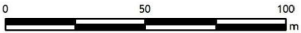




Legend
 Yellow outline: Rotorua 2019 SNA boundary
 Green hatched area: Areas to be added to SNA
 White dashed line: Cadastral boundary

Data Acknowledgment
 Map contains data sourced from LINZ
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 Undated ARCGIS Imagery
 Report: 3417J
 Client: D1 1531
 Ref: E:\GIS\RDC_SNA_G\Tmsd\Figures
 Path: SNA_718_3C.mxd

Changes to SNA 718 (Western Te Kopia) following site visit on 1 November 2019.



Wildlands
 Scale: 1:1,600
 Date: 27/11/2019
 Cartographer: KM
 Format: A3R

Western Te Kopia

Site Number:	718
Ecological District:	Atiamuri
Source of Information:	Wildland Consultants (2014a)
Digital Scale:	1:5,000
Data Source:	WRAPS 2012
Regional Council:	Waikato
1998 Site Number:	Not identified as a site in Shaw and Beadel (1998)
Current Tenure:	Unprotected
Site Area:	c.0.3 ha
Altitude Range:	c.400 m
Bioclimatic Zone:	Submontane
Grid Reference:	NZTM E1880972, N5745221; E1880919, N5745136; E1880706, N5744908

VEGETATION		LANDFORM	EXTENT
CODE	TYPE		
1	<p>Tasmanian blackwood-mānuka-kānuka-whauwhaupaku-kāmahi-tī kōuka/blackberry-rank exotic grasses forest</p> <p>Three mud pools (previously known as the Te Kopia Mud Pools) surrounded by a mostly failed Tasmanian blackwood plantation, with brush wattle (<i>Paraserianthes lophantha</i>) and indigenous tree species, including kānuka, whauwhaupaku, kāmahi, and tī kōuka. Tūrutu, <i>Hypolepis ambigua</i>, and bracken are common in the understorey. A notable feature of the kāmahi beside the eastern pool is the burnt foliage in the line of steam from the pool. A thin layer of mud from mud pool activity coats many of the trees around the hot pools. Creeping bent is common on heated soils to the south of the southern pool. There are elevated soil temperatures in the upper 10 cm of soil. Dead blackberry present here indicates a recent increase in surface geothermal activity in this area.</p>	Mud pools	<0.1 ha
2	<p>Mingimingi-mānuka-blackberry-indigenous broadleaved species scrub</p> <p>Vegetation surrounding a small geothermal stream. Ferns (including <i>Deparia petersenii</i> subsp. <i>congrua</i>, water fern, <i>Gleichenia microphylla</i>, and bracken), <i>Carex secta</i>, mingimingi, mānuka, and whekī are common on upper stream margins with raised soil temperatures. Downstream on cooler stream margins kiokio, <i>Carex geminata</i>, and blackberry become more common.</p> <p>Further upslope, away from the geothermal stream, indigenous broadleaved species are common including kāmahi, whauwhaupaku, kōhūhū, karamū, horoeka (<i>Pseudopanax crassifolius</i>), with occasional common alder and cotoneaster. Scattered lianes of <i>Rubus schmidelioides</i> var. <i>schmidelioides</i> are present, and tūrutu is common in the understorey. Blackberry becomes increasingly dense away from geothermal stream margins until it is the dominant cover.</p> <p>The gully is steep-sided with unsafe access over much of the site, so only small parts of the stream were viewed.</p>	Gully	c. 0.2 ha
3	<p>Prostrate kānuka/nonvegetated raw-soilfield shrubland</p> <p>A small geothermal manifestation in a gully north of Te Kopia Mud Pools. Much of the site is unstable bare ground with an extensive network of springs present. The bare ground contains areas of <i>Campylopus</i> mossfield, and scattered plants of Mercer</p>	Gully	<0.1 ha

VEGETATION		LANDFORM	EXTENT
CODE	TYPE		
	grass and creeping bent. In one place there are a few scattered macrocarpa (<i>Cupressus macrocarpa</i>) emergent over prostrate kānuka scrub with occasional blackberry. Three plants of <i>Nephrolepis flexuosa</i> , and occasional <i>Lycopodiella cernua</i> are also present. Tūrutu and <i>Rubus schmidelioides</i> var. <i>schmidelioides</i> are common on the margins. A stream flowing through the southern corner is surrounded by kāmahi, whauwhaupaku, karamū, makomako (<i>Aristotelia serrata</i>), whekī, kōhūhū, and macrocarpa forest.		

Indigenous Flora:	Three plants of <i>Nephrolepis flexuosa</i> (At Risk-Declining) are present. A small area of vegetation dominated by prostrate kānuka (At Risk-Naturally Uncommon) is also present. Other species typical of geothermal habitats are also present including mānuka, mingimingi, <i>Deparia petersenii</i> subsp. <i>congrua</i> , water fern, <i>Gleichenia microphylla</i> , <i>Lycopodiella cernua</i> , tūrutu, and bracken.
Fauna:	No threatened or at risk bird species as listed in Robertson <i>et al.</i> 2013 have been recorded from this site. Common indigenous and exotic species typical of the habitats present are likely to be present. Possum sign was recorded in part of the site.
Notes on Overall Condition:	Most of the geothermal features within the site are in good condition, and an 'At Risk' fern species is present, however the vegetation within the site includes a high proportion of exotic plant species.
Change Relative to Shaw and Beadel (1998):	Unknown
Threats/Modification/Vulnerability:	<p>Blackberry is common at the margins of the geothermal stream and on cooler soils (5-25% cover). Other pest plant species present include common alder (<1% cover) and cotoneaster (<1% cover). Although Tasmanian blackwood and brush wattle are present in part of the site, these species are not having a significant impact on geothermal features at the site.</p> <p>Macrocarpa and Tasmanian blackwood have been planted close to parts of this site. A track has been cut through blackberry to the southern of the two mudpools within the site.</p> <p>The site has been fenced to exclude domestic stock.</p> <p>Adjoining land uses include Macrocarpa plantation, Tasmanian blackwood plantation, mixed indigenous and exotic species scrub, and farmland.</p>
Risk Assessment:	<p>Pest plants: Risk to site - low; Timeframe - low.</p> <p>Pest animals: Risk to site - low; Timeframe - low.</p> <p>Human impacts: Risk to site - low; Timeframe - low.</p>
Significance Level:	Local (Table 1 - Criteria 3, 5; Table 2 - Factor 19).
Significance Justification:	Western Te Kopia is a locally significant site because it contains two nationally uncommon habitat types (geothermally heated dry ground, geothermal stream; Williams <i>et al.</i> 2007; Holdaway <i>et al.</i> 2012). The site also supports small populations of two 'At Risk' species (prostrate kānuka and <i>Nephrolepis flexuosa</i>), but does not represent habitat of considerable importance for the conservation of these species.

Field Work Required: No field work is required.

Notes: Background information on these sites was provided by Paul Cashmore and Pete Corson (Department of Conservation, Rotorua). The area of geothermal habitat alongside the stream was referred to as 'Road Spring' in Hochstein (2007b).

A geophysical assessment of the surface geothermal manifestations at this site is presented in Appendix 4 (Wildland Consultants 2014a). The geophysical assessment is presented as three separate sites - Te Kopia Northwest, Te Kopia West Mudpools, and Te Kopia Red Stream.

References: Hochstein (2005 & 2007b); Wildland Consultants (2004c, 2012 & 2014).