Before the Hearings Panel
At Porirua City Council

Under	Schedule 1 of the Resource Management Act 1991
In the matter of	the Proposed Porirua District Plan
Between	**Various**
	Submitters
And	**Porirua City Council**
	Respondent

Statement of Evidence of William Bruce Shaw
on behalf of Porirua City Council (Ecology)

Date: 4 March 2022

QUALIFICATIONS AND EXPERIENCE

1. My name is William Bruce Shaw.

2. I am Lead Principal Ecologist and a Director of Wildland Consultants Ltd based in Rotorua. I have been a practising ecologist since 1980, and I have been in my current role at Wildland Consultants Ltd since 1996.

3. I have a Master of Science degree from the University of Canterbury, 1980, and a Bachelor of Science in Earth Sciences and Biology (double major) from the University of Waikato, 1977.

8. My professional memberships include the Royal Society of New Zealand (MRSNZ), the New Zealand Ecological Society, the New Zealand Institute of Forestry (MNZIF), the New Zealand Biosecurity Institute, the Ornithological Society of New Zealand, and the New Zealand Botanical Society.

9. I am the author of 24 conference papers, 25 scientific or technical publications, 39 published articles and more than 800 ecological reports, species lists, and general ecological accounts.

10. I have particular expertise in the evaluation of ecological significance, ecological management, ecological restoration, and the assessment of ecological effects of actual and proposed land uses.

11. My work has included extensive field studies throughout Aotearoa New Zealand, including its offshore islands, and more widely in the Pacific. I previously worked for a consulting firm in Christchurch, and have undertaken ecological survey work and related assessments in urban, rural, and remote back country situations over more than 40 years. I have many years of experience with management planning for natural areas, undertaking extensive botanical and biological surveys and assessments of conservation management requirements. From 1986-1990 I was employed as a Scientist by the Forest Research Institute, Rotorua, specialising in forest ecology, threatened plants, vegetation mapping, and the ranking and management of

natural areas. From 1990 to 1996 I was a Conservancy Advisory Scientist (1990-1994) and then (1994-1996) Protection, Planning and Use Manager for the Department of Conservation. I also performed national-level roles with the Department. I have also lectured in ecology, nature conservation and natural area management to tertiary level students of Resource Management, and undergraduate Parks and Recreation students (at Lincoln University).

12. I was the lead author for the first threatened plant recovery plan published in Aotearoa New Zealand, in 1993, and have written restoration plans for large scale indigenous biodiversity enhancement projects, some involving >50,000 hectares.

13. Since 2009 I have been a Crown-appointee to Te Pua O Whirinaki Regeneration Trust, working with Ngāti Whare. In 2015, for Ngai Tūhoe, I led the establishment of a new management team for Te Urewera. I am a previous member of the Whirinaki Conservation Park Advisory Committee (member five years, Chairperson three years), and was a seconded member of the East Coast National Parks and Reserves Board for two years.

14. Ecological evaluation is a discipline in which I have more than 35 years of experience having, in the 1980s, developed an ecological ranking system that was applied regionally and nationally by the Department of Conservation. I have also developed, for Environment Waikato, a technical guideline for application of natural heritage criteria in their Regional Policy Statement, been an advisor to the Ministry for the Environment on criteria for the evaluation of Section 6(c) of the Resource Management Act, developed ecological evaluation criteria for the previous and current Bay of Plenty Regional Policy Statement, and developed (with Dr Kelvin Lloyd) ecological criteria for the Canterbury Regional Policy Statement. I have written criteria sets and related application guidance documents that have been used in various district plans, regional policy statements (Bay of Plenty, Waikato, Canterbury, Auckland), and at a national level by the Department of Conservation. I have presented ecological evidence before Boards of Inquiry, the Environment Court (about 40 cases), the High Court, the District Court, the Waitangi Tribunal, and many planning hearings. My first experience with the delineation of significant

natural areas was in the early 1980s, in Canterbury, for district schemes prepared under the ambit of the Town and Country Planning Act 1953.

15. In the mid-1990s I was commissioned by the Ministry for the Environment (MfE) to provide a formal peer review of draft ecological significance criteria for Aotearoa New Zealand, but these were never released for general use.

16. I provided technical advice on nationwide trends in indigenous biodiversity for development and publication of the first New Zealand Biodiversity Strategy in 2000. Leading up to the release of the Draft National Policy Statement on Indigenous Biodiversity (NPS-IB), I provided analysis and advice for various parties involved in the Biodiversity Consultative Group that compiled the draft National Policy Statement for Indigenous Biodiversity (NPS-IB).

17. My experience with application of the Resource Management Act and assessment of ecological significance includes field surveys undertaken across Aotearoa New Zealand, interactions with countless rural landowners and managers, authorship of numerous reports, presentations to councils and rural (and other) stakeholders, provision of technical and strategic advice to councils at every stage of SNA assessment and statutory plan preparation. This has involved long-term working relationships with many district and regional staff, with some plans taking five to 10 years to reach completion. Examples of district councils where I have provided long-term strategic advice with plan preparation and implementation include Rotorua, Whakatāne, Ōpōtiki, Matamata-Piako, Taupō, and New Plymouth.

18. I am familiar with Wellington Region and Porirua District through my professional experience and involvement in many ecological projects undertaken there over the last 25 years or so.

19. I have read the following information when preparing my evidence:
    a. Submission 179 on the Proposed Porirua District Plan (PDP) by Silverwood Corporation Ltd (SCL), including the ecological assessment report by RMA Ecology.

b. Review of the ecological assessment by RMA Ecology prepared by my colleagues Dr Nyree Fea (Senior Ecologist) and Mr Nicholas Goldwater (Principal Ecologist), and Dr Sarah Herbert (Senior Ecologist)[1].
c. Notes and photographs taken by my colleagues during a visit to the site with Council planners and staff on 17 November 2021.

CODE OF CONDUCT

20. I have read the Code of Conduct for Expert Witnesses set out in the Environment Court's Practice Note 2014. I have complied with the Code of Conduct in preparing my evidence and will continue to comply with it while giving oral evidence before the Environment Court. My qualifications as an expert are set out above. Except where I state I rely on the evidence of another person, I confirm that the issues addressed in this statement of evidence are within my area of expertise, and I have not omitted to consider material facts known to me that might alter or detract from my expressed opinions.

SUMMARY

21. It is feasible that future urban development within the site proposed for rezoning to FUZ by SCL can avoid adverse ecological effects. However, there is insufficient evidence provided in Submission 172 to be able to ensure that adverse ecological effects will be avoided.

22. While a considerable amount of information has been provided in RMA Ecology (2020), further clarity and additional information is required to be able to fully understand the scope of works, magnitude of effects, and the appropriateness of the mitigation proposed.

23. The approaches offered in the submitter's ecological assessment by RMA Ecology (2020) are adequate to avoid, minimise, and mitigate potential adverse ecological effects on the identified characteristics and values of the two

[1] A copy of this review is appended to this statement of evidence.

Significant Natural Areas (SNAs) that are partially within the site: SNA083 (Duck Creek and Saltmarsh) and SNA084 (Exploration Drive Kānuka Forest).

SCOPE OF EVIDENCE

24. My statement of evidence addresses the following matters:

    a. Whether significant adverse ecological effects can be avoided at the site proposed for rezoning to Future Urban Zone (FUZ) by Silverwood Corporation Ltd (SCL), and

    b. Whether the proposed rezoning will adequately avoid, remedy, or mitigate any adverse ecological effects on the identified characteristics and values of any areas identified in SCHED7 - Significant Natural Areas of the PDP, as per criterion 2(c) of FUZ-P1.

25. Note that comment on other (i.e. non-ecological) effects, and effects on any areas identified in SCHED9 - Outstanding Natural Features and Landscapes, SCHED11 - Coastal High Natural Character Areas, and SCHED10 - Special Amenity Landscapes, is outside the scope of my evidence.

26. Note also that comment on whether the site proposed for rezoning meets criteria 1, 2(a), 2(b) and 2(d) is also outside the scope of my evidence.

BACKGROUND

27. This statement of evidence has been prepared on behalf of the Porirua City Council (Council) in respect of technical related matters arising from the submissions and further submissions on the Proposed Porirua District Plan (PDP).

28. This statement of evidence relates to Submission 172 by Silverwood Corporation Limited (SCL) on the PDP. The submission seeks that the site is rezoned from ‘Rural’ to ‘Future Urban Zone’ (FUZ). This is a "holding zone" until further rezoning occurs to enable urban development.

29. The land that SCL has submitted on includes the following allotments (hereafter referred to as the 'site'):

- Lot 6 North (Sec 9 SO475749, 1.5 hectares),
- Lot 6 South (Sec 10 SO475749, 42.3 hectares),
- Lot 1 South (Sec 7 SO475749, 8.3 hectares), and
- 90 Arahura Crescent or the 'Landcorp' site (Lot 2 DP 389024 and Lot 34 DP 29428, 62.2 hectares).

30. My evidence addresses the following matters in relation to the urban development that would result from the proposed rezoning:

a. Whether it will avoid significant adverse ecological effects, as per Policy FUZ-P1 of the PDP;

b. Whether it will adequately avoid, remedy, or mitigate any adverse ecological effects on the identified characteristics and values of any areas identified in SCHED7 - Significant Natural Areas of the PDP as per Policy FUZ-P1 of the PDP; and

c. Whether points (a) and (b) are addressed adequately in the ecological assessment provided as part of the submission[2].

31. Policy FUZ-P1 in the PDP has the following requirements for land in Porirua City to be eligible for rezoning as Future Urban Zone (FUZ):

a. Are consistent with the Porirua Urban Growth Strategy 2048 (2019); and

i. Avoid significant adverse effects and avoid, remedy or mitigate any other adverse effects on the identified characteristics and values of any areas identified in SCHED9 - Outstanding Natural

[2] Appendix 5 to Submission 172: RMA Ecology Limited 2020: Silverwood, Whitby: Ecological assessment for rezoning. *Report number 2045.* Prepared for Silverwood Corporation Limited, October 2020.

Features and Landscapes, SCHED7 - Significant Natural Areas, SCHED11 - Coastal High Natural Character Areas and SCHED10 - Special Amenity Landscapes; and

ii. Will not result in an increase in risk to people's lives and properties within any area located in a Natural Hazard Overlay or a Coastal Hazard Overlay; or

b. Are of a size, scale and location which could accommodate comprehensive and integrated future development that:

i. Is serviced by infrastructure or planned to be serviced by infrastructure in the Council's Long-Term Plan;

ii. Is connected to or planned to be connected to the transport network;

iii. Avoids significant adverse effects and avoids, remedies or mitigates any other adverse effects on the identified characteristics and values of any areas identified in SCHED9 - Outstanding Natural Features and Landscapes, SCHED7 - Significant Natural Areas, SCHED11 - Coastal High Natural Character Areas and SCHED10 - Special Amenity Landscapes; and

iv. Will not result in an increase in risk to people's lives and properties within any area located in a Natural Hazard Overlay or a Coastal Hazard Overlay.

32. My statement of evidence addresses whether rezoning of the site to FUZ as requested by SCL will avoid significant adverse ecological effects and adequately avoids, remedies or mitigates any potential adverse ecological effects on the identified characteristics and values of any areas identified in SCHED7 - Significant Natural Areas of the PDP, as per criterion 2(c) of FUZ-P1.

33. Note that comment on other (non-ecological) effects, and on effects on any areas identified in SCHED9 - Outstanding Natural Features and

Landscapes, SCHED11 - Coastal High Natural Character Areas, and SCHED10 - Special Amenity Landscapes are outside the scope of my evidence.

34. Note that comment on whether the site proposed for rezoning meets criteria 1, 2(a), 2(b) and 2(d) is also outside the scope of my evidence.

COMMENTS ON THE SUBMISSION

35. Wildland Consultants staff produced a review of the ecological assessment (RMA Ecology 2020) in 2021[3].

36. On the basis of the Wildlands review of the submitter's ecological assessment provided in 2021, and having reviewed my colleague's photographs and notes from the site visit on 17 November 2021, it is my opinion that:

    a. It is feasible that future urban development within the site proposed for rezoning to FUZ by SCL can avoid adverse ecological effects. However, there is insufficient evidence provided in Submission 172 to be able to ensure that adverse ecological effects will be avoided.

    b. The approaches offered in the submitter's ecological assessment by RMA Ecology (2020) are adequate to avoid, minimise, and mitigate potential adverse ecological effects on the identified characteristics and values of the two Significant Natural Areas (SNAs) that are partially within the site: SNA083 (Duck Creek and Saltmarsh) and SNA084 (Exploration Drive Kānuka Forest).

37. However, while a considerable amount of information has been provided in RMA Ecology (2020), further clarity and additional information is required to be able to fully understand the scope of works, magnitude of

[3] Wildland Consultants 2021: Review of ecological impact assessment rural land rezoning near Waitangirua, Wellington. *Wildland Consultants Ltd Contract Report No. 4391h-ii*. Prepared for Porirua City Council. 12 pp.

effects, and the appropriateness of the mitigation proposed, on the following matters:

- Terrestrial and wetland vegetation
- Freshwater flora and fauna
- Bats
- Indigenous lizards
- Indigenous birds
- Mitigation suggested for adverse ecological effects

38. These matters are outlined below.

Terrestrial and wetland vegetation

39. A vegetation map for both the eastern (Landcorp) and western portions of the site, and quantification of the area of each habitat type. This should include freshwater and terrestrial vegetation types.

40. A more detailed description is also required- vegetation types and species list – for the western portion that did receive a site visit.

Freshwater flora and fauna

41. Provide information from the NIWA Freshwater Fish Database to verify the presence/absence of rare or threatened freshwater species, and therefore better inform the evaluation of the likely magnitude of ecological effects on freshwater species.

Bats

42. Details of the sources cited and locations of the bat surveys are needed to confirm the statement that bats are unlikely to reside or transit through the site.

Indigenous lizards

43. The applicant's ecologist(s) should undertake a search of the Department of Conservation Herpetofauna Database and the iNaturalist database and provide further information on the relative location of the lizard species recorded within 10 kilometres of the site.

44. While not required at this stage of the evaluation process, a lizard survey should be undertaken prior to applying for a resource consent for the development, and an application for a Wildlife Act Authority to disturb lizard habitats (if required).

Indigenous birds

45. No mention is made of any 'Threatened' or 'At Risk 'bird species that might occur in the near vicinity of the site, in both terrestrial and wetland habitats. The ecological assessment should account for any additional species that may occur at the site.

Mitigation suggested for adverse ecological effects

46. In the absence of a site visit to the eastern (Landcorp) portion of the site, it is difficult to determine which species will be affected, and the potential magnitude of those effects. It is therefore not possible to assess the appropriateness of the proposed mitigation measures.

47. The authors of the ecological assessment do suggest some ecologically-positive provisions, e.g. permanent protection of SNAs; control of pest plants and animals; and planting of indigenous shrubland and forest species in priority areas. If these are implemented as part of any future urban development in the area, then adverse ecological effects on the site and SNAs may be adequately mitigated.

CONCLUSION

48. The submitter has provided an ecological assessment to support their proposal for rezoning of the subject site. It is feasible that future urban development within the site proposed for rezoning to FUZ by SCL can avoid adverse ecological effects. While the ecological assessment provided in the submission is useful, further ecological information is required on various aspects of the site, as set out above, to be able to ensure that adverse ecological effects will be avoided, remedied, or mitigated.

REFERENCES

Payne T. and Ussher G. 2020: Silverwood, Whitby. Ecological assessment for rezoning. *Report No. 2045*. Prepared for Silverwood Corporation Ltd.

Wildland Consultants 2021: Review of ecological impact assessment rural land rezoning near Waitangirua, Wellington. *Wildland Consultants Ltd Contract Report No. 4391h-ii*. Prepared for Porirua City Council. 12 pp.

REVIEW OF THE ECOLOGICAL ASSESSMENT FOR PROPOSED RURAL LAND REZONING NEAR WAITANGIRUA, WELLINGTON

REVIEW OF ECOLOGICAL IMPACT ASSESSMENT
RURAL LAND REZONING NEAR
WAITANGIRUA, WELLINGTON

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R4391h-ii

REVIEW OF ECOLOGICAL IMPACT ASSESSMENT
RURAL LAND REZONING NEAR
WAITANGIRUA, WELLINGTON

Contract Report No. 4391h-ii

January 2022

Project Team:
Nyree Fea – Report author (avifauna, bats, vegetation)
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Porirua City Council

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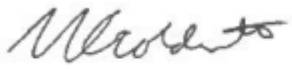

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1. INTRODUCTION

Wildland Consultants Ltd has been engaged by Porirua City Council (PCC) to provide an independent review of an Ecological Impact Assessment undertaken by RMA Ecology (RMAE) on a *c.*114-hectare parcel of land near Waitangirua, Porirua, Wellington (The 'Silverwood and Landcorp sites', hereafter referred to as 'the Site'). The Silverwood Corporation Limited seeks rezoning of the Site from 'Rural' to 'Future Urban Zone' and that this new zoning be included on the Proposed District Plan Planning Maps. This report includes a review of the submitted Ecological Impact Assessment (EcIA) with regards to the methods applied, the information supplied in the submission, plus an assessment of the EcIA's predicted effects against plans to rezone the Site to Future Urban Zone. Finally, this report also provides recommendations for the expert advice provided to the Council by RMAE on the nature and degree of ecological effects.

Specifically, Silverwood Corporation Limited (SCL) seeks that the rural zoned portions of the following allotments (Figure 1) be rezoned 'Future Urban':

- Lot 6 North (Sec 9 SO475749, 1.5 hectares)
- Lot 6 South (Sec 10 SO475749, 42.3 hectares)
- Lot 1 South (Sec 7 SO475749, 8.3 hectares)
- 90 Arahura Crescent or the 'Landcorp' site (Lot 2 DP 389024 and Lot 34 DP 29428, 62.2 hectares)

The Site has been identified as a 'Potential Residential Area' (medium term) in the Porirua City Council Growth Strategy 2048 (PCC 2019). According to its submission, SCL states that the Site consists of varied topography, with ridges, spurs and gullies, and faces predominantly north, west and east. It describes the Site as undeveloped and either grazed or used for forestry, and includes a mix of grazed pasture on the hills, shelterbelts, forest plantations, with bush-filled gullies. It is described as being the last remaining parcel of rural land in the area as it is surrounded by development to the north, west and east and is bordered by Belmont Regional Park to the south.

SCL states in its submission that "activities associated with the urbanisation of the Site have the potential to affect ecological values through the earthworks, removal of existing vegetation, modification of existing drainage and the generation of stormwater as a result of development (i.e., buildings and roads)". It therefore contracted Tony Payne of RMAE to provide an Ecological Assessment to ensure that any ecological features within the site, including SNAs, are identified and to ensure that future development of the Site would not adversely affect the ecological environment.

The EcIA by RMAE provides an overview of environments at the Site and includes an assessment of the proposed SNAs. In addition, the assessment identifies further sites that are considered to have ecological importance. As a result of their ecological assessment, RMAE concluded that potential adverse significant ecological effects could be avoided, mitigated or remedied, with any significant adverse residual effects remaining being offset through onsite restoration activities. SCL states in its submission that it was therefore of the view that the development of the Site could be undertaken while protecting important ecological values, and that it could appropriately address

adverse ecological effects through management or offsetting. SCL adds that development of the Site, according to the Masterplan designs, would also offer the opportunity to significantly enhance degraded ecological values that may not occur under the current land use.

2. METHODS

Relevant documents and datasets were collated and reviewed, including:

- Ecological Impact Assessment (EcIA) and its associated appendices (RMAE 2020).
- Submission 172 by Silverwood Corporation Limited to PCC.
- The Department of Conservation's (DOC) BioWeb Herpetofauna database.
- National Institute of Water and Atmospheric Research's freshwater fish database.

A site visit was carried out by Wildlands and PCC staff on 17 November 2021. This site visit focussed on the 63-hectare parcel of land managed by Landcorp that was not visited by RMAE for their ecological assessment.

3. PROTECTED AREAS

The RMAE report states that two Significant Natural Areas were identified on the Site. In addition, site investigations by RMAE identified other significant areas.

The first SNA ('**SNA083**: Duck Creek & Saltmarsh', area on site: 9,087 m^2) has been identified at the north-eastern boundary of the Site, north of the proposed 'Waitangirua Link Road', and is described in the Porirua City Council Proposed District Plan (PCCDP) as:

"*Stream network and estuarine wetland of Duck Creek, Whitby (GWRC wetland ID 140). Part of DOC's Duck Creek Scenic Reserve, which was established to protect significant saltmarsh, rare plants and wildlife, and fragile habitats. Estuarine saltmarsh dominated by sea rush, oioi and saltmarsh ribbonwood. Pockets of kānuka-māhoe-kahikatea (*Dacrycarpus dacrydioides*; of local interest)-rewarewa remnant forest exist along the riparian margin, as well rank grass and exotic plant species. Supports 11 Threatened, At Risk and regionally scarce bird species including black-billed gull (*Larus bulleri*; Threatened-Nationally Critical); At Risk-Declining red-billed gull (*Larus novaehollandiae scopulinus*), and South Island pied oystercatcher (*Haematopus finschi*); At Risk-Naturally Uncommon royal spoonbill (*Platalea regia*), Australian coot (*Fulica atra australis*), little black shag (*Phalacrocorax sulcirostris*), and black shag (*Phalacrocorax carbo novaehollandiae*); At Risk-Recovering pied shag (*Phalacrocorax varius varius*), variable oystercatcher (*Haematopus unicolor*), and bush falcon (*Falco novaeseelandiae ferox*); and bellbird (*Anthornis melanura melanura*; Regionally scarce). Freshwater species recorded from this site include the Threatened-Nationally vulnerable lamprey (*Geotria australis*), At Risk-Declining freshwater mussel (*Echyridella menziesi*), giant kōkopu (*Galaxias argenteus*), inanga (*Galaxias maculatus*), koaro (*Galaxias brevipinnis*),*

*longfin eel (*Anguilla dieffenbachii), *and redfin bully (*Gobiomorphus huttoni*); as well as banded kōkopu (*Galaxias fasciatus*), common bully (*Gobiomorphus cotidianus*), common smelt (*Retropinna retropinna*), shrimp (*Paratya curvirostris*), and shortfin eel (*Anguilla australis*); includes kānuka (presumably* Kunzea robusta*; Threatened-Nationally Vulnerable). The estuary provides habitat for the Threatened-Nationally Critical species of polychaete worm,* Boccardiella magniovara. *This site has been identified in the Proposed Natural Resources Plan, Schedule F1b, and F4, as providing important inanga spawning habitat and as a site with significant indigenous biodiversity values in the coastal marine area. Includes indigenous vegetation on Acutely Threatened land environments*."

This SNA is considered to be extremely vulnerable to pollution and sediment inputs, vegetation removal and weed incursions. As part of an area identified for intensification in suburban character study, it is also vulnerable to development.

SNA083 has been assessed against the Regional Policy Statement 23 (RPS23) criteria as follows:

- RPS23a Representativeness: Yes. Representative of Singers and Rogers (2014) SA2 (searush, oioi, glasswort, sea primrose rushland/herbfield) which represent salt marsh plant communities which are endangered in the Wellington Conservancy, and estuarine wetlands which are a nationally vulnerable ecosystem type. Remnant riparian forests are representative of original ecosystem types which are no longer commonplace and are under-protcted in Porirua City.
- RPS23b Rarity: Yes. Supports 11 Threatened, At Risk, and regionally scarce bird species and seven Threatened or At Risk fish species. Contains an estuarine wetland, which is a Threatened-Nationally Vulnerable ecosystem type and a plant community type which is endangered within the Wellington region. Includes indigenous vegetation on a Category 1[1] Threatened Land Environment.
- RPS23c Diversity: Yes. Supports a reasonable level of natural diversity.
- RPS23d Ecological Context: Yes. Provides habitat and enhances connectivity for fish and bird species within Duck Creek.
- RPS23e Tangata Whenua Values: Yes. This site is significant to Ngāti Toa Rangātira for kāinga, wāhi tapu, puna raranga, wai māori, kai awa, kai ngahere, rongoā, and wāhi maumahara reasons.

The second SNA ('**SNA084**: Exploration Drive Kānuka Forest', area on site: 27,725 m^2) has been identified at the north-eastern boundary of the Site, and is described in the PCCPDP as:

*"An area of advanced regenerating kānuka-mānuka-māhoe-mamaku forest, on lowland hills, with a good diversity of podocarp seedlings in the understorey including tōtara. This site significantly enhances connectivity between Eastern Porirua and Whitby, provides habitat for birds including morepork and protects a tributary of Duck Creek, which supports the At Risk-Declining longfin eel (*Anguilla dieffenbachia*), inanga*

[1] This was previously referred to as an "Acutely Threatened" land environment in the Threatened Environment Classfication system.

*(*Galaxias maculatus*), and giant kokopu (*Galaxias argenteus*); includes kānuka (presumably* Kunzea robusta*; Threatened-Nationally Vulnerable), and mānuka (*Leptospermum scoparium*; At Risk-Declining). Includes an area protected by the PCC covenant (1601)."*

The condition of SNA084 is threatened by further fragmentation by residential and Transmission Gully development, anthropogenic disturbances such as track development, and garden weed invasion.

This SNA has been assessed against the Regional Policy Statement 23 (RPS23) as follows:

- RPS23a Representativeness: Yes. Kānuka and/or mānuka forests are representative of current indigenous vegetation types, which are rare and poorly protected in Porirua City.
- RPS23b Rarity: Yes. May support four At Risk freshwater species.
- RPS23c Diversity: No. Contains a low level of diversity, due to largely regenerating vegetation types.
- RPS23d Ecological Context: Yes. Provides stepping stone habitats for birds which enhances connectivity between eastern Porirua and Whitby.
- RPS23e Tangata Whenua Values: Not assessed.

There are also two other areas of the Site that meet the criteria in Policy 23 of the RPS for determining significant indigenous biodiversity values, but are not delinated as SNAs by the PCCPDP. These areas include the seral kānuka forest beneath the transmission lines, which meets criterion (a) and the riparian margins surrounding Duck Creek which meets criterion (d)(i) (RMAE 2020).

4. REVIEW OF POTENTIAL EFFECTS ON TERRESTRIAL AND WETLAND HABITATS

The EcIA by RMAE does not include a detailed vegetation map for the site (although a map of likely wetland areas has been provided), making it difficult to assess the area of each terrestrial vegetation type. Furthermore, no site visit was undertaken for the 63-hectare parcel of land managed by Landcorp, with vegetation having been assessed based on aerial photographs and previous experience with the region.

During the site visit conducted on 17 November 2021, five terrestrial vegetation types were observed on the property. Due to the relatively quick site visit by PCC and Wildlands staff (relative to the site visits conducted by RMAE), it should be noted that this list of vegetation types is not complete for the entire site, particularly the western portion.

The vegetation types observed during the site visit were as follows:

1. Pine shelterbelt comprised of radiata pine (*Pinus radiata*).
2. Mānuka-broadleaved species shrubland. The dominant components of this vegetation type were mānuka (*Leptospermum scoparium* agg.) and māhoe (*Melicytus ramiflorus*). Ground cover vegetation consisted of typical exotic pasture grassland species.
3. Blackberry (*Rubus fruticosus* agg.) vineland.
4. (Pine)/māhoe scrub. This vegetation type consisted of mostly karamū (*Coprosma robusta*), kanono (*C. autumnalis* [=*grandiflora*]), and large-leaved pohuehue (*Muehlenbeckia australis*).
5. Exotic grassland[2]. These areas are dominated intensively grazed pasture including sweet vernal (*Anthoxanthum odoratum*), annual poa (*Poa annua*), cocksfoot (*Dacytlis glomerata*), Yorkshire fog (*Holcus lanatus*), pink ragwort (*Senecio glastifolius*), and rye grass (*Lolium perenne*). Creeping buttercup (*Ranunculus repens*) and lotus (*Lotus pedunculatus*) are present in damper areas. The wetland areas in gullies are grazed, but also include stands of soft rush (*Juncus effusus* var. *effusus*) and water pepper (*Persicaria hydropiper*). Scattered gorse (*Ulex europaeus*) shrubs are also present in some of the gullies.

The areas described as discrete patches of low scrub (most likely gorse) within the lower gully systems by RMAE (2020) are partially correct, although during the site visit it was noted that at least one of these areas contained mānuka-broadleaved srhubland.

For the adjoining eastern portion of the Site, the report only includes a general summary of the terrestrial vegetation types in this 50-hectare area. The descriptions state that the area had been cleared of original forest and converted to pine firest in the late 1980s. The current state is described as mixed vegeation communities with mature pine, successional māhoe and gorse scrub and patches of māhoe scrub with tree ferns surrounding Duck Creek and its tributaries. The report also mentions seral kānuka (*Kunzea robusta*) forest beneath the transmission lines where pine forest was not originally established, and on the northern boundary of the site beneath emergent mature eucalyptus trees within SNA084. It is therefore difficult to assess whether the ecological values assigned to each terrestrial or wetland vegetation type are appropriate and further detail is needed.

Regarding ecological assessment of the wetland environments on the Site, based on inspection of aerial photography in the report, it appears that all wetlands within the eastern portion of the project area have been accurately mapped. However it is difficult to verify if the extent of the wetlands on the western portion are accurate, given the absence of a site visit on the eastern side. Furthermore, the body of the report does not include detailed descriptions of the current wetland vegetation and structure. Detailed descriptions of wetland vegetation are required as they can inform whether certain fauna species may be present, e.g., cryptic species such as spotless crake (*Porzana tabuensis*) and fernbird (*Bowdleria punctata*).

[2] This vegetation description is based on a relatively quick site visit (compared to that carried out by RMAE) and therefore includes both the areas of dry pasture on ridgelines and hillslopes, and the likely PNRP / NPS-FM wetland areas in the gullies mapped in Figures 1-3 in RMAE (2020).

5. REVIEW OF POTENTIAL EFFECTS ON FRESHWATER FLORA AND FAUNA

The report by RMAE states that the site is divided into two catchments. They describe the western Landcorp portion of the site as part the wider Porirua Stream catchment, and the eastern 52-hectare portion of the site as part of the Duck Creek catchment, both of which ultimately feed into the Porirua Harbour. The authors state that both catchments are listed in the RPS as a 'river with significant indigenous ecosystems', and are identified as having inanga spawning habitat at the reach of tidal influence, with streams having habitat for threatened indigenous fish species, and habitat for six or more migratory indigenous fish species.

The authors further describe the Site with the eastern portion bounded by the main stem of Duck Creek with four small, tributaries as of relatively high ecological value (with hard-bottomed stream beds, diverse morphological features, and high shading from dense riparian scrub and pine forest). For the western portion of the site, the report states that the waterways consist of ten (10) small unnamed watercourses and that the gullies consist of a degraded mosaic of mostly small intermittent streams, and novel (induced) wetlands (based on a review of aerial images and recent experience surveying similar environments in the region). With the lack of mapping of the species within and surrounding these waterways (i.e., no site visit and/or research of the NIWA freshwater database), it is not possible to verify the presence or absence of rare or threatened freshwater species, and therefore the magnitude of ecological effects on freshwater species.

Given the significance of the two catchments in the RPS, there are no recommendations for detailed surveys of the freshwater species that may be affected by the change in zonation, and ultimately residential development of the Site. The report instead states that mapping of inland natural wetlands is required by the NPS-FM, and that GWRC may be about to commence this. Furthermore, the report does not appear to include descriptions of the vegetation present in the freshwater habitats.

In Section 4.1, the authors do, however, provide clear statements on the legal requirements for the protection of the streams, tributaries and wetlands on the property, and how these requirements might constrain habitat modification and development on the Site.

6. REVIEW OF POTENTIAL EFFECTS ON INDIGENOUS BATS

The potential for long-tailed bats to use the site appears to have been adequately assessed, however, more information is needed to verify their results. The authors do not provide a citation for the bat surveys that were undertaken at six locations in 2019 for the SH58 project, nor are distances relative to the Site disclosed. There are also no dates or sources provided for the other 'number of surveys' within a 20-kilometre radius of the Site. Understanding where and when these results were taken would help to verify the veracity of their evidence, and to assess the likelihood of bats occurring at the Site.

7. REVIEW OF POTENTIAL EFFECTS ON INDIGENOUS LIZARDS

The RMAE report notes that: *"The areas of scrub and rank grass throughout the site provide suitable habitat for the 'At Risk' listed glossy brown skink (*Oligosoma zelandicum*), northern grass skink (*Oligosoma polychroma*) and the copper skink (*Oligosoma aeneum*). The kanuka forest also provides suitable habitat for the 'At Risk' barking gecko (*Naultinus punctatus*) and 'At Risk' Ngahere gecko (*Mokopirirakau *'Southern North Island'). Again, as part of any resource consent process a detailed survey for these species should be undertaken."*

However, the source(s) of this information is not cited, neither is any information given about the location of lizard species records relative to the site.

At this stage of the ecological assessment process, the identification of lizard habitat on the property, and a recommendation for further survey to determine the presence or absence of terrestrial and arboreal species, are appropriate. The list of lizard species identified as being potentially present at the site is generally correct, however, Raukawa geckos (*Woodworthia maculata*; nationally and regionally Not Threatened) and ornate skinks (*Oligosoma ornata*; nationally At Risk - Declining and regionally Threatened) could also be present based on the habitat descriptions and records in the Department of Conservation herpetofauna database. It should be noted that the threat clsssification of copper skinks has been elevated to 'At Risk - Declining' in the most recent national threat classification listings for lizards (Hitchmough *et al.* 2021), and that this species is regionally threatened (Crisp 2020), therefore the presence or absence of this species will have a more important weight on resource consent decisions going forward.

With the exception of the pine shelterbelt and intensively grazed pasture, all vegetation types present at the Site have the potential to support lizards, and it therefore strongly recommended that a lizard survey is undertaken prior to applying for resource consent for development[3].

8. ASSESSMENT OF POTENTIAL EFFECTS ON INDIGENOUS BIRDS

Some consideration has been given in the EcIA for potential adverse effects on indigenous bird species that are likely to be associated with terrestrial and freshwater habitats, although some omissions need to be addressed. No details are provided on which indigenous bird species favour wetland habitats. The authors state that most of the wetland extent is likely to have formed because of surrounding land use practices including farming and stock activity (i.e., they are novel or 'induced' wetlands), however, the report should include recent survey results (eBird, iNaturalist or the NZ Bird Atlas) to verify the absence of rare or threatened wetland bird species.

The authors correctly state that, as part of any resource consent process, a detailed survey should be undertaken for the two 'At Risk' species that are the most likely to use the Site for nesting: New Zealand falcon (*Falco novaeseelandiae*), which may use the scrub and/or forestry slash areas on the upper ridge of the Silverwood site as nesting

[3] In addition, a Wildlife Act Authority from the Department of Conservation will be required if vegetation clearance or other disturbance of lizard habitat is likely to occur.

sites; and New Zealand pipit (*Anthus novaeseelandiae*), which nests in rough pasture and dense groundcover vegetation.

The report futher states that a wide range of common indigenous species would frequent the site, especially those that occur in the surrounding rural and residential areas. However, as there are patches of indigenous forest and areas of wetland on the Site, other indigenous species that could occur in the terrestrial and wetland habitats may not only include "common and cosmopolitan species".

One indigenous bird species, (pūtangitangi/paradise shelduck, (*Tadorna variegata*; nationally Not Threatened), and two exotic bird species (skylark and goldfinch) were encountered in the eastern portion of the Site during the visit on 17 November 2021.

According to recent observations (≤ 5 years) on iNaturalist or eBird for the Porirua district, a number of Threatened or At Risk species have been observed within five kilometres of the Site. For terrestrial species, these include red-crowned parakeet (*Cyanoramphus novaezelandiae*, At Risk) and North Island kaka (*Nestor meridionalis septentrionalis*, At Risk). For wetland species, these include bittern (*Botaurus poiciloptilus*, Threatened), banded rail (*Gallirallus philippensis*, At Risk), spotless crake (At Risk), fernbird (At Risk). Two 'At Risk' species were also observed on the property itself (white-fronted tern, *Sterna striata*; and New Zealand pipit).

In the absence of a detailed site visit on the eastern portion of the property, the presence of these other Threatened or At Risk species cannot be ruled out. Therefore, the ecological assessment should include any of these species that may have been overlooked.

9. REVIEW OF APPROACH TO ADDRESS ADVERSE EFFECTS (TERRESTRIAL HABITATS)

According to the submission by SCL, *"Many of the constraints and potential adverse ecological effects identified above can be avoided, mitigated (minimised) or remedied, with any significant adverse residual effects remaining being offset through onsite restoration activities."*

Approaches that were offered as effective ways to manage and mitigate potential effects include:

1. Permanent protection of SNAs and other ecologically important habitats by way of vesting in public agencies, joint private ownership through some type of body corporate or other communal ownership structure, or covenant registered against the titles of individual Lots;
2. Pest and weed control measures;
3. Planting using indigenous species to establish shrubland and forest on priority areas, including watercourses and buffers surrounding SNAs; and
4. Best practice stormwater design including incorporation of water sensitive design measures.

These recommendations offer positive ways for generalised impacts to be managed, however, more detail is needed on both the eastern and western portions of the Site to more accurately assess the effects, and subsequently the recommended mitigation or offsetting approaches. For example, mapping of both the wetland and terrestrial vegetation communities is required to better understand the fauna that may or may not be associated with those habitats.

10. REQUEST FOR FURTHER INFORMATION AND GENERAL RECOMMENDATIONS

10.1 Overview

The EcIA relating to the rezoning of the *c.*114-hectare site near Waitangirua has been reviewed. While a great deal of information has been provided in the EcIA report, further clarity and additional information is required to fully understand the scope of works, magnitude of effects, and the appropriateness of the mitigation proposed. Specific requests are outlined below.

10.2 Terrestrial and wetland vegetation

- A vegetation map for both the eastern (Landcorp) and western portions of the Site, and quantification of the area of each habitat type. This should include freshwater and terrestrial vegetation types.
- A more detailed description is also required (vegetation types and species list) for the western portion that did receive a site visit.

10.3 Freshwater flora and fauna

- Provide information from the NIWA Freshwater Fish Database to verify the presence/absence of rare or threatened freshwater species, and therefore better inform the magnitude of ecological effects on freshwater species.

10.4 Indigenous bats

- Details of the sources cited and locations of the bat surveys are needed to confirm the statement that bats are unlikely to reside or transit through the Site.

10.5 Indigenous lizards

- Conduct a search of the Department of Conservation herpetofauna database and iNaturalist and provide further information on the relative location of the lizard species recorded within 10 kilometres of the Site.
- While not required at this stage of the ecological assessment process, it is strongly recommended that a lizard survey occur prior to applying for resource consent for development and application for a Wildlife Act Authority to disturb lizard habitats (if required).

10.6 Indigenous birds

- No mention is made of Threatened or At Risk bird species that occur in the near vicinity of the Site, in both terrestrial and wetland habitats. The ecological assessment should account for any additinal species that may occur at the site.

10.7 Mitigation measures and biodiversity offsetting

- In the absence of site visit to the eastern (Landcorp) portion of the Site, it is difficult to determine what species will be affected, and the magnitude of those effects. It is therefore not possible to assess the appropriateness of the mitigation measures and offsetting proposed.
- The submitters do make some ecologically positive and generalised recommendations to protect and enhance ecological values at the site (e.g., permanent protection of SNAs; pest plant and animal control; planting of indigenous shrubland and forest species on priority areas).

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APPENDIX 1

VASCULAR PLANT SPECIES RECORDED DURING THE VISIT TO THE SILVERWOOD SITE,11 NOVEMBER 2021

INDIGENOUS SPECIES

Dicot. trees and shrubs

Coprosma autumnalis [=*grandifolia*]	kanono, raurēkau, raurākau, manono
Coprosma robusta	karamū, kāramuramu
Kunzea robusta	kānuka
Leptospermum scoparium agg.	mānuka
Ozothamnus leptophyllus	tauhinu

Monocot. lianes

Muehlenbeckia australis	puka

Ferns

Microsorum pustulatum	kōwaowao, pāraharaha, hound's tongue fern
Pteridium esculentum	rārahu, bracken

Rushes

Juncus edgariae	wi, wīwī

NATURALISED AND EXOTIC SPECIES

Gymnosperms

Pinus radiata	radiata pine

Dicot. trees and shrubs

Cotoneaster × *watereri*	
Erica lusitanica	Spanish heath
Rubus sp. (*R. fruticosus* agg.)	blackberry
Ulex europaeus	gorse

Grasses

Anthoxanthum odoratum	sweet vernal
Dactylis glomerata	cocksfoot
Holcus lanatus	Yorkshire fog
Lolium perenne	rye grass
Poa annua	annual poa

Rushes

Juncus effusus var. effusus	soft rush, leafless rush

Composite herbs

Bellis perennis	lawn daisy
Cirsium arvense	Californian thistle
Cirsium vulgare	Scotch thistle
Hypochaeris glabra	smooth catsear
Hypochaeris radicata	catsear
Senecio glastifolius	pink ragwort
Taraxacum officinale	dandelion

Dicot. herbs (other than composites)

Brassica rapa subsp. *sylvestris*	wild turnip
Digitalis purpurea	foxglove
Galium aparine	cleavers
Geranium dissectum	cut-leaved geranium
Lotus pedunculatus	lotus
Persicaria hydropiper	water pepper
Plantago major	broad-leaved plantain
Ranunculus repens	creeping buttercup
Rumex acetosella	sheep's sorrel
Stachys sylvatica	hedge woundwort
Stellaria media	chickweed
Trifolium repens	white clover

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