Milldale Fast-Track

29/07/2025 – Auckland Council Response

Annexure 7:

Groundwater & Dewatering

Technical Specialism Memo - Groundwater

To:	Dylan Pope – Lead Planner & Carly Hinde - PPL
From:	Richard Simonds - Principal Engineering Geologist – Fraser Thomas Ltd
Date:	17 July 2025

1.0 APPLICATION DESCRIPTION

Application and property details

Fast-Track project name:	Milldale
Fast-Track application number:	BUN60446761 & FTAA-2503-1038
Site address:	Wainui Road, Milldale, Upper Orewa

2.0 Executive Summary / Principal Issues

It is my opinion that the proposed works for Stages 10-13 **do not meet** the AUP (OP) Standards E7.6.1.6 (2&3) because the take of groundwater i.e. dewatering during excavation will be for longer than 30 days and there will be permanent dewatering/take, via the proposed underfill drains, beyond the construction period. This is a Restricted Discretionary Activity (RDA) under rule E7.4.1(A20).

The Application does not give this as a reason for consent, which I consider to be a significant omission

However, I consider that the scope of geotechnical investigations is satisfactory for the proposed development and the risk of encountering unforeseen ground conditions is low. Sufficient geotechnical investigation data is available for groundwater and geotechnical modelling purposes in order to determine the likely ground movement adjacent to the proposed development.

In addition, I consider that provided that the take of groundwater (dewatering) and groundwater diversion activity is undertaken in the manner described in the application material and summarised above, and subject to the proposed conditions 68 to 75 in Volume 6 of the application documents, the

potential adverse effects of the activity on the environment and on neighbouring buildings, structures and public services are considered likely to be less than minor.

I consider that the preparation of a draft Groundwater Settlement Monitoring and Contingency Plan (GSMCP) is not required as a Condition of Consent of the Water Permit.

The Application does not include consents in relation to NES:FM 45C (4a to c) and 45 4 a to) which I consider to be significant omissions.

I note that the sixteen natural inland wetlands on the site (as shown on the VEC drawing titled "*Freshwater Features Milldale Stages 10-13") together with* the large natural inland wetland at 147 Argent Lane will be reclaimed as part of the proposal. The Ecological report states: "*The proposed programme of off-site restoration and enhancement works in Milldale North will adequately offset and compensate for the loss of ecological extent and values associated with the removal of 2.02 ha of wetland and 1,028.5m of stream to be reclaimed, and will provide a net benefit of ecological values in the Rodney Ecological District, Orewa River catchment and wider Auckland region."*

However, there is no assessment of the effects of the proposed groundwater-related activity on five of the six off-site natural inland wetlands at 147 Argent Lane which I consider to be a significant omission.

3.0 Documents Reviewed

- A report titled "*Volume 2: Milldale Stages 10 -13 Milldale, Wainui : Fast Track Approvals Act 2024 Substantive Application*," prepared by B & A Urban & Environmental (B & A) and Woods dated 28 March 2025, rev 1.
- A report titled "*Volume 6: Milldale Stages 10 -13, 4C and WWTP Proposed Conditions of Consent – Milldale Wainui : Fast-track Approvals Act 2024 Substantive Application*," prepared by B & A and Woods dated 28 March 2025, rev 1.
- A report titled "*Milldale Stage 10 – 13 - Groundwater Dewatering Assessment*", prepared by Williamson Water & Land Advisory (WWLA), dated 25 February 2025, rev 1, ref WWLA1338, referred to below as *"The WWLA Report*".
- A report titled "*Proposed Residential Subdivision Milldale Stages 10 to 13, Wainui East : Geotechnical Investigation Report*," prepared by CMW Geosciences Ltd (CMW), dated 24 March 2025, ref AKL2024-0257AB rev 3, referred to below as "*The CMW Report*".
- A report titled "*Ecological Impact Assessment : Milldale - Stages 10-13,"* prepared by Viridis Environmental Consultants (VEC), dated February 2025, rev Final 1, ref 10015-030-01, referred to below as "*The VEC Report*".
- Engineering plans titled "Milldale Fast Track Stages 10-13", prepared by Woods dated February 2025.
- A report titled "*Earthworks Methodology Report – Milldale Earthworks 10-13*," prepared by Woods, dated 19 March 2025, rev 1, ref P24-128.

4.0 Additional Reasons for Consent

AUP (OP) Standards

It is my opinion that the proposed works for Stages 10-13 **do not** meet the permitted activity standard E7.6.1.6 (2&3), because the take of groundwater i.e. dewatering during excavation will be for longer than 30 days and there will be permanent dewatering/take via the proposed underfill drains, beyond the construction period. This requires a restricted discretionary activity under rule E7.4.1(A20). **The Application does not give this as a reason for consent, which I consider to be a significant omission.**

National Environmental Standards for Freshwater *"NES:FM"*

The application has been reviewed with respect to the requirements under "*NES:FM 45 : Specified Infrastructure*", in particular (4a to c) and "*NES:FM 45C : Urban Development*", in particular (4a to c) both of which pertain to: "*The taking, use, damming, or diversion of water within, or within a 100 m setback from, a natural inland wetland*". It is my opinion that

- Consent is required as a discretionary activity for the works for Stages 10-13, in accordance with 45 (4a to c) *"Construction of Specified Infrastructure,"* because the proposal involves the taking, use or damming or diversion of water within or within a 100m setback from a natural inland wetland which is for the purpose of constructing specified infrastructure and there is a hydrological connection between the water take and the wetland and the works will change the water level of the wetland.
- Consent is required as a restricted discretionary activity for the works for Stages 10-13, in accordance with 45C (4a to c) "Urban Development," because the proposal involves the taking, use or damming or diversion of water within or within a 100m setback from a natural inland wetland which is for the purpose of constructing urban development and there is a hydrological connection between the water take and the wetland and the works will change the water level of the wetland.

The Application does not include for these two consents, which I consider to be significant omissions.

5.0 Specialist Assessment

Review of The WWLA Report

The objectives of the WWLA report were to determine the effects of the Stages 10-13 works with regard to the following:

- Dewatering requirements based on the cut and fill plans associated with the proposed earthworks;
- Changes in stream baseflow due to landscape modification during development; and

- A regulatory assessment with regard to Chapter E - Section 7 of the AUP.

WWLA summarise Stage 10 &11 as follows:

- "*Earthworks will flatten ridges and fill hollows to create a more-gentle gradient, sloping toward the southeast;"*
- *"The maximum excavation depth is 7 m near the northwestern corner of the site;"*
- *"The most extensive excavation areas are along the northern side of the development, though there are also several excavation areas to south and east*; "

WWLA summarise Stage 12 & 13 as follows:

- "*Earthworks will flatten ridges and fill hollows to create a flatter gradient, sloping toward the northeast;"*
- *"There are three areas where excavation will exceed 10 m; to the north, southeast, and southwest of the site. The maximum excavation will be in the mid-southwestern portion of the site, reaching a depth of 11.9 m*."

WWLA has developed a numerical groundwater model to simulate hydrological conditions in the wider Milldale area and surrounding catchments, for the purpose of evaluating dewatering requirements and potential groundwater effects. The model was updated with groundwater monitoring data from twelve standpipe piezometers in the Stage 10 & 11 area and five standpipe piezometers in the Stage 12 &13 area. In addition, the model was used to evaluate any changes to the baseflow of existing streams.

WWLA conclude: "*Based on the analysis, dewatering is not required because groundwater will be managed by underfill drains and realigned streams, which in fill areas are higher than current drains. Hence, there will be a rebalancing in groundwater levels across the site, with some rises up to 3 m and maximum drawdown (or decline) of only 1 m. Overall there is no reduction in groundwater baseflows to the streams because of the underfill drains and realigned stream picking up baseflow.*

Stream base flow will be increased by 4.7% in Stage 10 to 11 and will be slightly reduced by approximately 2% in Stage 12 to 13. Overall, there is a slight increase in stream baseflow, albeit fairly neutral, and therefore the overall impact of stream baseflows is less than minor.

Model results indicate that there will be no loss of wetlands at 147 Argent Lane resulting from the proposed development, except Northwestern wetland, which will be reduced by 32% due to a reduction of surface water catchment area and lowering of groundwater table."

Draft conditions of consent have been proposed to ensure any effects on groundwater remain with the envelope determined from this assessment. Having reviewed the draft conditions of consent, WWLA consider these to be appropriate to limit potential effects on groundwater that might arise from the proposed development."

Review of The VEC Report

VEC state*: "One permanent stream and several intermittent streams, several natural inland wetlands, and constructed ponds and drainage channels were also present within the site" …. "All wetlands within the site were considered 'natural inland wetlands' in line with the NPS-FM definition" … "The project will involve bulk earthworks, the installation of infrastructure, vegetation removal, the reclamation and diversion of intermittent streams, culvert installation, and the reclamation of natural inland wetlands."*

In addition, VEC has identified *"potential"* natural inland wetlands off -site in the northwestern portion of the property at 147 Argent Lane.

Review of the Engineering Plans and the CMW Report

In their report CMW do not specifically assess the mechanical settlement effects associated with retaining wall deflections. We note from the Engineering Plan titled *"Retaining Wall Layout Plan Sheet 3,"* prepared by Woods, Drawing P24-128-00-1303-EW, rev 1 dated February 2025 that *"WALL 23"* is the nearest proposed retaining wall to any 3rd party asset adjacent to the site. *"WALL 23"* has a maximum retained height of approximately 3 m and is located approximately 12 m from the building at 142 Young Access, hence given that the building is located approximately 4 times the retained height from the wall, it is considered that any mechanical settlement effects (as a result of retaining wall deflection) on the building will be negligible.

6.0 Section 67 Information Gap

I have identified the following Section 67 information gap:

Description of Missing Information

The Application does not include an assessment of the effects of the proposed groundwater-related activity on five of the six off-site natural inland wetlands at 147 Argent Lane, which are indicated in the Ecological report to be groundwater-fed. This is considered to be medium risk depending on the quality of the wetlands.

Why is this Information Essential?

The absence of the above information significantly limits my ability to assess the effects as described below

Information gap	Nature of deficiency	Decision-making impact	Risk / uncertainty created
1. No assessment of the effects on five of the six natural inland wetlands at 147 Argent Lane	No assessment of effects of the groundwater-related activity	I am not able to assess whether or not the effects of dewatering and groundwater diversion on the five off-site natural wetlands is potentially adverse.	Medium / Potential for significant effect destruction / of these five wetlands which will require mitigation

7.0 Recommendation

I recommed that the Applicant should:

1. Update the assessment of the proposed activity against AUP (OP) Standards to include non-compliance with E7.6.1.6 (2&3). The "*Specialist Tracker*" states: "*An updated groundwater report will be provided that will address E7.4.1 (A20). The additional reason for consent will be included in the Application and a corresponding assessment of effects will be provided."*
2. Apply for a Consent which includes both dewatering and groundwater diversion **with a consent duration of 35 years**. The "Specialist Tracker" states: "*The additional reason for consent will be included in the Application and a corresponding assessment of effects will be provided.*"
3. Undertake an appropriate assessment of effects of the proposed dewatering and groundwater diversion on the five natural inland wetlands at 147 Argent Lane.
4. Apply for Consent as a discretionary activity for the works for Stages 10-13, in accordance with 45 (4a to c) *"Construction of Specified Infrastructure,"* because the proposal involves the taking, use or damming or diversion of water within or within a 100m setback from a natural inland wetland which is for the purpose of constructing specified infrastructure, and there is a hydrological connection between the water take and the wetland and the works will change the water level of the wetland.
5. Apply for a Consent as a restricted discretionary activity for the works for Stages 10-13, in accordance with 45C (4a to c) "Urban Development," because the proposal involves the taking, use or damming or diversion of water within or within a 100m setback from a natural inland wetland which is for the purpose of constructing urban development, and there is a hydrological connection between the water take and the wetland and the works will change the water level of the wetland.

8.0 Proposed Conditions

I have reviewed the Conditions of Consent (68 to 75 in Volume 6 of the Application documents), for the Water Permit and consider that they are appropriate, provided that the Definitions and Table 1 attached to this Technical Specialist Memo are included. The "Specialist Tracker" states: "*The definitions will be included into the recommended conditions*"

9.0 Supporting Documents

Attachment No. 1 - Definitions

Ground Dewatering and Groundwater Diversion Consent Conditions

Definitions

Words in the ground dewatering (take) and groundwater diversion consent conditions have specific meanings as outlined in the table below.

Bulk Excavation	Includes all excavation that affects groundwater excluding localised undercuts, excavation for shear keys and minor enabling works and piling less than 1.5m in diameter.
Commencement of Construction Phase Dewatering	Means commencement of Bulk Excavation and/or the commencement of the taking or diversion of groundwater, other than for initial state monitoring purposes.
Completion of Construction Phase Dewatering	Means when all drainage is in place and connected to the stormwater network.
Commencement of Excavation	Means commencement of Bulk Excavation or excavation to create perimeter walls.
Completion of Construction	Means when the s224 Certificate for subdivision works is issued by Auckland Council
Completion of Excavation	Means the stage when all Bulk Excavation has been completed.
Condition Survey	Means an external visual inspection or a detailed condition survey (as defined in the relevant conditions).
Damage	Includes Aesthetic, Serviceability, Stability, but does not include Negligible Damage. Damage as described in Table 1.
External visual inspection	A condition survey undertaken for the purpose of detecting any new external Damage or deterioration of existing external Damage. Includes as a minimum a visual inspection of the exterior and a dated photographic record of all observable exterior Damage.
RL	Means Reduced Level.

Services	Include fibre optic cables, sanitary drainage, stormwater drainage, gas and water mains, power and telephone installations and infrastructure, road infrastructure assets such as footpaths, kerbs, catch-pits, pavements and street furniture.
SQEP	Means Suitably Qualified Engineering Professional

Category of Damage	Normal Degree of Severity	Description of Typical Damage *(Building Damage Classification after Burland (1995), and Mair et al (1996))*	General Category *(after Burland – 1995)*
0	Negligible	Hairline cracks.	**Aesthetic Damage**
1	Very Slight	Fine cracks easily treated during normal redecoration. Perhaps isolated slight fracture in building. Cracks in exterior visible upon close inspection. Typical crack widths up to 1 mm.	
2	Slight	Cracks easily filled. Redecoration probably required. Several slight fractures inside building. Exterior cracks visible, some repainting may be required for weather-tightness. Doors and windows may stick slightly. Typically crack widths up to 5 mm.	
3	Moderate	Cracks may require cutting out and patching. Recurrent cracks can be masked by suitable linings. Brick pointing and possible replacement of a small amount of exterior brickwork may be required. Doors and windows sticking. Utility services may be interrupted. Weather tightness often impaired. Typical crack widths are 5 mm to 15 mm or several greater than 3 mm.	**Serviceability Damage**
4	Severe	Extensive repair involving removal and replacement of walls especially over door and windows required. Window and door frames distorted. Floor slopes noticeably. Walls lean or bulge noticeably. Some loss of bearing in beams. Utility services disrupted. Typical crack widths are 15mm to 25 mm but also depend on the number of cracks.	
5	Very Severe	Major repair required involving partial or complete reconstruction. Beams lose bearing, walls lean badly and require shoring. Windows broken by distortion. Danger of instability. Typical crack widths are greater than 25 mm but depend on the number of cracks.	**Stability Damage**

Table 1: Building Damage Classification

Note: In the table above the column headed “Description of Typical Damage” applies to masonry buildings only and the column headed “General Category” applies to all buildings.