

BEFORE ROTORUA DISTRICT PLAN HEARINGS PANEL

IN THE MATTER of the Resource
Management Act 1991

AND

IN THE MATTER of hearings in relation to
submissions and further
submissions by **MERCURY
NZ LIMITED** on Proposed
Plan Change 3 to the
**ROTORUA DISTRICT
PLAN**

STATEMENT OF EVIDENCE OF BRIAR LEIGHT TAYLOR SMITH

1. INTRODUCTION

1.1 My name is Briar Leigh Taylor Smith. I am employed as a terrestrial ecologist at Tonkin & Taylor Ltd.

1.2 I have the following experience in relation to the assessment Significant Natural Areas (“SNAs”) in the Waikato Region:

- Development of a methodology for ranking karst SNAs for Waikato Regional Council. This project involved ground-truthing, assessing the ecological significance of and ranking the values of various karst areas in the Waikato Region.
- Desktop assessment of SNAs in Waitomo District for Waitomo District Council.
- Updating spatial datasets pertaining to SNAs in Waikato District for Waikato District Council.
- Assessments of ecological significance for Environmental Benefit Lot applicants in Waipa District.

1.3 I hold the qualifications:

- BSc (Hons) – Zoology
- PhD – Zoology. My PhD focused on understanding the distribution and processes behind invertebrate diversity in New Zealand.

1.4 My evidence addresses the following:

- An explanation of the purpose and statutory significance of SNAs.
- An overview of the ecological assessment of Rotorua District SNAs carried out by Beadel et al. (2018) of Wildland Consultants Limited ("**Wildlands**") for Rotorua Lakes Council¹.
- A reassessment of proposed SNA 583 and SNA 585 based on a site visit carried out on 24 January 2020 and including: a site description, ecological values and a reassessment against the Waikato Regional Policy Statement ("**WRPS**") Criteria².
- An evaluation of Rotorua Lakes Council's Section 32 assessment of ecological values at Ohakuri Core Electricity Generation Site, owned by Mercury NZ Limited.

2. PURPOSE AND STATUTORY SIGNIFICANCE OF SNAS

- 2.1 The WRPS requires that both regional and district plans identify and protect habitats of significant indigenous vegetation and habitats of significant indigenous fauna through a range of policies.
- 2.2 These policies are outlined in Section 11 of the WRPS. Section 11A of the WRPS lists a number of criteria for determining the ecological significance of indigenous biodiversity in the region (see Appendix 1).

3. OVERVIEW OF SNA ASSESSMENT BY WILDLANDS

- 3.1 A Wildlands 2009 desktop study³ identified and mapped SNAs within Rotorua District, which were published in the Proposed Rotorua District Plan (2012). The 2009 study identified 56 additional potential SNA sites requiring further work to assess their ecological significance.

¹ Beadel S., Kapa M., Simpson A., Gillies R., Mazzieri F. 2018. Assessment of 56 Natural areas in the Rotorua District Not Already Identified as SNA, Amendments to 12 Current SNA and 12 New SNAS Identified. Wildland Consultants Ltd Contract Report R3417f. Prepared for Rotorua Lakes Council. Updated September 2018.

² Waikato Regional Council. 2016. Waikato Regional Policy Statement: Part 11A Criteria for determining significance of indigenous biodiversity.

³ Beadel S., Bycroft C., Bawden R., Wilcox F., Rate S. 2009. Rotorua District Council natural heritage and biodiversity review 2009. Volumes 1 and 2. Wildland Consultants Ltd Contract Report 2049. Prepared for the Rotorua District Council.

- 3.2 These 56 sites were assessed by Wildlands in 2018¹. The assessment included sites visits to review boundaries, assess composition and quality of vegetation and document any management issues. This information was assessed against WRPS 11A criteria (Appendix 1)⁴.

4. OHAKURI CORE ELECTRICITY GENERATION SITE

- 4.1 Ohakuri Core Electricity Generation Site (see Figure 1), owned by Mercury NZ Limited, is located within the Atiamuri Ecological District ("ED") in the Waikato Region. In 1995, this ED had 6.6 % (73,777 ha) remaining indigenous vegetation⁵.
- 4.2 Lowland areas of Atiamuri ED were originally vegetated with: rimu (*Dacrydium cupressinum*), tawa (*Beilschmiedia tawa*), kamahi (*Weinmannia racemosa*), towai (*Weinmannia silvicola*) forest; mixed podocarp forest; and tussock, fern and scrub⁶. Forests of this ED have been widely cleared and the land is now predominantly farmland and forestry. The creation of hydro lakes along the Waikato River has resulted in man-made environments for wildlife. Lake Ohakuri and Lake Atiamuri are two of these hydro lakes, and both are SNAs (Lake Ohakuri is SNA 584¹; Lake Atiamuri is SNA 581³). These two sites were assigned SNA status based on their ecological values meeting WRPS criteria 3, 6, 8, 9, 11^{1,3}.
- 4.3 Ohakuri hydro dam was commissioned in 1961 and is located between Lake Atiamuri (to the north) and Lake Ohakuri (to the south) (Figure 1). Ohakuri Core Electricity Generation Site was cleared of most of its vegetation during construction of the dam and power station (see Figure 2). The current vegetation within the site has regenerated naturally since then.
- 4.4 It is my understanding that the only ecological management works that have been carried out within the core site have been the removal of some wilding pines.

⁴ Note that Rotorua Lakes District council straddles both the Waikato Region and the Bay of Plenty Region. Wildland Consultants Ltd assessed sites in the Waikato were assessed against the WRPS criteria, while those in the Bay of Plenty were assessed against different criteria specific to the Bay of Plenty.

⁵ Leathwick, J.R., Clarkson, B.D., Whaley, P.T. 1995. Vegetation of the Waikato region: current and historical perspectives. Landcare Research contract report. Hamilton 54 p.

⁶ McEwen, M. ed. 1987: Ecological regions and districts of New Zealand. New Zealand Biological Resource Centre publication 5. Department of Conservation, Wellington.



Figure 1: Ohakuri Core Electricity Generation Site. The two proposed SNAs are shown in blue. The areas of SNA overlapping with Core site are labelled 1 (SNA 585) and 2 (SNA 583). Source: Proposed Plan Change 3 Significant Natural Areas Section 32 Evaluation Report Rotorua District Plan.

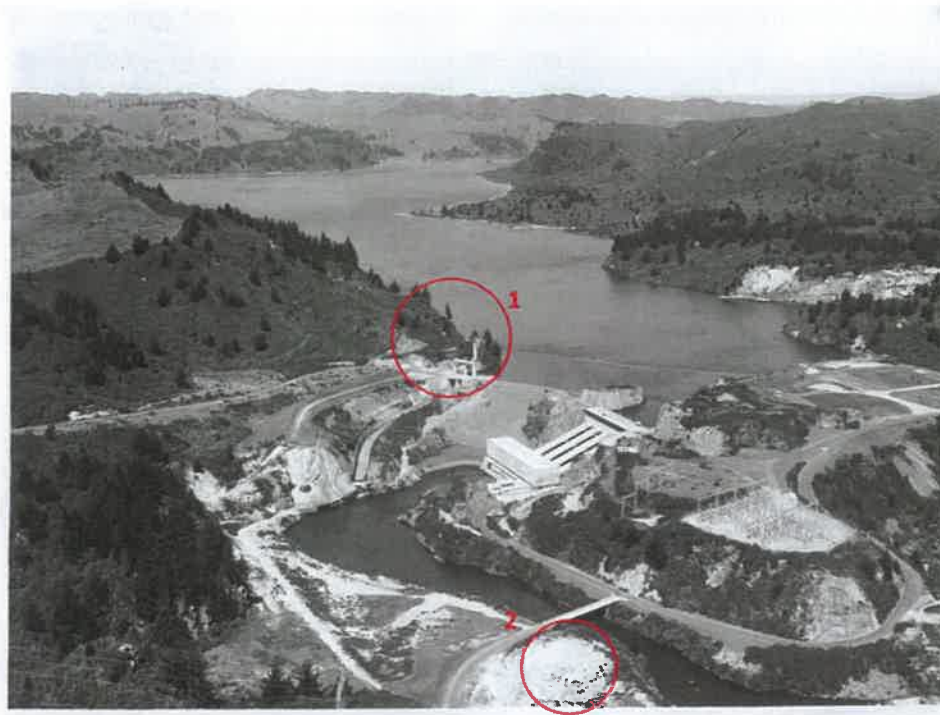


Figure 2: Aerial view of Ohakuri Power Station in 1969 showing sites 1 (SNA 585) and 2 (SNA 583). Lake Atiamuri is visible in the foreground. Lake Ohakuri is visible in the background.

5. SITE 1 – SNA 585 LAKE OHAKURI NORTHWEST RIPARIAN FACES

- 5.1 The site "SNA 585 Lake Ohakuri Northwest Riparian Faces" is described in the Wildlands assessment¹ as 84.63 ha of secondary forest and scrub dominated by kānuka (*Kunzea robusta*), mamaku (*Cyathea Medullaris*), kōhūhū (*Pittosporum tenuifolium*), māhoe (*Melicytus ramiflorus*) and kamahi. The site is described as having small wetlands on the lake margins, and that the general condition of the site is "good".
- 5.2 During the Wildlands field survey, NZ dabchick (*Poliocephalus rufopectus*; Threatened – Nationally Vulnerable)⁷, was observed on Lake Ohakuri and Wildlands considered it may use the site margins.
- 5.3 Wildlands assessed this site as meeting criteria 6, 7, 9 and 11 (see **Appendix 1**).
- 5.4 Approximately 0.7 ha of this proposed SNA overlaps Ohakuri Core Electricity Generation Site.
- 5.5 I visited this site on 24 January 2020. I visited a small area of this site on the edge of proposed SNA 585 where it crosses into the Ohakuri Core Electricity Generation Site

⁷ Miskelly, C.M., Dowding, J.E., Elliott, G.P., Hitchmough, R.A., Powiesland, R.G., Robertson, H.A., Sagar, P.M., Scofield, R.P. and Taylor, G.A. 2008. Conservation status of New Zealand birds, 2008. *Notornis*, 55(3), pp.117-135.

(Figure 1). This area is bounded by a rock face to the west (highlighted in orange in Figure 3) and an access track to the south. Mercury NZ Ltd infrastructure located within proposed SNA 585 are the underground diversion tunnel and a well (known as OW11) (Figure 4)⁸.

- 5.6 The area that I visited is located on a hill slope and is vegetated with secondary forest dominated by kamahi, five-finger (*Pseudopanax arboreus*), kōhūhū, māhoe and kānuka (Figure 5). The understorey comprises the usual suite of species associated with regenerating forest such as rangiora (*Brachyglottis repanda*), bush flax (*Astelia fragrans*), tree ferns and hangehange (*Geniostoma ligustrifolium*) (see Appendix 2 for species list). The canopy is dense in places, and seedlings of māhoe and five-finger are abundant.
- 5.7 Some weed species are present, including Spanish heath (*Erica lusitanica*), broom (*Cytisus scoparius*), cotoneaster (*Cotoneaster glaucophyllus*), blackberry (*Rubus fruticosus*) and cherry trees (*Prunus* sp.). Emergent wilding radiata pines (*Pinus radiata*) are present. The rock face is sparsely vegetated with exotic and indigenous plants.
- 5.8 Threatened or At Risk plant species observed during the site visit were kānuka (Threatened - Nationally Vulnerable) and mānuka (*Leptospermum scoparium*; At Risk – Declining)⁹.
- 5.9 Indigenous bird species observed were tūī (*Prosthemadera novaeseelandiae*) and grey warbler (*Gerygone igata*), both of which are Not Threatened⁷. No Threatened or At Risk fauna species were observed during the site visit.

⁸ Note that the boom anchor is located near but not within proposed SNA 585.

⁹ De Lange, P.J., Rolfe, J.R., Champion, P.D., Courtney, S., Heenan, P.B., Barkla, J.W., Cameron, E.K., Norton, D.A. and Hitchmough, R., 2013. Conservation status of New Zealand indigenous vascular plants, 2012 (p. 70). Publishing Team, Department of Conservation.



Figure 3: Looking southeast towards rock face with the access track running from left to right. Vegetation shown in this image includes mānuka, kānuka, Spanish heath, cotoneaster and fiver-finger, with wilding pines present in the background. The area of vegetation in the immediate foreground (right) is outside of the proposed SNA.



Figure 4: Well (OW11) located within proposed SNA 585. It is surrounded with understorey vegetation including kiokio (*Parablechnum novae-zelandiae*), whekī (*Dicksonia squarrosa*), makomako (*Aristotelia serrata*) and karamu (*Coprosma robusta*), with overhanging five-finger.



Figure 5: Looking northwest along the track. Visible vegetation includes indigenous species (rangiora, whetī, kiokio, kānuka, five-finger, māhoe) and wilding pines.

5.10 Wildlands assessed this site¹ as an SNA of regional significance meeting WRPS criteria 6, 7, 9, 11. These criteria are as follows:

- Criterion 6: "It is wetland habitat for indigenous plant communities and/or indigenous fauna communities (excluding exotic rush/pasture communities) that has not been created and subsequently maintained for or in connection with waste treatment, wastewater renovation, hydroelectric power lakes

(excluding Lake Taupō) water storage for irrigation, or water supply storage; unless in those instances they meet the criteria in Whaley et al (1995)".

- Criterion 7: "It is an area of indigenous vegetation or naturally occurring habitat that is large relative to other examples in the Waikato region of similar habitat types, and which contains all or almost all indigenous species typical of that habitat type. Note this criterion is not intended to select the largest example only in the Waikato region of any habitat type".
- Criterion 9: "It is an area of indigenous vegetation or habitat that is a healthy and representative example of its type because:

Its structure, composition, and ecological processes are largely intact; and

If protected from the adverse effects of plant and animal pests and of adjacent land and water use (e.g. stock discharges, erosion, sediment disturbance), can maintain its ecological sustainability over time".
- Criterion 11: "It is an area of indigenous vegetation or habitat for indigenous species (which habitat is either naturally occurring or has been established as a mitigation measure) that forms, either on its own or in combination with other similar areas, an ecological buffer, linkage or corridor and which is necessary to protect any site identified as significant under criteria 1-10 from external adverse effects".

5.11 I agree with the assessment by Wildlands that this site meets criteria 7, 9 and 11.

- In my opinion, the area of vegetation is large and contains the typical suite of species associated with regenerating indigenous forest (Criterion 7). Note that there is no size threshold specified in the WRPS for assessing vegetation size. However, based on Landcare Research Ltd's Land Cover Database version 4.1, of the 3969 mapped areas of 'Broadleaved Indigenous Hardwoods' in the Waikato Region, only 2% of these are over 84 ha in size.
- It is a healthy and representative example of its type because, although there are some weed species present, its structure, composition, and ecological processes are largely intact. Some pest plant species are present that may pose future problems (e.g. cotoneaster); however, if the SNA is protected from the adverse effects of these pests, it can maintain its ecological sustainability over time (Criterion 9).

- It is an area of indigenous vegetation that forms an ecological buffer to Lake Ohakuri (SNA 584)¹⁰.
- 5.12 I neither agree nor disagree that this site meets criterion 6. This is because the proposed SNA is large and I only assessed a small area of it; the portion I assessed is not wetland habitat.
- 5.13 Note that the presence of At Risk or Threatened species triggers Criterion of 3 of the WRPS criteria. Mānuka and kānuka are present at this site and have been assigned the threat status of At Risk and Threatened respectively⁹. They have been assigned these threat statuses due to the potential impact of Myrtle rust, a disease that is now present in some New Zealand Myrtaceae species. However, given the large extent of mānuka and kānuka in the surrounding landscape, and in accordance with the draft National Policy Statement on Indigenous Biodiversity ("**NPSiB**") (p37) and advice from WRC¹¹, for the purposes of this assessment, these two species do not trigger Criterion 3.
- 5.14 The boundary of this proposed SNA encompasses the bush on the Ohakuri Core Electricity Generation Site up to the edge of the track. It is my opinion that where this proposed SNA overlaps the Ohakuri Core Electricity Generation Site, the boundary of this proposed SNA is accurate.
- 5.15 Mercury NZ Ltd seeks for the area in orange (Figure 1) to be removed from the proposed SNA in order to be able to provide for operation flexibility to any necessary activities, including maintenance and surveillance activities associated with Mercury's dam safety assurance program. The area in question is approximately 592 m². This is approximately 0.07 % of the total proposed SNA area. Regarding the WRPS significance criteria met by this proposed SNA, my opinion is that:
- If the vegetation from within this area was removed, there may be some minor impact to the structure, composition, and ecological processes of the SNA due to the creation of a new edge that may leave the vegetation vulnerable to e.g. wind damage and weed invasion (Criterion 9).
 - If vegetation is to be removed from this area, providing the appropriate protocols are adopted during the removal of vegetation, then I would expect the impact on the suite of species associated with this vegetation type to be no more than minor (Criterion 7).

¹⁰ Note that the Wildland Consultants Ltd report states that this proposed SNA buffers Lake Atiamuri (SNA 581). Although this site may provide some buffering to SNA 581, its main buffering effect is on Lake Ohakuri (SNA 584).

¹¹ Deng, Yanbin, WRC. Pers. comm. 25 July 2018. Yanbin stated that "Given that there are large areas of mānuka & kānuka shrublands in our region, it would not be wise to rank all these areas as the SNAs at this stage". She asked me to avoid treating mānuka and kānuka as At Risk and Threatened species until there are "clear thresholds for how to assess [...] the significance of mānuka & kānuka shrubland".

- Removal of this vegetation would have little impact on the buffering effect of the SNA on Lake Ohakuri (Criterion 11).

6. SITE 2 – SNA 583 LAKE ATIAMURI SOUTH FACES

- 6.1 The site "SNA 583 Lake Atiamuri South Faces" is described in the Wildlands assessment¹ as 24.15 ha of lowland kānuka - kōwhai (*Sophora tetraptera*) and kānuka – kōwhai – makomako - tī kōuka (*Cordyline australis*) forest that "follows the faces of the eastern arm of Lake Atiamuri, finishing at the base of the Ohakuri Hydro Dam. It comprises secondary forest with local patches of kōwhai and is in good condition".
- 6.2 Little black shag (*Phalacrocorax sulcirostris*), black shag (*Phalacrocorax carbo*), (both Threatened – Naturally Uncommon) and grey duck (*Anas superciliosa*; Threatened – Nationally Critical)⁷ have been recorded from Lake Atiamuri and Wildlands considered it may use the site margins.
- 6.3 Wildlands assessed this site as meeting criteria 6, 9 and 11 (see Appendix 1).
- 6.4 Approximately 1.4 ha of this proposed SNA overlaps Ohakuri Core Electricity Generation Site.
- 6.5 I visited this site on 24 January 2020. I visited only a small area of the site on the eastern edge of proposed SNA 583 adjacent to the bridge across Lake Atiamuri (Figure 1; Figure 6).
- 6.6 The area that I visited is located on the edge of Lake Atiamuri and is vegetated with secondary forest dominated by kamahi, kōwhai, five-finger, kōhūhū, māhoe, kānuka, tree fuchsia (*Fuchsia excorticata*) (Figure 7). The understorey comprises the usual suite of species associated with regenerating forest such as rangiora, tree ferns and hangehange (see Appendix 3 for species list). The canopy is dense, and seedlings of māhoe and five-finger are abundant.
- 6.7 Some weed species are present, including broom, cotoneaster Himalayan honeysuckle (*Leycesteria formosa*) and blackberry. Emergent wilding radiata pines are present.
- 6.8 The edge of the proposed SNA adjacent to the bridge is vegetated with kiokio, māhoe, karamu and Himalayan honeysuckle (Figure 8).
- 6.9 The edge of the proposed SNA adjacent to the road is vegetated with weedy species (including bracken (*Pteridium esculentum*), blackberry and ragwort (*Jacobaea vulgaris*)) with some māhoe seedlings (Figure 9).
- 6.10 Threatened plant species observed during the site visit were kānuka (Threatened - Nationally Vulnerable)⁹.

- 6.11 Tūī were the only indigenous fauna species observed during the site visit. However, Gordon Lindsay (Mercury Energy, Ohakuri dam) informed me that he had seen birds nesting in the kōwhai and kōhūhū trees overhanging the river (Figure 7). The description and nesting behaviour of this bird species as described to me by Gordon indicates that it is most likely a white-faced heron (*Egretta novaehollandiae*). This species is native but is classified as Not Threatened⁷.

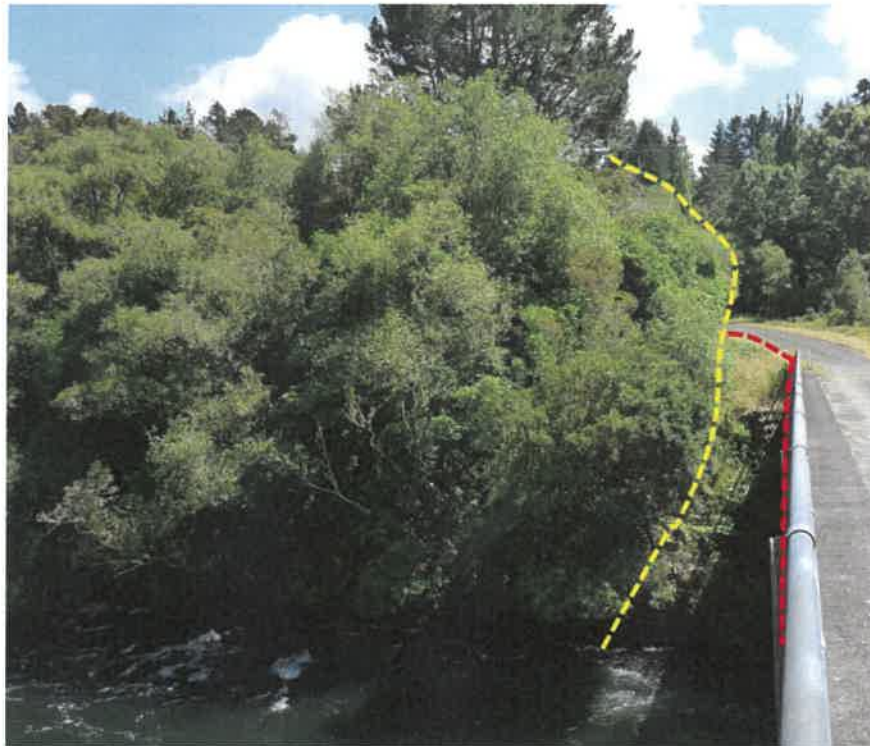


Figure 6: Looking north across the bridge towards site 2 and proposed SNA 583. Kōwhai, kamahi and kōhūhū can be seen overhanging Lake Atiamuri. Emergent wilding pines are present in the background. Vegetation with significant ecological value ends some metres before the bridge. The dashed red line indicates the SNA boundary proposed by Wildlands. The dashed yellow line indicates the SNA boundary that I recommend, with significant vegetation to the left of the line and weedy vegetation to the right.

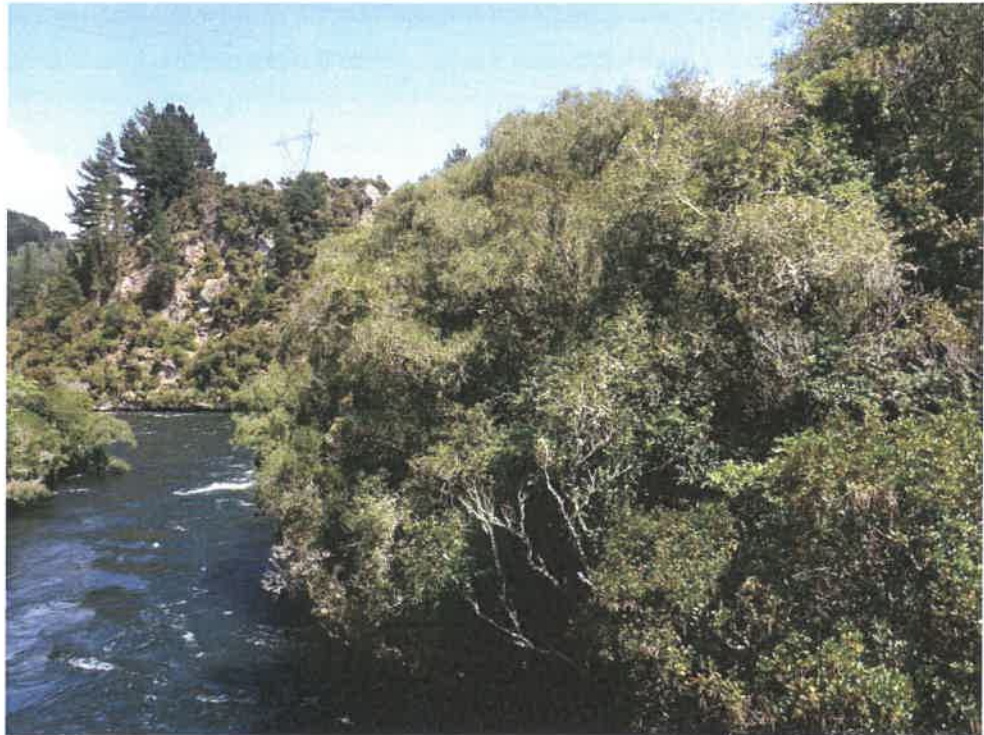


Figure 7: Looking west from the bridge towards proposed SNA 583. Kōwhai, kamahi and kōhūhū can be seen overhanging the lake.



Figure 8: The edge of the proposed SNA adjacent to the bridge is vegetated with kiokio, māhoe, karamu and Himalayan honeysuckle.



Figure 9: The edge of the proposed SNA adjacent to the road is vegetated with weedy species (including bracken, blackberry and ragwort) with some māhoe seedlings. The dashed red line indicates the SNA boundary proposed by Wildlands. The dashed yellow line indicates the SNA boundary that I recommend, with significant vegetation to the left of the line and weedy vegetation to the right.

6.12 Wildlands assessed this area as an SNA of "Local" significance, meeting WRPS criteria 6, 9 and 11 as follows:

- Criterion 6: "It is wetland habitat for indigenous plant communities and/or indigenous fauna communities (excluding exotic rush/pasture communities) that has not been created and subsequently maintained for or in connection with waste treatment, wastewater renovation, hydroelectric power lakes (excluding Lake Taupō) water storage for irrigation, or water supply storage; unless in those instances they meet the criteria in Whaley et al (1995)".
- Criterion 9: "It is an area of indigenous vegetation or habitat that is a healthy and representative example of its type because:

Its structure, composition, and ecological processes are largely intact; and

If protected from the adverse effects of plant and animal pests and of adjacent land and water use (e.g. stock discharges, erosion, sediment disturbance), can maintain its ecological sustainability over time".

- Criterion 11: "It is an area of indigenous vegetation or habitat for indigenous species (which habitat is either naturally occurring or has been established as a mitigation measure) that forms, either on its own or in combination with other similar areas, an ecological buffer, linkage or corridor and which is necessary to protect any site identified as significant under criteria 1-10 from external adverse effects".

6.13 I agree with the assessment of Wildlands that this site meets criteria 9 and 11.

- It is a healthy and representative example of its type because, although there are some weed species present, its structure, composition, and ecological processes are largely intact. Some pest plant species are present that may pose future problems (e.g. cotoneaster); however, if the SNA is protected from the adverse effects of these pests, it can maintain its ecological sustainability over time (Criterion 9).
- It is an area of indigenous vegetation that forms an ecological buffer to Lake Atiamuri (SNA581)¹².

6.14 I neither agree nor disagree that this site meets criterion 6. This is because I only assessed a small area of; the portion I assessed is was not wetland habitat.

6.15 Note that the presence of At Risk or Threatened species triggers Criterion of 3 of the WRPS criteria (see **Appendix 1**). Kānuka is present at this site and is considered Threatened⁹ due to the potential impact of Myrtle rust, a disease that is now present in some New Zealand Myrtaceae species. However, given the large extent of kānuka in the surrounding landscape, and in accordance with the draft NPSIB (p37) and advice from WRC¹¹, for the purposes of this assessment, these this species does not trigger Criterion 3.

6.16 The boundary of this proposed SNA encompasses the bush on the Ohakuri Core Electricity Generation Site up to the edge of the road and bridge. It is my opinion that the boundary of this proposed SNA should be amended to exclude roadside vegetation (visible in Figure 9) and the vegetation directly adjacent to the bridge (visible in Figure 6 and Figure 9) on the basis of that vegetation not meeting SNA criteria.

¹² Note that the Wildland Consultants Ltd report and the Section 32 report state that Lake Atiamuri is SNA 851. Lake Atiamuri is SNA 581.

7. CONCLUSION

- 7.1 I have reviewed the relevant sections of "Proposed Plan Change 3 Significant Natural Areas Section 32 Evaluation Report Rotorua District Plan". I have visited proposed SNAs 585 and 583 where they overlap with Ohakuri Core Electricity Generation Site. It is my opinion that both of these sites have significant ecological values, as described in the Section 32 Evaluation Report.
- 7.2 It is my opinion that where proposed SNA 585 overlaps the Ohakuri Core Electricity Generation Site, the boundary of this proposed SNA is accurate. Mercury NZ Ltd seeks for the area in orange (Figure 1) to be removed from the proposed SNA. The removal of vegetation from this area may have some impacts on the proposed SNA, as described in paragraph 5.15.
- 7.3 It is my opinion that where proposed SNA 583 overlaps the Ohakuri Core Electricity Generation Site, the boundary of this proposed SNA should be amended to exclude non-significant vegetation adjacent to the road and bridge (see Figure 6 and Figure 9 for proposed boundary).

Dr Briar Leigh Taylor Smith 5 February 2020

Appendix 1: WRPS 11A Criteria for determining significance of indigenous biodiversity

Previously assessed site	
1	It is indigenous vegetation or habitat for indigenous fauna that is currently, or is recommended to be, set aside by statute or covenant or by the Nature Heritage Fund, or Ngā Whenua Rāhui committees, or the Queen Elizabeth the Second National Trust Board of Directors, specifically for the protection of biodiversity, and meets at least one of criteria 3-11.
Ecological values	
2	In the Coastal Marine Area, it is indigenous vegetation or habitat for indigenous fauna that has reduced in extent or degraded due to historic or present anthropogenic activity to a level where the ecological sustainability of the ecosystem is threatened.
3	It is vegetation or habitat that is currently habitat for indigenous species or associations of indigenous species that are: classed as threatened or at risk, or endemic to the Waikato region, or at the limit of their natural range.
4	It is indigenous vegetation, habitat or ecosystem type that is under-represented (20% or less of its known or likely original extent remaining) in an Ecological District, or Ecological Region, or nationally.
5	It is indigenous vegetation or habitat that is, and prior to human settlement was, nationally uncommon such as geothermal, chenier plain, or karst ecosystems, hydrothermal vents or cold seeps.
6	It is wetland habitat for indigenous plant communities and/or indigenous fauna communities (excluding exotic rush/pasture communities) that has not been created and subsequently maintained for or in connection with: waste treatment; wastewater renovation; hydroelectric power lakes (excluding Lake Taupō); water storage for irrigation; or water supply storage; unless in those instances they meet the criteria in Whaley et al. (1995).
7	It is an area of indigenous vegetation or naturally occurring habitat that is large relative to other examples in the Waikato region of similar habitat types, and which contains all or almost all indigenous species typical of that habitat type. Note this criterion is not intended to select the largest example only in the Waikato region of any habitat type.
8	It is aquatic habitat (excluding artificial water bodies, except for those created for the maintenance and enhancement of biodiversity or as mitigation as part of a consented activity) that is within a stream, river, lake, groundwater system, wetland, intertidal mudflat or estuary, or any other part of the coastal marine area and their margins, that is critical to the self-sustainability of an indigenous species within a catchment of the Waikato region, or within the coastal marine area. In this context "critical" means essential for a specific component of the life cycle and includes breeding and spawning grounds, juvenile nursery areas, important feeding areas and migratory and dispersal pathways of an indigenous species. This includes areas that maintain connectivity between habitats.
9	It is an area of indigenous vegetation or habitat that is a healthy and representative example of its type because: its structure, composition, and ecological processes are largely intact; and if protected from the adverse effects of plant and animal pests and of adjacent land and water use (e.g. stock, discharges, erosion, sediment disturbance), can maintain its ecological sustainability over time.
10	It is an area of indigenous vegetation or habitat that forms part of an ecological sequence, that is either not common in the Waikato region or an ecological district, or is an exceptional, representative example of its type.

Role in protecting ecologically significant area	
11	It is an area of indigenous vegetation or habitat for indigenous species (which habitat is either naturally occurring or has been established as a mitigation measure) that forms, either on its own or in combination with other similar areas, an ecological buffer, linkage or corridor and which is necessary to protect any site identified as significant under criteria 1-10 from external adverse effects.

Appendix 2: Species list for Site 1 – SNA 585

Common name	Scientific name	Threat status ⁹
Winged thistle	<i>Carduus tenuiflorus</i>	Exotic
Makomako	<i>Aristotelia serrata</i>	Not Threatened
Bush flax	<i>Astelia fragrans</i>	Not Threatened
Toetoe	<i>Austroderia toetoe</i>	Not Threatened
Rangiora	<i>Brachyglottis repanda</i>	Not Threatened
Karamu	<i>Coprosma robusta</i>	Not Threatened
	<i>Coprosma robusta</i> hybrid	Not Threatened
Tutu	<i>Coriaria arborea</i>	Not Threatened
Cotoneaster	<i>Cotoneaster glaucophyllus</i>	Exotic
mamaku	<i>Cyathea Medullaris</i>	Not Threatened
Broom	<i>Cytisus scoparius</i>	Exotic
Turutu	<i>Dianella nigra</i>	Not Threatened
Whekī	<i>Dicksonia squarrosa</i>	Not Threatened
Foxglove	<i>Digitalis purpurea</i>	Exotic
Spanish heath	<i>Erica lusitanica</i>	Exotic
Hangehange	<i>Geniostoma ligustrifolium</i>	Not Threatened
Koromiko	<i>Hebe Stricta</i>	Not Threatened
Kānuka	<i>Kunzea robusta</i>	Threatened - Nationally Vulnerable*
Wall lettuce	<i>Lactuca muralis</i>	Exotic
Prickly mingimingi	<i>Leptecophylla juniperina</i>	Not Threatened
mānuka	<i>Leptospermum scoparium</i>	At Risk – Declining*
Soft mingimingi	<i>Leucopogon fasciculatus</i>	Not Threatened
lotus	<i>Lotus pedunculatus</i>	Exotic
Clubmoss	<i>Lycopodium volubile</i>	Not Threatened
māhoe	<i>Melicytus ramiflorus</i>	Not Threatened
Tree daisy	<i>Olearia albida</i>	Not Threatened
Heketara	<i>Olearia rani</i>	Not Threatened
Kiokio	<i>Parablechnum novae-zelandiae</i>	Not Threatened
Pine	<i>Pinus radiata</i>	Exotic
Kōhūhū	<i>Pittosporum tenuifolium</i>	Not Threatened
Gully fern	<i>Pneumatopteris pennigera</i>	Not Threatened
Shield fern	<i>Polystichum neozelandicum</i>	Not Threatened
Cherry	<i>Prunus</i> sp.	Exotic
Five-finger	<i>Pseudopanax arboreus</i>	Not Threatened
Bracken	<i>Pteridium esculentum</i>	Not Threatened
Blackberry	<i>Rubus fruticosus</i>	Exotic
Pate	<i>Schefflera digitata</i>	Not Threatened
kamahi	<i>Weinmannia racemosa</i>	Not Threatened

*These species are considered Threatened or At Risk due to the threat of myrtle rust which is now present in some New Zealand Myrtaceae.

Appendix 3: Species list for Site 2 – SNA 583

Common name	Scientific name	Threat status ⁹
Lance fern	<i>Austroblechnum lanceolatum</i>	Not Threatened
Rangiora	<i>Brachyglottis repanda</i>	Not Threatened
Buddleia	<i>Buddleja davidii</i>	Exotic
Karamu	<i>Coprosma robusta</i>	Not Threatened
Tutu	<i>Coriaria arborea</i>	Not Threatened
Cotoneaster	<i>Cotoneaster glaucophyllus</i>	Exotic
Mamaku	<i>Cyathea medullaris</i>	Not Threatened
Broom	<i>Cytisus scoparius</i>	Exotic
Whekī	<i>Dicksonia squarrosa</i>	Not Threatened
Tree fuschia	<i>Fuchsia excorticata</i>	Not Threatened
Ragwort	<i>Jacobaea vulgaris</i>	Exotic
Kānuka	<i>Kunzea robusta</i>	Threatened - Nationally Vulnerable*
Himalayan honeysuckle	<i>Leycesteria formosa</i>	Exotic
Māhoe	<i>Melicytus ramiflorus</i>	Not Threatened
Kiokio	<i>Parablechnum novae-zelandiae</i>	Not Threatened
Pine	<i>Pinus radiata</i>	Exotic
Kōhūhū	<i>Pittosporum tenuifolium</i>	Not Threatened
Five-finger	<i>Psuedopanax arboreus</i>	Not Threatened
Bracken	<i>Pteridium esculentum</i>	Not Threatened
Leather Leaf Fern	<i>Pyrrosia eleagnifolia</i>	Not Threatened
Blackberry	<i>Rubus fruticosus</i>	Exotic
Pate	<i>Schefflera digitata</i>	Not Threatened
Kōwhai	<i>Sophora tetraptera</i>	Not Threatened
Kamahi	<i>Weinmannia racemosa</i>	Not Threatened

*This species is considered Threatened due to the threat of myrtle rust which is now present in some New Zealand Myrtaceae.

