



Te Kopia

Site Number:	712
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:	65.1 ha
Altitude Range:	c.440-620 m
Bioclimatic Zone:	Submontane
Grid Reference:	NZTM E1880502, N5743445
Description and Assessment:	The description and assessment below covers the entire natural area, which is mainly within a protected area. The Te Kopia SNA comprises several small unprotected areas adjacent to the larger Te Kopia natural area and these are shown on the SNA site map. The significance assessment is based on the ecological values of the entire natural area of which the Te Kopia SNA is a part of. Note: vegetation types not present in the SNA are not shown in this site sheet, however they are presented in Wildland Consultants 2014a.

VEGETATION		LANDFORM
CODE	TYPE	
1	<p>Prostrate kānuka-mingimingi scrub</p> <p>A variable type dominated by either prostrate kānuka, or mingimingi, or both. Areas with more prostrate kānuka occur on warmer soils, whilst areas on cooler soils contain a higher proportion of mingimingi. The canopy is up to c.2.5 m height with occasional emergent kōhūhū, kāmahī, mānuka, and dead wilding pines and local water fern. Large patches of the moss <i>Campylopus</i> are present in the understorey.</p> <p>Where mingimingi is dominant, mānuka often occurs in association with occasional kāmahī, and locally common radiata pine. The subcanopy comprises the above species as well as prickly mingimingi, monoao, <i>Dicranopteris linearis</i>, and bracken. The groundcover is dominated by tūrutu, and a moss and liverwort mat on which <i>Schizaea dichotoma</i> and <i>Schizaea fistulosa</i> occur.</p>	Hillslopes
2	<p>(Kāmahī)/prostrate kānuka-(monoao) scrub</p> <p>Local kāmahī are emergent over a dense prostrate kānuka canopy (0.5-3 m height) with monoao locally common. Mingimingi, prickly mingimingi, <i>Gleichenia microphylla</i>, and tūrutu are scattered throughout. Local patches of mānuka, <i>Dicranopteris linearis</i>, and the moss <i>Chiloscyphus semiteres</i> are also present. Patches of kāmahī/mingimingi-prostrate kānuka scrub and kāmahī-rewarewa scrub are present within this vegetation type but are too small to map separately.</p>	Foot of scarp, hillslopes
4	<p>Prostrate kānuka shrubland</p> <p>This vegetation type occurs around the most active geothermal features, and comprises a sparse low canopy of prostrate kānuka (0.3-1 m high) with occasional mingimingi and monoao. The groundcover is dominated by <i>Campylopus</i> and <i>Dicranoloma</i> (mosses), with lichens, liverworts, and <i>Lycopodiella cernua</i> also present. Unvegetated areas occur locally throughout this</p>	Foot of scarp, hillslopes

VEGETATION		LANDFORM
CODE	TYPE	
	vegetation type. Mānuka-kāmahi/prickly mingimingi scrub is locally common around the margins. Scattered radiata pine and emergent rewarewa saplings are present. <i>Dicranopteris linearis</i> is abundant throughout this habitat type, while a small population of <i>Nephrolepis flexuosa</i> is present at the north end of geothermal activity.	
5	Mingimingi-water fern shrubland Mingimingi and water fern form an incomplete canopy over bare ground with local patches of <i>Lycopodiella cernua</i> . Several patches of <i>Dicranopteris linearis</i> are present. Boiling hot springs are present within this type.	Hillslope
7	Water fern fernland Water fern fernland surrounds a bubbling mudpool/spring within farmland in the southern part of the site. Soil temperatures of up to 100.4 °C were recorded at c.40 cm depth on the northern margin of this type. The fernland is fringed by pasture dominated by browntop, Yorkshire fog, and paspalum. Domestic stock have access.	Hillslopes
9	Bracken-Machaerina rubiginosa-mixed fern sedgeland A wetland in the base of an old explosion crater where whekī, harakeke, toetoe, and mānuka are emergent over a dense cover of bracken, <i>Machaerina rubiginosa</i> , and <i>Hypolepis distans</i> . Locally common species include <i>Gleichenia microphylla</i> , <i>Machaerina tenax</i> , <i>Hypolepis ambigua</i> , water fern, swamp kiokio, and kiokio. Occasional patches of <i>Carex geminata</i> and scattered emergent whekī-ponga are also present.	Old explosion crater
10	Soft rush-paspalum sedgeland Soft rush and paspalum sedgeland with water purslane, sweet vernal, and narrow-leaved plantain occurs around the margins of small hot springs and small areas of bubbling mud.	Hillslopes
11	Nonvegetated raw-soilfield Thermally altered clay, mud, and sinter (Burns and Leathwick 1995). Patches of raw-soilfield located within farmland support scattered patches of browntop.	Foot of the Paeroa fault scarp, hillslopes
12	Geothermal water Hot springs, hot pools, and mud pools. Mudpools and springs within farmland are often surrounded by pasture dominated by exotic species including browntop, Yorkshire fog, and paspalum with scattered soft rush and water fern.	Foot of scarp, hillslopes

Indigenous Flora: Prostrate kānuka (At Risk-Naturally Uncommon) dominates a large percentage of the geothermal vegetation present at this site¹.

Dicranopteris linearis (At Risk-Naturally Uncommon, and known from only c.23 sites in New Zealand) is common throughout the site¹. *Schizaea dichotoma* (At Risk-Naturally Uncommon) is known from this site¹. A small population of *Nephrolepis flexuosa* (At Risk-Declining) is present and two 'At Risk' orchids - *Calochilus paludosus* (At Risk-Naturally Uncommon) and *C. robertsonii* (At Risk-Naturally Uncommon) - are also well represented here. *Schizaea fistulosa* has been recorded here in the past (Clarkson 1984; Burns

¹ Refers to entire Te Kopia natural area.

and Leathwick 1995).

A survey of *Korthalsella salicornioides* (dwarf mistletoe; At Risk-Naturally Uncommon) in 2000 estimated the population at this site¹ to comprise 100-200 plants (Anon 2000). There appeared to be at least this many plants at the site during the 2014 survey.

Fauna: No threatened or at risk bird species as listed in Robertson *et al.* 2013 have been recorded from this site¹. Common indigenous and introduced bird species typical of the habitat are present including fantail, tomtit, tūī, kereru, North Island robin, welcome swallow, grey warbler, bellbird, goldfinch, skylark, common pheasant, magpie, and Eastern rosella.

Notes on Overall Condition: The geothermal vegetation is virtually unchanged since 1948 (Burns 1996b) and the area¹ is relatively free from adventive species, although pines were invading the mingimangi scrub until recently. The Department of Conservation has undertaken control of wilding pines at this site in recent years, and it is significantly improved in condition. It is the most intact remaining example of natural vegetation zonation (extending over c.579 m in altitude) that includes geothermal vegetation, ranging from tall kāmahi-dominated forest through to prostrate kānuka shrubland and geothermal wetland (see also Clarkson 1984).

Change Relative to Shaw and Beadel (1998): Unknown

Threats/Modification/Vulnerability: Pine control has been ongoing in the reserve¹ over recent years. The invasion of pines (previously c.6-25% cover, but now only c.1-5% cover) will be a continuing problem within the geothermal areas, and there is potential for ongoing weed invasion along the walking tracks. Blackberry (c.1% cover internally, c.5% cover on margins), Spanish heath (c.1% cover), grey willow (<1% cover), flowering cherry (<1%), buddleia (<1%), gorse (<1% cover), Himalaya fairy grass (*Miscanthus nepalensis*) (<1%), and pampas (<1%) are also present.

There are few walking tracks and human impact is low. A new walking track has been constructed near the northern end of the reserve.

The reserve is fenced, and appeared to be in good condition in all areas inspected in 2014. Parts of this site are located in farmland and are unfenced. These areas are grazed and unfenced geothermal features are damaged by stock trampling.

Adjoining land use includes indigenous forest and scrub, farmland.

Risk Assessment: Grazing: Risk to site - low; Timeframe - low.

Pest plants: Risk to site - low; Timeframe - low.

Trampling by humans: Risk to site - low; Timeframe - low.

Significance Level: International (Table 1 - Criteria 1, 3, 5, 6, 7, 9, 10; Table 2 - Factor 5).

**Significance
Justification:**

This site¹ is of international significance because it forms the best quality example of a relatively intact area of geothermal vegetation which is part of a high quality ecological sequence. The site is within Te Kopia Scenic Reserve which comprises an ecological sequence extending from geothermal vegetation through to tall forest, including a small geothermal wetland area. The Te Kopia Scenic Reserve has an elevation range of 400 to 979 m. This site is also an excellent, high quality example of geothermal vegetation with few weeds and little human-related disturbance.

One of the largest populations of *Dicranopteris linearis* (At Risk-Naturally Uncommon; de Lange *et al.* 2013) in New Zealand occurs here¹. This site also contains one of the largest populations of prostrate kānuka (At Risk-Naturally Uncommon), as well as good populations of four other 'At Risk' species (*Nephrolepis flexuosa*, *Calochilus paludosus*, *C. robertsonii*, and *Korthasella salicornioides*).

Field Work Required:

No field work is required.

Notes:

Te Kopia Scenic Reserve was ranked as the protected natural area of highest conservation significance in the Atiamuri Ecological District (Spring-Rice 1996).

Given (1996) assessed the botanical value of many geothermal sites in the Waikato Region, and in this survey this site¹ was classed as Category A - the highest category.

References:

Anon 2000; Beadel and Bill 2000; Burns 1996b & 1997b; Burns and Leathwick 1995; Clarkson 1984; Spring-Rice 1996; Wildland Consultants 2004c & 2012.

¹ Refers to entire Te Kopia natural area.