

IN THE ENVIRONMENT COURT
AT CHRISTCHURCH
I TE KŌTI TAIAO O AOTEAROA
KI ŌTAUTAHI

Decision No. [2023] NZEnvC 83

IN THE MATTER

of the Resource Management Act 1991

AND

an appeal under s120 of the Act

BETWEEN

SOUTH COAST NEIGHBOURHOOD
SOCIETY INCORPORATED

(ENV-2022-CHC-059)

Appellant

AND

OTAGO REGIONAL COUNCIL

Respondent

AND

DUNEDIN CITY COUNCIL

Applicant

Environment Judge P A Steven – sitting alone under s279 of the Act

In Chambers at Christchurch

Date of Consent Order: 8 May 2023

CONSENT ORDER

A: Under s279(1)(b) of the Resource Management Act 1991 ('RMA' or 'the Act'),
the Environment Court, by consent, orders that:



- (1) the appeal is allowed, and resource consent is granted for the construction and operation of a class 1 landfill at Smooth Hill, Dunedin, subject to the conditions of consent set out in Appendix A, attached to and forming part of this order; and
- (2) the appeal is otherwise dismissed.

B: Under s285 of the Resource Management Act 1991, there is no order as to costs.

REASONS

Introduction

[1] This proceeding concerns the appeal by South Coast Neighbourhood Society Incorporated against a decision of the Independent Hearing Panel, appointed by the Otago Regional Council, on RM20.280. The decision granted resource consents to the Dunedin City Council for the construction and operation of a class 1 landfill at Smooth Hill, Dunedin.

[2] The appeal sought that the consent be declined, or if consent was to be granted, that the conditions of consent be amended to adequately manage:

- (a) effects relating to the final design of the landfill;
- (b) landfill fire prevention and response;
- (c) leachate contamination of the Otokia Creek and marsh catchment; and
- (d) amenity effects.

[3] I have read and considered the consent memorandum of the parties dated 26 April 2023 which proposes to resolve the appeal. The agreement reached between the parties to resolve the appeal involves a number of amendments to the consent conditions as shown in Appendix A.

Other relevant matters

[4] No person has given notice of an intention to become a party under s274 of the Act.

[5] The parties agree that costs should lie where they fall and accordingly no order for costs is sought.

[6] The parties advise that all matters proposed for the court's endorsement fall within the court's jurisdiction and conform to the relevant requirements and objectives of the Act including, in particular, Part 2.

Outcome

[7] All parties to the proceeding have executed the memorandum requesting the orders. On the information provided to the court, I am satisfied that the orders will promote the purpose of the Act so I will make the orders sought.



P A Steven
Environment Judge



APPENDIX A SMOOTH HILL LANDFILL ORC CONDITIONS OF CONSENT

Our reference: [\[insert\]](#)

Discharge Permit RM20.280.[\[insert consent number\]](#) to discharge waste and leachate onto land, to discharge landfill gas, flared exhaust gases, dust and odour to air, and to discharge water and contaminants from an Attenuation Basin and sediment retention ponds to water, for the purpose of the construction and operation of a Class 1 landfill.

Water Permit RM20.280.[\[insert consent number\]](#) to take up to 87 m³/day and 1,600 m³/yr of groundwater, and use of up to 50 m³/day of groundwater, for the purpose of managing groundwater collected beneath a Class 1 landfill.

Water Permit RM20.280.[\[insert consent number\]](#) to divert surface water within the Ōtokia Creek catchment for the purpose of the construction and operation of a Class 1 landfill.

Water Permit RM20.280.[\[insert consent number\]](#) to dam water within an Attenuation Basin for the purpose of the construction and operation of a Class 1 landfill.

Under regulations 45 and 47 of the Resource Management (National Environmental Standards for Freshwater) Regulation 2020 consents RM20.280.[\[insert consent number\]](#) for the construction of specified infrastructure within 10m of a natural wetland for earthworks and vegetation clearance; for the taking, use, damming, diversion, or discharge of water within, or within a 100m setback from a natural wetland; and for maintaining and operating a Class 1 landfill.

Pursuant to Section 104B of the Resource Management Act 1991, the Otago Regional Council grants the above listed consents to:

Name: Dunedin City Council

Location of activity: [Brighton, Dunedin.](#)

Addresses and legal description of land:

Landfill site:

<u>Property Address</u>	<u>Legal Description</u>
750 Big Stone Road	Part Lot 1 DP 457417 and Section 1 – 2 SO 547235 (RT 971405)
700 Big Stone Road	Lot 2 DP 457417 (RT 598006)

Upgrades to McLaren Gully Road, Big Stone Road, and State Highway 1 intersection:

<u>Property Address</u>	<u>Legal Description</u>
949 Allanton-Waohola Road	Part Section 71 Irregular Block East Taieri Survey District, Section 2 of 6, Section 8-9, Section 2 of 17, Section 26-27, Section 1 of 28, Section 2 of 28, Section 3 of 28, Section 1 of 29, Section 41, Part Section 10-11, Part Section 1 of 19, Part Section 2 of 29, Part Section 7 and Part Section 30 Block II Ōtokia Survey District and Deposited Plan 2677 (RT OT17C/503)
108 McLaren Gully Road	Lot 1 DP 19819 (RT 11A/153)
109 McLaren Gully Road	Lot 7 DP 21420 (RT 19C/49)
200 McLaren Gully Road	Lots 3-5 DP 21420 (RT 244203)
	Lot 6 DP 21420 (RT 209914)
	Lot 1 DP 21420 (CFR 209912)
	Lot 2 DP 21420 (RT 209913)
211 McLaren Gully Road	Section 2 of 19 and Section 21 Block II Ōtokia Survey District (RT OT7A/953)

<u>949 Allanton-Waohola Road</u>	<u>Section 2 of 22, Section of 23, and Part 34 Block II Ōtokia Survey District (RT OT253/283)</u>
	<u>Part Section 3 of 23, 2 of 25 Block II and Part Section 1 of 22 Block III Ōtokia Survey District (RT OT13C/900)</u>
<u>200 Christies Gully Road</u>	<u>Section 1-2 Section 21 Block III Ōtokia Survey District (RT OT245/105)</u>
<u>350 Big Stone Road</u>	<u>Lot 1 DP 21447 (RT 209915)</u>
<u>645 Big Stone Road</u>	<u>Lot 8 DP 427870 (RT 510238)</u>

Map Reference: NZTM (NZGD2000) Lat -45.969079 / Long 170.238733

A. Schedule 1 – General Conditions Relevant to All Consents

1. The detailed design, construction, operation, closure and aftercare of the landfill (including all associated discharges of contaminants to land, water and air) must be undertaken in general accordance with the following documents, except where modified by other conditions of this consent. In the event of differences or conflict between the contents of the documents and the conditions, the conditions shall prevail:
 - a. *Smooth Hill Landfill, Assessment of Environmental Effects for Updated Design*, Boffa Miskell, May 2021, including attached Appendices 1 – 16.
 - b. *Waste Futures Phase 2 – Workstream Smooth Hill Landfill, Landfill Concept Design Report*, GHD, updated May 2021 and associated concept design drawings listed on drawing sheet 12506381-01-G001 Rev 2, except where replaced by the following updated drawings -
 - i. *General Arrangement Plan, drawing sheet 12506381-01-C102*, updated 19 April 2022.
 - ii. *Water Monitoring Locations, drawing sheet 12506381-01-C309*, updated 28 April 2022.
 - iii. *McLaren Gully Road Improvements Plan, drawing sheets 12506381-01-C606 and C607*, updated 7 April 2022.
 - iv. *McLaren Gully Road Constrained Section Plan and Detail, drawing 12506381-SK270, Rev B*, 26 April 2022.
 - c. Responses to further information requests provided by the consent holder dated 31 May 2021 and 4 August 2021.
 - d. Evidence provided by the consent holder dated 29 April 2021 and evidence provided as part of the consent holder's Reply submissions to the hearing dated 12 August 2022.
2. An alternative design or methodology to that proposed in the consent documents specified in general condition 1 may be used if:
 - a. The adverse effects of the activity are demonstrated by the consent holder to be the same or less than the consented design or methodology; and
 - b. The alternative design or methodology has been provided under general condition 25-27 to the Independent Peer Review Panel for review and is thereafter provided to the Otago Regional Council in accordance with the process specified in general conditions 19-23 and 20-24 and certification is obtained from the Otago Regional Council; or
 - c. The alternative design or methodology has been incorporated into the Landfill Management Plan required under general condition 15-18 and provided to the Independent Peer Review Panel for review and is thereafter provided to the Otago Regional Council in accordance with the process in general conditions 19-23 and 20-24 and certification is obtained from the Otago Regional Council.

Certification Process

3. The consent holder must follow the process set out below for any plans, documents, designs or specifications (hereafter referred to as 'documents') requiring the certification of an officer of the Otago Regional Council:
 - a. Documents requiring certification must be submitted to the relevant officer in electronic and hard copy form for certification at least 20 working days prior to the commencement of the works to which the documents relate. The certification process must be confined to confirming that the documents adequately give effect to the relevant condition(s).
 - b. Subject to (c) and (e) below, works to which the documents relate must not commence until the consent holder has received written certification from the relevant officer.
 - c. If the consent holder has not received a response from the relevant officer within 10 working days of the date of submission under (a) above, the documents must be deemed to be certified.
 - d. If the relevant officer's response is that that they are not able to certify the documents they must provide the consent holder with reasons and recommendations for changes to the documents in writing. The consent holder must consider any reasons and recommendations of the relevant officer and resubmit amended documents for certification.
 - e. If the consent holder has not received a response from the relevant officer within 5 working days of the date of resubmission under (d) above, the documents must be deemed to be certified.
 - f. If the relevant officer's response is that that they are still not able to certify the resubmitted documents then the consent holder must nevertheless implement the resubmitted documents with a notation that certification of them has not occurred.
 - g. Certified documents may be amended at the request of the consent holder at any time subject to recertification undertaken in accordance with Condition 3(a) to (f) with references in those clauses to certification to be read as recertification.

Community Liaison Group (CLG)

4. The consent holder must, ~~at least 6 months prior to construction of the landfill commencing,~~ within 6 months of the issuing of this consent invite the community to establish and maintain a Community Liaison Group (CLG) for the purpose of facilitating ongoing engagement between the consent holder and community on the design, construction and operation of the landfill in accordance with general conditions 5 to ~~10~~ 12.
5. The consent holder must invite the South Coast Neighbourhood Society, Ōtokia Creek Habitat and Marsh Habitat Trust and all ~~residents who own owners and occupiers of~~ property within 2 km of the landfill site to the first meeting of the CLG to participate as part of the CLG as representatives of the community. Persons who live more than 2 km from the landfill must not be excluded from the meeting should they wish to attend. ~~At the first meeting of the CLG, those persons in attendance must be invited to nominate up to 5 persons to attend future meetings, as representatives of the community.~~
6. In addition to the persons ~~nominated~~ under general condition 5, the CLG must also invite the following parties to participate ~~as members of the~~ representatives on the CLG:
 - a. A member of the Dunedin City Council local community board (who shall be invited to act as interim Chairperson of the CLG);
 - a-b. Te Rūnanga o Ōtākou;
 - b-c. A relevant member/s of the Independent Peer Review Panel; ~~and~~
 - d. Two representatives of the consent holder; ~~or landfill operator.~~
 - e. A representative of the landfill operator; and

e.f. A representative of Fire and Emergency New Zealand (FENZ)

7. Participants of the CLG may invite technical advisors or other parties to provide advice and assistance to the CLG.

8. The consent holder must provide the CLG with draft terms of reference for it to consider at its initial meeting.

7.9. The consent holder must offer to provide (at the consent holder's expense) ~~members of~~ the CLG the opportunity of a quarterly site inspection and a quarterly meeting for the first 5 years following the commencement of landfill construction activities, and both annually thereafter. The consent holder must also offer to provide to ~~members of~~ the CLG any information to which the Dunedin City Council (in its regulatory capacity) and the Otago Regional Council are entitled by virtue of the conditions of the resource consents for the landfill. The time, date, and venue of any meeting or site inspection must be notified to ~~members of~~ the CLG at least 15 working days prior to the meeting or site inspection.

8.10. The consent holder must invite a representative from the Otago Regional Council as consent authority to attend CLG site inspections and meetings in an observer capacity.

9.11. The consent holder must provide administrative support to the CLG. Minutes of any quarterly meeting must be taken by the consent holder and distributed to the ~~members of the~~ CLG.

10.12. The purpose of the quarterly meetings of the CLG will be for the consent holder to:

a. Present, discuss, and receive feedback on the results of any geotechnical investigations and baseline monitoring required by the conditions of the resource consents;

b. Present, discuss, and receive feedback on the details of the design, construction, and operation of the landfill as required by the conditions of consent;

a.c. Explain progress on the landfill design, construction and operation;

b.d. Present, ~~and~~ discuss, and receive feedback on any monitoring results and/or reporting as required by the conditions of the resource consents; and

e.e. Hear any community issues or concerns with the landfill design, construction and operation and discuss and consider means of addressing those issues or concerns.

~~11. In the event that a member of the CLG nominated under general condition 5 no longer wishes to be part of the CLG, the consent holder must invite a replacement member in accordance with general condition 5.~~

Advice Note: In the event that it is not possible to establish a CLG or convene meetings through lack of interest or participation from the invitees, then such failure to do so will not be deemed a breach of these conditions.

Independent Peer Review Panel

12.13. The consent holder must within 6 months of the issuing of this consent at least 6 months prior to construction of the landfill commencing, establish and retain at its own cost, an Independent Peer Review Panel. The consent holder must consult with the CLG on the membership of this panel. The purpose of the Independent Peer Review Panel is, where required by a condition of these consents, to review and confirm whether the detailed design, construction, operation and closure of the landfill, and the management of environmental effects, has been undertaken by appropriately qualified personnel in accordance with the conditions of these consents.

13.14. The Independent Peer Review Panel must comprise at least four-five persons who together must be:

a. Independent of the consent holder and the planning, design, construction, management and monitoring of the landfill site;

b. Qualified and experienced in landfill design, construction and management;

c. Qualified and experienced in geotechnical matters;

e.d. Qualified and experienced in groundwater and surface water quality and quantity matters, including landfill leachate and emerging contaminants;

d.e. Qualified and experienced in terrestrial and freshwater ecology; and

e.f. Qualified and experienced in the assessment of the risk of aviation bird strikes.

15. The proposed composition of the Independent Peer Review Panel must be provided to the Otago Regional Council at least 10 working days in advance of the panel commencing work.

14.16. The consent holder must not request the Independent Peer Review Panel to commence any work until the Otago Regional Council confirms to the consent holder in writing that it is satisfied that the composition of the Independent Peer Review Panel meets the requirements of condition 4214. The members of the Independent Peer Review Panel may be changed at any time, subject to consulting with the CLG on the change in membership and obtaining the prior written confirmation agreement of the Otago Regional Council.

15.17. The consent holder must commission the Independent Peer Review Panel to prepare an annual report on the adequacy of the following matters in relation to meeting requirements of these resource consents:

- a. Any management or monitoring plans reviewed during the year.
- b. Any designs reviewed during the year.
- c. Construction activities undertaken including, but not limited to:
 - i. Site preparation, including hydrogeological and geotechnical issues.
 - ii. Toe embankment construction.
 - iii. Liner construction.
 - iv. Stormwater system construction.
 - v. Leachate collection system installation.
 - vi. Landfill gas collection system installation.
- d. Landfill operation including, but not limited to:
 - i. Water control, including groundwater, stormwater and leachate management.
 - ii. Waste acceptance and placement.
 - iii. Daily and intermediate cover placement.
 - iv. Leachate system management.
 - v. Landfill gas system management.
- e. Monitoring results and records.
- f. Final capping and rehabilitation.
- g. The adequacy of measures in the Landfill Management Plan in managing adverse environmental effects, including bird strike risk to aviation.

The Independent Peer Review Panel's annual report must be informed by at least the following:

- a. A review of the landfill annual monitoring report required by general condition 6771.
- b. Review of designs and management plans submitted during the year as required by general conditions 4518, 4821, 22-26 and 2829.
- c. Review of construction CQA reports.
- d. Any further enquiries and inspections required by the Independent Peer Review Panel to allow them to carry out their duties.

The Independent Peer Review Panel's annual report must be forwarded to Te Rūnanga o Ōtākou, Otago Regional Council and Dunedin International Airport Limited prior to 1 May each year, unless otherwise agreed in writing with the Otago Regional Council. The consent holder must make the report publicly available on the Dunedin City Council website.

Landfill Management Plan

16.18. The detailed design, construction, operation, closure, and aftercare of the landfill must be undertaken in accordance with a Landfill Management Plan (LMP).

17.19. The Landfill Management Plan must be developed by the consent holder in consultation with Te Rūnanga o Ōtākou and the CLG, with an overall objective of setting out details of the practices and procedures to be adopted to achieve compliance with the conditions of resource consent.

18.20. The Landfill Management Plan must address how the following matters will meet any requirements, limits, or restrictions set out by the conditions of these resource consents:

- a. The stages and order of landfill development, including matters to be completed prior to each stage.
- b. Construction and testing of the lining system.
- c. Landfill gas, leachate, groundwater and stormwater management.
- d. Erosion and sediment controls during construction and operation.
- e. Types of waste to be accepted and those that are prohibited.
- f. Waste acceptance control and monitoring the types of waste accepted.
- g. Methods of placing and covering waste, including highly odorous and special waste.
- h. Management of the active landfill area.
- i. Fire preparedness and response management.
- j. Odour and dust management.
- k. Noise management.
- l. Litter management.
- m. Plant and animal pest management, including bird control.
- n. Monitoring procedures, including locations, parameters, frequency, detection limits and trigger levels.
- o. Landfill inspections and maintenance.
- p. Emergency management and contingency response procedures.
- q. Complaints response procedures.
- r. Record-keeping and reporting requirements.
- s. Final landfill capping, post settlement height, shape and contours of the land.
- t. Landfill closure and aftercare.

19.21. The Landfill Management Plan must also include the following sub-management plans:

- a. Landfill Operational Bird Management Plan – refer to condition **57-60** of Discharge Permit RM20.280. **[insert consent number]**.
- b. Vegetation Restoration Management Plan – refer to general condition **6465**.
- c. Freshwater and Wetland Monitoring and Management Plan – refer to general condition **6468**.

20-22. The Landfill Management Plan required by general condition 18, including any updated plan certified by the Otago Regional Council, must be provided within 10 working days to the CLG, and made available on the Dunedin City Council website.

Management Plan and Design Certification

21-23. The management plans required by general conditions 15-18 and 18-21 and the detailed design details required by condition 25-29 must be submitted by the consent holder to the Independent Peer Review Panel for a review to assess that they have been prepared by appropriately qualified personnel in accordance with the conditions of consent and in accordance with good practice. Where there is disagreement between the consent holder and the Independent Peer Review Panel, this must be explained in writing and submitted to Otago Regional Council along with the relevant management plan or detailed design.

22-24. The management plan or detailed design and the Independent Peer Review Panel feedback must be provided to the Otago Regional Council for certification in accordance with general condition 3.

Advice Note: The function of the Independent Peer Review Panel is not a substitute of Otago Regional Council's function in auditing compliance with consent conditions. Otago Regional Council will make the ultimate determination regarding whether the consent holder has achieved compliance with the conditions of this consent.

23-25. These resource consents and a copy of the Otago Regional Council certified version of any management plan and design details required by these consents must be kept on site at all times, and the consent holder must ensure all relevant personnel are made aware of each document's contents.

Management Plan Review and Amendment

24-26. By 1 July each year the consent holder must, in consultation with Te Rūnanga o Ōtākou and the CLG, complete a review of the management plans required by general conditions 15-18 and 18-21 to ensure that the management practices contained within them remain adequate to ensure compliance with the conditions of these consents. If amendments are made to a management plan, the amended plan must be submitted to the Independent Peer Review Panel for review and thereafter to the Otago Regional Council for recertification in accordance with general condition 3.

25-27. The consent holder may make amendments to any certified management plan required by general conditions 15-18 and 18-21 at any time. Any amendments must be made in consultation with Te Rūnanga o Ōtākou and the CLG and submitted to the Independent Peer Review Panel for review and thereafter to the Otago Regional Council for recertification in accordance with general condition 3.

Design and Construction

26-28. All investigations, detailed design and supervision of construction of the landfill must be undertaken by suitably qualified personnel experienced in such works, or works of a similar nature.

27-29. Prior to commencing the construction of any:

- a. Landfill toe bund;
- b. Landfill liner for an area;
- c. Groundwater collection system;
- d. Leachate collection and storage system;
- e. Landfill gas collection and destruction system;
- f. Stormwater drainage, treatment, and discharge system; or
- g. Final capping

the consent holder must submit a design report with specifications and design drawings to the Independent Peer Review Panel for review and thereafter to the Otago Regional Council for certification in accordance with general condition 3.

- 28-30.** The consent holder must hold a site meeting with Otago Regional Council compliance staff prior to the commencement of the construction of the landfill, and construction of each subsequent landfill stage, for the purposes of demonstrating how the requirements of these resource consents and any certified document will be complied with during construction.
- 29-31.** The consent holder must hold a site briefing for all contractors prior to the commencement of the construction of the landfill, and construction of each subsequent stage of the landfill, for the purposes of identifying the requirements of these resource consents and any certified document that must be complied with during construction.
- 30-32.** When completed, the works specified in general condition **25-29** must be confirmed by a suitably experienced Chartered Professional Engineer (CPEng) that they have been completed in accordance with the design certified by the Otago Regional Council. A Construction Quality Assurance (CQA) report must be prepared and submitted by the consent holder to the Independent Peer Review Panel and Otago Regional Council within 3 months following completion of the works specified in general condition **25-29**.

Landfill Operation

- 31-33.** The consent holder must appoint and retain an appropriately qualified and experienced person to supervise the operation of the landfill.
- 32-34.** The active landfilling area must not exceed 1000 m² at any time.
- 33-35.** The active landfilling area must not exceed 300 m² at any time when the daily fire danger rating for the landfill site is very high, extreme or very extreme for forestry as reported by the New Zealand Fire Weather System.
- Advice Note: The New Zealand Fire Weather System (FWS) is operated by the National Institute of Water and Atmospheric Research (NIWA) on behalf of Fire and Emergency New Zealand (FENZ) to monitor fire danger.*
- 34-36.** The full extent of the active landfill area must be monitored by a camera system at all times during daylight hours and camera images must be provided on the consent holder's website at no greater than 60 minute intervals.
- 35-37.** Except where required by condition **34-38**, all waste must be covered at the end of each working day with at least:
- non-combustible compacted soil cover to a minimum depth of 150 millimetres; or
 - non-combustible alternative materials that perform to an equivalent or higher standard to 150 millimetres soil cover to ensure management of odour and birds.
- 36-38.** All special waste, highly odorous waste, medical waste, and commercial or industrial waste containing putrescible material must be covered no more than 30 minutes following its placement with at least:
- non-combustible compacted soil cover to a minimum depth of 150 millimetres; or
 - non-combustible alternative materials that perform to an equivalent or higher standard to 150 millimetres soil cover to ensure management of odour and birds.

*Advice Notes: The discharge of highly odorous waste is restricted by condition **35-38** of Discharge Permit RM20.280. [insert consent number] for the Discharge of Waste and Leachate to Land.*

Discharge Permit RM20.280. [insert consent number] Discharge of Landfill Odour and Dust and Landfill Gas and Flare Emissions to Air condition 7 imposes additional requirements for the discharge of highly odorous wastes.

- 37-39.** There must be no waste that remains uncovered overnight.
- 38-40.** Daily cover must be removed before waste placement at the start of each day. As a minimum, windows must be cut through the previous layer of daily cover sufficient to allow the free flow of leachate from the new waste layer to the underlying layers.

39.41. Except within 10 m of the active landfilling area, all areas where further waste will not be placed for three months must be covered with non-combustible compacted intermediate soil cover to a minimum depth of 300 millimetres and grass cover must be established on the intermediate soil cover by hydroseed.

40.42. A final capping layer must be constructed once filling of any area is fully completed. The final cover layer must comprise the following minimum layers, from bottom to top;

- a. 600 millimetres of compacted cohesive soils with a permeability coefficient of not more than 1×10^{-7} metres per second; and
- b. 300 millimetres of growth media layer; and
- c. 150 millimetres of topsoil that is grassed, except that grassing is not required within 10 m of the active landfilling area.

41.43. Alternative final capping specifications to those specified in general condition **38.42** may be used where they provide equivalent or better performance and are submitted to the Independent Peer Review Panel for review and thereafter to the Otago Regional Council for certification in accordance with general condition 3.

42.44. The final cap must be graded and incorporate drainage so as to prevent ponding of stormwater and erosion and cracking of the capping surface.

43.45. During operation, closure and aftercare of the landfill, a walkover inspection of the landfill operational area must be undertaken at least monthly, and immediately following storm events greater than 50% Annual Exceedance Probability (AEP) to check for:

- a. Vegetation die off;
- b. Cracking of the final cap surface;
- c. Subsidence and erosion;
- d. Landfill gas leaks and odour;
- e. Leachate break out through the cap;
- f. Waste protruding through the cap; and
- g. Stormwater system overflows or damage.

Any defects must be remedied by the consent holder as soon as practicable. A report on the inspection and details of any remedial actions must be forwarded to the Independent Peer Review Panel and Otago Regional Council within one month of each inspection.

Monitoring

44.46. The consent holder must, in collaboration with Te Rūnanga o Ōtākou, prepare a plan specifying how Te Rūnanga o Ōtākou will be involved in both baseline monitoring and ongoing monitoring of the effects of the landfill operation. The plan must include but not necessarily be limited to the following:

- a. The specific components of the monitoring programme that Te Rūnanga o Ōtākou will be involved in and the nature of that involvement;
- b. Resourcing and support to be provided for Te Rūnanga o Ōtākou participation in the monitoring programme; and
- c. A process for periodic review of the plan by the consent holder and Te Rūnanga o Ōtākou.

The plan must be submitted to Otago Regional Council before the commencement of baseline monitoring. Any amendments to the Plan arising from a review under general condition **42.46(c)** must be provided to Otago Regional Council within 3 months of the review.

45.47. An automatic weather station that continuously and accurately records wind speed and direction, temperature, relative humidity, and rainfall must be installed, operated, and maintained on the site in a location that is free from obstructions. The weather station must be serviced and calibrated by a suitably qualified and experienced technician at least annually to ensure accurate monitoring. Wind speed and direction must be measured at a height of between 5 m and 10 m above ground level. Wind speed data shall be appropriately corrected to provide a measurement equivalent to a height of 10 m. The instruments, site location, operation, maintenance and calibration are to be in accordance with the requirements of AS/NZS 3580.14:2014 'Methods for sampling and analysis of ambient air – Part 14: Meteorological monitoring for ambient air quality monitoring applications'.

Groundwater and Surface Water Monitoring

46.48. The groundwater monitoring wells and piezometers described in **Table 1** below and as shown on drawing 12506381-C309 must be installed at least 36 months prior to the commencement of construction of the landfill to enable collection of groundwater level and groundwater quality data.

Table 1 – Groundwater Monitoring Wells / Piezometers

Monitoring well / piezometer	Description
GW1	Additional monitoring well to be installed with screen between 90-85m RL (down hydraulic gradient deep GW system)
GW2	Existing wells BH02a and BH02b (shallow GW system).
GW3	Existing well BH04a (shallow GW system) and BH04b (deep GW system)
GW5	Existing wells BH01a and BH01b (shallow GW system). Additional monitoring well (BH01c) to be installed with screen between 90-85 m RL (up hydraulic gradient deep GW system)
GW6	Existing well BH09
GW7	Additional monitoring well to be installed with screen between 99-96m RL (shallow GW system).
BH202	Existing well BH202 (deep GW system)
WT1 – WT6	Piezometers to be installed to enable monitoring of sub-surface water levels within wetlands within the site.
Landfill transect wells	Additional four groundwater monitoring wells to be installed within and downgradient of the landfill footprint to form a transect(s) in the direction of shallow groundwater flow to the wetland in the vicinity of wetland monitoring locations WT2 to WT4 with a screen at an elevation that allows monitoring of water levels in the shallow groundwater system.

47.49. All groundwater monitoring wells and piezometers listed in **Table 1** of general condition **44-48** must be located and installed under the direction of a suitably experienced hydrologist or hydrogeologist, and any wells must be constructed in accordance with NZ4411:2001 *Environmental Standard for Drilling of Soil and Rock*.

48.50. All groundwater monitoring wells and piezometers listed in **Table 1** of general condition **44-48** must be maintained to prevent the ingress of contaminants and to enable accurate monitoring. In the event of a well or piezometer being destroyed or becoming unsuitable for sampling, the consent holder must replace it with a well or piezometer in the same general location within 3 months of the well or piezometer being destroyed or becoming unsuitable.

49.51. Monitoring to collect baseline groundwater level and quality data, and surface water level and quality data, must commence at least 36 months prior to commencement of construction of the landfill to inform the development of trigger levels at the following locations:

- a. monitoring wells GW1 – GW7, and BH202 described in **Table 1** of general condition **44-48**,

- b. surface water monitoring locations SW1 – SW7 (and SW8 if access is allowed by the landowner) shown on drawing 12506381-C309.

Sampling of groundwater and surface water must occur monthly for the 36-month baseline monitoring period. Monitoring and sample analytes must be for the full suite of parameters set out in **Attachment 1** for those locations.

50.52. Automated monitoring equipment must be installed and automated collection of baseline data must commence at least 36 months prior to the commencement of construction of the landfill to inform the development of trigger levels at the locations described in **Table 2** below and as shown on drawing 12506381-C309. The consent holder must submit GPS references (in both NZTM2000 and WGS84 formats) for each monitoring location to Otago Regional Council prior to the commencement of monitoring. Monitoring must be for the parameters and the frequency set out in **Table 2**.

Table 2 – Automated Baseline Data Collection

Monitoring Location	Monitoring Parameter	Minimum Frequency of Monitoring	Minimum Precision
Wetlands			
WT1	Water Level	Hourly	0.01 m
WT2			
WT3			
WT4			
WT5			
WT6			
Groundwater			
GW1	Water Level	Hourly	0.01 m
GW2			
GW3			
GW4			
GW5			
GW6			
Landfill Transect Wells			
Surface Water			
SW7	Water Level	Hourly	0.01 m
	Water Velocity		0.1 m/s
	Soluble Nitrate	Daily	0.5 mg/L
	Soluble Ammonia		0.5 mg/L
	Electrical conductivity		5 uS/cm
	Dissolved Oxygen		1 mg/L
	Temperature		1°C
SW8/SW3*	Water Level	Hourly	0.01 m
	Water Velocity		0.1 m/s
	Soluble Nitrate	Daily	0.5 mg/L
	Soluble Ammonia		0.5 mg/L
	Electrical conductivity		5 uS/cm
	Dissolved Oxygen		1 mg/L
	Temperature		1°C

* Advice Note: Where permanent access to location SW8 for monitoring cannot be secured for continuous monitoring, equipment must be installed at location SW3.

51-53. Rainfall data must be collected at least daily over the 36-month baseline monitoring period stipulated in general conditions 47-51 and 48-52 at the automatic weather station at the site required under condition 4347.

52-54. At the conclusion of the 36-month baseline monitoring period identified in conditions 47-51 and 4852:

- a. On-site rainfall data must be compared with the baseline groundwater and wetland water level data from each monitoring well and piezometer to identify when recharge from rainfall has influenced measured water levels;
- b. The baseline groundwater and surface water data must be reviewed to confirm or make any required adjustments to the conceptual site model and predicted environmental effects to groundwater and surface water described in the report *Smooth Hill Landfill Assessment of Effects to Groundwater*, GHD, Updated May 2021; and
- c. The baseline monitoring results for the entire 36-month monitoring period, along with any updates to the conceptual model, must be reported to the Independent Peer Review Panel as part of the submission of the reviewed Landfill Management Plan under general condition 2218.

53-55. The Landfill Management Plan required under general condition 45-18 must include practices and procedures for the long-term monitoring of groundwater and surface water during landfill operation, informed by the completion of baseline monitoring under general conditions 47-51 and 48-52 to achieve the following:

- a. Confirmation of the effectiveness of erosion and sediment controls;
- b. Identification of any potential leachate discharge to the environment;
- c. The efficacy of the landfill liner and leachate collection systems;
- d. Identification of any adverse effects arising from landfill operation on groundwater or surface water downgradient or downstream of the landfill respectively; and
- e. Ensuring compliance with the conditions of these consents.

54-56. The monitoring practices and procedures for groundwater and surface water in the Landfill Management Plan must include the following as a minimum:

- a. Groundwater and surface water quality monitoring locations, parameters, frequencies, detection limits and trigger levels for each monitoring location and monitoring parameter. As a minimum this is to include monitoring requirements detailed in general conditions 53-57 to 5862;
- b. Hydrological and water level monitoring requirements for the wetlands within the site and the unnamed tributary of Ōtokia Creek, including locations, parameters and frequencies for each monitoring location and each monitoring parameter;
- c. Contingency response procedures to be undertaken in the event of trigger level exceedance. As a minimum this is to include actions detailed in general condition 5559;
- d. Monitoring methodologies; and.
- e. Record keeping and reporting requirements.

55-57. Water quality trigger levels must be developed and included in the Landfill Management Plan for the indicated parameters set out in **Attachment 1** to detect whether groundwater quality is being adversely affected by leachate leakage; and whether surface water quality is being adversely affected by leachate or suspended sediment; when monitored at the following locations:

- a. Monitoring wells GW1 – GW7, and BH202 described in **Table 1** of general condition 4448;
- b. The manhole outlet from groundwater collection system prior to discharge to the unnamed tributary of Ōtokia Creek;

- c. During stage 1 works, the sediment retention pond prior to discharge to the unnamed tributary of Ōtokia Creek. During subsequent stages, the attenuation basin prior to discharge to the unnamed tributary of Ōtokia Creek; and
- d. The surface water monitoring points shown as SW1 – SW7 (and SW8 if access is allowed by the landowner) on drawing 12506381-C309.

56.58. The baseline water data collected under general conditions **47-51** and **48-52** must be used to establish trigger level values for the indicated parameters in **Attachment 1**. Development of trigger levels must meet the following requirements:

- a. Trigger levels for groundwater and surface water quality must be calculated as the mean plus three standard deviations for parameter concentrations measured during the 36-month baseline monitoring (mean plus and minus three standard deviations for pH). Trigger levels must be reviewed every 5 years. The lesser of the then existing trigger levels or those calculated from the preceding 5 years' monitoring data must thereafter be adopted;

Advice Note: The 5 yearly reviews are intended to ensure changing land use over time (forestry cycles), slow rates of water quality improvements or deteriorations over time, and variability in baseline water quality are accounted for.

- b. Trigger levels for suspended sediments in surface water (SW1 – SW8) for non-flood events must be the greater of turbidity values recorded during baseline monitoring or the Regional Plan for Otago: Water Schedule 15 turbidity limit; and
- c. Trigger levels for suspended sediments in surface water (SW1 – SW8) for flood events (where out of channel flows occur) must be based on visual inspection with no conspicuous adverse change in colour or visual clarity after reasonable mixing occurring in the receiving waters.

57.59. During operation of the landfill the monitoring of groundwater levels and quality and surface water levels and quality outlined in **Table 3** below must occur and be assessed against the trigger levels established under general conditions **53-57** and **54-58**, and the results reported annually to the Te Rūnanga o Ōtākou, **CLG**, the Independent Peer Review Panel and Otago Regional Council in accordance with general condition **6771**. Where there is any exceedance of the **Table 3** water quality trigger levels caused by leachate or sediment, the consent holder must undertake an investigation into potential causes of the exceedance and prepare a report which must be provided to Te Rūnanga o Ōtākou, **CLG**, Otago Regional Council, and the Independent Peer Review Panel no later than 2 weeks following receipt of the additional monitoring round results. The report must outline likely causes of exceedance, statistical analysis of water quality, actions to be taken to prevent further trigger level exceedances and proposed follow up monitoring where necessary.

58.60. Continuous monitoring of the sub-liner groundwater drainage system, sediment retention pond for the stage 1 area, and attenuation basin specified in **Table 3** must meet the following requirements:

- a. Continuous monitoring of electrical conductivity, pH, temperature, turbidity and ammonia must occur; and
- b. The monitoring system must be configured so that exceedance of monitoring trigger levels activates an alarm notifying key landfill site personnel.

59.61. The Landfill Management Plan must include contingency response procedures which must as a minimum include the relevant actions outlined in general condition **5559**.

Table 3 – Operational Groundwater and Surface Water Monitoring and Actions

Monitoring Point as shown on drawing 12506381-C309	Frequency	Parameters	Consent holder monitoring location specific actions where trigger levels are exceeded
Manhole outlet from the sub-liner groundwater drainage system prior to discharge to the unnamed tributary of Ōtokia Creek or abstraction for non-potable water supply.	Continuous	<ul style="list-style-type: none"> ▪ Electrical conductivity (uS/cm) ▪ pH ▪ Temperature ▪ Turbidity ▪ Ammoniacal nitrogen (mg/L) 	<p>The manhole outlet from the groundwater collection system must be closed within 1 hour following any exceedance being detected, and groundwater redirected to the leachate collection system.</p> <p>Contaminated groundwater must be directed to the leachate collection system for disposal off site until such time as the conditions have reduced below the trigger level or it can be demonstrated that the effects of discharging the water will not result in exceedance of surface water trigger levels for locations SW1 – SW7.</p> <p>Validation of any continuous monitoring result must be undertaken through inspection of the instrument, recalibration (if needed), and retesting to confirm the result.</p> <p>An additional monitoring round must be undertaken no later than 1 week following any confirmed continuous monitoring exceedance or monthly monitoring exceedance being detected and analysed for the full parameter suite outlined in Attachment 1.</p>
Groundwater monitoring wells as GW1 – GW7 – and BH202	Monthly	Basic suite of parameters set out in Attachment 1 to be monitored, except that the full suite of parameters to be monitored in one monthly monitoring cycle per year	
Groundwater monitoring wells as GW1 – GW7 – and BH202	Quarterly.	Basic suite of parameters set out in Attachment 1 and water level to be monitored, except that the full suite of parameters to be monitored in one quarterly monitoring cycle per year	An additional monitoring round must be undertaken no later than 1 week following any exceedance being detected and analysed for the full parameter suites outlined in Attachment 1 .
During stage 1 works, the sediment retention pond prior to discharge to the unnamed tributary of Ōtokia Creek During subsequent stages,	Continuous (when flows occur)	<ul style="list-style-type: none"> ▪ Electrical conductivity (uS/cm) ▪ pH 	The outlet from the sediment retention pond or low flow outlet from the attenuation basin must be closed immediately following any exceedance being detected in the event that leachate contaminated stormwater is flowing to the unnamed tributary of Ōtokia Creek. Contaminated stormwater must be directed to the leachate collection system for disposal.

Monitoring Point as shown on drawing 12506381-C309	Frequency	Parameters	Consent holder monitoring location specific actions where trigger levels are exceeded
<p>the attenuation basin prior to discharge to the unnamed tributary of Ōtokia Creek.</p>		<ul style="list-style-type: none"> ▪ Temperature ▪ Turbidity ▪ Ammoniacal nitrogen (mg/L) 	<p>off site until such time as the conditions have reduced below the trigger level or it can be demonstrated that the effects of discharging the water will not result in exceedance of surface water trigger levels for locations SW1 – SW7.</p> <p>Validation of any continuous monitoring result must be undertaken through inspection of the instrument, recalibration (if needed), and retesting to confirm the result.</p> <p>An additional monitoring round of the surface water monitoring points SW1 – SW7, and a sample from the sediment retention pond or attenuation basin, must be undertaken no later than 24 hours following any exceedance being detected and analysed for the full parameter suite outlined in Attachment 1 for SW1 – SW7.</p>
<p>Surface water monitoring points shown as SW1 – SW6, surface water monitoring point shown as SW7 (located at the McLaren Gully Road culvert), and SW8 if access is available (located downstream of the downstream pond).</p>	<p>Either: Weekly (when flows occur). If continued periods of surface water discharge occur, then monitoring will occur weekly.</p> <p>Or: As otherwise specified in the Landfill Management Plan.</p>	<p>Basic suite of parameters set out in Attachment 1 to be monitored, except that the full suite of parameters to be monitored in one weekly monitoring cycle per year</p> <ul style="list-style-type: none"> ▪ Suspended solids (g/L) ▪ Turbidity (NTU) 	<p>All known downstream surface water abstractors within the McColl Creek catchment, and Te Rūnanga o Ōtākou must be notified of any exceedance no later than 1 day following the exceedance being detected.</p> <p>An additional monitoring round must be undertaken no later than 1 week following any exceedance being detected and analysed for the full parameter suites outlined in Attachment 1.</p> <p>Discharges from the stage 1 sediment retention pond and attenuation basin must be sampled for suspended solids and compared with sampling from the adjacent contributing catchment. Sediment controls must be adjusted if the results show that the sediment loads from the sediment retention pond or attenuation basin are the cause of the exceedance.</p>

60-62. All groundwater and surface water sampling required under general conditions **4751**, **48-52** and **55-59** must meet the following requirements:

- a. Sampling must be undertaken at the specified locations indicated in general conditions **4751**, **48-52** and **5559**;
- b. Sampling must be undertaken, or overseen by, a suitably qualified professional and collected in accordance with the relevant National Environmental Monitoring Standard (NEMS):
 - i. National Environmental Monitoring Standards Water Quality Part 1 of 4: Sampling, Measuring, Processing and Archiving of Discrete Groundwater Quality Data;
 - ii. National Environmental Monitoring Standards Water Quality Part 2 of 4: Sampling, Measuring, Processing and Archiving of Discrete River Quality Data; and
- c. All sample analysis must be performed by a laboratory that meets International Accreditation New Zealand ("IANZ") approved laboratory or otherwise as agreed in writing with the Otago Regional Council.

Management of effects on wetland and freshwater ecological values

61-63. Adverse effects on wetland or freshwater ecology arising from any hydrological, hydrogeological or water quality changes associated with the construction and/or operation of the landfill must be managed according to the Vegetation Restoration Management Plan and required by general condition **61-65** and the Freshwater and Wetland Monitoring Management Plan required by general condition **6468**. Where residual adverse effects on wetland or freshwater ecology are detected via monitoring undertaken in accordance with the Freshwater and Wetland Monitoring and Management Plan, any offset or compensation must use methodologies that use accepted ecological principles to derive the related offset / compensation type and quantum, such as biodiversity offset accounting methods (where relevant).

62-64. Annual baseline wetland and freshwater ecology monitoring undertaken by a suitably qualified wetland ecologist must commence no less than 36 months prior to construction of the landfill and preparation of the Vegetation Restoration Management Plan required under general condition **6465**. The purpose of the monitoring is to:

- a. Delineate the extent of and determine the annual variability (if any) in extent of existing wetland habitat within wetland areas in West Gully 3, West Gully 4, and the swamp wetland as identified in the *Smooth Hill Landfill, Ecological Impact Assessment, 19 August 2020 (updated 28 May 2021)* prepared by Boffa Miskell;
- b. Establish a baseline with which to compare to any monitoring of ecological conditions during construction and operation of the landfill;
- c. Define and monitor the extent of the swamp wetland, vegetation transects using national wetland delineation protocols (e.g. Clarkson et al. 2013) in a cross-section of wetland areas at the WT1, WT2-4, WT5, and WT6 locations shown on drawing 12506381-C309. 12-monthly monitoring must be undertaken between November and April at least three times prior² to the commencement of landfill construction. These cross sections must occur at the same location as baseline water level monitoring sites.

At the conclusion of the 36-month monitoring period, the baseline data must be reviewed and used to inform the Vegetation Restoration Management Plan required under general condition **6465**, and the determination of monitoring triggers and requirements for any long-term wetland or freshwater ecology monitoring.

63-65. A Vegetation Restoration Management Plan based on the *Draft Smooth Hill Vegetation Restoration Plan prepared by Boffa Miskell Ltd, dated June 2021*, must be prepared by a suitably qualified ecologist with the objective of addressing the loss of or impact on the swamp wetland and its riparian margin resulting from the exercise of these consents. The Plan must be developed in consultation with Te Rūnanga o Ōtākou **and CLG**. As a minimum the Plan must include:

- a. A summary of the impact assessment for the swamp wetland and its riparian margin.
- b. A summary of baseline wetland ecology monitoring under general condition **60-64** that has been undertaken to inform the Vegetation Restoration Management Plan.

- c. Wetland restoration measures, which as a minimum must include:
 - i. Wetland restoration including a 10 m buffer from the wetland edge, except where the landfill toe bund is within 10 m of the wetland edge.
 - ii. Stock exclusion from any restoration area using permanent fencing including gates for access.
 - iii. Pest plant control methods, including types of pest plant species to be controlled, areas in which they are to be controlled and in which areas or circumstances gorse (or another specified plant pest) may be tolerated as a nurse crop.
 - iv. Pest animal control.
 - v. A process for reviewing and adapting pest plant and animal controls.
 - vi. Ground preparation, planting and maintenance specifications so that plants used for restoration are eco-sourced from the same eco-region wherever possible, are free of pest plants, and plant size and densities are relevant to the location where they are being placed.
 - vii. A detailed programme of works, including timeframes for implementation.
 - viii. Standardised methodologies for onsite biosecurity control (bring onto site / onsite / taking off site).
 - ix. Long term success-based monitoring at year 0, 1, 3, 5, 10, 15, 25 and 30. Monitoring must include restoration planting success in terms of survival and growth.
- d. Key responsibilities of onsite personnel.
- e. An adaptive management and review process that includes Te Rūnanga o Ōtākou, [CLG](#), the Independent Peer Review Panel and Otago Regional Council.

[64-66](#). The Vegetation Restoration Management Plan must be assessed by a suitably qualified expert in bird strike risk assessment to confirm that any proposals for restoration will not increase aviation risk from birds. That assessment must be forwarded to the Independent Peer Review Panel with the Vegetation Restoration Management Plan for their review and confirmation in accordance with the process in general conditions [49-23](#) and [2024](#).

[65-67](#). Twice yearly baseline freshwater ecology monitoring by a suitably qualified freshwater ecologist must commence no less than 36 months prior to construction of the landfill and prior to the preparation of the Freshwater and Wetland Monitoring and Management Plan required under general condition [6468](#). The purpose of the monitoring is to:

- a. Determine the extent of existing freshwater habitat and the freshwater ecology values, including macroinvertebrate and fish communities, and how these may vary naturally seasonally and in response to the changes in the surrounding land use; and
- b. Establish a baseline with which to compare to any monitoring of ecological conditions during construction and operation of the landfill.

The freshwater ecology monitoring must be carried out at the SW3, SW7 and SW8 (if access is available) locations shown on drawing 12506381-C309. Sampling must be undertaken during the months between December and April. The freshwater ecology monitoring sites must occur at the same location as baseline water level and quality monitoring sites.

Monitoring methods must include assessments of in-stream habitat conditions closely following national protocols (e.g., Biggs and Kilory, 2000; Clapcott et al., 2011; Harding et al., 2009), sampling of the macroinvertebrate community in accordance with protocols C1 and/or C2 of Stark et al. (2001) and Joy et al. 2013, and assessment of the fish community in following protocols of Joy et al. 2013 and/or using passive sampler devices for environmental DNA (e.g., following standard protocol of Wilderlab).

At the conclusion of the 36-month monitoring period, the baseline data must be reviewed and used to inform the Freshwater and Wetland Monitoring and Management Plan required under general condition [6468](#).

66.68. A Freshwater and Wetland Monitoring and Management Plan must be prepared by a suitably qualified freshwater and wetland ecologist(s) with the objective of ensuring adverse effects to freshwater or wetland environments or indigenous species that arise from the exercise of these consents are effectively remedied or otherwise mitigated. The Plan must be developed in consultation with Te Rūnanga o Ōtākou and CLG. As a minimum the Plan must include:

- a. A summary of the baseline wetland monitoring and freshwater ecology monitoring undertaken under general conditions 60-64 and 6367;
- b. A summary of the ongoing monitoring of groundwater and surface water quality and quantity as detailed by the Landfill Management Plan;
- c. Pre, during and post construction monitoring methodologies for freshwater habitat conditions and freshwater macroinvertebrate and fish communities, with the aim of establishing any indirect effects on downstream freshwater and wetland environments attributable to the landfill's operation;
- d. Measures to remedy or mitigate any adverse effects on downstream freshwater and wetland environments that are the result of landfill construction or operation, and any appropriate methodologies for offsetting or compensating for any residual adverse effects if they are identified through monitoring;
- e. Annual reporting requirements, which must include but not be limited to reporting on mitigation or remediation measures implemented under (d) above and offset or compensation measures implemented under (d) above;
- f. Key personnel responsibilities for implementing the Freshwater and Wetland Monitoring and Management Plan; and
- g. An adaptive management and review process that includes Te Rūnanga o Ōtākou, CLG, the Independent Peer Review Panel and Otago Regional Council.

Complaints

67.69. The consent holder must provide contact details on the Dunedin City Council website that enable members of the public to contact the landfill operator at all times, including in case of emergency.

68.70. A complaint management, investigation and reporting system must be maintained by the consent holder during construction, operation, closure and aftercare of the landfill to record the receipt and management of all complaints, including those regarding odour or dust. The following details must be recorded:

- a. Type, date, and time of complaint;
- b. Name and address of complainant (if available);
- c. Location from which the complaint arose;
- d. Wind direction at the time of complaint (if relevant);
- e. The likely cause of the complaint;
- f. The action taken as a result of the complaint; and
- g. The response to the complainant.

All complaints must be investigated, and a response provided to the complainant. The complaints record must be made available to the Independent Peer Review Panel and Otago Regional Council on request.

Annual Monitoring Report

69.71. The consent holder must compile an annual monitoring report on the operation of the landfill, including:

- a. The status of landfill construction, completion of landfilling of any stage, and closure and aftercare activities completed during the preceding year;

- b. Any non-compliance with the conditions of these consents or difficulties in achieving the practices and procedures in the Landfill Management Plan which have arisen in the preceding year and the measures taken to address them;
- c. Any matters raised during consultation required by the conditions of this consent, including by the CLG, and the consent holder's responses to those matters;
- d. Any emergency management procedures and contingency response procedures specified in the Landfill Management Plan that were implemented during the preceding year;
- e. Landfill construction, landfilling operations and closure and aftercare activities proposed for the next year of the landfill operation; and
- f. Collated summaries and analyses of all monitoring results and other data required under these consents.

The report must be forwarded to Te Rūnanga o Ōtākou, CLG, the Independent Peer Review Panel, Dunedin International Airport Limited and Otago Regional Council by 1 March each year unless an alternative date is agreed in writing with the Otago Regional Council. The consent holder must make the report publicly available on the Dunedin City Council website.

Bond

70:72. Prior to the placement of refuse at the site the consent holder must provide and maintain a bond in favour of Otago Regional Council to meet the requirements of general conditions 68-73 to 7882. In the event of default by the consent holder, the bond must:

- a. Secure compliance with all the conditions of these consents and enable any adverse effects on the environment resulting from the consent holder's activities, and not authorised by a resource consent, to be avoided, remedied or mitigated;
- b. Secure the completion of rehabilitation and closure in accordance with the approved Aftercare section of the Landfill Management Plan;
- c. Ensure the performance of any monitoring obligations of the consent holder under these consents, as well as any site aftercare obligations such as care of the landfill cap and pollution prevention infrastructure;
- d. Provide for reconstruction of the landfill landform in the event of a mass movement; and
- e. Provide for early closure in the event of abandonment of the site.

71:73. The amount of the bond shall be initially set on the basis of cost estimates established by means of a risk assessment prepared by the consent holder, which shall be submitted to Otago Regional Council for review and approval prior to the commencement of the placement of refuse at the site. The amount of the bond must cover costs associated with completing work listed in general condition 7478.

72:74. Once the bonded sum is set, it is to be paid to the Otago Regional Council either in cash, or the bonded sum secured by a guarantor in favour of the Otago Regional Council prior to the placement of refuse at the site. The guarantor and the form of the bond are to be agreed as appropriate between the consent holder and the Otago Regional Council. The bonded sum is to be held by the Otago Regional Council on trust in an interest-bearing account to be called on and used to remedy any breaches of the conditions of the consents that are not remedied by the consent holder.

73:75. Should the consent holder and the Otago Regional Council be unable to reach mutual agreement on the form, terms and conditions, or amount of the bond, then the matter shall be referred to arbitration in accordance with the provisions of the Arbitration Act 1996. Arbitration shall be commenced on advice by either party that the amount of the bond is disputed, such notice to be given within 14 days of receipt by the Otago Regional Council of the amount of the bond established by the consent holder. If the parties cannot agree upon an arbitrator within seven days of receiving advice that the amount of the bond is in dispute, then an arbitrator shall be appointed by the President of the Institute of Professional Engineers of New Zealand (IPENZ). Such arbitrator shall give an award in writing within 30 days after his/her appointment, unless both parties mutually agree that time shall be extended. The parties shall bear their own costs in connection with arbitration. In all other respects, the provisions of the Arbitration Act 1996 shall apply.

74.76. If the decision of the arbitrator is not made available by the 30th day referred to above, then the amount of the bond shall be fixed by the Otago Regional Council, until such time as the arbitrator does make his/her decision. At that stage, the new amount shall apply. No further waste shall be placed at the site if the variation of the existing bond or the new bond is not provided in accordance with this condition.

75.77. The amount of the consent holder's bond shall be reviewed every five years from it being established, by means of a risk assessment using the criteria in general condition 77.81. More frequent reviews may be undertaken at the Otago Regional Council's discretion (but not within 12 months of a previous review), in which case the Otago Regional Council shall provide the consent holder with no less than 30 days' notice in writing of the review. If, on review, the amount of the bond to be provided by the consent holder is greater than the sum secured by the current bond, then within 30 days of the consent holder being given written notice by Otago Regional Council of the new amount to be secured by the bond, the consent holder and the guarantor shall execute and lodge with the Otago Regional Council a variation of the existing bond or a new bond for the amount fixed on review by the Otago Regional Council. No further waste shall be placed at the site if the variation of the existing bond or the new bond is not provided in accordance with this condition.

76.78. The bond sum may vary from time to time but at any given time shall be sufficient to cover the estimated cost at that time (including any contingency) of:

- a. Remediation of any adverse effect on the environment that may arise from the site. The estimated costs shall be determined by the consent holder by means of a quantitative risk assessment to ensure that the 90 percent confidence limit on remedial action costs is provided. An experienced environmental risk assessment practitioner shall conduct such a risk assessment. The consent holder's environmental risk assessment practitioner shall be approved by the Otago Regional Council and the method of conducting the risk assessment shall be made clear to the Otago Regional Council, including all assumptions drawn to conduct the assessment. The risk assessment shall include (but not be limited to) the factors listed below, the likelihood of any of these events occurring and the likely remedial costs:
 - (i) Excessive hydration of the landfill liner;
 - (ii) Excessive leachate seepage through liner;
 - (iii) Failure of leachate collection system;
 - (iv) Escape of leachate from leachate storage facilities;
 - (v) Surface water contamination within or beyond the boundary of the site;
 - (vi) Groundwater contamination within or beyond the boundary of the site;
 - (vii) Illegal dumping of hazardous and/or inappropriate waste;
 - (viii) Instability of landfill batters;
 - (ix) Underground migration of landfill gas;
 - (x) Significant and ongoing odour problems;
 - (xi) Failure of gas collection system;
 - (xii) Landfill fires;
 - (xiii) Erosion of landfill cap;
 - (xiv) Slipping/mass failure of the landfill mass; and
 - (xv) Failure to establish and or maintain vegetation cover on cap.
- b. Rehabilitation and closure of the site in accordance with the conditions of the consents. These works shall include:
 - (i) Capping and re-vegetation in accordance with the details of the Landfill Management Plan;
 - (ii) Installation of gas and leachate collection infrastructure where it is not installed progressively throughout the life of the landfill; and
 - (iii) Decommissioning of infrastructure no longer required.

The cost estimate must provide for the rehabilitation of the largest area of the landfill that may be open (filled and uncapped) at any stage. In the event that capping materials are required to be imported to the site, the consent holder shall allow for the cost of importation to be included in the estimate of costs.

- c. Monitoring and management of the site and its effects both before and after closure or abandonment of the site. In this context, closure shall mean completion of capping of the final landfill cell. The bond shall provide for the total area of landfill filled at a given time. The estimation of the bond for site monitoring and management costs shall consider (but not be limited to) the following aspects:
- (i) Inspection of landfill cap and landfill infrastructure including leachate collection system;
 - (ii) Repair of landfill cap and infrastructure;
 - (iii) Landscape maintenance of vegetated landfill cap;
 - (iv) Leachate and stormwater treatment and/or disposal;
 - (v) Decommissioning of leachate storage tanks;
 - (vi) Maintenance of groundwater bores and gas collection wells;
 - (vii) Ongoing extraction and management or usage of landfill gas;
 - (viii) Monitoring programmes for:
 1. Groundwater;
 2. Surface water;
 3. Leachate;
 4. Landfill gas; and
 5. Bird management, including before closure – adaptive management under Condition ~~56-59~~ of Discharge Permit RM20.280. *[insert consent number]* for the Discharge Waste and Leachate to Land Conditions.
- d. Ensuring the performance of any monitoring obligations of the consent holder under these consents, as well as any site aftercare obligations such as care of the landfill cap and pollution prevention infrastructure (Aftercare);
- e. Providing for reconstruction of the landfill landform in the event of a mass movement; and
- f. Providing for early closure costs in the event of abandonment of the site.

~~77-79.~~ The consent holder may apply to have the bond amended, discharged or reviewed at any time, in which case the Otago Regional Council shall advise the consent holder of its decision on the application within 60 days of it receiving the application. An application by the consent holder to amend the amount of the bond must be supported by a risk assessment carried out in accordance with the methodology detailed in general condition ~~7781~~.

~~78-80.~~ The bond shall be maintained in favour of the Otago Regional Council for a minimum period of 25 years following closure or abandonment of the landfill site. Closure shall mean completion of capping of the final landfill cell, or closure following abandonment prior to the final landfill cell being completed. If the landfill has been monitored and a risk assessment approved by the Otago Regional Council affirms that there are no existing or potential adverse environmental effects from the landfill operation, then the Otago Regional Council may at its discretion discharge the bond before the 25-year period has concluded. The bond period may at Otago Regional Council's discretion be extended beyond 25 years if a risk assessment to the satisfaction of Otago Regional Council conducted 25 years after landfill closure indicates that the landfill continues to pose a threat to the environment.

~~79-81.~~ The following aspects shall be considered in a risk assessment determining whether to amend or discharge the consent holder's bond:

- a. Environmental performance (e.g. verification that groundwater is not polluted);
- b. Sensitivity of the environment;
- c. Bird strike risk to aviation;
- d. Degree of waste stabilisation as reflected by the cessation of landfill gas and leachate generation; and
- e. Cap integrity.

~~80-82.~~ All costs relating to the bond shall be paid by the consent holder, other than in relation to arbitration (see above), in which case both parties shall bear their own costs. The decision to review the discharge of the bond should be based on the risk assessment criteria and methodology given in general condition ~~7781~~.

Review of Conditions

~~81.~~83. Pursuant to Section 128 of the Resource Management Act 1991 the consent authority may in May each year serve notice of its intention to review the conditions of these consents for the purposes of:

- a. Determining whether the conditions of these consents are adequate to deal with any adverse effect on the environment which may arise from the exercise of these consents and which it is appropriate to deal with at a later stage, or which becomes evident after the date of commencement of these consents;
- b. Ensuring the conditions of these consents are consistent with any National Environmental Standards, relevant regional plans and the Otago Regional Policy Statement;
- c. Ensuring the waste acceptance criteria conditions of these consents are consistent with applicable Ministry for the Environment and Environmental Protection Authority guidance, standards and notices, including for emerging contaminants;
- d. Ensuring the bird management conditions of these consents are effective for ensuring there is no increase in existing bird strike risk to aviation at Dunedin International Airport;
- e. Reviewing the requirements and frequency of monitoring and reporting required under these consents; or
- f. Requiring the adoption of the best practicable option to reduce any adverse effect on the environment.

Advice Notes

- a. *For the purposes of these consents:*
 - *'site' means the landfill site as shown and described in section 4.1 of the Smooth Hill Landfill, Assessment of Environmental Effects for Updated Design, Boffa Miskell, May 2021.*
 - *'landfill operational extent' means areas shown as such in Appendix 2 of the Smooth Hill Landfill, Assessment of Environmental Effects for Updated Design, Boffa Miskell, May 2021.*
 - *'active landfilling area' means the area of exposed waste.*
 - *'landfill footprint' means areas shown as the final filled landform for stages 1-4 in Appendix 2 of the Smooth Hill Landfill, Assessment of Environmental Effects for Updated Design, Boffa Miskell, May 2021*
 - *'stormwater' means water running off from any impervious surface such as roads, carparks, roofs, as well as any other surface run-off that is collected and/or intercepted.*

ATTACHMENT 1 TO GENERAL CONDITIONS

Table 1 below sets out the monitoring parameters to detect leachate leakage effects on groundwater quality; and leachate, suspended solids and turbidity on surface water; when monitored at the following locations in accordance with general condition 5559:

- a. The groundwater monitoring wells described in Table 1 of general condition 4448.
- b. The groundwater collection system prior to discharge to the unnamed tributary of Ōtokia Creek, or abstraction for non-potable water supply.
- c. During stage 1 works, the sediment retention pond for stage 1 prior to discharge to the unnamed tributary of Ōtokia Creek. During subsequent stages, the attenuation basin prior to discharge to the unnamed tributary of Ōtokia Creek.
- d. The surface water monitoring points shown as SW1 – SW7 (and SW8 if access is allowed) on drawing 12506381-C309 or as otherwise specified in the Landfill Management Plan.

Table 1 below shows which parameters must be monitored at each location. Table 1 also shows locations where trigger levels for certain parameters must be monitored. Trigger levels for each parameter are to be established in accordance with general condition 5358.

For groundwater samples all metal, metalloid and trace element parameters are the dissolved fraction of water sample only. For surface water and stormwater samples all metal, metalloid and trace element parameters are both dissolved fraction and total fraction of water sample.

Table 1 – Water Quality Monitoring Parameters

Monitoring Location								
Parameter (mg/L unless stated otherwise)	GW monitoring Bores GW1- GW7, BH202 and Groundwater collection system prior to discharge to the unnamed tributary of Ōtokia Creek			Sediment Retention Pond for Stage 1, attenuation basin, and groundwater collection system prior to discharge to the unnamed tributary of Ōtokia Creek		Surface Water monitoring points SW1 - SW8		
	Basic Suite	Full Suite	Trigger level	Continuous Monitoring	Trigger level	Basic Suite	Full Suite	Trigger level
Aluminium		X					X	
Arsenic	X	X	X			X	X	X
Boron		X	X				X	X
Cadmium	X	X	X			X	X	X
Calcium	X	X					X	
Chloride	X	X					X	
Chromium		X	X				X	X
Copper	X	X	X			X	X	X
Iron	X	X				X	X	
Lead	X	X	X			X	X	X
Magnesium	X	X					X	
Manganese		X					X	
Nickel	X	X	X			X	X	X
Potassium	X	X					X	
Sodium	X	X					X	
Sulphate	X	X	X				X	

Monitoring Location								
Parameter (mg/L unless stated otherwise)	GW monitoring Bores GW1- GW7, BH202 and Groundwater collection system prior to discharge to the unnamed tributary of Ōtokia Creek			Sediment Retention Pond for Stage 1, attenuation basin, and groundwater collection system prior to discharge to the unnamed tributary of Ōtokia Creek		Surface Water monitoring points SW1 - SW8		
	Basic Suite	Full Suite	Trigger level	Continuous Monitoring	Trigger level	Basic Suite	Full Suite	Trigger level
Zinc	X	X	X			X	X	X
Dissolved Reactive Phosphorus		X	X				X	X
Total Phosphorous							X	X
Ammoniacal Nitrogen	X	X	X	X	X	X	X	X
Kjeldahl Nitrogen	X	X				X	X	
Nitrite Nitrogen	x	x				x	x	x
Nitrate Nitrogen	X	X				X	X	X
Alkalinity	X	X	X			X	X	
Organic Carbon		X						
Total Volatile organic compounds		X	X				X	X
Total Semi- volatile organic compounds		X	X				X	X
PFOS + PFHxS		X					X	
PFOA		X					X	
pH (ph units)	X	X		X	X	X	X	X
Temperature (degrees Celsius)	X	X		X	X	X	X	
Electrical conductivity (µS/cm)	X	X		X	X	X	X	
Water Level (m RL)	X	X				X	X	
Flow rate (l/s)						X	X	
Suspended solids							X	X
Turbidity (NTU)				X	X		X	X

B. Discharge Permit RM20.280.[insert consent number]

Discharge of Waste and Leachate to Land Conditions

Purpose of this consent: to discharge solid waste and leachate to land.

Expiry date: this consent will expire on [insert date 35 years from issuing].

General

1. This consent will lapse [insert date 10 years from issuing] unless given effect to before that date.
2. This consent is also subject to the general conditions in Schedule 1 – General Conditions and Attachment 1 to that Schedule. In the event of differences or conflict between the general conditions and the conditions of this consent, the conditions of this consent prevail.

Pre-Construction Investigations

3. Geotechnical investigations must be carried out as part of the detailed design of the landfill and must include the development of a geotechnical ground model for the site. The investigations must also include verification of the dip and dip direction of the Henley Breccia and strength assessment of the contacts between geological units. The location of investigation points must be determined during the initial stages of the detailed landfill design process.
4. Lime may be used for stabilisation of loess soils where those soils are to be used as part of a Type 1 lining system under condition 4417(a). Lime must not be added to loess for use with a Type 2 lining system under condition 4417(b). Alternative stabilisers, such as bentonite, can be used in both lining systems. In addition to standard soil classification testing requirements for soil liners (including those in *WasteMINZ, Technical Guidelines for Disposal to Land 2018 – Appendix B, B.1 Landfill liners*), the loess soil to be used for a Type 1 lining system must be assessed as part of the detailed landfill design for its suitability for use as a low permeable mineral liner within the landfill liner design by:
 - a. Determining through a dispersivity test what percentage of lime or bentonite is required to stabilise the loess and reduce its dispersivity to a non-dispersive status. The dispersivity test shall be undertaken in both de-ionised water and a leachate equivalent solution;
 - b. Assessing the change, if any, in the Atterberg limits of unstabilised loess against stabilised loess. The Atterberg limits shall be determined using NZS 4402:1988 Test 2.4; and
 - c. Using a triaxial cell, assessing the change, if any, in saturated hydraulic conductivity of a re-compacted stabilised sample of loess across a range of moisture contents and strains, using first de-ionised water, then a leachate equivalent solution.
5. A minimum of five of each of the dispersivity, Atterberg limits and saturated hydraulic conductivity tests must be undertaken on the loess under condition 4 to ensure representative results are obtained. The results of this testing must inform the landfill design and assessment of the suitability of lime stabilised loess as a component of the liner design. Stabilised loess must be assessed as not acceptable if there is an increase in hydraulic conductivity of the material caused by suspected brittle micro-fracturing. The tests must be carried out on representative samples of loess taken from areas intended to be used as borrow areas for loess liner materials. Should additional borrow areas be identified later, then further samples, representative of those additional borrow areas, must be taken and tested in conformance with conditions 4 and 5 of this consent.
6. If loess is identified as unsuitable for use as a mineral component of the landfill liner in accordance with conditions 4 and 5, alternative materials must be considered as part of the liner design. Where an alternative and remote source for the mineral liner component is required, the material must be confirmed as being suitable in accordance with the same level and type of pre-characterisation testing as required for loess under conditions 4 and 5 of this consent.
7. A Site Specific Probabilistic Seismic Hazard Assessment (SSSHA) must be undertaken as part of the detailed design of the landfill to ensure seismic risks are addressed so the landfill's performance under seismic load is consistent with an IL4 structure as defined in Table 3.2 NZS 1170.0.2004 Structural Design Actions - Part 0 General Principles

(facilities containing hazardous materials capable of causing hazardous conditions that extend beyond the property boundaries) and Table 3.3 of NZS 1170.0.2004 for appropriate annual probability of exceedances based on the landfill's design life. The detailed design and construction of the landfill, in particular for permanent and temporary slopes, must be modified as necessary to incorporate any changes in seismic design parameters identified by the SSSHA.

8. The detailed design of the landfill must demonstrate the short (construction and operation) and long-term (closure to post closure) stability of all landfill cut and fill slopes. This must be achieved by undertaking quantitative limit equilibrium slope stability assessments of the design landform and earth fill retaining bund to demonstrate a factor of safety for cut and fill slopes in the static load case of ≥ 1.5 , and for the seismic load case where the factor of safety is < 1 in the pseudo-static seismic load case, the displacement method must be considered as per Section 6.3.2 of the Waka Kotahi NZTA Bridge Manual (3rd Edition Oct 2018).
9. The detailed design of the landfill must include stability analysis to verify the placement of waste achieves waste stability in the short (construction/operation) and long-term (closure/post closure) and ensures the interface friction angle at the base of the landfill between the waste and liner protects against a base slide failure or a potential circular slip failure through the base. This must include:
 - a. Veneer slope stability analysis of the proposed liner and capping arrangements for each stage; and
 - b. Waste stability analysis of each landfill stage.

The analysis must utilise site specific parameters where possible for the various waste materials, and/or publicly available material data where site-specific information is not available. Where publicly available material data is used, verification that the construction materials align with any assumptions made as part of the slope stability analysis must be included as part of the detailed design documentation provided to the Independent Peer Review Panel for its review.

Landscape Screening

10. A Landscape Mitigation Plan must be prepared by a suitably qualified person within 1 year of the granting of this consent. The purpose of the Plan is to ensure the landfill including all facilities and operations are fully screened from Big Stone Road and private properties on the opposite side of Big Stone Road from the landfill. The Plan must be developed in consultation with the CLG. As a minimum the Plan must include:
 - a. Fast growing exotic and native tree and shrub planting of a minimum width of 10 metres along the entire boundary of the site with Big Stone Road except where access is provided to the site.
 - b. Solid fencing of a minimum height of 1.8m or an earth bund, located behind the planting specified in condition 10(a) above. The fence must extend along that section of the Big Stone Road boundary as shown on Figure 3 attached.
 - c. Routine maintenance of the planting, including replacement of any dead planting.
 - d. A detailed programme of works, including timeframes for implementation.

The final Landscape Mitigation Plan must be provided to the Otago Regional Council for certification in accordance with general condition 3.

11. The Landscape Mitigation Plan required by condition 10 must be implemented in months between 1 March to 31 May following completion of the Plan, except in those places where landfill development earthworks are required to be completed first. In those areas where landfill development earthworks are required to be completed first, the Plan must be implemented in the months between 1 March to 31 May following completion of the earthworks.
- 10.12. All planting and screening included in the Landscape Mitigation Plan required by condition 10 must be maintained, and any dead trees and vegetation must be replaced by an equivalent species within the next planting season between 1 March to 31 May.

Landfill Liner and Groundwater and Leachate Collection Systems

~~44.13.~~ The landfill must be designed, progressively constructed, and operated with a:

- a. Groundwater collection system beneath the landfill liner to manage groundwater levels beneath the landfill liner;
- b. Landfill liner to isolate leachate from the underlying strata;
- c. Leachate collection system to remove leachate from the landfill; and
- d. Leachate storage and management facilities to temporarily store leachate prior to its removal from the site.

~~42.14.~~ The groundwater collection system must be sized and configured to ensure effective sub-liner drainage and control of groundwater. It must include a separate groundwater quality monitoring sump from the leachate collection system.

~~43.15.~~ The groundwater collection system must be maintained to enable its ongoing operation at all times and it must be restored as soon as practicable in the event of a system malfunction or fault. The Landfill Management Plan required by general condition ~~45.18~~ must include maintenance practices and procedures for the groundwater collection system.

~~44.16.~~ The lining system for the base of the landfill (the portion of the liner that is generally less than 4% crossfall, and continuing 5 horizontal metres up the side slopes) must, as a minimum, comprise the following lining system (from top to bottom):

- i. 300 millimetre layer of leachate drainage material;
- ii. Protection geotextile;
- iii. 1.5 millimetre HDPE geomembrane;
- iv. Geosynthetic clay liner (GCL); and
- v. 600 millimetre compacted soil with a coefficient of permeability $k < 1 \times 10^{-9}$ m/s.

Lime stabilised loess must not be used as part of this lining system.

~~45.17.~~ The lining system for the side slopes of the landfill must, as a minimum, comprise one of the following two lining systems:

- a. Type 1 Lining system (from top to bottom):
 - i. 300 millimetre layer of leachate drainage material;
 - ii. Protection geotextile;
 - iii. 1.5 millimetre HDPE geomembrane; and
 - iv. 600 millimetre compacted soil (clay) with a coefficient of permeability $k < 1 \times 10^{-9}$ m/s.
- b. Or Type 2 lining system (from top to bottom):
 - i. 300 millimetre layer of leachate drainage material;
 - ii. Protection geotextile;
 - iii. 1.5 millimetre HDPE geomembrane;
 - iv. Geosynthetic clay liner (GCL); and
 - v. 600 millimetre compacted soil with a coefficient of permeability $k < 1 \times 10^{-8}$ m/s.

~~46.18.~~ Alternative lining and leachate drainage systems to those specified in conditions ~~43.16~~ and ~~44.17~~ may be used where they provide equivalent or better performance and are submitted to the Independent Peer Review Panel for review, followed by submission to the Otago Regional Council for certification in accordance with the process set out in general condition 3.

- 47-19.** If stabilised loess is used as a component of the liner system for the side slopes of the landfill, it must be batch processed (by weight) prior to placement. As a minimum, the quality control for the batch processing must monitor the dosing of the stabiliser, record where each batch is placed, and include core samples recovered for validation testing of non-dispersive behaviour.
- 48-20.** The installation of the landfill lining system must be subject to independent construction quality assurance (CQA), including for the soil and geosynthetic components of the lining system. On completion of each stage of lining system construction a CQA report must be prepared and must include all of the test results, a description of the observations undertaken and certification that the lining system has been installed in accordance with the specification certified by the Otago Regional Council under general condition **2529**. This report must be submitted to the Independent Peer Review Panel for its review within 3 months following completion of the works referred to in this condition.
- 49-21.** The leachate collection system must:
- Be designed to meet the *WasteMINZ Technical Guidelines for Disposal to Land 2018* for a Class 1 landfill;
 - Be designed to ensure the maximum head of leachate on the liner is no greater than 300 millimetres over all areas of the liner under normal operating conditions, apart from the sumps; and
 - Provide leachate pumping systems in accordance with relevant standards in relation to landfill gas (e.g. AS/NZS 2381.1.1:2005).
- 20-22.** The leachate collection system must be operated to ensure the maximum head of leachate on the liner is no greater than 300 millimetres over all areas of the liner under normal operating conditions, apart from the sumps.
- 24-23.** The leachate storage and management facilities must be provided as follows:
- Leachate storage and management facilities must be designed for a capacity 50% greater than the calculated maximum leachate volume produced over a three-day period for any stage of operation of the landfill, as calibrated against the previous two year's monitoring records of leachate produced. The calculated maximum leachate volume and the leachate storage and management facilities must be described in the Landfill Management Plan required by general condition **4518**; and
 - For the first two years of operation of the landfill where there are insufficient records to calibrate the leachate storage and management systems, those systems must be designed to accommodate the calculated storage and flow rates based on the leachate which would be generated by a 1% Annual Exceedance Probability (AEP) storm event for the extent of landfill to be developed over that two-year period.
- 22-24.** An on-site standby electrical supply must be provided at all times to ensure that the operation of the leachate collection system is not interrupted by any loss of mains power supply.
- 23-25.** The leachate collection systems and leachate storage and management facilities must be maintained to enable their ongoing operation at all times and those systems and facilities must be restored as soon as practicable in the event of a malfunction or fault. The Landfill Management Plan required by general condition **45-18** must include leachate collection systems and leachate storage and management facilities maintenance practices and procedures, including but not limited to a regular programme for jetting and flushing of the leachate collection system.
- 24-26.** Effective measures must be implemented to minimise stormwater infiltration and runoff from areas outside the landfill footprint into areas of exposed landfill liner, areas of uncovered waste and the leachate collection system. The Landfill Management Plan required by general condition **45-18** must describe the stormwater infiltration and runoff measures.
- 25-27.** The level of leachate in the landfill and the volume of leachate that has been pumped from the landfill to the leachate storage facilities must be recorded daily. This record must be provided to the Independent Peer Review Panel and Otago Regional Council upon request and additionally provided to the Panel and Council as part of the Annual Report required by general condition **6771**.

26-28. A sample of leachate from the landfill must be collected from the landfill every 6 months and assessed against the full list of parameters identified in **Attachment 1** to this consent. The sampling results must be provided to the Independent Peer Review Panel and Otago Regional Council within 1 month of the results being received by the consent holder.

Waste Acceptance and Placement

27-29. The landfill must not be open to the general public. Waste must be consolidated off-site prior to transport in bulk to the landfill.

28-30. Food and garden organic waste streams must be collected separately from the general waste stream and processed at the Bulk Waste Transfer Station to minimise disposal of this material at the landfill.

29-31. To the extent practicable, putrescible waste must be removed from the general waste stream and processed separately prior to transfer and final disposal of general waste at the landfill such that to the extent practicable putrescible waste makes up less than 10% of the waste going to the landfill (by weight). Practices and procedures must be included in the Landfill Management Plan required by general condition **45-18** that provide for:

- a. Removal of putrescible waste at the source, including auditing of kerbside bins to prevent receipt of high levels of putrescible contaminated waste, and public education aimed at reducing contamination in kerbside bins;
- b. Ensuring all general waste from all sources is deposited at the Bulk Waste Transfer Station prior to consolidation and transfer to the landfill, except that commercial waste transporters may deliver general waste directly to the landfill without being sorted at the Bulk Waste Transfer Station if the operator has a valid Waste Acceptance Agreement with the Dunedin City Council at the time of delivery and that Agreement requires less than 10% putrescible material of the total waste (by weight);
- c. Removal of putrescible waste from general waste at the Bulk Waste Transfer Station prior to consolidation and transfer of general waste to the landfill. Where putrescible waste contamination cannot be removed from general waste, that general waste must be quarantined and transferred separately to the landfill for disposal as special waste in accordance with condition **44-47** below;
- d. Ensuring all organic food and garden waste that is contaminated with general waste, and all recycling material that is contaminated with organic food and garden waste, is screened to separate organic contaminated waste prior to processing. Organic contaminated waste must be quarantined and transferred separately to the landfill for disposal as special waste in accordance with condition **44-47** below; and
- e. Undertaking an annual assessment using the procedures in the *Solid Waste Analysis Protocol*, Ministry for the Environment, March 2002 of the general waste received at the Bulk Waste Transfer Station and from commercial waste transporters directly to the landfill, to confirm whether the waste received at the landfill is less than 10% putrescible material of the total waste (by weight). The results of the annual assessment must be provided to the **CLG**, Independent Peer Review Panel, Dunedin International Airport Limited, and Otago Regional Council within 1 month of the assessment being completed.

30-32. Materials accepted into the landfill must be limited to the following as defined by the *WasteMINZ Technical Guidelines for Disposal to Land 2018*:

- a. municipal solid waste (MSW) ;
- b. household waste;
- c. commercial waste;
- d. industrial waste;
- e. construction and demolition waste;
- f. clean fill material;
- g. managed fill material;