

# Technical Review

<b>To:</b>	Shay McDonald	<b>Date:</b>	20/09/2024
<b>Authority:</b>	ORC	<b>Ref:</b>	23009.04B
<b>Consent:</b>	RM21.688 Clutha District Council Mt Cooee		
<b>From</b>	<b>Role in Audit</b>	<b>Internal Reviewer</b>	
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This review pertains only to the responses provided by WSP on 13<sup>th</sup> September, 2024 to the s92 further information request questions 3 & 4.

## 1 Audit Questions

*Q3. Please provide an updated Compliance Monitoring Schedule that clearly and unambiguously describes all ground and surface water (stormwater, Clutha River/Mata-au, onsite waterbodies, wetland) monitoring that is proposed for the duration of the consents, including parameters to be measured, monitoring locations, sampling frequencies, identifies any additional monitoring sites that will be established, and **explains why the proposed monitoring is appropriate to ensure that adverse effects are identified and addressed**. The Compliance Monitoring Schedule should also set out the specific trigger levels for each contaminant that will be relied upon in the Trigger Action Response Plan.*

### Is the response adequate?

An updated compliance monitoring schedule has been provided however, it is not adequate for the following reasons:

- Monitoring locations still have not been justified as to their efficacy (e.g. relative elevations, flow directions etc). It is unclear where the stream below the wetland ultimately discharges to the Clutha River and whether this is upstream or downstream of the proposed surface water monitoring point. The locations SW1 & SW2 are described as "swale filter bed inlet" and "swale filter bed outlet". It is assumed this an error. It is unclear whether SW2 is upstream or downstream of the wetland discharge outlet.

- Stormwater triggers are proposed, however no stormwater sampling is proposed or documented within the schedule provided. There are 'action triggers' provided but no initial triggers.
- Many of the parameters listed in the table are not actually included in the proposed sampling schedule e.g. DRP, TP, TOC, BOD, COD, PFAS (included in previous schedule but not in this schedule). Dissolved oxygen has not been included. Field parameters should be measured at all sampling events. Leachate analysis should include metals for all events.
- The response from WSP (February 2024) in point 5 (iii) stated that monitoring would include "a new monitoring well closer to the landfill's southern edge." No additional well has been included in the monitoring schedule and BH 6 has been included even though BH6 is screened above the current base of the pit to the north.
- Monitoring of the landfill discharge beneath the expansion area is an appropriate addition to the schedule, however continuous conductivity monitoring is recommended to provide an early warning of any discharges.
- 'Appendix G Sheet Pile Cut-off Wall Review Report' found that the schematic of the cut-off wall from Royds Consulting (1995) suggests that the sheet pile wall is not continuous across the wall of the valley, with a gap at either end filled with low permeability clay. They recommended that "Subject to the findings from the monitoring (from BH1 and GW2A), it may be prudent to install further monitoring points along the wall, in particular beyond the ends of the wall where the low permeability clay barrier has been utilised to provide cut-off." There has been no response to this recommendation for additional monitoring.
- Trigger levels are not meaningful unless they are considered with respect to the location of the monitoring point and the parameter i.e. there should not be a trigger level for control bores. Four data points will not provide enough information to determine a baseline for the other analyses using the formula suggested Trigger level = mean +3SD. In addition, this doesn't tell you whether exceeding that trigger is significant i.e. what does it mean relative to guideline values?

**Does it change any conclusions for surface and groundwater from my audit memo? How uncertain are my conclusions?**

This does not change any conclusions – monitoring and responses can be appropriate, however an updated conceptual model should be used to inform

the monitoring, triggers and responses as stated in the response to Q52 of WSP's response to questions under s92 (22 Nov 2023). The monitoring and responses still need additional work.

*Q4. Please provide an assessment of the cumulative effects on water quality that takes into account the updated leakage rates from the proposed expansion. The cumulative effects assessment should consider all waterbodies that may be impacted by the landfill and should discuss those effects which result from the incremental effects of the activity over time and effects that arise in combination with other activities.*

**Is the response adequate?**

WSP have not provided a cumulative effects assessment, rather they have provided calculations of the possible groundwater concentrations from the proposed expansion if there are leakages from wrinkle failures. This does not include any discussion regarding the leachate discharge into the WWTP or the stormwater. The effects are assumed to be managed by the monitoring and trigger response actions. These actions are not documented within this response.

**Does it change any conclusions for surface and groundwater from my audit memo? How uncertain are my conclusions?**

No, this does not change any conclusions