Before the Independent Hearings Panel
at Far North District Council

under: the Resource Management Act 1991

in the matter of: Submissions and further submissions in relation to the proposed Far North District Plan

and: 15c Rezoning

and: **Lucklaw Farm Limited**

Statement of Evidence of Melanie Robyn Dixon (Ecology)

Dated: 11 June 2025

TABLE OF CONTENTS

STATEMENT OF EVIDENCE OF MELANIE ROBYN DIXON

INTRODUCTION

1 My full name is Melanie Robyn Dixon.

2 I am an ecologist with over 25 years of experience, first for local government then as a consultant. I have a particular focus on wetland ecology. I am employed as the Principal Ecologist for Collaborations, a small consultancy that works across a range of environmental, land and water science fields.

3 I have a BSc. in ecology and botany and a diploma in environmental science, both from Auckland University.

4 I have been engaged by the submitter, Lucklaw Farm Limited. I am familiar with the submission made by Mr John Gilbert Sturgess for Lucklaw Farm Limited and Taranaki Trust (submitter number S550, S551, S552, S585) and Grace Sturgess (submitter number S553) and the request that the zoning in the Proposed District Plan of the Lucklaw Farm blocks (690 & 700 Rangiputa Road, Karikari Peninsula) and properties to the west be changed from Rural Production to a combination of Mixed Use/Residential, Rural Lifestyle/Settlement and Rural Production (refer **Figure 1** below).

Figure 1: Proposed Zoning (A Mixed Use / Residential; B Rural Lifestyle; C Rural Production)

5 I undertook a site visit on 27 March 2025 and I have provided ecological advice into the long-term masterplan (Preliminary Spatial Strategy) developed for the site by BGLA. for the site.

CODE OF CONDUCT

6 Although this is not an Environment Court hearing, I note that in preparing my evidence I have reviewed the code of conduct for expert witnesses contained in part 9 of the Environment Court Practice Note 2023. I have complied with it in preparing my evidence. I confirm that the issues addressed in this statement of evidence are within

my area of expertise, unless otherwise noted. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

SCOPE OF EVIDENCE

7 In my evidence I will address:

7.1 The ecological context of the area, where the zoning changes is sought, namely the values of the Puwheke (Puheke) Beach, the Rotokawau lakes and surrounds.

7.2 The current land use and threats to ecological values.

7.3 The wider concept for redevelopment as set out in Puwheke Preliminary Spatial Strategy developed by BGLA (Appendix 4 of Ms Gilbert's evidence).

7.4 The potential ecological risks and opportunities of the proposed change in zoning and proposed redevelopment concept.

8 In preparing this evidence I have reviewed:

8.1 **Mr Langman's** planning evidence

8.2 **Ms Gilbert's** landscape evidence

8.3 **Mr Blyth's** evidence regarding hydrology, water sensitive design and potential development impacts on water quality.

8.4 The Rangiputa Preliminary Spatial Strategy, developed by Ms Bridget Gilbert Landscape Architecture and Earl Design, attached to Ms. Gilbert's evidence. This shows the wider concept for the future use of the site and is relevant to the zoning.

8.5 Various reports and plans as referred to in this evidence.

ECOLOGICAL CONTEXT

9 Puwheke Beach, Rotokawau Lakes and surrounds are a recognised area of significance within the Aupōuri Ecological District. The Aupōuri Ecological District encompasses the Aupōuri and Karikari Peninsulas and is characterised by '*shifting and consolidated sand dunes interspersed with small lakes, marshy hollows and peat swamps, and three large harbours'*. Acidic, low fertility soils (relating to the impact of the former Kauri forest) is also a feature of this district, and (where vegetated) these support heathlands, an unusual and low growing 'scrub' vegetation type generally dominated mānuka[1].

10 Puwheke Beach, Rotokawau Lakes and surrounds form part of an Outstanding Natural Landscape (Outer Karikari Beach, Puheke and South Rangiputa Head) in the Proposed District Plan. Puwheke beach itself contains largely intact native dune vegetation communities on the foredune and mid-dune[2]. In the dunes is a small estuary and dune

[1] Description taken from: Conning L., and Holland W. (2003). *Natural areas of Aupouri Ecological District: Reconnaissance survey report for the Protected Natural Areas Programme*. Department of Conservation, Whangarei, New Zealand Protected Natural Areas Programme Series: 372 pp.

[2] Described Boffa Miskell (2022) *Memorandum on the Puwheke Beach ecological values*. 8pp. Prepared for Lucklaw Farm.

swales, all dominated by native vegetation. The foredunes, back dunes, dune swales and ~~a~~ the small estuary are all identified in the Proposed District Plan as part of the Outstanding Natural Character Area (ONC 44).

11 Wetlands are a feature of this area and there are two dune lakes that formed on a hard sand pan (Rotokawau West and the smaller Lake Rotokawau East[3]) including a large, vegetated wetland (a coastal peatland) located on the northern boundary of the eastern lake. All three of these wetlands have been identified as being part of the top 150 wetlands[4] in the Northland region. The coastal peatland to the north of Rotokawau East is recognised in the Proposed District Plan as a High Natural Character area (HNC99). There is another large freshwater wetland (also a coastal peatland) at the western end of the beach that is also recognised as a High Natural Character Area (HNC-96).

12 An area of heathland is found along the slope along the western boundary (north of the Rangiputa Wastewater Treatment Plant). Heathlands are ecologically important ecosystems that support a range of often rare plant and animal species adapted to nutrient-poor, acidic soils. These open, shrubby landscapes are remnants of ancient vegetation patterns and human impacts, particularly fire. Gumlands are a seasonally wet variety of heathland[5]. Intact gumlands are dominated by mānuka (*Leptospermum hoipolloi*), in association with heath species (*Dracophyllum lessonianum, Epacris pauciflora*) and with an understory of tangle fern (*Gleichenia* spp.) and sedges (*Schoenus brevifolius, Machaerina teretifolia*). Whilst these species are found growing in this area, the heathland is modified by the former use of this area as a pine plantation, mānuka honey plantations (set up by the previous owner, who planted non-local mānuka species) and by pest plants.

13 Overall, the diversity of habitats, ecological sequences (from freshwater to shrubland and dune vegetation), representative value, Threatened and At Risk species present[6], and presence of large and diverse wetlands means that the area is considered to have very high ecological value. Wetlands are a threatened ecosystem both nationally and, in the Northland Region, where wetland loss exceeds 95%[7].

14 Whilst maps showing Significant Natural Areas (SNAs) were removed from Council's Proposed District Plan, a 412 hectare area was mapped as a Significant Natural Area

---

[3] Naming follows that adopted by Northland Regional Council. Rotokawau is a name given to several lakes (roto) in the Northland region. Kawau is te reo for shag (cormorant).

[4] Collectively ranked 15th out of 304 identified wetlands in Northland. (Wildlands 2011).

[5] See the Northland Regional Policy Statement (2024) Section H.6. 'Wet heathland' describes habitat found in Northland that includes gumland and ironstone heathland. When seasonally wet and consisting of wetland vegetation this is wetland. Wet heathland is often found in mosaics with other low fertility habitat such as bog and heathland. This is vulnerable habitat and can have very high biodiversity values" See also a general description of this vegetation type at https://www.landcareresearch.co.nz/publications/naturally-uncommon-ecosystems/wetlands/gumlands/.

[6] Surveys of the beach and surrounds (Boffa Miskell 2022, Wildlands 2023) found the area a range of indigenous species that are listed as Threatened or At Risk, for example, shorebirds, wetland birds (including matuku – Australasian bittern) a shore skink and several plants.

[7] The current extent of wetlands is estimated to be 14,291 ha, or about 3.2% of historic extent (453,251 ha). See Clarkson, B.R. and Price, R.J. (2022) A framework for monitoring Northland wetlands. Manaaki Whenua – Landcare Research report (Envirolink Grant 2205-NLRC228. Available at: https://www.envirolink.govt.nz/assets/Envirolink/2205-NLRC228-A-framework-for-monitoring-Northlands-wetlands.pdf

(FN411) by Far North District Council's consultants (Wildlands 2019)[8]. It should be noted that, whilst broadly correct, the SNA was not 'ground-truthed' and as such includes some areas of non-significant vegetation, for example, an area of old pine plantation to the north of the eastern lake, areas of wilding pine, and areas of non-local mānuka planted for honey production[9]. A copy of the extract from the SNA report relating to the area is included in **Attachment A**.

15 I also note that the proposed Outstanding Natural Character (ONC) and High Natural Character (HNC) overlays have not been 'ground-truthed', a concern raised by Lucklaw Farms in their original submission (S551.003). For instance, HNC 96, a freshwater wetland located behind the dunes at the western end of the beach, shares the same description as HNC 99, the freshwater wetland north of Lake Rotokawau West. Regarding ONC 44, which covers the Puwheke Beach dune system, I understand that the Council has agreed to shift the boundary seaward to align with the Regional Policy Statement's Outstanding Natural Character overlay for Puwheke Beach[10].

LAND USE AND THREATS

16 Gum digging was an important economic activity in Northland until the invention of synthetic alternatives in the 1930s[11]. Aerial photography from 1944 shows that almost all vegetation had been removed from the Karikari Peninsula by this date and soils extensively disturbed by this activity.

17 Following the cessation of gum digging, the Lucklaw Farm blocks have been used for cattle farming, with extensive areas converted into pine plantations and mānuka honey production. Additional modifications by the previous owner of the site include the development of an airstrip extending from Lake Rotokawau (to the west) toward the settlement of Rangiputa and preliminary earthworks and vegetation clearance to construct fairways for a planned (but never completed) golf course between the dunes and the lakes[12].

18 The main threats to the ecological values of the area as listed below. They are each discussed briefly in the following paragraphs.

18.1 Introduced pest animals

18.2 Introduced pest plants

[8] Wildlands (2019) Significant Indigenous Vegetation and Habitats of the Far North District Contract Report No. 4899d prepared of Far North District Council

[9] As noted in the extract in Appendix A the vegetation mapping was not confirmed by a site visit. The matter was raised in an earlier District Plan Hearing.

[10] See the Section 42a Report Coastal Environment (2024) prepared for Hearing 4. The report author states that it is not "*necessary, practical or appropriate*" (at para. 526) to ground the ONC and HNC on page 129 notes that "*My understanding is that PDP map of ONC 44 has been trimmed to align with the existing vegetation whereas extend the coastal environment overlay mapping extends to MHWS. In my view, the boundary of ONC 44 should align with the boundary of the coastal environment overlay consistent with the RPS. I note that this appears to be a wider mapping issue in terms of how some of these overlays align with the coastal environment overlay and MHWS*." Available at: https://www.fndc.govt.nz/__data/assets/pdf_file/0017/30257/Coastal-Environment-S42A-report.pdf

[11] Carl Walrond, 'Kauri gum and gum digging', Te Ara - the Encyclopedia of New Zealand, http://www.TeAra.govt.nz/en/kauri-gum-and-gum-digging/print (accessed 3 June 2025)

[12] *Per comm*. J. Sturges. These earthworks were undertaken when the pines were felled form this area.

18.3 Grazing

18.4 Increased nutrients

18.5 Human disturbance of dune habitat

Pest animals

19 Pest animals are considered the largest threat to biodiversity in New Zealand and managing pests is considered essential for the survival of native fauna and flora. Possums, rats, feral cats and stoats directly predate on native fauna as well as competing with them for food and habitat. Possums, pigs and rabbits eat and damage native flora.

20 Despite the high-quality habitat available, a survey by Wildlands in 2023[13] found few records of wetland bird species (such as mātātā (fernbird) and matuku-hūrepo (Australasian bittern)) and did not detect any geckos, a fact they credited to the combined impact of pest animals. Site observations are that pigs are abundant, and it appears that possums have become increasingly common since the Department of Conservation no longer undertakes pest control operations on land they administer in the area[14].

Pest plants

21 Sydney Golden Wattle (*Acacia longifolia*) is by far the most abundant in the area. It is a hardy pioneer species that thrives in coastal environments and its success in nutrient-poor habitats is generally attributed to its nitrogen-fixing capabilities. It is a flammable species and fire (along with any other disturbance that results in bare soil) acts as a significant ecological trigger, promoting mass germination from the soil long-lived seed bank[15]. It is common in the vicinity, including at Kaumaumau wetland across the harbour to the west. A strategic approach is needed to its management, given the impact it is having on high value ecosystems, noting that eradication is not likely to be possible.

22 Other pest plants in the area include gorse (*Ulex europaeus*), pampas grass (*Cortaderia selloana*). Rose-scented geranium *(Pelargonium capitatum*) was recently discovered in this area and has potential to take over large areas of duneland[16].

Grazing

23 The effects of livestock grazing depends on the intensity of the grazing pressure and the vulnerability of the area grazed and includes; the consumption of plants, the trampling of plants (including below ground parts), the dispersal of pest plant seeds (both direct and the indirect opening up of habitat for pest plants) and nutrient and

[13] Wildlands (2023) Assessment of Indigenous Biodiversity at Rotokawau Lakes and Environs, Karikari Peninsula, Northland. Report prepared for John and Andrea Sturgess, Lucklaw Farm.

[14] J.Sturgess *pers com.* Also discussed in Wildlands (2023).

[15] See the following and references contained within: Global Invasive Species Database (2025) Species profile: *Acacia longifolia*. Downloaded from http://www.iucngisd.org/gisd/species.php?sc=1662 on 01-06-2025.

[16] This is advice that was provided to Wildland Consultants who found and identified this species.

bacterial contamination from dung and urine[17]. In recognition of the impacts on grazing the managers of Lucklaw Farm have reduced both stocking rates and fertiliser as well as upgrading fencing[18]. However, removing of areas of land from grazing can increase management needs, particularly the requirement for pest plant control.

Nutrient impacts

24 The wetlands associated with Puwheke Beach, Rotokawau Lakes and surrounds (located on Lucklaw Farm and adjacent crown land) are types that are naturally low in fertility. As such they are uniquely threatened by any increased nutrients. Nutrients may come directly from stock grazing (as discussed above), from fertilising paddocks, pest animals (e.g. pigs), wild bird species, and from wastewater discharges[19].

25 Increased nutrient levels appear to already be having a detrimental impact on the dune lakes. These dune lakes are relatively shallow with limited surface water inflows and outflows (the eastern lake appears to have no natural outflow[20]). Wells and Champion (2013) have identified the lakes are in moderate to poor condition, being nutrient rich[21]. The invasive aquatic plant, alligator weed (*Alternanthera philoxeroides*), is also well established. More recently Wildlands (2023) noted that the water was turbid in both lakes and that the water quality of the smaller eastern dune was noticeably poorer than that of the larger lake.

Human disturbance

26 The impact of human disturbance, in the form of vehicle use along the Puwheke Beach and associated sand dune was covered at Hearing Stream 4 (Natural Character, Natural Features and Landscapes, Coastal Environment and Ecosystems & Indigenous Biodiversity) in 2024. At this hearing Dr Taylor presented evidence[22] on behalf of Lucklaw farms regarding the impact unrestricted vehicle access along Puwheke Beach on the structure of the dunes, dune vegetation and shorebirds.

CONCEPT PLAN FOR REDEVELOPMENT

27 In recognition of the very high ecological values of the area (which are predicated on low-nutrient conditions) and the challenge of effectively managing the threats to these (as discussed in this evidence), the managers of Lucklaw Farm have been exploring alternatives uses for the site that maximises ecological outcomes whilst creating economic benefits.

---

[17] Reeves, P.N. and Champion, P.D. (2004) Effects of livestock grazing on wetlands: literature review. NIWA client report prepared for Environment Waikato.

[18] J. Sturgess, pers comm.

[19] As discussed that Hearing

[20] There is, however, pipe the carries water under the road when lake levels are high (J. Sturgess *per comm.*)

[21] Wells R. and Champion P. 2013: Northland lakes ecological status 2013. National Institute of Water and Atmospheric Research Ltd, Hamilton, New Zealand. 294pp. Prepared for Northland Regional Council. Available at: https://www.nrc.govt.nz/media/j0rhu04q/northlandlakesecologicalstatus2013s328s416.pdf

[22] Hearing 4 Submitter evidence Lucklaw Farm Ltd S551, S585 - G Taylor evidence. Available at: https://www.fndc.govt.nz/__data/assets/pdf_file/0023/30884/Hearing-4-Submitter-evidence-Lucklaw-Farm-Ltd-S551,-S585-G-Taylor-evidence.pdf

28 The overarching concept is to create a tourist destination with residential and commercial development in appropriate areas. The proposed tourist activities focus on low-impact experiences that connect visitors with nature while supporting conservation and local communities. Revenue will support habitat restoration, pest control, and other conservation initiatives. This is shown in **Figure 2** below.

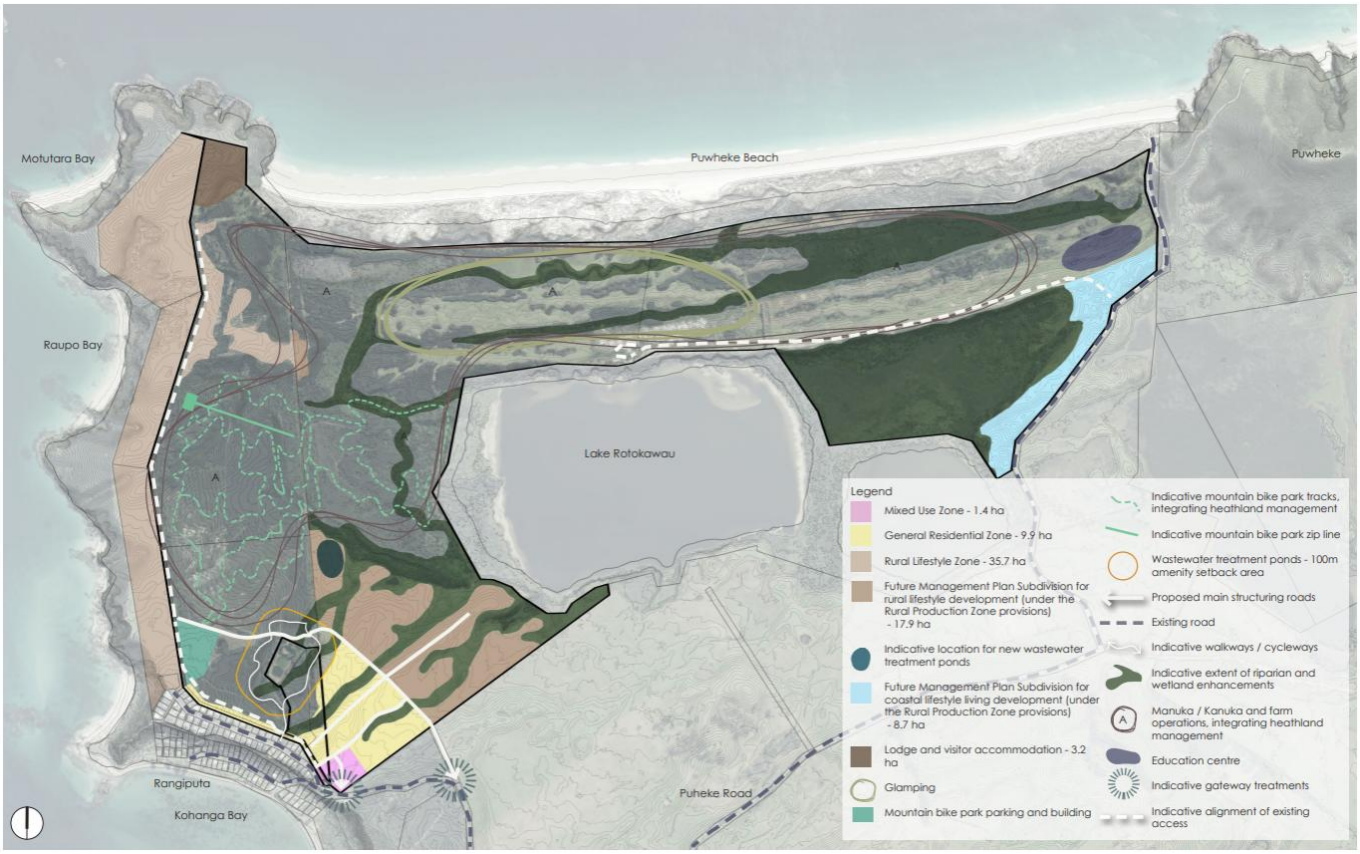


Figure 2. Conceptual development for Lucklaw Farms Limited (Preliminary Spatial Strategy) June 2025. Attached at Appendix D of Ms Gilbert's Landscape Evidence.

29 The concept for redevelopment of the area, as set out in the Puwheke Preliminary Spatial Strategy consists of the following development areas/activities:

29.1 Mixed Use and General Residential near Rangiputa township

29.2 Rural Lifestyle Living

29.3 Coastal Lifestyle Living (Future Management Plan subdivision area)

29.4 Lodge and visitor accommodation, on the western headland overlooking the Puwheke Beach

29.5 "Glamping"

29.6 Recreation (Mountain biking, ziplining and public walkways)

29.7 Education centre

29.8 Wetland and riparian enhancement areas.

29.9 New Wastewater Treatment Plant for Area A.

30 A change to the zoning is requested to achieve the commercial and general residential development in Area A and lifestyle development of Area B (see **Figure 1**, paragraph 4). The remainder of the proposal is likely to proceed under either a Management Plan subdivision or Environmental Benefit Subdivision (SUB-R6 and SUB-R7), noting that both regional and local consents would also be required for this to be actioned.

POTENTIAL RISKS

31 There are several potential risks to ecological values from the proposed development. These include:

31.1 the potential loss of indigenous vegetation (and associated habitat for fauna) from within proposed development areas;

31.2 water quality and quantity impacts, for example from sedimentation (during construction) or stormwater (post construction);

31.3 an increase in pest plants (through gardens) and an increase in pets (especially cats) that can harm wildlife, from additional dwellings.

31.4 wildlife disturbance from an increased human presence

Vegetation and habitat for fauna

32 In terms of vegetation loss, the proposed Mixed Use Zone and General Residential Zone are located close to the township itself in areas of current pasture and as such no vegetation loss is proposed. Generous riparian planting (> 30m minimum wide) is proposed along waterways in this area.

33 The Rural Lifestyle Living, Coastal Lifestyle Living, Lodge and visitor accommodation and proposed education centre have all been located on the fringes away from "core" ecological areas. Minor vegetation removal, mostly of exotic species, may be required.

34 Vegetation removal would be required for the proposed recreational activities. The mountain biking and ziplining are proposed in an area of heathland. As noted earlier in in paragraph 12 this vegetation type can support threatened species and parts may meet the statutory definition of 'wetland'. The final location of any tracks and other infrastructure would necessarily be dependent on a detailed survey of this area and a detailed management plan, and if necessary, resource consent applications.

35 Vegetation removal would also be required for tracks as shown. Some minor vegetation may also be required in the proposed glamping area, to create a pedestrian access track to the beach.

Water quality impacts

36 These matters are covered by Mr Blyth evidence. In brief, there are risks regarding stormwater contamination, sedimentation during construction and nutrients from wastewater treatment. However, he is confident that if a Water Sensitive Design approach is taken to design, wastewater is managed to a best practice standard, and earthworks are managed through appropriate erosion sediment control plans (ESCP),

water quality could be maintained and potentially enhanced. I assume that any resource consent application will be required to provide these details.

Human disturbance

37 The proposed development has the potential to increase the disturbance (e.g. through increased noise and light) of sensitive wildlife in association with the recreational activities and the glamping in particular (although in the proposed glamping areas farm activities are likely to be causing some disturbance).

38 In my opinion this human disturbance can be addressed in the details to be contained in a management plan relating the proposed future development in the rural zone.

POTENTIAL BENEFITS

Restoration through riparian planting and ecological enhancement

39 The proposed development includes the restoration of riparian margins, which will protect water quality, improve instream habitat and improve connections (e.g. corridors for wildlife) through the landscape, particularly in the general residential and commercial development area. Further targeted ecological enhancements will also occur where required, e.g. specific planting in the proposed glamping area and wetland enhancement. This is an opportunity to repair some of the damage caused by gum digging and farming. Given the high ecological values, all planting should be strictly based on the use of plants ecosourced to the Aupōuri Ecological District.

Specific restoration of heathlands

40 The heathlands areas have the highest management needs of any of the ecological features in the area. Heathlands are an early successional ecosystem that rely on fire disturbance for creation and maintenance in the landscape. Anecdotally, there is higher plant diversity on the 'edges' (including sides of tracks) than in intact areas. This indicates that the ecosystem has some tolerance for clearance and use (e.g. as for mountain biking) provided it is within the context of a sensitive management. A specific management plan which outlines vegetation management such as (1) the staged removal of non-local manuka, (2) the need for fire-breaks in this flammable plant community and (3) a strategic approach to pest plant control should be incorporated as part of any use of this area.

41 In the Proposed Northland Regional Plan (2024), it is noted that '*Wet heathlands (including gumland and ironstone heathlands) are wetlands because they are seasonally wet, consist of wetland vegetation, and are often found in mosaics with other low fertility habitat such as bogs and heathland*.' A wetland delineation has not been completed for this area, but it is likely to contain at least some areas of wet heathland which provides an extra protection for this area, ensuring it would be necessary to avoid, remedying or mitigate any adverse effects on the area.

Effective management of pest animals and pest plants / constraints on pet ownership

42 The management needs in relation to pest animals and pest plants on the site are very high. Effective pest management can be incorporated into a combination of sensitive redevelopment and an ongoing tourism operation more easily than conventional farming operation. An example of a sustainable tourism operation that has achieved

effective pest control is Rotorua Canopy Tours, where ziplines pass over nearly 800 traps the company's set as part of an eradication programme.

43 Any residential development near sensitive areas (i.e., proposed Lifestyle Living, Coastal Lifestyle Living, Lodge and visitor accommodation) should have restrictions on pets, in recognition of the adverse impact free-roaming pets have on native wildlife. Restrictions on cat and dog ownership are becoming increasingly common for subdivisions throughout Northland.

Reduction in nutrient levels

44 The proposal could result in reduction in nutrients entering waterways, lakes and wetlands from a reduction in area grazed. Proposed wastewater management is discussed by Mr Blyth, in his evidence, who cites research (at Paragraph 28) that the average 4 bedroom home produces less nutrients than a typical sheep and beef farm.

45 In terms of enhancing the dune lakes, Mr Blyth also recommended the wider community consider developing a catchment management plan for the dune lakes, working with other large landowners particularly Rangiputa Farm (managed by Pāmu – formerly Landcorp).

Potential benefits of increased human activity

46 The proposed development would result in a greater human presence at Puwheke beach. This may have benefits, as when more people are present, individuals are more likely to feel observed. This "eyes on the beach" could potentially deter rule-breaking behaviour such as driving on sand dunes and lead to a change of the cultural norm for beach use.

CONCLUSION

47 Although the scale of potential adverse effects cannot be known until the necessary consents are applied for, it is my view that any future ecological impacts resulting from the zoning changes requested in Lucklaw Farm's submission are likely to be relatively minor in both scale and intensity.

48 These potential effects should be considered in the context of both the current and potential future impacts of the land use anticipated by the zoning in the proposed District Plan (i.e., Rural Production). The ecological management needs of the site are very high. I note that the inclusion of wetlands in the District Plan overlays may not necessarily lead to their protection, given that central government is at the time of writing consulting on changes to the National Policy Statement for Freshwater (NPS-FW) to allow beef cattle to grazing any wetland, including those supporting threatened species, as a permitted activity[23].

49 As noted in this evidence, the proposed development comes with potential risk but also opportunities, including targeted riparian restoration, effective management of pest animals and pest plants and a 'bespoke' approach to heathland management. The

[23] The Government is consulting on proposals to amend the National Policy Statement for Freshwater Management with submission closing 27 July 2025.

long-term sustainability of wetlands, heathlands, and dune vegetation compatible with a change in zoning.

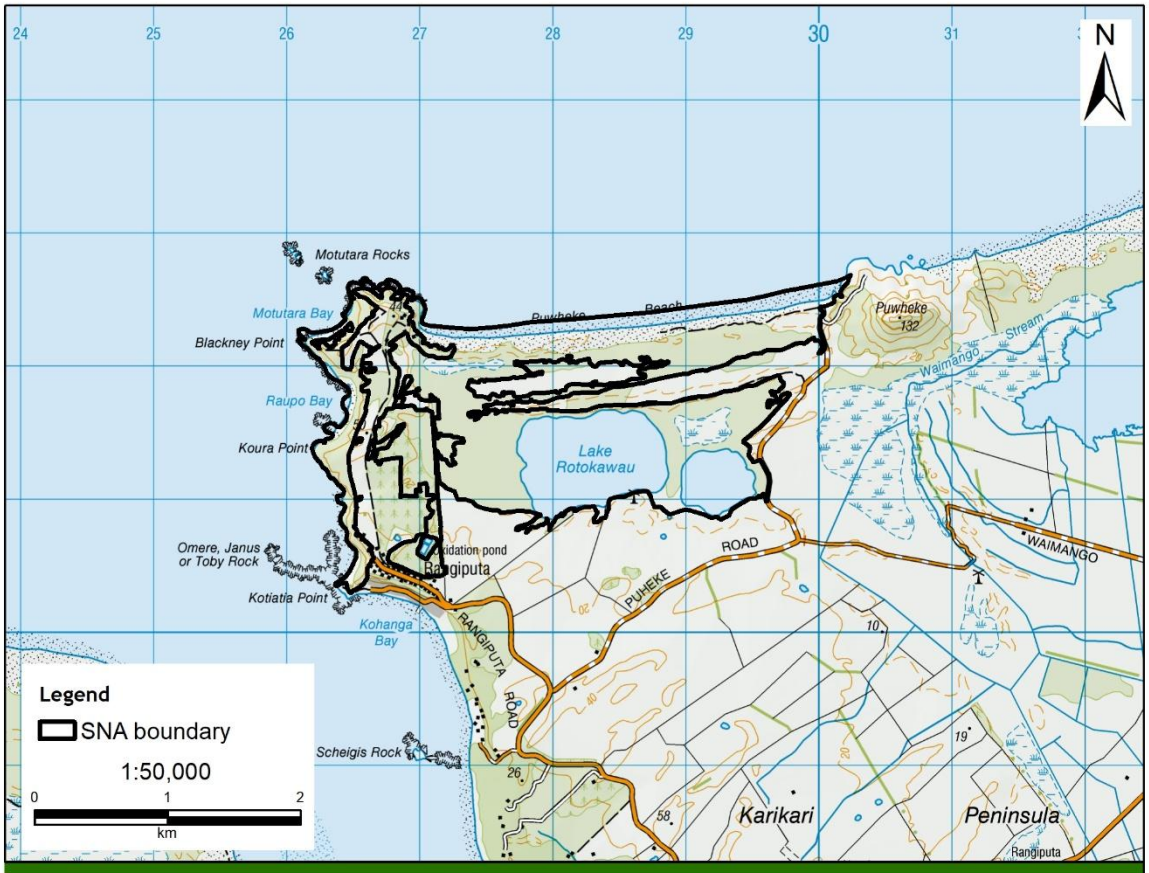
Dated: 11 June 2025

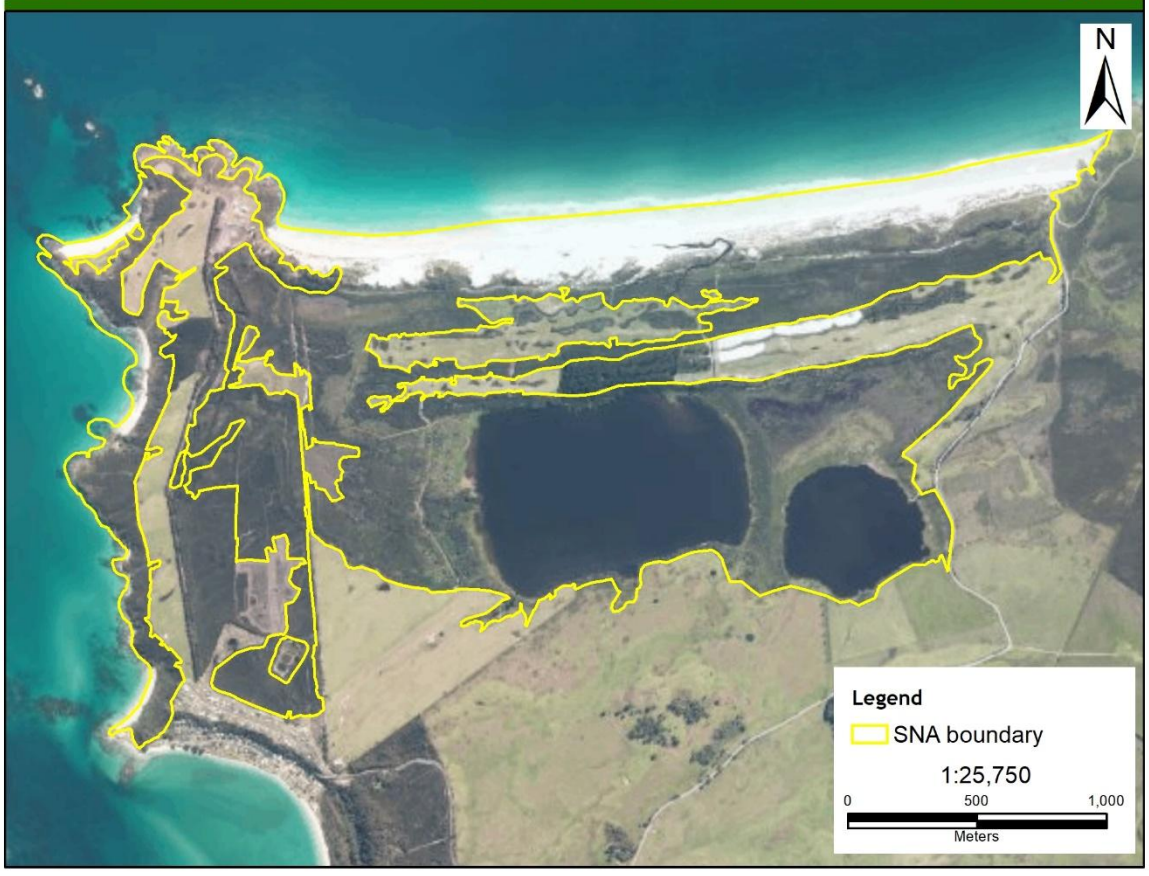
Melanie Robyn Dixon

Attachment 1: SNA extract from Wildlands 2019

FN411

Puwheke Beach and Rotokawau Lakes





PUWHEKE BEACH AND ROTOKAWAU LAKES

SNA ID:	FN411
Protection Status:	Includes Public Conservation Land (Puwheke Recreation Reserve, Marginal Strip - Lake Rotokawau, Marginal Strip - Puwheke Beach)
Area (ha):	412.16
Altitude Range (m):	0 - 43
Ecological District:	Aupōuri
Grid Reference:	E1628098, N6141647

VEGETATION TYPE	LANDFORM
Open water	Dune lake
Pōhutukawa coastal association	Lake margin
Mānuka swamp scrub	Interdune flats and hollows
Kānuka-mānuka scrub	Dunes and consolidated dunes
Pīngao sedgeland	Dunes
Spinifex grassland	Foredune
Coprosma acerosa-pohuehue association	Dunes
Coprosma acerosa-oioi-pohuehue association	Dunes
Raupō reedland	Dune hollow
Gorse-kānuka scrub	Dunes
Oioi rushland	Sand flats and dune hollow
Harakeke flaxland	Dune hollow
Coprosma tenuicaulis-mānuka swamp scrub	Alluvium
Conning and Holland (2003)	

Flora[1,2]:	*Thelymitra* (a) (WELT SP79140; Ahipara) (Threatened-Nationally Critical), bog clubmoss (*Lycopodiella serpentine*; Threatened-Nationally Vulnerable), *Todea barbara* (Threatened-Nationally Vulnerable), kānuka (*Kunzea* sp.; Threatened-Nationally Vulnerable), *Pimelea villosa* (At Risk-Declining), pōhutukawa (*Metrosideros excelsa*; Threatened-Nationally Vulnerable), pīngao (*Ficinia spiralis*; At Risk-Declining), *Cyclosorus interruptus* (At Risk-Declining; 1978 record), *Pellaea falcata* (At Risk-Declining), mānuka (*Leptospermum scoparium*; At Risk-Declining), *Utricularia delicatula* (At Risk-Relict), wire rush (*Empodisma minus*; regionally significant), *Veronica diosmifolia* (regionally significant), and *Cryptostylis subulata* (Non Resident Native - Coloniser) (Conning and Holland 2003).
Fauna:	Bird species include Australasian bittern (*Botaurus poiciloptilus*; Threatened-Nationally Critical), Caspian tern (*Hydroprogne caspia*; Threatened- Nationally Vulnerable), white-fronted tern (*Sterna striata striata*; At Risk-Declining), North Island fernbird (*Bowdleria punctata vealeae*; At Risk-Declining), spotless crake

[1] Three indigenous plant species (pōhutukawa, kānuka, mānuka) in the Myrtaceae family were recorded at the site. All of the Myrtaceae species are at risk of infection by myrtle rust (*Austropuccinia psidii*), a potentially devastating rust which has no known treatment. Along with other species in the Myrtaceae family, the threat status of the species present has been elevated as a precautionary measure based on the potential threat posed by myrtle rust (see de Lange *et al.* 2018). However, the Myrtaceae species found at the site were not assessed against the ecological significance criteria because these species are common and widespread in the Aupōuri Ecological District.

[2] The 2014 *Kunzea* revision (de Lange 2014), split the *Kunzea ericoides* complex into ten separate species of *Kunzea*. There are three *Kunzea* species in Northland: *Kunzea amathicola*, *Kunzea linearis*, and *Kunzea robusta*, which are all ranked as Threatened-Nationally Vulnerable (de Lange *et al.* 2018). There has been no field inspection of this site since the revision and the *Kunzea* species present at the site is not known.

(*Porzana tabuensis tabuensis*; At Risk-Declining), marsh crake (*Porzana pusilla affinis*; At Risk-Declining), Northern New Zealand dotterel (*Charadrius obscurus aquilonius*; At Risk-Recovering), New Zealand dabchick (*Poliocephalus rufopectus*; At Risk-Recovering), variable oystercatcher (*Haematopus unicolor*; At Risk-Recovering), pied shag (*Phalacrocorax varius varius*; At Risk-Recovering), black shag (*Phalacrocorax carbo novaehollandiae*; At Risk-Naturally Uncommon), little black shag (*Phalacrocorax sulcirostris*; At Risk-Naturally Uncommon) and New Zealand scaup (*Aythya novaeseelandiae*; regionally significant) (Conning and Holland 2003).

Aquatic fauna species include black mudfish (*Neochanna diversus*; At Risk-Declining; 1999 record), inanga (*Galaxias maculatus*; At Risk-Declining), and the Not Threatened common bully (*Gobiomorphus cotidianus*), and shortfin eel (*Anguilla australis*) (Conning and Holland 2003).

Snail species include the Archey's dune snail (*Succinea archeyi*; Threatened-Nationally Endangered) (Conning and Holland 2003).

Notes/Comments: Contains coastal wetlands, dune lakes, and heathlands (Conning and Holland 2003).

Significant: Yes

Significance Justification:

Criteria Met	Justification
1a(i)	Contains representative coastal associations, scrub, sedgeland, and reedland vegetation types.
1a(ii)	Contains representative *Machaerina articulata* reedland vegetation types which would have existed circa 1840.
1a(iii)	Contains a representative assemblage of water bird and freshwater fish species.
1b(i)	A large area of wetland and dune lake habitats at the Ecological District scale.
1b(ii)	Does not appear to be substantially degraded by anthropogenic activities.
2a(i)	The site occurs on a 'Chronically Threatened' land environment.
2a(ii)	Duneland vegetation has been much reduced in the Northland Region.
2a(iii)	Contains a mosaic of bog and fen habitats which exceed the minimum threshold sizes for these wetland types.
2b	Supports 'Threatened', 'At Risk' and regionally significant flora and fauna species.
2d(i)	Coastal pōhutukawa associations adjacent to dune lakes comprise a very rare ecological unit in Northland.
3a(i)	Contains a high diversity of vegetation and habitat types.
3a(ii)	Contains a good diversity of species.
3b	Contains vegetation types which reflect variations in moisture levels.
4a	Part of a complex of lakes and wetlands which provide an important link in the chain of habitats on the Aupōuri Peninsula.
4c	Provides important freshwater fish and waterbird habitat.

Threats/Modifications/ Vulnerability (Desktop Assessment):	This site contains willow-leaved hakea, willow weed, gorse, Sydney golden wattle, pampas, black wattle, brush wattle, pine, buffalo grass, apple of Sodom, and kikuyu (Conning and Holland 2003).
References:	Conning and Holland (2003).
Assessment for Significance Based On:	Northland 0.1 metre Urban Aerial Photos (2017) and existing information as cited above.
Boundary Changes Since 1999:	Boundaries adjusted to follow the extent of indigenous vegetation based on 2017 digital aerial photographs.
Field Work Required?	No
Assessment Date:	31/5/2019