



Horohoro Geothermal Area

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| Site Number: | SNA552 |
| Ecological District: | Atiamuri |
| Source of Information: | Wildland Consultants (2014a) |
| Digital Scale: | 1:5,000 |
| Data Source: | WRAPS 2012 |
| Regional Council: | Waikato |
| 1998 Site Number: | NHS No. 552 |
| Current Tenure: | Unprotected (Waipupumahana C - Maori freehold land) |
| Site Area: | <0.1 ha |
| Altitude Range: | 340 m |
| Bioclimatic Zone: | Lowland |
| Grid Reference: | NZTM E1878245, N5761600 |

| VEGETATION | | LANDFORM | EXTENT |
|------------|---|------------|---------|
| CODE | TYPE | | |
| 1 | <p>Mixed exotic grassland Exotic grassland dominated by narrow-leaved carpet grass (<i>Axonopus fissifolius</i>), Mercer grass (<i>Paspalum distichum</i>), Yorkshire fog (<i>Holcus lanatus</i>), browntop (<i>Agrostis capillaris</i>), and sweet vernal (<i>Anthoxanthum odoratum</i>), with scattered catsear (<i>Hypochaeris radicata</i>), white clover (<i>Trifolium repens</i>), red clover (<i>Trifolium pratense</i>), yarrow (<i>Achillea millefolium</i>), selfheal (<i>Prunella vulgaris</i>), and narrow-leaved plantain (<i>Plantago lanceolata</i>), surrounds a geothermal pool (c.10 × 10 m). Occasional emergent blackberry and Spanish heath are also present, along with scattered <i>Leucopogon fraseri</i> and <i>Blechnum pennamarina</i>. Harakeke (<i>Phormium tenax</i>) has been planted on banks above a small wetland.</p> <p>A few small patches of fernland dominated by <i>Gleichenia microphylla</i> are present near the water edge, along with patches of <i>Lycopodiella cernua</i> and <i>Campylopus clavatus</i>. Occasional kiokio (<i>Blechnum novae-zelandiae</i>), whekī-ponga (<i>Dicksonia fibrosa</i>) seedlings, and <i>Paesia scaberula</i> are present on banks above the pool.</p> <p>A small wetland dominated by <i>Eleocharis acuta</i>, track rush (<i>Juncus tenuis</i>), jointed rush (<i>Juncus articulatus</i>), soft rush (<i>Juncus effusus</i>), and water purslane (<i>Ludwigia palustris</i>) is present on the southern and western sides of the pool.</p> | Hillslopes | <0.1 ha |
| 2 | <p>Geothermal water Two geothermal pools are present.</p> <p>Northern Pool: A round pool (c.10 × 10 m) located at NZTM E1878248 N5761608. This pool had abundant orange and green algae present. The maximum surface temperature was 48°C in 2014. Sinter is present in the pool at the pool outlet, and sinter deposits are present in the outflow stream.</p> <p>Southern Pool (NZTM E1877948 N5761370): A 2 m × 5 m pool is located c.400 m to the southwest of Pool 1. The maximum measured surface temperature was 55°C. The pool is located under a canopy of maritime pine and grey willow. Scattered emergent grey willow and whekī-ponga over blackberry scrub are present on the southern margin of the pool. Exotic grassland occurs on the northern boundary. Only a narrow band of vegetation on pool margins appears to be geothermally</p> | Open water | <0.1 ha |

| VEGETATION | | LANDFORM | EXTENT |
|------------|--|----------|--------|
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| | influenced, with scattered kiokio, water fern (<i>Histiopteris incisa</i>) and <i>Carex virgata</i> present. | | |

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| Indigenous Flora: | <i>Lycopodiella cernua</i> , a characteristic plant of geothermal areas, is present. Occasional <i>Leucopogon fraseri</i> , <i>Gleichenia microphylla</i> , and <i>Campylopus clavatus</i> are also present. <i>Nephrolepis flexuosa</i> (At Risk-Declining) was recorded by Given (1995), but was not present in 2003 or in 2014 and is presumed to be extinct at this site (Wildland Consultants 2009). |
| Fauna: | No threatened or at risk species as listed in Robertson <i>et al.</i> (2013) have been recorded from this site. Common indigenous (e.g. pukeko) and introduced bird species typical of the habitat are present including spur-winged plover, silvereve, grey warbler, myna, goldfinch, and Eastern rosella. In the 2009 survey, cicadas and crickets were abundant, and one dragonfly was seen. |
| Notes on Current Condition: | Refer to accompanying map for location of Northern Pool and Southern Pool. This site is surrounded by farmland. Northern Pool: The vegetation is highly modified with only occasional indigenous species present. Drains have been dug to control the pool outlet for bathing. An overflow drain is also present. Cattle sign was observed near pool margins in 2014. Southern Pool: No geothermal vegetation present. Cattle sign was observed near pool margins in 2014. |
| Change Relative to Shaw and Beadel (1998): | Probably little change. |
| Threats/Modification/Vulnerability: | Invasive Exotic Plants: The geothermal pools are mostly surrounded by exotic pasture species. Northern Pool: Blackberry (2% cover) and Spanish heath (2% cover). Southern Pool: Maritime pine forms a canopy over the pool. Dense blackberry is present to the south of the pool with scattered emergent grey willow. Human Impacts: Northern Pool: Modified outlet trench with concrete platform and temporary pool for bathing facilities. An overflow trench is also present. Site has lost most of its ecological values because pastoral farming operations have resulted in the disappearance of indigenous vegetation cover. Grazing: Livestock grazing and trampling has modified the vegetation composition around the hot pools. Both pools are unfenced. |
| Risk Assessment | Grazing (stock): Risk to site - medium; Timeframe - low. Pest plants: Risk to site - low; Timeframe - low. |
| Significance Level: | Local (Appendix 7 - Table 1 - Criterion 5; Table 2 - Factor S). |
| Significance Justification: | This small site is of local significance because it comprises a small example of geothermal habitat, a nationally uncommon habitat type. |
| Field work Required: | No fieldwork required. |
| Notes: | The small geothermal pools and small areas of geothermal substrate have potential for restoration if stock are excluded. |

Given (1995 & 1996) assessed the botanical value of many of the geothermal sites in the Waikato Region. This site was ranked as 'D' in 1995 and 'C' in 1996 (an A ranking was given to the most significant sites).

Waikato Regional Council (unpublished) named this site as Waipupumahana. It is used for recreational bathing; water in the larger pool is 40-50°C.

References:

Beadel and Bill (2000); Given (1995 & 1996); Spring-Rice (1996); Waikato Regional Council (unpublished); Wildland Consultants (2004b, 2004c, 2009, 2012 & 2014).