WILLIAMSON
WATER & LAND ADVISORY

Unit 10 | 1 Putaki Drive | Kumeu
Auckland | New Zealand
T +64 21 65 44 22
E jon.williamson@wwla.kiwi
W www.wwla.kiwi

Memo

To	Emma Howie (Woods)	Date	1 August 2025
From	Jon Williamson	**Project No**	WWLA1338
Copy	Euan Williams (Woods)		
Subject	**Milldale Stages 10-13 – Hydric Soil & Wetland Hydrology Tool Assessment**		

1. Introduction

Section 53(2) of the Fast-Track Approvals Act 2024 enables the Expert Consenting Panel to invite written comments on the application from specified persons and groups.

This memorandum has been prepared in response to the technical specialist memorandums issued by Auckland Council as part of their assessment of the Milldale Fast-track Application. It specifically addresses the matters raised by Council and provides clarification, additional assessment, and updates where required.

In particular, this memo provides response to the following:

Memorandum of Planning Matters for Auckland Council (29 July 2025)

- Annexure 14: Freshwater Ecology and Terrestrial Ecology – Antoinette Bootsma and Rue Statham.

Since the initial lodgement of the Substantive Application with the Environmental Protection Authority (EPA), there has been ongoing engagement between the Applicant's expert team and Auckland Council specialists through meetings, design workshops, and site discussions.

1.1 Background

Williamson Water & Land Advisory (WWLA) produced a report for Fulton Hogan Land Development Limited (FHLDL) in February 2025 entitled "Milldale Stage 10-13 - Hydric Soil & Hydrology Tool Assessments"[1]. The report documented two phases of work undertaken at FHLDL's proposed Stage 10-13 development located within the northern and western extents of the Milldale development, which comprise the remaining undeveloped greenfield stages of Milldale.

We understand this report was shared with Auckland Council as part of early engagement, and on 24 June 2025 preliminary feedback was provided by Auckland Council's ecological specialist Ms. Antoinette Bootsma.

Overarching comments made by Ms. Bootsma were:

a) No vegetation dominance or prevalence data is provided at soil and hydrology samples, so that marginal soil or hydrology data can be understood in terms of MfE Wetland Delineation Protocols; and

[1] Milldale Stage 10-13. Hydric Soil & Hydrology Tool Assessments. Consultancy report prepared for Fulton Hogan Land Development Limited. WWLA1338 | Rev. 1. 25 February 2025.

b) Data provided in the report was not able to be verified since Munsell Charts are not shown in the photos against soil samples;

In addition, a number of detailed technical queries were made, but it became apparent during our 27 June meeting that the comments were not an exhaustive list, and that a more efficient way to resolve Ms. Bootsma's concerns was likely to be provision of a written overview of how WWLA reconciled the Hydric Soil and Hydrology Tool Assessment data to reach a conclusion on each site.

This memo responds to both the early engagement discussions and Council's Annexure 14 dated 29 July, which largely remains unchanged after the various discussions and documents shared.

2. Overview Response

2.1 No Vegetation Dominance or Prevalence Data

With regard to the first comment above, this will be addressed by describing our project instructions for the work.

The initial work undertaken documented in our November 2023 report[2] focussed on areas that were labelled as "potential wetland" by the project ecologists Viridis Consultants, on the basis of their inconclusive hydrophytic vegetation assemblages. To be clear, these areas were considered inconclusive or marginal from a vegetation perspective, hence WWLA was asked to investigate the soils and hydrology indicators of wetland at each site. We were also asked to assist in delineating the extent of areas that were confirmed to comprise of large hydrophytic vegetation and therefore were considered "natural inland wetlands".

The second phase of work undertaken in November 2024 provided some additional testing in areas that Viridis needed clarification in Stage 10-11, as well as sites in Stage 12-13 that had no previous work undertaken. This later testing aimed to provide soil and hydrology testing across representative parts of the site, rather than specific site testing, which was required due to the difficulty in assessing the vegetation, as informed by Viridis.

Figure 1 of our 2025 report has been improved (as **attached**) by including what was considered at the time as "potential wetland" locations, and also the areas identified with creeping bent or toad rush to assist interpreting where testing was done in or outside wetland areas. We understand that Viridis has prepared a similar figure, which was emailed to Ms. Bootsma on 6 June 2025, along with an explanation of the locations chosen for their wetland vegetation assessment, or why certain areas were not assessed.

In conclusion:

1. WWLA tested the soils within or adjacent to sites identified by Viridis as hydrophytic to assist in confirming the actual extent of the wetland; and
2. The lack of vegetation dominance or prevalence data in some of WWLA's testing location is an accurate statement, but reflects Viridis's judgement that these areas lacked any obvious hydrophytic vegetation (patchy and/or transitional hydrophytic vegetation at best), and hence were not identified for targeted vegetation assessments (i.e. soil testing was completed in some areas not considered to have hydrophytic vegetation by the project ecologists).

[2] Milldale Stage 10-11. Hydric Soil & Hydrology Tool Assessments. Consultancy report prepared for Fulton Hogan Land Development Limited. WWLA0921 | Rev. 1. 29 November 2023.

2.2 Munsell Soil Colour Chart

The Munsell Soil Colour Chart is used in the field to identify soil colour that is associated with hydric conditions. To recap, hydric soils are those that have formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic (low oxygen) conditions. These anaerobic conditions lead to distinct colour patterns, often characterised by:

- ***Low chroma colours:*** Indicating reduced iron (e.g., greys, bluish-greens).
- ***Mottles or redoximorphic features:*** Patches of different colours (e.g., reddish-brown mottles within a grey matrix) that indicate fluctuating water tables and oxidation/reduction processes.

In lieu of including the Munsell Soil Colour Chart (**Figure 2**) in the soil photos (which we agree would have provided Ms. Bootsma with greater assistance), the following description of the decision making process on whether a soil is truly representative of wetland or not, is provided below. However, it should be noted that while photographs can offer useful context, they often distort colour due to lighting conditions or camera settings, for this reason, soil assessments are best based on direct, onsite observations rather than photographs alone.

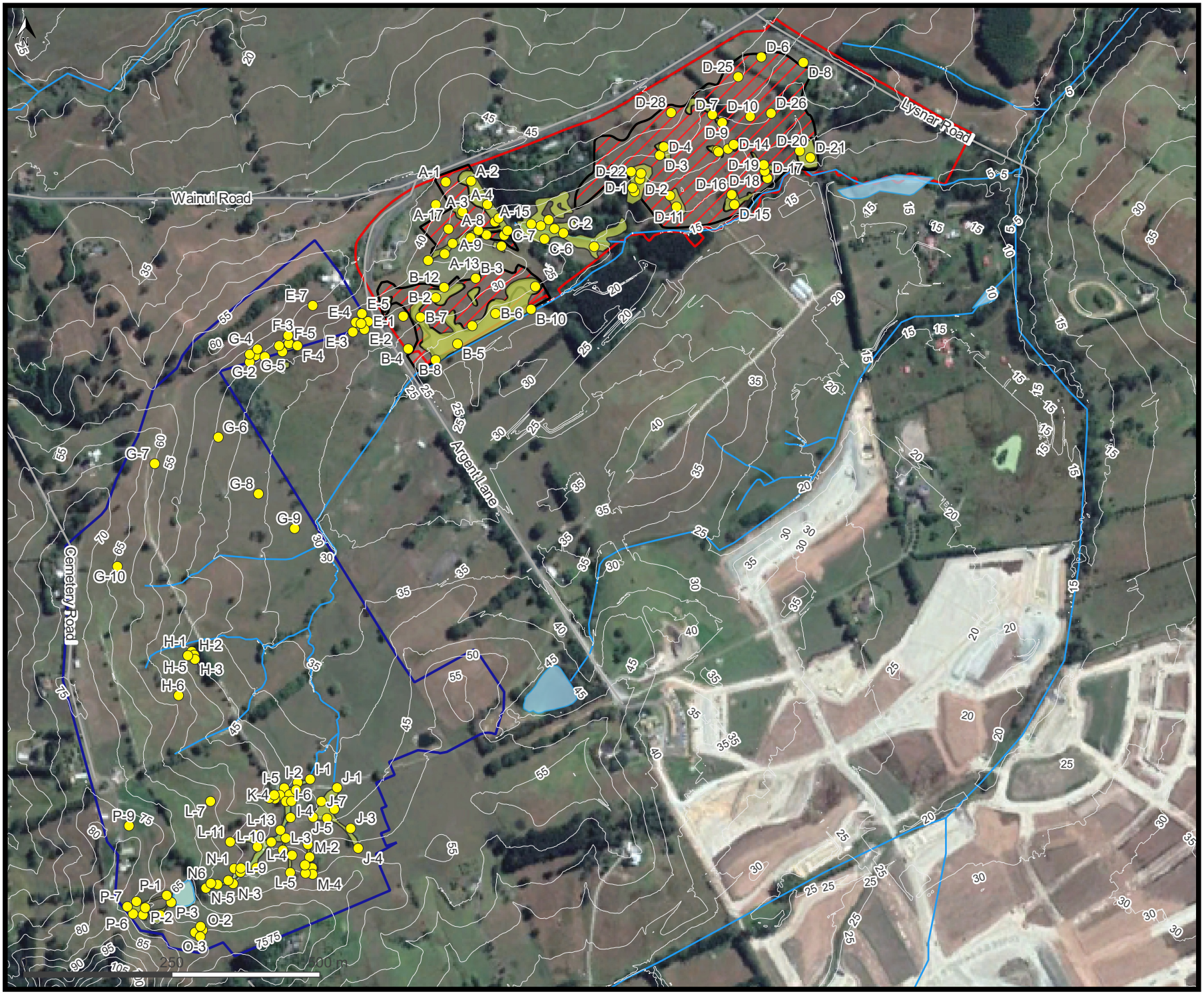
The first point to note is that the area does not have simple conventional soils that readily conform to the MfE Hydric Soils and Hydrology Tool Assessment Protocols i.e., the tool is not definitive on these soil types. This is because the Albic Ultic (pale E horizon under the topsoil), with some Yellow Utic Gley Soils, have:

1. ***Light coloured parent rock material*** - derived from parent material of deeply weathered claystones, mudstone and siltstones, which are of lighter grey to cream in colour;
2. ***History of native forest succession*** - described as “gumland soils”, which have a prior history of native forest comprising Podocarp followed by Kauri. The long term history of native forest succession reflects the forest’s effect on the soil, rendering the soils highly leached and of low nutrient status; and
3. ***Modern day agriculture*** - Stocking has resulted in considerable structural damage via mixing of the A and E horizon, and rendering the soil even poorer in drainage capacity.

Because of the physical “handicap” related to the naturally light colour of the soils, which is likely providing a false positive for hydric soils, we applied the MfE tool with a pragmatic perspective so as to avoid classifying entire areas as wetland. The two key area of special focus (over recording the other attributes) were i) interpretation of Munsell Colour, and ii) geomorphic position.

With respect to Munsell Colour and due largely to the parent soil colouration, where the soil colour was bordering on hydric/non-hydric, we erred on the side of non-hydric. For example, a soil that could be described as either colour 4/3 (hydric) or 3/3 (non-hydric), we selected 3/3. However, more importantly, strongly hydric soils colours such as 2/1 typically associated with peat, were obviously not related to the parent soil and indisputably hydric.

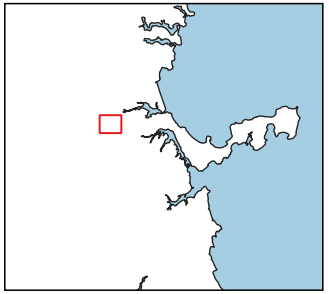
Dark anoxic soils typically coincide with geomorphic position, which is a highly important aspect of determining wetland in Auckland because of the seasonally dry conditions during summer. In this area, true natural inland wetlands require more than rainfall alone to support them, such as the groundwater table expression at the surface and/or seepages from perched water tables. Surface expression of groundwater tables typically occur in low lying areas and near the foot of hills or embankments. Conversely, perennial perched seepages typically occur at discrete locations on hill faces where i) there is significant upgradient catchment, and ii) bedding planes in the sedimentary geology outcrop.



Map Title:
Investigation Locations

Project:
Milldale Stages 10-13 - Hydric Soil & Hydrology Tool Assessment

Client:
Fulton Hogan Land Development Ltd



Legend

- Test pit locations
- Roads
- Surface contours (mAMSL)
- Existing Streams
- Lakes
- Potential Wetlands
- Bentgrass
- Stage 10_11 Boundary
- Stage 12_13 Boundary

Data Provenance
Google Satellite (2022)

Drawn by: Mya Mobberley
14/07/2025

Layout Name
Figure 1 updated Mya template G:\Shared drives\Projects\Fulton Hogan Land Development Ltd\WWLA1338_Milldale Stages 10-13 Gw Assessment\Technical\GIS\QGIS Project Files\Stages 10-13 Rosa.qgz

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Figure 1.

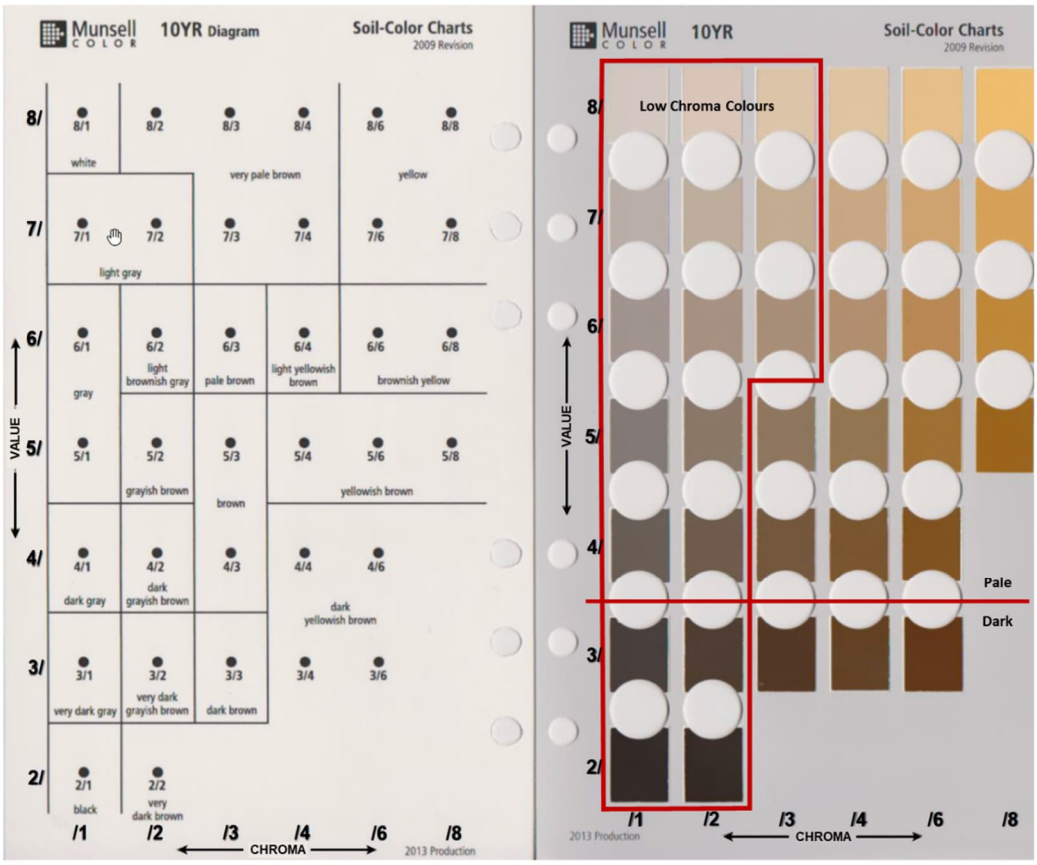


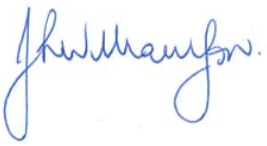
Figure 2. 10YR hue page from a Munsell Soil Colour Chart.

3. Conclusion

For a soil to be called hydric and an area wetland, several attributes must be met. This includes a critical interpretation of soil colour in the context of site specific conditions. In this case, where soil characteristics were ambiguous when compared to the Munsell chart, we took a precautionary approach given the light parent rock materials and leached soil profiles from historical podocarp forest, leaning toward classifying them as non-hydric.

In our view, the areas we identified as having hydric soils and as wetlands are clear and undisputed. While some marginal areas may exhibit borderline hydric soil colours, they lack other key indicators such as appropriate geomorphic position or secondary wetland hydrology-tool characteristics.

Yours sincerely,



Jon Williamson
Managing Director
+64 21 654422
jon.williamson@wwla.kiwi