

**BEFORE THE INDEPENDENT HEARINGS PANEL**

**IN THE MATTER** of the Resource Management Act 1991  
and the Local Government (Auckland  
Transitional Provisions) Act 2010

**AND**

**IN THE MATTER** of the Proposed Auckland Unitary Plan

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**STATEMENT OF PRIMARY EVIDENCE (ON SITE-SPECIFIC MATTERS) OF  
NICHOLAS PAUL GOLDWATER  
ON BEHALF OF THE ENVIRONMENTAL DEFENCE SOCIETY INCORPORATED  
AND ROYAL FOREST AND BIRD PROTECTION SOCIETY OF NEW ZEALAND  
SUBMISSION NUMBERS 4735 AND 4848  
HEARING TOPIC 023 – SEA AND VEGETATION MANAGEMENT  
21 JULY 2015**

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## SUMMARY

1. My name is Nicholas Paul Goldwater. I am currently a Senior Ecologist at Wildland Consultants Ltd in Auckland. I have been engaged by Forest and Bird and the Environmental Defence Society (“the Societies”) to provide evidence in relation to site-specific assessments of Significant Ecological Areas (SEAs) proposed by the Societies for Topic 023.
2. My evidence addresses five sites, two of which are partially included within the SEA overlay. The other three have been wholly excluded from the overlay.
3. The five sites are listed below together with the criteria they meet for the SEA overlay:
  - a. Northcross Reserve and environs: meets criterion Stepping stones, migration pathways and buffers (4c).
  - b. Waikumete Cemetery: meets criteria Representative (1a), Threat Status and Rarity (2a, 2b, 2e), Diversity (3a), Stepping stones, migration pathways and buffers (5e).
  - c. Cheeseman’s Bush: meets criteria Representative (1a), Threat Status and Rarity (2a, b) and Stepping Stones, migration pathways and buffers (4c).
  - d. Takapuna ecological sequence: meets criteria Threat Status and Rarity (2a, d and e) and Diversity (3a).
  - e. Park Rise Bush: meets criteria Threat Status and Rarity (2e) and Stepping stones, migration pathways and buffers (4c).
4. For each site I have provided a map (**Appendix 1**), a description, and a rationale as to why the entirety of each site should be considered for inclusion in the SEA overlay. The areas proposed for SEA inclusion are outlined in red on each map.

## INTRODUCTION

### Qualifications and Experience

5. My full name is Nicholas Paul Goldwater.
6. I have a Master of Science (First Class Honours) in ecology and environmental science, and have seven years’ experience as an ecologist working for a private consultancy, based in Auckland. I am a Senior Ecologist with Wildland Consultants Ltd, an ecological consultancy company specialising in ecological evaluations, ecological restoration, ecological survey and monitoring, and ecological research. In

this role I undertake field assessments, provide technical ecological advice and services and manage projects for a range of clients.

7. I have undertaken numerous ecological surveys and assessments around the Auckland region. I have extensive experience in the terrestrial, aquatic and wetland habitats within the region and I have a good understanding of the challenges that they face. I have carried out many surveys for Auckland Council and private land owners, including the assessment of proposed Significant Ecological Areas (SEAs). I have undertaken numerous large-scale ecological surveys around New Zealand and I have prepared many ecological management plans.
8. I am a member of the New Zealand Ecological Society, the Auckland Botanical Society, the New Zealand Plant Conservation Network and the New Zealand Wetland Trust.
9. I am familiar with the matters to which these proceedings relate.
10. I have read the Environment Court's Code of Conduct for Expert Witnesses, and agree to comply with it. My qualifications as an expert are set out above. I confirm that the issues addressed in this evidence are within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed. I have specified where my opinion is based on limited or partial information and identified any assumptions I have made in forming my opinions.

### **Purpose and Scope of Evidence**

11. This statement of evidence was prepared for the Environmental Defence Society Inc and the Royal Forest and Bird Protection Society of New Zealand Inc ("the Societies") in support of their submissions and further submissions on the Proposed Auckland Unitary Plan ("PAUP").
12. The purpose of this evidence is to provide technical advice to the Independent Hearings Panel (IHP) regarding site-specific assessments of SEAs proposed by the Societies. A total of five sites are proposed to be included in the SEA overlay:
  - a. Northcross Reserve and environs
  - b. Waikumete Cemetery
  - c. Cheeseman's Bush
  - d. Takapuna ecological sequence

- e. Park Rise Bush

13. In preparing my evidence, I have read or referred to the following material:

- a. Relevant sections of the Societies' submissions and further submissions;
- b. Relevant provisions of the Auckland Unitary Plan;
- c. Evidence of the following witnesses called by Auckland Council:
  - i. Joint ecologists' statement
  - ii. Abigail Salmond
  - iii. Shona Myers in relation to the Waikumete Cemetery Draft Reserve Management Plan (date 10 November 2014)

## SITE SPECIFIC SEAS

### Overview

14. My evidence addresses five sites that have either been excluded from the SEA overlay or are only partially covered by the overlay. For each site I have described the vegetation and habitats and summarised the ecological values. I have also assessed whether they meet the SEA criteria.

### Northcross Reserve and environs

15. Northcross Reserve and adjacent vegetation on Ministry of Education land occupy 4 hectares (**Figure 1, Appendix 1**), which is relatively large for an urban forest remnant. The site includes three steep and dissected gullies that drain into a tributary of Taiaotea Creek.
16. Northcross Reserve (**Area A**) contains indigenous broadleaved forest dominated by mahoe (*Melicytus ramiflorus*), mapou (*Myrsine australis*), ponga (*Cyathea dealbata*), mamaku (*C. medullaris*), and pigeonwood (*Hedycarea arborea*) with local kahikatea (*Dacrycarpus dacrydioides*) and tanekaha (*Phyllocladus trichomanoides*). The eastern part of the reserve comprises a low-fertility ridge dominated by willow-leaved hakea (*Hakea salicifolia*), with scattered radiata pine (*Pinus radiata*), black wattle (*Acacia mearnsii*), and prickly hakea (*H. sericea*). However, this ridge also provides habitat for gumland species such as kumerahou, *Pomaderris amoena*, sundew (*Drosera* sp.), sword sedge (*Lepidosperma laterale*) and tanglefern (*Gleichenia* sp.).

Gumland vegetation is a naturally uncommon vegetation type<sup>1</sup> that has been recently classified as Critically Endangered<sup>2</sup>.

17. The area of forest on Ministry of Education land to the east (**Area B**) is dominated by black wattle, eucalypts (*Eucalyptus* sp), radiata pine, and other exotic trees, but mahoe and mapou are regenerating abundantly in the understorey. Although the canopy at the site is mostly dominated by exotic species, there are small areas that are locally dominated by indigenous trees and tree ferns such as ponga, mamaku, mahoe and mapou. Ministry of Education Land to the north (**Area C**) is contiguous with the reserve and thus is characterised by the same type of indigenous vegetation that occurs in the reserve.
18. The ecological values of the site include the provision of habitat for indigenous forest birds, and streams within the site also likely provide habitat for indigenous fish. The site also provides useful buffering in the headwaters of Taiaotea Creek.
19. The site is close to SEA\_T\_8065 and forms part of a network of local habitats including this and other sites. As such, the site is likely to provide useful stepping stone habitat for mobile forest birds within a landscape dominated by residential development. For this reason, I consider the site meets significant criterion **Stepping stones, migration pathways and buffers (4c)** (Part of a network of sites that cumulatively provide important habitat for indigenous fauna or when aggregated make an important contribution to the provision of a particular ecosystem in the landscape). The exotic-dominant vegetation on the Ministry of Education land forms a substantial part of the remnant and it is noted that this vegetation is likely to become more indigenous in character over time.
20. This site has values that qualify as an SEA, and it is larger than several existing SEAs in the locality.

### **Waikumete Cemetery**

21. A site visit was not undertaken to Waikumete Cemetery given that the ecological values of this site are well-known and documented. In particular, the gumland

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<sup>1</sup> Williams P.A., Wiser S., Clarkson B. and Stanley M.C. 2007: New Zealand's historically rare terrestrial ecosystems set in a physical and physiognomic framework. *New Zealand Journal of Ecology* 31: 119-128.

<sup>2</sup> Holdaway R.J., Wiser S.K., and Williams P.A. 2012: Status assessment of New Zealand's naturally uncommon ecosystems. *Conservation Biology* 26: 619-629.

vegetation at the site has been recognised for many decades as being of national and regional significance for the indigenous plant species it contains.

22. Most of the contiguous vegetation is within and SEA overlay (SEA\_5492a) (**Figure 2, Appendix 1**). Under the PAUP, the site meets the following criteria of significance: **Representative (1a), Threat Status and Rarity (2a, 2b, 2e), and Diversity (3a)**.
23. It is my opinion, however, that the areas of contiguous vegetation currently omitted from the SEA overlay (**Figure 2, Appendix 1**) are highly likely to meet certain significance criteria and should be included in order to protect the long-term ecological integrity of the site.
24. Indigenous vegetation at Waikumete Cemetery is characterised by broad ridges that support extensive gumland dominated by mānuka (*Leptospermum scoparium*) and *Machaerina* spp. Large gullies support kānuka forest and scrub. A number of Threatened and At Risk<sup>3</sup>, and locally uncommon plant species are known from the site, including *Picris burbridgeae* (Threatened – Nationally Endangered) *Kunzea linearis* (At Risk – Declining), *Paspalum orbiculare* (At Risk – Declining), *Dichelachne inaequiglumis* (At Risk – Naturally Uncommon), *Caladenia atradenia* (At Risk – Naturally Uncommon), *Calystegia marginata* (At Risk – Naturally Uncommon), and *Ranunculus urvilleanus* (locally uncommon). The gumland liverwort *Goebelobryum unguiculatum* (Threatened – Nationally Endangered)<sup>4</sup> is also known from the site.
25. Indigenous fauna recorded from the site include Auckland green gecko (*Nautilinus elegans elegans*), longfin eel (*Anguilla dieffenbachii*), and redfin bully (*Gobiomorphus huttoni*), all of which have a threat status of At Risk – Declining.<sup>5</sup>

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<sup>3</sup> de Lange P., Rolfe J., Champion P., Courtney S., Heenan P., Barkla J., Cameron E., Norton D. and Hitchmough R. 2013: Conservation status of New Zealand indigenous vascular plants, 2012. *New Zealand Threat Classification Series 3*. Department of Conservation, Wellington. 70 pp.

<sup>4</sup> Glenny D., Fife A.J., Brownsey P.J., Renner M.A., Braggins J.E., Beever J.E., Hitchmough R. 2011. Threatened and uncommon bryophytes of New Zealand (2010 revision). *New Zealand Journal of Botany* 49: 305-327.

<sup>5</sup> Goodman J.M., Dunn N.R., Ravenscroft P.J., Allibone R.M., Boubée J.A.T., David B.O., Griffiths M., Ling N., Hitchmough R., and Rolfe J.R. 2014: Conservation status of New Zealand freshwater fish, 2013. *New Zealand Threat Classification Series 7*. Department of Conservation, Wellington. 12 pp. Hitchmough R., Anderson P., Barr B., Monks J., Lettink M., Reardon J., Tocher M., and Whitaker T. 2013: Conservation status of New Zealand reptiles, 2012. *New Zealand Threat Classification Series 2*. Department of Conservation, Wellington. 16 pp.

26. The site contains the largest area of relatively intact gumland vegetation in the Tamaki Ecological District, and has value as representative gumland vegetation despite the presence of pest plant species. Gumland vegetation is a naturally uncommon vegetation type <sup>6</sup> that has been recently classified as Critically Endangered<sup>7</sup>. Naturally uncommon ecosystem types are a priority for the protection of indigenous biodiversity in New Zealand.
27. Fragmentation and reducing the size of the contiguous vegetation (i.e. by clearing non-SEA areas) at the cemetery will result in increased edge effects and increased threat from further weed invasion. Moreover, the clearance of non-SEA areas would adversely affect current SEA areas through the removal of important buffering. Clearance of non-SEA vegetation would remove buffering for stream gullies that are likely to contain permanent and/or intermittent streams, from which at least two threatened fish species have been recorded
28. Management of weeds at the site, which has not been attempted to date, is important, but practical options for this are available and undertaking weed control would increase the significance and viability of the site.
29. Despite being adversely impacted by pest plants, the areas that have been omitted from the SEA overlay contain part of a threatened ecosystem type (gumland) and are highly likely to support a range of threatened plant species. These areas are therefore highly likely to meet the following minimum criteria: **Threat Status and Rarity (2a, 2b, and 2e)**. Given that the excluded areas also provide important buffering to the SEA areas, it is my opinion that they meet an additional criterion: **Stepping stones, migration pathways and buffers (5e)**, i.e. vegetation (indigenous or exotic) that provides protection for indigenous biodiversity in an existing protected natural area or an area identified as significant under the 'threat status and rarity' or 'uniqueness' criteria.
30. Based on the reasons discussed in my evidence, I consider it highly appropriate to expand the SEA to include areas of vegetation that are currently omitted from the overlay.

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<sup>6</sup> Williams P.A., Wiser S., Clarkson B. and Stanley M.C. 2007: New Zealand's historically rare terrestrial ecosystems set in a physical and physiognomic framework. *New Zealand Journal of Ecology* 31: 119-128.

<sup>7</sup> Holdaway R.J., Wiser S.K., and Williams P.A. 2012: Status assessment of New Zealand's naturally uncommon ecosystems. *Conservation Biology* 26: 619-629.

## Cheesman's Bush

31. Cheeseman's Bush is located at 146 Mill Road, Alfriston. It covers an area of approximately 4 hectares and comprises a remnant of mature broadleaved species-podocarp forest within a steeply incised gully (**Figure 3, Appendix 1**). I carried out a field survey at the site on 13 July 2015.
32. The remnant is dominated by taraire (*Beilschmiedia tarairi*) up to 15 m tall and > 55 cm basal diameter. Large mature puriri (*Vitex lucens*), some with basal diameters of greater than one metre occur frequently in association with taraire. Tall kahikatea (*Dacrycarpus dacrydioides*) up to 20 m tall occurs on the damp gully floor with occasional pukatea (*Laurelia novae-zelandiae*). Kanuka (*Kunzea robusta*) is locally common in the northeastern part of the remnant.
33. The site is drained by a permanent stream that flows through a culvert under Mill Road. The stream is well-shaded and buffered by bankside and canopy vegetation. The stream substrate is predominantly soft-bottomed with occasional cobbles, gravels and exposed bedrock. Woody debris and leaf litter occur frequently in the channel. Several large pools (>1 m wide) are present in the stream. The stream provides excellent potential habitat for indigenous aquatic species such as banded kokopu (*Galaxias fasciatus*), eels (*Anguilla* spp.), and koura (*Paranephrops planifrons*).
34. The vegetation is in very good condition. The remnant is fenced to exclude stock and feral goats and pigs, and the control of possums (*Trichosurus vulpecula*) and rats (*Rattus* spp.) is currently being undertaken. No sign of pest animals were observed during the survey, e.g. foliar browse, gnawing on fallen taraire fruit.
35. The site is floristically diverse (I recorded at least 50 indigenous species) and structurally intact, i.e. presence of canopy (including a range of epiphytes), sub-canopy, understorey and ground tier plant species. The incidence of pest plant species is very low. King fern (*Ptisana salicina*) occurs at the site. This species is classified as 'At Risk – Declining' by de Lange *et al.* (2013)<sup>8</sup> and is much reduced across its natural range due to herbivory by feral ungulates.

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<sup>8</sup> Lange P., Rolfe J., Champion P., Courtney S., Heenan P., Barkla J., Cameron E., Norton D. and Hitchmough R. 2013: Conservation status of New Zealand indigenous vascular plants, 2012. *New Zealand Threat Classification Series* 3. Department of Conservation, Wellington. 70 pp.



36. The taraire-puriri forest in Cheeseman's Bush is excellent example of a vegetation type that once dominated the fertile lowlands spanning from the Hunua Range foothills in the east to Awhitu in the west. Very little of this vegetation type remains in the western Hunua Ecological District, and less than 2% remains in the Manukau Ecological District.<sup>9</sup> Cheeseman's Bush is one of a handful of indigenous remnants remaining in the general area, and is thus likely to form an important part of a local habitat network.
37. The site supports a range of indigenous birds, including kaka (*Nestor meridionalis*). Kaka visit the site on occasion, most likely when travelling to and from the Hunua Range. This species is classified as 'Threatened – Nationally Vulnerable' by Robertson *et al.* (2013)<sup>10</sup>. The site also provides potential habitat for other threatened species such as long-tailed bat (*Chalinolobus tuberculatus*), which is classified as 'Threatened - Nationally Vulnerable' by O'Donnell *et al.* (2013).<sup>11</sup>
38. Based on my site assessment, I consider the site to meet at least three criteria of significance: **Representative (1a)**, i.e. taraire-puriri forest; **Threat Status and Rarity (2a)** (Habitat that contains threatened ecosystems, i.e. taraire, tawa, podocarp forest); **(2b)** (Habitat that supports a threatened species, i.e. king fern and kaka); and **Stepping Stones, migration pathways and buffers (4c)** (Part of a network of sites that cumulatively provide important habitat for indigenous fauna or when aggregated make an important contribution to the provision of a particular ecosystem in the landscape).
39. In my opinion this site is a priority for inclusion as an SEA and there is a clear justification to do so.

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<sup>9</sup> Lindsay H., Wild C., Byers S. 2009: Auckland Protection Strategy. A report to the Nature Heritage Fund Committee. Published by the Nature Heritage Fund. Wellington.

<sup>10</sup> Robertson H.A., Dowding J.E., Elliott G.P., Hitchmough R.A., Miskelly C.M., O'Donnell C.J.F., Powlesland R.G., Sagar P.M., Scofield R.P., and Taylor G.A. 2013: Conservation status of New Zealand birds, 2012. *New Zealand Threat Classification Series 4*. Department of Conservation, Wellington. 22 pp.

<sup>11</sup> O'Donnell C.F.J., Christie J.E., Lloyd B., Parsons S., and Hitchmough R.A. 2013: Conservation status of New Zealand bats, 2012. *New Zealand Threat Classification Series 6*. Department of Conservation, Wellington. 8 pp.

## Takapuna ecological sequence

40. A field survey was undertaken by my colleague on 9 July 2015 to evaluate the values of this site. I base my assessment in the following paragraphs on the results of that field survey.
41. This site comprises a small urban remnant of volcanic rock forest and adjacent freshwater and saline wetland vegetation (**Figure 4, Appendix 1**). The rock forest is dominated by karaka (*Corynocarpus laevigatus*), old-growth kohekohe (*Dysoxylum spectabile*) and mahoe with a sub-canopy comprising kawakawa (*Piper excelsum*), karamu (both *Coprosma robusta* and *C. macrocarpa* subsp. *minor*) and hangehange (*Geniostoma ligustrifolium*). A swamp maire (*Syzygium maire*) tree that formerly grew on the edge of an adjacent raupo wetland got blown over in a storm and died, but is illustrative of the representative value of the site.
42. There are two gullies containing small watercourses which support a small number of swamp forest species, growing within the larger rock forest unit. Swamp forest species include a few large (>12 metres tall) kahikatea, and one pukatea, with other indigenous plants such as nikau (*Rhopalstylis sapida*) and *Carex dissita* occurring in the sub-canopy and understorey, respectively.
43. Two small watercourses drain the gullies, flowing into a freshwater wetland dominated by raupo (*Typha orientalis*) and sedge species. A range of pest plant species occur in this part of the site.
44. The wetland becomes increasingly saline towards the southern boundary, where it joins mangrove (*Avicennia marina* subsp. *australasica*) scrub within a marine SEA (SEA\_M260a). Several vegetation communities are present at the southern end of the proposed SEA including saltmarsh, and saline herbfield.
45. The site contains a particularly diverse example of a saline herbfield, which is characterised by *Isolepis cernua* and remuremu (*Selliera radicans*), with bachelor's button (*Cotula coronopifolia*) and occasional New Zealand celery (*Apium prostratum* subsp. *prostratum* var. *filiforme*). The saline herbfield vegetation forms a mosaic with mangrove scrub, and small patches of oioi or sea rush rushland, at the southern extent of the wetland, within the proposed SEA site.

46. It is evident that a full terrestrial forest-freshwater-saltmarsh-mangrove ecological sequence occurs at the site. This contiguous ecological sequence is of particular interest given that rock forest is present as part of this sequence. Sequences such as this are rarely found in the current landscape. There is only one other example of full terrestrial-marine ecological sequence remaining in the North Shore (Soldier's Bay wetland).
47. Banded rail (*Gallirallus philippensis assimilis*) has been recorded from the adjacent mangrove habitat (Carol Berquist, Auckland Council, pers. comm.), and are likely to use the raupo wetland within the site. This cryptic bird species is classified as 'At Risk – Naturally Uncommon' by Robertson *et al.* (2013)<sup>12</sup>.
48. In my opinion the site meets several significance criteria. It contains a range of ecosystems (volcanic broadleaved forest, freshwater wetland, and saltmarsh) that are considered as threatened in the Auckland Region, thus meeting **Threat Status and Rarity (2a)** (Habitat contains threatened ecosystems, i.e. volcanic broadleaved forest, freshwater wetland, and saltmarsh); **(2d)** (Habitat that contains indigenous wetlands, i.e. raupo reedland, saltmarsh and saline herbfield); **(2e)** (Habitat the supports a rare species, i.e. banded rail); and **Diversity (3a)** (Habitat contains multiple native ecosystem types, i.e. full ecological sequence from mangroves to volcanic forest).
49. Although the site is small, it is relatively intact, and in my opinion it would easily be justified as a SEA due to its rarity and diverse floristic values.

### Park Rise Bush, Centennial Park

50. This site comprises two areas of mixed indigenous-exotic forest in Centennial Park, Campbells Bay (**Figure 5, Appendix 1**). The northernmost of these areas (**Area B**) is contiguous with an existing SEA (SEA\_8038), whereas the southern area (**Area A**) is surrounded by grassland. Another larger existing SEA (SEA\_8136) occurs in the southeast of the park, and is dominated by indigenous vegetation. **Area B**, together with the adjoining SEA, helps to buffer the headwaters of a permanent stream.

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<sup>12</sup> Robertson H.A., Dowding J.E., Elliott G.P., Hitchmough R.A., Miskelly C.M., O'Donnell C.J.F., Powlesland R.G., Sagar P.M., Scofield R.P., and Taylor G.A. 2013: Conservation status of New Zealand birds, 2012. *New Zealand Threat Classification Series 4*. Department of Conservation, Wellington. 22 pp.

51. A site survey was undertaken by my colleague on 9 July 2015 to evaluate the values of two relatively large areas of vegetation close to the existing SEA. I base my assessment in the following paragraphs on the results of that field survey.
52. **Area A** is c.3.7 hectares and comprises forest dominated by an exotic canopy (>15 metres tall) of gum (*Eucalyptus* sp.), radiata pine (*Pinus radiata*), and redwood (*Sequoia sempervirens*), with occasional copses of poplar (*Populus* sp.). The understorey is dominated by indigenous plant species, including mingimingi (*Leucopogon fasciculatus*), glossy karamu (*Coprosma lucida*), mapou, mahoe, and ponga. Karo (*Pittosporum crassifolium*), kohuhu (*Pittosporum tenuifolium*), five-finger (*Pseudopanax arboreus*), houpapa (*P. lessonii*) and mamaku (*Cyathea medullaris*) occur infrequently. *Gahnia xanthacarpa* and *Carex dissita* occur commonly in the wetter areas, around the watercourse.
53. A single specimen of swamp astelia (*Astelia grandis*) was recorded within a wet gully in **Area A**, in the upper reaches of the main watercourse. This appears to have established naturally and may be part of a remnant population - possibly gradually shaded out by large redwood and radiata pine which have created a dense canopy in this location. Swamp astelia is classified as 'Regionally Acutely Threatened - Regionally Critical' by Stanley *et al.* (2005)<sup>13</sup>. Area A therefore meets significance criterion **Threat Status and Rarity (2e)** (Habitat that supports an occurrence of a plant that is locally rare).
54. **Area B** covers c.4.7 hectares and is contiguous with the existing SEA. It comprises mature radiata forest with a mature and diverse sub-canopy (5-8 m tall), which includes most of the species described in **Area A** and additional species such as kiekie, pate (*Schefflera digitata*), gully fern (*Pneumatopteris pennigera*), and kanono (*Coprosma grandifolia*).
55. **Area A** buffers and shades a permanent watercourse, which provides good potential habitat for indigenous fish. The vegetation provides habitat for birds and potentially lizards. Kereru (*Hemiphaga novaeseelandiae*) was recorded during the survey.

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<sup>13</sup> Stanley R., de Lange P., and Cameron E.K. 2005: Auckland Regional Threatened and Uncommon Vascular Plants List. Auckland Botanical Society Journal 60(2): 152-157.

56. Despite the dominance of exotic species in the canopy, indigenous species are dominant in the sub-canopy and understorey, and pest plant species are largely absent.

57. Due to their size and proximity to the coast (and thus the Hauraki Gulf islands), **Areas A and B** are likely to form part of the North-West Wildlink. This is a regional wildlife linkage which provides areas of suitable habitat to facilitate the movement of indigenous biodiversity from the Hauraki Gulf in the northeast to the Waitakere Ranges in the southwest. In this respect, I consider that both areas meet significant criterion **Stepping stones, migration pathways and buffers (4c)** (Part of a network of sites that cumulatively provide important habitat for indigenous fauna or when aggregated make an important contribution to the provision of a particular ecosystem in the landscape). I note that a small SEA to the east of the site (SEA\_8137) meets this criterion, which further justifies the inclusion of Areas A and B as SEAs.

## CONCLUSION

58. Three of the five sites described in my evidence are currently omitted from the SEA overlay, while two are only partially included. I have provided justification in my evidence as to why all of these sites should be included as SEAs.



**Nicholas Paul Goldwater**

**21 July 2015**

## APPENDIX 1 - SITE MAPS

FIGURE 1 - NORTHCROSS RESERVE AND ENVIRONS





## FIGURE 2 - WAIKUMETE CEMETERY





FIGURE 3 - CHEESEMAN'S BUSH





FIGURE 4 - TAKAPUNA ECOLOGICAL SEQUENCE



FIGURE 5 - PARK RISE BUSH

