BEFORE AN INDEPENDENT HEARINGS PANEL
APPOINTED BY WAIMAKARIRI DISTRICT COUNCIL

UNDER	the Resource Management Act 1991
IN THE MATTER	of submissions on the Proposed Waimakariri District Plan and Variation 1 by Woodwater Limited (Submitter ID 215/48)
AND	Hearing Stream 12E – Rangiora, Kaiapoi, Woodend, Variation 1

STATEMENT OF EVIDENCE OF MARK TAYLOR ON BEHALF OF WOODWATER LIMITED.

Date: 02 August 2024

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1 INTRODUCTION

1.1 My name is Mark James Taylor.

1.2 I hold a degree of a Bachelor of Science in Zoology, and I have been a member of the New Zealand Freshwater Sciences Society for over 20 years.

1.3 I have 40 years' experience as a professional environmental consultant, working for the Ministry for Agriculture and Fisheries (Fisheries Research Division), the National Institute of Water and Atmospheric Research, and now Aquatic Ecology Limited (AEL).

1.4 I have authored and co-authored science papers, and numerous environmental reports and memos on aquatic ecology. In recent years, AEL has been involved in numerous residential land developments, natural resource surveys, and stream naturalisation projects.

1.5 I confirm that I have read the Code of Conduct for expert witnesses contained in the Environment Court Practice Note 2014. I confirm that I have considered all material facts that I am aware of that might alter or detract from the opinions I express, and that this evidence is within my area of expertise, except where I state that I am relying on evidence of another person.

1.6 In this matter, AEL prepared an assessment of the ecological values of the site subject to the proposed rezoning at South Woodend, this assessment focusing on potential wetland values of the site and the adjacent land zoned as LLRZ to the south. This report, dated 28 February 2024, identified three separate candidates for wetland status, of which two (Sites 2 &3) were of low value and unlikely to be improved through protection, buffer strips or native planting. I assessed the likely contribution of an existing irrigation system towards the botanical values present. A further wetland site (Site 4) located on the LLRZ was assessed as qualifying for wetland status, my recommendation being that this wetland could be appropriately enhanced.

2 SCOPE OF EVIDENCE

2.1 The purpose of this evidence is to outline to the Panel the results of a further assessment undertaken by AEL of Sites 2 and 3, which has recently been completed by AEL.

2.2 At the time of this updated assessment it was confirmed that Sites 2 & 3 were associated with historic irrigation infrastructure. The infrastructure consists of an underground pipe connecting a groundwater bore to two stationary sprinklers (App. I, Fig. i). This infrastructure is thought to be approximately 57 years old (Malcolm Clemence, Woodwater Ltd, pers. comms). The former wetland vegetation at Sites 2 and 3 may have been a direct result of old, leaking

irrigation infrastructure, which is now disused. An updated delineation of these wetland areas was therefore considered appropriate.

3 UPDATED WETLAND DELINEATION

3.1 The vegetation species and percent coverage within a $2m^2$ quadrat were reassessed at Sites 2 and 3 on 29/07/2024, as per the wetland delineation protocols (Ministry for the Environment 2022). The wetland indicator status of each flora species was used to conduct dominance tests and prevalence index tests, to confirm the presence or absence of wetland values at each location (Clarkson *et al* 2021). A significant shift in dominant vegetation species between the two surveys was noted at both Sites 2 & 3.

Site 2

3.2 The first wetland delineation, in February 2024, identified sparse vegetation at Site 2 (APP. II. Fig.i). The margins of this area were dominated by the obligate marsh yellowcress (*Rorippa palustric),* with the facultative wetland species willow weed (*Persicaria maculosa)* also recorded. Deep cracks were observed in the soil in bare-ground areas, signifying frequent wetting and drying events.

3.3 During the revisit in July 2024, Site 2 was vegetated with upland and facultative upland plan species (App. II, Fig.ii). The dominant flora species at Site 2 during the revisit was scentless mayweed (*Tripleurospermum inodorum)* (App.iii). This species does not have a wetland indicator status in New Zealand, and is therefore assumed upland (Clarkson *et al*. 2021). No facultative wetland or obligate flora species were observed at Site 2 during the revisit in July 2024.

3.4 The delineation of this area resulted in a prevalence score of 4.6 (3.0 required for wetland) and a dominance test result of 0% (> 50% required for wetland). Site 2 is therefore not defined as a wetland. There were also no signs of recent inundation, such as stork pugging or flood debris at this site despite recent rainfall (App.IV, Fig. i) and the presence of surface flow in the ephemeral upper McIntosh Drain. No recourse to the hydrology Test (and its growing season limitation) was required because the vegetation tests (Prevalence and Dominance) both clearly indicated non-wetland conditions.

Site 3

3.5 During the first survey of Ste 3 in February 2024, the dominant vegetation species were marsh foxtail (*Alopecurus geniculatus),* willow weed (*Persicaria sp.)* and broadleaf dock (*Rumex obtusifolius)* (App. II, Fig, iii). These species have indicator *statuses* of the facultative wetland or facultative. Site 3 therefore met the definition of a wetland in February 2024.

3.6 During the revisit in July 2024, vegetation at Site 3 was dominated by the facultative upland pasture grass species timothy grass (*Phleum pratense)* (App.II, Fig.iv). The dominance of this pasture species means that even if the area was defined as a wetland, it would be excluded from a legal wetland status by the pasture exclusion tool (Clarkson *et al* 2022). Essentially, it is too ingrown with pasture to be considered as a functional wetland habitat. However, the delineation of Ste 3 resulted in a prevalence index score of 3.96 (3.0 required for wetland) and a dominance test result of 0% (> 50% required for wetland). Site 3 therefore does not fall under the definition of a natural inland wetland. During the revisit, there was no indication of rain puddling at the location, despite recent rainfall (App. IV), and surface flow in the upper McIntosh Drain. Site 3 had essentially the same vegetation species as the surrounding undulating pasture.

4 CONCLUSION

4.1 Both Site 2 and Site 3 were not defined as wetlands under the NS -F 2020 following the July 2024 assessment. These sites did not support wetland fauna, nor native wetland flora, during either the first survey or the revisit. Neither do the qualify as an RMA wetland (as defined[1]), as they do not form habitat for aquatic plants or animals and fail the wetland assessment tests (Ministry for the Environment 2022). No surface water was present in February or July, and the periods in which surface water was retained were not considered long enough to facilitate habitat for aquatic species. This was confirmed through the absence of desiccated aquatic fauna, including macroinvertebrates, in both sites. The wetland values of Sites 2 & 3 during the original survey were limited to exotic hydrophytic plan species, which are no longer present, most probably due to the falling into disuse of the nearby irrigation infrastructure.

4.2 The absence of wetland values at Sites 2 and 3 means they do not require consideration under the NES-F 2020, or wetland-related consents for earthworks and residential development processes.

Mark James Taylor

02 August 2024.

[1] ***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*

Appendix I. Site Map

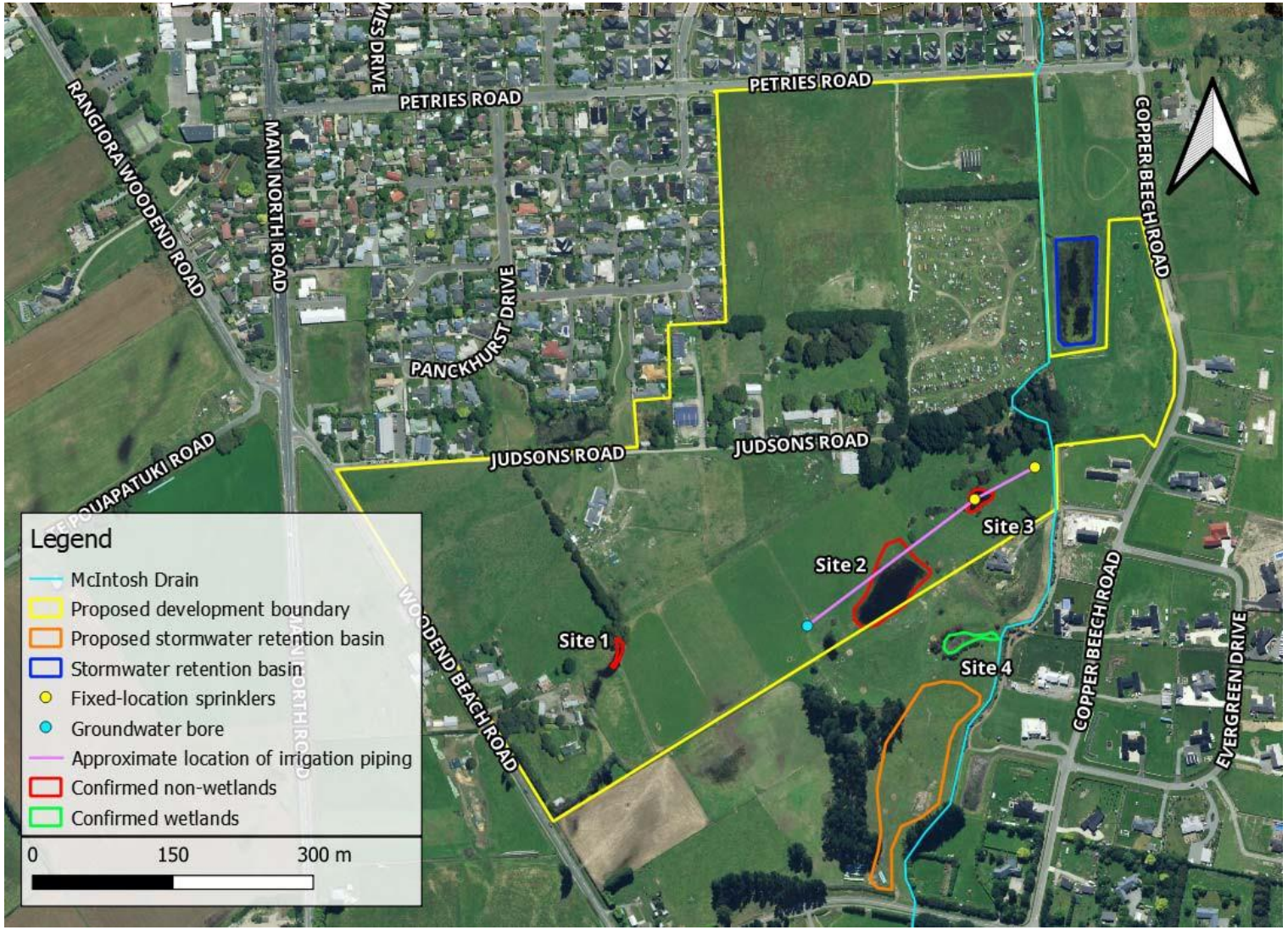

Figure i. Updated wetland delineation results, as of 29/07/2024. Approximate location of irrigation infrastructure is also depicted.

Appendix II. Site Photographs

Figure i. Site 2, taken during first delineation,

Figure ii. Site 2, taken during second delineation,

Figure iii. Site 3, taken during first delineation, 20/02/2024.

Figure iv. Site 3, taken during second delineation, 29/07/2024.

Appendix III. Plant species recorded during wetland delineation, 29/07/2024.

Scientific name	Common name	Indicator status	Site 2	Site 3
Ranunculus repens	Creeping buttercup	FAC		
Rumex obtusifolius	Broadleaf dock	FAC		
Cirsium vulgare	Scotch thistle	FACU		
Phleum pratense	Timothy grass	FACU		Dominant
Trifolium repens	White clover	FACU		
Lepidium coronopus	Wart cress	UPL*		
Malva neglecta	Dwarf mallow	UPL*		
Tripleurospermum inodorum	Scentless mayweed	UPL*	Dominant	
Overall Wetland Status			**Non-wetland**	**Non-wetland**

* All upland plant species were not included in the wetland indicator plant list, and were therefore assumed upland.

Appendix IV. Rainfall Data

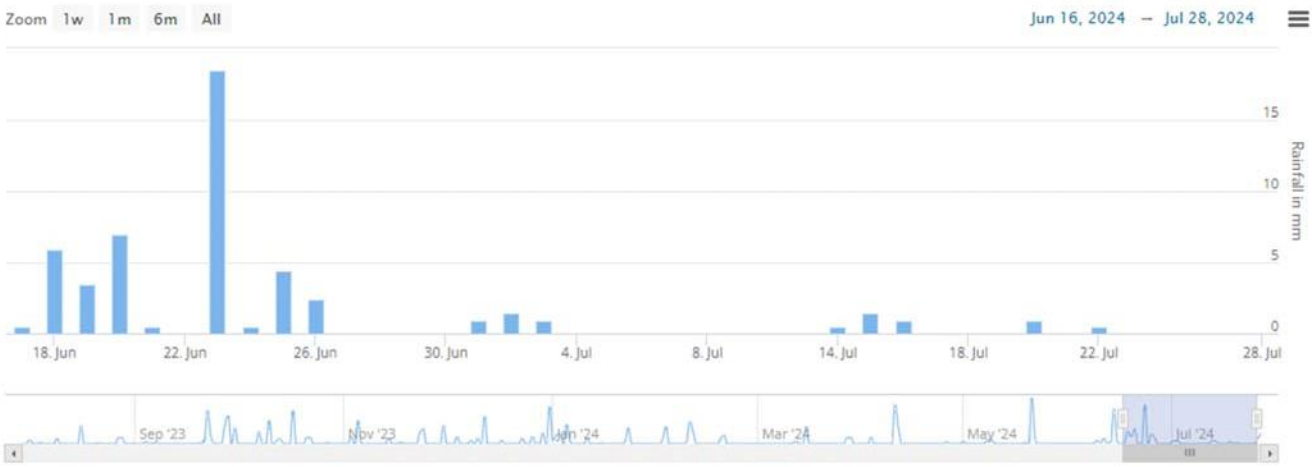

Figure i. Rainfall data from 17/06/2024 to 28/07/2024 (ECAN rainfall recorder, Threlkelds Road).