ORC NOTIFICATION RECOMMENDATION REPORT

ID Ref:	A1806541
Application No:	RM21.668
Prepared for:	Staff Consents Panel
Prepared by:	Shay McDonald – Senior Consents Planner
Date:	20 January 2025

Subject: **Notification recommendation for application RM21.668 by Clutha District Council for various consents relating to the continued operation, expansion, and progressive rehabilitation of the Mt Cooee Landfill at Balclutha**

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1. Purpose

To report and make recommendations under sections 95A-G of the Resource Management Act 1991 (the Act) on the notification decision for the above application.

2. Background Information

Applicant: Clutha District Council

Applicant's Agent: Aileen Craw of WSP

Site address or location: Mt Cooee Landfill, Kaitangata Highway, approximately 700 metres southeast of the intersection of Kaitangata Highway and Ipswich Street, Balclutha

Legal description(s) of the site:

Lot 1 DP 12203 held in record of title OT4C/62 owned by Clutha District Council

Lot 2 DP 12203 held in record of title OT4C/63 owned by Clutha District Council

Part Lot 61 DP 2254 held in record of title OT4C/367 owned by Clutha District Council

HAIL Reference: HAIL.00283.01 which applies to the current landfill extent.

Map reference (NZTM2000) approximate site midpoint: E1350177 N4873812

Consent(s) sought:

- RM21.668.01: Discharge Permit to discharge waste, hazardous waste, and leachate to land, in a manner that may result in contaminants entering groundwater.
- RM21.668.02: Discharge Permit to discharge landfill gases, odour, and dust to air.
- RM21.668.03: Discharge Permit to discharge water and entrained contaminants to water.
- RM21.668.04: Water permit to take and use groundwater for the purpose of operating the leachate collection system.

Purpose: Operation of the Mt Cooee landfill

Current consents:

- Discharge permit 94508 to discharge to land an average of 105 cubic metres per day of municipal, domestic, special waste, and industrial waste.
- Discharge permit 94509 to discharge collected and dirty stormwater
- Discharge permit 94510 to discharge landfill gases, dust, and odour to air

- Water permit 94511 to divert an unnamed tributary of the Clutha River into another small unnamed tributary via a channel
- Land use consent 94543 to install a culvert upstream of the existing culvert under State Highway 91 to the existing railway culvert
- Water permit 95953.V1 to take an average of 208 cubic metres per day of groundwater containing leachate.
- Discharge permit 95954 to discharge on average 36 cubic metres per day of landfill and composting facility leachate in a manner in which this may enter water.

Section 124 timeframes:

- Application was lodged between three and six months before the expiry date and the Consent Authority has used their discretion and section 124 applies.

2.1 Key issues/risks

The key issues/risks with the application are:

- The absence of specific final design information.
- Bird strike risk at the Balclutha Aerodrome.
- Cultural effects in relation to the Clutha River/Mata-Au.
- Odour effects.
- Visual effects experienced at specific neighbouring properties.

At this stage there are no principal issues in contention that need to be raised.

2.2 Summary

I recommend the application is processed on a limited notified basis. This is because, in summary:

- The activity will have or is likely to have adverse effects on the specific persons listed in Table 5 of Section 7, of a minor or more than minor level therefore non-notification is not available; however, these effects are unique and limited to these persons;
- Limited notification is not precluded, in these circumstances, under s95(5)-(6) of the Act; and
- More broadly, the activity is not likely to have adverse effects on the environment that are more than minor; therefore, public notification is not required under s95A(7)-(8) of the Act (and nor do ss95A(2)-(3) apply such that public notification is mandatory).

3. Description of Activity

3.1 General Information

Clutha District Council (**CDC, the Applicant**) has applied for resource consents to authorise the ongoing operation and expansion of the Mt Cooee Landfill in Balclutha. The consents applied for are listed in Section 2 of this report. The application was lodged with Council on 23 June 2023. Key information about the proposal is set out below.

- CDC operates the Mt Cooee Landfill on the outskirts of Balclutha.

- This landfill has been operating since 1985 and is the only municipal solid waste landfill in the Clutha District.

- The Mt Cooee Landfill site is designated in the Clutha District Plan for "refuse disposal" purposes.[1] The designation does not have any conditions.

- The landfill is operated as a Class 1 Landfill as defined in the WasteMINZ Technical Guidelines for Disposal to Land 2022.

- The landfill serves a population of approximately 18,400 people and accepts approximately 9,000 tonnes of refuse annually from residential, commercial, and industrial customers.

- CDC holds multiple resource consents issued by the Otago Regional Council (**ORC** or **Council**) which authorise various activities relating to the operation of the landfill. These consents expired on 1 October 2023.

- CDC seek to replace all relevant consents to enable the continued operation of the landfill.

- The existing landfill cells are nearing the end of their life, with capacity expected to be reached in approximately 2025. There is an ongoing need for waste disposal in the region.

- CDC gave consideration to the development of a new landfill at a different site, as well as the transport of waste to the AB Lime Landfill in Winton and the Smooth Hill Landfill in Dunedin. The creation of a new landfill at a different site was dismissed early in the business case process, but the disposal of waste at the Winton or Dunedin landfills was considered a viable option. Ultimately, the option to extend the existing Mt Cooee Landfill was preferred.

- CDC therefore also seek to authorise the expansion of landfill activities on the site, including the construction and operation of five new landfill cells, construction and operation of a transfer station and a resource recovery and education centre, and remediation activities associated with the progressive closure and aftercare of the landfill.

- The Applicant seeks a 25-year term for all consents.

[1] Designation 120

Figure 1 Location of the Mt Cooee Landfill site (highlighted yellow) in relation to nearby features. Source: RM21.668 application.

3.2 Facility Design and Waste Acceptance

3.2.1 Existing Facilities and Waste Acceptance Processes

The current site layout is shown in Figure 2.

Figure 2 Current site facilities layout. Source: RM21.668 Air Quality Assessment (Existing).

General waste is deposited directly at the tip face, including by members of the public. By nature, general municipal waste from domestic households, businesses, and farms will contain small quantities of hazardous wastes. This would normally constitute less than 1% of the overall waste stream. Other hazardous substances are not accepted, except for used paint and end-of-life gas bottles. Liquid wastes and septage are accepted via excavation of a dedicated liquid waste pit excavated in the deposited refuse layer. Special wastes are accepted under a licencing procedure.[2] Ash is accepted in a dedicated area to ensure that hot ashes don't ignite refuse. Green waste is shredded for landscaping. Household recycling is received and then transported offsite for processing.

Resource recovery facilities are provided on a cleared hardstand, with mobile 240 litre (**L**) bins for co-mingled recyclables, with separate collection of glass. There are also dedicated areas for bulky materials, scrap metal, ash, and paint.

3.2.2 Proposed Site Layout and Waste Acceptance Processes

Five new landfill cells are proposed for the Mt Cooee Landfill. These cells will be located to the south and east of the existing cells, with the new cells sitting in part on top of the existing landfill. Landfill design is discussed further in Section 3.4 of this report.

The application also includes the development of a Resource Recovery Centre (**RRC**) and enhanced transfer station operations. Once the RRC is constructed the public will no longer have the ability to dump waste directly at the tip face.

The RRC will provide a free drop-off facility for household recycling and divertible materials, with all received waste contained in mobile containers/skips. The recycling drop-off will be covered by a roof structure to ensure the unloading and storage of recyclables can occur without being exposed to the elements. Full recycling containers will be stored in the back of house areas as required, prior to being transferred to a separate collection area for transfer off site. Recovered materials will be assessed by operations staff and transferred to the re-use shop and education area as required. The education space and re-use shop will be developed with a dedicated carparking area.

The transfer station area will be enhanced with public access to a dedicated refuse tipping floor, an area to unload hazardous materials, and an area to deposit green waste. Hazardous substance storage will be provided in a bunded shipping container. A dedicated flat floor push pit facility will provide a multiuse facility for general waste and recoverable construction and demolition materials.

Two organics pads will be constructed from reinforced concrete for receiving green waste. Green waste will be shredded on site with shredded waste used for landscaping across closed areas of the landfill (as per the current landfill operations). The facility could also accommodate future consolidation of kerbside organics (including food waste) if required, but this is not specifically part of this application. No composting is proposed on site.

Waste received within the transfer station could include general waste, green waste, tyres, gas cylinders, special waste (by permit), screened soil, timber, plasterboard, bitumen and asphalt, clean concrete, bricks, tiles, reusable building materials, food waste, hazardous waste, commercial organics, and sweeper waste. The waste will be accepted in separate

[2] Approval for special wastes is required under the CDC Solid Waste Bylaw 2019.

dedicated areas within the transfer station, including a dedicated area for organics. Contaminated soils and special wastes that meet the waste acceptance criteria as defined for Class 1 landfills by WasteMINZ 2022, including biosolids, will also be accepted. Liquid wastes will not be accepted. Moist wastes will be limited to 'spadable sludge'.

General waste, special waste, contaminated materials, and sweeper wastes will all be hauled to the active cell of the landfill multiple times a day. Divertible materials such as food waste and commercial organics, timber, building materials, concrete, bricks, and tiles will be recovered where possible for reuse and taken offsite. Any hazardous material will be segregated in an enclosed shipping container and processed offsite.

The proposed site layout is shown in Figures 3 and 4.

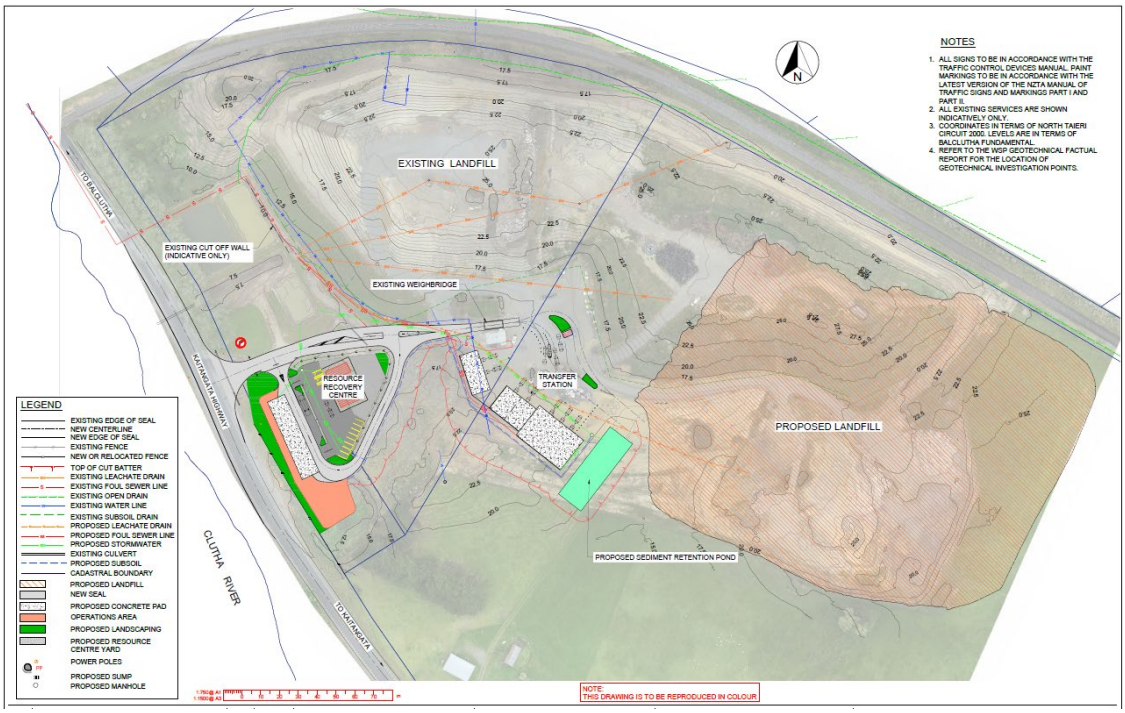

Figure 3 Existing landfill, proposed landfill, and proposed resource recovery centre. Source: RM21.668 Design Drawing Set.

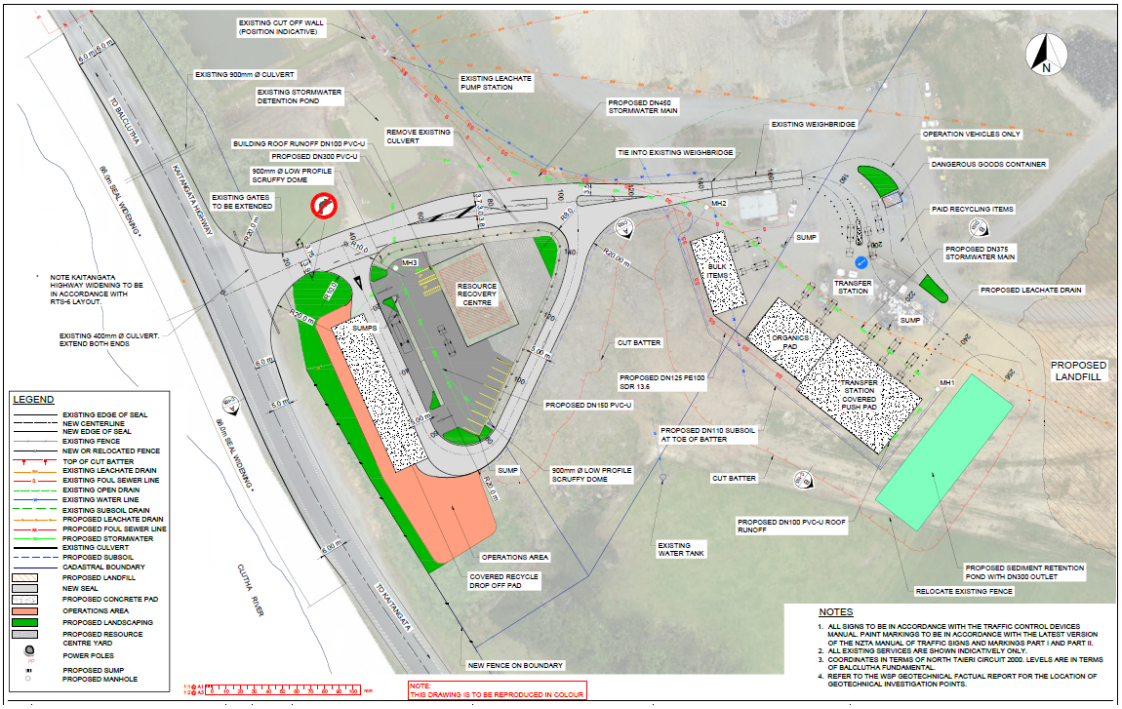

Figure 4 Transfer station and resource recovery centre overall site plan. Source: RM21.668 Design Drawing Set.

3.3 Landfilling

3.3.1 Historic Landfilling

The existing landfill cells (**Stage 1 landfill**) has been operational since the mid-1980s. Mt Cooee Landfill receives about 9,000 tonnes of waste per year. The Stage 1 landfill cells are expected to reach capacity at some time in 2025. Key details of existing landfilling practices are presented below:

- The Stage 1 landfill does not have a liner.
- Waste from Council collection services and public drop-off is deposited directly into the landfill face.
- The landfill accepts domestic, commercial, and limited sources of industrial waste.
- In areas where filling is complete, the Stage 1 cells have been capped and grassed.
- The expected final height of the Stage 1 landfill will be approximately 25 (**m**) reduced level (**RL**). The existing resource consents do not specify a maximum height or footprint for the Stage 1 landfill.

3.3.2 Proposed Landfilling

For the purpose of preliminary cell design, staging, and calculating airspace requirements for the proposed landfill expansion (**Stage 2 landfill**) an annual tonnage of approximately 9,000 tonnes of waste has been used. Key details are presented below:

- The Stage 2 landfill will encompass a total footprint area of 3.23 ha across five landfill cell stages and will be developed to the south and east of the existing landfill cells.

- The new cells will be lined with a Class 1-Type 2 liner.

- The total available airspace across the landfill expansion area will be 320,400 cubic metres (**m³**) which will provide approximately 30 years of waste disposal, based on predicted population increases and expected waste volumes.

- The five new cells will be developed sequentially, with three base cells developed against the existing landfill footprint in a clockwise order, and then two further cells developed on top of the base.

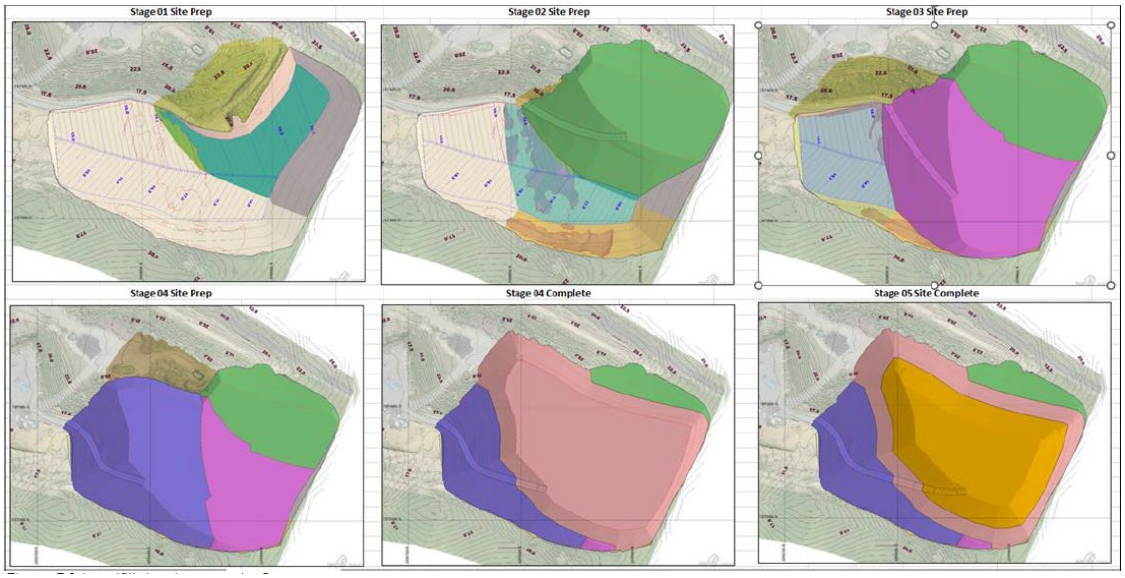

Figure 5 Proposed landfill staging, including site preparation, for the five proposed landfill cells. Source: RM21.668 Design Report.

- The clockwise staging sequence has two consequences:

    - Requirement to excavate and store large volumes of weathered and fresh greywacke in the early stages of the development.
    - Leachate from initial cells will drain into future cells. This is generally undesirable but is not an insurmountable issue.

- While the clockwise sequencing is the option outlined in the application, anticlockwise sequencing has not been ruled out. This would significantly simplify leachate management during construction as the permanent leachate collection between the first Stage 2 cell and the pump station could be constructed and operational from the outset.

- Proposed filling volumes, heights, and timeline are shown in Table 1.

Landfill Cell	Landfill Volume (m^3)	Max Elevation (by stage (mRL)	Annual tonnage (estimated)	Annual converted Volume (m^3)	Approximate Cell capacity (years)
ST01	59,200	27.5	9,000	11,250	5.25
ST02	62,200	27.5	9,000	11,250	6
ST03	79,400	27.5	9,000	11,250	7
ST04	69,200	31.0	9,000	11,250	6
ST05	50,400	36.0	9,000	11,250	4.5
Total	320,400	36.0			28.5

Table 1 Proposed cell volumes, elevation, and cell filling timelines. Source: RM21.668 Design Report.

- Daily cover will be applied across the working tip face at the end of each day. Daily cover material will depend on availability of suitable materials, but due to a lack of topsoil may include imported soils or clay; inert waste; shredded green waste sawdust, or mulch; contaminated soils that comply with site waste acceptance criteria; ash; or stabilised biosolids.

- Intermediate cover will be applied as cells are completed. This cover will have a low permeability to water and gas and will be grassed where it will remain exposed for more than three months.

- Final capping is discussed in Section 3.4 of this report.

- The final height of 36.0 m RL, including capping, will be approximately 14 m above the general surrounding ridge line.

3.4 Landfill Design

3.4.1 Landfill Guidelines

The current New Zealand best practice standard for sanitary landfill development is the WasteMINZ Technical Guidelines for Disposal to Land (2022) (**the WasteMINZ Guidelines**). These guidelines recommend installation of a low-permeability synthetic liner and a leachate collection system for Class 1 landfills containing municipal solid waste. The Stage 1 landfill does not include a low-permeability synthetic liner, but it does provide for leachate collection. The Stage 2 landfill will be lined and will have a leachate collection system.

3.4.2 Stage 1 Landfill

Mt Cooee Landfill is classified as a Class 1 landfill; however, the site would no longer be considered best practice in terms of design. The current landfill is unlined and relies on the natural containment provided by the underlying greywacke rock and a steel sheet pile wall that was installed across the valley floor at the toe of the landfill in 1995. The sheet pile wall extends down to the bedrock across the full width of the valley and is capped with a low-permeability compacted clay bund. The sheet pile and bund effectively act as a dam, containing groundwater and leachate and directing these to a pump station.

The Stage 1 landfill cells (where filling is complete) have been capped as follows (from top to bottom):

- Maintained grass cover.
- 150-200 mm topsoil and/or green waste mulch or other supplement.
- Undefined depth of subsoil layer.

- 500 mm of compacted silt or quarry strippings – permeability range of 10^{-6}-10^{-8} m/s.
- 200 mm final cover over refuse.

3.4.3 Proposed Expansion (Stage 2)

Five new landfill cells are proposed for the Mt Cooee Landfill. These cells will be located to the south and east of the existing cells, with the new cells sitting in part on top of the existing landfill.

It is proposed that Stage 2 be built to the south and east of Stage 1. The boundaries have been set as follows:

- An area on the existing fill and adjoining the weighbridge has been set aside for an onsite transfer station and materials recovery area. This area is over alluvial soils and unlined ground and is not considered suitable for the new fill.

- The east boundary of Stage 2 has been set 15 m from the eastern property boundary.

- The south boundary has been set at least 150 m from the Kaitangata highway, beyond the crest of the existing hill slope. This is to reduce visual impacts and avoid encroachment onto an identified wetland in the southeast corner of the property adjacent to the roadway.

- The north boundary is an effective continuation of Stage 1, alongside the railway.

As Stage 2 will sit in part on top of the existing landfill, some of the available void space is provided by filling back over the temporary batters of Stage 1. The development of Stage 2 will include lining these batters rather than relying on the existing sheet pile cut off wall. The construction of the new landfill cells will be staged, likely with a clockwise staging sequence commencing with the northern-most cell.

Each cell will be graded to drain to the west of the site, with a Class 1-Type 2 liner applied to each cell prior to the placement of any waste. The minimum requirements for the Class 1-Type 2 liner are described in Figure 6.

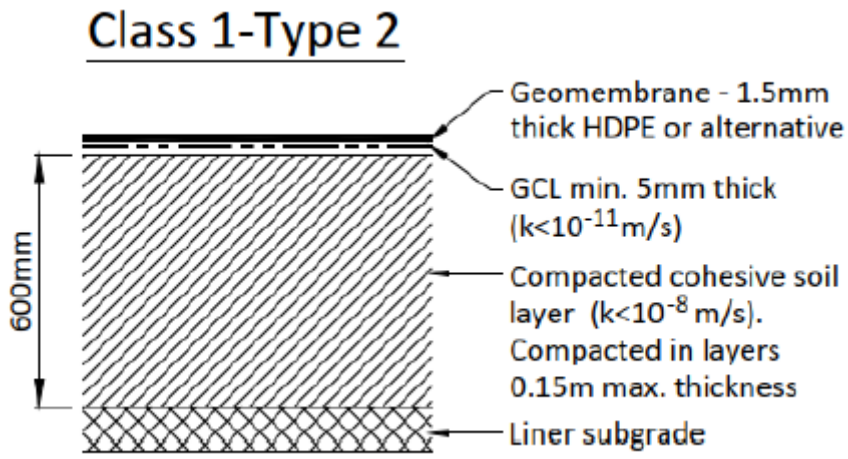

Figure 6 Minimum requirements for a Class 1-Type 2 landfill liner. Source: RM21.668 Design Report.

The following minimum liner requirements for the new cells are, from top to bottom:

- 300 mm thick granular drainage layer
- Non-woven geotextile layer to protect the geomembrane
- 1.5 mm HDPE geomembrane
- 5.0 mm geosynthetic clay liner (permeability $<10^{-11}$ m/s)
- 300 mm compacted cohesive soil (permeability $<10^{-9}$ m/s).

The liner will be placed following excavation of the landfill footprint, and following placement of a suitable liner subgrade such as crushed rock.

Where the new cells will overlap with eastern boundary of the existing cells, a side liner will be placed on the existing refuse batter (side of existing landfill with final capping applied) to minimise the reliance on the Stage 1 leachate controls. Construction stages 4 and 5 will involve placement of fill over the top platform of the existing Stage 1 landfill. Specific design of the piggyback liner will be required as the flatter surface of the top platform will be more susceptible to settlement. The Applicant proposes settlement monitoring pins be placed on this area to provide good information upon which to base the future design.

Final capping will be in accordance with the WasteMINZ Guidelines and will consist of an engineered cap with the following profile (from top to bottom):

- Maintained grass cover/plantings
- 150 mm topsoil
- 300 mm subsoil layer
- 200 mm drainage layer
- 300 mm compacted soil (permeability less than 10^{-7} m/s)
- Geosynthetic clay liner
- 500 mm combination of intermediate soil cover and gas dispersion layers
- Daily cover layer and waste layer.

Final capping and landscaping of surfaces will be undertaken in accordance with a Landscape Mitigation Concept and Effects Assessment Report.

3.4.4 Resource Recovery Centre and Transfer Station

The construction of the RRC areas will involve the cut and removal of approximately 15,000 m^3 of weathered greywacke across the development area, as well as the import of approximately 4,000 m^3 of granular fill to construct the appropriate gradient and building platforms for the resource recovery and waste transfer activities and traffic circulation. Additional to the granular fill, suitable basecourse and sub-base material would likely need to be imported to site to prepare the final surfaces.

3.5 Leachate and Groundwater Management

Leachate is liquid that, in passing through waste, extracts solutes, suspended solids or any other component of the waste material through which it has passed. This includes liquid included in the waste as received and that drains as a result of waste compression, or the ongoing breakdown of organic matter.

Landfill leachate needs to be controlled to minimise the discharge of leachate into the receiving environment, which in this case includes underlying soils, groundwater, and surface water. Leachate is managed by minimising the volume of leachate produced and by collecting leachate for discharge to an appropriate receiving location, which in this case is the CDC sewer.

For both the Stage 1 and Stage 2 landfill areas, the volume of leachate is minimised via upslope diversions of surface water, limiting the size of the active waste tipping area, and installation of intermediate or final capping as soon as practicable. Water runoff from the active landfill face is held in the immediate tip face and is allowed to soak into the landfill, from where it is captured by the leachate collection system.

Leachate is not stored prior to its discharge into the sewer; rather, it is pumped and discharged to the sewer as it is generated.[3] The Applicant seeks that no maximum limit for the abstraction of groundwater-leachate be set. This is to avoid a situation where they need to stop pumping, potentially causing leachate levels to back-up in the landfill.

A series of groundwater bores around the perimeter of the site are monitored for parameters indicative of leachate contamination.

3.5.1 Stage 1 Landfill

For the Stage 1 Landfill, leachate percolates through waste onto land and into groundwater above the underlying greywacke layer.

The leachate collection system in the Stage 1 landfill comprises:

a) A drainage system comprising leachate collection lines of perforated pipes (primarily drilled DN 100 mm HDPE and DN 110 mm Novaflo) laid on the original valley floor and leachate collection manholes. All lines are designed to allow cleaning with sewer jet cleaning equipment.
b) A sheet pile cut-off wall driven down to the greywacke rock to contain groundwater.
c) A pump station at the downstream face of the landfill, which transfers leachate/contaminated groundwater to the CDC sewer for treatment. On average 28,600 litres (**L**) are transferred each day (based on the current cells).
d) A 770 m^3 pond (lined with 600 mm clay with a permeability of < 10^{-9} m/s) provides emergency storage for leachate overflow from the pump station. This pond is in the process of being lined with an impermeable geomembrane and will eventually be replaced with a fully contained holding tank.

3.5.2 Stage 2 Landfill

Leachate generated within the new cells is, by design, not expected to interact with groundwater. The landfill floor under the new cells will be constructed to a minimum gradient of 2%. The proposed leachate drainage is:

- Lateral collectors running across the slope back to the perimeter batters at 80 m spacing. These are to be terminated against the access road (permanent access point) or left for later extension into the final cells.
- Main centre drain.

Pipe material, sizing, and spacing are specified in the design report. These parameters have been selected to provide the adequate factor of safety for the expected refuse depth, to minimise leachate head between drains, and to be accessible for cleaning.

[3] Application RM23.520 is being processed to enable the receipt of leachate at the Balclutha WWTP, which to date has been occurring unlawfully.

Leachate collected from the new cells will be transferred across the centre of the operational site via a new leachate line and discharged to the existing leachate pump station and subsequently to the CDC sewage system.

The landfill floor will be graded to a central low point under the central leachate drain. An underdrain will be constructed into the subgrade rock at this point, running under the landfill and exiting at the western end past the toe bund. This will provide a preferential flow path for any leachate trapped between the clay liner and the subgrade rock and will intercept any groundwater flow from the northeastern corner of the landfill that tracks along the surface of the subgrade rock.

The Applicant has volunteered a condition of consent that requires the new leachate drainage system be designed to achieve a leachate head not in excess of 300 mm at any point on the geomembrane liner. The landfill will not, under normal operation, be 'valved off' to hold leachate within the new landfill cells; rather, the cells will be maintained in a fully drained state.

In terms of the temporary management of leachate during the construction phase of the Stage 2 landfill, the general process is likely to be as follows, assuming the more complex clockwise sequencing is adopted:

- Construction of a temporary toe bund across the bottom of the first cell to provide a termination for the liner and containment of fill.
- Leachate would be collected through the toe bund and conveyed to the pump station.
- Construction of the second cell could occur in two parts; a temporary leachate pipe could be installed in the underdrain, the second part of the cell could then be developed – another toe bund, installation of the liner, collection of leachate through the bund, etc.
- The permanent leachate sump could be built below the proposed third cell and would not be disturbed by cell construction.
- The third base cell would follow a similar pattern.

Regardless of the final methodology, construction will be staged such that leachate from any operative Stage 2 landfill cells is conveyed to the pump station at all times during construction.

3.5.3 Transfer Station

The uncovered concrete pads in the transfer station drop off areas will store waste material (including green waste). Any runoff water will be treated as leachate. Runoff will be collected and piped to the existing leachate pump station. This pipe is a separate pipe from that which will convey leachate from the new cells in the landfill expansion area.

3.6 Surface Water Management

Note on terminology for this section: The Regional Plan: Water for Otago (**RPW**) defines stormwater as the water running off from any impervious surface such as roads, carparks, roofs, and sealed runways. The application describes stormwater as including both clean runoff as well as runoff from areas of the landfill that are pervious and that may contain sediment, i.e., dirty runoff. Therefore, the stormwater described in the application is not strictly stormwater in accordance with the RPW . To ensure some consistency with the application material and the Landfill Management Plan, this report will describe the runoff from impervious surfaces as 'clean stormwater', and the runoff from impervious surfaces

such as the general landfill (not including the active face) and access roads as 'dirty stormwater'.

In general, surface waters are managed on site such that the 'clean stormwater' water is separated from 'dirty stormwater' and contaminated water (leachate), ingress of water into the landfill is minimised, erosion of landfill capping is minimised, and uncontrolled offsite discharges of water are prevented. In some situations, cleaner water can flow or be directed to the dirty stormwater retention ponds. However, dirty (or contaminated) water will not flow or be directed into cleaner water.

Surface waters are managed on the landfill site via a series of culverts, drains and retention ponds.

3.6.1 Stage 1 Landfill

Since 2021, clean stormwater runoff from the catchment upstream of the landfill has been diverted around the northern side of the landfill. A constructed swale conveys this clean stormwater directly into the Clutha River/Mata-Au. No surface water inflow into the site is expected from the northern boundary as this flow is all diverted by the clean stormwater diversion.

Within the landfill site, surface runoff water (dirty stormwater) is diverted from the northwest side of the existing landfill cells into a 1000 m^3 retention pond. Dirty stormwater from the access roads and completed landfill areas that is not captured by this northwest drain is diverted along the southern end of the existing landfill area into a 600 m^3 retention pond. These ponds are not lined. Any sediment that was entrained in the stormwater is settled, and the supernatant water is passively discharged to the Clutha River/Mata-Au via overflow pipes underneath the Kaitangata Highway when the water level in the ponds is high enough.

Surface water runoff from the active landfill face is held in the immediate tip face area for ground soakage where it is then captured by the leachate collection system.

3.6.2 Stage 2 Landfill

Additional management of dirty stormwater during the progressive construction of the new cells is required. It is proposed that dirty stormwater will be directed into a toe drain and then into a new 650 m^3 sediment retention pond, which will allow suspended sediment to settle and aid in the attenuation of flow during rainfall events. The discharge from this pond will be via a DN300 pipe into the existing retention pond. During the operational phase, this new sediment retention pond will capture all dirty stormwater from the Stage 2 landfill area.

3.6.3 Transfer Station and Resource Recovery Centre

Stormwater from the Resource Recovery Centre and Transfer Station buildings and hard stand areas will be treated to remove sediment, fuel, oil, and gross pollutants and be conveyed into the existing retention pond. In this case, runoff from impervious surfaces such as the roofs of buildings would be clean stormwater, but this will be directed to the stormwater retention ponds rather than being discharged directly into the environment.

3.7 Landfill Gas Management

Degradation of biodegradable waste within a landfill results in the generation of landfill gas (**LFG**), primarily consisting of methane, carbon dioxide, oxygen and nitrogen with trace

amounts of odorous compounds such as reduced sulphur compounds and volatile organic compounds.

3.7.1 Stage 1 Landfill

There is currently no landfill gas collection infrastructure in place at the Stage 1 Landfill. Gas is passively vented through the waste and intermediate capping and is discharged to air. This is not considered best practice.

3.7.2 Stage 2 Landfill

The Emissions Reduction Plan 2022-2025 indicates that, where feasible, gas collection will be required by 2026 at all Class 1 landfills accepting municipal waste. The Applicant notes that this requirement is signalled to be implemented by way of amendment to the Resource Management (National Environmental Standards for Air Quality) Regulations 2024 (**NESAQ**). If LFG collection and destruction is required, then the following will be provided for the Stage 2 Landfill cells:

- A fully enclosed flare.
- Gas well to be constructed as the fill is placed.
- Reticulation of gas to the flare.

LFG abstraction within the Stage 1 adds a substantial level of complexity.

The Applicant reserves their position as to whether they will collect and destroy LFG pending further guidance from the Ministry for the Environment (**MfE**). The Applicant proposes to prepare a specific assessment of gas yields and a design of a gas system by 1 September 2025. The Applicant also proposes to engage an expert to prepare a report every three years, starting in 2025, which recommends whether collection and destruction of LFG is required.

At the time of writing this notification report, the second Emissions Reduction Plan 2026-2030 has been released, and this would appear to limit the requirement for LFG to those municipal landfills that receive more than 10,000 tonnes of waste per year. Mt Cooee Landfill is unlikely to reach this threshold.

Gas venting beneath the piggyback liner will generally consist of gas vents and gas evacuation subsoils (rectangular HDPE box section strip geofabric wrapped e.g. 'Megaflo Green' or equivalent) to be installed immediately below the piggyback liner in accordance with manufacturer recommendations. Gas drains will generally be in a grid patters (spacing generally not more than 7 m x 7 m) diagonally up the slope. The gas drainage subsoils will vent into a collector trench located at the top of the slope. This would consist of a slotted 110 mm HDPE in a fabric wrapped gravel surround. The venting of this trench will be designed at the time of construction of the slope and piggyback liner. It will be integrated into any gas collection system for the new landfill cell, vented out to the batter or penetrate through the piggyback liner as most appropriate to the geometry and other infrastructure.

3.8 Landfill Closure, Rehabilitation, and Aftercare

The Applicant does not anticipate landfill closure occurring within the 25-year consent term that has been applied for.

Progressive rehabilitation of closed and capped areas of the landfill will occur throughout the consent term. Areas which have received final capping will be smoothed to natural-looking contours, topsoil will be applied, and the areas will be planted with grass or copper

tussock. Planting of indigenous trees in the southeastern corner is proposed, and native succession planting is proposed as existing screening vegetation is removed on other areas of the site.

3.9 Compliance with Current Consents

The most recent compliance audit report (28 June 2023) states that the overall compliance for the Mt Cooee Landfill was graded **moderate non-compliant** on the basis that there was moderate non-compliance with Condition 5 of Discharge Permit 95954. This condition requires that groundwater beyond the boundary of the site at all times be substantially free of contaminants, resulting from activities at the Mt Cooee Landfill, which may directly or indirectly affect water use or ecosystems. Long-term sampling indicates that groundwater beyond the boundary of the landfill is not substantially free of contaminants at all times. Ammoniacal nitrogen, boron, manganese, nitrate-nitrogen and zinc exceed guideline values in samples from downgradient bores.

3.10 Application Documents

The Applicant provided the following documents with the application:

Application as lodged

- *Application for Resource Consent and Assessment of Effects on the Environment: Mt Cooee Landfill, Balclutha*, revision 3.0, prepared by WSP, dated 21 June 2023, including appendices A-V:
    - Appendix A: Certificates of Title
    - Appendix B: Design Report
    - Appendix C: Design Drawing Set
    - Appendix D: Landscape Visual Assessment
    - Appendix D-a Graphic Supplement to Landscape Visual Assessment
    - Appendix E: Geotechnical Factual Report
    - Appendix F: Geotechnical Interpretive Report
    - Appendix G: Sheet Pile Report
    - Appendix H-a: Mt Cooee Air Quality – Existing
    - Appendix H-b: Mt Cooee Air Quality – Expansion
    - Appendix I: Groundwater and Surface Water Report
    - Appendix J: Terrestrial, Wetland, and Waterway Assessment
    - Appendix K: Baseline Contamination Assessment
    - Appendix L: Archaeological Assessment
    - Appendix M: Cultural Impact Assessment
    - Appendix N: Integrated Transport Assessment
    - Appendix O: Flood Hazard
    - Appendix P: Stormwater Design Memo
    - Appendix Q: Assessment of Effects on Clutha River
    - Appendix R: Acoustic Assessment
    - Appendix S: Proposed Conditions of Consent
    - Appendix T: Bird Management Plan
    - Appendix U: Policy Assessment
    - Appendix V: Landfill Management Plan 2022

Responses to further information requests

- Response dated 22 November 2023
- Response dated 27 February 2024
- Response dated 9 April 2024

- Response dated 20 May 2024
- Response dated 27 August 2024
- Response dated 13 September 2024

Additional information

- Addendum report to landscape assessment, prepared by Mike Moore, dated 15 November 2024.

4. Description of the Environment

The site and the surrounding environment are adequately described within the application and this description is not duplicated here. The description in the application is adopted for this report. The key features of the site and surrounding environment are outlined below.

4.1 Site Visit

I first visited the site on 16 March 2023 as a general introduction to the site alongside members of the ORC compliance team. I next visited the site on 17 May 2023 for a detailed walkover in relation to this consent application. Also present at this visit were various representatives of the Applicant, as well as the following technical experts who were attending on behalf of ORC:

- Jonathan Shamrock of Tonkin + Taylor (**T+T**)
- Sue McManaway of Boffa Miskell
- John Iseli of Specialist Environment Services Limited (**SES**)
- Jason Smith of Morphum Environmental Limited (**Morphum**)
- Alexandra Badenhop of E3Scientific Limited (**E3**)
- Marc Ettema of ORC's Resource Science Unit

4.2 General

- The landfill is located approximately 1.2 km east of Balclutha along the Kaitangata Highway on land owned by CDC.

- The Mt Cooee Landfill site is designated in the Clutha District Plan for "refuse disposal" purposes. The designation does not have any conditions.

- The landfill occupies a natural shallow river valley, oriented northeast to southwest, sloping down to the true left bank of the Clutha River/Mata-Au at the site entrance.

- The surrounding area is a combination of residential, recreational, and rural land.

- Adjoining the site are the Main South Railway Line and the Balclutha Golf Course to the north, the Kaitangata Highway and the Matau Branch of the Clutha River/Mata-Au to the west and southwest, and private farmland including a residential dwelling to the east. See Figure 7.

- The Balclutha Aerodrome is located to the southwest of the site, across the Clutha River/Mata-Au; the Golfers Drive and Arthur Terrace residential areas are located to the northwest of the site.

- The part of the site that includes the Stage 1 landfill is identified on the ORC Hazardous Activities and Industries List (**HAIL**) as HAIL.00283.01 as category G3:

Landfill Sites. Other areas of the site are not listed on the HAIL database and soil sampling has demonstrated that these areas do not meet the definition of a contaminated site as set out in the RPWaste.

- The site is located within the Clutha Delta, which is a low-lying alluvium-filled basin. River flooding is the principal natural hazard for the delta. The flood hazard risk is alleviated, although not eliminated, by the Lower Clutha Flood Protection Scheme. Figure 8 shows the site during the November 1999 flood event.

- The eastern boundary of the Stage 2 landfill will be set 15 m from the eastern property boundary. The southern boundary will be set at least 150 m from the Kaitangata Highway.

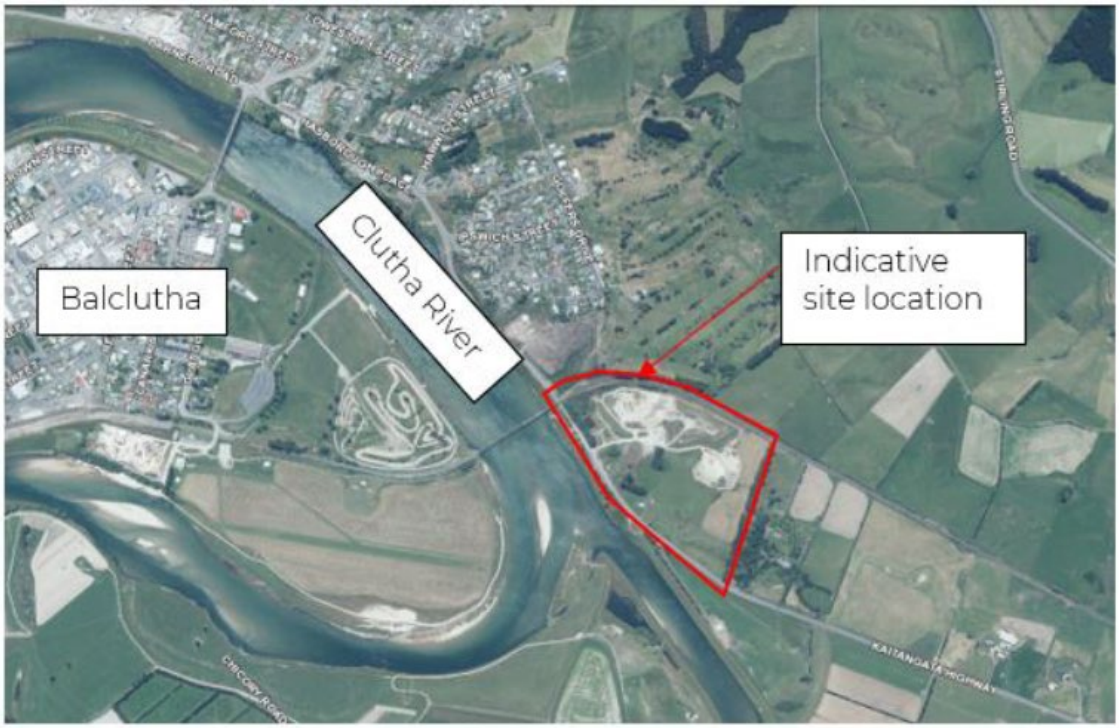

Figure 7 Location of the site adjacent to the Clutha River/Mata-Au, with nearby residential and rural land. Source: RM21.668 application.

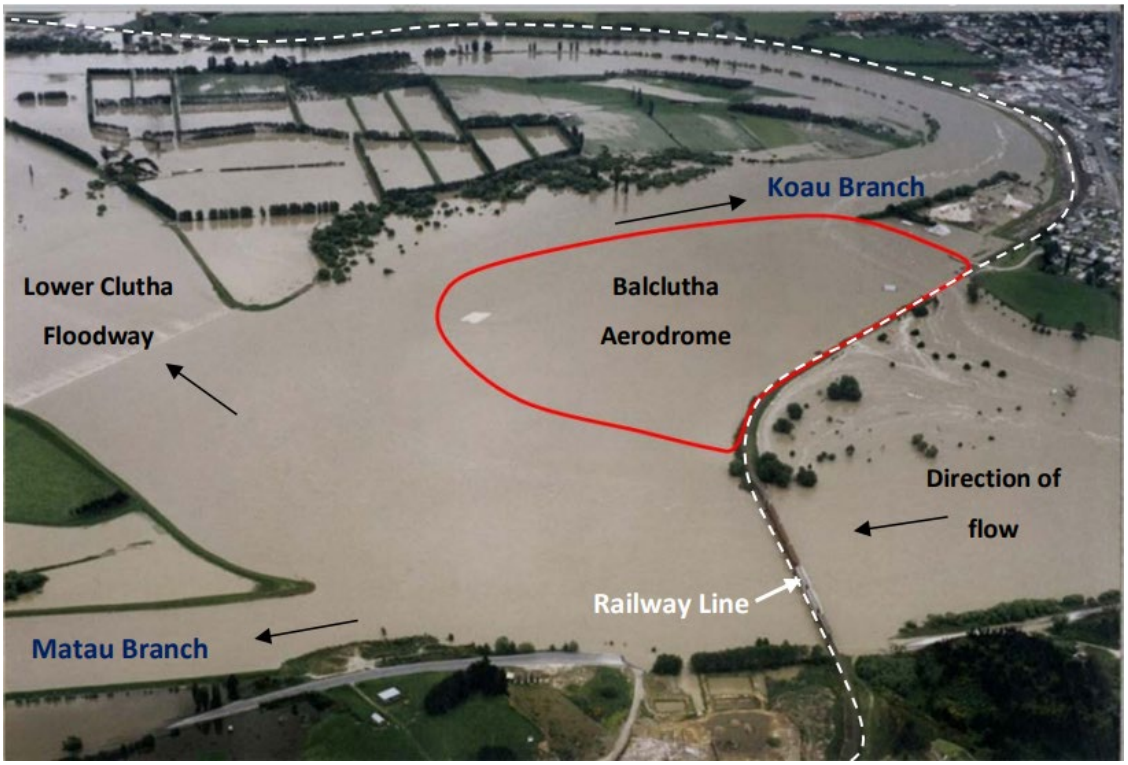

Figure 8 Image of the November 1999 flood. The Mt Cooee landfill is located at the centre and bottom of the image to the left of the dashed white railway line. Source: ORC report Natural Hazards on the Clutha Delta, May 2016.

4.3 Geology

Geology

- The site overlies an ancient floodplain, overlain by alluvial gravels.
- The site is generally underlain by a thin layer of topsoil and alluvium, overlying Greywacke (Caples Terrane bedrock).
- The valley under the Stage 1 landfill cell is infilled with up to 8 m of alluvium deposits. These thin at the valley sides to leave a 1-2 m veneer of weathered greywacke overlain with thin deposits of alluvial materials and topsoil.
- Caples Terrane bedrock is expected at shallow depths (typically <1 m bgl) across the eastern section of the site, with bedrock anticipated at greater depths across the western section of the site due to the presence of alluvial deposits.
- Stage 2 does not involve construction over the alluvium. All of Stage 2 will be founded on excavated greywacke, either weathered or fresh.
- The general topography of the site has been extensively modified by earthworks for the current landfill at the northern extent of the site and preparation of the proposed landfill at the eastern section of the site.
- Geological mapping of the area does not show any fault lines in close proximity to the landfill site. The closest mapped fault is the Livingstone Fault approximately 5 km to the east, which strikes northwest to southeast.
- There is no liquefaction risk to the Stage 2 fill foundation.

4.4 Groundwater

- Within the landfill site, both the alluvial sediments and underlying greywacke serve as water-bearing layers. The greywacke is relatively low permeability where the rock is massive, but higher permeability areas are found where the rock is highly fractured.

- Based on groundwater level measurements in historic and recent wells, the groundwater in the bedrock and overlying alluvium are conceptualised as one connected system.

- Groundwater investigations indicate that the groundwater level at the site could fluctuate as much as 1-2 m between seasons at select locations, but the eastern portion of the site has been observed to be mostly insensitive to seasonal fluctuations.

- Groundwater at the site is thought to be recharged from rainfall both on the site and in the area directly to the north within the contributing catchment.

- The general groundwater flow direction across the site is from the northeast to the southwest towards the Clutha River/Mata-Au and is assumed to broadly follow topography. Groundwater is likely connected to the Clutha River/Mata-Au.

- The site overlies the Inch Clutha Gravel Aquifer, which is an unconfined C-series aquifer with over 5 million m^3 of water available for allocation.

- Water quality sampling shows a likely impact of landfill activities in some downgradient monitoring wells GW2A, GW3, and BH1 which are all installed beyond the sheet pile wall.

- Boron – a useful indicator of leachate contamination at Mt Cooee – is present in elevated levels compared with upgradient bores. Elevated boron in BH1 suggests that leachate may be moving through the greywacke bedrock on the site.

- There is a strong increasing trend for nitrate-nitrogen in both GW2/GW2A and GW3. There was also an increasing trend in boron in GW3 but no trend in GW2/GW2A. Long-term data for chloride showed a strong decreasing trend in GW2/GW2A but no significant trend in GW3.

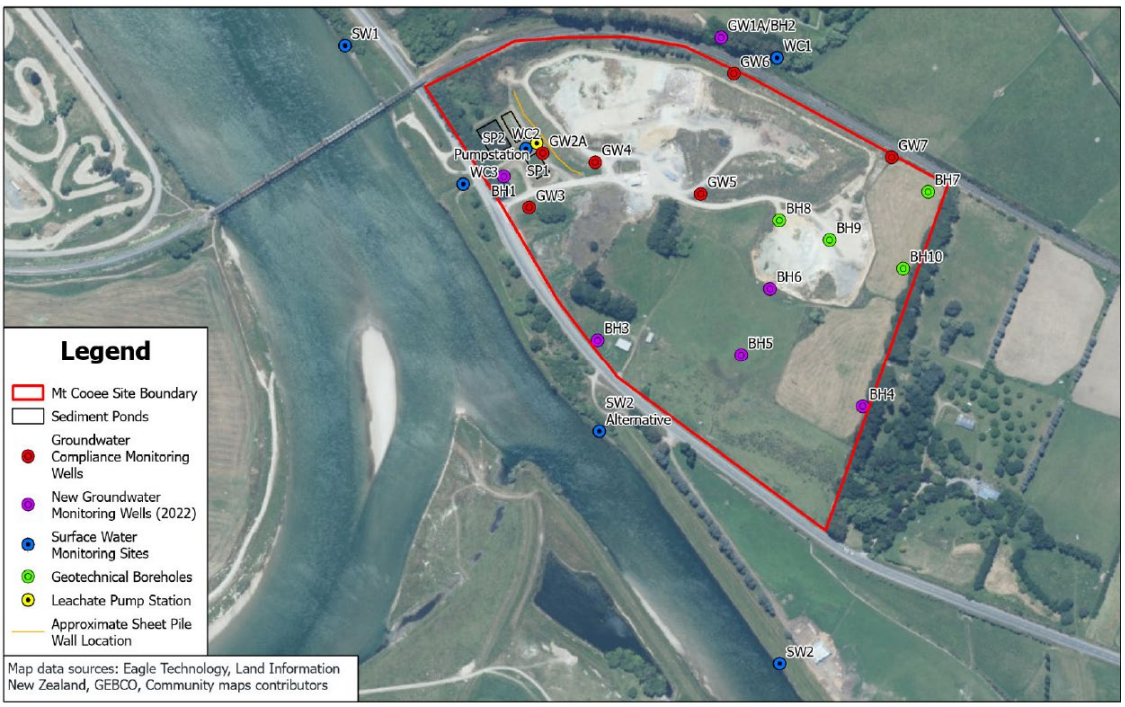

Figure 9 Monitoring wells (purple, red, green circles); surface water monitoring locations (blue circles); leachate pump station (yellow circle); sheet pile wall (orange line); ponds (black lines). Source: RM21.668 Groundwater and Surface Water Report.

4.5 Surface Water and Wetlands

- The site is located adjacent to the Clutha River/Mata-Au, on the true left bank, immediately north of the bifurcation into the Matau and Koau branches. The Kaitangata Highway separates the landfill from the river.

- Water quality sampling in the Clutha River/Mata-Au indicate that any leachate from the landfill is not having measurable impacts on water quality in the river.

- A small stream originally flowed through the site from the northwest. This stream was diverted on the northern boundary of the site to enable the construction of the existing landfill and supporting facilities. This stream discharges into the Clutha River-Mata-Au.

- A small watercourse flows through the southeast of the site, and discharges from the site through a culvert under the Kaitangata Highway and into the Clutha River/Mata-Au. Existing water quality is low, and the watercourse is compromised by stock access. See Figures 10 and 11. This stream originates approximately 130 m south of the southeastern edge of the Stage 2 landfill area. There are no surface inflows into the headwaters of this stream, so it is likely fed by groundwater.

- A small tributary of the Clutha River/Mata-Au previously flowed via pipe under the landfill. In 2021 this was diverted into a new swale which conveys stormwater around the landfill and into the Clutha River/Mata-Au.

- Two small areas of natural inland wetland exist in the southeast corner of the site, as shown in Figure 11. These are likely groundwater-fed.

- Ecological values of these wetlands are assessed as being low.

- Two stormwater retention ponds and a leachate emergency overflow pond are located at the western boundary of the site, adjacent to the Kaitangata Highway. See Figure 12.

Figure 10 lower reaches (left photo) and the upper reaches (right photo) of the small watercourse. Source: RM21.668 Terrestrial, Wetland, and Waterway Assessment.

Figure 11 Areas of natural inland wetland (dark blue) and the small watercourse (light blue line). Source: RM21.668 Terrestrial, Wetland, and Waterway Assessment.

Figure 12 Stormwater retention ponds (1, 3) and leachate emergency overflow pond (2). Source: Otago Maps.

4.6 Air Quality and Sensitive Receptors

- Within the Otago region, 22 urban areas have been gazetted into airsheds. These are further grouped into four airshed categories. The site is located within Otago Airshed 3.

- Airshed 3 includes Balclutha, North and Central Dunedin, Port Chalmers, Waikouaiti, and Oamaru.

- Where an airshed includes more than one town or region, all towns/regions within the airshed are assumed to have the air quality of the worst reading within that airshed. Monitoring for Airshed 3 is done in Central Dunedin. Therefore, air quality within Airshed 3 is as per Central Dunedin air quality.

- The NESAQ set ambient air quality standards for contaminants within airsheds. These regulations require Council to monitor air quality for contaminant concentrations within airsheds if it is likely that an ambient air quality standard will be breached.

- Based on monitoring undertaken in Central Dunedin over the last five years, Airshed 3 is not deemed to be polluted.

- Council has further categorised the 22 gazetted airsheds into three air zones for the purpose of the Regional Plan: Air for Otago (**RPA**). The site is located within Air Zone 2.

- Local topography of the site influences the wind regime in the immediate vicinity.

- During the night or early morning, low wind speed katabatic flows of cooler air tend to occur from the elevated areas north of the site, drifting in a south or southeasterly direction.[4]

- The prevailing wind in the region is from the west to west-northwest (27% of the time) blowing generally down the Clutha Valley. [5]

- Strong winds are generally from the west and southwest and are more prevalent during the day and during spring and summer seasons.

- Autumn and winter months, along with morning and evening hours, tend to have lighter winds blowing from the northwest and southwest.

- Calm conditions are rare (2.3% of the year) and winds from the southeast and northeast are less frequent overall.

- There are 78 residential dwellings within 500 m of the landfill site boundary.

- The closest residence (125 Kaitangata Highway) is located approximately 90 m from the site's southeastern boundary, between 280 m and 500 m from the active Stage 1 areas of the site, and approximately 170 m from the proposed Stage 2 areas.

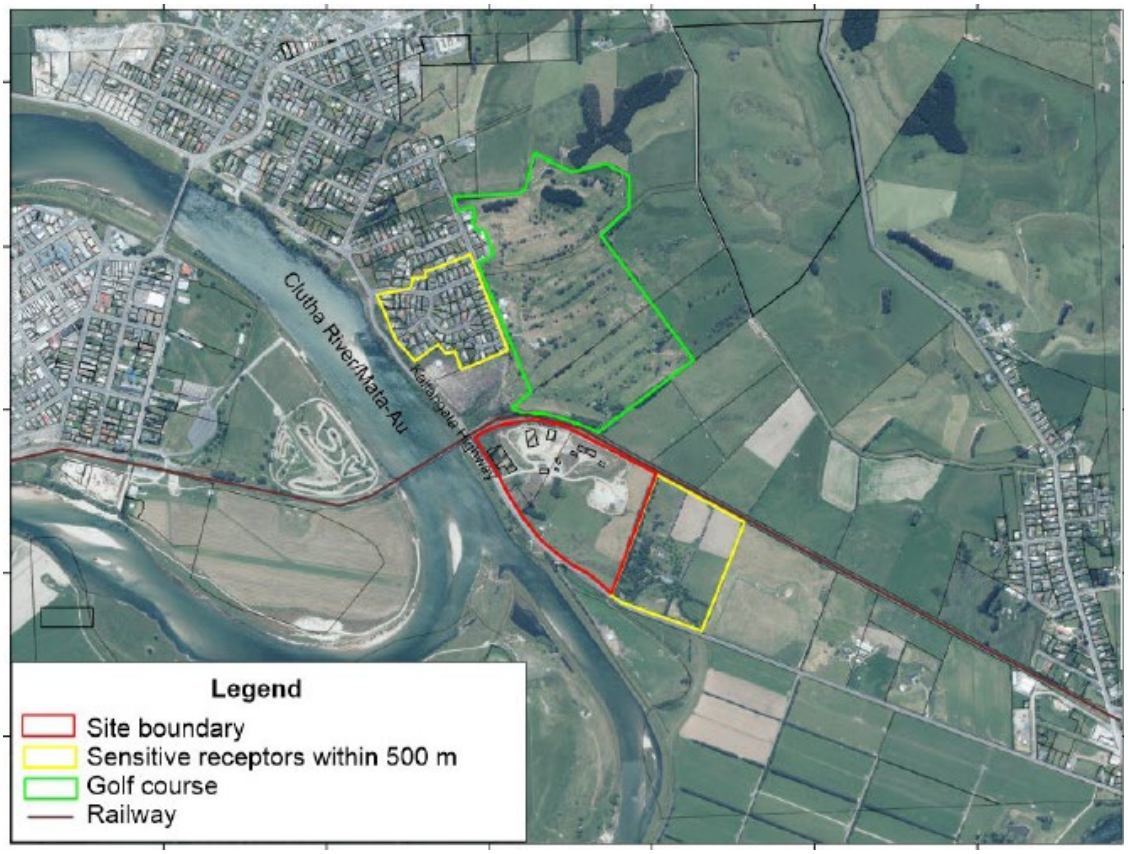

Figure 13 Sensitive residential receptors (yellow outline), golf course (green outline), and site boundary (red outline). Source: RM21.668 Air Quality Report (existing).

[4] Katabatic flows is the movement of air from high to low grounds, also known as drainage flows.
[5] Based on five years of data from the nearest weather station which is the *Balclutha Telford EWS* located approximately 5 km south of the landfill.

4.7 Landscape and Natural Character

- The site is located on the edge of low hill country defining the north-eastern side of the lower Clutha Valley, and the relevant landscape context includes Balclutha and the rural land within the valley to the southeast of the town.

- Being at a low elevation, the site does not have significant visibility beyond approximately 3km from within the valley, and landform generally screens it from the higher hill country to the north and northeast.

- The immediate site context is rural, but the site is near the edge of the urban area of Balclutha and separated from the town by the Main South Railway. A few residential properties (adjacent to Golfers Drive/Arthur Terrace) are located approximately 200 m to the northwest of the site boundary and can be seen from the site.

- The land to the east is zoned rural and developed as pastoral farmland. Across the railway line, the land to the north is also zoned rural and is developed as a golf course.

- Across the Kaitangata Highway from the site to the south-west, is the Clutha River/Mata au, which separates into the Matau and Koau branches at this point. The river margins in this area generally are highly modified by stopbanks and the dominance of exotic grass and tree cover.

- The Clutha River/Mata-Au between Balclutha and the sea is identified in Schedules to the RPW as having natural ecosystem values and Kāi Tahu values. The river also has notable physical, associative, and perceptual values and is a natural feature of significance.

4.8 Cultural Landscape

A detailed description of the cultural values which underpin the Kāi Tahu worldview and associations with the area can be found in the Cultural Impact Assessment (**CIA**) provided by Aukaha on behalf of Te Rūnanga o Ōtākou and Hokonui Rūnanga. A brief summary of key points is provided below.

Four core values lie at the heart of the mana whenua world view, namely whakapapa, mauri, mana, and tapu. These overlay a broader network of associated values. The CIA focuses on cultural impacts of the landfill activities in terms of the following values:

- Whakapapa – The literal meaning of the word whakapapa references the placing down of layers, a metaphor for the layering of generations from the past to the present, and into the future. Kāi Tahu are bound to the land, water, and all life supported by them, by whakapapa. Everything in existence is acknowledged and connected through whakapapa. Kāi Tahu are thus nested within the natural environment through whakapapa, which places obligations on Kāi Tahu to protect te taiao. Given the status afforded to te taiao and its components through whakapapa, they are viewed as prized and revered taoka with significant levels of mana and tapu, and whose mauri supports the life and wellbeing of people and all living things.

- Tapu – Tapu is an all-pervading force that has been passed down through whakapapa to the people of today. Every natural element possesses a level of tapu

derived from their connection to atua and tīpuna, who themselves were imbued with significant levels of tapu. The tapu status of people, places, and resources establishes expectations for the behaviour of whānau, requiring the balancing of rights and responsibilities. Activities related to waste are generally considered incompatible with tapu under tikaka Kāi Tahu. The placement of a landfill beside a significant ancestral waterway like the Mata-Au is concerning, given the potential for these activities degrade the tapu of this taoka.

- Mana – The word 'mana' refers to the authority and prestige that is passed down through whakapapa. Strongly linked to relative levels of tapu sourced through whakapapa, the natural environment is seen as holding significant levels of mana, which Rūnaka are dutybound to sustain and protect. Today, the mana and rakatirataka of Ōtākou and Hokonui is recognised and affirmed under the provisions of the NTCSA 1998, in which the Mata-Au is identified as a statutory acknowledgement area based on Kāi Tahu's "cultural, spiritual, historic, and traditional association to the Mata-Au."

- Mauri – Mauri flows from the living world and down through whakapapa, linking all aspects of the world. The mauri of water represents the essence that binds all things, acting as a life-giving force, and connecting the environment, from the mountains to the sea. Mauri is an observable expression of tapu and mana, denoting the life force that connects the physical and spiritual aspects of the world and the objects and beings within it. Waterbodies with an intact and strong mauri are characterised by good quality waters that flow with energy and life, sustain healthy ecosystems and support mahika kai and other cultural values. The primary resource management principle for Kāi Tahu is the protection of mauri. Concepts such as tapu, noa and rāhui are therefore applied by manawhenua to protect the mauri of a resource.

- Rakatirataka and kaitiakitaka – rakatirataka refers the exercise of mana in order to give effect to Kāi Tahu culture and traditions. In the management of the natural world, rakatirataka is underpinned by the obligations placed on mana whenua as kaitiaki; the practice of kaitiakitaka is an expression of rakatirataka. Wai māori is a taoka that is governed under the domain of rakatirataka, in accordance with Kāi Tahu tikaka and the principles of kaitiakitaka. The whakapapa connection with te taiao imposes a kaitiakitaka obligation on Rūnaka to protect wai and all the life it supports, in accordance with customs, knowledge, and mātauraka developed over many generations.

- Wāhi Tīpuna and Ara Tawhito – Wāhi tīpuna are characterised not only by natural and physical aspects, but also by the place names and associated traditions and events that bind Kāi Tahu to the landscape, just as the landscape itself is a part of Kāi Tahu identity. Such landscapes are linked by whakapapa in creation traditions, underpinning mana whenua status, and breathing life into mātauraka and tikaka. These are treasured places that transcend the generations and are today recognised as wāhi tīpuna. Wāhi tīpuna in the surrounding cultural landscape are numerous, indicating the level of activity and presence Kāi Tahu had there in the past. Many of these sites refer to landscape features, such as hills and waterways, indicating significant familiarity with the landscape, given that even minor features like streams and parts of hillsides are also named. Significant amongst these are the names associated with important waterways, including the Mata-Au and the two branches of its lower reaches – the Matau (north branch), and the Kōau (south branch). The

Mata-Au was a significant ara tawhito for whānau living along the southeast coast of Te Waipounamu, providing a pathway to follow up to the inland areas and upper lakes, and a travel-way to quickly return to the coast by mōkihi or waka.

- Mahika Kai – refers to the places, practices, knowledge, and species associated with mahika kai. Although food security was a significant element of mahika kai, it extended well beyond food gathering to encompass the harvest of primary resources for the production of textiles, tools, and implements. Mahika kai practices underpin the Kāi Tahu relationship with Otago's rivers, lakes, wetlands, moana, and the broader environment, which in turn is a bedrock for the cultural identity of Kāi Tahu. Mahika kai is a significant taoka to Kāi Tahu and was a substantive component of both Te Kēreme and the settlement with the Crown. Mahika kai is a key value associated with the Mata-Au catchment.

5. Status of the Application

5.1 Discharge of waste, hazardous waste, and leachate to land

Resource consents are required under the following planning instruments:

- Regional Plan: Water for Otago (**RPW**)
- Regional Plan: Waste for Otago (**RPWaste**)
- Regional Plan: Air for Otago (**RPA**)

Table 2 Resource Consent Requirements

Activity	Planning Instrument and Rule	Activity Status	Notes
Discharge waste, hazardous waste, and leachate to land, in circumstances which may result in contaminants entering groundwater, during the construction and operation of the landfill. *To replace resource consent 94508.*	RPWaste 7.6.1(1) and (2)	Discretionary	Contaminants are directly discharged to land and thereafter (in the case of leachate) to groundwater.
	RPWaste 6.6.1(1) and (2)	Discretionary	Contaminants (from the small amounts of hazardous wastes that are acceptable in a Class 1 landfill) are directly discharged to land and thereafter (in the case of leachate) to groundwater.
	RPW 12.B.4.1	Discretionary	Landfills are an industrial or trade premises. Contaminants are discharged to land.
	RPW 12.B.4.2	Discretionary	Landfills are an industrial or trade premises. Hazardous substances (as acceptable in Class 1

			landfills) are discharged to land.
Take combined groundwater and leachate. *To replace resource consent 95953.V1.*	RPW 12.2.4.1	Discretionary	Combined groundwater and leachate is taken at a pump station located at the downstream face of the landfill. Part (b) of rule 12.2.3.2A cannot be met; therefore, discretionary rule 12.2.4.1 applies.
Discharge of water and entrained contaminants to water in the Clutha River/Mata-Au. *To replace resource consent 94509*	RPW 12.B.4.1	Discretionary	The discharge of surface water that is not defined as stormwater in the RPW, and entrained contaminants (sediment), to land or water from an industrial or trade premises, requires resource consent. Water from the retention ponds is discharged to the Clutha River/Mata-Au.
Discharge of landfill gas, products of combustion from any potential LFG flare, dust, and odour into air. *To replace resource consent 94510*	RPWaste 7.6.1(3)	Discretionary	The discharge of contaminants (LFG, products of combustion, dust, odour) to air from operating landfills is a discretionary activity. This rule applies to discharges from the landfill only.
	RPA 16.3.5.9	Discretionary	The discharge of odour and dust from the operation of the RRC is not provided for by any other rule in Chapter 16.3.5 and is therefore a discretionary activity.

5.2 Permitted Activities

The following activities are described in the application as complying with the relevant permitted activity rule.

Table 3 Permitted Activities

Activity	Permitted Activity Rule	Notes
Divert surface runoff water throughout the landfill site.	RPW 12.3.2.1	Water that runs off access roads and completed landfill areas is diverted into stormwater retention ponds. The parts of this rule that apply to diversions are complied with.
Discharge stormwater from roofs and clean surfaces of the RRC to land and water.	RPW 12.B.1.8	Runoff from impervious surfaces such as the roofs of the RRC buildings is stormwater, and this is conveyed by pipes (reticulation) to the stormwater retention ponds and ultimately the Clutha River/Mata-Au.
Discharges of contaminants to air from construction of new landfill cells, the RRC, and supporting infrastructure.	RPA 16.3.13.1	Rule 16.3.13.1 permits construction activities. This rule prevails over discretionary rule 16.3.14.1 which manages the discharges from trade/industrial premises on the basis that it clearly provides for construction and 16.3.14.1 requires consideration of other activities "*expressly provided for by the rules of this plan*" which would include the permitted rule.

5.3 Consents Not Required

Consents under the Resource Management (National Environmental Standards for Freshwater) Regulations 2020

Subpart 1 of the Resource Management (National Environmental Standards for Freshwater) Regulations 2020 (**NES-F**) sets out standards for activities relating to freshwater in, or within a 100 m setback of, natural inland wetlands. This subpart regulates vegetation clearance, earthworks, and the taking, use, damming, diversion, or discharge of water to water in or within 100 m of natural inland wetlands. In this case, none of these activities will occur within 100 m of the mapped natural inland wetlands located toward the southeastern corner of the site. No consents are required under these regulations.

Consents for the disturbance of contaminated land

The area occupied by the Stage 1 landfill is listed as HAIL.00283.01, category G3: Landfill Sites. Other areas of the site are not listed on the HAIL database and soil sampling has demonstrated that these areas do not meet the definition of a contaminated site as set out

in the RPWaste. Therefore, resource consent under the RPWaste is not required for the earthworks required to construct the Stage 2 landfill.

Land use consent for earthworks

The use of land for the proposed earthworks does not contravene a national environmental standard or a rule in a regional plan. Therefore, the use of land for the earthworks to construct and operate the landfill cells and the resource recovery centre does not require resource consent.

5.4 Overall Activity Status

Applications involving a number of different activity statuses can be bundled together, so that the most restrictive activity classification is applied to the overall proposal. The bundling approach developed from case law is to enable appropriate consideration of the effects of an activity, or group of activities. Overall, the application has a **discretionary** activity status.

6. Assessment of Adverse Environmental Effects

The Permitted Baseline

The Consent Authority may disregard an adverse effect if a rule in a plan or national environmental standard permits an activity with that effect. In this case:

- There is no permitted activity rule for the discharge of contaminants to land, water, or air that occurs as a result of the operation of a landfill. While there is a permitted activity rule that allows for the discharge of contaminants for the creation of a cleanfill landfill, this does not provide an appropriate permitted baseline against which to assess the effects of a Class 1 landfill. This is because the environmental effects of a cleanfill landfill are significantly different in nature from the adverse effects associated with the discharge of contaminants to land, water, and air from a Class 1 landfill.

- There is no permitted activity rule within the RPA for the discharge of contaminants to air from the operation of trade and industrial premises such as the proposed RRC.

- There is no permitted activity rule within the RPW for the discharge of water and contaminants to land or water from industrial or trade premises that is applicable to the surface water that runs off the completed areas of the landfill and the internal landfill roads.

For the reasons outlined above, the permitted baseline is not considered relevant to this proposal and is not given further consideration in the below assessment of adverse environmental effects.

The Receiving Environment

The receiving environment is the environment upon which a proposed activity may have effects. The environment includes the current and future state of the environment as it may be modified by the use of rights to carry out permitted activities and by the implementation of resource consents that have been granted at the time the application is being considered, where it appears likely that those consents will be implemented.[6] It does not include the

[6] Queenstown Lakes District Council v Hawthorn Estate Ltd (2006) 12 ELRNZ 299 (CA) at [84].

environment as it might be modified by the implementation of future resource consents yet to be granted, nor does it include unlawful activities, even if these are already occurring.

In this case, the receiving environment is the wider landfill site, including its designation and implemented resource consents, but not those activities occurring under expired consents via s124;[7] groundwater; surface water, including artificial and natural watercourses and wetlands as well as their natural, physical, and cultural values; ambient air quality beyond the site and the receptors beyond the site that are sensitive to changes in ambient air quality.

6.1 General Comments

The application was supported by various technical reports. The technical reports were audited by independent subject matter experts on behalf of Council. A significant number of questions were raised and put to the Applicant in a request for further information made under s92(1) in July 2023. The Applicant responded to the majority of these questions in November 2023, with the remaining information provided in February 2024. The majority of questions were satisfactorily addressed, but there remained inaccuracies and inconsistencies in some areas, particularly relating to geotechnical, landfill design, and water quantity/quality matters. Further questions were put to the Applicant who subsequently provided further responses in April, May, August, and September 2024.

The Applicant did not provide an updated AEE or updated technical reports to correct or clarify the errors and inaccuracies in the original application. Following the September 2024 response, the s92 process was duly concluded. No further questions or concerns have been put to the Applicant for consideration, and any residual uncertainty as to adverse effects is accepted and incorporated into the assessment below to inform my notification recommendation. This was to avoid unreasonable delay in the processing of this application, which was lodged in June 2023.

Processing of the application was suspended on 1 October 2024.[8] This was to enable the Applicant to seek legal advice on the relevance of landscape effects to this application. Following the 20-working day suspension, a time extension was applied to enable the Applicant's landscape expert to prepare an addendum to his original assessment, and for ORC to arrange a peer-review. This is discussed in more detail in Section 6.9 of this report.

Given the volume of information presented in the application, the requests for further information, and the multiple rounds of technical audits (peer-reviews), the assessment of adverse effects presented below is necessarily a summary of the findings of the application process to date.

In general, the sections below are set out as follows:

- Summary of the Applicant's assessment.
- Where applicable, a summary of technical audit findings, including identification of points of agreement, disagreement, and residual uncertainty.
- Overall conclusions.

Variations to the above layout occur where the Applicant hasn't provided a standalone assessment for a particular matter or where a technical audit was not deemed necessary.

[7] Port Gore Marine Farms v Marlborough District Council [2012] NZEnvC 72 at [34], [75] and [172].
[8] Suspension was for 20 working days under s91D.

The following technical experts were engaged by ORC to audit the application:

- Jonathan Shamrock, Technical Director – Landfill Engineering and Geosynthetics at T+T
- Peter Abernathy, Geotechnical Engineer at T+T
- Alexandra Badenhop, Technical Director – Water & Environmental Management at E3
- Jason Smith, Environmental Scientist at Morphum
- Sue McManaway, Principal Landscape Planner at Boffa Miskell.

6.2 Landfill Design

Protecting groundwater and surface water from leachate contamination and protecting people from the adverse effects of landfill gas are the principal environmental performance objectives for landfill design. The geology of a site is an important consideration, both in terms of stability and in terms of the potential for migration of leachate and landfill gas.

Applicant Assessment

The Applicant provided concept-level design information as part of the application. Through the s92 process, additional information was requested on the subsoil drainage system, landfill liner, leachate drainage system, and capping details. The majority of the queries were addressed satisfactorily. However, as a general comment, there was a reluctance from the Applicant to provide specific design details at this stage of the consent process, on the basis that they are seeking a broad development envelope to enable flexibility at the detailed design and construction phases. This is to ensure that they aren't constrained to specific design parameters that may later prove to be unworkable.

The Applicant has also relied on assessment of risks and consequences in developing the landfill design, in particular with respect to the piggyback section of the Stage 2 landfill. The Applicant considers that the consequences of a liner failure in this section are negligible, on the basis that any leachate would seep into the Stage 1 cells and be captured by the sheet pile wall.

The Applicant agrees that consent conditions should set out general design parameters that need to be achieved, and that the detailed design would be subject to acceptance by ORC. The Applicant has also agreed that where any elements of the design would rely on adaptive management plans, the general contents of these plans should be reflected in consent conditions, and these plans would also need to be accepted by ORC. A construction quality assurance and control plan (**CQA**) is also proposed by the Applicant for the landfill liner material and installation.

The Applicant has confirmed that they are agreeable to a consent condition that requires that all leachate from the Stage 2 landfills be conveyed to the pump station at all times during construction. A description of the potential way in which leachate from the operative new cells will be managed during the construction of the later cells is provided in Section 3.5. This provides certainty that leachate can be appropriately managed during the proposed clockwise construction sequencing.

Technical Audit

The Design Report, and relevant sections of other technical reports, were audited by Jonathan Shamrock, Technical Director – Landfill Engineering and Geosynthetics at T+T. Full comments can be found in the following documents:

- Mount Cooee Landfill and Geotechnical Consent Technical review RM21.668, dated 13 June 2024.
- Mount Cooee Landfill and Geotechnical Consent Technical review RM21.668, dated 20 September 2024.

In general, Mr Shamrock is of the opinion that the majority of the relevant technical information for the design of the Stage 2 landfill and the RRC has been provided, reviewed, and assessed as appropriate, with a limited number of omissions, as set out below.

1. There is no design solution under the piggyback liner area to accommodate the expected ongoing differential settlement, and the impact of this on the lining system as the new overlying waste is placed. The WasteMINZ Guidelines state that a site-specific assessment is required. The Applicant proposes to assess landfill material exposed during the construction of the landfill liner systems and undertake proof rolling of the materials and further intermediate cover placement as necessary to form a smooth batter to place liners.

   Mr Shamrock considers that differential settlement would not be visible from conducting surface works prior to installation of the liner. Without an assessment or design solution such as a geogrid reinforced intermediate cover layer, or a substantial supporting layer of soil likely metres thick, the geomembrane in the piggyback liner will be exposed to the risk of tensile strains from the differential settlement and ultimately rupture, which would lead to a release of leachate into the old unlined landfill or tracking along the interface with the liner material.

   Mr Shamrock recommends that a geogrid layer is placed in the piggyback section below the liner, unless a substantial thickness of sub-liner fill (>2 m) is used to transition the expected differential settlements in this area of liner.

   Risk: rupture of the piggyback section of liner.
   Consequence: leachate could seep into the Stage 1 (unlined) landfill, where it would be captured by the sheet pile wall.

2. There is no gas collection proposed on the northeastern portion of the landfill built over the existing historic landfill; the degassing system ends at the top of the existing landfill slope. Irrespective of the age, or status of Emissions Reduction Plan legislation, the old waste area will continue to produce gas. Once a geomembrane piggyback liner is installed, this will create a barrier and gas will no longer have an outlet pathway on the top of the existing landfill, and gas pressure below the liner will need to be released to prevent a build-up of pressure under the new liner. A build-up of gas pressure under the piggyback liner can damage the geomembrane, which affects the containment ability of the landfill.

   Risk: gas build up under the piggyback liner could damage the geomembrane.
   Consequence: leachate leakage through damaged liner (see risk/consequence for point 1 above) or health and safety risk to workers if LFG is not collected and discharged or destroyed in a controlled way.

3. There is no geotextile, or other design solution, to mitigate the effects of physical clogging of the leachate drainage blanket through contact with the waste material and expected fines migration from the waste into the voids in the drainage layer. Mr Shamrock is of the opinion that an appropriately selected geotextile will improve the performance, and the service life, of the leachate drainage gravel and therefore long-term containment performance of the landfill. Mr Shamrock considers that the omission of this layer will result in an accelerated decrease in permeability of the leachate drainage gravel, with the resulting build-up of leachate mounding on the landfill base, resulting in an increased leachate pressure on the liner which increases the potential leakage rate from the landfill into the environment from any defects in the liner. The Applicant disagrees with this reasoning and considers that it is likely that the separation geotextile itself would become clogged and cause leachate mounding. The Applicant notes that the WasteMINZ Guidelines provide for but don't require a separation geotextile over drainage aggregate.

   Risk: the leachate blanket becomes clogged and leachate head builds up above the liner. Consequence: increased leachate leakage through any defects in the liner.

4. Key landfill infrastructure drainage information is not clearly described in the application, despite requests for more detail. The Applicant considers that specific drainage pathways for leachate, stormwater, and groundwater are matters for detailed design. Mr Shamrock believes that concept-level information is required at the consenting stage to understand the effects of the activity and to ensure that this information is transferred into consent conditions. Mr Shamrock's particular concerns are:

   a. How and where temporary (as the landfill construction will be staged) and final leachate drainage pipes will discharge to the leachate pump station, including how the staging of the landfill construction will be managed, given leachate drainage will be through active construction area.
   b. No details are provided for where subsoil collection drains (for stormwater and groundwater) will be positioned, and how the connection to the sediment retention pond will be achieved.
   c. There is uncertainty about what the final base grade of the new landfill cells will be, particularly in the piggyback area. This is also reflected in the inconsistencies in the geotechnical assessment profiles and those presented in the concept plans. The Applicant has highlighted that the final existing landfill profile is not yet known, as filling is still underway under the existing consent at the site. Due to this, Mr Shamrock considers that it is unclear if the geotechnical assessment is representative of the proposed activity.

   Risk: design information is not captured and transferred into consent conditions. Consequence: adverse effects are not adequately managed.

Conclusions

Based on the comments from Mr Shamrock, the design of the Stage 2 landfill is generally appropriate and broadly consistent with best practice guidelines. Four outstanding matters, detailed above, remain unresolved. Mr Shamrock is of the opinion that these four issues are fundamental to the expected performance of the landfill, and therefore the assessment of the activity. This is because containment, and the expected leachate leakage rate, is a critical

design parameter that is relied on by other experts as input into their assessment of effects. Mr Shamrock reiterates the importance of understanding key design details at this early stage so that they can be taken forward into conditions of consent.

I agree that these four matters introduce uncertainty that should be managed by conditions of consent, in particular by conditions that specify matters to be addressed during detailed design and acceptance of detailed design plans. However, as a prelude to forthcoming sections of this notification report, it is my opinion that the Applicant has provided sufficient concept-level information to enable the worst-case downstream adverse effects upon the environment to be understood, and even after taking into account the uncertainty associated with not resolving the above matters these effects would not be more than minor.

6.3 Stability Effects

Geotechnical analyses and assessments were undertaken to understand the overall site suitability, stability, and seismic risk, both during construction and throughout the anticipated life of the landfill.

Applicant Assessment
The following geotechnical features of the Mt Cooee site have informed the landfill design:

i. The valley under the old landfill cell is infilled with up to 8 m of alluvium deposits. These thin at the valley sides to leave a 1-2 m veneer of weathered greywacke overlain with thin deposits of alluvial materials and topsoil.
ii. Stage 2 does not involve construction over the alluvium. All of Stage 2 will be founded on excavated greywacke, either weathered or fresh. The greywacke is competent rock which requires ripping to excavate (once the initial 1-2 m of weathered material is passed).
iii. There is no liquefaction risk to the Stage 2 fill foundation.
iv. Groundwater will be greater than 1 m below the landfill liner base layer (more generally 2-3 m).
v. There is little clay or silt materials on the site which can be utilised for either landfill liner materials or for landfill cover and capping soils. There is only a thin veneer of silt over the weathered greywacke. Having no clay on site is a major factor determining the liner system.
vi. While there is no clay on site, suitable deposits of liner grade clay/silt are expected to be available within a short haul distance.
vii. Rock excavated to form the landfill floor will be granular material and will be permeable to water and gas if utilised for landfill cover.
viii. It is understood there is currently no economic use for the rock to be excavated and it is therefore all assumed to be either used within the site works, across Council operations, or cut to waste.

Overall, the ground investigations and preliminary geological mapping indicate that the underlying geology of the site is generally suitable and appropriate for the proposed landfill development.

There is very low risk of global instability of the proposed landfill extension toward the south (Clutha River/Mata-Au) due to the presence of bedrock at very shallow depth below the ground beneath the landfill and the highway. The geotechnical assessment therefore focusses primarily on the stability of the landfill batters. These assessments indicate that the minimum factors of safety are achieved under the static case and the seismically induced

slope movements are small and insignificant. Temporary stability of the landfill has been assessed and found to be acceptable, with factors of safety exceeding minimums for all stages of the landfill construction. The geotechnical design parameters, groundwater levels, and leachate level adopted in the analyses are at least moderately conservative to demonstrate the insensitivity to the landfill geometry from these variables.

The Applicant concludes that adverse geotechnical effects will be less than minor.

Technical Audit
The Geotechnical Factual and Interpretive Reports, and relevant sections of other technical reports, were audited by Peter Abernathy, Geotechnical Engineer at T+T. Full comments can be found in the following documents:

- Mount Cooee Landfill and Geotechnical Consent Technical review RM21.668, dated 13 June 2024.
- Mount Cooee Landfill and Geotechnical Consent Technical review RM21.668, dated 20 September 2024.

The following summary comments are taken from the September 2024 review:

We have reviewed the updated geotechnical assessment and believe it is appropriately representative of the landfill design, follows appropriate assessment standards and achieves acceptable performance outcomes for long term and temporary cases under static and seismic loading cases. (i.e. acceptable FOS and deformation are demonstrated through analysis of landfill sections). However, there appears to be differences, or lack of consistency, between the geotechnical sections analysed and what is presented in the drawings set. This primarily relates to the piggyback section of the landfill design.

The geotechnical assessment also highlights the critical requirement for an underdrainage or subsoil drainage system for the site to prevent uplift pressures on the liner system. While further details of the subsoil drainage system have been provided, there is further clarification required.

Mr Abernathy goes on to state that he agrees with the Applicant's conclusions as to the geotechnical effects of the proposal, subject to clarification on the consistency between the sections analysis in the geotechnical assessment and those presented in the final drawing set.

Conclusions
The geotechnical assessment demonstrates that acceptable performance outcomes are achieved for long-term and temporary stability under both static and seismic cases. Even taking into account the small amount of residual uncertainty identified by Mr Abernathy, I consider that any adverse geotechnical effects associated with the construction and operation of the Stage 2 landfill would be less than minor.

6.4 Flooding Effects

Adverse effects relating to flooding include:

- Inundation of the stormwater retention ponds, the emergency leachate pond, and the berm area to a depth not exceeding 1.0 m.
- Subsequent uncontrolled release of stormwater and leachate to the environment.

- Deposition of silt across all or part of the berm area during an extreme flood event.

Applicant Assessment

Modelling indicates that flooding to a depth of 0.5-1.0 m could occur on the berm area between the Kaitangata Highway and the front face of the landfill. Figures 14 and 15 show the modelled flooding extent at the site. The velocity of the floodwaters is expected to be relatively slow and is not expected to erode the face of the Stage 1 landfill. Under very high water levels the stormwater retention ponds and leachate pond may be inundated by flood water. Deposition of silt across all or part of the berm area would be expected during an extreme flood event.

The Applicant concludes that adverse effects relating to flooding will be less than minor.

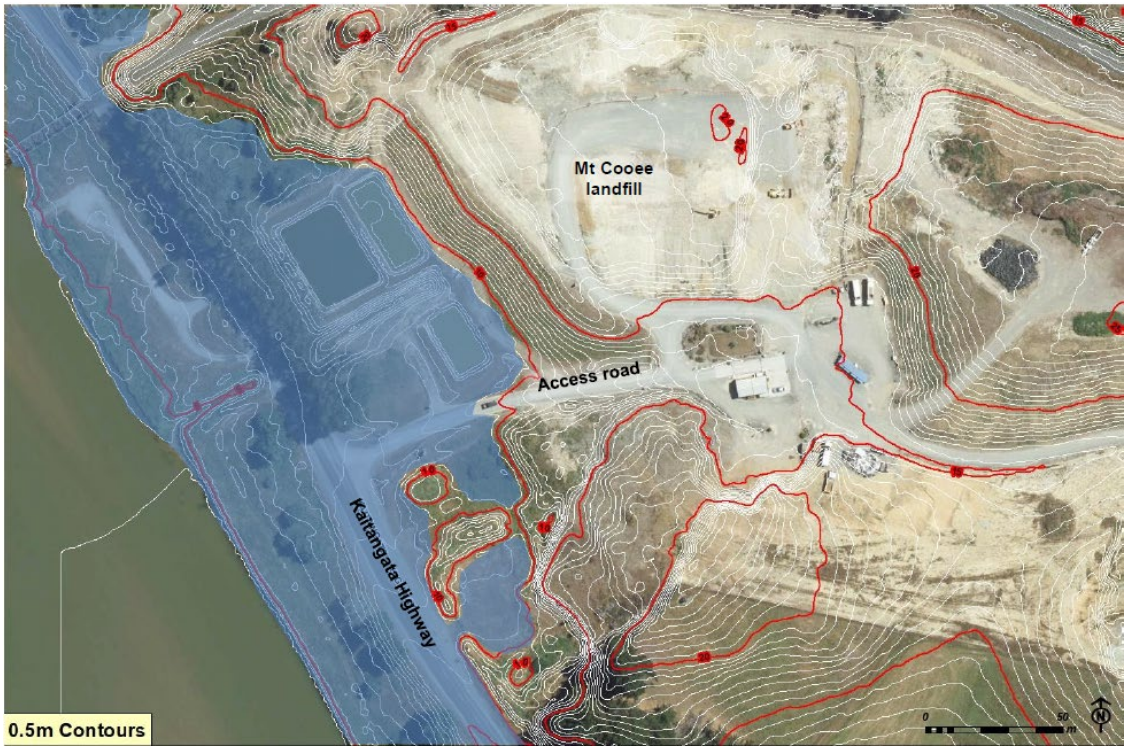

Figure 14 approximate extent of floodplain in front of Mt Cooee Landfill. Source: Flood hazard report.

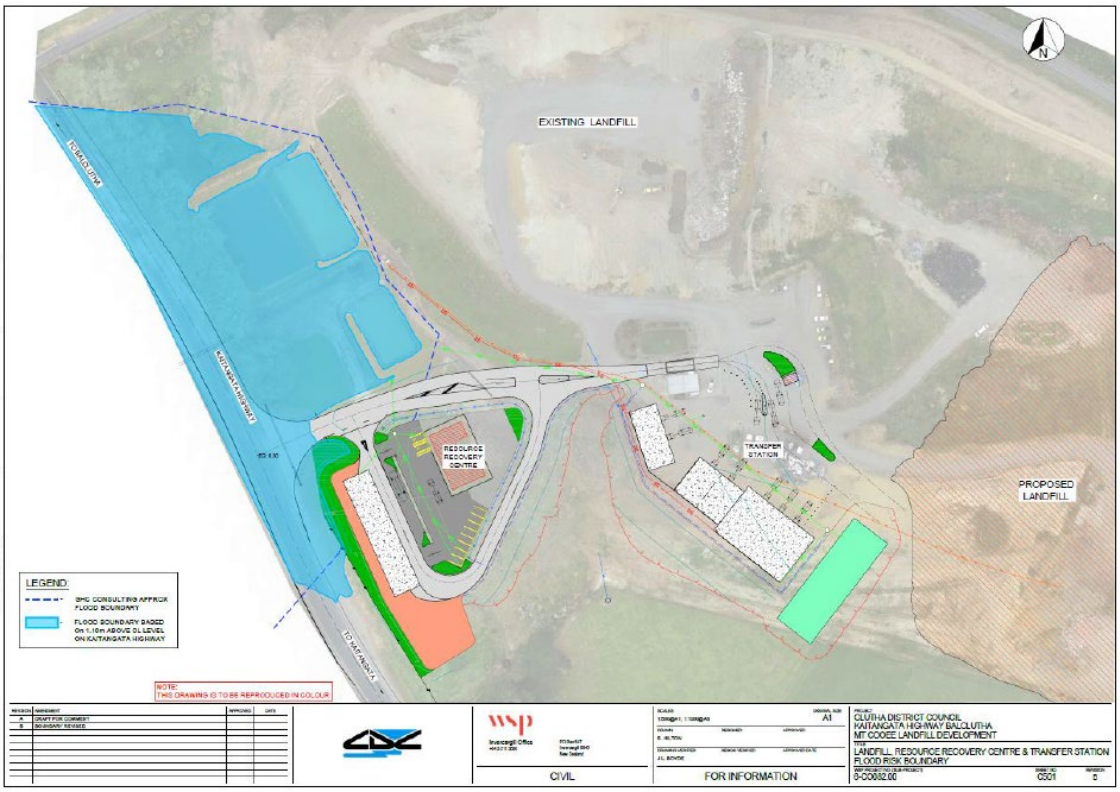

Figure 15 flood boundary based on 1.1 m above centreline of the Kaitangata Highway. Source Flood hazard report.

Technical Audit

The Flood Hazard Report was audited by Aparna Liyanage, Senior Engineer at Morphum.

Mr Liyanage states that an adequate level of information has been included in the application to enable the adverse effects associated with flooding to be understood. Although an explicit flood model was not developed, the Applicant has utilised the findings of the Clutha Delta Flood Hazard Study (NIWA, 2005) and the latest topography of the area in a sound manner to derive the expected flood hazard extent close to the landfill.

Mr Liyanage agrees that the RRC and the Stage 2 landfill are well outside the expected flood extent and that existing landfill face is unlikely to have any significant erosion even during an extreme flood event due to the low velocities and the minimal depth of flood water. Mr Liyanage considers that the inundation of the stormwater and leachate ponds is not of particular concern in the context of the area-wide flood issues that will be experienced during this magnitude of flooding.

The conclusions of the Applicant with respect to the risk posed by flood hazard are supported by the technical audit. Any release of stormwater or leachate to the environment would be insignificant in the context of the area-wide effects resulting from the flooding. In my opinion, adverse effects relating to flooding would be less than minor.

6.5 Effects on Groundwater

One of the key design parameters for landfills is to maintain separation between leachate and groundwater. This is not achieved for the Stage 1 landfill, where leachate percolates into the groundwater which flows through the unlined landfill. The resulting leachate is then pumped from behind the sheet pile wall. For the proposed Stage 2 landfill, the cells will be lined, and leachate will be captured and conveyed to the pump station. Upgradient groundwater will be intercepted by an underdrain beneath the central leachate line, with any

groundwater not conveyed by this underdrain being passively redirected around the new cells.

Applicant Assessment

Groundwater quantity

The majority of the groundwater beneath the site flows toward the Clutha River/Mata-Au. A minor proportion may flow toward the small stream and the areas of natural inland wetland in the southwest corner of the site. The existing unlined landfill will not reduce groundwater recharge into the site because groundwater can flow through the unlined cell; however, the capture of leachate which is combined with groundwater would reduce the groundwater recharge to the system at the site. Current groundwater levels and gradients on the site reflect the impacts of the existing landfill area operation. Contour mapping of current groundwater levels on the site do not suggest that the existing landfill cells are measurably impacting groundwater levels or gradients.

The proposed Stage 2 landfill will be lined and as such will 'divert' shallow groundwater around the cells to some degree, which could reduce groundwater recharge via a reduction in groundwater infiltration to the site. A small decrease in groundwater levels downgradient of the expansion area is anticipated due to the pumping of leachate-impacted groundwater. This is not expected to be measurable in reality. The proposed underdrain, to run underneath the central leachate line, will intercept groundwater which will be directed to the wetland area to mitigate any potential effects associated with a reduction of groundwater recharge of those wetlands.[9]

The proposed RRC and transfer station will increase the amount of hardstand surfaces on the site by approximately 0.6 ha. Based on this, the proposed hardstand areas will decrease the total groundwater infiltration by approximately 0.74% of the total catchment groundwater discharge.

Groundwater Quality

For the Stage 1 landfill, the primary leachate containment feature is the sheet pile wall. The available information relating to the sheet pile wall has been reviewed by geotechnical experts on behalf of the Applicant. Inspection of the wall was not possible, and photographs from its construction are not available. Based on this, and on the age of the wall, the Applicant's experts recommend that the suitability of the wall for the continued containment of leachate be qualitatively assessed through regular monitoring of the levels of contaminants in both GW2 and BH1. Additionally, it is noted that the potential for leachate escape through the weathered bedrock beneath the toe of the wall should be assessed through regular monitoring of the wells.

Water quality as measured in downgradient monitoring wells represents the existing landfill impacts. Water quality monitoring in wells GW2 and GW3 shows that leachate indicators ammoniacal nitrogen, boron, manganese, nitrate-nitrogen, and zinc exceed relevant water quality guideline values.[10] Nitrate-nitrogen and boron show increasing trends. The Applicant

[9] The Applicant has not confirmed the final discharge location of the underdrain. If the underdrain were to discharge directly into the natural inland wetland, or to water within 100 m of the natural inland wetland, an additional consent would be required under NES-F reg. 45B(5)

[10] Regional Plan: Water for Otago. Schedule 16A: Discharge Thresholds for Discharge Threshold Area 1 and Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Default guideline values for freshwater protection: 95% of specie, applicable for slightly to moderately disturbed systems.

considers that these trends are unlikely to continue as the Stage 1 landfill is approaching capacity and leachate volumes are at or approaching their maximum.

The Stage 2 landfill cells will be lined. As such, leachate will be contained and conveyed directly to the pump station for ultimate discharge to the trade waste network. The Applicant initially provided a quantitative assessment of leachate leakage rates and calculated contaminant loading rates in order to quantify the anticipated adverse water quality effects. The application provided a calculated leachate leakage rate of 8.8 L/day from the new cells. This assumed that the leachate collection system operates as designed and that the liner has no defects which would cause increased leakage. Significant inaccuracies were identified in these calculations (refer technical audit section below) and revised calculations were provided. These indicated that the potential leakage rate could in fact be up to 310 L/day when taking into account liner wrinkles. Nonetheless, the Applicant does not expect that this will result in a measurable effect on groundwater quality. The Applicant did not update the Surface and Groundwater Report to reflect these changes, but nonetheless concluded that any discharge to the Clutha River/Mata-Au via the groundwater system can be discounted as insignificant and unmeasurable due to the large dilution factor afforded by the river. This is discussed further in Section 6.6 of this report.

The Applicant concluded that there will be less than minor adverse effects on groundwater quantity and an overall improvement in groundwater quality, as compared to the current situation.

Technical Audit

The Groundwater and Surface Water Report, and relevant sections of other technical reports, were audited by Alexandra Badenhop, Technical Director – Water & Environmental Management at E3. Full comments can be found in the following documents:

- Technical Review dated 12 February 2024.
- Technical Review dated 20 September 2024.

The key finding of the technical audit process was that the calculated contaminant loadings, which are based on estimated leachate leakage rates, were incorrect (underestimated) by a factor of 1000 for the Stage 2 landfill. Via the s92 process the Applicant provided updated contaminant loading calculations, but failed to take into account the updated leachate leakage rates that they provided in response to another s92 question. Further corrections and updated assessments were requested from the Applicant. In response, the Applicant did not provide updated calculations, and instead opted to accept the uncertainty in the quantitative assessment and proposed to rely on monitoring and trigger-action-response plans and additional controls. Ms Badenhop is generally supportive of this approach, provided the monitoring locations are sited appropriately and the monitoring frequency is sufficient to provide the triggers required.

An updated monitoring schedule was requested from the Applicant. This was provided; however, Ms Badenhop considers that in its current form the schedule is not adequate for the following reasons:

- Monitoring locations have not been justified as to their efficacy.
- A number of the parameters listed by the Applicant are not included in the monitoring schedule.

- The Applicant had proposed a new monitoring well closer to the landfill's southern edge but failed to include it in the schedule.
- The Applicant has not proposed any new monitoring points along the sheet pile wall, as was recommended in their own technical report.
- The trigger levels proposed are not meaningful, insufficient data points are proposed for the baseline assessment, and the significance of any trigger level exceedances are not explained.

The additional controls include including filling any major fracture zones in the expansion area greywacke with liner-grade clay, the grading of the landfill base to a central low point under the central leachate drain, and the construction of a groundwater drain (underdrain) into the subgrade rock. This underdrain would allow upgradient groundwater to pass underneath the Stage 2 landfill cells and would also serve as a monitoring point which would enable detection of any leachate contamination. If such contamination was found, this leachate in the underdrain would be directed to the leachate pump station. Ms Badenhop considers that these are appropriate control measures.

Ms Badenhop agrees that groundwater quality will not be affected to a greater extent than it already is, either by the existing landfill or the proposed expansion. Given the existing effects upon groundwater are already occurring and are measurable, this is a useful statement. After noting the above inadequacies in the proposed monitoring schedule, Ms Badenhop remains satisfied that monitoring and responses can be appropriate, but notes that they should be informed by an updated conceptual model.

Conclusions

In general, the sheet pile wall provides a good level of containment for the Stage 1 landfill, but some leachate is likely to be migrating beyond the wall into groundwater adjacent to the Clutha River/Mata-Au. The Stage 2 leachate systems will provide a good level of containment – consistent with industry best practice, and the additional controls proposed by the Applicant for the Stage 2 cells are considered appropriate. As detailed in Section 6.2, there are a limited number of design elements that remain unresolved, and this introduces some risk and uncertainty into this assessment. In general, the consequence associated with the risk is an increased potential for liner failure and subsequent leachate leakage in the piggyback section of the landfill. This may track into the Stage 1 unlined landfill.

Taking into account the uncertainty in the potential leachate leakage rates, Ms Badenhop remains of the opinion that monitoring and responses (i.e. adaptive management) can be an appropriate means of managing adverse effects at this site, provided the monitoring locations are sited appropriately and the monitoring frequency is sufficient to provide the triggers required.

It is also important to consider the adverse effects on groundwater in the context of the sensitivity of the groundwater receiving environment. Groundwater is likely to be hydrologically connected to the Clutha River/Mata-Au, and this is the primary sensitive receptor of relevance to this application. Groundwater may also have a degree of hydrological connection to small waterways and the areas of natural inland wetland on the site. Effects on the Clutha River/Mata-Au, and on other surface waterbodies, are discussed in Section 6.6 of this report. Groundwater is not considered sensitive with respect to abstractive uses, and the potentially impacted area of groundwater is limited to the small area between the landfill and the Clutha River/Mata-Au. There are no known consented users of groundwater in the immediate vicinity of the landfill, nor are there likely to be any permitted

users of groundwater in this area. All known groundwater wells, other than those owned by CDC, are located significantly upgradient of the landfill.

While the monitoring schedule proposed by the Applicant is not wholly adequate, in my opinion, this level of detail is not required to understand the potential adverse effects of this proposal. This is because the worst-case groundwater scenario can be assessed as being approximately similar to the current measurable state of the environment at the site. Leachate generation and leakage rates from the Stage 1 landfill are not likely to increase from the current situation, and any leachate that may track into the existing landfill from the new cells would not cause any significant increase in downgradient groundwater contamination. Groundwater quality is currently impacted by the landfill, with leachate indicators present in downgradient monitoring wells in excess of freshwater guideline values. For this reason, I cannot conclude that adverse effects are less than minor. However, as there are no current or likely future users of this groundwater, and any related or consequential effects of the impacted groundwater resource can be managed to an acceptable level, as discussed below in this report, the impacts on the groundwater resource will not be more than minor. Therefore, I consider that it is appropriate to defer the finalised monitoring schedule and supporting adaptive management plans to consent conditions, should there be no other impediment to the granting of consent.

6.6 Effects on Surface Water

Potential adverse effects on surface water from the proposal include water level changes in the areas of the natural inland wetland at the southeast corner of the site and water quality effects on the small waterways and the Clutha River/Mata-Au.

Applicant Assessment

Water Quantity

There a several small watercourses on the wider site, as well as areas of natural inland wetland. These are fed at least in part by groundwater, and any adverse effects, in terms of water quantity, on these features would stem from changes to groundwater levels on the eastern side of the site. The Applicant finds that the maximum estimated reduction in groundwater level that may result from the Stage 2 landfill is unlikely to have a measurable effect on the small stream and areas of natural inland wetland at the southeastern corner of the site. The proposed groundwater drain (underdrain) in the subgrade rock beneath the Stage 2 landfill will alleviate any minor effects of any potential 'diversion' of groundwater around the Stage 2 cells by enabling any captured groundwater to be released to recharge the wetland.

The potential water quantity effects on the Clutha River/Mata-Au associated with the pumping of combined groundwater and leachate will be unmeasurable. This is because the estimated annual pumped volume of groundwater/leachate is in the order of 0.0003% of the Clutha River/Mata-Au mean low flow.

Water Quality

The hydrological connection between groundwater and the Clutha River/Mata-Au presents a potential pathway for the migration of leachate from groundwater into surface water. The proposal also includes the discharge of stormwater to the Clutha River/Mata-Au. Stormwater may contain sediment, although it is expected that the majority of sediment would have settled out in the sediment retention ponds prior to discharge. There is no intention to discharge any leachate directly to any surface waterbody.

As described in Sections 6.5 and 6.6 above, the contaminant loadings provided by the Applicant were incorrect, and ultimately the Applicant decided that instead of estimating contaminant loading they would rely on controls, monitoring, and adaptive management. This approach is further supported by the (limited) surface water sampling that was undertaken for the purpose of the application which found no discernible change in water quality downstream of the landfill versus upstream, indicating that the landfill is not impacting water quality within the Clutha River/Mata-Au in any measurable way. No exceedance of relevant surface water quality guideline values or ranges was found for the parameters that were assessed.

Adverse water quality effects on the small watercourse and areas of natural inland wetland at the southeast of the site would primarily manifest as a result of changes to shallow groundwater quality or as a result of poor erosion and sediment management during construction of the Stage 2 landfill. Changes in shallow groundwater quality downgradient of the Stage 2 landfill are not expected to be measurable. Nonetheless, an underdrain beneath the Stage 2 landfill will further minimise any potential water quality effects by providing a preferential flow path for any leakage trapped between the liner and the subgrade rock. Overland flow of surface water from the Stage 2 landfill will be directed to stormwater retention ponds, and any construction works for the landfill and RRC will be undertaken in accordance with an erosion and sediment control plan.

The Applicant concludes that adverse effects on surface water quality and quantity will be less than minor.

Technical Audit

The Groundwater and Surface Water Report, and relevant sections of other technical reports, were audited by Alexandra Badenhop, Technical Director – Water & Environmental Management at E3. Full comments can be found in the following documents:

- Technical Review dated 12 February 2024.
- Technical Review dated 20 September 2024.

Ms Badenhop agrees that the biggest effects on the environment are already occurring due to the current landfill operation. The Stage 2 landfill will have lesser effects due to its modern design in accordance with industry best practice guidelines, even taking into account the remaining uncertainties as set out in Section 6.2 of this report. Ms Badenhop agrees that the additional controls for the Stage 2 landfill and the proposed reliance on monitoring is an appropriate mechanism to minimise adverse effects on surface waterbodies.

In her audit, Ms Badenhop states that the wetland is likely fed by perched groundwater rather than being a fully connected groundwater system along the eastern extent of the landfill site and that impacts on the wetland hydrology are likely to be less than initially thought. Nonetheless, Ms Badenhop considers that the proposed installation of the underdrain will appropriately mitigate any reduction in groundwater levels.

Conclusions

Ms Badenhop agrees that the adverse effects on surface water quality from the proposal are not likely to be different in nature or magnitude to those which are currently occurring as a result of the Stage 1 landfill. Thus, the currently measurable state of the surface water receiving environment represents a conservative approximation of the future effects. The primary surface water receptor is the Clutha River/Mata-Au. Based on the limited water

sampling that was undertaken, there were no exceedances of relevant guideline values, and no measurable decrease in any water quality parameter downstream of the site versus upstream. There are no significant or similar sources of upstream contamination that would be confounding these comparative results. While this should not be interpreted as evidence that there is no leachate entering the river, it indicates that any diffuse discharges via connected groundwater are not having any measurable adverse effects on water quality.

Water quantity effects on the Clutha River/Mata-Au will be negligible.

Water quantity effects on the small stream and wetlands are unlikely to be measurable, and the proposed underdrain will further minimise any adverse effects. Given the lack of any measurable effects on water quantity, and on the basis that appropriate erosion and sediment control practices will be implemented during earthworks, water quality effects will be avoided or minimised.

Overall, I consider that adverse effects on surface water quantity and quality will be less than minor.

6.7 Effects on Aquatic Ecology

Applicant Assessment
The 4Sight Waterways Report considers that the ecological values of the wetland are low, as parts are dominated by exotic species, fauna values appear low, and the wetland area is very small and unlikely to provide sufficient buffering of the waterway. These wetland areas are the upper reaches of the small waterway. The waterway itself supports only a low flow of water and has poor water and habitat quality. These impacts are attributed to stock access rather than any direct effects from the existing landfill.

The proposed new stormwater retention pond, and the use of best practice erosion and sediment control measures during earthworks will minimise the potential for any sediment discharges to these areas. Any small changes to groundwater levels in the vicinity of these features is not likely to impact water quantity, and therefore not likely to adversely impact ecological values.

No definitive conclusions are provided by the Applicant or their experts as to the overall level of effects on ecological values in the stream and wetland; however, from the Terrestrial, Waterway, and Wetland Report it is inferred that very low or negligible ecological effects are anticipated.

Technical Audit
The Terrestrial, Waterway, and Wetland Report, and relevant sections of other technical reports, were audited by Jason Smith, Environmental Scientist at Morphum.

In his audit on behalf of Council, Mr Smith states that the discussion of ecological values in the application and the 4Sight Waterways Report is commensurate with the potential adverse effects on ecological values.

Conclusions
There is limited discussion of the adverse ecological effects of the proposal, but this is considered appropriate given the separation of the landfill and RRC from the waterway and wetland areas, and their low ecological values. The Stage 1 landfill is not expected to have

any adverse ecological effect on these features. The construction and operation of the Stage 2 landfill and RRC is expected to have very low or negligible effects. This corresponds to a less than minor adverse effect.

6.8 Effects relating to Birds

Landfills may attract birds, particularly where there is exposed putrescible waste, which provides a food source for bird populations. Where landfills are located close to airports the risk of bird strike on aircraft is increased. The Mt Cooee landfill is located approximately 500 m from the Balclutha Aerodrome. Where landfill operators take measures to disperse or otherwise reduce bird populations this can adversely impact on the birds.

Applicant Assessment

Effects from Bird Nuisance

The Bird Management Plan (**BMP**) provides a robust description of the bird populations known or likely to be present in the area, and the associated risks and impacts arising from the presence of those species in the area. Bird surveys indicate that the main species attracted to the landfill are the Southern Black-Backed Gull (**SBBG**), starling, and house sparrow. The SBBG present the greatest bird strike risk because of their size, abundance, and flight behaviour.

The BMP states that, for the existing landfill, the bird strike risk of birds soaring above the landfill (site risk) ranges from low to high, depending on the species, and for those flying to or from the landfill (flight path risk), the risk is moderate to high. The proposed expansion of the landfill is not expected to increase the bird strike risk or the number of birds coming to the landfill, primarily because the expansion will not result in more waste being landfilled, the percentage of putrescible waste is not expected to increase, and the active tip face area is not likely to increase.

It is noted that the BMP also states that the overall bird strike risk at the Balclutha Aerodrome is high, but that this risk is largely independent of the landfill and is instead largely associated with the proximity to the Clutha River/Mata-Au and the surrounding vegetation, both of which provide habitat for birds.

The BMP states that there have only been two recorded bird strikes at the Balclutha aerodrome in the last few years and that these were both from spur-winged plovers which sometimes nest on the edge of the runway.

Bird Management

Current operational practices at the existing landfill, including minimising the extent of the active face, prompt compaction and covering of putrescible waste, mowing grass, and prevention of nesting of birds, are not effective at deterring birds. The BMP sets out options for the management of bird populations. Methods can generally be categorised as exclusion methods or deterrence methods. Exclusion methods prevent birds accessing waste and thereby prevent the establishment of bird populations. The BMP states that exclusion methods are most likely to be successful in reducing bird numbers at the landfill and these methods are recommended. However, exclusion methods are expensive, and the Applicant has indicated that exclusion methods will not be adopted at the Mt Cooee Landfill. Instead, a range of bird deterrence methods will be employed, including daily cover of waste, bird scaring, bird poisoning, and (as a last resort) shooting birds. These methods would be managed via an adaptive management plan, which would be set out in the LMP, and would be supported by bird monitoring for the duration of any resource consent. Less detrimental

measures will be prioritised in the plan and more detrimental measures would only be used when targets for bird populations are not met. The Landfill Management Plan will be updated to ensure that it is consistent with the bird management plan, as these two plans are currently not entirely consistent with each other.

In terms of potential effects on birds, the BMP notes that under the Wildlife Act 1953, red-billed gulls and black-bills gulls are protected throughout New Zealand, and any bird control methods must ensure that these species are not killed or injured. For these reasons, lethal methods of control such as poisoning or shooting are not recommended at Mt Cooee.

Technical Audit

The Bird Management Plan, and relevant sections of other technical reports, were audited by Jason Smith, Environmental Scientist at Morphum.

Mr Smith agrees that there would be no increased risk of bird strike posed by the landfill expansion.

In terms of the bird management measures, Mr Smith reinforced that any adaptive management must clearly set out, in a stepwise fashion, the bird management measures that will be taken, and that the adaptive management plan must prioritise those bird management measures that have a less detrimental effects (on the birds) over other measures such as poisoning and shooting. The Applicant has agreed that such a plan will be prepared and that this will be reflected in consent conditions.

Conclusions

With respect to the risk posed by birds, and taking into account the following points:

- The existing risk posed by the landfill;
- The fact that the risk is not expected to increase as a result of the expansion area;
- That the risk of bird strike is high independently of the landfill;
- The low number of flights originating or terminating at the aerodrome;
- The very small number of recorded bird strike incidents at the Aerodrome; and
- The comments of Mr Smith,

I consider that the moderate to high risk of bird strike at the aerodrome resulting from the bird species likely to be found at the landfill translates into a minor adverse effect upon the South Otago Aero Club.

With respect to the potential adverse effects on birds, this was not assessed by the Applicant, other than to note that black-billed gulls and red-billed gulls are protected species under the Wildlife Act (1953), and it is an offence to kill them.

6.9 Effects on Landscape, Natural Character, and Amenity Values

The discharge of waste to land will result in a permanent change to the natural landform. Additionally, the activities associated with the construction and ongoing operation of the landfill occur on the margins of the Clutha River/Mata-Au. As such, effects on landscape, the visual effects that manifest from these, and natural character effects are relevant to this application.

Assessment Process

The application contained a Landscape and Visual Assessment Report, and a supporting Graphic Supplement, both prepared by Mike Moore, Landscape Architect. This was audited

by Sue McManaway, Principal Landscape Planner at Boffa Miskell. These reports were later superseded by an addendum report, prepared by Mike Moore, and a letter from Ms McManaway in response to the addendum report. This was to clarify the correct baseline for the landscape assessment, and to clarify the conclusions as to the potential effects of the proposal. The conclusions in the original report and the technical audit are to be disregarded. The below assessment as to landscape effects is based on the addendum report and the letter.

Relationship of landscape effects to RMA Terminology

Both Mr Moore and Ms McManaway rate the effects of the proposal in terms of the 7-point rating scale set out in Te Tangi a te Manu, Aotearoa New Zealand Landscape Assessment Guidelines. The way in which this scale translates into RMA effects terminology is shown in Figure 16.

Degree of effect assessment scale

Very low	*Low*	*Low-mod*	*Moderate*	*Mod-high*	*High*	*Very high*
Less than minor	*Minor*		*More than minor*		*Significant*	

Figure 16 The 7-point rating scale and the relationship to the RMA terminology as set out in Te Tangi a te Manu, Aotearoa New Zealand Landscape Assessment Guidelines. Source: The Moore Report, page 12.

Applicant Assessment

The addendum report states that the baseline used for the assessment is that which existed at the time that consent application was lodged. This clarifies that any effects which have already occurred as authorised by the expired resource consents are not to be reconsidered as part of this application, and also to clarify that the existing physical state of the landscape, any associated associative or perceptual values, and the existing degree of natural character, are the appropriate baseline upon which to consider the potential effects of the proposal.

Mr Moore considers the effects of the proposal in the context of the following timescales:

- Short-medium term means up to approximately 10 years.
- Medium-long term means approximately 10-35 years.
- Post-works/long term means after the landfill development is completed and the landform is fully rehabilitated.

In his addendum report, with reference to his original report where relevant, Mr Moore sets out the relevant landscape and natural character values of the site and the surrounding area. Mr Moore then sets out the effects of the proposal. These are summarised below.

<u>Landscape Effects</u>

Mr Moore considers that the landscape effects of the proposal are:

- During operation: effects are positive/low.
- Post final rehabilitation: effects are positive/low-moderate.

It is Mr Moore's opinion that the sensitivity to the proposed activities is low, and that the progressive rehabilitation of the existing landfill outweighs any negative landscape effects associated with the new landfill area.

<u>Visual Effects</u>

Mr Moore considers that the visual effects of the proposal are:

- On viewers from the Kaitangata Highway:
    - Positive/low in the short-medium term
    - Neutral in the long term.
    - Positive/low following final rehabilitation.
- On more distance viewers from across the Clutha River/Mata-Au:
    - Positive/low in the short-medium term
    - Neutral in the long term.
    - Positive/low following final rehabilitation.
- On viewers from the north:
    - Adverse/very low – neutral in the short-medium term
    - Positive/low in the long term.
    - Positive/moderate following final rehabilitation.

Natural Character Effects

Mr Moore considers that the designation site is not within the margin of the Clutha River/Mata-Au. However, in response to early technical audit feedback, Mr Moore comments on natural character effects:

"The existing landfill already influences the experience of natural character in this area, as does the presence of the Kaitangata Highway, and the stopbanks. The natural character of both the river and the wetland is significantly modified. The proposed development will result in new areas of indigenous vegetation, and the new landfill is significantly separated from both the river and the wetland. Given these factors, I consider that the landscape has low sensitivity to the proposed activity and that any adverse experiential natural character effects, affecting the context to the waterbodies, will be very low at most.

Any effects on Māori cultural landscape values in relation to Mata-Au are for tangata whenua to comment on."

The Applicant has adopted Mr Moore's opinions and considers that the proposal essentially has positive landscape, visual, and natural character effects.

Technical Audit

The Landscape and Visual Assessment and the Addendum Report, and relevant sections of other technical reports, were audited by Sue McManaway, Principal Landscape Planner at Boffa. Full comments can be found in the following documents:

- Letter dated 2 December 2024.

Ms McManaway agrees with Mr Moore's identification of the landscape context, and broadly accepts the identification of existing landscape values at the site and within the wider landscape. Where Mr Moore notes that, '*The natural character of the Clutha River / Mata-Au is also highly modified in this area but it has associative cultural landscape values to tangata whenua'*, Ms McManaway adds that the Clutha River /Mata-Au between Balclutha and the sea is identified in the Schedules of the Regional Plan: Water for Otago as having natural ecosystem values and Kāi Tahu values and (as previously identified in Mr Moore's original assessment), has notable physical, associative and perceptual values and is a natural feature of major significance, this lower section of the river having been identified as having moderate natural character.

Ms McManaway disagrees with all of the effects conclusions set out in Mr Moore's assessment. Ms McManaway's conclusions as to effects and her reasoning are summarised below.

Physical Landscape Effects

Ms McManaway considers that physical effects on landscape during operation will be adverse and low-moderate (minor) during operation, and low (less than minor) following closure. This Stage 2 landfill will result in progressive change to the landscape over a 25-year period, and while the physical change is consistent with the underlying designation, it contrasts with the surrounding land use. There will be an increased prominence of built form and activity and an intensification of the existing character as a modified landfill. The progressive rehabilitation of the landfill is a positive effect, but Ms McManaway disagrees that the proposed planting will enhance the landscape such that the overall level of physical effect on the landscape as a result of the proposed landfill is positive.

Visual Effects

Ms McManaway considers that visual effects will be:

- From the Kaitangata Highway:
    - Adverse and very low (less than minor) in the short-medium term;
    - Adverse and low (less than minor) in the medium-long term;
    - Adverse and very low (less than minor) following closure.

This is because the new landfill site is directly adjacent to the Kaitangata Highway, forming the foreground to views from the road over a length of 700 m, and the landfill will become increasingly visible from the highway at the later stages of the activity as it extends above the existing crest of the intervening ridge. On balance, these effects will not be continuous, the audience will be transitory, travelling at speed, and views will be available for a short duration.

- From distant viewpoints across the Clutha River/Mata-Au:
    - Adverse and very low (less than minor) in the short-medium term;
    - Adverse and low (less than minor) in the medium-long term;
    - Adverse and very low (less than minor) following closure.

This is because new landfill activity will become increasingly visible at the later stages of the activity, but the visibility of the proposal will generally be limited from these viewpoints and seen with a backdrop of vegetation and topography and the context of the existing landfill activity reduces the level of change and contrast that will be experienced in these views.

- From viewpoints to the north (limited to 1, 5, 7, 9 and 15 Arthur Terrace and 36 Golfers Drive):
    - Adverse and moderate (more than minor) in the short-medium term;
    - Adverse and low-moderate (minor) in the medium-long term;
    - Adverse and low (less than minor) following closure.

Under the proposal, the existing landfill will be rehabilitated and will be seen in the foreground with the new landfill activity commencing immediately to the south. While the existing landfill is likely to be a feature in existing views from these dwellings and is closer than the proposed area of landfill activity, given the elevated views possible, the effectiveness of the progressive reinstatement of the outer slopes of the proposed landfill as visual mitigation will be limited from these locations. Ms McManaway broadly agrees that

once the final landform is rehabilitated and put into tussock it will visually integrate somewhat with the existing setting, but states that the new landfill form will be noticeably higher, and the uniform slope of the embankments may contrast with the naturally undulating hill slopes in the wider landscape. Overall, while the existing, closer landfill activity will stop and be rehabilitated, the proposal will result in further visible landfill activity for the 25-year duration of the operation. The residents at 1, 5, 7, 9 and 15 Arthur Terrace and 36 Golfers Drive may be adversely impacted due to their proximity and potential for elevated views over the Site.

Natural Character Effects

Ms McManaway considers that natural character effects will be low (less than minor) reducing to very low (less than minor) following rehabilitation.

Conclusions

There is disagreement between Mr Moore and Ms McManaway with regard to all landscape, visual, and natural character effects. Both assessments are summarised in Table 4.

Table 4 Summary Effects Table. Source: Boffa Miskell Letter, dated 2 December 2024.

Effects Assessment	Mike Moore (Addendum) Identified Level and Nature of Effects		Boffa Miskell (Response to Addendum) Identified Level and Nature of Effects	
	During Operation	Post Rehabiliation	During Operation	Post Rehabiliation
Landscape effects				
Physical	Positive / Low	Positive / Low-moderate	Adverse / Low-Moderate	Adverse / Low
Landscape Character	N/A (part of visual)	N/A (part of visual)	Adverse / Low-Moderate	Adverse / Low
Visual effects				
	Short - Med	**Med-long**	**Post Rehab**	**Short - Med**	**Med - Long**	**Post Rehab**
Kaitangata Highway	Positive / Low	Neutral	Positive / Low	Adverse / Very Low	Adverse / Low	Adverse / Very Low
More distant viewpoints across the Clutha River / Mata au	Positive / Low	Neutral	Positive / Low	Adverse / Very Low	Adverse / Low	Adverse / Very Low
Viewpoints to the north (including res. properties at 1,5,7 and 9 Arthur Terrace)	Adverse / Very low - Neutral	Positive / Low	Positive / Moderate	Adverse / Moderate	Adverse / Low - Moderate	Adverse / Low
Natural Character effects				
Natural Character overall	N/A	N/A	Adverse / Low	Adverse / Vey Low

After considering both assessments, I prefer the assessment of Ms McManaway, and adopt its findings for the purpose of this notification report. I agree that positive effects associated with the progressive rehabilitation of the Stage 1 and later of the Stage 2 landfill will manifest during the consent term, but I do not agree that these outweigh the adverse effects associated with the continued landfilling at the site such that the activity has positive effects overall.

I would note that the Applicant seeks a consent duration of 25 years. Final rehabilitation and closure of the landfill will not occur within the consent term; therefore, I have disregarded the parts of both Mr Moore and Ms McManaway's assessments that refer to post-closure effects.

In summary, landscape effects, visual effects, and natural character effects would be minor or less for the duration of the consent, with the exception of more than minor visual effects on residents at 1, 5, 7, 9 and 15 Arthur Terrace and 36 Golfers Drive in the short-medium term.

6.10 Effects on Air Quality

Potential adverse air quality effects from the proposal are primarily related to dust, odour, and landfill gas.

Applicant Assessment

Sensitive receptors include any person, location, or system that may be susceptible to changes in 'abiotic' factors as a consequence of odours and emissions of dust from landfill operations. In this case, sensitive receptors are residential dwellings and users of the Balclutha Golf Course. The sensitive receptors located within 500 m have been reviewed and are identified in Figure 13, shown in Section 4.6 of this report.

Odour

Odour is expected from general refuse, partially decomposing organic waste, liquid septage, and LFG. These odours have slightly different characters, but all have the potential to be offensive and objectionable if poorly controlled. The potential sources of odour include the active face of the landfill, the waste transfer station, the liquid waste disposal area, the liquid waste dewatering location, the leachate collection chamber, the pump station sump, bulk loads of animal carcasses (infrequent), and landfill gas that is passively vented through the active fill area and areas of intermediate capping.

The two air quality assessments provided with the application consider the potential for odour effects upon sensitive receptors. In the context of this site, the relevant sensitive receptors include residential properties and the Balclutha Golf Course. The assessments follow the guidance and tools set out in the MfE *Good Practice Guide for Assessing and Managing Odour in New Zealand*, specifically community consultation, odour surveys and evaluation of complaint records, industry/council experience, meteorology and terrain assessment, and review of emission control systems and odour management plans.

The Air Quality Reports consider separation distances between landfill activities and sensitive receptors with reference to Australian guidelines. For initial evaluation purposes, a setback of 500 m from the landfill was used to identify potential sensitive receptors. There are approximately 78 residential dwellings within this radius as well as the Balclutha Golf Course. Odour observations and community surveys were undertaken by WSP staff across two days in 2022 and these found that weak odours were intermittently detected at the Golfers Drive and Arthur Terrace area approximately 250 m from the landfill. The observations concluded that there is a low frequency of observing very weak to weak intensity odours downwind of the existing landfill. WSP considered these odours to be mainly associated with the tipping and compaction of waste. Surveys of some of the nearest residents did not raise any odour or dust issues. The application states that no odour or dust complaints have been received in the last five years; however, the Mt Cooee Landfill Management Plan states that previous complaints have arisen from properties at Arthur Terrace and Golfers Drive. Based on the site experience, the dearth of odour complaints, and

the fact that the existing landfill area will continue to be operated in the same way, the Applicant concludes that there will be less than minor adverse odour effects from the existing landfill, and that there is no reason to expect these effects to increase.

Except for the nearest dwelling to the southeast of the site, the expansion of the landfill will move landfill operations further from sensitive receptors. The dwelling to the southeast will be approximately 170 m from the nearest potential odour sources on the expansion site, as compared to approximately 500 m from the existing active landfill. This dwelling will also be downwind during low wind speed (low dispersion) conditions up to 5% of the time. This location is considered the most sensitive to the current and proposed landfill activities. The Air Quality Report states that the key mitigation measures are capping and landfill gas collection and destruction, and that these should reduce the potential for odour emissions, as compared with the existing landfill. Similar or reduced odour is expected at all but the dwelling to the southeast, which will experience slightly increased odour.

I note that LFG collection and destruction forms part of this application, but it is not proposed to occur from the outset. This is discussed further under the Landfill Gas heading below.

The Applicant concludes that overall, there may be minor adverse odour effects associated with the proposal.

Dust

In terms of the existing (Stage 1) landfill, the Air Quality Report states that the potential for dust discharges from the site are expected to be very minor or negligible, and dust effects are not assessed further in that report.

The discharge of dust associated with the construction of the Stage 2 landfill cells and the construction of the RRC is a permitted activity. Dust discharges during the operation of the landfill and the RRC are not a permitted activity. Given the construction and operation phases will physically and temporally overlap, it is difficult to separate these dust sources. Nonetheless, the Applicant considers that there is limited potential for offsite dust discharges and proposes industry standard dust control measures including preparation of an erosion and sediment control plan, dampening of soils, and limiting vehicle speeds to ensure that there are no offsite dust effects.

Landfill Gas

LFG consists primarily of methane, carbon dioxide, oxygen, and nitrogen with trace amounts of reduced sulphur compounds and volatile organic compounds. LFG can cause health, safety, amenity, and environmental impacts due to the gases it contains.

Currently, there are no controls in place for the collection and destruction of LFG and LFG discharged to air via passive venting through the active filling area and through intermediate capping. If these areas are kept open for long duration there is a risk of odour. There is also potential for odour if previously capped areas of the landfill are excavated for any reason. While the passive venting of LFG is not considered best practice, the Applicant does not propose any changes for the LFG collection at the Stage 1 landfill site. The Applicant does undertake LFG monitoring on a quarterly basis inside the manholes at the active face and at the leachate pump station. This monitoring shows low methane concentrations at the source, and from this it is inferred that there will be negligible LFG concentrations in ambient

air. Monitoring of boreholes in the proposed expansion area does not show any indication the LFG is migrating through the underlying geology.

For the Stage 2 landfill, the Air Quality Report relies on the collection and destruction of LFG as a key mitigation measure, primarily for odour. While included as part of this application and considered in the design concept plans, collection and destruction of LFG is not proposed from the outset. The Applicant's position is that the proposed annual tonnage is very small for running an effective LFG collection and flaring system. Whether enough gas could be collected to run a flare would require specific assessment. The Applicant proposes a specific assessment of gas yields and concept design of a gas system by 1 December 2025. Also in 2025, and every five years thereafter, the Applicant proposes to commission another report that recommends whether collection and destruction of LFG is required to mitigate odour or otherwise meet statutory requirements. A LFG Management Plan would be prepared in the event that collection and destruction infrastructure is ultimately installed.

Technical Audit

The Air Quality Reports, and relevant sections of other technical reports, were audited by John Iseli, Principal Air Quality Consultant at SES. Full comments can be found in the following document:

- Memorandum: Technical Review of Assessment of Effects of Discharges to Air from the Clutha District Council Mt Cooee Landfill Expansion, dated 23 January 2024.

A summary of the audit comments is provided below.

Mr Iseli states that the receiving environment is appropriately described, the application correctly identifies odour and dust as the primary contaminants of concern, and the relevant sensitive receptors are identified. The Applicant's assessment relies on qualitative assessment tools, generally consistent with the Ministry for the Environment's Good Practice Guide for Odour Assessment. Mr Iseli considers that the technical assessment is sufficiently robust given the scale and significance of the discharges.

With respect to LFG, Mr Iseli notes that the proposed conditions do not specifically require LFG collection and flaring, which appears to be somewhat inconsistent with the New Zealand Emissions Reduction Plan guidance, despite the fact that the air quality assessments rely on LFG collection and destruction as a key mitigation measure.[11] After clarification through the s92 process, Mr Iseli accepts the Applicant's justification for not immediately installing LFG collection and destruction infrastructure, and supports the proposed consent conditions, but recommends that the recommending report be completed every three years until such time as a LFG collection and destruction system is installed. If a LFG flare is installed, Mr Iseli agrees that the 100 m setback from sensitive receptors is appropriate. Given LFG collection and destruction is no longer proposed from the commencement of consent, the odour effects of the landfill expansion in the eastern portion of the site are expected to be greater than those predicted by the Applicant.

Mr Iseli notes that the assessment of dust effects is limited, and recommends a series of consent conditions relating to dust management, including dust control measures in the erosion and sediment control plan, and continuous particulate matter monitoring at the

[11] The Emissions Reduction Plan requires collection and destruction of LFG by all municipal landfills. The second version ERP 2026-2030 (released December 2024) appears to require collection and destruction of LFG only by landfills receiving more than 10,000 tonnes of waste per year.

eastern site boundary when works occur within 200 m of the dwelling curtilage of the property at 125 Kaitangata Highway. These conditions have been accepted by the Applicant.

In summary, it is Mr Iseli's opinion that the small scale of the landfill and observed effects of the existing landfill discharge indicate that offsite effects are not expected to be more than minor. Overall, subject to the amendments and additions to consent conditions recommended, Mr Iseli considers that there is potential for minor odour and dust effects at the adjacent property to the east on Kaitangata Highway. Mr Iseli also considers that there is potential for minor odour effects at the golf course and the residential area to the northwest of the landfill in the general vicinity of Arthur Terrace/ Golfers Drive, specifically all residential properties in the Arthur Terrace/Golfers Driver area that are located within 300 m of the landfill.

Conclusions

The assessments undertaken by the Applicant are generally consistent with best practice and are in are proportion with the scale and significance of the activity. Mr Iseli has recommended several monitoring conditions in relation to dust, odour, and LFG and the Applicant has adopted these. This will ensure a good level of effects mitigation, in particular in relation to dust and odour from waste. However, the Applicant's LFG and odour assessments were predicated on the collection and destruction of LFG being undertaken at the site. As this is not being implemented from the outset, and may in fact not be implemented at all, the Applicant's original assessment of effects cannot be supported. I therefore prefer the assessment of Mr Iseli, who concluded that there would be minor odour effects for residents to the northwest of the site (Arthur Terrace, Golfers Drive) and users of the Balclutha Golf Course, as well as minor odour (and dust) effects for the residents at 125 Kaitangata Highway. I adopt this assessment for the purpose of this report. These minor adverse odour and dust effects would fall under the umbrella of 'amenity' effects rather than human health effects.

6.11 Effects on Mana Whenua Values

The CIA prepared by Aukaha on behalf of Te Rūnanga o Ōtākou and Hokonui Rūnanga assessed the cultural impacts of the proposal against the cultural values identified by mana whenua, which were summarised in Section 4.8 of this report. The findings of the CIA are summarised here.

The activities associated with the Mt Cooee Landfill require utu in response to their impacts on the whakapapa, mana, tapu, and mauri of te taiao, and significantly in this area, that of the Mata-Au. In terms of tapu and tikaka, it is not tika to construct and operate a landfill by a waterway, especially one of great significance such as the Mata-Au, which was a significant traditional mahika kai trail. The Mata-Au still holds great significance for mana whenua today, and as the landfill is only 60 m from the awa, it is imperative that robust measures are in place to ensure that potential adverse effects on the mana whenua values identified in the CIA are avoided.

The potential for contaminants to leach from the landfill and into the Mata-Au is a primary concern that mana whenua have regarding this application. To Kāi Tahu, wai is a taoka under their mana and rakatirataka. Rather than employing an economic model of ownership, mana whenua view the protection and enhancement of wai as part of their role as kaitiaki, a role which is inherited through whakapapa and that is exercised as an expression of mana. While few restrictions existed around placing landfills adjacent to waterways in the 1980s, these practices are inconsistent with the principle of 'Te Mana o Te Wai,' which now pervades

freshwater management in Aotearoa. This concept places the health and well-being of the waterway as the first priority. Involvement of Kā Rūnaka is vital to the implementation of Te Mana o Te Wai.

With a catchment area of 21,022 km^2, and a mean annual flow of 575 m^3/s, the Mata-Au has the largest catchment area and flow volume in the country. This results in a dilution effect, where water quality testing will determine that there are negligible effects on the awa, just as set out in the memo on the assessment of effects on Clutha River water quality. However, assessing an activity through a Te Mana o Te Wai framework requires that we move away from a mindset where we accept adverse effects to a certain standard. Instead, it directs us to adopt a more positive approach where we must ensure that any activity undertaken does not impact on the mauri and health and well-being of the waterway. This means that no leachate should be entering the Mata-Au at any level and dilution should not be seen as part of a solution.

Mana whenua are supportive of all new cells being appropriately lined before receiving waste and ensuring that areas of waste are covered with intermediate cover or final capping as soon as is practicable, to prevent water permeating through placed waste and to ensure that as much water as possible is diverted to the leachate collection system. Mana whenua also support locating the new cells to the southeast of the existing cells, further away from the awa. However, it is imperative that further investigations regarding the flooding risk of the site are conducted to ensure that appropriate flood protection measures are implemented. Monitoring and providing for the impacts of climate change are a key focus for manawhenua. If the landfill were to become inundated, and waste and contaminants swept into the Mata-Au, this would be catastrophic to the mana, tapu and mauri of the awa.

In summary, the CIA concludes that the mauri of the Mata-Au and the associated waterways and wetlands is unable to protect itself against unnatural actions and interventions such as diversions, altered flow regimes, and discharges. The protection of the mauri of the Mata-Au through this project is sought by mana whenua.

A collaborative process of engagement with the Clutha District Council has enabled Te Rūnanga o Ōtākou, Hokonui Rūnanga and Waikoau whānau to identify potential impacts on cultural values from the expansion of the Mt Cooee Landfill. The aspiration of Te Rūnanga o Ōtākou, Hokonui Rūnanga and Waikoau is to incorporate mana whenua values in a tangible way through this project.

CIA Recommendations

The CIA makes the following recommendations:

1. That the applicant engages with mana whenua through Aukaha to discuss a more appropriate consent term than the 35 years being sought.
2. That all practicable measures are taken to prevent leachate entering the Mata-Au.
3. That all practicable measures are taken to prevent any cross-contamination of the leachate and stormwater systems.
4. That leachate quality and quantity is regularly monitored and recorded before being discharged to the Balclutha WWTP from the landfill leachate collection system.
5. That all monitoring reports are sent to Kā Rūnaka through Aukaha.
6. That the Landfill Management Plan is sent to mana whenua through Aukaha.
7. That the applicant works together with Kā Rūnaka through Aukaha to decide on appropriate restoration efforts that can be undertaken, particularly regarding the

unnamed waterway and the two natural wetlands that are located within the landfill designation site.

8. Mana whenua support the recommendation in the Sheet Wall Cut-off Review Report to conduct regular monitoring of wells to monitor for potential leachate escape through the weathered bedrock below the toe of the wall.
9. Mana whenua support further investigation during the detailed design of flooding risk, which is also referred to in the Stormwater Design Memorandum, and the implementation of appropriate flood protection measures.
10. That the granting of consents for the expansion of the landfill is subject to a bond to secure the long-term monitoring and maintenance of the landfill after closure.
11. That the applicant engages with mana whenua through Aukaha on a post-closure Rehabilitation Plan.
12. That the applicant engages with mana whenua through Aukaha on the development of long-term options for the disposal of waste within the Clutha District beyond the life of the Mt Cooee Landfill.

Applicant Responses to Recommendations

1. Accepted – CDC have reduced the requested consent term to 25 years.
2. Accepted.
3. Accepted, but note that stormwater likely be used for irrigation purposes on site where required.
4. Accepted, but noting that CDC request that there is no volume limit placed on the leachate discharge because the intention is to pump leachate as it is generated rather than letting it accumulate.
5. Accepted, but CDC note that the annual report and associated commentary are likely to be of most use to mana whenua.
6. Accepted.
7. Out of scope of this application, but CDC willing to work with mana whenua on this separately from this application.
8. Accepted.
9. Accepted, flood risk will be appropriately addressed and taken into account at the detailed design stage.
10. Not accepted – CDC consider that a bond for rehabilitation is not appropriate, particularly given the consent duration and the fact that rehabilitation will be achieved in a progressive manner, including during the life of this consent, should it be granted. CDC also note that once waste is no longer received at Mt Cooee, there will still be ongoing consenting requirements for management of stormwater, leachate, and landfill gas.
11. Accepted.
12. Out of scope of this application. However, CDC are willing to work with mana whenua on this separately from this application.

Conclusions

The Applicant has accepted all the recommendations of the CIA, with the exception of two which are considered out of scope of the application, and with the additional exception of the bond condition. The explanation for not agreeing to a bond condition is reasonable. On this basis, I consider that adverse effects on mana whenua values are adequately addressed and will not be more than minor.

For completeness, I note that Mr Shamrock's technical audit of the application suggests that there is some residual uncertainty with respect to the details of the landfill design, and

groundwater sampling would suggest that some leachate is bypassing the sheet pile wall. While this does not translate into any measurable water quality effects on the Mata-Au, this is largely due to the significant dilution capacity offered by the Mata-Au – a justification which I understand to be generally unacceptable to mana whenua. On balance, I would note that there is no intention to directly discharge any leachate to any surface waterbody at any time, and that there are very few practicable options available to the Applicant to further reduce the potential for diffuse discharges of leachate from the Stage 1 landfill into the Mata-Au via connected groundwater. The Stage 2 landfill cells will be lined, and leachate will not interact with groundwater. Monitoring and adaptive management will ensure that any leakage from the new cells as a result of liner defects will be identified and captured via the underdrain. Additionally, the modelled flood risk does not suggest that there is any significant risk that the integrity of the existing or proposed landfill cells would be compromised by flood waters. Taking all of this into account, the water quality effects – from a western scientific perspective – on the Mata-Au are considered to be less than minor.

To the extent that cultural effects align with water quality effects, I would consider that effects are minimised to the greatest practicable extent by the proposal. Nonetheless, I would defer to the position of mana whenua with respect to magnitude of any adverse effects on cultural values, should any aspects of the CIA be revised in light of these findings of this report. I would also note that no written approval has been provided by mana whenua.

7. Notification and Written Approvals

7.1 Section 95A Public Notification

Step 1: Is public notification mandatory as per questions (a) – (c) below?

(a) Has the applicant requested that the application be publicly notified? **No**

(b) Is public notification required by Section 95C? **No**
Has further information been requested and not provided within the deadline set by Council? **No**
Has the applicant refused to provide further information? **No**
Has the Council notified the applicant that it wants to commission a report, but the applicant does not respond before the deadline to Council's request? **No**
Has the applicant refused to agree to the Council commissioning a report? **No**

(c) Has the application been made jointly with an application to exchange recreation reserve land under section 15AA of the Reserves Act 1977? **No**

Step 2: Is public notification precluded as per questions (a) – (b) below?

Step 2 requires that I determine whether the application meets either of the criteria set out in subsection (5) and if the answer is yes then go to step 4 (step 3 does not apply) and if the answer is no go to step 3.

Subsection (5) states:

(a) The application is for a resource consent for 1 or more activities, and each activity is subject to a rule or national environmental standard that precludes public notification. **No**

(b) The application is for one or more of the following activities but no other activities**:**

- **(i)** A controlled activity? **No**
- ***(ii)*** *[repealed]*
- **(iia)** A restricted discretionary, discretionary or non-complying activity but only if the activity is a boundary activity? **No**
- ***(iii)*** *[repealed]*

Neither of the criteria set out in subsection (5) of step 2 apply. Therefore, I must consider Step 3.

Step 3: Does the application meet either of the criteria in (a) or (b) below?
Step 3 states that public notification is required if either of the criteria set out in subsection (8) apply.
Subsection (8) says:

- **(a)** The application is for a resource consent for one or more activities, and any of those activities is subject to a rule or national environmental standard that requires public notification? **No – none of the rules or national environmental standards require public notification.**
- **(b)** Will the activity have or be likely to have adverse effects on the environment that are more than minor in accordance with Section 95D? **No – the effects on the environment will not be more than minor. While there is potential for more than minor adverse visual effects on residents of 1, 5, 7, 9 and 15 Arthur Terrace and 36 Golfers Drive, these are visual effects which are specific and unique to these persons occupying these private residential dwellings, and thus do not constitute more than minor adverse effects on the 'environment' in a broader sense.**

The answer to Step 3 is no – public notification is not required.

Step 4: Do special circumstances exist in relation to the application that warrant the application being publicly notified? No – there is nothing unusual or exceptional about this proposal, nor is there sufficient uncertainty about the nature, magnitude, or spatial extent of the adverse effects such that public notification would be desirable.

7.2 Section 95B Limited Notification

Step 1
Section 95B(2) Are there any affected groups or persons identified under Section 95B(2):

- **(a)** Protected customary rights groups? **No**
- **(b)** Customary marine title groups? **No**

Section 95B(3)(a) Is the proposed activity on or adjacent to, or may it affect, land that is the subject of a statutory acknowledgement made in accordance with an Act specified in Schedule 11? **Yes – adjacent to the Clutha River/Mata-Au**

Section 95B(3)(b) Is a person to whom a statutory acknowledgement is made an affected person under Section 95E? **Yes**

Step 2
Is Limited Notification precluded under Section 95B(6)?

- **(a)** Is the application for a resource consent for one or more activities, and each activity is subject to a rule or national environmental standard that preclude limited notification? **No**
- **(b)** Is the proposal a Controlled Activity that requires consent under the District Plan (other than a subdivision of land)? **No**

Step 3
Having regard to Section 95E of the Resource Management Act, identify persons who would be adversely affected by the proposed activity by effects that are minor or more

than minor, but not less than minor and give reasons why affected parties were identified.

The following parties have been identified to be affected parties due to effects on them that are minor or more than minor for the reasons stated below.

Table 5 Affected Parties

Affected Party	**How they are affected**
South Otago Aero Club	The risk of bird strike at the aerodrome is moderate to high. Although this risk exists somewhat independently of the Mt Cooee landfill, the significant population of birds at the landfill and the proximity to the aerodrome results in a minor level of adverse effect.
Aukaha and TAMI and TRONT	There is potential for diffuse discharges of landfill leachate into the Clutha River/Mata-Au via connected groundwater. While this is not expected to result in any measurable water quality effects, such discharges are generally unacceptable with respect to cultural values.
Owners of the Balclutha Golf Club	Minor odour may be experienced by users of the Golf Club. While the duration of odour experienced by any one user is likely to be short, repeated odour experiences by multiple club users could result in reduced attendance at the Club, impacting upon its long-term viability. Therefore, the minor odour effect is upon the owners of the Balclutha Golf Club, rather than the users of the club.
Owners and occupiers of: 36 Golfers Drive 1, 5, 7, 9, 15 Arthur Terrace	<u>Odour effects</u> Occupiers of these dwellings are considered to be affected to a minor degree because they will directly experience these odour effects during their occupation. Owners of these properties are considered to be affected because they would experience these effects in the event that they occupied the properties that they own. Given the proposed duration of the activity, it is not unreasonable to assume that owners may return to occupy these properties during the consent term, and I therefore consider that they are affected in the same way and to the same magnitude as the current occupiers. <u>Visual effects</u> More than minor visual effects in the short-medium term (approximately ten years) reducing to minor thereafter.

Owners and occupiers of: 2 Arthur Terrace 6 Arthur Terrace 8 Arthur Terrace 9A Arthur Terrace 10 Arthur Terrace 12 Arthur Terrace 14 Arthur Terrace 32 Golfers Drive	<u>Odour effects</u> Occupiers of these dwellings are considered to be affected to a minor degree by odour because they will directly experience these odour effects during their occupation. Owners of these properties are considered to be affected to a minor degree by odour because they would experience these effects in the event that they occupied the properties that they own. Given the proposed duration of the activity, it is not unreasonable to assume that owners may return to occupy these properties during the consent term, and I therefore consider that they are affected in the same way and to the same magnitude as the current occupiers.
Owners and occupiers of 125 Kaitangata Highway	Occupiers of these dwellings are considered to be affected to a minor degree by odour because they will directly experience these odour effects during their occupation. Owners of these properties are considered to be affected to a minor degree by odour because they would experience these effects in the event that they occupied the properties that they own. Given the proposed duration of the activity, it is not unreasonable to assume that owners may return to occupy these properties during the consent term, and I therefore consider that they are affected in the same way and to the same magnitude as the current occupiers.

The following parties were not considered to be affected parties to the application as effects on them will be less than minor or they are not considered to be affected parties:

Table 6 Parties not considered affected

Party	**Why they are not affected**
Department of Conservation (DoC) in their role as the agency responsible for the protection of New Zealand's natural and historic heritage	DoC provided an affected party approval on the 21 December 2023. On this basis, I should disregard effects on this party. However, I would note that since December 2023 the responses to s92 requests for information would indicate that there is a degree of uncertainty inherent in the application that was not evident in the original application material that DoC would have reviewed. This may constitute a change in the proposal from the perspective of DoC. Regardless, this

	uncertainty will be adequately managed via monitoring and adaptive management plans, and adverse effects on natural and historic heritage will be less than minor. Therefore, I would not consider that DoC are an affected party, even if no written approval was provided.
KiwiRail	KiwiRail provided an affected party approval on 13 November 2023. Matters of importance to this party include stability and ensuring that no drainage is directed to the rail corridor. No changes to these matters have been made to the application since the approval was provided. Therefore, adverse effects on KiwiRail are disregarded.
Otago Fish and Game Council in their role as the agency overseeing the effective management of the country's sports fish and game birds, and their habitats.	Water quality and quantity effects upon the Clutha River/Mata-Au will be less than minor. Consequently, adverse effects on any sports fish or game birds, or their habitats, that may be supported by this river will also be less than minor. The small onsite watercourses and areas of natural inland wetland do not support sports fish or game bird habitat; regardless, effects on these water features would be less than minor.
Public Health South	Public Health South have a general interest in landfills and their adverse effects, to the extent that these effects would impact upon human health. Water quality effects would be less than minor upon the Clutha River/Mata-Au, and minor upon the groundwater resource between the landfill and the river; however, there are no users of this groundwater. Offsite air quality effects will be minor upon specific nearby residents, but these effects are limited to odour and, for one property, dust – these are considered to be amenity effects rather than human health effects. Public Health South are not considered to be affected by this application.
Adjoining property owners and occupiers, other than those listed as affected in Table 5.	Dust and odour effects at these properties would not cause minor or more than minor adverse effects, either because these effects won't occur (dust) or because neither the owners nor occupiers are considered sensitive to the effects (odour). All other effects upon these parties will be less than

	minor.
Users of water from the Clutha River/Mata-Au downstream	There are no consented downstream surface water users from the Clutha River/Mata-Au in close proximity to the landfill, but there are likely to be a number of permitted users. These users are not considered affected by this application because water quality effects on the river will be less than minor.

Have all persons identified as affected under Step 3 provided their written approvals?
No

Step 4 Further notification in special circumstances
Do special circumstances exist in relation to the application that warrant notification of the application to any other persons not already determined to be eligible for limited notification under this section (excluding persons assessed under Section 95E as not being affected persons)? **No – Special circumstances for limited notification may be considered where there is a rule precluding notification, but a special or unique situation exists that would make notification to specific parties desirable. There is no such situation that applies to this application.**

8. NOTIFICATION RECOMMENDATION:

In accordance with the notification steps set out above, it is recommended that the application proceed on a limited notified basis.

Shay McDonald
Senior Consents Planner
20 January 2024

DECISION ON NOTIFICATION

Sections 95A to 95G of the Resource Management Act 1991

Date: **21 January 2025**

Application No: **RM21.668**

Subject: ***Decision on notification of resource consent application under delegated authority***

Decision under Delegated Authority

The Otago Regional Council decides that this resource consent application is to be processed on a **non-notified**[12] basis in accordance with sections 95A to 95G of the Resource Management Act 1991.

The above decision adopts the recommendations and reasons outlined in the Notification Recommendation Report above in relation to this application. I have considered the information provided, reasons and recommendations in the above report. I agree with those reasons and adopt them.

This decision is made under delegated authority by:

……..…

Peter Christophers
Team Leader Consents

21 January 2025

[12] Once all identified affected parties have provided their unconditional written approval to the application. If these approvals are not provided then the application will proceed by limited notification.