. Several crack willow (*Salix fragilis*) and manuka are present.	Geothermal wetland	<0.1 ha
16	Geothermal water Geothermally influenced water. This habitat extends into Lake Rotorua. Parrot's feather is common in lake margins.	Lake	0.6 ha
17	Nonvegetated raw-soilfield Geothermally altered clay, heated ground, mud, and sinter.	Flat	<0.1 ha

Indigenous Flora:

Prostrate kanuka ('At Risk - Naturally Uncommon' in de Lange *et al*. 2009) was common on the western side of Utuhina Stream. Prostrate kanuka is endemic to geothermal areas in New Zealand. Two other threatened plant species are known from Ohinemutu, but were not recorded in the 2005 survey: *Cyclosorus interruptus* ('At Risk - Declining' in de Lange 2009) is known from the northern side of Utuhina Stream (Beadel *et al.* 1996b), and *Fimbristylis velata* ('At Risk - Naturally Uncommon' in de Lange *et al.* 2009) was recorded around disturbed sites, sinterland, roadsides and grassed areas (Beadel *et al.* 1996a). Other indigenous species typical of geothermal vegetation are present including manuka, mingimingi, taupata (*Coprosma repens*), *Cyperus ustulatus, Histiopteris incisa*, *Hypolepis ambigua*, *Baumea juncea,* turutu, and kanuka.

Fauna:

Several threatened and at risk species as listed in Miskelly *et al*. (2008) were recorded from this site in 2005 - black-billed gull ('Threatened - Nationally Endangered'), red-billed gull ('Threatened - Nationally Vulnerable'), and little shag ('At Risk - Naturally Uncommon'). Other threatened and uncommon species likely to utilise the site include New Zealand dabchick ('Threatened - Nationally Vulnerable'), and black shag and little black shag (both 'At Risk - Naturally Uncommon'). Other common species recorded include white-faced heron, New Zealand scaup, welcome swallow, silvereye, myna, fantail, mallard, and blackbird. Australian bell frogs are common on lake margins.

Notes on Overall Condition:

A large part of this site is in a poor condition, but there are small areas with good quality indigenous geothermal vegetation. These areas are threatened by continued pest plant invasion and the close proximity of residential development. Some minor damage has occurred by people walking through geothermal areas. Some litter on site.

Change Relative to Shaw and Beadel (1998):

Some minor changes have occurred as part of residential development in Ohinemutu, which may have reduced the total area of geothermal vegetation to a small extent. Quantifying the loss of geothermal vegetation and habitat is difficult because the aerial photography used in the 1996 survey is of poor quality.

Threats/Modification/ Vulnerability:

Ohinemutu is in the Rotorua Geothermal Field, which has a well-managed management regime for geothermal energy use. Ohinemutu is highly modified; it was formerly part of a much larger area of geothermal scrub and shrubland, of which only small fragmented examples remain.

The populations of *Cyclosorus interruptus* and *Fimbristylis velata* are vulnerable to human disturbance by persons unaware of their significance (e.g. in 1982 spoil from road construction was dumped on several *Cyclosorus* plants). Weed control may also threaten these populations.

***Invasive Exotic Plants*:** Exotic plants dominate a large portion of the site, although several smaller areas of prostrate kanuka shrubland and two wetlands (one on each side of Utuhina Stream) have a high cover of indigenous species. Exotic garden escapes are common throughout the site. *Nephrolepis cordifolia,* Canna lily, ivy, agave, and watsonia are common in planted riparian margins and amongst prostrate kanuka scrub and shrubland. Lantana and prickly pear were also present in prostrate kanuka shrubland. Common exotic plants on geothermal margins included arrow bamboo, blue morning glory, Japanese honeysuckle, Chinese privet, silver birch, wild

ginger, and flowering cherry.

Human Impacts: Several tracks (formed and unformed) pass through geothermal vegetation. Some dumping of organic garden waste has occurred on margins of the site. Scattered litter occurs throughout the site. Some geothermal features have been altered for bathing and for general housing amenities. Gardens occur throughout the eastern portion of the site. A fire has occurred in manuka shrubland and prostrate kanuka on the western side of Utuhina Stream. Residential housing and other buildings are interspersed throughout the site, isolating geothermal features.

Risk Assessment:

Vegetation clearance: Risk to site - high; Timeframe - high.
New tracks: Risk to site - medium; Timeframe - medium.
Pest plants: Risk to site - high; Timeframe - high.
Waste dumping/litter: Risk to site - medium; Timeframe - medium.
Fire: Risk to site - high; Timeframe - high.

Significance Level:

Refer to accompanying site map for demarcation of areas A and B.

A. National (Appendix 10 - Table 1 - Criteria 1, 2, 4, 5, 6, 8, 11, 12, 13; Table 2 - Factors N11, N12).
B. Regional (Appendix 10 - Table 1 - Criteria 4, 11; Table 2 - Factor R9).

Significance Justification:

A. This part of the site is of national significance because it is a good quality example of a threatened or uncommon habitat type (geothermal wetland) and it contains a population of the fern *Cyclosorus interruptus* ('At Risk - Declining').
B. These parts of the site are of regional importance as they contain populations of two 'At Risk' species (prostrate kanuka and *Fimbristylis velata*).

Fieldwork Required:

No fieldwork is required.

Notes:

"The following species found by Thomas Kirk in 1872 at Ohinemutu are now thought to be extinct in the district: *Viola cunninghamii*, *Potentilla anserinoides, Thelymitra pulchella, Chenopodium glaucum, Lycopodium laterale*, and oioi (*Apodasmia similis*). The sedge, *Fimbristylis velata*, described as most abundant by Kirk, is now quite rare. This is perhaps not surprising since most of the area is now covered with gardens, houses and buildings." (Ecroyd 1991).

Kirk also noted that sea rush occurred on geothermal sites at Ohinemutu. Sea rush no longer grows there, although it is present elsewhere in the ecological district.

This site was identified as a "Recommended Area for Protection" (RAP No. 109) in the natural area survey of Rotorua Lakes ED (Beadel *et al*. 1998).

References:

Beadel *et al*. (1996b); Clarkson (1991); Ecroyd (1991); Clarkson (1982); Kirk (1873); Clarkson (1992); Wildland Consultants (2005c); Beadel *et al*. (1998); Shaw and Beadel (1998).