Delmore Fast-Track

25/06/2025 – Auckland Council Response

Annexure 9:

Wastewater

Dylan Walton

Technical Memorandum – Final

Delmore (88 Upper Orewa Road) Fast Track Application – BUN60446761

Wastewater Treatment Plant – BUN60444768
Auckland Council

TO:	Carly Hinde, Auckland Council	**REF:**	BUN60446761
FROM:	Dylan Walton, GWE Consulting Ltd	**DATE:**	19 June 2025

INTRODUCTION

This memorandum has been prepared in response to a fast track application for the Milldale development under BUN60444768. This memo is the final version, and follows an earlier memo ("Technical Memorandum", to Carly Hinde, Auckland Council, from Dylan Walton, GWE Consulting Ltd, dated 22 March 2025) in which a number of issues were raised, and which the applicant has now had the opportunity to address. As such, this memo follows the same broad format of the earlier memo.

Due to limited capacity at the Army Bay wastewater treatment plant (WWTP) it will be necessary for a large volume of wastewater to be treated and discharged locally at the development site. Several documents have been supplied by the applicant explaining how this will be achieved together with an assessment of effects of the activity. This memo provides my overall view of the proposal, highlighting any concerns or comments that I have.

DOCUMENTS REVIEWED

<u>Original Application documents</u>

Appendix 4 - EIA

Appendix 11- Water, Wastewater and Utilities Report

Appendix 15-31 - SITE PLAN WWTP

Appendix 30 – Wastewater Design Report

Appendix 40 – Wastewater Discharge Memorandum (herewith referred to as the AEE Report)

<u>Documents reviewed since issue of the earlier memo</u>

A. Memorandum – Viridis to Andrew Allsop-Smith, Andrew Fawcet (Vineway Limited), Subject "Delmore Fast Track - Response to Auckland Council Wastewater Queries", dated 11 June 2025.
B. Technical Note, TN04 – By Apex Water, Subject "Technical Note – Engagement Requests for Additional Information", dated 12th June 2025.
C. Letter – Barker and Associates to Auckland Council (Carly Hinde and Dylan Pope), subject "Substantive Fast-track Application for Delmore", dated 17 June 2025.
D. "Operation and Maintenance Manual – Delmore Wastewater Treatment Plant (Draft)", by Apex Water, dated 05/06/23[1].
E. "Operations and Maintenance Manual – Odour Control Delmore WwTP (Draft)", Revision 1, by Apex Water, dated 5 June 2025[1].
F. "Environmental Management Plan Delmore Wastewater Treatment Plant", Revision 1, by Apex Water, dated 5 Jue 2025[1].
G. "Emergency Response Plan Delmore Wastewater Treatment Plant (Draft)", Revision 1, by Apex Water, dated 5 June 2025[1].

[1] While I have received and viewed D to G, I have not undertaken a full comprehensive review of them. Three of them are in draft form and need finalising. I recommend that a condition be include requiring that these documents are finalised prior to operation of the Wastewater Treatment Plant.

REASONS FOR CONSENT

Auckland Unitary Plan Operative in Part

E6 Wastewater Network Management – The proposed new wastewater treatment plant will create discharged to land and, in turn, water. This requires consent as a discretionary activity pursuant to Rule E6.4.1(A6)

NOTES ON WASTEWATER REPORTS AND ASSESSMENT OF EFFECTS

This section provides a summary of comments raised by this author following receipt of the original application documents, with further comments following the response received from the applicant (listed in the "Documents reviewed" section above) given in *italics*.

1. Original comment on Reject Water from Reverse Osmosis (RO) Waste Stream

There is a lack of certainty about the fate of the RO waste stream, which could potentially be a very large volume of water in itself. It is not clear how the RO waste stream would be stored on site – assuming 30% waste stream on the proposed 245 m^3/ discharge, there could be approximately 80 m^3/d of RO reject water to dispose of.

If Watercare will accept pumping of this highly treated reject stream to Army Bay WWTP, then there is no issue. However, regulation around uses of recycled wastewater in New Zealand is extremely limited – Auckland Regional Public Health Service should be consulted, but where recycled wastewater use is for landscape irrigation, Auckland Council would consider this as a discharge, requiring a discharge consent. Similarly, if beneficial use for watering of gardens etc were undertaken, Council would likely require certainty on the fate of the water and probably a consent would be needed.

In short, it seems there is little (possibly no) precedent for this extent of recycled water in a residential setting in Auckland, and the regulations are silent on it. At the very least, if reuse for landscaping or at the individual properties were to take place (such that the discharge was being released to land or water in some way), then a consent (or conditions additional to those proposed by the Applicant) would likely be needed.

Comment on Applicant response

Page 8 in Technical Note TN.04 (document B above) states that the reject water will likely reduce to 15% of the flow treated. This is still a substantial volume – approximately 40 m^3. The response does not provide certainty on what will happen to this reject water. However, the response does state that an additional memorandum is being prepared by multiple specialists to address this issue. As per my original comments, unless all of the reject water is tankered away (and I understand Watercare has advised that it does not support tankering of wastewater, whether treated or untreated), additional conditions will be required to address the disposal of this stream. ***We cannot prepare a condition/s at this stage*** *without this certainty, and* ***we await the memo promised by the applicant****.*

2. Original Comment on Pathogenic impacts

Normally a Microbial Health Risk Assessment (MHRA) would be conducted for a discharge of this magnitude. However, the extremely high quality of the wastewater due to the RO renders this largely pointless as viruses will not pass through the tiny aperture of RO membranes.

Comment on Applicant Response

Pages 9 to 16 of Technical Note TN.04 (document B above) provide considerable additional information on the effluent quality compared with various standards, providing further assurance that a MHRA is not necessary. ***I consider this issue addressed.***

3. Original Comment on Ammonia Effects

From Table 2 in the Water Quality Report, it seems feasible / likely the discharge will push the stream to State B occasionally for ammonia. Similarly, DRP is also modelled to increase the stream concentration to Attribute B levels. Concentrations of other contaminants in the stream will also increase contaminants will also increase. While overall the indications are that ammonia in the discharge will not cause serious issues, there is little discussion of what the occasional change to NPSFM State B and the exceedance of the ANZGV means in and what can be expected to be witnessed in terms of impacts on the ecology as a result. For example, will the change to Band B result in there being a reduction in certain species.

Comment on Applicant Response

The Viridis memo (document A above) addresses this issue on pages 1 to 3. A summary of the impacts is provided in the three bullet points on page 2, followed by the assessment that, given the current ecological state of the stream, the changes to the stream are unlikely to represent a "meaningful" departure from the existing conditions. ***I concur with this and agree with the assessment****. Nevertheless,* ***Viridis have recommended regular monitoring as a condition of consent, which is given on Page 3 of their memo. I recommend that this condition be included, if the project is approved****.*

4. Original Comment on Effects on the Estuary and Overall impact of the discharge as a percentage of the catchment

It would be beneficial to understand how the additional ammonia and phosphorous will affect the estuary (if at all). This could be done under the wider umbrella of an analysis of scale of the discharge in relation to other contributions in the catchment. Given the level of development currently taking place upstream of the estuary, and that other wastewater discharges may also be taking place into the catchment, it is important to know what percentage contribution to the estuary (especially nutrients) is from the wastewater discharges.

Comment on Applicant Response

The applicant provides an assessment of the nitrogen and phosphorous loads on the Orewa Estuary on pages 3 to 5 of the Viridis memo. Under Scenario 2 (average conditions) the nitrogen load from the discharge will contribute approximately 1% and for phosphorous it was estimated at 5% of the total load, from the southern stem of the Orewa River only. I consider 1% to be relatively low. I consider 5%, however, to be a reasonable contribution. However, this is only from part of the overall catchment of the estuary, so these figures can be considered conservative. In addition, this is for the full flow through treatment and as it is unlikely that the maximum flow will be realised for any substantial length of time (prior to upgrades to the Army Bay Wastewater Treatment Plant that may enable receipt of raw wastewater from the Milldale development), ***I agree with Viridis' conclusion****; that the proposed discharge will represent a "…minor, localised nutrient source within the wider catchment and estuarine system."*

5. Original Comment on Emerging organic contaminants (EOCs), metals

The impact of EOCs and metals was not discussed. If metal impacts are low because of low solids concentration in the discharge, or if RO is effective at removing EOCs, this should be stated somewhere.

Comment on Applicant response

This is addressed on page 5 of the Viridis memo and on page 18 of the TN.04 . The responses reiterate that reverse osmosis (RO) is expected to be very effective at removing EOCs, and is well documented to achieve 70% to 100% removal of metals. I acknowledge that these are extremely difficult to remove anyway, and that the level of treatment RO provides will far exceed more traditional and less capable forms of treatment. ***I am therefore satisfied with this response****.*

6. Original Comment on Borelogs

No borelogs for the land disposal area were provided. The applicant has assumed 3 mm/d loading (irrigation) rate, with 8.5mm/d during drier periods. Soils in the area are extremely poorly draining and may not be able to cope with these loading rates. Page 3 of the Water Quality report also states an assumption that discharge flows will reduce by 50% due to absorption and evapotranspiration at the disposal field and this assumption feeds into the mass balances provided in that report. More confidence is needed that this assumption is reasonably accurate, and an examination of the underlying soils will largely confirm that.

Council can only comment on the information provided to it and in this case the proposed level of treated wastewater quality is extremely high. However, a possible benefit of examining the

soils is that the applicant may find that if uptake of water and nutrients via evapotranspiration and in the soils is significant enough, then this may reduce the level of treatment necessary.

Comment on Applicant Response

This issue is addressed on pages 5 and 6 of the Viridis Report and somewhat on pages 19 to 21 of the Apex Technical Note TN.04. I am satisfied that the current design is sufficiently conservative in its assessment to the soils in the disposal area and that confirmation of the soil categorisation can be undertaken as part of the consent conditions. Rileys note that bores were done nearby; it is unlikely there will be any difference between the disposal area and the bores already conducted TN.04 also proposes that soil moisture monitoring be used to optimise irrigation, providing further confidence that irrigation can take place at the proposed rates. ***I recommend that a condition be included, if the project is approved, providing for bore to be conducted at the disposal area to confirm the underlying assumptions made in the design to date.***

7. Original Comment on Irrigation Field

There is very little information about the location and size of the field, how it will operate etc. The proposed conditions allude to this by stating that the information would be provided later, but this generally needs a little more work (eg better site plans showing full separation distances to key site features, more certainty on the area that can be used etc).

Comment on Applicant Response

A response to this query is provided on pages 19 to 21 of the Apex note TN.04. Soil moisture monitoring is proposed and is a good idea to optimise wastewater loading on the land. Apex state that a maximum daily discharge of 8.5 mm/d has been designed for, with a maximum of 42.5 m^3/d discharge across each of two zones (0.5ha each). It remains to be seen whether 8.5mm/d is achievable, but it is feasible during summer conditions. ***I am happy to condition these maximum irrigation rates, together with conditions requiring no ponding and runoff, and regular monitoring. However, the most recent site plan provided (given on page 21 of TN.04) is limited – this plan will need to be updated to show the confirmed areas with separation distances to key site features****. This can be addressed through a condition requiring confirmation of these areas.*

8. Original Comment on Consent Conditions

Condition 102 - Wastewater Samples – The sampling frequency is a little on the light side. I would prefer to see fortnightly for a discharge of this magnitude. The consent limits are also 12 monthly medians and it would be good to have some visibility around performance within this time period. It is recommended a condition requiring that Council be alerted if (for example) there are two or more consecutive samples that exceed the median values, with an explanation of what will be done to ensure the limit is met.

Comment on Applicant response: The applicant proposes, on page 22 of TN.04, a condition providing for reporting to Council if three consecutive samples (taken at fortnightly intervals) exceed the consented limits. ***I agree with this approach and am happy to insert the recommended condition.***

Condition 103, UV dosage – There was no explanation in any of the reports why 16 mWs/cm^2 was suggested as the consentable dose.

Comment on Applicant response: Page 23 outlines the approach. 16 mWs/cm^2 was selected as it is the dose at which bacteria responsible for biofilm development will be inhibited. ***As RO effectively removes all viruses and this is the key mechanism for pathogen removal, I am satisfied with this response.***

Condition 104 – this condition permits up to 3 mg/L chlorine at the point of discharge. This is relatively high and could be toxic to some organisms. It isn't proposed in the Wastewater Design Report, so I assume this is a mistake.

Comment on Applicant response: The response confirms that chlorine dosing will not take place when discharge is direct to water. This was the main concern, so I am happy with this response. ***I recommend condition 104 be rewritten to clarify this.***

Condition 105 – this condition requires that the irrigation field be sized in accordance with the Wastewater Design Report. However, there isvery little information about the field in the reports.

Comment on Applicant response: On page 25 on TN.04 the applicant recommends a condition requiring that the disposal field be designed in accordance with the original application and TN.04. This is slightly unusual and normally we would expect a full and proper site plan confirming the size, location, shape, and separation of the disposal field to key site features. This hasn't been received yet. However, there is sufficient information provided with the supplied documents to have confidence that final design will be in accordance with the design details provided so far, and that the AEE is therefore valid. ***I am happy to re-word condition 105 as advised by the applicant on page 25 of TN.04.***

Condition 116, sampling – this appears to contradict condition 102.

Comment on Applicant response: This is addressed on page 26 of TN.04. The applicant offers a rewording of condition 102 to avoid contradiction with condition 116. I concur with this rewording.

Disposal field / disposal trench– There should a condition requiring monitoring and maintenance of the disposal field and trench.

Comment on Applicant response: This is addressed on page 27 of TN.04. The applicant offers a condition for maintenance and monitoring which is appreciated, but slightly limited. I recommend a condition requiring specific frequency of monitoring together with actions to be undertaken on observance of failure.

Reject water – see earlier comments. There may need to be additional conditions if reject water from the RO is discharged or utilised anywhere on the development.

Comment on Applicant response: This has been addressed earlier in this memo. ***We await the provision of the memo promised in item 1 above.***

9. Original General comments

I note that the above comments (and the following) only apply for Stage 1, as advised by the applicant, and that the proposed conditions are for Stage 1 only.

I generally accept and agree with the findings of the AEE report in that it seems unlikely there will be a more than minor impact the stream (notwithstanding that a little more refinement in some of the information provided is requested) given the extremely high level of treatment and likely short term of discharge. However, this discharge, and others in the Orewa Estuary catchment will be adding a load of contaminants to the estuary (even if it only for the short term). There sems to be little discussion on what the impact on the estuary will be, not just from this discharge but from others. For example, if there are four wastewater discharges taking place in the catchment, how much load (mainly nutrients, but others as well) will this be contributing to the estuary compared with if there were no discharges, and is this significant? The Applicant has alluded to the fact that there are currently rural and agricultural activities that this subdivision (and others) will replace, so that particular input would be removed, and this would need to be considered. It may even prove beneficial.

The wastewater will be treated to an extremely high standard, arguably the best standard for residential wastewater treatment in the country, and it is proposed only for a limited length of time. It is imminent that the wastewater will be delivered to Army Bay WWTP and it must be acknowledged that any impacts will be temporary. Going forward, it would be helpful to also see how the proposed discharge quality compares to the proposed limits in the document recently published by Taumata Arowai "Proposed National wastewater environmental wastewater standard". While this is still in proposal phase, it gives some direction on likely water quality standards in the future.

Comment on Aplicant Response: The applicant has addressed these comments throughout the Viridis report and TN.04, as summarised above.

COMMENTS ON CONDITIONS

This section summarises any changes to "Proposed Consent Conditions" advanced by Barker and Associates in the original application documents.

I note that I cannot recommend final conditions be granted until the memo confirming handling of reject water from the wastewater treatment plant (as indicated in item 1 above) is received and reviewed by Auckland Council. I can however, recommend that the following new or amended conditions be included if/when the consent is granted:

New condition: Borelogs – Prior to installation of the disposal field the consent holder shall undertake a minimum o12 hand augered boreholes across the location of the proposed disposal field to confirm the soil category and loading rate of irrigation to take place. The Consent Holer shall forward these results to Auckland Council within five days of undertaking work.

Revised Condition 102: The treated wastewater from the Wastewater Treatment Plant immediately prior to discharge to the land contract infiltration trench must comply with the following criteria:

Parameters	12-month median must not exceed
Total Nitrogen [mg/L]	1.0
Ammoniacal Nitrogen (mg/L)	0.3
cBOD5 [mg/L]	0.5
Total Suspended Solids [mg/L]	4.0
Total Phosphorus [mg/L]	0.07
Escherichia-coli [CFU/100mL]	<4.0
Enterococci [cfu/100mL]	<4.0

Advice note: Compliance is to be calculated based on the median of all samples taken over a 12-month period.

New condition (to follow condition 102, regarding treated wastewater quality): Should three consecutive samples return results above the median concentration limits for the parameters detailed in Condition 102, the consent holder shall notify Auckland Council within 5 working days. The consent holder must then conduct an investigation into the cause, supported by a report to be supplied to Auckland Council. The report shall outline the actions being undertaken to address and remedy the cause of the exceedance and detail whether further monitoring is required.

New condition (to follow condition 107): The maximum loading rate to either of the disposal fields shall not exceed 42.5m^3/d per field (85 m^3/d inn total).

New condition (to follow previous condition): Irrigation at the disposal shall not result in ponding or runoff.

New condition 105 (rewording of current condition 105): The irrigation field shall be designed in general accordance with the "Delmore Wastewater Treatment Plant Design Report" (Ref. 241104, February 2025 by Apex) and further response memo titled "Technical Note – Engagement Requests for Additional Information" (Ref: TN.04, 12th June 2025 by Apex).

New condition (to follow condition 11): The infiltration trench and irrigation field shall be monitored and maintained by a suitably qualified individual to ensure it continues to perform as intended.

New condition (to follow previous condition): Maintenance of the infiltration trench and disposal field shall be carried out at a minimum 3 monthly and a record of any maintenance carried out shall be kept on site and available for review upon request by the council. At a minimum, maintenance shall include:

- Flushing of irrigation lines
- Check that any sequencing valves are operating as intended
- A walkover of the disposal field to check for ponding, runoff, or broken lines
- Inspection of the infiltration trench for weeds or other potential sources of blockages
- Check for odour

New condition (to follow previous condition): All maintenance procedures shall be listed in the Site Operations and Management Plan (as required under Condition 123).

LIMITATIONS

General:

This report has been prepared for the sole benefit of **Auckland Council** as our Client, and their appointed representatives, according to their instructions, for the specific objectives described herein. This report is qualified in its entirety and should be considered in the light of our Terms of Engagement with the Client and the following:

a. Data or opinions contained within the report may not be used in other contexts or for any other purpose without our prior review and written agreement. Any reliance will be at the parties' sole risk.

b. No responsibility is assumed for inaccuracies in reporting by the information providers. In no event, regardless of whether GWE 's consent has been provided, does GWE accept any liability, whether directly or indirectly, for any liability or loss suffered or incurred by any third party to whom this report is disclosed placing any reliance on this report, in part or in full.

c. GWE has relied on information provided by the Client and by third parties to produce this document and arrive at its conclusions. GWE has not verified information provided (unless specifically noted otherwise) and we assume no responsibility and make no representations with respect to the adequacy, accuracy, or completeness of such information.

Prepared by:

Dylan Walton
Senior Wastewater Engineer