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To: Rowan Williams, Team Leader Consents
New Plymouth District Council
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From: Sarah Roth, Ecologist
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Date: 11 August 2021

Subject: Ecological statement on Road 2 and water quality standards of proposed subdivision & development at Parklands Avenue, Bell Block

Dear Rowan:

This memo has been prepared in response to an email from yourself, Rowan Williams, and Todd Whittaker (external planner to NPDC; Planning Works) dated 12 July 2021, addressed to Alan Doy (McKinnlay Surveyors) on behalf of Robe and Roche Investments Ltd (the Client). The proposed development is situated adjacent to an area of ecological significance in the form of the Waipu Lagoons. A comprehensive study of the potential effects of subdivision development on the Waipu Lagoons was prepared by David Mandeno, Apex Consultants Ltd, in 2004, commissioned by NPDC. This report outlines the ecological significance of the wetlands (natural rarity, breeding ground for threatened and at risk water fowl, indigenous vegetation dominated, natural in origin, etc.) along with detailed methodology and results of testing carried out to understand potential impacts of urbanisation surrounding the wetlands. Since this document exists, a comprehensive Ecological Assessment of Effects has not been carried out for this development as it may be redundant. Instead this memo aims to satisfy a response to queries in regards to:

1. ecological assessment of Road 2 on the wetland, especially considering the National Environmental Standards for Freshwater 2020
2. ecological statements on the standards and quality of storm water outflow at discharge locations.

Included are options to avoid adverse effects as per duty outlined in Sec 17 of the RMA.

Ecological assessment of Road 2

The scheme design submitted via email to Todd Whittaker on 8 July 2021 by Alan Doy has since been adjusted to accommodate a 20 metre riparian buffer from the surveyed wetland edge. A 20 metre riparian buffer is the minimum width that provides significant ecological function in terms of habitat provisions for fauna, water filtering capacity, sediment trapping and flora diversity. The revised scheme plan reflects the significant function of an appropriate riparian buffer with regards to the

Road 2 layout, which all infrastructure including footpath are proposed outside the 20 metre buffer.

In terms of duty to avoid adverse effects under S17 of the RMA: the Client has opted to avoid potential adverse ecological effects in the first instance and migrate the carriageway away from the lagoon to accommodate the buffer. Therefore, no further hierarchy need be exhausted.

In reference to the National Environmental Standards for Freshwater 2020: the current scheme design does not infringe on any vegetation removal, earthworks or infrastructure development clauses. However, the proposal does require discharge of storm water within 100 metres of a natural wetland, which is non-compliant with Regulation 54. This is addressed in more detail in the following section.

Water quality and hydrology of storm water and proximity to lagoons

The current scheme design proposes on-site soakhole discharge systems within each lot, along with Hynd's Downstream Defender situated before each outfall of carriageway flows as primary treatment. rip-rap apron located at each of the outfall point will be buffered with indigenous species and naturally fill-in with appropriate species over time. rip-rap apron size varies from 2.8 metres to 4.5 metres in length, and 1 metre to 1.8 metres in width.

On-site soak hole discharge systems significantly reduce total drainage and time of concentrations, as outlined in the Mandeno report (2004). Ecologically, this means the system is not expected to receive high velocity flows into naturally slow hydrologically moving environments as a result of the parcel development.

With regards to the carriageways, both quality and quantity of storm water need be addressed from an ecological perspective. The Downstream Defender (DD) is proposed to be situated before each storm water outfall site. The DD is classified as a gross pollutant trap, designed to capture all bigger sized debris (including cigarette butts, bottle caps, plastics, leaves, etc.). However, case studies have proven that the DD also remove small particles (including heavy metals) that naturally attach to large debris. Case studies of the product operating within NZ show 80% + removal of fine pollutants from storm water. Furthermore, DD captures hydrocarbons through first flush run-off which does not get re-entrained with further rain flows. It is expected that this system will provide suitably high quality storm water that will have minimal adverse effects on the wetland environment. It is recommended, nonetheless, that monitoring of heavy metals and other key contaminants be carried out at a regular basis to ensure high quality outcomes are achieved.

The quantity of storm water from carriageways will be managed via suitable sized rip-rap aprons at discharge locations that will ensure high velocity flows are reduced to low energy before reaching the wetlands. These flows will be dissipated further by in-stream planting at the downstream and riparian edges of the rip-rap area.

Furthermore, a detailed wetland assessment has been carried out by Red Jacket engineers that show hydrology impacts of 1%, 10% and 20% AEP on lagoon volume,

overall. The results show less than 2 mm rise or 5.6 mm fall (significant water is detained on site via soak holes, which may reduce lagoon levels during high rainfall events) over a 24 hour period (table provided in Appendix 1) across both wetlands. Normal wetland volume returns to neutral within 24 hours of rainfall event, according to calculations. Due to the nature of wetlands and the surrounding hydric soils and the nature of hydrophytic vegetation dominating the immediate wetland margin, the ecological impacts of this fluctuation are considered less than minor and are likely to be within the natural range regardless of catchment urbanisation.

In terms of duty to avoid adverse effects under S17 of the RMA: The potential adverse ecological effects of the subdivision and development storm water flows are, overall, considered to be less than minor. Parcel storm water flows are avoided being discharged directly into the wetland environment and instead accommodated by on-site soak holes. The potential adverse ecological effects of the carriageway storm water discharge into the wetland are mitigated via primary treatment through the DD and velocity attenuation via appropriately sized rip-rap apron. As such, these effects are considered to be no more than minor if recommendations to carry out regular water quality and erosion monitoring are detailed and executed.

In reference to the National Environmental Standards for Freshwater 2020: discharging of water within 100 metres of a wetland is non-complying with Regulation 54 of the policy. Considering the above, the discharge of proposed storm water will be appropriately managed and is therefore considered to be less than minor, so long as recommendations to carry out regular water quality and erosion monitoring are detailed and executed.

Overall, the proposed subdivision and development should not result in the loss of extent or values of the natural inland wetlands that are the Waipu Lagoons, assuming aforementioned recommendations are carried out. I trust this memo assists in providing further information to the points requested. If you require any further details, please do not hesitate to contact me.

Ngā mihi



Sarah Roth – Ecologist and Director



Appendix 1

Hydrological analysis of the eastern and western wetlands at Waipu Lagoons prepared by Red Jacket

	LEVEL DIFFERENCE IN WETLAND DUE TO DEVELOPMENT					
	20% AEP		10% AEP		1% AEP	
	Max (mm)	Min (mm)	Max (mm)	Min (mm)	Max (mm)	Min (mm)
Eastern Wetland Area 10,145 m ²	0.8	-4.4	1.5	-5.6	1.9	-1.7
Western Wetland Area 30,350 m ²	0.7	-3.4	0.7	-3.9	0.9	-1.2