21 Pitt Street,
PO Box 6345, Auckland,
1141, New Zealand
T: +64 9 300 9000 // **F:** +64 9 300 9300
E: info@beca.com // www.beca.com

Central Hawke's Bay District Council
PO Box 127
28 – 32 Ruataniwha Street
Waipawa 4210

27 October 2021

Attention: Darren de Klerk

Dear Darren

Pōrangahau Wastewater Discharge to Land - Ecology s92 Response (P:D.66a)

Further to the Hawkes Bay Regional Council (HBRC) letter dated 1 October 2021 in relation to resource consent application APP-126770, the following sets out our response to questions 41 – 47 raised under Section 92 of the Resource Management Act.

Wetland Ecology and Freshwater NES

41. The ecological report indicates in section 4.1.1 that Site 1 was assessed as a natural wetland; however, Table 2 (section 4.1.2) in the ecological report indicates that Site 1 failed the pasture test. This is contradicting since for a wetland to be considered a natural wetland in terms of NES-F (2020) it should pass the pasture test. Analysis of the NES Freshwater regulations needs to be re-assessed in light of wetland 1 potentially being a natural wetland and any potential offsite wetlands with regard to the 100m setback clauses of the Freshwater NES.

To clarify, the pasture test helps us to determine whether the site meets the NPS-FM improved pasture exclusion criteria and is considered to be passed if there is *more* than 50% pasture species. If a site meets the pasture test, it would be excluded as 'improved pasture' under the NPS FM. Therefore, by failing the pasture test, Site 1 is considered to meet the definition of a natural wetland and as such, the NES regulations will apply.

42. No reference is made in the AEE and Discharge Property Ecological Report (Beca 2021:P:D.66) of the details of the pasture test (methodology and results) such as the exotic pasture species present and details of the percentage ground cover as described in the interpretation guidance in the interpretation guidance on the wetlands definition in the NPSFM and Freshwater NES (Exposure draft 7 April 2021). Please provide details of the pasture tests for Sites 1 and 2.

The pasture test is used to evaluate whether there is > 50% cover of exotic pasture species (based on pasture species classifications by Stewart et al., 2014[1]) within vegetation plots. As described above, this is intended to help determine whether a site would meet the NPS-FM improved pasture exclusion criteria (in conjunction with an assessment of whether the area is subject to temporary rain-derived water pooling or has a more permanent wetland hydrology). Pasture species cover was 15% of Site 1, and pasture species cover was 46% of the vegetation plot at Site 2.

Further details of species present and percentage ground cover for Sites 1 and 2 are included in the table below.

Site	Species	Scientific Name	Indicator status	Dominant	% Cover	Pasture Species
1	Cutty grass	*Carex geminata*	FACW	Y	90	
1	Sea rush	*Juncus kraussii subsp. australiensis*	FACW		1	
1	Tall fescue	*Festuca arundinacea*	FACU		15	Y
Y1	Creeping buttercup	*Ranunculus repens*	FAC		2	
1	Knobby club-rush	*Ficinia nodosa*	FACU		1	
1	Creeping thistle	*Cirsium arvense*	FACU		10	
2	Cutty grass	*Carex geminata*	FACW	Y	35	
2	Sea rush	*Juncus kraussii subsp. australiensis*	FACW		15	
2	Knobby club-rush	*Ficinia nodosa*	FACU		5	
2	Creeping buttercup	*Ranunculus repens*	FAC		2	
2	Clover	*Trifolium repens*	FACU		1	Y
2	Slender clubrush	*Isolepis cernua*	OBL		2.5	
2	Giant umbrella sedge	*Cyperus ustulatus*	FACW		1	
2	Orchard grass	*Dactylis glomerata*	FACU	Y	45	Y

43. In terms of Table 2 (section 4.1.2) wetland hydrology indicators were present in both Site 1 and Site 2. Please provide details on how hydrology was determined.

Sites 1 and 2 are relatively low-lying and are located along the margins of a tidally influenced section of the Pōrangahau River and thus are considered to have primary indicators of wetland hydrology (1B: Groundwater & 1C: Soil saturation) according to the MfE Wetland Hydrology Tool[2]. Site 1 also passes the facultative-neutral test (secondary indicator 4D).

44. Table 2 (section 4.1.2) indicates 'Yes' under soils and the soils have been described in section 4.1.1. Were the soils assessed if they meet the criteria of hydric soils in terms of the Hydric soils – field identification guide/Hydric Soils tool (Fraser et al, 2018)? Please provide details of this assessment.

---

[1] A. Stewart et al., "Pasture and Forage Plants for New Zealand," *Grassland Research and Practice Series No. 8, Fourth Edition.*, 2014.

[2] Ministry for the Environment, "Wetland Delineation Hydrology Tool for Aotearoa New Zealand" (Wellington: Ministry for the Environment, 2021).

As mentioned in Section 4.1.1 of the Ecological Assessment, soil descriptions have been sourced from the 'Evaluation of Soils to Receive Pōrangahau and Te Paerahi's Wastewater'[3]. Soil on the alluvial plain adjacent to the Pōrangahau River to the north-east has a sand texture but is noted as having a greater profile available water and/or lower permeability status compared to those on the dunes[4]. At 65 cm depth, this soil contains heavy clay and therefore represents a combination of the Kairaki Sandy Loam (topsoil) and the Kaiapo Silt Loam (>65 cm)[5]. Kaiapo Silt Loam (Flaxton_69a.1) is a gley soil and is classified as being a deep, silt over clay textured, poorly draining soil. Across the alluvial plain south of the central sand dunes (LMU 1), this topsoil texture is more silty, rather than sandy and reflects more of the Kaiapo Silt Loam, rather than a combination with the Kairaki Sandy Loam.

Individual soil cores were not done, but soil is considered hydric on the basis of the following indicators from Fraser et al., 2018:

- Location in the landscape (flat)
- High Groundwater (tidal)
- Pan depth of 65cm

Nevertheless, as the sites passed the dominance and prevalence vegetation tests, they would not require further clarification as they would be considered wetlands regardless (see Figure 1 below).

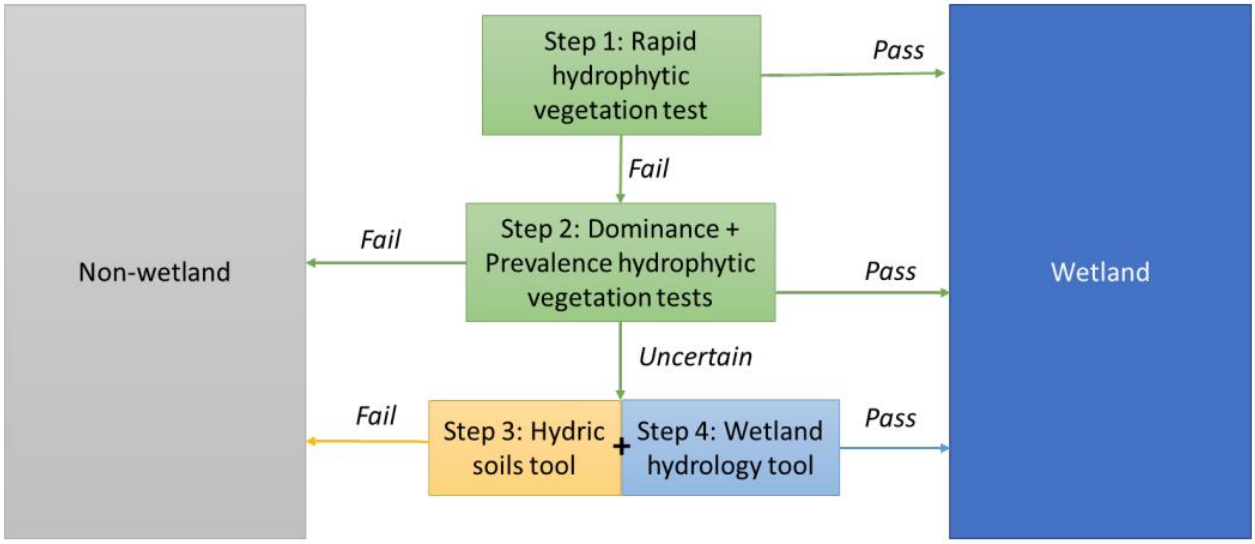

Figure 1. The sequence of steps for delineating wetlands using the hydrophytic vegetation, hydric soils and wetland hydrology tools (Ministry for the Environment, 2021)

[3] (LEI, 2020:P:B.15)

[4] (LEI, 2020:P:B.15)

[5] (LEI, 2020:P:B.15)

45. In terms of the NES-F (2020), the regulations apply to the discharge of water within, or within a 100 m setback from a natural wetland. Did the applicant identify wetlands and include plans of any wetland, with surveyed boundaries within 100 m of the subject site? If not, please provide this information.

Wetland 1 was the only putative wetland identified within 100m of the proposed discharge area via desktop assessment (methods are described in more detail in response to question 46 below).

46. The ecological study (Beca 2021:P:D.66) screened several potential wetlands (sites 3 to 11) although very limited information is provided on the assessment of these sites. Please provide details about the criteria used for the assessments of these sites.

Potential wetlands within the Site were identified based on desktop information including:

- Hawkes Bay Regional Council geospatial layers
- Google Earth and LINZ aerial photography
- Retrolens historical imagery
- Freshwater Environments of New Zealand (FENZ) estimated historic extent of wetlands in New Zealand geospatial layer.

Areas that had indications of visible soil saturation, or potential wetland vegetation (apparent low stature, grass, rushes and reed vegetation types) present in aerial imagery were mapped as potential wetlands. These potential wetlands were then investigated during the site visit in accordance with the Rapid Hydrophytic Vegetation Test. On inspection, sites 3-4 and 6- 11 were excluded on the basis of vegetation type (dune vegetation or dry pasture) and a lack inherent wetland characteristics (e.g. hydrology). Site 5 was also excluded on this basis having found to consist of planted riparian edge along a watercourse (See photos below).

Site 3

Site 4

Site 5

Site 7

Site 8

Site 11

47. No specific reference was made in the Discharge Property ecological report on how the hydrological regime of the wetland could be affected and how the hydrology of the wetland may need to be managed. Could the applicant provide details on the effects on the wetland hydrology and how the wetland hydrology could be managed?

Wastewater nutrients discharged to land will either be assimilated via plant uptake or percolate through the soil and drain via shallow groundwater to the Pōrangahau River and/or existing watercourses present on the Discharge Property. A small amount may drain through Wetland 1 via groundwater but this is not expected to cause a shift away from existing baseline conditions as the wetland is tidally influenced and already has a naturally variable water table. It is considered unlikely that there will be an ecological shift in the wetland community as the species present are expected to be tolerant of a natural variation in water levels. Soil

hydraulic conductivity of the Discharge Property is measured within LEI (2020:P:B.15) to determine a discharge regime to manage drainage and runoff as described in LEI (2021:P:C.15).

Yours sincerely

Sarah Busbridge

Ecologist

on behalf of

Beca Limited

Phone Number: +64 9 336 9460
Email: Sarah.Busbridge@beca.com