



Kuirau Park¹

Site Number: SNA114
Ecological District: Rotorua Lakes
Source of Information: Wildland Consultants (2005c) - Geothermal Site No. 4
Digital Scale: 1:2,000
Data Source: RDAM 2006
Regional Council: Bay of Plenty
1998 Site Number: NHS No. 114
Current Tenure: Reserve (Geothermal vegetation and management of geothermal features is not currently a key focus for parts of this site)
Site Area: 10.4 ha
Altitude Range: 290 m
Bioclimatic Zone: Lowland
Grid Reference: NZTM E1884352, N5774725

VEGETATION		LANDFORM	EXTENT
CODE	TYPE		
1	Eucalyptus-oak/Douglas fir/mingimingi-manuka/mown lawn-raw-soilfield treeland Planted indigenous and exotic trees and shrubs. Steaming ground is common throughout this area. Eucalyptus and ash trees occur over small areas of mingimingi-manuka shrubland, with occasional cotoneaster, wheki, harakeke, turutu, and <i>Histiopteris incisa</i> . Mown grass is dominated by narrow-leaved carpet grass and nonvegetated raw-soilfield. Some bare ground at site is associated with heated soils, while other areas of bare ground are related to recreation use in this area (an old miniature railway track which has now been removed).	Flat	1.1 ha
2	Manuka scrub Manuka dominated scrub surrounding steaming soils, mudpools, and geothermal water. Formed and unformed tracks are also present. Occasional <i>Histiopteris incisa</i> , turutu, bracken, and mingimingi are present.	Flat	0.4 ha
3	Black wattle/manuka scrub Emergent black wattle and rimu are common over manuka scrub. Occasional whauwhaupaku, wheki, and oak are present in the canopy. The understorey comprises of bracken and occasional prostrate kanuka and broom.	Flat	0.1 ha
4	Manuka-prostrate kanuka scrub A manuka dominated shrublands with scattered prostrate kanuka by track margins. Kanuka, karamu, and some harakeke are present. Other common species include small patches of arrow bamboo and narrow-leaved carpet grass, and also bracken, <i>Paesia scaberula</i> , <i>Hypolepis ambigua</i> and <i>Histiopteris incisa</i> . Small areas of <i>Lycopodiella cernua</i> fernland are scattered throughout, particularly near the geothermal wetland. <i>Baumea arthropphylla</i> , <i>B. juncea</i> , <i>B. teretifolia</i> and <i>Juncus acuminatus</i> are present in geothermal water margins.	Flat	1.2 ha
5	Arrow bamboo scrub Arrow bamboo scrub to 4 m tall.	Flat	<0.1 ha
6	Manuka-mingimingi shrubland A mixed manuka and mingimingi shrubland with patches of turutu and bracken. Occasional oak, black wattle, flowering	Flat	1.4 ha

¹ Also know as Tarewa (Maxwell 1991).

VEGETATION		LANDFORM	EXTENT
CODE	TYPE		
	cherry, wheki, broom, prostrate kanuka, whauwhaupaku, kamahi, and kohuhu are present.		
7	Manuka/narrow-leaved carpet grass grassland Scattered (often fenced) patches of manuka surrounding by rank grasses (narrow-leaved carpet grass, kikuyu grass, and Mercer grass). Scattered plants of harakeke and <i>Histiopteris incisa</i> are present.	Flat, crater	0.5 ha
8	Planted indigenous shrubland-manuka ↔ mingimingi shrubland A manuka-mingimingi shrubland with some enrichment planting. Formed and unformed tracks are present. Harakeke, ti kouka, koromiko, turutu, <i>Histiopteris incisa</i> , bracken, <i>Carex virgata</i> , kahikatea, rimu, black wattle, oak, and wheki are present with occasional gorse, cotoneaster and broom. Some small areas of Mercer grass and narrow-leaved carpet grass occur towards the eastern part of this type.	Flat	0.5 ha
9	Cultivar manuka-mingimingi-flowering cherry-red hot poker-harakeke and other garden plants shrubland ↔ narrow-leaved carpet grass grassland A mix of exotic indigenous and cultivar plantings including manuka, mingimingi, flowering cherry, harakeke, red hot poker (<i>Kniphofia uvaria</i>), and <i>Histiopteris incisa</i> . Some gardens. Patches of mown grass (dominated with narrow-leaved carpet grass) and planted ornamental trees occur between geothermal areas and nonvegetated raw-soilfield.	Flat	0.7 ha
10	Dead manuka/rarahu-turutu- <i>Histiopteris incisa</i> -mingimingi fernland Dead manuka/rarahu-turutu- <i>Histiopteris incisa</i> -mingimingi fernland with patches of nonvegetated raw-soilfield.	Flat	<0.1 ha
11	Mosaic of narrow-leaved carpet grass, mown lawn (70%) ↔ manuka-mingimingi shrubland (20%) ↔ nonvegetated raw-soilfield (10%) Area with mown narrow-leaved carpet grass grassland with fenced off areas of geothermal activity (mudpools and steam vents). Manuka and mingimingi scrub with ferns (<i>Histiopteris incisa</i> and bracken). <i>Lycopodiella cernua</i> and turutu are present in fenced areas. Occasional ti kouka present. Scattered patches of raw-soilfield occur throughout.	Flat	2.8 ha
12	Geothermal water Geothermally heated water.	Open water	1.2 ha
13	Nonvegetated raw-soilfield Geothermally influenced raw-soilfield with few plants, sinter, mud pools, and ash following a geyser eruption in January 2000.	Terrestrial	0.4 ha

Indigenous Flora: Prostrate kanuka ('At Risk - Naturally Uncommon' in de Lange *et al.* 2009) is present. Other species typical of geothermal habitats are present, including *Lycopodiella cernua*, manuka, kanuka, mingimingi, *Histiopteris incisa*, turutu, and rarahu.

Fauna: No threatened at risk species as listed in Miskelly *et al.* (2008) have been recorded from this site. Indigenous and exotic species typical of the habitat are present including fantail, house sparrow, goldfinch, mallard, pukeko, blackbird, tui, and bellbird.

Notes on Overall Condition: A large portion of this site has been highly modified as a recreation reserve, with little regard to enhancing the geothermal features and vegetation present.

Change Relative to Shaw and Beadel (1998):	Some natural fluctuations in geothermal activity have occurred at this site. The extent of geothermal vegetation appears similar to that recorded in the 1996 survey (Beadel <i>et al.</i> 1996b).
Threats/Modification/Vulnerability:	<p><i>Invasive Exotic Plants:</i> Gardens, ornamental trees and plantings, and mown lawn are present throughout the geothermal area. Invasive plants present include a manuka cultivar (1-5% cover), gorse (1-5% cover), and blackberry (<1% cover).</p> <p><i>Human Impacts:</i> Formed and unformed tracks occur throughout Kuirau Park. The vegetation is threatened by ongoing clearance as part of park maintenance, inappropriate planting of non-locally sourced indigenous and exotic plant species, alteration of geothermal features, and road works. Parts of the site have been used for a miniature railway (no longer in use), bathing facilities, artworks, and gardens.</p>
Risk Assessment:	Pest plants and exotic plantings: Risk to site - high; Timeframe - high.
Significance Level:	See accompanying site map for demarcation of areas A-C. <ul style="list-style-type: none"> A. National (Appendix 10-Table 1-Criteria 1, 2, 3, 4 8, 11, 12; Table 2 Factor N3) B. Regional (Appendix 10-Table 1-Criteria 1, 2, 3, 4; Table 2-Factor R4, R9, R17) C. Local (Appendix 10-Table 1-Criteria 6; Table 2 Factor L1)
Significance Justification:	<ul style="list-style-type: none"> A. This area was identified as a being of national significance in an assessment of important geological sites and landforms in the Bay of Plenty Region (Cody 1994; Kenny and Hayward 1996). B. This area is of regional significance as it contains a good quality example of a regionally under-represented type (geothermal vegetation). It also contains a population of the prostrate kanuka ('At Risk – Naturally Uncommon'). It acts as a buffer to Area A, which is of national significance. C. This area is of local significance because it contains a degraded and small example of a nationally uncommon habitat type (geothermal habitat).
Fieldwork Required:	No. Most of the site was surveyed in 2005, although the site of the old miniature railway was not surveyed due to it being fenced.
Notes:	<p><u>Area A</u> Contains relatively good quality, but unconnected, examples of geothermal vegetation which was once more extensive around Rotorua City. Several species present are known from only a few sites in Rotorua Lakes Ecological District.</p> <p><u>Area B</u> Small examples of geothermal vegetation.</p> <p>This site was identified as a "Recommended Area for Protection" (RAP No. 114) in the natural area survey of Rotorua Lakes ED (Beadel <i>et al.</i> 1998).</p>
References:	Beadel <i>et al.</i> (1996b); Ecroyd (1991); Wildland Consultants (2005c), Shaw and Beadel (1998); Beadel <i>et al.</i> (1998).