27 August 2024

Shay McDonald
Otago Regional Council
Private Bag 1954
Dunedin 9054

Sent via: Shay.McDonald@orc.govt.nz

Response to additional Section 92 questions regarding Civil Design Drawings: Consent Application RM21.668 – Mt Cooee Landfill, Balclutha

Dear Shay,

Thank you for the additional questions we received seeking clarifications from your peer reviewers on 18th June 2024 in relation to Clutha District Council's resource consent application RM21.668 to renew resource consents associated with the Mt Cooee Landfill in Balclutha.

Please find our responses to your questions in the table below.

As a general comment, we consider that the level of detail being sought by the Peer Reviewers with regard to several matters to be excessive and not appropriate to a consent level design. In our experience, it is important to frame consent conditions to allow designers, operational staff and Regional Council compliance officers appropriate flexibility to vary details to suit conditions as they find without the need for consent variations. The actual construction of these stages will be well into the future.

DRAWING NUMBER	PEER REVIEWER QUERY	RESPONSE
Sheet C199	Approximate landfill footprint transferred from sheet C208.	Filling is still currently taking place in this area under the current consent and activity. The final landform for the new consent is not yet exactly known.
	What does the base grade of the landfill look like on the piggy-back portion of the site and how is it prepared for the liner placement.	The existing refuse slope, which has intermediate cover, will be trimmed, proof rolled, and further intermediate cover placed to form a smooth batter on which to place liners. Currently, the sloping batter of the existing fill in the area indicated has a uniform slope of around 3:1 with only minor reprofiling required. The upper flat platform will be graded on a minimum 2% grade to the south to shed leachate from the new cell to the batter. Leachate flows from this part of the existing fill will be minimal once the piggy-back liner is placed over the top.
	Is there a leachate sump etc?	Yes of course, but we consider this level of detail is not required at this stage of the consent process.
	Subsoil drain.	Please refer comment to sheet C200 below.

Sheet C200	How will surface water drainage be accommodated? How does the liner terminate and transition onto the piggy-back portion?	There will be a timing and fill rate aspect to this. In part, this will be dependent upon how the CDC finish off the fill on the existing landfill in this area. Two situations would likely arise. Either: (a) Filling in Stage 01 is initially only to the top of the natural ground. In that case, we expect a temporary bench would be constructed to shed stormwater from a stabilised slope of intermediate cover clear of Stage 01. The Stage 01 liners would be anchored into this bench. An indicative detail for this is shown on amended Drawing C211 and C212; or (b) The fill rate is such that it is more practical to place the liners continuous from the Stage 1 floor up the slope. In this case, stormwater from the existing landfill batter is captured as leachate on Stage 01 (or in any temporary operational stormwater diversion which may be placed upon the liner).
	Where does the liner terminate? How will leachate be drained and contained at this temporary stage?	Normal practice would be to provide a low temporary bund at the downstream end of the active cell, take the liners beneath it and provide a temporary HDPE liner up the toe bund face into an anchor trench on the toe bund crest. We do not consider this level of detail germane to the granting of consent. These details will be subject to detailed design at a later date / stage and we assume would be subject to acceptance as a condition of consent.
	How will subsoil drainage be staged?	As necessary to suit ground contour as found. We do not consider this level of detail germane to the granting of consent. These details will be subject to detailed design at a later date / stage and we assume would be subject to acceptance as a condition of consent. Also, see comment to Sheet C209.
Sheet C201	Questions as above	Response as above. The queries in regards to the staging of stormwater (Sheets C01 – C05) are, in our opinion, best left as final design and site operational matters. This is the approach taken on other similar consents we are

		familiar with. In particular, we direct you to the stormwater conditions from the Waitomo Landfill (same size, 7,500 Tonne per year) as granted by Waikato Regional Council in 2019. The relevant conditions 38, 39 and 44 from WRC Consent 140685 are appended. These conditions are clear, workable and leave flexibility for the landfill designer, site operator and Regional Council compliance staff to respond appropriately to conditions and contour as found at the time. Our view is that it is simply not helpful to attempt to prescribe this level of detail at consent stage. For example, the actual staging of the cells is highly likely to change in the future depending upon filling rate and site economics. We have every confidence that ORC compliance staff will be able to tell the difference between stormwater from clean intermediate cover, contaminated stormwater from active work areas and leachate.
Sheet C02	Questions as above	Responses as above.
Sheet C203	Questions as above	Responses as above.
Sheet C204	Questions as above	Responses as above.
Sheet C205	Questions as above	Responses as above.
Sheet C209	Why no gas collection on this portion of the landfill built over the existing historic landfill?	Firstly, we do not know what the age of this waste will be when / if landfilling extends over this area. At current fill rates, it may be many years away and gas yields would by then be quite low. Secondly, we do not know what national standards will be in place under the Emissions Reduction Plan which will apply to this site. A similar situation was managed at the Waitomo Landfill with a condition requiring an assessment of gas flows prior to extending fill over an old area. We suggest a similar approach be taken. Refer to Conditions 52 and 53 of WRC 140685 appended as an example.
	Approximate extent of new landfill differs from other drawings. What is the actual extent of the basegrade footprint?	Refer to Sheet C202, however the difference is marginal and not germane to the granting of consent. The liners will extend over the full landfill footprint. As for Sheet C199 above, filling is still underway under the

		existing consent in this area so the final landform is not yet known.
	Landfill Underdrain	A proposed alignment for the landfill underdrain has been added to Sheet C209. This will be excavated into the landfill floor as shown on Sheet C212. We expect this excavation may be in hard rock in places and have allowed to over excavate, backfill with granular compacted fill to form the trench for a subsoil. The actual alignment for the subsoil, and indeed whether it is even necessary will be determined by on-going groundwater monitoring over a number of years prior to construction extending into this area.
Sheet C210	No details for a subsoil drain	This has been added to Sheet C209 and C213.
	No detail for the piggy-back liner, is this the same as the bund slope liner?	Yes. The existing refuse slope, which has intermediate cover, will be trimmed, proof rolled, and further intermediate cover placed as necessary to form a smooth batter on which to place liners.
	How does leachate get out and where does it drain to?	We expect that it won't get out. This is a detail for an upstream pipe termination providing a cleaning access. Pipe gradient is away from this chamber.
	How will the subsoil drain out below the leachate collector?	The subsoil would be in the landfill subgrade beneath the compacted levelling layer. It will drain by gravity to a sampling manhole prior to discharge as clean water. If staging precludes gravity flow it would be pumped.
	Leachate drainage aggregate?	Yes, refer typical floor and bund details.
Sheet C211	Leachate drainage aggregate?	Yes, refer typical floor and bund details.
	Subsoil drainage	Yes, this has been added to sheet C209 and C213.
	….existing topography doesn't appear to be a uniformly graded surface ready for the liner	No, it is not at present. There will likely be additional fill to be placed over the site under the current consent prior to construction of this section. Bear in mind that any construction on this piece is many years away at current fill rates. As for the batter slope, the existing refuse surface which will have intermediate cover, will be trimmed, proof rolled, further intermediate

		cover placed to form a smooth surface on which to place liners.
	Is this a drainage blanket or a drainage trench?	Yes, there is a full drainage blanket up the batter slope, not shown in full for clarity, detail on Sheet C210 refers.
Sheet C212	Section 7 “Final landfill profile”	Yes.
	Section 06 Is the piggy back subgrade surface going to be prepared or reprofiled in any way?	Yes. The existing refuse slope, which has intermediate cover, will be trimmed, proof rolled, and further intermediate cover placed to form a smooth batter on which to place liners.

If you have any queries or require further information, please contact Aileen Craw (phone 03 373 2031 direct or email aileen.craw@wsp.com). I look forward to your response.

Kind regards,

Peter Askey
Technical Principal – Solid Waste Management

Appendix A: Extract of conditions from WRC 140 685

(a) Stormwater Conditions

38.	Stormwater management a) Contaminated stormwater shall be managed as leachate. b) Dirty stormwater shall be treated through the site's stormwater treatment ponds. c) Clean stormwater does not need to be treated through the ponds. d) For the purpose of minimising leachate generation, stormwater outside of the landfill footprint shall be managed so it does not enter the landfill footprint.
39.	Stormwater from capped (final or intermediate capping) areas of the landfill may not be considered to be clean stormwater until the following steps have been undertaken: a) Capping and rehabilitation has been completed in accordance with the accepted design for that stage of the landfill. b) All bare surfaces have been re-vegetated, and the vegetation cover has become established. c) Designs to accommodate transfer of the stormwater have been prepared and submitted to the WRC for written approval. d) Inspection of the rehabilitated area by representatives of the consent holder and WRC e) Approval in writing that the rehabilitated area is a clean surface water area has been received from the WRC

44.	Stormwater Contamination Mitigation Plan (SCMP) The Stormwater Contamination Mitigation Plan (SCMP) shall be prepared by a suitably qualified environmental professional. Its purpose shall be to provide procedures and mechanisms that the consent holder will implement to avoid, remedy or mitigate any potential and actual adverse effects downstream of the site due to discharges from the site of stormwater which is contaminated by leachate or other contaminants which arise from the landfill operation. The SCMP shall be included within the Landfill Management Plan. The SCMP shall adequately fulfil the above purpose, including: a) A description of each of the stormwater and ring drain sampling locations and a discussion of options available at each location to avoid, remedy or mitigate adverse effects downstream in the event of any measured parameter exceeding the action trigger limits. The discussion of options shall include a consideration of practicality, cost, ease of implementation and likely effectiveness. b) Consideration of an option that provides the ability to temporarily cease the discharge of contaminated stormwater and ring drain water to the town stormwater system, with contaminated stormwater then being managed via another lawful method. The SCMP shall be prepared and provided to the WRC for approval within 6 months of grant of this consent. The SCMP shall be reviewed and updated every 5 years. The updated plan will be provided to the WRC by 1 September of the due year, the first due year being 2025.

(b) Landfill gas Assessment

52.	Gas abstraction report By the due date and prior to the placement of MSW against the highwall, the consent holder shall have a report prepared by an expert with appropriate experience in landfill gas abstraction, that as a minimum: a) Provides an overall concept design of the gas abstraction system that would be installed which is capable of effectively abstracting and destroying (e.g. flaring, electricity generation) the landfill gas. This system shall be designed to effectively maximise recovery of LFG and minimise odour; b) Provides detailed design of the gas abstraction wells to be located against the highwall; c) Provides detailed design of any other gas abstraction infrastructure that is to be constructed within the next year after the due date of this report; d) Provides a timeline for the proposed works. The report shall be provided to the WRC by 1 September 2021 unless otherwise confirmed in writing by the WRC.
53.	5 yearly gas abstraction review By 1 September 2026, and by every fifth year thereafter (the next being by 2031), the consent holder shall have a report prepared by an expert with appropriate experience in landfill gas abstraction, that as a minimum: a) Provides the calculated current and estimated future gas production at the landfill; b) Outlines the current legislative requirements for landfill gas management in New Zealand; c) Summarises all odour complaints received by the consent holder, the Waitomo District Council and the WRC. d) Summarises all of the consent holder's observations and assessments of landfill gas odour from the landfill; e) Summarises the WRC's observations of odour from the landfill, if the WRC has provided that information within one month of a request; f) Includes a detailed analysis of available information, that subsequently recommends whether collection and destruction of LFG is required to mitigate odour beyond the boundary or otherwise meet statutory responsibilities in regard to greenhouse gases. If the

	consent holder does not have enough information to make a conclusion, then the consent holder shall undertake the investigations required to gain such information; g) Details what gas abstraction infrastructure has been installed since the previous report; h) Includes an updated version of the Gas Abstraction Report required by condition 52 if the consent holder considers that report to now be fundamentally inaccurate. The report shall be provided to the WRC by the 1st of September of the year that it is due unless otherwise confirmed in writing by the WRC. If it is concluded gas collection is required, then the consent holder shall install the gas abstraction infrastructure necessary to begin the abstraction and destruction of landfill gas. The effective routine abstraction and destruction of gas shall commence no later than one year after provision of the report, unless agreed in writing by the WRC. **Note:** The overall purpose of the report is to ensure a stock take is undertaken every 5 years to determine whether active gas abstraction should begin, and if it is to begin, to develop and provide detailed designs of the gas abstraction system proposed. Also to ensure gas abstraction begins if objectionable odour from landfill gas is occurring.

WSP
Dunedin
197 Rattray Street
Dunedin 9016
New Zealand
+64 3 471 5500
wsp.com/