

To
EPA Panel for the Milldale FTAA Application

From
*Woods
Tim Rickards – Principal Engineer*

*W-REF: P24-189
5 August 2025*

Milldale Wastewater Treatment Plant – Response to feedback to the Milldale Fast-track application.

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 relating to the proposed Temporary Wastewater Treatment Plant (WWTP) portion of the project and provides clarification, additional assessment, and updates where required.

This memo provides response to matters which have been raised within the following documents:

- Memorandum of Planning Matters for Auckland Council (29 July 2025)
- Annexure A3: Watercare Memo
- Annexure A5: Wastewater Memo
- Annexure A6: Stormwater Memo
- 29July25_FTAA-2503-1038_Watercare_Submission

It also responds to a follow up letter received from Watercare as part of further consultation undertaken post receiving the S53(2) comments:

- Milldale FT Response- WSL Feedback to Further Info Provided 04082025

Summary of concerns raised

A summary of the concerns raised by the various memos has been compiled below.

WSL letters and memo focus on the following issues:

1. Concerns around the proposed Reverse Osmosis (RO) waste stream from the Temporary WWTP that is proposed to be returned to the WSL network. Concerns focus on the volume and frequency of this waste stream, as well as the contaminants present within the waste stream.
 - a. A subsequent meeting with WSL has identified the key contaminant of concern to be the salt content of the proposed waste stream.
 - b. Testing, controls and contingency measures on the Waste stream to ensure stated parameters of the waste stream are achieved.
2. The requirement for emergency storage at the WWTP. Currently it is not proposed to provide emergency storage at the WWTP and WSL are now concerned about the impact of operational failures at the WWTP on their downstream network.

It is noted that the letter from WSL also raises concerns around a proposed pipe bridge in the Milldale Fast-track application. This will be addressed separately from this memorandum as part of a wider response for the subdivision portion of the fast-track application.

The A5: Wastewater memo compiled by Auckland Council wastewater consultant Dylan Walton raises the following issues:

1. Concerns around the RO unit reject waste stream and the ability to discharge this waste stream back to the WSL Transmission Pipe as proposed in the application. Dylan seeks clarification that this approach has been accepted by WSL.
2. A request for an assessment of the effects on the Orewa Estuary as a result of the proposed discharge.

The A6: Stormwater memo compiled by Auckland Council stormwater specialist Martin Meyer raises the following issues:

1. A request for more information regarding the impact of the runoff from the 1% AEP storm event on the downstream catchment and how the E8 permitted activity standards are met.

The above concerns raised as part of the specialist memos and letters are also covered by the Planning Memorandum. No additional concerns raised within the Planning Memorandum document.

1. Background

As part of the Milldale Fast-track application it is proposed to construct a temporary WWTP to treat the wastewater runoff from the proposed new lots created through the Fast-track application. The WWTP is required due to a shortfall in capacity at the Army Bay WWTP, a result of WSL delaying a planned upgrade of this facility. This has resulted in a restriction on development in the Hibiscus Coast catchment.

It is understood from statements made by WSL that an upgrade to the Army Bay WWTP is planned to be completed by 2031. The proposed Temporary WWTP at Milldale is intended to be in operation until this upgrade is completed. The consent application is for 10 years to account for any potential further delays to the upgrade.

WSL notified the public in 2024 that there is a shortfall in capacity of the Army Bay WWTP and the Milldale design team has been working with WSL since that time to find solutions to the capacity issue that will allow development to continue.

Our team has met with WSL fortnightly since August 2024 to consult on the proposed temporary WWTP design and have included WSL feedback into the design decisions on the proposed plant. Key decisions that were agreed with WSL through this process are:

- In September 2024 a proposal was agreed with WSL around the way the plant would operate with the WSL network. This agreement included:
 - That the pipe network within the proposed development would be a public system gravitating to the existing WSL Milldale Transmission Pipe.
 - That the proposed WWTP would extract flows from the WSL network proportionate to the flow generated from the proposed Milldale Fast-track Development. Extraction would be via a pump station from the Milldale Transmission Pipe to offset the increased flows from the proposed Milldale Fast-track development.
 - The flows extracted from the Milldale Transmission Pipe will be withdrawn at a constant rate to ensure the required daily volume of wastewater treatment is achieved and there is no impact on the Army Bay WWTP. It was agreed that the diurnal and wet weather peaking of the flows could be buffered by the storage capacity in the WSL network.
 - It was agreed that during wet weather, the required daily volume to be treated would be increased to offset any stormwater infiltration into the network.

The majority of the Milldale wastewater passes through this lot via the Milldale Transmission Pipe parallel to the Waterloo Stream. All new lots proposed as part of the Milldale Fast-track application will also gravitate to this transmission pipe.

It is proposed to install a take-off manhole on this line to pump flows out of the transmission line to the proposed WWTP. The take-off manhole will be a pump chamber with a take-off pipe from the main transmission main. The wastewater in the transmission main will flow to the chamber until the chamber is full, and then bypass back along the existing transmission main to flow to the Army Bay Treatment Plant. Flow to the proposed Milldale treatment plant can then be controlled via a pump system drawing down the pump chamber as required.

Flows from the pump chamber will be pumped to the proposed WWTP, which is proposed to be a Membrane Bioreactor system (MBR) with an RO unit doing a final treatment of the flows prior to treatment.

Following treatment, it is proposed to pump the treated effluent to be discharged to a proposed artificial wetland within the subject site to be discharged into the receiving environment. There will be a small waste stream from the RO unit that will be discharged back to the Milldale Transmission Pipe.

It is proposed that the take-off manhole and WWTP would be private and remain in FHLDL ownership for them to maintain and operate. On completion of the upgrade of the Army Bay WWTP facility the take-off manhole and temporary WWTP will be decommissioned, and flows will continue down the transmission line to the Army Bay facility.

3. Design Wastewater Plant Flows

FHLD have proposed sizing the Temporary WWTP to service up to 1250 lots (1250 DUE's).

An assessment has been undertaken of the expected flows to the Milldale treatment plant from the proposed 1250 lots. This results in an expected peak average dry weather flow (ADWF) of 675 m³/day once full development is achieved. A wet weather flow rate has also been calculated to give a wet weather peak treatment volume of 829 m³ per day (note these figures exclude the offsetting of RO waste).

As agreed with WSL previously, there is suitable capacity in the downstream network to accommodate balancing of the diurnal peaks and wet weather events from the network, the treatment plant is designed to treat the average flows from the network over a 24hr period. No buffering tanks are proposed as part of the WWTP design.

The Milldale Transmission Pipe has already been approved by WSL through previous consents to convey flows from approximately 1800 DUE's. These approved DUE's will be fully utilised before the proposed WWTP comes online. This corresponds to an average dry weather flow of 972 m³/ day already being conveyed in the pipeline before the Milldale Fast-track lots are added.

The below table shows the required flow rates from the Milldale Fast track development that the WWTP will be designed to treat when operating at capacity. These flows do not include the additional flows that are proposed to be extracted to offset the proposed waste stream.

	Daily flow rate	Treatment flow rate
Dry weather flow	675 m ³ / day	7.8 l/s
Wet weather flow	829 m ³ / day	9.6 l/s

*Figures above exclude offsetting of RO waste

It is proposed to stage the release of housing of the Milldale Fast-track development over several years. The off-take flows will be staged to match the discharge from the lots from the staged development as they come online. This means that wastewater flows from the catchment being treated by the WWTP will increase over time to eventually reach the designed WWTP capacity.

Through the Engineering Approval process for the development of these stages, agreement will be reached with WSL regarding the required treatment flowrates of the temporary WWTP to address each subdivision stage flows.

4. WSL Reverse Osmosis (RO) Waste Stream Concerns

WSL have raised concerns around the proposed RO waste stream from the WWTP that is proposed to be returned to the WSL network. The concerns focus on the volume and frequency of this waste stream, as well as the contaminants present within the waste stream.

In addition to this Dylan Walton has correctly identified in his memo on behalf of Auckland Council the risk of not obtaining the approval from WSL to discharge the RO waste stream back to the WSL network. A letter was provided by WSL with the intention to mitigate this risk, but subsequent communications from WSL have called the validity of this letter into question.

A meeting was held with WSL on 30/7/2025 regarding their recent concerns regarding the RO discharge. It was identified that the key contaminant of concern is the salt concentration of the proposed waste stream and the effect this may have on the WSL Network and the Army Bay WWTP.

The waste stream from the RO unit back into the WSL network will be a constant flow. The flowrate of the waste stream will fluctuate in accordance with the treatment flowrate of the WWTP, with a consistent percentage of treatment flow being discharged as a waste stream back to the WSL network.

The key point here is that the flowrate in the Milldale Transmission Pipe downstream of the waste stream discharge point will not be affected by this waste stream discharge. This is achieved by increasing the off-take flowrate from the transmission main at an equivalent flowrate to that of the discharge flowrate from the waste stream. This has been detailed in all correspondence with WSL to date and is covered by the letter WSL have provided to FHLD to be used as part of the Fast-track application.

With regards to the contaminants in the waste stream it should be noted that the effluent will have already been treated to a very high standard by the proposed MBR system in the WWTP. The RO process is a final polishing process to enable the flow discharged to the receiving environment to be at the exceptional quality needed to ensure less than minor impacts. The waste stream discharged back to the Milldale Transmission Pipe will still be of very high quality and a significant improvement on the additional offtake flow that is withdrawn to offset this waste discharge.

WSL have correctly identified that there is a small increase to the concentration of salt in the flow being discharged back to the network when compared to the predevelopment flows. APEX have undertaken an assessment on the impacts of this increase in the salt concentration on the operation of the WSL network and Army Bay WWTP. It is not anticipated that this increase in salt concentration will have any negative impact on the WSL operations. Further to this, the waste stream proposal is anticipated to have a positive effect on the operation of the Army Bay WWTP through the reduction of other contaminants in the discharged when compared to predevelopment flows. Please refer to APEX's attached memorandum for further details on this assessment.

The above was communicated to WSL via a memo on the 31/7/2025. WSL responded via a letter on 4/8/2025. In our opinion the response displays some fundamental misunderstandings of the proposal and WSL continue to raise unfounded concerns regarding the RO waste stream. These are discussed below:

1. WSL still believe that the resulting contaminant loading in the wastewater flow to the Army Bay WWTP will increase compared to predevelopment as a result of the proposed temporary WWTP and RO waste stream. This is incorrect.

Other than salt concentration the contaminant concentration will be lower in the Army Bay flow than that of the predevelopment. This is achieved through extracting additional wastewater from the transmission main to offset RO stream. The proposal is for the temporary WWTP to withdraw this additional flow that is consented to flow to Army Bay WWTP, treat it and then discharge it back into the WSL network. This results in treated wastewater offsetting the untreated wastewater in the predevelopment flow.

-
2. WSL have concerns regarding the ability for the MBR plant to remove contaminants, and when contaminants are not able to be removed that these will be discharged back to the WSL transmission main via the RO waste stream. Contaminants raised as a concern are Salts, Organic compounds, Viruses and Pharmaceuticals.

Salts have been addressed previously in this document and are discussed in detail in APEX's response memo. It is acknowledged that these will be discharged back to the WSL network at a higher concentration. An assessment on the impact of this on WSL operations has been undertaken by Apex which explains why this will not have any adverse effects.

The other contaminants identified by WSL are acknowledged and discussed further in the APEX memo. It is noted that while these contaminants are listed within the WSL Army Bay discharge consent, there are no compliance limit requirements around them. WSL obligation is to monitor, investigate and report on them.

It is anticipated that the MBR will remove a significant portion of these contaminants, but this is difficult to quantify. In general it is anticipated that the resulting flow to the Army Bay WWTP will be an improvement on the predevelopment mass loads for most CECs.

3. The applicant is open to assisting WSL in the process of understanding these contaminants further by undertaking testing on the Milldale waste stream and providing this information to WSL. An agreement can be reached regarding this through the trade waste agreement process. WSL have raised concerns regarding the proposed Condition 22 regarding monitoring of the CEC's. This condition regards the discharge to the receiving environment, not the WSL transmission main. It is intended to monitor changes to the wastewater flows being received by the temporary WWTP and adjust the risk assessment and treatment process to account for these changes.
4. WSL are claiming that they were unaware of the requirement for an RO unit until early July 2025. They also appear uncertain of the flows being treated by the WWTP and the required waste stream discharge.

The RO unit was discussed with WSL in meetings in January 2025 and the discussions captured in emails from that time. An email from the 28th of January discusses the concept of isolating out the remaining contaminants in the flow and discharging them back to the WSL network. While the email doesn't mention an RO unit specifically the content discussed is the same. The focus at the time was around ensuring the flows in the WSL network were not affected.

The WWTP has been designed to scale up as required to offset flows from the proposed Fast-track development. This appears to have created some confusion with WSL regarding the design treatment flow for the temporary WWTP. The ultimate peak treatment flows for the temporary WWTP are outlined in the Section 3 above. Additional flow above this rate will need to be withdrawn to offset the RO unit waste stream. Interim treatment flowrates building up to this ultimate peak capacity will be agreed with WSL as each development stage is approved through the EA process.

The WSL letter refers to flow rates discussed in an initial flow memo provided to WSL in October 2024. At the time the proposed development catchment being offset was only 700 houses. The proposal for the temporary WWTP proposed through the Fast-track application is for 1250 house.

5. WSL have requested details regarding the waste streams from the MBR or RO unit during cleaning phases.

Discharges from the MBR and RO facilities during cleaning phases will be recycled through the temporary WWTP. Impact of MBR cleaning on discharge is minimised by operating the MBR plant on a duty/assist basis. During cleaning of the RO unit discharges to the WSL transmission pipe will be paused while discharge flows are recycled back through the temporary WWTP.

Details of this process have been provided as part of the APEX response memo. Apex have confirmed that cleaning processes will not impact the flowrates within the WSL transmission pipe or contaminant loading of the discharge.

-
6. WSL have requested a breakdown of the salts anticipated in the RO reject stream to enable them to undertake an assessment of the effects on the local WSL network.

APEX have provided a breakdown of the proposed trade waste discharge as part of their response memo including the salt concentrations. They have also included an assessment of the effects on the receiving WSL network. The findings of this assessment are that the increase in the concentration of salts is negligible when compared to the concentrations required to effect operations or asset life.

7. WSL have raised concerns regarding the precedent set by accepting RO reject streams.

The costs associated with constructing and operating a private WWTP while WSL complete the Army Bay WWTP upgrade are significant and the development of a private temporary WWTP to cover the shortfalls in WSL treatment capacity is not likely to be a regular occurrence in the Auckland region.

It should also be noted that if WSL had completed the Army Bay WWTP upgrade as originally scheduled there would be no requirement to address the RO waste stream from the temporary WWTP.

5. WSL Emergency storage concerns

It is not proposed to provide emergency storage at the WWTP and WSL have raised concerns about the impact this decision may have on the operation of their network. They are concerned that operational failures at the temporary WWTP will result in increased flows to the WSL network and Army Bay WWTP.

The lack of emergency storage is a function of the design decision to not provide buffering tanks to store the peak flows, and instead allow the WSL network and Army Bay WWTP storage to buffer the peaks with the temporary WWTP designed to treat a daily flowrate. This was a decision made in conjunction with WSL in September 2024 and has set the direction of the WWTP design process since.

Reverting this agreed position would require a redesign of the entire Milldale wastewater reticulation network to provide a separated gravity flow direct to the temporary WWTP. This would have significant implications on many aspects of the fast-track proposal including asset ownership, easements and future decommissioning of the temporary WWTP. This is not seen as a feasible option.

The lack of emergency storage has been considered as part of the design process. The WWTP has been designed with duty/ stand-by systems throughout. It is also proposed to have a permanent emergency generator onsite to protect against loss of power. This approach ensures that the proposed WWTP is robust in its ability to consistently treat the required flows and not require offset by the public system.

The available peak buffering in the WSL network also allows a second layer of protection. In the event the temporary WWTP does need to go offline, the flows can be buffered through the WSL network. This allows the temporary WWTP, once operational again, to treat at a higher flowrate and catchup on its daily treatment flowrate. If the outage is planned the plant can treat at a higher rate ahead of the outage to get ahead of its daily rate. This is the same approach that is used to address the diurnal and wet weather peaks.

Downstream of the proposed temporary WWTP is a tunnelled section of the Milldale Wastewater Transmission pipe. This section of pipe was constructed by FHLD to provide a wastewater connection to Milldale. The pipe was installed as a 1050mm diameter pipe, with 3m diameter manholes. This is significantly oversized for the required flows, but was completed at this diameter for construction efficiency reasons. This oversized pipe provides significant additional storage for the Orewa Pump Station that was not anticipated as part of its design or operation. It is estimated that an additional 1,000m³ of storage is provided by this oversized pipe. When compared to the expected wet weather daily flow of 829m³ it is clear there is capacity in the network to buffer flows, including emergency flows.

The above provides suitable insurance against plant failure which mitigates the need for emergency storage capacity. As a final point, as with all engineering designs, consideration needs to be given to what is a preferable means of failure. The proposed temporary WWTP is designed to fail back into the WSL

network, rather than via an emergency discharge to the receiving environment. This provides an opportunity for the WSL network to buffer the increase flows, and the Army Bay WWTP an opportunity to provide an element of treatment to them before they are discharged to the receiving environment. While not a desired outcome for either FHLDL or WSL, this is a robust strategy which in the event of a failure will have the best outcome for the receiving environment.

6. Assessment on the effects on the Orewa Estuary

The A5: Wastewater memo compiled by Auckland Council wastewater consultant Dylan Walton requested that an assessment of effects be undertaken on the Orewa Estuary to ensure the proposed discharge from the temporary WWTP doesn't create any adverse effects.

This assessment has been undertaken by APEX and is covered by their response memo.

The findings of this assessment are that there are no adverse effects anticipated as a result of the discharge on the Orewa Estuary.

7. 1% AEP storm event effect the downstream catchment

The A6: Stormwater memo compiled by Auckland Council stormwater specialist Martin Meyer requests more information regarding the impact of the runoff from the 1% AEP storm event from the proposed temporary WWTP on the downstream catchment and how the E8 permitted activity standards have been met.

Compliance with the unitary plan requirements under E8 is detailed within the WWTP infrastructure report. The discharge is permitted under AUP(OP) rule E8.4.1 (A7).

While the proposed temporary WWTP sits outside of the Milldale Network Discharge consent, it is included within the scope of the Wainui East Stormwater Management Plan. Again, this is detailed in the WWTP infrastructure report.

The WWTP sits within Zone A of the WE-SMP and the strategy for this zone is to meet SMAF requirements but allow larger storms events to pass forward without mitigation. The effects of the increased runoff from the WWTP are considered negligible when compared to those of the wider Milldale catchment. With the approach to pass flows forward it is anticipated that the peak of the runoff will pass ahead of the peak of the main runoff from the upstream catchment.

8. Summary

The above memo addresses the concerns raised by WSL and Auckland Council regarding the Milldale Fast-track application for the temporary WWTP. It shows that WSL concerns are unwarranted, and the items raised have been considered and addressed as part of the temporary WWTP design.

Tim Rickards

Principal Civil Engineer