TECHNICAL MEMORANDUM

PROJECT NO.: WGA241087
DOCUMENT NO.: WGA241087-MM-HG-0008_A
DATE: 22 OCTOBER 2025

COMPANY NAME	Barker & Associates
ATTENTION	Steph Wilson
SUBJECT	Response to Minute 2(i)

This memo presents information for the response to Panel Requests in terms of hydrogeology. The question involving a groundwater component is 2(i).

2(i) The effects on the oxbow lakes of the existing drain being diverted away from these lakes and discharging into the Waitoa River.

The hydrology of the oxbow wetlands are considered by WGA to be predominantly controlled by the Waitoa River. Flood events are expected to occur in which water will flow through the oxbow wetlands. In addition, the saturated zone within the river valley during winter is expected to include the oxbow lakes.

Summer groundwater levels under the current farm have been shown to be up to approximately 2.5 m lower than winter groundwater levels. Therefore, during winter, when groundwater levels are high, groundwater seepage will enter the farm drainage network and then move towards the drain outlet and the oxbow wetlands. During winter, the groundwater nutrient concentrations are expected to be high given the current land use of dairy farming. Although the shallow groundwater has not been tested for water quality, the deeper farm bore (16 m deep) has a nitrate concentration of 25 g/m^3.

Therefore, the current drainage outlet discharge is expected to have high nutrient water flowing into the wetlands during winter. During this time the wetland water levels are expected to be naturally high due to the river flow. In summer, when the oxbow wetlands would benefit from additional water, the current drain outlet is expected to be dry as groundwater levels under the farm will be low. WGA understands that Ecological Solutions noted no drainage inflow during their site visit during the summer.

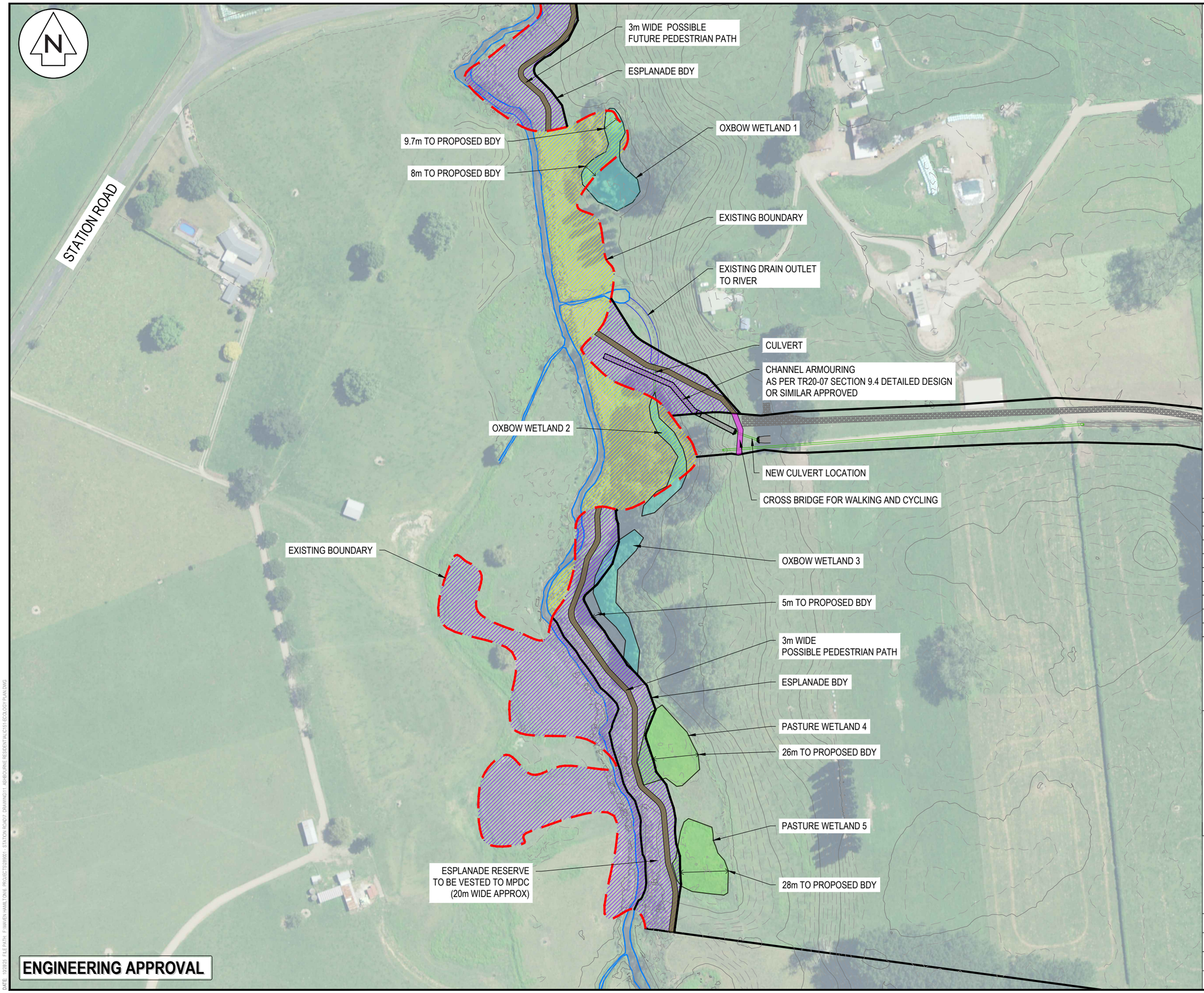
The future land use change is expected to improve the shallow groundwater quality.

Yours Sincerely

Clare Houlbrooke
Principal Hydrogeologist
WALLBRIDGE GILBERT AZTEC

APPENDIX A GROUNDWATER MAPS

APPENDIX A
OXBOW WETLAND MAP



ENGINEERING APPROVAL

NOTES

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Legend

- PR BDY
- EX ABBUTALS
- OXBOW WETLANDS ALONG THE WAITOA RIVER
- PASTURE WETLANDS ALONG THE WAITOA RIVER
- EDGE OF RIVER
- PR EASEMENTS
- CULVERT
- CROSS BRIDGE
- POSSIBLE FUTURE PEDESTRIAN PATH
- AREAS INSIDE EXISTING BOUNDARY
- AREAS OUTSIDE EXISTING BOUNDARY

Rev	Description	By	Date
D	EPA RFI	MKS	10/2025
C	EPA RFI	MKS	10/2025
B	EPA RFI	MKS	10/2025
A	EPA RFI	MKS	10/2025

	By	Date
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Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project

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Title

PROPOSED PLAN WITH ECOLOGY SHOWN

Project no.	289001		
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Cad file	C151-ECOLOGY PLAN.DWG		
Drawing no.	C151-1	Rev	D

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