



# Whakarewarewa<sup>1</sup>

**Site Number:** SNA106  
**Ecological District:** Rotorua Lakes  
**Source of Information:** Wildland Consultants (2005c) – Geothermal Site No. 12  
**Digital Scale:** 1:2,000  
**Data Source:** RDAM 2006  
**Regional Council:** Bay of Plenty  
**1998 Site Number:** Not identified as a site in Shaw and Beadel (1998)  
**Current Tenure:** Unprotected  
**Site Area:** 15.3 ha  
**Altitude Range:** 300-310 m  
**Bioclimatic Zone:** Lowland  
**Grid Reference:** NZTM E1885576, N5771138

VEGETATION		LANDFORM	EXTENT
CODE	TYPE		
1	Pohutukawa forest Two areas of pohutukawa forest with occasional whauwhaupaku and kamahi. Bracken is common in the understorey. Parts of the understorey have been planted. Some indigenous and exotic species have been planted in the understorey.	Flat, hillslope	0.1 ha
2	(Alder)-(arrow bamboo)/manuka- <i>Histiopteris incisa</i> treeland Scattered alder and arrow bamboo occur over manuka, <i>Histiopteris incisa</i> , kikuyu ( <i>Pennisetum clandestinum</i> ), <i>Juncus edgariae</i> and <i>Cyperus ustulatus</i> around banks of stream margins.	Stream margins, gently sloping	0.3 ha
3	Prostrate kanuka-mingimingi-manuka scrub Prostrate kanuka dominates a canopy which also comprises common mingimingi and manuka with occasional maritime pine, black wattle, kanuka, broom and monoao. Narrow-leaved carpet grass is common on track margins. The understorey has scattered turutu, <i>Lycopodiella cernua</i> , heather, <i>Gleichenia microphylla</i> , and Himalayan fairy grass ( <i>Miscanthus nepalensis</i> ).	Gently sloping, hillslope	1.5 ha
4	Black wattle/mingimingi-manuka scrub Scattered black wattle occur over mingimingi and manuka scrub. Occasional emergent rimu, whauwhaupaku and kamahi are present. Other common species present include <i>Gleichenia microphylla</i> , bracken, turutu, prickly mingimingi ( <i>Leptecophylla juniperina</i> subsp. <i>juniperina</i> ), heather, Spanish heath, and <i>Lycopodiella cernua</i> .	Hillslope	0.4 ha
5	Arrow bamboo ( <i>Pseudosasa japonica</i> ) scrub Arrow bamboo forms dense thickets to 4 m. Some patches of bamboo appear to have been mowed.	Hillslope, flat	0.1 ha
6	Prostrate kanuka shrubland Prostrate kanuka and monoao form a canopy to c.1 m tall. Some patches of nonvegetated raw-soilfield are present. Occasional mingimingi, maritime pine and heather are present with manuka becoming common on margins. Broom, mingimingi and bracken are common with occasional gorse, maritime pine, radiata pine, black wattle and patches of narrow-leaved carpet grass.	Gently sloping, hillslope	0.5 ha

<sup>1</sup> The area mapped in Wildland Consultants (2005c) extends to the west into what is now known as Te Puia. This area is protected. Management and site rankings are based on the entire site.

VEGETATION		LANDFORM	EXTENT
CODE	TYPE		
7	Manuka-mingimingi shrubland Manuka and mingimingi dominate a large portion of the geothermal areas at Whakarewarewa. One manuka plant had abundant <i>Korthalsella salicornioides</i> growing on it. It is also known to be abundant on kanuka at this site. Emergent black wattle, maritime pine, kanuka and eucalyptus ( <i>Eucalyptus</i> sp.) are common. Several small patches of prostrate kanuka are present, while some isolated patches of kamahi occurs on cooler soils. Turutu, Japanese honeysuckle, <i>Morelotia affinis</i> , prickly mingimingi, <i>Lycopodiella cernua</i> , and bracken are present in the understorey and open places. Some tanekaha and totara have been planted in this vegetation type on the Te Puia side of the site.	Flat, gently sloping, hillslope	6.7 ha
8	Manuka-mingimingi-broom shrubland Manuka, mingimingi and broom with occasional Tasmanian blackwood, karamu, and black wattle form a canopy with scattered tawiniwini ( <i>Gaultheria antipoda</i> ) and turutu, and small patches of narrow-leaved carpet grass in open places.	Hillslope	<0.1 ha
9	Bracken fernland Bracken with occasional broom.	Hillslope	0.6 ha
10	Bracken-Japanese honeysuckle-Himalayan honeysuckle fernland Abundant bracken, Japanese honeysuckle, Himalayan honeysuckle and common <i>Histiopteris incisa</i> . Occasional buddleia, wheki, black wattle, maritime pine and manuka are present. Fumaroles and heated soils have isolated small populations of prostrate kanuka.	Hillslope	<0.1 ha
11	Narrow-leaved carpet grass grassland Mown and rank grassland dominated by narrow-leaved carpet grass.	Flat, gently sloping	0.4 ha
12	Geothermal water Open heated geothermal water and hot springs.	Open water	0.2 ha
13	Nonvegetated raw-soilfield Heated bare ground, sinter, geysers, hot springs, mud pools, and fumaroles.	Flat, crater, gently sloping	2.0 ha

**Indigenous Flora:** Three species ranked as ‘At Risk - Naturally Uncommon’ in de Lange *et al.* (2009) were recorded at these geothermal areas in the 2005 survey: prostrate kanuka (covering large parts of this site as scrub, shrubland, and scattered individuals); *Korthalsella salicornioides*, and *Fimbristylis velata*.

Several orchid species have been recorded from the site in previous surveys including *Sullivania minor* (‘Threatened - Nationally Critical in de Lange *et al.* 2009), *Calochilus paludosus*, *C. robertsonii* (both ‘At Risk - Naturally Uncommon’ in de Lange *et al.* 2009), *Thelymitra carnea*, *T. longifolia*, *T. pauciflora*, *Microtis parviflora* and *M. unifolia* (Beadel *et al.* 1996b).

The fern *Schizaea dichotoma* (‘At Risk - Naturally Uncommon’ in de Lange *et al.* 2009) has been recorded from this site (Beadel *et al.* 1996b). Other ferns and fern allies known from the site include *Gleichenia microphylla*, *Hypolepis distans*, *Histiopteris incisa*, *Lycopodiella cernua*, bracken and wheki. *Psilotum nudum* has also been recorded from the site (Beadel *et al.* 1996b).

Other species present that are typical of geothermal vegetation include manuka, kanuka, pohutukawa, mingimingi, turutu, *Histiopteris incisa*, and

monoao.

**Fauna:** Common indigenous and exotic species, including tui, bellbird, fantail, silvereye, grey warbler, black-backed gull, Australian magpie, and blackbird. No threatened or at risk species as listed in Miskelly *et al.* (2008) have been recorded from this site.

**Notes on Overall Condition:** While this site has been greatly altered as part of tourist operations and the “live-in” urban village, it comprises one of the largest areas of geothermal vegetation in Rotorua Lakes ED. Seven threatened or at risk plant species have been recorded from the site.

**Change Relative to Shaw and Beadel (1998):** This site was not mapped in detail in the 1996 survey and therefore it is not possible to assess changes in the extent and composition of geothermal vegetation between 1996 and 2005.

**Threats/Modification/Vulnerability:** *Invasive Exotic Plants:* Invasive exotic plant species are common, particularly in cooler areas. Black wattle (1-5% cover) is common as seedlings in geothermal areas and forms a canopy on some margins. Brush wattle (*Paraserianthes lophantha*), Tasmanian blackwood, radiata pine and maritime pine are scattered throughout the site (<1% cover). Other wattle species recorded from Whakarewarewa include silver wattle and green wattle (*Acacia decurrens*) (Ecroyd *et al.* 1990). Occasional grey willow is present in cool wet areas. Broom, Spanish heath and gorse are occasional throughout, but also become common on margins. Heather is common amongst prostrate kanuka and manuka scrub and shrubland. Silver birch and alder are common next to Puarenga Stream. Arrow bamboo is present in some gardens in the Geothermal Village and on its margins. The arrow bamboo had been mowed in some places in 2005. In rank and mown grassland, kikuyu, Japanese honeysuckle, and narrow-leaved carpet grass are common. *Nephrolepis cordifolia* was present in a garden.

*Human Impacts:* Extensive human impacts are present throughout the site. The site is one of the major tourist attractions of New Zealand and part of the site has been developed as a “live-in” urban village with houses, access vehicle roads and tracks, gardens, bathing facilities, and walkways. Formed and unformed tracks are common throughout. Despite these human-induced changes the site still has large areas of geothermal features present. Some litter is present, particularly away from tourist operations.

**Risk Assessment:** Tourism: Risk to site - medium; Timeframe - low.  
Pest plants: Risk to site - high; Timeframe - high.

**Significance Level:** National (Appendix 10 - Table 1 - Criteria 1, 2, 3, 4, 5, 8, 11, 12, 13; Table 2 - Factors N3, N11).

**Significance Justification:** This site is of national significance because it contains a good quality example of threatened geothermal habitat. It is relatively large (the second largest in the Rotorua Lakes ED) and it contains populations of one threatened and six at risk plant species. This site has also been identified as being of at least national significance in a previous assessment (Cody 1994; Kenny and Hayward 1996).

**Fieldwork Required:** No

**Notes:** This site was identified as a “Recommended Area for Protection” (RAP No. 106) in the natural area survey of Rotorua Lakes ED (Beadel *et al.* 1998).

**References:** Beadel *et al.* (1996b); Ecroyd (1991); Wildland Consultants (2005c).