General Matters	
Term sought for groundwater permit	**Applicant response**
The 35-yr term sought for the taking of groundwater is not consistent with Policy 10A.2.2 of the Environment Court's Interim Decision on Plan Change 7, which states: *Irrespective of any other policies in this Plan concerning consent duration, only grant resource consents for takes and 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.* (Applications for water permits that are not replacing either a Deemed Permit or an existing water permit that expires before 31 December 2025, will be assessed in accordance with the provisions in Chapters 5, 6, 12 and 20, except that the duration of any water permit will be determined in accordance with the policies in Chapter 10A). Does the applicant wish to amend the consent term sought for the permit to take and use groundwater?	The applicant understands the Environment Court's final decision on Plan Change 7 was made operative on the 5th of March 2022, which has confirmed the wording of Policy 10A.2.2. The applicant is considering the implications of the policy for the application to take and use groundwater and will provide a separate response to ORC shortly.

General Matters	
Secondary approval in proposed consent conditions	**Applicant response**
Due to there being several areas where the applicant was not able to provide adequate information to support their conclusions regarding adverse effects on the environment and how these should be managed, several of the proposed conditions proposed suggest that certain reports/management plans/assessments/trigger levels be submitted to ORC for 'review' and 'approval'. Such wording is used in Conditions 4, 5, 7, 18, 39, 70. It is not appropriate to require ORC to review and approve specialist technical reports (e.g. the Detailed Design), nor is it appropriate to ask ORC to determining suitable consent conditions after the consent is granted. Some alternative wording is proposed under the various discipline headings below, however, it is ultimately up to the applicant to propose suitable consent conditions. Would the applicant like to take this opportunity to revisit this consent conditions and discuss what more suitable wording might look like?	It is agreed that an independent peer review panel should be established to review the design, construction, and operation of all stages of the landfill to certify it meets the requirements of the consent. This includes certification of the detailed design, LMP, and monitoring trigger levels. The peer review panel will communicate certification of any documentation to the ORC. The requirements for a peer review panel have been added as proposed conditions 4, 5, and 7 set out later in this table and included in the **attached** updated set of conditions.
Condition 4 The detailed design of the initial landfill development works, works for each stage of the landfill and road upgrades shall be provided to the ORC for review and approval that the detailed design compiles with this consent at least 3 months prior to construction commencing.	Changes have also been made to conditions 5, 7, 18, 39 and 70 (renumbered 6, 11, 26, 49, and 84 respectively) and other conditions in the **attached** updated set of conditions to require certification of documents by the peer review panel, in place of review and approval by the ORC.
Condition 5 The completed initial landfill development works, works for each stage of the landfill, and road upgrade works shall be certified by the suitably experienced Chartered Professional Engineer(CPEng) that they have been completed in accordance with the detailed design approved by ORC within 3 months following completion	
Condition 7 The detailed design of the landfill 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 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 shall be included as part of the detailed design documentation provided to ORC for review and approval to verify that the construction materials align with any assumptions made as part of the slope stability analysis.	
Condition 18 Monitoring trigger levels shall be developed for those parameters set out in Attachment 1 (Water Quality Monitoring Parameters) 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 bores shown as GW1 – GW6 on drawing 12506381-C309. b.The groundwater collection system prior to discharge to the Ōtokia Creek, or abstraction for non-potable water supply c. The sediment retention pond for stage 1 prior to discharge to the Ōtokia Creek d. The surface water monitoring points shown as SW1 – SW7 on drawing 12506381-C309. The baseline water chemistry data collected under condition 17 shall be used to establish typical ranges for each parameter in Attachment 1 and establish trigger values for these ranges. Proposed trigger levels shall be provided to ORC for approval that the trigger levels are suitable to detect any leachate in advance of waste being accepted.	
Condition 39 Monitoring trigger levels shall be developed for those parameters relevant to detect landfill gas escape, when monitored at the following locations: a. The landfill gas monitoring bore network. b. The surface of the final landfill cap. The baseline gas data collected under condition 38 shall be used to establish typical ranges foreach parameter and establish trigger values for these ranges. Proposed trigger levels shall be provided to ORC for approval that they are suitable to detect landfill gas in advance of waste being accepted.	

Condition 70 The consent holder shall annually complete a review of the LMP in consultation with Te Rūnanga o Ōtākou to ensure that management practices result in compliance with the conditions of these consents. Any proposed revisions shall be forwarded to the ORC for approval.	

General Matters

Secondary approval in proposed consent conditions	**Applicant response**
Conditions 47, 48, 49, 50 and 68 require ORC to certify that the consent condition has been satisfied, which in most cases means that there will be no peer review to ensure that what is being submitted is fit for purpose.	It is agreed that an independent peer review panel should be established to review the design, construction, and operation of all stages of the landfill to certify it meets the requirements of the consent. This includes certification of the ecological management plans. The peer review panel will communicate certification of any documentation to the ORC. The requirements for a peer review panel have been added as proposed conditions 4, 5, and 7 set out later in this table and included in the **attached** updated set of conditions.
Condition 47 A Falcon Management Plan based on the *Draft Smooth Hill Falcon Management Plan* prepared by Boffa Miskell Ltd, dated May 2021 shall be prepared by a suitably qualified ecologist prior to the commencement of construction, to ensure effects on any eastern falcons nesting at the site during construction of stages 1 – 4 of the landfill are avoided or minimised. The plan shall be developed in consultation with Te Rūnanga o Ōtākou. As a minimum the plan shall include: a. Background information on falcons. b. Responsibilities for falcon management. c. Mitigation measures. d. Monitoring. e. Review and updating of the plan. The plan shall be provided to ORC for approval that it meets the requirements in this condition prior to construction commencing. The plan shall be implemented for the duration of any landfill construction works.	Consequential changes have also been made to conditions 47, 48, 49, 50, and 68 (renumbered 57, 58, 59, 65, and 82 respectively) and other conditions in the **attached** updated set of conditions to require certification of documents by the peer review panel, in place of review and approval by the ORC.
Condition 48 A Lizard Management Plan based on the *Draft Smooth Hill Lizard Management Plan* prepared by Boffa Miskell Ltd, dated May 2021 shall be prepared by a suitably qualified ecologist prior to the commencement of construction, to ensure effects on any lizards during the construction of stages 1 – 4 of the landfill are avoided or minimised. The plan shall be developed in consultation with Te Rūnanga o Ōtākou. As a minimum the plan shall include: a. Background information on the lizards that may be present. b. Responsibilities for lizard management. c. Mitigation measures. d. Enhancement of lizard habitat for translocated lizards. e. Monitoring f. Review and updating of the plan The plan shall be provided to ORC for approval that it addresses the requirements in this condition prior to construction commencing. The plan is to be implemented for the duration of any landfill construction works.	

General Matters

Secondary approval in proposed consent conditions	Applicant response
Condition 49 A Vegetation Restoration Management Plan based on the Draft Smooth Hill Vegetation Restoration Plan prepared by Boffa Miskell Ltd, dated May 2021 shall be prepared by a suitably qualified ecologist prior to the commencement of construction, to mitigate for the loss of wetland vegetation by construction of the road upgrades, and potential changes to the vegetation structure of wetlands downstream of the landfill from changes to ground and surface water supply, so that that there is 'no net loss' of natural inland wetland habitat. The plan shall be developed in consultation with Te Rūnanga o Ōtākou. As a minimum the plan shall include: a. Background information on the wetlands present. b. Responsibilities for wetland management. c. Mitigation and offsetting measures which ensure: i. Enhancement of the existing degraded swamp wetland comprising 0.47ha by weed control, fencing, planting, and pest control, including planting of a 0.4ha buffer of indigenous dryland vegetation around the wetland. ii. Enhancement of no less than 0.49ha of existing wetland vegetation within the landfill site at the base of West Gully 3 and West Gully 4 by weed control, fencing, infill planting, and pest control iii. Wetland enhancement under (i) and (ii) above shall include planting of ecologically appropriately species(eco-sourced specimens free from weeds); fencing to exclude wandering stock and feral browsing animals; and weed and predator control throughout the life of the landfill to achieve zero or near-zero density of mammalian predators and weedy tree shrub, and vine species. d. Monitoring at 2 and 5 years following the implementation of ecological mitigation measures to ensure that any plantings of indigenous species have been successful, and that the availability and quality of habitats for indigenous fauna are overall of a similar or better than the habitats found in the existing environment. e. Implementation timeframes f. Review and updating of the plan. The plan shall be provided to ORC for approval that it addresses the requirements in this condition, prior to construction commencing. The plan is to be implemented during the construction of the landfill and road upgrades, and operation of the landfill.	
Condition 50 A Bird Management Plan, based on the *Draft Smooth Hill Bird Management Plan* prepared by Boffa Miskell Ltd and Avisure, dated May 2021, shall be prepared by a suitably qualified ecologist prior to commencement of construction, to reduce the attractiveness of the landfill to birds, particularly black backed gulls, and keep bird numbers to very low levels. As a minimum the plan shall include: a. Background information covering the attraction of birds to landfills and bird strike risk with aircraft. b. Responsibilities for bird control, including appointment of a Bird Control Officer. c. Liaison with and sharing of information with Dunedin Airport on bird management. d. Bird control measures. e. Maintaining registers of the use of bird control measures and their effectiveness. f. Bird monitoring. g. Review and updating of the plan. The plan shall be provided to ORC for approval that it addresses the requirement in this condition prior to operation of the landfill commencing. The plan is to be implemented for the duration of the operation of the landfill. The plan shall be reviewed and updated every 6 months for the first 3 years of operation, and annually thereafter.	
C. Landfill Management Plan (LMP) **Condition 68** The detailed design, construction, and operation of the landfill shall be in accordance with the provisions of a 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 Plan shall be provided to ORC for approval that it addresses the requirements of this condition at least three months prior to construction commencing. The LMP shall 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 accordance with all Health and Safety regulations d. The design and construction of the landfill adopts appropriate Quality Assurance and Quality Control procedures.	

General Matters

Secondary approval in proposed consent conditions	Applicant response
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. <u>Land stability:</u> 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 slopes are stable for construction and in the long term d. Placement of waste in the landfill ensures waste and landfill stability <u>Groundwater and surface water flows:</u> a. The ingress of stormwater into open and closed sections of the landfill is minimised. <u>Groundwater and surface water quality:</u> a. Leachate containment is optimised 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 b. The risks of excessive liner hydration are minimised c. Protection of the landfill liner from waste tipping and compaction activity. d. 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 e. The ingress of stormwater into open and closed sections of the landfill are minimised to avoid excessive leachate generation. f. Stormwater that comes into contact with waste is directed to the leachate collection system g. 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 h. Spills of fuels, hazardous substances, or other contaminants are promptly contained and remediated i. Monitoring bores are regularly maintained to prevent the ingress of contaminants j. Erosion and cracking of the landfill cap is minimised. <u>Air quality:</u> a. As small as practicable working landfill face 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 any building used for residential activity in existence at the date consent is granted f. Control landfill gas through the progressive installation and operation of a landfill gas collection system in the active landfill areas g. The destruction of recovered landfill gas by combustion or electricity generation. h. The escape of fugitive landfill gas is minimised i. Erosion and cracking of the landfill cap is minimised j. Ensure the health and safety of people on and beyond the site who may be at risk of being exposed to landfill gas emissions. <u>Terrestrial and freshwater ecology:</u> 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. c. Disturbance of nesting eastern falcons are avoided or minimised in accordance with a Falcon Management Plan d. Areas of suitable lizard habitat within the site are maintained in accordance with a Lizard Management Plan e. Loss of wetland vegetation is mitigated and offset in accordance with a Vegetation Restoration Management Plan f. 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 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. <u>Waste acceptance:</u> 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. Accurate records of all waste accepted at the landfill, load inspections, and disposal locations are maintained e. 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.'	

General Matters	
Secondary approval in proposed consent conditions	**Applicant response**
Noise: a. 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. Prevent windblown litter outside the site boundaries k. Maintain a clean and tidy site. l. Prevent the establishment of vermin and nuisance insect populations. Communications and complaints: a. Maintain a complaints management, investigation, and reporting system b. All complaints shall be promptly investigated and responded to	

General Matters	
Effects on property prices and community wellbeing	**Applicant response**
Submitters have raised concerns that the presence of a landfill in the headwaters of the Ōtokia Catchment will a create a perception of risk that will affect the number of people enjoying/using Ōtokia Creek, the wetland area, and Brighton Beach. Submitters are concerned that this may have a knock-on effect for local businesses, the surf lifesaving club, house prices, and community wellbeing. Submitters have also raised concerns that the presence of the landfill will have an adverse on property prices in the local vicinity (particularly those on Big Stone Road). The economic report does not address these matters. Have these matters been considered by the applicant, and if yes, what conclusion was reached? If these matters have not been considered by the applicant, then perhaps the applicant might be able to provide comment based on examples from elsewhere in the country?	**Response in relation to property prices:** The Courts have not considered effects on property values to be a relevant consideration per se in determining whether a resource consent should be granted. The physical effects of an activity on the environment are the primary consideration. Any effect on property prices is simply a (potentially imperfect) reflection of these environmental effects. The Environment Court has observed that to consider both the physical effects on the environment as well as any indirect effect on property prices would risk "double-weighing" of the effects on the environment. (See Chen v Christchurch City Council C102/97 (at pages 18-19). Here the Court stated at page 18: *Valuation evidence as to the reduction in property values because of interference with views needs to be carefully used because it can lead to 'double-weighing'. A valuation is simply another expert opinion of the adverse effect (loss) being assessed by the Council or Commissioner (or Court).* The relevance of impacts on property prices was considered recently in City Rail Link Limited (CRRL) (Successor to Auckland Transport) & Ors v Auckland Council, [2017] NZEnvC 204, which affirmed the previous decision in Bunnik v Waikato District Council Environment Court decision A42/96. The key passage from this judgement stated at paragraph 63: If property values are reduced as a result of activities on adjoining land, the devaluation would reflect the effects of that activity on the environment. The correct approach is to consider those effects directly rather than market responses because the latter can be an imperfect measure of environmental effects. **Response in relation to community wellbeing:** The key themes of the local community submissions were concerns about the perceived environmental effects of the landfill, particularly from contamination, and the perceived impacts that the proposed landfill could have on the wellbeing of the local community. Evidence is being prepared by the applicants' technical experts which will address the local community submissions as they relate to environmental effects, including any perceived effects on the Ōtokia Creek and Brighton Beach; noting that the Assessment of Environmental Effects (AEE) submitted as part of the consent application has identified that the operation of the proposed landfill would have no more than minor environmental effects. Further, the establishment of an independent peer review panel that will review all aspects of the detailed landfill design and operation, will likely provide added confidence to the community that the design and operation is to best practice. The requirements for a peer review panel has been added as proposed condition 4, 5, and 7 set out later in this table and included in the **attached** updated set of conditions. In addition, the applicant intends to provide evidence outlining how it intends to respond to the social concerns raised in the local community's submissions. The intention is for Council to support the local community to identify what kinds of initiatives would provide the most benefit to the community members.

General Matters for further discussion	
Conditional approval from Te Runaka o Otakou	**Applicant response**
This submission was in support subject to recommendations in the Cultural Impact Assessment being adopted. Would the applicant like to amend their application to adopt all of the recommendations of the CIA as consent conditions? If yes, please can suitably consent condition wording be provided.	The recommendations outlined in Appendix A of the Cultural Impact Assessment were considered and incorporated within in the proposed conditions of consent submitted as part of the updated application (June 2021) as generally described at section 8.11.7 of the AEE. Some of the recommendations however related to matters that occur prior to a consent being issued or sit outside of the consent process, and therefore would not appropriately be included as conditions, specifically: • Shifting to a zero-waste future is addressed through separate processes covered under the Council's Waste Management and Minimisation Plan 2020. The plan includes implementation pathways aimed at achieving the Council's zero waste future, and targets for waste minimisation of waste to landfill by 2030. Through the implementation of the plan, the Council will work closely with mana whenua as Treaty Partner and support their kaitiaki role. • Assessment of alternative sites and methods has been undertaken in advance of the applications being made for resource consent as detailed in the AEE. Requirements for such an assessment would therefore not appropriately be included as a condition. Different solutions to landfill development and operational procedures, and ecological management will however be considered through detailed design and as part of the development of the final Landfill Management Plan and associated ecological management plans. These plans will be developed in consultation with Te Rūnanga o Ōtākou as set out in renumbered 57, 58, 59, 60 and 61 set out later in this table and included in the **attached** updated set of conditions. The recommendations outlined in the CIA have been revisited to reconfirm they have been appropriately adopted, and notes the following additional matters to those described in the AEE: • First Wai Māori recommendation – all practicable measures have been taken to prevent discharges (including leachate) entering water. Discharge of leachate and stormwater contaminants to water are addressed by the requirements to adopt a liner and leachate collection system (renumbered condition 17), limiting discharge of leachate within the liner extent (renumbered condition 20), and requirement for the LMP to adopt procedures (renumbered condition 82, groundwater and surface water quality) which ensure leachate containment is optimised (clause a), stormwater that comes into contact with waste is directed to the leachate collection system (clause f), sediment runoff is effectively controlled (clause g), and any spills of contaminants are promptly contained and remediated (clause h). Procedures that achieve these objectives will be further detailed in the final LMP developed in consultation with Te Rūnanga o Ōtākou. • Second Wai Māori recommendation – the proposed water monitoring conditions (renumbered conditions 27 - 28) will ensure monitoring of stormwater at the attenuation basin (monitoring points SW1 and SW8) and stage 1 SRP (SW2), with stormwater being contained and prevented from discharge in the event of contaminant trigger levels being exceeded. An additional change is proposed (renumbered condition 28) which requires any contaminated stormwater contained within the attenuation basin and stage 1 SRP to be directed to the leachate collection system for disposal off site as set out later in this table and included in the **attached** updated set of conditions. Procedures covering this will be further detailed in the final LMP developed in consultation with Te Rūnanga o Ōtākou. • Third Wai Māori, and seventh Kaitiakitaka and Mauri recommendations – contaminant and hydrological effects on downstream wetlands are addressed by the Freshwater and Wetland Monitoring and Management Plan (renumbered condition 60). Plant and animal pest control will also be addressed in the Plant and Animal pest Control Programme (renumbered condition 61). Furthermore, as noted above, the applicant is considering other environmental enhancements beyond those already proposed in the application as part of its response to the concerns raised in submissions, which will be addressed in its evidence. • Second Kaitiakitaka and Mauri recommendation – the draft Falcon Management Plan requires that where kārearea have been identified as nesting on the site, works will be undertaken outside the breeding season where possible, and if not possible, exclusion zones will be established to avoid or minimise any adverse effects on nesting birds. While this does not fully adopt the CIA recommendations, the applicant considers that any effects on karearea will be avoided or minimised as set out in the EIA included with the AEE and the draft Falcon Management Plan. The final Falcon Management Plan will be developed in consultation with Te Rūnanga o Ōtākou (renumbered condition 57).

	• Third and sixth Kaitiakitaka and Mauri recommendations – the control and monitoring of landfill design elements and mitigation measures has been strengthened by the addition of a peer review panel to review the design, construction, and operation of all stages of the landfill, undertaking a Site Specific Probabilistic Seismic Hazard Assessment (SSPSHA) to inform landfill stability at detailed design, and independent quality assurance (CQA) of the installation of the landfill liner as proposed conditions 9 and 18 set out later in this table, and included in the **attached** updated set of conditions. • Third Recognition of Mana whenua recommendation – An LMP objective has been added (renumbered condition 82) to make it clear that mana whenua will be given the opportunity to undertake monitoring alongside other specialists as set out in the **attached** updated set of conditions.

Appendix 3 Landfill Concept Design: matters for further discussion

Matters raised in T+T report: "Technical Review to Inform Notification Decision: Smooth Hill Landfill - Appendix 3 - Landfill Concept Design" (2/9/21)

Para	Subject and commentary by ORC and T+T	Applicant response
15	Calculations will need to be provided with the Detailed Design to demonstrate that the appropriate head can be achieved for the aggregate to be used, the drainage slope and the collector pipe spacing. Furthermore, the applicant has provided some redundancy in the leachate collection system by showing two collection pipes at the toe of each side of the landfill. Provision should be made to be able to clean these pipes, and this could be readily achieved with a pipe laid up the slope of the toe bund to clean-out ports located at the surface of the landfill. These two matters can be covered by appropriate consent conditions. Does the applicant wish to amend their application to include appropriate consent conditions, and if yes, can suitable wording be provided?	It is agreed that calculations should be provided with the detailed design to demonstrate the appropriate head can be achieved for the aggregate used, the drainage slope and the collector pipe spacing. The appropriate maximum leachate head for the landfill has been secured as critical performance standard to be met under condition 13(b) (renumbered 17(b)) which requires the leachate collection system to be configured to ensure the maximum head on the liner is no greater than 300mm over all areas of the liner under normal operating conditions, apart from the sumps. This aligns with the requirements of the WasteMINZ Technical Guidelines for Disposal to Land 2018 for a class 1 landfill. Demonstrating achievement of the required maximum head will be one of many technical matters that will need to be addressed through detailed design and supported by appropriate calculations. As outlined above, the applicant agrees that an independent peer review panel should be established to review the design, construction, and operation of all stages of the landfill to certify it meets the requirements of the consent. The requirement for a peer review panel has been added as proposed conditions 4, 5, and 7 set out later in this table and included in the **attached** updated set of conditions. The addition of this condition will provide sufficient certainty and confidence that the detailed design will achieve the maximum head in condition 17(b) taking into account the aggregate used, drainage slope, and collector pipe spacing. The concept design included in the application provides for the leachate pipes to extent to the surface at the top oof the landfill toe embankment and adjacent to the leachate pump rises. This will enable jetting/cleaning of the leachate pipes. This is shown on drawing 12506381-01-C402, noting the detail is obscured on the drawing by the pump riser pipes. On this basis, it is considered a condition is not required.
16	The applicant proposes that leachate will be pumped from the landfill into storage tanks sized to contain 48 hours storage. The adequacy of the storage capacity will need to be reviewed as part of the Detailed Design. Does the applicant wish to amend their proposed consent conditions to include this detail, and if yes, can suitable wording be provided? This should include explanation of what action will be taken in the event that the storage capacity is deemed to be inadequate.	It is agreed that an adequate level of leachate storage capacity should be provided and that this is reviewed at detailed design. The concept design provides storage for the largest leachate production with leachate fully contained in the tanks for the 10yr storm event and in the tanks plus the bunded area for a 100-year event over a 2-day period. The applicant proposes a new condition 19 which secures the provision of an adequate amount of leachate storage is provided as a critical performance standard, as set out below and in the **attached** updated set of conditions. The condition requires a level of storage provision sufficient to the 1% AEP design leachate flow for the extent of the landfill developed, thereby enabling storage to be installed progressively as is required. *19. Leachate storage and management facilities shall be designed for a capacity to accommodate a 1% AEP design leachate flow for the extent of landfill developed.* As outlined above the leachate storage will be reviewed by the independent peer review panel to certify it meets the requirements of the consent, an provide certainty and confidence that the detailed design will provide the minimum storage required by condition 19.
25	**Water Quality** **Condition 13:** The landfill 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 class1 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 300mmover 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, with a separate sump from the leachate collection system.	It is agreed that the installation of the lining system should be subject to independent CQA assurance, and considers the proposed condition is acceptable. A new proposed condition 18 is set out below and included in the **attached** updated set of conditions. *18. The installation of the landfill lining system 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 shall be prepared and 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 shall be submitted to the independent peer review panel.*

Appendix 3 Landfill Concept Design: matters for further discussion

Matters raised in T+T report: "Technical Review to Inform Notification Decision: Smooth Hill Landfill - Appendix 3 - Landfill Concept Design" (2/9/21)

Para	Subject and commentary by ORC and T+T	Applicant response
	T+T has also recommended that the following should be inserted after **Condition 13:** *The installation of the lining system 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 shall be prepared and shall include all of the test results, a description of the observations undertaken and certification that the lining system has been instal led in accordance with the specification. This report shall be submitted to the PRP.*	
25	A high quality of construction is required, verified by Construction Quality Assurance (CQA), to provide the level of environmental protection proposed. It is critical that an appropriate level of review of the Detailed Designs and CQA documentation for each stage of landfill development is provided by or on behalf of the ORC. The approach adopted for a number of landfill consents in NZ is to appoint a Peer Review Panel (PRP) to review the design, construction and operation of the landfill. Accordingly, T+T have suggested that proposed **Conditions 4 and 5** be deleted **Condition 4** The detailed design of the initial landfill development works, works for each stage of the landfill, and road upgrades shall be provided to the ORC for review and approval that the detailed design compiles with this consent at least 3 months prior to construction commencing **Condition 5** The completed initial landfill development works, works for each stage of the landfill, and road upgrade works shall be certified by the suitably experienced Chartered Professional Engineer(CPEng) that they have been completed in accordance with the detailed design approved by ORC within 3 months following completion. T+T Suggested proposed replacement to **Conditions 4 and 5:** *4. The Consent Holder shall 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 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 shall comprise at least two persons who together shall be:* ○ *Independent of the Consent Holder;* ○ *Independent of the planning design, construction, management and monitoring of the site.* ○ *Experienced in landfill design, construction and management.* ○ *Experienced in geotechnical, groundwater and surface water aspects of landfill design, construction and operation.* ○ *Recognised by their peers as having such experience, knowledge and skill.* ○ *Approved in writing by Otago Regional Council.* *5. Prior to commencing the construction of a new landfill stage, the Consent Holder shall submit a design report and design drawings of the relevant stage to the Peer Review Panel for certification that it meets the requirements of the consent. The Peer Review Panel shall communicate this certification to Otago Regional Council.* *6. The Peer Review Panel shall prepare an annual report to be submitted to Otago Regional Council prior to 1 March each year, on the adequacy of the following matters in relation to meeting requirements of the consents:* ○ *Any management or monitoring plans reviewed during the year.* ○ *Any designs reviewed during the year.* ○ *Construction activities undertaken including:* ▪ *Site preparation.* ▪ *Liner construction.* ▪ *Leachate collection system installation.* ▪ *Landfill gas collection system installation.* ○ *Landfill operation including:* ▪ *Water control, including stormwater and leachate management.* ▪ *Waste compaction.* ▪ *Waste acceptance.* ▪ *Daily and intermediate cover placement.* ▪ *Leachate system.*	It is agreed that an independent peer review panel should be established to review the design, construction, and operation of all stages of the landfill to certify it meets the requirements of the consent. This includes certification of the detailed design, LMP, ecological management plans, and monitoring trigger levels. The peer review panel will communicate certification of any documentation to the ORC. The applicant considers the proposed conditions are generally acceptable with minor changes. The new proposed conditions 4, 5, and 7 are set out below and included in the **attached** updated set of conditions. While T+T have suggested that condition 5 could be deleted, the applicant considers this should be retained as set out below (renumbered condition 6) to ensure appropriate engineering QA confirmation that any completed works have been constructed in accordance with the detailed design certified by the independent peer review panel. *4. The consent holder shall 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 to assess the management of 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 shall comprise at least three persons who together shall 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 shall 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 shall communicate this certification to Otago Regional Council.* *6. The completed initial landfill development works, works for each stage of the landfill, and road upgrade works shall be certified by the suitably experienced Chartered Professional Engineer (CPEng) that they have been completed in accordance with the detailed design ~~approved by ORC~~ certified by the independent peer review panel. A CQA report shall be prepared and submitted to the independent peer review panel within 3 months following completion.* *7. The independent peer review panel shall prepare an annual report to be submitted to Otago Regional Council 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.*

Appendix 3 Landfill Concept Design: matters for further discussion

Matters raised in T+T report: "Technical Review to Inform Notification Decision: Smooth Hill Landfill - Appendix 3 - Landfill Concept Design" (2/9/21)

Para	Subject and commentary by ORC and T+T	Applicant response
	▪ *Landfill gas system.* ○ *Monitoring and records.* ○ *Capping and rehabilitation.* *This report shall be based on:* ○ *A review of the landfill annual monitoring report.* ○ *Review of designs submitted during the year.* ○ *Review of construction CQA reports.* ○ *Any further enquiries and inspections required by the Peer Review Panel to allow them to carry out their duties.*	*b. Any designs reviewed during the year.* *c. Construction activities undertaken including:* • *Initial landfill development works* • *Site preparation.* • *Liner construction.* • *Leachate collection system installation.* • *Landfill gas collection system installation.* *d. Landfill operation including:* • *Water control, including stormwater and leachate management.* • *Waste compaction.* • *Waste acceptance.* • *Daily and intermediate cover placement.* • *Leachate system.* • *Landfill gas system.* *e. Monitoring and records.* *f. Capping and rehabilitation.* *g. Ecological management.* *This report shall be based on:* *a. A review of the landfill annual monitoring report required by condition 81.* *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.* Consequential changes have also been made to conditions 7, 18, 39, 46, 47, 48, 49, 50, 51, 68, and 70 (renumbered 5, 11, 26, 49, 56, 57, 58, 59, 60, 61, 65, 82, and 84 respectively) in the **attached** updated set of conditions to require certification of documents by the peer review panel, in place of review and approval by the ORC.

Appendix 5 and 6 Geotechnical Interpretative matters for further discussion

Matters raised in T+T report: "Technical Review to Inform Notification Decision: Smooth Hill Landfill - Appendix 5 - Geotechnical Interpretative Report and Appendix 6 - Geotechnical Factual Report" (26/8/21)		**Applicant response**
Para	**Subject and commentary**	
34-38	Overall stability of the landfill at all stages of development will need to be demonstrated during Detailed Design. T+T questioned the appropriateness of the some of the slope stability analyses undertaken. Following provision of further information by the applicant, T+T agreed with the applicant's proposed approach provided that the cut and fill slope stability assessment is reviewed, and revised as necessary, during Detailed Design. The applicant's proposed conditions include requirements to assess 'Land Stability', i.e. the stability of the proposed cut and fill slopes, and also of the potential movement of the waste mass over the landfill liner system. It is not clear whether the landfill design and consent conditions may need to be revisited following the review and revision of the slope stability assessments. Can the applicant provide clarification and perhaps suggest how this would be built into consent conditions?	It is agreed that the stability of the landfill at all stages of development will need to be demonstrated at detailed design. The applicant intends to provide evidence further addressing site seismicity, slope stability, and the associated design response. The evidence will also address the likelihood of the slope stability undertaken as part of detailed design requiring redesign of the landfill or revisiting of the conditions of consent. The analysis being undertaken in support of that evidence with the latest seismic information for the Dunedin area demonstrates that achieving a factor of safety of 1.0 under the seismic stability case as set out in condition 6 included in the updated application is challenging. The proprietary modelling software for the seismic case nearly always produces a FoS <1 and the industry now recognises this and has moved to consider the likely ground displacement of the slope under seismic load. This approach has been adopted for Smooth Hill and will be presented in evidence. The Waka Kotahi Bridge Manual (3rd Edition, October 2018) provides the most technically robust approach to modelling slopes and it is proposed to apply this to assessment of slope stability as part of detailed design to the assessment of the pseudo-static seismic load case. The applicant proposes to amend condition 6 (renumbered 10) accordingly as set out below and included in the **attached** updated conditions of consent. This will be further addressed in the applicant's evidence. *10. The detailed design of the landfill shall ~~include slope stability analysis to verify that the landfill will be stable in~~ 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 slopes where the factor of safety is <1 in the pseudo-static seismic load case, the displacement method shall be considered as per Section 6.3.2 of the Waka Kotahi NZTA Bridge Manual (3rd Edition Oct 2018). ~~This shall include geotechnical stability analysis of the proposed sub-grade arrangement for each stage based on the proposed excavation/filling arrangement.~~* *~~The analysis shall adopt the following relevant factors of safety (FOS) adopted for landfill industry practice, with justification provided for any deviations from these values:~~* ~~**Condition**	**Required Factor of Safety**~~ ~~Static Stability with Elevated Leachate (permanent)	1.5~~ ~~Seismic Serviceability Limit State	1.0~~ ~~Seismic Ultimate Limit State	1.0~~ The likelihood of changes to the landfill design from undertaking the stability assessments as part of detailed design are considered to be low. Should the analysis identify the need for change to the landfill design, any changes are unlikely to be significant and fall within the scope of the design for which consent is being sought. Such changes could for example involve adding geogrid reinforcement or a shear key into toe bund which would result in no change to the landfill footprint and landform and have minimal impact on the overall design. Although there is a low probability of the landfill slopes being problematic, shallower landfill slopes might be required if the analysis were to show the slopes as failing under the seismic load, resulting a reduction in landfill volume. Ultimately in the unlikely event that significant design change is required, then a variation to the consents would need to be applied for under section 127 RMA to enable assessment of those changes, and the need for any associated changes to conditions.

Appendix 5 and 6 Geotechnical Interpretative matters for further discussion		
Matters raised in T+T report: "Technical Review to Inform Notification Decision: Smooth Hill Landfill - Appendix 5 - Geotechnical Interpretative Report and Appendix 6 - Geotechnical Factual Report" (26/8/21)		**Applicant response**
Para	**Subject and commentary**	
43	The site is bounded to the north-west and south-east by the Titri Fault (recurrence interval of 70,000 to 80,000 years) and Akatore Fault (recurrence interval of 3,000 years) respectively. GHD have defined 'active faults' as those with recurrence periods <2000 yrs, which means they have missed the Akatore Fault. A SSPSHA would usually be standard procedure for a landfill study in New Zealand. The applicant has confirmed that a SSPSHA would be carried out at the Detailed Design stage to confirm appropriate seismic design parameters are being used. T+T recommended a condition of consent be included to ensure this is done: *A Site Specific Probabilistic Seismic Hazard Assessment (SSPSHA) must be undertaken as part of Detailed Design of the landfill to ensure seismic risks are addressed so they are consistent with NZS 1170.5.2004 Structural Design Actions - Part 5 Earthquake Design Actions. The Detailed Design and construction of the landfill must be modified as necessary to incorporate any changes in seismic design parameters identified by the SSPSHA.* Does the applicant wish to amend their application to include this condition? In addition, this consent condition will need to detail a process whereby all elements of the landfill design, AEE and consent conditions are reviewed to ensure that they are still fit for purpose should be SSPSHA reveal that inappropriate seismic design parameters have been used previously. A peer review process should also be built into this. Can the applicant provide clarification and perhaps suggest how this consent condition should be worded?	It is agreed that a SSPSHA should be undertaken as part of detailed design, and considers the proposed condition is generally acceptable with minor changes. This will be further addressed in evidence. A new proposed condition 9 is set out below and included in the **attached** updated set of conditions. *9. A Site Specific Probabilistic Seismic Hazard Assessment (SSPSHA) 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 of the landfill shall use the results of the SSSHA as inputs into the slope stability modelling.* As noted above, the likelihood of changes to the landfill design from undertaking the SSPSHA a part of detailed design is considered to be low, and if required are unlikely to be significant and fall within the scope of the design for which consent is being sought. In the unlikely event that significant design change is required, then a variation to the consents would need to be applied for under section 127 RMA to enable assessment of those changes, and the need for any associated changes to conditions. As outlined above, the applicant agrees that an independent peer review panel should be established to review the design, construction, and operation of all stages of the landfill to certify it meets the requirements of the consent. This includes certification of detailed design. The requirement for a peer review panel has been added as proposed conditions 4, 5, and 7 set out earlier in this table and included in the **attached** updated set of conditions.
44	Insufficient investigations had been proposed for the area in the south-east, which was not able to be investigated previously, and now comprises about 50% of the overall landfill footprint. To ensure that an adequate level of geotechnical investigation is carried out, T+T recommended the following consent condition: *Additional geotechnical investigations must be carried out as necessary as part of Detailed Design, to fill in any investigation 'gaps' and to ensure that a robust geotechnical model is able to be created.* This condition is obviously too vague, but the intent is clear. Would the applicant like to propose something more appropriate to provide assurance that an adequate level of geotechnical investigation will be carried out?	It is agreed that additional geotechnical investigations should be undertaken as part of detailed design, and considers the proposed condition is generally acceptable with minor changes. The condition will ensure an adequate level of geotechnical investigation is undertaken. A new proposed condition 8 is set out below and included in the **attached** updated set of conditions. *8. Additional geotechnical investigations 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 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 shall be determined during the initial stages of the detailed design process where specific confirmation is required.*

Appendix 8 Groundwater matters

<table>
<tr><th colspan="2">Matters raised in T+T report: “Technical Review to Inform Notification Decision: Smooth Hill Landfill - Appendix 8 - Groundwater Report” (2/9/21)</th><th>Applicant response</th></tr>
<tr><th>Para</th><th>Subject and commentary</th><th></th></tr>
<tr><td>33, 34</td><td>An additional borehole was drilled within the proposed landfill footprint and contains nested groundwater monitoring piezometers. The resulting memo provided is a very short factual report. It does not include any reference to groundwater, no interpretation of the data, or an update to the conceptual groundwater model. Therefore, as it stands, this information does not answer any of the groundwater questions.

Deeper groundwater flow direction has not been confirmed yet due to dry piezometers, but the absence of groundwater strikes demonstrates the low permeability conditions and the tight nature of the bedrock. It would be good to have confirmation that there were no GW strikes during the drilling.

Can the applicant expand on this?

Has any data been collected since the piezometers were installed?</td><td>Deep groundwater flow direction was previously determined using monitoring wells BH201, BH202 and BH211b, which have similar screen elevations. BH301 had two piezometers installed within the Henley Breccia, the deepest of which (BH301b) also has a similar screen elevation to the aforementioned monitoring wells and has therefore subsequently been used included in the assessment of deep groundwater flow direction. Groundwater levels monitored on two occasions (17 February 2022 and 1 March 2022) have confirmed the previous interpretation of groundwater flow, which is in a southeast direction towards the Pacific Ocean.

Table 1: Deep groundwater levels informing horizontal deep groundwater flow direction
<table><tr><th>Monitoring Well</th><th>Groundwater level (mRL) (17/02/2022)</th><th>Groundwater level (mRL) (01/03/2022)</th></tr><tr><td>BH211b</td><td>102.7</td><td>102.7</td></tr><tr><td>BH201</td><td>97.2</td><td>99.1</td></tr><tr><td>BH202</td><td>103.1</td><td>103.2</td></tr><tr><td>BH301b</td><td>100.0</td><td>100.2</td></tr></table>
Groundwater monitoring at BH301 indicates that downwards vertical hydraulic gradients are present between BH301a and BH301b, confirming the previous interpretation that downward vertical gradients dominate the deeper groundwater system.

Table 2: Vertical hydraulic gradients at BH301
<table><tr><th>Monitoring Well</th><th>Date</th><th>BH301a groundwater level (m RL)</th><th>BH301b groundwater level (mRL)</th><th>Screen separation (m)</th><th>Downwards vertical hydraulic gradient</th></tr><tr><td rowspan="2">BH301</td><td>17/02/2022</td><td>110.7</td><td>100</td><td rowspan="2">12.8</td><td>0.84</td></tr><tr><td>01/03/2022</td><td>110.3</td><td>100.2</td><td>0.79</td></tr></table></td></tr>
<tr><td>41</td><td>The conceptual groundwater model figures of the shallow groundwater system at the proposed landfill toe shows the fine-grained low permeability layer (brown silt layer) to act as an aquitard for the shallow groundwater system. This brown silt layer is inferred (by the cross section illustration) to extend toward the north between BH201 and BH03.

The applicant has advised that this stratum has been recorded in the core at one bore location and inferred by observations of the drilling arising at another location. The lateral extent and effectiveness of the fine grained low permeability layer to act as an aquitard is not fully understood.

Can the applicant provide an updated geological cross section to include the findings of the bore?

And commentary around their findings from the drilling?</td><td>Reddish-brown, fine-grained, low permeability layers were encountered in BH301 at approximately 115 mRL and 108 mRL. This unit has previously been encountered at BH03, BH04, BH05 and BH211 between 95 mRL and 103 mRL. A reddish-brown layer was also observed during wash drilling on BH201, however no approximate depth was recorded. The layer appears to dip gently towards the base of the gullies where it appears to have been eroded (BH01 and BH02). While the unit is considered discontinuous, where it is present it is impeding the percolation of recharge. This is supported by strong downwards vertical hydraulic gradients and differences in groundwater chemistry in nested piezometers installed above and below this layer (including BH04 and BH211). As groundwater flow above and below the layer is in different directions, this unit separates the shallow and deep groundwater systems at the site.

See geology within the conceptual cross section C in the attached figure.</td></tr>
<tr><td>42, 51</td><td>It has been acknowledged by the applicant that the extent of the shallow aquifer cannot be well defined. Based on the conceptual groundwater model figures (updated Figure 6), the inferred area (width and length) of shallow groundwater system is different to that of the other figures in the Groundwater Report and a large part of the proposed landfill footprint is overlying the deeper groundwater system with groundwater flows toward the southeast. Limited detail has been provided on the ‘shallow’ part of the deeper groundwater system i.e. within the completed weathered to highly weathered Henley Breccia on the side slopes of the valley.

It was expected that the additional site investigations as described above would provide additional information on the groundwater systems in the centre of the landfill footprint.

An updated conceptual groundwater model section would have been helpful. Can the applicant expand on this?</td><td>A piezometer was not installed above the reddish-brown fine-grained low-permeability layer at BH301, which is where the shallow groundwater system is inferred to be located if saturated conditions are present. However, the low permeability layer was identified in this bore demonstrating that the layer is widespread across the site and likely to be present beneath the majority of the landfill footprint. As already recorded at other nested piezometers (BH04 and BH211), this unit influences downward percolation and water levels, with the low-permeability layer inferred to impede percolation of recharge. At BH301, this would allow a degree of horizontal flow to occur following the upper surface of this unit which slopes in elevation towards the shallow groundwater system present in the base of the valley where it discharges to the Otokia Creek.

As also discussed in response above, the nested piezometers at BH301 confirmed the presence of strong downward vertical hydraulic gradients within the Henley Breccia which are considered to dominate the deeper groundwater system.

See conceptual cross section C in the attached figure.</td></tr>
</table>

Appendix 8 Groundwater matters

Matters raised in T+T report: "Technical Review to Inform Notification Decision: Smooth Hill Landfill - Appendix 8 - Groundwater Report" (2/9/21)		**Applicant response**
Para	**Subject and commentary**	
43, 44, 52, 65	**<u>Condition 17 as currently worded</u>** *Groundwater monitoring shall commence at least 18 months prior to waste being accepted at monitoring bores GW1 – GW6, and surface water monitoring at locations SW1 – SW7 shown on drawing 12506381-C309 shall commence at least 36 months prior to landfill construction commencing to establish the baseline water chemistry and inform the development of monitoring trigger levels. Sampling of groundwater and surface water shall occur at least every 3 months for the parameters set out in Attachment 1 for those locations.* T+T disagree with the statement "that a more detailed quantification of recharge to the deep groundwater system is not considered to add value to the assessment as the risks associated with this flow path are minimal relative to those of shallow groundwater". The applicant has proposed quarterly groundwater monitoring for 18 months. T+T suggested that this is inadequate and recommended that **<u>Condition 17</u>** be amended to allow for a more comprehensive period of groundwater quality monitoring to support the conceptual site model and to establish baseline levels from which trigger levels will be derived. A suitable consent condition should: • Specify monitoring locations and bore depths; • Specify exactly what data (water level and water quality) will be collected and when (monthly for a minimum of 18 months); • Specify when and how the data will be interpreted and presented; and • Explain what action will be taken in the event that the data does not support the conceptual site model Does the applicant wish to amend their proposed condition accordingly? If yes, please can suitable wording be provided?	Table 1 presents the existing monitoring wells that are being monitored to confirm baseline groundwater levels and quality, as well as one proposed additional deep groundwater bore to act as up-hydraulic gradient bore for the deep groundwater system. The benefit of using existing wells means existing results dating back to 2019 can be incorporated into the baseline data (to date, five groundwater monitoring rounds have been undertaken at these locations). As the groundwater system responds very slowly to external influences, monitoring at a frequency greater than quarterly isn't warranted as changes in conditions will not be observed on this timescale. *Table 1: Proposed GW monitoring locations and requirements* **Monitoring well** / **Description** / **Monitoring requirements** GW1 / Existing well BH201 (down hydraulic gradient deep GW system) / Quarterly groundwater level monitoring and water quality sampling. 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 mRL (up hydraulic gradient deep GW system) GW6 / Existing well BH09 BH202 / Existing well BH202 (deep GW system) It is important to wait until the end of the monitoring period to assess the groundwater results with respect to reviewing the conceptual site model, and to allow statistical analysis to be undertaken to inform determination of trigger levels. At the conclusion of the groundwater monitoring period the results will be reviewed and reported to the independent peer review panel. At this time any adjustments the conceptual model would be made. Given the current condition of groundwater quality (elevated inorganic nitrogen and trace metals), the potential variability in the baseline water quality and the assessed small contribution from the proposed landfill (leachate leakage) is unlikely to have a meaningful influence on the existing interpreted outcomes. In the event that changes to existing groundwater conditions are identified the following cascade of steps will be undertaken: • Confirm that the change is real and not the result of monitoring error (repeat monitoring round). • Revisit the risk profile of the landfill in the context of the change. • Report the findings to the peer review panel • The landfill detailed design and operational controls will be revisited if appropriate. The applicant proposes new and amended conditions as set out below and included in the **attached** updated conditions of consent which include: • New condition 22 requiring the installation of an additional monitoring well monitoring the deep groundwater system at monitoring location GW5. • Amendment of condition 16 (renumbered 23) requiring retention of the existing monitoring wells for groundwater monitoring. • Amendment of condition 17 (renumbered 24) requiring the collection of both baseline groundwater level and quality data. • New condition 25 specifying when and how the data will be interpreted and presented, including updating of the conceptual site model. • Amendment of condition 18 (renumbered 26) requiring the development of trigger levels to meet specified objectives, and minimum requirements.

Appendix 8 Groundwater matters

Matters raised in T+T report: "Technical Review to Inform Notification Decision: Smooth Hill Landfill - Appendix 8 - Groundwater Report" (2/9/21)		Applicant response
Para	**Subject and commentary**	

22. An additional groundwater monitoring well at location GW5 as shown on drawing 12506381-C309 shall be installed at least 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 well at GW5 shall be installed to monitor the deep groundwater system with a screen between 90 and 85m RL and. shall be constructed in accordance with NZ4411:2001 Environmental Standard for Drilling of Soil and Rock.

23. The Ggroundwater monitoring ~~bores~~ wells described in the table below ~~GW1 – GW6 shall be installed at least 18 months prior to waste being accepted~~ as shown on drawing 12506381-C309 shall be retained to enable collection of baseline groundwater level and groundwater quality data and monitoring for leachate contamination of groundwater during operation. ~~All monitoring bores shall be sealed to prevent ingress of surface water or contaminants.~~

Monitoring well	***Description***
GW1	*Existing well BH201 (down hydraulic gradient deep GW system)*
GW2	*Existing wells BH02a and BH02b (shallow GW system).*
GW3	*Existing well BH04a (shallow GW system) and BH04b (deep GW system)*
GW5	*Existing wells BH01a and BH01b (shallow GW system).* *Additional monitoring well (BH01c) to be installed with screen between 90-85 mRL (up hydraulic gradient deep GW system). See condition 22.*
GW6	*Existing well BH09*
BH202	*Existing well BH202 (deep GW system)*

24. Groundwater monitoring to collect baseline groundwater level and groundwater quality data shall commence at least 18 months prior to ~~waste being accepted~~ construction of the landfill at the monitoring wells described in condition 23 , ~~bores GW1 – GW6~~and surface water monitoring at locations SW1 – SW7 shown on drawing 12506381-C309 to collect baseline surface water level and quality data shall commence at least 36 months prior to landfill construction commencing to establish the baseline water chemistry and inform the development of monitoring trigger levels. Sampling of groundwater ~~and surface water~~ shall occur at least every 3 months for the 18-month monitoring period for the full suite of parameters set out in Attachment 1 for those locations.

25. At the conclusion of the monitoring period identified in condition 24, the baseline data shall be reviewed to confirm or make any required adjustments to the conceptual site model. The monitoring results for the entire monitoring period, along with any updates conceptual model shall be reported to the independent peer review panel, prior to development of monitoring trigger levels under condition 26.

26. Following the reporting of monitoring results and any updates to the conceptual site model under condition 25, monitoring trigger levels shall 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 of the landfill by ensuring that the landfill does not have an adverse effect on water quality when compared with the current regime.*

Appendix 8 Groundwater matters		
Matters raised in T+T report: "Technical Review to Inform Notification Decision: Smooth Hill Landfill - Appendix 8 - Groundwater Report" (2/9/21)		**Applicant response**
Para	**Subject and commentary**	
		Trigger levels shall be developed for theose 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 bores wells described in condition 23 shown as GW1 – GW6 on drawing 12506381 – C309.* b. *The groundwater collection system prior to discharge to the Ōtokia Creek, or abstraction for non-potable water supply.* c. *During the stage 1 works, the sediment retention pond for stage 1 prior to discharge to the Ōtokia Creek. During subsequent stages, the attenuation basin, prior to discharge to the Ōtokia Creek.* d. *The surface water monitoring points shown as SW1 – SW7 on drawing 12506381-C309.* *The baseline water chemistry data collected under condition 1724 shall be used to establish typical ranges for each parameter in **Attachment 1** and establish trigger level values for the indicated parameters in Attachment 1 these ranges. Development of trigger level shall meet the following requirements:* a. *Establishment of levels for groundwater and surface water metals and nutrients shall 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 – SW7) for typical flows shall 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 – SW7) for flood events (where out of channel flows occur), shall be based on visual inspection 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 shall be provided to ORC for approval the independent peer review panel at least 3 months prior to construction, for certification that the trigger levels meet the requirements of this condition. are suitable to detect any leachate in advance of waste being accepted. The independent peer review panel shall communicate this certification to Otago Regional Council.*
57, 66	T+T acknowledge that potential leachate ingress to the deeper groundwater system could occur but is less likely given the location of the deeper groundwater at the site. One upgradient monitoring well GW1 is proposed immediately upgradient of the landfill footprint, but no detail has been provided on this monitoring well depth. The depth of the monitoring well needs to be deep enough to capture groundwater flows in the deep groundwater system. Furthermore, no design details of the monitoring bores (GW 1 - GW 6 and BH202) have been provided. These need to be provided by the applicant to show the target depths and which groundwater system they are monitoring. T+T suggested that the following consent condition be added: *The Landfill Monitoring Management Plan must describe, with justification reflecting the conceptual site model [insert ref], the target depths and design details for monitoring bores GW1 to GW6 and BH202.* Does the applicant wish to amend their application to include this condition?	As noted above monitoring well GW1 has already been installed and is down gradient of landfill footprint as deep groundwater flow direction is to the southeast. All other monitoring wells have also been installed, except that an additional deep groundwater well BH01c is proposed at the location of GW5 to provide up hydraulic gradient location within the deep GW system. As noted above, the applicant proposes new and amended conditions as set out in the table above and included in the **attached** updated conditions of consent which include: • New condition 22 requiring the installation of an additional monitoring well monitoring the deep groundwater system at monitoring location GW5, constructed in accordance with NZ4411:2001. • Amendment of condition 16 (renumbered 23) requiring retention of the existing monitoring wells for groundwater monitoring.

Appendix 8 Groundwater matters		
Matters raised in T+T report: "Technical Review to Inform Notification Decision: Smooth Hill Landfill - Appendix 8 - Groundwater Report" (2/9/21)		**Applicant response**
Para	**Subject and commentary**	
73, 74	***Condition 68i*** *Groundwater and surface water quality:* *a. Leachate containment is optimised 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* *b. The risks of excessive liner hydration are minimised* *c. Protection of the landfill liner from waste tipping and compaction activity.* *d. 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* *e. The ingress of stormwater into open and closed sections of the landfill are minimised to avoid excessive leachate generation.* *f. Stormwater that comes into contact with waste is directed to the leachate collection system* *g. 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* *h. Spills of fuels, hazardous substances, or other contaminants are promptly contained and remediated* ***i. Monitoring bores are regularly maintained to prevent the ingress of contaminants*** *j. Erosion and cracking of the landfill cap is minimised.* T+T recommended that Condition 68i be more appropriately worded to bring it in line with NZS 4411 Environmental Standards as follows: *Monitoring bores must be constructed in accordance with NZS 4411 and must be protected to ensure that physical damage to the bore headworks does not occur.* Does the applicant wish to amend their proposed condition accordingly?	All existing monitoring wells have already been constructed in accordance with NZS 4411. This will also be followed for construction of the proposed additional up gradient deep monitoring well BCH01c at GW5. As noted above, the applicant proposes new and amended conditions as set out in the table above and included in the **attached** updated conditions of consent which include new condition 22 requiring the installation of an additional monitoring well monitoring the deep groundwater system at monitoring location GW5, constructed in accordance with NZ4411:2001. Furthermore, an amendment is proposed to LMP objective (i) in condition 68 (renumbered 82) as set out below and included in the attached updated conditions of consent: *82(i) Monitoring wells are regularly maintained and to prevent the ingress of contaminants and protected to ensure physical damage to the bore headworks does not occur.*

Appendix 9 Surface Water matters

Matters raised in T+T report: "Technical Review to Inform Notification Decision: Smooth Hill Landfill - Appendix 9 - Surface Water Assessment" (7/9/21)		**Applicant response**
Para	**Subject and commentary**	
25, 26	While T+T agreed that there is a potential adverse effect on wetland hydrology, they were unable to conclude if this effect (either by itself or following the implementation of the proposed mitigation measures) would be minor or less than minor, for several reasons. The implications of these potential effects on wetlands need to be considered in the context of both the Regional Plan and Policy 6 the NESFW, which states, "There is no further loss of extent of natural inland wetlands, their values are protected, and their restoration is promoted" (our emphasis). Can this uncertainty and further assessment be addressed by the applicant?	The results of the landfill assessment indicate loss of stormwater within the landfill designation will occur, primarily as a function of increased infiltration and interception of rainwater by the landfill (leachate generation). This has the potential to reduce stormwater by approximately 20% in comparison to the assessed current conditions at the point where the tributary of the Otokia Creek crosses the landfill designation. While a net loss in stormwater is predicted, the influence of the attenuation basin and sediment retention ponds are considered likely to smooth out peak stormwater flows and provide more consistent flow to the catchment. With increasing distance from the landfill designation, the interception of runoff and groundwater recharge from additional catchments is expected to reduce the impact to the hydrological regime. Further explanation of effects on wetland hydrology will be addressed in the applicant's evidence currently in preparation. The above conclusions coupled with the widespread nature of similar narrow wetland areas in much smaller gully bottom habitats elsewhere in the landfill designation and surrounding hill country leads to the conclusions that: • Much smaller gully bottom areas with correspondingly smaller catchment yields (but that otherwise likely have similar poor draining soils and similar groundwater regimes) support wetland habitat. • The existing hydrological regime (total catchment yield) for the existing swamp wetland (and below areas) is highly variable due to climate and land use factors. The currently observed runoff volumes are not considered critical for the persistence of wetland habitats (in terms of wetland type or extent). This could be different, were the wetlands of an altogether different type (e.g., ephemeral), wherein the extent and nature of wetland habitat is tightly coupled to the hydrological regime, but this is not the case. • Wetland habitats below the landfill contain only widespread, generalist and tolerant indigenous wetland plant species that are adapted to varying runoff and prolonged dry periods. • Hence, the 'swamp wetland' area below the landfill (and in turn the wetland areas below it) would continue to receive sufficient water inputs to sustain wetland habitat of the same type and extent. On this basis, it is not considered that hydrological changes would lead to loss of wetland extent at the site. Further, the protection of wetland values would occur via the establishment of a reserve area (per the draft Restoration Management Plan, draft RMP) to set aside, fence, and manage wetland areas below the landfill (within the designation site) for their enhancement. Their restoration would be promoted via other draft RMP measures including removal of existing extensive weeds, and restoration plantings of appropriate local species.
46	We agree that continuous monitoring of water quality in the Attenuation Basin and fitting the low-level outlet with a shut-off valve is an appropriate way of managing the risk of leachate contamination in the Attenuation Basin. However, the draft consent conditions are silent as to how this would be implemented. A suitable consent condition should: • Provide details of automatic alarms that will be installed to warn the landfill operator of potential contamination events; • Specify the objectives to be achieved in terms of managing potential effects on water quality; • Specify under what conditions the alarms will be activated; • Provide details of emergency response processes; • Specify what the necessary remedial steps will be. If a suitable condition is not going to be provided prior to the hearing, then it should also provide details of an independent peer review process that will be undertaken to provide ORC with confidence that the proposed plan will be effective in achieving the stated objectives. Does the applicant wish to amend their application to include such a condition and if yes, can suitable wording be provided?	During the stage 1 works, continuous monitoring of the stage 1 sediment retention pond (SRP1) is proposed for conductivity, pH and Ammonia prior to discharge to the Ōtokia Creek. During subsequent stages, continuous monitoring will occur at the attenuation basin. A seepage or discharge of leachate to the sediment pond or attenuation basin will result in elevated levels/concentrations of water. The continuous monitoring via probes in the pond or basin will pick up the increase and if it exceeds one or more of the set trigger levels will activate an alarm. Once the pond and basin are constructed monitoring of water quality will be undertaken to allow establishment appropriate trigger values before the first waste is accepted at the landfill. Values must be sufficiently above typical values to avoid frequent false alarms due to natural variation while sufficient to detect leachate discharges. In the event of a trigger level exceedance an alarm would be activated at site facility and would also notify key site personnel via a text message to undertake response procedures as set out in the LMP. The response procedures would include: • Visual inspection to see if there is any obvious reason for the alarm and retesting to confirm exceedance of trigger levels. • Shutting off the outlet from the sediment retention pond or attenuation basin to prevent discharge to the downstream system and redirection of water to the leachate collection system until which time conditions have reduced below the trigger level or it can be demonstrated that the effects of discharging water will not need the surface water trigger levels at monitoring points SW1 – SW7. • Undertaking an additional monitoring round following any exceedance.

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Matters raised in T+T report: "Technical Review to Inform Notification Decision: Smooth Hill Landfill - Appendix 9 - Surface Water Assessment" (7/9/21)		**Applicant response**
Para	**Subject and commentary**	
		• Undertake remedial actions to address leachate discharge. Remedial works will be set out in the LMP but are expected to include: • Confirmation of the cause and source of leak. • Lowering leachate level in landfill and repair of cap where seepage has occurred. • Review of capping (construction and design) and leachate management to confirm appropriateness or whether modification is required. The applicant proposes new and amended conditions as set out below and included in the **attached** updated conditions of consent which include: • Amendment of condition 18 (renumbered 26) requiring the development of trigger levels to meet specified objectives, and minimum requirements. • New condition 27 detailing the requirements for continuous monitoring, including alarms, and requirements for response procedures to be included in the LMP. • Amendment of condition 19 (renumbered 28) detailing updated actions where trigger levels are exceeded. • Amendment of the water monitoring parameters in Appendix 1 to include a full and basic suite of monitoring parameters linked to different monitoring frequencies in condition 19 (renumbered 28). As outlined above, the applicant also agrees that an independent peer review panel should be established to review the design, construction, and operation of all stages of the landfill to certify it meets the requirements of the consent. This includes certification of the detailed design, LMP, and monitoring trigger levels. The requirement for a peer review panel has been added as proposed conditions 4, 5, and 7 set out earlier in this table and included in the **attached** updated set of conditions. *26. Following the reporting of monitoring results and any updates to the conceptual site model under condition 25, monitoring trigger levels shall 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 of the landfill by ensuring that the landfill does not have an adverse effect on water quality when compared with the current regime.* *Trigger levels shall be developed for theese 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 bores wells described in condition 23 shown as GW1 – GW6 on drawing 12506381 – C309.* *b. The groundwater collection system prior to discharge to the Ōtokia Creek, or abstraction for non-potable water supply.* *c. During the stage 1 works, the sediment retention pond for stage 1 prior to discharge to the Ōtokia Creek. During subsequent stages, the attenuation basin, prior to discharge to the Ōtokia Creek.* *d. The surface water monitoring points shown as SW1 – SW7 on drawing 12506381-C309.* *The baseline water chemistry data collected under condition 1724 shall be used to establish typical ranges for each parameter in **Attachment 1** and establish trigger level values for the indicated parameters in Attachment 1 these ranges. Development of trigger level shall meet the following requirements:*

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Matters raised in T+T report: "Technical Review to Inform Notification Decision: Smooth Hill Landfill - Appendix 9 - Surface Water Assessment" (7/9/21)		Applicant response
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a. *Establishment of levels for groundwater and surface water metals and nutrients shall 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 – SW7) for typical flows shall 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 – SW7) for flood events (where out of channel flows occur), shall be based on visual inspection 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 shall be provided to ~~ORC for approval~~ the independent peer review panel at least 3 months prior to construction, for certification that the trigger levels meet the requirements of this condition. ~~are suitable to detect any leachate in advance of waste being accepted~~. The independent peer review panel shall communicate this certification to Otago Regional Council.

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

a. *Continuous monitoring of electrical conductivity, pH, and ammonia shall occur.*

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

The landfill management plan required by condition 82, shall include response procedures in the event of an exceedance of trigger levels for continuous monitoring in condition 28. This shall as a minimum include the relevant actions outlined in condition 28.

27. During operation of the landfill the monitoring of groundwater level and quality, and surface water levels and quality outlined in the table below shall occur and be assessed against the trigger levels established under condition 26~~18~~, and the results reported to ~~ORC~~ the independent peer review panel and Otago Regional Council. Where there is any exceedance of the trigger levels caused by leachate or sediment, the specified actions shall be implemented.

Monitoring Point	***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 Ōtokia Creek or abstraction for non-potable water supply.	*Continuous*	• *Electrical conductivity* • *pH* • *Ammoniacal nitrogen*	*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*	*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*
	Monthly	*Basic suite of parameters set out in **Attachment 1** to be monitored, except that the full suite of parameters to be*		

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Matters raised in T+T report: "Technical Review to Inform Notification Decision: Smooth Hill Landfill - Appendix 9 - Surface Water Assessment" (7/9/21)		Applicant response				
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				monitored in one monthly monitoring cycle per year	*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.*	*taken to prevent further trigger level exceedances and proposed follow up monitoring where necessary.*
		Groundwater monitoring wells as GW1 – 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 Ōtokia Creek During subsequent stages, the attenuation basin prior to discharge to the Ōtokia Creek.	*Continuous (when flows occur)*	• *Electrical conductivity* • *pH* • *Ammoniacal nitrogen*	*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 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*	

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Para	**Subject and commentary**	
		<table><tr><td></td><td></td><td></td><td>*outlined in Attachment 1 for SW1 – SW7.*</td></tr><tr><td>*Surface water monitoring points shown as SW1 – SW6 and surface water monitoring point shown as SW7 (located at the Ōtokia Creek culvert).*</td><td>*Weekly (when flows occur). If continued periods of surface water discharge occur, then monitoring will occur weekly.*</td><td>*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*</td><td>*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.*</td></tr><tr><td></td><td></td><td>• *Sediment* • *Turbidity*</td><td>*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.*</td></tr></table>
50	SRP 4 drains an area of the site where the LFG plant and refuelling areas are located. T+T were unable to determine whether this area will be paved or remain unsealed. If it is paved then the construction of a sediment retention pond (or another device that can manage higher flows from paved surfaces, and potentially hydrocarbon contamination) may be suitable to drain this area. Can the applicant provide further clarification?	The lower facilities area is proposed to be compacted gravel surfacing as it will periodically have heavy plant on it which would damage seal. This area drains to a sediment retention pond (SRP4). The pond will be one of the first elements constructed as part of the sediment and erosion control works for the initial landfill development earthworks. The SRP will discharge via a decant to a nearby downstream gully system which may require a flexible pipe down the slope to avoid erosion/formation of rilling. The pond be retained after the completion of earthworks to provide ongoing treatment of stormwater from the lower facilities area during the operation of the landfill. Following earthworks completion, it is anticipated the discharge would be rerouted to the landfill parameter drain flowing to the attenuation basin.
56, 64	The collection of baseline data on surface water and groundwater over periods of 36 months and 18 months respectively is supported as it will enable the development of a robust picture of groundwater and surface water quality and enable the development of trigger levels that are protective of water quality. However, the draft consent conditions are not (at this point) sufficiently developed to ensure the effects on surface water quality will be less than minor. The intent of **Condition 18** is to develop trigger levels at each monitoring location is supported. However, requiring ORC to approve proposed trigger levels to confirm that they are suitable to detect any leachate is not appropriate. Rather, it is the role of the applicant to demonstrate that proposed trigger levels are appropriate to ensure any potential adverse effects on surface water quality are no greater than that proposed and assessed in the AEE. Furthermore, the surface water report suggests some metrics (95th percentile) as trigger levels. It is premature to establish those levels in the absence of a suitable baseline dataset. Does the applicant wish to amend their proposed conditions accordingly, and if yes, can suitable wording be provided? ***Condition 18*** *Monitoring trigger levels shall be developed for those parameters set out in Attachment 1 (Water Quality Monitoring Parameters) 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 bores shown as GW1 – GW6 on drawing 12506381-C309.*	The available monitoring data, including a minimum of 18 months groundwater sampling and 36 months surface water sampling, will be used to develop the trigger levels for key parameters in groundwater and surface water. Given the current condition of groundwater quality (elevated inorganic nitrogen and trace metals), the potential variability in the baseline water quality and the assessed small contribution from the proposed landfill (leachate leakage) is unlikely to have a meaningful influence on the existing interpreted outcomes. In the event that changes to existing conditions are identified the following cascade of steps will be undertaken: • Confirm that the change is real and not the result of monitoring error (repeat monitoring round). • Revisit the risk profile of the landfill in the context of the change. • Report findings to the peer review panel. • The landfill detailed design and operational controls will be revisited if appropriate. The data will be interpreted to develop trigger levels differently for surface water, suspended sediments within surface waters, and groundwater and surface water metals and nutrients as set out below:

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Matters raised in T+T report: "Technical Review to Inform Notification Decision: Smooth Hill Landfill - Appendix 9 - Surface Water Assessment" (7/9/21)		**Applicant response**
Para	**Subject and commentary**	
	b.The groundwater collection system prior to discharge to the Ōtokia Creek, or abstraction for non-potable water supply *c. The sediment retention pond for stage 1 prior to discharge to the Ōtokia Creek* *d. The surface water monitoring points shown as SW1 – SW7 on drawing 12506381-C309.* *The baseline water chemistry data collected under condition 17 shall be used to establish typical ranges for each parameter in Attachment 1 and establish trigger values for these ranges. Proposed trigger levels shall be provided to ORC for approval that the trigger levels are suitable to detect any leachate in advance of waste being accepted.* A suitable consent condition might: • Specify what baseline groundwater (18 months' worth) and surface water (36 months' worth) monitoring data will be used to develop trigger levels; • Explain what action will be taken in the event that the data does not support the conceptual site model; • Specify how and when the data will be interpreted to develop trigger levels; • Specify the objectives of these trigger levels in terms of managing potential effects on water quality; • Provide details of an independent peer process that will be undertaken to demonstrate to ORC that the proposed trigger levels will ensure that the proposed water quality objectives will be achieved.	**Surface water.** Development of the trigger levels would include review of available data (including consideration of variables i.e preceding rainfall or lack of, and flow). Based on the review of the data and from available information on earthworks construction and the landfill a number of key parameters would be identified for which trigger levels will be derived, with the proposed conditions below. **Suspended sediments within surface water** For typical flows the trigger level will be the upper limit of turbidity values recorded during baseline monitoring or the Otago Regional Plan Schedule 15 numerical limit for turbidity in receiving water, whichever is higher. The higher of the two levels will be applied because if, for example, the baseline background level exceeds the schedule 15 limit, frequent exceedances of the trigger level that are not associated with the landfill operation will result. For flood events (flow is out of channel) the trigger level is to be based on visual inspection with no significant increase in turbidity (greater than 30% in turbidity at the downstream boundary of the site over that of adjacent contributing catchments). **Groundwater and surface water metals and nutrients** Development of the trigger levels would include review of available data collected during the monitoring period. A trend analysis approach will be adopted for the setting of trigger levels for key parameters to ensure the following is accounted for: • The changing land use over time (forestry cycle). • Slow rate of change over time. • Variability in baseline quality. The objectives of the trigger levels will be: • To ensure construction management controls are adequate and being operated and maintained to ensure effective operation. • To identify potential leachate discharge to the environment at or near source to confirm efficacy of the management system or the need for remedial actions • With the overall objective being protection of the receiving environment downstream of the landfill by ensuring that the landfill does not have an adverse effect on water quality when compared with the current regime. The applicant proposes new and amended conditions as set out below and included in the **attached** updated conditions of consent which include: • New condition 25 specifying when and how the data will be interpreted and presented, including updating of the conceptual site model. • Amendment of condition 18 (renumbered 26) requiring the development of trigger levels to meet specified objectives, and minimum requirements. As outlined above, the applicant also agrees that an independent peer review panel should be established to review the design, construction, and operation of all stages of the landfill to certify it meets the requirements of the consent. This includes certification of the monitoring trigger levels. The requirement for a peer review panel has been added as proposed conditions 4, 5, and 7 set out earlier in this table and included in the **attached** updated set of conditions.
57	**Condition 19** its current form, along with the parameters set out in Attachment 1, is insufficient to provide certainty that monitoring data will be collected in a consistent manner, is sufficiently comprehensive to enable assessment on effects on surface water quality to be confidently undertaken, and will be undertaken to appropriate quality assurance standards. Does the applicant wish to amend their proposed conditions accordingly, and if yes, can suitable wording be provided?	The applicant proposes that the following is added to the conditions to ensure the monitoring is carried out in a consistent manner and to appropriate quality standards: • Sampling will be undertaken at the specified locations as indicated on the attached sampling location (attach if this has not been included) • Sampling must be undertaken, or overseen by, a suitably qualified professional and collected in accordance with AS/NZS 5667.11:1998

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Matters raised in T+T report: "Technical Review to Inform Notification Decision: Smooth Hill Landfill - Appendix 9 - Surface Water Assessment" (7/9/21)		**Applicant response**
Para	**Subject and commentary**	
		• All analysis carried out in connection with the consent shall be performed by a laboratory that meets International Accreditation New Zealand ("IANZ") approved laboratory or otherwise as specifically approved by the Consent Authority With respect to the comment that the parameters are not sufficiently comprehensive to enable assessment of effects on surface water. The sampling is to analyse for the identified trigger levels. The trigger levels will be identified as indicators for identification of leachate or construction activity discharges. The sampling of the surface waters on a weekly basis is considered to be an extremely intensive regime that will allow early identification of any issues. For groundwater and surface water monitoring during operation of the landfill, basic analytical suites will be adopted for standard sampling rounds, with full analytical suites undertaken at least once per year (as presented in Attachment 1 to the conditions). The applicant proposes the addition of a new condition setting out how sampling will be undertaken in a consistent manner and to appropriate standards. A new proposed condition 29 is set out below and included in the **attached** updated set of conditions. *26. All groundwater and surface water sampling required under conditions 24 and 28 shall meet the following:* a. *Sampling shall be undertaken at the specified locations indicated in conditions 24 and 28.* b. *Sampling shall be undertaken, or overseen by, a suitably qualified professional and collected in accordance with AS/NZS 5667.11:1998.* c. *All analysis carried 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.*

Appendix 10 Air Quality matters

	Para	Matters raised in T+T report: "Technical Review to Inform Notification Decision: Smooth Hill Landfill - Appendix 10 - Air Quality Assessment" (27/8/21) Subject and commentary	Applicant response
	38-41	The assessment of odour effects in the Air Quality Report relies heavily on the adoption of best practice odour control measures. T+T considers that a more complete and comprehensive Landfill Management Plan addressing the control of odour, and particularly the receipt and management of highly odorous wastes, should be provided before the substantive decision on the application is made. Furthermore, T+T considers additional consent conditions would be appropriate that: • Limit the time of day when highly odorous loads can be received to avoid early mornings when winds can be very light or calm which is a worst case for odour dispersion. • Include a definition of what constitutes highly odorous wastes. • Require the management plan to include specific procedures for the pre-acceptance, handling and placement of highly odorous wastes, including contingency measures in the event of an unexpected odorous load. • Specify the key requirements of the procedures for the receipt of highly odorous wastes (for example immediate burial, availability of odour suppressant sprays, etc.). Does the applicant wish to amend their application to include appropriate consent conditions, and if yes, can suitable wording be provided?	The additional recommendations suggested by T+T have been reviewed and it is agreed that these would be useful additions to the suite of odour controls already proposed and will help provide a greater level of assurance that odours from "highly odorous waste" will be appropriately controlled. The applicant proposes to amend condition 29 (renumbered 39) accordingly as set out below and included in the **attached** updated conditions of consent. Furthermore, all these measures, along with the mitigation measures outlined in the Air Quality Assessment included as part of the updated application will be captured within an updated LMP which will be provided as part of the applicant's evidence. *39. To minimise odour emissions during handling of highly odorous wastes the following measures shall be implemented:* *a. Highly odorous loads shall only be received between the hours of 10.00am and 4.00pm.* *b. ~~Requiring~~ Deliveries of highly odorous wastes ~~loads (including biosolids and offal)~~ shall be pre-booked, to ensure ~~the following~~ preparations are made including ensuring cover material is available at the pit location.* *c. Wastewater sludges, biosolids, and screenings 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 shall be refused entry and only accepted after treatment.* *d. Holding deliveries of unexpected highly odorous waste loads until preparations identified in (~~a~~b) above are in place to enable disposal.* *e. ~~Potentially~~ Highly odorous ~~loads~~ wastes shall be covered as soon as practicable and in any event not later than one hour following placement.* *f. The landfill management plan required by condition 82, shall 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 shall include as minimum requirements for prioritising the placement of highly odorous waste, covering of waste as required by condition 39(e), using special odorous waste placement areas that maximise separation distances to receptors, and the use of odour suppressing sprays/cannons.* *For the purposes of this condition, "highly odorous wastes" include:* *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*

Appendix 10 Air Quality matters			
Matters raised in T+T report: "Technical Review to Inform Notification Decision: Smooth Hill Landfill - Appendix 10 - Air Quality Assessment" (27/8/21)			**Applicant response**
	Para	**Subject and commentary**	
	43, 44	**Condition 34** There shall be no objectionable odour, or nuisance deposits of particulate matter at any building used for residential activity as a result of any of the consent holder's activities on the site. Does the applicant wish to amend Condition 34 accordingly? T+T recommends that **Condition 34** would be more appropriately worded in line with MfE guidance. This text relates to an offensive or objectionable 'effect': *There shall 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.*	It is agreed that proposed condition 34 (renumbered 44) should be amended as set out below and included in the **attached** updated set of consent conditions. *44 There shall 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 shall be no objectionable odour, or nuisance deposits of particulate matter at any building used for residential activity in existence at the date this consent is granted as a result of any of the consent holder's activities on the site.~~*

Appendix 11 Ecological – General matters

Matters for further discussion	Applicant response
Further information has been supplied to quantify the proposed offset using a Biodiversity Offset Accounting Model. Supporting benchmark data could have been supplied to support the models but was not. It is important that the model and associated data are transparent and robust at this stage, as it should be used to ascertain standards to be incorporated into proposed conditions of resource consent. These standards can then be used to develop long term ecological monitoring to determine when or if the proposed net gain in ecological/biodiversity value is achieved. T+T have recommended a suitable condition requiring the use of industry standard models. Each management plan condition also links back to this condition and the need for the required output. Does the applicant wish to amend their proposed conditions accordingly?	There is a need to clearly demonstrate the adequacy of proposed offset measures. The applicant recognises that BOAM and similar methods are increasingly being accepted and adopted as best-practice. However, relevant industry guidance does make practical allowance for situations where large offsets that have a high likelihood of success, as against relatively small losses (see Maysek at al. 2018). In these cases, offset models do not require a high burden of proof in comparison to offset proposals where gains may be marginal. It is understood that the Biodiversity Compensation Modelling (BCM) approaches recently developed by T&T also accept a lower burden of proof where ecological gains are likely relatively substantial. In this instance the proposed biodiversity offset is the restoration of 0.49 ha of wetland habitat within the landfill designation area to offset the loss of up to 0.0017 ha of similar habitat along McLaren Gully Rd that would be reclaimed due to road widening. BOAM calculations were provided, using straightforward metrics very similar to those used in best-practice BOAM industry guidance manuals. However, the applicants' s92 response acknowledged the difficulty in identifying an ecologically meaningful 'benchmark' for what is a highly modified wetland area in a highly modified catchment. Providing detailed benchmark data (if an ecologically relevant example could be agreed upon) would not provide any additional insight that would materially change the clear and large net-gain outcome demonstrated by the BOAM calculations in their existing form. The BOAM calculations provided were largely based on achieving an increase in relative cover of indigenous species at the offset site due to weeding and indigenous planting, with a 5 year time frame and high likelihood of success. Where offset and / or compensation is required for impact management and hence BOAM / BCM methods may be used, there is utility in using the same BOAM / BCM metrics as standards for monitoring of offset success. However, these industry models have been developed in recent years to address the greater inherent uncertainties of offset / compensation (being at the least-preferred end of the 'mitigation hierarchy'), as against the certainties and ecological relevance of mitigation actions at the point of impact. Where ecological impacts (including impacts detected by monitoring) can be mitigated at the point of impact BOAM / BCM methods may be useful in development of adaptive management or as evidence for the adequacy of the mitigation measure, but this is not the case here. The use of these models is not appropriate for this situationwhere the offset proposal involves restoration of an area that is geographically distinct from the point of impact, and when such a significant net gain outcome is predicted. Our response to T+T's recommended condition 47 below further addresses this matter.
T+T Recommended Condition 45 The Consent Holder must establish and retain at its own cost, an independent Peer Review Panel to review the management plans required by Conditions 49, 51, 52, 53 and 54 to assess whether these management plans, implemented effectively, will ensure that any adverse effects are mitigated, offset or compensated using best industry standards and methodologies listed in Condition 47. The independent Peer Review Panel must comprise at least two persons who together must be: a) Independent of the Consent Holder. b) Independent of the planning design, construction, management, and monitoring of the site. c) Appropriately qualified ecologist and / or person. d) Approved in writing by Otago Regional Council.	It is agreed that an independent peer review panel should be established to review the design, construction, and operation of all stages of the landfill to certify it meets the requirements of the consent. This includes certification of the ecological management plans. The peer review panel will communicate certification of any documentation to the ORC. The requirements for a peer review panel have been added as proposed conditions 4, 5, and 7 set out earlier in this table and included in the **attached** updated set of conditions.
T+T Recommended Condition 46 Prior to submitting any of the management plans required by Conditions 50, 51, 52, 53 and 54 to ORC for final acceptance, the Consent Holder must submit the draft management plan to the Peer Review Panel for certification that it meets the requirements of this consent. The Peer Review Panel must communicate this certification to ORC upon submission of the plan.	Consequential changes have also been made to conditions 47, 48, 49, 50, 51 and 68 (renumbered 57, 58, 59, 61 65, and 82 respectively) and other conditions in the attached updated set of conditions to require certification of documents by the peer review panel, in place of review and approval by the ORC.
T+T Recommended Condition 47 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).*	The broad intent of this condition is agreed with and noted the utility and growing acceptance of these sorts of methodologies in our response to the general matters above. We highlight our understanding that the BCM approach was very recently developed by T&T, whereas the other methods have already been accepted in various consenting processes but are nevertheless a relatively recent and evolving area of best practice. Not all residual adverse effects strictly require offset or compensation, in terms of the meaning of these terms in proper application of the 'effects management hierarchy.' Hence, we consider more appropriate the condition more explicitly direct (and we think this is partly there in the wording already) to first avoid, minimise or mitigate impacts, at the point of impact. Offset and compensation are appropriate only where this is not possible.

Appendix 11 Ecological – General matters	
Matters for further discussion	**Applicant response**
	The condition as worded implies that these modelling methods are the only means to address residual effects. This is not the case; numerous consenting processes have accepted alternative approaches. There is no ecological reason why a modelling approach is absolutely required to determine appropriate actions, but we agree models may assist the process. The draft condition is uncertain as to the level or degree of 'residual adverse effects' that would require management. We suggest there is a need to refer to a process by which effects would be monitored and a response triggered, as is generally contained within each of the existing management plan conditions. Overall we consider this standalone condition is unnecessary. While in agreement with the intent of the condition, we suggest that reference to these methods **or similar guidance** is referred to e.g., by way of advice note within the relevant management plan-related conditions. Expressly conditioning the use of the methodologies within the current versions of these specific reports risks setting in stone methods that are likely to be further refined and improved by ecology practitioners over the 35-year lifetime of the landfill. The accepted condition above requiring expert peer review of management plans provides an additional layer of confidence for council that appropriate management actions will be undertaken, and this approach allows for better flexibility as best practice methodologies evolve.

Appendix 11 Ecological – terrestrial and aquatic ecology matters	
Matter for Further discussion	**Applicant response**
T+T notes that there is considerable uncertainty as to how surface water flows may respond to the establishment of the landfill and so appropriate surface water hydrology monitoring should be established to ensure that the actual magnitude of effects is negligible or low. Wetlands are particularly sensitive to changes in hydrology, and it would therefore be appropriate to monitor changes in wetland extent as well. If the magnitude of effects is moderate or higher then additional effects management will need to be triggered. At this stage, T+T considers that the level of effects on the Swamp Wetland, Valley Floor Wetland, and wetlands along McLaren Gully Road may be underestimated. This has ramifications on whether the proposed offset is enough to result in no net loss or net gain in ecological/biodiversity value. No ecological monitoring is proposed to ensure that the actual effects will be as low as predicted. DOC's submission recommends water level monitoring in wetlands, water quality and fish and invertebrate surveys, wetland health monitoring, and provision to review consents if adverse environmental effects are detected. T+T have recommended consent conditions including requiring the development of a Freshwater and Wetland Monitoring and Management Plan to address these concerns. Does the applicant wish to amend their proposed conditions accordingly?	The matter of downstream hydrology effects to wetlands has been discussed above and in a discussion with T&T on 14 March 2022. While we note that this wetland is composed of generally tolerant species (that are not particularly sensitive to changes in hydrology, relative to many wetland species), we agree with T&T and the submission from DOC that an expanded program of monitoring (including water level monitoring, noting this would occur per renumbered condition 28 would be of benefit in supplementing the ecological monitoring already outlined in the draft Vegetation Restoration Management Plan. We acknowledge that the proposed monitoring was not detailed, did not include water level monitoring within wetlands, and did not include adaptive management responses (it was intended that implementing the VRMP measures upfront would account for the predicted worst-case degree of impact, without need for further response). We generally accept T+T's proposed condition 51 regarding creation of a Freshwater and Wetland Monitoring and Management Plan (subject to amendments). We understand why this plan cannot be combined (for efficiency) in a single plan along with the Restoration Management Plan (the RMP), to clearly devolve restoration actions (which are to be carried out upfront to address the impacts of landfill establishment and are broadly the focus of the existing draft VRMP) from monitoring actions (to detect residual or ongoing adverse effects). We accept this approach. The amendments to T+T's recommended condition 51 are addressed in this table below.
T+T Recommended Condition 48 The impact area associated with construction and / or operational activities must be limited to and not exceed 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) Radiata Pine / Gorse / Cocksfoot-Yorkshire Fog Treeland – 33.88 ha. c) (Yorkshire Fog) – Cocksfoot Grassland – 3.15 ha. d) [Purei] – Wiwi/ Rautahi – Exotic Grass Rushland – 0.00027 ha. e) Gorse Scrub – 0.41 ha. f) Exotic Grass Grassland and Fodder Crop Herbfields – 0.69 ha. There must be no direct impact on the Swamp Wetland, Downstream Valley Floor Marsh Wetland, and/or intermittent or perennial streams as a result of construction and / or operational activities.	The condition is accepted insofar as it relates to habitats of ecological value and is consistent with existing use rights. Matters b) and f) relating to the clearance of regenerating production pine forestry and pastoral farming areas are not accepted, considering the negligible ecological value of these habitats and the fact that total clearance of these areas is permitted as of right for current forestry and farming land uses respectively under the relevant regulatory planning documents. Matter e) is not accepted as this may constrain the applicant in their ability to comply with regional pest management plan requirements (refer also to T+T's recommended condition 50 matter b) iii) and discussion of this draft condition below). Furthermore, survey to ensure that (for example) no more than 2.7 m2 of rushland loss occurs would likely be within the margin of error for any surveyor and ecologist that may assess the site in future. Survey may need to be based on existing spatial vegetation maps in case of any unforeseeable change (e.g., a natural slight expansion of rushland) that occurs prior to construction and renders the condition unworkable. Further, considering the modified nature of these habitats, slight discrepancy from any of these amounts (in the order of at least 10%, or even more in the case of the minute level of roadside wetland loss) would not meaningfully alter the type or magnitude of ecological effect. We understand that the intended meaning of 'direct impact' (in relation to wetlands and streams) in the draft condition is to refers to earthworks, vegetation clearance, deposition of spoil, and similar effects. During a discussion within on 14 March 2022 with T&T, it was discussed that 'direct impact' was not intended to refer to hydrological impacts. The applicant therefore proposes a new condition 56 set out below and included in the **attached** updated set of conditions to replace its original condition 46. *56. The area directly impacted by construction and operation of the landfill shall be limited to and not exceed 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 shall 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.*

Appendix 11 Ecological – terrestrial and aquatic ecology matters

Matter for Further discussion	Applicant response
T+T Recommended Condition 49 There must be no clearance of indigenous vegetation, earthworks, or landfill operations in any areas outside of the landfill footprint and operational areas as identified in Smooth Hill Ecological Impact Assessment Report, Boffa Miskell, May 2021 Figure 2 and **Attachment 2** to this consent.	This condition was discussed with T&T on 14 March 2022. It was noted that consent is not sought to clear or undertake landfill operations in areas outside the landfill footprint and operational areas and, so this condition is not strictly necessary. A separate or varied consent would be needed to clear outside of these areas.
T+T Recommended Condition 50 A Restoration Management Plan 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 using the modelling approach set out in Condition 47 to offset or compensate for the loss or impact of freshwater, wetland and terrestrial environments caused as a result of the exercise of this consent. The plan must be submitted to ORC no less than 6 months prior to commencement of construction and 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) Offsetting and / or compensation measures, which as a minimum must include: i. Wetland restoration that not only includes the wetland itself, but also a 10 m buffer from the wetland edge. ii. Stock exclusion from any restoration area using permanent fencing including gates for access. iii. Management of all pest plant species to zero densities. 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 the pest animal control plan in the event that the annual performance targets are not achieved over two consecutive years. This review process must include Te Rūnanga o Ōtākou, the peer review panel, and ORC. vi. All plants used for restoration must be eco-sourced from the same eco-region and be free of pest plant and animals. vii. Ground preparation, planting and maintenance specifications. Plant size and densities must be relevant to the location of where they are being placed and restoration outcomes. viii. A detailed programme of works. ix. Long term success-based monitoring at year 0, 1, 3, 5, 10, 15, 25 and 30. Monitoring must include all metrics used in BOAM and BCM modelling in Condition 47. x. Standardised methodologies for onsite biosecurity control (bring onto site / onsite / taking off site). xi. Key responsibilities of onsite personal. xii. An adaptive management and review process that includes Te Rūnanga o Ōtākou, the peer review panel, and ORC.	The condition is generally accepted, but the following changes are proposed: • Matter b) could refer to impact management measures in general, as not all will be offsets or compensation. • Matter b) i) The purpose of restoring a 10 m buffer from wetland edges is understood, but currently unworkable given that the landfill toe bund is currently proposed to sit around 5 m from the mapped 'swamp wetland' edge. Although applying a 10 m setback is not effects based (as compared to any other distance), this condition is acceptable subject to a note that allows for a lesser setback from the swamp wetland. • Matter b) iii) The intent of this point is agreed but on a plain reading would be near-impossible to implement given the sheer prevalence of gorse in some restoration areas and risk of substantial bykill to regenerating native species if gorse must be fully controlled. Further, since effective natural regeneration can occur through a 'nursery' of gorse, we consider a more appropriate condition would be to allow the Restoration Management Plan to determine a) which plant species are deemed pest species for the purposes of the plan; b) in which areas these are to be eliminated; and c) in which specific areas or circumstances gorse (or another specified pest plant) might otherwise be tolerated as a nurse crop. • Matter b) v) This should apply to pest plants also. • Matter b) vi) The reference to 'and animals' is not needed. Nursery plants are unlikely to contain pest animals. • Matter b) ix) It is agreed that monitoring objectives should be clearly outlined. As per the response to T+T's proposed condition 47 we do not agree that BOAM / BCM modelling should be required as currently proposed. Instead reference to such models should be included as an advice note or similar, and that a clear purpose statement outlines that the objective of the plan is to effect no net loss of ecologically significant habitat / features in terms of type, amount, or condition. The peer review panel can then assess the substance of the plan against this purpose. The applicant therefore proposes a new condition 59 set out below and included in the **attached** updated set of conditions to replace its original condition 49. *55. A Restoration Management Plan based on the Draft Smooth Hill Vegetation Restoration Plan prepared by Boffa Miskell Ltd, dated May 2021, shall 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 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.* *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.*

Appendix 11 Ecological – terrestrial and aquatic ecology matters	
Matter for Further discussion	**Applicant response**
	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.* x. *Key responsibilities of onsite personnel.* c. *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 shall communicate this certification to Otago Regional Council. 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.*
T+T Recommended Condition 51 A Freshwater and Wetland Management Plan must be prepared by a suitably qualified ecologist(s) to ensure effects on any freshwater or wetland environment or species during the construction and operation of the landfill are avoided or offset. The plan must be submitted to ORC no less than 6 months prior to commencement of construction and 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 regarding onsite surveys that have been undertaken to inform the Freshwater and Wetland Management Plan. c) Mitigation methodologies, including salvage and relocation of any species associated with freshwater or wetland environments. d) A residual effects assessment using BOAM or BCM modelling. e) Offset or compensation outcomes that appropriately address any residual effects. f) Key responsibilities of onsite personal g) Pre, during and post construction (term of consent) 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). If an adverse effect is determined, then an adequate offset / compensation approach must be provided as per Condition 47. h) A process for appropriately managing / offsetting / compensating any future indirect effects identified from the monitoring in g. above. i) An adaptive management and review process that includes Te Rūnanga o Ōtākou, the peer review panel, and ORC.	The condition is generally accepted, but the following changes are proposed: In general, relating to matter d), e), and g), as per the responses to T+T's draft condition 47 and to draft condition 50 matter b) ix) it is not agreed that BOAM / BCM modelling should be required as currently proposed, and again note that not all measures will be offset or compensation. More broadly, the need to undertake ecological monitoring and, if an adverse effect is determined, to provide an adequate response is accepted. Comprehensive hydrological monitoring (e.g., in terms of surface water quality and quantity) is proposed through condition 18 (renumbered 28). Supporting this it is proposed that matter g) be amended to require *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)* only in the event that the trigger values in condition 28 are not met. If monitoring, per condition 28, does not detect effects, and there are no construction works in freshwater and wetland environments, then no adverse effects to freshwater and wetland environments due to landfill activities would arise. Assessment of macroinvertebrate communities and fish communities is a costly exercise that requires multiple experts, and therefore it would be unreasonable to monitor these communities during, and post construction in the absence of any water quantity / quality triggers. However, the need for baseline monitoring of these communities pre-construction is accepted. For wetland vegetation, requiring pre- and post construction monitoring is reasonable, because this would have the dual purpose of monitoring the successful implementation of habitat enhancement (planting and weeding) measures proposed. The applicant therefore proposes a new condition 60 set out below and included in the **attached** updated set of conditions.

Appendix 11 Ecological – terrestrial and aquatic ecology matters	
Matter for Further discussion	**Applicant response**
	60. A Freshwater and Wetland Monitoring and Management Plan must be prepared by a suitably qualified ecologist(s) to ensure 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. 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.* *c. Pre, during and post construction (term of consent) 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) to be undertaken in the event that water level monitoring undertaken under condition 28 identifies an exceedance of trigger levels.* *d. A residual effects assessment that takes into account adverse effects identified from the monitoring in c. above.* *e. A process for appropriately remedying or otherwise managing residual adverse effects identified from the assessment in d. above, including methodologies for the salvage and relocation of indigenous fish species or other indigenous species as may be required.* *f. Key responsibilities of onsite personnel.* *g. 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 shall communicate this certification to Otago Regional Council. 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.*

Appendix 11 Ecological – avifauna matters for further discussion

Matters for further discussion	Applicant response
According to T+T, the assessed level of effect on falcon seems to be an underestimation. Although T+T agrees that the implementation of a Falcon Management Plan is standard practice and will reduce the level of effect, if they are found to be breeding onsite and available breeding habitat is restricted in the surrounding environment, then there would be a level of residual effect that would need to be accounted for by offsetting. T+T have proposed amendments to the applicant's consent conditions to address these issues. Does the applicant wish to amend their proposed conditions accordingly?	Falcon breeding habitat is considered to be not restricted in the wider area. The surrounding landscape has a large mosaic of plantation pine (150,000+ hectares) and conservation estate that provides habitat for eastern falcon. Not all of this habitat is suitable for breeding, particularly mature pine stands, however given that it is production forestry, cyclic harvesting occurs; post-harvesting, the pine slash provides suitable habitat for falcon to breed in as does re-planted pine for up to four years post-planting. As such, it is considered that breeding habitat is not restricted in the area and no residual effect remains that requires offsetting. Furthermore it is noted that during a site visit conducted by the project ornithologist in January 2022, it was incidentally noticed that pine plantation adjacent to the Project site has been recently felled and therefore provides close, alternative breeding habitat that any pairs potentially looking to breed at the Project site can utilise when habitat is lost at the Project site or if they are disturbed or displaced.
T+T Recommended Condition 52 A New Zealand Falcon Management Plan based on the *Draft Smooth Hill Falcon Management Plan* prepared by Boffa Miskell Ltd, dated May 2021, must be prepared by a suitably qualified ecologist to ensure any adverse effects on any New Zealand falcons nesting at the site are avoided or offset. The plan must be submitted to ORC no less than 6 months prior to commencement of construction and 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 New Zealand Falcon. b. Detail regarding onsite surveys that have been undertaken to inform the New Zealand Falcon Management Plan. c. Mitigation methodologies to reduce the effects on Falcon during construction. d. Pre, during and post (duration of consent) construction monitoring methodologies. e. A residual effects assessment using BOAM or BCM modelling. f. Offset or compensation outcomes that appropriately address any residual effects. g. Key responsibilities of onsite personal. h. An adaptive management and review process that includes Te Rūnanga o Ōtākou, the peer review panel. and ORC.	The condition is generally accepted, but the following changes are proposed: With regards to matter d, the need for pre-construction surveys for falcon as well as monitoring of nests during-construction is accepted. However, these surveys are only required for the construction phase of the landfill (construction will not be occurring for the duration of the consent). Post-construction monitoring is not needed given that the potential effect being monitored for is mortality of eggs / chicks during construction. With respect to matter e, as per the EIANZ guidelines, that in regards to level of ecological effect, state that "*Low and Very Low levels should not normally be of concern, although normal design, construction and operational care should be exercised to minimise adverse effects*", the levels of effect on eastern falcon do not require offsetting. Mitigation measures noted in the draft Falcon Management Plan, including a 200 m buffer around nesting birds if found on site (which is a very conservative measure) will sufficiently reduce potential impacts on them, if not avoid them completely. With regards to matter f, as per the explanation for matter e, offsetting or compensation is not required as there are no residual effects to address. Finally, the references New Zealand falcon should be changed to eastern falcon. The applicant therefore proposes a new condition 57 set out below and included in the **attached** updated set of conditions to replace its original condition 47. *57. An Eastern Falcon Management Plan based on the Draft Smooth Hill Falcon Management Plan prepared by Boffa Miskell Ltd, dated May 2021, must be prepared by a suitably qualified ecologist to ensure any adverse effects on any New Zealand Eastern falcons nesting at the site during construction are 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. Mitigation methodologies to reduce the effects on Eastern Falcon during construction.* *d. Pre, and during construction monitoring methodologies.* *e. Key responsibilities of onsite personnel.* *f. 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 shall communicate this certification to Otago Regional Council. The certified plan is to be implemented for the duration of any landfill construction works.*

Appendix 11 Ecological – lizard matters for further discussion

Matters for further discussion	Applicant response
Based on the detail provided, the *low or very low level of effect* on lizard populations stated by the applicant may be underestimated. Although T+T agrees that the implementation of a Lizard Management Plan is standard practice and will reduce the level of effect, the remaining residual effects should be appropriately accounted for by offsetting. T+T have proposed amendments to the applicant's consent conditions to address these issues. Does the applicant wish to amend their proposed conditions accordingly?	The EcIA report assesses the lizard habitats that would be impacted by landfill construction as being generally marginal habitats where no lizards have been positively found to date. Further, habitat quality may have deteriorated since report preparation as pines mature across the landfill site. As outlined in the draft Lizard Management Plan, the purpose of lizard management is to ensure that effects are avoided (where possible) or mitigated. The draft management plan measures include salvage of individual lizards, coupled with habitat restoration via draft VRMP measures. Further, the draft management plan allows for more surveys to be carried out prior to the implementation of salvage given the scale of the site, the cryptic nature of the lizards and the habitat types. This will allow populations to be better targeted within the site. Enhancing existing lizard populations within the project site that will not be directly impacted by landfill construction and/or road widening will be the most important ecological intervention for lizards (only subject to avoidable residual effects from predation, see below). Residual effects for cryptic species such as lizards, would include mortality or loss of habitat for those individual lizards not able to be found, salvaged and translocated prior to site clearance. By definition, these adverse effects would be essentially undetectable and not able to be quantified or accurately built into an ecologically robust BOAM or BCM model. Instead, the appropriate response depends on the use of best practice salvage methods upfront, and habitat enhancement at proposed release sites (areas of indigenous vegetation outside the landfill footprint where lizards are most likely to be present). These matters will need to be agreed with DOC, stakeholders including mana whenua, and the proposed peer review panel. Other ongoing indirect effects related to predator influx will be managed via appropriate predator control as outlined in the proposed Plant and Animal Pest Control Programme. To prepare a robust BCM model would require very precise understanding of the population size and locations of lizards in order to accurately account for residual effects. The substantial effort required to achieve this understanding (for cryptic species in a very large area of marginal habitat) would be better spent upfront in salvage effort and avoidance of effects in the first place. Finally, the recent work in the Dunedin / Otago area on a species known as cryptic skink (in this area these may in fact be a related species known as herbfield skink; however, based on what was known at the time, it was noted in the EcIA that there was a possibility of cryptic skink being present at the landfill site) by Mr Carey Knox suggests the likelihood of this species being present at Smooth Hill is essentially nil. On this basis explicit consideration of effects / management for cryptic skink / herbfield skink is no longer required (but the management plan will nevertheless include appropriate management responses in the event of discovery of unexpected lizard species).
T+T Recommended Condition 53 A Lizard Management Plan based on the *Draft Smooth Hill Lizard Management Plan* prepared by Boffa Miskell Ltd, dated May 2021 must be prepared by a suitably qualified ecologist to ensure any adverse effects on any lizards onsite are avoided or offset. The plan must be submitted to ORC no less than 6 months prior to commencement of construction and 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 herpetofauna. b) Detail regarding onsite surveys that have been undertaken to inform the Lizard Management Plan. c) Mitigation methodologies including salvage and relocation. d) A residual effects assessment using BOAM or BCM modelling. e) Offset or compensation outcomes that appropriately address any residual effects. f) Key responsibilities of onsite personal. g) An adaptive management and review process that includes Te Rūnanga o Ōtākou, the peer review panel, and ORC.	The condition is generally accepted, but the following changes are proposed. The plan should be developed at least 12 months prior to construction (not 6), to allow time for the plan to be used to obtain a Wildlife Act Authority (for lizard salvage) from the Department of Conservation. Current WAA processing times are 9 months. This also allows time for site enhancement and predator control to commence and be effective, prior to lizard salvage and release. With regard to matters d) and e) as per the responses to T+T's draft condition 47 and to draft condition 50 matter b) ix) it is not agreed that BOAM / BCM modelling should be required as currently proposed, and again note that not all measures will be offset or compensated. Finally, reference to 'suitably qualified ecologist' should be replaced with 'suitably qualified herpetologist', as appropriate preparation of Lizard Management Plans requires an expert level understanding of current lizard salvage, handling, and habitat enhancement practices. The applicant therefore proposes a new condition 58 set out below and included in the **attached** updated set of conditions to replace its original condition 48. *58. A Lizard Management Plan based on the Draft Smooth Hill Lizard Management Plan prepared by Boffa Miskell Ltd, dated May 2021 must be prepared by a suitably qualified herpetologist to ensure any adverse*

	effects to lizards during construction are effectively avoided or otherwise managed. 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 herpetofauna.* *b. Detail of onsite surveys that have been undertaken to inform the Lizard Management Plan.* *c. Mitigation methodologies including salvage and relocation, and any habitat enhancement measures undertaken in accordance with condition 59.* *d. Key responsibilities of onsite personnel.* *e. An adaptive management and review process that includes Te Rūnanga o Ōtākou, the independent peer review panel, and ORC.* *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 shall communicate this certification to Otago Regional Council. The certified plan is to be implemented for the duration of any landfill construction works.*

Appendix 11 Ecological – aviation bird strike matters

Matters for Further Discussion	Applicant response
Submitters have raised concerns regarding the potential increased risk of aviation bird strike, particularly for aircraft using the Dunedin International Airport. T+T have reviewed the revised Bird Management Plan (June 2021), which included a risk assessment undertaken by Avisure, who recommended updates to the Bird Management Plan. T+T have recommended a detailed condition to address this which has been further adapted to provide certainty for parties that may be concerned about the risk of bird strike. Does the applicant wish to amend their proposed condition(s) accordingly? **T+T Recommended Condition 54** 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 submitted to ORC no less than 6 months prior to commencement of construction and must be developed in consultation with 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 54(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 54(b) d) A summary from a New Zealand perspective covering the attraction of birds to landfills and bird strike risk with aircraft. e) 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 55 is breached. h) Detailed methodologies and actions for bird management during operation. i) Key responsibilities of onsite personal 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 ORC. l) An adaptive management and review process that includes Te Rūnanga o Ōtākou, the peer review panel, Dunedin International Airport, and ORC. **T+T Recommended Condition 55** 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.	The applicant considers that T+T's proposed condition 54 is generally acceptable with minor changes. In recognition that long-life putrescible waste landfills are an attractor to birds, the applicant proposes further conditions addressing the reduction of putrescible waste from the waste stream to be received at Smooth Hill, thereby providing greater certainty of this intention. The applicant therefore proposes proposed new conditions 62 - 65 set out below and included in the **attached** updated set of conditions. *62. 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. To the extent practicable, food and garden organic waste streams must be collected and processed separately to minimise disposal of this material at Smooth Hill landfill.* *64. 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.* *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 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 ORC. 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.*

Appendix 11 Ecological – aviation bird strike matters	
Matters for Further Discussion	**Applicant response**
	The plan must be submitted to the independent peer review panel no less than 6 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. T+T's recommended condition 55 is not accepted. The Draft Bird Management Plan includes measures to limit birds greater than 50g to zero densities and escalating responses if these are breached. The ultimate requirement if repeated breaches occur would be for a net to be installed over the landfill which is a proven defence against foraging birds at landfills. The applicant notes that it is currently engaging with DIAL on relevant proposed conditions of consent with a view to reaching an agreed position ahead of the hearing, and any updated conditions will be included as part of the applicant's evidence.