PEER REVIEW OF A REPORT ON PART OF SNA163 WITHIN PUKEROA LAKEFRONT HOLDINGS LAND IN ROTORUA CITY

INTRODUCTION

Rotorua District Council require a peer review of a report (Dean 2015) prepared for Pukeroa Lakefront Holdings on Significant Natural Area (SNA) 163, located in Hinemaru Street, Rotorua City. They also requested an opinion on whether the findings are appropriate and, if not, a brief statement as to why that is the case.

This report provides comments on Dean (2015), along with a brief overview of the ecological context of the site.

ECOLOGIAL CONTEXT

SNA163 "Old Government Gardens" is a site comprising geothermal habitat and is in the Rotorua Geothermal Field in the Rotorua Lakes Ecological District, which is within the Taupo Volcanic Zone.

Currently there is only *c.*1,150 ha of geothermal vegetation left in New Zealand, a loss of 15-30% of geothermal habitat as a result of human impacts, regardless of any natural events. Of this *c.*1,150 ha, approximately 285 ha occurs in the Rotorua Lakes Ecological District, and it is likely that the loss of geothermal vegetation and habitats from the Rotorua Geothermal Field was much higher (even greater than 30%) as there has been considerable development within the Rotorua Geothermal Field, including, for example, the development of Rotorua City, housing at Ōhinemutu and Whakarewarewa, development at Kuirau Park, the Government Gardens, the Racecourse, and between the Racecourse and Sulphur Bay.

COMMENTS ON DEAN 2015

Comments are provided below on various parts of the report. Each comment is numbered and is marked on a pdf copy of the Dean report attached to this document (see Attachment 1).

1. Page 2: Agree. There may be areas outside of SNAs that are ecologically significant (note the SNAs identified in 2009 were identified as a desktop exercise, based on earlier studies).

2. Page 3: "Area B at the northern end of the larger SNA block has been completely cleared since the original survey was carried out (Photos 5-7). This area now comprises bare pumice and soil with mown lawn in the northern part and some regenerating geothermal kānuka seedlings scattered amongst a turf of narrow-leaved carpet grass (*Axonopus fissifolius*) in one area (Photo 7)."

   Comment

   Area B has an area of 0.16 ha. In 2009 this area comprised three vegetation types:

   - Eucalyptus/kānuka (including kānuka and geothermal kānuka) forest
   - (Silver birch)/mānuka/*Cyperus ustulatus-Hypolepis distans* shrubland

- Bare ground and soils that have been geothermally-influenced, with some sinter.

The 2012 aerial photograph shows that this area was still vegetated at that time. Note that the Proposed District Plan maps showing the boundaries of the SNAs were released on the 31 October 2012.

Evaluation of the 2013 Google aerial image shows that whilst much of the vegetation present in Area B had been cleared by 2013, part of Area B was still vegetated in 2013, although this may have been cleared subsequently.

It appears, therefore, that this area (i.e. the cleared portion of Area B) has been cleared, presumably by the landowner, subsequent to the SNA being identified in 2009.

3. Page 3: It is stated that both areas occur on "geothermally influenced soils". It is not stated, however, whether this is hydrothermally-altered soils or sinter, or both.

4. Page 4: Figure 1. Evaluation of the 2013 Google aerial image shows that whilst much of the vegetation present in Area B has been cleared, part of Area B was still vegetated in 2013, although this may have been cleared subsequently.

5. Page 5: "Photo 3: *Leucopogon fasciculatus* below a kānuka canopy in Area A."

   Comment

   Dean (2015) states, in the text on Page 2 (Section 3, Paragraph 2), that this vegetation is "geothermal-influenced scrub dominated by geothermal kānuka (*Kunzea tenuicaulis*) with kānuka (*K. robusta* and/or *K. robusta* × *tenuicaulis* hybrids)". The caption on the photograph should refer to geothermal kānuka (*Kunzea tenuicaulis*), as per the text. Geothermal kānuka is classified as At Risk-Naturally Uncommon.

6. Page 6, Photo 5:

Comment

This photograph shows vegetation in the part of the SNA identified as Area B by Dean (2015) that is proposed for removal (by Dean)from the SNA (marked as X), however the composition of the vegetation within this area is not described.

Photo 5: Bare ground in Area B with proposed SNA boundary shown in yellow

7. Page 7, Photo 6:

Comment

This photograph also shows vegetation in Area B (marked as X). The composition of this vegetation is not identified in the caption, or in the text on Page 3 which describes the vegetation present within Area B.

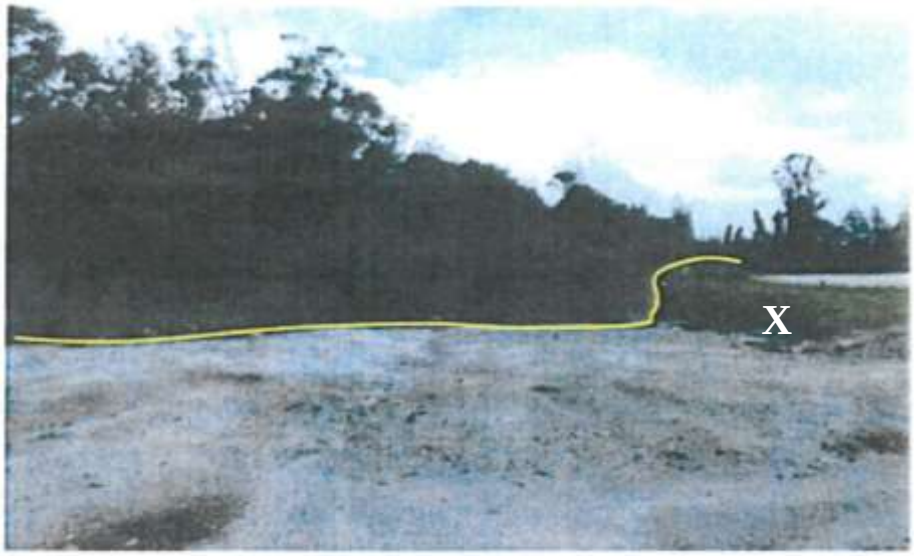

Photo 6: Bare ground in Area B with proposed SNA boundary shown in yellow.

8. Page 7: "Photo 7: Narrow-leaved carpet grass and regenerating kānuka in Area B."

Comment

Dean (2015) states in the text on Page 3 (Section 3, Paragraph at top of Page 3) that this vegetation is "some regenerating geothermal kānuka seedlings". The photograph caption should refer to geothermal kānuka (*Kunzea tenuicaulis*), as per the text. Geothermal kānuka is classified as At Risk-Naturally Uncommon[1].

9. Page 8: "The site was assessed".

Comment

It is not clear what is meant by this statement. The entire site (SNA163) has not been assessed against any criteria; only Area A, which is a very small part of the site.

10. Page 8, first sentence:

Comment

Overall, this sentence does not make sense. Is this a typographical error? Perhaps this word "sites" was meant to read "sits".

11. Page 8: "The criteria sets in the operative RPS, unlike the previous version, are not designed to identify significant sites from the triggering of a single criterion. Instead, the criteria are to be used as a guide in reaching an overall decision on significance."

Comment

This statement is Dean's (2015) interpretation of the wording in the RPS Appendix F Set 7 which actually states: "The criteria in each of the criteria sets below are not tests or standards which, if any one or more are met, will necessarily result in a conclusion that the place, feature or landscape (as the case may be) is significant or a matter of national importance. Instead the criteria are factors to be considered and evaluated in order to reach an overall judgment", not that "the criteria are to be used as a guide in reaching an overall decision on significance", as Dean (2015) claims. There is no guidance provided in the criteria set as to whether a site could be considered significant if only one criterion was to be triggered.

In addition, the statement from the RPS quoted in full by Dean (2015) is specific to Set 7 - Geothermal Features, and does not apply to other criteria sets in Appendix 7 of the RPS. For example, it is not relevant to Set 3 - Indigenous Vegetation and Habitats of Indigenous Fauna.

[1] de Lange P.J., Rolfe J.R., Champion P.D., Courtney S.P., Heenan P.B., Barkla J.W., Cameron E.K., Norton D.A., and Hitchmough R.A. 2013: Conservation status of New Zealand vascular plants, 2012. New Zealand threat classification series. Department of Conservation, Wellington.

12. Page 8: "The assessment of Area A against Criteria Set 7 is detailed in Table 1."

Comments

Only Area A was assessed against the RPS geothermal criteria set (Appendix F Set 7). Area B was not assessed.

Area A is part of SNA163 and it should have been assessed as part of this larger site, rather than in isolation. For example Criteria 7.12-7.21 all refer to "on a geothermal area". "The extent to which indigenous vegetation or habitat of indigenous fauna on a geothermal area …". This strongly implies that the "whole geothermal area" should be assessed against the criteria at one time, rather than just a small part of a geothermal area in isolation.

13. Page 8: "Table 1: Ecological Significance Assessment"

Assessment of Criterion 7.16 (Page 9): Assessed as "Low".

Comment

It is correct that the site has been modified, but most remaining geothermal sites in Rotorua have been modified. Also, some of the trees present are relatively old, for example vegetation has been present on this site for at least 50 years. Therefore the site is still functioning and would probably warrant a "Moderate" ranking.

Assessment of Criterion 7.21 (Page 10): Assessed as "Low".

Comment

Very few exotic species were noted during the survey. The vegetation has been present for at least a considerable length of time and is one of the last remaining examples of what was once a much larger area of geothermal vegetation. Would probably warrant a "Moderate" ranking.

14. Page 10:

Comment

Area A warrants a moderate rating for at least four criteria and also contains a mature stand of an At Risk species. The part of Area A where this stand occurs is significant in terms of Section 6(c). See further comments below.

15. Page 10: "Area B has been completely cleared and, although there is a small amount of kānuka regeneration occurring, this area is also **not significant** and should be excluded from the SNA."

Comments

Earlier in the report Dean (2015) (Page 3) notes that the seedling kānuka occurring in this area is geothermal kānuka, which is classified as At Risk-Naturally Uncommon.

Area B is also part of the larger adjacent area and should have been assessed against the criteria (in a similar fashion as undertaken for Area A) to determine whether it is significant or not.

16. Page 10: "An alternative boundary which excludes this area is included in Figure 1."

Comment

We overlaid the boundary B given in Figure 1 of the Dean (2015) report on the 2013 Google aerial image, and it appears that some of the area included in Area B still had a cover of woody vegetation (i.e. geothermal kānuka and/or kānuka) in 2013, although it may have been cleared subsequently. In addition, some of the bare ground may be sinter.

ASSESSMENT OF SIGNIFICANCE OF AREAS A AND B

In light of information presented in Dean (2015) and my comments above, assessments are provided below for Areas A and B, followed by closing comments.

Area A

Area A comprises *c.*0.06 ha of geothermal vegetation with very few exotic species present, and an area of bare ground (*c.*0.03 ha). The area dominated by bare ground (*c.*0.03 ha) is not significant and could be removed from the SNA.

The area comprising geothermal vegetation is dominated by a species classified as At Risk-Naturally Uncommon. Geothermal vegetation and habitats in the Taupo Volcanic Zone have been greatly reduced in extent since human colonisation, particularly the geothermal vegetation and habitats in the Rotorua Geothermal Field and the Rotorua Lakes Ecological District. Although very small, Area A is near a larger area of indigenous geothermal vegetation and has remained in the landscape for many years, despite ongoing disturbance in the adjacent area. It is a remnant of a much larger area of geothermal vegetation.

Assessment of its significance should be done in conjunction with the other parts of SNA163. However, if it were to be assessed individually then it would still score several moderate rankings and should be considered to be significant.

Area B

Area B is contiguous with the largest part of SNA163 (shown in Figure 1 in the Dean report). Evaluation of its significance should be undertaken as part of this larger area.

Most of Area B has been cleared of vegetation and is therefore not significant. The parts of Area B that have been cleared of vegetation and are currently unvegetated or dominated by exotic grass species, and are not geothermal sinter, are not significant and could be removed from the SNA.

The area of vegetation that remains along the eastern boundary of Area B (as per the 2013 Google aerial image) should be retained as part of the SNA along with any areas of sinter,

and possibly the areas of regenerating geothermal kānuka that are contiguous with the larger SNA area. A field inspection would be required to identify areas of sinter and to determine the SNA boundary.

A suggested revised boundary for SNA163 is attached (Attachment 2), but it should be noted that this has been provided without undertaking a field inspection.

CONCLUSION

The assessment provided by Dean (2015) is problematical in that it is based on 'carving up' of the SNA into small pieces, based on property boundaries, and then evaluation of these small bits in isolation from the larger remnant SNA. Some of the rankings applied by Dean (2015) are, in light of the national rarity of geothermal habitats and species, overly conservative.

Nevertheless, it would be appropriate to exclude some areas from the SNA, as indicated in this report. A field inspection is required to confirm site boundaries.

REFERENCES

Dean H. 2015: Pukeroa Lakefront Holdings: Review of Significant Natural Area 163, Hinemaru Street, Rotorua. 11 pp.

de Lange P.J., Rolfe J.R., Champion P.D., Courtney S.P., Heenan P.B., Barkla J.W., Cameron E.K., Norton D.A., and Hitchmough R.A. 2013: Conservation status of New Zealand vascular plants, 2012. New Zealand threat classification series. Department of Conservation, Wellington.

ATTACHMENT 1

PUKEROA LAKEFRONT
HOLDINGS DOCUMENT

Pukeroa Lakefront Holdings

Review of Significant Natural Area 163, Hinemaru Street Rotorua

Kessels Ecology
SURVEY ASSESSMENT AND RESTORATION

Table of Contents

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Version: Draft 1
PWF Ref: PLF.00313

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1 INTRODUCTION & SCOPE

Kessels Ecology was engaged to undertake a review of the ecological significance of a small area of indigenous vegetation east of Hinemaru Street, Rotorua city. The site has previously been identified as part of a Significant Natural Area (SNA) by Rotorua District Council (RDC) and is included as such in the Proposed Rotorua District Plan.

The property is described as Lot 6 DP307739 and is located on the western edge of the Government Gardens at 1100 Hinemaru Street. SNA 163 includes a central area of kanuka-dominated scrub and several small outlying areas.

The land is owned by Pukeroa Lakefront Holdings (PLH) which itself is owned by Pukeroa Oruawhata Trust which was set up to administer Ngati Whakaue land in Rotorua City. PLH contend the designation of two small parts of SNA 163 as significant and these areas are the subject of this review. The remaining parts of the SNA are not contended and are not discussed in this report.

2 METHODOLOGY

The Pukeroa Lakefront Holdings property at 1100 Hinemaru Street was briefly visited on April 20th 2015. The SNA areas relevant to this review were inspected and notes were taken on the vegetation composition, structure, and condition. Specifically, an area at the northern end of the largest block of SNA 163 was inspected (marked B on Figure 1) as well as the small block marked A on Figure 1. These two areas are referred to as Area A and Area B throughout this report.

No fauna survey was undertaken for this review.

GPS points were taken along the edge of the natural vegetation adjacent to area B, and these, along with December 2013 satellite photographs in Google Earth were used to more accurately define the SNA boundary.

The SNA within or adjacent to the Pukeroa Lakefront Holdings property was re-assessed against the criteria specific to geothermal sites in Appendix F Set 7 of the operative Bay of Plenty Regional Policy Statement (RPS) (BOPRC 2014a). Policies within the RPS relating to matters of national importance were also referred to, along with the Appendix F User Guide (BOPRC 2014b).

3 VEGETATION AND HABITATS

SNA 163 comprises five discrete areas scattered through the northern part of the Government Gardens, the adjacent golf course, and the lake shore (Wildland Consultants 2009). The two largest of these areas occur at least partly within the Pukeroa Lakefront Holdings property.

Area A comprises a small (< 600m^2) area of geothermal-influenced scrub dominated by geothermal kanuka (*Kunzea tenuicaulis*) with kanuka (*K. robusta* and/or *K. robusta x tenuicaulis* hybrids) (Photos 1 - 4). The canopy is rather open and reaches five or six metres tall in the eastern part but other areas are less than one metre tall and comprise geothermal kanuka in a more prostrate form. Mingimingi (*Leucopogon fasciculatus*) occurs in the eastern part of Area A below the kanuka (*Kunzea spp.*) canopy (Photo 3). A few turutu (*Dianella nigra*) are also present (Photo 4) along with one or two patches of exotic grasses. The groundcover tier is otherwise bare ground or litter and grass clippings have been dumped in the area, apparently for some time. Another small area of geothermal kanuka is located to the west of Area A which was not included in the original SNA, although as the composition is the same the reason for its exclusion is not clear.

(1)

Area B at the northern end of the larger SNA block has been completely cleared since the original survey was carried out (Photos 5 - 7). This area now comprises bare pumice and soil with mown lawn in the northern part and some regenerating geothermal kanuka seedlings scattered amongst a turf of narrow-leaved carpet grass (*Axonopus fissifolius*) in one area (Photo 7).

Both areas occur on geothermally influenced soils and there is a large open area of geothermal ground to the south of Area A which is completely un-vegetated.

The remaining area of the larger block contiguous with Area B was not inspected and its SNA status is not contended.

4 FAUNA

The original SNA assessment (Wildland Consultants 2009) listed a number of common indigenous and exotic birds as being present as well as the threatened red-billed and black-billed gulls. The two gull species are unlikely to utilise either of the two small areas which are the subject of this review but the common species may utilise these small areas from time-to-time for feeding and roosting.

Photo 1: Geothermal kanuka in Area A.

(4)

Figure 1: Original SNA boundaries and proposed revision.

Photo 2: Area A looking west.

(5) **Photo 3:** *Leucopogon fasciculatus* below a kanuka canopy in Area A.

Photo 4: Occasional turutu occur in Area A.

(6)

Photo 5: Bare ground in Area B with proposed SNA boundary shown in yellow

(7) **Photo 6:** Bare ground in Area B with proposed SNA boundary shown in yellow.

(8) **Photo 7:** Narrow-leaved carpet grass and regenerating kanuka in Area B.

5 ECOLOGICAL SIGNIFICANCE

(9) (10) The site was assessed against the geothermal feature set because this is the most relevant considering that the site sites above an active geothermal field and on soils that have been altered by geothermal activity. The criteria in Appendix F Set 7 are designed to provide a guideline in assessing significance under Section 6(c) of the Resource Management Act and are therefore directly applicable to the Rotorua District Plan Significant Natural Area designations.

(11) The criteria sets in the operative RPS, unlike the previous version, are not designed to identify significant sites from the triggering of a single criterion. Instead, the criteria are to be used as a guide in reaching an overall decision on significance. The explanatory wording from Set 7, Appendix F of the RPS is:

The criteria in each of the criteria sets below are not tests or standards which, if any one or more are met, will necessarily result in a conclusion that the place, feature or landscape (as the case may be) is significant or a matter of national importance. Instead, the criteria are factors to be considered and evaluated in order to reach an overall judgement as to the significance of any given feature(s).

(12) The assessment of Area A against Criteria Set 7 is detailed in Table 1. Scores of Low, Moderate, or High were given for each criterion along with a justification or discussion.

(13) **Table 1:** Ecological Significance Assessment

Criteria (Appendix F, Set 7, BOP RPS)	**Score**	**Justification**
Representativeness 7.12 The extent to which indigenous vegetation or habitat of indigenous fauna on a geothermal area contributes to the full range of associations of indigenous species representative, typical or characteristic of the natural biodiversity of the geothermal resource of the Taupo Volcanic Zone.	Low	This site is very small and highly modified.
Diversity and pattern 7.13 The extent to which indigenous vegetation or habitat of indigenous fauna on a geothermal area contains a high diversity of indigenous ecosystem or habitat types, or changes in species composition, reflecting the existence of diverse natural features (for example landforms, soil types or hydrology), or communities along an ecological gradient (e.g. a soil temperature gradient).	Low	One vegetation association is present on one landform and species diversity is very low.
Rarity 7.14 The extent to which indigenous vegetation or habitat of indigenous fauna on a geothermal area supports an indigenous species or associations of indigenous species threatened or rare nationally or regionally. NB the relative significance would be judged on the number of such species present and their threat status.	Moderate	This site provides habitat for prostrate kanuka (*Kunzea tenuicaulis*) which is classified as At Risk - Naturally Uncommon[1].
Distinctiveness 7.15 The extent to which indigenous vegetation or habitat of indigenous fauna on a geothermal	Low	Very small and degraded

[1] de Lange et. al. 2013.

area is one of the largest remaining examples of its type within the Taupo Volcanic Zone.		
7.16 The extent to which indigenous vegetation or habitat of indigenous fauna on a geothermal area is significantly reduced in area and is degraded but retains key natural ecosystem functions (for example hydrology).	Low	This site has been heavily modified and is very small. It retains some of its natural character and the geothermally-affected soils which influence the vegetation appear to still be present. Natural ecosystem functions such as regeneration, succession, and habitat provision are limited by the small size of the site and the disturbance regime imparted by its location and adjacent land use. The underlying geothermal driver of the vegetation and soil remains in place although this too is likely to have been significantly modified.
Ecological context 7.17 The extent to which indigenous vegetation or habitat of indigenous fauna on a geothermal area contributes to the ecological viability of adjoining significant natural areas and biological communities, by providing or contributing to an important ecological linkage or network, or providing a buffer from adjacent land uses.	Low	This site will provide only very limited inputs to the viability of nearby SNAs though seed dispersal and a small amount of additional habitat. It does not directly link to another site and does not provide any buffering.
7.18 The extent to which indigenous vegetation or habitat of indigenous fauna on a geothermal area provides habitat for threatened indigenous species at key stages of their life cycle.	Unknown but probably low	The site is too small to provide any significant habitat for threatened or at risk species.
Viability and sustainability 7.19 The extent to which indigenous vegetation or habitat of indigenous fauna on a geothermal area is of sufficient size and compact shape and that it has the capacity to maintain its ecological viability over time, to adapt to natural changes and to resist changes initiated by external agents.	Moderate	Very small sites such as this have limited capacity to cope with and adapt to adverse effects caused by neighbouring landuse or stochastic events. However, if it was protected from such events the site is likely to remain as semi-natural vegetation because the plant species present are generally adapted to open habitat with high light and low humidity levels. They are mostly prolific fruiters that can colonise bare ground relatively rapidly.
7.20 The extent to which indigenous vegetation or habitat of indigenous fauna on a geothermal area supports intact habitats and healthy functioning ecosystems.	Low	Highly modified. Natural ecosystem functions such as regeneration, succession, and habitat provision are limited by the small size of the site and disturbance regime imparted by its location and adjacent land use.

Naturalness 7.21 The extent to which indigenous vegetation or habitat of indigenous fauna on a geothermal area is in a natural state or healthy condition, or is in an original condition.	Low	Very few exotic species were noted but the site has been modified by clearance and constant disturbance.
Shared and recognised values 7.22 The extent to which the geothermal vegetation or habitat is valued for its historical, recreational, educational or scientific values.	N/A	Unable to assess
Māori values 7.23 The extent to which geothermal vegetation or habitat is clearly special or widely valued by Tangata Whenua by reason of traditional values (including consideration of the criteria in Set 4 Māori culture and traditions) and/or contemporary association values.	N/A	Unable to assess

(13)

(14) Overall I consider that Area A is **not significant** under Section 6(c) of the Resource Management Act and should be excluded from the Rotorua District Plan SNA schedule.

(15) Area B has been completely cleared and although there is a small amount of kanuka regeneration occurring this area is also **not significant** and should be excluded from the SNA. An alternative boundary which excludes this area is included in Figure 1.

6 RECOMMENDATIONS

6.1 Area A

(14) Area A is too small and modified to be considered ecologically significant under Section 6(c) of the RMA and should be excluded from the Significant Natural Area schedule. However, although the Area A is not significant careful consideration should be given to how this small area of indigenous vegetation could be used as a feature of any development that is undertaken on this land.

6.2 Area B

(15) Area B should be removed from the SNA because it has already been cleared of vegetation and apart from limited regeneration of kanuka it is now bare. An alternative boundary line for (16) the SNA has been proposed.

7 REFERENCES

BOPRC 2014a. Regional Policy Statement for the Bay of Plenty. Ngā Tikanga Whakahaerei Ngā Rawa o Te Taiao. Strategic Policy Publication 2013/04. Bay of Plenty Regional Council, Whakatane.

BOPRC 2014b. Appendix F (Criteria) User Guide. Regional Policy Statement for the Bay of Plenty. Ngā Tikanga Whakahaerei Ngā Rawa o Te Taiao. Resouce Policy Publication 2008/05. Bay of Plenty Regional Council, Whakatane.

de Lange P, Rolfe JR, Champion PD, Courtney SP, Heenan PB, Barkla JW, Cameron EK, Norton DA, Hitchmough RA 2013. Conservation status of New Zealand indigenous vascular plants, 2012. New Zealand Threat Classification Series 3. Department of Conservation, Wellington.

Wildland Consultants 2009. Rotorua District Council Natural Heritage and Biodiversity Review 2009. Volume 1. Report No. 2049. Prepared for Rotorua District Council. Wildland Consultants, Rotorua.

ATTACHMENT 2