Before the Independent Commissioner Hearing Panel

Under	the Resource Management Act 1991 (**RMA**)
In the matter of	an application by **Dunedin City Council** to develop a landfill at Smooth Hill, Dunedin.

Statement of evidence of Maurice Richard Dale – Planner

29 April 2022

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Qualifications and experience

1 My name is **Maurice Richard Dale**. I hold the position of Principal and Planner with the environmental consultancy firm Boffa Miskell Limited, based in the firm's Christchurch office. I have been employed by Boffa Miskell since 2010.

2 I hold a Bachelor of Resource and Environmental Planning from Massey University (1998). I am also a full member of the New Zealand Planning Institute, and a member of the Resource Management Law Association. I have 23 years' experience working in New Zealand and the United Kingdom, in statutory and environmental planning, including environmental effects assessment, policy analysis, and plan preparation and administration.

3 I have acted on resource management issues and projects for local and central government, and private clients, covering a broad spectrum of natural and physical resource management issues in urban, rural, coastal, and marine environments. I have extensive experience in the preparation of and assessment of resource consent applications and their associated assessment of effects under the Resource Management Act 1991 (**RMA**), including proposals involving management of large-scale construction activity, and interactions of activities with freshwater and indigenous biodiversity.

Code of conduct

4 I have read the Code of Conduct for Expert Witnesses in the Environment Court Practice Note 2014. This evidence has been prepared in accordance with it and I agree to comply with it. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

Background

5 In this matter, I was engaged by the Dunedin City Council (**DCC**). I have been involved in the proposal to develop a landfill at Smooth Hill from the commencement of the concept design and consenting phase in early 2019.

6 I prepared the original assessment of environmental effects (**AEE**) included with the applications for resource consent lodged with Otago Regional Council (**ORC**) and DCC's regulatory arm in August 2020. I also prepared the updated AEE and draft proposed conditions and was one of the authors of the draft Landfill Management Plan framework (**LMP**) provided to the Councils in May 2021.

7 Following the close of submissions, I have prepared updated sets of the draft proposed conditions that have been provided to ORC and DCC.

Scope of evidence

8 I have been asked to prepare planning evidence evaluating the proposal against the relevant RMA statutory provisions and documents. My evidence draws on the evaluation provided in the applications, and the evidence of other experts for DCC.

9 My evidence includes:

(a) A brief description of the proposal, noting any changes made since lodgment of the application;

(b) The relevant RMA planning documents, the applications made under those documents, and the activity status of the proposal;

(c) A brief description of aspects of the existing environment particularly relevant to the planning evaluation;

(d) A summary of the environmental effects of the proposal under s104(1)(a) and (ab), drawing on the expert evidence;

(e) An evaluation of the proposal against the provisions of the relevant planning documents under s104(1)(b) RMA;

(f) An evaluation of any relevant s104(1)(c) RMA *'other matters';*

(g) An evaluation of s105 and 107 RMA relating to discharges;

(h) An evaluation against Part 2 of the RMA;

(i) Response to matters raised submissions as they relate to planning matters which I consider are of particular significance for the decision maker; and

(j) Discussion on the proposed draft conditions of consent and draft Landfill Management Plan.

10 Throughout my evidence, I respond to matters raised in the Council s42A reports, particularly in regard to the proposed conditions.

11 In preparing my evidence I have reviewed the following documents:

(a) The Council requests for further information, and the applicant's responses to those requests;

(b) The Council section 95 RMA notification reports;

(c) All submissions received on the application;

(d) The Council section 42A reports;

(e) The evidence statements of all witness advising DCC; and

(f) Relevant local, regional, and national planning documents.

12 I have visited the Smooth Hill site and environs twice during the project.

13 Where in my evidence I refer to the resource consent applications and/or AEE, this refers to the updated applications and AEE submitted in May 2021, unless otherwise stated.

Executive summary

14 The construction, operation, closure, and aftercare of a new class 1 landfill for the disposal of municipal and hazardous waste, and the associated road upgrades requires resource consents from ORC and DCC under the NES-FW, relevant regional plans, the Proposed 2GP. The applications all have a discretionary status for the purposes of assessment under section 104 of the RMA, noting that the applications were submitted prior to the NES-FW coming into force (and which ascribes a more stringent non-complying status).

15 On the basis of the expert evidence for DCC, and extensive changes made to the draft proposed conditions, I consider for the purposes of s104(1)(a) and (ab) RMA that the adverse effects of the proposal on the environment will be minor and acceptable, and further consider that the landfill will have positive effects with regard to supporting delivery of the wider Council Waste Futures programme and waste reduction and carbon emission targets, generating economic benefits, and enabling restoration of degraded wetland environments within the site.

16 I also consider for the purposes of s104(1)(b) RMA, that the resource consent applications will be consistent with the overall policy direction of the relevant planning documents, and in particular the higher order, contemporary, and settled directions of the NPS-FW, PROPS, and Proposed 2GP.

17 I consider appropriate regard has been given to s104(1)(c) RMA *'other matter's'* including alternative sites and methods, and consider the proposal broadly aligns with the NRMP. With changes to the proposed conditions in

regard to discharges, the proposal will also not be contrary to the s107 RMA restrictions on the granting of discharge permits (s107 RMA).

18 I consider the proposal will achieve the purpose and principles of Part II the RMA, as it accords with the enabling purpose in section 5 of the Act to promote the sustainable management of natural and physical resources, recognises and provides for relevant matters of national importance, has had regard to other relevant matters, and taken into account the principles of the Treaty of Waitangi.

19 I have addressed the submissions relevant to planning matters, and the s42A reports, and conclude that there are no reasons why the proposal could not be approved, subject to the updated proposed draft conditions.

Assessment of DCC resource consent applications against the planning documents

20 The DCC s42A report considers the proposed road upgrades to be consistent with the relevant provisions of the 2006 District Plan and Proposed 2GP as they relate to the retention of indigenous vegetation, control of earthworks, protection of archaeological sites, protection of health and amenity from construction noise, maintenance of cultural values, and road safety and efficiency. The report considers that in all instances the proposal is consistent with the relevant provisions.

21 I agree with the s42A report that the proposal is fully consistent with the relevant provisions of the Proposed 2GP, noting as earlier the 2006 District Plan is no longer relevant to the assessment of this application.

The proposal

22 The proposal involves the staged construction, operation, closure and aftercare of a class 1 landfill for the disposal of municipal and hazardous waste, and associated upgrades to McLaren Gully Road (including its intersection with State Highway 1) and Big Stone Road to the site. The landfill will have a capacity of approximately 2.94 million cubic metres of waste and an expected life at current Dunedin disposal rates of approximately 40 years. The landfill will receive waste only from commercial waste companies, or bulk loads in accordance with waste acceptance criteria and procedures. Waste will not be directly received from the public.

23 Section 5.0 of the AEE describes the proposal, and the concept design of the landfill and road upgrades are further described in the evidence of **Mr Coombe** and **Mr Whaley** respectively. The final form of the project is

expected to generally accord with that conceptually described, however flexibility is sought through the resource consents (and their conditions) for future detailed design of the landfill.

24 In summary, the proposal includes the following components:

Infrastructure

(a) Earthworks to construct the required landfill shape including the base grade, with excavated soil being stockpiled in two stockpile areas for reuse over the life of the landfill;

(b) A low permeability lining system above the base grade to prevent leachate seepage into the surrounding environment, including a groundwater collection system to manage groundwater beneath the liner;

(c) A leachate collection system above the low permeability lining system, to remove and store leachate, prior to transport by tanker from the site for disposal. In the future leachate will likely be piped to the Council wastewater system at Brighton;[1]

(d) Stormwater control around the landfill and other areas of the site with appropriate treatment and attenuation before being discharged to watercourses within the site;

(e) LFG collection system, and destruction of LFG by flaring;

(f) Operational facilities including:

i. office and facilities for site staff;

ii. maintenance facilities for plant and equipment;

iii. weighbridge and vehicle wheel wash;

iv. water supplies for operational (non-potable) and staff (potable) requirements;

v. backup diesel generator to power leachate extraction pumps;

vi. Environmental monitoring infrastructure, including groundwater and LFG wells;

[1] No consents are being sought for any leachate pipeline to Brighton as part of these applications.

(g) Landscape perimeter planting established as part of the initial development works, and restoration of the swamp wetland within the site;

(h) Upgrade and sealing of McLaren Gully Road, including its intersection with State Highway 1, and Big Stone Road, constructed as part of the initial development works; and

(i) Landfill site access and a separate emergency access from Big Stone Road, and permanent and temporary internal roads required to access the various parts of the site.

Operations

(j) Vehicle movements to and from the site, and within the site. Heavy vehicles will access the landfill via SH1, McLaren Gully Road, and Big Stone Road. The landfill will be open to waste deliveries on Monday to Saturday 8.00am - 5.30pm, and Sunday 9.00am - 5.30pm. The landfill will be closed, Easter Friday, Christmas Day, New Year's Day, and the morning of Anzac Day (until 1pm);[2] and

(k) Staged and progressive filling of the landfill, including application of daily and intermediate cover. Incoming waste will be weighed and inspected for compliance with the landfill waste acceptance criteria. The landfill will accept municipal solid waste (**MSW**), and potentially hazardous waste that meets the leachability limits in the Ministry for the Environment Module 2: Hazardous Waste Guidelines (2004) - Class A. Food and garden organic waste streams will be collected and processed separately to minimise disposal of this material at Smooth Hill. Furthermore, to the extent practicable residual putrescible waste will be removed from the general waste stream prior to transport and disposal of waste at Smooth Hill.

Closure and Aftercare

(l) Closure of the landfill including placing the final capping layer on completion of each stage, establishing final landscaping, and removing/modifying infrastructure for the aftercare period. This includes recontouring of the soil stockpile areas, revegetation, and disestablishing any temporary stormwater systems; and

[2] The landfill operator may commence operations 1 hour before and up to 1.5 hours after the opening hours to prepare for waste delivery in the morning and to close off the works at the end of the day.

(m) Aftercare of the landfill including ongoing operation and maintenance of the LFG, leachate, and permanent site stormwater systems; maintenance of the landfill cap; maintenance of remaining site infrastructure; and ongoing environmental monitoring, reporting, and event response, as required by the resource consents.

25 As described in section 1.0 the AEE, following lodgement of the original applications and AEE in August 2020, the concept design of the landfill and road upgrades was reviewed in light of the Council requests for further information, the directions of the Resource Management (National Environmental Standards for Freshwater) Regulations 2020 (**NES-FW**), and National Policy Statement for Freshwater (**NPS-FW**) for management of *'natural wetlands'*, and continued review of the quantum of the likely waste stream for the landfill.

26 Compared with the original proposal as lodged, the updated proposal moves the landfill and associated infrastructure outside of the *'natural wetlands'* within the site, resulting in a reduction in the landfill footprint from 44.5 ha to 18.6 ha. The finished maximum height over the reduced footprint remains unchanged at RL149 m. Refinements to the design of the upgrades to McLaren Gully Road also resulted in the road being substantially moved outside of roadside *'natural wetlands'* with the exception of a small area (~16.5m^2). As described in the evidence of **Mr Whaley**, further changes have now been made to the road design that move the upgraded road fully outside these wetlands.

27 As described in section 5.15 of the AEE, the construction, operation, maintenance, closure, and aftercare of the landfill will occur in accordance with a comprehensive LMP prepared in accordance with the WasteMINZ WasteMINZ Technical Guidelines for Disposal to Land (August 2018) (**WasteMINZ guidelines**). The LMP is essentially a construction, operational, and environmental manual for the landfill. Its purpose is to document the site-specific procedures, including monitoring and contingency actions to be implemented to ensure the landfill achieves the operational and environmental objectives and conditions set out in the resource consents, to ensure the potential for adverse environmental effects is minimised.

28 It is common practice to prepare a full LMP as part of detailed design of the landfill, and before construction commences. This enables the LMP procedures to align with the detailed design, landfill developer/operator requirements, and the conditions of the approved resource consents. The LMP is a 'living' document and will be regularly reviewed and updated over the life of the landfill to ensure that management practices result in

compliance with the conditions of resource consent, and to respond to any changes in waste demands, best practice design and management, regulatory requirements, and any environmental changes.

29 A draft LMP was provided to the Councils in May 2021 as part of the updated applications. The draft LMP comprises a structure and indicative content recognising that finalisation of the plan is contingent on detailed landfill design and the specific needs of a landfill developer/operator. It provides a starting point for full completion of the final LMP before construction commences.

30 The framework includes provision for the following sections:

(a) Introduction – the plan purpose; requirements, structure; schedule of resource consents held and designation; relevant documents and guidelines; and procedures for plan review;

(b) Site management – description of the site; landfill management roles and responsibilities; training requirements for specialist roles; health and safety requirements; and procedures for communication with the community and receiving and responding to complaints;

(c) Landfill construction – general description of the design; and the parameters and procedures for detailed design and construction of the landfill;

(d) Landfill operation – daily procedures for operation of the landfill, including for waste acceptance;

(e) Landfill closure and aftercare – procedures for site closure, rehabilitation and ongoing aftercare; and

(f) Monitoring, records, and reporting – details of the monitoring and reporting requirements that will be undertaken.

31 The above structure also incorporates additional management plans which address specific management issues. These include a Receiving Environment Water Monitoring Plan, Eastern Falcon Management Plan, Lizard Management Plan, and Vegetation Restoration Management Plan, Freshwater and Wetland Monitoring and Management Plan, Landfill Operational Bird Management Plan, Landscape Management Plan, and Fire Preparedness and Response Plan which will be attached as appendices to the LMP. These management plans will be referenced throughout the LMP to ensure they form part of the overall integrated suite of procedures for the management of the landfill.

32 The draft Landfill Operational Bird Management, Eastern Falcon Management, Lizard Management, and Vegetation Restoration Management Plans were attached to the draft LMP. These plans were drafted in full in direct response to the ORC's request for further information which sought that these draft management plans be prepared. Also as requested by ORC, greater detail of procedures for the management of odour and dust was included in the draft LMP.

33 The draft proposed ORC conditions included as **Attachment 2** to my evidence, provide direction on the preparation, implementation, and review of the LMP and associated plans, including objectives to guide the development of the procedures, and against which the success of the plans can be measured. As discussed later in my evidence aspects of the draft LMP have been updated which is included as **Attachment 4** to my evidence.

Applications made to Otago Regional Council

34 I agree with the ORC s42A report that resource consents are required for the project under the following planning documents:[3]

(a) Resource Management (National Environmental Standards for Freshwater) Regulations 2020 (**NES-FW**) which controls activities affecting *'natural wetlands'*.[4] The regulations came into force on the 3rd of September 2020 after the resource consent applications were lodged.

(b) Regional Plan: Waste for Otago (**RP-Waste**), which controls the discharge of contaminants to land, air, and water associated with landfills and facilities for hazardous wastes. The Waste Plan is currently subject to proposed Plan Change 1, which does not change the rules relevant to the proposal.

(c) Regional Plan: Water for Otago (**RP-Water**), which controls the take, use, damming, and diversion of water, and discharges to land and water not controlled by the Waste Plan. The Water Plan is currently subject to proposed Plan Change 8, which does not change rules relevant to the proposal.

[3] Section 5, ORC s42A report

[4] As described in the evidence of Dr Morris, the swamp wetland at the bottom of the site, valley floor marsh wetland, and along the margins of McLaren Gully Road are *'natural wetlands'* under the NPS-FW

35 As described in the evidence of **Mr Ingles**, and **Dr Blakely**, the watercourses that exist within the site upstream of the swamp wetland only covey ephemeral overland flows of water during prolonged rainfall, have no clearly defined bed, have a general absence of natural stream bed substrates, and do not provide any habitat for freshwater macroinvertebrate or fish fauna. Accordingly, I agree with the ORC s42A report that they are not *'rivers'* as defined by the RMA, NES-FW, or RP-Water in determining the resource consents required for the project.[5]

36 I agree with the description of the NES-FW and regional rules triggered by the project in the ORC s42A report [6]. The table below summarises my understanding of the consents required and applied for under the above planning documents, their activity status, and the duration of consent sought. No additional consents are required as a result of the changes to the design of the upgrades to McLaren Gully Road, and land use consent within wetlands, and associated alteration of the bed is no longer required.[7]

Consent and Duration Applied for	**Relevant Documents and Rules**	**Activity Status**
Discharge consent – to discharge waste and hazardous waste onto land within the landfill, and landfill leachate onto land within the landfill that may result in contaminants entering groundwater. Consent duration of 35 years.	RP-Waste – rules 6.6.1 and 7.6.1.	Discretionary.
Water permit – to take up to 87m^3/day and 1600m^3/year of groundwater from the landfill groundwater collection system and use up to 50m^3/day for non-potable water supply for the landfill facilities. Consent duration of 6 years.[8]	RP-Water – rule 12.2.4.	Discretionary.
	NES-FW – reg 52.	Non-complying.

[5] Section 6.1.4 ORC s42A report.

[6] Section 5 ORC s42A report.

[7] Land use consent was previously required under Water Plan – rules 13.1.2.1, 13.2.3.1, 13.5.3.1, and NES-FW – regulations 52, 53, 54, and 57.

[8] Consistent with policy 10A.2.2 of Plan Change 7 to the Water Plan confirmed by the Environment Court on 5 March 2022.

Water permit – to divert surface water within the Ōtokia Creek catchment for land drainage of the landfill site. Consent duration of 35 years.	RP-Water – rule 12.3.4.	Discretionary.
	NES-FW – reg 52.	Non-complying.
Water permit – to dam surface water via the attenuation basin dam. Consent duration of 35 years.	RP-Water – rule 12.3.4.	Discretionary.
	NES-FW – reg 52.	Non-complying
Discharge permit – to discharge stormwater, collected groundwater, and contaminants to the Ōtokia Creek from the attenuation basin, sediment retention ponds, and from the site to an unnamed tributary of the Ōtokia Creek. Consent duration of 35 years.	RP-Water – rule 12.B.4.1.	Discretionary.
	NES-FW – reg 54.	Non-complying
Discharge permit – to discharge landfill gas, flared exhaust gases, dust, and odour into air from the landfill. Consent duration of 35 years.	RP-Waste – rules 6.6.1 and 7.6.1.	Discretionary.
Land use consent – to clear vegetation within 10m and undertake earthworks within 100m and 10m of natural wetlands for construction of the landfill and the upgrade of McLaren Gully Road. Unlimited consent duration.	NES-FW – reg 52. NES-FW – reg 54.	Non-complying.
Land use consent – to clear vegetation within and within 10m of natural wetlands for natural wetland restoration. Unlimited consent duration.	NES-FW – reg 39.	Restricted discretionary.

37 The applications were lodged after the NES-FW came into effect. I agree with the s42A report that consent for certain activities is still required under the NES-FW rules, and that where those result in a more stringent activity

status, s88A of the RMA provides that the activity status remains unchanged from when the applications was lodged. Accordingly, while as above the NES-FW rules prescribe a non-complying activity status, the resource consents applied for from ORC overall remain a discretionary activity under section 104 and 104B of the RMA.

38 While they currently have no effect, I note the Ministry for the Environment is considering changes to the NES-FW that would provide a discretionary activity pathway for landfills (among other activities) where they affect wetlands, due to their national and/or regional significance and/or their functional need for them to be situated in particular geographical locations.[9] Applications for consent would still need to demonstrate how the effects management hierarchy set out in the NPS-FW will be applied before consent can be granted. This hierarchy requires adverse effects are avoided where practicable, and where they cannot be avoided, they are minimised, remedied, offset, or compensated.

39 A series of piezometers or water levels loggers will need to be installed within and adjacent to wetlands as a consequence of proposed changes to hydrological monitoring outlined in **Mr Kirk's** evidence. No resource consents for these monitoring instruments have been applied for to date and would need to be applied for separately where required. I note that any associated vegetation clearance and earthworks for their installation would be classified as a restricted discretionary activity under the NES-FW.[10]

40 The ORC s42A report noted that a specific lapse date under s125 of the RMA for the consents was not requested.[11] However, I note a 10-year lapse date was requested for all resource consents.[12]

Applications to Dunedin City Council

41 The area of the site within which the landfill is proposed has been designated in the District Plan for *'proposed landfilling and associated refuse processing operations and activities'* since 1996. The designation has been 'rolled over' into the Proposed Dunedin City District Plan.[13] The Council has recently amended the designation under section 181(3) of the

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[9] Managing our Wetlands – Discussion Document on Proposed Changes to the Wetland Regulations, Ministry for the Environment, September 2021.

[10] Regulation 42 NES-FW – Construction of wetland utility structures.

[11] Section 11.2 ORC s42A report.

[12] Page 77, Assessment of Environmental Effects for Updated Design.

[13] Designation D659 Proposed Smooth Hill Landfill, Proposed 2GP.

RMA to encompass a stopped road running though the site into the designation.

42 As a result of the designation, no resource consents are required from DCC for the construction and operation of the landfill within the site. An outline plan of works is instead required to be submitted to DCC prior to development commencing under section 176A of the RMA.[14] This will be submitted following the completion of detailed landfill design, and in a way which aligns with the conditions of the ORC resource consents.

43 I agree with the DCC s42A report that resource consents are required for the project under the Proposed Dunedin City District Plan (**Proposed 2GP**) which controls the subdivision, use, and development of land. However, given the road upgrades have been moved fully outside of the roadside wetland areas, I consider the Operative Dunedin City District Plan (**2006 District Plan**) is no longer relevant to the applications due to the indigenous vegetation clearance provisions of that plan (which remain in effect) no longer being triggered by the road upgrades.

44 I agree with the description of the district rules triggered by the road upgrades and the consents sought in the DCC s42A report, with the exception that rules relating to indigenous vegetation clearance are no longer triggered as noted above.[15] The table below summarises my understanding of the consents required and applied for, and their activity status.

Consent applied for	**Relevant Document and Rule**	**Activity Status**
Land use consent – to upgrade McLaren Gully Road, Big Stone Road, and SH1 outside of the existing formed road corridor or legal road.	Proposed 2GP – rule 6.3.2.2.	Discretionary.
Land use consent – to undertake earthworks associated with the upgrade of McLaren Gully Road, Big Stone Road, and SH1.	Proposed 2GP – rule 8A.3.2.	Restricted discretionary.

[14] Section 176A RMA.

[15] Section 2.1 ORC s42A report.

45 Based on the above, the resource consents applied for from DCC are to be assessed as a discretionary activity under sections 104 and 104B of the RMA.

46 A 10-year lapse date was requested for the resource consents, pursuant to section 125(a) of the RMA.

The site and existing environment

47 The application site and existing environment are described in section 4.0 of the AEE, and specific aspects are further described in the evidence of other experts for DCC.

48 I note however the following aspects of the existing environment are particularly relevant to the evaluation of the proposal against the RMA and relevant planning documents later in my evidence:

(a) As described in the evidence of **Dr Morris**, the interconnected area of gullies and wetland habitat comprising largely indigenous vegetation types within and downstream of the landfill site, plantation forestry cutover areas within the site, and areas of rank grassland that fringe the cutover area within the site and along the roadsides of McLaren Gully Road and Big Stone Road comprise significant indigenous vegetation and/or significant habitats under section 6(c) of the RMA, and relevant planning documents.

(b) As described in the evidence of **Mr Girvan**, the site and surrounding area does not comprise an outstanding natural landscape or feature, or significant landscape for the purposes of sections 6(c) or 7(c) of the RMA.

(c) As described in the evidence of **Ms Lawrence**, there are seven archaeological sites within the project area relating to nineteenth century agricultural and pastoral activities, including two sites (I45/71 and I45/72) within the designation area, but outside the landfill footprint.

(d) Dunedin International Airport and State Highway 1 comprise *'nationally and regionally significant infrastructure'* defined by the Partially Operative Otago Regional Policy Statement (**PORPS**),[16] and the airport and SH1 are defined as *'nationally significant*

[16] Policy 4.3.2, ORPS.

infrastructure' under the Proposed Otago Regional Policy Statement (**Proposed RPS**).[17]

49 Activities that can be carried out as of right or with respect to future resource consents that have been granted (where it is likely they will be given effect to) form part of the existing and reasonably foreseeable future environment upon which effects of the proposal should be assessed.

50 In this regard, I note farming and forestry activities in the surrounding area, and vehicle movements on public roads are able to occur as of right as permitted activities under the Proposed 2GP. Additional residential activities can also establish within the surrounding area as a permitted activity under the Proposed 2GP rural zoning where they provide a minimum 15 ha site to establish a residential activity, or 80 ha site for a second residential activity on a site.[18] New residential buildings are required to be located at least 150m from existing, lawfully established landfills.

Environmental effects (s104(1)(a) and (ab) RMA)

51 An assessment of environmental effects under section 104(1)(a) of the RMA is contained in section 8.0 of the AEE. Rather than repeating that assessment, here I summarise the conclusions reached in the expert evidence for DCC on the environmental effects and which respond to the remaining issues raised in the s42A reports, and submissions.

52 This summary focusses on the environmental effects that fall within the scope of the resource consents that have been applied for. In that regard, I note the following:

(a) A number of the relevant land use effects including those relating to land stability, terrestrial ecology, landscape and visual amenity, archaeology, cultural values, transportation, aviation safety, noise, and community effects will also be addressed through the outline plan of works process. As noted above an outline plan will be submitted following the completion of detailed landfill design, and in a way which aligns with the conditions of the DCC resource consents.

(b) There are a number of activities permitted under the NES-FW, and regional and district plans and which therefore fall within the *'permitted baseline'* for which the RMA enables decision makers to

[17] Part 1 Introduction and General Provisions – Definitions, PRPS.

[18] Rule 16.5.2, Proposed 2GP.

disregard any adverse effect.[19] These include the discharge of stormwater from the road upgrades; discharge of dust to air from the construction of the road upgrades; drilling of land outside of wetlands to install groundwater and LFG monitoring bores, and LFG collection system. Effects from these activities may therefore be disregarded.

Waste management effects

53 The evidence of **Ms Graham**, CEO for DCC, and **Mr Henderson**, DCC's Group Manager Waste and Environment Solutions, describes the Council's Waste Future's programme, its decision-making processes related to developing a landfill at Smooth Hill relative to alternatives, and the nature of residual waste to be accepted at the landfill.

54 The proposal to construct and operate a landfill at Smooth Hill sits within the context of the wider Waste Futures programme. This programme aims to ensure effective reduction and management of solid waste; and to identify and procure the best solid waste solution for Dunedin to enable the city to move towards a zero-waste future and a more circular economy. In so doing, it will also support the Council's carbon emission reduction targets.

55 The Council is committed to reducing waste that is sent to landfill, and to reducing associated carbon emissions from waste. Mr Henderson in particular notes that food and garden organic waste streams will be collected and processed separately to minimise disposal of this material at Smooth Hill, and that to the extent practicable residual putrescible waste will be removed prior to transport and disposal of general waste at the landfill.

56 There has been an extensive investigation of potential sites, and consideration of a range of alternative options for disposal of residual waste including extension of Green Island landfill, out-of-district disposal, and incineration. None of these options are preferred due to for technical constraints and consenting challenges (Green Island); lack of control over the waste cycle, and cost increase exposure (out-of-district); and high capital cost, cultural acceptability; and ash disposal (incineration). I further discuss the assessment of alternatives later in my evidence in considering section s104(1)(c) RMA *'other matters'*.

[19] Section 104(2) RMA.

Economic and social effects

57 The economic benefits of the landfill for Dunedin City are described in the evidence of **Mr Akehurst**. The landfill will provide the opportunity to cater for commercial volumes of waste and therefore help fund investment into diversion and processing facilities required to achieve a circular waste economy. The landfill is expected to generate a net additional contribution to GDP of $23m in net present value over its anticipated consented lifetime, with the potential for this to increase to almost $50m in a 50:50 joint venture with a suitably qualified private sector partner. The landfill will sustain an additional 813 employment job years of which 616 occur within the first 10 years.

58 The evidence of **Ms Graham** describes how the Council has given a significant amount of consideration as to how best alleviate community concerns and address any potential perceived social and wellbeing impacts of the landfill. This could include establishment of communication strategies/plans to ensure the local community is provided with information and can voice their interests and concerns over the life of the landfill. It could also include Council support for pre-existing or new community initiatives that contribute to the wellbeing of the local community. The Council intends to engage with the community to gather ideas that best meet their needs and develop tangible initiatives to be delivered to provide a community benefit.

Effects on land stability, groundwater, and surface water

59 The seismic setting of the landfill has been described by **Professor Stirling**, and the stability of the landfill in the context of the interaction of geotechnical ground conditions and the landfill design is described in the evidence of **Ms Webb**. The underlying Henley Breccia material will result in kinematically stable landfill slopes based on the proposed design and is a suitable material for re-use as engineered fill for the construction of the landfill slopes and toe bund. Modelling of the toe bund, against which the landfill waste is toe buttressed, indicates the bund will be stable under static conditions. Based on the seismicity of the site, during a seismic event, the modelling indicates deformation of the toe bund of 2 – 14mm will occur. This will be further considered during detailed design, as will confirmation of the suitability of site won loess soils for use in the final landfill liner system.

60 Ms Webb considers that in response to the ORC peer review, s42A report, and submissions, that additional geotechnical investigations should be carried out as part of detailed design to generate a robust geotechnical

ground model; a Site Specific Probabilistic Seismic Hazard Assessment (SSSHA) should be undertaken to ensure seismic risks are addressed; and quantitative limit equilibrium slope stability assessment should be undertaken to demonstrate the short and long-term stability of all cut and fill slopes of the landform. These measures have been adopted in the draft proposed ORC conditions (**Attachment 2**). This set of draft conditions includes all changes requested by the ORC's geotechnical peer reviewer Mr Stiles.

61 Ms Webb notes any changes needing to be made to the design as a result of the SSSHA and slope stability analysis are likely to fall within the envelope of the current design, based on the current design inputs. I note the ORC s42A report expresses a preference for a mechanism to be built into the consent conditions to provide more certainty as to what is and what isn't being authorised by the consent. Ms Webb considers having a condition would be limiting for the landfill designer during detailed design. Given the above, I do not propose a condition as sought by ORC. As is common practice, any change to the design that is not in general accordance with the consent, would need to obtain either a change to the consent conditions under s127 RMA, or a new consent.

62 The concept design of the proposed landfill is described in the evidence of **Mr Coombe.** The sites' location and landform are beneficial for designing a landfill. The landfill concept has been designed to meet the best practice design standards of the WasteMINZ guidelines and incorporates robust environmental controls including structural containment. These include liner and leachate collection systems, LFG collection and destruction systems, and stormwater management, to avoid and mitigate adverse environmental effects, including from potential major environmental occurrences (e.g. storm rainfall events).

63 Mr Coombe's evidence considers in response to issues raised by ORC peer review, and submissions, that a peer review panel should be established to review the design, construction, and operation of the landfill; the landfill liner should be subject to construction quality assurance (CQA), the adequacy of leachate storage facilities should be confirmed as part of detailed design, and that waste delivery trucks should be covered. These measures have been adopted in the draft proposed ORC conditions (**Attachment 2**).

64 The effects of the landfill on groundwater and surface water levels, flow, and quality haven described in the evidence of **Mr Kirk** and **Mr Ingles**. Reduction in shallow groundwater flows and levels and reduced discharge to the connected Ōtokia Creek will be mitigated by the moderation of stormwater flows and infiltration to ground from the attenuation basin. This

infiltration is expected to provide a more consistent source of recharge to the shallow groundwater system, and baseflow for the Ōtokia Creek.

65 Reductions in surface runoff will be from the site will be less than would be expected to occur due to annual climatic variation and less than would occur as a result of the reafforestation of the area, and hydrological changes would not lead to loss of wetland extent at the site. The attenuation effect of the wetland systems and the attenuation basin will mitigate to a significant extent any impact on low flows or the extent and duration of no flow further downstream from the site.

66 Leachate generation and leakage will be minimised by the design and operation of the landfill. While some leachate leakage is expected (up to a peak of 1.4m^3/year), the predicted flux for the majority of water quality parameters within shallow groundwater will reduce with landfill development. Increases in flux of lead, Dissolved Reactive Phosphorus, and chromium are not predicted to exceed water quality criteria and increases in iron and Total Kjeldahl Nitrogen are not considered to be at concentrations of concern in the context of the existing environment. The flux of total inorganic nitrogen is estimated to reduce within the shallow groundwater system in comparison to existing conditions following placement of the landfill.

67 Diversion of stormwater runoff and minimising exposed areas of landfilling will avoid contamination of stormwater. Any stormwater that comes into contact with waste will be treated as leachate and collected by the leachate collection system. This along with stormwater controls and monitoring both on and off site will ensure leachate and other contaminant discharges from site are minimised and that effects immediately downstream will be less than minor and undetectable further downstream.

68 Monitoring during operation and after closure of the landfill will be undertaken at various locations to assess whether water is impacted by leachate leakage and confirm the effectiveness of sediment controls, triggering action where thresholds are exceeded. In addition, hydrological monitoring is proposed within and adjacent to wetlands. Considerable changes have been made to the draft proposed ORC conditions (**Attachment 2).** The draft conditions include amendments sought by the ORC's peer reviewers Mr Cochrane and Ms Lochhead, notably the addition of hydrological monitoring within the downstream wetlands.

69 Changes to the conditions include (among other refinements) requirements for three additional groundwater monitoring wells, and a network of six automated hydrological monitoring piezometers within and adjoining the

wetland. The groundwater baseline monitoring period has also been extended from 12 to 36 months. Following completion of baseline monitoring, including comparison of results with rainfall data, the site conceptual model will be confirmed and a Receiving Waters Environment Management Plan developed setting out the long-term monitoring programme, which is to include monitoring trigger levels established in accordance with requirements. Additional requirements for continuous monitoring have been incorporated during operation. Perfluorooctanesulfonic acid (PFOS), Total Organic Carbon, Total Kjeldahl Nitrogen, and Total Phosphorus have also been added as contaminants to be monitored.

70 The ORC s42A report considers there is uncertainty regarding the risk of contamination of the shallow groundwater system, and the ability of the proposed draft conditions of consent to ensure adverse effects on groundwater and surface water quality will be avoided, remedied, and mitigated. Acknowledging that concern, I consider that on the basis of the evidence of Mr Kirk and Mr Ingles in response, and changes to the proposed draft conditions, that effects on groundwater and surface water quality have been appropriately addressed.

LFG and fire effects

71 Landfill gas (**LFG**) related effects are described in the evidence of **Mr Welch.** Installation and operation of an LFG collection and destruction system in accordance with the WasteMINZ guidelines and National Environmental Standards for Air Quality (**NES-AQ**),[20] will ensure risks to on-site and off-site receptors are low. Monitoring during operating and after closure of the landfill will be undertaken at a perimeter landfill gas monitoring bore network and other locations to confirm the effectiveness of LFG management, triggering action where thresholds are exceeded.

72 Landfill fire related effects are described in the evidence of **Mr Dixon** and **Mr de Mar**. Proposed controls to reduce the risk of surface and subsurface landfill fires, and fire detection and on-site fire suppression capability are proposed. In addition, changes to the site design, including clearance of woody vegetation from the landfill footprint, fire breaks, a second emergency access point to the site, and use of less flammable tree species in the landscape screening will ensure the risk of fire escaping beyond the site is adequately managed. With these measures, fire risks will be managed to acceptable levels.

[20] Resource Management (National Environmental Standards for Air Quality) Regulations 2004.

73 Based on the evidence of Mr Welch, Mr Dixon, and Mr de Mar, changes have been made to the draft proposed ORC conditions in regard to management of LFG and fire risk (**Attachment 2**). This includes (among other refinements) additional requirements for completion of a detailed Landfill Gas Risk Assessment (LFGRA) prior to construction; development of monitoring trigger levels for a specific list of LFG monitoring parameters; monitoring for landfill gas escape within areas of immediate cover, buildings, and sub-surface pits; and development of a Fire Preparedness and Response Plan incorporating fire prevention, detection, and response measures for inclusion in the final LMP. The draft LMP has also been updated to include reference to this plan (**Attachment 4**).

Effects on air quality

74 The effects of the landfill on air quality from odour, dust, and flared LFG emissions are described in the evidence of **Mr Stacey**. Considering the results of a Frequency, Intensity, Duration, Offensiveness, Location (**FIDOL**) assessment and odour dispersion modelling, the implementation of the proposed odour mitigation measures will ensure nearby receptors are unlikely to experience odour effects that are offensive or objectionable.

75 Given the distance from the site to sensitive receptors, implementation of the dust mitigation measures in the draft LMP will ensure offsite receptors are unlikely to experience adverse dust nuisance effects. Furthermore, predicted offsite concentrations of air pollutants associated with the LFG flare are well below the relevant assessment criteria, and therefore flare emissions will have limited potential to cause adverse effects beyond the site boundary. Negligible impacts are anticipated from vehicle emissions and diesel generator emissions.

76 Mr Stacey's evidence considers in response to issues raised by the ORC peer review, s42A report, and submissions, that odour and dust should be managed to ensure it is not *'noxious, dangerous, offensive, or objectionable odour to the extent that it causes an adverse effect at or beyond the boundary of the site'*; additional measures for managing 'highly odorous waste' should be implemented; and the LFG combustion flare should meet specified standards. These measures have been adopted in the draft proposed ORC conditions (**Attachment 2**). This includes all changes requested by the ORC's air quality peer reviewer Mr Chilton. The draft LMP has also been updated, including to capture additional odour mitigation measures (**Attachment 4**).

Effects on terrestrial and freshwater ecology

77 The effects of the landfill and road upgrades on terrestrial vegetation and wetlands has been described in the evidence of **Dr Morris**. The updated design results in no areas of indigenous vegetation or wetlands being directly affected, and the degree of indirect hydrological impacts described in the evidence of Mr Kirk and Mr Ingles is expected to result in (at worst) low level ecological impacts to the modified swamp wetland without mitigation. No measurable adverse effects on the valley floor marsh wetland or roadside wetlands are expected to arise.

78 While it is not expected that the degree of hydrological impacts would lead to any loss of wetland extent or values in terms of indigenous wetland plant species, baseline monitoring and upfront restoration actions in the Vegetation Restoration Management Plan are proposed that improve the condition of indigenous wetland plant species relative to the current state. This results in a new gain and increases their resilience to water levels changes that may occur.

79 The effects of the landfill on freshwater ecology have been described in the evidence of **Dr Blakely**. The degree of indirect hydrological impacts described in the evidence of Mr Ingles, is not expected to result in any discernible change on the flow regime within the defined channel of the valley floor marsh wetland. Consequently, no changes in freshwater habitat are expected. Baseline freshwater monitoring alongside the hydrological monitoring within the wetland systems is however proposed. This would be in addition to responses detailed in the Freshwater Monitoring and Management Plan that will ensure that any unexpected stream habitat loss is quantified, and appropriately remedied or otherwise offset and compensated in accordance with the effects management hierarchy.

80 The effects of the landfill on avifauna are described in the evidence of **Ms Sievwright**. All effects on avifuna within the landfill site area are expected to be very low without mitigation, with the exception that potential construction-associated disturbance, displacement, and mortality of nesting eastern falcon are expected to be moderate without mitigation. Measures proposed to be implemented in the Falcon Management Plan are expected to result in a low level of effects on falcons, meaning that offsetting or compensation measures are not expected be required.

81 The effects of the landfill and road upgrades on lizards are described in the evidence **Ms King**. Measures proposed to be implemented in the Lizard Management Plan, including salvage, habitat restoration, and predator

control are expected to result in a negligible level of effects on lizards, and offsetting or compensation measures are not expected to be required.

82 In recognition of the evidence of Dr Morris, Dr Blakely, Ms Sievwright, and Ms King, changes have been made to the draft proposed ORC conditions (**Attachment 2**). This includes (among other refinements) baseline wetland ecology and freshwater monitoring (coupled with the hydrological monitoring) to inform the development of the Vegetation Restoration and Freshwater and Wetland Monitoring Management Plans; greater prescriptiveness of the content of the Freshwater and Wetland Monitoring Management Plan to ensure any adverse effects on freshwater values identified through monitoring are effectively remedied and otherwise managed; and provision for applying appropriate ecological offsetting/compensation methodologies to ensure any residual effects (where they occur) are offset and compensated through the ecological management plans to ensure no net loss in ecological values.

83 The ORC s42A report considers there is considerable uncertainty regarding the degree of hydrological change that may occur which could be managed through consent conditions requiring hydrological and ecological monitoring, and adaptive management responses. The report also considers there is a low degree of confidence in the magnitude and level of ecological effects, and whether no net loss in ecological values will be achieved. Acknowledging that concern, I consider that on the basis of the evidence of Dr Morris, Dr Blakely, Ms Sievwright, and Ms King in response, including changes to the draft proposed conditions of consent, that effects on ecological values are appropriately addressed.

Effects on landscape character, visual amenity, and natural character

84 The effects of the landfill and road upgrades on landscape character, visual amenity, and natural character are described in the evidence of **Mr Girvan**. The project area is not part of any outstanding or significant landscape or feature for the purposes of section 6s and 7 of the RMA. The undulating rural hill country and existing exotic forestry will enclose, and largely conceal the landfill, with views being limited to transient views from adjacent roads, and partial distant views from three dwellings along Big Stone Road. Indigenous screen planting and areas of faster growing exotic vegetation in key areas will result in landscape and visual effects being low. Waterbodies and wetlands within and downstream of the landfill express lower levels of naturalness and proposed ecological restoration will result in beneficial effects on natural character.

85 Recognising Mr Girvan's evidence, and in response to the ORC s42A report, changes to the draft proposed ORC conditions now require the implementation and maintenance of the proposed screen planting (**Attachment 2).**

Effects on archaeological values

86 The effects of the landfill and road upgrades on archaeological values are addressed in the evidence of **Ms Lawrence**. Seven archaeological sites have been identified in the project area relating to nineteenth century agricultural/pastoral activity which has low-medium, or medium archaeological values. There is further potential for unrecorded sites to be encountered during development.

87 Effects on recorded and unrecorded sites will be managed through proposed monitoring, discovery protocols, and recording requirements, and the authority process under the Heritage New Zealand Pouhere Taonga Act 2014. Furthermore sites (I45/71 and I45/72) within the site will be retained and protected. Changes have been made to the draft proposed ORC and DCC conditions to better capture the intended processes to ensure protection of archaeological values during the works (**Attachments 2 and 3**).

Effects on cultural values

88 The effects of the landfill and road upgrades on cultural values are addressed in the Cultural Impact Assessment (CIA) prepared by **Aukaha** on behalf of Te Rūnanga o Ōtākou. Potential impacts on cultural values identified in the CIA, have been addressed through design measures, and operational, and monitoring practices that will persist beyond the 40-year operational life of the landfill, to ensure effects on the mauri and whakapapa of the receiving environment are avoided to the fullest extent possible. Enhancement of wetland/riparian habitat, and pest management are also proposed to offset effects on mauri and whakapapa and restore mahika kai values.

89 The key messages and recommendations in the CIA have been adopted in the draft proposed ORC conditions (**Attachment 2)**. Ongoing engagement with Te Rūnanga o Ōtākou is proposed as part of these conditions, including input into the detailed management and monitoring measures in the LMP and associated ecological management plans that will support recognition of mana whenua, and exercise of rakatirataka and kaitiakitaka.

90 The ORC s42A report considers there is uncertainty regarding the degree of potential adverse effects on wai māori and native fauna, and the ability of the conditions to ensure that these are appropriately avoided, remedied, mitigated, offset or compensated. Acknowledging that concern, I consider on the basis of the terrestrial and freshwater ecology evidence of the applicant in response, including changes to the draft proposed conditions, that uncertainty with regard to effects on wai māori and native fauna has been appropriately addressed.

Transportation effects

91 The design of proposed road upgrades, and the transportation effects of the proposal are discussed in the evidence of **Mr Whaley**. Both McLaren Gully Road and Big Stone Road have low existing traffic flows, and the anticipated traffic demands are expected to be readily accommodated. The planned roading improvements have been designed to ensure the safety of the road network, including along those sections of McLaren Gilly Road which have been narrowed to avoid roadside wetlands.

92 The effects of the landfill on aviation safety from the attraction of birds is described in the evidence of **Mr Shaw**. Removal of food and garden organic waste, and to the extent practicable residual putrescible waste, from the waste stream described in the evidence of **Mr Henderson** will greatly reduce risk of the landfill attracting birds. Implementation of operational procedures and bird control measures in the Landfill Operational Bird Management Plan will ensure bird numbers are kept to very low levels. This coupled with reduction of the existing southern black backed gull population at Green Island landfill and breeding sites prior to the opening of Smooth Hill, could result in a net reduction in aviation risk.

93 Following, the close of submissions, the applicant has conferred with DIAL on the draft proposed conditions relating to bird management. As a result, changes have been made to the draft proposed ORC conditions (**Attachment 2**) including incorporating requirements for removal of food and residual putrescible waste; baseline bird monitoring; greater prescriptiveness of the content of the Landfill Operational Bird Management Plan; maintenance of bird registers during operation; and adoption of escalating management actions where bird trigger levels are exceeded. Requirements to establish a Bird Management Operational Group to consider escalation of management actions and review the effectiveness of the management plan and update it (based on an annual risk assessment) have also been added. At the time of finalising my evidence, DIAL was considering these amendments.

94 The ORC s42A report considers risk of bird strike has not been adequately assessed, and the proposed consent conditions will not ensure that the very high risk to aviation safety will be avoided. Acknowledging that concern, on the basis of Mr Shaw's evidence and the changes to the draft proposed conditions, I consider that risk to aviation safety has been appropriately addressed.

Noise effects

95 The noise effects of the landfill and construction of road upgrades are described in the evidence or **Mr Vossart**. Noise emissions from the landfill site are predicted to comply with condition 3 of the designation, and road construction noise is predicted to comply with the relevant 2GP construction noise limits, such that noise effects will be acceptable. Mr Vossart considers that various refinements should be made to the indicative noise procedures in the draft LMP, which have been incorporated in the updated draft LMP (**Attachment 4**).

Summary of effects assessment

96 The expert evidence for DCC, considers that the landfill has been designed in accordance with best practice standards, and will be stable. The proposed road improvements will be safe and meet anticipated traffic demands. Effects on groundwater and surface water flows and quality, and LFG and fire risks will be mitigated and of a low magnitude and supported by ongoing monitoring to detect effects and enable management responses. Odour, dust, and flare emissions will be mitigated such that nearby receptors are unlikely to experience effects that are offensive or objectionable.

97 Effects on terrestrial and freshwater ecology values will be mitigated and of a low or negligible magnitude, and (where required) remedied, offset, and compensated to ensure no net loss of values. Landscape, visual amenity, and natural character effects will be low, and effects on archaeological values managed through standard processes. During landfill operation birds will be managed to ensure no increase in aviation risk, and noise will comply with the relevant noise standards. Key messages and recommendations in the CIA have been adopted to support recognition of mana whenua, and exercise of rakatirataka and kaitiakitaka.

98 Recognising the above, and the changes made to the draft proposed conditions, I consider the adverse effects of the proposal on the environment will be minor and acceptable, and further consider that the landfill will have positive effects with regard to supporting delivery of the wider Council Waste Futures programme and waste reduction and carbon

emission targets, generating economic benefits, and enabling restoration of degraded wetland environments within the site.

Assessment against the relevant planning documents matters (s104(1)(b) RMA)

99 An assessment against the relevant planning documents that fall within the scope of the resource consents applied for under section 104(1)(b) of the RMA is contained in section 9.0 of the AEE. This assessment however did not consider the Proposed Otago Regional Policy Statement (**Proposed RPS**), which was notified in June 2021 after the updated applications were submitted.

100 I agree with the ORC and DCC s42a reports that the following planning documents are relevant in respect of the applications, with the exception that the 2006 District Plan is no longer relevant to the resource consent applications for the road upgrades made to DCC as noted earlier: [21]

ORC resource consent applications

(a) National Environmental Standards for Air Quality 2004 (**NES-AQ**).

(b) National Environmental Standard for Freshwater 2020 (**NES-FW**).

(c) National Policy Statement for Freshwater Management 2020 (**NPS-FW**).

(d) Partially Operative Regional Policy Statement (**PORPS**).

(e) Proposed Otago Regional Policy Statement (**Proposed RPS**)

(f) Otago Regional Plan: Waste (**RP-Waste**), as amended by proposed Plan Change 1.

(g) Otago Regional Plan: Water (**RP-Water**), as amended by proposed Plan Changes 7 and 8.

DCC resource consent applications

(h) Partially Operative Regional Policy Statement (**PORPS**).

(i) Proposed Otago Regional Policy Statement (**Proposed RPS**)

[21] The Otago Regional Plan: Air is not relevant, due to discharges to air from landfills instead being captured by the RP-Waste, and all other non-landfill discharges to air not requiring resource consent under the RP-Air.

(j) Proposed Dunedin City District Plan (**Proposed 2GP**).

101 I agree with the ORC s42A report that the current regional plans in particular pre-date and do not yet fully give effect to the higher order policy contained in the PORPS, PRPS, and NPS-FW. I consider this has resulted in a highly fragmented policy framework which results in conflicting and therefore uncertain policy direction against which to assess the project. Notification of the Proposed RPS after the updated application was submitted has resulted in further fragmentation of the policy framework.

102 I consider the provisions of the Proposed RPS are typically expressed in more directive terms to the equivalent provisions in the PORPS. The Proposed RPS freshwater provisions are also extensive and intended to give effect to the NPS-FW. This includes adoption of the NPS fundamental concept of Te Mana o te Wai, and Freshwater Management Unit's (FMU).[22] Objective LF-WAI-O1, and policies LF-WAI-P1 – P3 are identified as fundamental to upholding Te Mana o te Wai and are required to be given effect when making decisions affecting freshwater.

103 I consider that due to the extensive submissions made on the Proposed RPS provisions, which are yet to be determined, limited weight should be applied to them, particularly given the PORPS is a contemporary plan that has only recently been made partially operative. This is except where the Proposed RPS provisions clearly align with the higher order settled directions of the NPS-FW.

Assessment of ORC resource consent applications against the planning documents

104 Attachment 13 of the ORC s42A report contains an assessment of the applications to ORC against the planning documents. On the basis of that assessment, the s42a report concludes that the proposal is contrary to a number of provisions of the NPS-FW, PORPS, Proposed RPS, RP-Waste, and RP-Water. Furthermore, the report considers the proposal is not entirely consistent with various other policies, but that some of those matters could be addressed through further amendment of the proposed consent conditions.

[22] Under objective LF-VM-O5, the landfill catchment falls within the Dunedin & Coast FMU for the purposes of the future management of freshwater resources.

105 **Attachment 1** to my evidence outlines my response to the ORC s42a report assessment. I summarise the key differences between the s42A report, and my findings as follows.

Freshwater and indigenous biodiversity

106 Many of the ORC 42A report findings that the proposal is contrary or inconsistent with the planning provisions relate to perceived uncertainty of effects on the downstream hydrological regime, and consequentially on the extent of wetlands and rivers and their associated terrestrial and freshwater ecological values. Similar concerns are expressed in relation to effects on avifauna and lizards. Much of that concern relates to the ability of proposed conditions to manage uncertainties and ecological effects in accordance with the effects management hierarchy such that there is no net loss of ecological values.

107 As a consequence, the report considers in regard to freshwater and indigenous biodiversity maters that the proposal is:

(a) Contrary to the NPS-FW policy 1 concept of Te Mana o te Wai, and the emerging corresponding direction in Proposed RPS land and freshwater objective and policies LF-WAI-O1, and LF-WAI-P1 – P4.

(b) Inconsistent with NPS-FW policy 15 in regard to enabling communities to provide for their social, economic, and cultural wellbeing in a way consistent with the NPS.

(c) Contrary or inconsistent with NPS-FW policies 6 and 7, PORPS policy 3.2.16, and Proposed RPS policies LW-FW-P9, ECO-P6, and RP-Water policies 5.4.2A and 10.4.2, in regard to loss of natural wetlands, and river extent and their values.

(d) Inconsistent with policy 9 of the NES-FW, PORPS policies 3.1.9, 3.2.2, 5.4.6, 5.4.6A, and Proposed RPS policies ECO-P3 and ECO-P6 in regard to protection of significant indigenous vegetation and significant habitats of indigenous fauna.

(e) Inconsistent with but not contrary to PORPS policy 3.1.1 and RP-Water policy 5.4.2 in regard to maintaining good water quality, aquatic health, indigenous habitats and species, and natural functioning of rivers and wetlands, and *'avoiding'*, in preference to remedying or mitigating adverse effects on various RP-Water values listed for the Ōtokia Creek.

(f) Inconsistent with PORPS policy 2.2.1 and Proposed RPS policy MW-P3, in regard to managing the environment to support Kāi Tahu wellbeing.

108 As per the assessment of effects above, the draft proposed ORC conditions have been further developed to address the uncertainties the s42A report has raised, including baseline and operational hydrological, water quality, and ecological monitoring of wetland and freshwater habitats and management plan requirements to ensure effects will be managed in accordance with the effects management hierarchy.

109 On the basis of the evidence of **Mr Kirk** and **Mr Ingles**, I consider that effects on groundwater and surface water flows and quality will be mitigated such that they will be of a low magnitude. On the basis of **Dr Morris** and **Dr Blakely's** evidence, I consider effects on the extent and quality of wetland and freshwater ecological values will similarly be of a low magnitude, and mitigated, remedied, offset, and compensated to ensure no net loss. On the basis of **Ms Sievwright** and **Ms King's** evidence all effects on avifuna and lizards are expected to be very low or negligible.

110 In regard to giving effect to Te Mana o te Wai, the NPS-FW notes that this concept refers to the fundamental importance of water and recognises that protecting the health of freshwater protects the health and well-being of the wider environment. It protects the mauri of the wai. Te Mana o te Wai is about restoring and preserving the balance between the water, the wider environment, and the community.

111 There is a hierarchy of obligations in Te Mana o te Wai recognised in the single objective of the NPS-FW that prioritises: (a) first, the health and well-being of water bodies and freshwater ecosystems; (b) second, the health needs of people (such as drinking water); and (c) third, the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future. On the basis of the expert evidence for DCC, I consider that the health and well-being of water bodies and freshwater ecosystems has been prioritised in accordance with the hierarchy obligations in the NPS-FW objective.

112 I note that the equivalent Proposed RPS objective LF-WAI-O1 is worded in a more directive way to require *'protection'* of the mauri, health and wellbeing of waterbodies. On the basis of the DCC expert evidence, I consider that every effort has been made to achieve protection, including through offsetting effects on mauri through enhancement of wetland/riparian habitats.

113 I therefore consider that Te Mana o Te Wai will be given effect to, consistent with policy 1 of the NPS-FW, and the proposal will as far as possible achieve *'protection'* of mauri, and health and wellbeing of waterbodies as required in Proposed RPS objective and policies LF-WAI-O1, and LF-WAI-P1 – P4, noting the Proposed RPS is at this time unsettled, and therefore less weight should be given to these provisions than the NPS-FW. Recognising the consistency with policy 1 of the NPS-FW, I also consider communities will be enabled to provide for their social, economic, and cultural wellbeing in a way that is consistent with the NPS, under NPS-FW policy 15.

114 In regard to the loss of wetlands and river extent and their values, NPS-FW policies 3.22 and 3.24, and the equivalent Proposed RPS policies LF-FW-P9 and P13, and RP-Water policies 5.4.2A and 10.4.8 require any reduction in the extent or values of *'natural wetlands'* or a river to be *'avoided'* unless:

(a) In the case of wetlands, the loss arises from *'specified infrastructure'* that provides national or regional benefits, there is a *'functional need'* for the activity in that location, and the biodiversity effects management hierarchy has been applied.

(b) In the case of rivers, there is a *'functional need'* for the activity in that location, and the biodiversity effects management hierarchy has been applied.

115 The s42A report, considers the landfill may meet the definition of *'specified infrastructure'* in the NES-FW and Proposed RPS, but there is not a *'functional need'* for it to be located at the Smooth Hill site. I note landfills are not defined as *'regionally significant infrastructure'* in the Proposed RPS, and therefore by association they are not strictly captured in the definition of *'specified infrastructure'* under either NPS-FW or Proposed RPS. I note however that DCC has made submissions on the Proposed RPS seeking the inclusion of landfills in the definition of *'regionally significant infrastructure'*, such that this remains a live issue.

116 I consider there is a strong justification for landfills and in particular a class 1 MSW landfill serving Dunedin City to be *'regionally significant infrastructure'*, and therefore *'specified infrastructure'*. They provide an essential service for the disposal of residual waste and therefore provide significant community benefits much in the same way as other infrastructure like stormwater, and wastewater services that are currently captured in the Proposed RPS definition.

117 Furthermore, I also consider there is a *'functional need'* for a landfill in this location. The definition of *'functional need'* in the NPS-FW and Proposed RPS is not limiting to a particular site, but rather a particular environment as set out below:

> *'functional need - the need for a proposal or activity to traverse, locate or operate in a particular environment because the activity can only occur in that environment.'* [23]

118 The important part of this definition is underlined above, notably that the activity can only occur in a wetland or river environment managed through policies 3.22 and 3.24 of the NPS-FW, and equivalent regional policies. In practice, I consider whether there is a functional need for an activity will depend on the specifics of the proposal in terms of the inability for a particular piece of infrastructure or a facility to be positioned elsewhere on the site due to the site's inherent nature.

119 In the case of the Smooth Hill site, the positioning of the landfill in gullies upstream of the wetland and river environments is required for a range of reasons, including:

(a) By their nature (and as noted in the evidence of **Mr Coombe**), gully landforms are beneficial for designing a landfill. They provide for natural buttressing and containment of the waste and minimise the extent of earthworks required to establish the base of the landfill, as well as enable natural diversion and discharge of stormwater.

(b) All gullies within the designated part of the site form part of the upper reaches of the Ōtokia Creek catchment, and therefore placement anywhere within the designated site will have some consequential degree of effect on the downstream wetland and river receiving environment.

(c) Establishment of the landfill in the gullies enables other adverse environmental effects to be more readily contained and managed, particularly landscape and visual effects (as noted by **Mr Girvan**), and odour and noise effects on surrounding sensitive receptors (as noted by **Mr Stacey**, and **Mr Vossart**).

120 I therefore consider that the landfill qualifies as being regionally significant, and therefore *'specified infrastructure'*, and has a *'functional need'* to be located upstream of wetland and river environments on the site.

[23] Section 3.21, NPS-FW 2020

Recognising this, while not all effects on the extent or values of *'natural wetlands'* or a river will be *'avoided'*, as per the evidence of **Dr Morris** and **Dr Blakely** they will however be mitigated, remedied, offset, and compensated to achieve no net loss in accordance with the effects management hierarchy, and draft proposed conditions of consent.

121 Given landfills are not currently captured in the Proposed RPS definition of *'regionally significant infrastructure'*, I consider the proposal remains contrary to NPS-FW wetland policy 3.22 and the equivalent Proposed RPS policy LW-FW-P9 and RP-Water policy 10.4.8, noting that this remains a live issue through submissions on the Proposed RPS. However conversely it is consistent with the higher order NPS-FW wetland policy 6 under which policy 3.22 sits as effects wetlands will be managed in accordance with the effects management hierarchy such that there will be no further loss of wetlands, their values will be protected, and restoration will occur. For the same reasons I consider the proposal consistent with PORPS policy 3.2.16.

122 On the basis that loss of river extent and values will also be avoided to the extent practicable, I also consider the proposal will be consistent with NPS-FW river policies 7 and 3.24, and equivalent Proposed RPS policy LF-FW-P13, and RP-Water Plan policy 5.4.2A, noting consistency with these policies is not contingent on landfills being *'regionally significant infrastructure'*, and there is a *'functional need'* for landfill upstream of a river environment on the site.

123 Policy 10.4.2 of the RP-Water also relates to wetlands. I consider that policy 10.4.2 only applies to Regionally Significant Wetlands listed in Schedule 9 of the RP-Water, noting that objective 10.3.2 under which policy 10.4.2 sits seeks that *'Otago's Regionally Significant Wetlands and <u>their</u> values and uses are recognised and sustained.'* None of the wetlands immediately downstream of the landfill are identified as Regionally Significant Wetlands in Schedule 9, and on the basis of the evidence of **Mr Ingles**, **Dr Morris**, and **Dr Blakely**, I consider there will be no adverse effects on wetland values of the regionally significant Lower Ōtokia Creek Marsh at Brighton. Unlike the s42A report, I therefore consider the proposal will be consistent with RP-Water policy 10.4.2.

124 In regard to managing indigenous biological diversity, and the protection of significant indigenous vegetation and significant habitats of indigenous fauna, on the basis of the expert evidence and the proposed draft conditions, I consider the proposal will maintain ecosystem health and indigenous flora and habitats of fauna. The protection and enhancement of areas of significant indigenous vegetation and significant habitats of indigenous fauna within the swamp and valley floor marsh wetlands, and

habitats of avifauna and lizards will also be achieved. I therefore consider the proposal will be consistent with policy 9 of the NES-FW, PORPS policies 3.1.9, 3.2.2, 5.4.6, 5.4.6A, and Proposed RPS policy ECO-P3 and ECO-P6.

125 In regard to maintaining the values of freshwater, including those listed in the RP-Water for the Ōtokia Creek, I consider on the basis of the expert evidence for DCC and the draft proposed conditions the proposal will maintain good water quality and aquatic health, maintain indigenous habitats and species and their migratory patterns, and maintain as far as practicable the natural functioning and amenity and landscape values of rivers and wetlands. I consider the proposal will therefore be consistent with PORPS policy 3.1.1.

126 I agree with the ORC s42A report that the related RP-Water policy 5.4.2 requires effects to be *'avoided'* in preference to remedying or mitigating, however it does not discount remedying or mitigating being appropriate where effects cannot be avoided. I also note the use of the *'avoid'* terminology of the policy does not align with the higher order, settled, and more contemporary directions of the PORPS which have a focus on the *'maintaining and enhancing'* freshwater. On the basis of the expert evidence for DCC, I consider that adverse effects on the values of surface water and groundwater, and beds of rivers will be avoided, remedied, or mitigated consistent with policy 5.4.2.

127 The s42A report considers the proposal inconsistent with PORPS policy 2.2.1 and Proposed RPS policy MW-P3, in regard to managing the environment to support Kāi Tahu wellbeing, on the basis that some adverse effects on mauri will remain. On the basis of the DCC expert evidence, I consider that cultural values (in regard to mauri) have been *'recognised and provided* for'. Proposed RPS policy MW-P3 is worded in a more directive way requiring mauri be *'protected'* and *'safeguarded'*. As noted above, I consider that every effort has been made to achieve protection of mauri, including through offsetting effects through enhancement of wetland/riparian habitats. I therefore consider mauri has been *'protected'* and *'safeguarded'* as far as possible under Proposed RPS policy MW-P3, noting this provision is unsettled and limited weight should be applied to it.

128 The s42A report notes that the application to take and use groundwater is consistent with RP-Water Plan policy 10.2.2 (introduced through Plan Change 7) on the basis that a 6-year term for the water permit is sought. While I agree, I note that the applicant had originally sought a 35-year duration to align with the other consents sought and has amended the term in light of the very directive wording of policy 10.2.2 to *'only grant resource*

consents' for water takes and use for 6 years. While accepting the 6-year timeframe, I consider a 6-year duration presents significant uncertainty for the ability to obtain a new water permit to enable the continued operation of what would be significant community infrastructure, recognising the landfill is otherwise expected to have a consented life of 35 years.

Protection of infrastructure

129 The s42A report assessment considers there is a high risk to the functional needs of the airport, and the landfill is incompatible with and likely to result in reverse sensitivity effects in regard to the airport and aviation safety. It considers risk of bird strike has not been adequately assessed, and the proposed consent conditions are not sufficiently developed to ensure the high risk to aviation safety will be avoided.

130 The report therefore considers the proposal is contrary to PORPS policies 4.3.3, 4.3.5 and 4.6.8 and Proposed RPS policies EIT-INF-P15, and HAZ-CL-P18 in regard to providing for the functional needs of infrastructure, protecting infrastructure of national or regional significance, and managing the disposal of waste. It also considers the proposal contrary to RP-Waste policy 7.4.11 in regard to minimising adverse effects from landfills.

131 As per the assessment of environmental effects above, on the basis of **Mr Shaw's** evidence, I consider that removal of putrescible waste to the extent practicable prior to placement of waste at Smooth Hill, along with implementation of operational and bird control procedures in the Bird Management Plan could result in a net reduction in aviation risk. The conditions have been further developed, including escalating management actions where trigger levels are exceeded to ensure effects on aviation risk are avoided.

132 I consider therefore that the functional needs of the airport will be provided for, the airport will be protected from reverse sensitivity effects, and the disposal of waste will be managed to ensure the health and safety of people and minimise adverse effects in regard to aviation safety consistent with PORPS policies 4.3.3, 4.3.5 and 4.6.8 and Proposed RPS policies EIT-INF-P16, and HAZ-CL-P18. Airport safety has also been appropriately considered as sought by the Waste Minimisation Institute New Zealand's Technical Guidelines for Disposal to Land (August 2018), and effects on aviation safety have been minimised, consistent with policy 7.4.11.

Waste management

133 The s42A report assessment considers that there are other viable alternative options to the disposal of waste at Smooth Hill, including export

of waste and disposal at private landfills, and the reduction of putrescible waste through additional treatment of the waste stream prior to disposal. The report also considers the proposal will result in the creation of a new contaminated site and that effects on the environment have not been minimised as far as practicable.

134 The report therefore considers the proposal is inconsistent with PORPS policies 4.6.7 and 4.6.9, Proposed RPS policies HAZ-CL-P15, P16, and P17, and RP-Waste policies 4.4.2, 4.4.4, and 7.4.8 in regard to applying or giving effect to the waste management hierarchy, compositing of organic waste, promoting alternatives to landfills, and minimising adverse effects on the environment and mana whenua values from contaminated land.

135 As per the assessment of environmental effects above, on the basis of **Mr Henderson's** evidence, I note alternative options including out of district disposal and incineration are not preferred, and that food and organic waste will be diverted from the waste stream, and residual putrescible wastes will be removed from the waste stream to the extent practicable in accordance with waste minimisation principles.

136 I therefore consider that practicable alternative sites and methods have been considered; that the minimisation hierarchy has been given effect to; that composing of organic waste will be provided for, and that the landfill will cater only for those materials that cannot be recycled, recovered, or treated for re-use consistent with PORPS policy 4.6.9, Proposed RPS policies HAZ-CL-P16, and P17, and RP-Waste policies 4.4.2, 4.4.4, and 7.4.8.

137 I consider contaminated land policies 4.6.9 of the PORPS, and policy HAZ-CL-15 should be considered in the context of policies 4.6.7 and 4.6.8 which provide for the development of facilities and services for the storage, recycling, recovery, treatment and disposal of waste materials. While the creation of contaminated land will not be avoided, I consider on the basis of the expert evidence for DCC, all adverse effects on the environment have been minimised as far as practicable consistent with these policies.

<u>Precautionary approach</u>

138 The s42A report assessment considers granting the applications would be inconsistent with a precautionary approach due to a limited programme of investigations, resulting in a lack of certainty that adverse effects will be avoided, remedied, mitigated, offset or compensated. It considers some of this uncertainty could be managed though consent conditions. It therefore considers the applications are inconsistent with PROPS policy 5.4.3 and Proposed RPS policy IM-P15.

139 As per the expert evidence for DCC, I consider that sufficient investigations have been completed and any residual uncertainties in regard to land stability effects and effects on receiving terrestrial and freshwater environments will be adequately managed through the conditions, which have been further developed. I consider therefore that the adverse effects are not uncertain or poorly understood such that granting consent would be inconsistent with a precautionary approach. Accordingly, I consider the application consistent with PROPS policy 5.4.3 and Proposed RPS policy IM-P15.

Summary

140 Based on my assessment, I consider the ORC resource consent applications will be largely consistent with the various provisions of the relevant planning documents, and in particular the higher order, contemporary, and settled directions of the NPS-FW and PROPS, noting in particular that the Proposed RPS provisions seeking the *'protection'* or *'safeguarding'* of mauri remain unsettled.

141 I consider that the proposal remains contrary to NPS-FW policy 3.22, and the equivalent Proposed RPS policy LF-FW-P9, and RP-Water policy 10.4.8 in regard to the protection of *'natural wetlands',* owing to landfills not currently being defined as *'regionally significant infrastructure'* and therefore *'specified infrastructure'* for the purposes of these policies. However as noted, this remains a live issue through submissions made on the Proposed RPS, and furthermore the effects on natural wetlands will nonetheless be managed in accordance with the effects management hierarchy, such that the proposal is consistent with the higher order NPS-FW policy 6.

142 I therefore consider in an overall sense the proposal will be consistent with the overall policy direction provided by the planning documents.

Assessment of DCC resource consent applications against the planning documents

143 The DCC s42A report considers the proposed road upgrades to be consistent with the relevant provisions of the 2006 District Plan and Proposed 2GP as they relate to the retention of indigenous vegetation, control of earthworks, protection of archaeological sites, protection of health and amenity from construction noise, maintenance of cultural values, and road safety and efficiency. The report considers that in all instances the proposal is consistent with the relevant provisions.

144 I agree with the s42A report that the proposal is fully consistent with the relevant provisions of the Proposed 2GP, noting as earlier the 2006 District Plan is no longer relevant to the assessment of this application.

Other relevant matters (s104(1)(c) RMA)

145 I agree with the ORC s42A report that the provisions of the Kāi Tahu ki Otago Natural Resources Management Plan 2005 (**NRMP**), and alternative sites and methods are relevant *'other matters'* to be considered under s104(1)(c) RMA. The DCC s42A report for the road upgrade does not identify any *'other maters'* to consider.

Consideration of the NRRP

146 In regard to the NRMP, the ORC s42A report considers the proposal contrary to Wai Māori policy 56 which 'opposes the draining of all wetlands'. It also considers the proposal inconsistent with other aspects of the Wai Māori policies on the basis that some effects on mauri will remain, and also the Mahika Kai and Biodiversity policies on the basis of perceived uncertainty of effects on the downstream hydrological regime, and consequentially on the extent of wetlands and rivers and their associated terrestrial and freshwater ecological values.

147 **Attachment 1** to my evidence outlines my response to the ORC s42a report assessment. I summarise the key differences between the s42A report, and my findings as follows.

148 In regard to Wai Māori policy 56, I consider it unclear whether *'draining'* in the context of this policy captures any hydrological change or just complete draining. As noted in my assessment of the planning documents, on the basis of the evidence of **Mr Kirk** and **Mr Ingles**, I consider that effects on groundwater and surface water flows and quality will be mitigated such that they will be of a low magnitude. I consider the wetlands therefore will be protected, and while it is accepted that there is the potential for some hydrological changes in the swamp and valley floor marsh wetlands to occur, on the basis of the evidence they will not be *'drained'*.

149 I consider the proposal is largely consistent with the other Wai Māori and Mahika Kai and Biodiversity policies, on the basis of the DCC expert evidence and the proposed draft conditions of consent that have been further developed. As noted in my assessment of the planning documents, every effort has been made to achieve protection of mauri, including through offsetting effects through enhancement of wetland/riparian habitats. I consider mauri has been protected as far as possible such that the proposal is broadly aligned with the NRRP policies.

Consideration of Alternatives

150 The ORC s42A report has considered alternatives on the basis that the proposal may result in significant adverse effects and in light of the information provided in the application and s92 RMA responses. It identifies that consideration of disposal at an alternative location (private landfills within the district and/or private municipal landfills elsewhere in the region), and additional treatment to remove putrescible waste from the waste stream are viable alternatives that should be considered when determining whether to grant consent.

151 On the basis of my assessment of the effects above, I do not consider the proposal will result in any significant adverse effects, such that assessment of alternatives under section 104(1)(c) (and 105(1)(c)) RMA is warranted. Notwithstanding this, as noted above, the evidence of **Mr Henderson** has addressed alternatives. Extension of Green Island landfill, out-of-district disposal, and incineration options have also been considered. None of these options are preferred due to for technical constraints and consenting challenges (Green Island); lack of control over the waste cycle, and cost increase exposure (out-of-district); and high capital cost, cultural acceptability; and ash disposal (incineration). Food and garden organic waste streams will however be collected and processed separately to minimise disposal of this material at Smooth Hill, and that to the extent practicable residual putrescible waste will be removed prior to transport and disposal of general waste at the landfill.

Consideration of the gateway test (s104D RMA)

152 The ORC s42A report considers the *'gateway'* tests of s104D are a relevant consideration on the basis that the application is a non-complying activity under the NES-FW. As noted earlier, while that is the case, as the application was submitted prior to the NES-FW coming in effect, s88A of the RMA provides that the activity status of the applications remains discretionary. Accordingly, I do not consider the s104D *'gateway'* tests a relevant consideration, although based on my assessment of the effects and relevant planning provisions, the proposal overall would pass the gateway.

Matters relating to discharges (s105 and s107 RMA)

153 I have considered s105(1)(c) regarding any possible alternative methods of discharge in the context of s104 *'other matters'* above, and don't repeat that assessment here.

154 S107 RMA provides that a consent authority must not grant a discharge permit, if after reasonable mixing, the contaminant or water discharges is likely to give rise to various effects in the receiving waters, including (among others) any conspicuous change in the colour or visual clarity. The s42A report considers the proposed condition 26(c) (renumbered 35(c)) would enable the setting of trigger levels of suspended sediment that would lead to a conspicuous change in colour and visual clarity and therefore contravene s107 RMA.

155 I acknowledge that the conditions for setting trigger levels for flood events as worded could have the potential to lead to a discharge of suspended sediments resulting in a conspicuous change in colour and visual clarity in the receiving waters downstream of the site. Recognising that, I have amended draft proposed ORC condition 35(c) to require trigger levels for suspended sediments for flood events to be based on visual inspection with the discharge not causing a conspicuous change in colour or visual clarity after reasonable mixing in the downstream receiving waters.

Purpose and principles of sustainable management (Part 2 RMA)

156 In the decision RJ Davidson Family Trust v Marlborough District Council [2018] NZCA 316 the Court of Appeal reconfirmed the pre-eminence of Part II matters in the consideration of resource consents. In particular, the Court of Appeal held in Davidson that the High Court erred in holding that the Environment Court was not able or required to consider Part 2 of the RMA. That is, recourse to Part II is retained in appropriate situations.

157 In this instance where the planning framework (i.e. NPS-FW, PROPS, Proposed RPS, RP-Water, and RP-Waste have been introduced at separate times and with a different emphasis, it is unclear whether a coherent environmental outcome is completely provided for in the consents sought. Accordingly, out of caution, I have considered Part 2. This is intended to assist the overall evaluation of the proposal, to assess the merits and reach a fair appraisal.

158 On the basis of my assessment above, the proposal will support Dunedin's future needs for the disposal of residual waste to support social and economic well-being, and health of the community. It will do this in a way that sustains the potential of natural and physical resources; safeguards their life supporting capacity; and avoids, remedies, and mitigates adverse effects on the environment. Accordingly, it accords with the enabling purpose in section 5 of the Act to promote the sustainable management of natural and physical resources.

159 In regard to section 6 'matters of national importance', the proposal *'recognises and provides for'* the preservation of the natural character of the wetlands and rivers; protection of areas of significant indigenous vegetation and fauna; and the management of significant natural hazard risks. It also largely recognises and provides for the relationship of Māori with ancestral lands, waters, and taonga. In regard to section 7 *'other matters',* the proposal has had particular regard to and will support the efficient use and development of natural and physical resources, and the maintenance of the quality of the environment and amenity values.

160 Section 8 of the Act requires the principles of the Treaty of Waitangi to be *'taken into account'*. Kāi Tahu cultural values (including mauri, whakapapa, and mahika kai), customary uses, relationships to resources, areas of significance, and protection of wāhi tupuna identified in the CIA have been taken into account.

161 Given the above, I consider the proposal will achieve the purpose and principles of Part 2 RMA.

Response to matters raised in submissions

Alignment with Freshwater provisions of NES-FW and Proposed RPS

162 The submissions of Brighton Surf Life Saving Club, Ōtokia Creek and Marsh Habitat Trust, and South Coast Neighbourhood Society Inc, and others consider the proposal does not align with the NES-FW and/or Proposed RPS. Following the gazettal of the NES-FW, the DCC has worked to achieve alignment with the intentions of the NES-FW resulting in a modified proposal which now avoids any works within *'natural wetlands'*. Accordingly, the proposal as it is now stands is not a prohibited activity under the NES-FW.

163 My evidence above has considered the consistency of the proposal with freshwater objectives and policies of the NPS-FW (which supports the NES-FW regulations), PORPS, Proposed RPS, and RP-Water. Noting that limited weight should be applied to the Proposed RPS provisions at this time, my assessment concludes that the proposal overall is consistent with the freshwater objectives and policies of these planning documents, and in particular the higher order, contemporary, and settled directions of the NPS-FW and PORPS.

Protection of Dunedin International Airport from Incompatible Activities

164 DIAL consider that the landfill will result in increased risk of reverse sensitivity effects and compromise health and safety needs contrary to the

'avoid' policies in the Proposed RPS. The New Zealand Airline Pilots Association consider that the landfill would negatively impact on the potential of the airport, as a resource, to meet the reasonably foreseeable needs of the local community, and therefore is inconsistent with the RMA.

165 The concerns of DIAL and the Airline Pilots Association stem from concerns that the landfill will result in increased bird strike risk from the attraction of birds to the landfill. These concerns have been addressed in the evidence of **Mr Shaw** and following the close of submissions the applicant has conferred with DIAL on the draft proposed conditions relating to bird management. At the time of finalising my evidence, DIAL was considering these amendments. On the basis of Mr Shaw's evidence and the changes to the proposed draft proposed conditions, I consider that risk to aviation safety has been appropriately addressed.

Adequacy of Proposed Conditions

166 The submission of Big Stone Forest Limited considers that the draft conditions do not meet best practice, do not secure critical performance standards, and demonstrate significant deficiencies, meaning the conclusions of the effects assessments cannot be relied upon. They consider significant improvements are needed to the conditions and LMP to address risks and uncertainty, including controls on the size of the working face, controls on the oxygen content of LFG, prohibition of POP's, a covered dumping zone to manage odour, monitoring of hydrogen sulphide, and more limited operating hours.

167 The submission of A & M Granger considers the opening hours should be limited to 7am-6pm Monday to Friday (summer), and 8am-5pm Monday to Friday (winter), and that illegal dumping should be cleared quickly to protect neighbouring properties.

168 The Public Health Service (SDHB) consider the conditions should be adequate to protect public health and no less stringent than the appropriate NZ and adopted guidelines and standards for this type and scale of facility. They also consider monitoring conditions should be adequate to protect public health by giving an early warning of any treatment or design issues, engineering issues or failures, and this information should be made clearly available to the public.

169 The Director General of Conservation considers that management plan conditions should contain clear and effects-based objectives and performance standards, to ensure the management plans will lead to actions 'on the ground' to achieve environmental outcomes; have ongoing effect, and require ongoing implementation; set intervention thresholds to

allow review and intervention if objectives are not being met; require ongoing monitoring and reporting; provide for adaptive management where appropriate; and are enforceable throughout the duration of the consents.

170 I agree it is important that conditions of consent capture critical performance standards in line with NZ and adopted guidelines and standards to ensure the effects of the activity are appropriately managed and monitored. In that regard, I note that the draft conditions included with the application were a starting point, and as is typical and good practice I expected the conditions would evolve as informed by submissions, Council technical peer reviews, the s42A reports, and ultimately the input of decision makers.

171 While conditions of consent should capture critical performance standards, I also consider that reasonable flexibility needs to be built in to allow for changes that may occur as part of detailed landfill design, future changes in landfill best practice design and management, and any changes that occur to the baseline environment prior to construction commencing. Matters requiring flexibility for construction and operation are more appropriately captured as procedures within the LMP.

172 Noting the submission of the Director General of Conservation, I agree it is also important that the conditions provide clear effects-based objectives for the LMP and management plans to ensure plans include procedures which achieve ongoing environmental outcomes for the duration of the consents, processes for approval and review of effectiveness, and adaptive management where appropriate.

173 Recognising the above, considerable changes to the draft proposed ORC conditions (**Attachment 2)** from those originally submitted to capture additional performance standards, improve monitoring requirements, and refine LMP and management plan processes and objectives. In regard to the specific conditions requested by these submissions, I note the following:

(a) As per the fire evidence of **Mr Dixon**, the size of the active landfilling area (tip face) will be will generally be limited in area to no greater than 300 m^2 and will not extend beyond 1,000 m^2. If the fire danger rating is very high or extreme, it will be limited to no greater than 300 m^2. Changes addressing this are captured in in conditions 100 and 101.

(b) As per the evidence of **Mr Welsh**, the LFG systems will be designed, installed, operated, and maintained to minimise potential oxygen ingress into the landfill, and regular monitoring of oxygen in the collected LFG against trigger levels will occur, and actions implemented (e.g. system balancing) where levels are exceeded.

Changes addressing this are captured in conditions 50 – 60 and Attachment 2 to the proposed draft conditions.

(c) As per the evidence of **Mr Kirk**, persistent organic pollutants (POP's) in waste are very unlikely to influence water quality downstream of the landfill, but monitoring of leachate and surface water for perfluorooctanesulfonic acid (PFOS) should be undertaken as a cautionary measure. Changes addressing this are captured in Attachment 1 to the proposed draft conditions.

(d) As per the evidence of **Mr Stacey**, specific mitigation measures have been developed to reduce the likelihood and control odour from highly odorous waste types, but that a covered dumping zone is unnecessary as odour can managed using standard handling procedures. Changes addressing this are captured in condition 43, and in the draft LMP (**Attachment 4**).

(e) As per the evidence of **Mr Stacey**, monitoring of hydrogen sulphide will be undertaken. Changes addressing this are captured in Attachment 2 to the proposed draft conditions.

(f) Changes to landfill operating hours are addressed in the evidence of **Mr Henderson**. I note that the proposed hours where waste deliveries will be accepted in condition 90 fall within the change in operating hours proposed by Mr Henderson.

(g) I agree that any illegal dumping that might occur outside the site should be cleared rapidly to protect rural amenity and consider procedures addressing this should be included in the LMP. An LMP objective capturing this has been added to condition 113, and a reference included in the draft LMP (**Attachment 4**).

(h) I agree that monitoring information should be made available to the public to provide transparency and public confidence that landfill is being operated in accordance with the requirements of the resource consents. Changes addressing this are captured in conditions 7 and 112.

Approval of Consent Prior to Development of Detailed Design and Water Monitoring Trigger Levels and Actions

174 The submission of F Patrick considers that final geotechnical investigations, detailed design, and development of monitoring requirements for the landfill should be completed before the approval of consents, and that a contingency plan should be developed outlining measures in the event that

something goes wrong. Fish & Game similarly considers that the LMP should be developed prior to a decision on the consents being made, which includes trigger values and water quality standards for the discharge and the receiving waters; a plan that identifies actions to what must happen if exceeded; and an ability for the public to provide feedback.

175 Completion of final investigations, and detailed design ahead of resource consents being approved for a major infrastructure project is a rare occurrence in my experience, as it would commit the applicant to detailed design costs in the absence of certainty of consent approval. I note the evidence of **Ms Webb** considers that the current level of geotechnical investigation is appropriate for this site, and **Mr Coombe's** evidence is that the concept design is in accordance with the WasteMINZ guidelines.

176 Based on the technical evidence, I consider the draft proposed ORC conditions provide appropriate direction on the additional investigations and requirements for the detailed design of the landfill. The addition of requirements for an independent peer review panel in particular will provide oversight of the design, operation, and closure of the landfill bringing added confidence to the public that the landfill is designed and operated in accordance with the consent requirements.

177 Establishment of monitoring trigger values and water quality standards for the discharge and receiving waters should be informed by completion of baseline monitoring over an appropriate timeline leading up to construction commencing to establish baseline conditions, to ensure trigger levels and standards are set at the correct level. As noted earlier in my evidence, considerable changes to the draft proposed ORC water quality monitoring conditions 27 - 39 (**Attachment 2**) have been made, which include development of a Receiving Waters Environment Management Plan setting out the long-term monitoring programme which is to include monitoring trigger levels.

178 I agree that there is a need for contingency measures to be developed in the event of non-compliance with the water quality trigger values for the receiving waters. Specific management actions in the event of non-compliance are identified in water quality monitoring condition 36. Additional actions will ultimately be included in the Receiving Waters Environment Monitoring Plan required under condition 33 to be developed following the completion of baseline monitoring, which is to form part of the overall LMP required under condition 113 (**Attachment 2**).

Design and Construction of State Highway 1 Intersection with McLaren Gully Road

179 Waka Kotahi New Zealand Transport Agency request conditions and advice notes be added to the resource consent to ensure the final design and construction of the State Highway 1 intersection with McLaren Gully Road is of an acceptable standard. The conditions and advice notes sought by Waka Kotahi have been incorporated in conditions 15 - 19 in the draft proposed DCC conditions of consent (**Attachment 3**).

Proposed conditions

180 As noted throughout my evidence, the draft proposed ORC and DCC conditions have been updated and are included as **Attachments 2** and **3** respectively. In addition, the draft LMP document has been updated to align with amendments made to the draft proposed ORC conditions and is included as **Attachment 4**. I note however that the draft ecological and bird management plans originally included with the application and which form part of the LMP suite have not been updated and will be amended and finalised prior to construction to align with the conditions, should consents be granted.

181 The changes made are extensive and have been referred to throughout my evidence. I note the following additional amendments to the draft proposed ORC conditions that have been made in direct response to the s42A report:

(a) References have been made through the conditions relating to the certification of the detailed design, LMP and related management plans that clarify the certification role of the independent peer review panel, versus the role that ORC then has in confirming compliance with the conditions. References have been added to conditions 5, 34, 66, 67, 69, 71, 72, 78, 110, and 113.

(b) Reference to residual putrescible waste being removed from the general waste stream *'to the extent practicable'* has been retained in condition 64 (renumbered 75). How this will be achieved has been detailed in a new residual putrescible waste separation methodology in Attachment 3 to the conditions to ensure the condition is enforceable.

Conclusion

182 Overall, I consider based on DCC's expert evidence, the updated draft proposed conditions, and my evaluation of the relevant RMA provisions for these applications, that:

(a) The environmental effects of the proposal will be minor and acceptable given the proposed measures to manage adverse effects, and positive effects will be generated (s104(1)(a), (ab) RMA);

(b) The proposal overall will be consistent with the provisions of the relevant national, regional and district statutory planning documents (s104(1)(b) RMA);

(c) Appropriate regard has been given to *'other matter's'* including alternative sites and methods, and the proposal broadly aligns with the NRMP (s104(1)(c) RMA));

(d) The proposal is not contrary to the restrictions on the granting of discharge permits (s107 RMA); and

(e) The proposal will achieve the purpose and principles of Part II the RMA.

183 I have addressed the submissions relevant to planning matters, and the s42A reports, and conclude that there are no reasons why the proposal could not be approved, subject to the updated proposed draft conditions.

Maurice Richard Dale

29 April 2022

Attachment 1 – Assessment of ORC applications against relevant planning documents

An assessment of the applications made to ORC against the relevant planning documents is provided in the following tables. This focusses on the relevant policies of each planning document on the basis that if the application is consistent with these policies then it should also be consistent with the relevant objectives.

The second column outlines the assessment contained in the ORC s42A report. The third column outline my evaluation in response. Colour coding in the fourth column indicates whether I consider the proposal is consistent with (green), not entirely consistent with (yellow), inconsistent with (orange) or contrary to (red) the relevant policy. Grey is used where a policy has been discussed but is not relevant.

National Policy Statement for Freshwater Management 2020				
Policy	**s42A report assessment**		**Evaluation of s42A report position**	
Policy 1: Freshwater is managed in a way that gives effect to Te Mana o te Wai.	The CIA submitted with the application states that effects on mauri from contaminants entering water and from altering the existing hydrology are offset in part by mitigation measures such as riparian planting and pest management (which enhance mauri), but that these measures do not directly address the adverse effects on mauri. There is a low degree of confidence with regard to the applicant's magnitude and level of ecological effects conclusions. This means that an assessment of the overall offset package is unable to be finalised, and a conclusion is unable to be reached as to whether it is appropriate and will result in no net loss (and a preferable net gain) in ecological/biodiversity values.		There is a hierarchy of obligations in Te Mana o te Wai recognised in the single objective of the NPS-FW that prioritises: (a) first, the health and well-being of water bodies and freshwater ecosystems; (b) second, the health needs of people (such as drinking water); and (c) third, the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future. On the basis of the evidence of Mr Kirk and Ingles evidence, I consider that effects on groundwater and surface water flows and quality will be mitigated such that they will be of a low magnitude. On the basis of Dr Morris and Dr Blakely's evidence, I consider effects on the extent and quality of wetland and freshwater ecological values will similarly be of a low magnitude, and mitigated, remedied, offset, and compensated to ensure no net loss. I consider that the health and well-being of water bodies and freshwater ecosystems has therefore been prioritised in accordance with the hierarchy of obligations in the	

			NPS-FW and therefore consider Te Mana o te Wai will be given effect to consistent with policy 1.	
Policy 2: Tangata whenua are actively involved in freshwater management (including decision making processes), and Māori freshwater values are identified and provided for.	Tangata whenua (or at least Kai Tahu ki Ōtakau) have been actively involved in the development of, and have provided written approval to, the proposal. Te Rūnanga o Moeraki, Kāti Huirapa Rūnaka ki Puketeraki and Te Hokonui Rūnanga have not been involved in the process.		The DCC as applicant has actively involved Kai Tahu ki Ōtakou who hold mana in the project area in the assessment of the proposal to ensure cultural values are identified and provided for in the applications. Kai Tahu ki Ōtakou have submitted in support of the applications. I consider the proposal is therefore consistent with policy 2.	
Policy 3: Freshwater is managed in an integrated way that considers the effects of the use and development of land on a whole-of-catchment basis, including the effects on receiving environments.	The Applicant's assessment has considered the integrated management of freshwater. However, there are some gaps in the information presented, some uncertainty remains, and the proposed conditions are not are not sufficiently developed to ensure the health and well-being of water bodies, freshwater ecosystems, and receiving environments.		On the basis of the evidence of Mr Kirk and Ingles evidence, I consider that effects on groundwater and surface water flows and quality will be mitigated such that they will be of a low magnitude. On the basis of Dr Morris and Dr Blakely's evidence, I consider effects on the extent and quality of wetland and freshwater ecological values will similarly be of a low magnitude, and mitigated, remedied, offset, and compensated to ensure no net loss. The conditions have been further developed and include baseline and operational hydrological, water quality, and ecological monitoring of wetland and freshwater habitats and management plan requirements to ensure effects will be managed in accordance with the effects management hierarchy, to address the uncertainties. I consider effects on the receiving environment of the whole catchment will therefore be managed consistent with policy 3	
Policy 6: There is no further loss of extent of natural inland wetlands, their values are protected, and their restoration is promoted.	The Applicant has identified that the proposal will alter the water supply to the swamp wetland (less than 10 m below the landfill toe) by effectively intercepting up to 20% of the existing annual runoff into the wetland and by lowering the groundwater table in the vicinity of the wetland. This may		On the basis of the evidence of Mr Kirk and Ingles evidence, I consider that effects on groundwater and surface water flows and quality will be mitigated such that they will be of a low magnitude. On the basis of Dr Morris and Dr Blakely's evidence, I consider effects on the extent	

	also impact on the downstream valley floor marsh wetland. There still is not enough specific information on the tolerance of these wetlands to any potential alteration of hydraulic regime to make a conclusion regarding the quantum of ecological effects. This uncertainty could be managed though consent conditions requiring hydrological and ecological monitoring in the receiving environment and clearly identified adaptive management responses. The risk is that this devolves responsibility for a decision on acceptable level of effects to the proposed panel. This risk would need to be managed through the wording of the proposed conditions. Recommended monitoring of water levels in the swamp wetland has not been included in the applicant's proposed consent conditions, and monitoring of water levels alone will be insufficient to detect changes in the extent of the wetlands.		and quality of wetland and freshwater ecological values will similarly be of a low magnitude, and mitigated, remedied, offset, and compensated to ensure no net loss. The conditions have been further developed and include baseline and operational hydrological, water quality, and ecological monitoring of wetland and freshwater habitats and management plan requirements to ensure effects will be managed in accordance with the effects management hierarchy, to address the uncertainties. I consider therefore that there will be no further loss of natural inland wetlands, their values will be protected, and restoration will occur consistent with policy 6.	
Policy 7: The loss of river extent and values is avoided to the extent practicable. Policy 9: The habitats of indigenous freshwater species are protected.	The proposal has the potential to result in the loss of stream and wetland habitat as a consequence of reduced flows in the catchment and subsequent hydrological changes may occur along up to 300 m of the downstream tributary of Ōtokia Creek (and associated swamp and valley floor wetlands). The point where this creek transitions to perennial may shift 45 m further downstream. There is, however, still some uncertainty as to how surface water flows will respond to establishment of the landfill. The affected waterbodies support longfin eel (At Risk - Declining).		While accepted that hydrological changes in the tributary downstream of the site will occur, on the basis of the evidence of Mr Kirk and Ingles evidence, I consider that effects on groundwater and surface water flows and quality will be mitigated such that they will be of a low magnitude. On the basis of Dr Morris and Dr Blakely's evidence, I consider effects on the extent and quality of wetland and freshwater ecological values will similarly be of a low magnitude, and mitigated, remedied, offset, and compensated to ensure no net loss. I consider therefore the loss of river extent and values has been avoided to the extent practicable, and habitats of freshwater species will be protected consistent with policies 7 and 9.	

Policy 11: Freshwater is allocated and used efficiently, all existing over-allocation is phased out, and future over-allocation is avoided.	The volume of groundwater sought is within applicable allocation limits.		I agree with the ORC s42A report assessment.	
Policy 13: The condition of water bodies and freshwater ecosystems is systematically monitored over time, and action is taken where freshwater is degraded, and to reverse deteriorating trends.	The proposal includes monitoring of affected waterbodies throughout the life of the consent.		I agree with the ORC s42A report assessment and further note that the proposed conditions provide mechanisms whereby actions are taken where monitoring detects degradation of freshwater environments has occurred.	
Policy 15: Communities are enabled to provide for their social, economic, and cultural wellbeing in a way that is consistent with this National Policy Statement.	There are still questions regarding how the wellbeing of the local community will be affected by the proposal. I do not consider that the application is consistent with this provision as it is unclear how communities will be enabled to provide for their wellbeing as a result of the proposal.		On the basis of the assessment above, I consider that the proposal will ensure the community is able to provide for their social, economic, and cultural wellbeing consistent with the NPS-FW and policy 15.	

Partially Operative Regional Policy Statement 2019				
Policy	**s42A report assessment**		**Evaluation of s42A report position**	
Policy 1.1.2 – Social and cultural wellbeing and health and safety Provide for the social and cultural wellbeing and health and safety of Otago's people and communities when undertaking the subdivision, use, development and protection of natural and physical resources by all of the following:	Kāi Tahu values have been recognised and the recommendations of the CIA have largely been adopted. There is some question regarding how the wellbeing of the local community will be affected by the proposal. Significant adverse effects on human health have not been identified. Whilst the applicant is working towards a circular economy target, access to a waste disposal facility is required in both the short and long term.		The project will provide for Dunedin's future waste disposal needs thereby providing for community resilience and avoiding adverse effects on human health from inadequate waste management. On the basis of evidence of Mr Akehurst, the construction and operation of the landfill is projected to generate additional significant economic benefits and additional employment opportunities for Dunedin City.	

a) Recognising and providing for Kāi Tahu values; b) Taking into account the values of other cultures; c) Taking into account the diverse needs of Otago's people and communities; d) Avoiding significant adverse effects of activities on human health; e) Promoting community resilience and the need to secure resources for the reasonable needs for human wellbeing; f) Promoting good quality and accessible infrastructure and public services.			On the basis of the expert evidence for DCC, I consider the design of the landfill together with proposed monitoring and management measures will also ensure there are no significant adverse effects on human health or the surrounding environment. I consider therefore that the wellbeing and health and safety of the community will be provided for consistent with policy 1.1.2.	
Policy 1.2.1 – Integrated resource management Achieve integrated management of Otago's natural and physical resources, by all of the following: a) Coordinating the management of interconnected natural and physical resources; b) Taking into account the impacts of management of one natural or physical resource on the values of another, or on the environment; c) Recognising that the value and function of a natural or physical resource may extend beyond the	The Applicant's assessment has considered the integrated management of freshwater. However, there are some gaps in the information presented, some uncertainty remains, and the proposed conditions are not sufficiently developed to ensure the health and well-being of water bodies, freshwater ecosystems, and receiving environments.		The proposal has been designed cognisant of the interactions between land, freshwater, and ecosystems on a whole-of-catchment basis. On the basis of the evidence of Mr Kirk and Ingles evidence, I consider that effects on groundwater and surface water flows and quality will be mitigated such that they will be of a low magnitude. On the basis of Dr Morris and Dr Blakely's evidence, I consider effects on the extent and quality of wetland and freshwater ecological values will similarly be of a low magnitude, and mitigated, remedied, offset, and compensated to ensure no net loss. The conditions have been further developed and include baseline and operational hydrological, water quality, and ecological monitoring of wetland and freshwater habitats	

immediate, or directly adjacent, area of interest; e) Ensuring that effects of activities on the whole of a natural or physical resource are considered when that resource is managed as subunits. f) Managing adverse effects of activities to give effect to the objectives and policies of the Regional Policy Statement. g) Promoting healthy ecosystems and ecosystem services.			and management plan requirements to ensure effects will be managed in accordance with the effects management hierarchy, to address the uncertainties. I consider therefore the integrated management of natural and physical resources will be achieved consistent with policy 1.2.1.	
Policy 2.1.2 Treaty principles: Ensure that local authorities exercise their functions and powers, by: c) Taking into account Kāi Tahu values in resource management decision-making processes and implementation; d) Recognising and providing for the relationship of Kāi Tahu's culture and traditions with their ancestral lands, water, sites, wāhi tapu, and other taoka; f) Having particular regard to the exercise of kaitiakitaka; h) Taking into account iwi management plans.	These matters were all taking into account, recognised and provided for in the CIA and through the adoption of (most of) the recommendations of the CIA. The proposal is inconsistent with Policy 56 of the NRMP, however, Policy 2.1.2 of the PORPS only requires that the NRMP is taken into account.		I agree with the ORC s42A report assessment, with the exception of the assessment of policy 56 of the NRMP, which I address later in this table.	

Policy 2.2.1 – Kāi Tahu wellbeing Manage the natural environment to support Kāi Tahu wellbeing by all of the following: a) Recognising and providing for their customary uses and cultural values in Schedules 1A and B; and b) Safe-guarding the life-supporting capacity of natural resources.	Customary uses and cultural values were recognised and provided for in the CIA and through the adoption of (most of) the recommendations of the CIA. While effects on mauri from contaminants entering water and from altering the existing hydrology are offset in part by mitigation measures such as riparian planting and pest management (which enhance mauri), these measures do not directly address the adverse effects on mauri.		I consider that Kāi Tahu cultural values (including mauri, whakapapa, and mahika kai), customary uses, relationships to resources, areas of significance, and protection of wāhi tupuna identified in the CIA have been recognised and provided for to the extent possible. On the basis of the DCC expert evidence, I consider that cultural values (in regard to mauri) have been 'recognised and provided for'. I therefore consider the proposal will support Kāi Tahu wellbeing consistent with policy 2.2.1.	
Policy 3.1.1 – Fresh water a) Maintain good quality water and enhance water quality where it is degraded, including for: i. Important recreation values, including contact recreation: and ii. Existing drinking and stock water supplies b) Maintain or enhance aquatic: i. Ecosystem health; ii. Indigenous habitats; and, iii. Indigenous species and their migratory patterns. d) Maintain or enhance, as far as practicable: i. Natural functioning of rivers, lakes, and wetlands, their riparian margins, and aquifers: iv. Amenity and landscape values of rivers, lakes, and wetlands:	The Applicant's proposed consent conditions are not sufficiently developed to provide certainty that monitoring data will be collected in a consistent manner, that it will be sufficiently comprehensive to enable assessment on effects on water quality to be confidently undertaken, that sampling will be undertaken to appropriate quality assurance standards, that suitable objectives for trigger levels will be established, or that exceedances of trigger levels will be addressed adequately to ensure that the effects on water quality are managed appropriately. The affected waterbodies support longfin eel (At Risk - Declining). The proposal has the potential to result in the loss of stream and wetland habitat as a consequence of reduced flows in the catchment and subsequent hydrological changes may occur along up to 300 m of the downstream tributary of Ōtokia Creek (and associated swamp and valley floor wetlands). The point where this creek transitions to perennial may shift 45 m further downstream.		On the basis of the evidence of Mr Kirk and Ingles evidence, I consider that effects on groundwater and surface water flows and quality will be mitigated such that they will be of a low magnitude. On the basis of Dr Morris and Dr Blakely's evidence, I consider effects on the extent and quality of wetland and freshwater ecological values will similarly be of a low magnitude, and mitigated, remedied, offset, and compensated to ensure no net loss. The conditions have been further developed and include baseline and operational hydrological, water quality, and ecological monitoring of wetland and freshwater habitats and management plan requirements to ensure effects will be managed in accordance with the effects management hierarchy, to address the uncertainties. I consider therefore consider good water quality and aquatic health will be maintained, and natural functioning and landscape/amenity values of rivers will be maintained as far as practicable, consistent with policy 3.1.1	

e) Control the adverse effects of pest species, prevent their introduction and reduce their spread.	The applicant has identified that the proposal will alter the water supply to the swamp wetland (less than 10 m below the landfill toe) by effectively intercepting up to 20% of the existing annual runoff into the wetland and by lowering the groundwater table in the vicinity of the wetland. This may also impact on the downstream valley floor marsh wetland. There is a low degree of confidence with regard to the applicant's magnitude and level of ecological effects conclusions. This means that an assessment of the overall offset package is unable to be finalised, and a conclusion is unable to be reached as to whether it is appropriate and will result in no net loss (and a preferable net gain) in ecological/biodiversity values. It is, however, possible that agreement could be reached on appropriate conditions that require the use of offset and compensation tools to appropriately address residual adverse effects.			
Policy 3.1.3 – Water allocation and use Manage the allocation and use of fresh water by undertaking all of the following: a) Recognising and providing for the social and economic benefits of sustainable water use; b) Avoiding over-allocation, and phasing out existing over-allocation, resulting from takes and discharges; c) Ensuring the efficient allocation and use of water by:	The volume of groundwater sought is within applicable allocation limits.		I agree with the ORC s42A report assessment.	

i. Requiring that the water allocated does not exceed what is necessary for its efficient use			
Policy 3.1.6 – Air quality Manage air quality to achieve the following: a) Maintain good ambient air quality that supports human health, or enhance air quality where it has been degraded; b) Maintain or enhance amenity values.	Subject to minor refinement of the proposed conditions, adverse effects on air quality can be managed so that there will be no noxious, dangerous, offensive or objectionable odour or dust to the extent that it causes an adverse effect at or beyond the boundary of the site.		I agree with the ORC s42A report assessment and note that further refinements to the air quality conditions have been made.
Policy 3.1.9 – Ecosystems and indigenous biological diversity Manage ecosystems and indigenous biological diversity in terrestrial, freshwater and marine environments to: a) Maintain or enhance: i. Ecosystem health and indigenous biological diversity including habitats of indigenous fauna; b) Maintain or enhance as far as practicable: i. Areas of predominantly indigenous vegetation; iii. Areas buffering or linking ecosystems; c) Recognise and provide for:	The applicant's proposed consent conditions are not sufficiently developed to provide certainty that monitoring data will be: • collected in a consistent manner, • that it will be sufficiently comprehensive to enable assessment on effects on water quality to be confidently undertaken, • that sampling will be undertaken to appropriate quality assurance standards, • that suitable objectives for trigger levels will be established, or • that exceedances of trigger levels will be addressed adequately to ensure that the effects on water quality are managed appropriately. The proposal has the potential to result in the loss of stream and wetland habitat as a consequence of reduced flows in the catchment and subsequent hydrological changes may		On the basis of the evidence of Mr Kirk and Ingles evidence, I consider that effects on groundwater and surface water flows and quality will be mitigated such that they will be of a low magnitude. On the basis of Dr Morris and Dr Blakely's evidence, I consider effects on the extent and quality of wetland and freshwater ecological values will similarly be of a low magnitude, and mitigated, remedied, offset, and compensated to ensure no net loss. On the basis of Ms Sievwright and Ms King's evidence all effects on avifuna and lizards are expected to be very low or negligible. The conditions have been further developed and include baseline and operational hydrological, water quality, and ecological monitoring of wetland and freshwater habitats and management plan requirements to ensure effects will be managed in accordance with the effects management hierarchy to address the uncertainties. I consider therefore consider ecosystem health and indigenous biological diversity and areas of indigenous

i. Hydrological services, including the services provided for by tall tussock grassland; ii. Natural resources and processes that support indigenous biological diversity; d) Control the adverse effects of pest species, prevent their introduction and reduce their spread. Policy 3.1.11 – Environmental enhancement Encourage, facilitate and support activities that contribute to the resilience and enhancement of the natural environment, by where applicable: b) Protecting or restoring habitat for indigenous species; c) Regenerating indigenous species; e) Protecting or restoring wetlands; f) Improving the health and resilience of: i. Ecosystems supporting indigenous biological diversity; ii. Important ecosystem services, including pollination; h) Buffering or linking ecosystems, habitats and areas of significance that contribute to ecological corridors;	occur along up to 300 m of the downstream tributary of Ōtokia Creek (and associated swamp and valley floor wetlands). The point where this creek transitions to perennial may shift 45 m further downstream. The applicant has identified that the proposal will alter the water supply to the swamp wetland (less than 10 m below the landfill toe) by effectively intercepting up to 20% of the existing annual runoff into the wetland and by lowering the groundwater table in the vicinity of the wetland. This may also impact on the downstream valley floor marsh wetland. The subject site is an area that supports eastern falcon (At Risk – Recovering), longfin eel (At Risk - Declining), and indigenous lizard species including southern grass skink (At Risk – Declining) and possibly jewelled gecko (At Risk – Declining). Significant adverse effects on these values could be avoided by discharging of waste at an alternative location. There is a low degree of confidence with regard to the applicant's magnitude and level of ecological effects conclusions. This means that an assessment of the overall offset package is unable to be finalised, and a conclusion is unable to be reached as to whether it is appropriate and will result in no net loss (and a preferable net gain) in ecological/biodiversity values.		vegetation will be maintained consistent with policy 3.1.9. Furthermore, areas of significant indigenous vegetation and significant habitats of indigenous fauna will be protected and enhanced consistent with policy 3.2.2, and the function and values of wetlands protected consistent with policy 3.2.16. I also consider implementation of the Vegetation Restoration Management Plan will provide for environmental enhancement of the natural environment, consistent with policy 3.1.11.	

i) Controlling pest species. Policy 3.2.2 – Managing significant vegetation and habitats Protect and enhance areas of significant indigenous vegetation and significant habitats of indigenous fauna, by all of the following: b) Beyond the coastal environment, maintaining those values that contribute to the area or habitat being significant; c) Avoiding significant adverse effects on other values of the area or habitat; d) Remedying when other adverse effects cannot be avoided; e) Mitigating when other adverse effects cannot be avoided or remedied; f) Encouraging enhancement of those areas and values that contribute to the area or habitat being significant; g) Controlling the adverse effects of pest species, preventing their introduction and reducing their spread. Policy 3.2.16 – Managing the values of wetlands				

Protect the function and values of wetlands by all of the following: a) Maintaining the significant values of wetlands; b) Avoiding, remedying or mitigating other adverse effects; c) Controlling the adverse effects of pest species, preventing their introduction and reducing their spread; d) Encouraging enhancement that contributes to the values of the wetland; e) Encouraging the rehabilitation of degraded wetlands.				
Policy 4.1.4 - Assessing activities for natural hazard risk Assess activities for natural hazard risk to people, property and communities, by considering all of the following: a) The natural hazard risk identified, including residual risk; b) Any measures to avoid, remedy or mitigate those risks, including relocation and recovery methods; c) The long-term viability and affordability of those measures; d) Flow-on effects of the risk to other activities, individuals and communities;	Subject to minor refinement of the proposed conditions, potential adverse effects relating to geotechnical matters can be managed appropriately through the proposed consent conditions.		I agree with the ORC s42A report assessment and note that further refinements to the geotechnical land stability conditions have been made.	

e) The availability of, and ability to provide, lifeline utilities, and essential and emergency services, during and after a natural hazard event. Policy 4.1.6 - Minimising increase in natural hazard risk Minimise natural hazard risk to people, communities, property and other aspects of the environment by: a) Avoiding activities that result in significant risk from natural hazard; b) Enabling activities that result in no or low residual risk from natural hazard; d) Encouraging the location of infrastructure away from areas of hazard risk where practicable; e) Minimising any other risk from natural hazard.			
Policy 4.3.2 – Nationally and regionally significant infrastructure Recognise the national and regional significance of all of the following infrastructure: f) Ports and airports and associated navigation infrastructure;	Under the definitions in the PORPS, Dunedin International Airport is classed as both nationally significant infrastructure and regionally significant infrastructure. The proposed Smooth Hill Landfill does not meet either of these classifications under the PORPS because landfills do not fall under the definition of municipal infrastructure.		I agree with the ORC s42A report assessment and further note that State Highway is captured under tis policy as nationally and regionally significant infrastructure.

Policy 4.3.3 – Functional needs of infrastructure that has national or regional significance Provide for the functional needs of infrastructure that has regional or national significance, including safety.	There is a very high risk to the functional needs of the Dunedin International Airport in regard to aviation safety. The risk of bird strike has not been adequately assessed, and the applicant's proposed consent conditions are sufficiently developed to ensure that the very high risk to aviation safety will be avoided.		On the basis of Mr Shaw's evidence, I consider that removal of putrescible waste to the extent practicable, along with implementation of operational and bird control procedures in the Bird Management Plan could result in a net reduction in aviation risk. The conditions have been further developed, including escalating management actions where trigger levels are exceeded to ensure effects on aviation risk are avoided. I consider therefore that the functional needs of the airport (including safety) will be provided for, consistent with policy 4.3.3.	
Policy 4.3.4 - Adverse effects of nationally and regionally significant infrastructure Manage adverse effects of infrastructure that has national or regional significance, by: a) Giving preference to avoiding its location in all of the following: iv. Areas of significant indigenous vegetation and significant habitats of indigenous fauna beyond the coastal environment; b) Where it is not practicable to avoid locating in the areas listed in a) above because of the functional needs of that infrastructure: i. Avoid adverse effects on the values that contribute to the significant or outstanding nature of a) i-iii;	The proposed landfill does not meet the definition of regionally significant infrastructure and so this policy does not apply.		I agree with the ORC s42A report assessment.	

iii. Avoid, remedy or mitigate, as necessary, adverse effects in order to maintain the outstanding or significant nature of a) iv-viii; c) Avoid, remedy or mitigate, as necessary, adverse effects on highly valued natural features, landscapes and seascapes in order to maintain their high values; d) Avoiding, remedying or mitigating other adverse effects; e) Considering offsetting for residual adverse effects on indigenous biological diversity. Where there is a conflict, Policy 4.3.4 prevails over the policies under Objectives 3.2 (except for policy 3.2.12), 5.2 and Policy 4.3.1.				
Policy 4.3.5 – Protecting infrastructure with national or regional significance Protect infrastructure with national or regional significance, by all of the following: a) Restricting the establishment of activities that may result in reverse sensitivity effects; b) Avoiding significant adverse effects on the functional needs of such infrastructure;	Establishing the landfill at the proposed location is likely to result in reverse sensitivity effects in regards to adverse effects on the Dunedin International Airport. These two activities are incompatible. The risk of bird strike has not been adequately assessed, and the applicant's proposed consent conditions are sufficiently developed to ensure that the very high risk to aviation safety will be avoided. The Civil Aviation Authority 'Guidance Material for land use at or near airports' (2008) notes that the International Civil Aviation Organisation (ICAO) Bird Control and Reduction Manual recommends that [municipal solid		On the basis of Mr Shaw's evidence, I consider that removal of putrescible waste to the extent practicable, along with implementation of operational and bird control procedures in the Bird Management Plan could result in a net reduction in aviation risk. The conditions have been further developed, including escalating management actions where trigger levels are exceeded to ensure effects on aviation risk are avoided. I consider therefore that the airport will be protected from reverse sensitivity effects, consistent with policy 4.3.5.	

c) Avoiding, remedying or mitigating other adverse effects on the functional needs of such infrastructure; d) Protecting infrastructure corridors from activities that are incompatible with the anticipated effects of that infrastructure, now and for the future.	waste landfill] sites be located no closer than 13 km from the airport property.			

Policy 4.6.2 – Use, storage and disposal of hazardous substances Manage the use, storage and disposal of hazardous substances, by all of the following: a) Providing secure containment for the storage of hazardous substances; b) Minimising risk associated with natural hazard events; c) Ensuring the health and safety of people; d) Avoiding, remedying or mitigating adverse effects on the environment; e) Providing for the development of facilities to safely store, transfer, process, handle and dispose of hazardous substances; f) Ensuring hazardous substances are treated or disposed of in accordance with the relevant regulatory requirements; g) Restricting the location and intensification of activities that may result in reverse sensitivity effects near authorised facilities for hazardous substance bulk storage, treatment or disposal; h) Encouraging the use of best management practices.	The landfill will be able to accept hazardous waste (contaminated soil).		The landfill will accept municipal solid waste and hazardous materials that meet the leachability (TCLP) limits in the Ministry for Environment 2004: Module 2: Hazardous Waste Guidelines – Class A. No other hazardous wastes or hazardous substances will be accepted, with other measures signalled in the WWMP ensuring they are collected, recycled or disposed of in accordance with regulatory requirements so as to avoid adverse effects. Hazardous materials will be disposed of in an environmentally safe manner. The landfill waste and leachate containment measures have been developed in accordance with WasteMINZ guidelines for a class 1 landfill. I consider the landfill will therefore provide a new facility for the safe disposal of limited hazardous materials, consistent with policy 4.6.2. Furthermore, the disposal of hazardous materials will be securely contained and managed in accordance with best management practices to ensure the health and safety of people and avoid, remedy, or mitigate adverse effects on the environment consistent with policy 4.6.2.	

Policy 4.6.3 – Hazardous substance collection, disposal and recycling Promote and facilitate the establishment of hazardous substance collection, disposal and recycling services across the region.			

Policy 4.6.6 – Waste management Promote an integrated approach to the management of the use, storage and disposal of waste materials.	Disposal of waste has been considered in the broader context of waste management for the district.		I agree with the ORC s42A report assessment.
Policy 4.6.7 – Waste minimisation responses Encourage activities to give effect to the waste minimisation hierarchy of responses, by: a) Giving preference to reducing waste generated; then b) Reusing waste; then c) Recycling waste; then d) Recovering resources from waste; then e) Treatment; then f) Disposing residual waste to a disposal facility.	The applicant has explored other options for managing waste and is working towards a circular economy target. However, access to a waste disposal facility is required in both the short and long term. There could be further treatment and recovery of resources from the waste (separation of putrescible material) that would help to alleviate some of the significant adverse effects anticipated.		On the basis of Mr Henderson's evidence, I consider that the Council is giving effect to waste minimisation principles and note that food and organic waste will be diverted from the waste stream, and that residual putrescible wastes will be removed from the waste stream to the extent practicable prior to disposal at the landfill. I therefore consider that the waste minimisation hierarchy has been given effect to consistent with policy 4.6.7.
Policy 4.6.8 – Waste storage, recycling, recovery, treatment and disposal Manage the storage, recycling, recovery, treatment and disposal of waste materials by undertaking all of the following: a) Providing for the development of facilities and services for the storage, recycling, recovery, treatment and disposal of waste materials;	Establishing the landfill at the proposed location is likely to result in reverse sensitivity effects in regards to adverse effects on the Dunedin International Airport. These two activities are incompatible. The risk of bird strike has not been adequately assessed, and the applicant's proposed consent conditions are sufficiently developed to ensure that the very high risk to aviation safety will be avoided. The Civil Aviation Authority 'Guidance Material for land use at or near airports' (2008) notes that the International		I note that the focus of clause (e) is on restricting the location of activities that may result in reverse sensitivity effects on waste management facilities, rather than restricting the location of waste management facilities that may lead to reverse sensitivity effects on other activities. However, I note that waste management facilities are to ensure the health and safety of people and minimise adverse effects on the environment under clauses (c) and (e). On the basis of Mr Shaw's evidence, I consider that removal of putrescible waste to the extent practicable, along with implementation of operational and bird control

b) Ensuring the health and safety of people; c) Minimising adverse effects on the environment; d) Minimising risk associated with natural hazard events; e) Restricting the location of activities that may result in reverse sensitivity effects near waste management facilities and services	Civil Aviation Organisation (ICAO) Bird Control and Reduction Manual recommends that [municipal solid waste landfill] sites be located no closer than 13 km from the airport property.		procedures in the Bird Management Plan could result in a net reduction in aviation risk. The conditions have been further developed, including escalating management actions where trigger levels are exceeded to ensure effects on aviation risk are avoided. I consider therefore that the landfill will ensure the health and safety of people and the minimise adverse effects in regard to risk to aviation safety and all other potential adverse effects consistent with policy 4.6.8.	
Policy 4.6.9 New Contaminated land Avoid the creation of new contaminated land or, where this is not practicable, minimise adverse effects on the environment.	The proposal will result in the creation of a new contaminated site. Adverse effects on the environment have not been minimised as far as practicable.		I consider this policy needs to be considered in the context of policies 4.6.7 which 4.6.8 which provide for the development of facilities and services for the storage, recycling, recovery, treatment and disposal of waste materials. On the basis of the expert evidence for DCC, I consider all adverse effects on the environment have been minimised as far as practicable, consistent with policy 4.6.9.	
Policy 5.2.3 – Managing historic heritage Protect and enhance places and areas of historic heritage, by all of the following: a) Recognising that some places or areas are known or may contain archaeological sites, wāhi tapu or wāhi taoka which could be of significant historic or cultural value; b) Applying these provisions immediately upon discovery of such	Heritage New Zealand is the final arbiter on whether archaeological authorities are issued, and HNZ effectively peer review every archaeological assessment submitted. The applicant has stated that there will be engagement with HNZ prior to modifying the site, and that an archaeological authority will be sought. Proposed condition 69 will ensure that any new archaeological discoveries are appropriately managed.		I agree with the s42a report assessment.	

previously unidentified archaeological sites or areas, wāhi tapu or wāhi taoka; c) Avoiding adverse effects on those values that contribute to the area or place being of regional or national significance; d) Minimising significant adverse effects on other values of areas and places of historic heritage; e) Remedying when adverse effects on other values cannot be avoided; f) Mitigating when adverse effects on other values cannot be avoided or remedied; g) Encouraging the integration of historic heritage values into new activities; h) Enabling adaptive reuse or upgrade of historic heritage places and areas where historic heritage values can be maintained.			
Policy 5.4.1 – Offensive or objectionable discharges Manage offensive or objectionable discharges to land, water and air by: a) Avoiding significant adverse effects of those discharges; c) Avoiding, remedying or mitigating other adverse effects of those discharges.	Subject to minor refinement of the proposed conditions, adverse effects on air quality can be managed so that there will be no noxious, dangerous, offensive or objectionable odour or dust to the extent that it causes an adverse effect at or beyond the boundary of the site. There is a proposed consent condition that requires there to be no noxious, dangerous, offensive or objectionable odour or dust to the extent that it causes an adverse effect at or beyond the boundary of the site.		I agree with the ORC s42A report assessment and note that further refinements to the air quality conditions have been made.

Policy 5.4.2 – Adaptive management approach Apply an adaptive management approach, to avoid, remedy or mitigate actual and potential adverse effects that might arise and that can be remedied before they become irreversible, by both: a) Setting appropriate indicators for effective monitoring of those adverse effects; and b) Setting thresholds to trigger remedial action before the effects result in irreversible damage.	The applicant has undertaken a very limited programme of investigations to document groundwater and surface water quality. The proposal to collect further baseline data to develop a robust picture of groundwater and surface water quality and to enable the development of trigger levels that are protective of surface water quality is supported. However, it is noted that this could have been completed as part of the application process and could have reduced some of the uncertainties as to effects and scope.		On the basis of the evidence of Ms Webb, Mr Kirk and Mr Ingles, I consider that sufficient investigations have been completed to support the consent applications. The conditions have been further developed to ensure land stability effects and effects on receiving terrestrial and freshwater environments will be adequately managed and include further geotechnical investigations and stability analysis as part of detailed design, The conditions have been further developed and include baseline and operational hydrological, water quality, and ecological monitoring of wetland and freshwater habitats and management plan requirements to ensure effects will be managed in accordance with the effects management hierarchy, to address the uncertainties. I consider therefore that adaptive management responses will be applied that will avoid, remedy, or mitigate adverse effects before they become irreversible consistent with policy 5.4.2.	
Policy 5.4.3 Precautionary approach to adverse effects Apply a precautionary approach to activities where adverse effects may be uncertain, not able to be determined, or poorly understood but are potentially significant or irreversible.	The applicant's conclusions are supported by a limited programme of investigations, resulting in a lack of certainty that adverse effects will be avoided, remedied, mitigated, offset or compensated. Some of this uncertainty could be managed though consent conditions, but the applicant's proposed conditions are not currently sufficiently developed to provide this certainty. Granting the application in its current form would, therefore, be contrary to this policy.		On the basis of the assessment above, I consider that sufficient investigations have been completed and any residual uncertainties in regard to land stability effects and effects on receiving terrestrial and freshwater environments will be adequately managed through the conditions, which have been further developed. I consider therefore that the adverse effects are not uncertain or poorly understood such that granting consent would be inconsistent with a precautionary approach, and that the application is consistent with policy 5.4.3.	

Policy 5.4.6 Offsetting for indigenous biological diversity Consider indigenous biological diversity offsetting, when: a) Residual adverse effects of activities cannot be avoided, remedied or mitigated; b) The offset achieves no net loss and preferably a net gain in indigenous biological diversity; c) The offset ensures there is no loss of individuals of Threatened taxa other than kānuka (Kunzea robusta and Kunzea serotina), and no reasonably measurable loss within the ecological district to an At Risk-Declining taxon, other than mānuka (Leptospermum scoparium), under the New Zealand Threat Classification System ("NZTCS"); d) The offset is undertaken where it will result in the best ecological outcome, preferably; i. Close to the location of development; or ii. Within the same ecological district or coastal marine biogeographic region; e) The offset is applied so that the ecological values being achieved are	The subject site is an area that supports eastern falcon (At Risk – Recovering), longfin eel (At Risk - Declining), and indigenous lizard species including southern grass skink (At Risk – Declining) and possibly jewelled gecko (At Risk – Declining). There is a low degree of confidence with regard to the applicant's magnitude and level of ecological effects conclusions. This means that an assessment of the overall offset package is unable to be finalised, and a conclusion is unable to be reached as to whether it is appropriate and will result in no net loss (and a preferable net gain) in ecological/biodiversity values.		On the basis of Dr Morris, Dr Blakely, Ms Sievwright, and Ms King's evidence, I consider effects on the extent and quality of wetlands and freshwater ecological values, and on lizards and avifauna will be of a low magnitude mitigated, remedied, offset, and compensated to ensure no net loss. The conditions have been further developed and include baseline and operational hydrological, water quality, and ecological monitoring of wetland and freshwater habitats and management plan requirements to ensure effects will be managed in accordance with the effects management hierarchy, to address the uncertainties. I consider therefore that offsetting and compensation mechanisms will be applied to achieve no net loss and preferably a net gain in indigenous biological diversity and achieve positive biological diversity outcomes consistent with policy 5.4.5 and 5.4.6A.	

the same or similar to those being lost; f) The positive ecological outcomes of the offset last at least as long as the impact of the activity, preferably in perpetuity; g) The offset will achieve biological diversity outcomes beyond results that would have occurred if the offset was not proposed; h) The delay between the loss of biological diversity through the proposal and the gain or maturation of the offset's biological diversity outcomes is minimised. Policy 5.4.6A – Biological Diversity Compensation Consider the use of biological diversity compensation: a) When: i) Adverse effects of activities cannot be avoided, remedied, mitigated or offset; and ii) The residual adverse effects will not result in: 1. The loss of an indigenous taxon (excluding freshwater fauna and flora) or of any ecosystem type from an ecological district or coastal marine biogeographic region;				

2. Removal or loss of viability of habitat of a threatened or at risk indigenous species of fauna or flora under the New Zealand Threat Classification System (“NZTCS”); 3. Removal or loss of viability of a naturally rare or uncommon ecosystem type that is associated with indigenous vegetation or habitat of indigenous fauna; 4. Worsening of the NZTCS conservation status of any threatened or at risk indigenous freshwater fauna. b) By applying the following criteria: i) The compensation is proportionate to the adverse effect; ii) The compensation is undertaken where it will result in the best practicable ecological outcome, preferably: 1. Close to the location of development; 2. Within the same ecological district or coastal marine biogeographic region; iii) The compensation will achieve positive biological diversity outcomes that would not have occurred without that compensation;				

iv) The positive ecological outcomes of the compensation last for at least as long as the adverse effects of the activity; and v) The delay between the loss of biological diversity through the proposal and the gain or maturation of the compensation's biological diversity outcomes is minimised.				

Proposed Regional Policy Statement 2021				
Policy	**s42A report assessment**		**Evaluation of s42A report position**	
MW–P2 – Treaty principles *Local authorities* exercise their functions and powers in accordance with Treaty principles, by: (1) recognising the status of Kāi Tahu and facilitating Kāi Tahu involvement in decision-making as a Treaty partner, (2) including Kāi Tahu in resource management processes and implementation to the extent desired by mana whenua, (3) recognising and providing for Kāi Tahu values and resource management issues, as identified by *mana whenua*, in resource management decision-making processes and plan implementation, (4) recognising and providing for the relationship of Kāi Tahu culture and traditions with their ancestral lands, *water*, sites, wāhi tapu, and other taoka by ensuring that Kāi Tahu have the ability to identify these relationships and determine how best to express them, (5) ensuring that *regional* and *district plans* recognise and provide for Kāi Tahu relationships with Statutory Acknowledgement Areas, tōpuni, *nohoaka* and customary fisheries identified in the NTCSA 1998, including by actively protecting the mauri of these areas,	Tangata whenua (or at least Kai Tahu ki Ōtakau) have been actively involved in the development of, and have provided written approval to, the proposal. Te Rūnanga o Moeraki, Kāti Huirapa Rūnaka ki Puketeraki and Te Hokonui Rūnanga have not been involved in the process. Kāi Tahu values have been recognised and the recommendations of the CIA have largely been adopted.		The DCC as applicant has actively involved Kai Tahu ki Ōtakou who hold mana in the project area in the assessment of the proposal to ensure cultural values are identified and provided for in the applications. Kai Tahu ki Ōtakou have submitted in support of the applications. I consider therefore the DCC as applicant has exercised its functions in accordance with Treaty principles, and mana whenua cultural values have been provided for, consistent with policies MW-P2, IM-P3, AIR-P6, ECO-P1, HAZ–NH–P11, and LF–WAI–P2.	

(6) having particular regard to the ability of Kāi Tahu to exercise kaitiakitaka, (7) actively pursuing opportunities for: (a) delegation or transfer of functions to Kāi Tahu, and (b) partnership or joint management arrangements, and (8) taking into account iwi management plans when making resource management decisions. IM–P3 – Providing for *mana whenua* cultural values in achieving integrated management Recognise and provide for Kāi Tahu's relationship with natural resources by: (1) enabling *mana whenua* to exercise rakatirataka and *kaitiakitaka*, (2) facilitating active participation of *mana whenua* in resource management decision making, (3) incorporating mātauraka Māori in decision making, and (4) ensuring resource management provides for the connections of Kāi Tahu to *wāhi tūpuna*, *water* and *water bodies*, the coastal environment, mahika kai and habitats of taoka species. AIR–P6 – Impacts on *mana whenua* values Avoid *discharges* to air that adversely affect *mana whenua* values by having particular				

regard to values and areas of significance to *mana whenua*. ECO–P1 – *Kaitiakitaka* Recognise the role of Kāi Tahu as kaitiaki of Otago's indigenous *biodiversity* by: (1) involving Kāi Tahu in the management of indigenous *biodiversity* and the identification of indigenous species and ecosystems that are taoka, (2) incorporating the use of mātauraka Māori in the management and monitoring of indigenous *biodiversity*, and (3) providing for access to and use of indigenous *biodiversity* by Kāi Tahu, including mahika kai, according to tikaka. HAZ–NH–P11 – Kaitiaki decision making Recognise and provide for the role of Kāi Tahu as kaitiaki over *wāhi tūpuna*, Māori reserves and freehold land that is susceptible to *natural hazards* by involving *mana whenua* in decision making and management processes. LF–WAI–P2 – Mana whakahaere Recognise and give practical effect to Kāi Tahu rakatirataka in respect of *fresh water* by: (1) facilitating partnership with, and the active involvement of, *mana whenua* in				

freshwater management and decision-making processes, (2) sustaining the environmental, social, cultural and economic relationships of Kāi Tahu with *water bodies*, (3) providing for a range of customary uses, including mahika kai, specific to each *water body*, and (4) incorporating mātauraka into decision making, management and monitoring processes.				
MW–P3 – Supporting Kāi Tahu well-being The natural environment is managed to support Kāi Tahu well-being by: (1) protecting customary uses, Kāi Tahu values and relationships of Kāi Tahu to resources and areas of significance, and restoring these uses and values where they have been degraded by human activities, (2) safeguarding the mauri and life-supporting capacity of natural resources, and (3) working with Kāi Tahu to incorporate mātauraka in resource management. ECO–P3 – Protecting *significant natural areas* and taoka Except as provided for by ECO–P4 and ECO–P5, protect *significant natural areas* and indigenous species and ecosystems that are taoka by:	The CIA submitted with the application states that effects on mauri from contaminants entering water and from altering the existing hydrology are offset in part by mitigation measures such as riparian planting and pest management (which enhance mauri), but that these measures do not directly address the adverse effects on mauri. There is a low degree of confidence with regard to the applicant's magnitude and level of ecological effects conclusions. This means that an assessment of the overall offset package is unable to be finalised, and a conclusion is unable to be reached as to whether it is appropriate and will result in no net loss (and a preferable net gain) in ecological/biodiversity values.		I consider that Kāi Tahu cultural values (including mauri, whakapapa, and mahika kai), customary uses, relationships to resources, areas of significance, and protection of wāhi tupuna identified in the CIA have been protected to the extent possible. I acknowledge some adverse effects on mauri will remain as identified in the CIA, however I consider the 'protection' and 'safeguarding' focus in the policy is not synonymous with requiring no effect to occur. I therefore consider the proposal will support Kāi Tahu wellbeing consistent with policy MW-P3. Proposed RPS policy MW-P3 is worded in a directive way requiring mauri be 'protected' and 'safeguarded'. On the basis of the DCC expert evidence, I consider that every effort has been made to achieve protection of mauri, including through offsetting effects through enhancement of wetland/riparian habitats, and that achieving absolute protection of mauri in its purist sense is an impossibility for many uses and developments affecting freshwater. I therefore consider mauri has been 'protected' and 'safeguarded' as far as	

(1) avoiding adverse *effects* that result in: (a) any reduction of the area or values (even if those values are not themselves significant) identified under ECO–P2(1), or (b) any loss of Kāi Tahu values, and (2) after (1), applying the *biodiversity effects management hierarchy* in ECO–P6, and (3) prior to *significant natural areas* and indigenous species and ecosystems that are taoka being identified in accordance with ECO–P2, adopt a precautionary approach towards activities in accordance with IM–P15.			possible under Proposed RPS policy MW-P3, noting this provision is unsettled and limited weight should be applied to it. On the basis of Dr Morris and Dr Blakely's evidence, I consider effects on the extent and quality of wetland and freshwater ecological values will similarly be of a low magnitude, and mitigated, remedied, offset, and compensated to ensure no net loss. On the basis of Ms Sievwright and Ms King's evidence all effects on avifuna and lizards are expected to be very low or negligible. I therefore consider the application will protect significant natural areas and indigenous species and ecosystems that are taoka consistent with policy ECO-P3.	
IM–P2 – Decision priorities Unless expressly stated otherwise, all decision making under this RPS shall: (1) firstly, secure the long-term life-supporting capacity and mauri of the natural environment, (2) secondly, promote the health needs of people, and (3) thirdly, safeguard the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future.	There is a low degree of confidence with regard to the applicant's magnitude and level of ecological effects conclusions. This means that an assessment of the overall offset package is unable to be finalised, and a conclusion is unable to be reached as to whether it is appropriate and will result in no net loss (and a preferable net gain) in ecological/biodiversity values. Regarding water quality, the applicant's proposed consent conditions are not sufficiently developed to provide certainty that adverse effects on water quality will be managed appropriately.		On the basis of the evidence of Mr Kirk and Ingles evidence, I consider that effects on groundwater and surface water flows and quality will be mitigated and of a low magnitude. On the basis of Dr Morris and Dr Blakely's evidence, I consider effects on the extent and quality of wetland and freshwater ecological values will similarly be of a low magnitude, and mitigated, remedied, offset, and compensated to ensure no net loss. On the basis of Ms Sievwright and Ms King's evidence all effects on avifuna and lizards are expected to be very low or negligible. The conditions have been further developed and include baseline and operational hydrological, water quality, and ecological monitoring of wetland and freshwater habitats and management plan requirements to ensure effects will be managed in	

	It is not, therefore, clear at this stage whether the proposal will provide for the long-term life-supporting capacity and mauri of the natural environment.		accordance with the effects management hierarchy, to address the uncertainties. I therefore consider that the proposal will first secure the life-supporting capacity and mauri of the natural environment, second promote the health needs of people, third safeguard the ability of people to provide for their wellbeing, consistent with policy IM-P2.	
IM–P15 – Precautionary approach Adopt a precautionary approach towards proposed activities whose *effects* are uncertain, unknown or little understood, but could be significantly adverse, particularly where the areas and values within Otago have not been identified in plans as required by this RPS.	The applicant's conclusions are supported by a limited programme of investigations, resulting in a lack of certainty that adverse effects will be avoided, remedied, mitigated, offset or compensated. Some of this uncertainty could be managed though consent conditions, but the applicant's proposed conditions are not currently sufficiently developed to provide this certainty. Granting the application in its current form would, therefore, be contrary to this policy.		On the basis of the assessment above, I consider that sufficient investigations have been completed and any residual uncertainties in regard to land stability effects and effects on receiving terrestrial and freshwater environments will be adequately managed through the conditions, which have been further developed. I consider therefore that the application has appropriately applied a precautionary approach, consistent with policy 5.4.3.	
AIR–P1 – Maintain good ambient air quality Good ambient air quality is maintained across Otago by: (1) ensuring *discharges* to air comply with ambient air quality limits where those limits have been set, and (2) where limits have not been set, only allowing *discharges* to air if the adverse *effects* on ambient air quality are no more than minor. AIR–P3 – Providing for discharges to air Allow discharges to air provided they do not adversely affect human health, amenity and	Subject to minor refinement of the proposed conditions, adverse effects on air quality can be managed so that there will be no noxious, dangerous, offensive or objectionable odour or dust to the extent that it causes an adverse effect at or beyond the boundary of the site.		I agree with the ORC s42A report assessment and note that further refinements to the air quality conditions have been made.	

mana whenua values and the life supporting capacity of ecosystems. AIR–P4 – Avoiding certain discharges Avoid discharges to air that cause offensive, objectionable, noxious or dangerous effects.				
LF-WAI-O1 – Te Mana o te Wai The mauri of Otago's water bodies and their health and well-being is protected, and restored where it is degraded, and the management of land and water recognises and reflects that: (1) water is the foundation and source of all life – na te wai ko te hauora o ngā mea katoa, (2) there is an integral kinship relationship between water and Kāi Tahu whānui, and this relationship endures through time, connecting past, present and future, (3) each water body has a unique whakapapa and characteristics, (4) water and land have a connectedness that supports and perpetuates life, and (5) Kāi Tahu exercise rakatirataka, manaakitaka and their kaitiakitaka duty of care and attention over wai and all the life it supports. LF-WAI-P1 – Prioritisation	The CIA submitted with the application states that effects on mauri from contaminants entering water and from altering the existing hydrology are offset in part by mitigation measures such as riparian planting and pest management (which enhance mauri), but that these measures do not directly address the adverse effects on mauri. There is a low degree of confidence with regard to the applicant's magnitude and level of ecological effects conclusions. This means that an assessment of the overall offset package is unable to be finalised, and a conclusion is unable to be reached as to whether it is appropriate and will result in no net loss (and a preferable net gain) in ecological/biodiversity values. The Applicant's assessment has considered the integrated management of freshwater and land. However, there are some gaps in the information presented, some uncertainty remains, and the proposed conditions are not sufficiently developed to ensure the health and well-being of water bodies, freshwater ecosystems, and receiving environments.		Objective LF-WAI-O1 and policies LF-WAI-P1 – P4 are identified as being fundamental to upholding Te Mana o te Wai and are required to be given effect when making decisions affecting freshwater. Objective LF-WAI-O1 is worded in a directive way to require 'protection' of the mauri, health and wellbeing of waterbodies. On the basis of the evidence of Mr Kirk and Ingles evidence, I consider that effects on groundwater and surface water flows and quality will be mitigated and of a low magnitude. On the basis of Dr Morris and Dr Blakely's evidence, I consider effects on the extent and quality of wetland and freshwater ecological values will be mitigated, offset, and compensated to ensure no net loss. The conditions have been further developed and include baseline and operational hydrological, water quality, and ecological monitoring of wetland and freshwater habitats and management plan requirements to ensure effects will be managed in accordance with the effects management hierarchy, to address the uncertainties. On the basis of the DCC expert evidence, I therefore consider that every effort has been made to achieve	

In all management of *fresh water* in Otago, prioritise: (1) first, the health and well-being of *water bodies* and *freshwater* ecosystems, te hauora o te wai and te hauora o te taiao, and the exercise of *mana whenua* to uphold these, (2) second, the health and well-being needs of people, te hauora o te tangata; interacting with *water* through ingestion (such as *drinking water* and consuming harvested resources) and immersive activities (such as harvesting resources and bathing), and (3) third, the ability of people and communities to provide for their social, economic, and cultural wellbeing, now and in the future. LF-WAI-P3 – Integrated management/ki uta ki tai Manage the use of *fresh water* and *land* in accordance with tikaka and kawa, using an integrated approach that: (1) recognises and sustains the connections and interactions between *water bodies* (large and small, surface and ground, fresh and coastal, permanently flowing, intermittent and ephemeral), (2) sustains and, wherever possible, restores the connections and interactions			protection, including through offsetting effects on mauri through enhancement of wetland/riparian habitats. I therefore consider the proposal will as far as possible achieve protection of mauri, and health and wellbeing of water bodies consistent with objective LF-WAI-O1, and policies LF-WAI-P1 and P4, noting the Proposed RPS is at this time unsettled and therefore less weight should be given to these provisions. I also consider connections between water bodies habitats of mahika kai and indigenous freshwater will be sustained consistent with LF-WAI-P3.	

between *land* and *water,* from the mountains to the sea, (3) sustains and, wherever possible, restores the habitats of mahika kai and indigenous species, including taoka species associated with the *water body*, (4) manages the *effects* of the use and development of *land* to maintain or enhance the health and well-being of *fresh water* and *coastal water*, (5) encourages the coordination and sequencing of regional or urban growth to ensure it is sustainable, (6) has regard to foreseeable *climate change risks*, and (7) has regard to cumulative *effects* and the need to apply a precautionary approach where there is limited available information or uncertainty about potential adverse *effects*. LF-WAI-P4 – Giving effect to *Te Mana o te Wai* All persons exercising functions and powers under this RPS and all persons who use, develop or protect resources to which this RPS applies must recognise that LF-WAI-O1, LF-WAI-P1, LF-WAI-P2 and LF-WAI-P3 are fundamental to upholding *Te Mana o te Wai*, and must be given effect to when making decisions affecting *fresh water,*				

including when interpreting and applying the provisions of the LF chapter.				
LF–FW–P9 – Protecting *natural wetlands* Protect *natural wetlands* by: (1) avoiding a reduction in their values or extent unless: (a) the *loss of values* or extent arises from: (i) the customary harvest of food or resources undertaken in accordance with tikaka Māori, (ii) restoration activities, (iii) scientific research, (iv) the sustainable harvest of sphagnum moss, (v) the construction or maintenance of *wetland utility structures*, (vi) the maintenance or operation of *specific infrastructure*, or *other infrastructure*, (vii) *natural hazard works*, or (b) the Regional Council is satisfied that: (i) the activity is necessary for the construction or upgrade of *specified infrastructure*, (ii) the *specified infrastructure* will provide significant national or regional benefits, (iii) there is a *functional need* for the *specified infrastructure* in that location, (iv) the *effects* of the activity on indigenous *biodiversity* are managed by	The proposed activity is likely to result in the partial drainage of the swamp wetland and may also impact on the extent of the valley floor wetland. There still is not enough specific information on the tolerance of these wetland to any potential alteration of hydraulic regime to make a conclusion regarding the quantum of ecological effects. Clause (1)(vi) does not apply as this does not provide for the 'construction' of infrastructure. Whilst the landfill may meet the definition of specified infrastructure, there is not a functional need for it to be located at the Smooth Hill site and so clause (b) does not apply. A low degree of confidence with regard to the applicant's magnitude and level of ecological effects conclusions means that an assessment of the overall offset package is unable to be finalised, and a conclusion is unable to be reached as to whether it is appropriate and will result in no net loss (and a preferable net gain) in ecological/biodiversity values. Clause 2 has not, therefore, been satisfied.		I note landfills are not defined as 'regionally significant infrastructure' in the Proposed RPS, and therefore by association they are not strictly captured in the definition of 'specified infrastructure' under either NPS-FW or Proposed RPS. I note however that DCC has made submissions seeking the inclusion of landfills in the definition of 'regionally significant infrastructure', such that this remains a live issue. I also consider there is a 'functional need' for a landfill in this location. The definition of 'functional need' in the NPS-FW and Proposed RPS is not limiting to a particular site, but rather a particular environment, and whether there is a functional need for an activity will depend on the specifics of the proposal in terms of the inability for a particular piece of infrastructure or a facility to be positioned elsewhere on the site due to the sites inherent nature. I therefore consider that the landfill qualifies as being regionally significant, and therefore 'specified infrastructure', and has a functional need to be located upstream of wetland and river environments on the site. Recognising this, while not all effects on the extent or values of 'natural wetlands' or a river will be 'avoided', as per the evidence of Dr Morris and Dr Blakely they will however be mitigated, remedied, offset, and compensated to achieve no net loss in accordance with the effects management hierarchy, and draft proposed conditions of consent. Given landfills are not currently captured in the Proposed RPS definition of 'regionally significant	

applying either ECO–P3 or ECO–P6 (whichever is applicable), and (v) the other *effects* of the activity (excluding those managed under (1)(b)(iv)) are managed by applying the *effects management hierarchy,* and (2) not granting resource consents for activities under (1)(b) unless the Regional Council is satisfied that: (a) the application demonstrates how each step of the *effects management hierarchies* in (1)(b)(iv) and (1)(b)(v) will be applied to the *loss of values* or extent of the *natural wetland*, and (b) any consent is granted subject to conditions that apply the *effects management hierarchies* in (1)(b)(iv) and (1)(b)(v).			infrastructure', I consider the proposal remains contrary to policy LW-FW-P9, noting that this remains a live issue through submissions on the Proposed RPS.	
ECO–P4 – Provision for new activities Maintain Otago's indigenous *biodiversity* by following the sequential steps in the effects management hierarchy set out in ECO–P6 when making decisions on plans, applications for resource consent or notices of requirement for the following activities in *significant natural areas*, or where they may adversely affect indigenous species and ecosystems that are taoka: (1) the development or upgrade of *nationally* and *regionally significant*	The subject site is an area that supports eastern falcon (At Risk – Recovering), longfin eel (At Risk - Declining), and indigenous lizard species including southern grass skink (At Risk – Declining) and possibly jewelled gecko (At Risk – Declining). The landfill does not meet the definition of regionally significant infrastructure and there is no functional need for it to be located at the Smooth Hill site, so clause (1) does not apply. Clauses 2) - 5) do not apply.		I agree with the s42A report assessment that this policy does not apply.	

infrastructure that has a *functional* or *operational need* to locate within the relevant *significant natural area(s)* or where they may adversely affect indigenous species or ecosystems that are taoka, (2) the development of *papakāika*, marae and ancillary facilities associated with customary activities on Māori land, (3) the use of Māori land in a way that will make a significant contribution to enhancing the social, cultural or economic well-being of *takata whenua*, (4) activities that are for the purpose of protecting, restoring or enhancing a *significant natural area* or indigenous species or ecosystems that are taoka, or (5) activities that are for the purpose of addressing a severe and immediate *risk* to public health or safety.	In conclusion, this policy does not apply.			
ECO–P6 – Maintaining indigenous *biodiversity* Maintain Otago's indigenous *biodiversity* (excluding the coastal environment and areas managed under ECO–P3) by applying the following *biodiversity* effects management hierarchy in decision-making on applications for *resource consent* and notices of requirement: (1) avoid adverse *effects* as the first priority,	The subject site is an area that supports eastern falcon (At Risk – Recovering), longfin eel (At Risk - Declining), and indigenous lizard species including southern grass skink (At Risk – Declining) and possibly jewelled gecko (At Risk – Declining). A low degree of confidence with regard to the applicant's magnitude and level of ecological effects conclusions means that an assessment of the overall offset package is unable to be finalised, and a conclusion is unable to be reached as to whether it		On the basis of Dr Morris, Dr Blakely, Ms Sievwright, and Ms King's evidence, I consider effects on the extent and quality of wetlands and freshwater ecological values, and on lizards and avifauna will be of a low magnitude and mitigated, remedied, offset, and compensated to ensure no net loss. The conditions have been further developed and include baseline and operational hydrological, water quality, and ecological monitoring of wetland and freshwater habitats and management plan requirements to ensure effects will be managed in accordance with the effects management hierarchy, to address the uncertainties.	

(2) where adverse *effects* demonstrably cannot be completely avoided, they are remedied, (3) where adverse *effects* demonstrably cannot be completely avoided or remedied, they are mitigated, (4) where there are residual adverse *effects* after avoidance, remediation, and mitigation, then the residual adverse *effects* are offset in accordance with APP3, and (5) if *biodiversity* offsetting of residual adverse *effects* is not possible, then: (a) the residual adverse *effects* are compensated for in accordance with APP4, and (b) if the residual adverse *effects* cannot be compensated for in accordance with APP4, the activity is avoided.	is appropriate and will result in no net loss (and a preferable net gain) in ecological/biodiversity values.		I consider therefore consider indigenous biological diversity will be maintained consistent with the effects management hierarchy consistent with policy ECO-P6.	
ECO–P10 – Integrated management Implement an integrated and co-ordinated approach to managing Otago's ecosystems and indigenous *biodiversity* that: (1) ensures any permitted or controlled activity in a *regional* or *district plan* rule does not compromise the achievement of ECO–O1, (2) recognises the interactions ki uta ki tai (from the mountains to the sea) between the terrestrial *environment*, *fresh water*, and the *coastal marine area*, including the migration	The Applicant's assessment has considered the integrated management of freshwater and land. However, there are some gaps in the information presented, some uncertainty remains, and the proposed conditions are not sufficiently developed to ensure the health and well-being of water bodies, freshwater ecosystems, and receiving environments.		The proposal has been designed cognisant of the interactions between land, freshwater, and ecosystems on a whole-of-catchment basis. On the basis of the evidence of Mr Kirk and Ingles evidence, I consider that effects on groundwater and surface water flows and quality will be mitigated and of a low magnitude. On the basis of Dr Morris and Dr Blakely's evidence, I consider effects on the extent and quality of wetland and freshwater ecological values will similarly be of a low magnitude, and mitigated, remedied, offset, and compensated to ensure no net loss.	

of fish species between *fresh* and *coastal waters*, (3) promotes collaboration between individuals and agencies with *biodiversity* responsibilities, (4) supports the various statutory and non-statutory approaches adopted to manage indigenous *biodiversity*, (5) recognises the critical role of people and communities in actively managing the remaining indigenous *biodiversity* occurring on private *land,* and (6) adopts regulatory and non-regulatory regional pest management programmes.			The conditions have been further developed and include baseline and operational hydrological, water quality, and ecological monitoring of wetland and freshwater habitats and management plan requirements to ensure effects will be managed in accordance with the effects management hierarchy, to address the uncertainties. I consider therefore an integrated approach to managing ecosystems and indigenous biodiversity will be implemented consistent with policy ECO-P10.	
EIT–INF–P10 – Recognising resource requirements Decision making on the allocation or use of *natural and physical resources* must take into account the needs of *nationally* and *regionally significant infrastructure.*	Under the definitions in the PRPS, Dunedin International Airport is classed both as nationally significant infrastructure and regionally significant infrastructure. The proposed Smooth Hill Landfill does not meet either of these classifications under the PRPS.		I agree with the s42A report assessment.	
EIT–INF–P12 – Upgrades and development Provide for upgrades to, and development of, *nationally* or *regionally significant infrastructure* while ensuring that: (1) *infrastructure* is designed and located, as far as practicable, to maintain functionality during and after *natural hazard* events, (2) it is, as far as practicable, co-ordinated with long-term *land* use planning, and	The proposed Smooth Hill Landfill is not classed as nationally or regionally significant infrastructure under the PRPS and so this policy does not apply.		I agree with the s42A report assessment.	

(3) increases efficiency in the delivery, operation or use of the *infrastructure*.				
EIT–INF–P13 – Locating and managing *effects* of *infrastructure* When providing for new *infrastructure* outside the coastal environment: (1) avoid, as the first priority, locating *infrastructure* in all of the following: (a) *significant natural areas,* (b) outstanding natural features and landscapes, (c) *natural wetlands,* (d) *outstanding water bodies*, (e) areas of high or outstanding natural character, (f) areas or places of significant or outstanding *historic heritage*, (g) wāhi tapu, wāhi taoka, and areas with protected customary rights, and (h) areas of high recreational and high amenity value, and (2) if it is not possible to avoid locating in the areas listed in (1) above because of the *functional* or *operational needs* of the *infrastructure* manage adverse *effects* as follows: (a) for *nationally* or *regionally significant infrastructure*: (i) in *significant natural areas,* in accordance with ECO–P4,	Siting the landfill at the proposed location will not avoid effects on natural wetlands, although it is recognised that clause (1)(c) is to avoid locating infrastructure *in* natural wetlands, which is not proposed. This policy does not, therefore, apply.		I agree with the s42A report assessment.	

(ii) in *natural wetlands,* in accordance with the relevant provisions in the NESF, (iii) in *outstanding water bodies,* in accordance with LF–P12, (iv) in other areas listed in EIT–INF–P13 (1) above, minimise the adverse *effects* of the *infrastructure* on the values that contribute to the area's importance, and (b) for all *infrastructure* that is not *nationally* or *regionally significant*, avoid adverse *effects* on the values that contribute to the area's outstanding nature or significance.				
EIT-INF-P14 - Decision making considerations When considering proposals to develop or upgrade infrastructure: (1) require consideration of alternative sites, methods and designs if adverse effects are potentially significant or irreversible, and (2) utilise the opportunity of substantial upgrades of infrastructure to reduce adverse effects that result from the existing infrastructure, including on sensitive activities.	The applicant has stated that export of waste (to undefined location) is a viable alternative option i.e. that it is not impracticable to implement. The applicant has also indicted that disposal at existing private landfills may be an option, and that reduction of putrescible waste i.e. additional treatment of the waste stream prior to discharge is also an option.		On the basis of Mr Henderson's evidence, I note out of district disposal is not preferred as it would result in Council losing its ability to control the full waste cycle, thereby limiting carbon emission reduction and waste diversion initiatives, and expose the Council to risk of price increases, particularly haulage costs. Food and organic waste will be diverted from the waste stream, and residual putrescible wastes will be removed from the waste stream to the extent practicable prior to disposal at the landfill. I therefore consider that practicable alternative sites and methods have been considered consistent with policy EIT-INF-P14.	
EIT–INF–P15 – Protecting *nationally* or *regionally significant infrastructure* Seek to avoid the establishment of activities that may result in reverse sensitivity *effects* on *nationally* or *regionally significant infrastructure*, and/or where they may	Establishing the landfill at the proposed location is likely to result in reverse sensitivity effects in regards to adverse effects on the Dunedin International Airport. These two activities are incompatible.		On the basis of Mr Shaw's evidence, I consider that removal of putrescible waste to the extent practicable, along with implementation of operational and bird control procedures in the Bird Management Plan could result in a net reduction in aviation risk.	

compromise *the functional* or *operational needs* of *nationally* or *regionally significant infrastructure.*	There is a very high risk to the functional needs of the Dunedin International Airport in regard to aviation safety. The risk of bird strike has not been adequately assessed, and the applicant's proposed consent conditions are sufficiently developed to ensure that the very high risk to aviation safety will be avoided. The Civil Aviation Authority 'Guidance Material for land use at or near airports' (2008) notes that the International Civil Aviation Organisation (ICAO) Bird Control and Reduction Manual recommends that [municipal solid waste landfill] sites be located no closer than 13 km from the airport property.		The conditions have been further developed, including escalating management actions where trigger levels are exceeded to ensure effects on aviation risk are avoided. I consider therefore that the landfill will not result in reverse sensitivity effects on the airport or comprise its functional or operational needs, consistent with policy EIT-INF-P15.
HAZ–NH–P2 – *Risk* assessments Assess the level of *natural hazard risk* by determining a range of *natural hazard* event scenarios and their potential consequences in accordance with the criteria set out within APP6. HAZ–NH–P3 – New activities Once the level of *natural hazard risk* associated with an activity has been determined in accordance with HAZ–NH–P2, manage new activities to achieve the following outcomes: (1) when the *natural hazard risk* is significant, the activity is avoided,	Subject to minor refinement of the proposed conditions, potential adverse effects relating to geotechnical matters can be managed appropriately through the proposed consent conditions.		I agree with the ORC s42A report assessment and note that further refinements to the geotechnical land stability conditions have been made.

(2) when the *natural hazard risk* is tolerable, manage the level of *risk* so that it does not become significant, and (3) when the *natural hazard risk* is acceptable, maintain the level of *risk*.				
HAZ–CL–P15 – New *contaminated land* Avoid the creation of new *contaminated land* or, where this is not practicable, minimise adverse *effects* on the *environment* and *mana whenua* values.	The proposal will result in the creation of a new contaminated site. Adverse effects on the environment and mana whenua values have not been minimised as far as practicable.		I consider this policy needs to be considered in the context of policy HAZ-CL-P17 and P18 which provide for the development of facilities and services for the storage, recycling, recovery, treatment and disposal of waste materials. On the basis of the expert evidence for DCC, I consider all adverse effects on the environment have been minimised consistent with policy 4.6.9.	
HAZ–CL–P16 – *Waste* minimisation responses Apply the principles of the *waste* management hierarchy (reduce, reuse, recycle, recover, residual *waste* management) to the management of all *waste* streams. HAZ–CL–P17 – Disposal of *waste* materials Provide for the development and operation of facilities and services for the storage, recycling, recovery and treatment of *waste* materials but only for the disposal of *waste* materials if those materials cannot be recycled, recovered or treated for re-use.	The applicant has explored other options for managing waste and is working towards a circular economy target. However, access to a waste disposal facility is required in both the short and long term. There could be further treatment and recovery of resources from the waste (separation of putrescible material) that would help to alleviate some of the significant adverse effects anticipated.		On the basis of Mr Henderson's evidence, I consider that the Council is giving effect to waste minimisation principles and note that food and organic waste will be diverted from the waste stream, and that residual putrescible wastes will be removed from the waste stream to the extent practicable prior to disposal at the landfill. I therefore consider that the waste minimisation hierarchy has been given effect to consistent with policy HAZ-CL-P16, and that the landfill will cater only for those materials that cannot be recycled, recovered, or treated for re-use consistent with policy HAZ-CL-P17.	

HAZ–CL–P18 – *Waste* facilities and services When providing for the development of facilities and services for the storage, recycling, recovery, treatment and disposal of *waste* materials: (1) avoid adverse *effects* on the health and safety of people, (2) minimise the potential for adverse *effects* on the *environment* to occur, (3) minimise *risk* associated with *natural hazard* events, and (4) restrict the establishment of activities that may result in reverse sensitivity *effects* near *waste* management facilities and services.	Establishing the landfill at the proposed location is likely to result in reverse sensitivity effects in regards to adverse effects on the Dunedin International Airport. These two activities are incompatible. The risk of bird strike has not been adequately assessed, and the applicant's proposed consent conditions are sufficiently developed to ensure that the very high risk to aviation safety will be avoided. The Civil Aviation Authority 'Guidance Material for land use at or near airports' (2008) notes that the International Civil Aviation Organisation (ICAO) Bird Control and Reduction Manual recommends that [municipal solid waste landfill] sites be located no closer than 13 km from the airport property.		I note that the focus of clause (4) is on restricting the location of activities that may result in reverse sensitivity effects on waste management facilities, rather than restricting the location of waste management facilities that may lead to reverse sensitivity effects on other activities. However I note that waste management facilities are to ensure the health and safety of people and minimise the potential for adverse effects on the environment under clauses (1) and (2). On the basis of Mr Shaw's evidence, I consider that removal of putrescible waste to the extent practicable, along with implementation of operational and bird control procedures in the Bird Management Plan could result in a net reduction in aviation risk. The conditions have been further developed, including escalating management actions where trigger levels are exceeded to ensure effects on aviation risk are avoided. I consider therefore that the landfill will ensure the health and safety of people and the minimise adverse effects in regard to risk to aviation safety and all other potential adverse effects consistent with policy HAZ-CL-P18.	

Otago Regional Plan: Waste			
Policy	**s42A report assessment**		**Evaluation of s42A report position**
Policy 4.4.1 – To recognise and provide for the relationship Kai Tahu have with natural and physical resources by: a) Acknowledging that future generations will inherit the results of good and bad waste management practices; b) Providing for the management of Otago's waste stream in a manner that takes into account Kai Tahu cultural values; and c) Maintaining consultation with Kai Tahu on issues relating to waste minimisation.	Kāi Tahu values have been recognised and the recommendations of the CIA have largely been adopted. Whilst the applicant is working towards a circular economy target, access to a waste disposal facility is required in both the short and long term.		I consider that Kāi Tahu cultural values (including mauri, whakapapa, and mahika kai), customary uses, relationships to resources, areas of significance, and protection of wāhi tupuna identified in the CIA have been recognised and provided for to the extent possible. I consider therefore that the management of waste will be provided in a manner that takes into account Kāi Tahu cultural values consistent with policy 4.4.1.	
Policy 4.4.2 – To encourage, support and facilitate integrated waste management by (in order of priority): a) Minimising the effects on the environment by reducing the quantity and / or toxicity of material entering the waste stream; b) Reusing materials; c) Recycling materials, where practicable, that cannot be reused; d) Recovering resources from materials in the waste stream; and e) Disposing of the residual waste in an environmentally safe manner.	The applicant has explored other options for managing waste and is working towards a circular economy target, however, access to a waste disposal facility is required in both the short and long term. There could be further treatment and recovery of resources from the waste (separation of putrescible material) that would help to alleviate some of the significant adverse effects anticipated.		On the basis of Mr Henderson's evidence, I consider that the Council is giving effect to waste minimisation principles and note that food and organic waste will be diverted from the waste stream, and that residual putrescible wastes will be removed from the waste stream to the extent practicable prior to disposal at the landfill. I therefore consider that integrated waste management in accordance with order of priorities will be achieved consistent with policy 4.4.2.	

Policy 4.4.3 - To gather information on the waste stream in the Otago region.	The applicant has provided information regarding the predicted waste volume based on data collected and will continue to collect this data.		I agree with the ORC s42A report assessment.	
Policy 4.4.4 - To encourage the composting of appropriate organic waste material.	There will be no composting facilities on site due to it being attractive to birds and vermin. There could, however, be further treatment and recovery of resources from the waste (separation of putrescible material for composting elsewhere) that would help to alleviate some of the significant adverse effects anticipated.		As above, food and organic waste will be diverted from the waste stream, and that residual putrescible wastes will be removed from the waste stream to the extent practicable prior to disposal at the landfill. I therefore consider composing of organic waste will be provided for consistent with policy 4.4.4	
Policy 6.4.1 - To promote the safe transportation, and the use, treatment, storage and disposal of hazardous substances and hazardous wastes in such a manner that avoids adverse environmental effects.	Adverse effects will not be completely avoided.		I agree with the s42A report assessment, noting that the use of the *'avoid'* terminology of the policy does not align with the higher order, settled, and more contemporary directions of the Partially Operative RPS which have a focus on the *'minimising'* effects on the environment from disposal of hazardous wastes. The proposal will not therefore be fully consistent with policy 6.4.1.	
Policy 6.4.7 - To promote regionally coordinated collection, storage, treatment and disposal of hazardous waste.	The applicant has not indicated whether waste will be accepted from elsewhere in the region.		I note the proposal does not limit the ability for waste to be accepted from elsewhere in the region in the future should this occur. I consider retaining this flexibility is consistent with policy 6.4.7	
Policy 6.4.12 – To recognise and provide for the relationship Kāi Tahu have with Otago's natural and physical resources through: a) Providing for the management and disposal of Otago's hazardous substances and hazardous wastes in a	Kāi Tahu values have been recognised and the recommendations of the CIA have largely been adopted. Whilst the applicant is working towards a circular economy target, access to a waste disposal facility is required in both the short and long term.		I consider that Kāi Tahu cultural values (including mauri, whakapapa, and mahika kai), customary uses, relationships to resources, areas of significance, and protection of wāhi tupuna identified in the CIA have been recognised and provided for to the extent possible.	

manner which takes into account Kāi Tahu cultural values; and b) Supporting hazardous waste disposal methods which avoid, remedy or mitigate adverse effects on the environment and the mauri of its natural and physical resources; and c) Protecting waahi tapu and waahi taoka from hazardous waste management practices; and d) Ensuring that Kāi Tahu access to waahi tapu and waahi taoka is not compromised by waste management practices; and e) Acknowledging that future generations will inherit the results of good and bad waste management practices; and f) Maintaining consultation with Kāi Tahu on issues relating to hazardous substances and hazardous waste management. Policy 7.4.1 – To recognise and provide for the relationship Kāi Tahu have with Otago's natural and physical resources through: a) Providing for the management and disposal of Otago's wastes in a manner that takes into account Kāi Tahu cultural values; and	While effects on mauri from contaminants entering water and from altering the existing hydrology are offset in part by mitigation measures such as riparian planting and pest management (which enhance mauri), these measures do not directly address the adverse effects on mauri. Proposed offsetting or mitigation management plans need to be provided to mana whenua for review and consultation prior to implementation. Proposed condition 69 will ensure that any new archaeological discoveries are appropriately managed.		I consider therefore that the management of waste will be provided in a manner that takes into account Kāi Tahu cultural values; protects waahi tapu and waahi taoka; avoids, remedies, and mitigates adverse effects on environment and mauri; and maintains consultation with Kāi Tahu consistent with policies 6.4.12, and 7.4.1.	

b) Supporting waste disposal methods which avoid, remedy or mitigate adverse effects on the environment and the mauri of its natural and physical resources; and c) Protecting waahi tapu and waahi taoka from waste management practices; and d) Ensuring that Kāi Tahu access to waahi tapu and waahi taoka is not compromised by waste management practices; and e) Acknowledging that future generations will inherit the results of good and bad waste management practices; and f) Maintaining consultation with Kāi Tahu on issues relating to landfill management.				
Policy 7.4.3 – To ensure that landfills and discharges from silage production and composting operations are sited at locations and managed in a manner whereby adverse effects on the environment are avoided, remedied, or mitigated.	Whilst many of the potential adverse effects of locating the landfill at Smooth Hill have been addressed, uncertainty still remains regarding adverse effects on water quality and biodiversity values, and the risk to aviation is still considered to be very high.		On the basis of the expert evidence for DCC, I consider that all adverse effects have been avoided, remedied, or mitigated consistent with policy 7.4.3	
Policy 7.4.4 – To monitor discharges to land, water, and air from new, operating and closed landfills, and from silage production and composting.	The proposal includes monitoring throughout the life of the consent.		I agree with the s42A report assessment.	
Policy 7.4.5 – To identify and quantify waste inputs into operating, and new landfills.	The applicant has provided information regarding the predicted waste volume based on data collected and will continue to collect this data.		I agree with the s42A report assessment.	

Policy 7.4.6 – To require that all new, operating, and closed landfills are managed in compliance with approved management and post-closure procedures.	A Landfill Management Plan will be implemented.		I agree with the s42A report assessment.	
Policy 7.4.8 - To promote alternatives to landfills as a means of waste disposal.	The explanation behind this policy states, "*Landfills should be considered only where other alternatives such as waste minimisation, cleaner production, recycling, or other methods of waste disposal have failed or are impracticable to implement*". Although this policy does not require consent to be declined, given, specific examples of alternatives are identified, those alternatives where relevant may need to be considered for a landfill activity in order to be consistent with Policy 7.4.8. The applicant has stated that export of waste (to undefined location) is a viable alternative option i.e. that it is not impracticable to implement. The applicant has also indicted that disposal at existing private landfills may be an option, and that reduction of putrescible waste i.e. additional treatment of the waste stream prior to discharge is also an option.		On the basis of Mr Henderson's evidence, I note out of district disposal is not preferred as it would result in Council losing its ability to control the full waste cycle, thereby limiting carbon emission reduction and waste diversion initiatives, and expose the Council to risk of price increases, particularly haulage costs. Food and organic waste will be diverted from the waste stream, and residual putrescible wastes will be removed from the waste stream to the extent practicable prior to disposal at the landfill. I therefore consider that practicable alternative sites and methods have been considered consistent with policy 7.4.8.	
Policy 7.4.11 (introduced by Plan Change 1) – To minimise the adverse effects of discharges from new and operating landfills by requiring that: a) the siting, design, construction, operation and management of new and operating landfills is in accordance with the Waste Minimisation Institute New	Section 4.4 of the Waste Minimisation Institute New Zealand's Technical Guidelines for Disposal to Land (August 2018) states that an assessment of the suitability of a site for a landfill should consider airport safety, and that the Civil Aviation Authority 'Guidance Material for land use at or near airports' (2008) notes that the International Civil Aviation Organisation (ICAO) Bird Control and Reduction Manual recommends that [municipal solid waste landfill] sites be located no closer than 13 km from the airport property.		On the basis of Mr Shaw's evidence, I consider that removal of putrescible waste to the extent practicable, along with implementation of operational and bird control procedures in the Bird Management Plan could result in a net reduction in aviation risk. The conditions have been further developed, including escalating management actions where trigger levels are exceeded to ensure effects on aviation risk are avoided.	

Zealand's Technical Guidelines for Disposal to Land (August 2018) and b) a site-specific management plan is prepared and implemented in accordance with the Waste Minimisation Institute New Zealand's Technical Guidelines for Disposal to Land (August 2018) that includes (but is not limited to): i) methods for leachate management, collection, treatment and disposal; ii) methods for stormwater capture and control from both off-site and on-site sources; and iii) methods to minimise contamination of the receiving environment; and iv) controls to manage hazardous waste and avoid any discharge of hazardous wastes or the leaching of contaminants from hazardous wastes.			I consider therefore that airport safety has been appropriately considered as sought by the Waste Minimisation Institute New Zealand's Technical Guidelines for Disposal to Land (August 2018), and that all other effects have been minimised, and therefore the proposal is consistent with policy 7.4.11.

Otago Regional Plan: Water				
Policy	**s42A report assessment**		**Evaluation of s42A report position**	
Policy 5.4.2 – In the management of any activity involving surface water, groundwater or the bed or margin of any lake or river, to give priority to avoiding, in preference to remedying or mitigating:	Otokia Creek is identified for the following natural and ecosystem values: • Presence of significant fish spawning areas; • Presence of significant areas for development of juvenile fish;		I agree the policy requires effects to be avoided in preference to remedying or mitigating, however does not discount remedying or mitigating being appropriate where effects cannot be avoided. I also note the use of the *'avoid'* terminology of the policy does not align with the higher order, settled, and more contemporary	

1) Adverse effects on: a) Natural values identified in Schedule 1A; b) Water supply values identified in Schedule 1B; c) Registered historic places identified in Schedule 1C, or archaeological sites in, on, under or over the bed or margin of a lake or river; d) Spiritual and cultural beliefs, values and uses of significance to Kai Tahu identified in Schedule 1D; e) The natural character of any lake or river, or its margins; f) Amenity values supported by any water body; and 2) Causing or exacerbating flooding, erosion, land instability, sedimentation or property damage.	• Absence of aquatic pest plants • Provides access within the main stem of the catchment through to the sea unimpeded by artificial means, such as weirs, and culverts • Presence of indigenous fish species threatened with extinction; • Provides significant habitat for banded kokopu. Schedule 1D of the RPW identifies the spiritual and cultural beliefs, values and uses associated with water bodies of significance to Kai Tahu. Otokia Creek is identified as having the following values: • Kaitiakitanga: the exercise of guardianship by Kai Tahu, including the ethic of stewardship. • Mauri: life force. • Waahi tapu and/or Waiwhakaheke: sacred places; sites, areas and values of spiritual values of importance to Kai Tahu. • Waahi taoka: treasured resource; values, sites and resources that are valued. • Mahika kai: places where food is procured or produced. • Kohanga: important nursery/spawning areas for native fisheries and/or breeding grounds for birds. • Trails: sites and water bodies which formed part of traditional routes, including tauraka waka (landing place for canoes); • Cultural materials: water bodies that are sources of traditional weaving materials (such as raupo and paru) and rongoa (medicines).		directions of the Partially Operative which have a focus on the *'maintaining and enhancing'* freshwater On the basis of the evidence of Mr Kirk and Ingles evidence, I consider that effects on groundwater and surface water flows and quality will be mitigated and of a low magnitude. On the basis of Dr Morris and Dr Blakely's evidence, I consider effects on the extent and quality of wetland and freshwater ecological values will similarly be of a low magnitude and mitigated, remedied, offset, and compensated to ensure no net loss. On the basis of Mr Girvan's evidence, natural character will be enhanced. The conditions have been further developed and include baseline and operational hydrological, water quality, and ecological monitoring of wetland and freshwater habitats and management plan requirements to ensure effects will be managed in accordance with the effects management hierarchy, to address the uncertainties. I therefore consider that adverse effects on the values of surface water and groundwater, and beds of rivers in the Water Plan will be avoided, remedied, or mitigated consistent with policy 5.4.2	

	The applicant's proposed consent conditions are not sufficiently developed to provide certainty that effects on water quality will be avoided (in preference to remedying or mitigating).			
Policy 5.4.2A - The loss of river extent and values is avoided, unless the council is satisfied: (a) That there is a functional need for the activity in that location; and (b) The effects of the activity are managed by applying the effects management hierarchy.	The proposal has the potential to result in the loss of stream and wetland habitat as a consequence of reduced flows in the catchment and subsequent hydrological changes may occur along up to 300 m of the downstream tributary of Ōtokia Creek (and associated swamp and valley floor wetlands). The point where this creek transitions to perennial may shift 45 m further downstream. There is, however, still some uncertainty as to how surface water flows will respond to establishment of the landfill. There is no functional need for the landfill to be located at Smooth Hill.		I consider there is a 'functional need' for a landfill in this location. The definition of 'functional need' in the NPS-FW and Proposed RPS is not limiting to a particular site, but rather a particular environment, and whether there is a functional need for an activity will depend on the specifics of the proposal in terms of the inability for a particular piece of infrastructure or a facility to be positioned elsewhere on the site due to the sites inherent nature. I therefore consider that the landfill has a functional need to be located upstream of wetland and river environments on the site. Recognising this, while not all effects on the extent or values of a river will be 'avoided', as per the evidence of Dr Morris and Dr Blakely they will however be mitigated, remedied, offset, and compensated to achieve no net loss in accordance with the effects management hierarchy. The proposal has addressed how the effects management hierarchy will be applied to the loss of values and extent, and conditions of consent have been proposed that apply that hierarchy. Accordingly, I consider the proposal is consistent with policy 5.4.2.A.	
Policy 5.4.4 - To recognise Kai Tahu's interests in Otago's lakes and rivers by promoting opportunities for their involvement in resource consent processing.	Tangata whenua (or at least Kai Tahu ki Ōtakau) have been actively involved in the development of, and have provided written approval to, the proposal. Te Rūnanga o Moeraki, Kāti Huirapa Rūnaka ki Puketeraki and Te Hokonui Rūnanga have not been involved in the process.		The DCC as applicant has actively involved Kai Tahu ki Ōtakou who hold mana in the project area in the assessment of the proposal to ensure cultural values are identified and provided for in the applications. Kai Tahu ki Ōtakou have submitted in support of the applications.	

			I consider the proposal is therefore consistent with policy 5.4.4.	
Policy 5.4.8 – To have particular regard to the following features of lakes and rivers, and their margins, when considering adverse effects on their natural character: a) The topography, including the setting and bed form of the lake or river; b) The natural flow characteristics of the river; c) The natural water level of the lake and its fluctuation; d) The natural water colour and clarity in the lake or river; e) The ecology of the lake or river and its margins; and f) The extent of use or development within the catchment, including the extent to which that use and development has influenced matters (a) to (e) above.	These matters have been given to regard to.		I agree with the s42 report assessment	
Policy 6.4.0A – To ensure that the quantity of water granted to take is no more than that required for the purpose of use.	The primary purpose of abstraction groundwater collected in the sub-surface drainage system is to ensure dewatered conditions beneath the landfill. The applicant will, therefore, need to abstract as much groundwater as necessary (up to 87 m^3/day) to ensure that dewatered conditions are maintained.		I agree with the s42 report assessment	
Policy 6.4.1A – A groundwater take is allocated as:	The sub-surface drainage system is expected to intercept groundwater within the shallow groundwater system in the northern section of the landfill footprint,		I agree with the s42 report assessment	

a) Surface water, subject to a minimum flow, if the take is from any aquifer in Schedule 2C; or b) Surface water, subject to a minimum flow, if the take is within 100 metres of any connected perennial surface water body; or c) Groundwater and part surface water if the take is 100 metres or more from any connected perennial surface water body, and depletes that water body most affected by at least 5 litres per second as determined by Schedule 5A; or d) Groundwater if (a), (b) and (c) do not apply.	near the toe. This water (up to 87 m^3/day) will be abstracted and used as part of the non-potable water supply for the site or discharged to the unnamed tributary of Ōtokia Creek. The abstraction is not from a Schedule 2C aquifer and so clause a) does not apply. The point where the unnamed tributary of Ōtokia Creek tributary transitions to perennial has not been identified but is expected to be more than 100 m from the point of abstraction. The swamp wetland, which will be within 100 m of the point of abstraction, is not expected to have standing surface water year-round. Clause b) does not, therefore, apply, Given that the rate of abstraction is 1 L/s when averaged out over 24 hours, clause c) will not apply. The take will, therefore, be allocated as groundwater under clause d).			
Policy 6.4.10A1 - Enable the taking of water allocated as groundwater by Policy 6.4.1A, by: a) Determining the volume available for taking as the maximum allocation limit less the assessed maximum annual take for an aquifer calculated using Method 15.8.3.1; and b) Applying aquifer restrictions where specified in Schedule 4B. Policy 6.4.10A2 - Define the maximum allocation limit for an aquifer as: a) That specified in Schedule 4A; or	The annual allocation sought by the applicant is 1,600 m^3/yr. There are no known groundwater permits that authorised the take of groundwater from the same source, therefore the maximum allocation limit is determined in accordance with Policy 6.4.10A2. The aquifer is not specified in Schedule 4A. The mean annual groundwater recharge (MAR) predicted using groundwater modelling (method allowed for by Schedule 4D.2(g)) is approximately 2% of rainfall, equating to 30,095 m^3/yr, when based on an annual average rainfall of 809 mm across the 18.6 ha landfill footprint.		I agree with the s42 report assessment, noting Mr Kirk considers the mean annual recharge to be 6000m^3/yr resulting in a maximum allocation limit 3,000 m^3/yr, of which the proposal proposes to take 1,600 m^3/yr.	

b) For aquifers not in Schedule 4A, 50% of the mean annual recharge calculated under Schedule 4D.	The allocation limit (which is 50% of the mean annual recharge) therefore equates to 15,000 m^3/yr, although the Applicant has suggested that MAR could be as low as 6,000 m^3/yr (allocation 3,000 m^3/yr). Either way, the allocation sought is within the allocation limit.			
Policy 6.4.16 – In granting resource consents to take water, or in any review of the conditions of a resource consent to take water, to require the volume and rate of take to be measured in a manner satisfactory to the Council unless it is impractical or unnecessary to do so.	A recommended condition of consent ensures that the take of groundwater will be measured in accordance with the Resource Management (Measurement and Reporting of Water Takes) Regulations 2010 and Amendment Regulations 2020		I agree with the s42 report assessment, noting my evidence accepts this proposed condition.	
Policy 7.B.1 Manage the quality of water in Otago lakes, rivers, wetlands and groundwater by: a) Describing, in Table 15.1 of Schedule 15, characteristics indicative of good quality water; and b) Setting, in Table 15.2 of Schedule 15, receiving water numerical limits and targets for achieving good quality water; and c) Maintaining, from the dates specified in Schedule 15, good quality water; and d) Enhancing water quality where it does not meet Schedule 15 limits, to meet those limits by the date specified in the Schedule; and	The applicant has undertaken a very limited programme of investigations to document groundwater and surface water quality. The proposal to collect further baseline data to develop a robust picture of groundwater and surface water quality and to enable the development of trigger levels that are protective of surface water quality is supported, although it is noted that we would usually expect to see this work completed before the application is lodged. The applicant's proposed consent conditions are not sufficiently developed to provide certainty that monitoring data will be: • collected in a consistent manner, • that it will be sufficiently comprehensive to enable assessment on effects on water quality to be confidently undertaken,		On the basis of the evidence of Mr Kirk and Ingles evidence, I consider that effects on groundwater and surface water quality will be mitigated and of a low magnitude. For the majority of water quality parameters the flux within shallow groundwater its predicted to reduce with landfill development, even when considering the predicted leachate leakage rate. For parameters predicted to increase, concentrations are not anticipated to exceed the ANZG guidelines, or Schedule 15 limits referred to in policy 7.B.1, with the exception of ammoniacal nitrogen and nitrate in the shallow groundwater system which are expected to exceed the Schedule 15 limits (based on conservative assessment). However, the discharge of total inorganic nitrogen is predicted to reduce within the shallow groundwater system when compared to existing conditions, with a reduction also expected within the surface water of the	

e) Recognising the differences in the effects and management of point and non-point source discharges; and f) Recognising discharge effects on groundwater; and g) Promoting the discharge of contaminants to land in preference to water. Policy 7.B.2 – Avoid objectionable discharges of water or contaminants to maintain the natural and human use values, including Kāi Tahu values, of Otago lakes, rivers, wetlands, groundwater and open drains and water races that join them. Policy 7.B.4 – When considering any discharge of water or contaminants to land, have regard to: a) The ability of the land to assimilate the water or contaminants; and b) Any potential soil contamination; and c) Any potential land instability; and d) Any potential adverse effects on water quality; and e) Any potential adverse effects on use of any proximate coastal marine area for contact recreation and seafood gathering.	• that sampling will be undertaken to appropriate quality assurance standards, • that suitable objectives for trigger levels will be established, or • that exceedances of trigger levels will be addressed adequately to ensure that the effects on water quality are managed appropriately.		Ōtokia Creek. This decreasing total inorganic nitrogen is considered to provide a more appropriate measure for assessing potential changes in nitrogen load resulting from landfill development. The conditions have been further developed to ensure effects on receiving freshwater environments will be adequately managed and include baseline and operational water quality, ecological monitoring of wetland and freshwater habitats and management plan requirements, including to reduce the adverse effects of contaminants discharged into water. I consider therefore consider the water quality overall will be maintained, and in part enhanced, and natural and human use values will be maintained consistent with policies 7.B.1, 7.B.2, and adaptive management responses adopted consistent with policy 7.B.8.	

Policy 7.B.6 – When assessing any consent to discharge contaminants to water, consider the need for and the extent of any zone for physical mixing, within which water will not meet the characteristics and limits described in Schedule 15, by taking account of: a) The sensitivity of the receiving environment; and b) The natural and human use values, including Kāi Tahu values; and c) The natural character of the water body; and d) The amenity values supported by the water body; and e) The physical processes acting on the area of discharge; and f) The particular discharge, including contaminant type, concentration and volume; and g) The provision of cost-effective community infrastructure; and h) Good quality water as described in Schedule 15. Policy 7.B.7 – Encourage land management practices that reduce the adverse effects of water or contaminants discharged into water.				

Policy 7.B.8 - Encourage adaptive management and innovation that reduces the level of contaminants in discharges. Policy 7.C.1 - When considering applications for resource consents to discharge contaminants to water, to have regard to opportunities to enhance the existing water quality of the receiving water body at any location for which the existing water quality can be considered degraded in terms of its capacity to support its natural and human use values. Policy 7.C.2 - When considering applications for resource consents to discharge contaminants to water, or onto or into land in circumstances which may result in any contaminant entering water, to have regard to: a) The nature of the discharge and the sensitivity of the receiving environment to adverse effects; b) The financial implications, and the effects on the environment of the proposed method of discharge when compared with alternative means; and c) The current state of technical knowledge and the likelihood that the				

proposed method of discharge can be successfully applied. Policy 7.C.3 - When considering any resource consent to discharge a contaminant to water, to have regard to any relevant standards and guidelines in imposing conditions on the discharge consent.				
Policy 7.C.11 - To require the holder of any consent for a dam constructed for the storage of contaminants to completely remedy any adverse effect of the failure or overtopping of the dam structure, either during or after its construction.	The applicant has specified methods to ensure that the Attenuation Basin will not overflow in an uncontrolled manner but has not specified what would be done in the event that the dam fails.		Contingency measures will be detailed in the LMP. Specifically the LMP objectives require procedures to be developed and included in the LMP to infrastructure failure and ensure escape of contaminants are promptly detected and remediated to protection the receiving environment. I therefore consider the proposal is consistent with policy 7.C.11.	
Policy 10A.2.2 (introduced by Plan Change 7) - Irrespective of any other policies in this Plan concerning consent duration, only grant resource consents for takes and/or uses of freshwater, where this activity was not previously authorised by a Deemed Permit or by a water permit expiring prior to 31 December 2025, for a duration of no more than six years.	The term sought for the groundwater permit is 6 years.		I agree with the s42A report assessment and consider that directive nature of the policy limits all water permits to a 6-year duration. I note however this presents significant uncertainty for the ability to obtain a new water permit to enable the continued operation of what is significant community infrastructure, recognising the landfill is otherwise expected to have a consented life of 35 years.	
Policy 10.4.1 – Otago's regionally significant wetland values are:	Whilst the proposal will not affect any Regionally Significant Wetlands, it does have the potential to affect regionally significant wetland values. The affected waterbodies support longfin eel (At Risk - Declining).		I consider that policy 10.4.1 only applies to regionally significant wetlands listed in Schedule 9 of the Water Plan, noting that objective 10.3.2 refers to Otago's	

A1 Habitat for nationally or internationally rare or threatened species or communities; A2 Critical habitat for the life cycles of indigenous fauna which are dependent on wetlands; A3 High diversity of wetland habitat types; A4 High degree of wetland naturalness; A5 Wetland scarce in Otago in terms of its ecological or physical character; A6 Wetland which is highly valued by Kai Tahu for cultural and spiritual beliefs, values and uses, including waahi taoka and mahika kai; A7 High diversity of indigenous wetland flora and fauna; A8 Regionally significant wetland habitat for waterfowl; and A9 Significant hydrological values including maintaining water quality or low flows, or reducing flood flows.			Regionally Significant Wetlands and their values and uses are recognised and sustained. None of the wetlands immediately downstream of the landfill are identified as Regionally Significant Wetlands in Schedule 9, on the basis of the evidence of Mr Ingles, Dr Morris, and Dr Blakely, I consider there will be no adverse effects on wetland values of the regionally significant Lower Otokia Creek Marsh listed in Schedule 9 of the Water Plan. I therefore consider the proposal is consistent with policy 10.4.1.	
Policy 10.4.2 – Avoid the adverse effects of an activity on a Regionally Significant Wetland or a regionally significant wetland value, but allow remediation or mitigation of an adverse effect only when the activity: a) Is lawfully established; or	Whilst the proposal will not affect any Regionally Significant Wetlands, it does have the potential to affect regionally significant wetland values. The affected waterbodies support longfin eel (At Risk - Declining). The applicant has identified that the proposal will alter the water supply to the swamp wetland (less than 10 m below the landfill toe) by effectively intercepting up to		I consider that policy 10.4.2 only applies to regionally significant wetlands listed in Schedule 9 of the Water Plan, noting that objective 10.3.2 refers to. Otago's Regionally Significant Wetlands and <u>their</u> values and uses are recognised and sustained. None of the wetlands immediately downstream of the landfill are identified as Regionally Significant Wetlands in Schedule 9, on the basis of the evidence	

b) Is nationally or regionally significant important infrastructure, and has specific locational constraints; or c) Has the purpose of maintaining or enhancing a Regionally Significant Wetland or a regionally significant wetland value. Policy 10.4.8 - The loss of natural inland wetlands is avoided, their values are protected, and their restoration is promoted, except where: (a) The loss of extent or values arises from any of the following: (i) The customary harvest of food or resources undertaken in accordance with tikanga Maori (ii) Restoration activities (iii) Scientific research (iv) The sustainable harvest of sphagnum moss (v) The construction or maintenance of wetland utility structures (as defined in the Resource Management (National Environmental Standards for Freshwater) Regulations 2020 (vi) The maintenance or operation of specified infrastructure, or other infrastructure (as defined in the Resource Management (National	20% of the existing annual runoff into the wetland and by lowering the groundwater table in the vicinity of the wetland. This may also impact on the downstream valley floor marsh wetland. There still isn't enough specific information on the tolerance of these wetlands to any potential alteration of hydraulic regime to make a conclusion regarding the quantum of ecological effects. This uncertainty could be managed though consent conditions requiring hydrological and ecological monitoring in the receiving environment and clearly identified adaptive management responses. However, recommended monitoring of water levels in the swamp wetland has not been included in the proposed consent conditions, and monitoring of water levels alone will be insufficient to detect changes in the extent of the wetlands. The proposed landfill would not be classed as regionally significant infrastructure under the PORPS or the PRPS, and it is not subject to specific locational constraints that mean it cannot be sited elsewhere.		of Mr Ingles, Dr Morris, and Dr Blakely, I consider there will be no adverse effects on wetland values of the regionally significant Lower Otokia Creek Marsh listed in Schedule 9 of the Water Plan. I therefore consider the proposal is consistent with policy 10.4.2.	

Environmental Standards for Freshwater) Regulations 2020 (vii) Natural hazard works (as defined in the Resource Management (National Environmental Standards for Freshwater) Regulations 2020; or (b) The regional council is satisfied that: (i) The activity is necessary for the construction or upgrade of specified infrastructure; and (ii) The specified infrastructure will provide significant national or regional benefits; and (iii) There is a functional need for the specified infrastructure in that location; and (iv) The effects of the activity are managed through applying the effects management hierarchy.				

Kāi Tahu ki Otago Natural Resource Management Plan 2005				
Policy	**s42A report assessment**		**Evaluation of s42A report position**	
Wai Māori Policies • To require an assessment of instream values for all activities affecting water. • To promote the cultural importance of water to Kāi Tahu ki Otago in all water management within the Otago Region and Lower Waitaki Catchment. • To protect and restore the mauri of all water. • To encourage the use of the Cultural Health Index as a tool for monitoring waterways. • To encourage all stormwater be treated before being discharged. • To encourage Kāi Tahu ki Otago input into the development of monitoring programmes. • To require monitoring of all discharges be undertaken on a regular basis and all information, including an independent analysis of monitoring results, be made available to Kāi Tahu ki Otago.	Tangata whenua (or at least Kai Tahu ki Ōtakau) have been actively involved in the development of, and have provided written approval to, the proposal. Te Rūnanga o Moeraki, Kāti Huirapa Rūnaka ki Puketeraki and Te Hokonui Rūnanga have not been involved in the process. Kāi Tahu values have been recognised and the recommendations of the CIA have largely been adopted. The CIA submitted with the application states that effects on mauri from contaminants entering water and from altering the existing hydrology are offset in part by mitigation measures such as riparian planting and pest management (which enhance mauri), but that these measures do not directly address the adverse effects on mauri.		In regard to this policies I note – - Instream values have been assessed as part of the proposal. - I acknowledge however there will remain some adverse effects on mauri as identified in the CIA. - The CIA has not specifically sought cultural health monitoring be included. - All stormwater will be treated via sediment retention ponds and/or the attenuation basin prior to discharge. - Monitoring programmes will be developed with Kāi Tahu. All discharges will be monitored on a regular basis, and results subject to scrutiny from the independent peer review panel and made available to Kāi Tahu. - The LMP will contain procedures for containing spills and other incidents, and maintenance of stormwater and air discharge infrastructure. - Vegetation restoration and landscape mitigation will incorporate locally source indigenous plans, and subject to monitoring as set out in the LMP and ecological management plans. I consider the proposal broadly aligned with these policies.	

• To encourage Management Plans for all discharge activities that detail the procedure for containing spills and including plans for extraordinary events. • To require all discharge systems be well maintained and regularly serviced. Copies of all service and maintenance records should be available to Kāi Tahu ki Otago upon request. • To require re-vegetation with locally sourced indigenous plants for all disturbed areas. Re-vegetation should be monitored by an assessment of the vegetative cover at one growing season after establishment and again at three seasons from establishment. • To require groundwater monitoring for all discharges to land. • To promote integrated riparian management throughout entire catchments.				
Wai Māori Policy that the application is contrary to:	The Applicant has identified that the proposal will alter the water supply to the swamp wetland (less than 10 m below the landfill toe) by effectively intercepting up to 20% of the existing annual runoff into the wetland and by		I consider it is unclear whether 'draining' in the context of this policy captures any hydrological change or just complete draining.	

• Policy 56: To oppose the draining of wetlands. All wetlands are to be protected.	lowering the groundwater table in the vicinity of the wetland. This may also impact on the downstream valley floor marsh wetland.		While it is accepted that hydrological changes in the swamp and valley floor wetlands will occur, on the basis of the evidence of Mr Kirk and Ingles evidence, I consider that effects on groundwater and surface water flows affecting these wetlands will be mitigated and of a low magnitude. On the basis of Dr Morris and Dr Blakely's evidence, I consider effects on the extent and quality of wetland and freshwater ecological values will be mitigated, remedied, offset, and compensated to ensure no net loss. The conditions have been further developed and include baseline and operational hydrological, water quality, and ecological monitoring of wetland and freshwater habitats and management plan requirements to ensure effects will be managed in accordance with the effects management hierarchy, to address the uncertainties. I consider therefore consider that wetlands will not be 'drained' and will be protected
Wāhi Tapu Policies • To require consultation with Kāi Tahu ki Otago for activities that have the potential to affect wāhi tapu. • To promote the establishment of processes with appropriate agencies that: i. enable the accurate identification and protection of wāhi tapu. ii. provide for the protection of sensitive information about the	Proposed condition 69 will ensure that any new archaeological discoveries are appropriately managed.		I agree with the s42A report assessment.

specific location and nature of wāhi tapu. iii. ensure that agencies contact Kāi Tahu ki Otago before granting consents or confirming an activity is permitted, to ensure that wāhi tapu are not adversely affected. • To discourage all discharges near wāhi tapu. • To recognise Kāi Tahu ki Otago kaitiakitaka over the protection and recording of archaeological sites.				
Mahika Kai and Biodiversity Policies • To promote the protection of remaining indigenous fish habitat by: o Identifying waterways that exclusively support indigenous fish. o Prohibiting the introduction of exotic species where they currently do not exist. o Ensuring fish passage (both ingress and egress). o Removing exotic species from waterways of particular importance where this is achievable and appropriate	The affected waterbodies support longfin eel (At Risk - Declining). The proposal has the potential to result in the loss of stream and wetland habitat as a consequence of reduced flows in the catchment and subsequent hydrological changes may occur along up to 300 m of the downstream tributary of Ōtokia Creek (and associated swamp and valley floor wetlands). The point where this creek transitions to perennial may shift 45 m further downstream. There is, however, still some uncertainty as to how surface water flows will respond to establishment of the landfill. There is a low degree of confidence with regard to the applicant's magnitude and level of ecological effects conclusions. This means that an assessment of the overall offset package is unable to be finalised, and a conclusion is unable to be reached as to whether it is appropriate and will result in no net loss (and a		In regard to these policies I note – - On the basis of Ms Blakely's evidence, passage for fish will be retained where they exist. - Exotic weeds will be removed as part of restoration of the swamp wetland. - As noted above in relation to policy 56, existing wetlands will be protected and enhanced through storation, including through fencing. - The CIA has not specifically sought cultural health monitoring be included. - As noted above I there will remain some adverse effects on mauri as identified in the CIA. I consider the proposal broadly aligned with these policies.	

according to Kāi Tahu ki Otago. • To protect and enhance existing wetlands, support the reinstatement of wetlands and promote assistance for landowners for fencing-off wetlands. • To promote the development of a cultural monitoring tool for vegetation and ecosystem health. • To require that hazardous operations and the use, transportation and storage of hazardous substances are not to impact mahika kai and other cultural values.	preferable net gain) in ecological/biodiversity values. It is, however, possible that agreement could be reached on appropriate conditions that require the use of offset and compensation tools to appropriately address residual adverse effects.			
Cultural Landscapes • To require all earthworks, excavation, filling or the disposal of excavated material to: i. Avoid adverse impacts on significant natural landforms and areas of indigenous vegetation; ii. Avoid, remedy, or mitigate soil instability; and accelerated erosion; iii. Mitigate all adverse effects.	Kāi Tahu values have been recognised and the recommendations of the CIA have largely been adopted.		In regard to these policies I note- - Earthworks will be in areas that will largely avoid indigenous vegetation, and adverse effects (including erosion) will be avoided, remedied, and mitigated. - The development, operation, closure and aftercare of the landfill will occur in accordance with an LMP, which includes provision for a closure plan. - Landfill methane levels will be monitored, and results provided to Kāi Tahu.	

• To require site rehabilitation plans for land contaminated by landfills, tip sites, treatment plants, industrial waste, and agricultural waste. • To require monitoring of methane levels for all closed landfills and that analysed data be sent to KTKO Ltd.			I consider the proposal broadly aligned with these policies.	
Air and Atmosphere Policies • To require earthworks and discharges to air consider the impact of dust and other air-borne contaminants on health, mahika kai, cultural landscapes, indigenous flora and fauna, wāhi tapu and taoka. • To require Cultural Assessments for any discharges to air. • To promote the planting of indigenous plants to offset carbon emissions.	Kāi Tahu values have been recognised and the recommendations of the CIA have largely been adopted. The proposal does not include planting of indigenous plants to offset the landfill's carbon emissions.		In regard to these policies I note – - Dust and other airborne contaminants will be managed in accordance with consent conditions and procedures included in the LMP. - The CIA addressed discharges to air in the context of cultural values. - While no specific carbon planting offset is proposed, vegetation restoration and landscape mitigation will incorporate indigenous planting. I consider the proposal broadly aligned with these policies.	

SMOOTH HILL LANDFILL DRAFT ORC CONSENT CONDITIONS – 29 APRIL 2022

A. General conditions

1. The construction, operation, closure and aftercare of the landfill and road upgrades, including all associated discharges of contaminants to land, water, and air, mustshall be undertaken generally 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 measures in the documents and the conditions, the conditions shall prevail:

    a. [insert references to final consent documents]

2. Pursuant to Section 128 of the Resource Management Act 1991 the consent authority may in [insert month] each year serve notice of its intention to review the conditions of this consent for the purposes of:

    a. Determining whether the conditions of this consent are adequate to deal with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage, or which becomes evident after the date of commencement of the consent.

    b. Ensuring the conditions of this consent are consistent with any National Environmental Standards, relevant regional plans, and/or the Otago Regional Policy Statement.

    c. Reviewing the frequency of monitoring or reporting required under this consent.

    d. Amending the monitoring requirements programme set out in accordance with Conditions X and X.

    a. dealing with any adverse effect on the environment which may arise from the exercise of this consent; or

    a.e. Rrequiring the adoption of the best practicable option to reduce any adverse effect on the environment.

B. Conditions to be met during detailed design, construction, and operation

General

3. All investigations, detailed design, and supervision of construction of the initial landfill development works, works for each stage of the landfill, and road upgrades mustshall be supervised by a suitably experienced Chartered Professional Engineer (CPEng).

4. The consent holder mustshall establish and retain at its own cost, an independent peer review panel to review the design, construction and operation of all stages of the landfill and road upgrades, and the management of environmental and ecological effects, and to assess whether or not the work has been undertaken by appropriately qualified personnel in accordance with the consents and good practice.

    The independent Peer Review Panel mustshall comprise at least two three persons who together mustshall be:

    a. Independent of the consent holder.

    b. Independent of the planning, design, construction, management, and monitoring of the site.

    c. Experienced in landfill design, construction, and management.

    d. Experienced in geotechnical, groundwater, and surface water aspects of landfill design, construction and operation.

e. Experienced in terrestrial and freshwater ecology.

f. Recognised by their peers as having such experience, knowledge and skill.

g. Approved in writing by Otago Regional Council.

5. At least 3 months prior to commencing the construction of the initial landfill development works, a new landfill stage, and road upgrades the consent holder mustshall submit a design report and design drawings to the independent peer review panel for certification that it meets the requirements of the consent. The independent peer review panel mustshall communicate this certification to Otago Regional Council prior to the works commencing. Construction must not commence until Otago Regional Council has confirmed the requirements of the condition have been met.

6. The completed initial landfill development works, works for each stage of the landfill, and road upgrade works mustshall be certified by the suitably experienced Chartered Professional Engineer (CPEng) that they have been completed in accordance with the detailed design certified by the independent peer review panel. A Construction Quality Assurance (CQA) report mustshall be prepared and submitted to the independent peer review panel within 3 months following completion.

7. The independent peer review panel mustshall prepare an annual report to be submitted to Otago Regional Council and Dunedin International Airport Limited prior to 1 March each year, on the adequacy of the following matters in relation to meeting requirements of the consents:

a. Any management or monitoring plans reviewed during the year.

b. Any designs reviewed during the year.

c. Construction activities undertaken including:

i. Initial landfill development works.

ii. Site preparation.

iii. Liner construction.

iv. Leachate collection system installation.

v. Landfill gas collection system installation.

d. Landfill operation including:

i. Water control, including stormwater and leachate management.

ii. Waste compaction.

iii. Waste acceptance.

iv. Daily and intermediate cover placement.

v. Leachate system.

vi. Landfill gas system.

e. Monitoring results and records.

f. Capping and rehabilitation.

f.g. Management of adverse environmental effects.

g.h. Ecological management.

This report mustshall be based oninformed by at least the following:

a. A review of the landfill annual monitoring report required by condition 8111112.

b. Review of designs and management plans submitted during the year.

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 consent holder must make the report publicly available on its website.

~~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, even if this is inconsistent with the opinion of the peer review panel.~~

Land Stability

8. Additional geotechnical investigations must~~shall~~ be carried out as necessary as part of the detailed design of the landfill to generate a robust site encompassing geotechnical ground model for the site. The performance of the in-situ Henley Breccia is critical to the cut slope stability; further investigation must~~shall~~ include verification of the dip and dip direction of the Henley Breccia and strength assessment of the contacts between units. The location of investigation points ~~must~~~~shall~~will be determined during the initial stages of the detailed design process where specific confirmation is required.

9. A Site Specific Probabilistic Seismic Hazard Assessment (SS~~P~~SHA) must~~shall~~ be undertaken as part of 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 for appropriate annual probability of exceedances based on 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~~shall use the results of~~ the SS~~P~~SHA ~~as inputs into the slope stability modelling~~.

10. The detailed design of the landfill must~~shall~~ demonstrate ~~-~~the short (construction and operation) and long-term (closure to post closure) stability of all cut and fill slopes of the landform. This will be achieved by undertaking quantitative limit equilibrium slope stability assessment 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 ~~slopes~~ where the factor of safety is <1 in the pseudo-static seismic load case, the displacement method must~~shall~~ be considered as per Section 6.3.2 of the Waka Kotahi NZTA Bridge Manual (3rd Edition Oct 2018).

11. The detailed design of the landfill must ~~shall~~ 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~~shall~~ include:

a. Veneer slope stability analysis of the proposed liner and capping arrangements for each stage.

b. Waste stability analysis of the proposed landfill stages.

The analysis shall utilise site specific parameters where possible for the various materials, and/or publicly available material data where site-specific information is not available. Where publicly available material data is used, a verification programme must~~shall~~ be included as part of the detailed design documentation provided to the independent peer review panel for certification that the construction materials align with any assumptions made as part of the slope stability analysis.

~~Water Quantity~~Surface water, groundwater, and leachate management

~~17~~12. The landfill must~~shall~~ be designed and constructed with a:

a. Landfill liner to isolate leachate from the underlying strata, and which meets the minimum requirements of the WasteMINZ *Technical Guidelines for Disposal to Land 2018* for a class 1 landfill.

b. Leachate collection system to remove leachate from the landfill, and which meets the WasteMINZ *Technical Guidelines for Disposal to Land 2018* for a class 1 landfill and configured to ensure the maximum head of leachate on the liner is no greater than 300mm over all areas of the liner under normal operating conditions, apart from the sumps.

c. Groundwater collection system beneath the landfill liner which is sized and configured to ensure effective sub-liner drainage and control of groundwater, with a separate groundwater quality monitoring sump from the leachate collection system.

d. Stormwater system that is sized and configured to collect and divert stormwater away from open sections of the landfill and discharge it to the unnamed tributary of the Otokia Creek.

~~12~~13. The ~~landfill~~ stormwater perimeter drain, other permanent drainage diversion channels and culverts, and attenuation basin must~~shall~~ be designed and constructed to manage a 1% AEP (Annual Exceedance Probability) storm event. Diversion channels must~~shall~~ be designed such that if this capacity is exceeded the preferential (secondary) flow path is, as far as practicable, away from the landfill. ~~Suitable scour protection mustshall be placed within the landfill perimeter drain where design flows exceed 0.8m/s to prevent scouring.~~

~~13~~14. All stormwater from the site must~~shall~~ be discharged to the unnamed tributary of Ōtokia Creek as follows:

a. Stormwater collected within the area of S~~s~~tage 1 of the landfill development must~~shall~~ be discharged via a pipe through the toe bund to the unnamed tributary of Ōtokia Creek, until ~~which time~~ S~~s~~tage 1 is completed.

b. Except as provided by (a) above, stormwater from gullies upstream of the attenuation basin, the perimeter swale drain, and landfill operational areas (other than open sections of the landfill), upper facilities area, and final cap must~~shall~~ be directed to the attenuation basin for infiltration to ground, and discharge to the unnamed tributary of Ōtokia Creek.

~~31~~15. Suitable scour protection must be placed within the landfill perimeter drain where design flows exceed 0.8m/s. ~~Suitable scour protection mustshall be~~ and placed ~~on the~~at the outlet and spillway of the attenuation basin, to prevent scour.

~~32~~16. The vehicle wash bay must~~shall~~ be designed, constructed, and operated to ensure water used passes through sumps with oil and sediment traps with the capacity to cater for the proposed discharge of water. Discharges from the vehicle wash bay must~~shall~~ be directed to a sediment retention pond prior to discharge to the unnamed tributary of Ōtokia Creek.

~~33~~17. The wheel wash must~~shall~~ be designed, constructed, and operated to ensure used water passes through sediment traps and flocculation ponds of capacity to cater for the proposed discharge, prior to being recycled to the wheel wash. Excess discharges from the wheel wash must~~shall~~ be directed to the landfill attenuation basin.

~~34~~18. Stormwater, erosion and sediment control management measures must~~shall~~ be implemented during the construction and operation of the landfill, and construction of the road upgrades, which ensure:

a. The area of soil surfaces exposed at any one time is minimised.

b. Cut off drains are installed upslope of exposed soil surfaces to intercept stormwater and minimise flow over exposed soil.

c. All stormwater from exposed soil surfaces within the landfill footprint is directed to and treated in sediment retention ponds, prior to discharge to the landfill attenuation basin or the unnamed tributary of Ōtokia Creek.

d. Temporary measures such as silt fences, sediment traps, sediment retention ponds, and temporary cover and stabilisation are installed to minimise the transport of sediment from exposed soil surfaces and stockpile areas.

e. Completed earthworked areas are stabilised with vegetation or other means as soon as practicable.

~~35~~19. All erosion and sediment control measures must~~shall~~ take into account site specific conditions and be designed and implemented to in accordance with Auckland Council Publication GD05 – *Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region – June 2016* for the sizing of ponds, and Environment Canterbury *Erosion and Sediment Control Toolbox*, or other best practice guidelines, for the identification of the most appropriate control measures taking into account site specific conditions. Sediment control ponds must~~will~~ be designed to manage a 10% AEP (Annual Exceedance Event) storm event, with provision to pass a 1% storm event. Scour protection must~~shall~~ be placed at the outlet of sedimentation ponds to prevent scour.

~~14~~20. The take of groundwater from the groundwater collection system must~~shall~~ only be used for non-potable water supply, and the quantity taken for this purpose must~~shall~~ not exceed 50m^3/day. Any groundwater that is not taken for this purpose must~~shall~~ be discharged immediately to the unnamed tributary of Ōtokia Creek.

~~15~~21. The take of groundwater under condition 20 must be measured and recorded as follows:

a. Prior to the first exercise of this consent, the consent holder must install a:

i. Water meter that will measure the rate and volume of water taken to within an~~d~~ accuracy of +/- 5%. The water meter must be capable of output to a datalogger.

ii. ~~The quantity of water taken from the groundwater collection system for non-potable water supply, quantity of leachate taken from the leachate collection system shall be recorded instantaneously and reported annually to the independent peer review panel, and Otago Regional Council.~~ A datalogger that time stamps a pulse from the datalogger at least once every 15 minutes and has the capacity to hold at least twelve months data of water taken; and

iii. A telemetry unit which sends all of the data to the Otago Regional Council.

~~a.~~b. The consent holder must provide telemetry data once daily to the Otago Regional Council. The consent holder must ensure data compatibility with the Otago Regional Council's time-series database and conform with Otago Regional Council's data standards.

c. Within 20 working days of the installation of the water meter/datalogger/telemetry unit and any subsequent replacement of a water meter/datalogger/telemetry unit and at 5-yearly intervals thereafter, and at any time when requested by the Otago Regional Council, the consent holder must provide written certification to the Otago Regional Council signed by a suitably qualified person certifying, and demonstrating by means of a clear diagram, that:

i. Each device is installed in accordance with the manufacturer's specifications; and

ii. Data from the recording device can be readily accessed and/or retrieved in accordance with the conditions above.

d. The water meter/datalogger/telemetry unit must be installed and maintained throughout the duration of the consent in accordance with the manufacturer's instructions.

e. All practicable measures must be taken to ensure that the recording device(s) are fully functional at all times.

f. The Consent Holder must report any malfunction of the water meter/datalogger/telemetry unit to the Otago Regional Council within 5 working days of observation of the malfunction. The malfunction must be repaired within 10 working days of observation of the malfunction and the consent holder must provide proof of the repairs to the Otago Regional Council within 5 working days of the completion of repairs.

Advice Note: the water meter, data logger and telemetry unit should be safely accessible by the Consent Authority and its contractors at all times. The Water Measuring Device Verification Form and Calibration Form are available on the Otago Regional Council' website.

~~16~~22. The landfill perimeter drain, other permanent drainage diversion channels and culverts, attenuation basin, and groundwater collection system must~~shall~~ regularly inspected and maintained in perpetuity.

~~Water Quality~~

~~18~~23. The installation of the landfill lining system must~~shall~~ be subject to independent construction quality assurance (CQA), to include the soil and geosynthetic components of the lining system. On completion of each stage of lining system construction a CQA report must~~shall~~ be prepared and must~~shall~~ 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. This report must~~shall~~ be submitted to the independent peer review panel.

~~19~~24. Leachate storage and management facilities must be provided as follows:

a. Leachate storage and management facilities must~~shall~~ be designed for a capacity 50% greater than the calculated (as calibrated against the previous two year's results) maximum leachate volume produced over a three-day period for any stage of operation of the landfill. To demonstrate compliance with this condition, the calculated maximum leachate volume and the leachate storage and management facilities must~~shall~~ be described in the LMP required by condition ~~82~~113.

b. For the first two years of operation of the landfill where there are insufficient records to calibrate the leachate storage and management systems, such systems must~~shall~~ be designed to accommodate theoretical storage and flow rates based on the leachate which would be generated by a 1% AEP event for the extent of landfill to be developed over that two-year period.

~~20~~25. Leachate not removed from the site must~~shall~~ only be discharged onto or into land within the landfill liner extent shown on drawing 12506381-01-C201.

~~21~~26. On-site standby electrical supply must~~shall~~ be provided at all times to ensure that the operation of the leachate collection system is not interrupted through loss of mains power supply.

Groundwater and surface water monitoring

~~22~~27. The following additional groundwater monitoring wells and piezometers must be installed:

(a) Three ~~Two~~ additional groundwater monitoring wells at locations GW1, ~~and~~ GW5, and GW7 as shown on drawing 12506381-C309 must~~shall~~ be installed at least 36~~18~~ months prior to construction of the landfill to enable collection of ~~baseline~~ groundwater level and groundwater quality data ~~and monitoring for leachate contamination of groundwater during operation~~. The additional wells at GW1 and GW5 must~~shall~~ be installed to monitor the deep groundwater system with a screen between 90 and 85m RL. The additional monitoring well at GW7 must be installed to monitor the shallow groundwater system with a screen between 99 and 96 mRL. The additional monitoring wells ~~and.~~ must~~shall~~ be constructed in accordance with *NZ4411:2001 Environmental Standard for Drilling of Soil and Rock*.

(b) Six wetland piezometers at the approximate locations WT1-WT6 as shown on drawing 12506381-C309 must be installed at least 36 months prior to construction of the landfill to enable the collection of water levels. The piezometers must be installed to allow monitoring of sub-surface water levels within the wetland.

(c) Four groundwater monitoring wells must 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 as shown on drawing 12506381-C309 to enable the collection of water levels. These monitoring wells must be screened at an elevation that allows monitoring of the shallow groundwater system. The additional monitoring wells must be constructed in accordance with *NZ4411:2001 Environmental Standard for Drilling of Soil and Rock*.

~~23~~28. The groundwater monitoring wells described in the table below as shown on drawing 12506381-C309 mustshall be retained to enable collection of baseline groundwater level and groundwater quality data and monitoring for leachate contamination of groundwater during operation.

Monitoring well	Description
GW1	Additional monitoring well to be installed with screen between 90-85m RL (down hydraulic gradient deep GW system). See condition ~~22~~27.
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). See condition ~~22~~27.
GW6	Existing well BH09
GW7	Additional monitoring well to be installed with screen between 99-96m RL (shallow GW system). See condition 27.
BH202	sting well BH202 (deep GW system)

~~24~~29. ~~Groundwater~~ Water monitoring to collect baseline groundwater level and quality data, and surface water level and quality data mustshall commence at least ~~18~~36 months prior to construction of the landfill at the monitoring wells described in condition ~~23~~ 28, and surface water monitoring at locations SW1 – SW7 (and SW8 if access is available) shown on drawing 12506381-C309. ~~to collect b~~Baseline ~~surface~~ water level and quality data mustshall ~~commence at least 36 months prior to landfill construction commencing to~~be used to ~~establish the baseline water chemistry and~~ inform the development of monitoring trigger levels. Sampling of groundwater ~~and surface water~~ mustshall occur at least every 3 months and sampling of surface water every month for the 36 month baseline monitoring period. ~~18-month monitoring period for the~~ Monitoring and sample analytes must be for the full suite of parameters set out in **Attachment 1** for those locations.

30. Automated monitoring equipment must be installed at the approximate locations described in the table below and as shown on drawing 2506381-C309 to enable automated collection of baseline data for the identified parameters for 36 months prior to construction of the landfill.

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.*

31. Rainfall data collected at the automatic weather station at the site required under condition 41 must be recorded over the 36 ~~18~~-month ~~groundwater~~ monitoring period stipulated in condition ~~24~~29 and 30. On-site rainfall data must be compared with the groundwater and wetland level data from each monitoring ~~bore~~ well, piezometer, or water logger to identify when recharge from rainfall has influenced observed ~~ground~~water levels.

~~25~~32. At the conclusion of the monitoring period identified in condition ~~24~~29 and 30, the baseline data must~~shall~~ be reviewed to confirm or make any required adjustments to the conceptual site model and predicted environmental effects. The monitoring results for the entire monitoring period, along with any updates to the conceptual model must~~shall~~ be reported to the independent peer review panel. This report must include the Receiving Waters Environment Monitoring Plan required under condition 33 and 34, detailing the requirements of long-term monitoring.~~, prior to development of monitoring trigger levels under condition 26. and the long-term monitoring plan.~~

~~26~~33. ~~Following the reporting of monitoring results and any updates to the conceptual site model under condition 25, specific monitoring trigger levels must~~shall ~~be developed for each monitoring parameter and monitoring location~~ A Receiving Waters Environment Monitoring Plan must be developed to achieve the following objectives:

a. Ensure construction management controls are adequate and being operated and maintained to ensure effective operation.

b. Identify potential leachate discharge to the environment at or near source to confirm efficacy of the management system or the need for remedial actions.

c. Protection of the receiving environment downstream and downgradient of the landfill by ensuring that the landfill does not have an adverse effect on water quality and levels~~when compared with the current regime~~.

34. The Receiving Waters Environment Monitoring Plan shall include the following as a minimum:

a. Long term groundwater and surface water quality monitoring requirements, including locations, parameters and frequency. As a minimum this is to include monitoring requirements detailed in conditions 36 - 38 below.

b. Groundwater and surface water quality trigger levels for each monitoring location and monitoring parameter.

c. Hydrological and water level monitoring requirements for the wetland and unnamed tributary of Ōtokia Creek, including locations, parameters and frequency.

d. Hydrological and water level trigger levels for each monitoring location and monitoring parameter

e. Actions to be undertaken in the event of trigger level exceedance. As a minimum this is to include monitoring requirements detailed in condition 36 below.

f. Monitoring methodology

g. A plan review process that includes Te Rūnanga o Ōtākou, the independent peer review panel, and Otago Regional Council.

The plan must be submitted to the independent peer review panel no less than 3 months prior to the commencement of construction for certification that it addresses the requirements of this condition. The independent peer review panel shall communicate this certification to Otago Regional Council. Construction must not commence until Otago Regional Council has confirmed the requirements of the condition have been met. The certified plan must be implemented during the operation of the landfill.

35. Water quality trigger levels included in the Receiving Waters Environment Monitoring Plan mustshall be developed for the indicated parameters set out in **Attachment 1** to detect leachate leakage effects on groundwater; and leachate, suspended solids, and turbidity on surface water quality, when monitored at the following locations:

a. The monitoring wells described in condition 2328.

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 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 available) on drawing 12506381-C309.

The baseline water chemistry data collected under condition 2429 and 30 mustshall be used to establish trigger level values for the indicated parameters in **Attachment 1**. Development of trigger levels mustshall meet the following requirements:

a. Establishment of levels for groundwater and surface water quality mustshall use a trend analysis approach to ensure changing land use over time (forestry cycles), slow rate of change over time, and variability in baseline quality are accounted for.

b. Trigger levels for suspended sediments in surface water (SW1 – SW7SW8) for typical flows mustshall be the upper limit of turbidity values recorded during baseline monitoring or the Regional Plan for Otago: Water Schedule 15 turbidity limit, whichever is higher.

c. Trigger levels for suspended sediments in surface water (SW1 – SW7SW8) for flood events (where out of channel flows occur), shall be based on visual inspection with no conspicuous adverse change in colour or visual clarity after reasonable mixing occurring in the receiving waters.with a no greater than 30% increase in turbidity at the downstream boundary of the landfill site over that of adjacent contributing catchments.

Proposed trigger levels mustshall be provided to the independent peer review panel at least 3 months prior to construction, for certification that the trigger levels are suitable. The independent peer review panel mustshall communicate this certification to Otago Regional Council. .

2836. During operation of the landfill the monitoring of groundwater levels and quality, and surface water levels and quality outlined in the table below mustshall occur and be assessed against the trigger levels established under condition 2635, and the results reported annually to the Te Rūnanga o Ōtākou, the independent peer review panel and Otago Regional Council in accordance with condition 112. Where there

is any exceedance of the water quality trigger levels caused by leachate or sediment, the specified actions mustshall be implemented.

Monitoring Point as shown on drawing 2506381-C309	**Frequency**	**Parameters**	**Monitoring point and parameter specific actions where trigger levels are exceeded**	**Actions for all trigger level exceedances**
Sub-liner groundwater drainage system prior to discharge to the unnamed tributary of Ōtokia Creek or abstraction for non-potable water supply.	Continuous	• Electrical conductivity (uS/cm) • pH • Ammoniacal nitrogen (mg/L)	The manhole outlet from the groundwater collection system shall be closed immediately following any exceedance being detected, and groundwater redirected to the leachate collection system. Contaminated groundwater shall 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. An additional monitoring round will be undertaken no later than 1 week following any exceedance being detected and analysed for the full parameter suites outlined in **Attachment 1**.	An investigation is undertaken into potential causes. A report is provided to Te Rūnanga o Ōtākou, Otago Regional Council, and the independent peer review panel no later than 2 weeks following receipt of the additional monitoring round results. The report shall outline likely causes of exceedance, actions to be taken to prevent further trigger level exceedances and proposed follow up monitoring where necessary.
	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 ~~GW6~~	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 will 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	Continuous (when flows occur)	• Electrical conductivity (uS/cm) • pH	The outlet from the sediment retention pond or low flow outlet from the attenuation basin shall be closed immediately following any exceedance being detected in the event that leachate contaminated stormwater is flowing to the	

tributary of Ōtokia Creek During subsequent stages, the attenuation basin prior to discharge to the unnamed tributary of Ōtokia Creek.		• Ammoniacal nitrogen (mg/L)	unnamed tributary of Ōtokia Creek. Contaminated stormwater shall 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. An additional monitoring round of the surface water monitoring points SW1 – SW7, and a sample from the sediment retention pond or attenuation basin, will 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.	
Surface water monitoring points shown as SW1 – SW6, ~~and~~ surface water monitoring point shown as SW7 (located at the ~~Ōtokia Creek~~McLaren Gully Road culvert), and SW8 if access is available (located downstream of the downstream pond).	Either: Weekly (when flows occur). If continued periods of surface water discharge occur, then monitoring will occur weekly. Or: As otherwise specified in the Receiving Waters Environment Monitoring Plan.	Basic suite of parameters set out in **Attachment 1** ~~excluding sediment and turbidity~~ to be monitored, except that the full suite of parameters to be monitored in one weekly monitoring cycle per year	All known downstream surface water abstractors within the McColl Creek catchment, and Te Rūnanga o Ōtākou are notified of any exceedance no later than 1 day following the exceedance being detected. An additional monitoring round will be undertaken no later than 1 week following any exceedance being detected and analysed for the full parameter suites outlined in **Attachment 1**.	
		~~• Sediment~~ • Suspended solids (g/L) • Turbidity (NTU)	Sediment controls shall be adjusted so that the site does not contribute a disproportionate sediment load downstream in comparison to the catchment above McLaren Gully Road.	

~~27~~37. Continuous monitoring of the sub-liner groundwater drainage system, sediment retention pond for the stage 1 area, and attenuation basin under condition ~~28~~ 36 must~~shall~~ meet the following requirements:

a. Continuous monitoring of electrical conductivity, pH, temperature, turbidity and ammonia must~~shall~~ occur.

b. The monitoring system must~~shall~~ be configured so that exceedance of monitoring trigger levels activates an alarm notifying key site personnel.

The ~~landfill management plan required by condition 82~~Receiving Waters Environment Monitoring Plan must~~shall~~ include response procedures in the event of an exceedance of trigger levels for continuous monitoring in condition ~~28~~36. This must~~shall~~ as a minimum include the relevant actions outlined in condition ~~28~~37.

~~29~~38. All groundwater and surface water sampling required under conditions ~~24~~ 29 and ~~28~~36 must~~shall~~ meet the following requirements:

a. Sampling must~~shall~~ be undertaken at the specified locations indicated in conditions ~~24~~ 29 and ~~28~~36.

b. Sampling must~~shall~~ 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.

~~i.~~ii. National Environmental Monitoring Standards Water Quality Part 2 of 4: Sampling, Measuring, Processing and Archiving of Discrete River Quality Data.

~~AS/NZS 5667.11:1998.~~

c. All sample analysis carried must~~shall~~ be performed by a laboratory that meets International Accreditation New Zealand (“IANZ”) approved laboratory or otherwise as specifically certified by the independent peer review panel.

~~30~~39. The construction and operation of the landfill must~~shall~~ not cause after reasonable mixing there to be a conspicuous change in ~~water quality~~colour or visual clarity, objectionable odour, water unsuitable for consumption by farm animals, or significant effect on aquatic life in the Ōtokia Creek or any of its tributaries downstream of the discharge of stormwater from the landfill site.

Air Quality

~~36~~40. Municipal Solid Waste must~~shall~~ be accepted for disposal only if it has been transported to the landfill in sealed truck and trailer units or bins.

~~37~~41. An automatic weather station must~~shall~~ be maintained on site which records wind speed and direction, temperature, relative humidity, and rainfall.

~~38~~42. No composting ~~activity~~ operation shall occur on the site.

~~39~~43. To minimise odour emissions during handling of highly odorous wastes the following measures must~~shall~~ be implemented:

a. Highly odorous loads must~~shall~~ only be received between the hours of ~~10.00~~9.30am and 4.00pm.

b. Deliveries of highly odorous wastes must~~shall~~ be pre-booked, to ensure preparations are made including ensuring cover material is available at the pit location.

c. Wastewater sludges, biosolids, and screenings must~~shall~~ be treated with stabilised lime or an alternative that performs to an equivalent or higher standard of treatment for odour, prior to delivery to the site. Loads not complying must~~shall~~ be refused entry and only accepted after treatment.

d. Holding deliveries of unexpected highly odorous waste loads until preparations identified in (b) above are in place to enable disposal.

e. Highly odorous wastes mustshall be covered as soon as practicable and in any event not later than one hour30 minutes following placement.

f. The landfill management plan required by condition 82 113 mustshall include specific procedures for the pre-acceptance, handling, and placement of highly odorous wastes, including contingency measures in the event of an unexpected highly odorous waste load. This mustshall include as minimum requirements for prioritising the placement of highly odorous waste, covering of waste as required by condition 3943(e), using special odorous waste placement areas that maximise separation distances to receptors, and the use of odour suppressing sprays/cannons. Procedures for managing highly odorous waste must not conflict with any bird management procedures contained in the Landfill Operational Bird Management Plan under condition 78.

For the purposes of this condition, "highly odorous wastes" include, but are not limited to:

a. Wastewater treatment sludges, biosolids, screenings.

b. Wastewater pump station screenings, grits.

c. Animal remains.

d. Waste from meat processes.

e. Woolscour, tannery, fellmongery waste.

f. Fish waste.

4044. All waste mustshall at least be covered at the end of each working day with:

a. non-combustible compacted soil cover to a minimum depth of 150 millimetres; or

b. construction and demolition waste to a minimum depth of 150 millimetres; or

c.b. non-combustible alternative materials that perform to an equivalent or higher standard to 150 millimetres soil cover.

4145. No waste shall remain exposed overnight.

4246. All areas where further waste will not be placed for three months, mustshall be covered with non-combustible compacted intermediate soil cover to a minimum depth of 300 millimetres. Grass cover must be established by hydroseed, except where within 10m of the active landfilling area., and grass cover established by hydroseed.

4347. Leachate conveyance and storage facilities mustshall be sealed to minimise odour.

4448. There mustshall be no noxious, dangerous, offensive or objectionable odour or dust to the extent that it causes an adverse effect at or beyond the boundary of the site.

45. A detailed Landfill Gas Risk Assessment (LFGRA) mustshall be completed prior to construction of the landfill to confirm potential landfill gas related risks at the site, including potential sources of landfill gas, emission pathways, receptors of emissions from the site, and management measures. The detailed LFGRA should further consider / investigate organic mudstone / lignite as a source of ground gas at the site. The LFGRA required under this condition mustshall be reviewed and updated at least every 5 years, or more regularly if there are changes to the location of potential receptors.

~~46~~49. The landfill must~~shall~~ be designed, ~~and~~ progressively constructed, and operated with a:

a. Landfill liner to reduce fugitive subsurface emissions of landfill gas, and which meets the minimum requirements of the WasteMINZ *Technical Guidelines for Disposal to Land 2018* for a class 1 landfill.

b. Leachate collection system to remove leachate from the landfill, and which meets the minimum requirements of the WasteMINZ *Technical Guidelines for Disposal to Land 2018* for a class 1 landfill, and provides leachate pumping systems in accordance with relevant standards in relation to landfill gas (e.g. *AS/NZS 2381.1.1:2005*).

c. Landfill gas collection and destruction system suitable for the anticipated rate and quantity of landfill gas emitted by the landfill, which addresses the risks identified by the Landfill Gas Risk Assessment (LFGRA) ~~FGRA~~ in condition ~~45 above~~ 56 or 57 below and meets the minimum requirements of the WasteMINZ *Technical Guidelines for Disposal to Land 2018* for a class 1 landfill, and Resource Management (National Environmental Standards for Air Quality) Regulations 2004.

50. The landfill gas collection and destruction system shall be designed, constructed, operated, and maintained to minimise potential oxygen ingress into the landfill waste and optimise the rate of extraction of landfill gas.

51. All extracted landfill gas must be combusted in a flare(s) which meets the following requirements:

a. A principal flare(s) that has been designed, installed, operated and maintained in accordance with the requirements of Regulations 25, 26 and 27 of the Resource Management (National Environmental Standards for Air Quality) Regulations 2004.

b. Subject to the requirements of Condition 51(a), the principal flare(s) must be operated at all times unless it has malfunctioned or is shut down for maintenance.

c. A backup landfill gas flare(s) that meets the requirements of Regulation 27(3) of the Resource Management (National Environmental Standards for Air Quality) Regulations 2004 must be operated if the principal flare is not operating.

~~52~~52. The landfill gas collection and destruction system must be restored as soon as practicable in the event of a malfunction or fault.

~~53~~53. On-site standby electrical supply must be provided to ensure the operation of landfill gas flare equipment is not interrupted through loss of mains power supply.

~~47~~54. A landfill gas monitoring bore network must~~shall~~ be installed around the perimeter of the landfill at least ~~6~~ 12 months prior to waste being accepted to enable the collection of baseline data, and detection of landfill gas escaping laterally from the landfill and identify its location, and which ~~addresses the risks identified by the LFGRA in condition 45 above and~~ meets the minimum requirements of the EPA Victoria (2015) Best Practice Environmental Management guidelines.

~~48~~55. Monitoring of gas emissions ~~in~~ from the landfill gas monitoring bore network must~~shall~~ commence at least 12 months prior to waste being accepted to establish background ground gas data and inform the Landfill Gas Risk Assessment (LFGRA), and the development of monitoring trigger levels. Sampling of landfill gas must occur monthly for the 12-month monitoring period for the full suite of parameters set out in **Attachment 2**.

56. At the conclusion of the monitoring period identified in condition 55, a detailed Landfill Gas Risk Assessment (LFGRA) must be completed to confirm:

a. Potential landfill gas related risks at the site, including potential sources of landfill gas, emission pathways, receptors of emissions from the site.

b. Locations, parameters, and frequencies for LFG monitoring, including any amendments required to the monitoring bore network.

c. LFG management measures.

The detailed LFGRA should further consider / investigate organic mudstone / lignite as a potential source of ground gas at the site. The LFGRA along with the monitoring results for the entire monitoring period must be provided to the independent peer review panel, prior to the development of trigger levels under condition 60.

57. The LFGRA required under condition 56 must be reviewed and updated at least every 5 years, or more regularly if new receptors are identified, waste tonnages increase beyond those anticipated, or monitoring of LFG in accordance with condition 60 identifies LFG emissions beyond those anticipated.

58. Where the LFGRA identifies the need for amendments to the monitoring bore network, including any additional bores, those amendments shall be made in advance of waste being accepted, or within 6 months following completion of any updated LFGRA.

~~49~~59. Following the reporting of monitoring results and the completion of the LFGRA under conditions 56 or 57, monitoring trigger levels must~~shall~~ be developed to achieve the following objectives:

a. Ensure LFG controls are adequate and being operated and maintained to ensure effective operation.

b. Identify potential escape of fugitive LFG to the environment at or near source to confirm the efficacy of the management system or need for remedial actions.

c. Protection of the health and safety of people on and beyond the site who may be at risk of being exposed to LFG emissions.

d. Minimise the risk of landfill fires and identify fires.

Tigger levels must be developed for at least those parameters in **Attachment 2** relevant to detect landfill gas escape, when monitored at the following locations:

a. The landfill gas monitoring bore network.

b. Areas of intermediate cover

c. Within buildings and structures, and sub-surface pits

~~a.~~d. The surface of the final landfill cap.

Best practice guidance and t~~T~~he baseline gas data collected under condition ~~48~~ 55, and the LFGRA under conditions 56 or 57 must~~shall~~ be used to establish typical ranges for each parameter and establish trigger values for these ranges. Proposed trigger levels must~~shall~~ be provided to the independent peer review panel for certification that they are suitable to detect landfill gas at least 3 months in advance of waste being accepted or at least 3 months following completion of any updated LFGRA. The independent peer review panel must~~shall~~ communicate this certification to Otago Regional Council. Waste must not be accepted until Otago Regional Council has confirmed the requirements of the condition have been met.

~~50~~60. During operation of the landfill, landfill gas concentrations must~~shall~~ be measured at least monthly in each of the perimeter monitoring bores, and at least every 3 months at areas of intermediate cover, within buildings, structures, and sub-surface pits, and the surface of the final landfill cap, and assessed against the trigger levels established under condition 59 and reported to the independent peer review panel and Otago Regional Council. Where there is any exceedance, an investigation must be undertaken into potential causes. ~~a~~A report must~~will~~ be provided to Te Rūnanga o Ōtākou, the independent peer review panel and Otago Regional Council no later than 2 weeks after any exceedance is detected outlining likely causes of the exceedance, detailed actions to be taken to prevent further trigger level exceedances, and ~~reduce landfill gas detected and outlining~~ proposed follow up monitoring.

~~51~~61. During operation of the landfill, a walkover site inspection must~~shall~~ be undertaken at least monthly by the landfill operator. Any evidence of actual or potential landfill gas leaks, odour, cracks in the landfill surface, gas bubbles, leaks in the gas extraction system, or vegetation damage, must~~shall~~ be investigated. Remedial action must~~shall~~ be undertaken as soon as practicable where necessary to minimise fugitive emissions.

~~52. The landfill gas collection and destruction system mustshall be restored as soon as practicable in the event of a malfunction or fault.~~

~~53. On-site standby electrical supply mustshall be provided to ensure the operation of landfill gas flare equipment is not interrupted through loss of mains power supply.~~

~~*ADDITIONAL CONDITION RECOMMENDED:*~~

- ~~A principal flare(s) must be designed, installed, operated and maintained in accordance with the requirements of Regulations 25, 26 and 27 of the 'Resource Management (National Environmental Standards Relating to Certain Air Pollutants, Dioxins, and Other Toxics) Regulations 2004' (NESAQ).~~
- ~~Subject to the requirements of Condition XX(a), the principal flare(s) must be operated at all times unless it has malfunctioned or is shut down for maintenance.~~

~~a. A backup landfill gas flare(s) that meets the requirements of Regulation 27(3) of the NESAQ must be operated if the principal flare is not operating.~~

~~54~~62. A final capping layer must~~, shall~~ be constructed as each stage of the landfill is completed. The final cover layer must~~shall~~ 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 x 10^{-7} metres per second; and

b. 300mm growth media layer; and

c. 150 millimetres of topsoil (grassed, except where within 10m of the active landfilling area).

Ecology

~~55~~63. There must~~shall~~ be no clearance of indigenous vegetation, earthworks, or landfill operations in West Gullies 1, 2, 3, and 4, the Swamp Wetland, downstream Valley Floor Marsh Wetland and/or intermittent or perennial streams as identified in the *Smooth Hill Landfill, Ecological Impact Assessment Prepared for Dunedin City Council, 19 August 2020 (updated 28 May 2021)* prepared by Boffa Miskell. This does not apply to activities carried out during implementation of a certified Restoration Management Plan or Freshwater and Wetland Monitoring and Management Plan and prepared in accordance with Conditions 69 and 71.

~~56~~64. The area directly impacted by construction and operation of the landfill must~~shall~~ be limited to and not exceed 3.15 ha of (Yorkshire Fog) – Cocksfoot Grassland ~~the following maximum~~ areas as set out in *Smooth Hill Landfill, Ecological Impact Assessment Prepared for Dunedin City Council, 19 August 2020 (updated 28 May 2021)*, prepared by Boffa Miskell.~~:~~

~~a. (Purei) / (Yorkshire Fog – Cocksfoot) - Rautahi Sedgeland – 0.0014 ha.~~

~~b. (Yorkshire Fog) – Cocksfoot Grassland – 3.15 ha.~~

~~c. [Purei] – Wiwi/ Rautahi – Exotic Grass Rushland – 0.00027 ha.~~

~~There mustshall be no construction or landfill operational activities in the Swamp Wetland, Downstream Valley Floor Marsh Wetland, and/or intermittent or perennial streams. This does not apply to activities carried out during implementation of a certified Restoration Management Plan prepared in accordance with Condition 59.~~

~~66~~65. ~~Residual adverse effects associated with construction and/or operational activities on freshwater, terrestrial and wetland ecology must be offset and/or compensated using the effects management hierarchy and methodologies as set out in *Stream Ecological Valuation (SEV): a method for assessing the ecological functions of Auckland Streams (October 2011), Biodiversity Offsetting Under the Resource Management Act: a guidance document (September 2018), A Biodiversity Compensation Model for New Zealand: a user guide – version 1 (October 2021).*~~

Adverse effects associated with construction and/or operational activities on freshwater, terrestrial and wetland ecology must be appropriately managed according to the management plans required by conditions 66, 67, and 71. Where there are residual adverse effects, offset or compensation must use methodologies that are transparent, logical and use accepted ecological principles to derive the related offset / compensation type and quantum.

~~57~~66. An Eastern Falcon Management Plan based on the *Draft Smooth Hill Falcon Management Plan* prepared by Boffa Miskell Ltd, dated ~~May~~ June 2021, must be prepared by a suitably qualified ~~ecologist~~ ornithologist to ensure any adverse effects on any New Zealand Eastern falcons nesting at the site during construction are effectively avoided or otherwise managed following the effects management hierarchy~~avoided or mitigated~~. The plan must be developed in consultation with Te Rūnanga o Ōtākou.

As a minimum the plan must include:

a. A summary of the impact assessment for Eastern Falcon.

b. Detail of onsite surveys that have been undertaken to inform the Eastern Falcon Management Plan.

c. Avoid, remedy, and/or ~~M~~mitigation ~~methodologies~~ measures to reduce the effects on Eastern Falcon during construction, and any appropriate methodologies as described under condition 65 for offsetting or compensating for any residual adverse effects if they are identified through monitoring.

~~c.~~d. Pre~~,~~ and during construction monitoring methodologies.

e. Provision that if mortality of nesting falcon (including nest contents) occurs on site during project-related construction works that can be attributed to the construction works, it would trigger an immediate review of the plan and a suitable remedial, offset or compensatory action will be determined by a suitably qualified and experienced ornithologist and implemented to account for the loss/es. This action will be discussed with Te Rūnanga o Ōtākou and the peer review panel prior to implementation.

f. Annual reporting requirements, which will include, but not be limited to reporting on the avoid, remedy and /or mitigation measures used to reduce effects on Eastern falcon during construction as well as any remedial, offset or compensatory actions undertaken.

~~d. Offset or compensation outcomes that appropriately address any residual effects.~~

~~e.~~g. Key responsibilities of onsite personnel.

~~f.~~h. An adaptive management and review process that includes Te Rūnanga o Ōtākou, the independent peer review panel, and Otago Regional Council.

The plan must be submitted to the independent peer review panel no less than 3 months prior to commencement of construction for certification that it addresses the requirements of this condition. The independent peer review panel must communicate this certification to Otago Regional Council. Construction must not commence until Otago Regional Council has confirmed the requirements of the condition have been met. The certified plan is to be implemented for the duration of any landfill construction works.

67. A Lizard Management Plan based on the *Draft Smooth Hill Lizard Management Plan* prepared by Boffa Miskell Ltd, dated ~~May~~ June 2021 must be prepared by a suitably qualified herpetologist to ensure any adverse effects to lizards during construction are effectively avoided or otherwise managed following the effects management hierarchy. The plan must be developed in consultation with Te Rūnanga o Ōtākou and the Department of Conservation following their guidelines for lizard salvage and transfer in New Zealand. As a minimum the plan must include:

a. A revision of the lizard values onsite through a desktop assessment and on-site survey.

~~a.~~b. A summary of the impact assessment for ~~herpetofauna~~lizards.

~~b.~~c. Detail of onsite surveys that have been undertaken to inform the Lizard Management Plan.

~~c.~~d. Avoid, remedy, and ~~M~~mitigation methodologies including salvage and relocation, and any predator control, and habitat enhancement measures undertaken in accordance with condition ~~59~~69 and 71 to reduce the effects on lizards during construction.

e. Any appropriate methodologies as described under condition 65 for offsetting or compensating for any residual adverse effects if they are identified through monitoring.

f. Pre and during construction monitoring methodologies, including any post release monitoring.

g. Annual reporting requirements, which will include, but not be limited to reporting on the avoid, remedy and /or mitigation measures used to reduce effects on lizards during construction as well as any remedial, offset or compensatory actions undertaken.

~~d.~~h. Key responsibilities of onsite personnel.

~~e.~~i. An adaptive management and review process that includes Te Rūnanga o Ōtākou, the independent peer review panel, and Otago Regional Council.

The plan must be submitted to the independent peer review panel no less than 12 months prior to commencement of construction for certification that it addresses the requirements of this condition. The independent peer review panel must communicate this certification to Otago Regional Council. Construction must not commence until Otago Regional Council has confirmed the requirements of the condition have been met. The certified plan is to be implemented for the duration of any landfill construction works.

68. Annual baseline wetland ecology monitoring must be undertaken by a suitably qualified wetland ecologist and must commence no less than 36 months prior to construction of the landfill and preparation of the Vegetation Restoration Management Plan under condition 69. The purpose of the monitoring is to:

a. Determine the extent of existing wetland habitat and indigenous plant values within wetland areas in West Gully 3, West Gully 4, and the swamp wetland as identified in the *Smooth Hill Landfill, Ecological Impact Assessment Prepared for Dunedin City Council, 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. To assess the impact of the construction and operation of the landfill on downstream wetlands and indigenous species, to ensure residual or ongoing adverse effects are effectively remedied or otherwise managed.

To define wetland extent, vegetation transects using national wetland delineation protocols (e.g., Clarkson et al. 2013) must be carried out 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 prior 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 condition 69, which will detail monitoring triggers and requirements of any long-term ecological monitoring.

~~59~~69. A Vegetation Restoration Management Plan based on the Draft Smooth Hill Vegetation Restoration Plan prepared by Boffa Miskell Ltd, dated ~~May~~June 2021, must~~shall~~ be prepared by a suitably qualified ecologist ~~using the modelling approach set out in Condition X~~ to address the loss of or impact to ~~freshwater~~, wetland and terrestrial environments caused as a result of the exercise of this consent~~construction of the landfill and road upgrades,~~ to achieve no net loss of ~~ecologically significant~~ habitat / features in terms of type, amount, or condition. The plan must be developed in consultation with Te Rūnanga o Ōtākou.

As a minimum the plan must include:

a. A summary of the impact assessment for ~~freshwater,~~ wetland, and terrestrial environments.

~~a.~~b. A summary of baseline wetland ecology monitoring that has been undertaken to inform the Vegetation Restoration Management Plan under condition 68.

~~b.~~c. ~~Mitigation, offsetting and / or compensation~~Wetland restoration measures, which as a minimum must include:

i. Wetland restoration that not only includes the area of wetland to be restored itself, but also a 10 m buffer from the wetland edge, other than 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 (including targets to be met), and in which areas or circumstances gorse (or another specified plant pest) may be tolerated as a nurse crop.

iv. Pest animal control, including annual performance pest animal targets for the site using standardised Department of Conservation residual trap catch, tracking tunnel or chew card indices.

v. A process for reviewing and adapting pest plant and animal controls in the event that the performance targets are not achieved over two consecutive years. This review process must include Te Rūnanga o Ōtākou, the independent peer review panel, and Otago Regional Council.

vi. Ground preparation, planting and maintenance specifications. All plants used for restoration must be eco-sourced from the same eco-region and be free of pest plants. Plant size and

densities must be relevant to the location of where they are being placed and restoration outcomes.

vii. A detailed programme of works.

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 be based on performance standards that at a minimum must include measures of restoration planting success in terms of survival and growth.~~include all metrics used in BOAM and BCM modellingin Condition X~~.

~~c.~~d. Key responsibilities of onsite personnel.

~~d.~~e. An adaptive management and review process that includes Te Rūnanga o Ōtākou, the independent peer review panel, and Otago Regional Council.

The plan must be certified by a suitably qualified expert in bird strike risk assessment that any proposals for restoration will not increase aviation risk from birds.

Following certification, t~~T~~he plan must be submitted to the independent peer review panel no less than 3 months prior to commencement of construction for their certification that it addresses the requirements of this condition. The independent peer review panel must~~shall~~ communicate this certification to Otago Regional Council. Construction must not commence until Otago Regional Council has confirmed the requirements of the condition have been met. The certified plan is to be implemented during the construction of the landfill and road upgrades, and operation of the landfill.

~~*Advice note – where offsetting or compensation measures are applied, these shall follow best practice methods such as those set out in Stream Ecological Valuation (SEV): a method for assessing the ecological functions of Auckland Streams (October 2011); Biodiversity Offsetting Under the Resource Management Act: a guidance document (September 2018); or A Biodiversity Compensation Model for New Zealand: a user guide – version 1 (October 2021), or updated similar guidance. Where biodiversity offset accounting / compensation modelling approaches (BOAM / BCM) are used, the same metrics used in the development of the models shall form the basis of monitoring standards as may be required.*~~

70. Twice yearly 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 under condition 71. 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.

b. Establish a baseline with which to compare to any monitoring of ecological conditions during construction and operation of the landfill.

c. To assess the impact of the construction and operation of the landfill on the downstream freshwater environment and indigenous species, to ensure residual or ongoing adverse effects are effectively remedied or otherwise managed.

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. These 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 condition 71, which will detail monitoring triggers and requirements of any long-term ecological monitoring.

~~60~~71. A Freshwater and Wetland Monitoring and Management Plan must be prepared by a suitably qualified freshwater and wetland ecologist(s) to ensure and ~~residual or ongoing~~ adverse effects to ~~any~~ freshwater or wetland environments or indigenous species that arise from the exercise of this consent are effectively remedied or otherwise managed following the effects management hierarchy. The plan must be developed in consultation with Te Rūnanga o Ōtākou. As a minimum the plan must include:

a. A summary of the impact (direct and indirect) assessment for surface water bodies and wetlands.

~~b. Detail of onsite surveys that have been undertaken to inform the Freshwater and Wetland Management Plan.~~

b. A summary of the baseline wetland monitoring freshwater ecology monitoring undertaken to inform the Freshwater and Wetland Management Plan under conditions 68 and 70.

c. A summary of the ongoing monitoring of groundwater and surface water quality and quantity as detailed by the Receiving Waters Environment Monitoring Plan.

d. Pre, during and post construction monitoring methodologies with the aim of establishing any indirect effects on down catchment freshwater and wetland environments ~~(particularly macroinvertebrate communities, fish communities and aquatic habitat)~~ These must include performance standards in relation to baseline wetland extent and relative cover within the wetlands of indigenous wetland plant species. Monitoring may include monitoring of freshwater habitat conditions, and freshwater macroinvertebrate and fish communities in response to triggers developed as determined by the baseline monitoring data collected and the monitoring detailed in the Receiving Waters Environment Monitoring Plan. ~~to be undertaken in the event that water level monitoring undertaken under condition 28 identifies an exceedance of trigger levels.~~

e. Avoid, remedy, and/or mitigation measures to reduce the effects on downstream freshwater and wetland environments during landfill construction and operation, and any appropriate methodologies as described under condition 65 for offsetting or compensating for any residual adverse effects if they are identified through monitoring.

f. Annual reporting requirements, which will include, but not be limited to reporting on avoid, remedy, and mitigation measures used to reduce effects on downstream freshwater and wetland environments during landfill construction and operation, as well as any remedial, offset or compensatory actions undertaken.

~~e.~~g. ~~A residual effects assessment using BOAM or BCM monitoring .~~

~~f. Offset of compensation outcomes that appropriately address any residual effects.~~

~~g. A process for appropriately remedying or otherwise managing residual adverse effects identified from the assessment in d. above, including adaptive measures to address any apparent loss of wetland extent that arises due to hydrological changes, and methodologies for the salvage and relocation of indigenous fish species or other indigenous species as may be required.~~

h. Key responsibilities of onsite personnel.

i. An adaptive management and review process that includes Te Rūnanga o Ōtākou, the independent peer review panel, and Otago Regional Council.

The plan must be certified by a suitably qualified expert in bird strike risk assessment that any proposals for restoration will not increase aviation risk from birds.

Following certification, t~~T~~he plan must be submitted to the independent peer review panel no less than 3 months prior to commencement of ~~monitoring~~construction for their certification that it addresses the requirements of this condition. The independent peer review panel must~~shall~~ communicate this certification to Otago Regional Council. Construction must not commence until Otago Regional Council has confirmed the requirements of the condition have been met. The certified plan is to be implemented during the construction of the landfill and road upgrades, and operation of the landfill.

~~*Advice note – where offsetting or compensation measures are applied, these shall follow best practice methods such as those set out in Stream Ecological Valuation (SEV): a method for assessing the ecological functions of Auckland Streams (October 2011); Biodiversity Offsetting Under the Resource Management Act: a guidance document (September 2018); or A Biodiversity Compensation Model for New Zealand: a user guide – version 1 (October 2021) or updated similar guidance. Where biodiversity offset accounting / compensation modelling approaches (BOAM / BCM) are used, the same metrics used in the development of the models shall form the basis of monitoring standards as may be required.*~~

~~61~~72. A Plant and Animal Pest Control Programme must~~shall~~ be prepared prior to the commencement of construction, to ensure adverse effects on vegetation, avifauna, and herpetofauna from exotic pest plant species, and mammalian pests (rodents and mustelids) due to construction and operation of the landfill operation are minimised. The plan must~~shall~~ be developed in consultation with Te Rūnanga o Ōtākou. The programme must~~shall~~ be provided to the independent peer review panel ~~for certification~~ at least 3 months prior to construction for certification that it addresses the requirements of this condition. The independent peer review panel must~~shall~~ communicate this certification to Otago Regional Council. Construction must not commence until Otago Regional Council has confirmed the requirements of the condition have been met. The plan is to be implemented during construction and operation of the landfill.

Bird Management

~~62~~73. Smooth Hill landfill must not be available to the general public for the disposal of waste. Waste must be consolidated off-site prior to transport in bulk to Smooth Hill landfill.

~~63~~74. ~~To the extent practicable, F~~food and garden organic waste streams must be collected and processed separately and off site to minimise disposal of this material at Smooth Hill landfill.

~~64~~75. To the extent practicable, residual putrescible waste must be removed from the general waste stream and processed separately prior to transfer and final disposal of general waste at Smooth Hill landfill. To achieve this the consent holder must implement the methodology set out in **Attachment 3**.

76. The attenuation basin must be covered with a net or an array of closely spaced wires to prevent the basin attracting birds.

77. Monthly bird monitoring by a suitably qualified ornithologist over at least a 12-month period must occur prior to the preparation of the Landfill Operational Bird Management Plan under condition 78. The purpose of the monitoring is to:

a. Determine the year-round behaviour patterns of key bird species and their populations in the Dunedin area, especially black-backed gulls.

b. Determine how black-backed gulls and other species, respond to management initiatives at Green Island Landfill leading up to its closure to organic waste.

c. Establish a baseline estimate of risk at and around Dunedin Airport through structured regular surveys that allow risk assessment models to be updated.

The bird monitoring must be conducted in accordance with the methods in the *Draft Smooth Hill Bird Management Plan prepared by Boffa Miskell Ltd and Avisure, dated June 2021,* and *Smooth Hill Preliminary Bird Hazard Assessment, Aviesure, May 2021*, and include:

a. On airport surveys at Dunedin International Airport.

b. Off-airport surveys at three locations in close proximity to Dunedin Airport.

c. Green Island landfill surveys.

d. Pre-development Smooth Hill landfill surveys

The bird monitoring must inform the updated risk assessment under condition 77(d).

~~65 A Landfill Operational Bird Management Plan, based on the *Draft Smooth Hill Bird Management Plan prepared by Boffa Miskell Ltd and Avisure, dated May 2021*, must be prepared by a suitably qualified person. The plan must be developed in consultation with Dunedin International Airport and Te Rūnanga o Ōtākou. As a minimum the plan must include:~~

~~a. Details of further surveys undertaken across all seasons, updated information on what the waste stream will consist of, and how it will be handled, and a review of key factors contributing to the low bird numbers at Kate Valley.~~

~~b. An updated risk assessment based on the information obtained under Condition 65(a).~~

~~c. All of the recommendations from the Preliminary Bird Hazard Assessment undertaken by Avisure, dated May 2021, or any alternative and/or additional recommendations contained in the updated risk assessment required by Condition 65(b).~~

~~d. A summary from a New Zealand perspective covering the attraction of birds to landfills and bird strike risk with aircraft.~~

~~e. Detailed operational procedures, including for reducing putrescible/organic waste, daily cover of waste, minimising the extent of the active tip face, minimising open earthworks and pools of water, and reducing barren areas. Detailed methodologies regarding daily cover.~~

~~f. Bird species greater than 50 g that must be managed to zero densities daily.~~

~~g. Detailed processes of management actions if the limit in condition (f) is breached.~~

~~h. Detailed methodologies and actions for bird management during operation.~~

~~i. Key responsibilities of onsite personnel including the appointment of a Bird Control Officer.~~

~~j. Liaison with and sharing of information with Dunedin Airport on bird management.~~

~~k. Maintenance of a Landfill Operational Bird Management register including monthly compliance reporting to Dunedin International Airport and the independent peer review panel.~~

~~l. An adaptive management and review process that includes an annual meeting with Te Rūnanga o Ōtākou, the peer review panel, Dunedin International Airport, and Otago Regional Council. The consent holder must report to the independent peer review panel on any recommendations made by~~

~~this panel to the Landfill Operational Bird Management Plan, and any changes made to this plan as a result.~~

~~The plan must be submitted to the independent peer review panel no less than 3 months prior to commencement of construction for certification that it addresses the requirements of this condition. The independent peer review panel shall communicate this certification to Otago Regional Council. The certified plan is to be implemented during the operation of the landfill.~~

~~*ADDITIONAL CONDITION RECOMMENDED:*~~

~~All bird species specified in the Bird Management Plan greater than 50 g feeding at the landfill or accessing waterbodies must be managed to zero densities daily. If this is not achieved over 3 consecutive days, then the landfill operation must cease, and material covered (including netting if necessary) until zero densities of birds over 50 g can be reached over 5 consecutive days.~~

78. A Landfill Operational Bird Management Plan, that adopts the *Draft Smooth Hill Bird Management Plan* prepared by Boffa Miskell Ltd and Avisure, dated June 2021, must be prepared by a suitably qualified person to address the management of birds to ensure that aviation risk is kept at an acceptably low level. The plan must be developed in consultation with Dunedin International Airport Limited and Te Rūnanga o Ōtākou. As a minimum the plan must include:

    a. Birds are managed to ensure that operations including wetland restoration do not increase aviation risk in accordance with a Landfill Operational Bird Management Plan.

    b. A summary from a New Zealand perspective covering the attraction of birds to landfills and bird strike risk with aircraft.

    c. Details of the baseline bird monitoring undertaken under Condition 77 across all seasons, updated information on what the waste stream will consist of, and how it will be handled, and a review of key factors contributing to the low bird numbers at Kate Valley.

    d. An updated bird strike risk assessment based on the information obtained under condition 78(c).

    e. All of the recommendations from the Preliminary Bird Hazard Assessment undertaken by Avisure, dated May 2021, or any alternative and/or additional recommendations contained in the updated risk assessment required by condition 78(d).

    f. Detailed operational procedures, including for reducing putrescible/organic waste, daily cover of waste, minimising the extent of the active landfilling area, minimising open earthworks and pools of water, and reducing barren areas.

    g. Bird species greater than 50 g that must be managed to zero densities daily.

    h. Detailed bird deterrence and control methods, including triggers and management actions in accordance with condition 80.

    i. Training and key bird management responsibilities of onsite personnel including the appointment of a Bird Control Officer.

    j. Liaison with and sharing of information with Dunedin International Airport Limited on bird management in accordance with conditions 7, 79 - 83, and 112.

    k. Maintenance of Landfill Operational Bird Management registers in accordance with Condition 79.

    l. A bird monitoring regime which enables comparisons to be made between the baseline (pre-operation) bird monitoring under condition 77 to assess aviation strike risk and success of bird management at the landfill.

m. An adaptive management and review process in accordance with conditions 82 - 83

The plan must be provided to Dunedin International Airport Limited for review and feedback, before being submitted to the independent peer review panel no less than 3 months prior to commencement of construction for certification that it addresses the requirements of this condition. The independent peer review panel shall communicate this certification to Otago Regional Council and Dunedin International Airport Limited. Construction must not commence until Otago Regional Council has confirmed the requirements of the condition have been met. The certified plan must be implemented during the operation of the landfill.

79. The following bird registers shall be maintained on site and updated daily during operation of the landfill:

a. The number of black-backed gulls observed at the site.

b. The number of black-backed gulls killed by shooting.

c. The number of black-backed gulls killed by poison.

d. The number of bird species (and abundances of each species) with an individual body weight exceeding 50 g (as per condition 78(g) these species will be listed in the Landfill Operational Bird Management Plan).

e. The number and date of bird threshold trigger breaches with condition 80.

f. The date/s bird control measures in condition 80 are implemented and the duration of implementation.

g. A success register that documents how effective bird control measures are / were.

h. Sightings of falcon at or near the landfill (this will help inform if it is appropriate to use falcon decoys as a potential bird control option).

The registers must be provided monthly to the independent peer review panel and Dunedin International Airport Limited.

80. Where the bird registers in Condition 79 record the presence of any bird species with an individual body weight exceeding 50 g (as per condition 78(g) these species will be listed in the Landfill Operational Bird Management Plan), the following actions must be undertaken. Once remediation is undertaken and trigger levels are complied with, the consent holder may de-escalate management actions to the lowest compliant level.

Trigger level	**Management Action**
Where at any time there are less than 20 individuals with a typical adult body mass greater than 50 g.	Implementation of the landfill operational procedures set out in the Landfill Operational Bird Management Plan. Implementation of bird deterrence and control measures, including: a. Dispersal of birds from the active landfilling area. b. Anti-roosting strips on structures.
Where at any time there are more than 20 individuals with a typical adult body mass greater than 50 g.	In addition to the above, implementation of lethal bird control measures, including: a. Shooting b. Poisoning

	c. Colony control Notify Dunedin International Airport within 24 hours.
Where the lethal bird control measures above are unsuccessful and at any time there are more than 20 individuals from a species greater than 50 g, or combined numbers of these species exceeds 100 individuals.	In addition to the above, implementation of additional bird deterrence and control measures, including: a. Installation of wires above the active landfilling area. b. Bailing waste Notify Dunedin International Airport within 24 hours
Where there are more than 12 breaches of the threshold above in any 12-month period	Installation of a bird exclusion net over the active landfilling area. For remaining landfill area, implementation of the landfill operational procedures set out in the Landfill Operational Bird Management Plan. Notify Dunedin International Airport within 24 hours

81. An annual risk assessment must be completed by a suitably qualified expert in bird strike risk assessments to determine the contribution of the consented activity to bird strike risk, taking into account the results of bird monitoring required by condition 78(l).

The risk assessment is to consider the following:

a. Species (behaviour, mass, tendency to flock or roost communally);

b. Land use / activity type

c. Location relative to Dunedin Airport and the approach / departure paths.

d. Location relative to nearby land uses that may also attract, or have the potential to attract, birds.

e. Species strike risk based on Dunedin Airport strike data.

The annual risk assessment must be provided to the independent peer review panel and Dunedin International Airport Limited and used to inform reviews of the Landfill Operational Bird Management Plan under Conditions 82 and 83.

82. The consent holder must establish a Bird Management Operational Group comprising the consent holder, Dunedin International Airport Limited, and the landfill operator (if any) to meet twice during the first year of operation, and annually thereafter, to review the effectiveness of the Landfill Operational Bird Management Plan, for the purposes of considering:

a) whether there is a need escalate the management actions outlined in condition 80 sooner than required by the trigger levels.

b) whether any improvements are required to the Landfill Operational Bird Management Plan.

Any member of the Bird Management Operational Group may call an urgent meeting to address an aviation bird hazard issue in connection with the operation of the landfill.

The Bird Management Operational Group may require the consent holder to escalate the management actions in condition 80 to address the identified aviation bird hazard issue whether or not the trigger levels are exceeded.

83. Following any meeting under condition 81 the consent holder must (if necessary) update the Landfill Operational Bird Management Plan. The updated plan must be provided to Dunedin International Airport Limited for review and feedback, before being submitted to the independent peer review panel for certification that it addresses the management of birds to ensure that aviation risk is kept at an acceptably low level. The independent peer review panel shall communicate this certification to Otago Regional Council and Dunedin International Airport Limited. The certified plan must be implemented during the operation of the landfill.

Landscape and Visual Effects

84. All screen planting along the boundary with Big Stone Road, and along the north-eastern edge of the landfill facilities area must be planted as part of the initial landfill construction works in accordance with the *Landscape Mitigation Plan, Boffa Miskell Limited, 29 April 2022*, and must be in place prior to the first waste being accepted.

85. All planting required by condition 84, must be maintained, and any dead trees and vegetation must be replaced by an equivalent species within the next planting season.

Archaeology

86. Prior to the commencement of construction of the landfill, a 10m buffer zone and temporary site fencing must be established around the standing structures at archaeological sites I4571 and I45/72 under the direction of the archaeologist.

~~66. An archaeologist mustshall be retained to provide advice, recording, and reporting on any archaeological material encountered during the construction of the landfill and road upgrade works.~~

~~67~~87. Every practical effort must~~should~~ be made to avoid damage to any archaeological site, whether known, or discovered during the construction of the landfill and road upgrade works.

~~68~~88. Prior to the commencement of the construction of the landfill and road upgrade works, an archaeological site briefing must~~shall~~ be delivered to all contractors undertaking earthworks that may affect archaeology. The briefing must~~shall~~ outline:

a. The history of the site and its archaeological potential.

b. The standing archaeological remains to be retained.

c. The role of the archaeologist and requirements for archaeological involvement.

d. What sort of archaeological features could be expected and what they might look like.

e. What to do if a possible archaeological site is found and the archaeologist is not on site.

f. The process required to record and investigate these archaeological deposits should any be discovered.

~~69 The following mustshall occur where suspected archaeological material is encountered during construction of the landfill and road upgrade works4:~~

~~a. Work mustshall cease within 25 metres of a suspected burial find, and 10 metres of any other find and the project archaeologist alerted to determine whether it is archaeological material.~~

~~b. Where any suspected archaeological material is Maori in origin, HNZPT and Te Rūnanga o Ōtākou (via Aukaha) mustshall be notified of the discovery to enable appropriate cultural procedure's and tikanga to be undertaken. Materials are not to be removed until such time as HNZPT and iwi have responded.~~

~~c. Where human remains are uncovered, NZ Police, HNZPT and Te Rūnanga o Ōtākou (via Aukaha) mustshall be notified of the discovery to enable appropriate cultural procedures and tikanga to be undertaken. Remains are not to be removed until such time as the Police, HNZPT and Aukaha have responded.~~

~~d. An archaeological authority mustshall be obtained from HNZPT prior to any modification of an archaeological site.~~

~~e. All archaeological material mustshall be recorded by an archaeologist prior to work recommencing.~~

~~f.~~a. ~~A report on any archaeological material that is encountered mustshall be provided to HNZPT within one year of the completion of any works affecting an archaeological site.~~

Waste Acceptance

~~70~~89. An appropriately experienced person must~~shall~~ be retained to supervise the operation of the landfill.

90. Waste deliveries must only be received at the landfill between the hours of:

a. Monday to Saturday 8.00am – 5.30pm.

b. Sunday 9.00am – 5.30pm.

Waste deliveries must not be received at the landfill on Easter Friday, Christmas Day, New Year's Day, and the morning of Anzac Day (until 1pm).

~~71~~91. Waste must~~shall~~ only be discharged onto, or into, land within the landfill liner extent shown on drawing 12506381-01-C201.

~~72~~92. Waste must only be delivered by commercial waste transporters and the Council who ~~All persons delivering waste to the landfill mustshall~~ hold a valid Waste Acceptance Agreement confirming the material meets the waste acceptance criteria in the consent conditions.

~~73~~93. No waste, other than municipal solid waste (MSW) and hazardous wastes that meet the Ministry for the Environment Module 2: Hazardous Waste Guidelines – Class A shall be accepted for disposal.

~~74~~94. Disposal of medical wastes must~~shall~~ be in accordance with NZS4304:2002 Healthcare Waste Management or subsequent amendments, and disposal of asbestos in accordance with the Asbestos Regulations 1998 or subsequent amendments.

~~75~~95. The following wastes must~~shall~~ not be accepted for disposal:

~~a.~~c. Liquid waste.

~~b.~~d. Wastes or substances classified as explosive, flammable, oxidising or corrosive under the Hazardous Substances and New Organisms Act 1996.

~~c.~~e. Waste marked with an asterisk on the NZ Waste List (L Code), except solid wastes that meet the leachability limits in the Ministry for the Environment Module 2: Hazardous Waste Guidelines – Class A; asbestos labelled, packaged, and disposed of in accordance with the Asbestos Regulations 1998; and small quantities of waste containing potentially hazardous components that can be reasonably expected to be contained in the municipal waste stream.

~~76~~96 A notice must~~shall~~ be placed at the landfill entrance which identifies the wastes that are unacceptable at the landfill.

~~77~~97 Random inspections of incoming loads for the presence of hazardous waste must~~shall~~ be undertaken at a minimum rate of 1 in 50 loads and tipping of all waste ~~shall~~ must be supervised.

~~78~~98 Records must~~shall~~ be maintained of the quantities and types of waste accepted, and load inspections, and provided annually to the independent peer review panel and Otago Regional Council.

~~79~~99 Otago Regional Council must~~shall~~ be immediately notified if any waste delivery vehicle is turned away from the landfill that contains waste that does not comply with the waste acceptance criteria in the consent conditions.

Landfill Fire Prevention and Response

100. The active landfilling area must not exceed 1000m^2 and on any day when practical it must be reduced in size to not greater than 300m^2.

101. The active landfilling area must not exceed 300 m^2 when local fire danger rating is high or extreme.

102. No burning must occur anywhere on the landfill site, and combustible materials must not be stockpiled over the landfill footprint.

103. The active landfilling area must be under observation or surveillance at all times during the operating hours.

104. All waste must at least be covered at the end of each working day with:

    a. non-combustible compacted soil cover to a minimum depth of 150 millimetres; or

    b. non-combustible materials that perform to an equivalent or higher standard to 150 millimetres soil cover.

105. No waste shall remain exposed overnight.

106. 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. Grass cover must be established by hydroseed, except where within 10m of the active landfilling area.

107. Final capping areas must not be revegetated within 10m of the active landfilling area.

108. A minimum stockpile of 1500m^3 of inert cover material must be maintained adjacent to the landfill stage in operation for fire response.

109. A minimum fire water supply of 400m^3 be maintained on the site, with 200m^3 each located near the main site entrance and emergency entrance respectively.

110. A Fire Preparedness and Response Plan must be prepared by a suitably qualified person to ensure risk of landfill fires is prevented as far as practicable, and any fires are promptly detected and responded to. The plan must be developed in consultation with Fire and Emergency New Zealand (FENZ). As a minimum the plan must include:

    c. Description of key site features, the scale and type of landfilling operations, operating hours, and normal on-site workforce, after hours arrangements, potential fire ignition risks.

    d. Fire prevention measures to be implemented to prevent fires from igniting in the landfill and any other areas of the site.

    e. Fire detection procedures to be implemented during operating hours and afterhours, and reporting and notification procedures to emergency services, neighbours, and regulators.

    f. Fire risk mitigation and readiness features, including:

        i. Site access road network.

        ii. Main and emergency entrance gate locations.

        iii. Water source locations and details of water access for fire response.

        iv. Landfill cover procedures and how they serve to mitigate fire risk (and any variations to these in particular circumstances).

v. Soil cover supply available for fire response.

vi. Perimeter and other fire break locations and specifications.

vii. On-site command point for control and coordination of any fire response operations.

viii. On-site equipment types, capabilities, and availability for fire response.

ix. Readiness requirements for after-hours response.

g. Fire response procedures to be implemented, including:

i. Fire response organisation, including persons responsible for manging the response, operating on-site equipment to be used, and arrangements for control transfer and support when emergency services arrive at the site.

ii. Operating procedure for fire response.

iii. Operating procedures for ensuring personnel, equipment and the site are safe in the event of a spreading fire.

iv. Any triggers and procedures for clearing the site of personnel not needed for response.

v. Procedures for monitoring and reporting smoke and fumes from fires.

vi. Procedures for residual fire risk monitoring after the fire is reported as contained or extinguished.

h. Incident reporting and cause investigation protocol.

i. Protocol for review and evaluation of fire causes, effectiveness of fire prevention, detection mitigation and response measures, and process for continuous improvement, including conducting regular simulated fire drills.~~,~~

j. External notification protocols.

k. Response and notifications contact details directory.

l. A plan review process that includes FENZ, the independent peer review panel, and Otago Regional Council.

The plan must be submitted to the independent peer review panel no less than 3 months prior to the commencement of construction for certification that it addresses the requirements of this condition. The independent peer review panel shall communicate this certification to Otago Regional Council. Construction must not commence until Otago Regional Council has confirmed the requirements of the condition have been met. The certified plan must be implemented during the operation of the landfill.

Complaints

~~80~~111 A Complaints Log must~~shall~~ be maintained during construction and operation of the landfill and road upgrades to record the receipt and management of all complaints, including those regarding objectionable or offensive odour or dust. The following details must~~shall~~ 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.

g. The feedback to the complainant.

The Complaints Log mustshall be made available to the independent peer review panel, and Otago Regional Council on request.

Annual Monitoring Report

81112The landfill operator mustshall compile an annual monitoring report on the operation of the landfill, including:

a. the status of landfilling operations on the site and work completed during the preceding year;

b. any problems, which have arisen in the preceding year and measures taken to address those;

c. activities proposed for the next year of the landfill operation;

d. collated summaries and analyses of all monitoring and other data required under these consents.

e. how the operator is able to be satisfied that the proportion of putrescible material received at the landfill is in accordance with the methodology in **Attachment 3**.

The report mustshall be forwarded to Te Rūnanga o Ōtākou, independent peer review panel, Dunedin International Airport Limited and to the Otago Regional Council by the 31st of December each year unless otherwise agreed in writing. The consent holder must make the report publicly available on its website.

C. Landfill Management Plan (LMP)

82113. The detailed design, construction, and operation of the landfill mustshall be in accordance with the provisions of a Landfill Management Plan (LMP), based on the *Draft Smooth Hill Landfill Management Plan* prepared by Boffa Miskell Ltd, dated May 2021, and developed in consultation with Te Rūnanga o Ōtākou. The LMPlan mustshall be provided to the independent peer review panel for certification that it addresses the requirements of this condition at least 3 months prior to construction commencing. The independent peer review panel mustshall communicate this certification to Otago Regional Council. Construction must not commence until Otago Regional Council has confirmed the requirements of the condition have been met.

The LMP must incorporate the following specific management plans required by this consent, including:

a. Receiving Waters Environment Management Plan.

b. Landfill Operational Bird Management Plan.

c. Fire Preparedness and Response Plan.

d. Eastern Falcon Management Plan.

e. Lizard Management Plan.

f. Vegetation Restoration Management Plan.

g. Freshwater and Wetland Monitoring and Management Plan.

The LMP mustshall include procedures, including monitoring and contingency actions, to ensure the detailed design, construction, operation, and aftercare of the landfill results in compliance with the conditions of these consents, and achieves the following objectives:

General:

a. Operate the landfill in compliance with the resource consent requirements.

b. Appropriately trained staff are retained to operate the landfill.

c. The landfill is constructed and operated safely in a way that prevents harm to self, other workers, and the public, and meets obligations underaccordance with all Health and Safety regulations.

~~d. The design and construction of the landfill adopts appropriate Quality Assurance and Quality Control procedures.~~

d. Ensure landfill incidents including any escape of leachate or other contaminants, release of hazardous substances, or other event are promptly detected and remedied to protect the receiving environment and surrounding properties.

e. Ensure infrastructure failure or damage, including that caused by extreme events such as weather and earthquakes, are promptly detected and remedied to ensure its operation, and to protect the receiving environment.

f. Te Rūnanga o Ōtākou is provided with the opportunity to undertake monitoring alongside specialists undertaking landfill monitoring activities.

Construction management and quality assurance:

a. Landfill design and construction activities are undertaken in accordance with applicable New Zealand Standards relating to landfill construction (including geotechnical, lining system and drainage standards).

b. Earthwork materials are placed as controlled engineered fill in accordance with good earthworks practices and under strict quality construction control and assurance procedures.

c. Landfill elements (liner, cover, leachate, and LFG systems) are designed and constructed to at least the minimum thicknesses and standards recommended in WasteMINZ guidance for a Class 1 landfill facility.

d. Hours of construction of the landfill are managed to minimise disruption to neighbours in the surrounding area.

Land stability:

a. Seismic risks for the stability of the landfill are minimised.

b. Risks of slope failure for the landfill are minimised.

c. The landfill base grade, toe embankment, and completed surface slopes are stable during landfill development ~~for construction~~ and in the long term.

d. Placement of waste in the landfill ensures waste and landfill stability.

Groundwater and surface water ~~flows~~:

a. Control groundwater beneath the landfill liner through the installation and operation of a groundwater collection system.

~~a.~~b. The ingress of stormwater into open and closed sections of the landfill is minimised.

c. Minimise the volume of leachate that is produced.

~~b.~~d. Leachate ~~containment is optimised~~is managed and contained within the landfill footprint through the use of a high performance landfill liner, and leachate collection and storage system, that minimises migration into the underlying soil, groundwater, and surface water.

~~c.~~e. The risks of excessive liner hydration are minimised.

~~d.~~f. Protection of the landfill liner from waste tipping and compaction activity.

g. Safe disposal of leachate off site.

~~e.~~h. Leachate transport occurs with an incident contingency plan which meets the Ministry of the Environment Code of Practice for Transport of Hazardous and Liquid Waste.

f. The ingress of stormwater into open and closed sections of the landfill are minimised to avoid excessive leachate generation.

g.i. Stormwater that comes into contact with waste is directed to the leachate collection system.

j. Land disturbance activities are to be undertaken in a manner that minimises sediment generation.

h.k. Sediment runoff from the site is effectively controlled so that that site does not contribute a disproportionate sediment load downstream in comparison to the catchment above McLaren Gully Road.

i.l. Any Sspills of fuels, hazardous substances, or other contaminants are promptly contained and remediated.

j.m. Monitoring wells are regularly maintained to prevent the ingress of contaminants and protected to ensure physical damage to the wells does not occur.

k.n. Erosion and cracking of the landfill cap is minimised.

Air quality:

a. As small as practicable working landfill faceactive landfilling area is maintained to minimise odour.

b. Potentially highly odorous waste deliveries are identified prior to disposal.

c. All waste is covered with appropriate daily and intermediate cover material to minimise odour.

d. Adequate water supply for dust suppression is maintained.

e. Control odours and dust so that there is no odour or particulate matter that causes an objectionable effect at or beyond the boundary of the site.

f. Contain, capture, and Ccontrol landfill gas through the progressive installation, and operation, and maintenance of a landfill gas collection system in the active landfill areaslandfilled waste.

g. Optimise the overall quantity of landfill gas collected from the deposited waste to minimise fugitive emissions and landfill gas related odour.

g.h. The destruction of recovered landfill gas by flaring combustion or electricity generation.

i. Comply with the landfill gas related requirements of the NES Air Quality and recommendations of the WasteMINZ Guidelines and the Ambient Air Quality Guidelines.

h.j. The escape of fugitive landfill gas is minimised.

i.k. Erosion and cracking of the landfill cap is minimised.

j.l. Ensure the health and safety of people on and beyond the site who may be at risk of being exposed to landfill gas emissions by addressing the prioritised risks identified by the Landfill Gas Risk Assessment (LFGRA).

Terrestrial and freshwater ecology:

a. Prevent clearance of indigenous vegetation and wetlands, and vehicle and machinery movements in areas of indigenous vegetation and wetlands outside the landfill operational footprint.

b. Disturbance of nesting eastern falcons are avoided or mitigated otherwise managed in accordance with an Eastern Falcon Management Plan.

c. Effects to lizards during construction are effectively avoided or otherwise managed in accordance with a Lizard Management Plan.

d. Loss or impacts to of wetland and terrestrial environments and offset are remedied or otherwise managed in accordance with a Vegetation Restoration Management Plan to achieve+. Direct loss of or impact to freshwater, wetland and terrestrial environments caused as a result of construction of

~~the landfill and road upgrades is addressed, to achieve~~ no net loss of ~~ecologically significant~~ habitat / features in terms of type, amount, or condition ~~in accordance with a Restoration Management Plan~~.

e. Residual or ongoing adverse effects to any freshwater or wetland environment or indigenous species that arise from the exercise of this consent are effectively remedied or otherwise managed in accordance with a Freshwater and Wetland Monitoring and Management Plan.

g. Weed encroachment into indigenous vegetation communities, and populations of animal pests within the site are kept to below current levels in accordance with a Plant and Animal Pest Control Programme.

Landscape

a. Landscape and visual amenity effects from the landfill are minimised through perimeter planting of appropriate species.

Archaeology

a. The construction of the landfill is managed to ensure that known and unknown archaeological values are retained where possible, or otherwise appropriately recorded.

Landfill access:

a. Provide safe all-weather access to the site, and landfill for placement of waste.

b. The landfill site is securely fenced, and gates closed outside of opening hours.

c. Allow only authorised and appropriately site-inducted (or supervised) workers, inspectors or visitors onto the landfill site.

d. Traffic to, from, and within the landfill site is managed to minimise disruption on the surrounding transport network, residents, neighbours, landowners and road users as much as practicable.

e. Ensure heavy vehicles associated with the landfill use the State Highway 1 – McLaren Gully Road – Big Stone Road route, unless a hazard is present on this route which renders it inoperable.

Waste acceptance:

a. All landfill users are aware of the Waste Acceptance Criteria and acceptance procedures.

b. All waste received complies with the Waste Acceptance Criteria specified in the consent conditions.

c. Prevent the disposal of hazardous waste that does not comply with the Waste Acceptance Criteria specified in the consent conditions.

d. Ensure best practice management for the handling, storage and disposal of waste and hazardous materials.

~~d.~~e. Accurate records of all waste accepted at the landfill, load inspections, and disposal locations are maintained.

~~e.~~f. All waste being transported to the landfill is securely contained to prevent the escape of solid material or liquid from the vehicle.

~~f. The landfill site is securely fenced, and gates closed outside of opening hours.~~

Placing of refuse:

a. Placement of waste in the landfill ensures waste and landfill stability.

b. Protection of the landfill liner from waste tipping and compaction activity.

c. A small as practicable working active landfilling area is maintained.

d. Minimise odour, birds, pests and litter.

Fire prevention and response:

a. Risk of landfill fires are prevented as far as practicable, and any fires are promptly detected and responded to.

Bird Management

~~a.~~e. Birds are managed to ensure that operations including wetland restoration do not increase aviation risk ~~is kept at an acceptably low level~~ in accordance with a Landfill Operational Bird Management Plan.

Noise:

~~a.~~b. Noise from the landfill site complies with the designation conditions and is minimised where practicable.

General amenity and public health and safety:

a. Ensure the health and safety of people on and beyond the site.

~~b. All waste received complies with the Waste Acceptance Criteria specified in the consent conditions.~~

~~c. The landfill site is securely fenced, and gates closed outside of opening hours.~~

~~d. Prevent landfill fires from occurring.~~

~~e. Adequate water storage for fire-fighting is maintained.~~

~~f. Ensure that adequate fire control equipment is present on site and operable at all times.~~

~~g. Maintain a Fire Plan in conjunction with Fire and Emergency New Zealand (FENZ).~~

~~h. A small as practicable working landfill face is maintained.~~

~~i. All waste is covered with appropriate daily and intermediate cover material.~~

~~j.~~b. Prevent windblown litter outside the site boundaries.

~~k.~~c. Clear areas of illegal dumping outside the site.

~~l.~~d. Maintain a clean and tidy site.

~~m.~~e. Prevent the establishment of vermin and nuisance insect populations.

Communications and complaints:

a. Members of the public can contact the landfill operator at all times in relation to the construction and operation of the landfill, and in the case of emergency.

~~a.~~b. Maintain a complaints management, investigation, and reporting system.

c. ~~All complaints mustshall be promptly investigated and responded to.~~All complaints received in relation to the landfill must be investigated and responded to promptly, including investigations into whether any improvements to the operations of the landfill should be made.

~~83~~114 The landfill must~~shall~~ be operated at all times in accordance with the current provisions of the LMP.

~~84~~115 The consent holder must ~~shall~~ annually complete a review of the LMP in consultation with Te Rūnanga o Ōtākou and the independent peer review panel to ensure that management practices result in compliance with the conditions of these consents. Any proposed revisions must~~shall~~ be forwarded to the independent peer review panel for certification. The independent peer review panel must~~shall~~ communicate this certification to Otago Regional Council.

D. Advice Notes

~~Any new or modified culverts for the upgrade of McLaren Gully Road and Big Stone Road are to comply with the requirements of the Resource Management (National Environmental Standards for Freshwater) Regulations 2020), or otherwise obtain resource consent under the regulations. Where resource consent is required, the advice of a suitable qualified freshwater ecologist should be sought to ensure appropriate provision for freshwater fish passage.~~

a. For the purposes of this consent 'site' means the landfill site as described in section 4.1 of Application RM20.280 – Assessment of Environmental Effects (updated May 2021).

b. For the purpose of this consent, the term 'stormwater' means water running off from any impervious surface such as roads, carparks, roofs, ~~and sealed runways,~~ as well as any other surface run-off that is collected and/or intercepted.

c. For the purposes of this consent 'active landfilling area' means the area of exposed waste.

d. ~~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, even if this is inconsistent with the opinion of the peer review panel.

ATTACHMENT 1 TO OTAGO REGIONAL COUNCIL RESOURCE CONSENTS FOR DISCHARGES TO WATER

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 condition ~~28~~36:

a. The groundwater monitoring wells described in condition ~~22~~29.

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 available) on drawing 12506381-C309 or as otherwise specified in the Receiving Waters Environment Monitoring Plan.

Basic and full suite parameters and trigger levels to be monitored at each location are identified with a "X" in the table. Trigger levels for each parameter are to be established in accordance with conditions ~~26~~36.

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.

Where automated monitoring of water quality is specified within the Receiving Waters Environment Monitoring Plan as an alternative method for surface water monitoring, the monitoring and trigger level parameters will be specified within the Receiving Waters Environment Monitoring Plan.

Table 1 – Water Quality Monitoring Parameters

	Monitoring Location							
	GW monitoring Bores GW1-GW7~~GW6~~, BH202 and Groundwater collection system prior to discharge to the unnamed tributary of ~~Otokia~~Ōtokia Creek			**Sediment Retention Pond for Stage 1 and groundwater collection system prior to discharge to the unnamed tributary of ~~Otokia~~Ōtokia Creek**		**Surface Water monitoring points SW1 - ~~SW7~~SW8**		
Parameter (mg/L unless stated otherwise)	**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	
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~~ Nitrite Nitrogen	x	x				x	x	x
Nitrate Nitrogen	X	X				X	X	X
Alkalinity	X	X	X			X	X	
Organic Carbon		X						

Total ~~VOC~~Volatile organic compounds		X	X				X	X
Total ~~SVOC~~Semi-volatile organic compounds		X	X				X	X
PFOS + PFHxS~~PFAS~~		X	~~X~~				X	~~X~~
PFOA		X					X	
pH (ph units)	X	X		X	X	X	X	X
Temperature (degrees Celsius)	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)~~and level~~						X	X	
Suspended solids						~~X~~	X	X
Turbidity (NTU)						~~X~~	X	X

ATTACHMENT 2 TO OTAGO REGIONAL COUNCIL RESOURCE CONSENTS FOR DISCHARGES TO AIR

Table 2 below sets out the monitoring parameters to detect detect landfill gas escape, when monitored at the following locations in accordance with condition 60:

a. The landfill gas monitoring bore network.

b. Areas of intermediate cover

c. Within buildings and structures, and sub-surface pits

d. The surface of the final landfill cap.

Parameters and trigger levels to be monitored at each location are identified with a "X" in the table. Trigger levels for each parameter are to be established in accordance with condition 59.

Table 2 – Landfill Gas Monitoring Parameters

	Monitoring Location			
Parameter	**The landfill gas monitoring bore network**	**Areas of intermediate cover**	**Within buildings and structures, and sub-surface pits**	**The surface of the final landfill cap**
Gas flowrate (litres/hour)	X			
Methane (%v/v)	X	X	X	X
Oxygen (%v/v)	X			
Carbon dioxide (%v/v)	X			
Carbon monoxide (ppm)	X			
Hydrogen sulphide (ppm)	X			
Residual nitrogen (%v/v), calculated as the balance of methane, oxygen, carbon dioxide, carbon monoxide, and hydrogen sulphide.	X			
Ambient temperature (^{O}C)	X			
Gas pressure (mb)	X			
Barometric pressure (mb)	X			

ATTACHMENT 3 – RESIDUAL PUTRESCIBLE WASTE SEPERATION METHODOLOGY

Overview

1. As part of the 10 year plan 2021-31 Dunedin City Council adopted a new kerbside collection system consisting of:
    a. Fortnightly 45L glass bin;
    b. Fortnightly 80 or 240L mixed recycling bin;
    c. Fortnightly 80 or 140L general waste bin;
    d. Weekly 23L food waste bin; and
    e. Fortnightly 240L garden waste bin (optional).

2. Providing residents with options for the collection of both food and garden waste, separated from collections for general waste, will significantly reduce the amount of putrescible waste contained in the general waste stream. Additional measures (described below) will be implemented to further remove putrescible waste contamination from the general waste stream.

3. Alongside the adoption of a new kerbside collection system Council also resolved to fund construction of the following waste diversion facilities to support the new services:
    a. Organics Processing Facility (OPF);
    b. Material Recovery facility (MRF);
    c. Construction and Demolition Recovery Facility (CDRF); and
    d. Bulk Waste Transfer Station (BWTS).

4. The new kerbside collection system is due to be implemented 1 July 2023.

Methodology

Residual putrescible waste will be removed from the general waste stream and processed separately prior to transfer and final disposal of general waste at Smooth Hill landfill, with the goal that putrescible waste will initially make up less than 10% of the waste going to Smooth Hill, reducing to 5% over time. The process for removing putrescible waste from the general waste stream has three components set out below.

1. Removal of putrescible waste from the general waste stream at source:

    a. The contract for kerbside collection services includes three additional Full Time Equivalent positions to support Council's education and enforcement activities. These positions are:
        i. One Education Facilitator; and
        ii. Two Contamination Inspectors

        These roles will be dedicated to the reduction of contamination in kerbside bins presented for collection.

    b. The Contamination Inspectors will audit kerbside bins in advance of the collection vehicles and identify bins with high levels of contamination. These bins will not be collected, and education material will be left for the householder;
    c. A 'three strike' system will be used to remove services from households that continually present highly contaminated bins for collection;
    d. The Education Facilitator will continually evaluate the results of the kerbside bin audits and will also monitor contamination levels in waste loads at the OPF and MRF. The information collected will be used to work alongside Council to develop education campaigns aimed at reducing contamination by targeting specific materials, or targeting specific areas of Dunedin for kerbside audits.

2. Removal of putrescible waste from the general waste stream at BWTS:

    a. There will be no public access for waste disposal at Smooth Hill landfill;
    b. All general waste from all sources (Council collections, commercial, and general public) will be deposited at the BWTS prior to consolidation and transfer to Smooth Hill;
    c. At the BWTS all general waste will be deposited on the 'tipping floor' prior to consolidation and transfer into bulk transfer containers via mechanical handlers;
    d. Staff monitoring the tipping floor will identify any highly contaminated waste prior to consolidation and:
        i. Remove contamination and divert it to the OPF where possible; or
        ii. If contamination cannot be removed, these loads will be quarantined for separate disposal in accordance with the disposal procedures described in the Special Disposal Procedure for contaminated wastes set out below.

3. Removal of putrescible contamination from OPF and MRF:

    a. Organics entering the OPF may be contaminated with general waste, meaning it would be unable to be processed at the OPF.
    b. Recycling entering the MRF could be contaminated with organics, meaning it would be unable to be processed at the MRF.
    c. In both cases above the organics containing contaminated waste will be screened to separate the organic contaminated waste prior to processing; and
    d. The separated organic contaminated waste will be quarantined for disposal in accordance with the disposal procedures described in Special Disposal Procedure for contaminated wastes.

Special Disposal Procedure for contaminated wastes

1. Quarantined waste from the BWTS, OPF and MRF will be transported to the Smooth Hill landfill in sealed truck and trailer units or bins.
2. Deliveries of quarantined waste will be pre-booked, to ensure preparations are made including ensuring cover material is available at the tipface disposal location.
3. Deliveries of quarantined wastes will be covered immediately and prioritised for disposal ahead of more general waste and loads.

SMOOTH HILL DRAFT DCC CONDITIONS OF CONSENT FOR ROAD UPGRADES – 29 ARPIL 2022

Conditions:

1. The proposed activity must be undertaken in general accordance with the approved plans attached to this certificate as Appendix One, and the information provided with the ~~revised~~ updated resource consent application received by the Dunedin City Council on 31 May 2021 and further information received on 5 April 2022, except where modified by the following conditions. In the event of differences or conflict, between the measures in the documents and the conditions, the conditions shall prevail:

2. The consent holder:

   a) is responsible for all contracted operations relating to the exercise of this consent; and

   b) ensure that all personnel (contractors) working on the site are made aware of the conditions of this consent, have access to the contents of consent documents and to all associated erosion and sediment control plans and methodology; and

   c) ensure compliance with land use consent conditions.

Engineering

3. All investigations, detailed design, and construction of the road upgrades must be supervised by a suitably experienced Chartered Professional Engineer (CPEng).

~~4. Prior to construction commencing,~~

~~a) the detailed design of the road, including cut and fill slopes must be informed by geotechnical investigations and be in accordance with the road design standards contained in the Dunedin City Council Code of Subdivision and Development 2010 or alternative land development/traffic engineering standards as accepted by the Roading Manager, Dunedin City Council.~~

~~b) The detailed design of the road upgrades must be provided to the DCC Roading Manager for review and certification that the detailed design complies with this consent.~~

~~5. The completed road upgrade works must be certified by the suitably experienced Chartered Professional Engineer (CPEng) that they have been completed in accordance with the detailed design approved by the Transport Manager, Dunedin City Council. As-built plans, detailing full asset data, must be provided to the Transport Manager, Dunedin City Council.~~

~~6. Upon completion of construction of the required roading upgrades, all works must be tested to demonstrate that they meet the acceptance requirements of the DCC Code of Subdivision and Development, or alternative land development/traffic engineering standards as accepted by the Dunedin City Council and evidence of such provided to the Transport Manager, Dunedin City Council.~~

Ecology

7.4. The area directly impacted by construction of the road upgrades ~~is~~ must be limited to and ~~must~~ not exceed 2.97 ha (Yorkshire Fog) – Cocksfoot Grassland ~~the following maximum areas~~ as set out in Smooth Hill Landfill, Ecological Impact Assessment Prepared for Dunedin City Council, 19 August 2020 (updated 28 May 2021) prepared by Boffa Miskell.~~:~~

~~a) (Purei) / (Yorkshire Fog – Cocksfoot) - Rautahi Sedgeland – 0.0014 ha.~~
~~b) (Yorkshire Fog) – Cocksfoot Grassland – 2.97 ha.~~
~~c) [Purei] – Wiwi/ Rautahi – Exotic Grass Rushland – 0.00027 ha.~~

8.5. Prior to construction commencing, a Lizard Management Plan (LMP), based on the Draft Smooth Hill Lizard Management Plan prepared by Boffa Miskell Ltd, dated ~~May~~ June 2021, must be prepared by a suitably qualified herpetologist ~~ecologist~~, to ensure effects on any lizards during the construction of the road upgrades are avoided or otherwise managed following the effects management hierarchy~~minimised~~. The plan must be developed in consultation with Te Rūnanga o Ōtākou and the Department of Conservation following their guidelines for lizard salvage and transfer in New Zealand. As a minimum the plan must include:

a) A revision of the lizard values onsite through a desktop assessment and on-site survey.

~~a)~~b) A summary of the impact assessment for ~~herpetofauna~~lizards.

~~b)~~c) Detail of onsite surveys that have been undertaken to inform the Lizard Management Plan.

~~c)~~d) Avoid, remedy, and ~~M~~mitigation methodologies including salvage and relocation, and any predator control, and habitat enhancement measures undertaken ~~in accordance with condition 7~~to reduce the effects on lizards during construction.

e) Any appropriate methodologies for offsetting or compensating for any residual adverse effects if they are identified through monitoring.

f) Pre and during construction monitoring methodologies, including any post release monitoring.

g) Annual reporting requirements, which will include, but not be limited to reporting on the avoid, remedy and /or mitigation measures used to reduce effects on lizards during construction as well as any remedial, offset or compensatory actions undertaken.

~~d)~~h) Key responsibilities of onsite personnel.

~~e)~~i) An adaptive management and review process that includes Te Rūnanga o Ōtākou, the independent peer review panel, Otago Regional Council, and Dunedin City Council.

9.6. Prior to construction commencing, the LMP prepared under Condition ~~8~~ 5 above must be submitted to the Resource Consents Manager, Dunedin City Council at rcmonitoring@dcc.govt.nz for certification that it addresses the requirements of this condition. The plan is to be implemented for the duration of any road construction works.

~~10. Prior to the commencement of construction, a Restoration Management Plan (RMP), based on the Draft Smooth Hill Vegetation Restoration Plan prepared by Boffa Miskell Ltd, dated May 2021, must be prepared by a suitably qualified ecologist, to address the loss of or impact to freshwater, wetland and terrestrial environments caused as a result of construction of the road upgrades, to achieve no net loss of ecologically significant habitat / features in terms of~~

~~type, amount, or condition. The plan must be developed in consultation with Te Rūnanga o Ōtākou. As a minimum the plan must include::~~

~~a) A summary of the impact assessment for freshwater, wetland, and terrestrial environments.~~

~~b) Mitigation, offsetting and / or compensation measures, which as a minimum must include:~~

~~i. Wetland restoration that not only includes the area of wetland to be restored itself, but also a 10 m buffer from the wetland edge, other than 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 (including targets to be met), and in which areas or circumstances gorse (or another specified plant pest) may be tolerated as a nurse crop.~~

~~iv. Pest animal control, including annual performance pest animal targets for the site using standardised Department of Conservation residual trap catch, tracking tunnel or chew card indices.~~

~~v. A process for reviewing and adapting pest plant and animal controls in the event that the performance targets are not achieved over two consecutive years. This review process must include Te Rūnanga o Ōtākou, the independent peer review panel, and Otago Regional Council.~~

~~vi. Ground preparation, planting and maintenance specifications. All plants used for restoration must be eco-sourced from the same eco-region and be free of pest plants. Plant size and densities must be relevant to the location of where they are being placed and restoration outcomes.~~

~~vii. A detailed programme of works.~~

~~viii. Standardised methodologies for onsite biosecurity control (bring onto site / onsite / taking off site).~~

~~Long term success based monitoring at year 0, 1, 3, 5, 10, 15, 25 and 30.~~

~~c) Key responsibilities of onsite personnel.~~

~~d) An adaptive management and review process that includes Te Rūnanga o Ōtākou, the independent peer review panel, Otago Regional Council, and Dunedin City Council.~~

~~The plan must be submitted to Resource Consents Manager, Dunedin City Council at rcmonitoring@dcc.govt.nz no less than 3 months prior to commencement of construction for approval by the assigned compliance or monitoring officer that it addresses the requirements of this condition. The plan is to be implemented for the duration of any road construction works.~~

~~**Advice note:**~~

~~Where offsetting or compensation measures are applied, these shall follow best practice methods such as those set out in Stream Ecological Valuation (SEV): a method for assessing the ecological functions of Auckland Streams (October 2011); Biodiversity Offsetting Under the Resource Management Act: a guidance document (September 2018); or A Biodiversity Compensation Model for New Zealand: a user guide – version 1 (October 2021), or updated similar guidance. Where biodiversity offset accounting / compensation modelling approaches~~

~~(BOAM / BCM) are used, the same metrics used in the development of the models shall form the basis of monitoring standards as may be required.~~

~~Landscape~~

~~11. Where practicable, all completed road cut and fill batters must be hydroseeded with grass as soon as possible and not later than completion of the road upgrade works~~

Archaeology

~~12. An archaeologist must be retained to provide advice, recording, and reporting on any archaeological material encountered during the road upgrade works.~~

~~13.~~7. Every practical effort must be made to avoid damage to any archaeological site, whether known, or discovered during the road upgrade works.

8. Modification or destruction of an archaeological site shall be managed through the archaeological authority process under the Heritage New Zealand Pouhere Taonga Act 2014. Thus, an archaeologist must be retained to provide advice, recording, and reporting on any archaeological material encountered during the construction of the landfill and road upgrade works.

~~14.~~9. Prior to the commencement of the road upgrade work, an archaeological site briefing must be delivered to all contractors undertaking earthworks that may affect archaeology. The briefing must outline:

a) The history of the site and its archaeological potential.
b) The standing archaeological remains to be retained.
c) The role of the archaeologist and requirements for archaeological involvement.
d) What sort of archaeological features could be expected and what they might look like.
e) What to do if a possible archaeological site is found and the archaeologist is not on site.
f) The process required to record and investigate these archaeological deposits should any be discovered.

Evidence of the archaeological site briefing must be provided to a warranted DCC officer upon request.

~~15. The following must occur where suspected archaeological material is encountered during road upgrade works:~~

~~a) Work must cease within 25 metres of a suspected burial find, and 10 metres of any other find and the project archaeologist alerted to determine whether it is archaeological material.~~
~~b) Where any suspected archaeological material is Maori in origin, HNZPT and Te Rūnanga Ōtākou. (via Aukaha) must be notified of the discovery to enable appropriate cultural procedure's and tikanga to be undertaken. Materials are not to be removed until such time as HNZPT and iwi have responded.~~
~~c) Where human remains are uncovered, NZ Police, HNZPT and Te Rūnanga o Ōtākou. (via Aukaha) must be notified of the discovery to enable appropriate cultural procedures and tikanga to be undertaken. Remains are not to be removed until such time as the Police, HNZPT and Aukaha have responded.~~

~~d) An archaeological authority must be obtained from HNZPT prior to any modification of an archaeological site.~~

~~e) All archaeological material must be recorded by an archaeologist prior to work recommencing.~~

~~f) A report on any archaeological material that is encountered must be provided to HNZPT within one year of the completion of any works affecting an archaeological site.~~

~~Transportation~~Construction Traffic Management

~~16.~~10. Prior to construction of the road upgrades commencing, a Construction Traffic Management Plan must be prepared by a transportation engineer that includes measures to ensure the safe, effective, and efficient interaction of construction activity with other road users, and specifically address the following matters:

a) All heavy vehicle traffic is to use the route described within the application, (SH1 – McLaren Gully Road – Big Stone Road) unless a hazard is present on this route which renders it inoperable.

~~a)~~b) Delivery of heavy or outsized loads, such as excavators, is to avoid peak periods on State Highway 1.

~~b)~~c) Management of the interactions of construction traffic and other road users.

~~c)~~d) Minimising the impact on existing users of McLaren Gully Road and Big Stone Road users such as residents and other commercial activities.

The Construction Traffic Management Plan must be provided to Waka Kotahi NZ Transport Agency (NZTA) for review, and then submitted to the Dunedin City Council Transport Manager for ~~approval~~ certification that it addresses the requirements of this condition prior to commencement of the road upgrade works.

11. The road upgrade works must be undertaken in accordance with the approved Construction Traffic Management Plan.

Construction of Upgrades to McLaren Gully Road and Big Stone Road

12. Prior to construction of the upgrades to McLaren Gully Road and Big Stone Road commencing,

a) the detailed design of the road, including cut and fill slopes must be informed by geotechnical investigations and be in accordance with the road design standards contained in the Dunedin City Council Code of Subdivision and Development 2010 or alternative land development/traffic engineering standards as accepted by the Transport Manager, Dunedin City Council.

b) The detailed design of the road upgrades must be provided to the Transport Manager, Dunedin City Council for review and certification that the detailed design complies with this consent.

13. The completed road upgrade works must be certified by the suitably experienced Chartered Professional Engineer (CPEng) that they have been completed in accordance with the detailed design approved by the Transport Manager, Dunedin City Council. As-built plans, detailing full asset data, must be provided with the certification.

14. Upon completion of construction of the required roading upgrades, all works must be tested to demonstrate that they meet the acceptance requirements of the DCC Code of Subdivision and Development 2010, or alternative land development/traffic engineering standards as

accepted by the Dunedin City Council and evidence of such provided to the Transport Manager, Dunedin City Council.

Upgrades to State Highway 1 Intersection with McLaren Gully Road

~~17.~~15. Prior to the State Highway 1 intersection works occurring, the consent holder must submit to the Resource Consents Manager, Dunedin City Council at rcmonitoring@dcc.govt.nz a copy of Waka Kotahi NZ Transport Agency's approval to undertake works on the State Highway (as detailed in the advice notes below).

~~18.~~16. Prior to construction ~~of the road upgrades~~State Highway 1 intersection works commencing, the consent holder must submit the detailed design of the ~~road upgrades and the~~ State Highway 1 intersection works to Waka Kotahi NZ Transport Agency ~~and the Resource Consents Manager, Dunedin City Council at rcmonitoring@dcc.govt.nz to the assigned compliance or monitoring officer~~ for approval that the detailed design complies with this consent.

~~19.~~17. Prior to waste being accepted at the landfill, a right turn bay, auxiliary left turn lane, localised shoulder widening for left turn out movement and flag lighting (the 'State Highway 1 Intersection works') must be constructed at the intersection of State Highway 1 and McLarens Gully Road.

~~20.~~18. Prior to waste being accepted at the landfill, the consent holder must provide to the Resource Consents Manager, Dunedin City Council at rcmonitoring@dcc.govt.nz correspondence from Waka Kotahi NZ Transport Agency confirming that the works to the State Highway 1 intersection with McLaren Gully Road have been constructed to Waka Kotahi NZ Transport Agency standards.

~~21.~~19. The completed ~~road upgrade and~~ State Highway 1 intersection works must be certified by the suitably experienced Chartered Professional Engineer (CPEng) that they have been completed in accordance with the detailed design approved by Waka Kotahi NZ Transport Agency ~~and Dunedin City Council~~. That certification must be provided to Waka Kotahi NZ Transport Agency ~~and the Resource Consents Manager, Dunedin City Council at rcmonitoring@dcc.govt.nz~~.

Waka Kotahi Advice Notes:

a) It is a requirement of the Government Roading Powers Act 1989 that any person wanting to carry out works on a state highway first gain the approval of Waka Kotahi New Zealand Transport Agency for the works and that a Corridor Access Request (CAR) is applied for and subsequently a Work Access Permit issued (WAP) before any works commence. A CAR will be required for the State Highway 1 Intersection works.

b) Detailed design approval from Waka Kotahi NZ Transport Agency shall be gained by the consent holder prior to applying for a CAR. The detailed design shall be prepared by a suitably qualified professional who has been certified by Waka Kotahi. In developing the detailed design, the consent holder will need to consult with the Waka Kotahi appointed state highway maintenance contractor for Coastal Otago (Highway Highlanders; coastalotago@downer.co.nz) and a Waka Kotahi Safety Engineer.

c) A Corridor Access Request is made online via www.submitica.co.nz. The CAR needs to be submitted at least 21 working days before the planned start of works. A copy should also be sent to the Waka Kotahi NZ Transport Agency System Design and Delivery Planning Team at EnvironmentalPlanning@nzta.govt.nz . The Corridor Access Request will need to include:

- The detailed final design for the right turn bay, auxiliary left turn lane, localised shoulder widening, flag lighting and stormwater management;

- A Construction Traffic Management Plan that has attained approval from the Waka Kotahi NZ Transport Agency appointed state highway maintenance contractor for Coastal Otago (Highway Highlanders).

- If requested by Waka Kotahi, a design safety audit which has been prepared, processed and approved in accordance with Waka Kotahi guidelines for Road Safety Audit Procedures for Projects (https://www.nzta.govt.nz/assets/resources/road-safety-audit-procedures/docs/road-safety-audit-procedures-tfm9.pdf).

Vehicle Access

~~22.~~20. At the time the construction is being undertaken, all existing (or relocated) driveways adjoining the upgraded (sealed) McLaren Gully Road and/or Big Stone Road must be hard surfaced from the edge of the respective road carriageways, toward the respective property boundaries for a distance of not less than 5.0m and be adequately drained.

~~23.~~21. The new vehicle access to the landfill must be a minimum 5.0m, maximum 9.0m formed width, hard surfaced from the edge of the Big Stone Road carriageway, toward the property boundary for a distance of not less than 5.0m and be adequately drained for its duration.

~~24.~~22. The new vehicle access to the landfill must be constructed in accordance with Council's Industrial Specification for Vehicle Entrances.

~~25.~~23. A minimum sight distance of 139m must be achieved at the new vehicle access to ~~Big Stone Road~~the landfill unless an assessment from a suitably qualified transport expert determines that a lesser sight distance can be supported from a road safety perspective. The sight distance must be measured in accordance with Figure 6B.13 of the Dunedin City Council's 2nd Generation District Plan (2GP).

~~26.~~24. All heavy vehicle traffic associated with the landfill must use the route described within the application, (SH1 – McLaren Gully Road – Big Stone Road) unless a hazard is present on this route which renders it inoperable.

~~27.~~25. Deleterious material must not, at any stage, migrate onto the Big Stone Road carriageway.

Noise

~~28.~~26. The road upgrade works ~~is~~ must be limited to between 7.30am – 6pm Monday to Saturday (inclusive). No works are permitted to occur outside of these times, on Sundays, or public holidays, except where emergency works are required to protect public health and safety.

~~29.~~27. A minimum separation distance of 40 metres must be maintained between road construction equipment and the residential dwellings located at 108 and 109 McLaren Gully Road, if those houses are occupied during the work.

~~30.~~28. The following must occur if construction equipment is required to encroach upon the 40 metre setback specified in condition ~~30~~ 27 above, and/or the hours of work extend beyond those in condition ~~29~~26, and the houses are occupied during the work:

a) A Construction Noise Management Plan (CNMP) must be prepared by an acoustic specialist which addresses the requirement of Appendix E of addresses NZS6803: 1999

Acoustics –Construction Noise, and which includes measures to mitigate noise transmission from construction activity to the existing residential dwellings.

The CNMP must be submitted to the Resource Consent Manager, Dunedin City Council, @rcmonitoring@dcc.govt.nz for certification that it addresses the requirement of this condition at least ~~two weeks~~10 working days prior to commencement of the road upgrade works.

b) Dunedin City Council are to provide any comments no later than 5 working days prior to commencement of the road upgrade and certification must not be unreasonably withheld.

~~b)~~c) The road upgrade works must be undertaken in accordance with the ~~approved~~certified CNMP.

Earthworks

~~31.~~29. The earthworks for the road upgrades must be undertaken with the principles of industry best practice applied at all stages of site development including site stability, stormwater management, traffic management, along with dust and noise controls at the sites.

~~32.~~30. Prior to commencement of any road construction works, an Erosion and Sediment Management Plan (ESMP) must be prepared by a suitably qualified person which includes methods to ensure effective management of erosion and sedimentation during earthworks including measures to:

a) divert clean runoff away from disturbed ground;

b) control and contain stormwater run-off;

c) avoid sediment laden run-off from the site'; and

d) protect existing drainage infrastructure sumps and drains from sediment run-off.

e) manage dust

~~33.~~31. Any change in ground levels must not cause a ponding or drainage nuisance to neighbouring properties.

~~34.~~32. Any introduced fill material must comprise clean fill only.

33. Slopes must not be cut steeper than 1:1 (45°) or two metres high without specific engineering design and ~~certification~~approval by the Transport Manager, Dunedin City Council in accordance with condition 13.

~~35.~~34. Slopes must not be filled steeper than 2h:1v (27°) or two metres high without specific engineering design and ~~certification~~approval by the Transport Manager, Dunedin City Council in accordance with condition 13

~~36.~~35. All ~~temporary~~ completed slopes shall be inspected and signed off by a suitably experienced Chartered Professional Engineer (CPEng) in accordance with condition 14.

~~37.~~36. As-built records of the final extent and thickness of any un-engineered fill must be recorded and submitted to the Resource Consent Manager, Dunedin City Council, @rcmonitoring@dcc.govt.nz within 6 months of the completion of the works.

~~38.~~37. The consent holder's engineer must be engaged to determine any temporary shoring requirements at the site during earthworks construction and the consent holder must install any temporary shoring recommended by the engineer.

~~39.~~38. Surplus of unsuitable material is to be disposed of away from the site to a Council approved destination.

~~40.~~39. Should the consent holder cease, abandon, or stop work on site for a period longer than 6 weeks, the consent holder must first take adequate preventative and remedial measures to control sediment discharge/run-off and dust emissions, and must thereafter maintain these measures for so long as necessary to prevent sediment discharge or dust emission from the site. All such measures must be of a type and to a standard which are to the satisfaction of the Resource Consent Manager, Dunedin City Council.

~~41.~~40. If at the completion of the earthworks operations, any public road, footpath, landscaped areas or service structures ~~that~~ have been affected/damaged by contractor(s), consent holder, developer, person involved with earthworks or building works, and/or vehicles and machineries used in relation to earthworks and construction works, they must be reinstated to the satisfaction of Council at the expense of the consent holder.

~~42.~~41. At the end of each main earthwork stage (or earlier, if conditions allows) the affected areas must be immediately adequately top-soiled and vegetated (e.g. hydro-seeded) as soon as possible to limit sediment mobilisation.

Advice Notes:

Earthworks

1. Neighbouring property owners should be advised of the proposed works at least seven days prior to the road upgrade works commencing.

2. Where there is a risk that sediment may enter a watercourse at any stage during the earthworks, it is advised that the Otago Regional Council be consulted before works commence, to determine if the discharge of sediment will enter any watercourse and what level of treatment and/or discharge permit, if any, may be required.

Noise

3. Noise from the road upgrade works must comply with the recommended noise limits outlined in Rule 4.5.4.1 Construction of Dunedin City Council's 2nd Generation District Plan.

Transport

4. The vehicle crossing to the landfill site, between the road carriageway and the property boundary, is within legal road and will therefore require a separate Vehicle Entrance Approval from Dunedin City Council ~~CC~~ Transport to ensure that the vehicle crossing is constructed/upgraded in accordance with the Dunedin City Council Vehicle Entrance Specification (note: this approval is not included as part of the resource consent process).

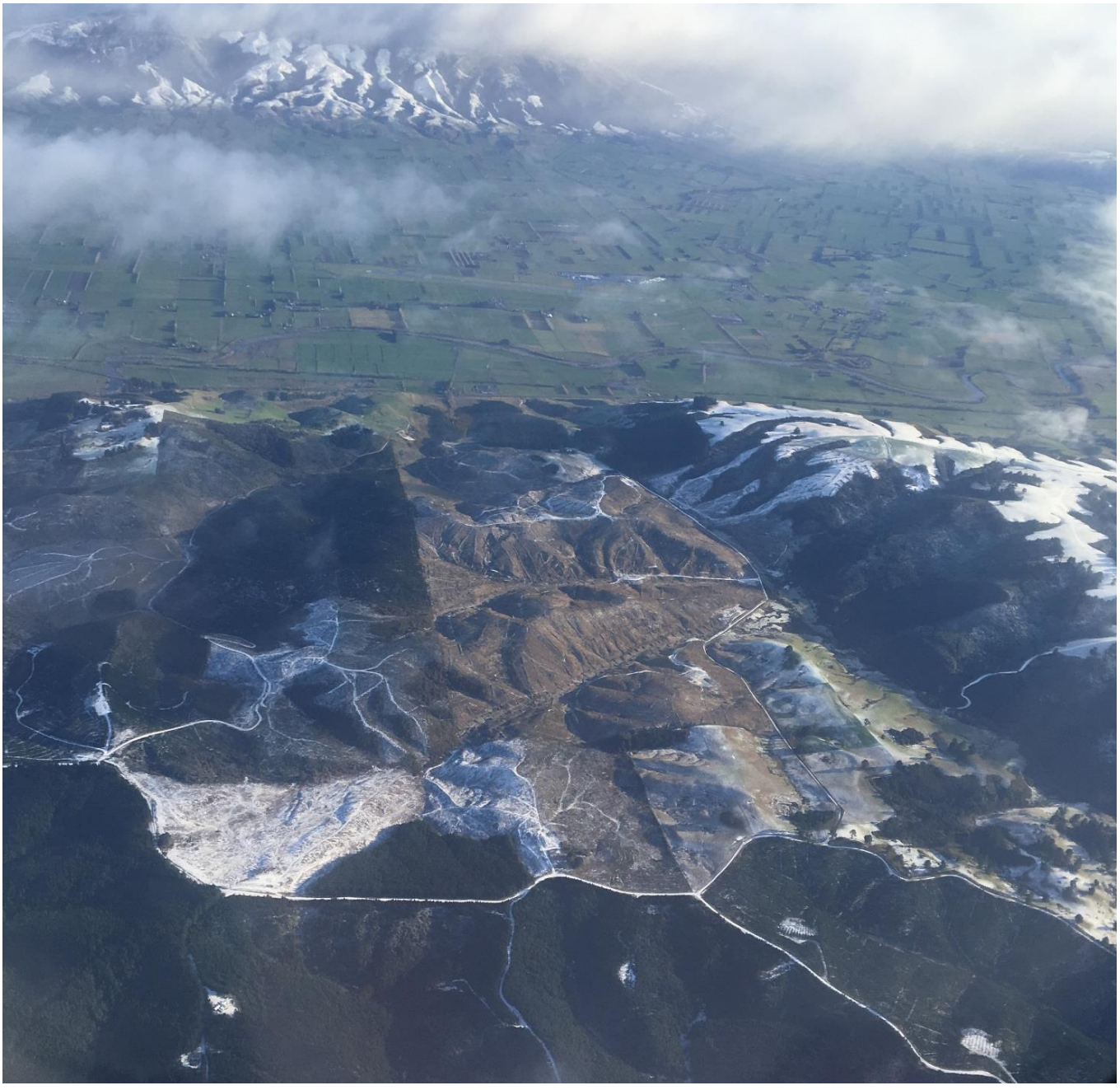
5. The vehicle access to the landfill site will need to be designed so that sight distances are optimised.

6. It is advised that in the event of future development on the site, ~~Transport~~ Dunedin City Council ~~would~~ will assess provision~~s~~ for access, parking and manoeuvring upon receipt of an Outline Plan of Works application.

Smooth Hill Landfill

DRAFT Landfill Management Plan
Prepared for Dunedin City Council

29 April 2022



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1.0 Introduction

1.1 Purpose

This draft Landfill Management Plan (LMP) framework has been prepared to support the construction, operation, closure, and aftercare of the Smooth Hill Landfill. The LMP documents the site-specific procedures including monitoring and contingency actions to be implemented ensure the landfill achieves the operational and environmental objectives and conditions set out in the resource consents, to ensure the potential for adverse environmental effects is minimised.

1.2 LMP Requirements

The resource consents issued by ORC require that the detailed design, construction, and operation of the landfill shall be in accordance with the provisions of a LMP, developed in consultation with Te Rūnanga o Ōtākou. The LMP is required to be provided to ORC for approval at least three months prior to construction commencing.

The LMP is required to include procedures, including monitoring and contingency actions, to ensure the detailed design, construction, operation, and aftercare of the landfill achieves the operational and environmental objectives and conditions set out in the resource consents.

The LMP objectives are set out in the resource consents issued for the construction and operation of the Smooth Hill Landfill and are incorporated in the relevant management sections of this LMP. The objectives guide the development of the procedures of the plan and provide the basis against which the success of the plan in minimising environmental effects is to be measured.

The landfill is to be operated at all times in accordance with the provisions of the current LMP.

The LMP is required to be reviewed annually in consultation with Te Rūnanga o Ōtākou to ensure that management practices result in compliance with the conditions of these consents, however, may also be revised at other times if required. Any proposed revisions are to be provided to the ORC for prior approval.

1.3 LMP Structure

This LMP has been structured as follows:

- **Section 1.0 – Introduction (this section)** – The plan purpose; requirements, structure; schedule of resource consents held and designation; relevant documents and guidelines; and procedures for plan review.

1. **Section 2 – Site Management** – Description of the site; landfill management roles and responsibilities; training requirements for specialist roles; health and safety requirements; and procedures for communication with the community and receiving and responding to complaints.
2. **Section 3 – Landfill Development** – General description of the design; and the parameters and procedures for detailed design and construction of the landfill that achieves the LMP objectives, and resource consent conditions. This section applies to

both initial site establishment/enabling works and to the progressive extension of landfill stages 1- 4.

3. **Section 4 – Landfill Operation** – Daily procedures for operation of the landfill, including for waste acceptance, that achieves the LMP objectives, and resource consent conditions.
4. **Section 5 – Landfill Closure and Aftercare –** Procedures for site closure, rehabilitation and ongoing aftercare, that achieves the LMP objectives, and resource consent conditions.
5. **Section 6 – Monitoring and Reporting** – Details of the monitoring and reporting requirements that will be undertaken.

Sections 3 – 5 reference and incorporate elements of more detailed bird management, ecological, fire, and landscape management plans attached as appendices to the LMP. Those plans form part of the overall suite of procedures for the management of landfill in this LMP.

Standard terms used in this LMP are defined in the glossary in **Appendix 7**.

1.4 Resource Consents and Designation

The construction, operation, closure, and aftercare of the Smooth Hill Landfill is authorised under the Resource Management Act 1991, by way of resource consents issued by ORC and DCC, and the site's designation in the Proposed Second Generation Dunedin City District Plan (2GP).

Dunedin City Council holds the resource consents from ORC and DCC set out in **Table 1** for the landfill and road upgrades supporting the landfill operation. The resource consents for the landfill, and road upgrades were granted by ORC on the [insert date] and expire on [insert date]. The resource consent for the road upgrade was granted by DCC on the [insert date]. Copies of all the resource consents are included in **Appendix 8**.

Table 1 – Smooth Hill Resource Consents

[Content to be included following issuing of consents]

Consent Type	Consent Reference	Description

The Smooth Hill Landfill site is designated (reference D659) for *'Proposed landfilling and associated refuse processing operations and activities'* in the 2GP. The designation has a lapse date of 2058 (unless given effect to prior to that date). The extent of the designation is shown in **Figure 1**. The designation, is subject to the following three conditions:

1. *This designation shall lapse on the 40th anniversary of the date on which this designation becomes operative.*

2. *A landscape plan showing proposed initial planting, final landform and final planting shall be prepared by the Requiring Authority under the direction of a qualified landscape architect prior to the commencement of landfilling operations. Development of the site shall be in accordance with this landscape plan.*

3. *Noise generated by any activity on the site shall comply with the following standards within 50 metres of the nearest house existing at the date on which the designation becomes operative - 55Dt/40Nt dBA. (NB These levels are subject to an adjustment of minus 5dBA for noise emissions having special audible characteristics).*

The designation of the land means that, development and operation of the underlying land for a landfill is therefore enabled, subject to the requirement under section 176A of the RMA to submit an outline plan of works to the DCC, as consenting authority.

1.5 Related Documents

In addition to this LMP, the documents set out in **Table 2** below include other requirements for the development and operation of the Smooth Hill Landfill.

Table 1 – Related Documents

[Content to be finalised following issuing of consents]

Title	Author	Date	Comments
Resource consents	ORC	[insert date]	
Health and safety plan	DCC	[insert date]	

1.6 Best Practice Guidelines

The best practice guidelines set out in **Table 3** below have been used in preparing this LMP.

Table 3 – Best Practice Guidelines

[Content to be finalised following issuing of consents and as part of detailed design]

Guideline	Author	Date
Technical Guidelines for Disposal to Land	Waste Management Institute of New Zealand (WasteMINZ)	August 2018.
Module 2 – Hazardous Waste Guidelines: Landfill Waste Acceptance Criteria and Landfill Classification.	Ministry for the Environment	May 2004.
GD05 – Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region	Auckland Council	June 2016

Erosion and Sediment Control Toolbox	Environment Canterbury	
Erosion and Sediment Control Guideline, R12/14.	Environment Canterbury	2007

1.7 LMP Review

The LMP is a living document and is required to be reviewed annually in consultation with Te Rūnanga o Ōtākou to ensure that management practices result in compliance with the conditions of these consents. The LMP may also be revised at other times outside of annual reviews, if required.

The reviews will also respond as necessary to changes in waste demands, best practice design and management, regulatory requirements, and any environmental changes.

DCC, as consent holder, is the owner of the master copy of the LMP and shall be responsible for reviews and updates to the plan.

1.8 Document History

The version history of the LMP is set out in in **Table 4** below.

Table 4 – Document Version History

[Content to be finalised following issuing of consents]

Revision	Prepared by	Date Approved by ORC	Copies of LMP held by
Rev 1, dated [insert date]	Boffa Miskell Ltd and GHD Ltd	[insert date]	ORC, DCC

2.0 Site Management

2.1 Site Description

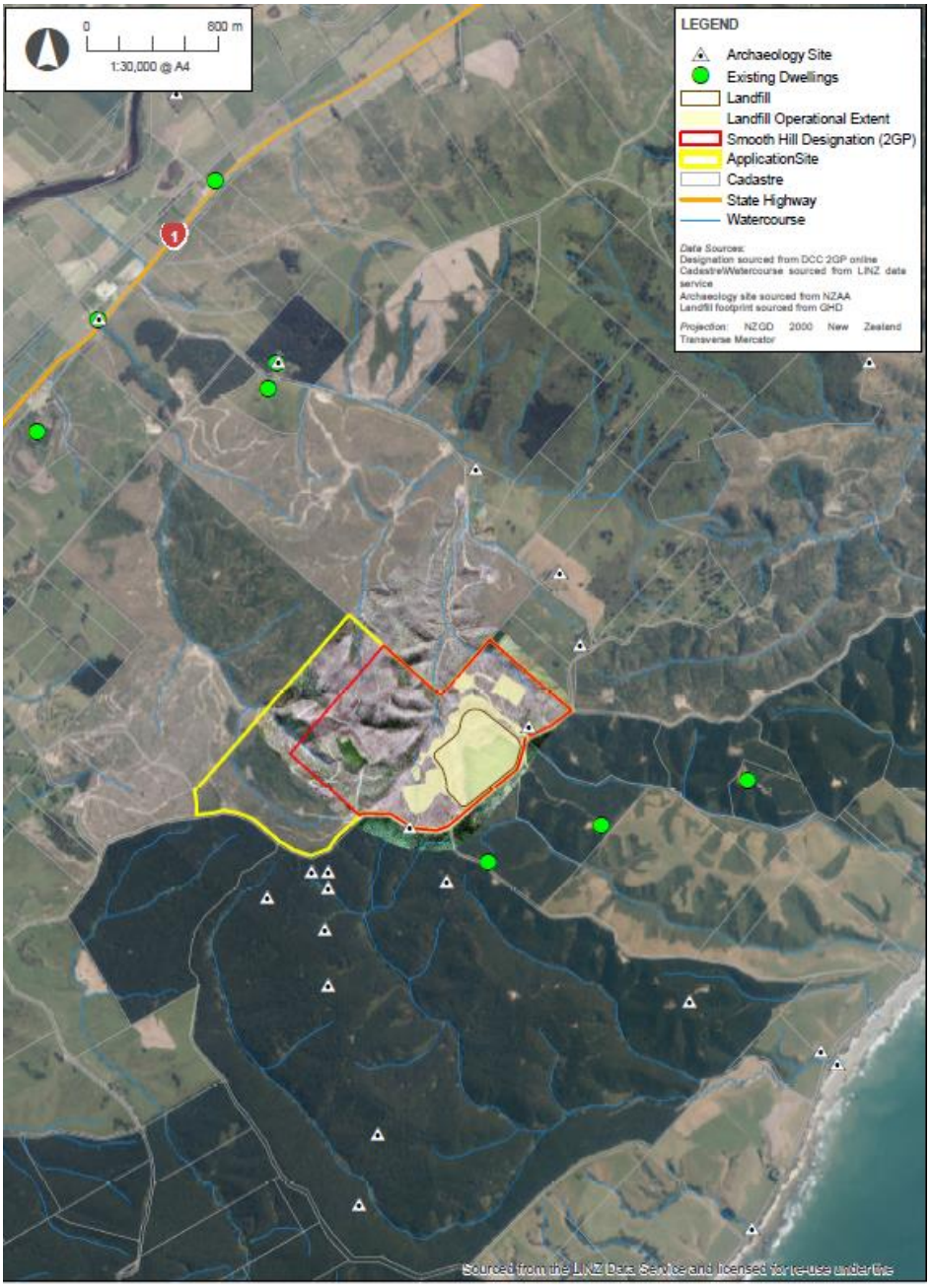
The Smooth Hill Landfill site is located approximately 28 km southwest of Dunedin in the hills between the Taieri Basin and the South Island east coast. Access to the site is primarily from State Highway 1 (SH1), McLaren Gully Road and Big Stone Road to a vehicle entrance located on the south eastern boundary of the site.

The site is legally described in **Table 5** and outlined in **Figure 1** below. This also shows the extent of the 2GP designation (reference D659) over the site.

Table 5 – Smooth Hill Landfill Site Legal Description

Address	Legal Description	Area	Owner
750 Big Stone Road	Part Lot 1 DP 457417, and Section 1 – 2 SO Plan 547235 (RT 971405)	118.8517 ha	Dunedin City Council
700 Big Stone Road	Lot 2 DP 457417 (RT 598006)	58.9603 ha	

Figure 1 – Smooth Hill Landfill Site



The site contains the following key environmental features, which are further described in the sections of the LMP where they relate to management of the development and operation of the landfill.

2.1.1 Surface Freshwater Systems

The landfill is situated within the McColl Creek catchment. A branch of the Ōtokia Creek originates within the landfill site, that ultimately flows to the coast near Brighton, approximately 10 km north-east of the landfill site. A series of south to north ephemeral watercourses pass through the site, that contain flowing water after persistent rainfall. The watercourses merge at the northern edge of the site forming a swamp wetland habitat.

The swamp wetland connects via a defined channel to a tributary of the Ōtokia Creek beyond the northern boundary of the site that is perennial or likely to have surface water present all or most of the year. During dry periods, surface water flow ceases as far downstream as at least the culvert, and surface water retreats to occasional isolated pools where water is impounded. The tributary flows approximately 1km downstream where it ultimately reaches a culvert beneath McLaren Gully Road. The tributary and valley floor forms part of a valley floor marsh wetland system. Beyond McLaren Gully Road, the tributary ultimately joins the main stem of the Ōtokia Creek.

2.1.2 Water Quality

Existing ground and surface water quality downstream of the landfill site is influenced by landform, soils vegetation cover, and cycles of forestry land use. During the harvest/replanting cycle of the forestry land use, the removal of the vegetative cover and the associated soil disturbance results in increased runoff and erosion of the surface soils with associated impacts on water quality downstream. As a result, there can be a significant variation in the water quality and runoff volumes from the catchment over time as forestry is cleared, replanted, and grows to maturity.

Baseline sampling of groundwater and surface water quality has been undertaken in accordance with the ORC resource consent conditions, for the purposes of setting trigger levels for monitoring to detect leachate leakage effects on groundwater, and leachate, suspended solids and turbidity on surface water quality.

[Content to be finalised following issuing of consents and completion of baseline water quality monitoring as per consent conditions].

2.1.3 Groundwater Systems

The landfill site is underlain by shallow and deep groundwater systems separated by an intermittent fine-grained low permeability layer within the Henley Breccia formation. The system receives recharge directly from rainfall, as well as from surface runoff and seepage from surface soil layers.

The shallow groundwater system is located within the bottom of the gullies of the site. Groundwater flows in the shallow system follow topography north towards the valley floor. Shallow groundwater levels are near the surface in the valley bottom, and the shallow system contributes baseflow to the perennial valley floor marsh wetland system and downstream Ōtokia Creek.

The deep groundwater system is located within the Henley Breccia. Some minor rainfall recharge, and seepage from the shallow system occurs, however it is constrained by low permeability materials. The deep groundwater system has very low permeability due to the presence of unweathered to slightly weathered breccia and conglomerate units. Horizontal groundwater gradients are relatively flat, with an inferred flow direction towards the coast southeast of the site.

2.1.4 Terrestrial and Freshwater Ecology

Vegetation types within the landfill site range from highly modified plantation forestry areas of negligible ecological value, to degraded wetland habitats of moderate ecological value and regenerating / secondary indigenous forest habitat of high ecological value. With the exception of kānuka, no *at-risk*, *threatened*, or locally uncommon or important plant species have been found on the landfill site.

The site provides habitat for a range of avifauna, including 14 native and 8 exotic bird species. Overall, the avifauna community assemblage at the site is characterised by an abundance and diversity of passerines and occasional harrier hawks, black-backed gulls, magpies and ducks. The most abundant native birds are tui and harrier hawk. Eastern falcon which have an *at-risk* classification have been recorded on the site. No *threatened* species have been recorded.

The site consists of variable, low to high quality habitat for native lizards, and a potential population of southern grass skinks is likely to be present. No *threatened* lizard species have been recorded on the landfill site.

The tributary of the Ōtokia Creek beyond the northern boundary of the landfill site contains habitat suitable for fish species. The New Zealand Freshwater Fish Database records show the Ōtokia Creek supports indigenous fish species including koaro, banded kokopu, longfin eel, and giant kokopu and inanga in the lower catchment. However, it is likely that the tributary between the designation site and McLaren Gully Road provides limited habitat for freshwater fish species other than eels.

2.1.5 Cultural and Historic Values

Kāi Tahu whānui, represented by Kā Papatipu Rūnaka and Te Rūnanga o Ngāi Tahu, comprise people of Kāi Tahu, Ngāti Māmoe and Waitaha descent, who hold mana whenua over an area that includes the entire Otago region. Te Rūnanga o Ōtākou have mana in the project area.

Smooth Hill is part of a wider cultural landscape which is imbued with the lived experiences of mana whenua tūpuna. These experiences and the values passed down through the generations inform mana whenua and Kāi Tahu Whānui identity, cultural practices and approaches to environmental management. Mana, mauri and whakapapa are core values which underpin the Kāi Tahu worldview with respect to this project. These values are interconnected and the degradation of one value can affect other values.

Two archaeological sites (NZAA references I45/71 and 145/72) that contain the remains of two European pre-1900 buildings exist along the Big Stone Road frontage of the landfill site.

2.16 Surrounding Land Use

The land use surrounding the landfill site predominately consists of commercial plantation forestry on large landholdings. Some localised areas of pastoral farming exist, notably adjacent to the sites north eastern boundary, and land at the bottom end of McLaren Gully Road.

Two houses are located along McLaren Gully, approximately 1km from the SH1 intersection, and approximately 1.7km from the landfill site.

Two further houses are located in the hills between Big Stone Road and the coast, approximately 380m and 605m southeast of the landfill site respectively. Other houses are located at distances beyond 1km along Big Stone Road in the direction of Brighton.

Dunedin International Airport is situated 4.5km to the northwest of the landfill site on the Taieri Plain.

2.2 Roles and Responsibilities

DCC is both the owner of the Smooth Hill Landfill site, and the holder of all associated resource consents. DCC has responsibility for compliance with the resource consents, and designation requirements.

Specific roles and responsibilities that will be held for the construction and operation of the landfill are as follows:

- Landfill manager
- Landfill site supervisor
- Environmental manager
- Bird control officer
- Landfill gas systems manager
- Waste acceptance and compliance manager
- Communication/complaints manager

The organisational structure is shown in **Figure 2**.

Figure 2 – Organisational Structure

[Content will be finalised following the issuing of consents and as part of detailed design, and in collaboration with future landfill operator]

2.3 Staffing and Training

Objective:

1. Appropriately trained staff are retained to operate the landfill in a safe and effective manner.

Procedures

The following staff and training procedures will be implemented during the construction and operation of the landfill:

a. Responsibilities are to be assigned for the training of staff on the contents of this LMP together with regular compliance monitoring.

b. Staff who inspect or direct the placement of incoming wastes are to be trained to identify wastes that are unacceptable or require special handling procedures (including, for example, identifying potentially odorous or unexpected highly odorous deliveries). These staff include weighbridge attendants, tip face supervisors, and equipment operators.

c. Environmental staff are to be familiar with the procedures and monitoring requirements relating to surface water, groundwater, air emissions, vegetation restoration, bird management, falcon / kārearea management, lizard management, plant and animal pest management, and emergency responses should there be any breaches.

d. Operators of plant and equipment are to be trained to undertake the tasks required of them and to operate the machinery assigned to them. A summary of training of operators it be maintained to readily identify what staff can use what machinery.

e. All staff are to be familiar with the landfill facilities, operational procedures, site hazards, health and safety procedures, and environmental requirements.

f. All staff are to be familiar with site emergency procedures.

[Content will be finalised following the issuing of consents and as part of detailed design, and in collaboration with future landfill operator]

2.4 Health and Safety

Objectives

1. The landfill is constructed and operated in way that prevents harm to self, other workers and the public and meets obligations under Health and Safety regulations.

Procedures

The following health and safety procedures will be implemented during the construction and operation of the landfill:

a. A site-specific Health and Safety Plan will be prepared and implemented to meet obligations under the Health and Safety at Work Act 2015.

b. All site and operational hazards and risks are to be identified, assessed and eliminated where possible.

c. Responsibilities are to be assigned for the management of health and safety and training of staff together with regular compliance monitoring.

d. All site staff are to be aware of all the risks and be trained to manage those risks or be prohibited from entering the risk zone.

e. Staff that may be in contact with hazardous chemicals, dust or biological contaminants are to be provided with appropriate PPE and inoculations.

f. All staff, contractors, and visitors are to be inducted to advise the hazards on site and where they may or may not have access. All contractors and visitors are to be accompanied unless trained to manage the identified risks.

[Content will be finalised following the issuing of consents and as part of detailed design, and in collaboration with future landfill operator]

2.5 Communication and Complaints

2.5.1 Communications

Objective

1. Members of the public can contact the landfill operator at all times in relation to the construction and operation of the landfill, and in the case of emergency.

Procedures

The following communications procedures will be implemented during the construction and operation of the landfill:

a. The [Landfill Operator Role 1] will be the primary point of contact for all emergencies.

b. The [Landfill Operator Role 2] will be the primary point of contact for all enquiries. In the event that [Landfill Operator Role 2] is not available, the [Landfill Operator Role 3] shall be the point of contact.

c. [Landfill Operator Name] will ensure that contact details for [Landfill Operator Roles 1, 2 & 3] are made available on the Dunedin City Council, and [Landfill Operator Name] websites, and posted on signage at the site entrance to the landfill.

[Content will be finalised following the issuing of consents and as part of detailed design, and in collaboration with future landfill operator]

2.5.2 Complaints Management

Overview

Complaints may be received from customers, neighbours, the DCC service desk, or the wider community. Issues that could lead to complaints include:

a. Dust, noise, odour, litter and visual impacts.

b. Traffic impacts.

c. Birds, vermin, rabbits, wild cats, rodents and flies.

[Landfill Operator Name] will seek to manage and operate the landfill in a manner that ensures that the facility is a good neighbour.

Objective

1. All complaints received in relation to the landfill are investigated and responded to promptly, including investigations into whether any improvements to the operations of the landfill should be made.

Procedures

The following complaints management procedures will be implemented during the construction and operation of the landfill.

Complaints will be managed in the following way:

a. A complaints management system will be established prior to the commencement of construction of the landfill. This shall include the preparation of a Complaints Log that captures the following information:
    i. Type, date, and time of complaint.
    ii. Name and address of complainant (if available).
    iii. Location from which the complaint arose.
    iv. Wind direction and general weather conditions at the time of complaint (if relevant)
    v. The likely cause of the complaint.
    vi. The action taken as a result of the complaint.
    vii. The feedback to the complainant.
b. If a complaint is received, the landfill operator shall ensure that it is recorded in the Complaints Log.
c. Complaints will be forwarded to the [Landfill Operator Role 1] for prompt attention, or to the [Landfill Operator Role 2] in the absence of the [Landfill Operator Role 1].
d. Each complaint shall be investigated as soon as possible and shall take the form of a telephone conversation with the complainant in the first instance.
e. If appropriate, a visit to the complainant's location shall be made as soon as possible after the complaint is received so that an assessment of the conditions to which the complaint relates can be made.
f. In the case of complaints that relate to odour, investigations shall:
    i. Determine the contributing factors to the issue; and
    ii. Identify improvements to odour control procedures.
g. All dealings with the complainant shall be undertaken in a courteous and professional manner.
h. Corrective actions are implemented as required and the LMP is updated to accommodate such corrective actions.
i. The complaints management system outlined above shall be maintained for the duration of the life of the landfill (subject to any improvements that may arise as a result of the annual review of the LMP).

[Content will be finalised following the issuing of consents and as part of detailed design, and in collaboration with future landfill operator]

3.0 Landfill Development

[This section of the LMP will ultimately set out parameters that will guide detailed design, and construction management procedures. The section will be finalised during the detailed design phase.

This section applies to both initial site establishment/enabling works and to the progressive extension of landfill stages. The information presented below is consistent with the design intent and principles of the conceptual landfill design.

Whilst the conceptual design describes the overall landfill development to a reasonable degree of detail (sufficient to support resource consent applications), fuller details of construction management requirements and procedures will only be defined during and following detailed design phases of the project.

At the current concept design level, it is important to maintain the opportunity to incorporate the widest available range of future design improvements and innovations]

3.1 General Description of Design

[This section of the LMP will provide a brief description of the detailed design of the landfill. It will provide details about the landfill's capacity, its projected life and staging. A schedule of approved concept design drawings and documents will also be included].

[The following placeholder content is based on the concept design used to support the resource consent application. Content will be finalised following the issuing of consents and as part of detailed design, and in collaboration with future landfill operator]

The Smooth Hill landfill has been designed as a Class 1 landfill for the disposal of municipal solid waste and hazardous wastes. The general arrangement of the landfill design is shown in **Figure 1** below**.**

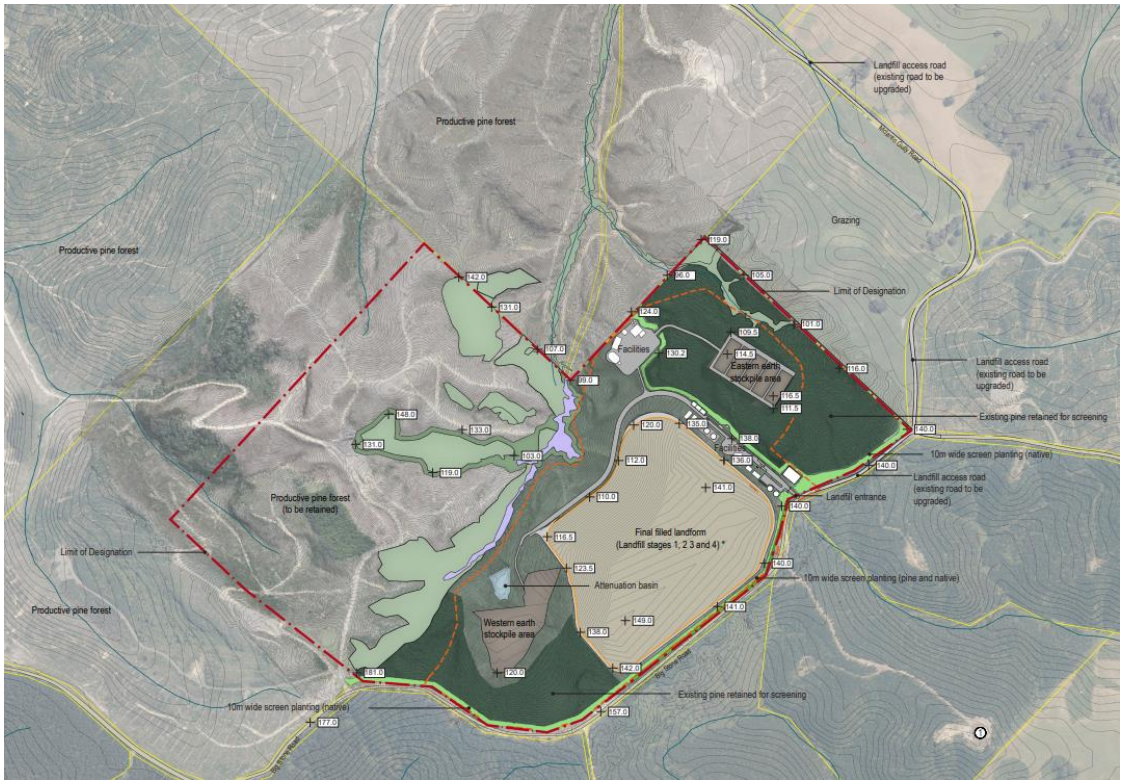
Construction, filling, and final capping of the completed landfill will occur progressively in four stages supported by a 10m high toe embankment. Stage 1 involves filling behind the toe embankment. Stages 2 to 4 will then progress in a clockwise fashion from northeast, the south and then west filling over Stage 1 and buttressed against the surrounding gully.

Each stage will in turn be developed and filled sequentially in a number of sub-stages. As filling of each stage progresses, incoming waste will first be covered with daily cover, followed by placement of intermediate cover, and then the final cap.

The landfill will have a total waste volume of approximately 2.94 M cubic metres, which is equivalent to approximately 2.35 M tonnes of refuse.

Initial construction activities occur prior to the landfill accepting its first waste. It is anticipated that these activities will take place over at least two construction seasons prior to the landfill accepting waste.

Figure 1 – Smooth Hill Landfill General Arrangement



Initial construction activities will include:

- Upgrades to McLaren Gully Road, including its intersection with State Highway 1, and Big Stone Road.
- Initial site clearance.
- Construction of landfill site access and access between the facilities areas and soil stockpile areas, and the perimeter access track.
- Landfill facilities.
- Landfill toe embankment, stormwater attenuation basin, and the sediment control measures and the section of the landfill perimeter drain serving the upper facilities area, and stage 1.
- Formation of the base grade, groundwater collection, low permeability liner system, and leachate collection systems for stage 1.
- Perimeter planting for all stages and required ecological mitigation/offset planting.
- Landfill environmental monitoring systems, including groundwater/LFG wells.
- LFG collection and destruction system to coincide with the timing for placement of 200,000 tonnes of waste in the landfill – approximately 3 – 4 years after commencement of landfilling.

3.2 Landfill Formation

Objectives

1. Optimally utilise the designated land for the disposal of waste.
2. Seismic risks and risks of slope failure for the landfill are minimised.
3. The landfill base grade, toe embankment, and completed surface slopes are stable during landfill development and in the long-term.

Procedures

The following landfill formation procedures will be implemented during the detailed design and construction of the landfill. “Landfill formation” in the context of this section relates to all matters relating to construction of the landfill to ensure its short- and long-term stability.

[Content to be drafted following issuing of consents, as part of detailed design and in collaboration with future landfill operator. All procedures will reflect the relevant land stability requirements of the final conditions of consent]

3.3 Leachate Containment and Management

Overview

Leachate is the liquid produced through waste degradation and rainwater that percolates through the waste to the landfill liner, collecting dissolved and/or suspended matter from the waste as it passes through.

Objectives

1. Leachate is managed and contained within the landfill footprint through the use of a high-performance landfill liner, and ~~provision of an on-site~~ leachate collection and storage system, ~~to limit/reduce any risk of~~ that minimises migration into the underlying soil, groundwater, and surface water.
2. Leachate transport occurs with an incident contingency plan which meets the Ministry of the Environment Code of Practice for Transport of Hazardous and Liquid Waste.
3. ~~2.~~ Safe disposal of leachate off-site.
4. ~~3.~~ The risks of excessive liner hydration are minimised.
5. ~~4.~~ The ingress of stormwater into open and closed sections of the landfill are minimised to avoid excessive leachate generation.

Procedures

The following leachate containment and management procedures will be implemented during the detailed design and construction of the landfill:

[Content to be included following issuing of consents and as part of detailed design, and in collaboration with a future landfill operator, however, will include:

a. Procedures the reflect the relevant leachate containment and management requirements of the final conditions of consent.

b. A low permeability liner system placed on the landfill base grade will be constructed progressively as the landfill stages are developed to contain leachate within the landfill and prevent it from entering the underlying soils or groundwater. In accordance with WasteMINZ guidelines, the liner will meet Type 1 or Type 2 as required for Class 1 landfills.

c. A stormwater management system that enables monitoring of stormwater from areas of intermediate cover or final cover and provides the ability to redirect any contaminated surface water to the leachate system if found to be contaminated.

d. A leachate collection system at the base of the landfill from where it will be removed off site for treatment and disposal.

e. Design and installation of an appropriate groundwater and surface water monitoring network to confirm the effectiveness of the system, including monitoring wells outside the waste boundary]

3.4 Landfill Gas Collection and Management

Overview

LFG is a complex mixture of different gases produced predominantly from anaerobic degradation of biodegradable waste materials deposited within landfill sites. The emission rate and chemical composition of LFG varies depending on many factors including waste type, time, moisture content, temperature, etc. Fugitive or pathway specific LFG emissions can occur and can pose safety and environmental risks if not adequately managed.

LFG collection and destruction is required by the National Environmental Standards for Air Quality (NES Air Quality) Regulations 2004 for landfills designed to contain more than 1,000,000 tonnes of waste, in which the systems must be in operation before 200,000 tonnes of waste is placed. Based on the predicted waste stream of 60,000 tonnes per annum, it is anticipated that the gas collection and flaring system will need to be operable in the fourth year of waste disposal to meet these standards.

Objectives

1. Contain, capture, and control LFG through the progressive installation and operation of a landfill gas collection system in the ~~active landfill areas and~~landfilled waste ~~destruction of gas captured~~.

2. The destruction of recovered landfill gas by flaring

~~2.~~3. Comply with the LFG related requirements of the NES Air Quality ~~NES~~ and recommendations of the WasteMINZ Guidelines and the Ambient Air Quality Guidelines.

4. The escape of fugitive landfill gas is minimised.

~~3.~~5. Ensure the health and safety of people on and beyond the site who may be at risk of being exposed to LFG emissions by addressing the prioritised risks identified by the LFGRA~~preliminary LFG Risk Assessment~~.

Procedures

The following landfill gas procedures will be implemented during the detailed design and construction of the landfill:

[Content to be included following issuing of consents and as part of detailed design, and in collaboration with a future landfill operator, however, will include:

a. Procedures that reflect the relevant landfill gas containment and management requirements of the final conditions of consent.

b. Progressive installation and appropriate construction quality assurance (CQA) of a low permeability basal and sidewall lining system which will reduce the likelihood of subsurface LFG emissions beyond the landfill liner system (either on site or off site).

c. Progressive installation of an active LFG collection, treatment and destruction system (i.e. gas extraction wells, pipework, manifolds, flares and/or engines) that is suitable for the quantity and quality of LFG emitted by the site as landfill development progresses.

d. Installation of a destruction system using flaring (with the possible future generation of electricity once LFG quantities are sufficient).

e. Design and installation of an appropriate LFG monitoring network to confirm the effectiveness of the system, including LFG monitoring boreholes/wells outside the waste boundary.

f. Buildings and structures on-site (but outside the landfill footprint) will be designed and constructed to minimise the risk of LFG entry and accumulation.

g. Subsurface services on-site will be designed and constructed in accordance with relevant standards in relation to LFG as applicable (e.g. AS/NZS 2381.1.1:2005).

3.5 Stormwater Management and Sediment and Erosion Control

Objectives

1. Land disturbance activities are to be undertaken in a manner that minimises sediment generation.
2. Sediment runoff from the site is effectively controlled so that the site does not contribute a disproportionate sediment load downstream in comparison to the catchment above McLaren Gully Road.
3. Ensure ~~i~~nfrastructure failure or damage, including that caused by extreme events such as weather and earthquakes, are promptly detected and remedied to ensure its operation, and to protect the receiving environment.

Stormwater and Erosion and Sediment Control Procedures

The following stormwater and erosion and sediment control procedures will be implemented during the detailed design and construction of the landfill:

[Content to be drafted following issuing of consents, as part of detailed design and in collaboration with future landfill operator, however, is expected to include:

a. Procedures which reflect the relevant stormwater and erosion and sediment control requirements of the final conditions of consent.

b. Preparation of a site-specific Water Management Plan (WMP) for the entire landfill catchment, and includes:

   i. Early attenuation basin and perimeter swale drain development, to ensure these principal runoff diversion features are installed from the outset.

   ii. Installation of Sediment Retention Ponds (SRPs), specifically designed to serve specific areas of the development (such as temporary stockpiling areas).

   iii. Toe bund construction methods that ensure runoff predominantly occurs into the site and into stormwater control features and prevents uncontrolled runoff to the downstream receiving environment.

   iv. Appropriate diversion of stormwater runoff is achieved around active earthworks and construction areas (during enabling/establishment phases).

   v. Exposed soil surfaces will be minimised and will be protected by diversion/cut-off drains to reduce runoff over them, including temporary measures where practicable to minimise the transport of sediment from earthworks areas. Disturbed areas shall be stabilised with vegetation cover or by other means as soon as practicable.

   vi. Suitable conveyance systems (channels, pipes, culverts) are in place to carry the stormwater to suitable treatment devices to remove any entrained sediment. These systems may comprise permanent systems (e.g. perimeter channels) or temporary systems as each stage is developed.

a. Adequate treatment systems are in place to remove sediment from stormwater at all stages of development and operation of the landfill.

b. Preparation of site-specific erosion and sediment control plan (ESCP) for each construction catchment which sit under the WMP and includes -

   i. design and construction of surface water drainage channels and discharge structures that ensure sufficient sediment settlement capacity and scour protection.

   ii. use of best practice soil stabilisation and sediment control measures to control discharges at source, such as silt fences, temporary diversion/contour swales, grassing, hydroseeding, protective matting etc.

   iii. Stage area limitation: Excavation will be carried out on an “as required” basis to limit the footprint of soil disturbance at any one time and following excavation, surfaces will be protected as soon as possible.

   iv. Localised control measures such as the use of filter socks or temporary silt dams in channels while works are under construction and there is potential for elevated sediment concentrations in runoff.

   v. Regular surface water monitoring will be undertaken during construction to confirm and optimise sediment management efficacy.

3.6 Groundwater Management

Objectives

1. Control groundwater beneath the landfill liner through the installation and operation of a groundwater collection system.

Procedures

The following groundwater management procedures will be implemented during the detailed design and construction of the landfill:

[Content to be drafted following issuing of consents, as part of detailed design and in collaboration with future landfill operator, however, is expected to include:

a. Procedures which reflect the relevant groundwater management requirements of the final conditions of consent.

b. Design and installation of a network of subsoil drains beneath the lining system to alleviate groundwater pressures and provide sub-liner drainage protection for all stages of the landfill development.

c. Installation of a collection manhole fitted with a submersible pump to extract water for storage at the non-potable water supply reservoir located at the facilities area. The groundwater collection manhole will be otherwise be designed to discharge groundwater to the Ōtokia Creek catchment. In the event that unacceptable changes in groundwater quality are identified the pump will allow groundwater to be redirected for treatment as leachate.

d. Design and installation of an appropriate groundwater monitoring system]

3.7 Landfill Access

Objectives

1. Provide safe all weather access to the site.
2. Prevent unauthorised site access.
3. ~~Traffic impacts and disruption to surrounding residents, neighbours, landowners, and road users are minimised.~~Traffic to, from, and within the landfill site is managed to minimise disruption on the surrounding transport network, residents, neighbours, landowners and road users as much as practicable.
4. ~~3.~~Ensure heavy vehicles associated with the landfill use the State Highway 1 – McLaren Gully Road – Big Stone Road route, unless a hazard is present on this route which renders it inoperable.

Procedures

The following landfill access procedures will be implemented during the detailed design and construction of the landfill:

[Content to be drafted following issuing of consents, as part of detailed design and in collaboration with future landfill operator, however us expected to include:

a. Procedures which reflect the relevant access requirements of the final conditions of consent.

b. The site entrance and internal site access/haul roads linking the critical enabling works platforms (attenuation basin, toe embankment, stockpile areas and support facilities) will be formed in a logical sequence and as a site establishment priority.

c. An access track will be constructed around the landfill perimeter to provide 4-wheel drive access to the perimeter of the landfill for fence and swale drain construction and monitoring and maintenance purposes.

d. Perimeter security fencing, security gate controls and signage will be installed as a component of site establishment.

3.8 Construction Management

3.8.1 Supervision

Objectives

1. The construction of the landfill is supervised by a suitably qualified chartered professional engineer (CPE).

Procedures

The following supervision procedures will be implemented during the detailed design and construction of the landfill:

[Content to be drafted following issuing of consents, as part of detailed design and in collaboration with future landfill operator. All procedures will reflect the relevant supervision requirements of the final conditions of consent]

3.8.2 Construction Standards and Quality Assurance

Objectives

1. Landfill design and construction activities are undertaken in accordance with applicable New Zealand Standards relating to landfill construction (including geotechnical, lining system and drainage standards).

2. Earthwork materials ~~will be~~are placed as controlled engineered fill placed in accordance with good earthworks practices and under strict quality construction control and assurance procedures.

3. Landfill elements (liner, cover, leachate, and LFG systems) will be designed and constructed to at least the minimum thicknesses and standards recommended in WasteMINZ guidance for a Class 1 landfill facility.

Procedures

The following construction standards and quality control procedures will be implemented during the detailed design and construction of the landfill:

[Content to be included following issuing of consents and as part of detailed design, and in collaboration with future landfill operator. All procedures will reflect the relevant construction standard and quality assurance requirements of the final conditions of consent]

3.8.3 Construction Hours

Objectives

1. Hours of construction of the landfill are managed to minimise ~~the level and duration of~~ disruption to neighbours in the surrounding area.

Procedures

The following construction hours procedures will be implemented during the construction of the landfill:

[Content to be included following issuing of consents and as part of detailed design, and in collaboration with a future landfill operator, however, will include:

a. Working hours during construction are to be limited to between 7:00 AM and 7:00 PM]

3.8.4 Archaeology

Objective

1. The construction of the landfill is managed to ensure that known and unknown archaeological values are retained where possible, or otherwise appropriately recorded.

Procedures

The following archaeology procedures will be implemented during the construction of the landfill:

[Content to be included following issuing of consents and as part of detailed design, and in collaboration with a future landfill operator, however, will include:

a. Procedures which reflect the archaeology requirements of the final conditions of consent

b. Undertaking a baseline survey and periodic monitoring of archaeological sites I45/71 and I45/72 prior to the commencement of construction.

c. Constructing temporary site fencing around the standing structures at archaeological sites I45/71 and I45/72 to prevent inadvertent collisions with the standing structures, and to prevent unnecessary access.

d. Preservation of the standing structures at archaeological sites I45/71 and I45/72 as ruins.

e. An archaeological authority under Section 44 of the HNZPTA 2014 is obtained from the HNZPT prior to any modification of an archaeological site]

3.8.5 Dust Management

Objectives

1. ~~Dust is controlled during the construction of the landfill to minimise the potential for off-site dust emissions as far as practicable~~.

2. Control dust so that there is no particulate matter that causes an objectionable effect at ~~any building used for residential activity in existence at the date consent is granted~~or beyond the boundary of the site.

3. Adequate water supply for dust suppression is maintained.

Procedures

The main activities that can lead to the generation of dust during the construction phase are:

- Earthworks for construction of the facilities areas, vehicle access, toe embankment, attenuation basin, and perimeter drainage.
- Earthworks associated with the construction of landfill cells.
- Vehicle movements on unpaved surfaces.
- Stockpiling of fill or aggregate.

Further construction will occur periodically during the operation of the site as project stages are developed with most of the activities outlined immediately above being undertaken within the landfill operational area.

The following dust management procedures will be implemented during construction of the landfill:

a. Visual dust inspections will be carried out on a regular basis throughout the day.

b. Watercarts or fixed sprinklers will be used to control dust generated from haul roads.

c. Where visual inspections find instances of dust leaving the boundary of the site, the intensity of dust control measures should be increased, including increasing dust suppression (watering) rate.

d. During high-wind speeds (wind speeds above 5 m/s) delay/reduce rate of works and/or further increase the rate of watering. Data collected by the on-site AWS will be used to inform site staff if wind speeds are above 5 m/s.

e. Establish vehicle speed limits (typically less than 15 km/hour) to reduce wheel generated dust emissions.

f. Where practicable, those parts of the site that are paved should be kept clean and free from waste and dust through regular sweeping and/or hosing down.

g. Controlling dust from any excavation by placing material directly into trucks where possible.

h. If material being excavated is very dry, using water sprays to increase surface moisture.

i. Where material is placed in temporary stockpiles, use water in dry windy conditions to control the dust potential or cover, if practicable, prior to re-use or long-term storage.

j. Limit the height of uncovered stockpiles to reduce wind entrainment. Stockpiles exceeding 3 m in height have a higher risk of discharging dust.

k. Long term stockpiles should be grassed or covered using other appropriate measures to avoid dust generation.

l. Take account of daily weather forecast wind speed, wind direction and spoil conditions before commencing dust generating activities.

m. Installation of appropriate temporary wheel wash facilities in advance of the permanent wheel wash being available to reduce impacts to local roads.

Content to be finalised following issuing of consents and as part of detailed design, and in collaboration with a future landfill operator]

3.8.6 Traffic Management

Objectives

1. Traffic to, from, and within the landfill site is managed during construction to minimise the ~~level and duration of~~ disruption on the surrounding transport network, residents, neighbours, landowners and road users as much as practicable.

Procedures

The following traffic management procedures will be implemented during the construction of the landfill:

[Content to be included following issuing of consents and as part of detailed design, an in collaboration with a future landfill operator, however, will include:

a. Procedures which reflect the traffic management requirements of the final conditions of consent.

b. Preparation of a Construction Traffic Management Plan (CTMP)]

3.8.7 Noise Management

Objectives

1. ~~Manage noise arising from activities on site to minimise disruption to property owners, neighbours and/or occupiers in the surrounding area.~~Noise from the landfill site complies with the designation conditions and is minimised where practicable.

Procedures

The following noise management procedures will be implemented during construction of the landfill:

[Content to be included following issuing of consents and as part of detailed design, and in collaboration with a future landfill operator, however, will include:

a. Procedures which reflect the noise management requirements of the final conditions of consent

b. Working hours during construction are to be limited to between 7:00 AM and 7:00 PM

c. Construction activities are to be in compliance ~~with condition 3 of the designation.~~with $L_{Aeq(15min)}$ 55 dB between 7am – 7pm at 50 metres from noise sensitive receptors.

d. Equipment is to be selected, maintained and operated to minimise noise emissions and prevent noise sources that could potentially lead to annoyance.

e. Movable equipment involved with the construction of the landfill that typically stays on site for longer period(s) of time are to be fitted with broad band reversing alarms. Note: this provision does not strictly apply to equipment that arrives and departs site on a daily

basis (e.g. delivery vehicles), although installation of broad-band reversing sirens on such visiting equipment is to be encouraged whenever practical as good acoustics practice.

f. Noise minimisation training is to form part of the site-induction program and include procedures for managing noise e.g. prevention of tailgates banging.

g. Methods of bird management that avoid noise-based bird dispersal methods are preferred whenever practicable e.g. anti-roosting strips to prevent birds landing and roosting on structures at the landfill

~~g.~~h. Implementation of a noise monitoring programme which includes specification of noise measuring equipment, measurement duration, recommended weather conditions, required schedule of measurements (e.g. periodic and at the commencement of an activity), location(s) requiring measurement and reporting requirements]

3.8.8 Hazardous Substances

Objectives

1. Ensure best practice management for the handling, storage and disposal of waste and hazardous materials.
2. Any spills of fuels, hazardous substances, or other contaminants are promptly contained and remediated.

Procedures

The following hazardous substances procedures will be implemented during construction of the landfill:

[Content to be included following issuing of consents and as part of detailed design, and in collaboration with a future landfill operator, however, will include:

a. Procedures which reflect the hazardous substances management requirements of the final conditions of consent.

b. Undertake regular maintenance and systematic inspections of plant and equipment, with particular attention to hydrocarbon and other hazardous material storage areas to reduce the likelihood of equipment failure, spills and leaks.

c. In the event of a spill of fuel, hydraulic fluid, or any other potential contaminants, take immediate steps to contain and remove the spilt contaminant. The spilt contaminants and any material used to contain are to be disposed of in an authorised manner]

3.9 Ecological Management

Objectives

~~1. Adverse effects on vegetation, birds, lizards, and aquatic ecological values from construction are minimised.~~

~~2.~~1. Prevent clearance of indigenous vegetation and wetlands, and vehicle and machinery movements in areas of indigenous vegetation and wetlands outside the landfill operational footprint.

2. Disturbance of nesting eastern falcons are avoided or otherwise managed in accordance with an Eastern Falcon Management Plan~~Disturbance of nesting eastern falcons are avoided or minimised~~.

~~3.~~ Effects to lizards during construction are effectively avoided or otherwise managed in accordance with a Lizard Management Plan ~~Areas of suitable lizard habitat within the site are maintained~~.

Procedures

The following ecological procedures will be implemented during the construction of the landfill:

Terrestrial vegetation and wetlands

a. There is to no clearance of indigenous vegetation, earthworks, or landfill operations in West Gullies 1, 2, 3 and 4, the swamp wetland, downstream valley floor marshland and/or intermittent or perennial streams as identified in the *Smooth Hill Ecological Impact Assessment Report, Boffa Miskell, May 2021*.

b. Construction operations are to be undertaken in accordance with the Vegetation Restoration Management Plan (see **Appendix 2**)

c. There is to be no vegetation clearance, earthworks, road widening and vehicle or machinery movements in areas of indigenous vegetation and wetland outside the ultimate footprint of the construction and landfill operation works.

d. Construction equipment is to be clean when entering and leaving the site to prevent the spread and introduction of weeds.

Birds

e. Enabling and construction works (tree felling; vegetation clearance, earthworks and the construction of roads and other infrastructure) within areas identified as potential falcon / kārearea habitat are to be undertaken in accordance with the management actions set out in the Falcon Management Plan (see **Appendix 5**).[1]

Lizards

f. Enabling and construction works shall be undertaken in accordance with the management actions set out in the Lizard Management Plan (see **Appendix 4**). The Lizard Management Plan:

   i. describes the key lizard habitats within the site;

   ii. The potential effects on lizards that may arise; and

   iii. The ways in which the effects can be managed (including the need for lizard salvage and release).

[Content to be finalised following issuing of consents and as part of detailed design, and in collaboration with a future landfill operator]

[1] Areas of potential falcon / karearea habitat are identified in Appendix 2 to the Falcon Management Plan (Appendix 5 to this LMP)

3.10 Landscape Management

Objectives

1. Landscape and visual amenity effects from the landfill are minimised through perimeter planting of appropriate species.

Procedures

The following landscape procedures will be implemented during the construction of the landfill:

[Content to be included following issuing of consents and as part of detailed design, and in collaboration with a future landfill operator, however, will include:

a. Procedures which reflect the landscape requirements of the final conditions of consent.

b. Perimeter landscape planting is to be implemented in accordance with the landscape mitigation plan in **Appendix 3]**

4.0 Landfill Operation

4.1 Access Control

Objectives

1. The landfill site is securely fenced, and gates closed outside of opening hours.

2. Allow only authorised and appropriately site-inducted (or supervised) workers, inspectors or visitors onto the landfill site.

2.3. Ensure heavy vehicles associated with the landfill use the State Highway 1 – McLaren Gully Road – Big Stone Road route, unless a hazard is present on this route which renders it inoperable.

~~3. Provide site security to ensure the safety of all persons on site and all procedural environmental safeguards are maintained.~~

Procedures

The following access control procedures will be implemented during the operation of the landfill:

[Content to be included following issuing of consents and as part of detailed design, and in collaboration with a future landfill operator, however, will include:

1. Implementation of hours of operation.

2. Monitoring and maintenance of security fencing, security gate controls and signage.

3. Prevention of after-hours access via a locked gate at the site entrance.

4. During the hours of operation, access to landfill areas beyond the site entrance is to be via a controlled gate and/or barrier]

4.2 Waste Acceptance

Objectives

1. All landfill users are aware of the Waste Acceptance Criteria and acceptance procedures.
2. All waste received complies with the Waste Acceptance Criteria specified in the consent conditions.
3. Prevent the disposal of hazardous waste that does not comply with the Waste Acceptance Criteria specified in the consent conditions.
4. Accurate records of all waste accepted at the landfill, load inspections, and disposal locations are maintained.
5. All waste being transported to the landfill is securely contained to prevent the escape of solid material or liquid from the vehicle.

Procedures

The following waste acceptance procedures will be implemented during the operation of the landfill:

[Content to be included following issuing of consents and as part of detailed design, and in collaboration with a future landfill operator, however, will include:

Waste Acceptance Criteria

a. Waste acceptance criteria which reflect the relevant requirements of the final conditions of consent.

Pre-approval of waste disposers

b. Waste disposers to complete a formal Waste Disposal Application and submit it to the landfill operator prior to becoming a user of the landfill; or before there is a change to the nature or the mass of the waste being disposed of at the landfill.
c. The landfill operator evaluating Waste Disposal Applications (including pre-assessment testing supplied by the disposer) to determine whether the waste meets the Waste Acceptance Criteria.
d. If a Waste Disposal Application is accepted, confirmation of a Waste Acceptance Agreement by the landfill operator and the disposer of the waste. The agreement will set out the requirements of the disposer in terms of any pre-treatment and landfill access restrictions and rights of the landfill operator to inspect, challenge, sample, test and, if necessary reject waste.
e. Waste will only be accepted at the landfill from disposers who hold a valid Waste Acceptance Agreement confirming the material in the disposer's load meets the waste acceptance criteria for the landfill.
f. Waste disposers will be required to provide evidence of their Waste Acceptance Agreement to the landfill operator at the weighbridge.

Acceptance procedure

g. Trucks arriving at the landfill will be directed to the weighbridge. The landfill operator will check the disposer's Waste Acceptance Agreement and weigh the waste.

h. Any disposer who does not hold a valid Waste Acceptance Agreement will be turned away.

i. Disposers who are transporting loads of dust generating wastes will be required to dampen down these loads prior to delivery to the landfill.

j. Random inspections of incoming loads for the presence of hazardous waste will be undertaken, and records of these inspections will be kept.

k. If a random inspection of a load of incoming waste identifies any unacceptable wastes, the landfill operator shall turn the delivery away, make a record of the waste collection operator; the date; and the type(s) of unacceptable wastes present in the load; and notify the ORC]

4.3 Placing of Refuse

Objectives

~~1. Ensure that the life of the landfill is maximised.~~

~~2.~~1. Placement of waste in the landfill ensures waste and landfill stability.

~~3.~~2. Protection of the landfill liner from waste tipping and compaction activity.

~~4.~~3. A small as practicable working ~~landfill face~~active landfilling area is maintained.

~~5.~~4. Minimise odour, birds, pests and litter.

~~6.~~5. All waste is covered with appropriate daily and intermediate cover material.

Procedures

The following refuse placing procedures will be implemented during the operation of the landfill:

[Content to be included following issuing of consents and as part of detailed design, and in collaboration with a future landfill operator, however, will include:

a. Procedures which reflect the relevant refuse placement requirements of the final conditions of consent.

Staging, cells and the tipping face

b. Operating cells within each stage will be limited to avoid excessive percentages of cover soils to waste.

c. Alternative tipping cells should be available in case of high winds.

d. The landfill operator shall minimise the width of the tipping face.

Placement of waste

e. Waste shall only be placed within the landfill liner extent.

f. Tipping of all waste shall be supervised.

g. If inappropriate loads are identified once they have been tipped from the vehicle, immediate steps will be taken to separate and secure the waste. Contingency plans for identification of the waste and special handling procedures will be implemented immediately.

h. The placement of waste will be managed to ensure that operations do not damage the landfill liner and leachate system

i. Potentially odorous loads will be covered as soon as possible.

j. Dust generating waste will be treated as a special waste. The customer will be required to dampen down the load prior to delivery to site, and specific controls to be implemented at the disposal point e.g. water sprays, waste pit.

k. Waste which has significantly different compressibility properties from the surrounding waste will not be placed within close proximity of the final cover layer to avoid sharp differential settlement which could affect the integrity of the cap.

l. Special waste which has implications for health and safety (such as asbestos) will not be placed within close proximity of the underneath of the final cover to prevent accidental disturbance during capping and underground services works.

m. Where placement of waste occurs over an area of intermediate cover the cover will be adequately penetrated or removed to render the surface permeable to gas and leachate.

Special and/or Hazardous Waste

n. Requirements set out in section 4.2 for medical waste, asbestos and hazardous wastes that meet the Ministry for the Environment Module 2: Hazardous Waste Guidelines – Class A.

Compaction

o. Compaction is undertaken using specialised heavy mobile equipment to minimise voids in the waste mass and ensure efficient use of the landfill volume available.

p. Waste will be placed and compacted to ensure that unconfined faces are stable and capable of retaining cover material.

Cover

q. Daily cover of a depth consistent with the consent conditions, will be placed to ensure that waste is not exposed outside of operating hours (and will not remain exposed overnight).

r. Intermediate cover of a depth consistent with the consent conditions will be placed over areas of the landfill where there will not be any waste placement for a period of at least three months.

s. When each stage of the landfill is completed, a final cover layer will be placed over that part of the landfill, consistent with the consent conditions]

4.4 Leachate Management

Objectives

1. Minimise the volume of leachate that is produced.

2. Leachate is managed and contained within the landfill footprint through the use of a high-performance landfill liner, and ~~provision of an on-site~~ leachate collection and storage system, ~~to limit/reduce any risk of~~ that minimises migration into the underlying soil, groundwater, and surface water.
3. The risks of excessive liner hydration are minimised.
4. Safe disposal of leachate off-site.
5. Leachate transport occurs with an incident contingency plan which meets the Ministry of the Environment Code of Practice for Transport of Hazardous and Liquid Waste.
6. Infrastructure failure or damage, including that caused by extreme events such as weather and earthquakes, are promptly detected and remedied to ensure its operation, and to protect the receiving environment.

Procedures

The following leachate management procedures will be implemented during the operation of the landfill:

[Content to be included following issuing of consents and as part of detailed design, and in collaboration with a future landfill operator, however, will include:

a. Procedures which reflect the relevant leachate management requirements of the final conditions of consent.
b. Redirecting upslope surface water from entering the leachate collection system.
c. Minimising the size of the active filling area where waste is exposed to rainfall.
d. Covering areas with intermediate or final cover as soon as is practicable so that as much water as possible is shed into a stormwater collection system and minimising percolation of water through these layers into the underlying waste
e. Providing well managed stormwater systems to separate all stormwater flow from areas where waste is placed and ensuring all site stormwater is diverted away from waste.
f. Removal of leachate off site for treatment and disposal].
g. Implementation of an appropriate groundwater and surface water monitoring program to confirm the effectiveness of the system.

4.5 Landfill Gas Management

Objectives

1. Contain, capture, and control LFG through the progressive installation, ~~and~~ operation, and maintenance of a landfill gas collection system in the ~~active landfill areas~~landfilled waste.
2. Optimise the overall quantity of LFG collected from the deposited waste to minimise fugitive emissions and LFG related odour.
3. Comply with the LFG related requirements of the NES Air Quality ~~NES~~ and recommendations of the WasteMINZ Guidelines and the Ambient Air Quality Guidelines.

4. Ensure the health and safety of people on and beyond the site who may be at risk of being exposed to LFG emissions by addressing the prioritised risks identified by the ~~preliminary LFG Risk Assessment~~LFGRA.
5. The destruction of recovered LFG by flaring~~combustion or electricity generation~~.
6. Erosion and ~~damage~~ cracking of the landfill cap is minimised.
7. Infrastructure failure or damage, including that caused by extreme events such as weather and earthquakes, are promptly detected and remedied to ensure its operation, and to protect the receiving environment.

Procedures

The following landfill gas management procedures will be implemented during the operation of the landfill:

[Content to be included following issuing of consents and as part of detailed design, and in collaboration with a future landfill operator, however, will include:

a. Procedures which reflect the relevant landfill gas management requirements of the final conditions of consent.
b. Operation and monitoring of an active LFG collection, treatment and destruction system (i.e. gas extraction wells, pipework, manifolds, flares and/or engines) as landfill development progresses.
c. Operation of a destruction system using flaring (with the possible future generation of electricity once LFG quantities are sufficient).
d. Implementation of an appropriate LFG monitoring program to confirm the effectiveness of the system, including from LFG monitoring boreholes/wells outside the waste boundary and regular surface monitoring of methane emissions from the completed cap.
e. Appropriate work, health and safety procedures will be developed and implemented in relation to situations where workers/site users may be at risk of being exposed to LFG emissions]

4.6 Stormwater Management and Sediment and Erosion Control

[Operational Stormwater management will be performed as an extension of the systems and procedures implemented in the construction and enabling works phases of the development]

Objectives

1. The ingress of stormwater into open and closed sections of the landfill is minimised.
2. Stormwater that comes into contact with waste is directed to the leachate collection system.
3. Land disturbance activities are to be undertaken in a manner that minimises sediment generation.

4. Sediment runoff from the site is effectively controlled so that that site does not contribute a disproportionate sediment load downstream in comparison to the catchment above McLaren Gully Road.
5. Erosion and ~~damage~~ cracking of the landfill cap is minimised.
6. Infrastructure failure or damage, including that caused by extreme events such as weather and earthquakes, are promptly detected and remedied to ensure its operation, and to protect the receiving environment.

Stormwater and Erosion and Sediment Control Procedures

The following stormwater and erosion and sediment control procedures will be implemented during the operation of the landfill:

[Content to be drafted following issuing of consents, as part of detailed design and in collaboration with future landfill operator, however is expected to include:

a. Procedures which reflect the relevant stormwater and erosion and sediment control requirements of the final conditions of consent.

b. Preparation of a site-specific Water Management Plan (WMP) for the entire landfill catchment, and includes:
    i. Appropriate diversion of stormwater runoff is achieved around active landfill development and filling areas. Any stormwater that interacts with landfill wastes shall be captured and treated as leachate.
    ii. Exposed soil surfaces will be minimised and will be protected by diversion/cut-off drains to reduce runoff over them, including temporary measures where practicable to minimise the transport of sediment from operational areas.
    iii. Suitable conveyance systems (channels, pipes, culverts) are in place to carry the stormwater to suitable treatment devices to remove any entrained sediment. These systems may comprise permanent systems (e.g. perimeter channels) or temporary systems as each stage is developed.
    iv. Adequate treatment systems are in place to remove sediment from stormwater at all stages of development and operation of the landfill.
    v. Regular inspections of the stormwater system to ensure separation of clean and leachate or sediment contaminated stormwater, before and after significant rainfall events.

c. The stormwater collection system shall incorporate practicable measures to re-direct contaminated stormwater to the leachate system to reduce risks of surface water contamination. Preparation of site-specific erosion and sediment control plan (ESCP) for each construction catchment which sit under the WMP and includes -
    i. design and construction of surface water drainage channels and discharge structures that ensure sufficient sediment settlement capacity and scour protection.
    ii. use of best practice soil stabilisation and sediment control measures to control discharges at source, such as silt fences, temporary diversion/contour swales, grassing, hydroseeding, protective matting etc.

iii. Regular surface water monitoring will be undertaken during operational phases to confirm and optimise sediment management efficacy and to confirm the absence of leachate impacts in surface water discharges]

4.7 Groundwater Management

Objectives

1. Control groundwater beneath the landfill liner through the installation and operation of a groundwater collection system.

Procedures

The following groundwater management procedures will be implemented during the operation of the landfill:

[Content to be drafted following issuing of consents, as part of detailed design and in collaboration with future landfill operator, however is expected to include:

a. Procedures which reflect the relevant groundwater management requirements of the final conditions of consent.

b. Implementation of an appropriate groundwater monitoring program to confirm the effectiveness of the system.

c. Regular inspections of the groundwater collection system.

d. Where monitoring of groundwater indicates unacceptable changes in groundwater quality, the groundwater will be intercepted and re-directed as leachate]

4.8 Site Internal Roading

Objectives

1. Provide safe all-weather access to the landfill for placement of waste.

Procedures

The following internal roading procedures will be implemented during the operation of the landfill:

[Content to be drafted following issuing of consents, as part of detailed design and in collaboration with future landfill operator, however is expected to include:

a. Procedures which reflect the relevant internal roading management requirements of the final conditions of consent.

b. Temporary aggregate access roads will be constructed on the landfill to provide passage of the waste delivery trucks. These temporary access roads will be amended regularly as the waste is placed and the level of the waste increased as the cell is progressively filled]

4.9 Landfill Facilities

Objectives

1. Landfill facilities are provided and maintained that provide for the effective functioning of the site.

Procedures

The following facilities will be provided for the operation of the landfill:

[Content to be drafted following issuing of consents, as part of detailed design and in collaboration with future landfill operator, however is expected to include:

a. Procedures which reflect the relevant facilities requirements of the final conditions of consent.

b. Installation and operation of the necessary facilities at the landfill including:

   i. Site Office and Staff Amenities

   ii. Potable and non-potable (including fire-fighting) water storage

   iii. Maintenance workshops

   iv. Weighbridge facilities

   v. Wheel Wash facilities

   vi. Leachate storage tanks, odour suppression beds and tanker loading bay

   vii. LFG Flare, and possible future Energy Generation

c. Operation and maintenance of the site facilities]

4.10 General Amenity Management

Objectives

1. Prevent windblown litter outside the site boundaries.
2. Clear areas of illegal dumping outside the site.
~~2.~~3. Maintain a clean and tidy site.

Procedures

The following general amenity procedures will be implemented during the operation of the landfill:

[Content to be drafted following issuing of consents, as part of detailed design and in collaboration with future landfill operator, however is expected to include:

a. Procedures which reflect the relevant requirements of the final conditions of consent.

b. Procedures for keeping the site neat and ensuring that no litter is allowed to blow off the site, including maintaining screen fencing at the tip face as required to reduce windblown litter over and around the site]

4.11 Odour Management

Objectives

a. ~~Minimise and c~~Control odours so that there is no odour that causes an objectionable effect at or beyond the boundary of the site. ~~any building used for residential activity in existence at the date consent is granted.~~

b. As small as practicable working ~~landfill face~~activity landfilling area is maintained to minimise odour.

c. Potentially highly odorous waste deliveries are identified prior to disposal.

d. All waste is covered with appropriate daily and intermediate cover material to minimise odour.

Procedures

The following odour procedures will be implemented during the operation of the landfill:

Waste Acceptance

~~a. Implementing protocols to forewarn of the arrival of odorous wastes so that preparations can be made to cover waste as soon as its placed.~~

~~b.~~a. Transporting refuse to the site in sealed truck and trailer units or bins.

~~c. Treating wastewater biosolids (stabilised with lime or equivalent treatment) prior to arriving at the site.~~

b. Training weighbridge staff to identify and hold unexpected highly odorous deliveries until such time as measures are in place to enable acceptance and cover of the waste immediately.

c. Highly odorous loads shall only be received between the hours of 9.30am and 4.00pm.

d. Deliveries of highly odorous wastes shall be pre-booked, to ensure preparations are made including ensuring cover material is available at the pit location.

e. Wastewater sludges, biosolids, and screenings shall be treated and/or stabilised with lime or an alternative that performs to an equivalent or higher standard of treatment for odour, prior to delivery to the site. Loads not complying shall be refused entry and only accepted after treatment.

f. Holding deliveries of unexpected highly odorous waste loads until preparations identified in (e) above are in place to enable disposal.

g. Highly odorous wastes shall be covered as soon as practicable and in any event not later than one hour following placement.

Waste Handling and Landfill Management

~~d.~~h. Implementing and maintaining good housekeeping standards on the site.

~~e.~~i. Keeping the size of the landfill working face to a minimum.

~~f.~~j. Locating the refuse tip head close to the refuse placement area to avoid pushing the refuse a long distance that would increase odour potential.

~~g.~~k. Landfill cells will be filled from the base of the valley.

~~h.~~l. Covering waste at the end of each working day so no refuse is exposed overnight.

~~i.~~m. Mowing landfill surfaces that are grassed to allow effective surface emission monitoring, prior to times when that monitoring is being undertaken.

j.n. Undertaking instantaneous surface monitoring (ISM) on a ~~regular~~ three-monthly basis to identify any areas of capping that need to be remediated.

o. Scheduling activities such as extensive excavations into old waste (only undertaken under exceptional circumstances) to days when wind direction is away from sensitive receptors.

p. Use of odour sprays or cannons upwind of the odour source during low wind speed conditions (winds less than 3m/s) to supress odour towards receptors.

k.q. Leachate storage tanks will be fitted with an appropriate control system to minimise the potential for odour discharges

r. Conducting regular walk-over inspections of the landfill to identify any damage to the cover system and to monitor the effectiveness of the mitigation measures employed.

s. Undertaking boundary odour surveys at least once a week by a trained staff member to assess the level of offsite odour and the effectiveness of control measures. The monitoring frequency should be increased if the odour intensity is characterised by the staff member as being either 'distinct', 'strong' or 'very strong' or if complaints are received from neighbouring properties.

The odour monitoring will be undertaken by a staff member that has not spent a significant amount of time working near active areas of the landfill immediately prior to monitoring. This avoids the staff member being desensitised to odour while undertaking the survey.

Highly odorous waste disposal control procedures (e.g. biosolids or offal)

l.t. Arranging deliveries so that trucks are not waiting outside the gate prior to the landfill opening for the day.

m.u. Arranging deliveries of highly odorous waste to arrive ~~during the middle part of the day~~between 9.30am and 4.00pm, as this time of day generally provides better odour dispersion conditions.

n.v. Prioritising deliveries of highly odorous waste directly to the tip-head.

o.w. Locating placement areas as far as practicable from the nearest sensitive receptors.

p.x. Locating a stockpile of suitable cover material near to the disposal area to allow the waste to be immediately covered.

q.y. Completely emptying bins as far as practicable to minimise the amount of residual material retained in the bin which can cause odour nuisance as the truck leaves the site.

r.z. Investigation of odour complaints to determine the contributing factors and identification of improvements to odour control procedures. Potential odour sources include:

i. Refuse odours from tipped waste or material awaiting tipping;

ii. Storage of leachate;

iii. Odour from highly malodorous specific wastes,

iv. Excavation activities into previously placed waste; and;

v. Landfill gas.

~~s.~~aa. If it is determined that all odour mitigation measures were being implemented effectively at the time of the complaint and that the complaint is directly attributed to the placement of highly odorous waste, then waste from this customer will no longer be accepted until it can be demonstrated that the level of odour from the waste has reduced to acceptable levels.

Measures to identify and control excessive abnormal odour.

Should excessive odour be generated by the landfill from abnormal operation, implementing a staged approach to identifying and remediating the cause of odour, including:

~~t.~~bb. Identifying and covering odorous waste.

~~u.~~cc. Stop further deliveries from any identified source of the odorous waste.

~~v.~~dd. Redistribute odour sprayers/cannons.

~~w.~~ee. Alter the odour spray chemical dose rate.

~~x.~~ff. Repair obvious leaks in gas system.

~~y.~~gg. Repair obvious deficiencies in the landfill cover.

~~z.~~hh. Move the tipping to a remote area until wind is favourable.

~~aa.~~ii. Undertake additional surface emissions survey.

[Content to be finalised following issuing of consents and as part of detailed design, and in collaboration with a future landfill operator]

4.12 Dust Management

[Operational dust management will be performed as an extension of the systems and procedures implemented in the construction and enabling works phases of the development – refer Section 3 for further details]

4.13 Noise Management

[Operational noise management will be performed as an extension of the systems and procedures implemented in the construction and enabling works phases of the development – refer Section 3 for further details]

4.14 Bird Management

Objective

1. ~~The attractiveness of the landfill to birds is reduced, and bird numbers are kept to very low levels in accordance with a Bird Management Plan.~~ Birds are managed to ensure that operations including wetland restoration do not increase aviation risk in accordance with a Bird Management Plan.

Procedures

The following procedures will be implemented during operation of the landfill to manage birds:

a. Operation of the Smooth Hill Landfill will be undertaken in accordance with the procedures set out in the Bird Management Plan (see **Appendix 1**). The Bird Management Plan:

   i. Sets out key roles and responsibilities for managing birds at the Smooth Hill Landfill;

   ii. Describes operational procedures that should be followed to avoid the establishment of bird populations at the Smooth Hill Landfill (e.g. requirements around daily cover of placed waste; minimising areas of pooled water etc.);

   iii. Sets out a sequence of deterrence and control methods that should be employed if specified bird population thresholds at the Smooth Hill Landfill are exceeded (e.g. anti-roosting strips, shooting birds, colony control);

   iv. Record keeping requirements; and

   v. Monitoring requirements.

[Content to be finalised following issuing of consents and as part of detailed design, and in collaboration with a future landfill operator]

4.15 Pest Management

Overview

The operation of the landfill has the potential to result in the following issues relating to pests:

1. An increase in fly numbers during the summer months, particularly when there are delays between the collection and deposition of waste. Eggs laid in putrescible waste may hatch over this period.
2. An increase in rodent populations due to the increase in food supplies at the landfill; which can also lead to impacts on native species and neighbouring land occupiers.
3. Uncontrolled weeds across the wider site may pose a risk to newly developed plantings and existing areas of biodiversity, as well as posing a potential source of seed that may create issues for neighbouring properties.
4. Predatory animals (rodents, mustelids (stoats, ferrets and weasels), and possums) may be attracted to the site, leading to impacts on native species, particularly lizards.
5. Browsing and grazing animals (ungulates (hoofed animals e.g. pigs and goats), rabbits and possums) may impact existing biodiversity, damage new plantings and pose a risk of immigration to neighbouring properties.

Objectives

1. Ensure the landfill meets its obligations under the Regional Pest Management Plan for Otago (**RPMP**), including its obligations to abide by the Good Neighbour Rules.
2. Minimise pest populations at the landfill.
3. Control pests to enhance existing biodiversity across the wider Smooth Hill Site.

4. Protect new plantings and restoration areas from the impacts of animal pests and weed infestations.

Procedures

The following pest management procedures will be implemented during the operation of the landfill:

[Content to be drafted following issuing of consents, as part of detailed design and in collaboration with future landfill operator, however is expected to include:

a. Procedures which reflect the relevant requirements of the final conditions of consent.

b. Undertaking monitoring of rodent and mustelid populations (stoats, ferrets and weasels) to inform the most appropriate pest control methods for these populations and establish a baseline.

c. Fencing the high value biodiversity sites within the designation boundary to exclude large pest animals (e.g. pigs and goats) from these areas.

d. Preparation and implementation of a detailed Pest Control Programme which -

   i. Establish a rodent control network around the landfill site which reflect industry best practice.

   ii. Establish a predator (mustelids, possum and rat) trapping network across the wider site to protect native species.

   iii. Control weeds as needed to enhance existing areas of biodiversity and allow new plantings to establish free of competition. Prompt compaction of waste and application of cover soil.

   iv. Weed control in all plantings and high value habitats, and control of any weeds as required by the RPMP.

   v. Control of the pig and goat population if needed to ensure there is no unacceptable damage to the site, high value habitats or new plantings. Also, ensure that these pests do not impact on neighbouring properties.

   vi. Control of the rabbit population to ensure that the population remains at or below Level 3 on the Modified Mclean Scale.

   vii. In particularly severe cases of fly infestations, application of insecticides]

4.16 Hazardous Substances

[Operational hazardous substances management will be performed as an extension of the systems and procedures implemented in the construction and enabling works phases of the development – refer section 3 for details]

4.17 Ecological Management

[Operational ecological management will be performed as an extension of the systems and procedures implemented in the construction and enabling works phases of the development – refer section 3 for details]

4.18 Landscape Management

[Operational landscape management will be performed as an extension of the systems and procedures implemented in the construction and enabling works phases of the development – refer section 3 for details]

4.19 Fire Management

Objectives

1. Risk of landfill fires are prevented as far as practicable, and any fires are promptly detected and responded to.

Procedures

The following incident management procedures will be implemented during the operation of the landfill:

a. Operation shall be undertaken in accordance with the management actions set out in the Fire Preparedness and Response Plan (see **Appendix 6**). The Fire Preparedness and Response Plan outlines:

   i. Fire prevention measures to be implemented to prevent fires from igniting in the landfill and any other areas of the site

   ii. Fire detection procedures to be implemented during operating hours and afterhours, and reporting and notification procedures to emergency services, neighbours, and regulators

   iii. Fire risk mitigation and readiness features.

   iv. Fire response procedures to be implemented.

   v. An incident reporting and cause investigation protocol.

   vi. A protocol for review and evaluation of fire causes, effectiveness of fire prevention, detection mitigation and response measures, and process for continuous improvement, including conducting regular simulated fire drills,

   vii. External notification protocols.

   viii. Response and notifications contact details directory.

   ix. A plan review process that includes FENZ, the independent peer review panel, and Otago Regional Council.

[Content to be finalised following issuing of consents, as part of detailed design and in collaboration with future landfill operator]

~~4.19~~4.20 Incident Management

Objectives

1. Ensure landfill incidents including any escape of leachate or other contaminants, release of hazardous substances, or other event are promptly detected and remedied to protect the receiving environment and surrounding properties. ~~Ensure landfill incidents including~~

~~any escape of leachate or other contaminants, release of hazardous substances, fire, or other event that may adversely affect the receiving environment and surrounding properties are rapidly responded to and managed~~.

2. Ensure infrastructure failure or damage, including that caused by extreme events such as weather and earthquakes, are promptly detected and remedied to ensure its operation, and to protect the receiving environment.

~~3. Prevent landfill fires from occurring.~~

~~4. Adequate water storage for fire-fighting is maintained.~~

~~5. Ensure that adequate fire control equipment is present on site and operable at all times.~~

~~6. Maintain a Fire Plan in conjunction with Fire and Emergency New Zealand (FENZ).~~

Procedures

The following incident management procedures will be implemented during the operation of the landfill:

[Content to be drafted following issuing of consents, as part of detailed design and in collaboration with future landfill operator, however is expected to include:

a. procedures which reflect the relevant requirements of the final conditions of consent].

~~b. Procedures for fire prevention, including keeping and maintaining appropriate fire-fighting equipment on site in serviceable order.~~

~~c. Providing on site storage of water for fire fighting purposes]~~

5.0 Landfill Closure and Aftercare

Prior to the end of the life of the landfill a Landfill Closure and Aftercare Plan will be prepared to detail the activities required for closure of the landfill and the aftercare period. In general terms, the following issues will be addressed.

Objectives:

1. The landfill site is reinstated to a final form and end use compatible with the surrounding environment.
2. Effective ongoing operation and maintenance of the landfill cap, groundwater and leachate collection, stormwater, and landfill gas management systems.
3. Ensure ongoing environmental monitoring in accordance with resource consent requirements.

Procedures:

The following procedures will be implemented during the closure and aftercare of the landfill:

[Content to be drafted following issuing of consents, as part of detailed design and in collaboration with future landfill operator, however is expected to include:

a. Procedures which reflect the relevant requirements of the final conditions of consent.

b. Preparation of a Landfill Closure Plan and Aftercare Plan.

c. Progressive construction of the final capping system following completion of filling in any area.

d. Grading the completed stockpile sites to conform to the adjacent topography, revegetated, and any stormwater systems disestablished.

e. Establishment of final permanent stormwater features, including contoured swales on the landfill cap draining to the perimeter drain and attenuation basin.

f. Removal of all facilities not required during the landfill aftercare period.

g. Ongoing provision of aftercare activities comprising:

    i. Ongoing operation and maintenance of the LFG collection and treatment system

    ii. Ongoing operation and maintenance of the leachate collection, treatment and disposal system.

    iii. Maintenance of the site stormwater systems

    iv. Maintenance of the landfill cap, including filling any areas that may have been subject to differential settlement, and repair of any surface erosion and maintenance of vegetation as required

    v. Maintenance of any remaining site infrastructure, including fences.

    vi. Ongoing environmental monitoring as required by consents.

    vii. Any reporting required by consents.

    viii. Responding to contingent events as set out in the Landfill Closure Plan]

6.0 Monitoring, Records and Reporting

[This section of the LMP will set out the various monitoring, record-keeping and reporting requirements for various aspects associated with the pre-construction, construction, operation, and closure and aftercare phases of the landfill.

Monitoring of landfills is necessary to confirm that they are performing as expected, in accordance with the design, operational practices and regulatory requirements; and that discharges are not resulting in, or likely to result in, adverse effects on the environment.

The primary areas of focus for the landfill monitoring programme will:

- Leachate
- Stormwater
- Groundwater
- Surface water
- Landfill gas
- Landfill stability
- Landfill cap integrity; and

- Waste Acceptance

In addition to these areas of focus, monitoring at the landfill will also include:

- Birds
- Lizards
- Pests
- Odour
- Noise
- Waste acceptance

The section is expected to include procedures which reflect the relevant monitoring requirements of the final conditions of consent. This includes, but is not limited to procedures for the monitoring, recording, and reporting set out in the following table:

Component	**Proposed Monitoring**	**Reporting**
Weather	Baseline and operational monitoring of wind speed and direction, temperature, relative humidity, and rainfall.	
Groundwater	Rate and volume of water taken from groundwater collection system, and volume of water conveyed to non-potable water storage.	Annually to ORC.
	Baseline and operational monitoring of groundwater quality from monitoring bores GW1 – ~~GW6~~ GW7 to detect for leachate.	Baseline as part of approval of monitoring trigger levels. Operational annually to ORC, and within 2 weeks of any exceedance of trigger levels.
	Operational continuous monitoring of water from groundwater collection system prior to discharge to the Ōtokia Creek or abstraction for non-potable supply to detect for leachate.	Operational annually to ORC, and within 2 weeks of any exceedance of trigger levels.
Surface Water	Baseline and operational monitoring of surface water quality at monitoring points SW1 – SW7 (and SW8 if access available) to detect for leachate, suspended solids, and turbidity.	Baseline as part of approval of monitoring trigger levels. Operational annually to ORC, and within 2 weeks of any exceedance of trigger levels.
	Operational continuous monitoring of water from the stage 1 sediment retention pond prior, and for subsequent stages the attenuation basins prior to discharge to the Ōtokia Creek to discharge to the Ōtokia Creek to detect for leachate, suspended solids, and turbidity.	Operational annually to ORC, and within 2 weeks of any exceedance of trigger levels.

Landfill Gas	Baseline and operational monitoring of landfill gas monitoring bore network, areas of intermediate cover, within buildings/structures and the surface of the final landfill cap.	Baseline as part of approval of monitoring trigger levels. Operational annually to ORC and within 2 weeks of any exceedance of trigger levels.
Landfill Stability	Regular engineering inspections.	Annually to ORC.
Landfill Cap Integrity	Regular walkover inspections.	Annually to ORC.
Odour	Operational monitoring for objectionable odour.	Annually to ORC.
Dust	Construction and operational monitoring for objectionable ~~odour~~dust.	Annually to ORC.
Noise	Construction and operational monitoring for exceedance of relevant noise standards.	Annually to ORC.
Waste	Quantities and types of wastes accepted. Load inspections Location of special wastes deposited in landfill.	Annually to ORC.
Birds	As set out in the Bird Management Plan.	Annually to ORC.
Falcons	As set out in the Falcon Management Plan.	Annually to ORC.
Lizards	As set out in the Lizard Management Plan.	Annually to ORC.
Terrestrial Vegetation	As set out in the Vegetation Restoration Management Plan.	Annually to ORC.
Freshwater and Wetlands	As per the Freshwater and Wetland Management and Monitoring Plan.	Annually to ORC.
Incidents	Events or incidents, including their nature, response, and follow up actions implemented.	Following event to ORC.
Complaints	Complaint's log.	On request to ORC.

The following sections will be completed in detail following the issuing of consents, and as part of detailed design and in collaboration with future landfill operator]

6.1 General Requirements

6.2 Groundwater and Surface Water Monitoring

6.3 Landfill Gas Monitoring

6.4 Bird Monitoring

6.5 Ecological Monitoring

6.6 Odour Monitoring

6.7 Noise Monitoring

6.8 Waste Acceptance and Placement Monitoring

6.9 Emergency Management

6.10 Annual Reporting

[Section will capture annual reporting requirements set out in the consent conditions]

Appendix 1: Bird Management Plan

Appendix 2: Receiving Waters Environment Monitoring Plan

Appendix 3: Vegetation Restoration Plan

Appendix 4: Freshwater and Wetland Monitoring and Management Plan

Appendix 5: Landscape Mitigation Plan

Appendix 6: Lizard Management Plan

Appendix 7: Falcon Management Plan

Appendix 8: Fire Preparedness and Response Plan

Appendix 9: Glossary of Terms

Appendix 10: Resource Consents