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By email: CharlotteM@barker.co.nz

Dear Charlotte,

### **Delmore Subdivision – treated wastewater removal - assessment of air quality effects**

To support the overarching consent application for the Delmore subdivision, offsite disposal of wastewater will be required under specific circumstances.

To enable offsite disposal, the wastewater will be piped from the WWTP to a proposed filling point at the southern end of the Delmore subdivision (refer Figure 1). Wastewater will be pumped to truck and trailer tankers ('tanker units') and carted offsite for disposal. Tanker units will follow a predetermined route to a site that includes Upper Orewa Road and Russell Road. A dedicated entrance/exit will be provided off Russell Road adjacent to the filling point. The tanker units will use a proposed residential cul-de-sac turning area to park while filling. An overview of the entry and exit point and filling location is provided in Figure 1. The route will be fully sealed with the only exception being Russell Road, from the intersection with Upper Orewa Road to the filling point entry/exit; an approximate length of 500 meters.

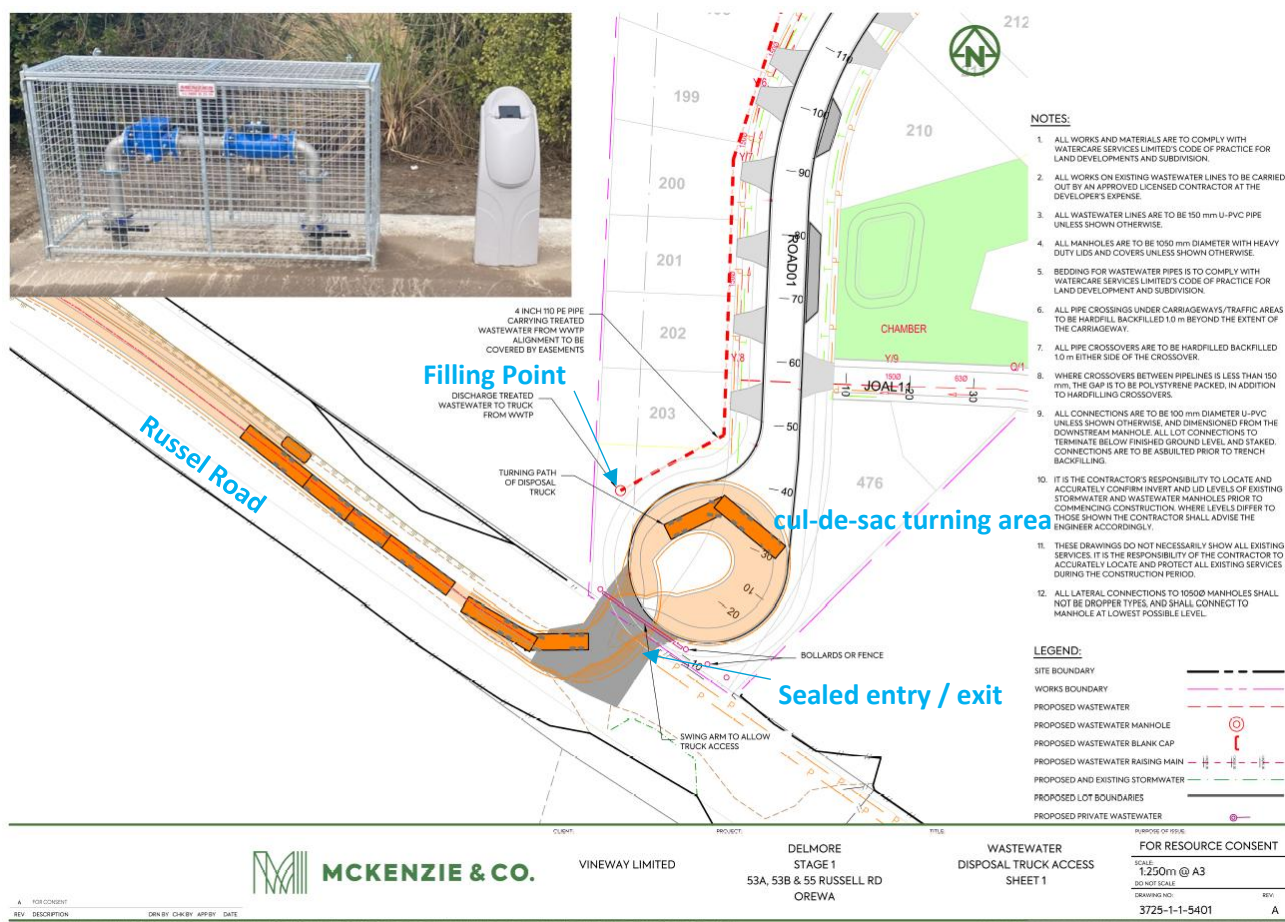


Figure 1. Proposed layout of the filling point location and entrance/exit off Russell Road (Air Matters annotations shown in Blue).

## Scenario 1 & 2 (tankering treated waste water)

Apex Water, designer of the WWTP, have assessed the volume of wastewater to be disposed offsite and the corresponding number of tanker units required. During the subdivision's initial stages the maximum number of tanker units is expected to be seven with an average of <2 per day. During peak flows, with the subdivision fully developed, there will be 81 days per year that require more than 10 tanker units, with an absolute peak of 16 tanker units per day. Notably, these high-demand days are anticipated to occur within the summer December to February period.

As the tanker units will be using the same entranceway to access and exit, the number of vehicle movements will equal double the number of tankers used. The traffic assessment<sup>1</sup> estimates that the majority of the time (99%) there will be up to one truck (two movements) per hour. Even outside of this time, there will in practice only ever be a maximum of three truck movements per hour, on average. Air Matters has based their assessment on this theoretical maximum of vehicle movements.

<sup>1</sup> Commute Transportation Consultant memo (ON SITE WASTEWATER – 88, 130, 133 UPPER OREWA ROAD AND 53A, 53B, 55 RUSSELL ROAD, OREWA) dated 3 July 2025.

## Assessment

Air Matters have considered the effects on air quality from the additional activity of pumping treated wastewater into the tanker units and transporting offsite. Other WWTP-related activities, including removal of sludge and solid waste, and chemical deliveries, are expected to remain identical to that anticipated in the original AEE. However, for completeness, they have been considered in this assessment. Table 1 below provides an overview of the anticipated heavy vehicle transport requirements (based on APEX's *Technical Note – Truck Movements and Volumes* dated 2 July 2025):

Table 1. Anticipated heavy vehicle transport requirements based on material type.

Material	Frequency and duration of removal	Trucking type and route
Treated wastewater	Limited to summer months (peak of 15 vehicles per day)	In a tanker via the Russell Road filling point
Reverse Osmosis reject stream	Removal throughout the year (approx. once per week)	In a tanker via the Russell Road filling point
Waste activated sludge	Removal throughout the year (approx. once every second week)	Within a skip bin and standard skip truck, to and from the wastewater treatment plant.
Delivery of chemicals	Deliveries throughout the year (approx. once every second week)	In a specialised tanker to and from the wastewater treatment plant.

Potential effects on air quality from the offsite disposals and deliveries are described in Table 1 below.

Table 1. Assessment of potential effects as a result of the additional offsite wastewater disposal

Potential effect	Assessment
Odour ventilated from truck during filling	The wastewater that requires transporting offsite (treated and Reverse Osmosis reject stream) will be highly treated (processed through secondary and tertiary treatment) and will therefore not have the potential to generate odour during the tanker unit filling.
Odour from skip bin removal and transport	<p>The waste activated sludge will be dewatered and is described as a 'cake' consistency (APEX, 2023). The dried sludge will be collected in a skip bin located within the WWTP building. Air within this building is actively extracted and treated through an odour control unit.</p> <p>During removal of the skip from the building and transport off-site there is potential for odour to be released. Practical measures such as covering the skip bin with a close-fitting tarp, in conjunction with the low frequency (one per week) and short duration of collection will limit the potential offsite effects.</p>
Odour during chemical deliveries	Odour from chemical deliveries, specifically acetic acid was assessed in the original AEE (Air Matters, 2023). A number of recommendations were made to minimise the release of odour from the onsite chemical tanks; these controls are also applicable to the chemical delivery and filling process. Consequently, provided the controls are implemented, odour from chemical deliveries will be minimised to an acceptable level.
Particulate emissions (dust) from vehicle movements	<p><b>Via the wastewater treatment plant (through the Delmore subdivision)</b></p> <p>The accessway to the WWTP will be fully sealed as part of the initial subdivision development. As such the generation of dust emissions from the infrequent heavy vehicle movements is not expected to occur.</p> <p><b>Via the Russell Road filling point</b></p> <p>The entrance and exit off Russell Road and the turning circle will be fully sealed (refer Figure 1), avoiding the potential generation of dust for the proposed allotments adjacent to the filling station (refer Figure 1). Monitoring of soil tracking on these sealed surfaces should be undertaken when transportation is underway. If excessive tracking is observed then practical measures such as road sweeping or wheel washing should be employed.</p> <p>The unsealed section of Russell Road, extending from the Orewa Road intersection to the filling station entrance/exit, is approximately 500 m. There are a several existing and proposed dwellings within close proximity (&lt;50 m) of this unsealed section.</p>

## Potential effect

## Assessment

Permitted Activity Rule (A95) and Standard (E14.6.1.1) of the Auckland Unitary Plan specifically provides for the discharge of contaminants to air from unsealed roads, provided:

1. The discharge must not cause, or be likely to cause, adverse effects on human health, property or ecosystems beyond the boundary of the premises where the activity takes place.
2. The discharge must not cause noxious, dangerous, offensive or objectionable odour, dust, particulate, smoke or ash beyond the boundary of the premises where the activity takes place.
3. There must be no dangerous, offensive or objectionable visible emissions

The Permitted Activity Standard notes when making a determination of adverse effects in relation to odour and dust, the FIDOL factors (frequency, intensity, duration, offensiveness and location) should be used. This has been undertaken below:

The **frequency** and **duration** of dust exposure will be limited to three additional heavy vehicle movements per hour on average and the potential effects on any sensitive receptors will be further limited by the wind direction. Winds from the South, which would carry dust directly towards the proposed allotment and existing dwellings is limited to 9.1% of the time

**Intensity** of any generated dust has the potential to be high. This is based on the unsealed nature of the road and entrainment of dust from heavy vehicles. This can be mitigated by practical steps such as lowering vehicle speeds, ensuring the gravel road surface is in good repair and water suppression.

The source of dust is from an unsealed rural road and dust is currently being generated by existing traffic. Based on this, road dust is considered to have a low **offensiveness** for the existing rural dwellings. Any dust affecting the proposed allotments, which are of residential (urban) nature, is likely to be of a moderate offensiveness.

In terms of **location**, the assessed receptors are residential dwellings which are classified as having a high sensitivity to dust effects<sup>2</sup>. A number of the dwellings are within 50 m of the road which could result in increased effects due to the short separation distance.

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<sup>2</sup> Ministry for the Environment (2016). Good practice guide for assessing and managing dust.

Potential effect	Assessment
	In conclusion, the proposed activity has the potential to increase the frequency and intensity of dust experienced at the existing houses and proposed allotments adjoining Russell Road. These effects can be mitigated to an acceptable level by employing dust mitigation methods including limiting vehicle speeds, maintaining the surface of the road and removing any tracked material on the paved surfaces.
Vehicle emissions	<p>Emissions from traffic are not regulated under the Resource Management Act. However, based on the limited tanker unit movements (maximum of 3 vehicle movements per hour averaged over a day) there are not anticipated to be any objectionable or offensive effects from vehicle emissions at surrounding residential areas.</p> <p>Practical mitigations such as turning off the vehicle's engine while the filling process is occurring will eliminate potential effects on the proposed allotments. This is particularly relevant for the allotment located immediately adjacent to the filling location (i.e. Lot 203 in Figure 1)</p>
Cumulative effects	Due to the separation distance from the WWTP and the filling station (~300 m) and the less than minor adverse effects from both activities (based on the proposed mitigations) there are not expected to be any cumulative adverse effects that require consideration.

### Scenario 3 (Tankering of untreated wastewater)

APEX's *Technical Note – Truck Movements and Volumes* (dated 2 July 2025) provided an alternative waste disposal option (referred to as Scenario 3), which is proposing to tanker raw wastewater offsite at a rate not exceeding 9 tankers per day using the Russell Road entrance and filling location.

Under Scenario 3 there is increased potential to cause odour effects on the surrounding allotments during the tanker filling stage. This is based on the frequency, duration and potential intensity of odour being generated. A moderate risk of odour may also exist from the storage of the untreated wastewater, dependant on a number of factors such as holding time.

To mitigate this risk to an acceptable level, best practice controls should be considered, including:

- The air that is displaced from the tankers during filling should be directed through an odour control system. This would require a detailed design specific to this application.
- Vented emissions (if present) from the holding tank (at the WWTP site) should also be directed through an odour control system. This would also require a detailed design specific to this application.

Given the close proximity of the allotments to the filling location, and the need to conduct the detailed design, it is also recommended that targeted monitoring of the odour is carried out, post-commissioning, to demonstrate that effects are appropriately mitigated. This could be in the form of odour surveys or short-term gas monitoring.

Peak vehicle movements on Russell Road associated with Scenario 3 are not expected to significantly increase above that proposed for the treated wastewater tankering. However, the frequency will be year-round as opposed to being limited to the summer months. Consequently, from a dust perspective, it is recommended, that more frequent monitoring of the road condition is undertaken and gravel regularly replaced as required, in addition to the recommendations for treated waste water tankering outlined in Scenario 1 and 2 above.

## Conclusion and Recommendations

To support the overarching consent application for the Delmore subdivision, removal of treated wastewater from the WWTP, using tanker trucks, is proposed. Air Matters have assessed the potential air quality effects of this additional activity, including potential cumulative effects with the existing WWTP's waste removal and chemical deliveries. In conclusion, there are not anticipated to be any additional air quality effects, including odour and dust, that result in unacceptable effects on the surrounding area. This conclusion is based on a number of mitigations being in place to minimise the generation of dust and odour during waste removal and chemical deliveries. Due to the potential elevated risk, specific controls for the unsealed section of Russell Road, over the duration of the activity have been recommended and include:

- Limit of vehicle speeds (particularly the tanker units associated with the wastewater removal) to 20km per hour<sup>3</sup> while traversing on the unsealed section of Russell Road.
- Undertake an inspection of the roadway and replenish the surface layer with gravel if a high proportion of fine (dust-generating) material is present. Given the wastewater removal is likely to occur over summer, this inspection should be undertaken in the late spring period.
- Monitoring the sealed entrance/exit and cul-de-sac for any soil tracking and mitigated (swept) if required.

If in the event that the activity generates unacceptable levels of dust for the adjoining properties, active dust suppression through a watering cart and/or dust suppression could also be employed on a regular (daily) basis over the transport period.

In regards to Scenario 3 (the storage and tankering of untreated wastewater) there is increased potential to cause odour effects on the surrounding allotments during the tanker filling stage and the storage of waste water. To mitigate this risk, best practice controls should be considered including capturing and treating any emissions from the filling process and storage tank. Given the increased use of Russell Road for Scenario 3, it is also recommended that more frequent monitoring of the road condition is undertaken and gravel regularly replaced as required.

Kind Regards,



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<sup>3</sup> Vehicle speed and dust emissions are a linear relationship (MfE, 2016). Therefore, reducing speeds from a posted speed of 50 to 20 km/h should result in greater than 50% reduction in generated dust.