APPENDIX SIX
ECOLOGY MEMORANDUM

Memorandum

Bioresearches
A Babbage Company

To:	**Envelope Engineering Limited** [redacted]**Limited**	**Date:**	13 May 2021
Attention:	[redacted] [redacted]	**Ref:**	64496
Subject:	**Review Information with regard to a potential wetland at Shelly Bay**		

[redacted] Limited, on behalf of Envelope Engineering, requested a review of information and photographs relating to a potential wetland in Shelly Bay, Miramar, and a determination if the area meets the criteria as a 'natural wetland' under the National Policy Statement for Freshwater Management 2020 (NPS-FM), and the National Environmental Standard for Freshwater 2020 (NES-F).

The following documents and information were reviewed:

- Word Document titled: Shelly Bay Wetland Investigation 6-5-2021, which comprised a set of photographs of the subject site.
- Set of photographs file name: 2021-05-06 Wetland
- Set of photographs file name: 2021-05-05 Wetland Photos.

No site visit was carried out, but the area of concern is a small area with a few clumps of *Carex* grass, facultative wetland plants (FACW) which by definition are usually, but not always found in wetland areas (Photo 1).

Photo 1. Carex mixed in with terrestrial vegetation.

Bioresearches
68 Beach Road, Auckland 1010
P O Box 2027, Auckland 1140
T 09 379-9417
Website: www.Bioresearches.co.nz

Photo 2. Carex (photo centre) within wider site

The National Policy Statement for Freshwater Management 2020 (NPS-FM) defines a natural wetland as:
'A wetland (as defined in the Act) that is not:

1. *a wetland constructed by artificial means;*
2. *a geothermal wetland;*
3. *any area of improved pasture that, at the commencement date, is dominated by (that is more than 50% of) exotic pasture species and is subject to temporary rain-derived water pooling.'*

The Act refers to the RMA, which defines a wetland as:

> *'**wetland** includes permanently or intermittently wet areas, shallow water, and land water margins that support a natural ecosystem of plants and animals that are adapted to wet conditions'*

In determining whether an area is classified as a wetland the Ministry for Environment guidance to the new legislation, references the Landcare Wetland Delineation Protocols i.e. Clarkson (2014), *A vegetation tool for wetland delineation in New Zealand.* Landcare Research Contract Report: LC1793 for Meridian Energy.

These protocols require the determination of the project area and then identification of the major vegetation types, then sampling representative plots using the Dominance Test and Prevalence Index. At this site a representative 2m by 2m herbaceous plot and a circular 5m radius sapling/shrub plot centred on the herbaceous plot was be used.

Using the photographs provided the plant species in the area and their affinity to wetlands are listed in Table 1. Table 2 presents the species within the plot areas, their percentage dominance and their wetland indicator status rating, from which the Dominance Text and Prevalence Index were calculated.

Table 1. Species observed or recorded within the potential wetland area.

Species Name	Common Name	Wetland Indicator Status Rating[1]
Coprosma robusta	Karamu	FACU
Coprosma lucida	Shining karamu	UPL
Pinus radiata	Pine	UPL
Ulex europaeus	Gorse	FACU
Cytisus scoparius	Broome	UPL
Crocosmia x crocosmiiflora	Montretia	UPL
Brachyglottis repanda	Rangiora	UPL
Cyperus ustulatus	Coastal cutty grass	FACW
Piper excelsum	Kawakawa	UPL
Carex secta	Purei	FACW
Asplenium oblongifolium	Shining spleenwort	UPL
Dactylis glomerata	Cocksfoot grass	FACU
Pseudopanax lessonii	Five finger, houpara	UPL
Pittosporum crassifolium	Karo	UPL
Muelenbeckia complexa	Pohuehue	FACU
Chrysanthemoides monilifera	Boneseed	UPL*

*intolerant of poor drainage

Table 2. Plot Results within potential wetland area

Sapling/Shrub Stratum				
Species Name	**Common Name**	**Classification**	**Cover %**	**Dominant**
Coprosma robusta	Karamu	FACU	20	y
Coprosma lucida	Shining karamu	UPL	5	
Brachyglottis repanda	Rangiora	UPL	10	y
Ulex europaeus	Gorse	FACU	10	y
Piper excelsum	Kawakawa	UPL	30	y
Pseudopanax lessonii	Five finger, houpara	UPL	10	y
Herbaceous Stratum				
Species Name	**Common Name**	**Classification**	**Cover %**	**Dominant**
Cytisus scoparius	Broome	UPL	2	
Crocosmia x crocosmiiflora	Montretia	UPL	15	y
Cyperus ustulatus	Coastal cutty grass	FACW	20	y
Carex secta	Purei	FACW	30	y
Asplenium oblongifolium	Shining spleenwort	UPL	5	
Dactylis glomerata	Cocksfoot grass	FACU	15	y
Muelenbeckia complexa	Pohuehue	FACU	2	

[1] OBL: obligate (> 99% occurrence in wetlands); FACW: Facultative Wetland (usually wetland but occasionally found in uplands); FAC (commonly either wetland or non-wetland); FACU (occasionally wetland but usually upland); UPL (almost always uplands).

Using these plant species and a representative plot from the photographs (refer Photo 1 and 2 for the general aspect) the Dominance Test and Prevalence Index would be:

- 22% for the Dominance Test (wetland criteria NOT met: as >50% dominance by 'wetland' species required); and
- 3.78 for the Prevalence Index (wetland criteria NOT met: as test >3.0).

For an area to be classified as a wetland both tests must be met, as neither was meet, the area is **not** classified as wetland.

Although the potential wetland area (Photo 1 and 2) shows occasional *Carex* species, there is a significant amount of bare ground (covered by pine needles) and at least seven other terrestrial species mixed in with the *Carex* and in the immediate vicinity.

The area does not meet the RMA definition for wetland, as a small clump of *Carex* intermixed with terrestrial plants is insufficient to realistically meet the criteria of supporting a *natural ecosystem of plants* ***and animals*** *that are adapted to wet conditions,* and furthermore it does not the intent of the definition. For an area to be considered for assessment under the NPS-FW / NES-F it must first meet the definition of wetland in the RMA, as all the definitions refer back to this.

In conclusion, from the documentation provided and the photographs, the small area of *Carex*

- fails to meet the RMA definition of a *natural ecosystem that supports plants and animals adapted to wet conditions*; and
- fails to meet the Dominance and Prevalence Tests for a wetland.

The area is therefore not classified as a natural wetland.

Yours sincerely
BIORESEARCHES

[redacted], M.Sc.(Hons) | Marine & Freshwater Biologist
Bioresearches, a subsidiary of Babbage Consultants Limited
[redacted] DDI [redacted] | Mobile [redacted] |