Milldale Fast-Track

29/07/2025 – Auckland Council Response

Annexure 5:

Wastewater Treatment

Technical Specialist Memo – Milldale Fast Track Application, Wastewater

To:	Dylan Pope – Lead Planner & Carly Hinde - PPL
From:	Dylan Walton - Senior Wastewater Engineer, GWE Consulting Limited
Date:	25/07/2025

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

The Applicant proposes to discharge an average of 675 m^3/d and a peak of 830 m^3/d of highly treated residential type wastewater to an infiltration basin and ultimately to Waterloo Creek in Upper Orewa. They have provided an Assessment of Effects indicating that the overall impact of this discharge 'should' be minor. Based on documents I have viewed, I agree in principle with this assessment. I have raised initial comments and queries about the proposal in my technical memo dated 21 March 2025 and have since met with the Applicant's wastewater engineers in meetings on 27 May 2025 and 19 June 2025. Many of my concerns have been addressed. However, more information is required on several issues before I can unprovisonally recommend a set of consent conditions. These are:

- There remains uncertainty on the fate of reject water from the wastewater treatment plant.
- Confirmation of the receiving environment, flow volume, and waste stream characteristics of reject water is required so an assessment of the impacts of this on the receiving body can be undertaken.
- There has been little correspondence from Water care indicating their willingness/unwillingness to accept wastewater into the Army Bay wastewater treatment plant.
- Further information on the scale of impact on Orewa Estuary is required.

In my meeting with the Applicant's wastewater engineers of 19 June 2025, it was agreed that the conditions could be refined to (a) reflect the staged nature of the development, (b) provide some flexibility to avoid Section 127 changes as the development progresses, and (c) adopt a loading (kg/d) metric for the discharge limits.

At the time of writing, I have not received documentation addressing the outstanding items or amended conditions reflecting the agreements on (a) to (d) above. Therefore, while I support the proposal in principle, I cannot recommend a final set of consent conditions.

3.0 Documents Reviewed

Appendix 2F – Infrastructure Report (dated 28/03/2025)

Appendix 2K – Engineering Drawings Part 1-7 (dated February 2025)

Appendix 3C – Civil Drawings (dated February 2025)

Appendix 3F - Infrastructure Design Report (dated 28/03/2025)

Appendix 4A - Infrastructure Report (1) (dated 28/03/2025)

Appendix 4F – Water Quality Assessment (herewith referred to as the "AEE Report")

Appendix 4J – Alternative Options Assessment (undated)

Appendix 4K – Wastewater Treatment Plant Design Report (herewith referred to as "Wastewater Design Report", dated 28 February, 2025)

Appendix 4L – Engineering Drawings (dated February 2025)

Appendix 4P – Hazardous Substances Assessment (dated 20 February 2025)

Volume 4 – WWTP AEE Final (1) (dated 28th March 2025)

Meeting minutes – prepared by B&A Urban and Environmental, dated 27 May 2025. Location Auckland Council, 135 Albert Street.

Meeting minutes - prepared by B&A Urban and Environmental, dated 19 June 2025. Location Woods, 8 Nugent Street, Auckland.

4.0 Additional Reasons for Consent Not included in AEE

Section 5.2.1 of "Volume 4 – WWTP AEE Final (1)" describes the activity as discretionary under Rule E6.4.1 (A6) of the Auckland Unitary Plan. I agree with this. There are no additional reasons requiring consent to discharge treated wastewater.

5.0 Specialist Assessment

In undertaking this assessment, I have considered the nature of the treated wastewater, the characteristics of the receiving environment, and what effect the treated wastewater will have on the receiving environment. The Applicant has provided descriptions of all of these (with an exception to the receiving environment - see below). I agree in principle with the Applicants proposition, namely (a) that the raw wastewater has been adequately characterized, (b) that the level of treatment proposed by the Applicant will not result in a significant impact on the receiving environment, and (c) that the treatment plant proposed can achieve the level proposed, with caveats.

I have also considered, and acknowledge, that the proposed solution is an interim measure and long-term discharge is not proposed. Therefore, any impacts will be finite and not prolonged.

I visited the site on 21 November 2024 and attended a workshop with the client on 27 May 2025, in which most of Council's and the Applicant's specialists attended. I also attended a meeting with the Applicant's Planner and Wastewater Engineer on 19 June 2025, at which points raised in my Technical Memo of 21 March 2025 were discussed.

In summary:

Receiving Environment – Several wastewater samples and site investigations were undertaken by the Applicant and a full description of the receiving environment is given in the AEE Report. The primary receiving environment is a small stream (Waterloo Creek), which discharges into Orewa River, which

flows to an estuary and into the sea. The Applicant describes Waterloo Creek (into which the discharge will take place) as the freshwater environment and Orewa River (at the State Highway 1 bridge) as the marine (or "estuarine") site. Water sampling, biological assessments, and hydrology assessments were undertaken at (a) the proposed discharge point at Waterloo Creek, (b) immediately upstream from the proposed discharge point, and (c) Orewa River at the State Highway 1 overpass. Waterloo Creek (with an average estimated flow of 4,882 m^3/d) was described as being in relatively healthy condition in relation to water quality, but investigations also revealed a high level ecological degradation mainly due to stream features such as suspended sediments and clarity. Orewa River was described as having a moderate level of biological degradation, and as being under some degree of "environmental stress" due to sediments and nutrients. This stress was assessed as being less than for Waterloo Creek.

I agree with the Applicants assessment of the receiving environments. However, no assessment was conducted on the main body of Orewa Estuary, between the State Highway 1 overpass and the sea. This is a recreational area and, as an estuarine environment, may be a resource for recreation, food gathering, and other activities. This is discussed in further detail below.

Raw Wastewater Characteristics – Wastewater characteristics are given in Table 3 of the Wastewater Design report. The proposed dry weather and wet weather flow rates are 675.12 m3/d and 829.2 m3/d respectively. I concur with the Applicants assumed characteristics and flow rates.

Wastewater Treatment – A full description of the proposed treatment process is provided in pages 60 to 80 of the Wastewater Design Report. A process low diagram (PFD) is given on page 62 of the report. In brief, the process comprises activated sludge treatment followed by membrane filtration and reverse osmosis to provide an extremely high level of solids, nutrients, and pathogen removal. The proposed treatment quality limits are given in Section 4.3 of the proposed conditions of consent, and are summarised as:

Parameter	12 monthly median must not exceed
Total Nitrogen (mg/L)	1.0
Ammoniacal Nitrogen (mg/L)	0.3
Carbonaceous Biochemical Oxygen Demand ($cBOD_5$, mg/L)	0.5
Total Suspended Solids (mg/L)	4.0
Total Phosphorous (mg/L)	0.07
Escherichia Coli (cfu/100 mL)	< 4.0
Enterococci (cfu/100 mL)	< 4.0

It is proposed that discharge will take place via a "contact basin" whereby treated wastewater will percolate through the bottom of a small basin and pass subsurface to Waterloo Creek. An overflow pipe will be provided. While it is possible there may be some treatment through the basin and soil prior to entering the creek, the Applicant's specialists have assumed this will not occur.

The level of treatment proposed is extremely high and will be difficult to achieve. However, I am satisfied that the treatment method proposed can achieve this level of water quality.

Assessment of Effects – Sections 5, 6, 7 and 8 of the AEE Report provides the assessment of effects, and the key conclusions are summarized below:

- The degraded freshwater environment is likely due to historical pastoral uses of upstream land;
- The proposed discharge is likely to increase stream flows, but any increases in ammonia concentrations that may occur are likely to result in the stream not being graded outside attribute state A (under the National Environmental Standards for Freshwater Management);
- Concentrations of other contaminants in the stream are likely to reduce or not affect the concentration in the stream;
- Possible effects on ecology such as erosion or habitat degradation can be managed through a number of methods;
- Proposed consent conditions around treated wastewater quality sampling and ecological monitoring, are a mitigating feature of the proposal.

Overall, the Applicant's specialists conclude that effects associated with the proposed discharge 'should' have a minor environmental impact on the receiving water. I agree with the conclusion that there 'should' be a minor impact. However, there are several items for which I consider should be addressed, which will provide more certainty around the conclusions, such that it can be concluded that the proposed discharge will 'very likely' or 'highly likely' have a minor impact – see Further Comments section.

Further Comments - My Technical Memorandum of 21st March 2025 outlines my initial comments and queries, and these were discussed in more detail at the meeting with the Applicant's Planner and Wastewater Engineer on 19 June 2025. These main points are listed below, with comments either following immediately or in Section 6.0 below. I have not received any additional documentation since the meeting that relates to wastewater.

Reject Water from Reverse Osmosis Stream – This remains somewhat unresolved. See Section 6.0 below. I note that while it is unlikely that the full RO reject water volume will ever be realised, and as a short-term measure it may be tankered away, this remains unresolved.

Pathogenic Effects - consider this comment resolved. Reverse osmosis will remove all bacteria and pathogens so a Microbial Health Risk Assessment (MHRA) would be a redundant exercise.

Ammonia Effects – Apex is preparing a response. See Section 6.0 below.

Effects on the Estuary and Overall impact of the discharge as a percentage of the catchment – not listed in the meeting minutes, but Apex stated they are preparing a response to show the scale of the impact of the discharge on the estuary.

Emerging organic contaminants (EOCs) and metals – The Applicant's wastewater engineer has confirmed verbally in the June 19 meeting, that there will likely be low concentrations of these contaminants, and will provide further detail in writing.

Overflow from the infiltration basin – The Applicant's wastewater engineer has undertaken to provide further detail around overflow from the basin. The Applicant's Wastewater Engineer acknowledged and accepted this and is to provide more information

Discussions with Watercare – While I don't doubt that Watercare will not accept wastewater from Milldale, I have not seen anything writing to this effect. The Applicant continues to request this from Watercare.

Summary

Overall, I support the application, provided that certainty can be provided around what will happen with reject water (and confirmation that Watercare will not accept any wastewater) and that further details of the scale of impacts on Orewa Estuary are provided. I also note that at the 19 June meeting, the Applicant's Wastewater Engineer proposed a daily load metric for consent conditions (refer to meeting minutes) as well as conditions that reflect the staged nature of the development. In my opinion this is a sensible and pragmatic approach. While we await final responses to the items above (and in Section 6.0 below), I expect that the Applicant may also amend or adjust the proposed conditions of consent to reflect the daily load condition and staged development. As such, I cannot recommend any final conditions of consent at this stage.

6.0 Section 67 Information Gap

I have identified the following Section 67 information gaps:

1. Description of Missing Information

Reject Water and confirmation that Watercare won't accept reject water or raw (or treated) wastewater

Why is this Information Essential?

The volume of reject water, at peak flow certainly, is substantial. As per the minutes from 19 June meeting, there has been little or no written correspondence from Watercare confirming whether they can accept the reject water. There has been no confirmation or information provided on (a) the volume of this stream, (b) the frequency with which it will be disposed, and (c) the characteristics of this stream, such as 5 day Biochemical Oxygen Demand (BOD_5), nutrients, salts, suspended solids, emerging organic contaminants and pathogen count (amongst others). Such information is required to enable a proper assessment of impacts on the receiving body, whether it is a Watercare network/treatment plant, surface water, or land disposal.

If Watercare could accept this waste stream, it may be the best practicable option to simply deliver it to the Army Bay Wastewater Treatment Plant. The meeting minutes also note that it is not intended for re-use of the reject water. If at any stage it is disposed of to land or water it will need to go through a consent process, in which case there is always the possibility (however slim) of rejection. If rejected, then it puts the RO process in doubt, affecting the overall proposal.

2. Description of Missing Information

Effects on the estuary and impact of the discharge relative to the overall catchment.

Why is this Information Essential?

As the treated wastewater will ultimately pass to the estuary, it is important to know how much extra load of contaminants the estuary will receive from the wastewater. While there may not be significant impacts on the immediate receiving waters (Waterloo Creek and Orewa River) in terms of concentrations, the discharge of treated wastewater can be considered as a new contributor to the catchment. It is therefore important to understand the scale of this eg will it add 1% additional nutrients or 10%, or 50%.

Information gap	**Nature of deficiency**	**Decision-making impact**	**Risk / uncertainty created**
1. Fate of reject water	No certainty provided on this.	It is a wastewater stream, integral to the application, that may need a discharge consent. It is difficult to issue a discharge consent for the treated wastewater without confirming the fate of the RO stream. More information about volume, characteristics, and receiving body is required	**Medium/high**
2. Written confirmation from Watercare	No written confirmation form Watercare has been provided stating they cannot or will not accept wastewater from the development (until the Army Bar Wastewater Treatment Plant is upgraded)	If Watercare were able to accept the wastewater, the best practicable option would likely be pumping the wastewater to Army Bay	**Medium/high**
3. Impact on Orewa Estuary	Scale of impact on the estuary hasn't been addressed	It is unlikely that there will be more than a minor impact on the estuary, based on the	**Medium**

		findings of the Upstream waters. However, as new discharge it is important to understand any additional stress that it may be putting the Estuary under in terms of contaminant loads	

7.0 Recommendation

Based on the documents provided, and correspondence with the Applicant's wastewater specialists and planners, I support the application in principle. The level of wastewater treatment provided by the new plant is extremely high and, in my experience, may be the 'best' treatment provided for residential wastewater ever experienced in practice in New Zealand. It would be extremely difficult to treat to a 'better' level. However, there remain three key items to be addressed before I can unprovisionally provide support and recommend a final set of consent conditions:

1) There remains no certainty of what will happen with reject water from the reverse osmosis plant;
2) Confirmation of (a) the receiving body of RO reject water, (b) flow volume, and (c) RO reject water characteristics is required so an assessment of the impacts of this can be undertaken;
3) Little correspondence with Watercare has been provided confirming that they cannot or will not accept wastewater from the development; and
4) The scale of the impact on Orewa Estuary has not been confirmed.

I note that, in discussions with the Applicant's engineers, it is intended to address these issues.

Other comments raised during the course of my assessment (listed in Section 5.0 of this report), while important, have either been addressed or can be addressed through conditions of consent.

I note that the Applicant's engineers intend to provide additional documentation to address any outstanding issues. Based on my discussions with them at the meeting of 19 June 2025, it is possible that new conditions may be proposed, namely (i) providing flexibility to avoid Section 127 applications and (ii) conditions that acknowledge the staged nature of the development. We await these proposed conditions.

8.0 Proposed Conditions

As throughout this memo, I cannot recommend conditions be granted until the issues listed in Section 6.0 have been satisfactorily addressed. I understand that the Applicant's engineer is in the process of accumulating the required information, and I anticipate that this will further

affect the conditions of consent. Nevertheless, I recommend the following changes be made to the conditions that have been proposed to date.

Condition 59: I recommend an additional condition requiring that Council be advised, within five working days of the receipt of the final sample result, if three consecutive samples exceed the 12 monthly median limits.

Condition 69: I recommend that the Operation and Management Plan be required to include three monthly monitoring and maintenance of the infiltration basin.

9.0 Supporting Documents

Technical Memo – Milldale Fast Track Application – BUN60446761, From Dylan Walton (GWE) to Carly Hinde (Auckland Council), dated 21 March 2025.